expedeon

protein discovery & analysis

Product Guide 2015

Contents

How to order:

Email:	orders@expedeon.com
Visit our webshop:	www.expedeon.com
Fax your order:	01223 873371 / 858 457 7939
Call us or your local distributor	

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Contents

Precast Gels

RunBlue™
Protein Electrophoresis Products

RunBlue precast gels have been developed as an improvement on the current state of the art precast SDS-PAGE gels. RunBlue gels are more rigid and up to 10 times stronger than conventional precast gels resulting in more robust gels that can be handled with confidence without tearing - an 8% gel can be thrown into the air and caught without breaking!

Benefits of RunBlue Precast Gels

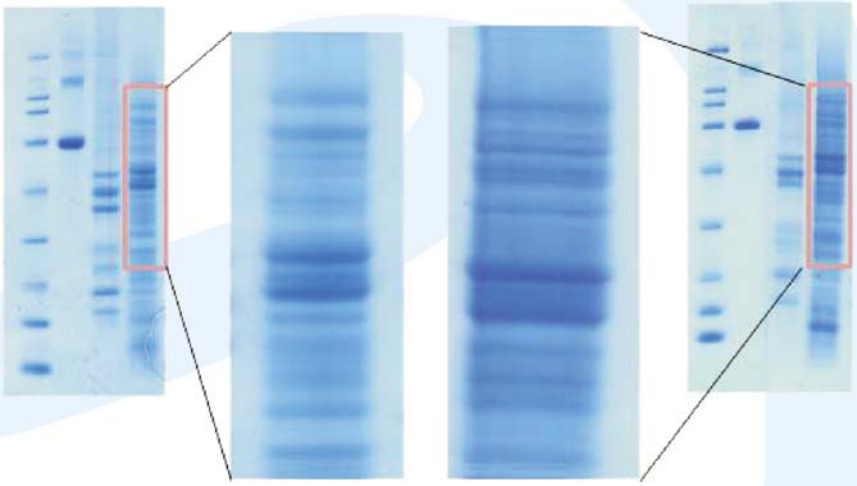
- Mass Spec compatible
- 2 year shelf life - never throw away another gel
- Up to 10x stronger - no more torn, ruined gels
- Dyed stacking gel - makes gel loading child's play (SDS = Red, Native = Green)
- No comb to remove - no more broken or bent teeth
- Full length resolving gel - improved resolution and better blotting
- Easy to open with fingers - no more bent spatulas!
- Fast delivery with immediate and expert technical support for total peace of mind
- Best value gels available - save money!

RunBlue™ Technology

Proprietary photo-polymerisation process	- Sharper bands - Better batch to batch reproducibility
Composite Gel technology	- Stronger gels
Unique plastic cassette	- Reduced hydrophobicity -> less streaking - Enhanced oxygen barrier -> sharper bands
Unique proprietary stacking chemistry	- Better stacking -> sharper bands - Larger volume capacity
Optimised Running buffer	- Lower conductivity -> Less heat generation - run at higher voltage -> shorter run

RunBlue gels are packed with innovative technology focused on delivering the highest resolution and band sharpness. A direct comparison between RunBlue and a leading competitor product demonstrates the superior band sharpness and resolution that can be obtained with RunBlue Gels.

Competitor 4-12% RunBlue™ 4-20%



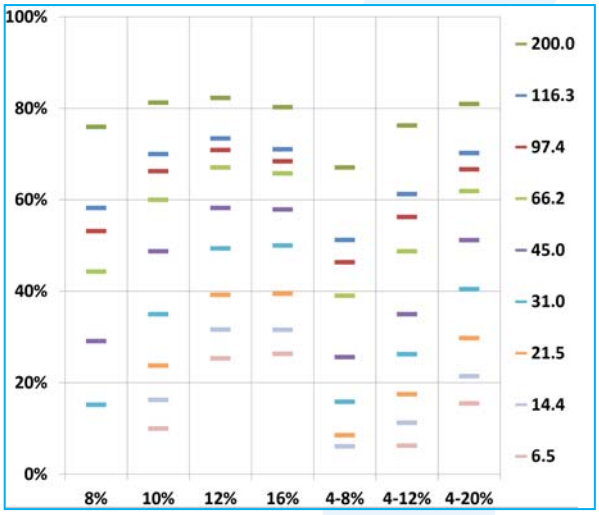
Lane 1: Biorad Marker, Lane 2: BSA, Lane 3 Chicken Muscle Lysate, Lane 4: E. Coli Lysate. Samples were prepared in LDS sample buffer and gels were run at 200V in appropriate running buffers.

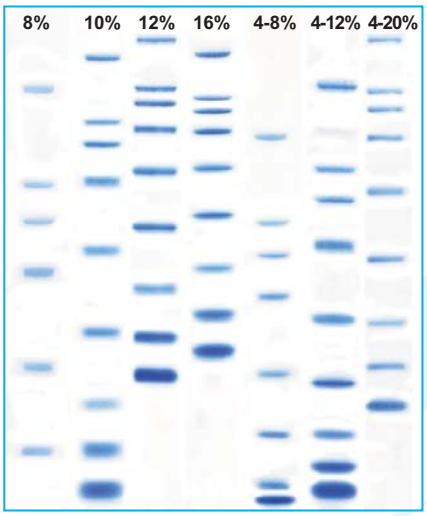
RunBlue™ Specifications				
Gel percentages	8%, 10%, 12%, 16%, 4-8%, 4-12%, 4-20%			
Storage & Shelf Life	24 months at 2°- 8° C (DO NOT FREEZE)			
	3 months at room temperature			
Pack size	10 gels per box			
Running buffer	TEA-Tricine-SDS (NXB50500)			
Sample buffer	Tris-Chloride-LDS (NXB31010)			
		10 x 10 – NXG	**8 x 10 – BCG**	**10 x 15 – CCG**
Cassette dimensions	wxhxd (cm)	10 x 10 x 0.4	8 x 10 x 0.25	10 x 15 x 0.4
Gel dimensions	wxhxd (cm)	8.5 x 8 x 0.1	8.5 x 6.5 x 0.1	13.5 x 8 x 0.1
Sample volume	1 well	700 µl	700 µl	-
	2 well	450 µl	450 µl	-
	12 well	35 µl	35 µl	-
	17 well	20 µl	20 µl	-
	20 well	-	-	35 µl
	26 well	-	-	20 µl

Compatible Tanks	Gel Box Mfg	Compatible Boxes
8 x 10 cm	Bio-Rad	Mini-Protean® II, Mini-Protean® III
		Mini-Protean® Tetra
10 x 10 cm	Hoefer	Hoefer™ Tall Mighty Small™ (SE280)
	Life Technologies®	X-cell™ Bolt®
	Lonza	PAGEr® Minigel Chamber

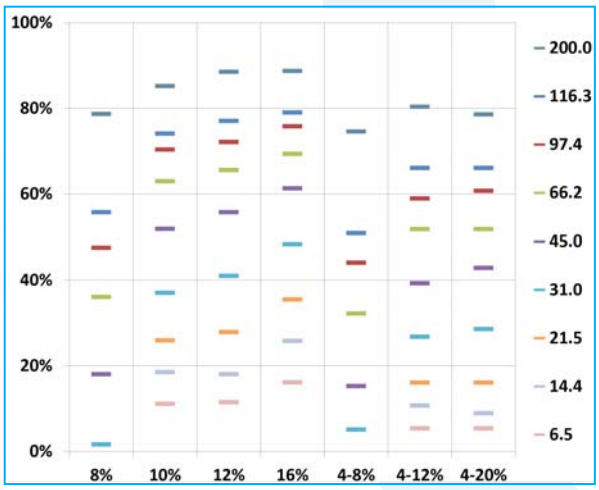
Protein Migration Charts

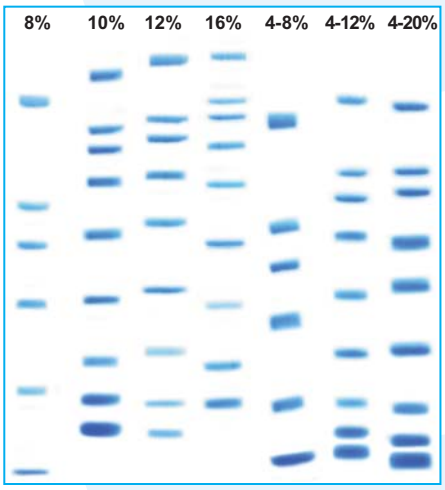
RunBlue Migration Chart: 10x10 cm
TRICINE Running buffer (NXB50500)





RunBlue Migration Chart: 8x10 cm
TRICINE Running buffer (NXB50500)





Conversion Tables

Gel Conversion Table: Life Nupage --> RunBlue			
Nupage Bis Tris		RunBlue TEO-Cl	
Gel Type	Running Buffer	Gel Type	Running Buffer
8%	MOPS	8% or 4-8%	TEO-Tricine (NXB50500)
10%		10%	
12%		12%	
4-12%		4-12%	
8%	MES	10%	TEO-Tricine (NXB50500)
10%		12%	
12%		16%	
4-12%		4-20%	

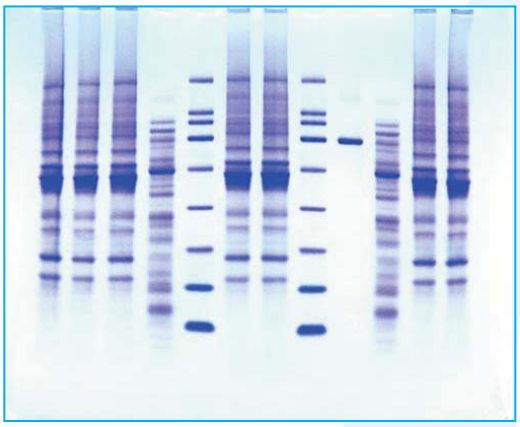
Gel Conversion Table - well type: Life Nupage --> RunBlue			
Nupage Bis Tris		RunBlue TEO-Cl	
Well Type	Volume (ul)	Well Type	Volume (ul)
10	25	12	35
12	20	12	35
17	15	17	20
1	700	1	700

Gel Conversion Table: Biorad TGX --> RunBlue			
Biorad TGX		RunBlue TEO-Cl	
Gel Type	Running Buffer	Gel Type	Running Buffer
7.5%	Tris Glycine	8%	TEO-Tricine (NXB50500)
10%		10%	
12%		12%	
4-15%		4-12%	
4-20%		4-20%	
8-16%		12% - 16%	
Any Kda		4-20%	

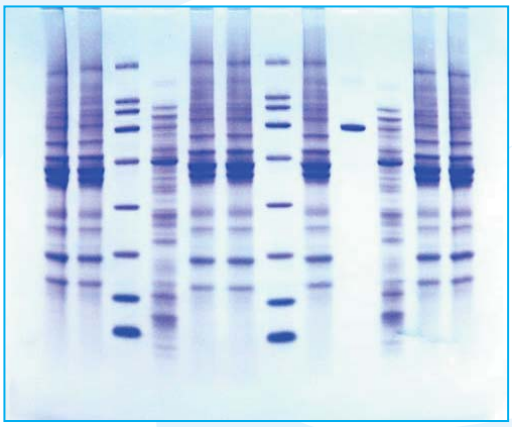
Gel Conversion Table - well type: Biorad TGX -> RunBlue			
Biorad TGX		RunBlue TEO-Cl	
Well Type	Volume (ul)	Well Type	Volume (ul)
8+1	30	12	35
10	30	12	35
12	20	12	35
15	15	17	20

RunBlue gels are extremely strong and durable. Not only is the product 10x stronger than any competitor product, Runblue gels also have an unsurpassed two year shelf life.

2 Weeks Old



1 Year Old



RunBlue - Virtually Identical Results after One Year

Ordering information

				1 Well	2 Well	12 Well	17 Well
SDS	10 x 10 cm casette Compatible with SureLock Tanks	Single %	8%	NXG00801	NXG00802	NXG00812	NXG00827
			10%	NXG01001	NXG01002	NXG01012	NXG01027
			12%	NXG01201	NXG01202	NXG01212	NXG01227
			16%	NXG01601	NXG01602	NXG01612	NXG01627
		Gradient	4-8%	NXG40801	NXG40802	NXG40812	NXG40827
			4-12%	NXG41201	NXG41202	NXG41212	NXG41227
			4-20%	NXG42001	NXG42002	NXG42012	NXG42027
	8 x 10 cm casette Compatible with BioRad Tanks	Single %	8%			BCG00812	BCG00827
			10%			BCG01012	BCG01027
			12%			BCG01212	BCG01227
			16%			BCG01612	BCG01627
		Gradient	4-8%			BCG40812	BCG40827
			4-12%			BCG41212	BCG41227
			4-20%			BCG42012	BCG42027
NATIVE	10 x 10 cm casette Compatible with SureLock Tanks	Single%	10%			NXN01012	NXN01027
			20%			NXN02012	NXN02027
		Gradient	2-8%			NXN20812	NXN20827
			3-20%			NXN32012	NXN32027
	8 x 10 cm casette Compatible with BioRad Tanks	Single%	10%			BCN01012	BCN01027
			20%			BCN02012	BCN02027
		Gradient	2-8%			BCN20812	BCN20827
			3-20%			BCN32012	BCN32027
						20 Well	**26 Well**
SDS	10 x 15 cm casette Compatible with BioRad's Criterion Tank using adapter	Single%	12%			CCG01220	CCG01226
		Gradient	4-12%			CCG41220	CCG41226
			4-20%			CCG42020	CCG42026

We can make any percentage of gel and can cast in different buffer systems such as Tris/Glycine. If we currently do not stock your preferred gel please contact us for a quotation. A minimum order of 5 boxes is required for custom castings.

Premixed buffers & solutions

All RunBlue Buffers, Reagents and Accessories have been specifically designed and formulated for use with the RunBlue gels and apparatus to provide optimum performance and results. Buffers are made using the highest quality chemicals and have different compositions to other manufacturers' buffers. Only use RunBlue formulated buffers with RunBlue gels.

RunBlue LDS Sample buffer (NXB31010) has been specifically formulated for use with RunBlue gels. The ions in the sample buffer match the gel buffer and the buffer has a higher density, making it compatible with the density of the running buffer. The buffer contains two tracking dyes. The red dye is designed to monitor the pH of the buffer. A colour change from red to yellow indicates a shift in pH indicating that the buffer was poorly made or recycled too many times.

RunBlue SDS Running Buffer (NXB50500) is a TEO-Tricine buffer system that can be used under reducing or non-reducing conditions. TEO-Tricine running buffer can be used for excellent separation of higher or lower molecular weight proteins.

Ordering information

	Product Code	Description	Unit Size
SDS	NXB50500	RunBlue Tricine - SDS Run Buffer 20X	500 ml
	NXB50425	RunBlue Tricine - SDS Run Buffer 20X	4L
	NXB31010	RunBlue LDS Sample Buffer 4X	10 ml
	NXA30010	RunBlue Antioxidant 10X	10 ml
	NXA32001	RunBlue Sample Reducer (DTT) 10X	1 ml
NATIVE	NXB61500	RunBlue Native Run Buffer 20X	500 ml
	NXB61425	RunBlue Native Run Buffer 20X	4L
	NXB33010	RunBlue NATIVE Sample Buffer 4X	10 ml
BLOTTING	NXB86500	RunBlue Tris Glycine Blot Buffer 10X	500 ml
	NXB86425	RunBlue Tris Glycine Blot Buffer 10X	4L
	NXB82500	RunBlue Tris Glycine SDS Run Buffer 10X	500 ml
	NXB82425	RunBlue Tris Glycine SDS Run Buffer 10X	4L
	NXA19020	RunBlue Blot sandwich Nitrocellulose membrane (90x85 mm) - 0.2 um	pack of 20
	NXA29320	RunBlue Blot sandwich PVDF membrane (90x85 mm) - 0.2 um	pack of 20

Scan-to-Order

InstantBlue™

InstantBlue Stain gives a crystal clear background with only protein bands stained blue. InstantBlue is very sensitive and can detect as low as 5 ng of protein.

InstantBlue is formulated ready to use. Gels can remain in stain for weeks without concern. Only proteins are stained resulting in extremely well defined blue bands on a highly transparent background. The reduction of background interference results in a better signal to noise ratio. Protein bands containing as low as 5 ng per band (BSA) can be detected.

The InstantBlue formulation is non-toxic and does not contain any methanol. Proteins stained using the InstantBlue stain are also compatible with mass spectrometry (MS) analysis and silver staining. With InstantBlue there is no methylation.

Comparison with other stains:

	InstantBlue™ (Expedeon)	SimplyBlue™ (Invitrogen)	GelCode Blue™ (Pierce)	Home-made (Anyone)
No need to wash before staining	✔	3 x 5 mins	3 x 5 mins	Typically 3 x 5 mins
No need to fix before staining	✔	✔	✘	✘
No need to heat / microwave	✔	✘	✔	✔
No need to de-stain	✔	✘	✘	✘
No risk of over-staining if left too long	✔	✘	✘	✘
Non toxic and easily disposed of	✔	✔	✘	✘

Ordering information

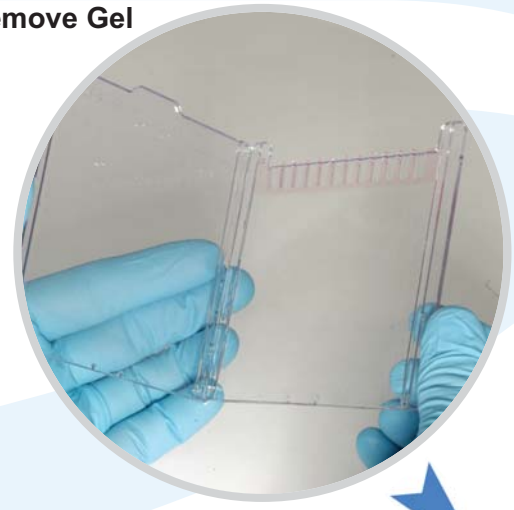
Product Code	Description	Unit Size
ISB1L	InstantBlue	1 litre

InstantBlue Stain Protocol

Benefits

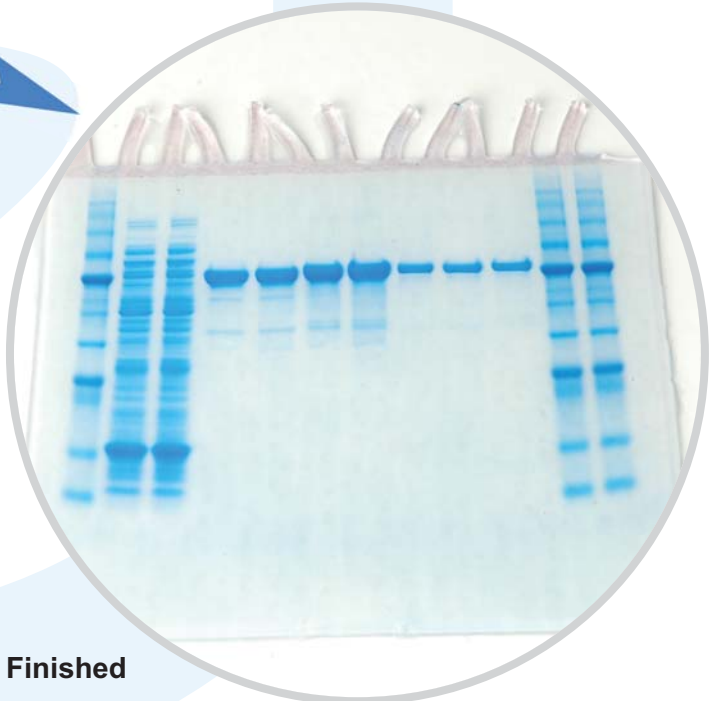
- **Ultra quick**
  Results within 15 minutes
- **Easy**
  One step protocol
  No washing
  No fixing
  No heating
  No de-staining
- **Sensitive**
  5ng protein per band
- **Enabling**
  Mass Spec compatible
  Edman Sequencing
- **Safe**
  Non toxic
  No Methanol
  Sink disposal

1. Remove Gel



2. Add Stain

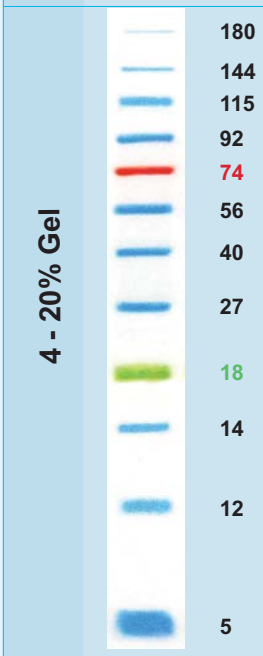
3. Leave 15 Minutes



Finished

Protein Markers

RunBlue prestained markers enable easy visualization of the marker proteins during and after running and western blotting. The markers can be used to estimate the molecular weight of your protein of interest and assess the transfer efficiency during blotting. Expedeon offers two types of prestained molecular weight markers:

Marker	Tri Colour	Dual Colour
Range	180 Kda – 5 kDa	195 Kda – 7.6 kDa
# of bands	12	10
Colours	Blue 180, 144, 115, 92,56,40,27,14,12,5	Blue 195, 142, 96, 48,33,22,12,7.6
	Red 74	Pink 71, 28
	Green 18	
		

Storage
Storage long term at -20°C or for 3 months at 4°C.

Recommend Load Volumes
RunBlue prestained markers are provided ready to use in 1x RunBlue sample buffer. Recommended volumes to load are:

Application	12 well		17 well	
	volume	loads/vial	volume	loads/vial
Monitor during run	10 µl	60	5 µl	120
Visible after blotting	4 µl	150	2 µl	300
Visible after staining	4 µl	150	2 µl	300
for use with Antiblue	2 µl	300	1 µl	600

Ordering information

Product Code	Description	Unit Size
NXA05160	RunBlue Dual Colour marker	600 µl
NXA6050	RunBlue Tri Colour marker	600 µl

Equipment & Accessories

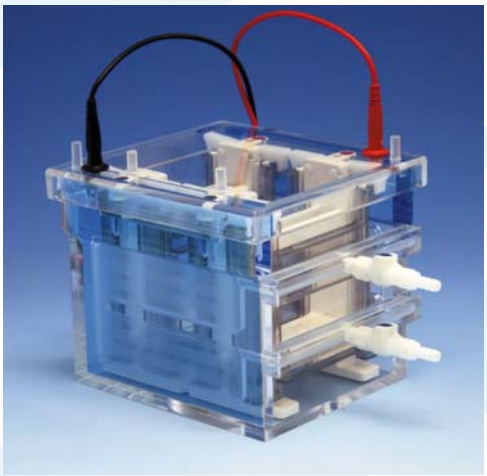
RunBlue gels run best on our Dual Run and Blot unit. This unique apparatus permits the running of both 10x10cm and 8x10cm gels. The unit is available in dual and quad form enabling up to 4 gels to be run at one time.

Both units can also be used to complete Western blots. The unique electrode arrangement provides a gradient electric field which ensures that both small and large proteins migrate from the gel at a comparable rate.

Quad units are available in cooled format, enabling cold water hook up if required.

Features & Benefits

- Fits both 10x10 and 8x10 cassettes
- Coloured centre core to provide maximum contrast with loading buffer for easy loading
- Excellent sealing and no leakage from cathode to anode
- Can be cooled in place to reduce heat effects such as smiling or frowning
- Gradient field for blotting providing more uniform transfer. Ideal for high quality wet blotting
- Excellent value for money
- RunBlue Vs. Sure Lock Tank
  - RunBlue Tanks run gels evenly compared to the SureLock tanks
  - RunBlue Tanks last 10X longer
  - RunBlue Tanks can run and blot



Ordering information

Product Code	Description
Gel Tanks	
NXE00002	RunBlue Dual Run and Blot System (runs up to 2 gels) supplied with 1 bufferdam, 2 blotting cassettes and 2 cool blocks
NXE00004	RunBlue Quad Run and Blot System (runs up to 4 gels) supplied with 1 bufferdam and 4 blotting cassettes
NXE00005	RunBlue Quad Cool (runs up to 4 gels) supplied with 1 bufferdam and 4 blotting cassettes
NXE00102	RunBlue MIDI Dual Run & Blot unit
NXE00014	RunBlue Blotting Cassette with Pad 9x9cm
NXE00015	RunBlue Cooling Block, Dual Run and Blot
NXE00016	RunBlue Buffer Dam, Dual Run and Blot
NXE00017	RunBlue Sponge Pad Kit, 9x9cm, 4 pack
Blot Membrane	
NXA19020	RunBlue Blot Sandwich NC 90x85mm, 1 pack of 20
NXA29320	RunBlue Blot Sandwich PVDF 90x85 mm, 1 pack of 20

Scan-to-Order

Anti-Blue Antibody

A MUST HAVE PRODUCT FOR ALL LABS

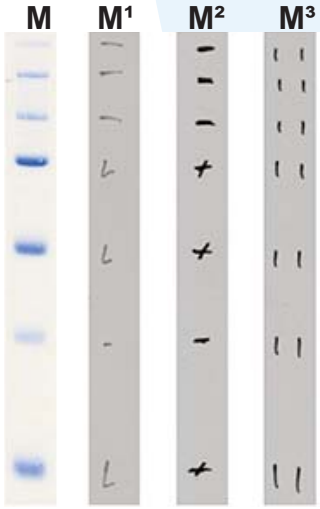
Expedeon's Anti-Blue Antibody is a unique antibody with epitopes that specifically recognize the blue-stained proteins in any prestained protein marker. It is compatible with any pre-stained marker (blue) and can be used in conjunction with any primary antibody. The Anti-Blue antibody is available unlabelled or labelled with HRP for easy analysis. The unlabelled antibody can be detected by any secondary anti-mouse antibody.

Features & Benefits

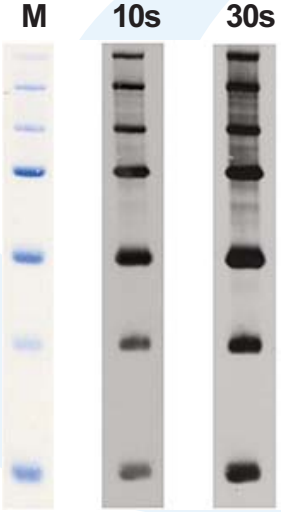
- Simultaneous visualization of markers and target protein
- Easy to use, fits in with existing work flows
- Compatible with any pre-stained marker containing blue-stained proteins
- Save money: use as little 0.25µl marker
- No cross reactivity, no background
- Outstanding specificity
- Highly sensitive
- Compatible with any primary or secondary antibody
- Freeze/Thaw stable

With Anti-Blue antibody the time of manually marking your protein marker bands is forever gone. No more guessing how accurately the marker bands were charted! Anti-Blue visualizes your markers and your target proteins together on the same blot, in the same exposure.

The Past



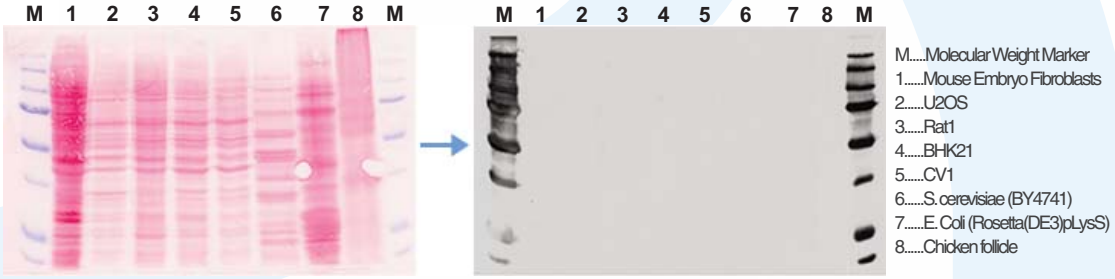
The Future



Key features

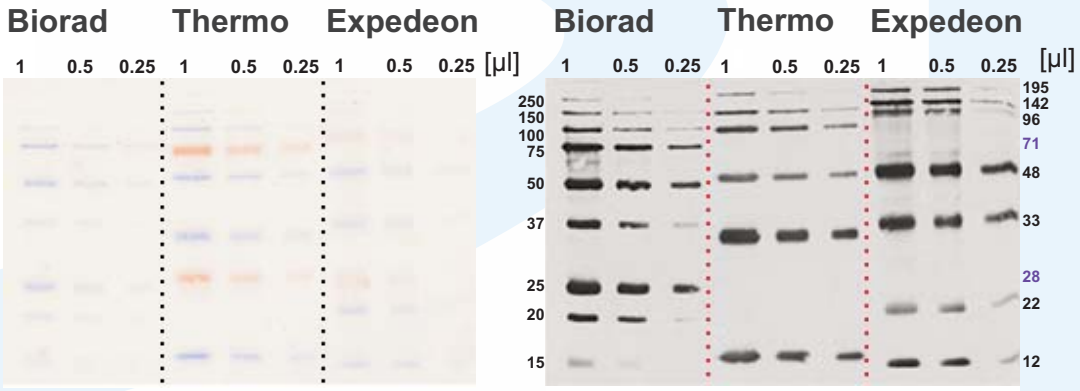
No Cross Reactivity

The Anti-Blue antibody has been extensively tested with whole cell lysates of different species, confirming the extremely high specificity towards blue-stained proteins. No cross-reactivity with whole cell proteins has been detected.



Universal

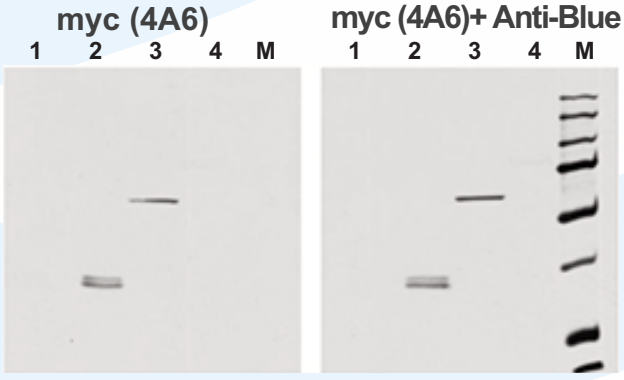
Anti-Blue is suitable for use with any blue prestained marker. The antibody will however not recognize prestained markers stained with any other colour, unstained markers or coomassie or silver stained proteins.



The indicated amounts of the respective protein markers were separated by SDS-PAGE and transferred to nitrocellulose membrane. The membrane was blocked with 3% skim milk in PBS-T for 1 h at room temperature and incubated with Anti-Blue antibody diluted 1:2000 and secondary anti-mouse HRP in 0.5% skim milk in PBS-T for 1 h at room temperature. The membrane was washed 3x with PBS-T and processed for ECL detection.

Highly Specific

Anti-Blue is highly specific and only recognizes blue prestained markers. It also does not interfere with the binding of primary antibody with its target protein as shown in the pictures below. The blot on the left was treated with primary antibody without Anti-Blue, for the blot on the right Anti-Blue was mixed with the primary antibody. The results are identical.



1... U2OS 4HA-B56
2... NIH3T3 myc-C /HA-B55
3... NIH3T3 myc-A
4... MEF PME1-/-
M... Molecular Weight Marker (1 l)

How to use

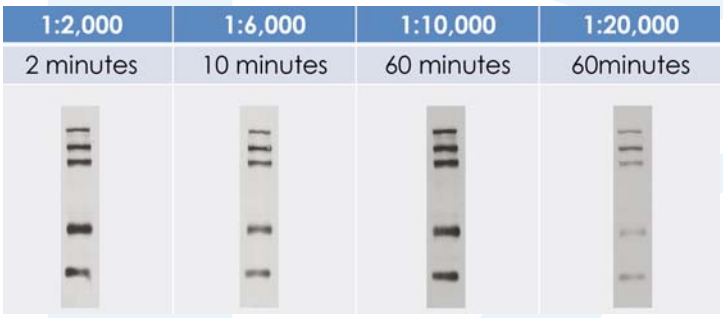
Use at Primary or Secondary Antibody Stage

Anti-Blue antibody can either be used at the primary antibody probing stage or at the secondary antibody stage without interfering with identification of the target protein. The antibody is simply co-diluted in the primary or secondary antibody titer and applied to the blot.

The Anti-Blue dilution factor can be varied to match the expected exposure time for the secondary antibody. Typically the Anti-Blue dilution factor will range from 1:2000 to 1:20,000 corresponding with an exposure time ranging from 2 to 60 minutes.

Recommended procedure	
2 µl of prestained marker per lane	
Explosure	**Dilution**
Short 2 min	1:2,000
Medium 10 min	1:6,000
Long 30 min	1:10,000

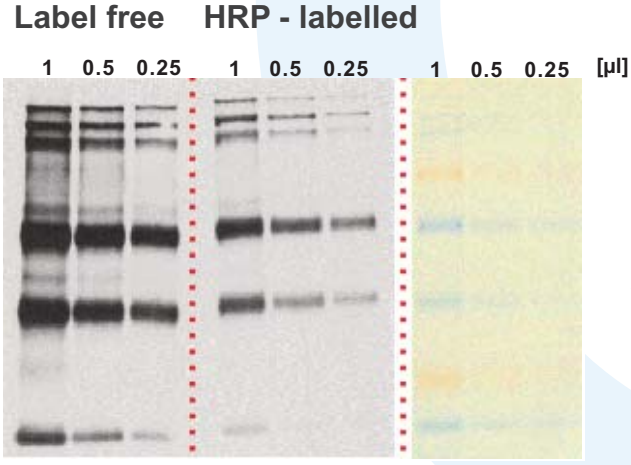
Dilution & Exposure



Expedeon RunBlue Prestained Markers (2 L per lane) were separated by SDS-PAGE and transferred to nitrocellulose. Membranes were blocked in 3% dry milk (NFDM) in PBS-Tween for 1,5h at RT and incubated with HRP-coupled anti-BLUE-HRP protein marker antibody (diluted as indicated, in 0.5% NFDM in PBS-T) for 2 hour at RT. Proteins were visualized by ECL.

HRP-labelled or Label Free

Anti-Blue is a mouse antibody. When working with anti-mouse secondary antibodies the label free antiblue can be used either at the primary or secondary stage. When working with secondary antibody against a different species the label version of the antibody should be used. This is best used at the secondary probing stage.



- the label-free Anti-Blue antibody diluted 1:2000 + anti-mouse HRP labelled secondary antibody or;
- HRP-labelled Anti-Blue antibody diluted 1:2000 in 0.5% dry milk in PBS-Tween for 2h at RT.

The indicated volumes of RunBlue 2-Color SDS Marker (NXA05160) were separated by RunBlue SDS-PAGE Gels and transferred to RunBlue nitrocellulose membranes (NXA19020). The membranes were blocked with 3% dry milk in PBS-Tween for 1h at room temperature and incubated with either HRP-labelled or Label free Anti-Blue.

Save Money

Anti-Blue not only provides great functionality, its use also saves you money. Due to the high sensitivity of Anti-Blue, the amount of costly prestained marker required for your blots can be reduced substantially. Furthermore the superior stability of the antibody enables the Anti-Blue solutions to be reused multiple times. Below three workflow scenarios using Anti-Blue have been detailed.

Workflow comparison

	Option 1	Option 2	Option 3
Anti-Blue Price/vial		£100 / 500 ul £0.20 / ul	
Dilution Factor	1:2000	1:6000	1:10,000
Exposure time	2 min	10 min	30 min
Reuse	3x	1x	-
Total Volume	600 ml	1,200 ml	1,000 ml
Volume/per blot	10 ml		
Blots / vial	60	120	100
Cost per blot	£1.67	£0.84	£1.00

The overall cost comparison between the conventional workflow (no Anti-Blue) and the different Anti-Blue work flows demonstrates cost savings of up to 59%!

Overall workflow cost

Cost	Conventional workflow (10ul, 2 lanes)	Anti-Blue workflow (2ul, 2 lanes)		
		Option 1	Option 2	Option 3
Marker/blot	£4.00		£0.80	
Anti-Blue/blot	-	£1.67	£0.84	£1.00
TOTAL / blot	£4.00	£2.47	£1.64	£1.80
Cost Saving/blot		£1.53 38%	£2.36 59%	£2.20 55%
Annual Saving (10 blots / week)		£765	£1,180	£1,100

Ordering information

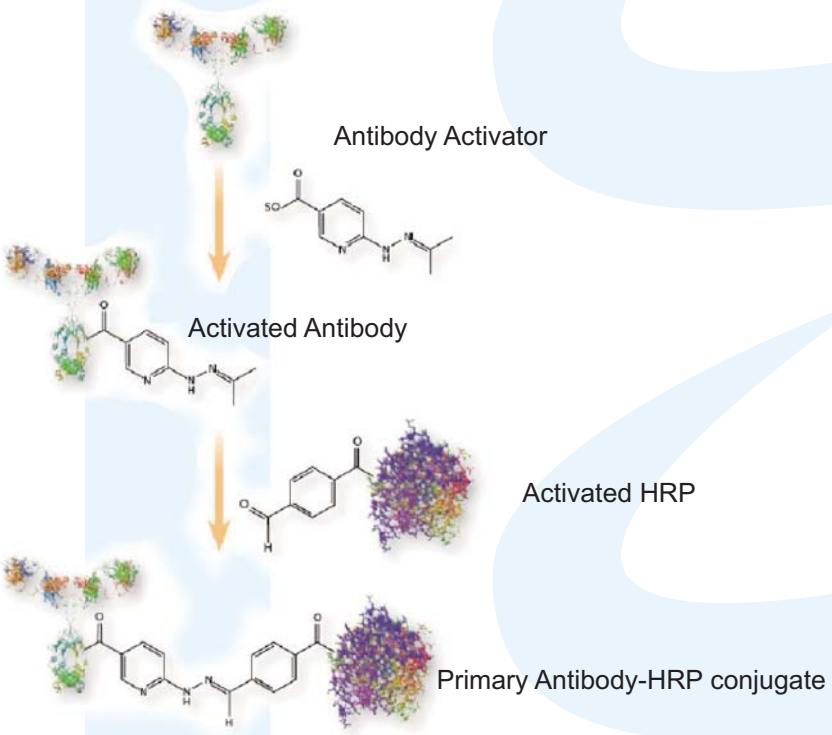
Product Code	Description
ABF0100	Anti-Blue Antibody 100ul
ABF0400	Anti-Blue Antibody 4x100ul
ABH0100	HRP labelled Anti-Blue Antibody 100ul
ABH0400	HRP labelled Anti-Blue Antibody 4x100ul

Scan-to-Order

InstantBlot

Development of western blots with secondary antibodies while simple in execution has historically produced results with significant background banding that in many cases obscures the visualization of the target antigen. It has long been recognized that superior results can be achieved using primary anti-antigen/label conjugates in western blot assays.

InstantBlot technology lets you modify your primary antibody directly with HRP. No purification required. No more secondary antibodies needed resulting in reduced backgrounds. Each InstantBlot kits converts up to 100 µg of primary antibody to a primary antibody-polyHRP conjugate in near quantitative yield, requiring only pipettes and a microcentrifuge. The whole process requires less than 30 minutes hands-on time. With InstantBlot you obtain better results, faster.



The final conjugate allows development of up to 40 western blots, which is dependent on the inherent affinity of the primary antibody.

Kit Features

- Minimal background
- Faster procedures
- Elimination of cross-species contamination
- Multiplexing possibilities
- Cost savings

Kit Features

Components:	Quantity:
Antibody Activator	1 x 100 µg
Activated-HRP	1 x 50 µL
Modification Buffer	5 mL
Spin Columns	3
Collection Tubes	6
DMF	0.2 mL
Antibody Working Buffer	120 mL
20X Wash Buffer	75 mL

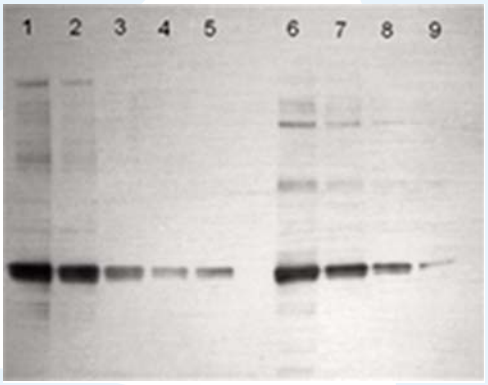
Examples:

Actin Dection in Mouse LLC lysate:

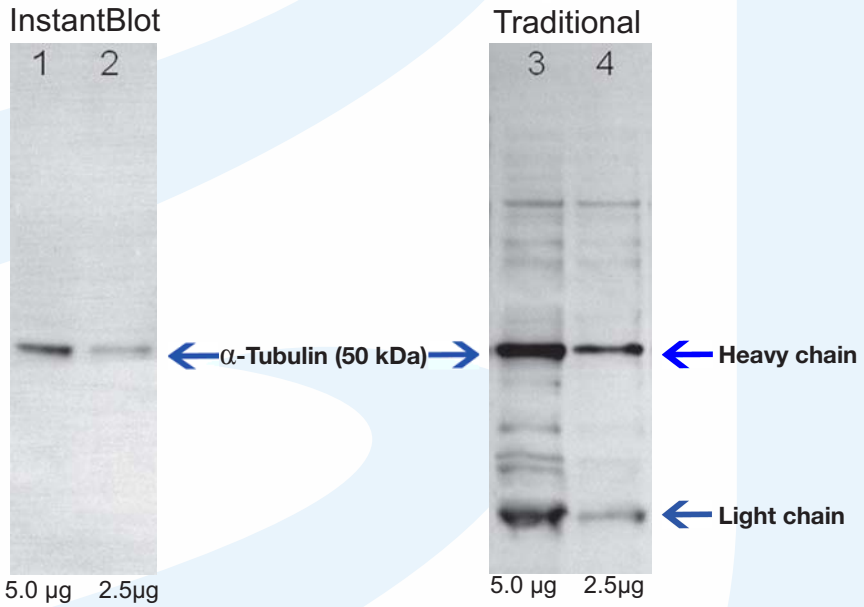
Mouse LLC lysate (10 µg to 0.625 µg) was transferred to nitrocellulose membrane and blocked with 4% BSA for 1 hour at room temperature.

Lanes 1-5:
Direct detection with InstantBlot
Blocked membranes were probed with mouse-actin-antibody-HRP conjugate (0.25 g/mL) for 1 hour at room temperature. The target protein was visualised through ECL development.

Lanes 6-9:
Traditional detection with secondary antibodies
Blocked membranes were probed with mouse-actin-antibody-HRP conjugate (0.25 g/mL) for 1 hour at room temperature. The blot was subsequently probed with goat antimouse-HRP conjugate (0.1 g/mL) for 1 hour at room temperature; The target protein was visualised through ECL development.



Tubulin Detection in Mouse Splenocyte lysate:



1. Load sample 5 µg (Lane 1) to 2.5 µg (Lane 2).
2. Transfer to nitrocellulose membrane, 3% milk block, 1 hour.
3. Incubate with 0.2 µg/mL α-Tubulin antibody-HRP conjugate, 1 hour.
4. ECL development.

1. Load sample 5 µg (Lane 1) to 2.5 µg (Lane 2).
2. Transfer to nitrocellulose membrane, 3% milk block, 1 hour.
3. Incubate with 0.2 µg/mL α-Tubulin antibody-HRP conjugate, 1 hour.
4. Incubate with 0.15 µg/mL goat anti-mouse-HRP conjugate, 1 hour.
5. ECL development.

Ordering information

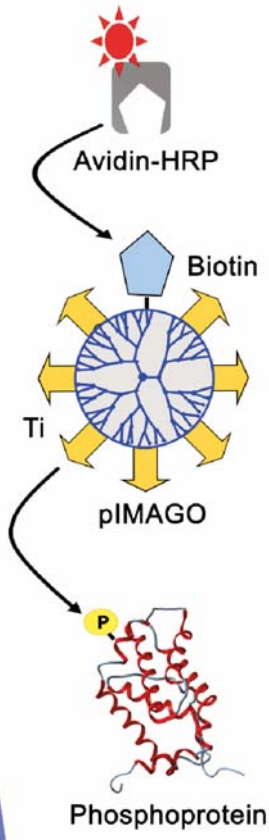
Product Code	Description
WBIB40	InstantBlot Kit

Scan-to-Order

Phosphoprotein Detection

pIMAGO®

A universal and reliable alternative to phospho-antibodies for Western blot or ELISA and a safe and cost effective alternative to ^{32}P radioactive assays.



Features & Benefits

- **Universal detection**
  Detection in any organism/sequence/amino acid through Ti^{4+}
- **High specificity**
  Multiple Ti^{4+} ensure strong binding resisting harsh washing
- **High sensitivity**
  Multiple Biotin ensure significant signal amplification (100pg)
- **Multiplex capability**
  Small size (4nm) allow multiplexing with total protein antibodies
- **Flexibility**
  Avidin-HRP/ Fluor 550/Fluor 680/Fluor 800 available for detection

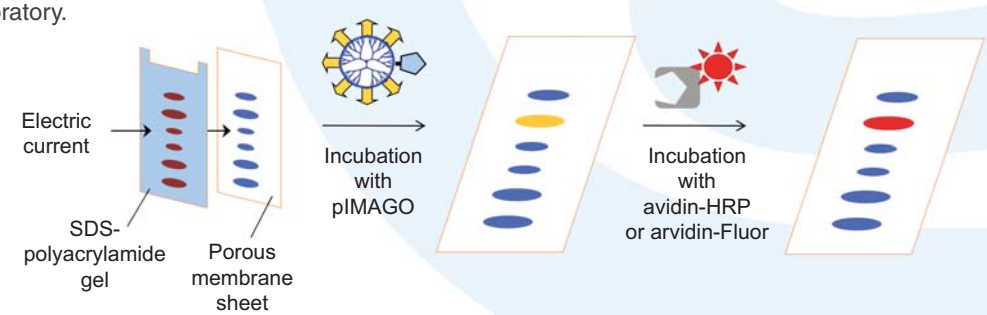
Applications

- Phosphorylation detection by **Western blot** or dot-blot
- Phosphorylation detection by **ELISA**, micro plate assays
- In vitro **kinase/phosphatase** assays
- Kinase **activity profiling**/Inhibitor screening
- Detection of **in vivo** phosphorylation after IP
- Phospho **array** currently being investigated

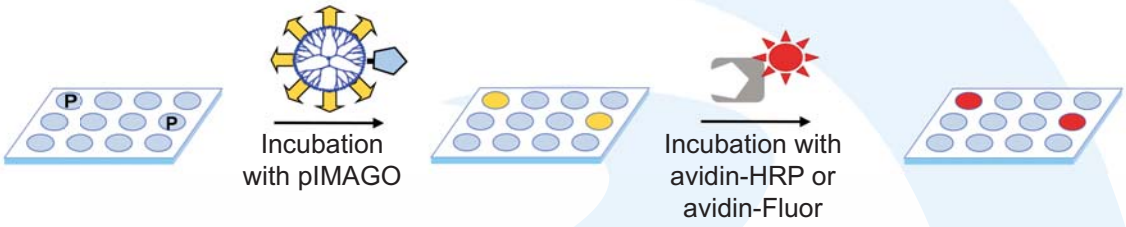
pIMAGO is a universal phosphoprotein detection technology that enables sensitive and specific recognition of phosphorylated molecules.

pIMAGO is based on water-soluble, globular nanopolymers (i.e., dendrimers) that are multi-functionalized with reactive groups (e.g., Ti(IV) ions) for the highly specific recognition of phosphate groups, and with 'reporting' groups (e.g., biotin, fluorophore) that facilitate their detection. Multiple functionalized groups per denrimer ensure very strong binding to the phosphoproteins (resulting in high specificity) and significant signal amplification from many "reporting" groups (resulting in high sensitivity).

Unlike phospho-antibodies, the binding is not biased by amino acid sequence, and therefore can be used for detection of any phosphorylation event on any protein site. pIMAGO detection protocol resembles a simple Western Blot procedure and can be easily incorporated by any laboratory.



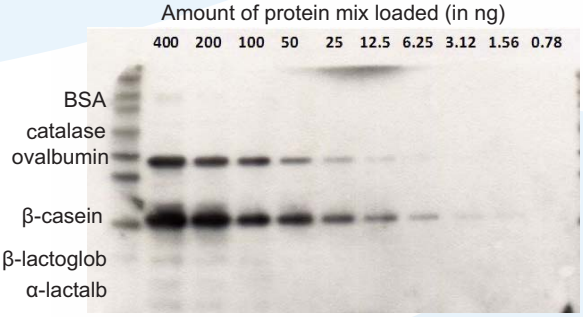
pIMAGO-biotin phosphoprotein detection on membrane kits. All kits include pIMAGO-biotin reagent, streptavidin-based detection reagent, blocking buffer, pIMAGO buffer, washing buffer and a control phosphoprotein. ECL substrate is not included.



pIMAGO-biotin phosphoprotein detection on microplate kits. All kits include pIMAGO-biotin reagent, streptavidin-based detection reagent, blocking buffer, pIMAGO buffer, high-binding adsorption plates and a control phosphoproteins. HRP-based kits also include colorimetry substrate and stop solution.

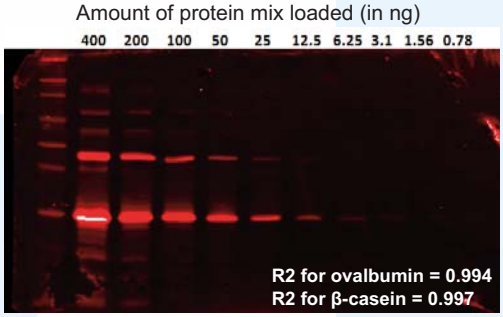
Avidin-HRP detection

Amount of protein mix loaded (in ng)



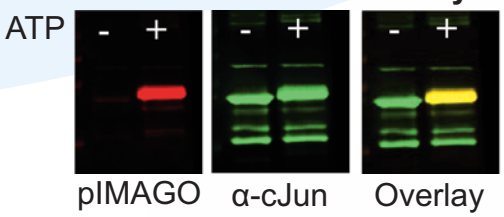
Avidin-Fluor680 detection

Amount of protein mix loaded (in ng)

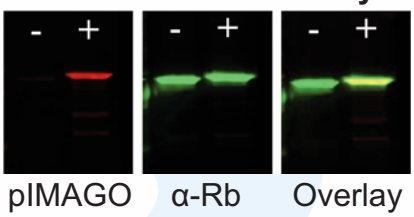


pIMAGO analysis of in vitro kinase assays using avidin-HRP (left) or avidin-Fluor (right) detection.

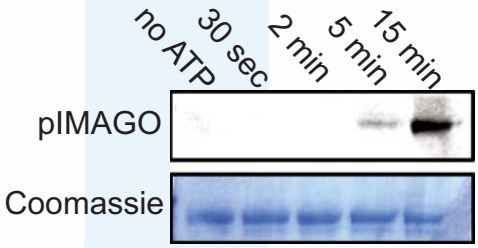
JNK1-cJun kinase assay



Cdk1-Rb kinase assay



Cdk1-Cdc6 kinase assay



Ordering information

Product Code	Description
800-10	pIMAGO HRP Phosphoprotein Detection on Western Blot (complete kit) - 10 mini-blots
800-40	pIMAGO HRP Phosphoprotein Detection on Western Blot (complete kit) - 40 mini-blots
801-10	pIMAGO Fluor 550 Phosphoprotein Detection on Western Blot (complete kit) - 10 mini-blots
801-40	pIMAGO Fluor 550 Phosphoprotein Detection on Western Blot (complete kit) - 40 mini-blots
802-10	pIMAGO Fluor 680 Phosphoprotein Detection on Western Blot (complete kit) - 10 mini-blots
802-40	pIMAGO Fluor 680 Phosphoprotein Detection on Western Blot (complete kit) - 40 mini-blots
803-10	pIMAGO Fluor 800 Phosphoprotein Detection on Western Blot (complete kit) - 10 mini-blots
803-40	pIMAGO Fluor 800 Phosphoprotein Detection on Western Blot (complete kit) - 40 mini-blots
900-100	pIMAGO HRP Colorimetric Phosphoprotein Detection on Microplate (complete kit) - 100 wells
900-400	pIMAGO HRP Colorimetric Phosphoprotein Detection on Microplate (complete kit) - 100 wells
901-100	pIMAGO Fluor 550 Phosphoprotein Detection on Microplate (complete kit) - 100 wells
901-400	pIMAGO Fluor 550 Phosphoprotein Detection on Microplate (complete kit) - 400 wells
902-100	pIMAGO Fluor 680 Phosphoprotein Detection on Microplate (complete kit) - 100 wells
902-400	pIMAGO Fluor 680 Phosphoprotein Detection on Microplate (complete kit) - 400 wells
903-100	pIMAGO Fluor 800 Phosphoprotein Detection on Microplate (complete kit) - 100 wells
903-400	pIMAGO Fluor 800 Phosphoprotein Detection on Microplate (complete kit) - 400 wells

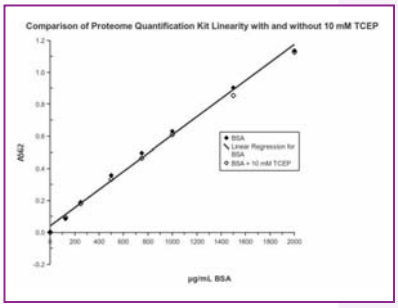
Scan-to-Order

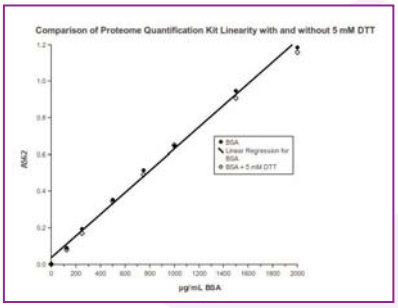
BCA Assay

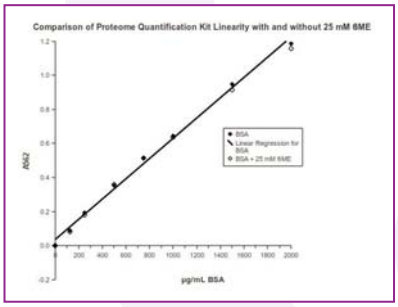
The Proteoquant Proteome Quantification Assay Kit is for researchers using universal sample preparation methods to prepare whole proteome starting material for analysis.

Based on a modification of the simple and scalable BCA protein quantification assay, the Proteoquant Proteome Quantification Assay Kit is compatible with the UPX Universal Protein Extraction Kit, the YPX Yeast Protein Extraction Kit, and other protocols for protein extraction into solutions containing both SDS and reducing agents.

A protocol modification, included with the kit, allows researchers to omit the thiol alkylation step if their chosen extraction method does not require the presence of th reducing agents TCEP, DTT, or 6-mercaptoethanol in the extraction solution.







Ordering information

Product Code	Description	Unit Size
44110	Proteoquant Proteome Quantitation Assay	980 reactions
44120	Proteoquant BCA Assay	1960 reactions
44130	Proteoquant BCA Assay	3920 reactions
44140	Proteoquant BCA reducing agent compatibility kit	980 reactions

BradfordUltra™

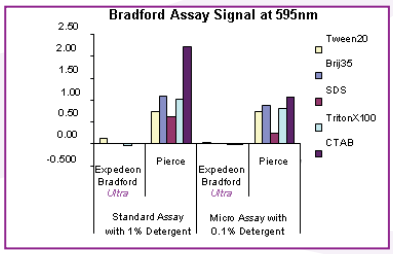
BradfordUltra™ is a quick and ready-to-use Coomassie-binding, colorimetric method for total protein quantitation in an environment containing up to 1% detergent (1% high protein range, 0.1% low protein range).

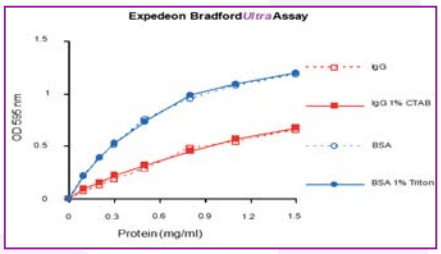
When Coomassie dye binds protein in an acidic medium, an immediate shift in absorption maximum occurs from 465 nm to 595 nm with a concomitant color change from brown to blue. Protein concentrations are estimated by reference to absorbances obtained for a series of standard protein dilutions, which are assayed alongside the samples with unknown protein concentrations.

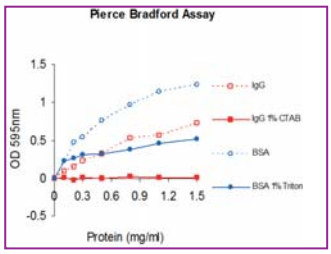
Benefits

- Fast
- Detergent compatible
- Reducing agent compatible
- Only 20 ul sample
- Cost - effective

Expedeon's BradfordUltra is an improvement over classical Bradford formulations which cannot tolerate detergent contamination of the protein samples. In addition, the BradfordUltra reagent shows excellent linearity for a defined range of protein concentrations and shows significantly less protein-to-protein variation than is observed with other Bradford-type Coomassie formulations.







Detergent Compatibility

Comparison of Expedeon's BradfordUltra Assay with Pierce's "Coomassie Protein Assay". The graph shows the average blank corrected A595 measurements for detergents samples (no protein). When detergents are present in the sample, competitor Bradford assay solutions give high blank readings making accurate detection of the protein sample impossible. BradfordUltra is not affected by the detergents compared to classic formulations and provides excellent signal to noise ratios and accurate determination of the protein concentration regardless of the detergent presence.

Standard curves obtained with BradfordUltra are unaffected by the presence of detergents. Standard curves obtained with classical Bradford formulation are significantly affected by the presence of detergents resulting in loss of sensitivity and inaccurate results.

Protocol

1) Make a dilution series of the chosen model protein in the range:
0.1 mg/ml – 1.5 mg/ml (high protein range) **OR**
1 µg/ml – 25 µg/ml (low protein range)

2) Mix the samples, standards and a blank (buffer, no protein) with BradfordUltra reagent.
High Protein Range: 1 part sample for 15 parts reagent
Low Protein Range: 1 part sample for 1 part reagent

3) Read absorbance at 595 nm.

4) Calculate concentration
Subtract the average 595 nm measurement for the blank from the 595 nm measurements of all other individual standards and unknown samples. Plot the average blank-corrected 595 nm measurement for each standard vs. concentration. Use the slope of this standard curve to estimate the protein concentration of the unknown samples.

Ordering information

Product Code	Description	Unit Size
BFU05L	BradfordUltra 500ml	1650 reactions
BFU1L	BradfordUltra 1 Litre	3300 reactions

Scan-to-Order

** Compatible with the detergents and the additives in the Hampton crystallisation screens

Bradford*Mx*™

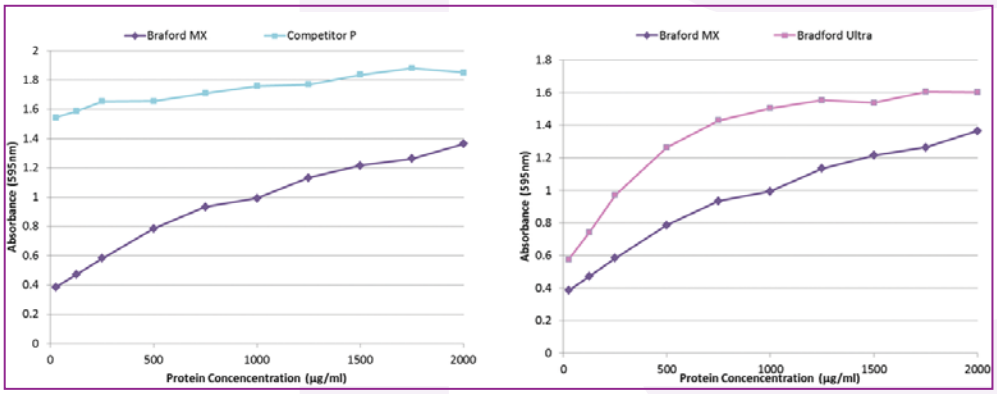
Expedeon's Bradford*MX* is an improvement over classical Bradford formulations which cannot tolerate detergent contamination of the protein samples.

Bradford*MX* is a quick and ready-to-use Coomassie-binding, colorimetric method for total protein quantitation in an environment containing up to 1% detergent. In addition to detergent compatibility, Bradford*MX* uses far less protein sample compared to other assays (only 5 microlitre are required). The assay also shows enhanced linearity for a wider range of protein concentrations and significantly less protein-to-protein variation.

Benefits

- Enhanced linearity
- Lower background
- Only 5ul sample required
- Fast
- Detergent compatible
- Reducing agent compatible

When Coomassie dye binds protein in an acidic medium, an immediate shift in absorption maximum occurs from 465 nm to 595 nm with a concomitant colour change from brown to blue. Protein concentrations are estimated by reference to absorbances obtained for a series of standard protein dilutions, which are assayed alongside the samples with unknown protein concentrations.



Standard curves for bovine serum albumin (BSA) containing 1% Triton X-100 using Bradford*MX* and Competitor P Bradford assay. Bradford*MX* provides better signal to noise and enables accurate measurement of protein.

Standard curves for bovine serum albumin (BSA) containing 1% Triton X-100 using Bradford*MX* and Bradford Ultra. Bradford*MX* provides enhanced linearity and a wider dynamic range.

Ordering information

Product Code	Description
BFMX05L	Bradford*MX* 500ml
BFMX1L	Bradford*MX* 1 Litre

BradfordRed™

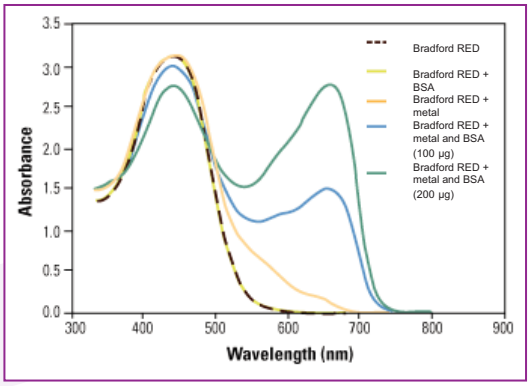
Bradford*Red* is a quick and ready-to-use colorimetric protein assay with increased linearity and increased detergent- and reducing agent-compatibility for convenient protein quantitation at 660nm.

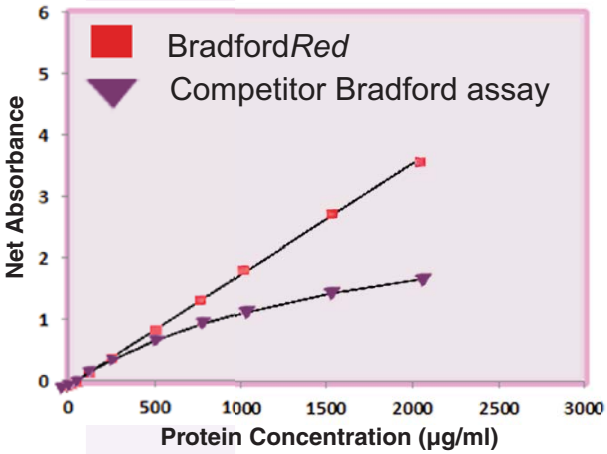
Expedeon's Bradford*Red* has a greater linear range than Coomassie-based Bradford assays. It is compatible with higher concentrations of most detergents (up to 5% for some detergents, e.g. Brij and CHAPS), reducing agents and other commonly used reagents. The accessory ionic detergent compatibility reagent (IDCR) creates an even broader detergent compatibility. Bradford*Red* is suitable for samples containing Laemmli SDS sample buffer with bromophenol blue.

Benefits:

- Enhanced linearity
- Greater range and concentration of detergent compatibility
- Reducing agent compatible
- Only 10ul sample required
- Fast
- Convenient room temperature storage

Bradford*Red* produces significantly less protein-to-protein variation compared to competitor Bradford assays, although it produces more protein-to-protein variability than Bradford*MX*. Please note that appropriate standards should be used due to the inherent protein variability of all protein assays. The Bradford*Red* assay can be performed in either a test tube or microplate format.





Standard curves for BSA using Bradford*Red* and competitor B Bradford assay. Absorbances were measured at 660nm for the Bradford*Red* assay and 595nm for the competitor Bradford assay. Bradford*Red* has a greater linear range (25 to 2000µg) than the competitor Bradford assay (125 to 1000µg).

Bradford*Red* is based on the binding of a dye-metal complex to protein in acidic conditions that causes a shift in the dye's absorption maximum, which is measured at 660nm. The colour produced is stable and increases in proportion to a broad range of increasing protein concentrations, even in the presence of detergents and reducing agents that would be incompatible with standard Bradford and BCA protein assays. The ionic detergent compatibility (IDCR) reagent may be added to the assay reagent to increase compatibility with high amounts of ionic detergents, to measure samples containing Laemmli SDS sample buffer with bromophenol blue.

Ordering information

Product Code	Description
BFR05L	Bradford*RED* Kit (500ml reagent plus IDCR)
BFR1L	Bradford*RED* Kit (1L reagent plus IDCR)

Scan-to-Order

Versa*Wave* Spectroscopy

The Versa*Wave* spectrophotometer is the perfect tool for fast and accurate measurement of a wide variety of biomolecules such as protein, DNA and RNA. The Versa*Wave* reads samples in milliseconds and can be used for micro-volume measurements with sample volumes as low as to 0.6 µl. Equally the device can be used as a conventional spectrophotometer. Furthermore, the Versa*Wave* extends its capabilities into other areas such as remote sample measurement and on-line 'real time' sampling. The Versa*Wave* with its small footprint will suit any laboratory looking for fast, reliable and accurate measurements.

Features & Benefits:

- Easy to use: preprogrammed applications for DNA, RNA and protein quantitation
- Wide dynamic range up to 12,000 ng/µl dsDNA: no need to dilute samples
- Highly sensitive and accurate down 3 ng/µl dsDNA
- Low sample volume required down to 0.6 µl
- Sample can be fully recovered using VersaTip
- Multitude of sample read out options:
  - Pipette tip
  - Droplet cuvettes
  - Conventional cuvette
  - Flow cells
  - Immersion probe
- No moving parts: virtually maintenance free; no calibration or after sales service required

Specification:	
Pathlength	from 40mm to 0.125 mm
Sample volume	as low as 0.6 µl
Light source	Pulsed xenon lamp (powered for reading only)
Lamp life	Up to 10 years in normal operation
Detector	3648 pixel CCD Array (UV enhanced)
Photometric linearity	Better than 1%
Photometric range	-0.2 to 2.5A
Wavelength range	190 to 1050nm
Wavelength accuracy	±0.5nm
Spectral bandwidth	<2nm
Absorbance precision	0.003A
Read time	2 seconds (includes full wavelength scan)
PC communication	Ethernet
Power	24VDC from supplied adapter with input (100 – 240VAC)
Dimensions	18 x 18 x 17cm
Weight	3.5kg
Software compatibility	Professional versions of Windows 8 (32 bit & 64 bit), Windows 7 (32 bit & 64 bit), Windows Vista (32 bit), Windows XP (32 bit)
Warranty	1 Years

VersaWave the ideal partner for protein quantitation

Independent of solution surface tension

Proteins are surface active in their own right and are often formulated with other surface active ingredients such as detergents. Variable surface tension is a problem for common stretched-drop spectrophotometers and leads to poor accuracy and large variability. Measurements with Versa*Tip* are not affected by the surface tension of the solution and provide the highest accuracy and reproducibility irrespective of the composition of your sample.

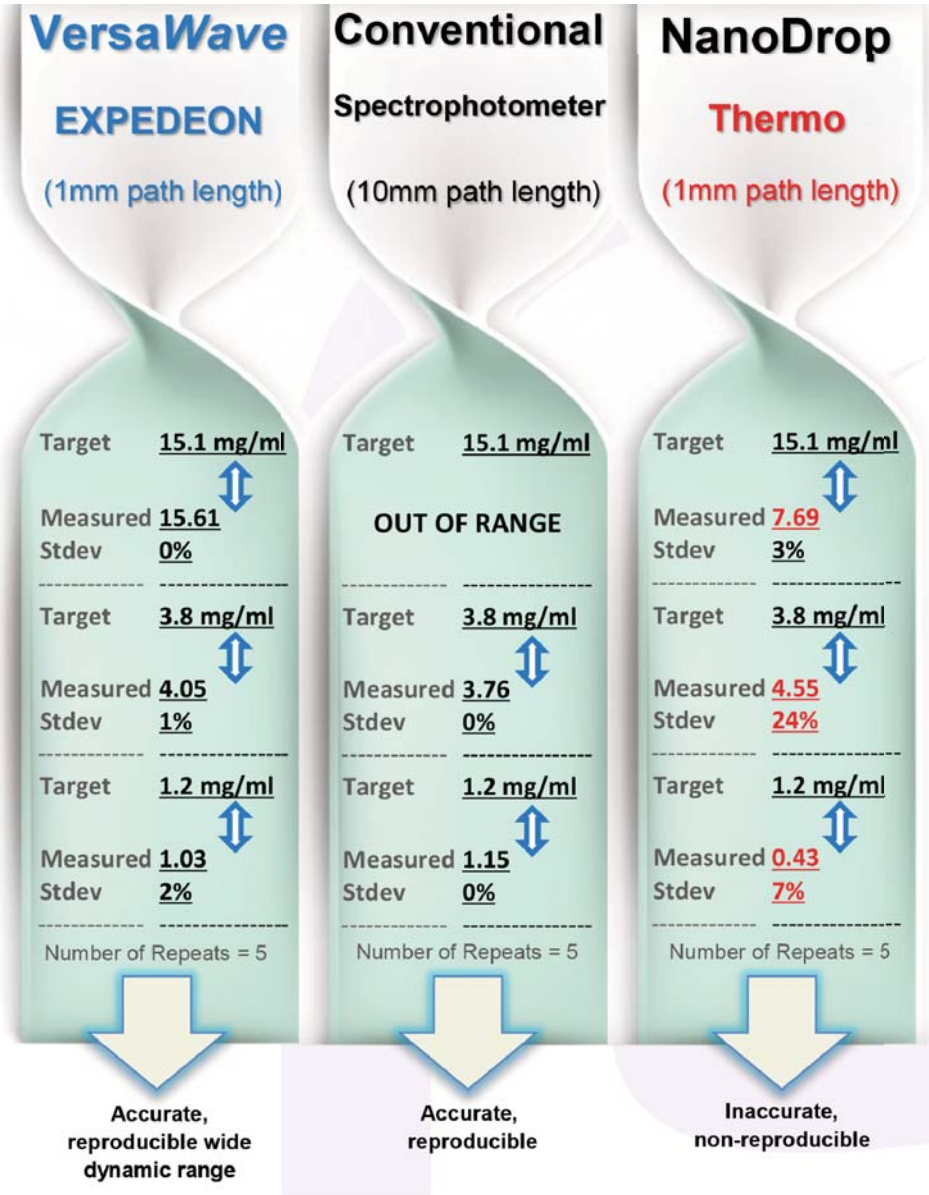
Sample Evaporation

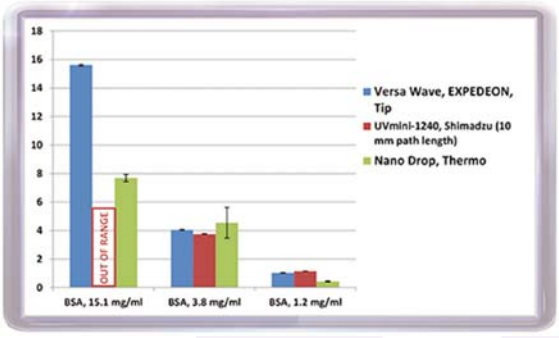
Stretched-drop spectrophotometers expose the sample droplet to ambient air. Any evaporation of the droplet with result in in-situ concentration of the compounds and in the case of proteins can also result in aggregation. This can result in overestimation of the analyte concentration of interest. Versa*Tip* retains the sample in the tip of a pipette protecting it from evaporation. This results in accurate and reliable measurement of your samples but also enables multipoint time based assay such as enzyme kinetics analysis or protein solubility.

Why Choose VersaWave:

- **Microvolume:** Analyze samples as small as a few microliters
- **Sample Retention:** Non-destructive measurement, No cross contamination
- **Fast and Easy:** Reads samples in seconds without need for accurate pipetting skills. Seamless integration into workflow
- **Full spectrum data:** spot impurities via absorbance ratios and deviations from the spectrum
- **Versatile:** use as micro-volume device with tips or drop-cuvettes or use with regular cuvettes, flow cells, immersion probes. The system is suitable for any UV-VIS application
- **Unique Technology:** Patented UV-tip technology
- **Low cost ownership.** No moving parts, no maintenance or recalibration required
- **Small footprint**
- **Outstanding technical support.** Our technical support experts are life science and spectroscopy experts with extensive experience in a wide variety of application and analysis techniques
- **Made in the UK**

VersaWave vs NanoDrop





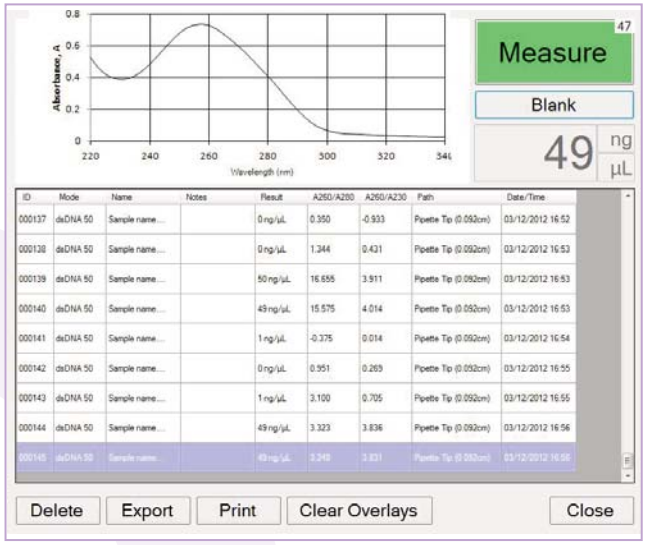
Three concentrations of BSA were analysed with the Versawave and Versa*Tip* accessory. The same solutions were also analysed with a cuvette based conventional spectrophotometer and a NanoDrop device.

The data obtained with the microvolume Versa*Tip* accessory showed high accuracy and reproducibility and was comparable to the data obtained with cuvette based conventional spectroscopy but with extended range towards larger protein concentrations.

NanoDrop showed poor accuracy and large variability. Higher protein concentration were particularly inaccurate, reporting concentrations of only half the real value, whilst lower concentrations showed larger variability. These poor results are attributed to sample surface tension and evaporation.

DNA/RNA Concentration and Purity

The measurement of absorbance values at 230, 260, 280 and 320nm and their use with standard conversion factors for nucleic acid quantification and purity check is well documented. Versa*Wave* has stored methods for quantitation of ssDNA, dsDNA and RNA. A cuvette holder accessory is available so that Versa*Wave* can also be used with cuvettes instead of pipette tips accommodating a range of pathlengths: 10mm, 5mm, 1mm, 0.5mm, 0.2mm and 0.125mm.



Proteins

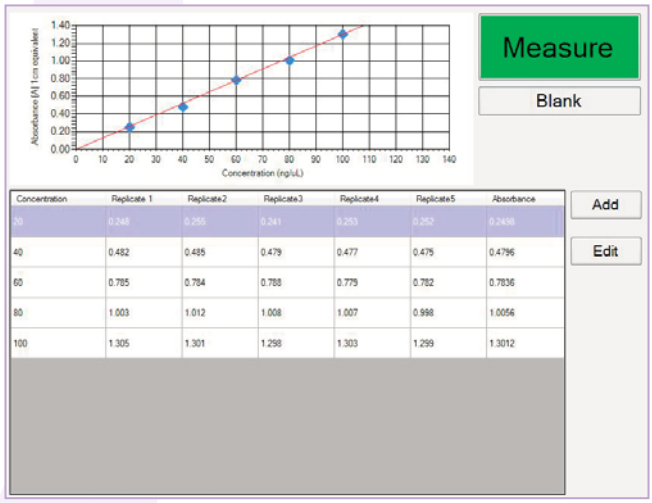
The Versa*Wave* has stored methods for both direct (UV280, IgG, Lysozyme, BSA) and indirect (Bradford, Lowry) protein determinations, and these protocols can be modified to suit local needs as there are many variants. Other methods can be entered and stored as required, and users can construct fully editable calibration curves using from 1 to 50 standards with up to 5 replicates of each, apply polynomial curve fitting, automatically compensate for the path length of the pipette tip or cuvette, store calibration results in a secure project folder and use a blank or blank and high standard in routine operation, or verify all points as required.

VersaWave Accessory Selection Guide

Concentration Range (BSA)	Recommended Accessory	Notes
1 - 40 mg/ml	Versa*Tip*	Quick, easy, high throughput
2 - 80 mg/ml	Versa*Cell* with 0.5mm path	Reduces need for dilution
> 80 mg/ml	Versa*Cell* / Versa*Tray* with 0.125 mm path	Extended measuring ranges
0.01 to 4 mg/ml	Versa*Probe* with 1cm path	Higher sample requirement (0.75 ml)
0.005 to 2.0 mg/ml	Versa*Probe* with 2cm path	Higher sample requirement (1 ml)

Microarray

The labeling efficiency of reactions for microarray measurements can be determined by using the approximate ratio of bases to dye molecules; this can be determined from the absorbance of the nucleic acid at 260 nm and the absorbance of the dye at its max. Versa*Wave* has stored methods for the common dyes while others can easily be added. There is automatic correction for pathlength and cross interference from the dye to ensure that results are both accurate and reliable.



Cell Culture

The measurement of cell culture optical density at 600nm (OD600) is used as a convenient method of estimating cell growth rates and their readiness for harvesting. The Versa*Wave* offers quick and accurate measurements of OD600 as well as allowing more detailed calibration against standards of known cell populations.

Ordering information

Product Code	Description
VWU1000	VersaWave - Supplied with control and data acquisition software and fibre optic couplings

Scan-to-Order

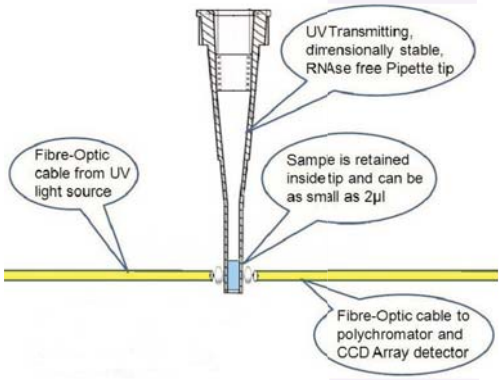
VersaTip

The VersaTip works on the basis of light from a long life, pulsed xenon lamp being passed along a fibre optic cable to a coupling attached to one side of a remote pipette holder; this has been specially designed for the accurate and reproducible location of a micro-pipette with unique UV-transmitting pipette tip.

Features & Benefits:

- Fast, accurate and reliable measurments
- Easy to use
  - No sample drop to dispense
  - No instrument arm to close
  - No cuvette cap to replace
- non-destructive measurement
  - sample can be transferred directly from source to destination with quantitation en route and without loss
- No cleaning between samples
- No cross-contamination
- No moving parts – low maintenance

UV light passes through the sample held in the tip and through to the opposite side where a second coupling and fibre optic cable lead back to the instrument. A complete wavelength scan is obtained, with control and data acquisition being managed by VersaWave software installed onto a PC attached to the instrument.



	VersaTip (n = 120)		Conventional Spectrophotometer (n = 3), quartz cuvette	
DsDNA (ng/ul)	Average	Precision	Average	Precision
25	25.6	3%	26.2	5%
250	258.5	3%	266.8	7%
500	495.5	1%	515.0	3%
1000	985.4	1%	1001.5	0%

Technical Specification

Wavelength Range	220 to 1050nm
Pathlength using tips	1 mm
Sample Volume	2.5 µl
Detection range	
dsDNA	3 - 1600 ng/µl
protein (BSA)	1 - 40 mg/ml

Ordering information

Product Code	Description
VTH0001	VersaTip holder includes VersaTip pipettor
VTP0010	VersaTip pipettor
VTR1000	10 boxes of UV transparent VersaTip pipette tips (96 per box); total 960
VTR5000	50 boxes of UV transparent VersaTip pipette tips (96 per box); total 4800
VTB1000	1 bag of VersaTip UV transparent pipette tips (1000 per bag)

VersaCell

The VersaCell is a micro volume cuvette compatible with the VersaWave spectrophotometer enabling accurate, consumable free quantitation of sample volumes as low as 0.6 µl.

Eliminate the dilution stage - save time

The preparation and isolation of nucleic acid and templates from mini-preps, DNA kits, PCR reactions and gel elution for use in, for example, automated DNA sequencing often results in very low yields of between 1-5 µg of sample with very high native absorbance. Due to the narrow pathlength of the VersaCell such samples can be measured directly with the VersaWave using as little as 0.6 µl sample and without the need for dilution, thereby saving valuable time. Quantification and purity analysis are therefore easily determined at any point during the preparation and isolation steps.

Proven sample handling technology - save hassle

The VersaCell uses advanced precision micro-machining techniques and materials to produce a patented high energy optical system which ensures that sufficient energy is available to measure low volume samples accurately and reproducibly across a wide absorbance range. It utilises a magnetic closure mechanism to facilitate sample loading and easy cleaning. The VersaCell is available with 0.5 mm, 0.2 mm or 0.125 mm path lengths.

Features & Benefits:

- Ultra low volume requirement as little as 0.6 µl
- Easy to use
  - magnetic closing action
  - surfaces are easy to wipe clean after measurement
- Fast and accurate measurments
- Wide dynamic range using different pathlengths
- Quick release fibre optic connectors

Technical Specification

	VBC0500	VBC0200	VBC0125
Wavelength Range		190 - 1050	
Pathlength	0.5 mm	0.2 mm	0.125 mm
Sample Volume	2.5 µl	1.0 µl	0.6 µl
Detection range			
dsDNA	6 - 3000 ng/µl	15 - 7500 ng/µl	24 - 12500 ng/µl
protein (BSA)	0.2 - 80 mg/ml	0.5 - 200 mg/ml	0.8 - 325 mg/ml

Ordering information

Product Code	Description
VBC0500	VersaCell 0.500 mm path length
VBC0200	VersaCell 0.200 mm path ength
VBC0125	VersaCell 0.125 mm path length

Scan-to-Order

VersaTray

The VersaTray is a micro volume cuvette compatible with the VersaWave spectrophotometer enabling accurate, consumable free quantitation of sample volumes as low as 0.7 µl and the rapid and accurate quantitation biomolecules such as protein, DNA and RNA.

Eliminate the dilution stage - save time

The preparation and isolation of nucleic acid and templates from mini-preps, DNA kits, PCR reactions and gel elution for use in, for example, automated DNA sequencing often results in very low yields of between 1-5 ug of sample with very high native absorbance. Due to the narrow path length of the VersaCell such samples can be measured directly with the VersaWave using as little as 0.7 µl sample and without the need for dilution, thereby saving valuable time. Quantification and purity analysis are therefore easily determined at any point during the preparation and isolation steps.

Proven sample handling technology - reduce / eliminate hassle

Due to the integrated beam deflection and the use of fibre-optic cables, it is possible to measure the sample directly on the surface of the optical window of the Tray cell. The cap with mirror provides a well-defined optical light path and prevents the sample from drying up ensuring reproducible measurements as the sample will not be enriched by evaporation of the solvent. The VersaTray is available with a 1 mm path length or 0.2 mm path length.

Features & Benefits:

- Ultra low volume requirement as little as 0.7 µl
- Easy to use + Easy to clean
  - cap closing action,
  - no need to remove cuvette from device
- Fast and accurate measurments
- Wide dynamic range using different path lengths

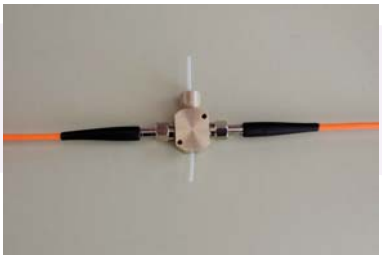
Technical Specification

	VTC1000	VTC0200
Wavelength range	190 - 1050	
Path length	1.0 mm	0.2 mm
Sample volume	3 - 5 µl	0.7 - 4.0 µl
Detection range		
dsDNA	5 - 1500 ng/µl	15 - 7500 ng/µl
protein (BSA)	0.1 - 40 mg/ml	0.5 - 200 mg/ml

Ordering information

Product Code	Description
VTC1000	VersaTray 1 mm path length
VTC0200	VersaTray 0.2 mm path length

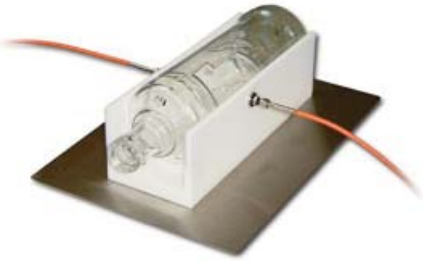
Sample Handling Accessories



For conventional applications using glass or quartz cuvettes, the 10 mm pathlength standard cuvette holder will accept the full range of micro and reduced pathlength cuvettes with a Z dimension (beam height) of 15 mm.

Use of the steel/PFA flowcell enables the instrument to be used as a reaction monitor for flow chemically reactive systems. The chemical reagents / products are measured as they move from the reaction vessel along inert PFA tubing and into the short pathlength flowcell; here, high absorbance values can be measured as a function of time.

Alternatively we offer industrial grade flowcells, manufactured from PEEK, which are suitable for the on-line measurement of sample under flow. Applications include for instance the monitoring contaminants and other impurities in eluates. The system is enabled to measure up to four wavelengths simultaneously. A dismantling tool is supplied to make cleaning a very simple operation. The flow cell body is available in different path lengths (up to 100 mm) ensuring to correct operating range and sensitivity can be achieved for your application.



Custom sample holders can be designed and built for almost any size or type of sample, whether it is large, small or awkward shaped. Plastic film and glass sheets can be measured without the need for cutting a representative sample; multiple measurements over a large area are possible. Shaped lenses, as in spectacles and sunglasses, are also easily accommodated, as are glass bottles of all sizes. It is also possible to directly measure the transmission properties of bottles.

An easy way to do in-situ measurements in the lab or remote at-line industrial measurements (e. g. in a sample stream, a large container etc) is to use a dip or immersion probe; there is no fragile cuvette, no sample transfer - just dip and rinse. With a choice of pathlength (2 – 40 mm through interchangeable tips), high temperature tolerance, a high degree of chemical inertness, a dip probe provides a high level of flexibility and ease of use.

Fluorescent measurements on special inks used on bottle labels, for example, can be obtained by using an instrument fitted with a specific LED excitation source and used in conjunction with a probe modified with a cut off filter to monitor the emitted light.

Ordering information

Product Code	Description
VSV0010	VersaVette Cuvette holder, 10 mm path length
VFS0001	VersaFlow Steel flowcell, 1 mm path length
VFP0001	VersaFlow PEEK flowcell, 1 mm path length
VFP0010	VersaFlow PEEK flowcell, 10 mm path length
VFP0040	VersaFlow PEEK flowcell, 40 mm path length
VSP0002	VersaProbe Immersion probe, 2 mm transflection path length
VSP0005	VersaProbe Immersion probe, 5 mm transflection path length
VSP6010	VersaProbe Immersion probe, 10 mm transflection path length [6 mm barrel]
VSP3010	VersaProbe Immersion probe, 10 mm transflection path length [3.17 mm barrel]

Scan-to-Order

Amintra Affinity Purification

Amintra

Protein Purification Tools

Amintra™ Affinity resins are part of a range of cost-effective chromatography resins designed for superior purification performance and customer satisfaction. Amintra resins benefit from high binding capacity, excellent specificity & resolution. They have outstanding durability and stability, are high flow rate compatible and suitable for all types of chromatography. Amintra resins are available in prepacked columns (1 and 5ml) and as a slurry.

HIS-TAGGED Proteins: Nickel-NTA

---Expedeon's Ni-NTA affinity resin is designed for simple, rapid His-tagged recombinant protein purification from a cell lysate under native or denaturing conditions. Amintra Ni-NTA offers excellent flow properties
and high protein **binding capacity: in excess of 50mg protein/ml**.

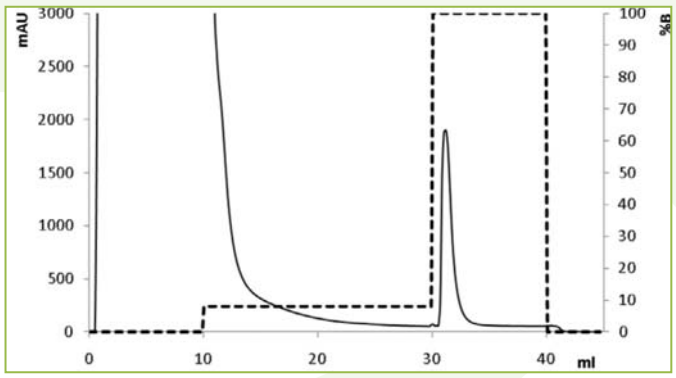
NTA is a tetradentate chelator which occupies four of the six binding sites in the coordination sphere of the nickel ion. The other two coordination sites are usually occupied by water molecules and can interact with histidine residues of the recombinant protein. This binding minimizes metal leaching during purification.

Benefits of Ni-NTA

- One step purification
- High capacity: 50 mg/mL
- Purification under native or denaturing conditions
- Minimum metal leaching

Specification:

Supporting matrix:	Covalently coupled to agarose resin
Charged metal ion:	Ni^2
Bead size range:	45-165 µm
Recommended working pH:	pH 2.0-12.0
Max binding capacity: protein/ml resin	50 mg His-tagged recombinant
Linear Flow rate pressure 1 bar)	Up to 300 cm/h (5cm diameter column,
Optimum Flow Rate	1-10 ml/min
Maximum pressure	0.1MPa (1 bar)
Chemical stability:	High
Solubility in water:	Insoluble



Clarified E. coli lysate (10 ml) was purified on a 1ml Amintra NiNTA column (2,5 cm). Binding buffer: 50 mM Na_2HPO_4, 300 mM NaCl, 10 mM Imidazole, pH 8.0. Elution buffer: 50 mM Na_2HPO_4, 300 mM NaCl, 250 mM Imidazole, pH 8.0. Flow Rate: 1 ml /min.

Chemical compatibility:

	REAGENTS	COMMENTS
BUFFERS	• Sodium Phosphate	• Sodium Phospate buffer 50 mM pH 8.0 is recommended.
	• Tris, HEPES, MOPS	• Coordinate with metal ions, causing a decrease in binding capacity. Up to 100 mM may be used.
	• Sodium Chloride	• Reduced non-specific binding. • At least 0.3M should be used. Up to 2 M can be used.
DENATURING AGENTS	• Urea	• Solubilizes protein. Use 8 M for purification under denaturing conditions.
	• Guanadine-HCl	• Solubilizes protein. Up to 6 M can be used.
ADDITIVES	• Imidazole	• Competes with the His-tag protein. • Reduces non-specific binding: 20 mM. • Elute the His-tag protein: up to 100 mM.
	• Glycerol	• Avoids hydrophobic interactions between proteins. • Up to 50% can be used.
	• EDTA	• Coordinates with nickel, causing a decrease in capacity. • Not recommended, but up to 1 mM in samples has been used successfully in some cases.
	• Ethanol	• Avoids hydrophobic interactions between proteins but may precipitate proteins causing column clogging and low flow rates. • Up to 20% can be used.
REDUCING AGENTS	• Reduced glutathione	• Can reduce Ni^{2+} ions at higher concentrations. Up to 30 mM samples has been used.
	• b-mercaptoethanol	• Avoids formation of disulfide bonds. Can reduce NI^{3+} ions at higher concentrations. Up to 20 mM in samples has been used.
	• DTT, DTE	• Can reduce NI^{3+} ions at higher concentrations. Up to 10 mM in samples has been.
	• SDS	• Avoids hydrophobic interactions between proteins. • Conditions with cations, causing a decrease in capacity. • Not recommended but up to 0.3% in samples.
DETERGENTS	• Non ionic detergents (Tween, Triton, etc)	• Removes background proteins.

Ordering information

Product Code	Description	Unit Size Medium (ml)
ANN0025	Amintra Ni-NTA Resin	25ml
ANN0100	Amintra Ni-NTA Resin	100ml

Scan-to-Order

HIS-TAGGED Proteins: Nickel IDA

Amintra NiHIS and CoHIS are affinity resins precharged with Nickel or Cobalt designed for simple and rapid purification of recombinant HIS-tagged protein from cell lysate under denaturing or native conditions. Amintra NiHIS and CoHIS resin consists of 45-165 μm agarose beads covalently coupled to a chelating group. Typically binding capacity of 10 mg HIS6x-tagged protein / ml resin.

Specification:	
Supporting matrix:	Covalently coupled to agarose resin
Charged metal ion:	Ni^{2} or Co^{2}
Bead size range:	45-165 μm
Recommended working pH:	pH 2.0-12.0
Typical binding capacity:	~10 mg HIS-tagged recombinant protein/ml resin
Maximum Flow rate	5 ml/min
Optimum Flow Rate	1 ml/min
Maximum pressure	1 bar
Chemical stability:	High
Solubility in water:	Insoluble

Nickel HIS-Tagged Magnetic Resin

HIS-tags have been widely employed as a powerful separation approach in the purification of a broad range of proteins and peptides. It is based on the specific interactions between certain transitional metal ions, mostly Cu2+, Ni2+, Zn2+ and Co2+ to the exposed amino acid surface chains containing histidine. The presence of several adjacent histidines such as (HIS)6-tag increases the affinity to immobilised metal ions. Increasingly, Amintra Ni-NTA and Ni-IDA resins are employed for the purification of histidine-tagged recombinant proteins expressed in bacteria, yeast and mammalian cells.

Key benefits:

- Tailored base matrix design for batch magnetic purification of proteins
- High binding capacity (could be over 40 mg/ml)
- Simple and convenient operation, no chromatography training required
- Flexible operational conditions
- Low cost

Characteristics of Amintra Nickel Magnetic	
Particle size	50 – 150 μm
Base matrix	Cross-linked 6% agarose encapsulating magnetic particles
Metal ion capacity	Approx. 12 - 25 μmol / ml resin
Binding capacity	Up to 40 mg/ml resin
	0.01M HCl and 1% SDS tested for 30 mins
	0.5 M NaOH tested for overnight
pH stability	pH 2-14 (<2 h)
	pH 4-12 (up to one week)
Storage	20% ethanol at 4°C
Supplied as	50% Slurry

Ordering information

Product Code	Description	Unit Size Medium (ml)	Unit Size Slurry (ml)
ACO0005	Amintra Cobalt IDA Resin	5	10
ACO0025	Amintra Cobalt IDA Resin	25	50
ACO0100	Amintra Cobalt IDA Resin	100	200
Amintra Nickel Magnetic			
AMN0002	Magnetic Resin HIS Tagged	1	2
AMN0005	Magnetic Resin HIS Tagged	2.5	5
AMN0025	Magnetic Resin HIS Tagged	12.5	25

GST-TAGGED proteins

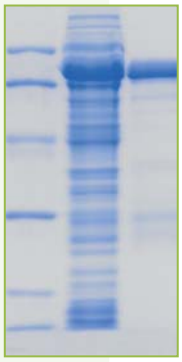
Loose Resin

Amintra's Glutathione resin is designed for rapid one-step purification of glutathione S-transferase-tagged proteins from bacteria, yeast, insect and mammalian cultures. Glutathione is covalently coupled to a high crosslinked agarose matrix that provides a high chemical and physical stability and excellent flow rates. The resin is made in the particle size range of 40-165 µm and has a dynamic binding capacity of 10 mg recombinant GST/ml resin. Amintra Glutathione is stable with all commonly used buffers and reagents including 0.1M NaOH and organic solvents. Removal of the GST tag can be performed whilst the fusion protein is bound to the column or in solution after elution.

Specification:

Supporting matrix:	4% highly crosslinked agarose resin
Bead size range:	40 -165 µm (90 micron average)
Recommended working pH:	pH 4.0-10.0
Typical binding capacity:	~10 mg GST-tagged protein/ml resin
Recommended Flow rate	1-2 ml/min/cm2
Maximum Flow rate	4 ml/min/cm2
Maximum pressure	3 bar
Chemical stability:	High
Solubility in water:	Insoluble

Clarified E. coli lysate (lane 2) containing recombinant Glutathione-S-Transferase, Mr 36100 Da was purified using Amintra GST resin.



GST-Tagged Magnetic Resin

GST-tagged proteins expressed in bacteria, yeasts, insects and mammalian cell cultures can be readily purified in a single purification step. After binding of target molecules, the magnetic resin can be readily isolated with the aid of a magnet. The GST tag can be cleaved in bound condition or in eluted condition by specific proteases such as TEV-express and 3C-express.

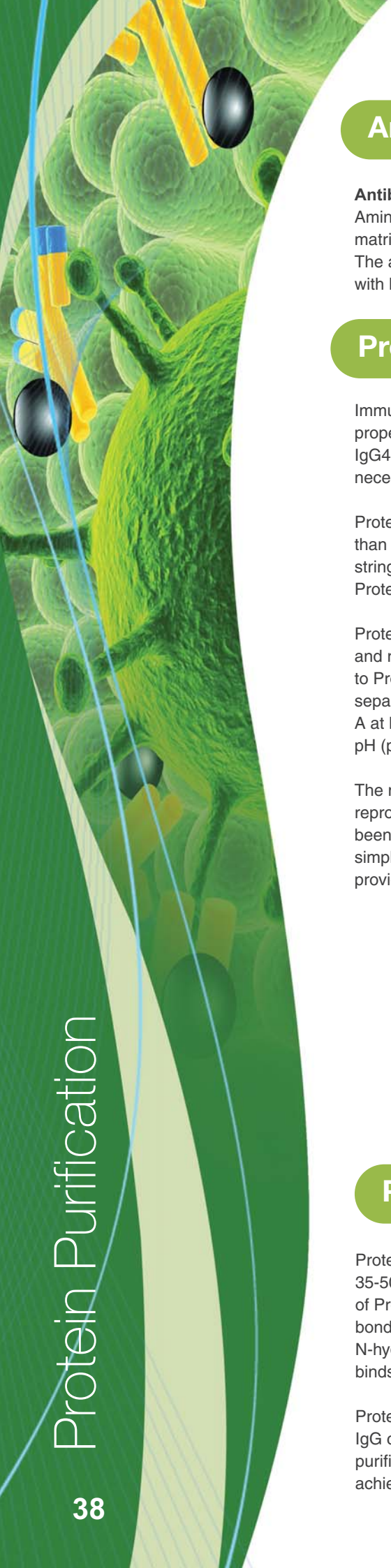
Amintra Glutathione Magnetic is specially designed for magnetic purification of proteins in batch mode. The base matrix is made of cross-linked magnetically charged agarose.Removal of liquid after each step, such as binding, washing and elution can be readily done by pulling the resin down with a magnet.

Characteristics of Amintra Glutathione Magnetic	
Base Matrix	Highly cross-linked 4% magnetic agarose
Particle size	50 – 150 m
Ligand	Glutathione
Ligand density	20 mol / ml resin
Protein binding capacity	10 mg / ml resin
Chemical stability	Stable in all the commonly used aqueous - buffers; stable at short contact to denaturants (e.g. 6M guanidine.HCl or 8M urea); stable to common clean-in-place agents e.g. 70% ethanol, 0.1 M NaOH, 0.1 M HCl.Supplied as 50% Slurry
pH stability	pH 4-12
Storage condition	20% ethanol at 4°C – 8°C
Supplied as	50% Slurry

Ordering information

Product Code	Description	Unit Size Medium (ml)	Unit Size Slurry (ml)
AGS0005	Amintra Glutathione Resin	5	10
AGS0025	Amintra Glutathione Resin	25	50
AGS0100	Amintra Glutathione Resin	100	200
Amintra Glutathione Magnetic			
AMG0002	Glutathione Magnetic Resin	1	2
AMG0005	Glutathione Magnetic Resin	2.5	5
AMG0025	Glutathione Magnetic Resin	12.5	25

Scan-to-Order



Antibody Purification

Antibody Purification
Amintra Protein A and Protein G resins are designed on a highly crosslinked sepharose matrix covalently modified with recombinant Protein A and Protein G expressed in E. coli. The albumin domain naturally present in these proteins has been deleted to create a resin with high capacity and affinity for antibodies.

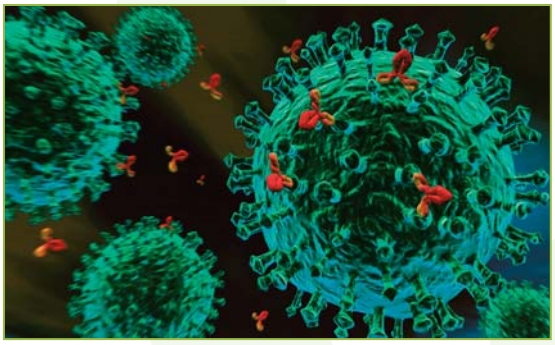
Protein A or Protein G Chromatography:

Immunoglobulin G from most species consists of several subclasses with different biological properties. Four subclasses of IgG have been identified in humans (IgG1, IgG2, IgG3, and IgG4) and in mice (IgG1, IgG2a, IgG2b and IgG3). For immunological studies, it is often necessary to isolate one particular subclass of IgG from the other subclasses.

Protein G binds to all major Ig classes except IgM and therefore has a wider reactivity profile than Protein A. However, the binding of Igs to Protein G is often stronger, requiring more stringent elution conditions for complete recovery of the immunoglobulin compared to Protein A.

Protein A can withstand more harsh conditions which can be beneficial for deep cleaning and regeneration. Different mouse IgG subclasses will exhibit varying strength of association to Protein A. Customization of the purification strategy may be required for the affinity separation, e.g. mouse IgG1, the most common subclass used, does not bind well to Protein A at low ionic strength. However, the use of high salt concentrations (2-3 M NaCl) and high pH (pH 8-9), these antibodies will bind to Protein A and provide good separation.

The needs of the researcher dictate that the speed of sample processing, the cost and the reproducibility are key criteria for selecting purification tools. Amintra purification resins have been designed to offer the optimal solution to each criterion. In the vast majority of cases, simply selecting the correct resin and performing a considered purification strategy will provide the best possible separation of your target proteins.



Protein A Chromatography:

Protein A is a cell wall protein from Staphylococcus aureus with a molecular weight between 35-50 kDa. The quality of the Protein A agarose (or equivalent) is important to avoid leakage of Protein A during the elution procedure. Immobilized Protein A resins linked via an amide bond between the amino groups of Protein A and either oxirane or N-hydroxysuccinimide ester groups form the most stable cross-links. Immobilized Protein A binds specifically to the Fc region of immunoglobulin molecules of many mammalian species.

Protein A affinity chromatography is a rapid one-step purification, which removes most non-IgG contaminants and can achieve purities close to homogeneity. It is particularly useful for purifications of tissue culture supernatant, where 10-100 fold concentrations can be achieved.

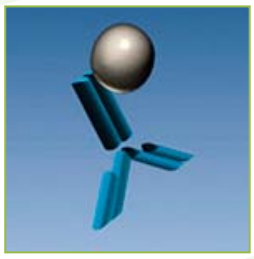
Loose Resin

Protein A resin is formulated in 0.01% Thimerosal and, as supplied, is stable for up to 2 years at 2-8˚C from the date of manufacture. All resins are susceptible to oxidative agents and high temperatures should be avoided. Amintra Protein A resin is resistant to short term exposure to organic solvents (e.g. 70% ethanol, 5.8M acetic acid) and is stable in all aqueous buffers commonly used for Protein A chromatography. Protein A is resistant to 6M guanidine-HCl, 8M urea and 2M sodium isothiocyanate.

Specification:	
Protein A	Recombinant Protein A expressed in E. coli deficient in albumin binding domain
Supporting matrix:	6% crosslinked agarose resin
Ligand Density:	3.5 mg Protein A/ml resin
Bead size range:	60-165 µm
Recommended working pH:	pH 2.5-10.0
Typical binding capacity:	Up to 30 mg Human IgG /ml resin
Maximum Flow rate	Up to 300 cm/h
Maximum pressure	0.1MPa (1 bar)
Chemical stability:	High
Solubility in water:	Insoluble
Toxin Levels	Free of Staphyloccocus enterotoxins and hemolysins

Protein A Magnetic Resin

Protein A is immobilised to highly porous and highly cross-linked agarose incorporating magnetic material. The particles have an open pore structure with excellent mass transfer properties for large protein molecules. Amintra Protein A Magnetic can be used in any commercially available magnetic device or be settled with any magnet (such as a magnet bar or magnetic plate etc.



Key benefits:

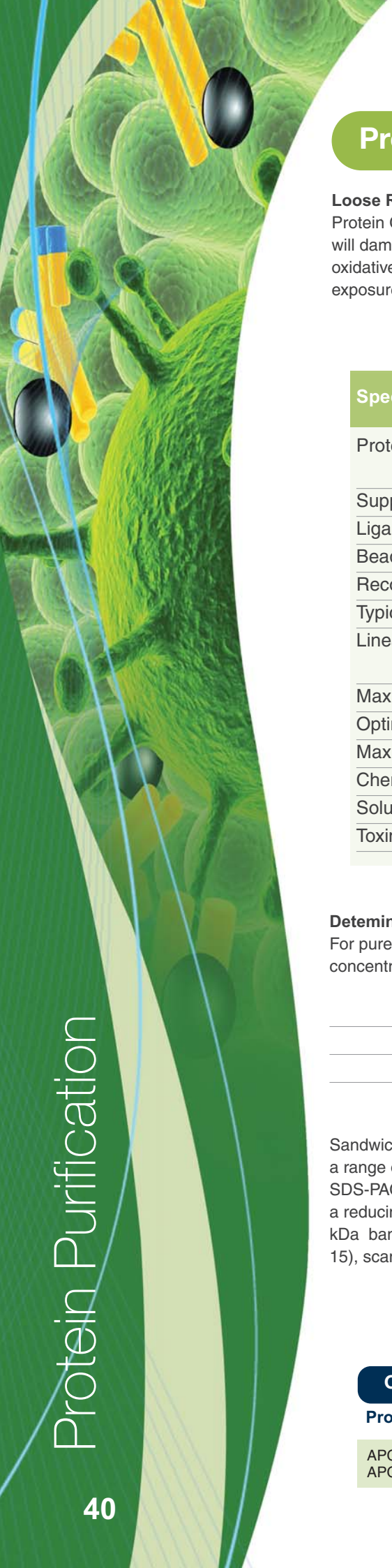
- Tailored base matrix design for batch magnetic purification of immunoglobulins
- Simple and convenient operation, no chromatography training required
- Flexible operational conditions
- Low cost
- No special magnet required

Characteristics of Amintra Protein A Magnetic	
Binding capacity	Approx. 15 mg human IgG / ml resin
Chemical compatibility	All commonly used reagents for antibody purifications
Storage condition	4°C – 8°C
Supplied as	20% Slurry

Ordering information

Product Code	Description	Unit Size Medium (ml)	Slurry (ml)
APA0005	Amintra Protein A Resin	5ml	
APA0025	Amintra Protein A Resin	25ml	
APA0100	Amintra Protein A Resin	100ml	
Amintra Protein A Magnetic			
AMA0001	Protein A Magnetic Resin	0.2	1
AMA0005	Protein A Magnetic Resin	1	5
AMA0025	Protein A Magnetic Resin	5	25

Scan-to-Order



Protein G Chromatography:

Loose Resin

Protein G resin is formulated in 20% ethanol. Do not freeze the resin (freezing the suspension will damage the agarose beads), or store it at room temperature. All resins are susceptible to oxidative agents and high temperatures should be avoided. The resin is resistant to short exposure of 8M urea, pH 11 and pH 1.0. Protein G is resistant to treatment with 0.1M NaOH.

Specification:	
Protein G	Recombinant Protein G expressed in E. coli deficient in albumin binding domain
Supporting matrix	4% crosslinked agarose resin
Ligand Density	2 mg Protein G/ml resin
Bead size range	45-165 µm
Recommended working pH	pH 2.5- 9.0
Typical binding capacity	Up to 20 mg Human IgG /ml resin
Linear Flow rate	Up to 300 cm/h (5cm diameter column, pressure 1 bar)
Maximum Flow rate	20-40 ml/min
Optimum Flow Rate	1-10 ml/min
Maximum pressure	0.1MPa (1 bar)
Chemical stability	High
Solubility in water	Insoluble
Toxin Levels	Free of Staphyloccocus enterotoxins and hemolysins

Detemine Antibody Concentration

For pure solution the Beer-Lambert law, A = ε.c.l, can be used to determine the protein concentration of IgG (mg/ml).

	Extinction Coefficient (ml.mg-1.cm-1)
IgG	0.72
IgM	0.84
IgA	0.94

Sandwich ELISA assay can also be used to accurately measure antibody concentrations within a range of 1 mg/ml to 20 mg/ml sample. The antibodies can also be monitored for purity by SDS-PAGE under reducing or non-reducing conditions (see page 15). Note that IgG appears in a reducing SDS-PAGE as 25 kDa and 50-55 kDa bands and IgM appears as 25 kDa and 70-80 kDa bands. Recovery of immunoglobulins can be quantified by Bradford assay (see pages 14 & 15), scanning densitometry of reducing or non-reducing SDS-polyacrylamide gels or ELISA.

Ordering information

Product Code	Description	Unit Size Medium (ml)
APG0005	Amintra Protein G Resin	5ml
APG0025	Amintra Protein G Resin	25ml

Amintra Protein L Resin

Protein L is an immunoglobulin-binding protein that was expressed, isolated from the bacterial species *Peptostreptococcus magnus*.

Protein L Agarose resin offers a unique ability in a convenient way to separate a wider range of mammalian Immunoglobulin classes and sub-classes compare to other antibody-binding protein as Protein A or G.

Through a specific interaction with kappa light chains and no interferences with the antigen binding site, Protein L provides a high binding affinity and can be used for the purification of IgG, IgM, IgA, IgE and IgD from various species. Besides entire antibody, Protein L is also suitable for binding of a wide range of only antibody fragments such as Fabs, single-chain variable fragments (scFv), and domain antibodies (Dabs).

Amintra Protein L resin contains immobilised Protein L by means of covalent binding on agarose bead. This manufacturing process avoids protein loss and provides long-term robustness.

Amintra Protein L resin allows batch or column purification of immunoglobulins containing light chains of type kappa I, III, IV in human and kappa in mouse classes, subclasses and fragments of immunoglobulinsfrom cell culture media biologicial fluids.

For an easy handling and usage, Amintra Protein L Resin is supplied as a suspension in 20% ethanol.

Highlights:

- High affinity binding for all entire Ig classes (IgG, IgM, IgA, IgE and IgD) containing kappa light chains
- High affinity binding for antibody fragments (Fabs, scFv, Dabs …) containing kappa light chains
- Stable and robust
- Re-usable in column format
- Supplied as a suspension

Specification:	
Protein L:	PROTEIN L Agarose Resin
Supporting matrix:	4% crosslinked agarose resin
Ligand Density:	3,5 mg Protein L/ml resin
Bead size range:	50-150 µm (approx.)
Typical binding capacity:	10 mg Human IgG /ml resin
Chemical stability:	Covalent binding

Ordering information

Product Code	Description	Unit Size Medium (ml)
APL0002	Amintra Protein L Resin	2ml
APL0005	Amintra Protein L Resin	5ml
APL0010	Amintra Protein L Resin	10ml

Scan-to-Order

Amintra Streptavidin Resin

Using an innovative immobilization technology, Amintra Streptavidin Resin offers an ultra-high biotin-binding capacity with a very low leaching.

Constituted of pure recombinant streptavidin covalently cross-linked and immobilised on fine beaded agarose, Amintra Streptavidin Resin can be used to bind biotinylated biomolecules in a variety of batch- or column-type affinity procedures with low non-specific binding.

Highlights:

- High capacity (> 330 nmol free Biotin/ml gel)
- Inert and Robust (leach resistant covalent bonds)
- Different formats available (2 mL, 5 mL, 10 mL)
- Better results with lower costs

Applications:

- Immobilization of biotinylated biomolecules or drugs
- Immunoprecipitation, ChIP, cell capture, and others
- Cell-surface labeling with biotinylation reagents, followed by precipitation with streptavidin
- Recovery of biotinylated DNA for dideoxy sequencing

Specification:	
Amintra Streptavidin Resin	Agarose Beads Bulk Resin
Supporting matrix:	Highly crosslinked agarose, 6%
Bead size range:	20-50 µm
Typical binding capacity:	>330 nmol free Biotin /ml gel
Antimicrobial Agent:	10mM sodium phosphate, 150 mM NaCL, pH 7.2 with 0.05% azide and 1mM EDTA
Storage conditions:	4 to 8°C

Ordering information

Product Code	Description	Unit Size Medium (ml)
ASA0002	Amintra Streptavidin Resin	2ml
ASA0005	Amintra Streptavidin Resin	5ml
ASA0010	Amintra Streptavidin Resin	10ml

Affinity Resins

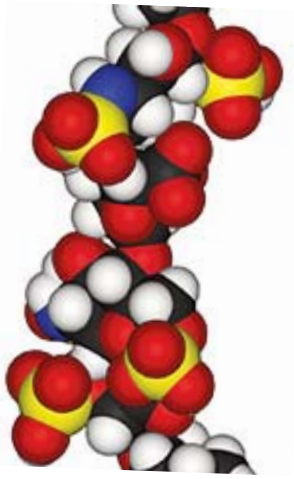
Amintra NHS-activated

Amintra NHS-activated is a highly cross-linked N-hydroxysuccinimide activated matrix. Ligands containing primary amino groups are coupled directly to this active ester to form a chemically stable amide bond.

Characteristics of Amintra NHS-activated	
Mean particle size	90 µm
Particle size range	45 to 165 µm
Bead structure	Highly cross-linked 4% agarose, spherical
Linear flow velocity	150 cm/h at 100 kPa
Ligand density	16 to 23 µmol NHS/ml drained medium
Long term	pH 3 to 13
Short term (CIP)	pH 2 to 13
Supplied as	50% Slurry

Amintra Heparin Resin

Amintra Heparin Resin is an affinity chromatography medium that is used for the purification of biomolecules that show affinity to heparin, such as antithrombin III, coagulation factors and other plasma proteins, DNA binding proteins, lipoproteins, protein synthesis factors, enzymes that act on nucleic acids, and steroid receptors.



Characteristics of Amintra Heparin Resin	
Matrix	Agarose
Functional group	Heparin of porcine origin
Ligand density	4 - 5 mg/ml
Particle size	50 - 150µm
pH stability	4-13 (short term) and 4-12 (long term)
lWorking temperature	4°C – 30°C
Chemical stability	All commonly used buffers, 6M guanidine-HCl, 8 M urea
Storage	0.05 M sodium acetate in 20% denatured ethanol
Supplied as	50% Slurry

Ordering information

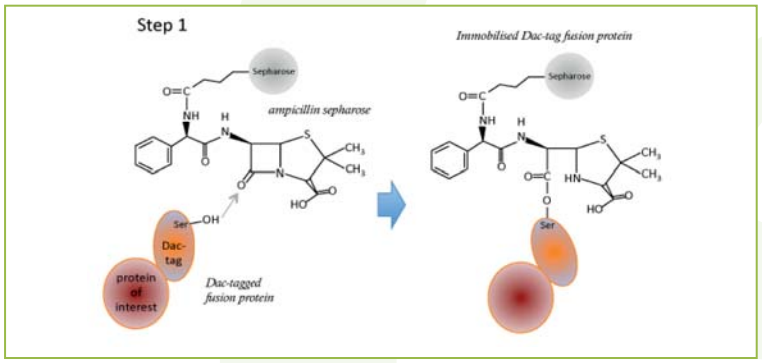
Product Code	Description	Unit Size Medium (ml)	Unit Size Slurry (ml)
Amintra NHS-activated			
AMS0025	Amintra NHS-Activated Resin	25	50
AMS0100	Amintra NHS-Activated Resin	100	200
Amintra Heparin Resin			
AHP0005	Amintra Heparin Resin	5	10
AHP0025	Amintra Heparin Resin	25	50

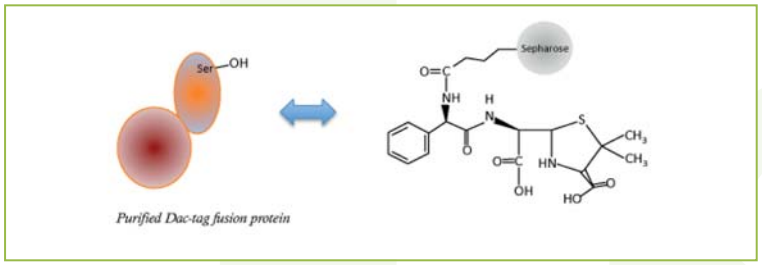
Scan-to-Order

COOL-tag

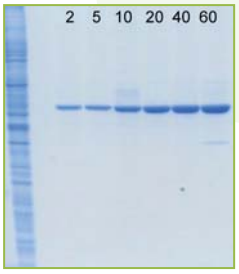
What is the COOL-tag?
The COOL-tag is a monomeric, soluble 28.5kDa engineered fragment of a Penicillin Binding Protein.

How does it work?
The COOL-tag binds rapidly and efficiently to ampicillin sepharose at room temperature by forming an ester bond via a serine residue.

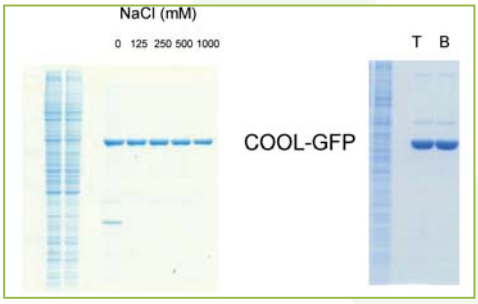




The target protein can then be eluted at 4°C or via competitive elution with ampicillin.



Rapid Binding
COOL-tagged target protein rapidly binds to ampicillin sepharose. Saturation is achieved after 60 minutes. Up to 10mg/ml protein can be bound to the resin.



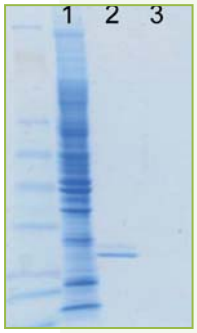
2mg HEK 293 protein extract with 20µl resin

High Compatibility
COOL-tag technology is compatibile with salt concentrations up to 1M, works in your buffer of choice at pH 7.5 and is suitable for use with non-ionic detergents such as triton 0.2% X-100 (T) or 0.06% Brij35 (B).

COOL-Tag

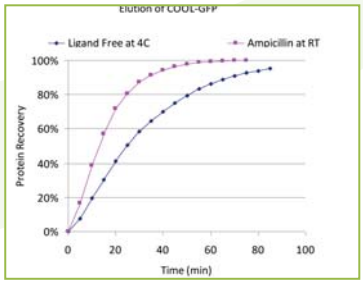
Key Features:

- Ligand free, temperature induced elution or Ampicillin-mediated elution
- Truly 1 step purification – no need to desalt of buffer exchange after elution
- Exceptional purity, high yielding and high recovery
- Cysteine and metal free chemistry: No interference with metallo-protein function, e.g. metalloproteases, ubiquitin ligases
- Monomeric protein: no dimerisation via the tag
- Suitable for analytical or preparative scale
- Suitable for Mammalian, insect, bacterial, yeast and dictyostelium expression

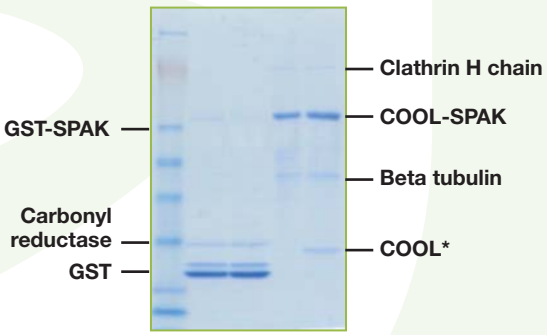


High Specific affinity
Unlike other tags, only COOL-tagged proteins bind the resin. As demonstrated by the pulldown of 2mg HEK 293 protein extract with 20µl different resin. Ni-Sepharose (lane 1) pulls down many contaminants, GST-sepharose (lane 2) non-specifically binds GST and carbonyl reductase, Ampicilin sepharose (lane 3) does not bind contaminants.

Ligand Free Elution at 4°C
COOL-tagged protein can be eluted either at 4°C or storing the sample on ice or competitively with ampicilin. Ampicilin mediated elution is slighty faster. Protein recovery is excellent for both methods.



COOL-tag vs GST-TAG
Transient transfection of GST-SPAK or COOL-SPAK in 293 cells.
* Due to leakage at precision site



Ordering information

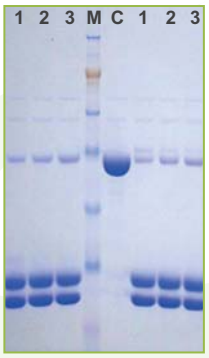
Product Code	Description	Unit Size
Expression Vectors		
CEV01010	Plasmid pcDNA3.1 Cool-RV-3C	10 ug
CEV01020	Plasmid pET28a-Cool TEV	10 ug
CEV01030	Plasmid pET28a-Cool Thrombin	10 ug
Purification Resins		
ACT0005	Amintra COOL-Catch resin	5ml
ACT0025	Amintra COOL-Catch resin	25ml
ACT0100	Amintra COOL-Catch resin	100ml

Scan-to-Order

Proteases for Tag Cleavage

TEV-Express contains an enhanced form of a catalytic fragment of the N1a protein of Tobacco etch virus (TEV), a cysteine protease that recognizes the cleavage site of Glu-Asn-Leu-Tyr-Phe-Gln-Gly, cleaving between Gln and Gly. TEV-Express does not require any special buffers for its activity and can be used in a buffer most suitable for the target protein. TEV-Express is a 52 kDa protein with both GST and His tags for easy removal using either Amintra NiHIS or Glutathione purification resins.

1 Unit of TEV-Express cleaves >85% of 3 µg of control substrate in 1 hour at 30°C.



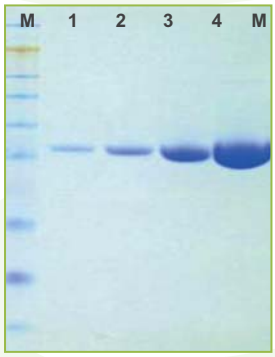
A 49 kDa GST-fusion protein (C) at 1 mg/ml is incubated with TEV-Express or TEV Protease at a ratio of (1) 1:50, (2) 1:100, (3) 1:200 (w/w) in a buffer of 25 mM Tris-HCl, pH8.0, 150 mM NaCl, 14 mM b-mercaptoethanol at 4°C for 16 hours. The cleaved products are 27 kDa and 22 kDa. 'TEV' is a competitors' TEV Protease product.

3C-Express is a recombinant, restriction grade, HRV3C (Human rhinovirus 3C) protease that recognizes the cleavage site of Leu-Glu-Val-Leu-Phe-Gln/Gly-Pro, commonly referred to as the PreScission Site, and cleaves between Gln and Gly. 3C-Express has robust activity at 4°C and high specific activity.
3C-Express is a 47 kDa protein with both GST and His tags for easy removal using either Amintra NiHIS or Glutathione purification resins.

1 unit of 3C-Express cleaves >95% of 100 µg of control target protein at 4°C for 16 hours.

A 68 kDa GST-fusion protein (C) at 1 mg/ml is incubated with 3C Express (*) at a ratio of (1) 1:50, (2) 1:100, (3) 1:200, (4) 1:400 (w/w) in a buffer of 25 mM Tris-HCl, pH8.0, 150 mM NaCl, 14 mM b-mercaptoethanol at 4°C for 16 hours. The cleaved products are 42 kDa and 26 kDa.

BaseMuncher is a non-specific endonuclease that hydrolyzes both single- and double-stranded nucleic acids (DNA and RNA) to 5'-phosphorylated oligonucleotides of 1-4 bases in length. Recombinantly produced in E. coli using the Benzonase gene in a proprietary process, BaseMuncher is a highly purified homodimer of 27 kDa subunits that has exceptionally high specific activity and is completely free of protease activity. BaseMuncher is ideal to digest nucleic acids and to reduce viscosity during protein purification and sample preparation.



1 unit of BaseMuncher converts 1.0 OD260 of salmon sperm DNA into acid-soluble nucleotides in 30 minutes at 37°C in a reaction buffer of 50 mM Tris-HCl, pH 8.0 and 1 mM MgCl2.

Ordering information

Product Code	Description
TEV0010	TEV-Express 1,000 units in 50µl
TEV0100	TEV-Express 10,000 units in 500µl
3CE0005	3C-Express 500 units in 250µl
3CE0050	3C-Express 5,000 units in 2500µl
BM0025	Basemuncher 25,000 units in 100µl
BM0100	Basemuncher 100,000 units in 400µl

Empty Columns for protein purification

These empty columns can be filled with the resin of your choice for quick and convenient protein purification by centrifugation or syringe.

Mini Column
The mini column is a tool for single-use format centrifuge purification using small quantities of resin (100 – 250 µl). The mini columns (pack size: 25 or 100) are supplied with their top caps. The material is polypropylene and each mini column contains a polyethylene frit with a nominal pore size of 20µm.

Spin Column
The spin column is a single-use format column for purification using small quantities of resin (50 – 100 µl). Purification is with a syringe (luer lock system) or by centrifugation. The spin columns (pack size: 25) are supplied with end caps and two top caps (luer lock & rubber gasket screw cap). The material is polypropylene and each spin column contains a polyethylene frit with a nominal pore size of 35µm.

Technical Specification Empty Mini Columns	
Column Material	Polypropylene
Frit Material	Polyethylene
Frit Pore Size	20 µm
Caps	Two caps: Luer-lock & screw cap
Chemical Stability	Stable in all commonly used reagents
Product Name	Empty Mini Columns (100 units)
Capacity (ml)	1.5 ml

Technical Specification Empty Spin Column	
Column Material	Polypropylene
Frit Material	Polyethylene
Frit Pore Size	35 µm
Caps	Two caps: Luer-lock & screw cap
Chemical Stability	Stable in all commonly used reagents Autoclavable at 110°C
Product Name	Plastic Spin Columns 25 columns for single-use applications
Capacity (µl)	800

Ordering information

Product Code	Description	Unit Size
Empty Mini Columns		
AMCO25	Empty Mini Columns (100-250 l)	pk of 25
AMCO100	Empty Mini Columns (100-250 l)	pk of 100
Empty Spin Columns		
ASCO25	Empty Spin Columns (50-100 l)	pk of 25

Scan-to-Order

Empty Columns for protein purification

These columns are designed for gravity purification using small quantities of resin of your choice. Two different column sizes are available: 0.5-2.0 ml and 2-6 ml bed volume.

Plastic Column

These plastic columns are especially designed for working with bed volumes of 0.5-2.0 ml for gravity purification. Each pack contains 50 columns with their top and end caps. The material is polypropylene with a total volume of 12 ml and each contains a polyethylene frit with a nominal pore size of 20 µm. Extra Large Plastic Columns are available with a total volume of 35 mL, working bed volumes of 2-6 mL, and nominal pore size of 20 µm.

Plastic Column XL

These larger plastic columns are especially designed for working with bed volumes of 2-6 ml for gravity purification. Each pack contains 50 XL columns with their top and end caps. The material is polypropylene with a total volume of 35 ml and each contains a polyethylene frit with a nominal pore size of 20 µm.

Technical Specification Empty Column

	Plastic Column	Plastic Column XL
Column material	Polypropylene	
Frit Material	Polyethylene	
Frit Pore Size	20 µm	
Chemical Stability	Stable in all commonly used reagents	
Product Name	Plastic Column (0.5-2.0 mL)	Plastic Column XL (2-6 mL)
Capacity (mL)	12 mL	35 mL
Bed Volumes (mL)	0.5 mL - 2.0 mL	2.0 - 6.0 mL

Ordering information

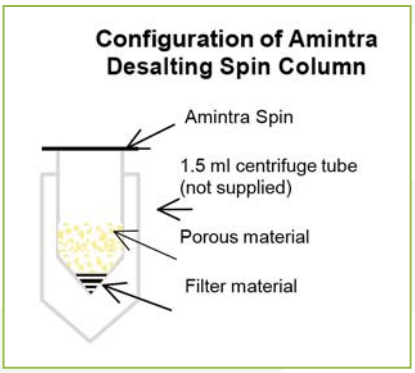
Product Code	Description	Unit Size
AGC150	Empty Gravity Columns (0.5-2ml)	pk of 50
AGC250	Empty Gravity Columns (2-6ml)	pk of 50

Amintra Desalting Spin Column

Cross-linked neutral particles with very small pores are packed into spin tubes for rapid desalting and / or buffer exchange. Amintra Desalting Spin Column achieves desalting or buffer exchange in just a few minutes. Up to 24 samples (depending on the type of microcentrifuge) of 10 – 100 µl can be processed in one spin. It is a much faster and more efficient approach when compared to dialysis tubes or membrane ultrafiltration.

Key benefits:

- Rapid desalting or buffer exchange
- Very little loss of target molecules (typically > 95% recovery)
- Suitable for proteins (> 6,000 dalton) and DNAs (> 10 bp)
- DNAse free



The small porous particles provide huge surface area with very short diffusion distance, which means small molecules such as salt can be partitioned rapidly. In comparison, both dialysis tube and membrane ultrafiltration have very low surface areas. It always takes much longer to conduct dialysis (typically from a few hours to a few days). Membrane ultrafiltration of small samples always experiences membrane blockage and severe loss of valuable materials

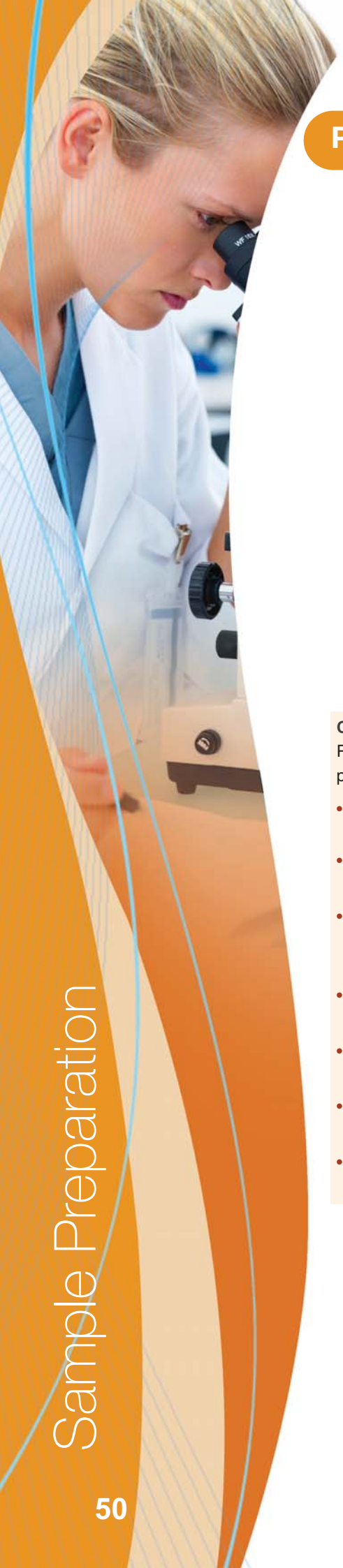
Amintra Desalting Spin Column is particularly useful for the following applications:

- Desalting of histidine-tagged proteins (e.g. imidazole and NaCl) recovered from IMAC Amintra Desalting Spin Colum
- Desalting of samples before loading to SDS-PAGE or GELFREE 8100
- Desalting of samples before conducting other analysis
- Buffer exchange, for example, after low pH elution
- Desalting of DNAs

Ordering information

Product Code	Description	Unit Size
Amintra Desalting Spin Column		
ADS0050	pk of 50	50 ml
ADS0100	pk of 100	100 ml

Scan-to-Order



Protease Inhibitors

Proteoloc™ Protease Inhibitor Cocktails

Protection from Endogenous Proteases During Protein Extraction.

The process of breaking open cell walls and subcellular compartments during protein extraction liberates endogenous proteases. Without effective inhibition, these enzymes will quickly diminish yields of intact proteins from cell and tissue extracts.

The addition of protease inhibitors to lysis buffers used for protein extractions is an effective means of protecting extracted proteins from enzymatic degradation by endogenous proteases.

Expedeon offers two protease inhibitor preparations for use with protein extraction lysis buffers: Proteoloc Protease Inhibitor Cocktail, and Proteoloc Protease Inhibitor Cocktail EDTA-free. Both products offer protection against loss of intact proteins due to endogenous protease activity. Proteoloc Protease Inhibitor Cocktails are provided as 100X stock solutions in DMSO.

Use the EDTA-free product if the next step in your workflow is isoelectric focusing, metal-affinity column separation, or another technique that is incompatible with chelation. Otherwise, use the standard Proteoloc Proteome Inhibitor Cocktail, which contains EDTA.

Proteoloc Inhibitor Cocktail is the protease inhibitor mixture recommended for use with Expedeon's UPX Universal Protein Extraction and YPX Yeast Protein Extraction Kits.

Composition

Proteoloc Protease Inhibitor Cocktail contains the following protease inhibitors:

- AEBSF: Irreversible serine protease inhibitor. Inhibits chymotrypsin, kallikrein, plasmin, thrombin, and trypsin.
- Aprotinin: Reversible serine protease inhibitor. Inhibits chymotrypsin, kallikrein, plasmin, trypsinogen, and urokinase.
- Bestatin: Metalloprotease inhibitor selective for aminopeptidases. Inhibits activity of leucine aminopeptidase, aminopeptidase B, and triamino peptidase.
- EDTA: Inhibits metalloproteases by chelating divalent metal ions (provided in a separate vial).
- E-64: Irreversible inhibitor of cystine proteases. Inhibits calpain, papain, and cathespin B.
- Leupeptin: Reversible inhibitor of serine and cystine proteases. Inhibits calpain, papain, trypsin, and cathespin B.
- Pepstatin A: Reversible aspartic acid protease inhibitor. Inhibits pepsin, rennin, cathespin D, chymosin, and protease B.

Ordering information

Product Code	Description	Unit Size
44202	Proteoloc Protease Inhibitor Cocktail	1ml
44201	Proteoloc Protease Inhibitor Cocktail	2x 1ml
44203	Proteoloc Protease Inhibitor Cocktail	5x 1ml
44204	Proteoloc Protease Inhibitor Cocktail	10x 1ml
44212	Proteoloc Protease Inhibitor Cocktail EDTA-FREE	1ml
44211	Proteoloc Protease Inhibitor Cocktail EDTA-FREE	2x 1ml
44213	Proteoloc Protease Inhibitor Cocktail EDTA-FREE	5x 1ml
44214	Proteoloc Protease Inhibitor Cocktail EDTA-FREE	10x 1ml

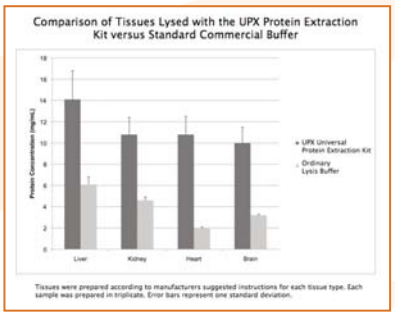
Protein Extraction

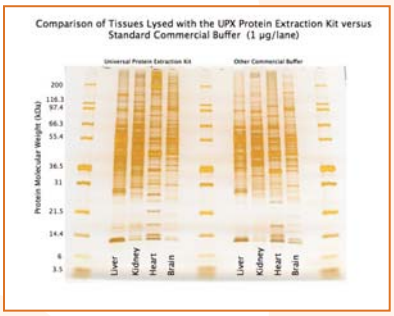
UPX Universal Protein Extraction Kit

The UPX Universal Protein Extraction Kit is for researchers who need universal, unbiased extraction of both membrane proteins and soluble proteins, and an abundance of starting material.

One Protein Extraction Protocol for Tissues and Cells, Fresh or Frozen.

Protein Discovery's UPX Protein Extraction Kit work with high efficiency on a wide variety of samples such as heart, liver, brain, and kidney organ tissues, mammalian-derived cultured cell lines, and bacteria. You can begin with freshly harvested or frozen cells.



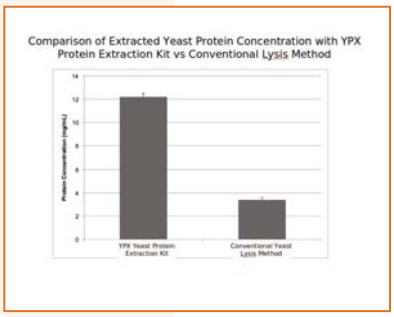


Compatible with SDS-PAGE, Gelfree® Fractionation, FASP™ Digestion

The lysis buffer in the UPX Protein Extraction Kit maximizes the extraction of proteins from cells and tissues under conditions that are compatible with downstream methods for preparing samples for mass spectrometry. Containing reducing agents and SDS, the lysis buffer provides unbiased, total extraction of membrane proteins and soluble proteins from cells and tissue. Solubulized proteins in the resulting lysates can be analyzed by SDS-PAGE and fractionated by the Gelfree 8100 Fractionation System. Protein Discovery recommends Filter-Aided Sample Preparation (FASP) for detergent depletion and complete trypsin digestion of extracts prior to analysis by mass spectrometry.

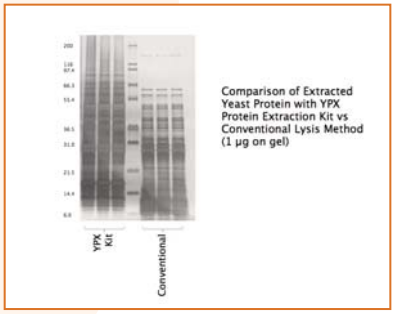
YPX Yeast Protein Extraction Kit

Protein Discovery's YPX Yeast Protein Extraction Kit is for researchers who need fast, high-yield, unbiased yeast protein extraction and the ability to handle many samples at once. The simplified protocol does not require mechanical disruption and works with equivalent high efficiency on all yeasts regardless of morphology or growth medium. Starting yeast culture preparations can be frozen or freshly harvested. The YPX Yeast Protein Extraction Kit delivers far more protein than conventional lysis methods.



Unbiased Extraction of Yeast Proteins from Low to High Mass

A key advantage of Protein Discovery's YPX Yeast Protein Extraction Kit is high-efficiency extraction throughout the protein mass range of the proteome. Samples are never subjected to harsh mechanical treatment or conditions conducive to intrinsic protease activity.



Extract Yeast Proteins with Speed and Certainty

By extracting yeast proteins with nearly 100% efficiency every time, the YPX Yeast Protein Extraction Kit avoids the major problem in quantitative proteomics of variable extraction efficiency. The simplified extraction protocol is fast and can be easily carried out on multiple cultured yeast preparations simultaneously.

Ordering information

Product Code	Description	Unit Size
44101	UPX Universal Protein Extraction Kit	50ml
44102	YPX Yeast Protein Extraction Kit	50ml

Scan-to-Order

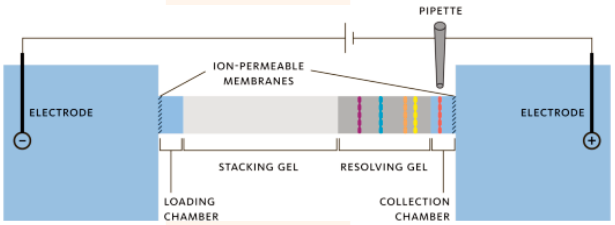
Gelfree® 8100 Fractionation System

The Gelfree 8100 Fractionation System for mass spectrometry sample preparation partitions complex protein mixtures into user-selectable liquid-phase molecular weight fractions. Gel Elution Liquid Fraction Entrapment Electrophoresis (GELFREE)

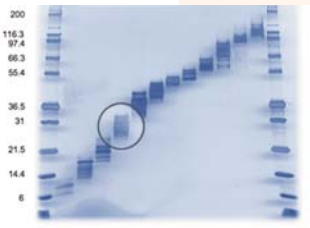
How it Works

Gelfree technology is "Gel-eluted Liquid Fraction Entrapment Electrophoresis." Each of the eight Gelfree 8100 Cartridge channels consists of a precision-cast gel column surrounded by pipette-accessible sample loading and fraction collection chambers. Samples are mixed with the pre-formulated Sample Buffer and pipetted into the sample loading chamber.

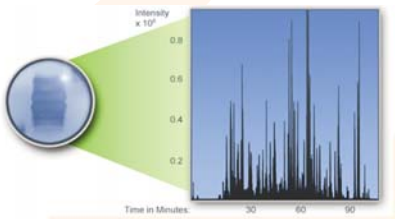
When electric current is applied, charged molecules in the channel migrate first focus in the stacking gel and then separate according to their electrophoretic mobility or, when using SDS, molecular weight. Smaller proteins move more quickly and elute into the fractionation collection chamber, where they are trapped in a defined liquid volume. At predefined intervals, the instrument will then automatically pause for easy removal of the liquid fraction with a pipette. For collection of the next size-based fraction, the sequence is restarted and the process continued.



Collecting a fraction from a single tube gel



1D gel of S. cerevisiae fractions prepared using the Gelfree System. A 200 µg aliquot of yeast was fractionated into 12 fractions using the Gelfree 8100 system. 1D gel analysis with silver staining was used to visualise the results.



Basepeak chromatogram of digested fraction from Gelfree System. A yeast sample, S. cerevisiae, was fractionated into 12 fractions. The resulting fractions were acetone precipitated to remove SDS, digested using trypsin, and analysed using nanoLC-MS/MS.

Features

- Intact protein molecular weight fractionation, isolation, and purification
- Liquid-phase recovery without band or spot cutting
- Broad mass range fractionation up to 500 kDa
- Up to eight samples processed in parallel
- Programmable fractionation for isolating and purifying targeted proteins
- High protein recovery (>80%)
- High reproducibility (<15% CV)
- Sampling unbiased by hydrophobicity, pI
- High loading capacity (>5X more than a 1D gel)
- Proteins are recovered intact, for complete characterization

Applications

- Simplify and reduce the dynamic range of complex protein mixtures for bottom-up discovery proteomics using LC-MS/MS
- Fractionate and recover proteins intact for top-down proteomics
- Isolate and enrich user-selected molecular weight fractions for targeted protein quantification using LC-MS/MS
- Isolate intact proteins to analyze variants, post-translational modifications, alterations
- Separate protein pull-down components for target protein purification
- Separation, isolation, and intact recovery of antibodies intact for in-depth characterization

Broad Mass Range Fractionation

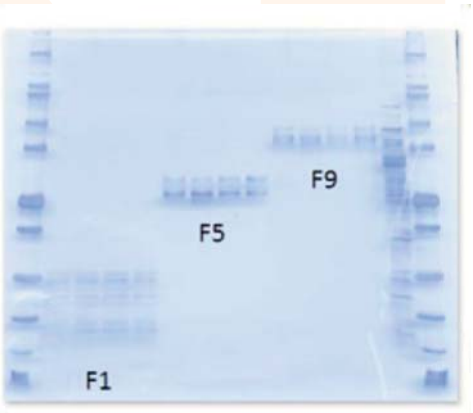
The Gelfree 8100 Fractionation System offers molecular weight-based fraction targeting over a broad mass range. Using the 12% Cartridge Kit, the system is capable of partitioning complex protein samples across the mass range 10 – 50 kDa. Using the 10% Cartridge Kit, the system is capable of partitioning complex protein samples across the mass range 15 – 100 kDa. Using the 8% Cartridge Kit, the system is capable of partitioning complex protein samples across the mass range 35 – 150 kDa. Using the 5% Cartridge Kit, the system is capable of partitioning complex protein samples across the mass range 75 – 500 kDa. Recovery across all mass ranges is > 80%. Intact protein molecular weight-based fractionation with liquid phase recovery.

GELFREE 8100 Cartridge Specifications

% Polyacrylamide	mW Range	Optimum mW Range	average Fraction Width
5%	3.5 - 500 kDa	75 - 500 kDa	40 kDa
8%	3.5 - 150 kDa	35 - 150 kDa	10 kDa
10%	3.5 - 100 kDa	15 - 100 kDa	7 kDa
12%	3.5 - 60 kDa	10 - 50 kDa	4 kDa

Recovery and Reproducibility

The Gelfree 8100 Fractionation System uses specialized materials to optimize protein recovery and prevent non-specific loss. In addition, each gel column used in the Gelfree system is comprised of a proprietary composite gel matrix that is robotically cast using state-of-the-art automation. Every gel tube is computer imaged to ensure compliance with strict quality control specifications and each cartridge is barcoded for tracking. This level of quality control and precision-manufacturing uniquely permits the absolute elution time reproducibility provided by the Gelfree system. Gelfree Reproducibility of Fractionation. 200 g yeast lysate prepared using the Gelfree 8100 Fractionation System. Fractions 1, 5, and 9 from four lanes across 2 cartridges were run on a 1D gel to demonstrate the gel-to-gel and cartridge-to-cartridge reproducibility of the system.



High reproducibility and high recovery

Programmable Methods for Targeted Isolation

The Gelfree 8100 Fractionation System is the first product to provide user-programmable molecular weight-based protein purification with liquid phase recovery. Simple adjustment of the fraction collection intervals using the touch screen interface allows isolation of analytes at a targeted molecular weight in a single fraction with near quantitative recovery.

To develop a method for targeted protein isolation using the Gelfree system, the user samples the elution window at high frequency over the expected mass range. The peak width is plotted and the fraction collection interval defined. For all subsequent runs, the optimized fraction collection interval is used to isolate and purify the target analyte in a single fraction. Fraction collection windows for a given analyte depend on the amount of total protein loaded.

The Fractionation Station

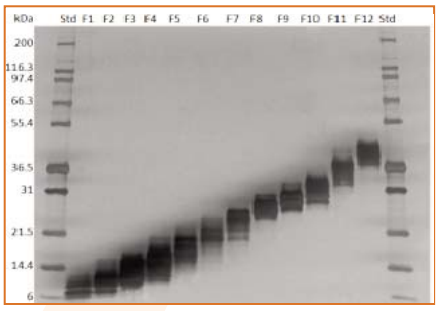
The compact, bench-top Gelfree 8100 Fractionation Station provides specified voltage to each of eight independent channels and pauses for fraction collection according to user programming. Using the touch screen interface, the fractionation sequence is defined or selected, permitting broad mass range analyte fractionation or target protein enrichment in accordance with the user's requirements.

During operation, the touch screen interface provides feedback on the status and current/voltage that is applied for each channel.

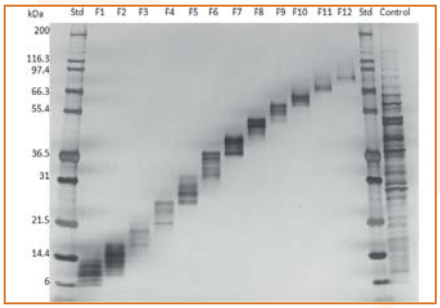
The Cartridge Kits

Ready-to-use Gelfree 8100 Cartridge Kits complement the Gelfree 8100 Fractionation Station. Each Cartridge Kit contains pre-formulated Running and Sample Buffers, as well as the Fractionation Cartridge. The Gelfree 8100 Fractionation Cartridge contains eight independent channels for molecular weight fractionation and liquid phase recovery. All eight channels may be used simultaneously, or one or more channels may be used, saving the unused channels for use at a later time. Four separate Gelfree 8100 Cartridge Kits are available for protein isolation, purification and fractionation across distinct mass ranges.

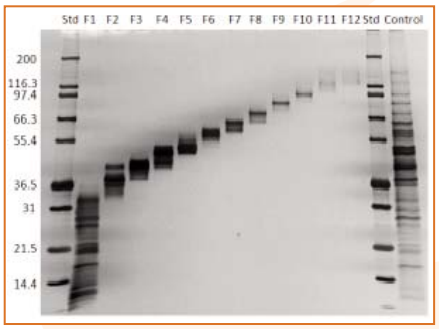
The Gelfree 8100 12% Tris-Acetate Cartridge Kit is designed for separation in the mass range 3.5 – 50 kDa, with resolution between 10 kDa and 50 kDa. The following image shows an aliquot of each of 12 Gelfree fractions from a yeast lysate partitioned using the 12% Cartridge Kit and run out on a 1D gel for visualization.



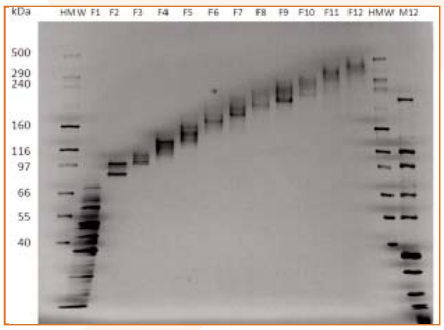
The Gelfree 8100 10% Tris-Acetate Cartridge Kit is designed for separation in the mass range 3.5 – 100 kDa, with resolution between 15 kDa and 100 kDa.The following image shows an aliquot of each of 12 Gelfree fractions from a yeast lysate partitioned using the 10% Cartridge Kit and run out on a 1D gel for visualization.



The Gelfree 8100 8% Tris-Acetate Cartridge Kit is designed for separation in the mass range 3.5 – 150 kDa, with resolution between 35 kDa and 150 kDa. The following image shows an aliquot of each of 12 Gelfree fractions from a yeast lysate partitioned using the Gelfree 8100 8% Tris-Acetate Cartridge Kit and run out on a 1D gel for visualization.



The Gelfree 8100 5% Tris-Acetate Cartridge Kit is designed for separation in the mass rangeis designed for separation in the mass range 3.5 – 500 kDa, with resolution between 75 kDa and 500 kDa. The following image shows an aliquot of each of 12 Gelfree fractions from a yeast lysate partitioned using the Gelfree 8100 5% Tris-Acetate Cartridge Kit and run out on a 1D gel for visualization.



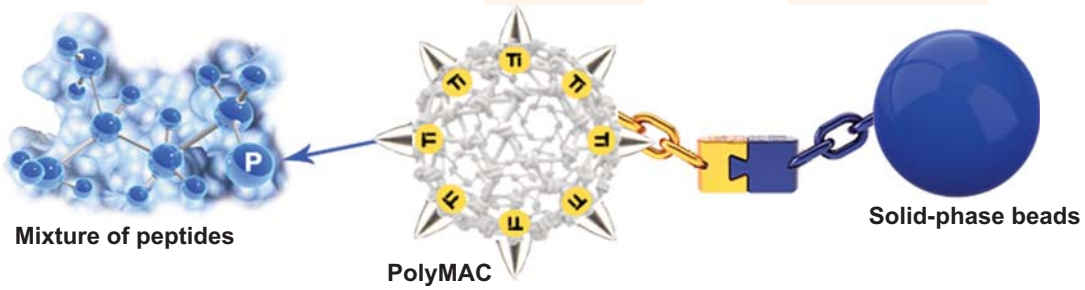
Ordering information

Code	Description	Unit Size
48100	1 Gelfree Protein Fractionation Station	1
42102	Gelfree 8100 Cartridge Kit 12% Tris Acetate, including	1 Kit
42103	Gelfree 8100 Cartridge Kit 8% Tris Acetate, including	1 Kit
42104	Gelfree 8100 Cartridge Kit 5% Tris Acetate, including	1 Kit
42105	Gelfree 8100 Cartridge Kit 10% Tris Acetate, including	1 Kit
42302	Gelfree 8100 Tris Acetate Sample Buffer	1
42202	Gelfree 8100 HEPES Running Buffer	1
All Cartridge Kits includes: 1 x cartridge, 1 x HEPES running buffer, 1 x sample buffer		

Phosphopeptide Isolation

Phosphopeptide enrichment by PolyMAC-Ti

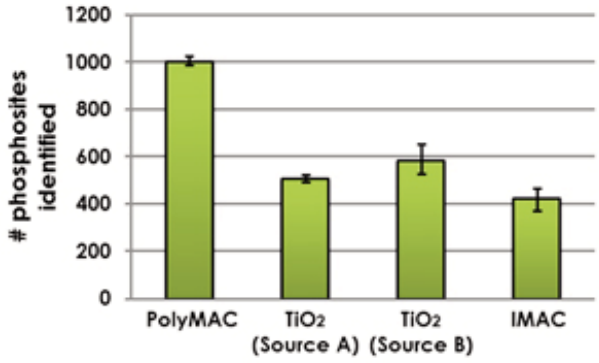
Due to low stoichiometry of phosphorylation, phosphopeptide enrichment is a critical step for successful phosphoproteomics experiments. The products described here, termed PolyMAC (Polymer-based Metal ion Affinity Capture), overcome the shortcomings of current enrichment methods that typically lack required reproducibility, phosphopeptide recovery and selectivity. In this method, a soluble nanopolymer is functionalized with metal ions to specifically capture O-phosphorylated peptides. PolyMAC-Ti offers an efficient and greatly improved method to achieve more complete phosphopeptide enrichment under homogeneous conditions.

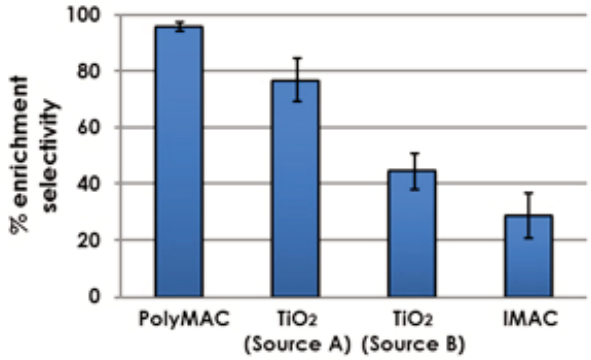


Performance comparison

100ug of digested complex cell lysate from DG-75 B-cell lymphoma cells was used to compare the enrichment efficiency between titanium-based PolyMAC and other commercially available sources of phosphopeptide enrichment reagents. A number of unique phosphosites identified and percent enrichment selectivity were used as the parameters for comparison. Each experiment was run in triplicate.

PolyMac offers improved peptide enrichment, enhanced selectivity and superior reproducibility compared to existing enrichment methods.





Expedeon offers its standard PolyMAC-Ti (M) kit which comprises a proprietary bead based gel slurry and spin filters purification method which uses our magnetic beads. Kit available in 25, 50 and 100 reaction sizes.

Kit Components

- 0.5mL of PolyMAC-Ti reagent
- 30mL of Loading buffer
- 20mL of Capture buffer
- 50mL of Washing buffer
- 20mL Elution buffer
- 10 spin columns (re-usable)
- Magnetic Beads

Ordering information

Product Code	Description
PMACTM02	PolyMAC-Ti with magnetic beads (25 reactions)
PMACTM05	PolyMAC-Ti with magnetic beads (50 reactions)
PMACTM10	PolyMAC-Ti with magnetic beads (100 reactions)

Scan-to-Order

Protein Digestion for MS

FASP Protein Digestion Kit

Complete Protein Solubilization. Complete Trypsin Digestion. Every Time.

Now you can use aggressive, whole proteome solubilization protocols and reagents to prepare proteins from any biological material for trypsin digestion and analysis by mass spectrometry. Based on the Universal Sample Preparation method developed by Wisniewski, Zoubman, Nagaraj and Mann, Protein Discovery's FASP Protein Digestion Kit enables efficient digestion of samples for proteome analysis, even in the presence of the most extreme contaminating species. This method is the perfect complement to lysis buffers containing strong detergents and reducing agents. No longer are you forced to choose between efficient extraction or digestion. The FASP kit allows you to do both at the highest efficiency.
The maximum loading capacity of one FASP Protein Digestion Kit is 0.4 mg protein in up to 30 µL solution.

FFPE-FASP™ Protein Digestion Kit

De-paraffinization and Uncrosslinking. Unbiased Extraction and Complete Solubilization. Same-As-Fresh Quantification.

Filter-Aided Sample Prep (FASP) is the enabling technology behind quantitative mass spectrometry analysis of archived tissues. Based on a spin-filter sample preparation method initially described by Manza, et al., and developed further and extended to FFPE tissue processing by Ostasiewicz, et al., this method features unbiased extraction, complete proteome solubilization, and highly efficient digestion. The resulting filtrate is free of detergents, large molecules, and other substances that would interfere with mass spectrometry analysis of the proteome.

Ordering information

Product Code	Description	Unit Size
44250	FASP Protein Digestion Kit	8 pack
44255	FFPE-FASP Protein Digestion Kit	8 pack

Protein Solubility for MS

PPS Silent® Surfactant

Use an easy-to-use Mass Spectrometry compatible reagent to extract, solubilize proteins and improve in-solution digestions.

Now you can use mass spectrometry to analyze proteins extracted from LCM samples and other small cell populations without pooling cells from multiple sections. PPS Silent Surfactant disrupts cell membranes, extracts and solubilizes proteins, then breaks down into non-surfactant hydrolytic cleavage products. The single-tube protocol prepares samples for nanoLC-MS/MS analysis without the use of salts or detergents which would necessitate yield-reducing sample clean-up prior to injection.

Features

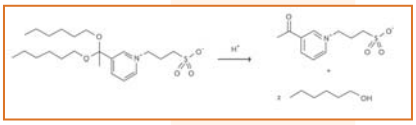
- Reduces detergent interference in mass spectrometry
- Disrupts cell membranes
- Solubilizes hydrophobic proteins
- Improves enzymatic efficiency
- Improves MS analysis of complex protein mixtures
- Improves membrane protein ID
- Hydrolyzes into soluble, non-surfactant cleavage products

Applications

- Increase shotgun proteomics sequence coverage
- Enable membrane proteomic analysis of cells captured by LCM
- Potentiate trypsin digestion of membrane proteins
- Enable iTRAQ quantitation of insoluble proteins

How it Works

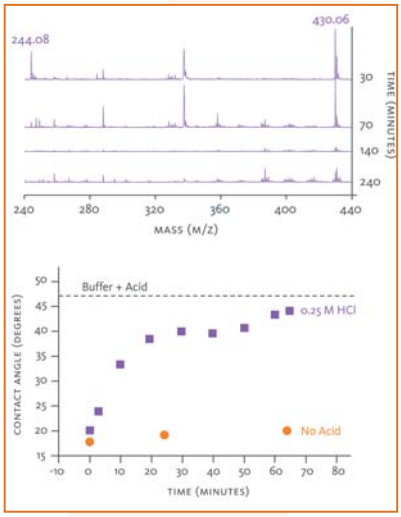
PPS Silent Surfactant is acid-cleavable so it can be removed by hydrolysis. The intact molecule is zwitterionic, so PPS Silent Surfactant can also be removed by SCX HPLC.



Performance

Hydrolysis of PPS Silent Surfactant clears detergent interference. Acid hydrolysis of PPS Silent Surfactant clears detergent interference, enabling mass spectrometry analysis of peptides resulting from trypsin digestion of complex protein mixtures.

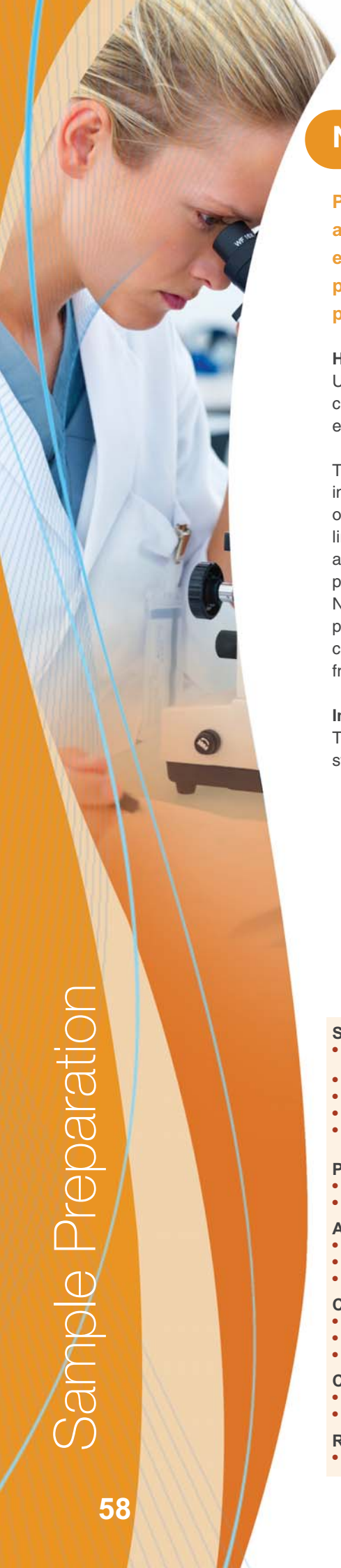
Hydrolysis products are non-surfactant. Loss of surfactant property upon hydrolytic cleavage. Cleavage occurs within 30 minutes in 0.25 M HCl.



Ordering information

Product Code	Description	Unit Size
21010	PPS Silent Surfactant	10mg
21011	PPS Silent Surfactant	5x1mg

Scan-to-Order



NVoy Technology

Protein processing and production is often hampered by the formation of aggregates that restrict and complicate the handling of proteins, antibodies and enzymes. NVoy is designed to minimise the sequential losses in consecutive protein processing steps which would otherwise dramatically reduce the overall protein yield.

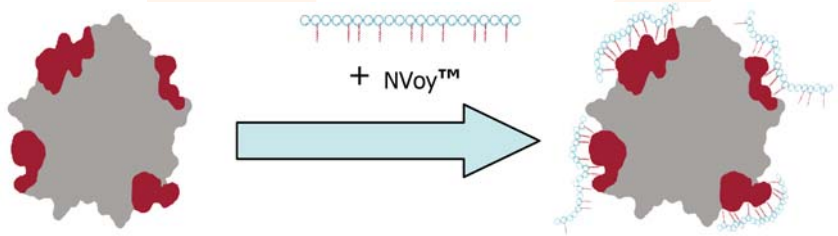
How it Works

Utilising NVoy technology is an alternative to the use of detergents, fusion proteins, arginine, chaperones and a range of other common additives employed to increase protein solubility and enable the handling of proteins in solution.

The NV10 polymer can be bought as part of kits such as Stabil-P.A.C and the refold kits or lose in 1.25 gram or large pack sizes. The polymer is designed to increase the solubility and stability of proteins whilst preventing aggregation and reducing non-specific binding. NVoy polymers are linear, uncharged carbohydrate polymers of around 5kD, derivatised to make them highly amphipathic. They associate at multiple points with surface exposed hydrophobic patches of proteins in a dynamic fashion to form multipoint reversible complexes. Multiple-binding points allow NV polymers to be used at low concentrations relative to alternative reagents and their size prevents them from entering the protein core and inhibiting normal structural bonding or blocking catalytic/binding sites. Based on simple carbohydrate polymers, NV polymers are easily separated from the protein when they are no longer required in solution.

Impact Areas of NVoy Technology

The impact of NVoy technology can be seen in many areas of protein research including stabilisation, purification, analysis and crystallisation.



Stabilisation
- Maintain activity over several freeze/thaw cycles, Prolonged storage at 4ºC for unstable proteins
- Maintain solubility of fusion proteins after “tag” is removed
- Stable formulation of protein / antibody for immobilisation + conjugation
- Maintain soluble proteins that usually require ligand to be present
- Increase concentration of proteins that would otherwise aggregate when concentrated

Purification
- Endotoxin removal
- Minimise protein losses
- Improve purification strategy
- Cleaner protein preparations

Analysis
- Allow full structural characterisation (MS, crystallisation, NMR, CD)
- Use in HTS assays to keep proteins soluble and reduce non-specific binding
- Replacing detergents which are more difficult to remove downstream

Concentration
- Enhance solubility enabling concentration of aggregation prone proteins
- Prevent non-specific binding to plastic and hydrophobic membranes
- Concentrate and maintain high protein concentration without the need for any other additives

Crystallisation
- Controllable crystal growth when rapid formation produces poor crystals
- Solubilise and stabilise proteins for longer period of time

Refolding
- Simple, effective, generic technique

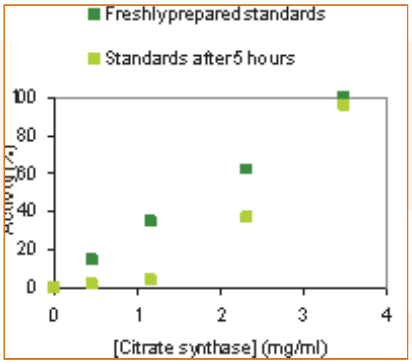


Figure 1: Within 5 hours of preparing a set of citrate synthase standards the standard curve has lost linearity, and the activities of the standards at 0.4 µg/ml and 1.1 µg/ml have virtually disappeared.

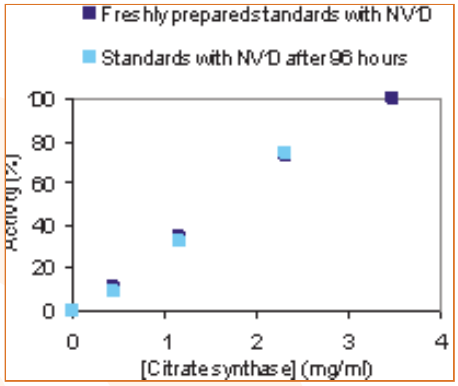


Figure 2: The citrate synthase standard curve produced from samples containing NV10 remains linear even after 96 hours.

Concentration of Bovine Serum Albumin

Duplicate samples containing 10 µg/ml BSA in PBS and supplemented with varying concentrations of NV10 were concentrated tenfold in Vivaspin 2 spin concentrators (5,000 mwco, Hydrosart low protein-binding membrane) according to the manufacturer's instructions.

Starting solution (1 ml)	Recovered yield (%)
10 µg/ml BSA	46%
10 µg/ml BSA + 10 µg/ml NV10	60%
10 µg/ml BSA + 40 µg/ml NV10	85%
10 µg/ml BSA + 100 µg/ml NV10	90%

Endotoxin removal

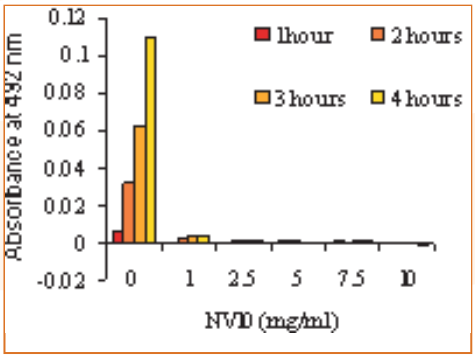
Target protein was bound to an affinity resin and washed with 10 column volumes (CV) of wash buffer containing 2% NV10 followed by 10 CV wash buffer containing 0.2% NV10 followed by 5 CV wash buffer. Target protein was eluted and analysed for endotoxin content. The same protein was processed with Detoxi Gel procedure (Pierce) according to the manufactures' instructions.

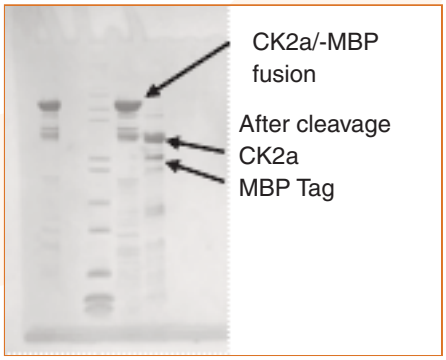
Method	Protein Yields (% Control)	Endotoxin EU	Activity (% Control)
Control	100	120,000	100
Detoxi Gel	32	3000	55
NVoy	78	None detected	72

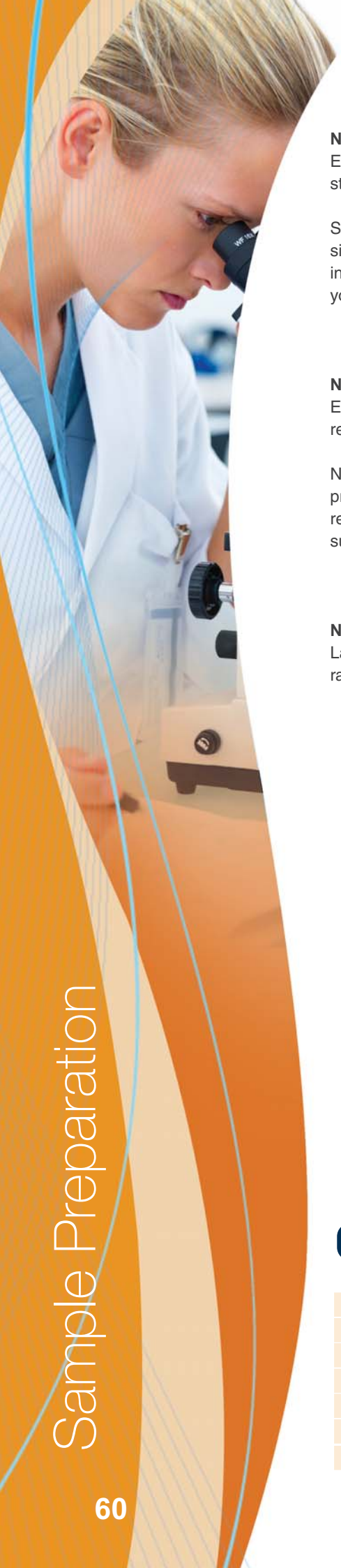
NVoy-assisted endotoxin removal resulted in a final endotoxin concentration below the detection limit. Moreover the Expedeon method resulted in significantly higher protein recovery and protein activity.

Removal of the maltose binding protein fusion partner (k-MBP) from the kinase, using Factor Xa, results in heavy aggregation and low yields of the native kinase. By adding NV10 to the cleavage buffer (20 mM Tris.HCl, 75 mM NaCl, 1 mM CaCl2, pH 6.5) aggregation can be significantly reduced, whilst the cleavage reaction remains unaffected.

Cleavage of the protein kinase fusion CK2α/-MBP







NVoy Stabil-P.A.C™
Each Stabil-P.A.C™ kit contains NVoy technology designed to increase the solubility and stability of proteins whilst preventing aggregation and reducing non-specific binding.

Stabil-P.A.C kits are a convenient way to test if NVoy is able to assist your work. Containing single shot amounts of lyophilised NVoy in six aliquots, ensuring reagent integrity. Once the initial assessment has been made using these kits, larger quantities can be obtained to satisfy your project requirements.

NVoy Refold™
Expedeon offers a range of protein refolding kits that provide a simple, generic method for refolding target proteins without the need to screen multiple refolding conditions.

NVoy Protein Refolding Kits often produce higher yields of fully refolded protein as NVoy protects the vulnerable intermediates in the refolding process. Furthermore, with NVoy being removable in a slow, time dependant and user controllable manner, the protein is provided with sufficient time and protection to refold correctly.

NVoy Polymer Packs
Large quantities of NVoy reagent enable cost effective scaling of NVoy stabilisation. Pack sizes range from 1.25g upwards. Contact us for further information.

Ordering information

Product Code	Description
STP	Stabil-P.A.C 6x10mg of NV10 polymer + release agents
STP MX	Stabil-P.A.C Maxi 6x40mg of NV10 polymer + release agents
RSK	40mg of NV10 polymer + refold reagents
RM20	160mg of NV10 polymer + refold reagents
NPPS	1.25g NV10 polymer
NPP	5g NV10 polymer
NPP50	50g NV10 polymer

Notes

Notes

Notes

How to order:

Email:	orders@expedeon.com
Visit our webshop:	www.expedeon.com
Fax your order:	01223 873371 / 858 457 7939

Call us or your local distributor

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expedeon
protein discovery & analysis