NBS Biologicals

LIFE SCIENCE
Catalogue
2016

- Electrophoresis
- PCR/Amplification
- DNA Purification
- DNA Sequencing
- Transfection
- Western Blotting
- Protein Labelling
- Cell Viability
- Cell Immortalization
- Cell Culture
- Lab Dialysis
- Custom Services

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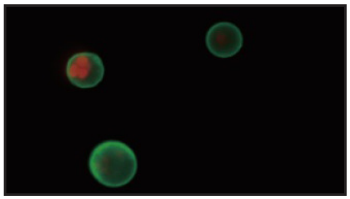
New Products for 2016



Agarose A

Our new low priced all-purpose agarose. Standard melting/gelling, low EEO.

----- **Page 7**

RNase A

RNase A is a proprietary chromatographic preparation method for elimination of DNase activity.

----- **Page 20**

Proteinase K

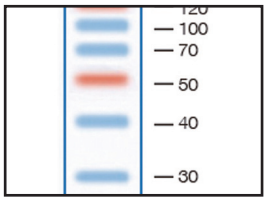
Highly active and stable protease, with low cutting specificity.

----- **Page 20**

IPTG

IPTG is a non-metabolizable galactose analog that induces expression of the lac operon in Escherichia coli.

----- **Page 15**



Protein Markers

Ready-to-use protein markers, available premixed and unstained.

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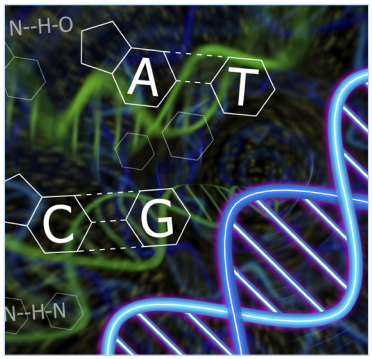
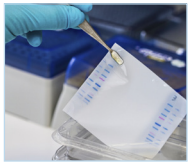
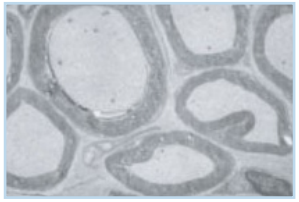


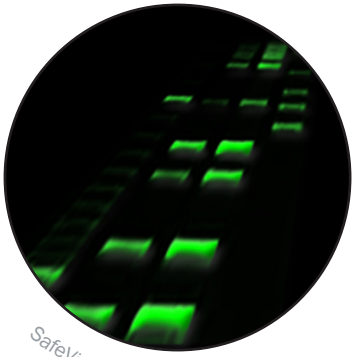




SafeView Nucleic Acid Stain

NON-CARCINOGENIC DYE FOR IN GEL STAINING

- Staining of dsDNA, ssDNA and RNA
- Compatible with Standard Molecular Biology Applications
- Used in the Same Way as Ethidium Bromide



SafeView visualised using optional green filter

The Safer Alternative to Ethidium Bromide

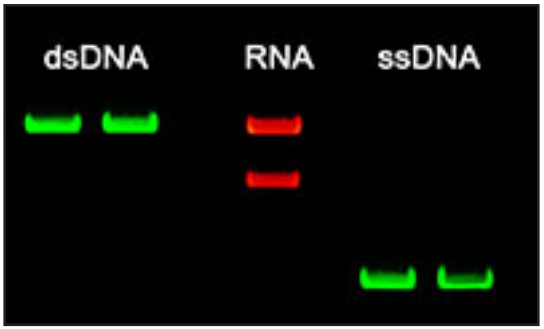
SafeView is a safe nucleic acid stain for the detection of dsDNA, ssDNA and RNA in agarose gel. This dye replaces Ethidium Bromide (toxic, potential mutagen) commonly used in agarose gel electrophoresis.

Safe to Use

SafeView is non-carcinogenic and causes significantly fewer mutations in the Ames test. SafeView also tests negative in both the mouse marrow chromophilous erythrocyte micronucleus test and mouse spermary spermatocyte chromosomal aberration test.

Sensitive & Convenient

SafeView emits green fluorescence when bound to dsDNA, ssDNA and RNA and has a fluorescence excitation maxima when bound to nucleic acid at approx.290-320nm, emitting at 490nm.



Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-SV1	SafeView Nucleic Acid Stain	1ml	£42.00
NBS-SV5	SafeView Nucleic Acid Stain	5 x 1ml	£179.00

SafeView Plus Nucleic Acid Stain

NON-CARCINOGENIC DYE FOR POST STAINING

- Staining of dsDNA, ssDNA and RNA
- Compatible with Standard Molecular Biology Applications
- Can be used for Agarose and Polyacrylamide Gel Electrophoresis

SafeView Plus represents the newest generation of nucleic acid stains. It can be safely and widely used for the visualisation of double-stranded DNA, single-stranded DNA, and RNA in agarose and polyacrylamide gels. SafeView Plus was developed to replace toxic ethidium bromide (EB, a potent mutagen) and has higher sensitivity and enhanced performance than SafeView (NBS-SV). SafeView Plus is used as a substitute for ethidium bromide for post electrophoresis DNA staining. There is no need to add it to the electrophoresis buffer or casting gel. The fluorescence has an excitation maxima at approximately 490nm.

Ordering Information

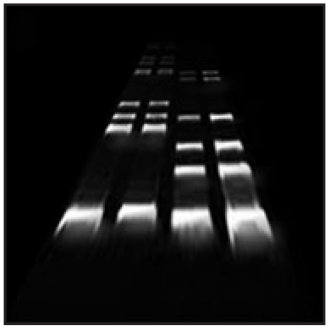
Cat #	*Description*	*Pack Size*	*Price*
NBS-SP1	SafeView Plus Nucleic Acid Stain	1.0 ml (10,000X)	£57.00
NBS-SW1	SafeWhite Nucleic Acid Stain	1ml	£42.00
NBS-SW5	SafeWhite Nucleic Acid Stain	5 x 1ml	£179.00

SafeWhite Nucleic Acid Stain

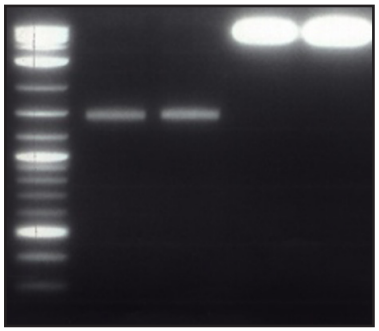
NON-CARCINOGENIC DYE INCORPORATED INTO A 6X LOADING BUFFER

- Add SafeWhite to Samples and Markers and You're Ready to Go
- Compatible with Standard Molecular Biology Applications
- Staining of dsDNA, ssDNA and RNA

SafeWhite is a safe nucleic acid stain for the detection of dsDNA, ssDNA and RNA in agarose gel. This dye replaces the Ethidium Bromide commonly used in agarose gel electrophoresis. SafeWhite is ncorporated into a 6x loading dye, so simpley add it to your samples and ladders and you are ready to go!



Agarose - Low EEO



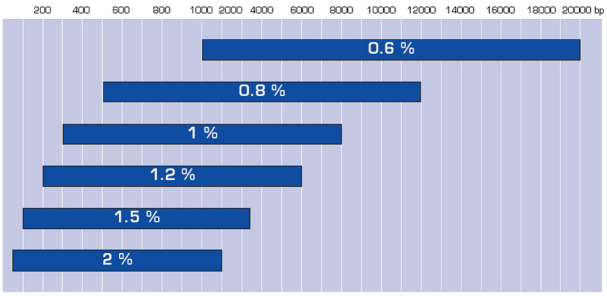
1% Agarose - Low EEO Gel (stained using EtBr)

ALL-PURPOSE AGAROSE FOR ANALYTICAL/PREPARATIVE WORK

- Low EEO (0.05-0.13)
- High Gel Strength (≥2,500 g/cm^2 @ 1.5%)
- Low Absorption of Staining Reagents

Agarose - Low EEO is an all-purpose agarose designed for nucleic acid analytical work, blotting and routine applications. This gel has a low EEO allowing for shorter electrophoretic runs without compromising resolution, while having a high mechanical resistance for easier and more reliable handling.

Agarose - Low EEO has low absorption of staining agents and high thermal stability due to high hysteresis (difference between gelling and melting temperatures), it also has excellent transparency of the gel, high visability and exhibits low DNA binding and gel background.



Left: Separation Range Chart for Agarose - Low EEO
Separation ranges depend on the choice of buffer. These ranges were determined in presence of TAE buffer. Migration in TBE buffer is slower, therefore lower concentrations can be used to obtain similar ranges.

Top Tip

Unlike most other all-purpose agaroses, Agarose - Low EEO has a high gel strength of >2500 when used at 1.5% concentration, and can therefore be used in place of a speciality high strength agarose!

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-AG100	Agarose - *Low EEO*	100g	£46.00
NBS-AG500	Agarose - *Low EEO*	500g	£171.00

Agarose A

OUR LOWEST COST AGAROSE FOR ROUTINE APPLICATIONS

- Low EEO (0.09-0.13)
- Biotechnology Grade

Agarose A is our best priced standard melting/gelling agarose, suitable for routine nucleic acid and protein analytical preparative applications. Agarose A is standard gel strength, if you require a higher strength (for easier handling) please choose Agarose - Low EEO.

Specification

Gel Strength 1.5%	≥1,200 g/cm^2
Gelling Point	36-39°C
Melting Point	87-89°C
pH in solution (1.5%)	5.5-7.5
pH in gel	5.0-6.0
Electroendosmosis-Mr	0.09-0.13
Sulfate	<0.12%
Ash	<2.0%

Agarose, Low Melting Point

LOW MELTING POINT AGAROSE, DNASE & RNASE FREE

- Low Melting Point (62-68°C)
- Low EEO (<0.12)
- Biotechnology Grade

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
D0012-1KG	Agarose A	1kg	£168.00
AB0015-25G	Agarose, Low Melting	25g	£81.00

Precast Agarose Gel

SAVE TIME BY MINIMISING PREP WORK

- Ready-to-Use
- Economically Priced

with SafeGreen

SafeGreen is a non-carcinogenic nucleic acid stain for the detection of double-stranded DNA, single-stranded DNA and RNA. It is based on the same technology as our SafeView stain (Cat# NBS-SV1), but stains both DNA RNA in green (rather than green and red respectively). This dye replaces Ethidium Bromide, and is equivalent in sensitivity.

Best results are achieved by using a optional fluorescence filter. SafeView-Green emits maximum at 535nm.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
TAE17-2PER-SF	Precast Agarose Gel TAE, 2%, 17 Well, Eco-Green Stained, 20 gels per Box	1box	£
TBE17-2PER-SF	Precast Agarose Gel TBE, 2%, 17 Well, Eco-Green Stained, 20 gels per Box	1box	£
TAE48-2PER-SF	Precast Agarose Gel TAE, 2%, 48 Well, Eco-Green Stained, 10 gels per Box	1box	£
TBE48-2PER-SF	Precast Agarose Gel TBE, 2%, 48 Well, Eco-Green Stained, 10 gels per Box	1box	£
TAE12-2PER-SF	Precast Agarose Gel TAE, 2%, 12 Well, Eco-Green Stained, 20 gels per Box	1box	£
TBE12-2PER-SF	Precast Agarose Gel TBE, 2%, 12 Well, Eco-Green Stained, 20 gels per Box	1box	£

Cat #	*Description*	*Pack Size*	*Price*
TAE17-2PER-SF	Precast Agarose Gel TAE, 2%, 17 Well, Eco-Green Stained, 20 gels per Box	1box	£
TBE17-2PER-SF	Precast Agarose Gel TBE, 2%, 17 Well, Eco-Green Stained, 20 gels per Box	1box	£
TAE48-2PER-SF	Precast Agarose Gel TAE, 2%, 48 Well, Eco-Green Stained, 10 gels per Box	1box	£
TBE48-2PER-SF	Precast Agarose Gel TBE, 2%, 48 Well, Eco-Green Stained, 10 gels per Box	1box	£
TAE12-2PER-SF	Precast Agarose Gel TAE, 2%, 12 Well, Eco-Green Stained, 20 gels per Box	1box	£
TBE12-2PER-SF	Precast Agarose Gel TBE, 2%, 12 Well, Eco-Green Stained, 20 gels per Box	1box	£

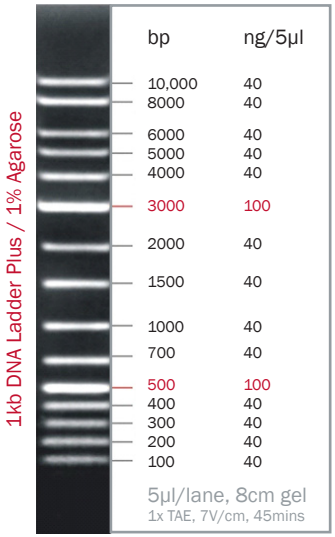
with Ethidium Bromide

Ethidium bromide is the most commonly used dye for DNA and RNA detection in gels. Ethidium bromide is a DNA intercalator, inserting itself between the base pairs in the double helix. Ethidium bromide has UV absorbance maxima at 300 and 360 nm, and an emission maximum at 590 nm. The detection limit of DNA bound to ethidium bromide is 0.5 to 5.0 ng/band.

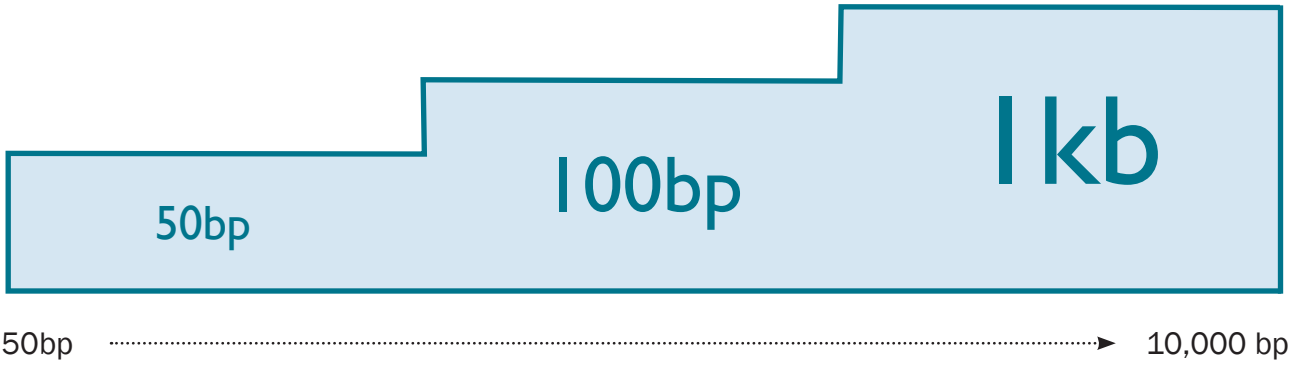
DNA Ladder Plus

READY-TO-USE MOLECULAR WEIGHT MARKERS

- Bright, Sharp Bands for Accurate Sizing
- Precise DNA Concentrations
- Ready-to-Use



Introducing our new range of ready to use DNA ladders for electrophoresis. These extended range ladders are available in 50bp, 100bp and 1kb size and offer precise standard and bright reference bands. All fragments are precisely mixed and quantified during production and the ladders are supplied premixed with loading dye.



Ladder Size Ranges

50bp Ladder Plus	50 - 1000bp
100bp Ladder Plus	100 - 3000bp
1kb Ladder Plus	100 - 10,000bp

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-LP50	DNA Ladder Plus, 50bp	50µg	£35.00
NBS-LP100	DNA Ladder Plus, 100bp	50ug	£35.00
NBS-LP1K	DNA Ladder Plus, 1kb	50ug	£35.00

TBE (TRIS-Borate-EDTA) Buffer

- High Ionic Strength
- High Buffering Capacity

Tris-Borate EDTA (TBE) is used both in PAGE and agarose gel electrophoresis for DNA and proteins. Our TBE is supplied as 10x concentrate (dilute to strength) and is used within the gel and as a running buffer.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-6000-10	TBE Buffer, 10x Solution	1L	£29.00
NBS-6000-50	TBE Buffer, 10x Solution	5L	£68.00
NBS-6001-10	TAE Buffer, 50x Solution	1L	£44.00
NBS-6001-50	TAE Buffer, 50x Solution	5L	£116.00

TAE (TRIS-Acetate-EDTA) Buffer

- Low Ionic Strength
- Better Resolution of Large DNA Fragments

Tris-Acetate EDTA (TAE) is used as a running buffer in both PAGE and agarose electrophoresis. Our TAE is supplied as 25x and 50x concentrates which are diluted to working strength.

SafeView/BesTaq Mastermix

CONVENIENT ALL-IN-ONE PCR MASTERMIX

- Everything you need for PCR and Instant Visualisation in a Single Solution
- Incorporates High Fidelity Polymerase and Safe DNA Stain

SafeView/Bestaq 2X PCR MasterMix is a ready-to-use mixture containing BesTaq DNA Polymerase (page 12), deoxynucleotides, and reaction buffer in a 2X concentration. It contains all the necessary reagents for amplification of DNA along with an inert blue (loading) dye, proprietary SafeView reagent (page 4), a stabiliser which allows for direct loading of the final products onto an ethidium-bromide-free gel for analysis and a Safe Marker Stain which is added to your molecular weight markers for visualisation.

Safe Visualisation

SafeView is proven to be non-carcinogenic by the Ames-test. The results are negative in both the mouse marrow chromophilous erythrocyte micronucleus and mouse spermary spermatocyte chromosomal aberration tests.

High Fidelity Taq Polymerase

BesTaq, with its superior fidelity and extreme robustness, is one of the best performing DNA polymerases available on the market. With its monomeric, unique topological structure, BesTaq DNA Polymerase possesses enhanced processivity, elevated yield, boosted speed, extended amplification length, and improved difficult template tolerance. This high-performing polymerase and its mastermix are the ideal choice for any PCR application, especially for cloning difficult templates, amplifying A/T- and G/C- rich sequences, and replicating long amplicons. With over 50X more accuracy than Taq DNA polymerase, BesTaq DNA Polymerase and its mastermix can consolidate all PCR protocols and reactions into one simple, efficient, and extremely reliable PCR system. BesTaq DNA Polymerase generates blunt-end PCR products and has both 5'-3' polymerase activity as well as 3'-5' proofreading exonuclease activity.

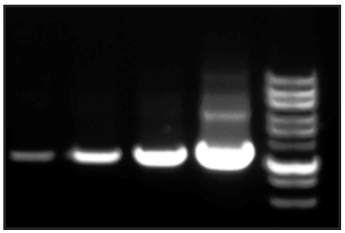
The use of Bestaq DNA Polymerase in this MasterMix offers:

- High-speed PCR without compromising accuracy
- High-processivity to reduce reaction time by up to 70%
- Robust and high yield across a wide range of templates
- Efficient amplification of DNA templates up to 15kb

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-SMM	SafeView/BesTaq PCR Mastermix	200 rxn	£199.00

DNA Polymerases



BESTAQ DNA POLYMERASE

BesTaq DNA polymerase is a polymerase with superior fidelity and robustness. The unique, single-enzyme structure is optimised for difficult templates and results in enhanced yield, speed and amplification length.

BesTaq is designed for all PCR applications and particularly suited for cloning difficult (both AT- and GC-rich) and long amplicons. It has of the highest fidelities available on the market (over 50X better than Taq DNA polymerase) and will generate blunt-end products with 5'-3' polymerase activity and 3'-5' proofreading exonuclease activity.

HOTSTART TAQ DNA POLYMERASE

Hotstart Taq DNA Polymerase is a chemically modified Taq DNA Polymerase whose enzyme activities can only be activated after 3-5 minutes of incubation at 94°C. This enzyme thus exhibits no polymerase activities before the onset of thermal cycling, preventing nonspecific DNA amplification and primer dimer formation. PCR products, amplified up to 6kb in length with Taq DNA Polymerase, generate a single base (A) 3' overhang.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
G456	BesTaq DNA Polymerase	250U	£49.00
G457	BesTaq DNA Polymerase	1000U	£103.00
3GHST81-500U	3G Hot Start Taq DNA Polymerase (5U/ul)	500U	£144.00
3GHST81-5x500U	3G Hot Start Taq DNA Polymerase (5U/ul)	5x500U	£645.00
9K-001-0035	Taq DNA Polymerase	1000U	£277.00
9K-001-0033	Taq DNA Polymerase	6000U	£906.00
DD0056-0.5ml	dNTP Mixture (10mM)	0.5ml	£22.00
DD0057-0.5ml	dNTP Mixture (25mM)	0.5ml	£28.00
DD0058-4x0.1ml	dNTP Set (100mM each)	4x0.1ml	£34.00
DD0058-4x0.5ml	dNTP Set (100mM each)	4x0.5ml	£145.00
MB1193-4X1.5ML	$MgCl_2$, 25mM	4x1.5ml	£22.00

Also Available

Spin Column PCR Purification Kit
see page 17

High yield DNA Spin Column kit, competitively priced and ready-to-use!

EasyScript RTase

- Reliable - Will work for any cDNA synthesis application
- Flexible - Suitable for both total RNA or poly(A) + RNA templates
- High Yield - Superior to competitor RNase enzymes

EasyScript RTase is derived through a series of rational and iterative ‘mutation - function’ optimisations and represents a much superior version of the native RTase enzyme. Deliberate mutations within the RNase H domain of EasyScript mediate abogation of the RNase H activity associated with the enzyme. Removal of RNase H activity helps to perrvent RNA degradation during first strand cDNA synthesis thereby allowing maximal perfomance in cDNA synthesis.

EasyScript is also available in ‘plus’ form which has been bioengineered to perform optimally at elevated temperatures (50-55ºC). EasyScript Plus represents a molecular innovation that offers an easy and reliable one step solution to cDNA synthesis from difficult RNA templates. Employment of a higher than average reaction temperature mitigates the problems associated with secondary structures and high GC content in the starting template. Additionally this featue also allows for synthesis of longer transcripts, in this case, up to 15kb in length.

EasyScript Plus RTase

EasyScript is also available in ‘plus’ form which has been bioengineered to perform optimally at elevated temperatures (50-55ºC). EasyScript Plus represents a molecular innovation that offers an easy and reliable one step solution to cDNA synthesis from difficult RNA templates. Employment of a higher than average reaction temperature mitigates the problems associated with secondary structures and high GC content in the starting template. Additionally this featue also allows for synthesis of longer transcripts, in this case, up to 15kb in length.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
G232	EasyScript Reverse Transcriptase	100 rxns	£94.00
G237	EasyScript Plus Reverse Transcriptase	100 rxns	£141.00
G234	EasyScript cDNA Synthesis Kit	100 rxns	£128.00
G236	EasyScript Plus cDNA Synthesis Kit	100 rxns	£203.00

EvaGreen Express qPCR MasterMix

GUARANTEED HIGH PERFORMANCE REAL-TIME PCR

- Extremely Rapid Activation – Only 30 Seconds!
- Compatible with most real-time PCR instruments
- Ultra-fast qPCR Thermal Cycling – 10 Second Annealing/Elongation Time

Guaranteed high-performance real-time PCR using EvaGreen Express 2X qPCR MasterMix. EvaGreen Express 2X qPCR MasterMix provides all ingredients necessary for extremely rapid quantitative PCR in a premixed and optimised format. Available with the option of ROX or fluorescein as the internal passive reference dye, EvaGreen Express 2X qPCR MasterMix offers unparalleled performance in sensitivity, signal-to-noise ratio, and complete elimination of primer dimers.

The EvaGreen and TaqProbe Selection Guides are available to view on our website, www.nbsbio.co.uk

TaqProbe qPCR MasterMix

ULTIMATE SENSITIVITY IN REAL-TIME PCR

Ultimate sensitivity in real-time PCR with TaqProbe 2X qPCR MasterMix. TaqProbe 2X qPCR MasterMix is designed for high throughput quantitative PCR using TaqMan probe-based chemistry. Available with the option of ROX or fluorescein as the internal passive reference dye, TaqProbe 2X qPCR MasterMix offers superb performance in sensitivity and signal-to-noise ratio. The multiplex formulation supports quantitative amplification and detection of up to four targets simultaneously with consistent and reliable results.

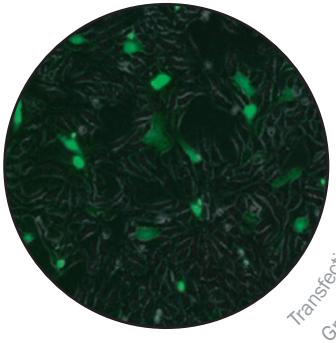
Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
MasterMix-ER	EvaGreen Express 2X qPCR MasterMix-ROX	4x1.25ml - 500 reactions (20 µl)	£158.00
MasterMix-EL	EvaGreen Express 2X qPCR MasterMix-Low ROX	4x1.25ml - 500 reactions (20 µl)	£158.00
MasterMix-EC	EvaGreen Express 2X qPCR MasterMix-iCycler	4x1.25ml - 500 reactions (20 µl)	£158.00
MasterMix-ES	EvaGreen Express 2X qPCR MasterMix-No Dye	4x1.25ml - 500 reactions (20 µl)	£158.00
MasterMix-P	TaqProbe 2X qPCR MasterMix-ROX	4x1.25ml - 500 reactions (20 µl)	£144.00
MasterMix-PL	TaqProbe 2X qPCR MasterMix-Low ROX	4x1.25ml - 500 reactions (20 µl)	£144.00
MasterMix-PC	TaqProbe 2X qPCR MasterMix-iCycler	4x1.25ml - 500 reactions (20 µl)	£144.00
MasterMix-PS	TaqProbe 2X qPCR MasterMix-No Dye	4x1.25ml - 500 reactions (20 µl)	£144.00
MasterMix-PM	TaqProbe 2X qPCR MasterMix-Multiplex	4x1.25ml - 500 reactions (20 µl)	£144.00

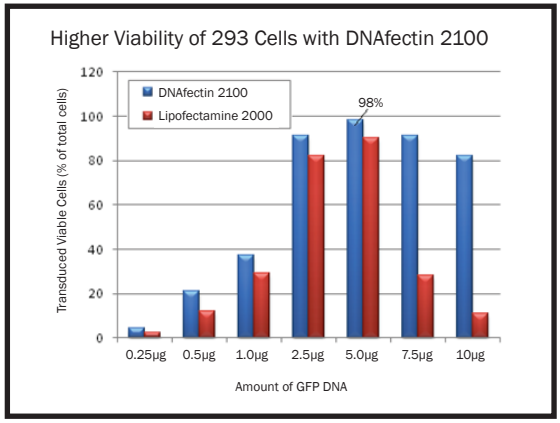
DNAfectin 2100

HIGH EFFICIENCY TRANSFECTION REAGENT

DNAfectin 2100 Transfection Reagent is a unique formulation of multiple polycations and liposomes that enable highly efficient and effective DNA transfection of eukaryotic cells.



Transfection of Vero African Green Monkey Kidney Cells



Above
Transfection efficiency and cell viability of 293 cells transfected with different amounts of GFP plasmid DNA in a 6-well cell culture plate. Results are recorded 48 hours after transfection.

Cell Line	Species/Tissue	Efficiency
293T	Human Embryonic Kidney	100%
Jurkat	Human T Lymphoma	25%
SHEP	Human Neuroblastoma	90%
BOSC23	Human Kidney	90%
HT1080	Human Fibrosarcoma	80%
C33A	Human Cervical Carcinoma	90%
MRC5	Human Primary Fibroblast	80%
MDK+Telo	Dog Kidney Cells+Telo	80%
B16	Murine Melanoma	80%
CB3	Mouse Erytholeukemia	25%
HuVEC	Human Ubilical Vein	20%
HepG2	Human Liver Carcinoma	40%
MMRU	Human Melanoma	75%
MMAN	Human Melanoma	80%
MDA-MB-231	Human Breast Carcinoma	85%
HeLa	Human Cervical Carcinoma	80-90%
A2780	Human Ovarian Carcinoma	70-75%
L6	Rat Myoblast	60-70%
Rabbit-telo	Telomerase-Rabbit Cells	50%
USO2 (T-USO2)	Human Osteosarcoma (tet-inducible)	80-90%

IPTG

Isopropyl b-D-1-thiogalactopyranoside

IPTG is a non-metabolizable galactose analog that induces expression of the lac operon in Escherichia coli.

It is a commonly used reagent in cloning procedures that require induction of b-galactosidase activity and is used in conjunction with X-Gal, or Bluo-Gal, in blue-white color selection of recombinant bacterial colonies.

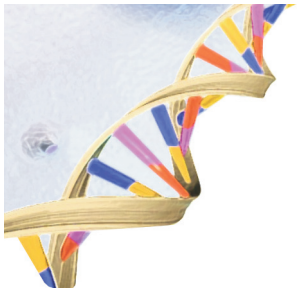
Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
G2100	DNAfectin 2100	1mg/ml	£118.00
IB0168-25G	IPTG	25g	£70.00

DNA & RNA Purification

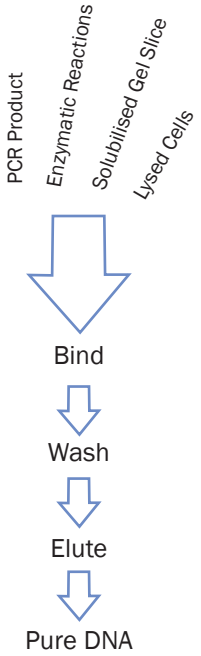
New Range

EZ-10 and One-4-ALL kits for DNA, RNA and protein isolation/ purification.



Our Spin Column and 96-Well Kits have been designed for fast, high quality extraction & purification of DNA, RNA & Protein from a variety of sources.

In addition to our popular DNA Cleanup kits we also have an extensive range of Plasmid & Genomic kits and RNA & All-in-One kits.



Featured for **2016**

Spin Column Genomic DNA Miniprep Kit
----- Page 18

Spin Column All-in-One Miniprep Kit
----- Page 19

Spin Column RNA Miniprep Kit
----- Page 19

Mini Spin Columns

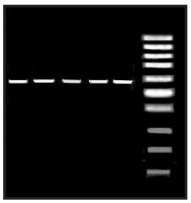
We supply spin columns/collection tubes separately, these are compatible with our own EZ-10 Spin Column kits as well as those of other brands!

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
SD5005	Mini Spin Columns (DNA)	100 pcs	£29.00
SD5008	Mini Spin Columns (RNA)	100 pcs	£30.00
SD5006	96-Well Filter Plates	12 pcs	£43.00

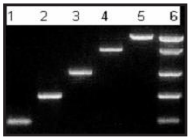
DNA Cleanup Kits

EZ-10 Spin Column PCR Purification Kit



This kit utilises membrane technology which selectively adsorbs up to 10µg PCR products or DNA fragments in the presence of a specialised binding buffer. Primers (<40-mer), nucleotides, enzymes, mineral oil and all other impurities are not able to bind and are hence eliminated from the column. PCR products or DNA fragments are readily eluted in the included buffer.

EZ-10 Spin Column Gel Extraction Kit



This kit provides a simple and efficient method for DNA extraction from agarose gel. It is also an ideal took to desalt the solution as well as to remove residual organic solvents or unincorporated nucleotides or primers (<40-mer) from reaction mixture containing DNA.

EZ-10 Spin Column Cleanup Miniprep Kit

This DNA Cleanup kit provides a simple, efficient method for purification of DNA fragments from various enzymatic reactions (eg. cDNA synthesis, ligation, restriction digestions, tailing etc.). It is also an ideal tool to desalt the solution of DNA as well as to remove residual organic solvents or unincorporated nucleotides or primers (<40-mer) from reaction mixture.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
BS363	EZ-10 Spin Column PCR Purification Kit	50 preps	£25.00
BS664	EZ-10 Spin Column PCR Purification Kit	250 preps	£63.00
BS353	EZ-10 Spin Column Gel Extraction Kit	50 preps	£25.00
BS654	EZ-10 Spin Column Gel Extraction Kit	250 preps	£63.00
BS367	EZ-10 Spin Column Cleanup Miniprep Kit	50 preps	£25.00
BS668	EZ-10 Spin Column Cleanup Miniprep Kit	250 preps	£99.00

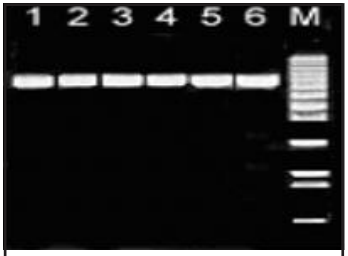
Cat #	*Description*	*Pack Size*	*Price*
BS3652	EZ-10 96-Well PCR Purification Kit	2 plates	£89.00
BS365	EZ-10 96-Well PCR Purification Kit	5 plates	£177.00
BS3692	EZ-10 96 Well Cleanup Miniprep Kit	2 plates	£89.00
BS369	EZ-10 96 Well Cleanup Miniprep Kit	5 plates	£177.00

DNA Plasmid/Genomic Kits

EZ-10 Spin Column Plasmid DNA Miniprep Kit

Fast and Simple Preparation of high quality DNA

This kit provides a simple and efficient method for mini plasmid DNA purification from bacterial culture. Plasmid DNA is selectively adsorbed by the spin column and impurities such as proteins, salts and nucleotides are washed away. The whole procedure takes about 12 minutes and no phenol/ chloroform or ethanol precipitations are required.



Gel Electrophoresis of plasmid DNA (pUC18) purified from Plasmid DNA Miniprep Kit.

One-4-ALL Genomic DNA Miniprep Kit

Purification of gDNA from Multiple Sample Sources

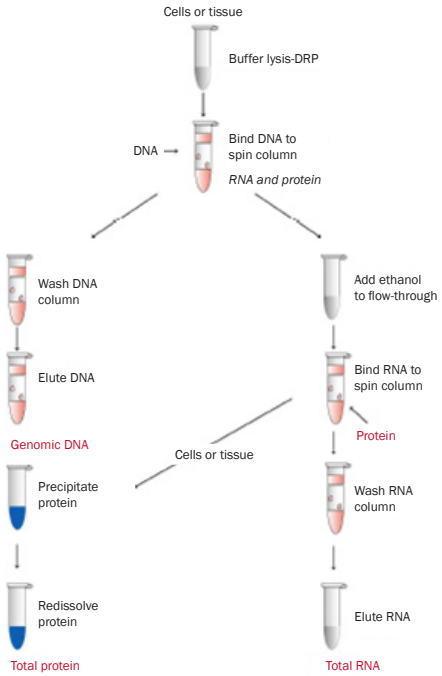
This kit allows for the purification of high quality genomic DNA with a molecular weight >20kb. The spin columns provide a fast and easy purification with the purified DNA idealy prepared for standard downstream reactions, including PCR, restriction digestions and hybridisations.

Cat #	*Description*	*Pack Size*	*Price*
BS413	EZ-10 Spin Column Plasmid DNA Miniprep Kit	50 preps	£25.00
BS614	EZ-10 Spin Column Plasmid DNA Miniprep Kit	250 preps	£63.00
BS88503	One-4-ALL Genomic DNA Miniprep Kit	50 preps	£62.00
BS88505	One-4-ALL Genomic DNA Miniprep Kit	250 preps	£248.00
BS4152	96 Well Plate Plasmid DNA Miniprep Kit	2 plates	£89.00
BS415	96 Well Plate Plasmid DNA Miniprep Kit	5 plates	£177.00

All-in-One Miniprep Kit

PURIFICATION OF DNA, RNA AND PROTEIN FROM A SINGLE SAMPLE

The *Spin Column* All-in-One Miniprep Kit allows you to simultaneously isolate DNA, RNA and Protein from a single sample. Purification is achieved within 1 hour and all standard downstream applications are supported.



Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
BS88003	All-in-One DNA/RNA/Protein Miniprep Kit	50 preps	£74.00
BS88203	All-in-One DNA/RNA Miniprep Kit	50 preps	£67.00
BS88133	EZ-10 DNAaway RNA Miniprep Kit	50 preps	£74.00
BS88136	EZ-10 DNAaway RNA Miniprep Kit	250 preps	£296.00

EZ-10 DNAaway RNA Miniprep Kit

SIMPLE & EFFICIENT RNA EXTRACTION FROM BACTERIAL CULTURE

- High Yield & Reproducibility
- Purification in Under 30 mins

Our *Spin Column* RNA Miniprep Kit allows for high quality purification of RNA from animal cells and tissues. The gDNA eliminator column allows DNA contamination to be eliminated during RNA purification so the purified RNA is idealy prepared for downstream applications that require little to no DNA contamination (eg. Real time PCR).

RNase A

RELIABLE ELIMINATION OF DNASE ACTIVITY

A major application for Ribonuclease A (RNase A) is the removal of RNA from preparations of plasmid DNA. In this application, the presence of DNase activity as an impurity is a concern. The boiling-water bath method used to eliminate contaminating DNase activity has proven unreliable. For this reason, Biobasic developed a proprietary chromatographic preparation method for elimination of DNase activity.

RNase A is an endoribonuclease that attacks at the 3¢ phosphate of a pyrimidine nucleotide. The sequence of pG-pG-pC-pA-pG will be cleaved to give pG-pG-pCp and A-pG. The highest activity is exhibited with single stranded RNA. RNase A is a single chain polypeptide containing 4 disulfide bridges. In contrast to RNase B, it is not a glycoprotein. RNase A can be inhibited by alkylation of His12 or His119, which are present in the active site of the enzyme. Activators of RNase.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
RB0473-1G	RNase A	1g	£56.00
PB0451-1G	Proteinase K	1g	£137.00

Proteinase K

INACTIVATION OF DNASE AND RNASE IN EUKARYOTIC & MICROBIOLOGICAL CELL CULTURE

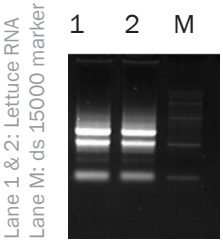
In presence of 0.5-1.0% SDS Proteinase K inactivates DNases and RNases in eukaryotic and microbiological cell cultures. The use of Proteinase K during lysis of the cells allows the isolation of intact highly-molecular nucleic acids.

Our Proteinase K is a highly active and stable protease with low cutting specificity. The enzyme belongs to the group of subtilisine-related serine proteases and is strongly inhibited by PMSF.

TRI-isolate RNA Reagent

ISOLATION OF TOTAL RNA FROM A VARIETY OF SOURCES

- Simple, Reliable and Rapid RNA Isolation
- Isolation from a Wide Variety of Sources
- Stable Yield (RNA Integrity Maintained)



Extraction of RNA from lettuce using TRI-isolate

The TRI-isolate RNA Purification Kit provides a simple, reliable, and rapid method for isolating high-quality total RNA from a wide variety of sample sources, including animal and plant cells and tissue, bacteria, and yeast. The kit utilises the strong lysis capability of TRI-isolate Reagent, this maintains the integrity of the RNA, while disrupting cells and dissolving cell components.

How does the reagent work?

The addition of chloroform followed by centrifugation, separates the solution into an aqueous phase and an organic phase. RNA remains exclusively in the aqueous phase. After transfer of the aqueous phase, the RNA is recovered by precipitation with isopropyl alcohol. After removal of the aqueous phase, the DNA and proteins in the sample can be recovered by sequential precipitation. Precipitation with ethanol yields DNA from the interphase, and an additional precipitation with isopropyl alcohol yields proteins from the organic phase. Copurification of the DNA may be useful for normalising RNA yields from sample to sample. Total RNA isolated by TRI-isolate Reagent is free of protein and DNA contamination. It can be used for Northern blot analysis, dot blot hybridisation, poly (A)+ selection, in vitro translation, RNase protection assay, and molecular cloning.

Reagents required, but not supplied:
- Chloroform
- Isopropyl alcohol
- 75% Ethanol (in DEPC-treated water)
- DEPC-treated water

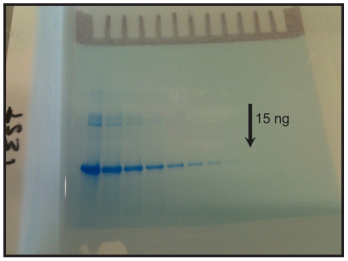
Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-TRI	TRI-isolate RNA Reagent	100ml	£152.00

SafeBLUE Protein Stain

SAFE, SINGLE STEP PROTEIN STAIN

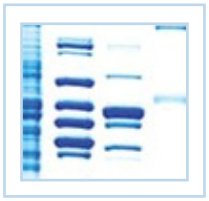
- The Most Sensitive Single Step Stain Available!
- No Mixing, Fixing, Washing or Destaining Required
- Compatible With Mass Spectrometry



SafeBLUE is a safe and highly sensitive single step protein stain. Simply run your protein gel, add the stain and watch your bands appear in a few minutes. There is no need to wash or destain and the background is crystal clear.

Protocol

1: Run Gel



2: Add SafeBLUE*

10 mins**

3: Remove Gel from Stain

* Use just enough to cover gel (typically around 20ml)
** Takes 10-15mins to see 60ng, longer for low conc. proteins

Results in 10 Minutes....

Staining of low concentration proteins (60ng) occurs inside of 15 minutes with sensitivity increasing down to 10ng if left for an hour. The signal generated by SafeBLUE is linear, enabling true quantification of your sample. It is impossible to over-saturate using SafeBLUE, so if prefered you can incubate overnight without harmful effects.

SafeBLUE contains doesn't contain any harmful chemicals or acids, so is much safer than standard protein dyes - it can even be disposed of down the sink after staining!

The Safe Protein Stain

SafeBLUE is completely non-toxic and can be safely disposed of down the sink.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-SB1L	SafeBLUE Protein Stain	1L	£99.00

Prestained Protein Markers

Mid-Range Protein Markers (20-120kDa)

Prestained Protein Molecular Weight Marker is a mixture of purified proteins covalently coupled to a blue chromophore. It consists of 6 proteins ranging in apparent molecular weight from approximately 20 kDa to 120 kDa. The protein concentrations are optimized to yield 6 well defined blue bands after SDS-polyacrylamide gel electrophoresis. The Marker is supplied in gel loading buffer and is ready-to-use (reconstituted).

Wide-Range Protein Markers (10-240kDa)

The Wide Range Prestained Protein Ladder is a three-colour protein standard with 12 pre-stained proteins covering a wide range molecular weights from 10 to 245kDa. Proteins are covalently coupled with a blue chromophore except for two reference bands (one green and one red band at 25kDa and 75kDa respectively) when separated on SDS-PAGE (Tris-glycine buffer). This ladder is designed for monitoring protein separation during SDS-polyacrylamide gel electrophoresis, verification of Western transfer efficiency on membranes (PVDF, nylon, or nitrocellulose) and for approximating the size of proteins. The ladder is supplied in gel loading buffer and is ready to use.

Unstained Protein Markers

Wide-Range Protein Markers (10-200kDa)

Wide Range Protein Molecular Weight Unstained Marker is designed for accurate sizing of proteins in SDS-polyacrylamide gel electrophoresis, as well as on PVDF, nylon and nitrocellulose membranes. It is a mixture of 14 recombinant, highly purified, unstained proteins ranging in size from 10 kDa to 200 kDa. Each protein in the ladder contains an integral Strep-tag® II sequence which can be detected directly on Western blots using a Strep-Tactin®-AP* conjugate or an antibody against Strep-tag® II.

Low-Range Protein Markers (4.1-66kDa)

Protein marker, Low Range is a mixture of purified proteins with known amino acid sequences. They are resolved to 9 sharp bands when analysed by SDS-PAGE (Tris-Glycine) and stained with Coomassie Blue R-250.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
BSM0441	20-120kDa Mid Range Prestained Protein Ladder	2x250ul	£
BG00364	10-240kDa Wide Range Prestained Protein Ladder	500ul	£
BM201	4.1-66kDa Low Range Unstained Protein Ladder	100ul	£
BSM0661	10-200kDa Wide Range Unstained Protein Ladder	2x250ul	£

Acrylamide Products

QUALITY ACRYLAMIDES FOR CRYSTAL CLEAR ELECTROPHORESIS GELS

- Batch Tested to Ensure Reproducibility
- DNase, RNase & Protease Free

Acrylamide, 40% Solution

Our 40% Acrylamide solution is made from ultra-pure components and is 0.45 and 0.2micron filtered.

Bis-Acrylamide, 2% Solution

Bis-Acrylamide solution is a crosslinker and is used in conjunction with the 40% Acrylamide solution to create a polyacrylamide gel of the required ratio.

Acryl/Bis Solutions

Our liquid acrylamide solutions are made to exact standards from the highest quality materials, this ensures crystal clear electrophoresis gels for reliable and reproducible results.

Solutions are manufactured using molecular biology grade pyrogen free water and filtered through 0.2 micron glass fibre and nylon filters to eliminate particulate matter.

Custom Formulations

We can offer a custom gel formulation service offering small batches of liquid acrylamide made to your specification!

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-2000-05	Acrylamide, 40% Solution	500ml	£43.00
NBS-2000-10	Acrylamide, 40% Solution	1L	£64.00
NBS-2500-05	Bis-Acrylamide, 2% Solution	500ml	£23.00
NBS-2500-10	Bis-Acrylamide, 2% Solution	1L	£39.00
NBS-2300-05	Acryl/Bis (19:1), 30% Solution	500ml	£40.00
NBS-2300-10	Acryl/Bis (19:1), 30% Solution	1L	£60.00
NBS-2600-05	Acryl/Bis (29:1), 30% Solution	500ml	£39.00
NBS-2600-10	Acryl/Bis (29:1), 30% Solution	1L	£60.00
NBS-2100-05	Acryl/Bis (37.5:1), 30% Solution	500ml	£43.00
NBS-2100-10	Acryl/Bis (37.5:1), 30% Solution	1L	£69.00
NBS-2400-05	Acryl/Bis (19:1), 40% Solution	500ml	£46.00
NBS-2400-10	Acryl/Bis (19:1), 40% Solution	1L	£62.00
NBS-3500-05	Acryl/Bis (29:1), 40% Solution	500ml	£43.00
NBS-3500-10	Acryl/Bis (29:1), 40% Solution	1L	£62.00
NBS-3600-05	Acryl/Bis (37.5:1), 40% Solution	500ml	£44.00
NBS-3600-10	Acryl/Bis (37.5:1), 40% Solution	1L	£64.00

Sodium Dodecyl Sulphate

SDS, 20% Solution

SDS is difficult to weigh due to its hazardous dispersal problems, therefore our SDS is supplied formulated into 20% solution ready for use. The SDS solution is 0.2 micron filtered and made from sterile MB grade water, it is supplied in 500ml quantities however other amounts can be supplied on request. SDS does not need sterilisation.

SDS-PAGE Buffers

TG (TRIS-Glycine) Buffer, 10x

TRIS-Glycine (TG) buffer is suitable for protein PAGE and western blotting procedures. Tris-Glycine and Tris-Glycine SDS are the most popular buffers used in the electrophoresis of proteins ranging from 5 to 500Kda. We also have TG buffer available as a premixed powder for added convenience.

TG-SDS (TRIS-Glycine-SDS) Buffer, 10x

Tris-glycine SDS is used as a running buffer for electrophoresis of proteins in PAGE proteomics studies. We also have TG-SDS buffer available as a premixed powder for added convenience.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
NBS-4002-05	SDS, 20% Solution	500ml	£48.00
NBS-3000-01	TEMED	100ml	£47.00
NBS-6300-50	TG Buffer, 10x Solution	5L	£62.00
NBS-6300-100	TG Buffer, 10x Solution	10L	£108.00
NBS-6400-50	TG-SDS Buffer, 10x Solution	5L	£75.00
NBS-6400-100	TG-SDS Buffer, 10x Solution	10L	£106.00

ECL Western Blotting Reagent

CHEMILLUMINESCENT SUBSTRATE FOR HRP

- Highly Sensitive Non-Radioactive Substrate
- Easy Detection of Picogram Amounts of Antigen

ECL Western Blotting Substrate is a highly sensitive nonradioactive, enhanced luminol based chemilluminescent substrate for the detection of horseradish peroxidase (HRP) on immunoblots.

ECL Western Blotting Substrate enables the detection of picogram amounts of antigen and allows for easy detection of HRP using photographic or other imaging methods. Blots can be repeatedly exposed to X-ray film to obtain optimal results or stripped of the immuno-detection reagents and re-probed. The special formulation of ECL Substrate makes it the ideal substitute for Amersham ECL Substrate without the need for additional optimisation of assay conditions

Product Description...

ECL Western blotting detection reagent contains 2x100ml of A and B solutions.

Solutions A and B are mixed in a 1:1 ratio immediately prior to application. The mixture is then ready for detection of any immobilised specific antigens in chemiluminescent western blots through horseradish peroxidase (HRP) labelled antibodies. The kit is designed for a high quality and long lasting glow reaction.

The reagents in this kit have been matched to optimise the range and sensitivity of detection using various antibodies in Western blot assays.

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
G075	ECL Western Blotting Reagent	2 x 100ml	£81.00

Protein Labelling Kits

- High Recovery of Conjugates
- All Processes in Single Filtration Tube
- Includes All Reagents Required for Labelling

Fluorescein Labelling Kit

The Fluorescein Labelling Kit-NH2 is mainly used for the preparation of fluorescein-labelled proteins such as IgG for immunostaining and cellular proteins for tracing. This kit can be used to produce conjugates in 1 hour and contains all of the necessary reagents for labelling, including storage buffer. Each vial of fluorescein can label up to 200 µg of IgG, conjugating about 4 to 6 fluorescein molecules per IgG molecule.

Biotin Labelling Kit

The Biotin Labelling Kit is available as both NH2 and SH reactive biotin (offering conjugation in 1 hour or 3 hours respectively). Both kits offer a high recovery of conjugates and contain all necesary reagents for the labelling. The number of biotin molecules per protein can be determined by HABA assay and excess biotin molecules can be removed using the Filtration tube (included).

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
LK01-10	Fluorescein Labelling Kit-NH2	3 samples	£221.00
LK03-10	Biotin Labelling Kit-NH2	3 samples	£130.00
LK55-10	Biotin Labelling Kit-NH2	1 sample	£176.00
LK10-10	Biotin Labelling Kit-SH	3 samples	£130.00
LK57-10	Biotin Labelling Kit-SH	1 sample	£176.00
LK11-10	Peroxidase Labelling Kit-NH2	3 samples	£190.00
LK51-10	Peroxidase Labelling Kit-NH2	1 sample	£235.00
LK09-10	Peroxidase Labelling Kit-SH	3 samples	£190.00
LK53-10	Peroxidase Labelling Kit-SH	1 sample	£235.00

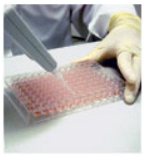
Peroxidase Labelling Kit

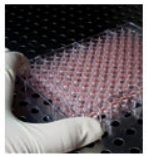
The Peroxidase Labelling Kit is available as both NH2 and SH reactive peroxidase (offering conjugation in 1 hour or 3 hours respectively). This kit is mainly used for the preparation of peroxidase-labelled IgG for enzyme immunoassay (EIA) and for the preparation of peroxidase-labelled antigen for competitive EIA. This kit contains all of the necessary reagents for the labelling process, including Reducing agent and Storage buffer. When labelling small molecules, excess molecules can be removed by using the Filtration tubes included in this kit.

Cell Counting Kit-8

LOW CYTOTOXICITY VIABILITY & PROLIFERATION ASSAY

- Low Cellular Toxicity
- Ready-to-Use Single Bottle Solution
- No Radioisotopes or Organic Solvents Required


1. Add CCK-8

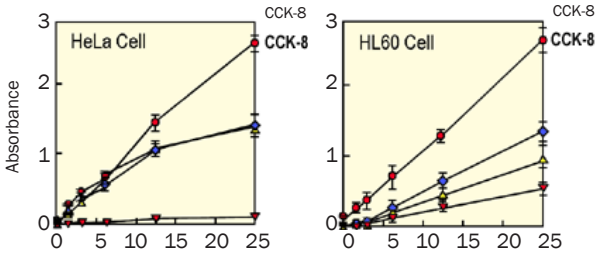

2. Incubate


3. Read O.D.

Cell Counting Kit-8 (CCK-8) is a Dehydrogenase based assay for cell viability and cytotoxicity. CCK-8 has been developed utilising highly water soluble tetrazolium salts, called WSTs, these produce a water-soluble formazan dye upon bioreduction in the presence of an electron carrier.

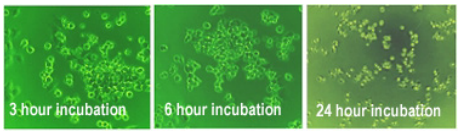
CCK-8 is added directly to the cells with no premixing of components, and is bioreduced by cellular dehydrogenases to give an orange water formazan that is directly proportional to the number of living cells.

The kit components show no cytotoxicity in cell culture media and additional experiments may be carried out using the same assay plate. CCK-8 is a flexible assay and can be adapted for 24-384 well plates. CCK-8 combines the highly stable WST-8 with 1-Methoxy PMS, giving a sensitive, nonradioactive colourimetric assay for determining the number of viable cells.



Toxicity of Assay Solutions:
Comparison Between CCK-8 and Competitor Kit

Cell Counting Kit-8



Cell viability assay from company R

Ordering Information

Cat #	Description	Pack Size	Price
CK04-10	Cell Counting Kit-8	500 assays	£92.00
CK04-11	Cell Counting Kit-8	1000 assays	£149.00
CK04-13	Cell Counting Kit-8	3000 assays	£316.00
CK04-20	Cell Counting Kit-8	10,000 assays	£1,088.00

LDH Assay Kit-WST

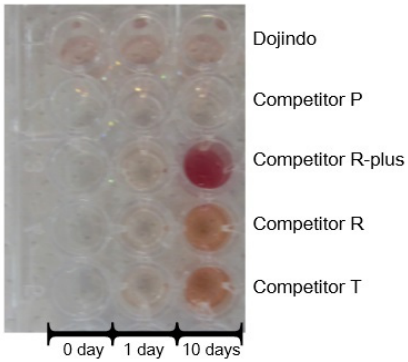
DETERMINATION OF CYTOTOXICITY BY MEASURING LACTATE DEHYDROGENASE

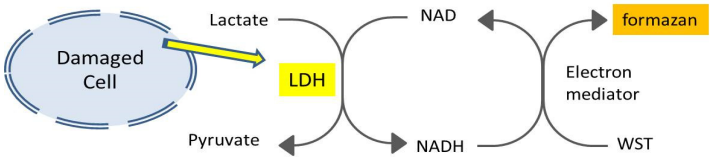
- New Conventional Colorimetric Assay System
- Utilises for Both Homogeneous and Non-Homogeneous Assays
- Longer Working Solution Stability (2 months after reconstitution)

Cytotoxicity LDH Assay Kit-WST is a kit for determination of cytotoxicity by measuring a lactate dehydrogenase (LDH) activity released from damaged cells. LDH is a stable cytoplasmic enzyme presented in all types of cells and released into the cell culture medium through damaged plasma membrane. Cytotoxicity LDH Assay kit-WST can be used to measure the released LDH according to the following scheme. LDH catalyes dehydrogenation of lactate to pyruvate thereby reducing NAD to NADH. NADH reduces a water-soluble tetrazolium salt(WST) in the presence of an electron mediator to produce an orange formazan dye. The amount of the formazan dye thus formed is proportional to that of released LDH into the medium, which is an indication of cytotoxicity.

Since Cytotoxicity LDH Assay kit-WST neither reflects the activity of living cells nor is harmful to cells, cytotoxicity can be measured with the living cells(homogeneous assay). In addition, non-homogeneous assay that is performed by using the cell culture supernatant is also possible. Unlike competitive products, the reconstituted Working Solution is stable under refrigerated condition and the Working Solution can be used for long periods as ready-to-use solution after the preparation.

LDH Assay Kit-WST allows longer storage of working solution once it is reconstituted.





Ordering Information

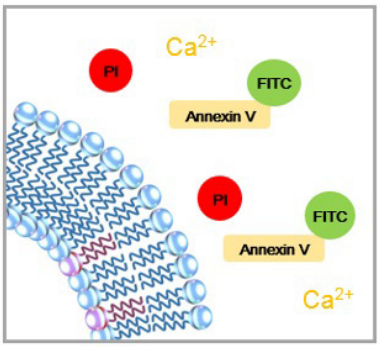
Cat #	Description	Pack Size	Price
CK12-01	Cytotoxicity LDH Assay Kit-WST	100 tests	£125.00
CK12-05	Cytotoxicity LDH Assay Kit-WST	500 tests	£232.00

Annexin V

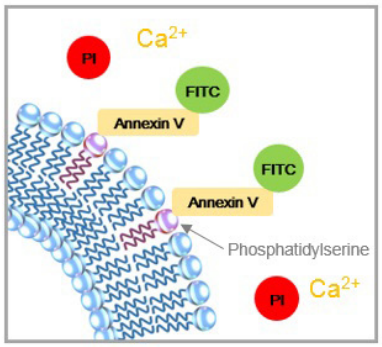
FITC APOPTOSIS DETECTION KIT

- Apoptotic Cells Can be Identified Using Flow Cytometry or Fluorescence Microscopy
- Perform Double Staining Simultaneously & Observe Stages in the Cell Membrane

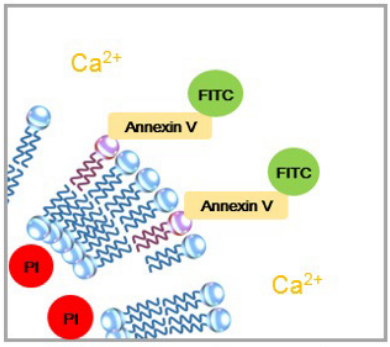
Apoptosis plays an important role in maintaining the homeostasis and developmental processes in both plants and animals. Any abnormal cells during the cytogenesis are eliminated by apoptosis. For instance, tumor growth from cancer cells occurred in vivo is inhibited by induction of apoptosis. However, apoptosis is not induced when the error occurs in tumor suppressor gene p53. Thus, the growth of cancer cells has been found to proceed. Apoptotic cells can be identified based on the alteration of cellular morphology as well as the alternation of biomedical changes.



Normal Cell



Early stages of apoptosis



Late stages of apoptosis

Annexin V stained cells are used to indicate cell membrane changes that occur in the early stage of apoptosis. Once apoptosis is initiated, the phosphatidylserine presents in the inner cell membrane migrates through the cell membrane of the lipid bilayer. Annexin V specifically binds to phosphatidylserine in the presence of protein-dependent Ca ion. By using fluorescent-labeled Annexin V, the apoptotic cells can be identified by flow cytometry or fluorescence microscopy (fig. 1).

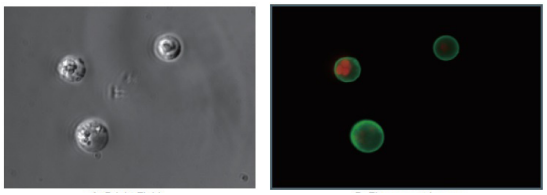


Fig. 1 Fluorescent imaging of apoptosis induced cells

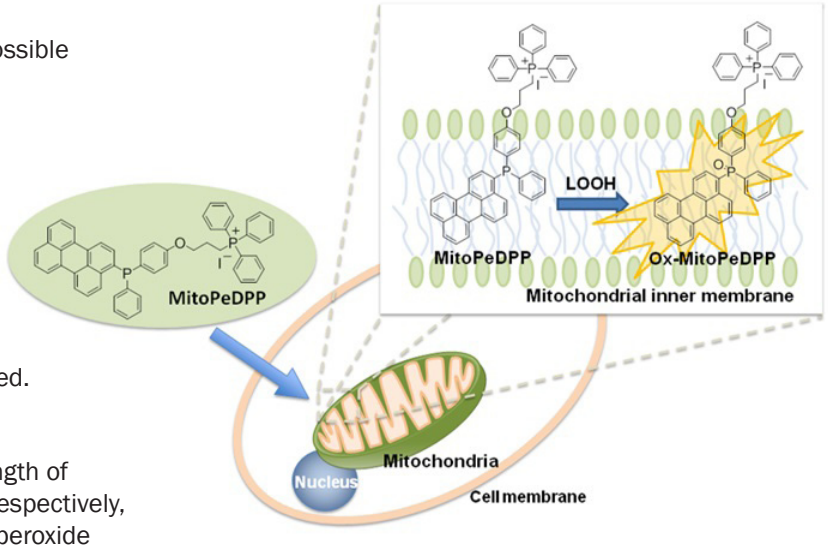
Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
AD10-10	Annexin V, FITC Apoptosis Detection Kit	50 tests	£80.00
AD10-12	Annexin V, FITC Apoptosis Detection Kit	2 x 50 tests	£160.00

MitoPeDPP

FLUORESCENT PROBE FOR MITOCHONDRIAL RESEARCH

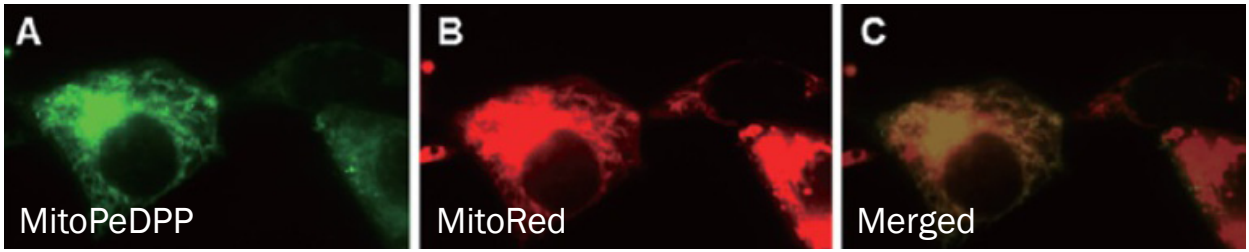
- Cell Membrane Permeable Probe
- Mitochondria Targeted Imaging is Possible



MitoPeDPP is a cell-membrane-permeable probe, Perylene-based dye. It specifically localises in mitochondria due to the triphenylphosphonium moiety introduced.

As the excitation and emission wavelength of MitoPeDPP are 452 nm and 470 nm, respectively, the probe can be applied for lipophilic peroxide imaging in living cells.

Lipophilic Peroxides Detection in Mitochondria (cell line used: HepG2 cell)



A: MitoPeDPP stained Mitochondria with t-BHP treatment
B: MitoRed stained Mitochondria
C: Merged Image (A/B)

Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
M466-10	MitoPeDPP	1 set (3 x 5ug)	£192.00

Cell Immortalization Reagents

We are proud to be ABM's exclusive UK/Ireland distributor for cell immortalization products.

Primary cells have a finite life span of less than 10-50 passages in vitro depending on cell type. Immortalizing your cell line will eliminate the frequent need to re-establish fresh cultures from specimen and will provide a consistent cellular material, capable of extended proliferation and possess similar or identical genotype and phenotype as the parental tissue, throughout the duration of your research experiment.

Immortalization Strategies for Mammalian Cells

Several methods exist for immortalizing mammalian cells in culture. With years of experience, ABM has developed the most comprehensive cell immortalization products comprising of ready-to-use retroviral, lentiviral and adenoviral vectors.

Replicative senescence is an irreversible growth arrest triggered by a DNA damage signal from critically short telomeres, thus restoration of telomerase activity in primary cells can extend cell proliferation and achieve immortalization. Many studies have shown that co-expression of hTERT with other immortalizing agents (namely CDK4 and Bmi1, both of which silences tumor repressor p16) provides a more authentic normal cell model with well-defined genetic background.

Overriding the normal cell cycle control points is another way of bypassing cellular senescence, and the most commonly used and the best understood of this class of oncogenes is Simian Virus 40 large T antigen (SV40). SV40 Large T antigen binds to a number of proteins, but the most important are p53 and Rb which, when functioning normally, are negative regulators of cell division. Similarly, using siRNA to inactive p53 and/or Rb can also initiate unlimited cellular life span. Other oncogenes include c-Myc, Ras and HPV 16 E6/E7 and their introduction, likewise, can efficiently immortalize primary cells.

While most cell types can be established from the use of hTERT and other oncogene expression, B and T lymphocytes have proven refractory to immortalization to these immortalizing agents, and have only been shown to be immortalized through use of specific methods such as EBV.

Product Groups Available

- Gene Immortalization (Myc, p53, Rb, Ras, CDK4, Bmil) Reagents
- HPV E6-E7 Cell Immortalization Reagents
- SV40 T antigen Cell Immortalization Reagents
- EBV Cell Immortalization Reagents
- hTERT Cell Immortalization Reagents

Contact us for details...

Primary Cells

Primary cells are taken directly from living tissue (e.g. biopsy material) and cultured in vitro. As opposed to continuous cell lines (e.g. tumor), primary cells are known for their virtue of retaining most of the characteristics of the original tissue from which they are derived in the first place.

Primary Cells

Primary Adipose Cells
Primary Airway Cells
Primary Blood Cells
Primary Blood Vessel Cells
Primary Bone and Cartilage Cells
Primary Bone Marrow Cells
Primary Brain Cells
Primary Breast Cells
Primary Colon Cells
Primary Digestive System Cells
Primary Eye Cells
Primary Hair Follicle Cells
Primary Heart Cells
Primary Liver Cells
Primary Lung Cells
Primary Mesentery Tissue Cells
Primary Oral Cells
Primary Pancreas Cells
Primary Placenta Cells
Primary Renal System Cells
Primary Reproductive System Cells
Primary Skeletal Muscle Cells
Primary Skin Cells
Primary Umbilical Cord Cells

Immortalized Primary Cells

Immortalized Adipose Cells
Immortalized Airway Cells
Immortalized Blood Cells
Immortalized Blood Vessel Cells
Immortalized Bone and Cartilage Cells
Immortalized Bone Marrow Cells
Immortalized Brain Cells
Immortalized Breast Cells
Immortalized Colon Cells
Immortalized Eye Cells
Immortalized Hair Follicle Cells
Immortalized Heart Cells
Immortalized Liver Cells
Immortalized Lung Cells
Immortalized Mesentery Cells
Immortalized Oral Cells
Immortalized Ovarian Cells
Immortalized Pancreas Cells
Immortalized Pharynx Cells
Immortalized Placenta Cells
Immortalized Renal System Cells
Immortalized Reproductive System Cells
Immortalized Skeletal Muscle Cells
Immortalized Skin Cells
Immortalized Umbilical Cord Cells

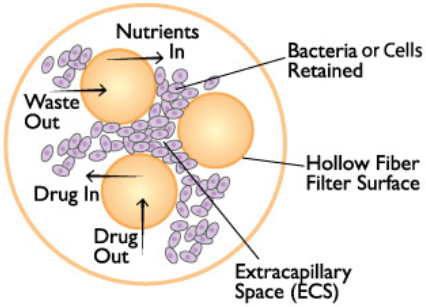
Immortalized Primary Cells

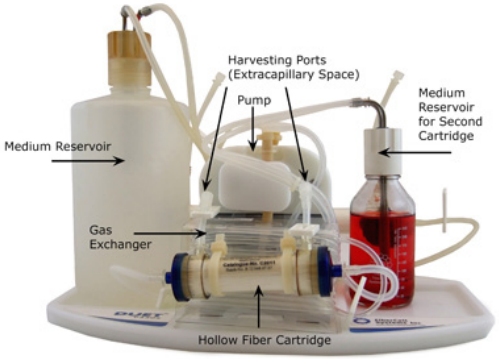
Immortalized primary cells are derivatives of primary cells that owing to mutation events end up evading normal cellular senescence and acquiring the ability of continuous cell-division. Immortalized cells are highly useful for research in cell biology as they are easier to culture and maintain than primary cells.

ABM has the world's largest collection of immortalized cell lines which can provide you with an integrated platform for meeting the needs for virtually any relevant research project. We also provide customers with custom cell immortalization services (see page 38).

Hollow Fiber Cell Culture

Duet Pump for Hollow Fiber Cell Culture





The FiberCell Systems Duet Pump provides flexible flow rate support for all of the FiberCell hollow fiber bioreactor cartridges. Continuous flow is required to provide for nutrition support and constant oxygenation of the culture modules. The Duet utilises a unique positive pressure displacement pumping action on the pump tubing of the flow path. Squeezing of the tubing in conjunction with the two one-way check valves produces a frictionless pumping action. Peristaltic pumps rub on the tubing causing pieces of the tubing to break off and move into circulation where they can cause blockage of the fibers. This frictionless mechanism is the reason that FiberCell modules have supported continuous culture of cells up to 2 years of continuous culture.

Constant flow rate and oxygenation is the key to support of hollow fiber cell culture modules. The FiberCell Duet Pump system can generate from 1 mL to 140 mL per minute of flow rate depending upon the cartridge used. Silicone tubing is gas permeable and can be used to provide for gas exchange while maintaining the system in a closed, biosafe manner. The loop of silicone tubing that is part of the cartridge flow path stand provides the gas exchange for the system. The larger cartridges (C2003 and C2018) along with the C5011 contain twice the amount of tubing as the medium sized cartridges and also have a larger pump tubing to provide for increased flow rate increasing the oxygenation capacity of these systems.

Simple in design and execution, the FiberCell Duet Pump is designed to fit into a standard CO2 incubator, which provides temperature, and gas control. There is a thin cord designed to fit through the incubator door that provides low voltage power to the pump and the brushless DC motor ensures that ozone is not generated inside the incubator. Cartridges are easily removed from the Duet while the motor is running. Work with the cartridge in the hood and then replace the cartridge into the Duet when you are finished.

The FiberCell Duet Pump comes with a full 2-year warranty.

Ordering Information

Cat #	*Description*	*Price*
P3202	FiberCell Duet Pump	£1971.00
A1006	38mm Reservoir Caps for plastic bottles	£176.00
A1005	33mm Reservoir Caps for glass bottles	£176.00
A1007	5-port 38mm for invitrotox	£249.00
A1008	45mm Reservoir Caps (steel) for bottles	£249.00

Hollow Fiber Cartridges

Cartridge Selection Guide

A cartridge should be selected based on the intended application. FiberCell offer three types of fibers: polysulfone, cellulosic, and PS+ fibers. Fibercell also offer three different molecular weight cut-offs (MWCO): 5 kd, 20 kd, and .1 micron.

The hydrophilic polysulfone fiber is specifically selected for good cell culture performance. Both the 5 kd MWCO and 20 kd MWCO fibers have ten times the gross filtration rate of the equivalent cellulosic fiber for rapid nutrient and waste exchange. This is seen as better cell growth and higher fidelity of protein production not seen in cellulosic fibers. Any cell type that will attach to plastic or grow in suspension culture should grow well in the polysulfone cartridge.

Ordering Information

Cat #	*Description*	*Surface Area*	*Fiber Type*	*Packing Density*	*ECS Vol*	*Max. Cell#*	*Price*
C2025	Small Polysulfone Plus cartridge .1µm	75 cm2	activated PS	30%	2.5 mL	108	£219.00
C2008	Medium Polysulfone cartridge 5kd MWCO	3000 cm2	low flux PS	50%	20 mL	109	£375.00
C2011	Medium Polysulfone cartridge 20kd MWCO	3000 cm2	high flux PS	50%	20 mL	109	£375.00
C3008	Medium Cellulosic 5kd MWCO	2000 cm2	Cellulosic	38%	12 mL	109	£375.00
C2018P	Large PS 20kd MWCO cartridge, no flow path	1.2 m2	high flux PS	50%	70 mL	5 x 1010	£348.00
C2003	Large Polysulfone cartridge 5kd MWCO	1.2 m2	low flux PS	50%	70 mL	5 x 1010	£514.00
C2018	Large Polysulfone cartridge 20kd MWCO	1.2 m2	high flux PS	50%	70 mL	5 x 1010	£514.00
C2003P	Large PS 5kd MWCO cartridge, no flow path	1.2 m2	low flux PS	50%	70 mL	5 x 1010	£348.00
C5011	HI Output Mab cartridge	3000 cm2	high flux PS	50%	20 mL	2 x 109	£411.00
C4005	2.5 m2 Polysulfone cartridge, 5kd MWCO	2.5 m2	low flux PS	50%	150 mL	1011	£440.00
C4020	2.5 m2 Polysulfone cartridge, 20kd MWCO	2.5 m2	high flux PS	50%	150 mL	1011	£440.00

As a general rule the cartridge used will depend upon the size of the secreted product you wish to collect and the amount you wish to collect. FiberCell cartridges are powerful cell culture tools and their small size can be misleading. The medium sized C2011 with a surface area of 3,000 cm2 and a volume of only 20 mL has been shown to out-produce a 10 liter bag type bioreactor by a significant degree. The larger cartridges should only be used when 500 mg or more of a recombinant protein is desired.

For monoclonal antibody production the 20 kd MWCO fiber should be used to allow TGF beta to diffuse out while retaining the antibody within the small volume of the ECS. The scale-up option here is the C5011 which is optimized for hybridoma culture. Please see the monoclonal antibody section for more information.

The PS+ fiber has a unique chemistry that allows protein matrices, antibodies and cytokines to be bound to the surface of the fiber. This cartridge should be used for primary cell types where you wish to control the surface matrix that the cells interact with and also for the growth of endothelial cells on the inside of the fiber. The fiber must be coated with some matrix so this matrix should be taken into account when selecting this fiber.

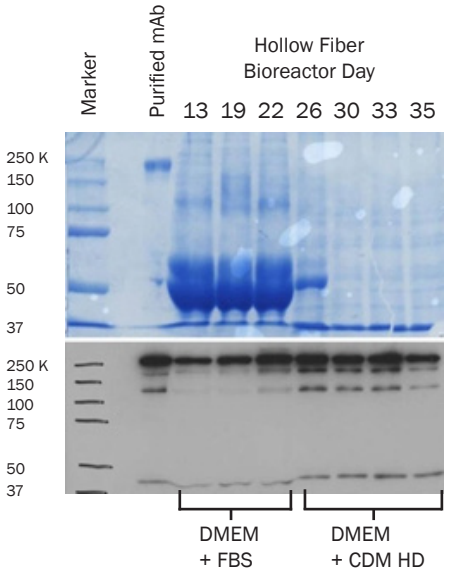
CDM-HD Serum Replacement

CHEMICALLY DEFINED & PROTEIN FREE

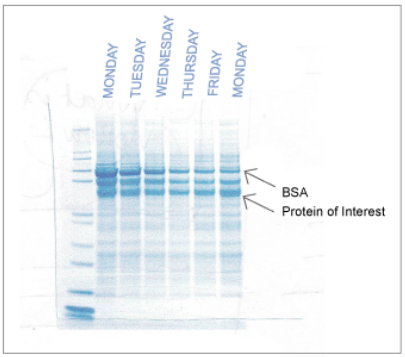
- Lot-to-Lot Consistency
- Regulatory Complience Simplified
- Long Shelf Life, Simple Storage Conditions

CDM-HD Serum Replacement is a chemically defined, protein free serum replacement that permits any basal medium (eg. DMEM or RPMI) to be used without serum.

CDM-HD provides lot-to-lot consistency and is an economical replacement for serum. It is available as a dry powder to make up one litre and is used at a concentration of 10%. CDM-HD has been optimised for hollow fiber systems but is also suitable for use in T-Flask based cell cultures.



Demonstration of Adaptation to Serum-free Medium



SDS-Page gel of successive harvests from the ECS of a recombinant protein secreted by a 293 cell line. Initial medium is DMEM with 10% FBS (Monday). Medium is changed from DMEM-FBS to Hyclone serum free medium for 293 cells. Note the diminution of serum proteins, especially BSA in the harvest from the ECS while the protein of interest remains constant or increases as the adaptation continues. Protein of interest is higher in concentration on Mondays as it has accumulated over the weekend to a higher level.

CDM-HD is part of the complete hollow fiber cell culture range we supply. This range includes the duet pump, cartridges and accessories.

Designed for...

- Monoclonal Antibodies
- Recombinant Proteins
- In Vitro Toxicity
- Lymphocyte
- Endothelial
- Virus

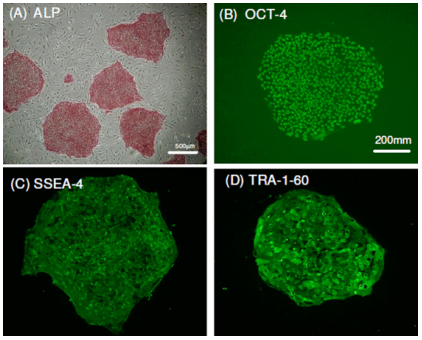
Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
CDM-HD	CDM-HD Serum Replacement	Powder for 1L	£174.00

StemCell Keep

CRYOPRESERVATION SOLUTION FOR STEM CELLS

- High Efficiency
- Protein and DMSO Free
- Long Shelf Life - Two Years at 4°C



StemCell Keep is a ready-to-use vitrification solution for human ES/iPS cell cryopreservation. This low toxicity and easy to handle solution has been developed without any protein or DMSO to achieve maximum efficiency.

High Efficiency

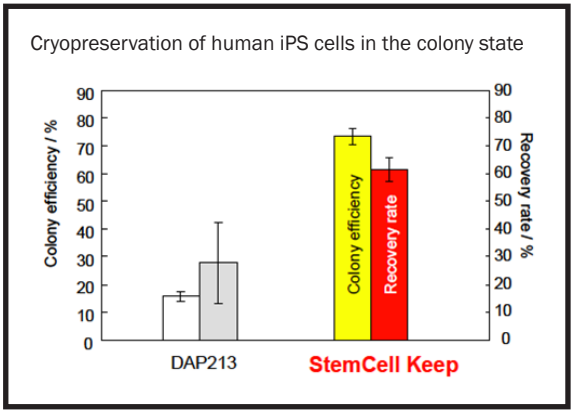
StemCell Keep combines high cytoprotection with vitrification technology to cryopreseve ES/iPS cell colonies - cell pluripotency is maintained after thawing.

Protein and DMSO Free

Animal-derived, protein free and DMSO free formulation with no risk of the adverse affect of DMSO on differentiation usually associated with vitrification.

Long Shelf Life

StemCell Keep has a shelf life of 2 years when stored at 4°C, after use the remaining solution can be kept for this period without losing functional quality.

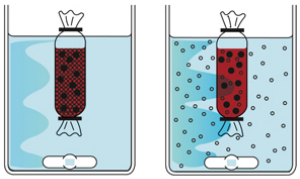


Above - attached colony and recovery rates after thawing. *One day after seeding.* After vitrification with DAP213 only 15% of colonies were attached (compared to the non-freezing control), compared to 80% of the colonies when vitrified with StemCell-Keep.
At day 4. Cells had grown and fomed large colonies, these were counted to evaluate recovery rates - 28% for cells preserved by vitriication using DAP213, compared to 62% using StemCell-Keep.

Ordering Information			
Cat #	*Description*	*Pack Size*	*Price*
VPL-A1	StemCell Keep	20ml (100 vials)	£299.00

Biotech Dialysis Tubing

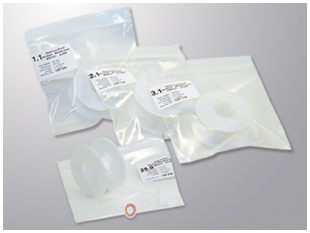
Biotech Grade CE and RC Tubing, Discs & Sheets



Biotech membranes are specifically engineered for more critical separation constraints in which an ultrapure membrane with a precise MWCO is required. Since these synthetic membranes are manufactured using a process without metal salts, no pre-treatment or cleaning is required.

Biotech membranes are available in two membrane types:

- Cellulose Ester (CE)
- Regenerated Cellulose (RC)



Cellulose Ester (CE)
Wide range of selectivity and purity
pH Range: 2-9
Temperature Limit: 37°C
Organic Resistance: Fair

Regenerated Cellulose (RC)
Combined selectivity, purity, resistance
pH Range: 2-12
Temperature Limit: 60°C
Organic Resistance: Good

Biotech CE Membrane (10 m/roll)

Ordering Information					
	Flat Width	*10mm*	*16mm*	*24mm*	*31mm*
MWCO	*Diameter*	*6.4mm*	*10mm*	*15mm*	*20mm*
	Volume/L	*0.32 ml/cm*	*0.79 ml/cm*	*1.8 ml/cm*	*3.1 ml/cm*
0.1 - 0.5 kD		131048	131054	131057	131060
0.5 - 1.0		131084	131090	131093	131096
3.5 - 5 kD		131192	131198	131201	131204
8 - 10 kD		131264	131270	131273	131276
20 kD		131336	131342	131345	131348
50 kD		131372	131378	131381	131384
100 kD		131408	131414	131417	131420
300 kD			131450		131456
1000 kD			131486		131492
Price		£350.00	£400.00	£458.00	£481.00

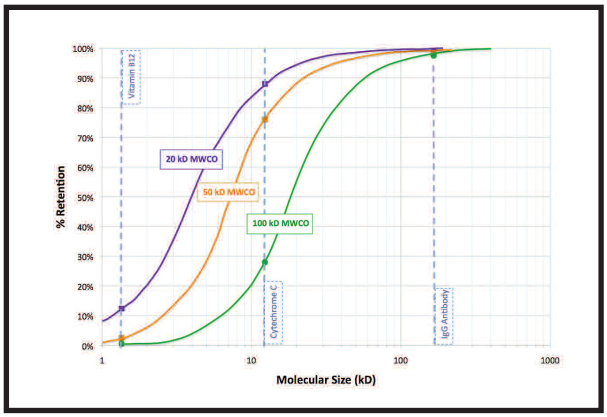
Biotech RC Membrane (5 m/roll)

Ordering Information			
	Flat Width	*10mm*	*16mm*
MWCO	*Diameter*	*6.4mm*	*10mm*
	Volume/L	*0.32 ml/cm*	*0.79 ml/cm*
3.5 - 5 kD		133192	133198
8 - 10 kD		133264	131270
20 kD		133336	131342
Price		£209.00	£400.00

Float-A-Lyser G2

READY-TO-USE DIALYSIS DEVICE

- 95-98% Sample Recovery
- Volume Specific Dilution Control
- Superior Handling & Leak Prevention



▲ MWCO Selection Guide

Please use the chart above to choose the correct molecular weigh cut off.

The proprietary Biotech Grade CE is a low protein-binding synthetic membrane available in 6 precise MWCO's with no heavy metal and sulfide contaminants. The cylindrical tubing geometry prevents sample dilution (associated with cassette-type devices) and provides open access for total volume retrieval by pipette. Only the Float-A-Lyser G2 assures a 95-98% sample recovery while maintaining 99% sample purity and <1% sample dilution.

Introducing the Float-A-Lyser G2, the next generation in Ready-to-Use laboratory dialysis devices featuring proprietary Ultra-pure Biotech Cellulose Ester (CE) Membranes.

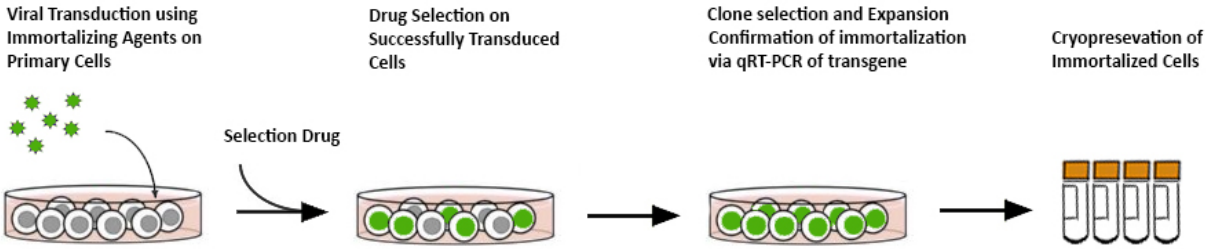
The leak-proof screw-on cap with sealing o-ring provides easy access with included pipette for loading, in-process testing and sample retrieval, without the risk of needle punctures. The included floatation ring improves sample buoyancy and vertical orientation during dialysis. The sleek design allows multiple samples to be dialysed in the same reservoir.

Ordering Information

MWCO	*Colour Code*	*Maximum Sample Volume*			*Pack Size*
		1ml	*5ml*	*10ml*	
0.1 - 0.5 kD	Green	G235025	G235049	G235061	12/pkg
3.5 - 5 kD	Black	G235029	G235053	G235065	
8 - 10 kD	Yellow	G235031	G235055	G235067	
20 kD	Red	G235033	G235057	G235069	
50 kD	Violet	G235034	G235058	G235070	
100 kD	Blue	G235035	G235059	G235071	
300 kD	Amber	G235036	G235060	G235072	
1000 kD	Pink	G235037	G235062	G235073	
Price		£113.00	£124.00	£127.00	

Cell Immortalization Service

With years of experiences with cell line cell immortalization, scientists at ABM have been able to successfully immortalize essentially any human and mouse cell in last 10 years using different immortalizing agents or genes. If you have a primary cell culture that needs to be immortalized, ABM's custom services is the quick and reliable service for your project. It saves you time and money over trying different genes yourself. ABM's custom service package already includes all different genes and you will not pay anything unless your cells are successully immortalized. So it is risk-free and you pay only when your cell line is immortalized.



Due to the vast array of different cells types and custom products/services available, it is not possible to outline the range in this catalogue, the full range can be viewed on ABM's own website, www.abmgood.com

ABM products/sevices are availabe exclusively through us in the UK and Ireland. For further information and pricing please contact us directly, by email or phone.

Email: info@nbsbio.co.uk
Phone: 01480 433875

Custom siRNA Oligos

HPLC PURIFIED OLIGOS FOR EFFICIENT SILENCING

- Competitively Priced
- High Quality: HPLC Purity >97%
- Chemical Modified, Dye-Labelled or Large Scale Oligos

Our custom siRNA oligos are HPLC purified to >97%, this removes all of the unpaired single chains so all you need to do is dilute the oligos into universal buffer. The siRNA oligos are also chemically synthesised giving the following advantages:

1. Simple Operation
2. High Transfection Efficiency
3. Minimal Toxic Side Effect for Cells/Tissues
4. Large-scale Preparation

To order please supply either the sequences (sense & antisense) or the gene name.

free design

£111.00 / 5.0nmol

free negative control

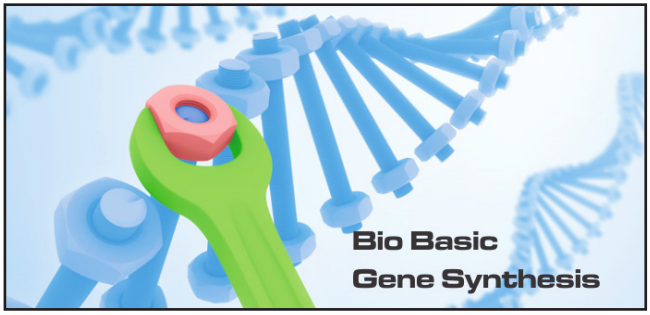
Ordering Information

Cat #	*Description*	*Pack Size*	*Price*
A01002	Custom siRNA Oligo	5.0 nmol	£111.00
A01005	Custom siRNA Oligo	12.5 nmol	£186.00
A01010	Custom siRNA Oligo	25.0 nmol	£343.00
A02002	Chemically Modified siRNA Oligo	5.0 nmol	£141.00
A02005	Chemically Modified siRNA Oligo	12.5 nmol	£217.00
A02010	Chemically Modified siRNA Oligo	25.0 nmol	£365.00
A03002	FAM Labelled siRNA Oligo	5.0 nmol	£204.00
A03005	FAM Labelled siRNA Oligo	12.5 nmol	£279.00
A03010	FAM Labelled siRNA Oligo	25.0 nmol	£430.00
B01001	siRNA Negative Control	2.5nmol	£36.00
B02001	siRNA FAM Labelled Negative Control	2.5nmol	£47.00
B03001	siRNA Positive Control	2.5nmol	£36.00

Gene Synthesis

COMPETITIVE PRICES AND FAST TURNAROUND

- Quick Turnaround Guarantee
- Low Price Guarantee



Our gene synthesis service is provided by Biobasic and offers a 100% Correct DNA Sequencing Guarantee. Each gene is confirmed base-by-base by sequence and is guaranteed to match 100% with your requested sequences.

Free Vectors - Subcloning

Genes are cloned into our standard pUC57-Amp (Ampicillin treated) or pUC57-kan (Kanamycin treated) vectors free of charge. Should you require to clone the gene into a vector other then pUC57 or pBluescript, there is an additional fee of £ .

You will receive 2-4ug of lyophilized DNA containing synthetic gene of interest, sequence chromatogram trace files, gene report, QC restriction digestion files, an alignment file as well as vector information. If you wish to receive up to 10ug of plasmid DNA, we are pleased to provide it to you at no extra cost. However, an additional three days in turn around time would be required.

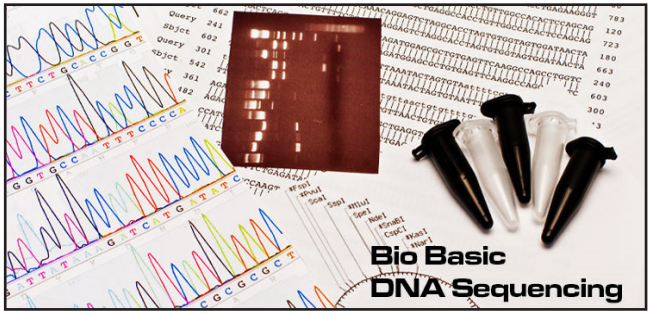
Further discounts on large projects and long term contracts are also available. Discount rates are based on total number of base pairs of your gene order.

Synthesis begins at £0.14/bp, or £0.12 for 15 genes or more.

Please enquire for a quotation or further information.

DNA Sequencing

THE HIGHEST STANDARD IN DNA SEQUENCING SERVICES



- Large-scale DNA sequencing (>100 samples)
- Small-scale DNA sequencing (<100 samples)
- PCR Products Sequencing
- Plasmid DNA preps from glycerol stocks in advance of sequencing

Advantages

Repeat Sequencing – Other service providers will usually only provide a single run.
Courtesy Gel Analysis – Our team will perform a courtesy gel analysis.
Positive controls – Included to ensure proper sequencing chemistry and procedures are carried out.
No strict guidelines for sample layout – We accept samples in many formats and arrangements. We will not refuse an order due to orientation and will gladly work with you to sort things out. Of course we would appreciate it if you would arrange your samples in a certain order (column by column or row by row).
No penalties – We understand that not everything works out, samples may be compromised during transit. We do not charge for reactions we do not perform.
Very competitive pricing.
Samples are accepted as bacterial colonies, glycerol stocks, pelleted cultures and crude PCR products.

Key Features

Multiple of 3730XL sequencers stand by
Sequence up to 800bp per reaction, more than 90% successful rate
Special prices on large projects and contracts
24hr to 48 hour turnaround
Incoming sample QC
Fluorescent dye-terminator sequencing
>650bp Q20 read lengths typical
Universal primers provided at no additional charge (complete list)
Template preparation and primer synthesis available

Prices from:

£1.17/rxn for large-scale standard purified plasmid samples (>100 samples)

£1.94/rxn for small-scale standard purified plasmid samples (<100 samples)

Please enquire for a quotation or further information.

Protein Purification

PROTEIN EXPRESSION AND PURIFICATION SERVICE

We are pleased to launch our Biobasic protein expression and purification service. Biobasic has the necessary know-how to deliver quality results, they have the capacity to take your project directly from gene synthesis to protein expression, refolding and purification.

General Summary of our Process

We have three expression systems:
1. E.Coli Expression System
2. Baculovirus Expression System
3. Mammalian Expression System

1. For E.Coli expression projects, we have a standard pricing and they come in guaranteed packages of 1mg, 5mg and 15mg of purified protein.

2. or 3. In the case of the Baculovirus or Mammalian expression projects, we start with a pilot study (please enquire about pricing) in order to analyse whether the expression would be high or low. Then, based on the results of the pilot study, we determine pricing for the subsequent full-length project.

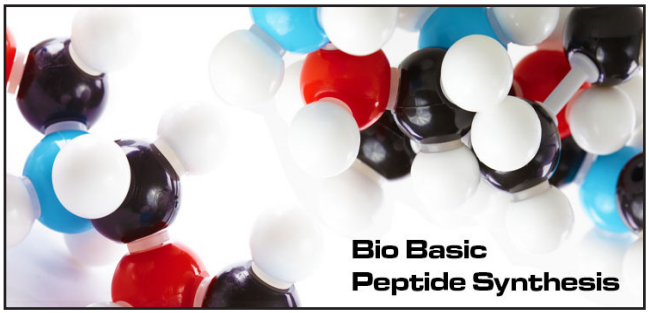
After the pilot study, you can choose whether to continue with the project, should you be satisfied with the price and pilot study results. Projects can either be initiated from gene synthesis, or you can simply provide us with the constructs that you would like to express. At the end of the project, we deliver all of the products we guarantee (amount of protein or study results).

£965.00 for 5mg purified protein

price valid for our 5mg E.coli package, featuring:
- 5mg tag containing protein.
- E.coli expression system
- >80% purity guaranteed or it's FREE

Please enquire for a quotation or further information.

Peptide Synthesis



Biobasic provides a wide array of peptide services, including high quality custom peptides, hundreds of modifications, and peptide library services. With dedicated project managers, our service employs synthesis protocols, QA/QC procedures, and instrumentations to assure your peptides are synthesised and delivered in as little as two weeks.

Key Features

10+ years of experience in peptide synthesis, >95% success rate
GMP grade peptides are available
Peptide Length: From small peptides to long peptides (>100 amino acids)
Purity: Flexible purity, from crude up to 98%
Modifications available: Modified amino acids, labels, N- and C-terminal conjugation, and more
Scale: From milligrams to kilograms
Quality Control: All custom peptides are supplied with strict analytical specifications, which include HPLC and MS analysis
Turnaround time: 2-3 weeks for standard peptide synthesis

From £1.60/aa (for basic package, 1-4mg of your 1-30aa peptide

High purity packages begin at £8.64/aa for 1-4mg of your 1-30aa peptide at >98% purity

Please enquire for a quotation or further information.

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