

Molecular Biology

Sample Preparation

PCR

Cloning and Transformation

Purified and Recombinant Enzymes

Nucleic Acid Purification

Bacterial Growth Media

Adenoviral Gene Delivery

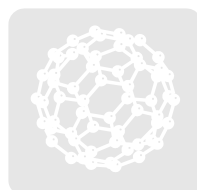
Transfection

Gene Expression

Yeast Kits and Media

Plant Culture and Specialty Media

Electrophoresis



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Sample Preparation



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In 1995, a revolution in sample lysis took place when the FastPrep® Instrument and its unique motion were introduced. Multi-directional pulverization and high quality purification reagents provided researchers with the ability to lyse even difficult samples in seconds in order to isolate total RNA, full-length DNA, and active protein.

For over a decade, MP Biomedicals has improved the FastPrep® Instrument and FastPrep® line of kits to meet the evolving needs of researchers from a wide array of disciplines. Our expertise in sample lysis has attracted partners in both industry and academia, and we are always interested in how our technology can help you or your organization become more successful.

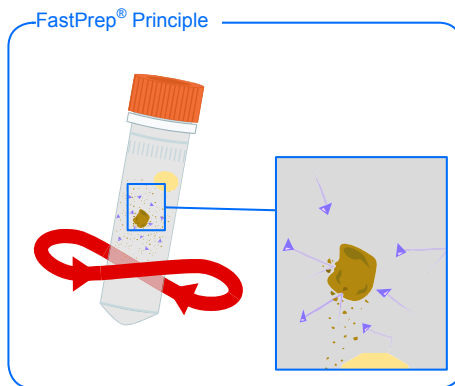
The FastPrep® System

Lyse any Tissue and Cells in 40 seconds or less!

- > Homogenization of 24 (FastPrep® -24) and 12 samples (FastPrep® FP120) simultaneously
- > Lysis of tough cells and tissues with ease
- > High reproducibility due to precise setting of lysis time and speed
- > No cross contamination possible with the closed lysing matrix tubes
- > Further extraction and purification of DNA, RNA or proteins with the FastPrep® Kits



FastPrep®-24 Instrument



FastPrep® FP120 Instrument

The FastPrep® System products offer a unique means by which virtually any type of sample, no matter how difficult, can be quickly and consistently homogenized within 40 seconds.

Indeed, the FastPrep®-24 and FastPrep® FP120 instruments are unique high-speed benchtop homogenizers that employ a powerful technology for the extremely rapid lysis of biological samples.

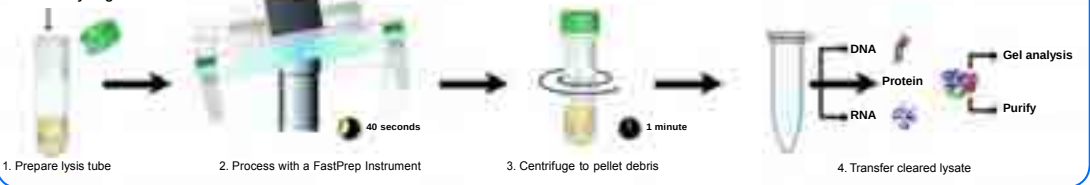
As shown in the following figure, simply add the sample to a 2 ml tube containing an optimized lysing matrix and buffer. Easily program the instruments for a speed between 4 and 6 meters per second, choose a time between 1 and 40 seconds, and press start. In a few seconds, the vertical angular motion causes the lysing matrix particles to impact the sample from all directions simultaneously, releasing nucleic acids and proteins into the protective buffer. After centrifugation of the sample, the supernatant is collected for further purification processes.

FastPrep® purification kits are used in conjunction with the FastPrep®-24 or FastPrep® FP120 Instruments to stabilize and isolate DNA, RNA, and protein from practically any source.

The FastPrep®-24 and FastPrep® FP120 instruments make it possible to isolate DNA, RNA and proteins from sources that are virtually impossible to lyse without the use of their rapid reciprocating motion. When compared to traditional homogenization methods such as vortexing, syringe shearing, grinding with a mortar and pestle or hammering samples frozen with liquid nitrogen, the FastPrep® instruments will save hours of work during the sample preparation stage and provide higher yields of intact DNA, RNA and proteins.

FastPrep® Procedure

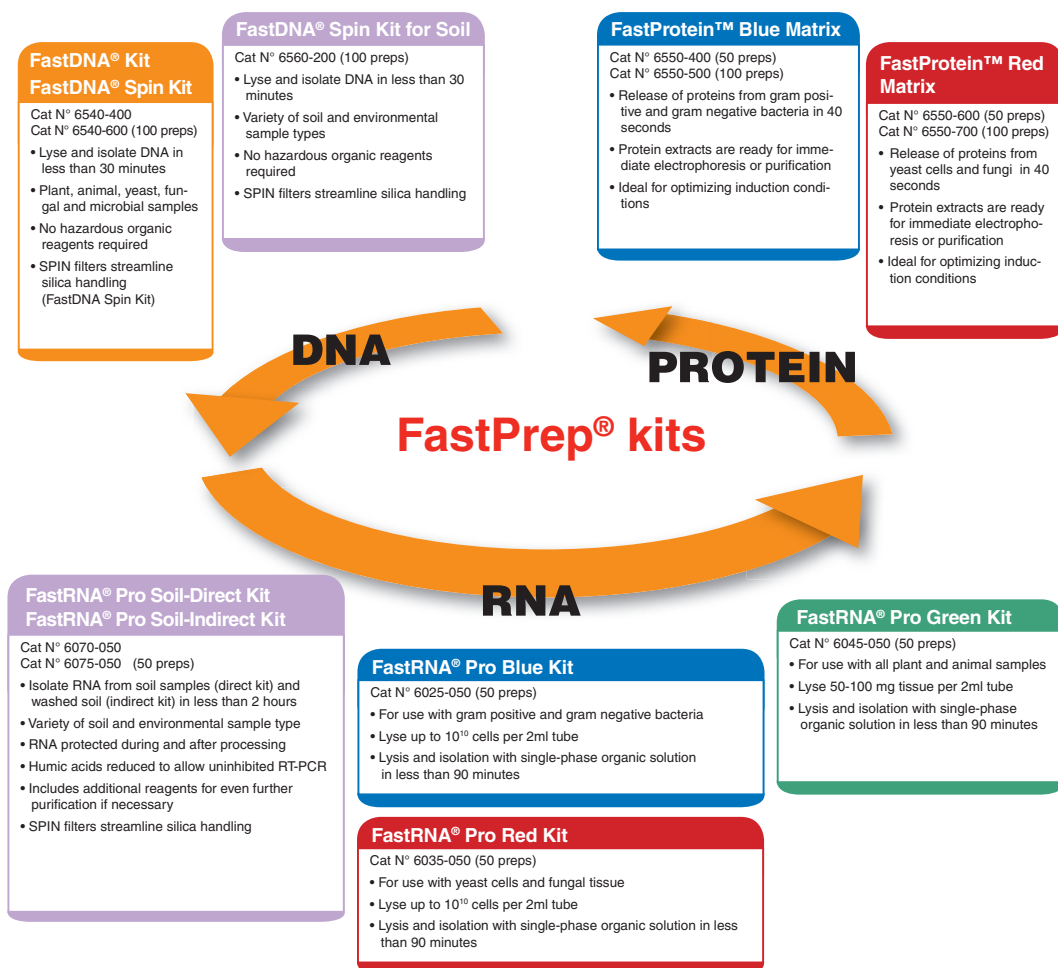
Cells and lysing buffer



A Wide Range of FastPrep® Kits

Ready-to-Use Protocols for DNA, RNA and Protein Isolation from any Sample!

- > **Rapid and reproducible sample lysis and purification process**
- > **No cross contamination with the closed lysing matrix tubes**
- > **Increased yields of high quality DNA, RNA and proteins**
- > **Integrity and size of DNA, RNA and proteins are retained**
- > **Nucleic acids and proteins are ready-to-use in downstream applications**



Examples of Successfully Lysed Samples

ANIMALS

Bovine:

Fecal pellets
Lymph nodes

Fly:

Embryonic tissue

Ground Squirrel:

Fecal pellets

Human:

Cells
Colorectal tumor tissue
Feces
Heart tissue
Liquid stool
Sputum
Throat swabs
Umbilical Vein EC's

Mouse:

Brain tissue
Dermis
Kidney tissue
Liver tissue
Pancreatic cells
Stomach contents

Mule Deer:

Fecal pellets
Non human primate:
Tissue

Rat:

Arteries
Brain tissue
Large Intestine tissue
Pancreas tissue
Sciatic Nerve
Small Intestine tissue
Stomach tissue

BACTERIA

Bacillus subtilis
Borrelia burgdorferi
Cryptosporidium parvum
Cryptosporidium sp.
Cyanobacteria
Delisea pulchra
Desulfococcus sp.
Desulfosarcina sp.
Escherichia coli
Geobacter sp.
Group A Streptococcus
Lactobacillus sp.
Lactococcus lactis
Mycobacterium avis
Mycobacterium fortuitum
Mycobacterium smegmatis
Mycobacterium tuberculosis
Mycobacterium ulcerans
Nostoc punctiforme
Photobacterium luminescens
Propionibacteria freudenreichi
Propionibacteria jensenii
Pseudomonas aureofaciens
Pseudomonas putida
Pseudomonas chloraphis
Pseudomonas sp.
Staphylococcus aureus
Staphylococcus epidermis
Streptococcus gordonii
Streptococcus mutans
Streptococcus parasanguis
Streptococcus pneumoniae
Streptococcus pyogenes
Various bacterial species
Vibrio cholerae

ENVIRONMENTAL

Feces:

Bovine
Human
Mule Deer
Groundwater
Liquid sludge

Sediment:

Aquifer
Estuary
Freshwater marsh
Marine
Shallow water

Soil:

Avocado grove
Brown forest
Clay loam from Alfalfa pasture
Clover grass mixture
Garden topsoil
Landfill
Rice field slurry
Sandy loam from Oak/Hickory forest

Wheeling loam

Wastewater

YEAST/FUNGI

Acremonium sp.
Aspergillus fumigatus
Candida albicans
Cronartium ribicola
Cryptococcus neoformans
Fanconi anemia
Fusarium solani
Kluyveromyces lactis
Mycelium
Neotyphodium lolii
Neurospora crassa
Phialophora gregata
Pseudallescheria boydii
Rhizopus arrhizus
Saccharomyces cerevisiae
Saccharomyces kluyveri
Schizosaccharomyces pombe
Trichosporon geigelii

PLANTS

Arabidopsis Dwarf Mutant leaves
Arabidopsis leaves
Arabidopsis stem
Beta vulgaris L. leaves
Citrus maxima leaves
Citrus sinensis L. leaves
Cronartium ribicola spores and soil
Erythroxylum coca var. *coca* leaves
Eucalyptus globulus leaves
Eucalyptus grandis leaves
Gossypium hirsutum L. leaves
Hordeum vulgare L. leaves
Lolium perenne (ryegrass) leaves
Mimulus cardinalis leaves
Mimulus lewisii
Nicotiana tabacum leaves
Oleaceae sp. leaves
Phaseolus vulgaris L. leaves
Pinus taeda L. needles
Pinus taeda L. germinating seedlings
Pinus taeda L. embryos of non germinated seeds
Populus deltoides leaves
Populus trichocarpa leaves
Saccharum L. hybrid leaves
Soybean stem
Zea mays L. leaves

FastPrep[®] Instruments and accessories

FastPrep[®]-24 Instrument

The FastPrep[®]-24 Instrument is a high-speed benchtop homogenizer offering the ultimate in speed and performance for the lysis of biological samples. Indeed, simultaneous homogenization of up to 24 samples takes place within 40 seconds.

The FastPrep[®]-24 Instrument uses a unique, optimized motion to disrupt cells through the multidirectional, simultaneous beating of specialized Lysing Matrix beads on the sample material.



Developed for difficult and resistant samples, the FastPrep[®]-24 Instrument lyses thoroughly and quickly any tissues and cells and thus allows easy and reproducible isolation of stable RNA, active proteins and full-length genomic DNA.

Samples and buffers are added to a 2.0 ml Lysing Matrix tube containing specialized Lysing Matrix beads. The ergonomic design of the instrument ensures an easy loading of the sample tubes that remains securely sealed during the processing. The homogenization speed and duration times are digitally controlled. After setting your speed and time with the touch of a button, just push "run", and in less than a minute your samples are completely lysed!

The removal of the sample holder from the FastPrep[®]-24 Instrument allows its use as a tube rack for further purification experiments.

Specifications

Controls:

Time:

Speed:

Acceleration:

Deceleration:

Duty cycle:

Noise level:

Construction:

Dimensions :

Weight:

Power requirements:

Standard environmental temperature operating range:

Safety features:

Registration:

Microcontroller control panel, with LCD screen

and membrane-printed keyboard;

Microcontroller clock 16 MHz

1- 60 seconds, programmable in 1 sec increments

4 - 6.5 m/s, programmable in 0.5 m/s increments

<2 seconds to maximum speed

<2 seconds to stop

6.5 m/s for 60 seconds with 60 seconds rest period between runs

<70dB

Painted aluminium body, with transparent top enclosure

Exchangeable polypropylene sample holder

Sealed Sample Compartment

Self-contained disposable pan for ease of cleaning

All surfaces chemically resistant

Height--- 270mm; Base (Ellipse) size - 425 X 330 mm

17.5 kg

90-250 VAC, 50/60Hz, 1,200 W

4 - 40 °C

automatic stop on lid opening; emergency

stop button semi-disposable pan; sealing of

the sample handling compartment. Easy to

sanitize surfaces

CE mark

Cat. #	Description
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6004500	FastPrep [®] -24 Instrument
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Large-scale Adapters for the FastPrep®-24 Instrument

Ideally suited for

- DNA and RNA Isolation
- Enzyme Isolation and Protein Production
- Natural Products Isolation
- Food Preparation for Quality Analysis
- Biopharma Manufacturing
- Forensic Applications

BigPrep® and TeenPrep® adapters provide a powerful tool for the simultaneous homogenization of 2 samples in 50ml tubes and 12 samples in 15ml tubes respectively. These new sample holders are designed for use in place of the 24 x 2ml tubes holder supplied with the FastPrep®-24 Instrument. A wide range of disposable 50ml and 15ml Lysing Matrix tubes have been developed to guarantee a thorough homogenization of any sample in just a few seconds. With the BigPrep® and TeenPrep® adapters and optimized Lysing Matrices, you will get consistent results every time you lyse your samples! Save hours of work during the sample preparation stage and avoid cross-contamination occurring with traditional homogenization methods such as syringe shearing, sonication or mortar and pestle grinding.

BigPrep® Adapter

50ml tube adapter for 2 tubes

Cat. #	Description	Size
6002525	BigPrep® Adapter	(2x 50ml tubes)



TeenPrep® Adapter

15ml tube adapter for 12 tubes

Cat. #	Description	Size
6002526	TeenPrep® Adapter	(12x 15ml tubes)



High-Throughput Adapters for the FastPrep®-24 Instrument

The FastPrep®-24 Instrument is ideally suited for high-throughput applications. Up to 24 and 48 samples distributed in 2ml Lysing Matrix tubes are homogenized simultaneously within seconds with the QuickPrep® and HighPrep® adapters respectively. The ergonomic design of these adapters ensures an easy loading of Lysing Matrix tubes that remain securely sealed during the homogenization. QuickPrep® and HighPrep® adapters stand stable on the benchtop and are commonly used as tube racks for sample storage at -20°C or -80°C. Frozen Lysing Matrix tubes loaded in the QuickPrep® and HighPrep® adapters are ready to be immediately processed in the FastPrep-24 Instrument with minimal hands-on manipulation, thus preventing sample thawing before the homogenization process and degradation of cellular components by endogenous enzymes.

HighPrep® Adapter

2ml tube adapter for 48 tubes

Cat. #	Description	Size
6002527	HighPrep® Adapter	(48x 2ml tubes)



QuickPrep® Adapter

2ml tube adapter for 24 tubes

Cat. #	Description	Size
6002512	QuickPrep® Adapter	(24x 2ml tubes)*

* Adapter supplied with the FastPrep-24 Instrument



FastPrep® FP120 Instrument

The FastPrep® FP120 Instrument can simultaneously lyse up to 12 samples with its patented vertical, angular motion. This rapid, reciprocating "figure-8" motion causes a sample to be pulverized by specialized lysing matrices from multiple directions at once.



The FastPrep® FP120 Instrument fits anywhere on the benchtop and is simple to operate. First, samples and buffer are added to impact-resistant 2 ml tubes pre-filled with specialized lysing matrix particles. The user places between 1-12 tubes into the sample holder and easily secures them with locking clamps. Digitally program speeds between 4-6 meters per second and times up to 45 seconds and press "run". With hardly any noise and in no time at all, the FastPrep® Instrument and lysing matrix homogenize your sample while you wait!

Specifications

Controls:

Time:

Speed:

Acceleration:

Deceleration:

Duty Cycle:

Noise level:

Construction:

Dimensions:

Weight:

Power Req.:

Safety:

Registration:

Programmable run time and speed; large LED readout

1–45 sec, programmable in 1 sec increments

4.0–6.5m/sec, programmable in 0.5 m/sec increments

< 2 seconds to maximum speed

< 2 seconds to stop

6.5 m/s for 45 seconds with a 5-minute rest period between runs

<80dB

Anodized aluminum sample holder

Polypropylene sample retention "spoke" plate

Chemical-resistant painted surfaces

(W x D x H) 11 in x 15.75 in x 12 in (28.0 cm x

40.0 cm x 30.5 cm)

36 lbs (16.3 kg)

100 V AC, 50/60 Hz, 8 A (Japan Only)

120 V AC, 50/60 Hz, 8 A

230 V AC, 50/50 Hz, 5 A

CSA and CE Approved

ISO 9001-1994. Registered by QMI (Quality Management Institute).

Certificate number 001080

Cat. #	Description	Size
6001100	FastPrep® FP120 Instrument	100V
6001120	FastPrep® FP120 Instrument	120V
6001220	FastPrep® FP120 Instrument	220V

Lysing Matrix Tubes

Lysing Matrices are critical components of the FastPrep® Sample Preparation system.

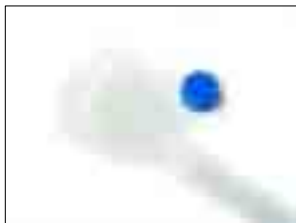
MP Biomedicals receives matrix particles from proven vendors and ensures the unprocessed material meets high qualitative standards. Matrix particles are then prepared and dispensed under a rigorous set of proprietary conditions that offer customers a premium product that can be immediately used with confidence. Matrices are available separately for use with your own unique buffers, and are also available as components of the complete purification kits on the following pages.

Lysing Matrix A



Each impact-resistant 2.0 ml tube contains garnet matrix and one 1/4 inch ceramic sphere. Extra 1/4 inch ceramic spheres are packaged separately. Lysing Matrix A tubes have orange caps and are found in the FastDNA® and FastDNA® SPIN Kits.

Lysing Matrix B



Each impact-resistant 2.0 ml tube contains 0.1 mm silica spheres. Lysing Matrix B tubes have blue caps and are found in the FastRNA® Pro Blue Kit for isolation of total RNA from gram positive and gram negative bacteria.

Lysing Matrix C



Each impact-resistant 2.0 ml tube contains 1.0 mm silica spheres. Lysing Matrix C tubes have red caps and are found in the FastRNA® Pro Red Kit for isolation of total RNA from yeast and fungi.

Lysing Matrix D



Each impact-resistant 2.0 ml tube contains 1.4mm ceramic spheres. Lysing Matrix D tubes have green caps and are found in the FastRNA® Pro Green Kit for isolation of total RNA from plants and animals.

Lysing Matrix E



Each impact-resistant 2.0 ml tube contains 1.4 mm ceramic spheres, 0.1 mm silica spheres, and one 4 mm glass bead. Lysing Matrix E tubes have purple caps and are found in the FastDNA® SPIN Kit for Soil and the FastRNA® Pro Soil Kits.

Cat. #	Description	Size
6910050	Lysing Matrix A	50 x 2 ml Tubes
6910100	Lysing Matrix A	100 x 2 ml Tubes
6910500	Lysing Matrix A	500 x 2 ml Tubes
6911050	Lysing Matrix B	50 x 2 ml Tubes
6911100	Lysing Matrix B	100 x 2 ml Tubes
6911500	Lysing Matrix B	500 x 2 ml Tubes
6912050	Lysing Matrix C	50 x 2 ml Tubes
6912100	Lysing Matrix C	100 x 2 ml Tubes
6912500	Lysing Matrix C	500 x 2 ml Tubes
6913050	Lysing Matrix D	50 x 2 ml Tubes
6913100	Lysing Matrix D	100 x 2 ml Tubes
6913500	Lysing Matrix D	500 x 2 ml Tubes
6914050	Lysing Matrix E	50 x 2 ml Tubes
6914100	Lysing Matrix E	100 x 2 ml Tubes
6914500	Lysing Matrix E	500 x 2 ml Tubes
6750200	BioPulverizer™ System I (10 tubes each of 6910-6914)	50 x 2 ml Tubes

50ml Lysing Matrix Tubes



Cat #	Description	Size	
6950010	BigA - Lysing Matrix Tubes	10x 50ml Tubes	
6950050	BigA - Lysing Matrix Tubes	50x 50ml Tubes	
6951010	BigB - Lysing Matrix Tubes	10x 50ml Tubes	
6951050	BigB - Lysing Matrix Tubes	50x 50ml Tubes	
6953010	BigD - Lysing Matrix Tubes	10x 50ml Tubes	
6953050	BigD - Lysing Matrix Tubes	50x 50ml Tubes	
6960010	BigClean - Lysing Matrix Tubes with stainless steel beads	10x 50ml Tubes	
6960050	BigClean - Lysing Matrix Tubes with stainless steel beads	50x 50ml Tubes	

15ml Lysing Matrix Tubes

Cat#	Description	Size	
6930050	TeenA - Lysing Matrix Tubes	50 x 15ml Tubes	
6931050	TeenB - Lysing Matrix Tubes	50 x 15ml Tubes	
6932050	TeenC - Lysing Matrix Tubes	50 x 15ml Tubes	
6933050	TeenD - Lysing Matrix Tubes	50 x 15ml Tubes	
6934050	TeenE - Lysing Matrix Tubes	50 x 15ml Tubes	

Kits for DNA Purification

FastDNA® SPIN Kit

Isolation of genomic DNA from plants, animals, bacteria, yeast, algae, and fungi using a silica spin filter method

Advantages

- Rapid and reproducible sample lysis with the FastPrep®-24 or FastPrep® FP120 Instrument
- Lyse and isolate DNA in less than 30 minutes from a variety of sample types
- Flexible format eliminates need for separate DNA isolation kits
- No hazardous organic reagents required
- SPIN Filters are included to streamline silica handling

The FastDNA® SPIN Kit, an updated version of the wellknown FastDNA® Kit, is used with the FastPrep®-24 or FastPrep® FP120 Instrument to lyse and subsequently isolate DNA from up to 200 mg of almost any sample in less than 30 minutes. Lysing Matrix A and three different chaotropic buffers are provided for the optimal homogenization of a wide variety of sample types. The released DNA is purified by a silica based GENECLAN® SPIN procedure and is suitable for PCR analysis and other downstream applications.

Kit Components: Lysing Matrix A, Binding Matrix, SEWS-M Solution, DES Solution, CLS-VF Solution, PPS Solution, CLS-TC Solution, CLS-Y Solution, SPIN Filters, Catch Tubes

Cat. #	Description	Size
6540600	FastDNA® SPIN Kit	100 preps

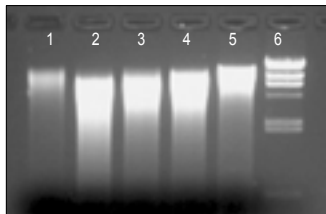
FastDNA® Kit

Isolation of genomic DNA from plants, animals, bacteria, yeast, algae, and fungi

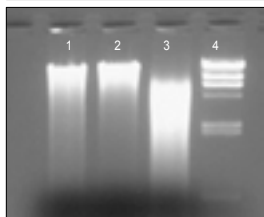
Advantages

- Rapid and reproducible sample lysis with the FastPrep®-24 or FastPrep® FP120 Instrument
- Lyse and isolate DNA in less than 30 minutes from a variety of sample types
- Flexible format eliminates need for separate DNA isolation kits
- No hazardous organic reagents required

Trusted for over 7 years, the FastDNA® Kit is used with the FastPrep®-24 or FastPrep® FP120 Instrument to lyse and subsequently isolate DNA from up to 200 mg of almost any sample in less than 30 minutes. Lysing Matrix A and three different chaotropic buffers are provided for the homogenization of a wide variety of sample types. The released DNA is purified by a silica based GENECLAN® procedure and is suitable for PCR analysis and other downstream applications.



DNA from plant samples extracted with the FastDNA® Kit. Approximately 1 µg of isolated DNA was loaded on a 1.2% agarose gel (0.5X TAE). Lane 1: H0.16g apple stem; Lane 2: H0.45g red bell pepper seeds; Lane 3: H0.45g pelargonium root; Lane 4: H0.45g mature peace lily leaf; Lane 5: H0.45g ice plant leaf; Lane 6: Lambda Hind III marker.



DNA from animal samples extracted with the FastDNA® Kit. Approximately 1 µg of isolated DNA was loaded on a 1.2% agarose gel (0.5X TAE). Lane 1: ≈0.4g rat liver; Lane 2: ≈0.5g mouse brain; Lane 3: ≈0.45g chicken bone; Lane 4: Lambda Hind III marker.

Kit Components: Lysing Matrix A, Binding Matrix, SEWS-M Solution, DES Solution, CLS-VF Solution, PPS Solution, CLS-TC Solution, CLS-Y Solution

Cat. #	Description	Size
6540400	FastDNA® Kit	100 preps

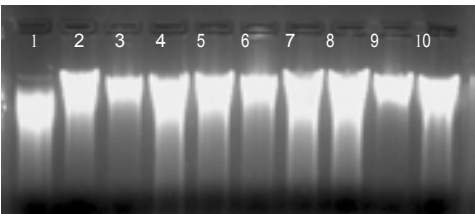
FastDNA® SPIN Kit for Soil

Isolation of DNA from cells present in soil or other environmental samples

Advantages

- Rapid and reproducible sample lysis with the FastPrep®-24 or FastPrep® FP120 Instrument
- Easily isolate DNA from a variety of organisms in many different types of soil
- Lyse and isolate DNA in less than 60 minutes
- No hazardous organic reagents required

The FastDNA® SPIN Kit for Soil is designed to efficiently isolate bacterial, fungal, plant and animal genomic DNA from soil and other environmental samples. Up to 500 mg soil can be processed by the FastPrep®-24 or FastPrep® FP120 Instrument in impact-resistant 2 ml tubes. The released DNA is purified by a GENECLAN® procedure and is suitable for PCR analysis and other downstream applications.



DNA from various soil samples extracted with the FastDNA® SPIN Kit for Soil. 20% of the DNA isolated from 500 mg soil was loaded on a 1.2% agarose gel (0.5X TAE). Soil was taken from: Lane 1: tomato pot; Lane 2: sludge; Lane 3: sandy soil; Lane 4: under pine tree; Lane 5: under palm tree; Lane 6: green garden; Lane 7: Nile Lilly pot; Lane 8: lawn grass; Lane 9: citrus tree; Lane 10: avocado tree. DNA ranges from approximately 4-20 kb.

Kit Components: Lysing Matrix E, PPS Solution, Binding Matrix, SEWS-M Solution, DES Solution, Sodium Phosphate Buffer, BBS Solution, MT Buffer, SPIN Filters, Catch Tubes

Cat. #	Description	Size
6560200	FastDNA® SPIN Kit for Soil	50 preps

Kits for RNA Purification

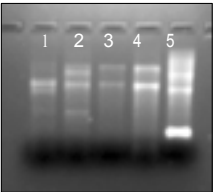
FastRNA® Pro Blue Kit

Isolation of total RNA from gram positive and gram negative bacteria

Advantages

- Rapid and reproducible sample lysis in under 40 seconds with the FastPrep®-24 or FastPrep® FP120 Instrument
- Difficult gram positive cells lysed with ease
- RNA safely and consistently isolated with single-reagent RNApro™ Solution
- Lyse, isolate and precipitate RNA in less than 90 minutes

The FastRNA® Pro Blue Kit is designed to efficiently isolate total RNA from gram positive and gram negative bacteria. Using the FastPrep®-24 or FastPrep® FP120 Instrument up to 10¹⁰ cells are homogenized by Lysing Matrix B in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications.



Bacterial total RNA extracted with the FastRNA® Pro Blue Kit. Approximately 2% of the total RNA isolated from 10¹⁰ bacterial cells was loaded on to a 1.2% denaturing agarose gel (1X MOPS). Lane 1: Salmonella typhimurium; Lane 2: Pseudomonas stuartii; Lane 3: Escherichia coli; Lane 4: Bacillus subtilis; Lane 5: 0.24-9.5kb RNA Ladder.

Kit Components: Lysing Matrix B, RNApro™ Solution, DEPC-treated H₂O

Cat. #	Description	Size
6025050	FastRNA® Pro Blue Kit	50 preps

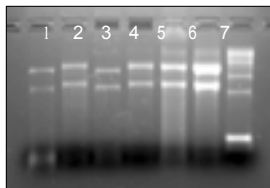
FastRNA® Pro Red Kit

Isolation of total RNA from yeast and fungi

Advantages

- Rapid and reproducible sample lysis in under 40 seconds with the FastPrep®-24 or FastPrep® FP120 Instrument
- Spores and other difficult cells lysed with ease
- RNA safely and consistently isolated with single-reagent RNApro™ Solution
- Lyse, isolate and precipitate RNA in less than 90 minutes

The FastRNA® Pro Red Kit is designed to efficiently isolate total RNA from yeast and fungi. Using FastPrep®-24 or FastPrep® FP120 Instrument, up to 10⁹ cells are homogenized by Lysing Matrix C in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications.



Yeast and fungal total RNA extracted with the FastRNA® Pro Red Kit.

Approximately 2% of the total RNA isolated from 100 mg tissue or 10¹⁰ cells was loaded onto a 1.2% denaturing agarose gel (1X MOPS). Lane 1: *S. pombe*; Lane 2: *S. cerevisiae*; Lane 3: *P. pastoris*; Lane 4: *C. albicans*; Lane 5: common mushroom; Lane 6: small common mushroom; Lane 7: 0.24-9.5kb RNA Ladder.

Kit Components: Lysing Matrix C, RNApro™ Solution, DEPC-treated H₂O

Cat. #	Description	Size
6035050	FastRNA® Pro Red Kit	50 preps

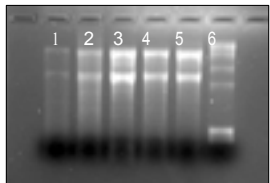
FastRNA® Pro Green Kit

Isolation of total RNA from plant and animal samples

Advantages

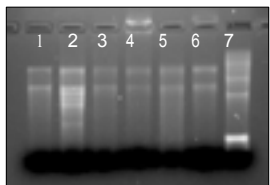
- Rapid and reproducible sample lysis in under 40 seconds with the FastPrep®-24 or FastPrep® FP120 Instrument
- Difficult samples such as frozen mammalian tissue, roots, stems, and seeds lysed with ease
- RNA safely and consistently isolated with single-reagent RNApro™ Solution
- Lyse, isolate and precipitate RNA in less than 90 minutes

The FastRNA® Pro Green Kit is designed to efficiently isolate total RNA from any type of plant and animal tissue or cultured cells. Using the FastPrep®-24 or FastPrep® FP120 Instrument, between 50-500 mg of tissue can be homogenized by Lysing Matrix D in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications.



Rat total RNA extracted with the FastRNA® Pro Green Kit.

Approximately 2% of the total RNA isolated from 100 mg frozen tissue was loaded on to a 1.2% denaturing agarose gel (1X MOPS). Lane 1: tail; Lane 2: kidney; Lane 3: liver; Lane 4: ear; Lane 5: brain; Lane 6: 0.24-9.5kb RNA Ladder.



Plant total RNA extracted with the FastRNA® Pro Green Kit.

Approximately 2% of the total RNA isolated from 100 mg tissue was loaded on to a 1.2% denaturing agarose gel (1X MOPS). Lane 1: wheat seed; Lane 2: tomato leaf; Lane 3: red soybean seed; Lane 4: oat seed; Lane 5: iceplant leaf; Lane 6: barley seed; Lane 7: 0.24-9.5kb RNA Ladder.

Kit Components: Lysing Matrix D, RNApro™ Solution, DEPC-treated H₂O

Cat. #	Description	Size
6045050	FastRNA® Pro Green Kit	50 preps

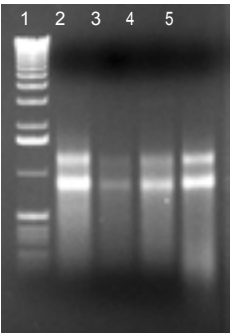
FastRNA® Pro Soil-Direct Kit

Isolation of total RNA directly from soil

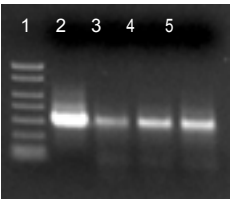
Advantages

- Rapid and reproducible sample lysis in under 40 seconds with the FastPrep®-24 or FastPrep® FP120 Instrument
- Easily lyse difficult gram positive cells, plant material, and organic debris directly from soil
- Lysis and purification solutions protect RNA during processing
- Humic acid levels reduced to allow uninhibited RT-PCR
- From lysis to total RNA in less than 2 hours

The FastRNA® Pro Soil-Direct Kit is designed to efficiently isolate total RNA from organic material found in soil samples. Using the FastPrep®-24 or FastPrep® FP120 Instrument, up to 0.5 g of material is homogenized by Lysing Matrix E in impact-resistant 2 ml tubes. Total RNA is released into a protective solution, extracted, precipitated, and cleaned with the proprietary RNAMATRIX® and a Quick-Clean Spin Filter. Total RNA prepared with this kit is suitable for RT-PCR analysis and other downstream applications.



Total RNA extracted from Soil Samples with the FastRNA® Pro Soil-Direct Kit. Approximately 15% of the total RNA isolated from 0.5 g of four different soil samples was loaded on to a 0.8% agarose gel. Lane 1: 1kb ladder, Lane 2: Soil #1, Lane 3: Soil #5, Lane 4: Soil #10, Lane 5: Soil #11.



RT-PCR of Fungal Gene from Total RNA Isolated from Soil Samples with the FastRNA® Pro Soil-Direct Kit. Approximately 40% of the RT-PCR reaction was loaded on to a 0.8% agarose gel. Lane 1: 150bp - 2kb marker, Lane 2: Soil #1, Lane 3: Soil #5, Lane 4: Soil #10, Lane 5: Soil #11. Kit Components: RNAPro™ Soil Lysis Solution, Lysing Matrix E, Phenol:Chloroform (1:1), Inhibitor Removal Solution, DEPC-treated H₂O, RNAMATRIX® Binding Solution, RNAMATRIX® Slurry, RNAMATRIX® Wash Solution Concentrate, Quick-Clean Spin Filters

Cat. #	Description	Size
6070050	FastRNA® Pro Soil-Direct Kit	50 preps

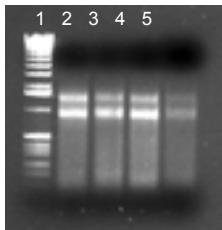
FastRNA® Pro Soil-Indirect Kit

Isolation of total RNA from soil supernatants

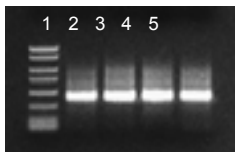
Advantages

- Rapid and reproducible sample lysis in under 40 seconds with the FastPrep®-24 or FastPrep® FP120 Instrument
- Easily lyse difficult gram positive cells, plants, and other cellular material
- Lysis and purification solutions protect RNA during processing
- Humic acid levels enormously reduced to allow uninhibited RT-PCR
- From lysis to total RNA in less than 2 hours

The FastRNA® Pro Soil-Indirect Kit is designed to efficiently isolate total RNA from organic material found in soil sample supernatants. Cellular material is washed away from soil particles, centrifuged, and homogenized by the FastPrep®-24 or FastPrep® FP120 Instrument in impact-resistant 2 ml tubes of Lysing Matrix E. Total RNA is released into a protective solution, extracted, precipitated, and cleaned with the proprietary RNAMATRIX® and a Quick-Clean Spin Filter. Total RNA prepared with this kit is suitable for RT-PCR analysis and other downstream applications.



Total RNA extracted from Soil Samples with the FastRNA® Pro Soil-Indirect Kit. Approximately 15% of the total RNA isolated from four different soil samples was loaded on to a 0.8% agarose gel. Lane 1: 1kb ladder, Lane 2: RNA from 5 g Soil #1, Lane 3: RNA from 10 g Soil #2, Lane 4: RNA from 5 g Soil #7, Lane 5: RNA from 5 g Soil #10.



RT-PCR of Fungal Gene from Total RNA Isolated from Soil Samples with the FastRNA® Pro Soil-Indirect Kit. Approximately 40% of the RT-PCR reaction was loaded on to a 0.8% agarose gel. Lane 1: 150bp - 2kb marker, Lane 2: Soil #1, Lane 3: Soil #2, Lane 4: Soil #7, Lane 5: Soil #10.

Kit Components: RNApro™ Solution, Lysing Matrix E, Inhibitor Removal Solution, DEPC-treated H₂O, RNAMATRIX® Binding Solution, RNAMATRIX® Slurry, RNAMATRIX® Wash Solution Concentrate, Quick-Clean Spin Filters

Cat. #	Description	Size
6075050	FastRNA® Pro Soil-Indirect Kit	50 preps

Kits for Protein Isolation

FastProtein™ Blue Matrix

Easy lysis of bacterial cells to release recombinant proteins

The FastProtein™ Blue Matrix, also known as Lysing Matrix B, is used with the FastPrep®-24 or FastPrep® FP120 Instrument to reproducibly lyse gram positive and gram negative bacterial cells within 40 seconds. A brief protocol is provided to allow for the maximum flexibility in lysis and purification methods. Rapid release of recombinant protein saves valuable time during optimization of expression. Information from up to 24 different induction variables can be quickly obtained after one 40 second FastPrep® run followed by electrophoresis. Once your protein of interest is expressed and identified, the active proteins released by the unique motion of the FastPrep® Instrument can be recovered from the lysate by a wide range of protein-specific techniques.

Cat. #	Description	Size
6550400	FastProtein™ Blue Matrix	50 x 2 ml tubes
6550500	FastProtein™ Blue Matrix	100 x 2 ml tubes

FastProtein™ Red Matrix

Easy lysis of yeast cells to release recombinant proteins

The FastProtein™ Red Matrix, also known as Lysing Matrix C, is used with the FastPrep®-24 or FastPrep® FP120 Instrument to reproducibly lyse yeast cells within 40 seconds. A brief protocol is provided to allow for the maximum flexibility in lysis and purification methods. If no special induction buffer is required, the user can lyse yeast cells in the provided Yeast Breaking Buffer. Rapid release of recombinant protein saves valuable time during optimization of expression. Information from up to 24 different induction variables can be quickly obtained after one 40 second FastPrep® run followed by electrophoresis. Once your protein of interest is expressed and identified, the active proteins released by the unique motion of the FastPrep® Instrument can be recovered from the lysate by a wide range of protein-specific techniques.

Cat. #	Description	Size
6550600	FastProtein™ Red Matrix (includes 250 ml YBB)	50 x 2 ml tubes
6550700	FastProtein™ Red Matrix (includes 500 ml YBB)	100 x 2 ml tubes

New, large-scale lysis adapter for the FastPrep-24

BigPrep™

Largest, Fastest, Cleanest Sample Prep System

- Simultaneously homogenize two large samples (up to 2 X 50 ml)
- Lyse extremely tough and frozen samples in 40 seconds or less
- Ideal for isolation of DNA, RNA, Enzymes, Natural products and more
- Quickly analyze safety and quality of food preparation samples
- Perfect for Protein production and Biopharma manufacturing
- Eliminate cross contamination



*Easily interchangeable
Simple to clean and decontaminate
Compatible with SafTest™*



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this product
on page **852**

Online ordering and product information:

www.mpbio.com



Because you asked for a 15 ml tube format

TeenPrep™

No sample can resist lysis in the new

tube adapter for FastPrep®-24

- 12x15 ml tube adapter
- Lyse a wide range of samples efficiently in 40 seconds or less
- Ideal for isolation of DNA, RNA, Enzymes, Natural products and more
- Quickly analyze safety and quality of food preparation samples
- Perfect for Protein production and Biopharma manufacturing
- Completely eliminates cross contamination



*Easily interchangeable
Simple to clean and decontaminate
Compatible with SafTest™*



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this product
on page **852**

Online ordering and product information:

www.mpbio.com



MPBiomedicals is an established manufacturer of PCR polymerases. Our customers are typically laboratories that demand the highest levels of reliability and who are not prepared to compromise on quality. The PCR product range covers requirements for general PCR, hot start, high fidelity, high sensitivity, long fragment, multiplex PCR, and quantitative PCR (qPCR).

In This Chapter:

Quantitative PCR 867

Taq DNA Polymerase 873

Hot Start Polymerases 878

High Fidelity Polymerase 879

Long Fragment Polymerase 880

PCR Mastermixes 882

PCR Enhancers 883

dNTPs 884

DNA Contamination Removal 886

Reverse Transcription 886

PCR Polymerase Overview

Quantitative PCR

- qPCR-ROX-&GO™ Mastermixes*
- qPCR ROX-&GO™ Fast Mastermixes*
- qPCR-&GO™ for Plastic Mastermixes*
- qPCR-&GO™ LC480 mastermixes*
- qPCR-&GO™ for Capillaries Mastermixes*
- qRT-PCR1-&GO™ for Capillaries Green*

Taq DNA Polymerases

- Taq DNA Polymerase*
- Q-BioTaq™ DNA Polymerase*

Hot Start Polymerase

- SurePRIME™ DNA Polymerase*

High Fidelity Polymerase

- Isis DNA Polymerase*

Long Fragment Polymerase

- Arrow Taq DNA Polymerase*

PCR Mastermixes

- Taq-&GO™*
- Taq-&LOAD*

PCR Enhancers

- T4 gp32*
- Betaine Solution*
- BSA Solution*

dNTPs

- dATP, dTTP, dGTP, dCTP, dUTP*
- dNTPs Sets*
- dNTPS Mixes*

DNA Contamination removal

- DNA OFF™*

Reverse Transcription

- Two-Step RT-PCR-&GO™ kits*
- AMV Reverse Transcriptase*
- M-MuLV Reverse Transcriptase*
- Primers*

qPCR...&GO!

Highest levels of
highly sensitive real time PCR

Find
this product
on page

868



Applications for PCR continue to increase in complexity and variety. This growth has driven researchers to choose novel polymerases with specific high performance features. MP Biomedicals is actively developing innovative enzymes that offer higher:

- Sensitivity
- Processivity
- Fidelity
- Thermostability

Recent additions include systems for real time PCR. All of these systems are available in convenient mastermix formats.

Quality Control

MP Biomedicals has manufactured thermostable polymerases for over 15 years. Our collective expertise ensures the highest standard of quality and lot-to-lot reproducibility. Each thermostable polymerase is shipped with a quality control data sheet. The following are tested as required.

Absence of:

- nickases
- endonuclease contamination.
- 3' exonuclease activity (when requested).
- 5' exonuclease and 5' phosphatase activity (when requested).
- ribonucleases

Enzyme-specific PCR assays

Purity

The characteristics of our enzymes are summarized below :

Application		Routine PCR	PCR with increased specificity (hot start)	Extremely High Fidelity	PCR from small amounts of starting material	PCR of Long Fragments	Simultaneous PCR of multiple targets (multiplex PCR)
Enzyme		Taq	SurePRIME™	Isis	Arrow™	Arrow™	Q-BioTaq™
Characteristics	5'→3' exonuclease	Yes	Yes	No	Yes	Yes	No
	3'→5' exonuclease	No	No	Yes	Yes	Yes	No
	Error rate (10 ⁻⁶)	24	24	0.6	18	18	24
	Thermostability (half life at 95°C)	40 min	40 min	18 hours	40 min	40 min	80 min
	Activity at 25°C	Yes	No	Yes	Yes	Yes	Yes
	Max. Target Length	>7kb	>7kb	>18 kb	>21 kb	>21 kb	>7kb
	3' - End	dA	dA	blunt	dA/blunt mix	dA/blunt mix	dA

Quantitative PCR and RT-PCR

Application		Systems using plates						Systems using glass capillaries	
		Quantification of DNA and cDNA with SYBR® Green				Quantification of DNA and cDNA with Probes		Quantification of DNA and cDNA with SYBR® Green	Quantification of RNA with SYBR® Green
Mastermix		qPCR ROX- &GO™ Green	qPCR- &GO for plastic Green	qPCR ROX- &GO™ Fast Green	qPCR- &GO™ LC 480 Green	qPCR ROX- &GO™	qPCR- &GO™ for plastic	qPCR- &GO™ for capillaries Green	qRT-PCR1- &GO™ for capillaries Green
Thermocyclers		ABI PRISM™ 7000 - 7300 - 7500 - 7700 - 7900 HT	BIO-RAD MyiQ™ iCycler™	ABI PRISM™ 7500	LightCycler™ 480	ABI PRISM™ 7000 - 7300 - 7500 - 7700 - 7900 HT	BIO-RAD MyiQ™ iCycler™	LightCycler™ 1.0 - 1.5 - 2.0	
Characteristics	Hot Start	YES	YES	NO	NO	YES	YES	NO	NO
	SYBR® Green	YES	YES	YES	YES	NO	NO	YES	YES
	ROX dye	Included in Mastermix	Supplied separately	Included in Mastermix	Not included	Included in Mastermix	Supplied separately	Not included	Not included

qPCR ROX-&GO™ mastermixes

For optimal qPCR in Systems requiring ROX

- Convenient Mastermix format with or without SYBR® Green I
- ROX dye included (low or high ROX level)
- Hot start PCR enzyme
- Stable formulation
- with or without dUTP

qPCR ROX-&GO™ mastermixes are complete reagents for performing quantitative polymerase chain reaction (qPCR).

Two convenient mastermix formats:

- **qPCR ROX-&GO™** is for qPCR employing fluorescently labeled, sequence specific probes. Probe based qPCR is a highly-specific method to quantitate DNA.
- **qPCR ROX-&GO™ Green** contains the fluorescent intercalating dye SYBR® Green I. This method reduces costs and speeds the development of qPCR assays because sequence specific probes do not need to be designed or produced.

Both qPCR ROX-&GO™ and qPCR ROX-&GO™ Green are supplied as complete 5X mastermixes. Simply dilute the mastermix and add gene specific primers and template for reaction setup. This format minimizes pipetting, thus saving time and eliminating opportunities for contamination. The 1X MgCl₂ concentration is 2.5 mM, for convenience a vial of MgCl₂ is provided for very rare cases when further MgCl₂ optimization is required.

Normalize with ROX

ROX dye is used as an internal passive reference to normalize non-PCR related background fluorescence emission that can negatively affect qPCR results. qPCR devices from various equipment manufacturers can take advantage of ROX, it is required for all ABI PRISM™ devices.

Hot start for increased specificity

Both qPCR ROX-&GO™ mastermixes contain SurePRIME™ a hot-start Taq DNA polymerase that is incapable of amplifying DNA until activated by incubation at 95°C for 10 min. This eliminates unwanted amplification (mispriming and/or primerdimer extension) that can lead to unwanted non-specific background during qPCR reaction setup.

Stable formulation

qPCR ROX-&GO™ and qPCR ROX-&GO™ Green contain only highly purified components such as MP Biomedicals SurePRIME™ DNA Polymerase and dNTPs. Performance is guaranteed for over one month when stored at 4°C, thus avoiding repeated freeze-thaw steps that can degrade products stored -20°C.

Applications

qPCR ROX-&GO™ (low ROX level) mastermixes provide accurate real-time quantification of DNA and cDNA on Applied Biosystems 7500 and Stratagene Instruments.

qPCR ROX-&GO™ (high ROX level) mastermixes provide accurate real-time quantification of DNA and cDNA on the ABI Sequence Detection Systems excepted Applied Biosystems 7500 System

Cat. #	Description	Size	# of Reactions
EPQON480	qPCR ROX-&GO™ Green (low ROX level)*	5 x 400µl	200 x 50µl or 500 x 20 µl
EPQOF480	qPCR ROX-&GO™ (low ROX level)*	5 x 400µl	200 x 50µl or 500 x 20 µl
EPQOUN480	qPCR ROX-&GO™ Green (low ROX level)* including dUTP	5 x 400µl	200 x 50µl or 500 x 20 µl
EPQOF480H	qPCR ROX-&GO™ (High ROX level)	5 x 400µl	200 x 50µl or 500 x 20 µl
EPQON480H	qPCR ROX-&GO™ Green (High ROX level)	5 x 400µl	200 x 50µl or 500 x 20 µl

▷ Storage: -20°C

* a separate vial of ROX dye is supplied in case higher levels of ROX are required

NEW ! : High pack size

Cat. #	Description	Size	# of Reactions
EPQON2500	qPCR ROX-&GO™ Green (low ROX level)*	10 x 1 ml	2500 x 20 µl
EPQON5000	qPCR ROX-&GO™ Green (low ROX level)*	20 x 1 ml	5000 x 20 µl
EPQON9999	qPCR ROX-&GO™ Green (low ROX level)*	40 x 1 ml	10000 x 20 µl

*a separate vial of ROX dye is supplied if higher ROX concentration are required

qPCR ROX-&GO™ Fast mastermixes

For optimal Ultra Fast qPCR in Systems requiring ROX

- Convenient Mastermix format with SYBR® Green I
- ROX dye included
- Stable formulation
- with or without dUTP

qPCR ROX-&GO™ Fast mastermixes are complete reagents for performing Ultra Fast quantitative polymerase chain reaction (qPCR). qPCR ROX-&GO™ Fast mastermixes have been optimized for ultra fast quantification of broad range of starting DNA amounts, on systems using plates and requiring ROX. qPCR ROX-&GO™ Fast Green mastermixes contain the fluorescent intercalating dye SYBR® Green I.

Convenient format

qPCR ROX-&GO™ fast Green mastermixes are supplied as complete 5X mastermixes. Simply dilute the mastermix and add gene specific primers and template for reaction setup. This format minimizes pipetting, thus saving time and eliminating opportunities for contamination. The 1X MgCl₂ concentration is 2.5 mM, for convenience a vial of MgCl₂ is provided for very rare cases when further MgCl₂ optimization is required.

Normalize with ROX

ROX dye is used as an internal passive reference to normalize non-PCR related background fluorescence emission that can negatively affect qPCR results. qPCR devices from various equipment manufacturers can take advantage of ROX, it is required for all ABI PRISM™ devices.

Stable formulation

qPCR ROX-&GO™ Fast Green mastermixes contain only highly purified components such as MP Biomedicals Taq DNA Polymerase and dNTPs. Performance is guaranteed for over one month when stored at 4°C, thus avoiding repeated freeze-thaw steps that can degrade products stored -20°C.

Applications

qPCR ROX-&GO™ Fast mastermixes provide accurate real-time quantification of DNA and cDNA on the ABI PRISM™ 7500 System.

Cat. #	Description	Size	# of Reactions
EPQFN480	qPCR ROX-&GO™ Fast Green	5 x 400µl	200 x 50µl
EPQFUN480	qPCR ROX-&GO™ Fast Green Including dUTP	5 x 400µl	200 x 50µl

▷ Storage: -20°C

qPCR-&GO™ for Plastic mastermixes

For optimal qPCR in Instruments using plasticware

- Convenient Mastermix format with or without SYBR® Green I
- Hot start PCR enzyme
- Stable formulation
- with or without dUTP

qPCR-&GO™ plastic mastermixes are complete reagents for performing quantitative polymerase chain reaction (qPCR).

Two convenient mastermix formats:

- qPCR-&GO™ for Plastic is for qPCR employing fluorescently labeled, sequence specific probes.
- qPCR-&GO™ for Plastic Green contains the fluorescent intercalating dye SYBR Green I.

Both qPCR-&GO™ for Plastic and qPCR-&GO™ for Plastic Green are supplied as complete 5X mastermixes. Simply dilute the mastermix and add gene specific primers and template for reaction setup. This format minimizes pipetting, thus saving time and eliminating opportunities for contamination. The 1X MgCl₂ concentration is 2.5 mM, for convenience a vial of MgCl₂ is provided for very rare cases when further MgCl₂ optimization is required.

Hot start for increased specificity

Both qPCR-&GO™ for Plastic mastermixes contain SurePRIME™ a hot start Taq DNA polymerase that is incapable of amplifying DNA until activated by incubation at 95°C for 10 min. This eliminates unwanted amplification (mispriming and/or primer-dimer extension) that can lead to unwanted non-specific background during qPCR reaction setup.

Stable formulation

qPCR-&GO™ for Plastic and qPCR-&GO™ for Plastic Green contain only highly purified components such as MP Biomedicals SurePRIME™ DNA Polymerase and dNTPs. Performance is guaranteed for over one month when stored at 4°C, thus avoiding repeated freeze-thaw steps that can degrade products stored -20°C.

Applications

qPCR-&GO™ for Plastic mastermixes provide accurate real-time quantification of DNA and cDNA on the BIO-RAD iCycler™, MyIQ™ Systems.

Cat. #	Description	Size	# of Reactions
EPQSF200	qPCR-&GO™ for Plastic	5 x 400 µl	200 x 50 µl
EPQSN200	qPCR-&GO™ for Plastic Green	5 x 400 µl	200 x 50 µl
EPQSN200	qPCR-&GO™ for Plastic Green including dUTP	5 x 400 µl	200 x 50 µl

▷ Storage: -20°C

qPCR-&GO™ LC480 mastermixes

For optimal qPCR in Lightcycler® 480 instrument

- Ultra Fast qPCR
- Convenient Mastermix format with SYBR® Green
- Stable formulation
- with or without dUTP

qPCR-&GO™ LC480 mastermixes are complete reagents for performing ultra fast quantitative polymerase chain reaction (qPCR).

High sensitivity and broad range

qPCR-&GO™ LC480 mastermixes have been optimized to permit the accurate analysis of a broad range of starting DNA amounts (even very small amounts) and to limit the formation of primer-dimers that result in unwanted background effects.

Convenient format

qPCR-&GO™ LC480 Mastermixes are supplied as a complete easy to use 5X mastermix.

This format minimizes pipetting, thus saving time and eliminating opportunities for contamination.

The 1X MgCl₂ concentration is 2.5mM, for convenience a vial of MgCl₂ is provided for very rare cases when further MgCl₂ optimization is required.

Stable formulation

qPCR-&GO™ LC480 Mastermixes contain only highly purified components such as MP Biomedicals Taq DNA Polymerase and dNTPs. Performance is guaranteed for over one month when stored at 4°C, thus avoiding repeated freeze-thaw steps that can degrade products stored -20°C.

Applications

qPCR-&GO™ LC480 Mastermixes provide accurate real-time quantification of DNA and cDNA on the LightCycler™ 480 System.

Cat. #	Description	Size	# of Reactions
EPQLN480	qPCR-&GO™ LC480 Green	5 x 400µl	200 x 50µl
EPQLUN480	qPCR-&GO™ LC480 Green Including dUTP	5 x 400µl	200 x 50µl

▷ Storage: -20°C

qPCR-&GO™ for Capillaries mastermixes

For optimal qPCR in Instruments using glass capillaries

- Convenient Mastermix format with SYBR® Green
- Ultra Fast qPCR
- Stable formulation
- with or without dUTP

qPCR-&GO™ for Capillaries mastermixes are complete reagents for performing ultra fast quantitative polymerase chain reaction (qPCR).

High sensitivity and broad range

qPCR-&GO™ for Capillaries green mastermixes have been optimized to permit accurate analysis of a broad range of starting DNA amounts (even very small amounts) and to limit the formation of primer-dimers that result in unwanted background effects (Fig 1).

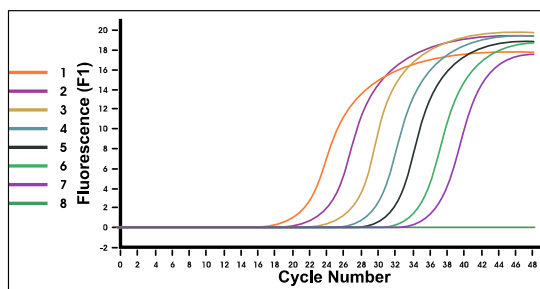
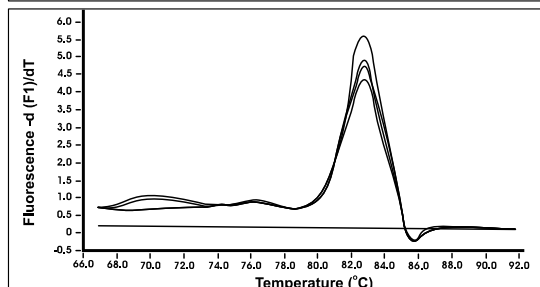
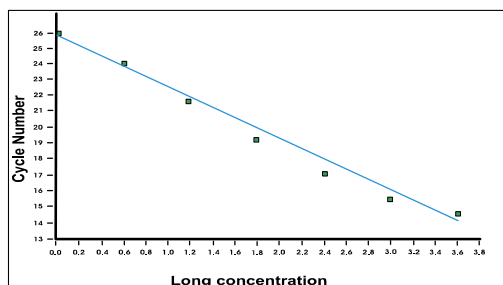


Fig. 1:
A quantitative PCR of exponential serial dilutions of genomic murine DNA extracted from F9 cells, was performed on a LightCycler™ 2.0 System using primers specific to the PTEN gene (coding for a phosphatase).



- | | |
|-------------------|-------------------|
| 1. 100 ng | 5. 1/256 (390 pg) |
| 2. 1/4 (25 ng) | 6. 1/1024 (98 pg) |
| 3. 1/16 (6.25 ng) | 7. 1/4096 (25 pg) |
| 4. 1/64 (1.55 ng) | 8. blank |



Convenient format

qPCR-&GO™ for Capillaries Mastermixes are supplied as a complete easy to use 5X mastermix. This format minimizes pipetting, thus saving time and eliminating opportunities for contamination. The 1X MgCl₂ concentration is 2.5mM, for convenience a vial of MgCl₂ is provided for very rare cases when further MgCl₂ optimization is required.

Stable formulation

qPCR-&GO™ for Capillaries Mastermixes contain only highly purified components such as MP Biomedicals Taq DNA Polymerase and dNTPs. Performance is guaranteed for over one month when stored at 4°C, thus avoiding repeated freeze-thaw steps that can degrade products stored -20°C.

Applications

qPCR-&GO™ for Capillaries Mastermixes provide accurate real-time quantification of DNA and cDNA on the LightCycler™ Systems 1.0, 1.5, 2.0.

Cat. #	Description	Size	# of Reactions
EPQPN096	qPCR-&GO™ Green for Capillaries	400 µl	96 x 20 µl
EPQPN480	qPCR-&GO™ Green for Capillaries	5 x 400 µl	480 x 20 µl
EPQPUN480	qPCR-&GO™ Green for Capillaries including dUTP	5 x 400 µl	480 x 20 µl

▷ Storage: -20°C

NEW ! : High pack size

Cat. #	Description	Size	# of Reactions
EPQPN2500	qPCR-&GO™ Green for capillaries	10 x 1 ml	2500 x 20 µl
EPQPN5000	qPCR-&GO™ Green for capillaries	20 x 1 ml	5000 x 20 µl
EPQPN9999	qPCR-&GO™ Green for capillaries	40 x 1 ml	10000 x 20 µl

qRT-PCR1-&GO™ Capillaries Green

For optimal qRT-PCR in Instruments using glass for capillaries

- Convenient mastermix format with SYBR® Green I fluorescent dye
- Ultra Fast qPCR
- AMV reverse transcriptase for sensitive quantification RNA
- Fast one step Protocol

qRT-PCR1-&GO™ for Capillaries Green is a complete reagent for performing ultra-fast quantitative reverse-transcription polymerase chain reaction (qRT-PCR) in one step.

Convenient format

qRT-PCR1-&GO™ for Capillaries Green is a one-step qRT-PCR mastermix including SYBR Green® I for use in glass capillaries. All reagents in the mastermix have been optimized at a 5X concentration, to provide the highest sensitivity while decreasing unwanted background (fig 1). Just dilute and add RNA template and gene specific primers. This format minimizes pipetting, thus saving time and eliminating opportunities for contamination.

Sensitive quantification

qRT-PCR1-&GO™ for Capillaries Green includes the enzyme AMV Reverse Transcriptase, which withstands reaction temperatures above 55°C. Reverse transcription at 55°C and above significantly enhances sensitivity, efficiency and accuracy by eliminating RNA secondary structure.

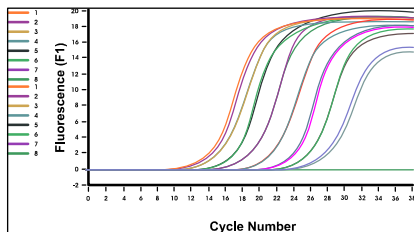


Fig. 1:

A one step quantitative RT-PCR of exponential serial dilutions (from 20 ng to 5 pg) of total murine RNA extracted from F9 cells, were performed on a LightCycler® 2.0 System using primers specific to the 36B4 gene (coding for a ribosomal phosphoprotein used as an internal reference).

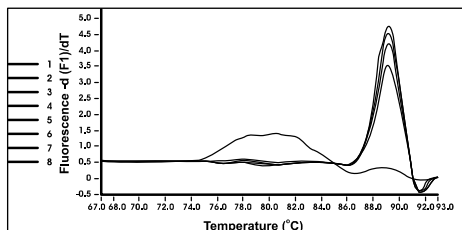


Fig. 2 : Melting peaks Analysis showing the specificity of all RT-PCR products*

One Step Protocol

By performing RT and PCR in a single tube a better representation of starting mRNA amounts is obtained when compared to qPCR performed in common two-step procedures. By using gene specific primers for reverse transcription the potential for non-specific background during PCR is reduced, resulting in a more accurate analysis of mRNA level in tested samples. Additionally, results can be obtained in as little as 40 min while saving the hands on time needed to set up individual RT and PCR reactions.

Applications

qRT-PCR1-&GO™ for Capillaries Green mastermix provides accurate realtime quantification of RNA on the LightCycler® 1.0 ; 1.5 ; 2.0 Systems.

Cat. #	Description	Size	# of Reactions
EPQRT480	qRT-PCR1-&GO™ Green for Capillaries	5 x 400 µl	480 x 20 µl
EPQRUT480	qRT-PCR1-&GO™ Green for Capillaries including dUTP	5 x 400 µl	480 x 20 µl

▷ Storage: -20°C

*All kits are supplied with 1000 U AMV RT and MgCl₂ at 25 mM

Taq DNA Polymerases

Taq DNA Polymerase

Recombinant form - for general PCR applications

- Highly reproducible results
- Ideal for T/A cloning
- Ultra pure enzyme
- Highly processive

Highly processive, recombinant, thermostable 5'-3' DNA polymerase catalyzes the addition of mononucleotide units to the 3'-OH end of a primer chain. Remains functional even after prolonged incubation at 95°C. Applications include PCR, RT-PCR, DNA sequencing and DNA labeling. This enzyme possesses 5'-3' exonucleases activity.

Unit definition: One unit is the amount of enzyme required to catalyze the incorporation of 10 nmol of nucleotides into acid-insoluble material in 30 min. at 74°C under assay conditions.

Storage conditions: 20mM Tris-HCl pH 8.0, 100mM KCl, 0.1mM EDTA, 1mM dithiothreitol, 0.5% Tween 20, 0.5% Nonidet P40, 50% glycerol. Stored at -20°C

Incubation buffer with MgCl₂ (1X): 10mM Tris-HCl pH 9.0, 50mM KCl, 1.5mM, MgCl₂, 0.1% Triton X-100, 0.2 mg/ml BSA

Incubation buffer w/o MgCl₂ (1X): 10mM Tris-HCl pH 9.0, 50mM KCl, 0.1% Triton X- 100, 0.2 mg/ml BSA

Quality control: Performed on every lot of enzyme:
Specific PCR on genomic and phage templates, activity check, absence of ribonucleases, absence of nickases and endonucleases, absence of 3' exonucleases, purity on SDS-PAGE, absence of proteases.

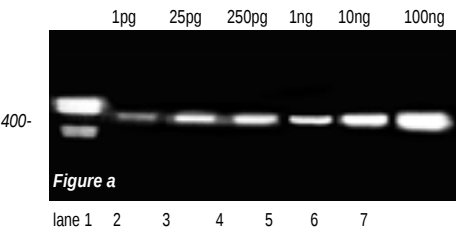


Figure a:
Amplification of a 400 bp fragment of human β globin with Taq DNA polymerase. Varying amounts of human β globin, 1 pg to 100 ng, were amplified under the following conditions: 50 µl reaction; 50 pmoles each specific primer, 300 µM each dNTP, 1U Taq DNA polymerase, MgCl₂ 1.5 mM. Lane 1: marker pBR322/HaeIII, Lane 2: 1pg, Lane 3: 25 pg, Lane 4: 250 pg, Lane 5: 1ng, Lane 6: 10 ng, Lane 7: 100 ng, of template DNA respectively.

Cat. #	Concentration	Size	Incubation Buffers Included
EPTQA025	5 U/µl	250 U	10x Buffer with MgCl ₂ 10x Buffer w/o MgCl ₂ 25mM MgCl ₂ sol
EPTQA325	5 U/µl	3x250 U	10x Buffer with MgCl ₂ 10x Buffer w/o MgC 25mM MgCl ₂ sol

Cat. #	Concentration	Size	Incubation Buffers Included
EPTQA925	5 U/μl	10 x 250 U	10x Buffer with MgCl ₂ 10x Buffer w/o MgCl ₂ 25mM MgCl ₂ sol
EPTQD025	5 U/μl	250 U	only 10x Buffer with MgCl ₂
EPTQD325	5 U/μl	3 x 250 U	only 10x Buffer with MgCl ₂
EPTQD925	5 U/μl	10 x 250 U	only 10x Buffer with MgCl ₂
EPTQA100	5 U/μl	1000 U	10x Buffer with MgCl ₂ 10x Buffer w/o MgCl ₂ 25mM MgCl ₂ sol
EPTQA105	5 U/μl	5 x 1000 U	10x Buffer with MgCl ₂ 10x Buffer w/o MgCl ₂ 25mM MgCl ₂ sol

▷ Storage: -20°C

Taq DNA Polymerase - with XD buffer

Taq DNA polymerase is now available with an incubation buffer containing no Triton and no BSA. This incubation buffer (XD buffer) allows optimal results for researchers working with vegetal or beef material or using further dHPLC.

Incubation buffer XD with MgCl₂ (1x): 20 mM Tris-HCl pH 8.3, 50 mM KCl, 1.5 mM MgCl₂

Cat. #	Concentration	Size	Incubation Buffers Included
EPTQX025	5 U/μl	250 U	10x XD Buffer with MgCl ₂
EPTQX325	5 U/μl	3 x 250 U	10x XD Buffer with MgCl ₂
EPTQX925	5 U/μl	10 x 250 U	10x XD Buffer with MgCl ₂
EPTQX100	5 U/μl	1000 U	10x XD Buffer with MgCl ₂

Taq DNA Polymerase - with SO₄(NH₄)₂ buffer

It has been reported that buffers containing Ammonium Sulphate are able to improve the efficiency and specificity of some amplifications.

Incubation SO₄(NH₄)₂ Buffer: 67 mM Tris HCl pH 8.8, 16 mM SO₄(NH₄)₂, stabiliser.

Cat. #	Concentration	Size	Incubation Buffers Included
EPTQS001	5 U/μl	250 U	10x SO ₄ (NH ₄) ₂ Buffer without Mg 50 mM MgCl ₂ solution
EPTQS901	5 U/μl	10 x 250 U	10x SO ₄ (NH ₄) ₂ Buffer without Mg 50 mM MgCl ₂ solution

Taq DNA Polymerase – Direct Loading

Taq DNA Polymerase is also available with an incubation buffer containing already a colored loading buffer for Direct loading of PCR products on agarose gels.

This 5X Direct Loading buffer contains a densifying agent and a red-purple dye that allow to follow the migration of the sample during the electrophoresis. (The included dye migrates at 400 bp on a 1,2% TAE or TBE gel).

This product is also available in a ready to use mastermix (see Mastermixes section of this chapter for more information).



Cat. #	Concentration	Size	Components
EPTQL025	5 U/μl	250 U	5x Direct Loading Buffer with Mg 25 mM MgCl ₂ solution
EPTQL100	5 U/μl	1000 U	5x Direct Loading Buffer with Mg 25 mM MgCl ₂ solution

▷ Storage: -20°C

Taq DNA Polymerase - concentrated

Certain PCR applications require a high concentrations of *Taq* DNA Polymerase. However, adding larger volumes of *Taq* DNA Polymerase will increase the glycerol concentration in the reaction mix (*Taq* DNA Polymerase storage buffer contains 50% glycerol to prevent freezing) and high glycerol levels can interfere with PCR. To avoid inadvertently raising glycerol concentrations in the final mix, *Taq* DNA Polymerase at 15 U/μl concentration is recommended.

Cat. #	Concentration	Size	Incubation Buffers Included
EPTQC060	15 U/μl	600 U	10x Buffer with MgCl ₂ * 10x Buffer w/o MgCl ₂ * 25 mM MgCl ₂ sol
EPTQX060	15 U/μl	600 U	10x XD Buffer with MgCl ₂ *
EPTQC200	15 U/μl	2000 U	10x Buffer with MgCl ₂ * 10x Buffer w/o MgCl ₂ * 25 mM MgCl ₂ sol
EPTQX200	15 U/μl	2000 U	10x XD Buffer with MgCl ₂ *

*See composition on previous page

Incubation and Storage Buffers for Taq DNA polymerase

Cat. #	Description	Size
EPTQBUF1	10x Incubation Buffer with MgCl ₂	5 x 1,5 ml*
EPTQBUF2	10x Incubation Buffer w/o MgCl ₂ + 25 mM MgCl ₂ solution	5 x 1,5 ml*
EPTQBUF3	10x XD Incubation Buffer with MgCl ₂	5 x 1,5 ml*
EPTQBUF4	5X Direct loading buffer with MgCl ₂	5 x 1 ml
EPTQST01	Storage and Dilution Buffer	5 x 1 ml*

*See composition on previous page

Taq CORE Kits

Taq DNA Polymerase + dNTPs in one kit

Taq CORE Kits contain all the reagents (presented as separate items) required for PCR: MP Biomedicals high quality recombinant *Taq* DNA polymerase, high purity dNTPs Mix (>99%), optimized incubation buffers with and without MgCl₂ and a separate MgCl₂ solution.

Two types of kits are supplied with dNTPs at either 10 mM each or 25 mM each



Cat. #	Taq Concentration	Taq Units	Buffers
Taq CORE Kit 10 (with dNTPs at 10mM each)			
EPTQK101	5U/μl	250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKD101	5U/μl	250	standard buffer w. MgCl ₂
EPTQKX101	5U/μl	250	XD Buffer w. MgCl ₂
EPTQK103	5U/μl	3 x 250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKD103	5U/μl	3 x 250	standard buffer w. MgCl ₂

Cat. #	Taq Concentration	Taq Units	Buffers
EPTQKX103	5U/μl	3 x 250	XD Buffer w. MgCl ₂
EPTQK105C†	5U/μl	5 x 250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQK109	5U/μl	10 x 250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKD109	5U/μl	10 x 250	standard buffer w. MgCl ₂
EPTQKX109	5U/μl	10 x 250	XD Buffer w. MgCl ₂
EPTQK300	5U/μl	1000	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQK10L	5U/μl	5 x 1000	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKC610	15U/μl	600	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKC612	15U/μl	2000	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
Taq CORE Kit 25 (with dNTPs at 25mM each)			
EPTQK251	5U/μl	250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKD251	5U/μl	250	standard buffer w. MgCl ₂
EPTQKX251	5U/μl	250	XD Buffer w. MgCl ₂
EPTQK253	5U/μl	3 x 250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKD253	5U/μl	3 x 250	standard buffer w. MgCl ₂
EPTQKX253	5U/μl	3 x 250	XD Buffer w. MgCl ₂
EPTQK255C†	5U/μl	5 x 250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQK259	5U/μl	10 x 250	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKD259	5U/μl	10 x 250	standard buffer w. MgCl ₂
EPTQKX259	5U/μl	10 x 250	XD Buffer w. MgCl ₂
EPTQK25L	5U/μl	5 x 1000	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKC620	15U/μl	600	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQKC622	15U/μl	2000	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution
EPTQK600	15U/μl	12 x 600	standard buffer w. MgCl ₂ standard buffer w/o MgCl ₂ 25mM MgCl ₂ solution

▷ Storage: -20°C

†Each kit contains 5 tubes of enzyme and 5 corresponding sets of dNTPs. Multiple groups or individuals can be supplied with the reagents needed for PCR from a single kit.

Q-BioTaq™ DNA Polymerase

For multiplex PCR and RAPDs

- Recombinant, truncated form of *Thermus aquaticus*
- Highly thermostable (98°C)
- No 5'-3' exonuclease activity
- Enzyme cannot degrade the 5' end of primers

Q-BioTaq™ DNA Polymerase is a thermostable DNA polymerase which can be used effectively for PCR and DNA sequencing by the chain termination method. This enzyme is encoded by a modified form of the *Thermus aquaticus* DNA polymerase gene with an N-terminal deletion. The properties of Q-BioTaq™ DNA Polymerase include high thermostability and absence of 5'-3' exonuclease activity. This polymerase is particularly useful in applications where multiple amplifications are required. The enzyme is highly purified and free of RNases and endo- and exonucleases.

Unit definition: One unit is the amount of enzyme required to catalyse the incorporation of 10 nmol of nucleotides into acid insoluble material in 30 min. at 74°C under assay conditions.

Storage: 25 ml Tris HCl (pH 8.0 at 25°C); 100 mM NaCl; 0.1 mM EDTA; 1 mM DTT; 0.75% Triton; 50% glycerol

Incubation Buffer 1x: 67 mM Tris HCl (pH 8.8 at 25°C); 16.6 mM (NH₄)₂ SO₄; 0.01% Tween 20; 3.5 mM MgCl₂

Quality Control: Activity, SDS-PAGE/purity, nuclease, specific PCR on genomic and phage templates.

Cat. #	Concentration*	Size	Incubation Buffers Included
EPQBT010	5 U/μl	100 U	10x Q-BioTaq Buffer with Mg 10x Q-BioTaq Buffer without Mg 25 mM MgCl ₂ solution
EPQBT025	5 U/μl	250 U	10x Q-BioTaq Buffer with Mg 10x Q-BioTaq Buffer without Mg 25 mM MgCl ₂ solution
EPQBT050	5 U/μl	500 U	10x Q-BioTaq Buffer with Mg 10x Q-BioTaq Buffer without Mg 25 mM MgCl ₂ solution
EPQBT100	5 U/μl	1000 U	10x Q-BioTaq Buffer with Mg 10x Q-BioTaq Buffer without Mg 25 mM MgCl ₂ solution
EPQBT015	5 U/μl	5 x 100 U	10x Q-BioTaq Buffer with Mg 10x Q-BioTaq Buffer without Mg 25 mM MgCl ₂ solution

Q-BioTaq CORE Kit 10 (with dNTPs at 10 mM each)

EPQBK1025	5 U/μl	250 U	10x Q-BioTaq Buffer with Mg 10x Q-BioTaq Buffer without Mg 25 mM MgCl ₂ solution
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▷ Storage: -20°C

*The concentration of Q-BioTaq™ is in KlenTaq units. 1U KlenTaq=5U DNA Taq Pol.

Hot Start Polymerase

SurePRIME™ DNA Polymerase

For hot start PCR

- Chemically modified *Taq* DNA polymerase
- Low background
- Highly specific amplification
- Room temperature reaction set-up

SurePRIME™ DNA Polymerase is a thermostable polymerase that is suitable for all PCR applications requiring "hot start" conditions. The enzyme is a highly purified form of recombinant *Taq* polymerase that has been chemically modified by the addition of heat-labile blocking groups to specific amino acid residues.

Heat activation for Specificity

SurePRIME™ DNA Polymerase is heat-activated after a preincubation step of 15 min at 95°C after which it is functionally equivalent to classical *Taq* DNA Polymerase. Linear activation is also possible (5 to 7 min at 95°C as initial activation and additional 1 min at 95°C for the first 7-8 PCR cycles). In its inactive state, SurePRIME™ DNA Polymerase is incapable of extending primer-dimers or mis-annealed primer-template species, therefore PCR performed after activation is highly specific. In laboratory tests which deliberately accentuate problems commonly encountered in PCR (i.e. non-specific hybridization, primer-dimer formation) SurePRIME™ DNA Polymerase easily outperforms *Taq* DNA polymerase (See Figure 1).

Applications for SurePRIME™ *Taq* polymerase include:

- Hot start PCR
- Advance preparation of Master Mixes
- Multiplex PCR
- Automated PCR

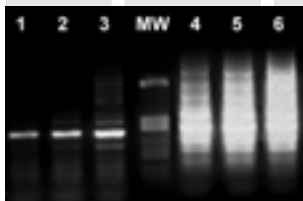


Figure 1:

PCR assays carried out using a nonoptimized primer pair, amplifying a well-characterized 400 bp fragment on a human beta-globin gene.

Primers are shortened oligos, with additional non-matched bases at the 5' end, designed to create a restriction site at each extremity of the PCR fragment. SurePRIME™ DNA Polymerase (lane 1: 1 U; lane 2: 2 U; lane 3: 5 U) and classical *Taq* DNA Polymerase (lane 4: 1 U; lane 5: 2 U; lane 6: 5 U) were comparatively tested.

After reaction set-up, the tubes were incubated at 25°C for 30 min to favour misannealing of primers and eventual residual activity of elongation.

PCR program

For SurePRIME™ DNA Polymerase: (15 min at 95°C) x 1 – (1 min at 53°C, 2' at 70°C, 1 min at 93°C) x 3 – (1 min at 65°C, 2 min at 70°C, 1 min at 93°C) x 30 – (1 min at 65°C, 10 min at 70°C) x 1

For *Taq* DNA polymerase: as above omitting the preincubation (15 min at 95°C). Molecular weight marker (MW) is pBR322 Hae III/*Taq* I.

Storage Buffer: 20 mM Tris HCl, pH 8.0, 100 mM KCl, 0.1 mM EDTA, 1mM Dithiothreitol, 0.5% Tween 20, 0.5% Nonidet P40, 50% Glycerol. SurePRIME™ DNA Polymerase is provided with additional storage buffer (500 µl) to be used as dilution buffer.

Incubation buffer 1x: 10 mM Tris HCl, pH 8.3; 50 mM KCl Incubation buffer 10 x C does not contain MgCl₂, a vial of 25 mM MgCl₂ is provided separately.

Quality Control: Activity, absence of nickases and endonucleases, absence of ribonucleases, specific PCR on genomic template with non-optimized primer pairs.

Unit Definition: One unit is the amount of enzyme required to catalyze the incorporation of 10 nmol of nucleosides into acid-insoluble material in 30 min at 72°C under assay conditions.

Cat. #	Concentration	Size	Incubation Buffers Included
EPHSP025	5 U /µl	250 U	10x Incubation Buffer w/o MgCl ₂ 25 mM MgCl ₂ solution 1x Storage and dilution buffer
EPHSP525	5 U /µl	5 x 250 U	10x Incubation Buffer w/o MgCl ₂ 25 mM MgCl ₂ solution 1x Storage and dilution buffer

▷ Storage: -20°C

SurePRIME™ CORE Kits

Chemically modified Taq DNA Polymerase + dNTPs in one kit

SurePRIME™ CORE Kits contain all the reagents (presented as separate items) required for Hot Start PCR : MP Biomedicals SurePRIME™ DNA polymerase, high purity dNTPs Mix (>99%) and optimized incubation buffers.
Two types of kits are supplied :

Cat. #	Units*
SurePRIME™ CORE Kit 10 (with dNTPs at 10mM each)	
EPHSK105	5 x 250 U
EPHSK101	250U
SurePRIME™ CORE Kit 25 (with dNTPs at 25mM each)	
EPHSK255	5 x 250 U
EPHSK251	250U

▷ Storage: -20°C *Units of SurePRIME™ DNA polymerase

High Fidelity Polymerase

Isis DNA Polymerase

For high fidelity PCR

- Extremely low error rates
- Optimal blunt end cloning
- The most thermostable polymerase available

High Accuracy

Isis is a proofreading DNA polymerase and amplifies DNA with 40 times more accuracy than standard Taq DNA polymerase. The error rate is 0.66 x 10-6 mutation frequency/bp/duplication as determined by the Flaman(1,2) method. Isis DNA polymerase is isolated from Pyrococcus abyssi(3,4) (Fig 1) and is an excellent choice for applications requiring high fidelity, like error-free cloning.

Easy to use

Isis DNA Polymerase does not require primer 3'-end protection, unlike many other proofreading enzymes. This saves time during reaction set-up and optimization. Isis DNA polymerase is able to amplify up to 6 kb on genomic DNA templates and 18 kb on phage DNA under a variety of amplification conditions (Fig 2). Isis DNA polymerase offers robust activity and flexibility.



Figure 1
Thermal vents discovered 3 km below sea-level of the Fiji islands are populated by hyper-thermophilic archaea bacteria that possess highly thermostable DNA polymerases. In collaboration with IFREMER, Qbiogene has developed and optimized Isis DNA polymerase isolated from Pyrococcus abyssi which offers unique performance for DNA amplification applications. (Photograph Copyright Ifremer)

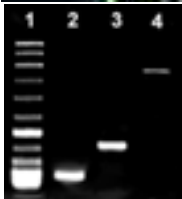


Figure 2:
Amplification of human b-globin DNA 400 bp (lane 2), 900 bp (lane 3) and mitochondrial human DNA (4.0 kb lane 4) with Isis DNA polymerase. 10 ng of each DNA template, with 50 pmol of each primer, 100 µM of each dNTP and 1.5 mM MgSO₄. 0.5 U of Isis DNA polymerase was used for amplifying 400 bp and 1 U for 900 bp and 4.0 kb. Lane 1: Leon™, Molecular weight marker.

Higher yield of even difficult sequences

Since Isis DNA Polymerase is the most thermostable proofreading polymerase available. Extreme denaturing temperatures can be used to amplify DNA with difficult to read secondary structures. Isis retains 80% of its activity after a 5 hour incubation at 95°C and 50% after 5 hours at 100°C. Increased activity during PCR yields more product when compared to less thermostable enzymes (Fig 3).

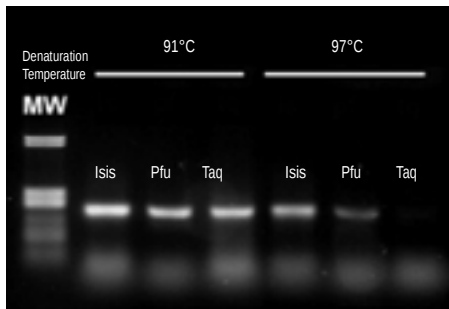


Figure 3

Performance comparison of Pfu, Taq and Isis DNA polymerases. Amplification of human beta-globin DNA (400bp) with 1 U of each DNA Polymerase, 50 pmol of primers, 100 µM of dNTPs and 1.5 mM MgSO₄. Molecular Weight Marker: pBR HaeIII/Taq I

Storage buffer: TrisHCl 20 mM, pH 8.0, KCl 100 mM, EDTA 0.1 mM, Dithiothreitol 1mM, Tween 20 0.5%, Nonidet P40 0.5%, Glycerol 50%

Incubation buffer 1x: TrisHCl 20 mM, pH(25°C) 9.0, KCl 25 mM, (NH₄)₂SO₄ 10 mM, Tween 20 0.1%, MgSO₄ 1.5 mM, BSA 0.1 mg/ml Incubation buffer is provided 10 x C

Quality control: Activity, absence of nickases and endonucleases, absence of ribonucleases, specific PCR on genomic and phage templates.

Unit definition: One unit is the amount of enzyme required to catalyze the incorporation of 10 nmol of nucleosides into acid insoluble material in 30 min. at 74 °C under assay conditions.

There is a patent pending on the enzyme Isis DNA polymerase. Isis DNA Polymerase has been developed in collaboration with IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer).

Cat. #	Description	Concentration	Size
EPSIS100	Isis DNA polymerase	1 U/µl	100 U
EPSIS103	Isis DNA polymerase	1 U/µl	3x 100 U

➤ Storage: -20°C

References:

- (1) Flaman, J.M., et al. (1994) Nucl. Acids Res. 15, 3259-3260.
- (2) Flaman, J.M., et al. (1995) Proc. Natl. Acad. Sci. USA 92, 3963-3967.
- (3) Gueguen, Y. et al., (2001) Eur. J. Biochem. 268, 1-10.
- (4) Gueguen, Y. et al., (2002) FEMS Microbiology Letters. 217, 89-94.

Long Fragment Polymerases

Arrow *Taq* DNA Polymerase

High sensitivity and amplification of fragments up to 21 kb

- 20 times greater sensitivity than *Taq* DNA Polymerase
- Amplifies fragments up to 21 kb

Arrow *Taq* DNA Polymerase (patent pending) is a unique blend of MP Biomedicals proprietary recombinant *Tfu* and *Taq* DNA polymerases. The efficient 3'-5' proofreading activity of *Tfu* DNA Polymerase greatly reduces primer misincorporation and therefore prevents fragment truncation. This results in greater sensitivity and dramatically increased read-lengths compared to *Taq* DNA polymerase alone. Because Arrow *Taq* DNA polymerase contains *Tfu* DNA polymerase, which has proofreading capacity, it exhibits a lower error rate than *Taq* DNA polymerase (see table at the chapter introduction).

Arrow *Taq* DNA Polymerase is recommended for applications that require amplification of:

- low copy number targets
- long fragments

High sensitivity PCR

Arrow *Taq* DNA Polymerase offers 20 times greater PCR sensitivity than classic *Taq* DNA Polymerase under standard PCR conditions, leading to greater yields of specific PCR products. This feature enables the detection of low-copy targets that are impossible to amplify successfully using *Taq* DNA Polymerase alone, see Figure 1.

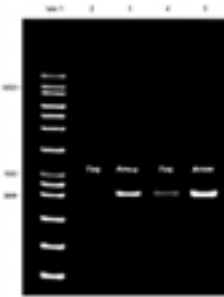


Figure 1.
Amplification of 100pg of a 3.8kb fragment of lambda DNA with *Taq* or Arrow *Taq* DNA polymerases
Lane 1: Raoul™ Molecular Weight Marker
Lane 2: 5U *Taq* DNA Polymerase, 100 pg template lambda DNA, 40 μM of each dNTP
Lane 3: 5U Arrow *Taq* DNA Polymerase, 100 pg template lambda DNA, 40 μM of each dNTP
Lane 4: 5U *Taq* DNA Polymerase, 100 pg template lambda DNA, 200 μM of each dNTP
Lane 5: 5U Arrow *Taq* DNA Polymerase, 100 pg template lambda DNA, 200 μM of each dNTP

Long fragments

Under standard PCR conditions, Arrow *Taq* DNA Polymerase provides efficient amplification of fragments from genomic DNA over 6 kb in length (Figure 2) and up to 21 kb in length using lambda DNA template (Figure 3). In comparison, *Taq* DNA Polymerase is only able to amplify fragments up to approximately 7 kb using lambda DNA.

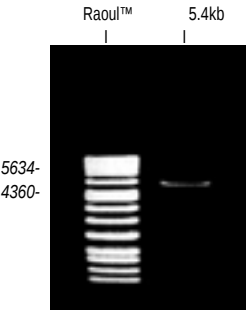


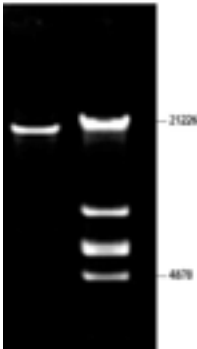
Figure
Amplification of 5.4 kb of human β globin with Arrow *Taq* DNA polymerase.
Reaction conditions: 50 μl reaction; 100 ng human β globin, 50 pmol each specific primer, 300 μM each dNTP, 10 U Arrow *Taq* in 1 x T.Pol buffer (1.5 mM $MgCl_2$).

Figure 3
Amplification of 21 kb lambda DNA with Arrow *Taq* Lane 1: 5U Arrow *Taq* DNA Polymerase, 10 ng template lambda DNA, 300 μM of each dNTP Lane 2: lambda DNA/EcoRI

Incubation Buffer: 10 mM Tris-HCl pH 9.0, 50 mM KCl, 1.5 mM $MgCl_2$, 0.1% Triton X-100, 0.2 mg/ml BSA. 10X buffer provided.
Storage Buffer: 20 mM Tris-HCl pH 8.0, 100 mM KCl, 0.1 mM EDTA, 1 mM dithiothreitol, 0.5% Tween 20, 0.5% Nonidet P40, 50% glycerol.
Quality Control: Absence of nickases and endonucleases, absence of ribonucleases, specific PCR on genomic and phage templates.

Cat. #	Description	Size
EPARO250	Arrow <i>Taq</i> DNA Polymerase at 5 U/μl	250 U
EPARO253	Arrow <i>Taq</i> DNA Polymerase at 5 U/μl	3 x 250 U

Storage: -20°C



PCR Mastermixes

- Optimized for highly efficient PCR
- Significant savings in preparation time
- Reduced pipetting
- Reduced risk of errors and contamination
- Stable at 4°C

All MP Biomedicals thermostable DNA polymerases are available in ready-to-use &GO™ PCR mastermix formats. &GO™ PCR Mastermixes contain all the components for PCR with the exception of template and primers. This not only saves valuable time in the laboratory, but also reduces the risk of pipetting and reagent handling errors. Each &GO™ mix is provided 5X concentrated and can be used to perform 20 µl or 50 µl reactions. To prepare the reaction, simply add 10 µl of &GO™ PCR Mastermix 5XC to template and primers diluted to 40 µl. For smaller reactions use 4 µl of mastermix in a 20 µl reaction.

Taq-&GO™

Mastermix for routine PCR

Taq-&GO™ is a 5X concentrated PCR Mastermix containing MP Biomedicals recombinant Taq DNA polymerase, dNTPs, MgCl₂ and buffer. Taq-&GO™ is stable for over one year at 4°C.

Cat. #	Description	Reactions	Size
EPTAG100	Taq-&GO™	100	1 ml
EPTAG110	Taq-&GO™	1,000	10 x 1 ml

► Storage: -20°C

Taq-&LOAD™

Direct Loading of routine PCR products

Taq-&LOAD™ is a 5X concentrated PCR mastermix containing MP Biomedicals recombinant Taq DNA Polymerase, dNTPs, MgCl₂, incubation and loading buffer (includes a compound increasing the density of the sample and a red/purple dye).

This mastermix allows direct loading after the PCR on the agarose gel without the need of loading dye. The included red purple dye migrates at 400 bp on a 1.2% agarose gel.

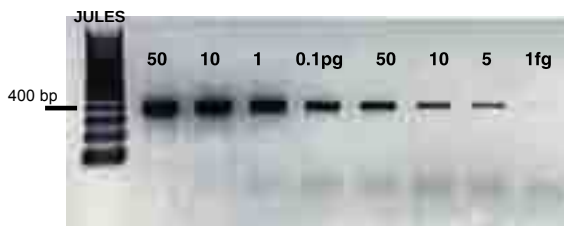


Fig.1:

Amplification of a 400bp fragment from a pBR plasmid with Taq-&LOAD.

Reaction conditions : 5µl of Taq-&LOAD Mastermix in a final 25µl reaction.

10µl of the reaction have been loaded on a 1.2% TBE gel.

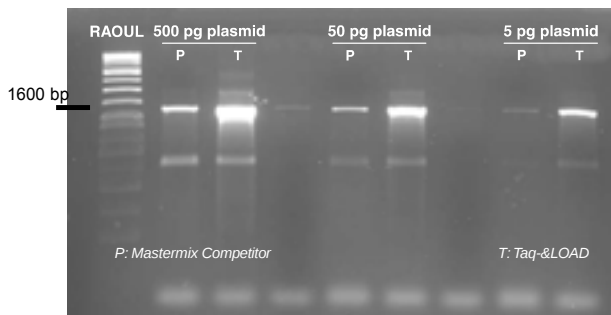


Fig.2:

Amplification of a 1600bp fragment from a 4800bp plasmid.

Reaction conditions : 10µl of Taq-&LOAD Mastermix or 25µl of Mastermix from competitor in a final 50µl reaction. 10µl of the reaction have been loaded on a 1% TBE gel.

Cat. #	Description	Reactions	Size
EPTAL100	Taq-&LOAD™	100 U	1 ml
EPTAL110	Taq-&LOAD™	1000 U	10x1 ml

► Storage: -20°C

PCR Enhancers

T4 bacteriophage gene 32 Product (T4 gp32)

Single-strand binding protein

- Enhances DNA polymerase proofreading activity and PCR fidelity
- Increases yield of large PCR DNA fragments

T4 bacteriophage gene 32 product, or T4 gp32, is a nonsequence specific, single strand binding protein isolated from the bacteriophage T4. It is reported to act by binding to single-stranded DNA in a co-operative manner thereby destabilizing double-stranded DNA(1).

Used with either Taq or Arrow Taq DNA polymerase, T4 gp32 protein strongly increases PCR fidelity. The T4 gp32 protein is used to improve yields of long PCR products catalyzed by Taq DNA Polymerase(2), DNA polymerase proofreading(3) and amplification efficiency in low purity DNA. It has also been used to stabilize single-stranded regions of DNA for sitedirected mutagenesis.

Storage buffer: Tris-HCl 20 mM, pH 8.0, NaCl 100 mM, EDTA 1 mM, DTT 0.5 mM, Glycerol 50%.

The supplied protein is a purified recombinant form free of endonucleases and nickases.

Improved yield of long PCR product (25.7 kb) in the presence of T4 gp32 DNA template was amplified with Arrow Taq.

Cat. #	Description	Size
TGP32100	T4 gp32	200μl (100 μg)

▷ Storage: -20°C

References:

1. Topal, M.D. and Sinha, N.K. (1983). Products of bacteriophage T4 genes 32 and 45 improve the accuracy of DNA replication in vitro. *J. Biol. Chem.* 258: 12274-12279.
2. Schwarz, K., Hansen-Hagge, T., Bartram, C. (1990). Improved yields of long PCR products using gene 32 protein. *Nucleic Acids Research* 18 :1079.
3. Sandhu, D.K., Keohavong, P. (1994). Effects of the T4 bacteriophage gene 32 product on the efficiency and fidelity of DNA amplification using T4 DNA polymerase. *Gene* 144: 53-58.

Betaine solution

5M, PCR grade

Betaine has been shown to improve the amplification of DNA by reducing the formation of secondary structure in GC-rich regions. It is an isostabilizing agent, equalizing the contribution of GC and AT base pairing to the stability of the DNA duplex.

Specifications::

DNase, RNase: Not detectable

Cat. #	Description	Size
BETA0200	Betaine, 5M	20 ml
BETA0615	Betaine, 5M	6 x 1.5 ml

▷ Storage: Store at +4°C

BSA solution

20 mg/ml, PCR Grade

BSA has been shown to improve PCR efficiency by his ability of stabilizing the enzyme activity.

Specifications:

DNase, RNase : Not detectable

Cat. #	Description	Size
BSAS2001	BSA, 20mg/ml	1 ml

▷ Storage: -20°C

dNTPs

dNTPs Mix

Ready to use solutions of dATP, dCTP, dGTP, dTTP

- Improve PCR efficiency
- Lower denaturation temperatures
- Increase template lengths

The quality of nucleotides used in a PCR can significantly influence the result of the reaction. Our manufacturing process guarantees that the dNTPs are highly purified (>99%). Contaminants can often hinder PCR and result in disappointing product yield. Achieve sensitive and consistent results with our specially prepared deoxynucleotides. Also suitable for use in cDNA synthesis, DNA sequencing and labeling procedures.

Quality control: dNTP mix is controlled by specific PCR using genomic template.

Components: dNTP mix contains 5 μ mol of each dATP, dCTP, dGTP, dTTP in an aqueous solution neutralized to pH 7.0, at either 5 mM, 10 mM or 25 mM each.

Cat. #	Description	Size
NTPMX050	dNTPs Mix (5 mM each)	5 μ mol each (1 ml)
NTPMX055	dNTPs Mix (5 mM each)	5 x 5 μ mol
NTPMX100	dNTPs Mix (10 mM each)	5 μ mol each (500 μ l)
NTPMX105	dNTPs Mix (10 mM each)	5 x 5 μ mol
NTPMX250	dNTPs Mix (25 mM each)	5 μ mol each (200 μ l)
NTPMX255	dNTPs Mix (25 mM each)	5 x 5 μ mol

▷ Storage: -20°C

PCR Nucleotide Sets

Sets of four dNTPs

- Separate vials of four dNTPs
- Concentrated neutralized solutions

dNTPs Set 1

This set is composed of four separate vials of highly purified (>99%), PCR grade, sodium salts of dATP, dCTP, dGTP and dTTP. The four dNTPs are in solution at 10 mM or 100mM concentration. This format allows the addition of each dNTP to be altered as required for specific experiments, e.g. when adding a radioactive nucleotide for labeling by PCR or to increase the chance of non-specific mutations. These solutions achieve sensitive and consistent PCR results and are also suitable for use in real-time PCR, cDNA synthesis and DNA sequencing.

dNTPs Set 2

(if degradation of contaminant DNA is required)

This set is composed of four separate vials of highly purified (>99%), PCR grade, sodium salts of dATP, dCTP, dGTP and dUTP. The four dNTPs are in solution at a 100mM concentration. The incorporation of dUTP in place of, or in addition to, dTTP allows the degradation of contaminating PCR products from previous reactions with Uracil-DNA Glycosylase (UNG).

Cat. #	Description	Pack Size
NTACG010	dNTPs Set 1 (10 mM each)	4 x 5 μ mol (4 x 500 μ l)
NTACG100	dNTPs Set 1 (100 mM each)	4 x 25 μ mol (4 x 250 μ l)
NTACG111	dNTPs Set 1 (100 mM each)	4 x 100 μ mol (4 x 1 ml)

▷ Storage: -20°C

dATP (100 mM solution)

2'-Deoxyadenosine 5'-Triphosphate (sodium salt)

Formula: $C_{10}H_{14}N_5O_{12}P_3Na_2 \cdot 3H_2O$
Concentration: 100 mM in highly purified water
High Purity: >99%
pH: 6.5 - 7.5

Cat. #	Description	Pack Size
NTATP100	dATP (100 mM)	25 µmol (250 µl)
NTATP111	dATP (100 mM)	100 µmol (1 ml)

▷ Storage: -20°C

dCTP (100 mM solution)

2'-Deoxycytidine 5'-Triphosphate (sodium salt)

Formula: $C_9H_{13}N_3O_{13}P_3Na_2 \cdot H_2O$
Concentration: 100 mM in highly purified water
High Purity: >99%
pH: 6.5 - 7.5

Cat. #	Description	Pack Size
NTCTP100	dCTP (100 mM)	25 µmol (250 µl)
NTCTP111	dCTP (100 mM)	100 µmol (1 ml)

▷ Storage: -20°C

dGTP (100 mM solution)

2'-Deoxyguanosine 5'-Triphosphate (sodium salt)

Formula: $C_{10}H_{13}N_5O_{13}P_3Na_2 \cdot H_2O$
Concentration: 100 mM in highly purified water
High Purity: >99%
pH: 6.5 - 7.5

Cat. #	Description	Pack Size
NTGTP100	dGTP (100 mM)	25 µmol (250 µl)
NTGTP111	dGTP (100 mM)	100 µmol (1 ml)

▷ Storage: -20°C

dTTP (100 mM solution)

2'-Deoxythymidine 5'-Triphosphate (sodium salt)

Formula: $C_{10}H_{14}N_2O_{14}P_3Na_2 \cdot 2H_2O$
Concentration: 100 mM in highly purified water
High Purity: >99%
pH: 6.5 - 7.5

Cat. #	Description	Pack Size
NTTTP100	dTTP (100 mM)	25 µmol (250 µl)
NTTTP111	dTTP (100 mM)	100 µmol (1 ml)

▷ Storage: -20°C

dUTP (100 mM solution)

2'-Deoxyuridine-5'-triphosphate (sodium salt)

Formula: $C_9H_{12}N_2O_{14}P_3Na_2 \cdot H_2O$
Concentration: 100 mM in highly purified water
High Purity: >99%
pH: 7.5 - 8.5

Cat. #	Description	Pack Size
NTUTP100	dUTP (100 mM)	25 µmol (250 µl)
NTUTP111	dUTP (100 mM)	100 µmol (1 ml)

▷ Storage: -20°C

DNA Contamination Removal

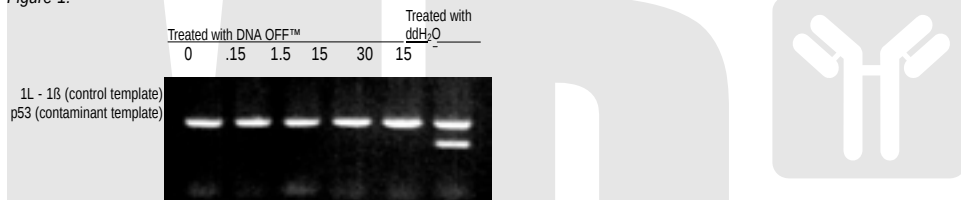
DNA OFF™

Ready to use solution for eliminating DNA from all surfaces

- Decontaminates PCR work areas
- Ready-to-use
- Cost effective
- Non-carcinogenic & non-corrosive
- Heat resistant

DNA OFF™ is a non-alkaline cleansing solution that is highly active against DNA contamination. This solution contains a surfactant plus an agent that destroys DNA intended for use at PCR workstations including countertops, apparatus and pipettors. Presence of contaminant DNA at a PCR work area can result in DNA amplification artifacts.

Figure 1:



Effectiveness of DNA OFF™ at removal of DNA contamination. Increasing amounts of p53 template DNA were dried onto the bottom of thin wall PCR tubes. DNA OFF™ (100 µl) was added to the tubes as indicated and 100 µl ddH2O was added to the control tube. Each tube was vortexed for 20 seconds followed by two 100 µl washes with ddH2O. PCR reaction mix containing 15pg 1L-1B DNA template and both 1L-1B and p53 primers were added to each tube and run for 35 cycles. PCR products were resolved on a 1.2% agarose gel (1X TAE) and visualized by EtBr staining.

The DNA OFF™ is stable and heat resistant. In addition, the solution is non-corrosive and does not contain carcinogenic compounds.

DNA OFF™ is ready-to-use for eliminating DNA from all surfaces. The decontamination instructions are easy to follow. By simply applying DNA OFF™ and rinsing, DNA is completely removed leaving your work area free of contaminant DNA.

Cat. #	Description	Size
QD0500	DNA-OFF	500 m

▷ Storage: Store at room temperature

Reverse Transcription

RT-&GO™ mastermix

Mastermix for first strand cDNA synthesis

PCR

RT-&GO™ Mastermix is a 2.5X concentrated mastermix for efficient first strand cDNA synthesis, containing all the components required for Reverse Transcription : M-MuLV Reverse Transcriptase, Reverse Transcription buffer, RNase inhibitor and dNTPs.

RT-&GO™ Mastermix can be used either with random primers (random octamers, Cat. # RTOCT100) for transcription of total RNA or with poly(T) primers (anchored oligo (dT)25V, Cat. # RTANC100) to transcript mRNAs, or gene specific primers.

Resulting first strand cDNA can be used directly for second strand synthesis, standard PCR, high fidelity PCR for further cloning or quantitative PCR.

Cat. #	Description	Size
RTRAG100	RT-&GO™ Mastermix	100 reactions

▷ Storage: -20°C

The mix doesn't freeze at this storage temperature, for immediate use.

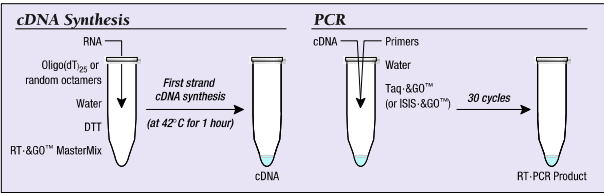
Two-Step RT-PCR-&GO™ Kits

Separate Mastermixes for RT and PCR

- For reproducible high yield amplification
- Optimized ready-to-use RT and PCR Mastermixes
- Significant savings in preparation time
- Reduced risks of errors and contamination

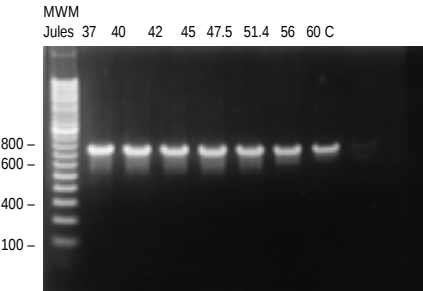
RT-PCR (reverse transcription-polymerase chain reaction) is a common technique used for the detection and study of mRNA. Two-Step RT-PCR allows each part of the process to be individually optimized for yield and permits multiple PCRs from a single RNA sample.

Figure 1:
Two-Step RT-PCR-&GO™ Protocol



Kit concept offers the benefits of Two-Step RT-PCR within the time needed to perform One-Step RT-PCR.

Figure 2:



RT-PCR performed on 0.5 µg of total RNA from mouse heart with the high fidelity Two-Step RT-PCR-&GO™ Kit. Reverse transcription reaction was performed at various temperatures with RT-&GO™ Mastermix and anchored oligo(dT)25 primer. PCR was performed with Isis-&GO™ Mastermix and primers for the amplification of a 750 bp fragment of GAPDH gene. Lane 1: Jules Marker (Cat. # MWJUL300).

This new kit concept allows you to enjoy the flexibility of Two-Step RT-PCR in the same time as it takes to do one-step RT-PCR. For the PCR step, the kits offers the choice between 2 Mastermixes containing either MP Biomedicals Taq DNA polymerase for standard PCR (Taq-&GO™) or the high fidelity Isis DNA Polymerase (Isis-&GO™) when, for example, further cloning of the PCR product is foreseen.

Kit Components	Quantity
RT-&GO™ Mastermix (M-MuLV Reverse transcriptase, RNase inhibitor, DTT, dNTPs)	800 µl
Anchored Oligo (dT)25V (40 µM)	100 µl
N8 random octaners (40 µM)	100 µl
100 mM DTT	500 µl
Water DEPC treated	1 ml
Taq-&GO™ (100 U polymerase, buffer, dNTPs)	1 ml

Cat. #	Description	Size
RT2ST100	Standard Two-Step RT-PCR-&GO™ Kit	100 reactions

▷ Storage: -20°C (Taq-&GO™ Mastermixes can be stored at +4°C)

Reverse Transcriptase AMV

From Avian Myeloblastosis Virus

- Withstands temperatures of 55 to 60°C
- RNase H and unwinding activity

AMV Reverse Transcriptase is an RNA-dependent DNA polymerase. The enzyme is composed of two polypeptides, α and β . The molecular weight of the α subunit is 68,000 Da and that of the β subunit 92,000 Da. It is widely used for first and second strand synthesis of complementary DNA (cDNA) from mRNA templates for cloning or for hybridization probes. Such synthesis requires a primer, commonly oligo(dT) bound to the 3'-poly(A) region of mRNA. Polymerization proceeds in the 5' to 3' direction with no 5' to 3' exonuclease activity. Under the right conditions, high yields of full length cDNA can be obtained using AMV reverse transcriptase.

AMV Reverse Transcriptase is suitable for synthesis of cDNA using specific primers, at temperatures of 55 to 60°C. This high reaction temperature permits transcription of RNA containing secondary structure.

Storage: 200 mM KPO4 pH 7.2, 2 mM DTT, 0.2% Triton X-100, 50% Glycerol, temperature -20°C.
Incubation buffer: 50mM Tris HCl pH 8.3, 40 mM KCl, 6 mM MgCl₂.
Unit definition: One unit incorporates 1 nmol of dTTP into an acid-insoluble product in 10 minutes at 37°C using polyA-oligo dT12-18 as a substrate.
Purity: Free of contaminating endonuclease, exonuclease and ribonuclease.
Activity: 10-20 units/ μ l with a specific activity higher than 200,000 units per mg.
Functional testing: When globin mRNA is incubated for 5 minutes at 37°C, at least 99% of cDNA products are full length.

Cat. #	Description	Size
EMAMV200	Reverse Transcriptase AMV	200 U
EMAMV203	Reverse Transcriptase AMV	600 U (3 x 200 U)

▷ Storage: -20°C

M-MuLV Reverse Transcriptase

High efficiency enzyme from Moloney Murine Leukemia Virus

- Synthesis of full length copies of cDNA → 10 kb
- Low RNase H activity
- Recombinant enzyme

M-MuLV Reverse Transcriptase, a recombinant enzyme, is an RNA-dependent DNA polymerase. It is a single polypeptide with an apparent molecular weight of 71,000 Da. It requires Mg²⁺ for optimal activity. As M-MuLV RT has a lower RNase H activity than AMV reverse transcriptase it is a better choice for synthesizing full-length copies of large mRNA (in excess of 10 kb), under optimal reaction conditions. It is recommended that 200-300 units of M-MuLV reverse transcriptase are used per μ g of mRNA in a reaction at 37°C for 1 hour. Synthesis of cDNA longer than 2 kb is done at 42°C. This enzyme can synthesize a complementary strand initiating from a single stranded RNA or DNA template. Applications include: synthesizing cDNA for cloning or for hybridization probes, filling in and labeling the 3'-termini of DNA with 5'-protruding ends, DNA sequencing, and amplification of RNA.

Storage: 50 mM Tris HCl, pH 8.3, 0.1M NaCl, 1 mM EDTA, 5 mM DTT, 0.1% Triton X-100, 50% Glycerol (v/v). Store at -20 °C
Incubation buffer1x: 50 mM Tris HCl pH 8.3, 75 KCl, 3 mM MgCl₂, 10mM DTT .
Unit definition: One unit incorporates one nmol of dTTP into DE-81 adsorbable form in 10 minutes at 37°C using polyA-oligo dT12-18 as a substrate.
Purity: Free of contaminating, non-specific double-stranded and singlestranded endonucleases, exonucleases and ribonucleases. Typically greater than 90% pure by SDS-polyacrylamide gel electrophoresis.

Concentration: 100 units/ μ l
 Supplied with 5x incubation buffer and DTT 100mM apart

Cat. #	Description	Size
EMMLV100	M-MuLV Reverse Transcriptase	10,000 U
EMMLV103	M-MuLV Reverse Transcriptase	30,000 U (3 x 10,000 U)

▷ Storage: -20°C

Anchored Oligo(dT)25V NEW

Anchored Oligo(dT)25 V Primers have 25 thymidine residues and, to ensure binding at the beginning of the mRNA message, one G, C or A residue (the anchor) at the 3' end.

Concentration: 40 µM

Cat. #	Description	Size	Price
RTANC100	Anchored oligo(dT)25V	100 µl (100 RT-PCR reactions)	

▷ Storage: -20°C

Random Octamers NEW

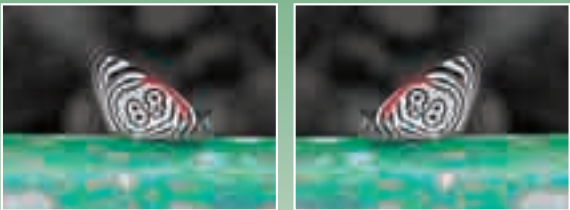
Random Octamers are random sequences of eight deoxyri-bonucleotides (8-mers). Random octamers may be used as universal primers in first strand cDNA synthesis, cDNA library construction and RT-PCR.

Concentration: 40 µM

Cat. #	Description	Size	Price
RTOCT100	Random Octamers	100 µL (100 RT-PCR reactions)	

▷ Storage: -20°C

Can you find any difference
between the 2 images?



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- ▶ High yield even with difficult genomic templates

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Cloning & Transformation



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Looking for convenient, error-proof, and reliable products for cloning and transformation? MP Biomedicals offers a broad array of products designed to save time and money without sacrificing results. From the purification and cloning of PCR products to the transformation of ligated DNA, MP Biomedicals kits are the answer to labs focused on quality.

Selection Agents for Cloning

Ampicillin

Ampicillin (sodium salt)

The antibiotic ampicillin is a derivative of penicillin that inhibits bacterial cell wall synthesis. Ampicillin is used to select bacterial cells transformed with a plasmid carrying an ampicillin resistance gene (for example pBR 322). The sodium salt of ampicillin, as provided, is easier to solubilize than ampicillin base.

CAS No : 69-52-3
MW : 371.39 g/mol
EC No : 200-708-1
Formula : $C_{18}H_{18}N_3O_4SNa$

Specifications

Sterile powder soluble in water

Cat. #	Description	Size
0219452605	Ampicillin	5g
0219452625	Ampicillin	25 g
0219452680	Ampicillin	100 g

▷ Storage: Store dry at + 4°C. (Aqueous solutions of ampicillin are not stable and should be freshly prepared prior to use).

► Risk and Safety: Hazardous material

Please refer to the material safety data sheet for proper handling

IPTG

Molecular biology grade

IPTG (Isopropyl-β-D-thiogalactopyranoside) is a galactose analogue not recognized by β-galactosidase. It is an inducer of the operon in *E. coli*. At a 1 mM concentration, IPTG induces β-galactosidase gene expression allowing the selection of Lac⁺ recombinant bacteria in X-Gal containing medium. IPTG is water soluble.

CAS No : 367-93-1
MW : 238.31 g/mol
EC No : 2067030
Formula : $C_9H_{18}SO_5$

Specifications

Appearance : white powder
Assay (HPLC) : > 99.0 %
Specific rotation : $-31^\circ \pm 1^\circ$ (1%, H₂O, 20°C)
Water content : < 1.0 % (Karl Fisher)
Dioxane : < 0.0001 %
RNase, DNase and Protease free.

References

Donner, J. et al. (1982) J. Biol. Chem. 257, 14826-9.
S. Cho et al. (1985) Biophys. Res. Commun., 128, 1268.

Cat. #	Description	Size
IPTG0001	IPTG	1 g
IPTG0005	IPTG	5 x 1 g
IPTG0010	IPTG	10 x 1 g

X-Gal

Molecular biology grade

X-Gal (5-Bromo-4-Chloro-3-Indolyl-β-D-galactopyranoside) is a β-galactosidase chromogenic substrate(1,2). In the presence of β-galactosidase, X-Gal is hydrolyzed and yields a blue precipitate. X-Gal is used for the identification and selection of β-galactosidase producing bacteria (bacteria Lac⁺(3); they produce blue colonies on agar medium. X-Gal is used at a 40 µg/ml concentration. It is soluble in dimethylformamide.

CAS No : 7240-90-6
 MW : 408.64 /mol
 EC No : 230-640-8
 Formula : C₁₄H₁₅BrClNO₆

Specifications

Assay (HPLC) : > 99.0 %
 Appearance : White powder
 Specific rotation : [α]_D²⁰ : -62 ±2
 Water content (KF) : < 0.2 %
 Solubility : clear solution
 (2% in DMF)
 RNase, DNase, Protease free

References

1. Lojda, Z. et al. (1973) *Histochemie* 34, 31-9.
2. Lojda Z. et al. (1979), "Enzyme Histochemistry, A Laboratory Manual". Springer-Verlag Berlin, Heidelberg, New-York.
3. Davies, et al. (1980) *Advanced Bacterial Genetics*, Cold Spring Harbour, N.Y.

Cat. #	Description	Size
XGAL0100	X-Gal	100 mg
XGAL0500	X-Gal	5 x 100 mg
XGAL1000	X-Gal	1 g
XGAL5000	X-Gal	5 x 1 g

▷ Storage: Store at -20°C

Enzymes

Alkaline Phosphatase (CIP)

Isolated from calf intestine

- Hydrolysis of 5' residues
- Active on RNA and DNA
- Heat inactivated

Calf intestine alkaline phosphatase (CIP) hydrolyzes 5'-terminal monophosphate groups of DNA and RNA and 5'-di- and triphosphate groups of RNA. This enzyme is widely used for removing 5' phosphates from fragments of DNA or RNA prior to labeling the 5' end with polynucleotide kinase, or to prevent self-ligation of cloning vectors. Unlike BAP, CIP is inactivated by heat. The enzyme has been tested for the absence of nickase, ribonuclease, endo- and exonuclease activity.

Storage: Tris HCl 10 mM pH 8.0, MgCl₂ 1 mM, ZnCl₂ 0.1 mM, KCl 50 mM, Glycerol 50%, Temperature - 20°C

Activity: The activity of CIP is given in DNA units see under BAP.

Quality control: In addition to the QC tests specified at the beginning of the chapter the dephosphorylation kinetics and efficiency of transformation of CIP treated plasmids is determined for each lot of enzyme.

References :

1. Chaconas, G. and v.d. Sande, J.H. (1980) *Meth. Enzymol.* 65:75
2. Efstratiadis, A. et al. (1974) *Nucl. Acids. Res.* 4:4165
3. Fernley, H.N. and Walker, T.G. (1967) *Biochem. J.* 104:1011
4. Maxam, A.M. and Gilbert, W. (1980) *Methods Enzymol.* 65:499
5. Simsek, M. et al. (1973) *Proc. Natl. Acad. Sci. USA* 70:1041

Cat. #	Size
EMCIP200	20000 U DNA (50 U pNPP)
Concentration: 200 U/μl	
Delivered with 10x dephosphorylation buffer	

T4 DNA Ligase

Isolated from T4 infected E. coli

- Highly active ligase
- For blunt and sticky ends

The enzyme is a single polypeptide of 68,000 molecular weight. T4 DNA Ligase joins fragments of DNA with compatible cohesive termini as well as blunt ended DNA fragments. DNA fragments with cohesive termini can be ligated at 4 °C by the addition of 0.01 to 0.1 Weiss units of enzyme per μg DNA. Blunt-ended DNA fragment ligation is usually carried out at 16°C with 1 to 2 Weiss units per μg DNA. DNA ligase catalyzes the formation of a phosphodiester bond between adjacent 3'-OH and 5'-P termini. This phosphodiester bond-forming reaction requires ATP hydrolysis. Inorganic pyrophosphate and AMP are released as by-products.

Cat. #	Size
EMLIG200	200 U
EMLIG203	600 U (3 x 200U)

▷ Storage: -20°C

Concentration: 5 U/μl

10x Incubation buffer provided [contains ATP]

Storage: Tris HCl 10 mM, pH 7.4, KCl 50 mM, DTT 1mM, EDTA 0.1 mM, Glycerol 50 %. Store at -20°C

Incubation buffer 1x: Tris HCl 50 mM pH 7.6, MgCl₂ 10 mM, DTT 10 mM, ATP 1 mM.

Activity: At least 3000 Weiss units per mg protein.

Unit definition: One Weiss unit is the amount of enzyme required to exchange, 1 nmol 32PPi into Norit absorbable material within 20 min(1) at 37 °C. One Weiss unit corresponds to 0.2 units according to Modrich and Lehman with d(A-T) as substrate(2). A 50% ligation yield of Hind III digested DNA fragments can be obtained with 0.006 Weiss units. The amount of DNA Ligase required depends both on the nature of the fragments to be ligated, and on whether blunt ends or sticky ends are involved. Other factors such as the length of the sticky ends, the stability of the hydrogen-bonded structure, the temperature and the concentration of the DNA fragments also have a strong influence on ligation efficiency. Therefore any activity definition will be limited to a particular set of conditions. Qbiogene uses the pyrophosphate exchange assay of Weiss et al.

Typical results: Ligation of sticky ends: 0.025 U T4 DNA Ligase more than 95% of 1 μg HindIII digested I DNA are religated in 20 μl 1 x incubation buffer in 1h at 22 °C.

References:

1. Weiss B. et al. (1968) *J. Biol. Chem.* 243: 4543.
2. Modrich, P. and Lehman, I.R., (1970) *J.Biol.Chem.* 245:

E. coli Transformation

Transform & Grow™ Bacterial Transformation Kit

- No Heat Shock Required
- Transform-It™ Solution is Ready-to-Use
- Transform Plasmids, Ligations, and Cosmids
- Store Competent Cells 10 Weeks or Longer
- More Reliable than "Do-it-Yourself" Methods
- Easy Procedure with Minimal Hands-On Time

The Transform & Grow™ Bacterial Transformation Kit provides a simple and efficient method for the preparation, transformation and storage of competent *E. coli* cells. Bacterial cells are grown to mid-log phase at 37°C, pelleted and resuspended in Transform-It™ Solution. This unique buffer enables the cells to become immediately available for transformation and permits freezing the cells for future use without further preparation. The competent cells remain stable at -70°C for at least 10 weeks. The Transform & Grow™ Bacterial Transformation Kit eliminates the requirement for heat shock and prepares competent cells within two and a half hours with only 30 minutes of hands-on manipulation. The kit includes Transform-It™ Solution, SUPER-COMP Media and Roll & Grow® Plating Beads to prepare competent cells with a reliable and reproducible transformation efficiency of 2–8 x 10⁶ transformants per µg of supercoiled plasmid DNA. Reagents for 50 transformations are provided.



Kit Components: Transform-It™ Solution, SUPER-COMP Media, Roll & Grow® Plating Beads

Cat. #	Description	Size
2150200	Transform & Grow™ Bacterial Transformation kit	50 transformations

SUPER-COMP Media and Transformation Salts

SUPER-COMP is an extremely rich medium that significantly increases cell competency when using a simple RbCl/CaCl means of preparing competent host cells:

1. Dilute 1 ml of a fresh overnight culture of host cells grown in LB medium into 25 ml of 37°C SUPER-COMP media in a 500 ml flask.
2. Incubate cells with vigorous aeration for 1-2 hours until cells reach mid-log phase (approximately 8 x 10⁸ cells/ml, OD₆₀₀ reading 0.8 for most *E. coli* host cells).
3. Centrifuge culture in a sterile tube at 4°C to pellet cells. Resuspend pellet in 15 ml of ice cold 1X RbCl/CaCl Transformation Salts.
4. After 15 minutes on ice, centrifuge to pellet cells and gently resuspend in 2 ml of ice cold 1X RbCl/CaCl Transformation Salts. Keep cell suspension on ice.

Cells are now competent and are immediately ready for DNA uptake. For maximum transformation efficiency, store for 12- 24 hours at 4°C to increase competency 4-6 fold (at 48 hours they will be approximately as efficient as when first made). Competent cells can also be frozen in aliquots at -80°C after adding glycerol to 20%.

Cat. #	Description	Size
3103011	SUPER-COMP Media	100 Capsules
3103014	10X RbCl/CaCl Transformation Salts	150 ml

SOB Medium

Standard media for preparing cells for chemical transformation.

31 g (31 Capsules) per Liter
Contents/liter: 20 g tryptone, 5 g yeast extract, 0.5 g NaCl, 5 g MgSO₄•7H₂O

Cat. #	Size
Powder	
3030022	454 g (1 lb)
Capsules	
3030021	454 g (1 lb)

SOC Medium

SOC is a special medium for incubating competent cells immediately after transformation to allow expression of transferred resistance genes before exposing cells to selective conditions.

31 g per liter

Contents/liter: SOB, 20 mM glucose

Cat. #	Size
Powder	
3031012	227 g (0.5 lb)
Liquid	
3031014	10 ml

Agrobacterium Transformation

Agrobacterium Transformation Kit

Transformation solution for Agrobacterium sp.

The *Agrobacterium* Transformation Kit provides a single transformation solution with which *A. rhizogenes* or *A. tumefaciens* can be transformed with plasmid DNA using either a freeze/thaw or electroporation method. Optimized *Agrobacterium* Medium and Agar are also included, along with Roll & Grow® Plating Beads for easy spreading of transformed cells. Once media preparation is complete, this easy transformation procedure takes less than 45 minutes with minimal hands-on time.

Kit Components: *Agrobacterium* Transformation Solution, *Agrobacterium* Medium Pouch, *Agrobacterium* Medium Agar Pouch, Roll & Grow® Plating Beads.

Cat. #	Description	Size
3301100	<i>Agrobacterium</i> Transformation Kit	25 preps

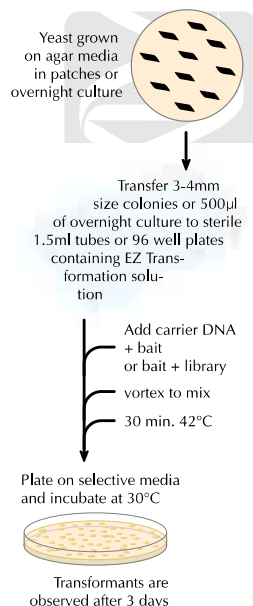
S. cerevisiae Transformation

EZ-Yeast Transformation Kit

High throughput transformation of yeast cells

- Designed for high-throughput requiring lower efficiency
- No need to make competent cells
- Simple and fast transformation method with minimal hands-on time

The EZ-Yeast Transformation Kit is designed for high-throughput transformation with efficiencies up to 10^3 transformants per μg plasmid DNA. Perfect for a quick analysis of potentially positive two-hybrid colonies, the EZ-Yeast Transformation Kit does not require fully competent cells prior to transformation. Simply remove a 3-4 mm colony or 0.5 ml overnight culture to a new tube, add vector and carrier DNA, incubate for 30 minutes and plate on selective media.



Cat. #	Description	Size
2100200	EZ-Yeast Transformation Kit	200 preps

Alkali-Cation™ Yeast Transformation Kit

High efficiency transformation of yeast cells

- Transformation process complete in less than 90 minutes
- Efficiencies routinely greater than 10^4 transformants per μg plasmid DNA

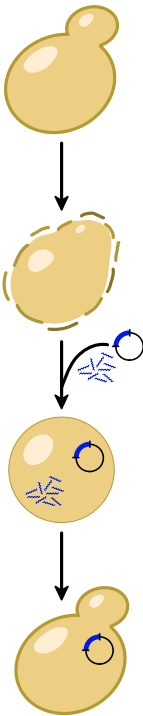
The Alkali-Cation™ Yeast Transformation Kit provides the reagents needed to perform an easy and quick transformation of yeast, while obtaining a large number of transformants. Its ease of use, robustness, and scalability make this the method of choice for the high-efficiency transformation needed in two hybrid screens. Host cells are made competent by treatment with a lithium/cesium acetate solution. Plasmid DNA is added to the competent cells along with carefully prepared carrier DNA that has been optimized to provide high transformation efficiencies. The Alkali-Cation™ Yeast Transformation Kit has also been successfully used to transform linear DNA into *P. pastoris* for protein expression studies.

Kit Components: TE (pH 7.5), Lithium/Cesium Acetate, Carrier DNA, Histamine, PEG, TE/Cation MIXX, SOS

Cat. #	Description	Size
2200200	Alkali-Cation™ Yeast Transformation Kit	250 preps

Alkali-Cation™ Kit

1. Grow yeast to mid-log phase
2. Treat cells with Lithium/Cesium Acetate Solution
3. Introduce plasmid DNA, carrier DNA, histamine, PEG, and TE/CationMIXX
4. Heat shock and plate on regeneration media to allow cell wall reconstruction and growth of transformants



Grab Your Analytes with the Luminous Tentacles

Most Stable Recombinant Aequorin Bioluminescent Protein and Conjugates Commercially Available

- ▶ Stable in wide pH range
- ▶ Does not require reducing agent
- ▶ Convenient general purpose avidin-biotin, and ready-made conjugates for your research
- ▶ Construct biosensors in a minute
- ▶ Ideally suited for both *in vitro* diagnostics and *in vivo* applications



Find these products on pages
805-806

Online ordering and product information:

www.mpbio.com



Purified & Recombinant Enzymes



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In keeping with our dedication to meeting the needs of researchers at all levels, a wide range of enzymes manufactured to the highest quality specifications are included in this chapter.

PURIFIED AND RECOMBINANT ENZYMES

DNA/RNA Modifying Enzymes

Calf Intestine Alkaline Phosphatase
DNA Polymerase Klenow fragment
T4 DNA Ligase
T4 Polynucleotide Kinase
Deoxyribonuclease (RNAase Free)
RNase inhibitor

Peptidases

Lysozymes
Proteinase K

Yeast Lytic Enzymes

Yeast Lytic Enzyme
Zymolyase

Kinases and Phosphatases

Protein Kinases
Protein Synthesis Initiation Factors
Protein Kinase Substrates
Protein Phosphatase Substrates
Modulator Proteins
Antibodies
Protein Kinase Kits
Protein Kinase Peptides
Index of Substrates by Target

Furins

Protease Inhibitors

Fluoromethylketone
Inhibitors (FMK) Non-Caspase
Aldehyde Inhibitors (CHO)
Chloromethylketone
Inhibitors (CMK)
Diazomethylketone Inhibitors (DMK)
Diphenyl-1-(N-Peptidylamino)-
Alkanephosphonate (DAP)
Serine Protease Inhibitors
General Inhibitors
Secretase Inhibitors

Synthetic Substrates

7-Amino-4

Trifluoromethylcoumarin Substrates (AFC)
Single Amino Acid Substrates
Two Amino Acid Substrates
Three Amino Acid Substrates
Four Amino Acid Substrates
Over Four Amino Acid Substrates

7-Amino-4 -

Mmethylcoumarin Substrates (AMC)
Single Amino Acid Substrates
Two Amino Acid Substrates
Three Amino Acid Substrates
Four Amino Acid Substrates
Over Four Amino Acid Substrates

4-Methoxy-2-

Naphthylamine Substrates (MNA)
Single Amino Acid Substrates
Two Amino Acid Substrates
Three Amino Acid Substrates
Four Amino Acid Substrates
Paranitroanilide Substrates (PNA)
Single Amino Acid Substrates
Two Amino Acid Substrates
Three Amino Acid Substrates
Four Amino Acid Substrates
Peptide Thiobenzyl Ester Substrates (SBzl)
Single Amino Acid Substrates
Two Amino Acid Substrates
Three Amino Acid Substrates
Four Amino Acid Substrates
Intramolecularly Quenched Substrates
EDANS-DABCYL Substrates
MCA-DNP Substrates

Cathepsins

Dipeptidyl Peptidases

Granzymes

Recombinant Caspases

RNA/DNA Modification Enzymes

- Calf Intestine Alkaline Phosphatase
- DNA Polymerase Klenow fragment
- T4 DNA Ligase
- T4 Polynucleotide Kinase
- Deoxyribonuclease (RNAase Free)
- RNase inhibitor

Calf Intestinal Phosphatase (CIP)

Isolated from calf intestine

- Hydrolysis of 5' residues
- Active on RNA and DNA
- Heat inactivated

Calf intestine alkaline phosphatase (CIP) hydrolyzes 5'-terminal monophosphate groups of DNA and RNA and 5'-di- and triphosphate groups of RNA. This enzyme is widely used for removing 5' phosphates from fragments of DNA or RNA prior to labeling the 5' end with polynucleotide kinase, or to prevent self-ligation of cloning vectors. Unlike BAP, CIP is inactivated by heat. The enzyme has been tested for the absence of nickase, ribonuclease, endo- and exonuclease activity.

Storage:

Tris HCl 10 mM pH 8.0, MgCl₂ 1 mM, ZnCl₂ 0.1 mM, KCl 50 mM,
Glycerol 50%, Temperature - 20°C

References :

1. Chaconas, G. and v.d. Sande, J.H. (1980) Meth. Enzymol. 65:75
2. Efstratiadis, A. et al. (1974) Nucl. Acids. Res. 4:4165
3. Fernley, H.N. and Walker, T.G. (1967) Biochem. J. 104:1011
4. Maxam, A.M. and Gilbert, W. (1980) Methods Enzymol. 65:499
5. Simsek, M. et al. (1973) Proc. Natl. Acad. Sci. USA 70:1041

Cat. #	Size
EMCIP200	20 000 U DNA (50 U pNPP)
Concentration: 200 U/μl Delivered with 10 x Incubation buffer.	

DNA Polymerase I (Klenow Fragment)

Isolated from E. coli

- Label 3' ends
- Generate blunt ends
- Random priming
- DNA sequencing

The Klenow fragment consists of the C-terminal portion (70%) of DNA Polymerase I. It retains the DNA dependent 5'-3'-polymerase with 3'-5'-exonuclease activity but lacks the 5'-3'-exonuclease activity of the native enzyme. This preparation is free of any endonuclease activity. The enzyme is widely used for DNA sequencing experiments(1), for filling-in of 5' protruding sticky ends, for blunt-end formation of DNA fragments(2), for second strand synthesis of cDNA(3), and for random-primed labeling(4,5) for the incorporation of non-radioactively labeled and [32P]-labeled nucleotides.

Storage:

100 mM KPO₄, 1 mM DTT, 50% glycerol (v/v), 0.1 mg/ml BSA, pH 7.0. Store at -20°C.

Activity:

One unit is the amount of enzyme required to catalyze the incorporation of 10 nanomoles of deoxynucleotides into DE-81 adsorbable form in 30 minutes at 37 °C.

Incubation conditions:

40 mM KPO₄ pH 7.5, 6.6 mM MgCl₂, 1 mM 2-mercaptoethanol.

Note: Because Klenow fragment incorporates nucleotides that are complementary to the single-stranded 5' extensions, the choice of 32P-labeled dNTP depends on the restriction enzyme used to generate the DNA ends.

References :

1. Sanger F et al., (1977) Proc. Natl. Acad. Sci. USA, 74:5463
2. Anderson, S. et al., (1980) Nucl. Acids. Res. 8:1731
3. Houdebine, L.M., (1976) Nucl. Acids. Res. 3:615
4. Feinberg, A.P. and Vogelstein, B. (1983) Anal. Biochem. 132:6-13

Cat. #	Size
EMKLF200	200 U
Concentration : 5 U/μl Supplied with 10 X incubation buffer and a separate MgCl ₂ solution at 66mM	

T4 Polynucleotide Kinase

(E.C.2.7.1.78) Isolated from T4 infected E. coli

- 5'-labeling of DNA and RNA
- Mapping termini of RNA transcripts
- 5'-phosphorylation of synthetic oligonucleotides

T4 Polynucleotide Kinase catalyzes the transfer of the gamma phosphate of ATP to a 5' OH terminus in DNA or RNA. This enzyme is used for 32P-labeling of 5' termini in DNA, for sequencing by the Maxam Gilbert method(1), for probes for hybridization assays, for preparing radioactive molecular weight markers etc. 5' end termini of DNA are usually dephosphorylated using alkaline phosphatase before labeling with kinase. In the presence of ADP, it will also catalyze the exchange of 5'-terminal phosphate groups and ATP(3).

Storage: Tris HCl 50 mM, pH 7.5, EDTA 0.1 mM, DTT 1mM, ATP 1 μ M, Glycerol 50 %. Store at -20°C.

Unit definition: one Richardson unit catalyzes the transfer of one nmol of phosphate from ATP onto the 5' OH end of a polynucleotide in 30 minutes at 37°C(2)

1x incubation buffer: Tris HCl 50 mM pH 7.5, MgCl₂ 10 mM, DTT 5 mM.

References

1. Maxam, A.M. and Gilbert, W., Method Enzymol. 65, 499 (1980)
2. Richardson, C.C., Nucl. Acids. Res. 2, 815 (1971)
3. Berkner, K.L. and Falk, W.R., J. Biol. Chem. 252, 3176 (1977)

Cat. #	Size
EMKIN500	500 U

Concentration: 10 U/ μ l

10x incubation buffer supplied

T4 DNA Ligase

Isolated from T4 infected E. coli

- Highly active ligase
- For blunt and sticky ends

T4 DNA Ligase joins fragments of DNA with compatible cohesive termini as well as blunt ended DNA fragments. DNA fragments with cohesive termini can be ligated at 4 °C by the addition of 0.01 to 0.1 Weiss units of enzyme per μ g DNA. Blunt-ended DNA fragment ligation is usually carried out at 16°C with 1 to 2 Weiss units per μ g DNA. DNA ligase catalyzes the formation of a phosphodiester bond between adjacent 3'-OH and 5'-P termini. This phosphodiester bond-forming reaction requires ATP hydrolysis. Inorganic pyrophosphate and AMP are released as by-products.

Storage: Tris HCl 10 mM, pH 7.4, KCl 50 mM, DTT 1mM, EDTA 0.1 mM, Glycerol 50 %. Store at -20°C

Incubation buffer 1x: Tris HCl 50 mM pH 7.6, MgCl₂ 10 mM, DTT 10 mM, ATP 1 mM.

Activity : At least 3000 Weiss units per mg protein.

Unit definition : One Weiss unit is the amount of enzyme required to exchange, 1 nmol 32PPi into Norit absorbable material within 20 min(1) at 37 °C. One Weiss unit corresponds to 0.2 units according to Modrich and Lehman with d(A-T) as substrate(2). A 50% ligation yield of Hind III digested DNA fragments can be obtained with 0.006 Weiss units. The amount of DNA Ligase required depends both on the nature of the fragments to be ligated, and on whether blunt ends or sticky ends are involved. Other factors such as the length of the sticky ends, the stability of the hydrogen-bonded structure, the temperature and the concentration of the DNA fragments also have a strong influence on ligation efficiency. Therefore any activity definition will be limited to a particular set of conditions. MP Biomedicals uses the pyrophosphate exchange assay of Weiss et al.

Typical results : Ligation of sticky ends: 0.025 U T4 DNA Ligase a more than 95% of 1 μ g HindIII digested DNA are religated in 20 μ l 1 x incubation buffer in 1 h at 22 °C.

References

1. Weiss B. et al. (1968) J. Biol. Chem. 243: 4543.
2. Modrich, P. and Lehman, I.R., (1970) J.Biol.Chem. 245: 3626

Cat. #	Size
EMLIG200	200 U
EMLIG203	600 U (3 x 200 U)

Concentration: 5 U/ μ l

Incubation buffer 10x provided contains ATP

Deoxyribonuclease I (RNase free)

Isolated from bovine pancreas

- Ready to use solution
- Removing DNA from RNA and protein preparations
- Studying DNA-protein interactions by DNase I foot printing(1)
- Nick translation of DNA

DNase I (deoxyribonuclease I) digests single- and double-stranded DNA to produce oligodeoxyribonucleotides. This preparation is for use in applications where protecting the integrity of RNA is critical. It is a key tool for preparing RNA free from DNA contaminants. RNase free DNase I is able to selectively degrade DNA template without hydrolysis of the RNA probe.

DNase I produces random nicks in double-stranded DNA in the presence of Mg²⁺, but both strands of DNA are cleaved in the presence of Mn²⁺.

Storage: Tris HCl 10 mM pH 7.4, KCl 50 mM, CaCl₂ 0.5 mM, BSA 0.1 mg/ml, Glycerol 50 %. Store at -20°C

Unit Definition : One unit is defined as the amount of enzyme required to completely hydrolyze 1 µg I DNA within 1 minute at 25°C. Hydrolysis liberates fragments of less than 100 base pairs length.

Incubation buffer 1x: Tris HCl 10 mM pH 7.4, KCl 50 mM, CaCl₂ 0.5 mM, MgCl₂ 5 mM.

References :
Galas, D.J. and Schmitz, A. (1978) Nucleic Acids Res. 5: 3157-3170.

Cat. #	Size
EMDRF200	200 U

Concentration: 10 U/µl
Supplied with 10 x incubation buffer

RNase Inhibitor

RNase Inhibitor is a protein which specifically inhibits ribonucleases. It is used in applications such as *in vitro* translation, cDNA synthesis, RNA *in vitro* analysis, RNA purification, etc. RNase inhibitor is easier to use and to eliminate than vanadylribonucleosides.

Source: Human placenta

Unit definition: One unit is the amount of protein required to inhibit the activity of 5 ng of ribonuclease A by 50%. A minimal concentration of DTT (1mM) is required to maintain the activity. If less than 1mM DTT is used, the RNase inhibitor is irreversibly inactivated. The protein is denatured over 65°C.

Quality control: Each batch checked for absence of RNases, nickases, *exo-* and *endonucleases*.

Storage: Store at -20°C

References Blackburn, P., (1979), J.Biol.Chem., 254, 12484.

Cat. #	Description	Size
RNAI0001	RNase Inhibitor	1000 U
RNAI0002	RNase Inhibitor	10000 U

Peptidases

Lysozyme

From Chicken Egg White

Storage: Store at 0°C

[9001-63-2]
2X Crystallized

Activity : >9,000 units/mg protein

Unit definition: One unit will cause a decrease in A₄₅₀ of 0.001 per minute at pH 6.24 and 25°C using *Micrococcus lysodeikticus* as substrate.

Cat. #	Description	Size
100834	Salt-free and soluble. Lyophilized	1 g 5 g 10 g

Lysozyme

From Chicken Egg White

Storage: Store at 0°C

[9001-63-2]
3X Crystallized

Activity : 20,000-25,000 units/mg protein

Unit definition: One unit will cause a decrease in A_{450} of 0.001 per minute at pH 6.24 and 25°C using *Micrococcus lysodeikticus* as substrate.

Cat. #	Description	Size
100831	Salt-free and albumin-free. Lyophilized	100 mg 500 mg 1 g 5 g 10 g 25 g 100 g

Lysozyme

From Chicken Egg White (Type VI)
Molecular Biology Reagent

Storage: Store at 0°C

[9001-63-2]
3X Crystallized

Activity : ε23,500 Shugar units/mg

Unit definition: One unit will produce a decrease in A_{450} of 0.001 per minute at pH 6.24 and 25°C using *Micrococcus lysodeikticus* as substrate.

Cat. #	Description	Size
195303		1 g 5 g 25 g

Lysozyme

From Egg White

Storage: Store at -20°C

This enzyme catalyzes the hydrolysis of Gram-positive bacteria cell walls. Some limited activity to Gram-negative bacteria, chitin, and N-acetylglucosamine oligomers is observed. Optimum activity is observed at pH 6.0-7.0. This enzyme is supplied as an exhaustively dialyzed, lyophilized powder.

Activity : ~20,000 units/mg protein

Unit definition: One unit of enzyme will decrease the A_{450} 0.001 per minute at pH 6.24, 25°C in an assay using the lysis of *M. luteus* cells.

Cat. #	Size
363234	5 g

Lysozyme

From Human Neutrophils (White leucocytes)

Storage: Store at -20°C

(EC 3.2.1.17)

MW 17 kDa

Purity : >98% by SDS-PAGE

Activity : ~30,000 Shugar units/mg protein

Unit definition: One unit is defined as the amount of enzyme that will digest powdered cells of *Micrococcus lysodeikticus*, causing a decrease in absorbancy of 0.001 per minute at 37°C, pH 7.0.

References:

1. Shugar, D., *Biochem. Biophys. Acta*, **8**: 302 (1952).

Cat. #	Description	Size
191335	Supplied as a salt-free, lyophilized solid	100 µg

Proteinase K

EC 3.4.21.14. Isolated from Tritirachium album

- Broad spectrum of action
- Cleaves peptide bonds
- Catalyzes peptide amide hydrolysis
- Active in SDS and urea

Proteinase K is a serine endopeptidase with a molecular weight of 28 000. It exhibits a broad spectrum of action in addition to cleavage of peptide bonds, it is able to catalyze peptide amide hydrolysis. Calcium ions do not affect the activity of the enzyme but they do contribute to stability when present in concentrations of 1-5 µmoles. An interesting characteristic of Proteinase K is that it retains its activity in the presence of sodium dodecyl sulphate (SDS) or urea (0.5-1% SDS and 1-4 M urea). Raising the reaction temperature from 37°C to 50°C-60°C can increase the enzyme's activity several fold. Proteinase K is able to digest native proteins, thereby inactivating enzymes such as DNase and RNase without recourse to a denaturation process.

Proteinase K is inactivated by diisopropyl fluorophosphate (DFP) or phenyl methane sulphonyl fluoride (PMSF). Chelating agents such as citrate and EDTA have no effect on the enzyme's activity.

Proteinase K is useful in the isolation of highly native, undamaged DNAs or RNAs, since most microbial or mammalian DNases and RNases are rapidly inactivated by the enzyme, particularly in the presence of 0.5-1% SDS.

Storage: Store at 4°C.

Activity: Lyophilized Proteinase K supplied at minimum 30 mAnson U/mg

Unit definition: One Anson unit produces 1µmol of amino acid after 1 minute at 37.5°C at pH 7.5.

Quality control : Highly purified lyophilized powder, tested to ensure absence of DNase and RNase.

Reference :

Ebeling, W et al, (1974) Eur. J. Biochem, 47:91

Cat. #	Size
PROTK025	25 mg
PROTK100	100 mg
PROTK500	500 mg

Yeast Lytic Enzymes

YEAST LYTIC ENZYME

From Arthrobacter luteus

Unit definition: One unit will produce a $\odot A_{600}$ of 0.001 per minute at pH 7.5 and 25°C using a suspension of brewers yeast as substrate in a 3 ml reaction mixture.

Lytic Activity: 5000 units/g
This enzyme catalyzes the lysis of yeast cells and hydrolyzes glucose polymers with β -1,3-linkages. It is useful for preparing yeast spheroplasts.

Storage: Store at 0-5 °C

Cat. #	Size
360951	5 g

ZYMOLYASE 20T

From Arthrobacter luteus

Unit definition: The amount of activity causing a decrease in A_{600} of 30%.

Lytic Activity: 20,000 units/g
This is a highly purified preparation which effectively lyses cell walls of viable yeast cells.

Storage: Store at 0-5 °C

Cat. #	Size
320921	1 g

ZYMOLYASE 100T

From Arthrobacter luteus

Unit definition: The amount of activity causing a decrease in A_{600} of 30%.

Lytic Activity: 100,000 units/g
This is a highly purified preparation which effectively lyses cell walls of viable yeast cells.

Storage: Store at 0-5 °C

Cat. #	Size
320931	500 mg
320932	250 mg

Kinases and Phosphatases

PROTEIN KINASES

Protein Kinases are part of the signal transduction machinery which cells use to respond to extracellular stimuli. The high interest in these enzymes stems from the fact that they are involved in several disease states such as: organ failure, arthritis, asthma, cancer diabetes, CNS and other metabolic disorders.

Cat. #	Description	Size
PK110	GST PAK 1	100ng
PK111	Auto Activated Protein Kinase	50ng
PK113	Myelin Basic Protein Kinase-1	100ng
PK114	MBPK-2; Myelin Basic Protein Kinase-2	100ng
PK115	C RAF-1	100ng
PK117	cPK, Cytosolic Protamine Kinase	1ug

PROTEIN SYNTHESIS INITIATION FACTORS

Protein synthesis initiation factor 4E (eIF-4E) is mRNA Capbinding protein involved in an early rate-limiting step in the initiation of protein synthesis. In cells, it occurs as a complex with inhibitory binding proteins (4EBP)

Cat. #	Description	Size
IK118	Eif4e	1ug
IK119	eIF-4E s209A	1ug
IK120	eIF-4E T210A	1ug
IK121	eIF-4E s209T210A	1ug
IK122	eIF-4E s53A	1ug
IK123	eIF-4E S124A	1ug

PROTEIN KINASE SUBSTRATES

Cat. #	Description	Size
SK124	PDC-Pyruvate Dehydrogenase Complex	10ug
SK125	BCKD Complex; Branched-Chain-Keto Acid Dehydrogenase Complex	10ug
SK126	MBP: Myelin Basic Protein	10mg
SK127	c-Jun-AP-1 Transactivating Factor	1ug
SK146	Protamine Sulfate	100mg

PROTEIN PHOSPHATASE SUBSTRATES

Cat. #	Description	Size
PP130	PP2A Protein Phosphatase 2A	1ug
PP131	PP2A2; Protein Phosphatase 2A2	1ug
PP132	PP2A cr Protein Phosphatase 2A Catalytic Subunit	1ug
PP133	PP1C; Protein Phosphatase 1 Catalytic Subunit	1ug
PP134	PP2B; Protein Phosphatase 2B, Calcineurin	1ug
PP135	PP2C Protein Phosphatase 2C	1ug
PP136	PDP1; Pyruvate Dehydrogenase Phosphatase	1ug

MODULATOR PROTEINS

Cat. #	Description	Size
MP137	GST-I1; inhibitor-1	1ug
MP138	Subunit A (PR65) of PP2A	1ug
MP139	AGlu416 Subunit of Protein Phosphatase 2A	1 ug
MP140	I1(α) PP2A	250 ng
MP141	I2(α) PP2A	250 ng
MP142	GST-DEK Oncoprotein	1ug
MP143	I2(β) PP2A	250 ng
MP144	GST-I1(α) PP2A	1ug
MP145	GST-I2(α) PP2A	1ug
MP128	GST-Cdc42	1ug
MP129	Apolipoprotein AI	1ug

ANTIBODIES

Cat. #	Description	Size
AP148	Anti-PP2Ac	100 μ l
AP149	Anti-I1 PP2A	50 μ l
AP150	Anti-I2 PP2A(α)	50 μ l
AP151	Anti-AK/PAK2	50 μ l
AP152	Anti-PAK	50 μ l
AP153	Anti-Eif4e	50 μ l

PROTEIN KINASE KITS

Assay kits are useful for determining the activity of the catalytic domain of protein kinase. The kit can be used to evaluate the effect of a test substance or identify new targets. The kit provides for 50 assays. Assay is based on the reaction with myelin basic protein and [γ - 32 P] ATP.

Cat. #	Description
KK111	AK Assay Kit
KK112	CK-2 Assay Kit
KK113	MBPK Assay Kit
KK125	BCKDH Assay Kit
AKK148	Anti-PP2A Detection Kit
AKK149	Anti-I1 PP2A Detection Kit
AKK150	Anti-I2 PP2A(α) Kit
AKK151	Anti-AK/PAK2 Detection Kit
AKK152	Anti-PAK Detection Kit
AKK153	Anti-elF4E Detection Kit

PROTEIN KINASE PEPTIDES

Cat. #	Description	Size
PKS001	AALVRQMSVAFFFK Protein Kinase C(micro)	1mg
PKS002	AAKIQASFRGHMARKK Protein Kinase Selectide	1mg
PKS003	ARRPEGRTWAQPGY General	1mg
PKS004	ARKRERAYAFGHHA AKTide -SA	1mg
PKS005	ARKRERTYSFGHHA Aktide-2T	1mg
PKS006	ADAQHATPPKKKRVEDPKDF p34 cdc2	1mg
PKS007	APRTPGGRR Myelin basic protein substrate	1mg
PKS008	RRRDDSDDD Casein Kinase II	1mg
PKS009	RRREETEEE Casein Kinase II	1mg
PKS010	RRRLSSLRA-NH ₂ Ribosomal S6	1mg
PKS011	RRADSDDDDD Casein Kinase II	1mg
PKS012	RREETEEE Casein Kinase II	1mg
PKS013	RRGRTGRGRGIFR Kinase C (PKC)	1mg
PKS014	RRLIEDAEYAARG Tyrosine Kinase Substrate	1mg
PKS015	RRLIEDNEYTARG Tyrosine Kinase Substrate	1mg
PKS016	RRLSSLRA cAMP S6-1	1mg
PKS017	RRKASGP cAMP RRKASGP	1mg
PKS018	RRKASGPPV Phosphate Acceptor Peptide	1mg
PKS019	RRKDLHDDEEAMSITA Casein Kinase	1mg
PKS020	RGYALG General	1mg
PKS021	RGYSLG General	1mg
PKS022	RKRARKE General	1mg
PKS023	RKRSRAE General	1mg
PKS024	RKRSRKE General	1mg
PKS025	RKISASEFDRPLR Protein Kinase G BPDEtide	1mg
PKS026	RFARKGALRQKNVHEVK Protein Kinase C (19-35)	1mg
PKS027	RFARKGALRQKNVHEKN Protein Kinase C(19-36)	1mg
PKS028	RFARKGSLRQKNV [Ser25] Protein Kinase C (19-31)	1mg
PKS029	RFARKGALEQKNVHEKN [Glu27] Protein Kinase C (19-36)	1mg
PKS030	RFAYRDMRQTVAVGVIAVDKK Protein Kinase C (delta)	1mg
PKS031	RPRAATF-NH ₂ Protein Kinase B (alpha)	1mg
PKS032	RTRSGSVYEPLKI Malantide	1mg
PKS033	NYPLELYERVRTGC Protein Kinase C Fragment	1mg
PKS034	Ac-DY(PO3H2) VPML-NH ₂ SH2	1mg
PKS035	CDNQIKKM P34cdc2 Kinase Fragment	1mg
PKS036	Ac-QKRPSQRSKYL Ac-MBP(4-14) Peptide	1mg
PKS037	QKRPRRKDTP G-Subtide	1mg
PKS038	pGLU-KRPSQRSKYL [pGlu4]Myelin Basic Protein 4-14	1mg
PKS039	EGVPSTAIRESLLKE p34cdc2 Peptide (PSTAIR)	1mg
PKS040	ERMRRPRKQGSVRRRV Protein Kinase C (epsilon)	1mg
PKS041	GdFAD Achatin-1	1mg

Cat. #	Description	Size
PKS042	GRTGRRNAIHD-NH2 cAMP Dependent PK Inhibitor	1mg
PKS043	GIGAVLKVLTTGLPALISWIKRKRQQ-NH2 Melittin	1mg
PKS044	GIGAVLKVLTTGLPALISWIKRKRQQ-OH Melittin Free acid	1mg
PKS045	GRPRTSSFAEG Crosstide	1mg
PKS046	H-GPHRSTPESRAAV-OH GSK-3(beta) Substrate	1mg
PKS047	GPHRATPEARAAV GSK-3 (beta) Substrate, Negative control	1mg
PKS048	HATPPKKKRRK Cdk1 Substrate II	1mg
PKS049	Ac-IYGEF-NH2 P60c-src-Substrate II	1mg
PKS050	Ac-IY(PO3H2)GEF- NH2P60c-src-Substrate II, Phosphorylated	1mg
PKS051	ITSFEEAKGLDRINERMPRRRDAMP Calcineurin Autoinhibitory Peptide	1mg
PKS052	LLYEMLAGQAPFEGEDEDELFSIMEHNV Protein Kinase C fragment 530-558	1mg
PKS053	KKFNARRRLKGAILTTMLA Calmodulin Dependent Protein Kinase II	1mg
PKS054	LQNRRLGLDLLFLKEGGL CKS-17	1mg
PKS055	LRRASLG Kemptide	1mg
PKS056	LRRASLG-NH2 Kemptide, amide	1mg
PKS057	Biot-LHQRRGSIQAKVHHVKC-NH2 Protein Kinase C (phi) Substrate	1mg
PKS058	KKALRRQETVDAL Autocamtide 2	1mg
PKS059	KKALRRQEAVDAL ALs9 Autocamtide 2	1mg
PKS060	KKALHRQETVDAL [His5] Autocamtide 2	1mg
PKS061	KRELVEPLTPSGEAPNQALLR EGF-r (661-681) T669 peptide	1mg
PKS062	KKRPQRATSNVFS-NH2 Kemtamide	1mg
PKS063	KRTLRR Protein Kinase C in PC12 Pheochromocytom	1mg
PKS064	KKRAARATS-NH2 Myosin Kinase Inhibiting Peptide	1mg
PKS065	KEAKEKRQEIAKRRRLSSLRASTSKSGGSQK S6 Kinase substrate Peptide 32	1mg
PKS066	KRNPGSQKRFPSNCGRD Phosphorylase Kinase b-subunit fragment	1mg
PKS067	KRREILSRPSYR CREBtide	1mg
PKS068	KQAEAVTSPR MAP Kinase Substrate, Tyrosine Hydroxylase 24-33	1mg
PKS069	KKRFSEKSKFLK MARCKS PSD-Derived Peptide-PKC Substrate	1mg
PKS070	MHRQETVDCLK-NH2 CA2+/Calmodulin Kinase II Substrate 281-291	1mg
PKS071	Myristoyl-KRTLRR-OH Inhibitor of PKC	1mg
PKS072	Ac-FKSKFL-NH2 Protein Kinase C Substrate	1mg
PKS073	PLSRTLVAALK [Ala9,10, Lys11,12] Glycogen Synthase (1-12)	1mg
PKS074	PLSRTLVSYS-NH2 Calmodulin Dependent Protein Kinase	1mg
PKS075	PLRRTLVAAL-NH2 Calmodulin Dependent Protein Kinase Substrate Analog	1mg
PKS076	PLARTLSVAGLPGKK Syntide 2	1mg
PKS077	PKTPKAKKL Cdk5 Substrate	1mg
PKS078	SFVNSEFLPKS Alpha PKC Beta-1Peptide AB/Glu-Val-PKC 660-673	1mg
PKS079	SYTNPEFVINV Alpha PKC Beta-1 Peptide AB/Glu-Val-PKC 660-673	1mg
PKS080	Biotin-SIYRRGSRWRKL Protein Kinase C used in vitro PKC Functional assay	1mg
PKS081	TYADFIASGRTGRRNAI-NH2 Protein Kinase A Inhibitor (6-22), amide	1mg
PKS082	TTYADFIASGRTGRRNAI-NH2 cAMP Dependent PK Inhibitor (5-22) amide	1mg
PKS083	TTYADFIASGRTGRRNAIHD cAMP Dependent PK Inhibitor (5-24)	1mg
PKS084	TTYADFIASGRTGRRNAIHD-NH2 cAMP Dependent PK Inhibitor (5-24) amide	1mg
PKS085	Biotin-TRKRQSRMRRRVHQING Protein Kinase C(nano) Substrate, biotinylated	1mg
PKS086	TSTEPQYPGENL p60 c-src peptide 521-533	1mg
PKS087	YSFVHHGFNFRVSWREMLA General	1mg
PKS088	YIYGSK General	1mg
PKS089	YMDGTMSQV Asp371, Tyrosinase 369-377, human	1mg
PKS090	VAPSDSIQAEWYFGKITRRE Tyr-Specific Protein Kinase Inhibitor	1mg
PKS091	VRKRTLRL Protein Kinase C Substrate	1mg
PKS092	DADepYLIPQGGEGFR Protein Tyrosine Phosphatase 1B Substrate I	1mg
PKS093	DLDPVPIGRFDRRVpSVAEE PP2B Calcineurin Substrate	1mg
PKS094	ENDpYINASL Protein Tyrosine Phosphatase Substrate I	1mg
PKS095	Ac-ELEFpYMDYE-NH2 Protein Tyrosine Phosphatase 1B Substrate II	1mg
PKS096	TRDipYETDpYpYRK InsR (1142-1153) Protein Tyrosine Phosphatase Sub.II	1mg
PKS097	TSTEPQYPQGENL PP60 c-src(521-533)	1mg

Target	MP Bio Catalog No.
Achatin-1	PKS041
Ac-MBP(4-14) Peptide	PKS036
AKTide -SA	PKS004
Aktide-2T	PKS005
Alpha PKC Beta-1 Peptide AB/Glu-Val-PKC 660-673	PKS078
Alpha PKC Beta-1 Peptide AB/Glu-Val-PKC 660-673	PKS079
ALs9 Autocamtide 2	PKS059
Asp371, Tyrosinase 369-377, human	PKS089
Autocamtide 2	PKS058
Autocamtide 2 [His5]	PKS060
CA2+/Calmodulin Kinase II Substrate 281-291	PKS070
Calcineurin AutoinhibitoryPeptide	PKS051
Calcineurin Substrate	PKS093
Calmodulin Dependent Protein Kinase	PKS074
Calmodulin Dependent Protein Kinase II	PKS053
Calmodulin Dependent Protein Kinase Substrate Analog	PKS075
cAMP RRKASGP	PKS017
cAMP S6-1	PKS016
cAMP Dependent PK Inhibitor	PKS042
cAMP Dependent PK Inhibitor (522) amide	PKS082
cAMP Dependent PK Inhibitor (5-24)	PKS083
cAMP Dependent PK Inhibitor (5-24) amide	PKS084
Casein Kinase I	PKS019
Casein Kinase II	PKS008
Casein Kinase II	PKS009
Casein Kinase II	PKS011
Casein Kinase II	PKS012
Cdk1 Substrate II	PKS048
Cdk5 Substrate	PKS077
CKS-17	PKS054
CREBtide	PKS067
Crosstide	PKS045
EGF-r (661-681) T669 peptide	PKS061
General	PKS003
General	PKS020
General	PKS021
General	PKS022
General	PKS023
General	PKS024
General	PKS087
General	PKS088
Glycogen Synthase (1-12) [Ala9,10, Lys 11, 12]	PKS073
GSK-3(beta) Substrate	PKS046
GSK-3(beta) Substrate, Negative control	PKS047
G-Subtide	PKS037
Inhibitor of PKC	PKS071
InsR(1142-1153) Protein Tyrosine Phosphatase Sub.II	PKS096
Kemptide	PKS055
Kemptide, amide	PKS056
Kemtamide	PKS062
Kinase C (PKC)	PKS013
Malantide	PKS032
MAP Kinase Substrate, Tyrosine Hydroxylase 24-33	PKS068
MARCKS PSD-Derived Peptide- PKC Substrate	PKS069
Melittin	PKS043
Melittin, Free acid	PKS044
Myelin Basic Protein 4- [pGlu4]	PKS038
Myelin basic protein substrate	PKS007
Myosin Kinase Inhibiting Peptide	PKS064
p34 cdc2	PKS006
P34cdc2 Kinase Fragment	PKS035
p34cdc2 Peptide (PSTAIR)	PKS039
p60 c-src peptide 521-533	PKS086

Target	MP Bio Catalog No.
P60c-src-Substrate II	PKS049
P60c-src-Substrate II, Phosphorylated	PKS050
Phosphate Acceptor Peptide	PKS018
Phosphorylase Kinase b-subunit fragment	PKS066
Protein Kinase C fragment 530-558	PKS052
PP60 c-src(521-533)	PKS097
Protein Kinase A Inhibitor (6-22), amide	PKS081
Protein Kinase B (alpha)	PKS031
Protein Kinase C (19-31) [Ser25]	PKS028
Protein Kinase C (19-35)	PKS026
Protein Kinase C (19-36)	PKS027
Protein Kinase C (19-36) [Glu27]	PKS029
Protein Kinase C (delta)	PKS030
Protein Kinase C (epsilon)	PKS040
Protein Kinase C (phi) Substrate	PKS057
Protein Kinase C Fragment	PKS033
Protein Kinase C in PC12 Pheochromocytoma	PKS063
Protein Kinase C Substrate	PKS072
Protein Kinase C Substrate	PKS091
Protein Kinase C used in <i>in vitro</i> PKC Functional assay	PKS080
Protein KinaseC(micro)	PKS001
Protein Kinase C(nano) Substrate, biotinylated	PKS085
Protein Kinase G BPDtide	PKS025
Protein Kinase Selectide	PKS002
Protein Tyrosine Phosphatase 1B Substrate I	PKS092
Protein Tyrosine Phosphatase 1B Substrate II	PKS095
Protein Tyrosine Phosphatase Substrate I	PKS094
Ribosomal S6	PKS010
S6 Kinase substrate Peptide 32	PKS065
SH2	PKS034
Syntide 2	PKS076
Tyrosine Kinase Substrate	PKS014
Tyrosine Kinase Substrate	PKS015
Tyr-Specific Protein Kinase Inhibitor	PKS090

Furins And PC's

Furin and Proproteins (PCs) are Serine Proteases containing a subtilisin-like catalytic domain that are involved in conversion of hormone precursors into their active form. There are seven of these enzymes known, they are: Furin, PC 1/3, PC 2, PC 4, PC 5/6, AND PC 7/8. PCs are involved in several disease conditions such as: Cancer, Alzheimer's Disease, Activation of Anthrax and other Toxins, HIV and other Viral Infections.

Enzyme Systems Products, a division of MP Biomedicals, provides the following PC products:

ENZYMES

Cat. #	Name	Size
FUR01	Furin	100 µl
FUR01/3	PC 1/3	50 µl
FUR02	PC 2	100 µl
FUR05/6	PC 5/6	50 µl
FUR04	PC 4	Coming Soon
FUR07/8	PC 7/8	50 µl

ANTIBODIES

Polyclonal	From Rabbits	Size
FAB01	Furin Antibodies	Inquire
FAB01/3	PC1/3 Antibodies	Inquire
FAB02	PC2 Antibodies	Inquire
FAB05/6	PC5/6 Antibodies	Inquire

AFC FLUOROGENIC SUBSTRATE:

Sequence	Cat. #	Size
Ac-Arg-Glu-Lys-Arg-AFC	AFC136	10 mg 25 mg

$C_{35}H_{51}N_{12}O_9F_3$

M.W. 840

REFERENCES:

Lindberg I et al *Biochem. Biophys. Res. Com* 183(1): 1 (1992)
Gotoh. B. et al *J. Virol.* 66(11): 6391 (1992)

Protease Inhibitors

FLUOROMETHYLKETONE INHIBITORS (FMK) NON-CASPASE

The FMK peptides are potent, cell permeable, irreversible inhibitors. They are soluble in DMSO and useful for *in vitro* and *in vivo* applications. The solid product is stable in a desiccator at room temperature for 1 year. The stock solution in dry DMSO is stable when stored in a -20°C freezer for 6-8 months.

Sequence	Cat. #	Size
Mu-Leu-Homophe-fluoromethylketone	FK040	1 mg 3 mg 5 mg

$C_{22}H_{32}N_3O_4F$

An inhibitor for Cathepsin K.

M.W. 421

REFERENCES:

Esser, R. et al., *J. of Rheumatology*, 20(7):1176 (1993).
Esser, R.E. et al., *Arthritis Rheum.*, 337(21):236 (1994).

Sequence	Cat. #	Size
Z-Leu-Leu-Leu-fluoromethylketone	FK020	1 mg 3 mg 5 mg

$C_{27}H_{32}N_3O_5F$

An inhibitor of Proteasomes

M.W. 507

REFERENCES:

Steinhilb, ml. et al. *J. Biol. Chem.*, 276:4476 (2001).
Meriin, AB. et al. *J. Biol. Chem.*, 273:6373 (1998).

Sequence	Cat. #	Size
Z-Leu-Leu-Tyr-fluoromethylketone	FK017	1 mg 3 mg 5 mg

$C_{30}H_{40}N_3O_6F$

An inhibitor for Calpain.

M.W. 557

REFERENCE:

Escherich, A. et al., *J. Biol. Chem.*, **378(8):893 (1997)**.

Sequence	Cat. #	Size
Biotin-Phe-Ala-fluoromethylketone	FK029C	1 mg 3 mg 5 mg

$C_{23}H_{31}N_4O_6SF$

An inhibitor/probe for Cathepsin B and L.

M.W. 478

REFERENCES:

Esser, R. et al., *J. of Rheumatology*, **20(7):1176 (1993)**.

Esser, R.E. et al., *Arthritis Rheum.*, **37(21):236 (1994)**.

Sequence	Cat. #	Size
Mu-Phe-Homophe-fluoromethylketone	FK024	1 mg 3 mg 5 mg

$C_{25}H_{30}O_4N_3F$

An inhibitor for Cathepsin B and L.

M.W. 455

REFERENCE:

Rosenthal, P. et al., *J. Clin. Invest.*, **91:1052 (1993)**.

Sequence	Cat. #	Size
Z-Phe-Phe-fluoromethylketone	FK028	1 mg 3 mg 5 mg

$C_{27}H_{27}N_2O_4F$

An inhibitor for Cathepsin B and L.

M.W. 462

REFERENCES:

Esser, R. et al., *J. of Rheumatology*, **20(7):1176 (1993)**.

Esser, R.E. et al., *Arthritis Rheum.*, **37(21):236 (1994)**.

Sequence	Cat. #	Size
Mu-Val-Homophe-fluoromethylketone	FK018	1 mg 3 mg 5 mg

$C_{21}H_{30}N_3O_4F$

An inhibitor for Calpain.

M.W. 407

REFERENCES:

Esser, R. et al., *J. of Rheumatology*, **20(7):1176 (1993)**.

Esser, R.E. et al., *Arthritis Rheum.*, **37(21):236 (1994)**.

ALDEHYDE INHIBITORS (CHO)

Sequence	Cat. #	Size
Z-Gly-Pro-Leu-aldehyde	AL024	5 mg

$C_{21}H_{28}N_3O_5$

M.W. 403

Sequence	Cat. #	Size
Mu-Leu-Homophe-aldehyde	AL040	5 mg 25 mg

$C_{21}H_{31}N_3O_4$

A Cysteine protease inhibitor.

M.W. 389

Sequence	Cat. #	Size
Z-Leu-Ser-aldehyde	AL028	25 mg

$C_{17}H_{24}N_2O_5$

M.W. 336

Sequence	Cat. #	Size
Ac-Val-Glu-Ile-Asp-aldehyde	AL015	5 mg 25 mg

$C_{22}H_{36}N_4O_9$

An inhibitor for Caspase-6.

M.W. 500

REFERENCE:

Hirata, H. et al., *J. Exp. Med.*, **187:587 (1998)**.

CHLOROMETHYLKETONE INHIBITORS (CMK)

Peptide Chloromethylketone conjugates have provided the research community with excellent Serine and Cysteine protease inhibitors, however, the strong reactivity of the CMK group can produce general inhibitory effects. Our product line provides inhibitors specifically designed to achieve both general and selective protease inhibitory activities.

Sequence	Cat. #	Size
Z-Ala-Ala-Asp(OMe)-CMK	CK032	3 mg 5 mg 10 mg

$C_{20}H_{26}N_3O_7Cl$

An inhibitor for Granzyme B.

M.W. 455

REFERENCES:

Deas, O. et al., *J. Imm.*, **161:3375 (1998)**.

Ponk, G.J., et al., *Science*, **271:808 (1996)**.

Sequence	Cat. #	Size
Ala-Ala-Phe-CMK	CK022	5 mg 10 mg

$C_{16}H_{22}N_3O_3Cl$

An inhibitor for Tripeptidyl Peptidase II.

M.W. 340

REFERENCES:

Glas, R. et al., *Nature*, **392:618 (1998)**.

Geier, E. et al., *Science*, **283:978 (1999)**.

Sequence	Cat. #	Size
Biotin-Ala-Ala-Phe-CMK	CK022C	5 mg 10 mg

$C_{26}H_{36}N_5O_5SCl$

An inhibitor for Chymotrypsin.

M.W. 565

REFERENCE:

Glas, R. et al., *Nature*, **392:618 (1998)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Ala-CMK	CK017	5 mg 10 mg

$C_{27}H_{33}N_4O_7Cl$

An inhibitor for Neutrophil Elastase.

M.W. 500

REFERENCE:

Navia, et al., *Proc. Nat. Acad. Sci. USA*, **86:7 (1989)**.

Sequence	Cat. #	Size
Suc-Ala-Ala-Pro-Phe-CMK	CK023	5 mg 10 mg

$C_{25}H_{33}N_4O_5Cl$

An inhibitor for Chymotrypsin.

M.W. 504

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro- -Trp-CMK	CK036	5 mg 10 mg

C₂₇H₃₆N₆O₇Cl

An inhibitor for Chymotrypsin.

M.W. 577

Sequence	Cat. #	Size
Ala-Ala-Pro-Val-CMK	CK021	5 mg 10 mg

C₁₇H₂₆N₄O₈Cl

An inhibitor of Serine proteases.

M.W. 500

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro- -Val-CMK	CK020	5 mg 10 mg

An inhibitor for Human Leukocyte Elastase.

REFERENCES:

Powers, J.C. et al., *Biochem. Biophys. Acta.*, 485:156 (1977).

Stein, R.L. and Trainor, D.A., *Biochem.*, 25:5414 (1986).

Sequence	Cat. #	Size
Z-Gly-Leu-Phe-CMK	CK008	5 mg 10 mg

C₂₆H₃₂N₃O₅Cl

An inhibitor for Cathepsin G.

M.W. 502

Sequence	Cat. #	Size
MeOSuc-Leu-Ala-Pro- -Phe-CMK	CK033	5 mg 10 mg

C₂₈H₄₁N₄O₇Cl

An inhibitor for Chymotrypsin.

M.W. 581

Sequence	Cat. #	Size
D-Phe-Pro-Arg-CMK	CK013	5 mg 10 mg

C₂₁H₃₁N₆O₃Cl

Highly effective irreversible inhibitor for Thrombin.

M.W. 451

REFERENCES:

Kaiser, B. and Hauptmann, J., *Cardiovasc. Drug. Rev.*, 10:71 (1992).

Rahr, H. B. et al., *Thromb. Res.*, 73:279 (1994).

Sequence	Cat. #	Size
D-Val-Leu-Lys-CMK	CK024	5 mg 10 mg

C₁₈H₃₅N₄O₃Cl

A very efficient inhibitor for Human

Thrombin. $K_3/K_1 = 23,000 \text{ M}^{-1} \text{ S}^{-1}$

M.W. 427

REFERENCE:

Collen, D. et al., *Biochem. Biophys. Acta.*, **165:158 (1980)**.

DIAZOMETHYLKETONE INHIBITORS (DMK)

Diazomethylketone conjugates provide potent inhibition and enhanced selectivity for Cysteine proteases.

Sequence	Cat. #	Size
Gly-Phe-diazomethylketone	DK006	5 mg 10 mg

C₁₂H₁₃N₄O₂

An inhibitor for Cathepsin C.

M.W. 245

REFERENCE:

McGuire, J.M. et al., *J. Biol. Chem.*, **268(4):2458 (1993)**.

Sequence	Cat. #	Size
Leu-diazomethylketone	DK001	10 mg 25 mg

C₇H₁₂N₂O

M.W. 154

Sequence	Cat. #	Size
Z-Leu-Leu-Tyr-diazomethylketone	DK007	5 mg 10 mg 25 mg

C₃₀H₃₈N₆O₆

An inhibitor for Calpain.

M.W. 565

Sequence	Cat. #	Size
Z-Phe-Ala-diazomethylketone	DK003	10 mg 25 mg

C₂₁H₂₂N₄O₄

An inhibitor for Cathepsin B.

M.W. 394

REFERENCES:

Green, C.D.J. and Shaw, E., *J. Biol. Chem.*, **256:1923 (1981)**.

Kirscke, H. and Shaw, E., *Biochem. Biophys. Res. Comm.*, **101:454 (1981)**.

Sequence	Cat. #	Size
Z-Phe-Phe-diazomethylketone	DK002	10 mg
$C_{27}H_{28}N_4O_4$		25 mg

A Cysteine protease inhibitor for Cathepsin L.

M.W. 470

REFERENCES:

Green, C.D.J. and Shaw, E., *J. Biol. Chem.*, **256:1923 (1981)**.

Kirscke, H. and Shaw, E., *Biochem. Biophys. Res. Comm.*, **101:454 (1981)**.

Sequence	Cat. #	Size
Z-Tyr-Ala-diazomethylketone DK008		10 mg
		25 mg

$C_{21}H_{22}N_4O_5$

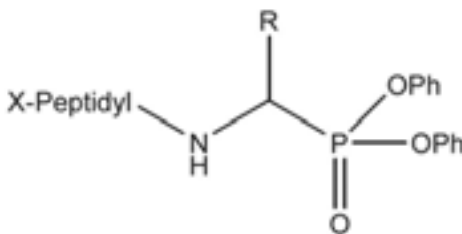
An inhibitor for Cathepsin B, L and S.

M.W.

DIPHENYL · 1-(N-PEPTIDYLAMINO)-AL-KANEPHOSPHONATE (DAP) SERINE PROTEASE INHIBITORS

Patent Numbers: 5,543,396; 5,681,821; 5,686,419

The Diphenyl 1-(N-peptidylamino)-alkanephosphonate esters are potent and specific irreversible serine protease inhibitors. The DAP inhibitors have minimal toxicity, are serine specific and stable in aqueous solution. These advantages make the DAP inhibitors excellent alternatives to the Chloromethyl Ketone compounds.



Sequence	Cat. #	Size
Biotin-Ala-Ala-Phep(OPh) ₂	DAP022C	1 mg
		3 mg
		5 mg

$C_{38}H_{44}N_6O_7SP$

A specific Serine protease inhibitor for Cathepsin G and Chymotrypsin.

M.W. 721

REFERENCE:

Abuelyaman, A.S. et al., *Arc. Biochem. Biophys.*, **344(2):271 (1997)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala- -Phep(OPh) ₂	DAP022	1 mg 3 mg 5 mg

C₂₉H₃₆N₃O₉P

A specific Serine protease inhibitor for Cathepsin G and Chymotrypsin.

M.W. 609

REFERENCE:

Oleksyszyn, J. and Powers, J.C., *Methods in Enzymology*, **244:423 (1994)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro- Phep(OPh) ₂	DAP023	1 mg 3 mg 5 mg

C₃₅H₄₁N₄O₉P

A specific Serine protease inhibitor for Chymotrypsin.

M.W. 692

REFERENCE:

Oleksyszyn, J. and Powers, J.C., *Biochemistry*, **30:485**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro- Valp(OPh) ₂	DAP020	1 mg 3 mg 5 mg

C₃₁H₄₁N₄O₉P

A specific Serine protease inhibitor for Elastase.

M.W. 644

REFERENCE:

Oleksyszyn, J. and Powers, J.C.,
Biochemistry, **30:485**.

Sequence	Cat. #	Size
BOC-D-Phe- Pro(4-AM)p(OPh) ₂	DAP013	1 mg 3 mg 5 mg

C₃₉H₄₄N₅O₇P

A specific Serine protease inhibitor for Thrombin.

M.W. 726

REFERENCE:

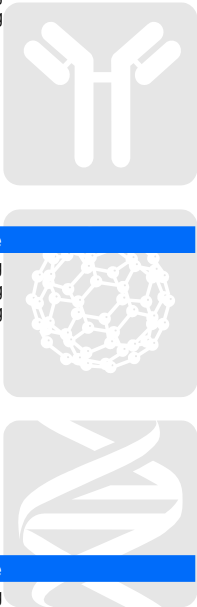
Hof, P. et al., *EMBO J.*, **25(20):5481 (1996)**.

Sequence	Cat. #	Size
Ala-PIPP(OPh) ₂	DAP042	1 mg 3 mg 5 mg

C₂₀H₂₆N₂O₄P

A specific Serine protease inhibitor for DPP-IV

M.W.



GENERAL INHIBITORS

General Protease inhibitors are routinely used in applications where inhibition of an entire enzyme class or family is desired. The inhibition spectrum can be extended by using cocktails of the class specific inhibitors.

Inhibitor	Cat. #	Size
Amastatin	199000	1 mg 5 mg



An inhibitor for Metalloprotease and Alanylaminopeptidase.

M.W. 511.0

REFERENCE:

Aoyagi, T. et al., *J. Antibiotics*, **31:636 (1978)**.

Inhibitor	Cat. #	Size
Antipain	152843	1 mg 5 mg 25 mg



An inhibitor for Trypsin, Papain, and Cathepsin A and B.

M.W. 604.7

Inhibitor	Cat. #	Size
Aprotinin	190382	10 mg 50 mg

From Bovine lung analytical grade
Lyophilized. Activity: Approx. 6000
Kallikrein inhibitor units (KIU) per mg.

M.W. ~ 6500

REFERENCES:

Kunitz, M. and Northrup, JH *Gen. Physiol.* **19:991, (1966)**

Inhibitor	Cat. #	Size
E-64	152846	1mg 5 mg 10 mg



An inhibitor for Cysteine Proteases.

M.W. 357.4

REFERENCE:

Shoji-Kasai, Y. et al., *Proc. Natl. Acad. Sci. USA*, **85:146 (1988)**.

Inhibitor	Cat. #	Size
Bestatin	152844	1 mg 5 mg 10 mg 25 mg



An inhibitor for Metalloproteases,
Aminopeptidase B and Leucine
Aminopeptidase.

M.W. 308.4

REFERENCES:

Dang, L.C. et al., *Biochemistry*, **37:1868 (1998)**.

Back, S.H. et al., *J. Biol. Chem.*, **272:25560 (1997)**.

Inhibitor	Cat. #	Size
Chymostatin	152845	1 mg 5 mg 25 mg 50 mg

A mixture of A, B and C microbial
product. Inhibits Cathepsins A, B and
D, Chymotrypsin and Papain.

REFERENCE:

Umezawa, H. et al., *Antibiotics*, **23:425 (1970)**.

Inhibitor	Cat. #	Size
IElastatinal	152847	1 mg 5 mg 10 mg



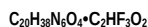
An inhibitor for Elastase. Elastatinal
is a microbial product.

M.W. 512.6

REFERENCES:

Umezawa, H. et al., *J. Antibiotics*, **26:787 (1973)**.

Inhibitor	Cat. #	Size
Leupeptin	195623	1 mg 5 mg 25 mg



An inhibitor for Trypsin, Plasmin,
Papain and Cathepsin B.
Purity > 90%.

M.W. 540.6

REFERENCES:

Kondo, S. et al., *Chem. Pharm. Bulletin*, **17:1896 (1969)**.

Inhibitor	Cat. #	Size
Pepstatin-A	195368	1 mg 5 mg 10 mg 25 mg

$C_{34}H_{63}N_5O_9$

A microbial product. An inhibitor for Pepsin, Renin and Cathepsin D.

M.W. 686

REFERENCES:

Umezawa, H. et al., *J. Antibiotics*, 23:259 (1970).

Inhibitor	Cat. #	Size
Homophe-Hydroxamic Acid MMP200		5 mg

$C_{18}H_{31}N_4O_4$

A General MMP Inhibitor.

M.W. 363

SECRETASE INHIBITORS

Sequence	Cat. #	Size
Lys-Thr-Glu-Glu-Ile-Ser-Glu-Val-Asn(statine)-Val-Ala-Glu-Phe-OH	STA200	1 mg 3 mg 5 mg

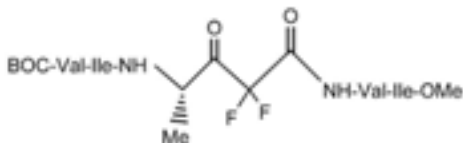
$C_{73}H_{118}N_{16}O_{27}$

M.W. 1651

REFERENCE:

Sinha, S. et al., *Nature*, 402:537 (1999).

Sequence	Cat. #	Size
BOC-Val-Ile[(s)-4-amino-2,2-difluoro-3-oxo-Pentanoyl]-Val-Ile-OMe	DFK167	1 mg 3 mg 5 mg



REFERENCE:

Wolfe, M.S. et al., *Biochem.*, 38:4720 (1999).

Matrix Metalloprotease (MMP)

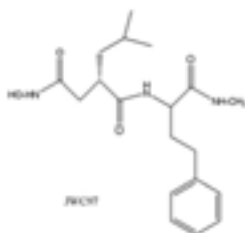
The MMPs are a family of zinc-binding metalloendopeptidases capable of degrading extra cellular matrix (ECM) components including collagen, gelatin, myelin, laminin, fibronectin, and elastin.

Members of the matrix metalloprotease family have been implicated in disease states such as arthritis, periodontal disease and tumor cell division and metastasis. MMPs are also known to be essential for the growth of new blood vessels.

Our catalogue contains several MMP FRET substrates. We are now providing several new inhibitors for these important enzymes:

NEW MMP INHIBITORS

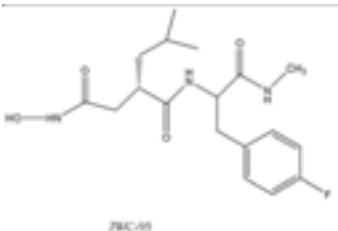
Cat.No. MMP200



Structure

MMP	General	
IC50	MMP-1	7.4 nM
	MMP-2	2.3 nM
	MMP-7	<100 nM
	MMP-13	<10 nM
		219.08/5 mg

Cat.No. MMP210



Structure

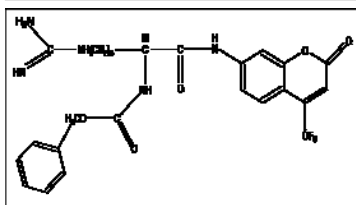
MMP	MMP-3	
IC50	MMP-1	5.9 nM
	MMP-2	2.3 nM
	MMP-3	65 nM
		404.46/5 mg

SYNTHETIC SUBSTRATES

7-AMINO-4-TRIFLUOROMETHYLCOUMAR SUBSTRATES (AFC)

AFC substrates are similar in structure to the AMC substrates, only the methyl group is replaced with a trifluoromethyl (CF₃) group. The AFC substrates have the advantage of being both chromogenic (yellow color $E_{380nm} = 12600 \text{ M}^{-1}\text{cm}^{-1}$) and fluorogenic. The specificity and sensitivity of AFC allow for the detection of enzyme activities in cell lysate or electrophoretic gels as the emission spectra of the free and the conjugated AFC do not overlap.

Structure of AFC Substrates:



Excitation: 400 nm Emission: 505 nm
SINGLE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
L-Ala-7-amino-4-trifluoromethylcoumarin	AFC001	10 mg 25 mg
$C_{13}H_{10}N_2O_3F_3$		

M.W. 294

Sequence	Cat. #	Size
Z-Ala-7-amino-4-trifluoromethylcoumarin	AFC025	10 mg 25 mg
$C_{21}H_{17}N_2O_3F_3$		

M.W. 432

Sequence	Cat. #	Size
L-Arg-7-amino-4-trifluoromethylcoumarin	AFC002	10 mg 25 mg
$C_{18}H_{17}N_5O_3F_3$		

A fluorogenic substrate for Cathepsin H.

M.W. 384

REFERENCES:

Kanaoka, Y. et al., *Chem. Pharm. Bul.*, **25:3126** (1997).

Rothe, M. and Dodt, J. et al., *Eur. J. Biochem.*, **210:759** (1992).

Sequence	Cat. #	Size
Z-Arg-7-amino-4-trifluoromethylcoumarin	AFC023	10 mg 25 mg
$C_{24}H_{24}N_5O_3F_3$		

A fluorogenic substrate for Trypsin.

M.W. 520

REFERENCE:

Powers, J.C. et al., *J. Appl. Toxicol.*, **20:5177** (2000).

Sequence	Cat. #	Size
L-Asp-7-amino-4-trifluoromethylcoumarin	AFC003	10 mg 25 mg
$C_{14}H_{15}N_2O_3F_3$		

A fluorogenic substrate for Trypsin.

M.W. 344

REFERENCE:

Smith, G.P. et al., *Biochem. Biophys. Acta.*, **719:532** (1982).

Sequence	Cat. #	Size
L-Glu-7-amino-4-trifluoromethylcoumarin	AFC021	10 mg 25 mg

$C_{15}H_{12}N_2O_5F_3$

A fluorogenic substrate for Angiotensinase.

M.W. 358

Sequence	Cat. #	Size
L-γ-Glu-7-amino-4-trifluoromethylcoumarin	AFC022	10 mg 25 mg

$C_{15}H_{13}N_2O_5F_3$

A fluorogenic substrate for Gamma-Glu Transpeptidase.

M.W. 356

Sequence	Cat. #	Size
pGlu-7-amino-4-trifluoromethylcoumarin	AFC045	10 mg 25 mg

$C_{15}H_{10}N_2O_4F_3$

M.W. 340

Sequence	Cat. #	Size
L-Gly-7-amino-4-trifluoromethylcoumarin	AFC004	10 mg 25 mg

$C_{12}H_8N_2O_3F_3$

M.W. 286

Sequence	Cat. #	Size
L-Leu-7-amino-4-trifluoromethylcoumarin	AFC007	10 mg 25 mg

$C_{16}H_{15}N_2O_3F_3$

A fluorogenic substrate for Aminopeptidase M.

M.W. 342

REFERENCE:

Smith, G.P. et al., *Biochem. Biophys. Acta.*, **719:532 (1982).**

Sequence	Cat. #	Size
L-Lys-7-amino-4-trifluoromethylcoumarin	AFC008	10 mg 25 mg

$C_{16}H_{17}N_3O_3F_3$

A fluorogenic substrate for Aminopeptidase B.

M.W. 357

REFERENCE:

Cahn, S. et al., *Biochem. Biophys. Res. Comm.*, **127:962 (1985).**

Sequence	Cat. #	Size
Z-Lys-7-amino-4-trifluoromethylcoumarin	AFC024	10 mg 25 mg

$C_{24}H_{24}N_3O_5F_3$

M.W. 492

Sequence	Cat. #	Size
L-Met-7-amino-4-trifluoromethylcoumarin	AFC009	10 mg 25 mg

$C_{24}H_{24}N_3O_5$

M.W. 329

Sequence	Cat. #	Size
Z-Met-7-amino-4-trifluoromethylcoumarin	AFC027	10 mg 25 mg

$C_{23}H_{23}N_3O_5F_3S$

M.W. 495

Sequence	Cat. #	Size
L-Phe-7-amino-4-trifluoromethylcoumarin	AFC012	10 mg 25 mg

$C_{19}H_{14}N_2O_3F_3$

M.W. 376

Sequence	Cat. #	Size
L-Trp-7-amino-4-trifluoromethylcoumarin	AFC018	10 mg 25 mg

$C_{21}H_{15}N_3O_3F_3$

M.W. 415

Sequence	Cat. #	Size
L-Tyr-7-amino-4-trifluoromethylcoumarin	AFC019	10 mg 25 mg

$C_{19}H_{15}N_2O_4F_3$

M.W. 392

Sequence	Cat. #	Size
Glutaryl-Tyr-7-amino-4-trifluoromethylcoumarin	AFC028	10 mg 25 mg

$C_{19}H_{15}N_2O_9F_3$

Sequence	Cat. #	Size
L-Val-7-amino-4-trifluoromethylcoumarin	AFC020	10 mg 25 mg

$C_{19}H_{14}N_2O_3F_3$

M.W. 328

TWO AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Ala-Arg-7-amino-4-trifluoromethylcoumarin	AFC034	10 mg 25 mg

$C_{19}H_{22}N_6O_4F_3$

M.W. 456

Sequence	Cat. #	Size
Arg-Arg-7-amino-4-trifluoromethylcoumarin	AFC038	10 mg 25 mg

$C_{22}H_{26}N_6O_4F_3$

VERY HYGROSCOPIC. Keep in desiccator 70°C. A fluorogenic substrate for DPP-III.

M.W. 541

REFERENCE:

Manhtle, D. et al., *Biochem.*, **211:567 (1983)**.

Sequence	Cat. #	Size
Z-Arg-Arg-7-amino-4-trifluoromethylcoumarin	AFC051	10 mg 25 mg

$C_{30}H_{36}N_6O_5F_3$

HYGROSCOPIC. Store in desiccator. A fluorogenic substrate for Cathepsin B.

M.W. 676

REFERENCES:

Trabandt, A. et al., *Arth. and Rheum.*, **34(11):1444 (1991)**.

Hasnain, S. et al., *Biol. Chem. Hoppe-Seyler*, **373:413 (1992)**.

Smith, R.E. et al., *Antican. Res.*, **8:525 (1988)**.

Sequence	Cat. #	Size
Ala-Pro-7-amino-4-trifluoromethylcoumarin	AFC042	10 mg 25 mg

$C_{18}H_{17}N_3O_4F_3$

A fluorogenic substrate for DPP-IV.

M.W. 397

REFERENCES:

Loch, N. et al., *Eur. J. Biochem.*, **210:161 (1992)**.

Smith, R.E. et al., *Histochem. J.*, **24:637 (1992)**.

Sequence	Cat. #	Size
Gly-Arg-7-amino-4-trifluoromethylcoumarin	AFC031	10 mg 25 mg

A fluorogenic substrate for Cathepsin C (DPP-I).

M.W. 442

REFERENCE:

Hola-Jamriska, L. et al., *Parasitology*, **118:275 (1999)**.

Sequence	Cat. #	Size
Glutaryl-Gly-Arg-7-amino-4-AFC050 trifluoromethylcoumarin $C_{23}H_{27}N_6O_4F_3$		10 mg 25 mg

A fluorogenic substrate for Urokinase.

M.W. 556

REFERENCE:

Huseby, R.M. et al., *Throm. Res.*, **10:679 (1977)**.

Sequence	Cat. #	Size
Gly-Phe-7-amino-4- trifluoromethylcoumarin $C_{21}H_{17}N_3O_4F_3$	AFC033	10 mg 25 mg

A fluorogenic substrate for Cathepsin C (DPP-I).

M.W. 433

REFERENCE:

Smith, M.J. et al., *J. Imm.*, **154:6299 (1995)**.

Sequence	Cat. #	Size
Gly-Pro-7-amino-4- trifluoromethylcoumarin $C_{17}H_{15}N_3O_4F_3$	AFC039	10 mg 25 mg

A fluorogenic substrate for DPP-IV.

M.W. 383

REFERENCES:

Loch, N. et al., *Eur. J. Biochem.*, **210:161 (1992)**.

Smith, R.E. et al., *Histochem. J.*, **24:637 (1992)**.

Sequence	Cat. #	Size
Z-Leu-Arg-7-amino-4- trifluoromethylcoumarin $C_{30}H_{35}N_5O_5F_3$	AFC053	10 mg 25 mg

A fluorogenic substrate for Cathepsins K,S and V.

M.W. 632

REFERENCES:

Bromme, D. et al., *J. Biol. Chem.*, **271:2126 (1996)**.

Bromme, D. et al., *Biochem.*, **38:2377 (1997)**.

Sequence	Cat. #	Size
Suc-Leu-Tyr-7-amino-4- trifluoromethylcoumarin $C_{28}H_{28}N_5O_5F_3$	AFC117	10 mg 25 mg

A fluorogenic substrate for Porcine Calpain Isozymes I and II.

M.W. 591

REFERENCES:

Sasaki, T. et al., *J. Biol. Chem.*, **259:12489 (1984)**.

Woo, K.M. et al., *J. Biol. Chem.*, **264:2088 (1989)**.

Sequence	Cat. #	Size
Lys-Ala-7-amino-4-trifluoromethylcoumarin	AFC035	10 mg 25 mg

$C_{19}H_{22}N_4O_4F_3$

A fluorogenic substrate for DPP-II enzyme.
M.W. 428

REFERENCES:

Smid, J.R. et al., *Anat. Res.*, **233:394** (1992).
Vargas, M.A. et al., *Peptides*, **13:255** (1992).

Sequence	Cat. #	Size
Lys-Pro-7-amino-4-trifluoromethylcoumarin	AFC036	10 mg 25 mg

$C_{21}H_{24}N_4O_4F_3$

A fluorogenic substrate for DPP-IV.

M.W. 454

REFERENCES:

Loch, N. et al., *Eur. J. Biochem.*, **210:161** (1992).
Smith, R.E. et al., *Histochem. J.*, **24:637** (1992).

Sequence	Cat. #	Size
Z-Phe-Arg-7-amino-4-trifluoromethylcoumarin	AFC052	10 mg 25 mg

$C_{33}H_{38}N_6O_6F_3$

A fluorogenic substrate for Cathepsin L and Kallikrein.

M.W. 666

REFERENCES:

Maciewica, et al., *Biomed. Biochem. Acta.*, **50:564** (1991).
McDonald, J.K. et al., *Biochem. Biophys. Res. Comm.*, **151:827** (1988).
Marks, N. et al., *Arch. Biochem. and Biophys.*, **259:131** (1987).

Sequence	Cat. #	Size
Phe-Pro-7-amino-4-trifluoromethylcoumarin	AFC037	10 mg 25 mg

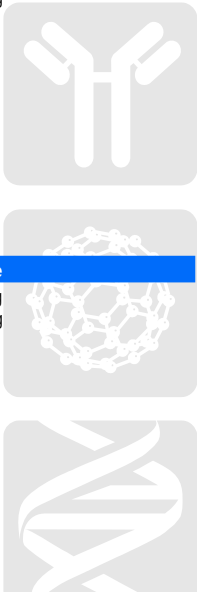
$C_{24}H_{21}N_3O_4F_3$

A fluorogenic substrate for DPP-II and DPP-IV.

M.W. 473

REFERENCES:

Sannes, P.L. et al., *J. Histochem. and Cytochem.*, **34:983** (1986) (DPP-II)
Smid, J.R. et al., *Anat. Res.*, **233:394** (1992) (DPP-II).
Loch, N. et al., *Eur. J. Biochem.*, **210:161** (1992) (DPP-IV).
Smith, R.E. et al., *Histochem. J.*, **24:637** (1992) (DPP-IV).



Sequence	Cat. #	Size
Pro-Arg-7-amino-4-trifluoromethylcoumarin	AFC032	10 mg
$C_{21}H_{24}N_6O_4F_3$		25 mg

A fluorogenic substrate for Cathepsin C (DPP-I).

M.W. 482

Sequence	Cat. #	Size
Ser-Tyr-7-amino-4-trifluoromethylcoumarin	AFC041	10 mg
$C_{22}H_{26}N_4O_5F_3$		25 mg

A fluorogenic substrate for DPP-I.

M.W. 479

REFERENCE:

McGuire, J.M. et al., *J. Biol. Chem.*, **268(4):2458 (1993)**.

THREE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Z-Ala-Arg-Arg-7-amino-4-trifluoromethylcoumarin	AFC055	10 mg
$C_{33}H_{44}N_{10}O_7F_3$		25 mg

A fluorogenic substrate for Cathepsin B.

M.W. 746

REFERENCES:

Maciewicz, et al., *Biomed. Biochem. Acta.*, **50:564 (1991)**.

McDonald, J.K. et al., *Biochem. Biophys. Res. Comm.*, **151:827 (1988)**.

Marks, N. et al., *Arch. Biochem. and Biophys.*, **259:131 (1987)**.

Sequence	Cat. #	Size
Ac-Ala-Ala-Lys-7-amino-4-trifluoromethylcoumarin	AFC048	10 mg
$C_{24}H_{30}N_5O_5F_3$		25 mg

A fluorogenic substrate for Trypsin.

M.W. 541

REFERENCES:

Schwartz, L.B. et al., *The N. E. J. of Med.*, **June 25 (1987)**.

Schwartz, L.B. et al., *J. Imm.*, **126:1290 (1981)**.

Sequence	Cat. #	Size
Suc-Ala-Ala-Phe -7-amino-4-trifluoromethylcoumarin	AFC084	10 mg
$C_{29}H_{31}N_4O_6F_3$		25 mg

A fluorogenic substrate for Cathepsin G.

M.W. 620

REFERENCES:

Lively, M. O. et al., *Biochem. Biophys. Acta.*, **525:171 (1978)**.

Yoshida, N. et al., *Biochem.*, **19:5799 (1980)**.

Sequence	Cat. #	Size
Z-Gly-Gly-Arg-7-amino-4-trifluoromethylcoumarin	AFC056	10 mg 25 mg

$C_{28}H_{30}N_7O_7F_3$

A fluorogenic substrate for Plasminogen Activator.

M.W. 633

REFERENCES:

Huseby, R.M. et al., *Throm. Res.*, **10:679 (1977)**.

Suido, N.M.E. et al., *J. Periodontal Res.*, **22:412 (1987)**.

Sequence	Cat. #	Size
Suc-Gly-Gly-Phe -7-amino-4-trifluoromethylcoumarin	AFC087	10 mg 25 mg

$C_{27}H_{25}N_4O_8F_3$

A fluorogenic substrate for Cathepsin G.

M.W. 590

REFERENCES:

Lively, M.O. et al., *Biochem. Biophys. Acta.*, **525:171 (1978)**.

Yoshida, N. et al., *Biochem.*, **19:5799 (1980)**.

Sequence	Cat. #	Size
Z-Gly-Pro-Arg-7-amino-4-trifluoromethylcoumarin	AFC061	10 mg 25 mg

$C_{31}H_{34}N_7O_7F_3$

A fluorogenic substrate for Granzyme A.

M.W. 673

REFERENCES:

Smyth, M.J. et al., *J. Biol. Chem.*, **267(34):24418 (1992)**.

Velotti, F. et al., *Eur. J. Imm.*, **22:1049 (1992)**.

Sequence	Cat. #	Size
BOC-Gln-Ala-Arg-7-amino-4-trifluoromethylcoumarin	AFC123	10 mg 25 mg

$C_{28}H_{30}N_8O_8F_3$

A fluorogenic substrate for Trypsin.

M.W. 685

REFERENCE:

Kawabata, S. et al., *Eur. J. Biochem.*, **172:17 (1988)**.

Sequence	Cat. #	Size
BOC-Gln-Gly-Arg-7- amino-4-trifluoromethylcoumarin	AFC137	10 mg 25 mg

$C_{28}H_{37}N_8O_5F_3$

A fluorogenic substrate for Factor XIIa.

M.W. 671

REFERENCE:

Kawabata, S. et al., *Eur. J. Biochem.*, **172:17** (1988).

Sequence	Cat. #	Size
Z-His-Glu-Lys-7- amino-4-trifluoromethylcoumarin	AFC248	10 mg 25 mg

$C_{27}H_{31}N_6O_5F_3$

A Cysteine protease substrate for Lys-Gingipain.

M.W. 576

REFERENCE:

Abe, N. et al., *J. Biochem.*, **128(5):877** (2000).

Sequence	Cat. #	Size
D-Ile-Pro-Arg-7- amino-4-trifluoromethylcoumarin	AFC250	10 mg 25 mg

$C_{27}H_{35}N_7O_5F_3$

HYGROSCOPIC. A fluorogenic Serine protease substrate.

M.W. 594

Sequence	Cat. #	Size
BOC-Leu-Arg-Arg-7- amino-4-trifluoromethylcoumarin	AFC113	10 mg 25 mg

$C_{33}H_{49}N_{10}O_7F_3$

A fluorogenic substrate for Cathepsin B.

M.W. 754

REFERENCES:

Mizuno, K. et al., *Biochem. Biophys. Res. Comm.*, **144:807** (1987).

Mizuno, K. et al., *Biochem. Biophys. Res. Comm.*, **159:305** (1989).

Sequence	Cat. #	Size
BOC-Leu-Gly-Arg-7- amino-4-trifluoromethylcoumarin	AFC058	10 mg 25 mg

$C_{29}H_{40}N_7O_7F_3$

A fluorogenic substrate for Plasminogen Activator.

M.W. 655

REFERENCES:

Huseby, R.M. et al., *Throm. Res.*, **10:679** (1977).

Suido, N.M.E. et al., *J. Periodontal Res.*, **22:412** (1987).

Sequence	Cat. #	Size
Ac-Leu-Leu-Leu-7-amino-4-trifluoromethylcoumarin	AFC119	10 mg 25 mg

$C_{30}H_{41}N_4O_6F_3$

A fluorogenic substrate for Proteasomes.

M.W. 610

REFERENCE:

Tsubuki, S., et al., *Biochem. Biophys. Res. Comm.*, **196:1195** (1993).

Sequence	Cat. #	Size
Ac-Leu-Leu-Tyr-7-amino-4-trifluoromethylcoumarin	AFC116	10 mg 25 mg

$C_{33}H_{39}N_4O_7F_3$

A fluorogenic substrate for Calpain.

M.W. 116

Sequence	Cat. #	Size
Ac-Lys-Pro-Arg-7-amino-4-trifluoromethylcoumarin	AFC130	10 mg 25 mg

$C_{29}H_{39}N_6O_6F_3$

A fluorogenic substrate for Trypsin, Cytotoxic Lymphocytes.

M.W. 652

REFERENCES:

Osman, I.A.R. et al., *Histochem. and Cytochem.*, **37:415** (1989).

Schwartz, L.B. et al., *Am. Rev. Respir.*, **135:1186** (1987).

Sequence	Cat. #	Size
MeOSuc-Phe-Leu-Phe-7-amino-4-trifluoromethylcoumarin	AFC088	10 mg 25 mg

$C_{39}H_{41}N_4O_8F_3$

A fluorogenic substrate for Mast Cell Protease.

M.W. 750

REFERENCE:

Li, X.C. et al., *Biochem.*, **30(40):9709** (1991).

Sequence	Cat. #	Size
D-Phe-Phe-Arg-7-amino-4-trifluoromethylcoumarin	AFC060	10 mg 25 mg

$C_{34}H_{35}N_7O_6F_3$

A fluorogenic substrate for Plasma Kallikrein.

M.W.

Sequence	Cat. #	Size
D-Phe-Pro-Arg-7-amino-4-trifluoromethylcoumarin	AFC064	10 mg 25 mg

$C_{30}H_{33}N_7O_5F_3$

HYGROSCOPIC. A fluorogenic substrate for Thrombin.

M.W. 628

REFERENCES:

McRae, B.J. et al., *Biochem.*, 20:7196 (1981).

Kato, H. et al., *Throm. Res.*, 56:77 (1988).

Sequence	Cat. #	Size
Z-Phe-Pro-Arg-7-amino-4-trifluoromethylcoumarin	AFC054	10 mg 25 mg

A fluorogenic substrate for Kallikrein.

M.W. 763

REFERENCE:

Magihara, M. et al., *Clin. Chem.*, 33:1463 (1987).

Sequence	Cat. #	Size
D-Pro-Phe-Arg-7-amino-4-trifluoromethylcoumarin	AFC059	10 mg 25 mg

$C_{30}H_{33}N_7O_5F_3$

HYGROSCOPIC. A fluorogenic substrate for Thrombin.

M.W. 628

REFERENCES:

McRae, B.J. et al., *Biochem.*, 20:7196 (1981).

Kato, H. et al., *Throm. Res.*, 56:77 (1988).

Sequence	Cat. #	Size
D-Val-Leu-Arg-7-amino-4-trifluoromethylcoumarin	AFC066	10 mg 25 mg

$C_{27}H_{38}N_7O_5F_3$

HYGROSCOPIC. A fluorogenic substrate for Glandular Kallikrein.

M.W. 597

REFERENCES:

Marata, M.A. et al., *Can. Res.*, 48:4158

Shori, D.K. et al., *Biochem. Pharmacology*, 43(6):1209.

Chan, K. et al., *Diabetes*, 42:113 (1993).

Sequence	Cat. #	Size
D-Val-Leu-Lys-7-amino-4-trifluoromethylcoumarin	AFC081	10 mg 25 mg

$C_{27}H_{38}N_5O_5F_3$

HYGROSCOPIC. A fluorogenic substrate for Plasmin.

M.W. 569

REFERENCE:

Calvin, S.A. et al., *Anal. Biochem.*, **80:355 (1977)**.

Kato, H. et al., *Biochem.*, **88:183 (1980)**.

Sequence	Cat. #	Size
Z-Val-Lys-Met-7-amino-4-trifluoromethylcoumarin	AFC115	10 mg 25 mg

$C_{34}H_{42}N_5O_5SF_3$

A fluorogenic substrate for Amyloid A4-Generating Enzyme.

M.W. 722

REFERENCE:

Ishiura, S. et al., *Neurosci. Lett.*, **115:323 (1990)**.

Sequence	Cat. #	Size
BOC-Val-Pro-Arg-7-amino-4-trifluoromethylcoumarin	AFC118	10 mg 25 mg

$C_{31}H_{42}N_7O_7F_3$

A specific fluorogenic substrate for Thrombin.

M.W. 718

REFERENCES:

Mizuno, K. et al., *Biochem. Biophys. Res. Comm.*, **159:305 (1989)**.

Kawabata, S. et al., *Eur. J. Biochem.*, **172:17 (1988)**.

Sequence	Cat. #	Size
Z-Val-Val-Arg-7-amino-4-trifluoromethylcoumarin	AFC245	10 mg 25 mg

$C_{34}H_{42}N_7O_7SF_3$

A fluorogenic substrate for Cathepsin S.

M.W. 717

REFERENCE:

Bromme, D. et al., *Biochem.*, **264:475 (1989)**.

FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Met-7-AFC096		10 mg
amino-4-trifluoromethylcoumarin		25 mg
A fluorogenic substrate for Human Pancreatic Elastase.		
M.W. 713		

REFERENCES:

Stein, R.L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
Suc-Ala-Ala-Pro-Phe -7- AFC085		10 mg
amino-4-trifluoromethylcoumarin		25 mg
$C_{34}H_{38}N_5O_9F_3$		

A fluorogenic substrate for Chymotrypsin.

M.W. 715

REFERENCES:

Sawada, H. et al., *Experientia*, **39:454 (1983)**.

Oshima, G. et al., *Biochem.*, **94:1615 (1983)**.

Powers, J.C. et al., *J. Appl. Toxicol.*, **20:5177 (2000)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Val-7- AFC094		10 mg
amino-4-trifluoromethylcoumarin		25 mg
$C_{31}H_{38}N_5O_9F_3$		

A fluorogenic substrate for Human Elastase.

M.W. 681

REFERENCES:

Stein, R.L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
BOC-Ala-Gly-Pro-Arg-7- AFC121		10 mg
amino-4-trifluoromethylcoumarin		25 mg
$C_{31}H_{41}N_8O_9F_3$		

A fluorogenic substrate for Cathepsin K.

M.W. 710

REFERENCE:

Imada, T. et al., *Biochem. Biophys. Res. Comm.*, **143:587 (1987)**.

Sequence	Cat. #	Size
Ac-Ala-Glu-Val-Asp-7- AFC145		5 mg
amino-4-trifluoromethylcoumarin		10 mg
$C_{29}H_{34}N_5O_{11}F_3$		25 mg

A fluorogenic substrate for Caspase-6 and 8.

M.W. 685

REFERENCES:

Garcia-Calvo, M. et al., *J. Biol. Chem.*, **273(49):32608 (1998)**.

Sequence	Cat. #	Size
Ac-Arg-Glu-lys-Arg-AFC trifluoromethylcoumarin	AFC136	10 mg 25 mg

$C_{35}H_{51}N_{12}O_9F_3$

M.W. 840

REFERENCES:

Lindberg I. et al., *Biochem. Biophys. Res. Com.*, **183(1): 1 (1998).**
Gotoh. B et al *J. Virol.* **66(11): 6391 (1992)**

Sequence	Cat. #	Size
Ac-Asp-Gln-Met-Asp-7- amino-4-trifluoromethylcoumarin	AFC202	5 mg 10 mg 25 mg

$C_{25}H_{35}N_6O_{12}SF_3$

A fluorogenic substrate for Caspase-6.

M.W. 700

REFERENCE:

Talanian, R.V. et al., *J. Biol. Chem.*,
272(15):9677 (1997).

Sequence	Cat. #	Size
Ac-Asp-Glu-Val-Asp-7- amino-4-trifluoromethylcoumarin	AFC138	5 mg 10 mg 25 mg

$C_{30}H_{34}N_5O_{13}F_3$

A fluorogenic substrate for Caspase-3
(CPP32, YAMA), 6, 7, 10.

M.W. 730

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998).**
Nicholson, D.W. et al., *Nature*, **376:37 (1995).**

Sequence	Cat. #	Size
Ac-Asp-Met-Gln-Asp-7- amino-4-trifluoromethylcoumarin	AFC144	5 mg 10 mg 25 mg

$C_{30}H_{40}N_6O_{12}SF_3$

A fluorogenic substrate for Caspase-3 and 6.

M.W. 765

REFERENCE:

Ekert, P.G. et al., *EMBO*, **18(2):330 (1999).**



Sequence	Cat. #	Size
Ac-Glu-Ser-Met-Asp-7- amino-4-trifluoromethylcoumarin	AFC169	5 mg 10 mg 25 mg

$C_{29}H_{34}N_6O_{12}SF_3$

A fluorogenic substrate for Caspase-3.

M.W. 733

REFERENCE:

Han, Z. et al., *J. Biol. Chem.*, **272:13432 (1997)**.

Sequence	Cat. #	Size
MeOSuc-Ile-Glu-Gly-Arg- 7-amino-4-trifluoromethylcoumarin	AFC067	10 mg 25 mg

$C_{34}H_{45}N_8O_{11}F_3$

A fluorogenic substrate for Factor Xa.

M.W. 754

REFERENCE:

Kato, M. et al., *Throm. Res.*, **50:77 (1998)**.

Sequence	Cat. #	Size
Ac-Ile-Glu-Pro-Asp-7- amino-4-trifluoromethylcoumarin	AFC153	5 mg 10 mg 25 mg

$C_{28}H_{35}N_6O_{11}F_3$

A fluorogenic substrate for Granzyme B.

M.W. 726

REFERENCES:

Harris, J.L. et al., *J. Biol. Chem.*, **273:27364 (1998)**.

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Sequence	Cat. #	Size
Ac-Ile-Glu-Thr-Asp-7- amino-4-trifluoromethylcoumarin	AFC140	5 mg 10 mg 25 mg

$C_{31}H_{38}N_6O_{12}F_3$

A fluorogenic substrate for Caspase-8.

M.W. 729

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677 (1997)**.

Sequence	Cat. #	Size
Suc-Leu-Leu-Val-Tyr-7- amino-4-trifluoromethylcoumarin	AFC086	10 mg 25 mg

$C_{40}H_{50}N_6O_{10}F_3$

A fluorogenic substrate for Chymotrypsin.

M.W. 817

REFERENCES:

Ishiwara, S. et al., *FEBS Lett.*, **189:119 (1988)**.

Tsukahara, T. et al., *Eur. J. Biochem.*, **177:261 (1988)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-Glu-Asp-7- amino-4-trifluoromethylcoumarin	AFC158	5 mg 10 mg 25 mg

$C_{32}H_{38}N_6O_{13}F_3$

A fluorogenic substrate for Caspase-13.

M.W. 757

REFERENCE:

Humke, E.W. et al., *J. Biol. Chem.*, **273(25):15702 (1998)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-His-Asp-7- amino-4-trifluoromethylcoumarin	AFC154	5 mg 10 mg 25 mg

$C_{33}H_{38}N_7O_{11}F_3$

A fluorogenic substrate for Caspase-9.

M.W. 766

REFERENCE:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Thornberry, N.A. et al., *J. Biol. Chem.*,
272:17907 (1997).

Sequence	Cat. #	Size
Ac-Leu-Glu-Val-Asp-7- amino-4-trifluoromethylcoumarin	AFC155	5 mg 10 mg 25 mg

$C_{32}H_{42}N_5O_{11}F_3$

A fluorogenic substrate for Caspase-4.

M.W. 728

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677 (1997)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-Thr-Asp-7- amino-4-trifluoromethylcoumarin	AFC157	5 mg 10 mg 25 mg

$C_{31}H_{38}N_6O_{12}F_3$

A fluorogenic substrate for Caspase-8.

M.W. 729

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677 (1997)**.

Sequence	Cat. #	Size
BOC-Leu-Phe-Ser-Arg-7- amino-4-trifluoromethylcoumarin	AFC075	10 mg 25 mg

$C_{39}H_{51}N_8O_9F_3$

A fluorogenic substrate for Factor XIa.

M.W. 832

REFERENCE:

Kawabata, S. et al., *Biochem. Biophys. Res. Comm.*, **183(1):1** (1992).

Sequence	Cat. #	Size
BOC-Leu-Ser-Thr-Arg-7- amino-4-trifluoromethylcoumarin	AFC073	10 mg 25 mg

$C_{34}H_{49}N_8O_{10}F_3$

A fluorogenic substrate for Activated Protein C.

M.W. 786

REFERENCE:

Reidlinger, T. et al., *J. Biol. Chem.*, **272(40):24899** (1997).

Sequence	Cat. #	Size
Suc-Lys-Leu-Thr-Arg-7- amino-4-trifluoromethylcoumarin	AFC071	10 mg 25 mg

$C_{36}H_{52}N_8O_{10}F_3$

A fluorogenic substrate for Factor XIa.

M.W. 827

Sequence	Cat. #	Size
Ac-Trp-Glu-His-Asp-7- amino-4-trifluoromethylcoumarin	AFC156	5 mg 10 mg 25 mg

$C_{38}H_{37}N_8O_{11}F_3$

A fluorogenic substrate for Caspase-1.

M.W. 839

REFERENCE:

Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907** (1997).

Sequence	Cat. #	Size
Ac-Tyr-Val-Ala-Asp-7- amino-4-trifluoromethylcoumarin	AFC120	5 mg 10 mg 25 mg

$C_{33}H_{36}N_8O_{10}$

A fluorogenic substrate for Caspase-1 (ICE), 4.

M.W. 719

REFERENCE::

Marcelli, M. et al., *Cancer Res.*, **58:76** (1998).

Sequence	Cat. #	Size
Ac-Val-Asn-Leu-Asp-7- amino-4-trifluoromethylcoumarin	AFC171	5 mg 10 mg 25 mg

$C_{31}H_{39}N_6O_{10}F_3$

A fluorogenic substrate for Caspase-3.

M.W. 712

Sequence	Cat. #	Size
Ac-Val-Gln-Val-Asp-7- amino-4-trifluoromethylcoumarin	AFC201	5 mg 10 mg 25 mg

$C_{31}H_{39}N_6O_{10}F_3$

A fluorogenic substrate for Caspase-6.

M.W. 713

REFERENCE:

Talanian, R.V. et al., *J. Biol. Chem.*, **272**(15):9677 (1997)

Sequence	Cat. #	Size
Ac-Val-Glu-His-Asp-7- amino-4-trifluoromethylcoumarin	AFC170	5 mg 10 mg 25 mg

$C_{32}H_{38}N_7O_{11}F_3$

A fluorogenic substrate for Caspase-1.

M.W. 752

Sequence	Cat. #	Size
Ac-Val-Glu-Ile-Asp-7- amino-4-trifluoromethylcoumarin	AFC141	5 mg 10 mg 25 mg

$C_{32}H_{40}N_5O_{11}F_3$

A fluorogenic substrate for Caspase-6.

M.W. 728

REFERENCES:

Thornberry, N.A. et al., *Science*, **281**:1312 (1998).

Talanian, R.V. et al., *J. Biol. Chem.*, **272**:9677 (1997).

OVER FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Ac-Arg-Gly-Phe-Phe-Pro-7- amino-4-trifluoromethylcoumarin	AFC098	5 mg 10 mg 25 mg

$C_{43}H_{48}N_9O_8F_3$

A fluorogenic substrate for Cathepsin D.

M.W. 875

REFERENCES:

Lojda, Z. et al., *Histochem J.*, **88**:505 (1988)

Nishimura, Y. et al., *Biochem. Biophys. Res. Comm.*, **148**:335 (1987).

Gulmick, S. et al., *J. Mol. Bio.* **277**:265 (1992).

Sequence	Cat. #	Size
Ac-Val-Asp-Val-Ala-Asp-7- amino-4-trifluoromethylcoumarin	AFC142	5 mg 10 mg 25 mg

$C_{33}H_{43}N_6O_{12}F_3$

A fluorogenic substrate for Caspase-2.

M.W. 771

REFERENCE:

Thornberry, N.A. and Lazebnik, Y., *Science*, **281:1312 (1998)**.

7-AMINO-4-TRIFLUOROMETHYLCOUMARIN SUBSTRATES (AFC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
SINGLE AMINO ACID SUBSTRATES				
L-Ala-AFC	294	-----	AFC001	10 mg 25 mg
Z-Ala-AFC	432	-----	AFC025	10 mg 25 mg
L-Arg-AFC	384	Cathepsin H	AFC002	10 mg 25 mg
Z-Arg-AFC	520	Trypsin	AFC023	10 mg 25 mg
L-Asp-AFC	344	-----	AFC003	10 mg 25 mg
L- α -Glu-AFC	358	Angiotensinase	AFC021	10 mg 25 mg
L- γ -Glu-AFC	358	γ -Glu Transpeptidase	AFC022	10 mg 25 mg
pGlu-AFC	340	-----	AFC045	10 mg 25 mg
L-Gly-AFC	286	-----	AFC004	10 mg 25 mg
L-Leu-AFC	342	Aminopeptidase	AFC007	10 mg 25 mg
L-Lys-AFC	357	Aminopeptidase B	AFC008	10 mg 25 mg
Z-Lys-AFC	492	-----	AFC024	10 mg 25 mg
L-Met-AFC	360	-----	AFC009	10 mg 25 mg
Z-Met-AFC	495	-----	AFC027	10 mg 25 mg
L-Phe-AFC	376	-----	AFC012	10 mg 25 mg
L-Trp-AFC	415	-----	AFC018	10 mg 25 mg
L-Tyr-AFC	392	-----	AFC019	10 mg 25 mg
Glutaryl-Tyr-AFC	507	-----	AFC028	10 mg 25 mg
L-Val-AFC	328	-----	AFC020	10 mg 25 mg

TWO AMINO ACID SUBSTRATES				
Ala-Arg-AFC	456	-----	AFC034	10 mg 25 mg
Arg-Arg-AFC	541	DPP-III	AFC038	10 mg 25 mg

7-AMINO-4-TRIFLUOROMETHYLCOUMARIN SUBSTRATES (AFC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Z-Arg-Arg-AFC	619	Cathepsin B	AFC051	10 mg 25 mg
Ala-Pro-AFC	397	DPP-IV	AFC042	10 mg 25 mg
Gly-Arg-AFC	442	Cathepsin C (DPP-I)	AFC031	10 mg 25 mg
Glutaryl-Gly-Arg-AFC	556	Urokinase	AFC050	10 mg 25 mg
Gly-Phe-AFC	433	Cathepsin C (DPP-I)	AFC033	10 mg 25 mg
Gly-Pro-AFC	383	DPP-IV	AFC039	10 mg 25 mg
Z-Leu-Arg-AFC	632	Cathepsin K, S & V	AFC053	10 mg 25 mg
Suc-Leu-Tyr-AFC	595	Porcine Calpain Isozymes I & II	AFC117	10 mg 25 mg
Lys-Ala-AFC	428	DPP-II	AFC035	10 mg 25 mg
Lys-Pro-AFC	454	DPP-IV	AFC036	10 mg 25 mg
Z-Phe-Arg-AFC	666	Cathepsin L Kallikrein	AFC052	10 mg 25 mg
Phe-Pro-AFC	473	DPP-II	AFC037	10 mg 25 mg
Pro-Arg-AFC	482	Cathepsin C (DPP-I)	AFC032	10 mg 25 mg
Ser-Tyr-AFC	479	DPP-I	AFC041	10 mg 25 mg
THREE AMINO ACID SUBSTRATES				
Z-Ala-Arg-Arg-AFC	746	Cathepsin B	AFC055	10 mg 25 mg
Ac-Ala-Ala-Lys-AFC	541	Tryptase	AFC048	10 mg 25 mg
Suc-Ala-Ala-Phe-AFC	620	Cathepsin G	AFC084	10 mg 25 mg
Z-Gly-Gly-Arg-AFC	633	Plasminogen Activator	AFC056	10 mg 25 mg
Suc-Gly-Gly-Phe-AFC	590	Cathepsin G	AFC087	10 mg 25 mg
Z-Gly-Pro-Arg-AFC	673	Granzyme A	AFC061	10 mg 25 mg
BOC-Gln-Ala-Arg-AFC	685	Trypsin	AFC123	10 mg 25 mg

7-AMINO-4-TRIFLUOROMETHYLCOUMARIN SUBSTRATES (AFC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
BOC-Gln-Gly-Arg-AFC	671	Factor Xlla	AFC137	10 mg 25 mg
Z-His-Glu-Lys-AFC	576	Lys-Gingipain	AFC248	5 mg 10 mg 25 mg
D-Ile-Pro-Arg-AFC	594	Serine Protease Substrate	AFC250	5 mg 10 mg 25 mg
Boc-Leu-Arg-Arg	754	Cathepsin B	AFC113	10 mg 25 mg
BOC-Leu-Gly-Arg-AFC	655	Plasminogen Activator	AFC058	10 mg 25 mg
Ac-Leu-Leu-Leu-AFC	610	Proteasomes	AFC119	10 mg 25 mg
Ac-Leu-Leu-Tyr-AFC	116	Calpain	AFC116	10 mg 25 mg
Ac-Lys-Pro-Arg-AFC	652	Tryptase, Cytotoxic Lymphocytes	AFC130	10 mg 25 mg
MeOSuc-Phe-Leu-Phe-AFC	768	Mast Cell Protease	AFC088	10 mg 25 mg
D-Phe-Phe-Arg-AFC	678	Plasma Kallikrein	AFC060	10 mg 25 mg
D-Phe-Pro-Arg-AFC	628	Thrombin	AFC064	10 mg 25 mg
Z-Phe-Pro-Arg-AFC	763	Kallikrein	AFC054	10 mg 25 mg
D-Pro-Phe-Arg-AFC	628	Thrombin	AFC059	10 mg 25 mg
D-Val-Leu-Arg-AFC	597	Glandular Kallikrein	AFC066	10 mg 25 mg
D-Val-Leu-Lys-AFC	569	Plasmin	AFC081	10 mg 25 mg
Z-Val-Lys-Met-AFC	722	Amyloid A4- Generating Enzyme	AFC115	5 mg 10 mg 25 mg
BOC-Val-Pro-Arg-AFC	718	Thrombin	AFC118	5 mg 10 mg 25 mg
Z-Val-Val-Arg-AFC	717	Cathepsin S	AFC245	5 mg 10 mg 25 mg

7-AMINO-4-TRIFLUOROMETHYLCOUMARIN SUBSTRATES (AFC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
FOUR AMINO ACID SUBSTRATES				
MeOSuc-Ala-Ala-Pro-Met-AFC	713	Pancreatic Elastase	AFC096	10 mg 25 mg
Suc-Ala-Ala-Pro-Pro-7-amino-AFC		clynotrgosin	AFC085	10 mg 25 mg
MeOSuc-Ala-Pro-Val-AFC		Elastase	AFC094	10 mg 25 mg
BOC-Ala-Ala-Pro-Val-7-Amino-AFC	710	Cathespin K	AFC121	10 mg 25 mg
Ac-Arg-Glu-Lys-Arg-AFC	840	-----	AFC136	10 mg 25 mg
MeOSuc-Ala-Ala-Pro-Met-AFC	713	Pancreatic Elastase	AFC096	10 mg 25 mg
Suc-Ala-Ala-Pro-Phe-AFC	720	hymo-trypsin	AFC085	10 mg 25 mg
MeOSuc-Ala-Pro-Val-AFC	681	Human Elastase	AFC094	10 mg 25 mg
Ac-Ala-Glu-Val-Asp-AFC	685	Caspase 6 & 8	AFC145	5 mg 10 mg 25 mg
Ac-Asp-Gln-Met-Asp-AFC	700	Caspase-6	AFC202	5 mg 10 mg 25 mg
Ac-Asp-Glu-Val-Asp-AFC	730	Caspase-3 (CPP-32, YAMA), 6, 7, 10	AFC138	5 mg 10 mg 25 mg
Ac-Asp-Met-Gln-Asp-AFC	765	Caspase 3 & 6	AFC144	5 mg 10 mg 25 mg
Ac-Glu-Ser-Met-Asp-AFC	733	Caspase-3	AFC169	5 mg 10 mg 25 mg
MeOSuc-Ile-Glu-Gly-Arg-AFC	754	Factor Xa	AFC067	5 mg 10 mg 25 mg
Ac-Ile-Glu-Pro-Asp-AFC	726	Granzyme B	AFC153	5 mg 10 mg 25 mg
Ac-Ile-Glu-Thr-Asp-AFC	729	Caspase-8	AFC140	5 mg 10 mg 25 mg

7-AMINO-4-TRIFLUOROMETHYLCOUMARIN SUBSTRATES (AFC)

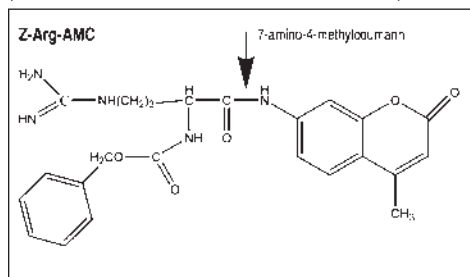
Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Suc-Leu-Leu-Val-Tyr-AFC	817	Chymo-trypsin	AFC086	10 mg 25 mg
Ac-Leu-Glu-Glu-Asp-AFC	757	Caspase-13	AFC158	5 mg 10 mg 25 mg
Ac-Leu-Glu-Glu-His-AFC	766	Caspase-9	AFC154	5 mg 10 mg 25 mg
Ac-Leu-Glu-Val-Asp-AFC	728	Caspase-4	AFC155	5 mg 10 mg 25 mg
Ac-Leu-Glu-Thr-Asp-AFC	729	Caspase-8	AFC157	5 mg 10 mg 25 mg
BOC-Leu-Phe-Ser-Arg-AFC	826	Factor Xla	AFC075	10 mg 25 mg
BOC-Leu-Ser-Thr-Arg-AFC	786	Activated Protein C	AFC073	10 mg 25 mg
Suc-Lys-Leu-Thr-Arg-AFC	827	Factor Xla	AFC071	10 mg 25 mg

7-AMINO-4-METHYLCOUMARIN SUBSTRATES (AMC)

The AMC fluorescent substrates are widely used for routine assays of peptidases. A wide array of AMC substrates are available from Enzyme Systems Products. The short peptide sequence is conjugated to 7-amino-4-methylcoumarin, which is released upon cleavage by a peptidase. The release of the fluorescent 7-amino-4-methylcoumarin is then measured using a spectrofluorometer. Hydrolysis rates can be measured using either a continuous (recommended) or a stopped assay

Structure of an AMC substrate:

example: Z-Arg-AMC (Benzoyloxycarbonyl-L-Arginyl-4-Methyl-7 coumaride)
(the arrow indicates the amide bond which is cleaved)



Excitation: 380 nm Emission: 460 nm

SINGLE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
L-Ala-7-amino-4-methylcoumarin	AMC001	10 mg 25 mg

$C_{13}H_{13}N_2O_3$

M.W. 246

Sequence	Cat. #	Size
L-Arg-7-amino-4-methylcoumarin	AMC002	10 mg 25 mg

$C_{16}H_{20}N_2O_3$

A fl uorogenic substrate for Cathepsin H.

M.W. 331

REFERENCES:

Kanaoka, Y. et al., *Chem. Pharm. Bul.*, **25:3126 (1997).**

Rothe, M. and Dodt, J. et al., *Eur. J. Biochem.*, **210:759 (1992).**

Sequence	Cat. #	Size
L-Asp-7-amino-4-methylcoumarin	AMC003	10 mg 25 mg

$C_{14}H_{13}N_2O_5$

M.W. 290

Sequence	Cat. #	Size
L-Gly-7-amino-4-methylcoumarin	AMC004	10 mg 25 mg

$C_{12}H_{11}N_2O_3$

M.W. 232

Sequence	Cat. #	Size
L-Leu-7-amino-4-methylcoumarin	AMC007	10 mg 25 mg

$C_{18}H_{19}N_2O_3$

A fluorogenic substrate for Aminopeptidase M.

M.W. 288

REFERENCE:

Smith, G.P. et al., *Biochem. Biophys. Acta.*, **719:532 (1982)**.

Sequence	Cat. #	Size
L-Lys-7-amino-4-methylcoumarin	AMC008	10 mg 25 mg

$C_{18}H_{20}N_2O_3$

A fluorogenic substrate for Aminopeptidase B.

M.W. 303

REFERENCE:

Cahn, S.A.T. et al., *Biochem. Biophys. Res. Comm.*, **127:962 (1985)**.

Sequence	Cat. #	Size
BOC-Lys(Ac)-7-amino-4-methylcoumarin	AMC172	10 mg 25 mg
$C_{23}H_{31}N_3O_6$		

A fluorogenic substrate for Afl uorogenic substrate for Histone Deacetylase Deacetylase.

M.W. 445

Sequence	Cat. #	Size
L-Met-7-amino-4-methylcoumarin	AMC009	10 mg 25 mg

$C_{15}H_{17}N_2O_3S$

M.W. 306

Sequence	Cat. #	Size
L-Phe-7-amino-4-methylcoumarin	AMC012	10 mg 25 mg

$C_{19}H_{17}N_2O_3$

M.W. 322

Sequence	Cat. #	Size
L-Pro-7-amino-4-methylcoumarin	AMC013	10 mg 25 mg

$C_{15}H_{15}N_2O_3$

M.W. 272

Sequence	Cat. #	Size
L-hydroxyPro-7-amino-4-methylcoumarin	AMC014	10 mg 25 mg

$C_{15}H_{15}N_2O_4$

M.W. 369 (including HBR salt)

Sequence	Cat. #	Size
L-Ser-7-amino-4-methylcoumarin	AMC016	10 mg 25 mg

$C_{13}H_{13}N_2O_4$

M.W. 262

TWO AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Arg-Arg-7-amino-4-methylcoumarin	AMC038	10 mg 25 mg

$C_{22}H_{32}N_6O_4$

VERY HYGROSCOPIC. Keep in desiccator 70°C. A fluorogenic substrate for DPP-III.

M.W. 487

REFERENCE:

Mantle, D. et al., *Biochem.*, **211:567 (1983).**

Sequence	Cat. #	Size
Z-Arg-Arg-7-amino-4-methylcoumarin	AMC051	10 mg 25 mg

$C_{30}H_{38}N_6O_6$

HYGROSCOPIC. Keep in desiccator. A fluorogenic substrate for Cathepsin B.

M.W. 621

REFERENCES:

Trabandt, A. et al., *Arth. and Rheum.*, **34(11): 1444**.
Hasnain, S et al., *Biol. Chem. Hoppe- Seyler*, **373:413 (1992)**.
Smith, R.E. et al., *Anticancer. Res.*, **8:525 (1988)**.

Sequence	Cat. #	Size
Ala-Pro-7-amino-4-methylcoumarin	AMC042	10 mg 25 mg

A fluorogenic substrate for DPP-IV.

M.W. 343

REFERENCES:

Loch, N. et al., *Eur. J. Biochem.*, **210:161 (1992)**.
Smith, R.E. et al., *Histochem J.*, **24:637 (1992)**.

Sequence	Cat. #	Size
Gly-Arg-7-amino-4-methylcoumarin	AMC031	10 mg 25 mg

A fluorogenic substrate for Cathepsin C (DPP-I).

M.W. 388

REFERENCE:

Hole-Jamriska, L. et al., *Parasitology*, **118:275 (1999)**.

Sequence	Cat. #	Size
Glutaryl-Gly-Arg-7-amino-4-methylcoumarin	AMC050	10 mg 25 mg

A fluorogenic substrate for Urokinase.

M.W. 502

REFERENCE:

Huseby, R.M. et al., *Throm. Res.*, **10:679 (1977)**.

Sequence	Cat. #	Size
Gly-Phe-7-amino-4-methylcoumarin	AMC033	10 mg 25 mg

A fluorogenic substrate for Cathepsin C (DPP-I).

M.W. 379

REFERENCE:

Smith, M.J. et al., *J. Imm.*, **154:6299 (1995)**.

Sequence	Cat. #	Size
Gly-Pro-7-amino-4-methylcoumarin	AMC039	10 mg
$C_{17}H_{18}N_2O_4$		25 mg

A fluorogenic substrate for DPP-IV.

M.W. 329

REFERENCES:

Loch, N. et al., *Eur. J. Biochem.*, **210:161** (1992).

Smith, R.E. et al., *Histochem. J.*, **24:637** (1992).

Sequence	Cat. #	Size
Z-Leu-Arg-7-amino-4-methylcoumarin	AMC053	10 mg
		25 mg

$C_{30}H_{38}N_6O_6$

M.W. 578

Sequence	Cat. #	Size
Lys-Ala-7-amino-4-methylcoumarin	AMC035	10 mg
		25 mg

$C_{19}H_{25}N_4O_4$

A fluorogenic substrate for DPP-II.

M.W. 374

REFERENCES:

Smid, J.R. et al., *Anat. Res.*, **233:394** (1992).

Vargas, M.A. et al., *Peptides*, **13:255** (1992).

Sequence	Cat. #	Size
Suc-Leu-Tyr-7-amino-4-methylcoumarin	AMC117	10 mg
		25 mg

$C_{29}H_{32}N_4O_8$

A fluorogenic substrate for Porcine Calpain Isozymes I and II; *E. Coli* Protease Ti.

M.W. 541

REFERENCES:

Sasaki, T. et al., *J. Biol. Chem.*, **259:12489** (1984).

Woo, K.M. et al., *J. Biol. Chem.*, **264:2088** (1989).

Sequence	Cat. #	Size
Lys-Pro-7-amino-4-methylcoumarin	AMC036	10 mg
		25 mg

$C_{21}H_{27}N_4O_4$

A fluorogenic substrate for DPP-IV.

M.W. 374

REFERENCE:

Loch, N. et al., *Eur. J. Biochem.*, **210:161** (1992).

Smith, R.E., et al., *Histochem. J.*, **24:637** (1992).

Sequence	Cat. #	Size
Z-Phe-Arg-7-amino-4-methylcoumarin	AMC052	10 mg 25 mg

$C_{33}H_{38}N_6O_6$

A fluorogenic substrate for Cathepsin L and Kallikrein.

M.W. 612

REFERENCES:

Maciewica, et al., *Biomed. Biochem. Acta.*, **50:564 (1991)**.
McDonald, J.K. et al., *Biochem. and Biophys. Res. Comm.*, **151:827 (1988)**.
Marks, N. et al., *Arch. Biochem. and Biophys.*, **259:131 (1987)**.

Sequence	Cat. #	Size
Phe-Pro-7-amino-4-methylcoumarin	AMC037	10 mg 25 mg

$C_{24}H_{24}N_3O_4$

A fluorogenic substrate for DPP-II and DPP-IV.

M.W. 420

REFERENCES:

Sannes, P.L. et al., *J. Histochem. and Cytochem.*, **34:983 (1986) (DPP-II)**.
Smid, J.R. et al., *Anat. Res.*, **233:394 (1992) (DPP-II)**.
Loch, N. et al., *Eur. J. Biochem.*, **210:161 (1992) (DPP-IV)**.
Smith, R.E. et al., *Histochem. J.*, **24:637 (1992) (DPP-IV)**.

Sequence	Cat. #	Size
Pro-Arg-7-amino-4-methylcoumarin	AMC032	10 mg 25 mg

$C_{21}H_{27}N_6O_4$

A fluorogenic substrate for Cathepsin C (DPP-I).

M.W. 428

Sequence	Cat. #	Size
Ser-Tyr-7-amino-4-methylcoumarin	AMC041	10 mg 25 mg

$C_{22}H_{22}N_3O_6$

A fluorogenic substrate for DPP-I.

M.W. 425

REFERENCE:

McGuire, J.M. et al., *J. Biol. Chem.*, **268(4):2458 (1993)**.

THREE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Suc-Ala-Ala-Ala-7-amino-4-methylcoumarin	AMC091	10 mg
		15 mg



A fluorogenic substrate for Elastase.

M.W. 503

REFERENCES:

Stein, R. L. et al., *Biochem.*, **25:5414** (1986).

Del Mar, E.G. et al., *Biochem.*, **19:468** (1980).

Castillo, M.J. et al., *Anal. Biochem.*, **99:53** (1979).

Sequence	Cat. #	Size
Ac-Ala-Ala-Lys-7-amino-4-methylcoumarin	AMC048	10 mg
		25 mg



A fluorogenic substrate for Trypsin.

M.W. 487

REFERENCES:

Schwartz, L.B. et al., *The N. E. J. of Med.*, **June 25** (1987).

Schwartz, L.B. et al., *J. Imm.*, **126:1290** (1981).

Sequence	Cat. #	Size
Suc-Ala-Ala-Phe-7-amino-4-methylcoumarin	AMC084	10 mg
		25 mg



A fluorogenic substrate for Cathepsin G.

M.W. 566

REFERENCES:

Lively, M.O. et al., *Biochim. Biophys. Acta.*, **525:171** (1978).

Yoshida, N. et al., *Biochem.*, **19:5799** (1980).

Sequence	Cat. #	Size
Z-Ala-Arg-Arg-7-amino-4-methylcoumarin	AMC055	10 mg
		25 mg



A fluorogenic substrate for Cathepsin B.

M.W. 692

REFERENCES:

Maciewica, et al., *Biomed. Biochem. Acta.*, **50:564** (1991).

McDonald, J.K. et al., *Biochem and Biophys. Res. Comm.*, **151:827** (1988).

Marks, N. and Berg, M.J. et al., *Arch. Biochem. and Biophys.*, **259:131** (1987).

Sequence	Cat. #	Size
Boc-Gly-Lys-Arg-7-amino-4-methylcoumarin	AMC246	10 mg
$C_{33}H_{44}N_6O_7$		25 mg

M.W. 665

REFERENCE:

Seidah, N.G. et al., *FEBS Lett.*, **211(2):144** (1987).

Sequence	Cat. #	Size
Z-Gly-Gly-Arg-7-amino-4-methylcoumarin	AMC056	10 mg
$C_{28}H_{33}N_7O_7$		25 mg

A fluorogenic substrate for Plasminogen Activator.

M.W. 579

REFERENCES:

Huseby, R.M. et al., *Throm. Res.*, **10:679** (1977).

Suido, N.M.E. et al., *J. Periodontal Res.*, **22:412** (1987).

Sequence	Cat. #	Size
Glut-Gly-Gly-Phe-7-amino-4-methylcoumarin	AMC087	10 mg
$C_{27}H_{28}N_4O_8$		25 mg

A fluorogenic substrate for Cathepsin G.

M.W. 536

REFERENCES:

Lively, M.O. et al., *Biochimet. Biophys. Acta.*, **525:171** (1978).

Yoshida, N. et al., *Biochem.*, **19:5799** (1980).

Sequence	Cat. #	Size
Z-Glu-Pro-Arg-7-amino-4-methylcoumarin	AMC061	10 mg
$C_{31}H_{37}N_7O_7$		25 mg

A fluorogenic substrate for Granzyme A.

M.W. 619

REFERENCES:

Smyth, M.J. et al., *J. Biol. Chem.*, **267(34):24418**.

Velotti, F. et al., *Eur. J. Imm.*, **22:1049** (1992).

Sequence	Cat. #	Size
BOC-Gln-Ala-Arg-7-amino-4-methylcoumarin	AMC123	10 mg
$C_{28}H_{42}N_6O_7$		25 mg

A fluorogenic substrate for Trypsin.

M.W. 631

REFERENCE:

Kawabata, S. et al., *Eur. J. Biochem.*, **172:17**(1988).

Sequence	Cat. #	Size
Z-His-Glu-Lys-7-amino-4-methylcoumarin	AMC248	10 mg 25 mg

C₃₅H₄₁N₇O₉

A Cysteine protease substrate for Lys-Gingipain

M.703

REFERENCE:

Abe, N. et al., J. Biochem., 128(5):877 (2000).

Sequence	Cat. #	Size
BOC-Leu-Arg-7-amino-4-methylcoumarin	AMC113	10 mg 25 mg

C₃₃H₅₂N₁₀O₇

HYGROSCOPIC. A fluorogenic substrate for Cathepsin B.

M.W. 700

REFERENCES:

Mizuno, K. et al., Biochem. Biophys. Res. Comm., 144:807 (1987).

Mizuno, K. et al., Biochem. Biophys. Res. Comm., 159:305 (1989).

Sequence	Cat. #	Size
Z-Leu-Leu-Glu-7-amino-4-methylcoumarin	AMC180	10 mg 25 mg

C₃₅H₄₄N₄O₉

A fluorogenic Proteasome substrate measuring Peptidylglutamyl Peptide hydrolyzing activity of the 20 S Proteasome.

M.W. 664

REFERENCES:

Crain, et al., J. Biol. Chem.,

272(20):13437 (1997).

Lono, P.O. et al., Immunopharm., 36:285 (1997).

Orlowski, M. et al., Biochem., 32:1563

Sequence	Cat. #	Size
Ac-Lys-Pro-Arg-7-amino-4-methylcoumarin	AMC130	10 mg 25 mg

C₂₉H₄₂N₆O₆

A fluorogenic substrate for Trypsin, Cytotoxic Lymphocytes.

M.W. 598

REFERENCES:

Osman, I.A.R. et al., J. Histochem. and Cytochem., 37:415 (1989).

Schwartz, L.B. et al., Am. Rev. Respir., 135:1186 (1987).

Sequence	Cat. #	Size
Z-Phe-Ala-Arg-7-amino-4-methylcoumarin	AMC062	10 mg 25 mg
$C_{36}H_{44}N_2O_7$		

A fluorogenic substrate for Plasma Kallikrein.

M.W. 684

Sequence	Cat. #	Size
D-Phe-Phe-Arg-7-amino-4-methylcoumarin	AMC060	10 mg 25 mg
$C_{34}H_{38}N_2O_5$		

A fluorogenic substrate for Plasma Kallikrein.

M.W. 624

Sequence	Cat. #	Size
D-Phe-Pro-Arg-7-amino-4-methylcoumarin	AMC064	10 mg 25 mg
$C_{30}H_{36}N_2O_5$		

HYGROSCOPIC. A fluorogenic substrate for Thrombin.

M.W. 574

REFERENCES:

McRae, B. J. et al., *Biochem.*, **20:7196 (1981)**.

Kato, H. et al., *Throm. Res.*, **56:77 (1988)**.

Sequence	Cat. #	Size
Z-Phe-Pro-Arg-7-amino-4-methylcoumarin	AMC054	10 mg 25 mg
$C_{38}H_{48}N_2O_7$		

A fluorogenic substrate for Kallikrein.

M.W. 709

REFERENCE:

Magihara, M. et al., *Clin. Chem.*, **33:1463 (1987)**.

Sequence	Cat. #	Size
D-Pro-Phe-Arg-7-amino-4-methylcoumarin	AMC059	10 mg 25 mg
$C_{30}H_{36}N_2O_5$		

HYGROSCOPIC. A fluorogenic substrate for Thrombin.

M.W. 574

REFERENCES:

McRae, B. J. et al., *Biochem.*, **20:7196 (1981)**.

Kato, H. et al., *Throm. Res.*, **56:77 (1988)**.

Sequence	Cat. #	Size
BOC-Ser-Phe-Leu-7-amino-4-methylcoumarin	AMC247	10 mg 25 mg
$C_{33}H_{42}N_4O_8$		

M.W.

Sequence	Cat. #	Size
D-Val-Leu-Arg-7-amino-4-methylcoumarin	AMC066	10 mg 25 mg

$C_{27}H_{41}N_7O_5$

HYGROSCOPIC. A fluorogenic substrate for Glandular Kallikrein.

M.W. 543

REFERENCES:

Marata, M.A. et al., *Can. Res.*, **48:4158 (1988)**.

Shori, D.K. et al., *Biochem. Pharmacology*, **43(6):1209 (1992)**.

Sequence	Cat. #	Size
D-Val-Leu-Lys-7-amino-4-methylcoumarin	AMC081	10 mg 25 mg

$C_{27}H_{41}N_5O_5$

HYGROSCOPIC. A fluorogenic substrate for Plasmin.

M.W. 515

REFERENCE:

Calvin, S.A. et al., *Anal. Biochem.*, **80:355 (1977)**.

Kato, H. et al., *Biochem.*, **88:183 (1980)**.

Sequence	Cat. #	Size
Z-Val-Val-Arg-7-amino-4-methylcoumarin	AMC245	10 mg 25 mg

$C_{34}H_{45}N_7O_7$

A fluorogenic substrate for Cathepsin S.

M.W. 663

REFERENCE:

Bromme, D. et al., *Biochem.*, **264:475 (1989)**.

FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Suc-Ala-Ala-Pro-Ala-7-amino-4-methylcoumarin	AMC092	10 mg 25 mg

$C_{27}H_{33}N_5O_9$

A fluorogenic substrate for Leukocyte Elastase.

M.W. 571

REFERENCES:

Stein, R. L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Met-7-AMC096 amino-4-methylcoumarin		10 mg 25 mg

$C_{31}H_{41}N_5O_9S$

A fluorogenic substrate for Human Pancreatic Elastase.

M.W. 659

REFERENCES:

Stein, R. L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
Suc-Ala-Ala-Pro-Phe-7- amino-4-methylcoumarin	AMC085	10 mg 25 mg

$C_{34}H_{41}N_5O_9$

A fluorogenic substrate for Chymotrypsin.

M.W. 666

REFERENCES:

Sawada, H. et al., *Experientia*, **39:454 (1983)**.

Oshima, G. et al., *Biochem.*, **94:1615 (1983)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Val-7- amino-4-methylcoumarin	AMC094	10 mg 25 mg

$C_{31}H_{41}N_5O_9$

A fluorogenic substrate for Elastase.

M.W. 627

REFERENCES:

Stein, R. L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
BOC-Ala-Gly-Pro-Arg-7- amino-4-methylcoumarin	AMC121	10 mg 25 mg

$C_{31}H_{44}N_6O_8$

A fluorogenic substrate for Cathepsin

K. A fluorogenic Serine protease

substrate corresponds to the cleavage

site at the Arg 98 of the natural ANF precursor.

M.W. 693

REFERENCE:

Imada, T. et al., *Biochem. Biophys. Res. Comm.*, **143:587 (1987)**.

Sequence	Cat. #	Size
Ac-Ala-Glu-Val-Asp-7-amino-4-methylcoumarin	AMC145	5 mg 10 mg 25 mg

$C_{29}H_{37}N_5O_{11}$

A fluorogenic substrate for Caspase-6 and 8.

M.W. 631

REFERENCE:

Garcia-Calvo, M. et al., *J. Biol. Chem.*, **273(49):32608 (1998)**.

Sequence	Cat. #	Size
Ac-Asp-Glu-Val-Asp-7-amino-4-methylcoumarin	AMC138	5 mg 10 mg 25 mg

$C_{30}H_{37}N_5O_{13}$

A fluorogenic substrate for Caspase-3 (CPP32, YAMA), 6, 7, 10.

M.W. 676

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Nicholson, D.W. et al., *Nature*, **376:37 (1995)**.

Sequence	Cat. #	Size
Suc-Ala-Leu-Pro-Phe-7-amino-4-methylcoumarin	AMC163	10 mg 25 mg

$C_{37}H_{44}N_5O_9$

A fluorogenic PPlases (peptidyl-Prolyl cis-trans Isomerase) substrate.

M.W. 702

REFERENCE:

Kofron, J.L. et al., *Biochem.*, **30:6127 (1991)**.

Sequence	Cat. #	Size
Ac-Asp-Met-Gln-Asp-7-amino-4-methylcoumarin	AMC144	5 mg 10 mg 25 mg

$C_{30}H_{43}N_6O_{12}S$

A fluorogenic substrate for Caspase-3 and 6.

M.W. 711

REFERENCE:

Ekert, P.G. et al., *EMBO*, **18(2):330 (1999)**.

Sequence	Cat. #	Size
MeOSuc-Gly-Pro-Leu-Gly-7-amino-4-methylcoumarin	AMC100	10 mg 25 mg

C₃₅H₄₆N₆O₁₀

A fluorogenic substrate for Bacterial Collagenase.

M.W. 711

Sequence	Cat. #	Size
MeOSuc-Ile-Glu-Gly-Arg-7-amino-4-methylcoumarin	AMC067	10 mg 25 mg

C₃₄H₄₆N₆O₁₁

A fluorogenic substrate for Factor Xa.

M.W. 700

REFERENCE:

Kato, M. et al., *Throm. Res.*, **50:77** (1988).

Sequence	Cat. #	Size
Ac-Ile-Glu-Thr-Asp-7-amino-4-methylcoumarin	AMC140	5 mg 10 mg 25 mg

C₃₁H₄₁N₅O₁₂

A fluorogenic substrate for Caspase-8.

M.W. 675

REFERENCES:

Thornberry, H.A. et al., *Science*, **281:1312** (1998).

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677** (1997).

Sequence	Cat. #	Size
Ac-Ile-Glu-Pro-Asp-7-amino-4-methylcoumarin	AMC153	5 mg 10 mg 25 mg

C₃₂H₄₁N₅O₁₁

A fluorogenic substrate for Granzyme B.

M.W. 672

REFERENCES:

Harris, J.L. et al., *J. Biol. Chem.*, **273:27364** (1998).

Thornberry, N.A. et al., *Science*, **281:1312** (1998).

Sequence	Cat. #	Size
Ac-Leu-Glu-His-Asp-7-amino-4-methylcoumarin	AMC154	5 mg 10 mg 25 mg

C₃₃H₄₁N₇O₁₁

A fluorogenic substrate for Caspase-9.

M.W. 712

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312** (1998).

Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907** (1997).

Sequence	Cat. #	Size
Ac-Leu-Glu-Thr-Asp-7-amino-4-methylcoumarin	AMC157	5 mg 10 mg 25 mg

$C_{31}H_{41}N_5O_{12}$

A fluorogenic substrate for Caspase-8.

M.W. 675

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.* **272:9677 (1997)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-Val-Asp-7-amino-4-methylcoumarin	AMC155	5 mg 10 mg 25 mg

$C_{32}H_{45}N_5O_{11}$

A fluorogenic substrate for Caspase-4.

M.W. 674

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.* **272:9677 (1997)**.

Sequence	Cat. #	Size
Suc-Leu-Leu-Val-Tyr-7-amino-4-methylcoumarin	AMC086	10 mg 25 mg

$C_{40}H_{53}N_5O_{10}$

A fluorogenic substrate for Chymotrypsin.

M.W. 763

REFERENCES:

Ishiwara, S. et al., *FEBS Lett.*, **189:119 (1988)**.

Tsukahara, T. et al., *Eur. J. Biochem.*, **177:261 (1988)**

Sequence	Cat. #	Size
Ac-Trp-Glu-His-Asp-7-amino-4-methylcoumarin	AMC156	5 mg 10 mg 25 mg

$C_{38}H_{40}N_8O_{11}$

A fluorogenic substrate for Caspase-1.

M.W. 785

REFERENCE:

Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907 (1997)**

Sequence	Cat. #	Size
Ac-Tyr-Val-Ala-Asp-7- amino-4-methylcoumarin	AMC120	5 mg 10 mg 25 mg

C₃₁H₄₄N₈O₈

A fluorogenic substrate for Caspase-1 (ICE), 4.

M.W. 665

REFERENCE:

Marcelli, M. et al., *Cancer Res.*, 58:76 (1998).

Sequence	Cat. #	Size
Ac-Val-Glu-Ile-Asp-7- amino-4-methylcoumarin	AMC141	5 mg 10 mg 25 mg

C₃₂H₄₃N₅O₁₁

A fluorogenic substrate for Caspase-6.

M.W. 674

REFERENCES:

Thornberry, N.A. et al., *Science*, 281:1312 (1998).

Martin, L.M. et al., *Blood*, 90:4283 (1997).

Takahashi, A. et al., *Exp. Cell. Res.*, 231:123 (1997).

Sequence	Cat. #	Size
Ac-Val-Glu-Thr-Asp-7- amino-4-methylcoumarin	AMC179	5 mg 10 mg 25 mg

C₃₀H₃₉N₅O₁₂

A fluorogenic substrate for Caspases.

M.W. 661

Sequence	Cat. #	Size
D-Val-Lys-Lys-Arg-7- amino-4-methylcoumarin	AMC076	10 mg 25 mg

C₃₃H₅₄N₁₀O₆

A fluorogenic substrate for Plasma Kallikrein.

M.W. 686

Sequence	Cat. #	Size
Ac-Glu-Glu-Val-Val-Lys- 7-amino-4-methylcoumarin	AMC178	10 mg 25 mg

C₃₈H₅₅N₇O₁₃

A fluorogenic substrate for Hepatitis C
Virus NS3 Protease substrates.

M.W. 817

REFERENCE:

Pennington, M.W. et al., *J. Cell Biochem.*, 135:1186 (1996).

OVER FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Z-Arg-Gly-Phe-Phe-Pro-7-amino-4-methylcoumarin	AMC098	5 mg 10 mg 25 mg

$C_{43}H_{51}N_9O_8$

A fluorogenic substrate for Cathepsin D.

M.W. 821

REFERENCES:

Lojda, Z. et al., *Histochem.*, **88:505** (1988).

Nishimura, Y. et al., *Biochem. Biophys. Res. Comm.*, **148:335**.

Gulmick, S. et al., *J. Mol. Bio.*, **277:265** (1992).

Sequence	Cat. #	Size
D-Pro-Leu-Gly-Ile-Ala-Gly-Arg-7-amino-4-methylcoumarin	AMC077	10 mg 25 mg

$C_{40}H_{60}N_{11}O_9$

M.W.

Sequence	Cat. #	Size
Ac-Val-Asp-Val-Ala-Asp-7-amino-4-methylcoumarin	AMC142	5 mg 10 mg 25 mg

$C_{33}H_{46}N_6O_{12}$

A fluorogenic substrate for Caspase-2.

M.W. 717

REFERENCES:

Thornberry, N.A. and Lazebnik, Y., *Science*, **281:1312** (1998).

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677** (1997).

7-AMINO-4-METHYLCOUMARIN SUBSTRATES (AMC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
SINGLE AMINO ACID SUBSTRATES				
L-Ala-AMC	246	-----	AMC001	10 mg 25 mg
L-Arg-AMC	331	Cathepsin H	AMC002	10 mg 25 mg
L-Asp-AMC	290	-----	AMC003	10 mg 25 mg
L-Gly-AMC	232	-----	AMC004	10 mg 25 mg
L-Leu-AMC	288	Aminopeptidase M	AMC007	10 mg 25 mg
L-Lys-AMC	303	Aminopeptidase B	AMC008	10 mg 25 mg
BOC-Lys(Ac)-AMC	445	Histone Deacetylase	AMC172	10 mg 25 mg
L-Met-AMC	306	-----	AMC009	10 mg 25 mg
L-Phe-AMC	322	-----	AMC012	10 mg 25 mg
L-Pro-AMC	272	-----	AMC013	10 mg 25 mg
L-HydroxyPro-AMC	369*	-----	AMC014	10 mg 25 mg
L-Ser-AMC	262	-----	AMC016	10 mg 25 mg
TWO AMINO ACID SUBSTRATES				
Arg-Arg-AMC	487	DPP-III	AMC038	10 mg 25 mg
Z-Arg-Arg-AMC	565	Cathepsin B	AMC051	10 mg 25 mg
Ala-Pro-AMC	343	DPP-IV	AMC042	10 mg 25 mg
Gly-Arg-AMC	388	Cathepsin C (DPP-I)	AMC031	10 mg 25 mg
Glut-Gly-Arg-AMC	502	Urokinase	AMC050	10 mg 25 mg
Gly-Phe-AMC	379	Cathepsin C (DPP-I)	AMC033	10 mg 25 mg
Gly-Pro-AMC	329	DPP-IV	AMC039	10 mg 25 mg
Z-Leu-Arg-AMC	578	-----	AMC053	10 mg 25 mg
Lys-Ala-AMC	374	DPP-II	AMC035	10 mg 25 mg

* Including HBr Salt

7-AMINO-4-METHYLCOUMARIN SUBSTRATES (AMC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Suc-Leu-Tyr-AMC	541	Porcine Calpain Isozymes I & II	AMC117	10 mg 25 mg
Lys-Pro-AMC	374	DPP-IV	AMC036	10 mg 25 mg
Z-Phe-Arg-AMC	612	Cathepsin L & Kallikrein	AMC052	10 mg 25 mg
Phe-Pro-AMC	374	DPP-II & DPPIV	AMC037	10 mg 25 mg
Pro-Arg-AMC	428	Cathepsin C (DPP-I)	AMC032	5 mg 10 mg 25 mg
Ser-Tyr-AMC	425	DPP-I	AMC041	10 mg 25 mg
THREE AMINO ACID SUBSTRATES				
Suc-Ala-Ala-Ala-AMC	503	Elastase	AMC091	10 mg 25 mg
Ac-Ala-Ala-Lys-AMC	487	Tryptase	AMC048	10 mg 25 mg
Suc-Ala-Ala-Phe-AMC	566	Cathepsin G	AMC084	10 mg 25 mg
Z-Ala-Lys-Arg-AMC	665	-----	AMC246	10 mg 25 mg
Suc-Gly-Gly-Phe-AMC	536	Cathepsin G	AMC087	10 mg 25 mg
Z-Gly-Pro-Arg-AMC	619	Granzyme A	AMC061	10 mg 25 mg
BOC-Gln-Ala-Arg-AMC	631	Trypsin	AMC123	10 mg 25 mg
Z-His-Glu-Lys-AMC	522	Lys-Gingipain	AMC248	5 mg 10 mg 25 mg
BOC-Leu-Arg-Arg-AMC	700	Cathepsin B	AMC113	10 mg 25 mg
Z-Leu-Leu-Glu-AMC	664	Peptidylglutamyl Peptide	AMC180	10 mg 25 mg
Ac-Lys-Pro-Arg-AMC	598	Tryptase, Cytotoxic Lymphocytes	AMC130	5 mg 10 mg 25 mg

7-AMINO-4-METHYLCOUMARIN SUBSTRATES (AMC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Z-Phe-Ala-Arg-AMC	062	Plasma Kallikrein	AMC062	10 mg 25 mg
D-Phe-Phe-Arg-AMC	624	Kallikrein	AMC060	10 mg 25 mg
D-Phe-Pro-Arg-AMC	574	Thrombin	AMC064	10 mg 25 mg
Z-Phe-Pro-Arg-AMC	709	Kallikrein	AMC054	10 mg 25 mg
D-Pro-Phe-Arg-AMC	574	Thrombin	AMC059	10 mg 25 mg
BOC-Ser-Phe-Leu-AMC	622	-----	AMC247	10 mg 25 mg
D-Val-Leu-Arg-AMC	543	Glandular Kallikrein	AMC066	10 mg 25 mg
D-Val-Leu-Lys-AMC	515	Plasmin	AMC081	10 mg 25 mg
Z-Val-Val-Arg-AMC	663	Cathepsin S	AMC245	5 mg 10 mg 25 mg
FOUR AMINO ACID SUBSTRATES				
Suc-Ala-Ala-Pro-Ala-AMC	586	Leukocyte Elastase	AMC092	10 mg 25 mg
MeOSuc-Ala-Ala-Pro-Met-AMC	659	Human Pancreatic Elastase	AMC096	10 mg 25 mg
Suc-Ala-Ala-Pro-Phe-AMC	666	Chymo-trypsin	AMC085	10 mg 25 mg
MeOSuc-Ala-Ala-Pro-Val-AMC	627	Elastase	AMC094	10 mg 25 mg
BOC-Ala-Gly-Pro-Arg-AMC	693	Cathepsin K	AMC121	5 mg 10 mg 25 mg
Ac-Ala-Glu-Val-Asp-AMC	631	Caspase 6 & 8	AMC145	5 mg 10 mg 25 mg
Ac-Asp-Glu-Val-Asp-AMC	676	Caspase-3 (CPP32, YAMA), 6, 7, 10	AMC138	5 mg 10 mg 25 mg
Suc-Ala-Leu-Pro-Phe-AMC	702	PPlases substrate	AMC163	10 mg 25 mg
Ac-Asp-Met-Gln-Asp-AMC	711	Caspase 3 & 6	AMC144	5 mg 10 mg 25 mg
MeOSuc-Gly-Pro-Leu-Gly-AMC	711	Bacterial Collagenase	AMC100	10 mg 25 mg

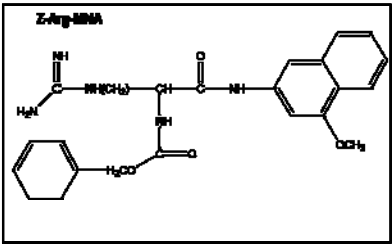
7-AMINO-4-METHYLCOUMARIN SUBSTRATES (AMC)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
MeOSuc-Ile-Glu-Gly-Arg-AMC	700	Factor Xa	AMC067	5 mg 10 mg 25 mg
Ac-Ile-Glu-Thr-Asp-AMC	675	Caspase-8	AMC140	5 mg 10 mg 25 mg
Ac-Ile-Glu-Pro-Asp-AMC	672	Granzyme B	AMC153	5 mg 10 mg 25 mg
Ac-Leu-Glu-His-Asp-AMC	712	Caspase-9	AMC154	5 mg 10 mg 25 mg
Ac-Leu-Glu-Thr-Asp-AMC	675	Caspase-8	AMC157	10 mg 25 mg
Ac-Leu-Glu-Val-Asp-AMC	674	Caspase-4	AMC155	5 mg 10 mg 25 mg
Suc-Leu-Leu-Val-Tyr-AMC	763	Chymo-trypsin	AMC086	10 mg 25 mg
Ac-Trp-Glu-His-Asp-AMC	785	Caspase-1	AMC156	5 mg 10 mg 25 mg
Ac-Tyr-Val-Ala-Asp-AMC	665	Caspase-1, 4	AMC120	5 mg 10 mg 25 mg
Ac-Val-Glu-Ile-Asp-AMC	674	Caspase-6	AMC141	5 mg 10 mg 25 mg
Ac-Val-Glu-Thr-Asp-AMC	661	Caspases	AMC179	5 mg 10 mg 25 mg
D-Val-Lys-Lys-Arg-AMC	954	Plasma Kallikrein	AMC076	10 mg 25 mg
OVER FOUR AMINO ACID SUBSTRATES				
Z-Arg-Gly-Phe-Phe-Pro-AMC	812	Cathepsin D	AMC098	10 mg 25 mg
Ac-Glu-Glu-Val-Val-Lys-AMC	847	Hepatitis C Virus NS3 Protease Substrate	AMC178	10 mg 25 mg
D-Pro-Leu-Gly-Ile-Ala-Gly-Arg-AMC	839	-----	AMC077	10 mg 25 mg
Ac-Val-Asp-Val-Ala-Asp-AMC	717	Caspase-2	AMC142	5 mg 10 mg 25 mg

4-METHOXY-2-NAPHTHYLAMINE SUBSTRATES (MNA)

MNA substrates offer the advantage of dual detection using either chromogenic or fluorogenic detection systems. The MNA released by proteolytic activity can be converted to a colored azo dye by coupling with a diazonium salt. Activity can be measured using a spectrophotometer (520nm OD; $\epsilon_{520} = 27,000 \text{ M}^{-1} \text{ cm}^{-1}$). Fluorometric measurement of MNA allows for improved assay sensitivity.

Structures of MNA Substrates:



Excitation: 340 nm

Emission: 425 nm

SINGLE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Arg-4-methoxy-2-naphthylamine	MNA002	10 mg
		25 mg

C₁₇H₂₂N₂O₂

A fluorogenic/chromogenic substrate for Cathepsin H.

M.W. 328

REFERENCES:

Kanaoka, Y. et al., *Chem. Pharm. Bul.*, **25:3126** (1997).

Rothe, M. et al., *Eur. J. Biochem.*, **210:759** (1992).

Sequence	Cat. #	Size
Ala-Pro-4-methoxy-2-naphthylamine	MNA042	10 mg
		25 mg

C₁₈H₂₂N₂O₃

A fluorogenic/chromogenic substrate for DDP-IV.

M.W. 340

REFERENCES:

Loch, N. et al., *Eur. J. Biochem.*, **210:161** (1992).

Smith, R.E. et al., *Histochem. J.*, **24:637** (1992).

Sequence	Cat. #	Size
Z-Arg-Arg-4-methoxy-2-naphthylamine	MNA051	10 mg
		25 mg

C₃₁H₄₁N₃O₅

A fluorogenic/chromogenic substrate for Cathepsin B.

M.W. 619

REFERENCES:

Trabandt, A. et al., *Arth. and Rheum.*, **34(11):1444** (1991).

Hasnain, S. et al., *Biol. Chem. Hoppe-Seyler*, **373:413** (1992).

Smith, R.E. et al., *Anticancer Res.*, **8:525** (1988).

Sequence	Cat. #	Size
Glutaryl-Gly-Arg-4-methoxy-2-naphthylamine	MNA050	10 mg
		25 mg

C₂₈H₃₂N₄O₆

A fluorogenic/chromogenic substrate for Urokinase.

M.W. 500

REFERENCE:

Huseby, R.M. et al., *Throm. Res.*, **10:679** (1977).

Sequence	Cat. #	Size
Z-Leu-Arg-4-methoxy-2-naphthylamine	MNA053	10 mg 25 mg

$C_{31}H_{40}N_6O_5$

A fluorogenic/chromogenic substrate for Cathepsin K, S and V.

M.W. 576

REFERENCES:

Bromme, D. et al., *J. Biol. Chem.*,
271:2126 (1996).

Bromme, D. et al., *Biochem.*, **38:2377 (1997).**

Sequence	Cat. #	Size
Suc-Leu-Tyr-4-methoxy-2-naphthylamine	MNA117	10 mg 25 mg

$C_{30}H_{35}N_3O_7$

A fluorogenic/chromogenic substrate for Calpain.

M.W. 549

REFERENCES:

Sasaki, T. et al., *J. Biol. Chem.*, **259:12489 (1984).**

Woo, K.M. et al., *J. Biol. Chem.*, **264:2088 (1989).**

Sequence	Cat. #	Size
Z-Phe-Arg-4-methoxy-2-naphthylamine	MNA052	10 mg 25 mg

$C_{30}H_{35}N_6O_5$

A fluorogenic/chromogenic substrate for Cathepsin C.

M.W. 610

REFERENCES:

Maciewicz, et al., *Biomed. Biochem. Acta.*, **50:564 (1991).**

McDonald, J.K. et al., *Biochem. and Biophys. Res. Comm.*, **151:827 (1988).**

Marks, N. et al., *Arch. Biochem. and Biophys.*, **259:131 (1987).**

THREE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Glut-Ala-Ala-Ala-4-methoxy-2-naphthylamine	MNA090	10 mg 25 mg

$C_{25}H_{32}N_4O_7$

A fluorogenic/chromogenic substrate for Elastase.

M.W. 500

Sequence	Cat. #	Size
Z-Ala-Arg-Arg-4-methoxy-2-naphthylamine	MNA055	10 mg 25 mg

$C_{34}H_{46}N_{10}O_6$

A fluorogenic/chromogenic substrate for Cathepsin B.

M.W. 690

REFERENCES:

Maciewica, et al., *Biomed. Biochem. Acta.*, **50:564 (1991)**.
 McDonald, J.K et al., *Biochem and Biophys. Res. Comm.*, **151:827 (1988)**.
 Marks, N. et al., *Arch. Biochem. and Biophys.*, **259:131 (1987)**.

Sequence	Cat. #	Size
Ac-Ala-Ala-Lys-4-methoxy-2-naphthylamine	MNA048	10 mg 25 mg

$C_{31}H_{38}N_5O_6$

A fluorogenic/chromogenic substrate for Tryptase.

M.W. 577

REFERENCES:

Schwartz, L.B. et al., *The N. E. J. Of Med.*, June 25 (1987).
 Schwartz, L.B. et al., *J. Imm.*, **126:1290 (1981)**.

Sequence	Cat. #	Size
Suc-Ala-Ala-Phe-4-methoxy-2-naphthylamine	MNA084	10 mg 25 mg

$C_{30}H_{34}N_4O_7$

A fluorogenic/chromogenic substrate for Cathepsin G.

M.W. 562

REFERENCES:

Lively, N.O. et al., *Biochimet. Biophys. Acta.*, **525:171 (1978)**.
 Yoshida, N. et al., *Biochem.*, **19:5799 (1980)**.

Sequence	Cat. #	Size
Glut-Ala-Ala-Phe-4-methoxy-2-naphthylamine	MNA083	5 mg 10 mg 25 mg

$C_{31}H_{36}N_4O_7$

A fluorogenic/chromogenic substrate for Cathepsin G.

M.W. 576

REFERENCES:

Lively, N.O. et al., *Biochimet. Biophys. Acta.*, **525:171 (1978)**.
 Yoshida, N. et al., *Biochem.*, **19:5799 (1980)**.

Sequence	Cat. #	Size
Z-Ala-Lys-Lys-4-methoxy-2-naphthylamine	MNA080	10 mg 25 mg

$C_{34}H_{47}N_5O_6$

A fluorogenic/chromogenic substrate for Plasmin.

M.W. 634

REFERENCES:

Calvin, S.A. et al., *Anal. Biochem.*, **80:355 (1977)**.

Kato, H. et al., *Biochem.*, **88:183 (1980)**

Sequence	Cat. #	Size
Z-Gly-Gly-Arg-4-methoxy-2-naphthylamine	MNA056	10 mg 25 mg

$C_{29}H_{35}N_7O_6$

A fluorogenic/chromogenic substrate for Plasminogen Activator.

M.W. 577

REFERENCES:

Huseby, R.M. et al., *Throm. Res.*, **10:679 (1977)**.

Suido, N.M.E. et al., *J. Periodontal Res.*, **22:412 (1987)**.

Sequence	Cat. #	Size
Suc-Gly-Gly-Phe-4-methoxy-2-naphthylamine	MNA087	10 mg 25 mg

$C_{28}H_{30}N_4O_7$

A fluorogenic/chromogenic substrate for Cathepsin G.

M.W. 534

REFERENCES:

Lively, M.O. et al., *Biochim. Biophys. Acta.*, **525:171 (1978)**.

Yoshida, N. et al., *Biochem.*, **19:5799 (1980)**.

Sequence	Cat. #	Size
Z-Gly-Pro-Arg-4-methoxy-2-naphthylamine	MNA061	10 mg 25 mg

$C_{32}H_{38}N_6O_6$

A fluorogenic/chromogenic substrate for Granzyme A.

M.W. 617

REFERENCES:

Smyth, M.J. et al., *J. Biol. Chem.*, **267(34):24418 (1992)**.

Velotti, F. et al., *Eur. J. Imm.*, **22:1049 (1992)**.

Sequence	Cat. #	Size
BOC-Leu-Arg-Arg-4-methoxy-2-naphthylamine	MNA113	10 mg 25 mg

$C_{34}H_{54}N_{10}O_6$

A fluorogenic/chromogenic substrate for Cathepsin B.

M.W. 697

REFERENCES:

Mizuno, K. et al., *Biochem. Biophys. Res. Comm.*, **144:807 (1987)**.

Mizuno, K. et al., *Biochem. Biophys. Res. Comm.*, **159:305 (1989)**.

Sequence	Cat. #	Size
MeOSuc-Phe-Leu-Phe-4-methoxy-2-naphthylamine	MNA088	10 mg 25 mg

$C_{40}H_{46}N_4O_7$

A fluorogenic/chromogenic substrate for Mast Cell Protease.

M.W. 694

Sequence	Cat. #	Size
D-Phe-Phe-Arg-4-methoxy-2-naphthylamine	MNA060	10 mg 25 mg

$C_{31}H_{39}N_7O_4$

A fluorogenic/chromogenic substrate for Plasma Kallikrein.

M.W. 573

Sequence	Cat. #	Size
MeOSuc-Phe-Pro-Phe-4-methoxy-2-naphthylamine	MNA089	10 mg 25 mg

$C_{38}H_{42}N_4O_7$

A fluorogenic/chromogenic substrate for Mast Cell Protease.

M.W. 664

Sequence	Cat. #	Size
D-Val-Leu-Arg-4-methoxy-2-naphthylamine	MNA066	10 mg 25 mg

$C_{28}H_{42}N_4O_4$

A fluorogenic/chromogenic substrate for Glandular Kallikrein.

M.W. 540

REFERENCES:

Marata, M.A. et al., *Can. Res.*, **48**:4158 (1988).
 Shori, D.K. et al., *Biochem. Pharmacology*, **43**(6):1209 (1992).
 Chan, K. et al., *Diabetes*, **42**:113 (1993).

Sequence	Cat. #	Size
Z-Val-Leu-Arg-4-methoxy-2-naphthylamine	MNA065	10 mg 25 mg

$C_{36}H_{48}N_7O_6$

A fluorogenic/chromogenic substrate for Glandular Kallikrein.

M.W. 675

REFERENCES:

Marata, M.A. et al., *Can. Res.*, **48**:4158 (1988).
 Shori, D.K. et al., *Biochem. Pharmacology*, **43**(6):1209 (1992).
 Chan, K. et al., *Diabetes*, **42**:113 (1993).

Sequence	Cat. #	Size
D-Val-Leu-Lys-4-methoxy-2-naphthylamine	MNA081	10 mg 25 mg

$C_{28}H_{42}N_5O_4$

HYGROSCOPIC. A fluorogenic/chromogenic substrate for Plasmin.

M.W. 512

REFERENCES:

Calvin, S.A. et al., *Anal. Biochem.*, **80:355 (1977)**.

Kato, H. et al., *Biochem.*, **88:183 (1980)**.

FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Ala-4-methoxy-2-naphthylamine	MNA092	10 mg 25 mg

$C_{30}H_{38}N_5O_8$

A fluorogenic/chromogenic substrate for Elastase.

M.W.

Sequence	Cat. #	Size
Suc-Ala-Ala-Pro-Phe-4-methoxy-2-naphthylamine	MNA085	10 mg 25 mg

$C_{35}H_{44}N_5O_8$

A fluorogenic/chromogenic substrate for Chymotrypsin.

M.W. 659

REFERENCES:

Sawada, H. et al., *Experientia*, **39:454 (1983)**.

Oshima, G. et al., *Biochem.*, **94:1615 (1983)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Met-4-methoxy-2-naphthylamine	MNA096	5 mg 10 mg 25 mg

$C_{32}H_{43}N_5O_8S$

A fluorogenic/chromogenic substrate for Human Pancreatic Elastase.

M.W. 657

REFERENCES:

Stein, R.L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Pro-Val-4-methoxy-2-naphthylamine	MNA094	10 mg 25 mg

$C_{32}H_{43}N_5O_8$

A fluorogenic/chromogenic substrate for Elastase.

M.W. 625

REFERENCES:

Stein, R.L. et al., *Biochem.*, **25:5414 (1986)**.

Del Mar, E.G. et al., *Biochem.*, **19:468 (1980)**.

Castillo, M.J. et al., *Anal. Biochem.*, **99:53 (1979)**.

Sequence	Cat. #	Size
MeOSuc-Ile-Glu-Gly-Arg-4-methoxy-2-naphthylamine	MNA067	10 mg 25 mg

$C_{34}H_{48}N_8O_{10}$

A fluorogenic/chromogenic substrate for Factor Xa.

M.W. 728

REFERENCE:

Kato, M. et al., *Throm. Res.*, **50:77 (1988)**.

Sequence	Cat. #	Size
Z-Tyr-Val-Ala-Asp-4-methoxy-2-naphthylamine	MNA120	5 mg 10 mg 25 mg

$C_{40}H_{45}N_5O_{10}$

A fluorogenic/chromogenic substrate for Caspase-1 and 4.

M.W. 755

REFERENCE:

Marcelli, M. et al., *Can. Res.*, **58:76 (1998)**.

Sequence	Cat. #	Size
Z-Arg-Glu-Phe-Phe-Pro-4-methoxy-2-naphthylamine	MNA098	5 mg 10 mg 25 mg

$C_{50}H_{57}N_9O_8$

A fluorogenic/chromogenic substrate for Cathepsin D

M.W. 911

REFERENCE:

Lojda, Z., et al., *Biochem., Biophys. Res. Comm.*, **148:335 (1987)**

Gulmick, S. et al., *Mol. Bio.*, **277:265**

4-METHOXY-2-NAPHTHYLAMINE SUBSTRATES (MNA)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
SINGLE AMINO ACID SUBSTRATES				
Arg-MNA	328	Cathepsin H	MNA002	10 mg 25 mg
TWO AMINO ACID SUBSTRATES				
Ala-Pro-MNA	340	DPP-IV	MNA042	10 mg 25 mg
Z-Arg-Arg-MNA	619	Cathepsin B	MNA051	10 mg 25 mg
Glutaryl-Gly-Arg-MNA	500	Urokinase	MNA050	10 mg 25 mg
Z-Leu-Arg-MNA	576	Cathepsin-K, S, V	MNA053	10 mg 25 mg
Suc-Leu-Tyr-MNA	549	Calpain	MNA117	10 mg 25 mg
Z-Phe-Arg-MNA	610	Cathepsin C	MNA052	10 mg 25 mg
THREE AMINO ACID SUBSTRATES				
Glut-Ala-Ala-Ala-MNA	500	Elastase	AMC092	10 mg 25 mg
Z-Ala-Ala-Arg-MNA	690	Cathepsin B	AMC096	10 mg 25 mg
Ac-Ala-Ala-Lys-MNA	577	Tryptase	AMC085	10 mg 25 mg
Suc-Ala-Ala-Phe-MNA	562	Cathepsin G	AMC094	10 mg 25 mg
Glut-Ala-Ala-Phe-MNA	576	Cathepsin G	AMC121	5 mg 10 mg 25 mg
Z-Ala-Lys-Lys-MNA	634	Plasmin	AMC145	5 mg 10 mg 25 mg
Z-Gly-Gly-Arg-MNA	577	Plasminogen Activator	AMC138	5 mg 10 mg 25 mg
Suc-Gly-Gly-Phe-MNA	534	Cathepsin G	AMC163	10 mg 25 mg
BOC-Leu-Arg-Arg-MNA	697	Cathepsin B	AMC144	5 mg 10 mg 25 mg
MeOSuc-Phe-Leu-Phe-MNA	694	Mast Cell Protease	AMC100	10 mg 25 mg
D-Phe-Phe-Arg-MNA	622	Plasma Kallikrein	MNA089	10 mg 25 mg
MeOSuc-Phe-Pro-Phe-MNA	678	Mast Cell Protease	MNA066	10 mg 25 mg
D-Val-Leu-Arg-MNA	540	Glandular Kallikrein	MNA065	10 mg 25 mg

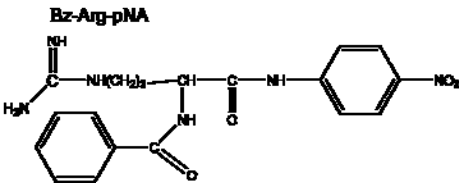
4-METHOXY-2-NAPHTHYLAMINE SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
D-Val-Leu-Lys-MNA	512	Plasmin	MNA081	10 mg
FOUR AMINO ACID SUBSTRATES				
MeOSuc-Ala-Ala-Pro-Ala-MNA	597	Elastase	MNA092	5 mg 10 mg 25 mg
Suc-Ala-Ala-Pro-Phe-MNA	659	Chymo-trypsin	MNA085	5 mg 10 mg 25 mg
MeOSuc-Ala-Ala-Pro-Met-MNA	657	Pancreatic Elastase	MNA096	10 mg 25 mg
MeOSuc-Ala-Ala-Pro-Val-MNA	625	Elastase	MNA094	5 mg 10 mg 25 mg
MeOSuc-Ile-Glu-Gly-Arg-MNA	728	Factor Xa	MNA067	10 mg 25 mg
Ac-Tyr-Val-Ala-Asp-MNA	755	Caspase 1 & 4	MNA120	5 mg 10 mg
OVER FOUR ACID SUBSTRATES				
Z-Arg-Gly-Phe-Phe-Pro-MNA	911	Cathepsin D	MNA098	5 mg 10 mg 25 mg

PARANITROANILIDE SUBSTRATES (PNA)

The Paranitroanilide substrates are N-acylated derivatives of 4-nitroanilides. Upon cleavage, they release a paranitroanilide group, which has a high absorbance at 410 nanometers ($E_{410nm} = 8800 \text{ M}^{-1}\text{cm}^{-1}$). They are used for the detection of Serine and Cysteine proteinases.

Structure of a Paranitroanilide substrate: example: L-BAPA



Sequence	Cat. #	Size
Z-pGlu-paranitroanilide	PNA005	10 mg 25 mg

C₁₉H₁₇N₃O₆

M.W. 383

Sequence	Cat. #	Size
L-Val-paranitroanilide	PNA020	10 mg 25 mg

C₁₁H₁₄N₂O₃

M.W. 236

TWO AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
L-Ile-Pro-paranitroanilide	PNA001	10 mg 25 mg

$C_{17}H_{22}N_4O_4$

M.W. 236

THREE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
pGlu-Pro-Val-paranitroanilide	PNA164	10 mg 25 mg

$C_{21}H_{27}N_5O_6$

A chromogenic substrate for Human Granulocyte.

M.W. 445

REFERENCE:

Tanaka, M. et al., *Clin. Chem. Acta.*, **43:427 (1990)**

Sequence	Cat. #	Size
D-Phe-Pro-Arg-paranitroanilide	PNA064	5 mg 10 mg 25 mg

$C_{26}H_{33}N_8O_5$

A chromogenic substrate for Thrombin.

M.W. 537

REFERENCES:

McRae, B.J. et al., *Biochem.*, **20:7196 (1981)**.

Sequence	Cat. #	Size
Z-Val-Gly-Arg-paranitroanilide	PNA166	10 mg 25 mg

$C_{27}H_{36}N_8O_7$

A chromogenic substrate for Urokinase.

M.W. 584

Sequence	Cat. #	Size
D-Val-Leu-Arg-paranitroanilide	PNA066	10 mg 25 mg

$C_{23}H_{37}N_8O_5$

A chromogenic substrate for Glandular Kallikrein.

M.W. 505

REFERENCES:

Marata, M.A. et al., *Can. Res.*, **48:4158 (1988)**.

Shori, D.K. et al., *Biochem. Pharm.*, **43(6):1209 (1992)**.

Chan, K. et al., *Diabetes*, **42:113 (1993)**.

FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
MeOSuc-Ala-Ala-Ala-Argparanitroanilide	PNA010	5 mg 10 mg 25 mg

 $C_{26}H_{38}N_6O_9$

M.W. 621

Sequence	Cat. #	Size
Suc-Ala-Ala-Pro-Pheparanitroanilide	PNA085	10 mg 25 mg

 $C_{30}H_{36}N_6O_9$

A chromogenic substrate for Chymotrypsin.

M.W. 624

REFERENCES:

Sawada, H. et al., *Experientia*, **39:454 (1983)**Oshima, G. et al., *J. Biochem.*, **94:1615 (1983)**Powers, J.C. et al., *J. Appl. Toxicol.*, **20:5177 (2000)**

Sequence	Cat. #	Size
MeO-Suc-Ala-Ala-Pro-Val-paranitroanilide	PNA094	10 mg 25 mg

 $C_{27}H_{38}N_6O_9$

A chromogenic substrate for Elastase.

M.W. 590

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907 (1997)**.

Sequence	Cat. #	Size
Ac-Ala-Glu-Val-Aspparanitroanilide	PNA145	5 mg 10 mg 25 mg

 $C_{25}H_{34}N_6O_{11}$

A chromogenic substrate for Caspase-6, 8 and 10.

M.W. 494

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907 (1997)**.

Sequence	Cat. #	Size
Suc-Ala-Leu-Pro-Pheparanitroanilide	PNA163	50 mg 250 mg

 $C_{33}H_{44}N_6O_9$

A chromogenic substrate for Chymotrypsin.

M.W. 666

REFERENCE:

Kofron, J.L. et al., *Biochem.*, **30:6127 (1991)**.

Sequence	Cat. #	Size
Ac-Asp-Gln-Met-Asparanitroanilide	PNA144	5 mg 10 mg 25 mg

C₂₆H₃₅N₇O₁₂S

A chromogenic substrate for Caspase-3 and 6.

M.W. 669

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907 (1997)**.

Sequence	Cat. #	Size
Ac-Asp-Glu-Val-Asparanitroanilide	PNA138	5 mg 10 mg 25 mg

C₂₆H₃₄N₆O₁₃

A chromogenic substrate for Caspase-3 and CCP-32.

M.W. 638

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Nicholson, D.W. et al., *Nature*, **376:37 (1995)**.

Sequence	Cat. #	Size
Z-Glu-Ala-Ile-Pro-paranitroanilide	PNA011	10 mg 25 mg

C₃₃H₄₂N₆O₁₀

M.W. 682

Sequence	Cat. #	Size
Ac-Ile-Glu-Pro-Asparanitroanilide	PNA153	5 mg 10 mg 25 mg

C₂₆H₃₈N₆O₁₁

A chromogenic substrate for Granzyme B.

M.W. 634

REFERENCES:

Harris, J.L. et al., *J. Biol. Chem.*, **273:27364 (1998)**.

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Sequence	Cat. #	Size
Ac-Ile-Glu-Thr-Asparanitroanilide	PNA140	5 mg 10 mg 25 mg

$C_{27}H_{38}N_6O_{12}$

A chromogenic substrate for Caspase-8.

M.W. 638

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677 (1997)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-Glu-Asparanitroanilide	PNA158	5 mg 10 mg 25 mg

$C_{28}H_{38}N_6O_{13}$

A chromogenic substrate for Caspase-13.

M.W. 666

REFERENCE:

Humke, E.W. et al., *J. Biol. Chem.*, **273(25):15702 (1998)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-His-Asparanitroanilide	PNA154	5 mg 10 mg 25 mg

$C_{29}H_{38}N_6O_{11}$

A chromogenic substrate for Caspase-9.

M.W. 674

REFERENCES:

Harris, J.L. et al., *J. Biol. Chem.*, **273:27364 (1998)**.

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-Thr-Asparanitroanilide	PNA157	5 mg 10 mg 25 mg

$C_{27}H_{38}N_6O_{12}$

A chromogenic substrate for Caspase-8.

M.W. 638

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312 (1998)**.

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677 (1997)**.

Sequence	Cat. #	Size
Ac-Leu-Glu-Val-Asparanitroanilide	PNA155	5 mg 10 mg 25 mg

$C_{28}H_{40}N_6O_{11}$

A chromogenic substrate for Caspase-4.

M.W. 636

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312** (1998).

Talanian, R.V. et al., *J. Biol. Chem.*, **272:9677** (1997).

Sequence	Cat. #	Size
Ac-Trp-Glu-His-Asparanitroanilide	PNA156	5 mg 10 mg 25 mg

$C_{34}H_{37}N_9O_{11}$

A chromogenic substrate for Caspase-1.

M.W. 747

REFERENCE:

Thornberry, N.A. et al., *J. Biol. Chem.*, **272:17907** (1997).

Sequence	Cat. #	Size
Ac-Tyr-Val-Ala-Asparanitroanilide	PNA120	5 mg 10 mg 25 mg

$C_{29}H_{36}N_6O_{10}$

A chromogenic substrate for Caspase-1.

M.W. 628

REFERENCE:

Marcelli, M. et al., *Cancer Res.*, **58:76** (1998).

Sequence	Cat. #	Size
Ac-Val-Glu-Ile-Asparanitroanilide	PNA141	5 mg 10 mg 25 mg

$C_{28}H_{40}N_6O_{11}$

A chromogenic substrate for Caspase-6.

M.W. 636

REFERENCES:

Thornberry, N.A. et al., *Science*, **281:1312** (1998).

Sequence	Cat. #	Size
Ac-Val-Gln-Val-Asparanitroanilide	PNA162	5 mg 10 mg 25 mg

C₂₇H₃₈N₇O₁₀

A chromogenic substrate for Caspase-3.

M.W. 621

REFERENCE:

Talanian, R. et al., *J. Biol. Chem.*,
272:9677 (1997).

Sequence	Cat. #	Size
Ac-Val-Asp-Val-Ala-Asparanitroanilide	PNA142	5 mg 10 mg 25 mg

C₂₉H₃₁N₇O₁₂

A chromogenic substrates for Caspase-2.

M.W. 679

REFERENCES:

Thornberry, N.A. and Lazebnik, Y., *Science*,
281:1312 (1998).

PARANTROANILIDE SUBSTRATES (PNA)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
SINGLE AMINO ACID SUBSTRATES				
Z-pGlu-PNA	383	-----	PNA005	10 mg 25 mg
L-Val-PNA	236	-----	PNA020	10 mg 25 mg
TWO AMINO ACID SUBSTRATES				
L-Ile-Pro-PNA	347	-----	PNA001	10 mg 25 mg
THREE AMINO ACID SUBSTRATES				
pGlu-Pro-Val-PNA	445	Human Granulocyte	PNA164	5 mg 10 mg 25 mg
D-Phe-Pro-Arg-PNA	537	-----	PNA064	5 mg 10 mg 25 mg
Z-Val-Ala-Asp-PNA	465	-----	PNA139	5 mg 10 mg 25 mg
Z-Val-Gly-Arg-PNA	584	Urokinase	PNA166	10 mg 25 mg
D-Val-Leu-Arg-PNA	505	-----	PNA066	10 mg 25 mg

PARANITROANILIDE SUBSTRATES (PNA)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
FOUR AMINO ACID SUBSTRATES				
MeOSuc-Ala-Ala-Ala-Arg-PNA	621	-----	PNA010	5 mg 10 mg 25 mg
L-Val-PNA	624	-----	PNA085	10 mg 25 mg
MeOSuc-Ala-Ala-Pro-PNA	588	-----	PNA002	5 mg 10 mg 25 mg
MeOSuc-Ala-Ala-Pro-Val-PNA	591	-----	PNA094	10 mg 25 mg
Ac-Ala-Glu-Val-Asp-PNA	491	Caspase 6 & 8	PNA145	5 mg 10 mg 25 mg
Suc-Ala-Leu-Pro-Phe-PNA	666	Chymo-trypsin	PNA 163	10 mg 25 mg
Ac-Ala-Gln-Met-Asp-PNA	669	-----	PNA144	5 mg 10 mg 25 mg
Ac-Asp-Glu-Val-Asp-PNA	638	Caspase-3	PNA138	5 mg 10 mg 25 mg
Z-Glu-Ala-Ile-Pro-PNA	682	-----	PNA011	5 mg 10 mg 25 mg
Ac-Ile-Glu-Pro-Asp-PNA	634	Granzyme B	PNA153	5 mg 10 mg 25 mg
Ac-Ile-Glu-Thr-Asp-PNA	638	Caspase-8	PNA140	5 mg 10 mg 25 mg
Ac-Ile-Glu-Glu-Asp-PNA	666	Caspase-13	PNA158	5 mg 10 mg 25 mg
Ac-Leu-Glu-His-Asp-PNA	674	Caspase-9	PNA154	5 mg 10 mg 25 mg
Ac-Leu-Glu-Thr-Asp-PNA	638	Caspase-8	PNA157	5 mg 10 mg 25 mg
Ac-Leu-Glu-Val-Asp-PNA	636	Caspase-4	PNA155	5 mg 10 mg 25 mg

PARANITROANILIDE SUBSTRATES (PNA)

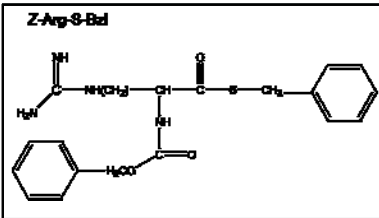
Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Ac-Trp-Glu-His-Asp-PNA	747	Caspase-1	PNA156	5 mg 10 mg 25 mg
Ac-Tyr-Val-Ala-Asp-PNA	628	-----	PNA120	5 mg 10 mg 25 mg
Ac-Val-Glu-Ile-Asp-PNA	636	Caspase-6	PNA141	5 mg 10 mg 25 mg
Ac-Val-Gln-Val-Asp-PNA	621	Caspase-3	PNA162	5 mg 10 mg 25 mg
Ac-Val-Asp-Val-Ala-Asp-PNA	679	Caspase-2	PNA142	5 mg 10 mg 25 mg

PEPTIDE THIOBENZYL ESTER
SUBSTRATES (SBzl)

Peptide thio benzyl esters are very sensitive substrates for serine and cysteine proteases. S-Bzl substrates are less specific than MNA, AMC or AFC substrates, however, they are useful in measuring the activity of enzymes having low k_m/K_m values against synthetic substrates. The thiol leaving group is detected by reaction with a thiol reagent such as 5,5'-dithiobis (2-nitrobenzoic acid) (DTNB or Leman's reagent) or 4,4'-dithiopyridine. The rate of thio benzyl ester hydrolysis is then measured at 324 nanometers by monitoring the formation of 4-thiopyridone ($E_{324nm} = 19,800 M^{-1}cm^{-1}$) or at 405 nanometers using DTNB as a thiol reagent ($E_{405nm} = 13,260 M^{-1}cm^{-1}$) for 2-nitro-5-thiobenzoate anion TNBS-. Arginine and lysine containing substrates may be used to detect serine protease activities in crude homogenates.

Structure of a Thiobenzyl ester substrate:

Example: Benzylloxycarbonyl-L-Arginyl-S-benzyl ester



SINGLE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
BOC-Ala-thiobenzyl ester	SB016	5 mg 10 mg
$C_{15}H_{21}NO_5S$		
M.W. 294		
Sequence	Cat. #	Size
Z-Arg-thiobenzyl ester	SB001	5 mg 10 mg
$C_{21}H_{28}N_4O_5S$		

A chromogenic substrate for Trypsinlike Protease Substrates.

M.W. 417

REFERENCE:

McRae, B.J. et al., *Biochem.*, 20:7196 (1981).

Sequence	Cat. #	Size
Z-Lys-thiobenzyl ester	SB002	5 mg 10 mg

$C_{21}H_{26}N_2O_2S$

A chromogenic substrate for Plasmin.

M.W. 275

REFERENCE:

McRae, B.J. et al., *Biochem.*, **20:7196** (1981).

Sequence	Cat. #	Size
L-Phe-thiobenzyl ester	SB024	5 mg 10 mg

$C_{16}H_{16}NOS$

M.W. 270

Sequence	Cat. #	Size
Z-Trp-thiobenzyl ester	SB005	5 mg 10 mg

$C_{26}H_{24}N_2O_2S$

M.W. 440

Sequence	Cat. #	Size
Z-Tyr-thiobenzyl ester	SB004	5 mg 10 mg

$C_{24}H_{23}NO_4S$

A chromogenic substrate for Chymotrypsin.

M.W. 421

TWO AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Z-Arg-Arg-thiobenzyl ester	SB006	5 mg 10 mg

$C_{27}H_{38}N_6O_4S$

A chromogenic substrate for Cathepsin B.

M.W. 570

REFERENCES:

Smyth, M.J. et al., *J. Biol. Chem.*, **267(34):24418** (1992).

Velotti, F. et al., *Eur. J. Imm.*, **22:1049** (1992).

Sequence	Cat. #	Size
Z-Gly-Arg-thiobenzyl ester	SB007	5 mg 10 mg

$C_{23}H_{29}N_5O_4S$

A chromogenic substrate for Plasminogen Activator Serine Protease.

M.W. 609

REFERENCE:

McRae, B. J. et al., *Biochem.*, **20:7196** (1981).

Sequence	Cat. #	Size
Z-Gly-Pro-thiobenzyl ester	SB010	5 mg 10 mg

$C_{22}H_{24}N_2O_4S$

M.W. 412

REFERENCES:

Smyth, M.J. et al., *J. Biol. Chem.*, **267(34):24418** (1992).

Velotti, F. et al., *Eur. J. Imm.*, **22:1049** (1992).

Sequence	Cat. #	Size
Z-Phe-Arg-thiobenzyl ester	SB008	5 mg 10 mg

$C_{30}H_{35}N_5O_4S$

M.W. 564

REFERENCE:

McRae, B.J. et al., *Biochem.*, **20:7196** (1981).

Sequence	Cat. #	Size
Z-Trp-Arg-thiobenzyl ester	SB009	5 mg 10 mg

$C_{32}H_{38}N_6O_4S$

M.W. 603

REFERENCE:

McRae, B.J. et al., *Biochem.*, **20:7196** (1981).

THREE AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
BOC-Ala-Ala-Asp-thiobenzyl ester	SB028	5 mg 10 mg

$C_{22}H_{31}N_3O_7S$

A chromogenic substrate for Granzyme B.

M.W. 480

REFERENCES:

Poe, M. et al., *J. Biol. Chem.*, **226(1):98** (1991).

Odake, S. et al., *Biochem.*, **30:2217** (1991).

Sequence	Cat. #	Size
BOC-Ala-Ala-Met-thiobenzyl ester	SB029	5 mg 10 mg

$C_{23}H_{35}N_3O_5S_2$

A chromogenic substrate for Granzyme A.

M.W. 496 BOC-AAM-SBZL

REFERENCES:

Poe, M. et al., *J. Biol. Chem.*, **226(1):98** (1991).

Odake, S. et al., *Biochem.*, **30:2217** (1991).

Smyth, M.J. et al., *J. Biol. Chem.*, **267(34):24418** (1992).

Sequence	Cat. #	Size
BOC-Ala-Ala-Phe-thiobenzyl ester	SB021	5 mg 10 mg
$C_{27}H_{35}N_3O_5S$		

A chromogenic substrate for Cathepsin G.

M.W. 512

Sequence	Cat. #	Size
BOC-Ala-Ala-Val-thiobenzyl ester	SB023	5 mg 10 mg

$C_{23}H_{35}N_3O_5S$

M.W. 464

REFERENCE:

Harper, J.W., Ramirez, G. et al., *Anal. Biochem.*, **118:382** (1981).

Sequence	Cat. #	Size
Suc-Ala-Pro-Phe-thiobenzyl ester	SB026	5 mg 10 mg

$C_{28}H_{33}N_3O_5S$

M.W. 539

REFERENCES:

Odeegard, O.R., Try, K. et al., *Homeostasis*, **17:109** (1987).

Yoshida, N. et al., *Biochem.*, **19:5799** (1980).

Sequence	Cat. #	Size
Suc-Phe-Leu-Phe-thiobenzyl ester	SB025	5 mg 10 mg

$C_{35}H_{41}N_3O_5S$

M.W. 631

REFERENCES:

Odeegard, O.R. et al., *Homeostasis*, **17:109** (1987).

Yoshida, N. and Powers, J.C. et al., *Biochem.*, **19:5799** (1980).

Sequence	Cat. #	Size
D-Val-Leu-Lys-thiobenzyl ester	SB013	5 mg 10 mg

$C_{24}H_{39}N_4O_5S$

A chromogenic substrate for Plasmin.

M.W. 463

REFERENCES:

Calvin, S.A. et al., *Anal. Biochem.*, **80:355** (1977).

FOUR AMINO ACID SUBSTRATES

Sequence	Cat. #	Size
Mu-Ala-Ala-Pro-Ala-thiobenzyl ester	SB020	5 mg 10 mg

$C_{26}H_{37}N_5O_5S$

A chromogenic substrate for Elastase.

M.W. 547

REFERENCE:

Harper, J.W., Ramirez, G. et al., *Anal. Biochem.*, **118:382** (1981).

Sequence	Cat. #	Size
Mu-Ala-Ala-Pro-Phe-thiobenzyl ester	SB022	5 mg 10 mg

$C_{32}H_{41}N_5O_5S$

A chromogenic substrate for Chymotrypsin.

M.W. 623

REFERENCE:

Harper, J.W., Ramirez, G. et al., *Anal. Biochem.*, **118:382** (1981).

INTRAMOLECULARLY QUENCHED SUBSTRATES

Intramolecularly quenched peptide substrates are comprised of a fluorescence donor group and an energy absorbing fluorescence quenching group separated by a short peptide sequence. Enzymatic cleavage of the peptide separates the donor and quencher elements and allows for a fluorescent signal to develop. Various donor:quencher pairs can be used in these constructs and newer, more versatile, pairs are under development. Constructs using the following donor: quencher pairs are available:

Donor : Quencher Pairs

1. Abz:DNP; (O-aminobenzoic acid) : (2,4 dinitrophenyl)
2. EDANS:DABCYL; (5-[2' aminoethyl]-amino] naphthalenesulfonic acid) : [[4'-(dimethylamino)phenyl]azo]-benzoic acid
3. MCA:DNP; (7-methoxycoumarin-4-acetyl) :(dinitrophenyl)

Abz-EDDNP Substrates

In Abz-EDDNP substrates, the fluorescence of the orthoaminobenzoyl (Abz) group is quenched by the 2, 4-dinitrophenyl group, the degree of quenching being highly dependent on the peptide length. The Abz-EDDNP represents a very effective donor-quencher pair. After total hydrolysis, the fluorescence increases by a factor of 7 to 100 and the absorption of EDDNP does not change with pH. Moreover, the peptide sequence may contain up to 10 residues without loss of the quenching effect. Conditions for enzymatic assays using Abz-EDDNP substrates are similar to those described for terminally labeled substrates. Calibration of the fluorometer is performed with Abz-Phe-Arg-OH prepared from total hydrolysis of Abz-Phe-Arg-pNA and its concentration determined from the absorbance at 420 nm of the p-nitroanilide group, assuming $E_{420nm} = 8800 \text{ M}^{-1}\text{cm}^{-1}$ for p-nitroanilide using Cathepsin L enzyme for such hydrolysis.

PEPTIDE THIOBENZYL ESTER SUBSTRATES (SBzl)

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
SINGLE AMINO ACID SUBSTRATES				
BOC-Ala-SBzl	294	-----	SB016	5 mg 10 mg
Z-Arg-SBzl	417	Trypsin-like Protease	SB001	5 mg 10 mg
Z-Lys-SBzl	275	Plasmin	SB002	5 mg 10 mg
L-Phe-SBzl	270	-----	SB024	5 mg 10 mg
Z-Trp-SBzl	444	-----	SB005	5 mg 10 mg
Z-Tyr-SBzl	394	-----	SB004	5 mg 10 mg
TWO AMINO ACID SUBSTRATES				
Z-Arg-Arg-SBzl	570	Cathepsin B	SB006	5 mg 10 mg
Z-Gly-Arg-SBzl	609	Plasminogen Activator Serine Protease	SB007	5 mg 10 mg
Z-Gly-Pro-SBzl	412	-----	SB010	5 mg 10 mg
Z-Phe-Arg-SBzl	564	-----	SB008	5 mg 10 mg
Z-Trp-Arg-SBzl	603	-----	SB009	5 mg 10 mg
THREE AMINO ACID SUBSTRATES				
BOC-Ala-Ala-Asp-SBzl	480	Granzyme B	SB028	5 mg 10 mg
BOC-Ala-Ala-Met-SBzl	496	Granzyme A	SB029	5 mg 10 mg
BOC-Ala-Ala-Phe-SBzl	512	Cathepsin G	SB021	5 mg 10 mg
BOC-Ala-Ala-Val-SBzl	464	-----	SB023	5 mg 10 mg
Suc-Ala-Pro-Phe-SBzl	539	-----	SB026	5 mg 10 mg
Suc-Phe-Leu-Phe-SBzl	631	-----	SB025	5 mg 10 mg
D-Val-Leu-Lys-SBzl	463	Plasmin	SB013	5 mg 10 mg
FOUR AMINO ACID SUBSTRATES				
Mu-Ala-Ala-Pro-Ala-SBzl	547	Elastase	SB020	5 mg 10 mg
Mu-Ala-Ala-Pro-Phe-SBzl	626	Chymo-trypsin	SB022	5 mg 10 mg

Structure of an Abz-EDDNP substrate:

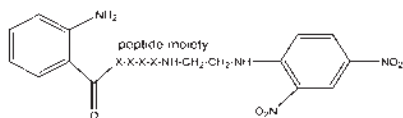
Abz-EDDNP substrate

Abz

o-Aminobenzoyl

EDDNP

ethylene diamine 2,4 dinitrophenyl



Excitation: 320 nm

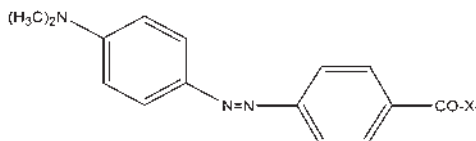
Emission: 420 nm

EDANS-DABCYL Substrates

In these substrates, fluorescence of the EDANS group (5-[(2-aminoethyl)-amino]naphthalenesulfonic acid) is quenched by the DABCYL group (4-[[4'-(dimethylamino)phenyl]azo]-benzoic acid). The DABCYL group is conjugated to the C-terminus, or a carboxyl side chain and the EDANS group is attached to the N-terminus of the peptide substrate or a side chain amino group. These substrates are useful to study substrate specificity of a given peptidase.

Structure of a DABCYL-EDANS Substrate

(The --- line indicates the cleavage site within the substrate)



Dabcyl

Excitation: 335 nm

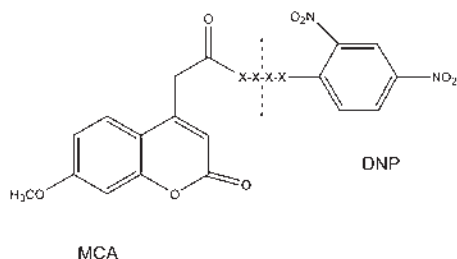
Emission: 493 nm

MCA – DNP Substrates

MCA-DNP substrates incorporate a fluorescing group, MCA (7-methoxycoumarin-4-acetyl) and a quenching group, DNP (dinitrophenyl). The MCA is conjugated to the amino end or an amino side chain in the peptide, while the DNP will be attached as a Lys(DNP) or as EDDNP (see above). The increase in fluorescence is measured using a spectrofluorometer.

Structure of MCA-DNP Substrate

(The --- line indicates the cleavage site within the substrate)



MCA

DNP

Sequence	Cat. #	Size
2-4-DNP-Pro-Leu-Gly-Met-Trp-Ser-Arg	MET04	1 mg 3 mg 5 mg

C₄₄H₆₁N₁₃O₁₃S

A fluorogenic substrate for MMP-2 and 9.

M.W. 1012 (not including TFA salt)

REFERENCE:

Netzel-Amett, S. et al., *Anal. Biochem.*, 195:86 (1991).

Sequence	Cat. #	Size
7-MCA-Arg-Pro-Lys-Pro-Val-Glu-Nval-Trp-Arg-Lys(DNP)-NH ₂	MET05	1 mg 3 mg 5 mg

C₇₈H₁₁₀N₂₂O₂₀

A fluorogenic substrate for MMP-2 and 9.

M.W. 1675 (not including TFA salt)

REFERENCE:

Nagase, M. et al., *J. Biol. Chem.*, 269:20952 (1994).

Sequence	Cat. #	Size
7-MCA-Pro-CHA-Gly-Nval-His-Ala-DPA-NH ₂	MET06	1 mg 3 mg 5 mg

C₅₁H₆₅N₁₃O₁₅

A fluorogenic substrate for MMP-13.

M.W. 1100 (not including TFA salt)

REFERENCE:

Knauper, V. et al., *J. Biol. Chem.*, 271:1544 (1996).

Sequence	Cat. #	Size
7-MCA-Pro-Leu-Ala-Nval-DPAAla-Arg-NH ₂	MET07	1 mg 3 mg 5 mg

C₄₉H₆₈N₁₄O₁₅

A fluorogenic substrate for MMP-2.

M.W. 1093 (not including TFA salt)

REFERENCE:

Murphy, G. et al., *J. Biol. Chem.*, 269:6632 (1994)

Sequence	Cat. #	Size
7-MCA-Arg-Pro-Lys-Pro-Tyr-Ala-Nval-Trp-Met-Lys (DNP) -NH ₂	MET08	1 mg 3 mg 5 mg

C₇₉H₁₀₅N₁₅O₁₅S

A fluorogenic substrate for MMP-1, 2, 3 and 9.

M.W. 1657 (not including TFA salt)

REFERENCE:

Nagase, M. et al., *J. Biol. Chem.*, 269:20952 (1994).

Sequence	Cat. #	Size
7-MCA-Pro-Leu-Gly-Leu-DPA-Ala-Arg-NH2	MET09	1 mg 3 mg 5 mg

C₄₉H₆₈N₁₄O₁₅

A fluorogenic substrate for MMP-2 and 7.

M.W. 1093 (not including TFA salt)

REFERENCE:

Knight, J.C. et al., *FASEB J.*, 9:975 (1995).

Sequence	Cat. #	Size
MCA-Gly-Lys-Pro-Ile-Leu-Phe-Phe-Arg-Leu-Lys(DNP)-D-Arg-NH2	MET011	1 mg 3 mg 5 mg

C₆₅H₁₂₂N₂₂O₁₉

A fluorogenic substrate for Cathepsin D.

M.W. 1756

REFERENCE:

Yasuda, Y et al., *J. Biochem.*, 125:1137 (1999).

Sequence	Cat. #	Size
Abz-Phe-Arg-Phe(NO2)-OH	ABZ001	10 mg 25 mg

C₃₁H₃₈N₆O₇

A fluorogenic substrate for Cathepsin X.

M.W. 632

REFERENCE:

Dorit, K. et al., *Biochem.*, 38:12648 (1999).

Sequence	Cat. #	Size
Abz-Ile-Lys-Lys-Ser-Ser-Phe-EDDNP	ABZ002	5 mg 10 mg 25 mg

C₄₈H₆₈N₁₃O₁₃

A Cysteine protease substrate for Cathepsin B.

M.W. 1035

REFERENCE:

Almida, P.C. et al., *Hypertension*, 35(6):1278 (2000).

Sequence	Cat. #	Size
Abz-Lys-Leu-Ser(Obzl)-Phe-Ser-Lys-Gln-EDDNP	ABZ003	5 mg 10 mg 25 mg

C₆₀H₈₃N₁₅O₁₅

A Cysteine protease substrate for Cathepsin B.

M.W. 1253

REFERENCE:

Del Nery, E. et al., *J. Protein Chem.*, 19(1):33 (2000).

Sequence	Cat. #	Size
Abz-Phe-Arg-Ser-Arg-Gln-EDDNP	ABZ004	5 mg 10 mg 25 mg

$C_{44}H_{61}N_{17}O_{12}$

A Cysteine protease substrate for Cruzain, Papain and Cathepsin L.

M.W. 1019

REFERENCE:

Alves, L.C., *Eur. J. Biochem.*, **268**(5):1206 (2001).

Sequence	Cat. #	Size
Abz-(AMF)-Ser-Arg-Gln-EDDNP	ABZ005	5 mg 10 mg 25 mg

$C_{39}H_{52}N_{14}O_{11}$

A Cysteine protease substrate for Leishmania mexicana.

M.W. 892

REFERENCE:

Alves, L.C., *Eur. J. Biochem.*, **268**(5):1206 (2001).

Sequence	Cat. #	Size
Abz-Phe-Arg-Leu-EDDNP	ABZ006	5 mg 10 mg 25 mg

$C_{38}H_{47}N_{11}O_8$

A Cysteine protease substrate for Papain.

M.W. 761

REFERENCE:

Melo, R.L. et al., *Anal. Biochem.*, **293**(1):71 (2001)

Sequence	Cat. #	Size
Abz-Phe-Arg-Arg-EDDNP	ABZ007	5 mg 10 mg 25 mg

$C_{36}H_{46}N_{14}O_8$

A Cysteine protease substrate for Cathepsin L.

M.W. 804

REFERENCE:

Melo, R.L. et al., *Anal. Biochem.*, **293**(1):71 (2001).

Sequence	Cat. #	Size
Abz-Phe-Pro-Gln-EDDNP	ABZ008	5 mg 10 mg 25 mg

$C_{34}H_{38}N_6O_9$

A Serine protease substrate for Kinase.

M.W. 717

REFERENCE:

Quinto, B.M. et al., *Int. J. Biochem. Cell Bio.*, **32(11-12):1161 (2000).**

Sequence	Cat. #	Size
Abz-Asn-Lys-Pro-Arg-Ala-Pro-Gln-EDDNP	ABZ009	5 mg 10 mg 25 mg

$C_{48}H_{72}N_{12}O_{14}$

A Serine protease substrate for Neurolysin.

M.W. 1136

REFERENCE:

Olivera, V. et al., *Anal. Biochem.*, **292(2):257 (2001).**

Sequence	Cat. #	Size
Abz-Val-Lys-Lys-Arg-Ser-Ala-Arg-Gln-EDDNP	ABZ010	5 mg 10 mg 25 mg

$C_{55}H_{90}N_{22}O_{15}$

A Serine protease substrate for Rat Kallikrein.

M.W. 1298

REFERENCE:

Zani, M. et al., *Biochem. Biophys. Acta.*, **1547(2):387 (2001).**

Sequence	Cat. #	Size
Abz-Phe-Arg-Ala-EDDNP	ABZ011	5 mg 10 mg 25 mg

$C_{33}H_{41}N_{11}O_8$

A Serine protease substrate for Tissue Kallikrein.

M.W. 719

REFERENCE:

Melo, R.L. et al., *Anal. Biochem.*, **293(1):71 (2001).**

Sequence	Cat. #	Size
Arg-Glu-(EDANS)-Glu-Val-	BAS120	1 mg
Asn-Leu-Asp-Ala-Glu-Phe-		3 mg
Lys(DABCYL)-Arg-OH		5 mg

C₉₁H₁₂₉N₂₅O₂₅S

A fluorogenic substrate for β -Secretase.

M.W. 2005

REFERENCE:

Ermolieff, J. et al., *Biochem.*, **39(40):12450** (2000).

Sequence	Cat. #	Size
MCA-Ser-Glu-Val-Asn-Leu-	BAS131	1 mg
Asp-Ala-Glu-Phe-Arg-		3 mg
Lys(DNP)-Arg-Arg-NH ₂		5 mg

C₈₅H₁₁₂N₂₁O₂₄

A fluorogenic substrate for β -Secretase.

M.W. 1808

REFERENCE:

Ermolieff, J. et al., *Biochem.*, **39(40):12450** (2000).

Sequence	Cat. #	Size
Arg-Arg-Lys(MCA)-Gly-Val-	BAS141	1 mg
Val-Ile-Ala-Thr-Val-Ile-Ile-		3 mg
Glu-Lys(DNP)-Arg-Arg-NH ₂		5 mg

C₁₀₇H₁₇₉N₃₅O₂₉

A fluorogenic substrate for α -Secretase.

M.W. 2403

Sequence	Cat. #	Size
MCA-Tyr-Glu-Val-His-His-	BAS150	1 mg
Glu-Lys-Leu-Val-Phe-		3 mg
Lys(DNP)-NH ₂		5 mg

C₈₅H₁₁₂N₂₁O₂₄

A fluorogenic substrate for α -Secretase.

M.W.

Sequence	Cat. #	Size
MCA-Pro-Leu-Ala-Gln-	TNF160	1 mg
Ala-Val-DAP(DNP)-Arg-		5 mg
Ser-Ser-Ser-Arg-NH ₂		10 mg

C₆₉H₁₀₃N₂₃O₂₄

M.W. 1638

REFERENCE:

Van, D.E. et al., *Bioorg. Med. Chem. Lett.*, **7:1219** (1997).

INTRAMOLECULARLY QUENCHED SUBSTRATES
MMP SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
2-4-DNP-Pro-Leu-Gly-Met-Trp-Ser-Arg	1012*	MMP-2, 9	MET04	5 mg
7-MCA-Arg-Pro-Lys-Pro-Val-Glu-Nval-Trp-Arg-Lys(DNP)-NH ₂	1675*	MMP-2, 9	MET05	1 mg 3 mg 5 mg
7-MCA-Pro-CHA-Gly-Nval-His-Ala-DPA-NH ₂	1100*	MMP-13	MET06	1 mg 3 mg 5 mg
7-MCA-Pro-Leu-Ala-Nval-DPA-Ala-Arg-NH ₂	1093*	MMP-2	MET07	1 mg 3 mg 5 mg
7-MCA-Arg-Pro-Lys-Pro-Tyr-Ala-Nval-Trp-Met-Lys-(DNP)-NH ₂	1657*	MMP-1, 2, 3 & 9	MET08	1 mg 3 mg 5 mg
7-MCA-Pro-Leu-Gly-Leu-DPA-Ala-Arg-NH ₂	1093*	MMP-2, 7	MET09	1 mg 3 mg 5 mg
* not including TFA salt				

SECRETASE SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Arg-Glu-(EDANS)-Glu-Val-Asn-Leu-Asp-Ala-Glu-Phe-Lys(DABCYL)-Arg-OH	2005	β-Secretase	BAS120	1 mg 5 mg
MCA-Ser-Glu-Val-Asn-Leu-Asp-Ala-Glu-Phe-Arg-Lys(DNP)-Arg-Arg-NH ₂	2001	β-Secretase	BAS131	1 mg 5 mg 10 mg
Arg-Arg-Lys(MCA)-Gly-Val-Val-Ile-Ala-Thr-Val-Ile-Ile-Glu-Lys(DNP)-Arg-Arg-NH ₂	2403	α-Secretase	BAS141	1 mg 5 mg
MCA-Tyr-Glu-Val-His-His-Glu-Lys-Leu-Val-Phe-Lys(DNP)-NH ₂	1770	α-Secretase	BAS150	1 mg 5 mg 10 mg

INTRAMOLECULARLY QUENCHED SUBSTRATES

MMP SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
2-4-DNP-Pro-Leu-Gly-Met-Trp-Ser-Arg	1012*	MMP-2, 9	MET04	5 mg
7-MCA-Arg-Pro-Lys-Pro-Val-Glu-Nval-Trp-Arg-Lys(DNP)-NH ₂	1675*	MMP-2, 9	MET05	1 mg 3 mg 5 mg
7-MCA-Pro-CHA-Gly-Nval-His-Ala-DPA-NH ₂	1100*	MMP-13	MET06	1 mg 3 mg 5 mg
7-MCA-Pro-Leu-Ala-Nval-DPA-Ala-Arg-NH ₂	1093*	MMP-2	MET07	1 mg 3 mg 5 mg
7-MCA-Arg-Pro-Lys-Pro-Tyr-Ala-Nval-Trp-Met-Lys-(DNP)-NH ₂	1657*	MMP-1, 2, 3 & 9	MET08	1 mg 3 mg 5 mg
7-MCA-Pro-Leu-Gly-Leu-DPA-Ala-Arg-NH ₂	1093*	MMP-2, 7	MET09	1 mg 3 mg 5 mg
* not including TFA salt				

SECRETASE SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
Arg-Glu-(EDANS)-Glu-Val-Asn-Leu-Asp-Ala-Glu-Phe-Lys(DABCYL)-Arg-OH	2005	β-Secretase	BAS120	1 mg 5 mg
MCA-Ser-Glu-Val-Asn-Leu-Asp-Ala-Glu-Phe-Arg-Lys(DNP)-Arg-Arg-NH ₂	2001	β-Secretase	BAS131	1 mg 5 mg 10 mg
Arg-Arg-Lys(MCA)-Gly-Val-Val-Ile-Ala-Thr-Val-Ile-Ile-Glu-Lys(DNP)-Arg-Arg-NH ₂	2403	α-Secretase	BAS141	1 mg 5 mg
MCA-Tyr-Glu-Val-His-His-Glu-Lys-Leu-Val-Phe-Lys(DNP)-NH ₂	1770	α-Secretase	BAS150	1 mg 5 mg 10 mg

SECRETASE SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
MCA-Pro-Leu-Ala-Gln-Ala-Val-DAP(DNP)-Arg-Ser-Ser-Ser-Arg-NH ₂	1770	TACE	TNF160	1 mg 5 mg

CYSTEINE PROTEASE SUBSTRATES

Sequence	M.W.	Known Target Enzyme	Cat. #	Size
ABZ-Phe-Arg-Ph(NO ₂)-OH	632	Cathepsin X	ABZ001	10 mg 25 mg
Abz-Ile-Lys-Lys-Ser-Ser-Phe-EDDNP	1035	Cathepsin B	ABZ002	5 mg 10 mg 25 mg
Abz-Lys-Leu-Ser(OBzl)-Phe-Ser-Lys-Gln-EDDNP	1253	Cathepsin B	ABZ003	5 mg 10 mg 25 mg
Abz-Phe-Arg-Ser-Arg-Gln-EDDNP	1019	Cathepsin L	ABZ004	5 mg 10 mg 25 mg
Abz-(AMF)-Ser-Arg-Gln-EDDNP	892	<i>Leishmania mexicana</i>	ABZ005	5 mg 10 mg 25 mg
Abz-Phe-Arg-Leu-EDDNP	761	Papain	ABZ006	5 mg 10 mg 25 mg
Abz-Phe-Arg-Arg-EDDNP	804	Cathepsin L	ABZ007	5 mg 10 mg 25 mg
Abz-Phe-Pro-Gln-EDDNP	717	KINASE	ABZ008	5 mg 10 mg 25 mg
Abz-Asn-Lys-Pro-Arg-Ala-Pro-Gln-EDDNP	1136	Neurolysin	ABZ009	5 mg 10 mg 25 mg
Abz-Val-Lys-Lys-Arg-Ser-Ala-Arg-Gln-EDDNP	1298	Kallikrein	ABZ010	5 mg 10 mg 25 mg
Abz-Phe-Arg-AlaEDDNP	719	Kallikrein	ABZ011	5 mg 10 mg 25 mg

ENZYME PRODUCTS

Enzymes are natural catalysts that play an important regulatory role in biochemical and physiological reactions. Enzyme dysfunction, either excessive or diminished, is associated with many pathological conditions. Enzyme Systems Products offers a variety of enzymes that are routinely used to study these pathologies. Included in the ESP product line are enzymes associated with all the major categories of protease activity, Serine Proteases, Cysteine Proteases, Matrix Metalloproteases and Aspartyl Proteases.

Human Cathepsin Enzyme Products

Protein purity is determined by SDS-PAGE and activity is determined using a fluorescent peptide substrate.

Enzyme	Cat. #	Size
Cathepsin B – Human Liver	CATB1	25 µg
Cathepsin D – Human Liver	CATD1	25 µg
Cathepsin G – Human Sputum	CATG1	0.1 mg
Cathepsin H – Human Liver	CATH1	25 µg
Cathepsin L – Human Liver	CATL1	25 µg

Dipeptidyl Peptidase IV Enzyme Product

Protein purity is determined by SDS-PAGE and activity is determined using a chromogenic peptide substrate.

Enzyme	Cat. #	Size
Dipeptidyl Peptidase IV (DPP-IV)*	SPE01	5 mU
Dipeptidyl Peptidase IV (DPP-IV) (HUMAN)	SPE02	10mU

*Purified from *Aspergillus orizae*

Granzyme B Enzyme Products

Granzyme B is a serine protease associated with Perforin in killer T cells and Natural Killer (NK) cells. These enzymes are involved in the perforation of target cells and then initiation of proteolysis that leads the cell on a programmed cell death pathway (apoptosis). Granzyme B, a 30 to 32 kDa enzyme cleaves peptides at the aspartyl residue and can cleave thiobenzyl and AFC peptide substrates containing Asp. Granzyme B has been found in the nucleus as well as in cytoplasmic granules of killer T cells and seems a likely candidate for proteases that may initiate apoptosis under the appropriate set of conditions. Enzyme Systems Products offers purified Granzyme B enzyme, an inhibitor, and two substrates:

Protein purity is determined by SDS-PAGE and activity is determined using a chromogenic peptide substrate.

Enzyme	Cat. #	Size
Granzyme A*	GR2	10 µg
Granzyme B*	GR1	10 µg

*Purified from: Lymphocytes

Recombinant Caspases

Caspase-1 (human, recombinant)

Storage: Store at -70°C.
MW: 20 + 10 kDa subunits
Purity: >95% by SDS-PAGE

Ref: Dang LC et al. *Biochemistry* 35: 14910 (1996)
Thornberry NA et al. *Methods Enzymol.* 244: 615 (1994)

Cat. #	Size
CSE168	1000 U

Caspase-2 (human, recombinant)

Storage: Store at -70°C.
MW: 19 + 12 kDa subunits
Purity: >95% by SDS-PAGE

Ref: Susin SA et al. *J. Exp. Med.* 189: 381 (1999)
Chou JJ et al. *Cell* 94: 171 (1998)

Cat. #	Size
CSE175	1000 U

Caspase-3

(human, recombinant)

Storage: Store at -70°C.
 MW: 17 + 12 kDa heterodimer
 Purity: >95% by SDS-PAGE

Ref: Thornberry NA et al. J. Biol. Chem. 272: 17907 (1997)
 Talanian RV et al. J. Biol. Chem. 272: 9677 (1997)

Cat. #	Size
CSE169	1000 U

Caspase-4

(human, recombinant)

Storage: Store at -70°C.
 MW: 19 + 10 kDa subunits
 Purity: >90% by SDS-PAGE

Ref: Nasir J et al. Mamm. Genome 8: 611 (1997)
 Ossina NK et al. J. Biol. Chem. 272: 16351 (1997)

Cat. #	Size
CSE176	1000 U

Caspase-5

(human, recombinant)

Storage: Store at -70°C.
 MW: 22 + 10 kDa subunits
 Purity: >80% by SDS-PAGE

Ref: Schwartz S et al. Cancer Res. 59: 2995 (1999)
 Faucheu C et al. Eur. J. Biochem. 236:207 (1996)

Cat. #	Size
CSE171	1000 U

Caspase-6

(human, recombinant)

Storage: Store at -70°C.
 MW: 18 + 11 kDa subunits
 Purity: >80% by SDS-PAGE

Ref: Samejima K et al. J. Biol. Chem. 274: 4335 (1999)
 Stennicke HR et al. J. Biol. Chem. 272: 25719 (1997)

Cat. #	Size
CSE170	1000 U

Caspase-7

(human, recombinant)

Storage: Store at -70°C.

MW: 20 + 12 kDa subunits

Purity: >95% by SDS-PAGE

Ref: Han Z et al. *Mol. Cell Biol.* 19: 1381 (1999)

Marcelli M et al. *Cancer Res.* 59: 382 (1999)

Cat. #	Size
CSE177	1000 U

Caspase-8

(human, recombinant)

Storage: Store at -70°C.

MW: 18 + 11 kDa subunits

Purity: >95% by SDS-PAGE

Ref: Fernandes-Alnemri T et al. *Proc. Natl.*

Acad. Sci. USA 93: 7464 (1996)

Muzio M et al. *Cell* 85: 817 (1996)

Cat. #	Size
CSE172	1000 U

Caspase-9

(human, recombinant)

Storage: Store at -70°C.

MW: 20 + 12 kDa subunits

Purity: >90% by SDS-PAGE

Ref: Pan J et al. *J. Biol. Chem.* 273: 5841 (1998)

Li P et al. *Cell* 91: 479 (1997)

Cat. #	Size
CSE173	1000 U

Caspase-10

(human, recombinant)

Storage: Store at -70°C.

MW: 18 + 11 kDa subunits

Purity: >95% by SDS-PAGE

Ref: Ng PW et al. *J. Biol. Chem.* 274: 10310 (1999)

Kang JJ et al. *J. Biol. Chem.* 274: 3189 (1999)

Cat. #	Size
CSE174	1000 U

Nucleic Acid Purification



In This Chapter:

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Plasmid Purification Kits.....	1008
Genomic DNA Purification Kits	1013
Total RNA Purification Kits	1016
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Preparation and isolation of nucleic acids is at the heart of every molecular biology laboratory. It must be done routinely, with the highest speed, yield, and efficiency. Only when it has been completed can the real work of the researcher begin - studying the structure and function of this nucleic acid. We at MP Biomedicals want to get you through this secondary yet essential chore as quickly as possible. Try our products and see how much faster, simpler, and more economical they can make your DNA and RNA purifications!

Gel Isolation and Reaction Cleanup

Patented GENECLAN® technology simplifies the process of purifying DNA into three easy steps: Bind, Wash, and Elute. Ethanol precipitation is never required, and purified DNA is immediately ready for a wide variety of downstream applications.

GENECLAN® kits are available in three different formats depending upon what form of the binding matrix is most convenient and appropriate for your specific application. Slurry-based kits provide the most flexibility with respect to purification scale and volume. As an option, these kits can also be used with SPIN filters purchased separately or as part of a SPIN Kit. Silica-embedded membrane kits offer the utmost in speed and convenience.

GLASSMILK® Slurry Kits:

- GENECLAN® Kit
- GENECLAN® II Kit
- GENECLAN® III Kit
- MERmaid® Kit (with GLASSFOG®)
- RNaid® Kit (with RNAMATRIX®)

GLASSMILK® Slurry SPIN Kits

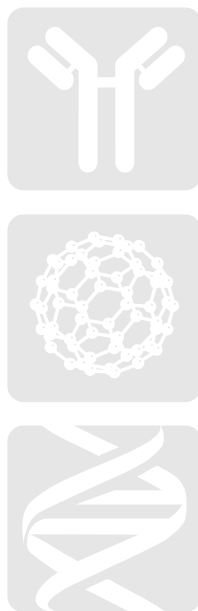
- GENECLAN® SPIN Kit
- MERmaid® SPIN Kit (with GLASSFOG®)
- RNaid® SPIN Kit (with RNAMATRIX®)

GLASSMILK®-Embedded Membrane Filter:

- GENECLAN® Turbo Kit
- GENECLAN® Turbo for PCR Kit
- GENECLAN® Turbo 96 Kit

Applications for GENECLAN® Technology

- Isolation of nucleic acids from agarose gels
- Desalting
- Eliminate proteins from enzymatic reactions
- Remove primers and unincorporated nucleotides from enzymatic reactions
- Separate linearized from uncut vector
- Isolate PCR product away from genomic DNA



Kit Name	Size Range	Starting Material	Format	Method
GENECLAN® Turbo Kit	100bp-300kb	Solution or Gel	GENECLAN®-embedded membrane in SPIN filter	Spin or vacuum
GENECLAN® Turbo for PCR Kit	100bp-10kb	Solution	GENECLAN®-embedded membrane in SPIN filter	Spin or vacuum
GENECLAN® Turbo 96 Kit	100bp-300kb	Solution	GENECLAN®-embedded membrane in 96-well plate	Spin or vacuum
GENECLAN® Kit	200bp-20kb	Solution or Gel	GENECLAN® slurry	Spin
GENECLAN® II Kit	200bp-20kb	Solution or Gel	GENECLAN® slurry	Spin
GENECLAN® III Kit	200bp-20kb	Solution or Gel	GENECLAN® slurry	Spin
GENECLAN® SPIN Kit	200bp-300kb	Solution or Gel	GENECLAN® slurry plus SPIN filter	Spin
MERmaid® Kit	10bp-200bp	Solution or Gel	GLASSFOG® slurry	Spin
MERmaid® SPIN Kit	10bp-200bp	Solution or Gel	GLASSFOG® slurry plus SPIN filter	Spin
RNaid® Kit	75 bases -10kb	Solution or Gel	RNAMATRIX® slurry	Spin
RNaid® SPIN Kit	75 bases -10kb	Solution or Gel	RNAMATRIX® slurry plus SPIN filter	Spin

GENECLEAN® Kit

- Purify DNA fragments from 200 bp to 20 kb
- GLASSMILK® slurry allows flexibility of reaction size and volume
- Isolate DNA from TAE buffered agarose gels and solutions

Kit Components: NaI, New Wash Concentrate, GLASSMILK®

Cat. #	Description	Size
1001200	GENECLEAN® Kit	200 Preps

GENECLEAN® II Kit

- Purify DNA fragments from 200 bp to 20 kb
- GLASSMILK® slurry allows flexibility of reaction size and volume
- Isolate DNA from TAE or TBE buffered agarose gels and solutions

Kit Components: NaI, New Wash Concentrate, TBE Modifier, GLASSMILK®

Cat. #	Description	Size
1001400	GENECLEAN® II Kit	300 Preps

GENECLEAN® III Kit

- Purify DNA fragments from 200 bp to 20 kb
- EZ-GLASSMILK® easier to resuspend than original GLASSMILK®
- EZ-GLASSMILK® slurry allows flexibility of reaction size and volume
- Isolate DNA from TAE or TBE buffered agarose gels and solutions
- Recover labeled DNA fragments with ease

Kit Components: NaI, New Wash Concentrate, TBE Modifier, EZ-GLASSMILK®, Label Block, GENECLEAN® III Elution Solution

Cat. #	Description	Size
1001600	GENECLEAN® III Kit	600 Preps

GENECLEAN® SPIN Kit

- Purify DNA fragments from 200 bp to 300 kb
- GLASSMILK® slurry allows flexibility of reaction size and volume
- Isolate DNA from TAE or TBE buffered agarose gels and solutions
- Save time by performing all steps in SPIN filter
- Purify larger fragments due to less manipulation of bound DNA
- No carryover of matrix into DNA solution

Kit Components: GENECLEAN® SPIN GLASSMILK®, GENECLEAN® SPIN New Wash Solution, GENECLEAN® SPIN Elution Solution, SPIN Filter with tube, Catch Tubes

Cat. #	Description	Size
1101200	GENECLEAN® SPIN Kit	50 Preps
1101400	GENECLEAN® SPIN Kit	100 Preps
1101600	GENECLEAN® SPIN Kit	300 Preps

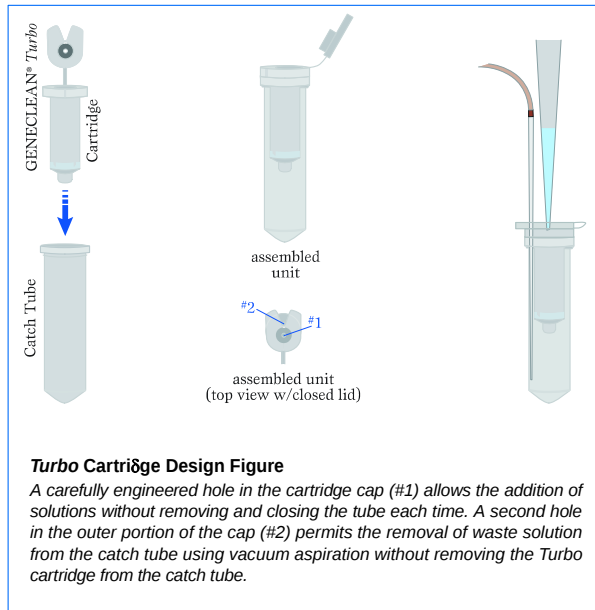


Patented Turbo Technology

The fastest and most convenient way to purify DNA

Geneclean® Turbo Kits and RapidPURE™ Plasmid Mini Kits contain patented Turbo filters with unique, time saving advantages.

The GLASSMILK® purification matrix is embedded in a Turbo filter housed within a Turbo cartridge (Turbo Cartridge Design Figure). The irregular shape of GLASSMILK® plus the thickness of the filter allow for a greater binding surface area and higher capacity than most filter-base purification systems!



GENECLEAN® Turbo Kit

- Purify DNA fragments from 100 bp to 300 kb
- Isolate DNA from TAE or TBE buffered agarose gels, PCR reactions, and other enzymatic solutions
- Save time with patented *Turbo* filter design
- Process with either vacuum or centrifugation
- Purify larger fragments due to less manipulation of bound DNA
- No carryover of matrix into DNA solution
- Fastest, most flexible kit

Kit Components: GENECLEAN® Turbo Salt Solution, GENECLEAN® Turbo Wash Solution, GENECLEAN® Turbo Cartridges, GENECLEAN® Turbo Catch Tubes, GENECLEAN® Turbo Elution Solution, GENECLEAN® Turbo Gnomonic Salt Solution

Cat. #	Description	Size
1102200	GENECLEAN® Turbo	50 preps
1102400	GENECLEAN® Turbo	100 preps
1102600	GENECLEAN® Turbo	300 preps

GENECLEAN® Turbo for PCR Kit

- Purify DNA fragments from 100 bp to 10 kb
- Isolate target DNA from PCR reactions
- Save time with patented *Turbo* filter design
- Process with either vacuum or centrifugation
- Purify larger fragments due to less manipulation of bound DNA
- No carryover of matrix into DNA solution

Kit Components: GENECLEAN® Turbo Salt Solution, GENECLEAN® Turbo Wash Solution, GENECLEAN® Turbo Cartridges, GENECLEAN® Turbo Catch Tubes, GENECLEAN® Turbo Elution Solution

Cat. #	Description	Size
1103200	GENECLEAN® Turbo for PCR	50 preps
1103400	GENECLEAN® Turbo for PCR	100 preps
1103600	GENECLEAN® Turbo for PCR	300 preps

GENECLEAN® Turbo 96 Kit

- High-throughput purification of DNA fragments from 100 bp to 300 kb
- Process with either vacuum or centrifugation
- No carryover of matrix into DNA solution
- Sealable 96-well collection plate for easy storage

Kit components: GENECLEAN® Turbo 96 DNA Filter Plate, GENECLEAN® Turbo 96 Binding Solution, GENECLEAN® Turbo 96 Wash Solution, Collection Plate and Mat, GENECLEAN® Turbo 96 Elution Solution

Cat. #	Description	Size
1104200	GENECLEAN® Turbo 96	1 x 96 preps
1104400	GENECLEAN® Turbo 96	4 x 96 preps

MERmaid® Kit

- Purify DNA fragments from ≥ 0 bp to 200 bp
- GLASSFOG® slurry allows flexibility of reaction size and volume
- Isolate dsDNA or oligos from TAE buffered agarose or acrylamide gels and solutions

Kit Components: High Salt Binding Solution, Ethanol Wash Concentrate, BioGel,

Cat. #	Description	Size
1005200	MERmaid® Kit	200 Preps

MERmaid® SPIN Kit

- Purify DNA fragments from 10 bp to 200 bp
- GLASSFOG® slurry allows flexibility of reaction size and volume
- Isolate dsDNA or oligos from TAE buffered agarose or acrylamide gels and solutions
- Save time by performing all steps in SPIN filter
- No carryover of matrix into DNA solution
- Recover labeled DNA fragments with ease

Kit Components: GLASSFOG® SPIN Bind Solution, MERmaid® SPIN High Salt Wash, MERmaid® SPIN Ethanol Wash Concentrate, MERmaid® Elution Solution, 50X Electrophoresis Buffer, BioGel, MERmaid® SPIN Filters, Elution Catch Tubes, Label Block

Cat. #	Description	Size
1105200	MERmaid® SPIN Kit	25 Preps
1105600	MERmaid® SPIN Kit	150 Preps

SeqDirect™ PCR Cleaning Kit

Stabilize PCR products prior to sequencing

The SeqDirect™ PCR Cleaning Kit is designed to purify PCR products for fluorescent cycle sequencing using a 20 minute, two-temperature incubation that is amenable to high-throughput processing. This "cleaning" of PCR products is achieved using a proprietary combination of enzymatic and non-enzymatic methods to remove/neutralize PCR primers, dNTPs, starting materials and PCR buffer components. No columns or precipitations are required, so sample loss is nonexistent. Templates applicable to the procedure include single-band and multiple-band PCR products if using specific nested primers. The SeqDirect™ PCR Cleaning Kit is offered in several sizes as a concentrate to be reconstituted with the provided buffer before use.

Kit Components: SeqDirect™ Mixx, Buffer Mixx

Cat. #	Description	Size
9903200	SeqDirect™ PCR Cleaning Kit	32 Reactions
9903400	SeqDirect™ PCR Cleaning Kit	1,000 Reactions

SeqDirect™ 96 PCR Cleaning Kit

Stabilize PCR products in 96-well plates prior to sequencing

The SeqDirect™ 96 PCR Cleaning Kit is designed to purify PCR products for fluorescent cycle sequencing using a 20 minute, two-temperature incubation that is amenable to high-throughput processing. This "cleaning" of PCR products is achieved using a proprietary combination of enzymatic and non-enzymatic methods to remove/neutralize PCR primers, dNTPs, starting materials and PCR buffer components. No columns or precipitations are required, so sample loss is nonexistent. Templates applicable to the procedure include single-band and multiple-band PCR products if using specific nested primers. The SeqDirect™ 96 PCR Cleaning Kit is offered as a ready-to-use 96-well plate.

Kit Components: SeqDirect™ 96-well plate, 96-well seal

Cat. #	Description	Size
9904200	SeqDirect™ 96 PCR Cleaning Kit	1 x 96-well plate

RNAid® Kit

- Purify RNA fragments from 75 bases to 10 kb
- RNAMATRIX® slurry allows flexibility of reaction size and volume
- Isolate RNA from agarose or acrylamide gels and solutions

Kit Components: DEPC-Treated Water, RNA Binding Salt, RNA Wash Concentrate, RNAMATRIX®, 10% Acetic Acid

Cat. #	Description	Size
1007200	RNAid® Kit	200 Preps

RNAid® SPIN Kit

- Purify RNA fragments from 75 bases to 10 kb
- RNAMATRIX® slurry allows flexibility of reaction size and volume
- Isolate RNA from agarose or acrylamide gels and solutions
- Save time by performing all steps in SPIN filter
- No carryover of matrix into RNA solution

Kit Components: DEPC-Treated Water, RNA Binding Salt, RNA Wash Concentrate, RNAMATRIX®, 10% Acetic Acid, SPIN Filters, Catch Tubes

Cat. #	Description	Size
1107200	RNAid® SPIN Kit	200 Preps

aseERASE® Matrix

Eliminate trace enzymatic activities from solutions of RNA and DNA with aseERASE® - a proprietary matrix-based reagent. Simply add aseERASE® to a DNA or RNA sample and spin. Nuclease activities and other contaminants are pelleted with the aseERASE® matrix, leaving RNA and DNA that is stable at room temperature for long periods of time, even in the presence of Mg²⁺, Mn²⁺, or other activators of endonucleases.

Kit Components: aseERASE® Matrix

Cat. #	Description	Size
2601204	aseERASE® (250 Preps)	1.25 ml

Label Block

Label Block is part of the GENECLEAN® III and MERmaid® SPIN kits, and allows for efficient purification of DNA fragments labeled with ³²P or ³⁵S. This reagent is available separately for use with other GENECLEAN® based purification kits.

Cat. #	Description	Size
1001605	Label Block	1 ml

GENECLEAN® SPIN Modules

Purchase separately for kits that do not come with SPIN filters in order to increase the size range of purified DNA and to reduce overall processing time.

Cat. #	Description	Size
2080600	SPIN Modules	60 Filters/Catch Tubes
2080800	SPIN Modules	100 Filters/Catch Tubes

Plasmid Purification Kits

Ion Exchange Gravity Flow Columns

PhoenIX™ Midiprep Kit
PhoenIX™ Maxiprep Kit
PhoenIX™ Filter Maxiprep Kit
PhoenIX™ Gigaprep Kit

GLASSMILK®-Embedded Turbo Filter Kits

RapidPURE® Plasmid Mini Kit
RapidPURE® Plasmid Mini 96 Kit
96-Well Express Kit

GLASSMILK® Slurry and SPIN Kits

RPM® Kit
Yeast RPM® Kit
MiniPrep Express™ Matrix

Scale	Kit Name	Quantity	Starting	DNA Binding Culture	Method
Mini	RapidPURE® Plasmid Mini Kit	≤20 µg	1-2 ml	GENECLEAN®-embedded membrane in Turbo Cartridge	Spin or vacuum
Mini	RapidPURE® Plasmid Mini 96 Kit	≤25 µg	1-2 ml	GENECLEAN®-embedded membrane in 96-well plate	Spin or vacuum
Mini	RPM® Kit	≤20 µg	1-2 ml	GENECLEAN® slurry plus spin filter	Spin
Mini	RPM® Yeast Plasmid Isolation Kit	≤20 µg	1-2 ml	GENECLEAN® slurry plus spin filter	Spin
Mini	96-Well Prep Express	≤25 µg	1-2 ml	GENECLEAN®-embedded membrane in 96-well plate	Spin or vacuum
Mini	MiniPrep Express™ Matrix	1-5 µg	1 ml	GENECLEAN® slurry	Decant with pipet
Mid	PhoenIX™ Midiprep Kit	45-100 µg	25 ml	Anion Exchange Column	Gravity Flow
Maxi	PhoenIX™ Maxiprep Kit	≤500 µg	100 ml	Anion Exchange Column	Gravity Flow
Maxi	PhoenIX™ Filter Maxiprep Kit	≤500 µg	100 ml	Anion Exchange Column	Gravity Flow
Giga	PhoenIX™ Gigaprep Kit	≤10 mg	2.5-5 L	Anion Exchange Column	Vacuum

RapidPURE® Plasmid Mini Kit

- Miniprep kit for ≤20 µg plasmid DNA
- Save time with patented *Turbo* filter design
- Process with either vacuum or centrifugation
- Plasmid DNA ready for transfection and other downstream applications
- No phenol/chloroform extraction or precipitation required
- Use with CIRCLEGROW® Broth for even higher yields

Kit Components: Pre-Lysis Buffer, Alkaline Lysis Solution, Neutralizing Solution, RapidPURE™ Mini Salt Solution, Wash Solution, RapidPURE™ Turbo Cartridges, RapidPURE™ Turbo Recovery Tubes, CIRCLEGROW® Broth Pouch(es)

Cat. #	Description	Size
2066200	RapidPURE® Plasmid Mini Kit	60 preps
2066400	RapidPURE® Plasmid Mini Kit	120 preps
2066600	RapidPURE® Plasmid Mini Kit	300 preps



RapidPURE® Plasmid Mini 96 Kit

- High-throughput isolation of ≤ 25 μ g plasmid DNA
- Process with either vacuum or centrifugation
- No carryover of matrix into DNA solution
- Sealable 96-well collection plate for easy storage
- Plasmid DNA ready for transfection and other downstream applications
- No phenol/chloroform extraction or precipitation required
- Use with GS96 Broth for even higher yields

Kit Components: Pre-Lysis Solution, Alkaline Lysis Solution, Neutralizing Solution, Lysate Filter Plate, RapidPURE™ Turbo 96 DNA Filter Plate, RapidPURE™ Turbo 96 Binding Solution, RapidPURE™ 96 Wash Solution, 96-well Adhesive Seal, Collection Plate, Collection Plate Mat, Elution Solution

Cat. #	Description	Size
2067200	RapidPURE® Plasmid Mini 96 Kit	1 x 96 preps
2067400	RapidPURE® Plasmid Mini 96 Kit	4 x 96 preps

RPM® Kit

- Miniprep kit for ≤ 20 μ g plasmid DNA
- Save time by performing all steps in SPIN filter
- Plasmid DNA ready for transfection and other downstream applications
- No phenol/chloroform extraction or precipitation required
- Use with CIRCLEGROW® Broth for even higher yields

Kit Components: Pre-Lysis Buffer, Alkaline Lysis Solution, Neutralizing Solution, GLASSMILK® SPIN Buffer™, Wash Solution Concentrate, SPIN Filter with tube, Catch Tube, CIRCLEGROW® Sample

Cat. #	Description	Size
2070400	RPM® Kit	120 Preps
2070500	RPM® Kit	300 Preps
2070600	RPM® Kit	600 Preps

RPM® Yeast Plasmid Isolation Kit

- Easy plasmid isolation from both yeast and bacteria
- No phenol/chloroform extractions
- No ethanol precipitation
- Proven GENECLEAN® GLASSMILK® technology
- Plasmid DNA isolated from yeast or bacterial cells in less than 30 minutes
- See the Yeast Kits & Media section for more information!

Kit Components: Yeast Lysing Matrix, Alkaline Lysis Solution, Neutralizing Solution, GLASSMILK® Spin Buffer, Wash Solution Concentrate, SPIN Filters, Catch Tubes, Pre-Lysis Buffer

Cat. #	Description	Size
2069400	RPM® Yeast Plasmid Isolation Kit	100 preps

MiniPrep Express™ Matrix

- Provides the essential binding matrix for making your own kit
- Save money by making your own lysis reagents
- Patented GENE CLEAN® matrix, buffer recipes, and protocols provided
- Rapid purification and screening of up to 1250 samples for pennies per prep
- Eluted plasmid is ready for downstream applications

Kit Components: MiniPrep Express™ Matrix, Protocols and recipes necessary for either alkaline lysis or boiling miniprep procedures

Cat. #	Description	Size
2000200	Miniprep Express™ Matrix	1250 Preps

96 Well Prep Express

- Provides the essential binding matrix for making your own high-throughput miniprep kit
- Save money by making your own lysis reagents
- Patented silica-embedded filter plate, buffer recipes, and protocols provided
- Plasmid DNA ready for downstream applications
- Elute up to 25 µg of plasmid DNA in TE or water

Kit Components: 96-well filter plate, Turbo 96 Binding Solution, 96-well Adhesive Seal, Protocols and recipes necessary for either alkaline lysis or boiling miniprep procedures

Cat. #	Description	Size
2002200	96-well Prep Express	4 x 96 preps

PhoenIX™

ION EXCHANGE

PhoenIX™ plasmid purification kits rely on ion-exchange chromatography through a unique, solid-phase column. Precisely balanced pH values and salt concentrations permit optimal purification of highly clean plasmid DNA. Unlike resins found in other ion-exchange kits, PhoenIX™ columns are distinct. Smaller pores increase the surface area available for binding. Longer spacer molecules on the resin particles allow a better degree of separation between biomolecules during the binding and washing process.

Plasmid DNA purified with PhoenIX™ columns can be used immediately in a wide variety of downstream applications including automated fluorescent sequencing, enzymatic amplification, labeling, transcription, cloning and other enzymatic manipulations. Additionally, the levels of endotoxin that remain after purification are so low that successful transfection will occur with even sensitive cell lines.

PhoenIX™ Midiprep Kit

- Midiprep kit for 45-100 µg plasmid DNA from 15-25 ml of *E. coli* cells
- Easy-to-use, patented gravity flow resin in pre-packed columns
- Purity equal to 2 passes through a CsCl gradient
- No hazardous buffers or organic reagents
- Plasmids ready for transfection, microinjection, sequencing, amplification, digestion, etc.

Kit Components: RNase A, Cell Resuspension Buffer, Lysis Buffer, Neutralization Buffer, Equilibration Solution, Column Wash Buffer, Elution Buffer, TE Buffer, PhoenIX™ Midi Columns

Cat. #	Description	Size
2075200	PhoenIX™ Midiprep Kit	25 preps

PhenoIX™ Maxiprep Kit

- Maxiprep kit for ≤ 500 μ g plasmid DNA from 100 ml of *E. coli* cells
- Easy-to-use, patented gravity flow resin in pre-packed columns
- Purity equal to 2 passes through a CsCl gradient
- No hazardous buffers or organic reagents
- Plasmids ready for transfection, microinjection, sequencing, amplification, digestion, etc.

Kit Components: RNase A, Cell Resuspension Buffer, Lysis Buffer, Neutralization Buffer, Equilibration Solution, Column Wash Buffer, Elution Buffer, TE Buffer, PhenoIX™ Maxi Columns

Cat. #	Description	Size
2075300	PhenoIX™ Maxiprep Kit	25 preps

PhenoIX™ Filter Maxiprep Kit

Clear bacterial lysate and apply to binding column in a single step with this unique filter device!

- No extra preparation or incubation
- No inconvenient syringes
- No danger of clogging
- Filter Maxiprep kit for ≤ 500 μ g plasmid DNA from 100 ml of *E. coli* cells
- Easy-to-use, patented gravity flow resin in pre-packed column with filter (see figure)
- Purity equal to 2 passes through a CsCl gradient
- No hazardous buffers or organic reagents
- Plasmids ready for transfection, microinjection, sequencing, amplification, digestion, etc.

Each of the 10 preps in the PhenoIX™ Filter Maxiprep Kit provides 500 μ g of ultrapure plasmid DNA from 100 - 500 ml of bacterial culture. Cleared bacterial lysate is poured through the filter and onto the PhenoIX™ Maxi Column in a single step for rapid purification by gravity flow. Protocols for high copy and low copy plasmids are included in the instruction manual.

Kit Components: RNase A, Cell Resuspension Buffer, Lysis Buffer, Neutralization Buffer, PhenoIX™ Filter Maxi Columns, Disposable Maxi Column Rack, Equilibration Buffer, Column Wash Buffer, Elution Buffer

Cat. #	Description	Size
2075600	PhenoIX™ Filter Maxiprep Kit	10 preps



PhenoIX™ Filter Maxi Column

PhoenIX™ Gigaprep Kit

- Gigaprep kit for ≤ 10 mg plasmid DNA from 2.5-5 L of *E. coli* cells
- Lysate filtration cartridge included for maximum efficiency
- Easy-to-use, patented resin in pre-packed columns
- Purity equal to 2 passes through a CsCl gradient
- No hazardous buffers or organic reagents
- Plasmids ready for transfection, microinjection, sequencing, amplification, digestion, etc.

Kit Components: RNase A, Cell Resuspension Buffer, Lysis Buffer, Neutralization Buffer, Equilibration Solution, Column Wash Buffer, Elution Buffer, TE Buffer, PhoenIX™ Giga Columns, Lysate Filtration Cartridges

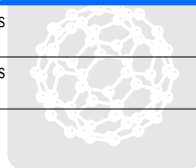
Cat. #	Description	Size
2075400	PhoenIX™ Gigaprep Kit	5 preps

PhoenIX™ Low Copy Refill Kits

The purification of low-copy plasmids requires twice the volume of alkaline lysis reagents as for high-copy plasmids. If a PhoenIX™ kit is to be used exclusively for low-copy plasmids, refill kits are available for your convenience.

Kit Components: RNase A, Cell Resuspension Buffer, Lysis Buffer, Neutralization Buffer

Cat. #	Description	Size
2075250	PhoenIX™ Midiprep Low Copy Refill Kit (For use with the 25-prep PhoenIX™ Midiprep Kit or the 10-prep PhoenIX™ Filter Maxiprep Kit)	12 preps
2075350	PhoenIX™ Maxiprep Low Copy Refill Kit (For use with the 25-prep PhoenIX™ Maxiprep Kit)	12 preps



Genomic DNA Purification

Genomic DNA Purification Kits

MPBioMedicals offers a wide variety of specialized kits for the isolation of genomic DNA. Silica-based purification kits rely on our proven GENECLAN® technology, while kits based on traditional procedures are available as well. In all cases, the yield of genomic DNA and the speed of the protocol are greatly enhanced through the use of the FastPrep® System (see Sample Preparation Chapter for more information).

DNA Isolation from Plants:

- FastDNA® Kit
- FastDNA® SPIN Kit
- FLORACLEAN™ Kit
- GNOME DNA Isolation Kit

DNA Isolation from Animals:

- FastDNA® Kit
- FastDNA® SPIN Kit
- GNOME® DNA Isolation Kit
- GNOME® DNA Whole Blood Kit

DNA Isolation from Yeast:

- FastDNA® Kit
- FastDNA® SPIN Kit
- Whole Cell Yeast PCR Kit
- Yeast Cell Lysis Kit

DNA Isolation from Phage:

- ssPhage™ Kit
- λQuick® Kit

DNA Isolation from Difficult Sources:

- GENECLAN® for Ancient DNA Kit
- FastDNA® Kit
- FastDNA® SPIN Kit
- FastDNA® SPIN Kit for Soil

FastDNA® SPIN Kit

Isolation of genomic DNA from plants, animals, bacteria, yeast, algae, and fungi using a silica spin filter method

The FastDNA® SPIN Kit, an updated version of the well-known FastDNA® Kit, is used with the FastPrep®-24 or FastPrep® FP120 Instrument to lyse and subsequently isolate DNA from up to 200 mg of almost any sample in less than 30 minutes. Lysing Matrix A and three different chaotropic buffers are provided for the optimal homogenization of a wide variety of sample types. The released DNA is purified by a silica based GENECLAN® SPIN procedure and is suitable for PCR analysis and other downstream applications. See the Sample Preparation section for more information.

Kit Components: Lysing Matrix A, Binding Matrix, SEWS-M Solution, DES Solution, CLS-VF Solution, PPS Solution, CLS-TC Solution, CLS-Y Solution, SPIN Filters, Catch Tubes

Cat. #	Description	Size
6540600	FastDNA® SPIN Kit	100 preps



FastDNA® Kit

Isolation of genomic DNA from plants, animals, bacteria, yeast, algae, and fungi

The FastDNA® Kit is used with the FastPrep®-24 or FastPrep® FP120 Instrument to lyse and subsequently isolate DNA from up to 200 mg of almost any sample in less than 30 minutes. Lysing Matrix A and 3 different chaotropic buffers are provided for the homogenization of a wide variety of sample types. DNA is released within 40 seconds, and is purified by a silica-based GENECLAN® procedure. See the Sample Preparation section for more information.

Kit Components: Lysing Matrix A, Binding Matrix, SEWS-M Solution, DES Solution, CLS-VF Solution, PPS Solution, CLS-TC Solution, CLS-Y Solution

Cat. #	Description	Size
6540400	FastDNA® Kit	100 preps

FastDNA® SPIN Kit for Soil

Isolation of DNA from cells present in soil or other environmental samples

The FastDNA® SPIN Kit for Soil is designed to efficiently isolate bacterial, fungal, plant and animal genomic DNA from soil and other environmental samples. Up to 500 mg soil can be processed by the FastPrep®-24 or FastPrep® FP120 Instrument in impact-resistant 2 ml tubes. DNA is released within 40 seconds, and is purified by a GENECLAN® procedure. See the Sample Preparation section for more information.

Kit Components: Lysing Matrix E, PPS Solution, Binding Matrix, SEWS-M Solution, DES Solution, Sodium Phosphate Buffer, BBS Solution, MT Buffer, SPIN Filters, Catch Tubes

Cat. #	Description	Size
6560200	FastDNA® SPIN Kit for Soil	50 preps

GNOME® DNA Isolation Kit

Purification of up to 100 µg of genomic DNA from a variety of sources

The GNOME® DNA Isolation Kit is a rapid and efficient method for isolation of high molecular weight genomic DNA from bacteria, plant, yeast, blood cells and other mammalian cells and tissues of all types. The kit uses RNase Mixx to eliminate RNA immediately after lysis, and Protease Mixx to rapidly degrade cellular proteins. This is followed by a proprietary "salting out" technique that precludes the need for phenol, chloroform or other organic extractions.

Kit Components: Cell Lysis/Denaturing Solution, RNase Mixx, Protease Mixx, Salt-Out Mixture, Cell Suspension Solution

Cat. #	Description	Size
2010400	GNOME® DNA Kit	25 Preps
2010600	GNOME® DNA Kit	100 Preps

GNOME® Whole Blood DNA Isolation Kit

Genomic DNA isolation from whole blood

This version of the GNOME® DNA Isolation Kit has been modified for the isolation of DNA from whole blood. Up to 100 µg of DNA can be isolated from 2 ml of whole blood without the use of organic extractions. DNA is suitable for restriction enzyme digestion or PCR amplification.

Kit Components: Cell Lysis/Denaturing Solution, RNase Mixx, Protease Mixx, Salt-Out Mixture, Cell Suspension Solution, Ace Blood Solution

Cat. #	Description	Size
2011600	GNOME® Whole Blood DNA Isolation Kit	100 Preps

FLORACLEAN™ Kit *Purification of nuclear chromosomal DNA from plants*

The FLORACLEAN™ Kit is a modification of the popular GNOME® DNA Isolation Kit that has been designed specifically for isolation of nuclear chromosomal DNA from plant tissues. Purified nuclei are lysed to obtain DNA free of phenolics, polysaccharides, and other contaminants that can inhibit subsequent enzymatic manipulation of the DNA and that are often difficult to eliminate from DNA preps of plant cells. No organic extractions are required. Using this kit, up to 400 µg of DNA is isolated from 1.5 g of tissue. Isolated DNA is suitable for PCR or enzymatic manipulations.

Kit Components: Nuclear Buffer Concentrate, CHO powder, Nuclear Buffer Chaotrope Solution, Nuclear Suspension Solution, Nuclear Lysis Solution, Protease Mixx, "Salt-Out" Mixture, Sieve Material

Cat. #	Description	Size
2012400	FLORACLEAN™ Kit	25 Preps

GENECLEAN® for ANCIENT DNA Kit *Purification of fragmented or damaged DNA from aged or preserved samples*

This kit is designed for isolation of up to 20 µg DNA from bone, preserved tissue, soil organisms, and animal by-products. Special attention has been paid to the production of the reagents of this kit in order to minimize the possibility of contamination by contemporary DNA of extraneous sources. All solutions are prepared from ultrapure reagents and dispensed in a dedicated laminar flow hood. No PCR template can be detected with probes to non-human genes. Since traces of human DNA can be detected by multiple, high-cycle PCR, this kit is not certified to be free of all DNA traces and it is recommended that proper controls are used.

Kit Components: Dehybernation Solution A, Ancient DNA GLASSMILK®, Salton Wash #1, Ancient Alcohol Wash, DNA-free Elution Solution, Spin Filter with tube, Catch Tube, Salton Wash #2, Dehybernation Solution B, Lysing Matrix K, Dehybernation Solution A2

Cat. #	Description	Size
1002200	GENECLEAN® for Ancient DNA Kit	100 Preps

Whole Cell Yeast PCR Kit *Quickly release DNA from yeast cells for PCR analysis*

The Whole Cell Yeast PCR Kit is designed to release PCR-ready DNA from yeast colonies or liquid cultures with a single, 60 minute incubation. The tough yeast cell wall is permeabilized enzymatically and the resulting cell suspension is used directly in the PCR reaction to obtain reproducible results without first purifying the DNA. Ideal for high throughput screening of yeast colonies.

Kit Components: Enzyme Mixx, Enzyme Buffer, Control Yeast BIO96, Control Actin PCR Primer Set

Cat. #	Description	Size
2016200	Whole Cell Yeast PCR Kit	200 preps

Yeast Cell Lysis Kit *Enzymatic digestion of yeast cell walls prior to traditional DNA purification procedures*

The Yeast Cell Lysis Kit contains the necessary reagents for digestion of the yeast cell wall in preparation for efficient lysis with the GNOME® DNA Isolation Kit (see previous page). It can also be used prior to other traditional DNA purification kits in which reagents alone are not sufficient to lyse yeast cell walls.

Kit Components: Yeast Suspension Buffer, Yeast Enzyme Enhancer, Spheroplast Indicating Solution, Spheroplast Control Solution, Yeast Enzyme Salts, Spheroplasting Enzyme Solution, Spheroplasting Enzyme Mixx

Cat. #	Description	Size
2015600	Yeast Cell Lysis Kit	100 preps

λQuick!® Kit

Purification of Lambda phage DNA

The λQuick!® Kit is designed for the rapid isolation and purification of Lambda phage DNA from liquid or plate lysates. Methods and growth media to obtain high titer plate lysates are included in the kit. Once cell lysis is complete, phage particles are harvested and purified. Purified particles are then lysed and phage DNA is isolated and purified with silica matrix. Average yield is 20 µg Lambda DNA per lysed plate.

Kit Components: Suspension Buffer, Phage Drop Buffer, Nuclease Mixx, Spin Matrix, Spin DNA Wash Concentrate, Elution Solution, Spin Filter with Tube, Catch Tube, Bottom Agar, Top Agarose, Sieve Cloth

Cat. #	Description	Size
2055400	λQuick!® Kit	25 Preps

ssPHAGE™ DNA SPIN Kit

Purification of M13 phage or phagemid DNA

The ssPHAGE™ DNA SPIN Kit is designed to facilitate the isolation of single-stranded DNA from filamentous phage such as M13 or phagemids. Since filamentous phages are extruded from the host cell, phage are precipitated from the supernatant of a pelleted cell culture and lysed. Phage DNA is then bound to a silica matrix, washed, and eluted. No enzymatic reactions or organic extractions are required.

Kit Components: ssPhage Drop Buffer, ssPhage GLASSMILK® Spin Buffer, ssPhage Wash Solution, Spin Filter with Tube, Catch Tube

Cat. #	Description	Size
2065200	ssPHAGE™ DNA SPIN Kit	60 Preps

Total RNA Purification Kits

FastRNA® Pro Blue Kit

Isolation of total RNA from gram positive and gram negative bacteria

The FastRNA® Pro Blue Kit is designed to efficiently isolate total RNA from gram positive and gram negative bacteria. Using the FastPrep®-24 or FastPrep® FP120 Instrument, up to 10¹⁰ cells are homogenized by Lysing Matrix B in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications. See the Sample Preparation section for more information.

Kit Components: Lysing Matrix B, RNApro™ Solution, DEPC-treated H₂O

Cat. #	Description	Size
6025050	FastRNA® Pro Blue Kit	50 preps

FastRNA® Pro Red Kit

Isolation of total RNA from yeast and fungi

The FastRNA® Pro Red Kit is designed to efficiently isolate total RNA from yeast and fungi. Using the FastPrep®-24 or FastPrep® FP120 Instrument, up to 10⁹ cells are homogenized by Lysing Matrix C in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications. See the Sample Preparation section for more information.

Kit Components: Lysing Matrix C, RNApro™ Solution, DEPC-treated H₂O

Cat. #	Description	Size
6035050	FastRNA® Pro Red Kit	50 preps

FastRNA® Pro Green Kit *Isolation of total RNA from plant and animal samples*

The FastRNA® Pro Green Kit is designed to efficiently isolate total RNA from any type of plant and animal tissue or cultured cells. Using the FastPrep®-24 or FastPrep® FP120 Instrument, between 50-500 mg of tissue can be homogenized by Lysing Matrix D in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications. See the Sample Preparation section for more information.

Kit Components: Lysing Matrix D, RNApro™ Solution, DEPC-treated H₂O

Cat. #	Description	Size
116045050	FastRNA® Pro Green Kit	50 preps

FastRNA® Pro Soil-Direct Kit *Isolation of total RNA directly from soil samples*

The FastRNA® Pro Soil-Direct Kit is designed to efficiently isolate total RNA from organic material found in soil samples. Using the FastPrep®-24 or FastPrep® FP120 Instrument, up to 0.5 g of material is homogenized by Lysing Matrix E in impact-resistant 2 ml tubes. Total RNA is released into a protective solution, extracted, precipitated, and cleaned with the proprietary RNAMATRIX® and a Quick-Clean Spin Filter. Total RNA prepared with this kit is suitable for RT-PCR analysis and other downstream applications. See the Sample Preparation section for more information.

Kit Components: RNApro™ Soil Lysis Solution, Lysing Matrix E, Phenol:Chloroform (1:1), Inhibitor Removal Solution, DEPC-treated H₂O, RNAMATRIX® Binding Solution, RNAMATRIX® Slurry, RNAMATRIX® Wash Solution, Quick-Clean Spin Filters

Cat. #	Description	Size
6070050	FastRNA® Pro Soil-Direct Kit	50 preps

FastRNA® Pro Soil-Indirect Kit *Isolation of total RNA from soil supernatants*

The FastRNA® Pro Soil-Indirect Kit is designed to efficiently isolate total RNA from organic material found in soil supernatants. Cellular material is washed away from soil particles, centrifuged, and homogenized by the FastPrep®-24 or FastPrep® FP120 Instrument in impact-resistant 2 ml tubes of Lysing Matrix E. Total RNA is released into a protective solution, extracted, precipitated, and cleaned with the proprietary RNAMATRIX® and a Quick-Clean Spin Filter. Total RNA prepared with this kit is suitable for RT-PCR analysis and other downstream applications.

Kit Components: RNApro™ Solution, Lysing Matrix E, Inhibitor Removal Solution, DEPC-treated H₂O, RNAMATRIX® Binding Solution, RNAMATRIX® Slurry, RNAMATRIX® Wash Solution, Quick-Clean Spin Filters

Cat. #	Description	Size
6075050	FastRNA® Pro Soil-Indirect Kit	50 preps

RNaid® Plus SPIN Kit *Purification of total RNA from cells and tissues, gels or solutions*

The RNaid® Plus SPIN Kit is similar to the RNaid® SPIN kit in that it purifies RNA from gels and solutions, but also provides the additional feature of purification of total RNA from cells and tissues. 100-600 µg of RNA can be isolated from 1 g of tissue or 10⁸ cells using the RNaid® Plus SPIN kit. Protocols are included for animal cells and tissues, bacteria and yeast, and the procedure can be scaled up or down. Cells or tissues that are difficult to lyse may require prior mechanical disruption. (See the FastPrep® System in the Sample Preparation section for difficult-to-lyse samples).

RNaid® Plus SPIN Kit Components: DEPC-Treated Water, RNA Binding Salt, RNA Wash Concentrate, RNAMATRIX®, 10% Acetic Acid, Cell Lysis Solution, Phenol Buffer, Spin Filters, Catch Tubes

Cat. #	Description	Size
1109200	RNaid® Plus SPIN Kit	15 Preps

Total RNA SAFEKIT™

Total RNA purification from animal tissues, cells and insects

The Total RNA SAFEKIT™ allows for isolation of RNA without using organic extraction solvents or guanidine salts. The procedure is characterized by its simplicity and the resulting RNA is undegraded, free of DNA and protein. Utilizes 10-100 mg sample sizes.

Kit Components: Proprietary Solutions 1, 2, 3 and 4

Cat. #	Description	Size
1008200	Total RNA SAFEKIT™	50 Preps

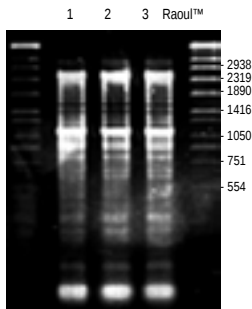
Nucleic Acid Preparation Tools

RNA-PLUS™

For the purification of RNA

- Ready-to-use solution
- Single-step RNA isolation method
- Green dye facilitates phase visualization
- Suitable for all tissues and cells

RNA-PLUS™ enables RNA isolation from tissues or cells of human, animal, plant, yeast or bacterial origin. RNA-PLUS™ represents an improvement on Chomczynski's procedure for single step RNA isolation providing higher efficiency removal of DNA and proteins. The method promotes formation of complexes of RNA with guanidinium and water molecules and abolishes hydrophilic interactions of DNA and proteins during sample extraction. RNAs obtained with RNA-PLUS™ are not degraded and are free of proteins and DNA. The RNA is suitable for all downstream applications including RT-PCR, hybridization, Northern, polyA+ mRNA isolation, *in vitro* transcription. 1 ml of reagent is sufficient for 50 mg tissue or 5 x 10⁶ cells.



1.5 % non denaturation agarose gel.

Lanes 1, 2 and 3 are Total Human Heart RNA extracted with RNA-Plus. Lane 4 is Raoul™ molecular weight marker.

Quality Control

All batches are performance tested

References

"Single Step Method of RNA Isolation by Acid Guanidium Thiocyanate-Phenol-Chloroform Extraction." P. Chomczynski, N. Sacchi (1987), Anal. Biochem 162, 156.

Not Available in North America

UN No: UN2821

Cat. #	Description	Size
RNAPLUS1	RNA-PLUS™	20 ml
RNAPLUS2	RNA-PLUS™	100 ml
RNAPLUS3	RNA-PLUS™	200 ml

▷ Storage: + 4°C do not freeze

▶ Risk and Safety: Hazardous material

Please refer to the material safety data sheet

AquaPhenol™ *pH-adjustable phenol for both RNA & DNA extraction*

AquaPhenol™ is a liquid phase water saturated phenol, ready to be used at pH 4.5 for RNA extraction. For DNA extraction, the pH of AquaPhenol™ can be adjusted to a value close to that of the DNA solution to be extracted with supplied Tris buffers. Two Tris buffers are included: pH Maker™ 7.5 for the preparation of pH 7.5 equilibrated AquaPhenol™ and pH Maker™ 8 for the preparation of pH 8 equilibrated AquaPhenol™. Buffered AquaPhenol™ is ready for use in five minutes or less.

CAS number : 108-95-2
 Formula : C_6H_6O
 UN No : UN2821
 EC No : 203-632-7
 MW : 94.1 g/mol

Specifications

Phenol (double distilled) saturated with ultra pure water
 (30 % water v/v)

Iron : < 0.0001%
 Heavy metals (as Pb) : < 0.0005%
 Water content (KF) : 30% +/- 1%

RNase, DNase, Protease free

Cat. #	Description	Size
AQUAPH01	AquaPhenol™	250 ml
AQUAPH02	AquaPhenol™	4 x 250 ml
AQUAPH03	AquaPhenol™	10 x 250 ml

▶ Storage: Bottled under inert gas to avoid oxidation. Before opening store between 4°C and ambient temperature, after opening store at 4°C, store at - 20°C if aliquoted.

▶ Risk and Safety: Hazardous material

Please refer to the material safety data sheet

Chloroform

Improves extraction of crude DNA when used with phenol

CAS number : 67-66-3
 Purity : 99+%
 Formula : $CHCl_3$
 MW : 119.4 g/mol

Cat. #	Description	Size
194002	Chloroform	25 ml 100 ml 500 ml 1 L

Ready-Red™ *Chloroform:isoamyl alcohol 24:1 with red dye*

- Facilitates separation of organic and aqueous phases
- Improves recovery
- Molecular biology grade

Ready-Red™ is used either to remove traces of phenol from the aqueous phase or can be mixed directly with AquaPhenol™ (void volume in AquaPhenol™ bottle is adapted to this purpose).

Cat. #	Description	Size
RYRED001	Ready-Red™	250 ml
RYRED002	Ready-Red™	4 x 250 ml
RYRED003	Ready-Red™	10 x 250 ml

AquaPhenol™ / Ready-Red™ Kit

Combi-pack containing 2 bottles of Ready-Red for every bottle of AquaPhenol™.

Cat. #	Description	Size
AQUARED1	AquaPhenol™ /Ready-Red™ Kit	1 x AQUAPH01,2 x RYRED001
AQUARED2	AquaPhenol™ /Ready-Red™ Kit	4 x AQUAPH01, 8 x RYRED001

Biophenol

Tris-saturated phenol

Phenol is used extensively for purifying nucleic acids and removing proteins. It is an efficient denaturing reagent for proteins, causing them to precipitate.

Biophenol is a molecular biology grade phenol of highest purity. It is offered saturated with Tris buffer or premixed with chloroform containing isoamyl alcohol (IAA).

CAS number : 108-95-2

Formula : C_6H_6O

UN No : UN2821

EC No : 604-001-00-2

MW : 94.1 g/mol

Specifications

Phenol (tridistilled) : 91 %

pH : 7.8 – 8.2

Water ultra pure : 9 %

Iron : < 0.0001 %

Heavy metals : < 0.0001 %

RNase, DNase, Protease free

Not Available in North America

Cat. #	Description	Size
PHEC0001	Biophenol/Chloroform/IAA	250 ml
PHEC0002	Biophenol/Chloroform/IAA	4 x 250 ml
PHET0001	Biophenol/Tris	250 ml
PHET0002	Biophenol/Tris	4 x 250 ml

► Storage: Bottled under Argon to avoid oxidation, in extra thick amber glass bottles with PTFE lined caps. Before opening store between 4°C and ambient temperature, after opening store at 4°C, store at - 20°C if aliquoted.

► Risk and Safety: Hazardous material

Please refer to the material safety data sheet

Glycogen

Molecular biology grade

Free from any contaminating DNA, RNA, nucleases, proteases, phosphatases, kinases, etc., this preparation is used as a carrier for the precipitation of nucleic acids (DNA or RNA). Glycogen is an inert material and does not interfere with molecular biology experiments. It can replace tRNAs or sonicated DNAs as an additive for the precipitation of nucleic acids.

Specifications

35 mg/ml solution in redistilled water. 1µl of glycogen gives a visible precipitate when precipitating with ethanol under standard conditions.

Source Isolated from oysters

Cat. #	Description	Size
GLYCO001	Glycogen	0.5 ml
GLYCO002	Glycogen	3 x 0.5 ml

► Storage: Room temperature

Isopropyl Alcohol

Isopropanol; 2-Propanol

Ideal for precipitating nucleic acids. In comparison to ethanol, approximately half the amount is required for precipitation, which minimizes the total volume for recovery.

CAS number : 67-63-0
Purity : 99+%
Formula : C_3H_8O
MW : 60.1 g/mol

Cat. #	Description	Size
194006	Isopropyl Alcohol	25 ml 100 ml 500 ml

RNase Erase®

Spray on and rinse off for an RNase-free surface! Completely removes RNase contamination from bench tops, glass, and plasticware. RNase Erase® is nontoxic and comes packaged with an adjustable spray bottle for ease of use.

Cat. #	Description	Size
2440204	RNase Erase®	500 ml

DNA OFF™

Ready to use solution for eliminating DNA from all surfaces

- Decontaminates PCR work areas
- Ready-to-use
- Cost effective
- Non-carcinogenic & non-corrosive
- Heat resistant

DNA OFF™ is a non-alkaline cleansing solution that is highly active against DNA contamination. This solution contains a surfactant plus an agent that destroys DNA intended for use at PCR workstations including countertops, apparatus and pipettors. Presence of contaminant DNA at a PCR work area can result in DNA amplification artifacts.

The DNA OFF™ is stable and heat resistant. In addition, the solution is non-corrosive and does not contain carcinogenic compounds.

DNA OFF™ is ready-to-use for eliminating DNA from all surfaces. The decontamination instructions are easy to follow. By simply applying DNA OFF™ and rinsing, DNA is completely removed leaving your work area free of contaminant DNA.

Cat. #	Description	Size
QD0500	DNA-OFF	500ml

▷ Storage: Room temperature

N-Lauroylsarcosine

Useful in concentrated salt solutions used in the cell lysis step during RNA purification.

CAS number : 137-16-6
Purity : ≥99.5%
Formula : $C_{15}H_{28}NO_2Na$
MW : 293.4 g/mol

Cat. #	Description	Size
194008	N-Lauroylsarcosine	50 g 100 g 250 g

Water, RNase/DNase-Free

Use for making and running RNA and DNA gels. Not DEPC-Treated.

Cat. #	Description	Size
2450204	RNase/DNase-free Water	500 ml

Water, DEPC-Treated

Use for elution of DNA and RNA from silica matrices. Nuclease free.

Cat. #	Description	Size
2420104	DEPC-treated Water	200 ml
2420204	DEPC-treated Water	5 x 200 ml

Water, Endotoxin-Free

Use for elution of DNA and RNA from silica matrices or to make solutions for transformation and transfection protocols. Enzyme and endotoxin-free.

Cat. #	Description	Size
2430304	Endotoxin-free Water	100 ml

Bacterial Growth Media



MP Biomedicals manufactures an excellent selection of *E. coli* growth media for almost any molecular biology application. Specialty, high-yield formulations, tried-and-true LB Agar, and even the basic ingredients of growth media are all available to meet your needs. Each recipe is subjected to extensive quantitative testing, and is Molecular Biology Certified™ through qualitative tests such as cell density and plasmid yield.

For ultimate ease and convenience, our patented media capsules eliminate the waste, inaccuracies, and mess associated with weighing out bulk powder. Pre-mixed powders are also available in single-use pouches or in larger bottles and drums. We also offer liquid media, pre-poured plates and custom packaging options.

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Introduction

MP Biomedicals is well known for providing high-quality growth media in a variety of formulations for every molecular biologist. We specialize in formulations for yeast and bacterial genetics, and offer more than a thousand recipes and variations. Each product is subjected to extensive quantitative testing, and is Molecular Biology Certified™ through qualitative, molecular biology based tests such as cell density and plasmid yield.

- Unbeatable selection of premixed formulations
- Proprietary media for enhanced cell and plasmid yield
- Convenient packaging formats for a variety of applications and budgets
- Molecular Biology Certified™ for the highest quality
- Proven and reliable reputation
- High-quality raw materials and additives
- Customized recipes and packaging

Wide variety of pre-mixed media formulations for *E. coli*



MP Biomedicals offers unique, specialty media for increased plasmid yield and protein expression, as well as all of the conventional media formulations. If you need something even more specialized, we can easily make your custom recipe from our Molecular Biology Certified™ raw materials.

Convenient packaging formats

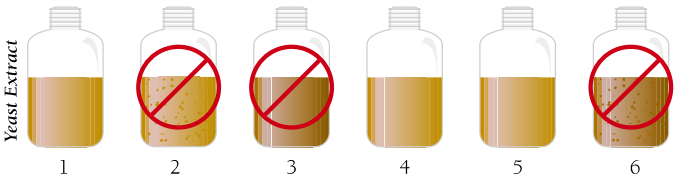
MP Biomedicals is the only source for encapsulated growth media. The ultimate in ease and convenience, our patented media capsules eliminate the waste, inaccuracies, and mess associated with weighing out bulk powder. Simply drop the capsules in water and autoclave! Pre-mixed powders are also available in single-use pouches or in larger bottles and drums. Liquid media, pre-poured plates, and custom packaging options are also available.



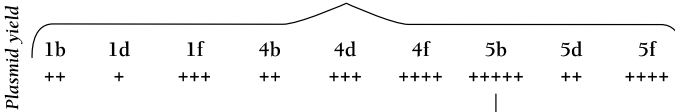
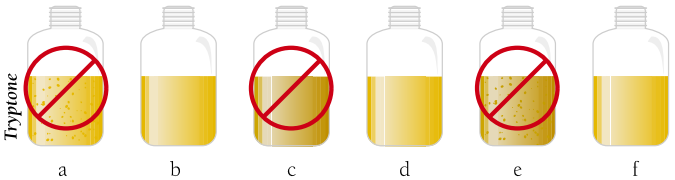
Molecular Biology Certified™ Manufacturing

Molecular Biology Certified™ growth media is designed and tested to meet the specific needs of a molecular biologist. In addition to the standard qualitative and quantitative assays of solubility, color, clarity, pH, and culture confluency, all bacterial culture media are tested for molecular biology applications such as plasmid extraction, DNA/RNA yield from the strain grown in the media, optimized protein expression, and reproducibility. The extracted plasmid or genomic DNA must also meet our high quality standards for PCR and restriction enzyme digestion, and purified proteins must maintain a high percentage of original activity.

The process of Molecular Biology Certification for LB Medium is outlined in the figure below. Several batches of yeast extract and tryptone are made and subjected to quantitative testing. In this example, yeast extract batches numbered "1", "4", and "5", and tryptone batches lettered "b", "d", and "f" passed the first rounds of quality control. Small batches of LB Medium are made with every combination of these qualified ingredients and tested for plasmid yield. The best combination (yeast extract "5" with tryptone "b") is chosen for the larger batch of media, to which NaCl is added prior to milling the powder into a consistent pre-mixed product. Upon completion, all qualitative tests are performed in addition to re-verification of the quantitative data.



Testing and Production of Molecular Biology Grade LB-medium



Yeast Extract - 5
Tryptone - b

NaCl

LB formulation
mixed and milled
to a fine powder

QC Tested ←

1. solubility/clarity
2. pH
3. cell growth density
4. plasmid yield

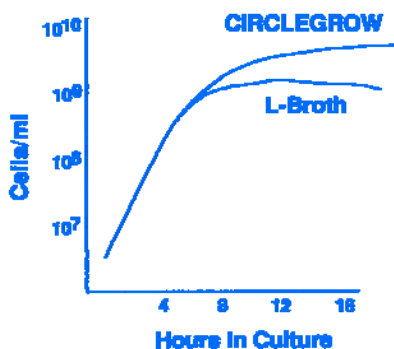
Each package size of LB contains a copy of the QC results and a QA document.

Specialty Formulations for *E. coli*

CIRCLEGROW® Broth and Agar

Extend plasmid production past log phase

CIRCLEGROW® media is designed for obtaining rapid growth of *E. coli* and high yields of plasmid DNA. Bacteria grown in conventional culture media reach an abrupt stationary phase upon exhaustion of nutrients. Cell proliferation is halted completely and some cell death and plasmid loss occurs. At the end of log phase, cells growing in CIRCLEGROW® begin to utilize a proprietary second carbon source which becomes available on a delayed basis. Cell growth and plasmid replication continue long after cells in conventional media have reached stationary phase or expired. Bacteria commonly grow in CIRCLEGROW® to a density triple that achieved in other media (see figure). The slow post-log phase growth of bacteria in CIRCLEGROW® eliminates the need for constant OD monitoring. CIRCLEGROW® cultures left overnight or over the weekend will have a much lower percentage of dead cells, and a higher percentage of plasmid DNA, than cultures prepared with any other media. The result is a higher yield of plasmid DNA in less volume with less attention.



CIRCLEGROW® Broth

40 g (40 Capsules, 8 Large Capsules) per Liter
Contents/L: Proprietary Formulation

Cat. #	Size
<i>Powder</i>	
3000112	227 g (0.5 lb)
3000122	454 g (1 lb)
3000132	908 g (2.0 lb)
3000142	2.3 kg (5.0 lb)
3000152	5 kg (11 lb)
<i>Pouches</i>	
3000165	10 x 0.5 L Pouches
3000185	100 x 0.5 L Pouches
3000175	10 x 1.0 L Pouches
3000195	100 x 1.0 L Pouches
<i>Capsules</i>	
3000121	250g (250 Caps)
3000131	1kg (1,000 Caps)
3000141	2.5 kg (2,500 Caps)
<i>Large Capsules</i>	
3000116	227 g (0.5 lb)
3000126	454 g (1 lb)
3000136	1 kg (2.2 lb)
3000146	5 kg (11 lb)
<i>Sterile Solution</i>	
3000104	500 ml

CIRCLEGROW® Agar

55 g (11 Large Capsules) per Liter
Contents/L: Proprietary Formulation

Cat. #	Size
<i>Powder</i>	
3100132	1 kg (2.2 lb)
3100142	2.3 kg (5.0 lb)
<i>Large Capsules</i>	
3100126	454 g (1 lb)
3100136	1 kg (2.2 lb)
3100146	5 kg (11 lb)
<i>Pre-Poured Plates (no antibiotic)</i>	
3100124	10 x 100mm Plates
3100134	100 x 100mm Plates

GS96 Broth for Multi-well Plates

High yields of plasmid DNA in 96-well and 384-well plates

GS96 Broth is formulated to grow host cells to the highest density possible without aeration, and to produce high yields of plasmid DNA from those cultures. Perfect for growing bacterial cells in 96-well and 384-well plates, GS96 media can be used in any situation in which aeration of the culture is difficult or absent. GS96 broth is used at the front end of high-throughput automated procedures, and growth can be increased even further by the addition of 0.05% glycerol.

50 g per Liter
Contents/L: Proprietary Formulation

Cat. #	Size
<i>Powder</i>	
3101112	227 g (0.5 lb)
3101132	1 kg (2.2 lb)
<i>Sterile Solution</i>	
3101124	500 ml

Plasmid Growth Formulations (PGF)

Optimize plasmid yield in a given host cell

Each individual plasmid growth formulation (PGF) demonstrates different growth characteristics for a given plasmid/host system.
PGF-843: 45 g per Liter; PGF-6277: 50 g per Liter; PGF-426: 40 g per Liter; PGF-1287: 52 g per Liter; PGF 1121: 39 g per Liter
Contents/L: Proprietary Formulation

Cat. #	Description	Size
<i>Powder</i>		
3302312	PGF-843	227 g (0.5 lb)
3302712	PGF-1121	227 g (0.5 lb)
3302412	PGF-6277	227 g (0.5 lb)
3302512	PGF-426	227 g (0.5 lb)
3302612	PGF-1287	227 g (0.5 lb)

Protein Growth Formulations (ProGF)

Optimize protein production in a given host cell

Each individual protein growth formulation (PGF) demonstrates different characteristics for a given protein/host system.

ProGF-9: 40.2 g per Liter; ProGF-11: 42.2 g per Liter; ProGF-13: 48.0 g per Liter; ProGF-19: 42.0 g per Liter; ProGF-LB: 35.0 g per Liter.

Contents/L: Proprietary Formulation

Cat. #	Description	Size
3401175	ProGF-9	10 x 1.0 L pouches
3401275	ProGF-11	10 x 1.0 L pouches
3401375	ProGF-13	10 x 1.0 L pouches
3401475	ProGF-19	10 x 1.0 L pouches
3401575	ProGF-LB	10 x 1.0 L pouches

Nutrient Agar Stabs

Contents/liter: Proprietary LB-like formulation containing glucose, cysteine and thymine.

Stabs are a convenient way to store or transport bacterial strains. Vials of soft nutrient agar are stabbed with a loop of a fresh culture and incubated overnight. The caps are then tightened and the cultures are stored in the dark. Special glass vials ensure an airtight environment for at least two years, and most cell types will remain viable for at least this long.

Cat. #	Size
3050033	50 Stabs

Standard *E. coli* Growth Media

LB Medium Recipes

Recipes for the *E. coli* growth media known as LB Medium or L-Broth typically contain 10 g of tryptone and 5 g of yeast extract per liter, and can vary in salt concentration from 0.5 g to 10 g per liter. MP Biomedicals offers three forms of this traditional media: LB Medium and LB Agar contain 10 g NaCl per liter, LB Medium, Lennox and LB Agar, Lennox contain 5 g of NaCl per liter, and L-Broth and L-Broth Agar contain 0.5 g NaCl per liter. A NaCl-free version of LB Medium is also available for use in salt-inducible recombinant protein expression.

LB Medium

25 g (25 Capsules or 5 Large Capsules) per liter

Contents/liter: 10 g tryptone, 5 g yeast extract, 10 g NaCl

Cat. #	Size
<i>Powder</i>	
3002022	454 g (1 lb)
3002032	1 kg (2.2 lb)
3002042	5 kg (11 lb)
<i>Pouches</i>	
3002065	10 x 0.5 L Pouches
3002085	100 x 0.5 L Pouches
3002075	10 x 1.0 L Pouches
3002095	100 x 1.0 L Pouches
<i>Capsules</i>	
3002011	227 g (0.5 lb)
3002021	454 g (1 lb)
3002031	1 kg (2.2 lb)
3002041	5 kg (11 lb)
<i>Large Capsules</i>	
3002016	227 g (0.5 lb)
3002026	454 g (1 lb)

Cat. #	Size
3002036	1 kg (2.2 lb)
3002046	5 kg (11 lb)
<i>Sterile Solution</i>	
3002014	500 ml
3002024	1.0 L

LB-Agar Medium

40 g (40 Capsules or 8 Large Capsules) per liter
Contents/liter: LB Medium, 15 g Agar-B

Cat. #	Size
<i>Powder</i>	
3002222	454 g (1 lb)
3002232	1 kg (2.2 lb)
3002242	5 kg (11 lb)
<i>Pouches</i>	
3002265	10 x 0.5 L Pouches
3002285	100 x 0.5 L Pouches
3002275	10 x 1.0 L Pouches
3002295	100 x 1.0 L Pouches
<i>Capsules</i>	
3002211	227 g (0.5 lb)
3002221	454 g (1 lb)
3002231	1 kg (2.2 lb)
3002241	5 kg (11 lb)
<i>Large Capsules</i>	
3002216	227 g (0.5 lb)
3002226	454 g (1 lb)
3002236	1 kg (2.2 lb)
3002246	5 kg (11 lb)
<i>Sterile Solution</i>	
3002204	500 ml
<i>*Pre-Poured Plates (no additives)</i>	
3002224	10 x 100mm plates
3002234	100 x 100mm plates
<i>Pre-Poured Plates (w/ 50µg/ml Ampicillin)</i>	
3014124	10 x 100mm plates
3014134	100 x 100mm plates
<i>Pre-Poured Plates (w/ 100µg/ml Ampicillin)</i>	
3014224	10 x 100mm plates
3014234	100 x 100mm plates
<i>Pre-Poured Plates (w/ 30µg/ml Kanamycin)</i>	
3015224	10 x 100mm plates
3015234	100 x 100mm plates
<i>Pre-Poured Plates (w/ 50µg/ml Kanamycin)</i>	
3015324	10 x 100mm plates
3015334	100 x 100mm plates
<i>Pre-Poured Plates (w/ 100µg/ml Carbenicillin)</i>	
3019124	10 x 100mm plates
3019134	100 x 100mm plates
<i>Pre-Poured Plates (w/ 100µg/ml Ampicillin, 40µg/ml X-GAL & 0.5mM IPTG)</i>	
3017124	10 x 100mm plates
3017134	100 x 100mm plates

**Inquire for details on plates not listed here.*

LB-Top Agar

32 g (32 Capsules or 6 Large Capsules) per liter
Contents: LB Medium, 7 g Agar-B

Cat. #	Size
Powder	
3002522	454 g (1 lb)

LB Medium, Lennox

20 g powder (20 Capsules or 4 Large Capsules) per Liter
Contents: 10 g tryptone, 5 g yeast extract, 5 g NaCl

Cat. #	Size
Powder	
3002122	454 g (1 lb)
3002132	1 kg (2.2 lb)
3002142	5 kg (11 lb)
Pouches	
3002175	10 x 1.0 L Pouches
Capsules	
3002121	454 g (1 lb)
3002131	1 kg (2.2 lb)
3002141	5 kg (11 lb)
Large Capsules	
3002136	1 kg (2.2 lb)
3002146	5 kg (11 lb)
Sterile Solution	
3002104	500 ml

LB Agar, Lennox

35 g (35 Capsules) per Liter
Contents: LB Medium, Lennox, 15g/L Agar-B

Cat. #	Size
Powder	
3002332	1 kg (2.2 lb)
Capsules	
3002321	454 g (1 lb)
3002331	1 kg (2.2 lb)

L-Broth

16 g (16 Capsules) per Liter
Contents/liter: 10 g tryptone, 5 g yeast extract, 0.5 g NaCl

Cat. #	Size
Powder	
3001032	1 kg (2.2 lb)
3001042	5 kg (11 lb)
Capsules	
3001021	454 g (1 lb)
3001031	1 kg (2.2 lb)
3001041	5 kg (11 lb)

L-Broth Agar

31 g (31 Capsules) per Liter
Contents/liter: L-Broth, 15 g Agar-B

Cat. #	Size
<i>Powder</i>	
3001232	1 kg (2.2 lb)
3001242	5 kg (11 lb)
<i>Capsules</i>	
3001221	454 g (1 lb)
3001231	1 kg (2.2 lb)
3001241	5 kg (11 lb)
<i>Large Capsules</i>	
3001236	1 kg (2.2 lb)
3001246	5 kg (11 lb)

L-Broth Top Agar

23 g per Liter
Contents/liter: L-Broth, 7 g Agar-B

Cat. #	Size
<i>Powder</i>	
3001522	454 g (1 lb)

LB Medium w/o Sodium Chloride

15 g per Liter
Contents/liter: 10 g tryptone, 5 g yeast extract

Cat. #	Size
30202032	1 kg (2.2 lb)

Terrific Broth

Part 1: 36 g (36 Capsules) per Liter
Part 2: Potassium phosphate salts and glycerol in sterile solution
Contents/liter: 24 g yeast extract, 12 g tryptone

Cat. #	Size
<i>Powder, Part 1 (Includes Part 2 sterile liquid)</i>	
3045032	1 kg (2.2 lb)
<i>Capsules Part 1 (Includes Part 2 sterile liquid)</i>	
3045031	1 kg (2.2 lb)

Terrific Broth II

50 g (50 Capsules) per Liter
Contents/L: Proprietary Formulation

Terrific Broth II is a proprietary formulation that is shipped as a single powder instead of as two separate components. Terrific Broth II exhibits the same growth characteristics as the original Terrific Broth formula.

Cat. #	Size
<i>Powder</i>	
3046022	454 g (1 lb)
3046032	1 kg (2.2 lb)
3046042	5 kg (11 lb)

Cat. #	Size
<i>Pouches</i>	
3046065	10 x 0.5 L Pouches
3046085	100 x 0.5 L Pouches
3046075	10 x 1.0 L Pouches
3046095	100 x 1.0 L Pouches
<i>Capsules</i>	
3046021	454 g (1 lb)
3046031	1 kg (2.2 lb)
3046041	5 kg (11 lb)

SuperBroth

60 g (60 Capsules or 12 Large Capsules) per Liter

Contents/liter: 35 g tryptone, 20 g yeast extract, 5 g NaCl

Cat. #	Size
<i>Powder</i>	
3010032	1 kg (2.2 lb)
3010042	5 kg (11 lb)
<i>Pouches</i>	
3010075	10 x 1.0 L Pouches
3010095	100 x 1.0 L Pouches
<i>Capsules</i>	
3010031	1 kg (2.2 lb)
3010041	5 kg (11 lb)
<i>Large Capsules</i>	
3010036	1 kg (2.2 lb)
3010046	5 kg (11 lb)
<i>Sterile Solution</i>	
3010014	500 ml

SuperBroth Agar

75 g per Liter

Contents/liter: SuperBroth, 15 g Agar-B

Cat. #	Size
<i>Powder</i>	
3010232	1 kg (2.2 lb)
<i>Capsules</i>	
3010231	1 kg (2.2 lb)

SuperBroth Top Agar

67 g per Liter

Contents/liter: SuperBroth, 7 g Agar-B

Cat. #	Size
<i>Powder</i>	
3010522	454 g (1 lb)

Tryptone Broth

18 g per Liter

Contents: 10 g tryptone-B, 8 g NaCl

Cat. #	Size
<i>Powder</i>	
3003032	1 kg (2.2 lb)

Tryptone Agar

33 g per Liter

Contents: Tryptone Broth, 15 g Agar-B

Cat. #	Size
Powder	
3003232	1 kg (2.2 lb)

Tryptone Top Agar

25 g per Liter

Contents/liter: Tryptone Broth, 7 g Agar-B

Cat. #	Size
Powder	
3003522	454 g (1 lb)

M9 Minimal Medium Salts

Part A (g/L of 50x): 350 g K_2HPO_4 100 g KH_2PO_4 Part B (g/L of 50x): 29.4 g sodium citrate, 50 g $(NH_4)_2SO_4$, 5g $MgSO_4$

Parts A and B are initially dissolved in water, autoclaved, and thereafter serve as 50x concentrated stock solutions for making M9 Growth Media. To make M9 Growth Media, 2% parts A and B are added to sterile water (or water plus melted, purified agar). Additional nutrients, such as glucose, casamino acids, vitamins, or antibiotics are added when the solution cools and before plates are poured or media is inoculated with bacteria.

Cat. #	Size
Powder for 1000ml 50x M9 Salts (Includes Part B, makes 50L total)	
3035022	450 g

M9 Minimal Medium Salts

(1-part Maniatis formulation)

Contents/L of 5x solution: 33.9 g Na_2HPO_4 15 g KH_2PO_4 2.5 g NaCl, 5 g NH_4Cl

Cat. #	Size
Powder	
3037012	227 g (0.5 lb)
3037022	454 g (1 lb)
3037032	1 kg (2.2 lb)
3037042	5 kg (11 lb)

Competent Cell Preparation & Growth

SUPER-COMP Media and Transformation Salts

SUPER-COMP is an extremely rich medium that significantly increases the competency of the cells when using a simple RbCl/CaCl means of preparing competent host cells:

1. Dilute 1 ml of a fresh overnight culture of host cells grown in LB medium into 25 ml of 37°C SUPER-COMP media in a 500 ml flask.
2. Incubate cells with vigorous aeration for 1-2 hours until cells reach mid-log phase (approximately 8×10^8 cells/ml, OD_{600} reading 0.8 for most *E. coli* host cells).
3. Centrifuge culture in a sterile tube at 4°C to pellet cells. Resuspend pellet in 15 ml of ice cold 1X RbCl/CaCl Transformation Salts.
4. After 15 minutes on ice, centrifuge to pellet cells and gently resuspend in 2 ml of ice cold 1X RbCl/CaCl Transformation Salts. Keep cell suspension on ice.

Cells are now competent and are immediately ready for DNA uptake. For maximum transformation efficiency, store for 12-24 hours at 4°C to increase competency 4-6 fold (at 48 hours they will be approximately as efficient as when first made). Competent cells can also be frozen in aliquots at -80°C after adding glycerol to 20%.

Cat. #	Description	Size
3103011	SUPER-COMP Media	100 Capsules
3103014	10X RbCl/CaCl Transformation Salts	150 ml

SOB Medium

Standard media for preparing cells for chemical transformation.

31 g (31 Capsules) per Liter

Contents/liter: 20 g tryptone, 5 g yeast extract, 0.5 g NaCl, 5 g $MgSO_4 \cdot 7H_2O$

Cat. #	Size
<i>Powder</i>	
3030022	454 g (1 lb)
<i>Capsules</i>	
3030021	454 g (1 lb)

SOC Medium

SOC is a special medium for incubating competent cells immediately after transformation to allow expression of transferred resistance genes before exposing cells to selective conditions.

31 g per liter

Contents/liter: SOB, 20 mM glucose

Cat. #	Size
<i>Powder</i>	
3031012	227 g (0.5 lb)
<i>Liquid</i>	
3031014	10 ml

Transform & Grow™ Bacterial Transformation Kit

- No Heat Shock Required
- Transform-It™ Solution is Ready-to-Use
- Transform Plasmids, Ligations, and Cosmids
- Store Competent Cells 10 Weeks or Longer
- More Reliable than "Do-it-Yourself" Methods
- Easy Procedure with Minimal Hands-On Time

The Transform & Grow™ Bacterial Transformation Kit provides a simple and efficient method for the preparation, transformation and storage of competent *E. coli* cells. Bacterial cells are grown to mid-log phase at 37°C, pelleted and resuspended in Transform-It™ Solution. This unique buffer enables the cells to become immediately available for transformation and permits freezing the cells for future use without further preparation. The competent cells remain stable at -70°C for at least 10 weeks. The Transform & Grow™ Bacterial Transformation Kit eliminates the requirement for heat shock and prepares competent cells within two and a half hours with only 30 minutes of hands-on manipulation. The kit includes Transform-It™ Solution, SUPER-COMP Media and Roll & Grow® Plating Beads to prepare competent cells with a reliable and reproducible transformation efficiency of 2-8 x10⁶ transformants per µg of supercoiled plasmid DNA. Reagents for 50 transformations are provided.



Kit Components: Transform-It™ Solution, SUPER-COMP Media, Roll & Grow® Plating Beads

Cat. #	Description	Size
2150200	Transform & Grow™ Bacterial Transformation Kit	50 transformations

Media for Lambda and Filamentous Phage

For optimal binding of lambda phage to cells, add 0.2% maltose (10 ml of a 20% solution/liter) to growth media to induce the lambda receptor (LamB) on the host cell. Maltose induction of the lambda receptor is not recommended when making liquid lysate phage stocks because liberated phage will bind to cellular membrane fragments containing a high concentration of phage receptors.

Maltose

Cat. #	Size
Powder 4006022	454 g (1 lb)
Sterile 20% Solution 3068034	100 ml

D-(+)-Maltose (4-O- α -D-Glucopyranosyl-D-

CAS Number: [6363-53-7]
Monohydrate
Crystalline
Mixed Anomers
Purity: 99%
Formula: $C_{12}H_{22}O_{11} \cdot H_2O$
MW: 360.3

Cat. #	Size
190237	100 g 500 g 1 kg

▷ Storage: Room Temperature

D-(+)-Maltose

(Malt Sugar)

CAS Number: [6363-53-7]
Monohydrate
Crystalline
Purity: 95-98%
Formula: $C_{12}H_{22}O_{11} \cdot H_2O$
MW: 360.3

Cat. #	Size
102241	100 g 500 g 1 kg

▷ Storage: Room Temperature

D-(+)-Maltose

(4-O- α -D-Glucopyranosyl-D-glucose)

CAS Number: [6363-53-7]
Cell Culture Reagent
Monohydrate
Crystalline
Mixed Anomers
Purity: 99%
Formula: $C_{12}H_{22}O_{11} \cdot H_2O$
MW: 360.3

Cat. #	Size
194701	100 g 500 g 1 kg

▷ Storage: Room Temperature

SuperBroth

60 g (60 Capsules or 12 Large Capsules) per Liter
Contents/liter: 35 g tryptone, 20 g yeast extract, 5 g NaCl

Cat. #	Size
<i>Powder</i>	
3010032	1 kg (2.2 lb)
3010042	5 kg (11 lb)
<i>Pouches</i>	
3010075	10 x 1.0 L Pouches
3010095	100 x 1.0 L Pouches
<i>Capsules</i>	
3010031	1 kg (2.2 lb)
3010041	5 kg (11 lb)
<i>Large Capsules</i>	
3010036	1 kg (2.2 lb)
3010046	5 kg (11 lb)
<i>Sterile Solution</i>	
3010014	500 ml

SuperBroth Agar

75 g (75 Capsules) per Liter

Contents/liter: SuperBroth, 15 g Agar-B

Cat. #	Size
Powder	
3010232	1 kg (2.2 lb)
Capsules	
3010231	1 kg (2.2 lb)

SuperBroth Top Agar

67 g per Liter

Contents/liter: SuperBroth, 7 g Agar-B

Cat. #	Size
Powder	
3010522	454 g (1 lb)

NZCYM Broth

23 g (23 Capsules) per Liter

Contents/liter: 10 g NZ-amine, 1 g casamino acids, 5 g yeast extract, 2 g $\text{MgSO}_4 \cdot \text{H}_2\text{O}$, 5 g NaCl, pH 7

Cat. #	Size
Powder	
3004032	1 kg (2.2 lb)
3004042	5 kg (11 lb)
Pouches	
3004085	100 x 0.5 L Pouches
Capsules	
3004031	1 kg (2.2 lb)

NZCYM Agar

38 g per Liter

Contents/liter: NZCYM Broth, 15 g Agar-B

Cat. #	Size
Powder	
3004232	1 kg (2.2 lb)

NZCYM Top Agar

30 g per Liter

Contents/liter: NZCYM Broth, 7 g Agar-B

Cat. #	Size
Powder	
3004522	454 g (1 lb)

NZYM Broth (NZY)

22 g (22 Capsules) per Liter

Contents/liter: 10 g NZ Amine, 5 g yeast extract, 2 g $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, 5 g NaCl, pH 7

Cat. #	Size
Powder	
3005022	454 g (1 lb)
3005032	1 kg (2.2 lb)
3005042	5 kg (11 lb)
Capsules	
3005031	1 kg (2.2 lb)

NZYM Agar (NZY)

37 g per Liter

Contents/liter: NZYM Broth, 15 g Agar-B

Cat. #	Size
Powder	
3005222	454 g (1 lb)

NZYM (NZY) Top Agar

29 g per Liter

Contents/liter: NZYM Broth, 7 g Agar-B

Cat. #	Size
Powder	
3005522	454 g (1 lb)

NZM Broth

17 g per Liter

Contents/liter: 10 g NZ Amine, 2 g $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, 5 g NaCl

Cat. #	Size
Powder	
3006032	1 kg (2.2 lb)

NZM Agar

32 g per Liter

Contents/liter: NZM Broth, 15 g Agar

Cat. #	Size
Powder	
3006222	454 g (1 lb)

NZM Top Agar

24 g per Liter

Contents/liter: NZM Broth, 5 g Agar

Cat. #	Size
Powder	
3006522	454 g (1 lb)

NZYDT Broth

21 g per Liter

Contents/liter: 10 g NZ Amine, 5 g yeast extract, 5 g NaCl, pH 7, 1 g $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, 40 mg thymidine

Cat. #	Size
Powder	
3007122	454 g (1 lb)

NZYDT Agar

36 g per Liter

Contents/liter: NZYDT, 15 g Agar-B

Cat. #	Size
Powder	
3007322	454 g (1 lb)

NZY (Harvard) Broth

23 g per Liter

Contents/liter: 8 g NaCl, 10 g NZ Amine, 5 g yeast extract

Cat. #	Size
Powder	
3007022	454 g (1 lb)

LB-Agar for Lambda

42 g per Liter

Contents/liter: LB Agar Medium, 2 g $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$

Cat. #	Size
Powder	
3002412	227 g (0.5 lb)

SM Buffer

Contents/liter: NaCl, MgSO_4 Tris pH 7.5, Gelatin

SM phage diluent and storage buffer contains Mg^{2+} and is used for routine manipulation of phage suspensions. The gelatin in SM buffer stabilizes lambda phage particles during storage.

Cat. #	Size
Sterile Solution	
3070044	500 ml

YT-Broth

18 g (18 Capsules) per Liter

Contents/liter: 8 g, tryptone, 5 g yeast extract, 5 g NaCl

YT media formulations are optimized for the growth and maintenance of M13 phage or other filamentous ssDNA bacteriophages.

Cat. #	Size
Powder	
3011032	1 kg (2.2 lb)
Capsules	
3011031	1 kg (2.2 lb)
3011041	5 kg (11 lb)

YT-Broth Agar

33 g (33 Capsules) per Liter

Contents/liter: YT, 15 g Agar-B

Cat. #	Size
Powder	
3011232	1 kg (2.2 lb)
Capsules	
3011241	5 kg (11 lb)

YT Top Agar

25 g per Liter

Contents/L: YT, 7 g Agar-B

Cat. #	Size
Powder	
3011532	1 kg (2.2 lb)

2xYT-Broth

31 g (31 Capsules or 6 Large Capsules) per Liter

Contents/L: 16 g, tryptone, 10 g yeast extract, 5 g NaCl

Cat. #	Size
Powder	
3012022	454 g (1 lb)
3012032	1 kg (2.2 lb)
3012042	5 kg (11 lb)
Capsules	
3012021	454 g (1 lb)
3012031	1 kg (2.2 lb)
3012041	5 kg (11 lb)
Large Capsules	
3012026	454 g (1 lb)
3012036	1 kg (2.2 lb)
3012046	5 kg (11 lb)

2xYT-Broth Agar

46 g (46 Capsules) per Liter

Contents/liter: 2xYT, 15 g Agar-B

Cat. #	Size
Powder	
3012232	1 kg (2.2 lb)
3012242	5 kg (11 lb)
Capsules	
3012231	1 kg (2.2 lb)
3012241	5 kg (11 lb)

2xYT-Top Agar

46 g per Liter

Contents/liter: 2xYT, 7 g Agar-B

Cat. #	Size
Powder	
3012522	454 g (1 lb)

Microbiological Media

MP offers a broad selection of media and supplements for the growth, maintenance and isolation of various microorganisms. MP encourages inquiries for media which may not appear here and requests for quantity discounts. If additional information is needed, please contact your local MP office or distributor.

AC Broth

34 g per Liter

contents/liter: 20 g Peptone, 3 g Beef Extract, 3 g Yeast Extract, 3 g Malt Extract, 5 g Dextrose, 0.2 g Ascorbic Acid

Used for cultivating a broad range of microorganisms and for sterility testing of turbid or viscous solutions and other materials which do not have preservatives that contain mercury.

Cat. #	Size
1000817	500 g

Actinomycete Isolation Agar

22 g per Liter

contents/liter: 2 g Sodium Caseinate, 0.1 g Asparagine, 4 g Sodium Propionate, 0.5 g Dipotassium Phosphate, 0.1 g Magnesium Sulfate, 0.001 g Ferrous Sulfate, 15 g Agar

Used for the cultivation and maintenance of *Actinomyces* species from soil and water.
Use with glycerol (cat. no. 1004417).

Cat. #	Size
1000917	500 g

Anaerobic Agar

51 g per Liter

contents/liter: 17.5 g Casein Peptone, 2.5 g Soy Peptone, 2.5 g Sodium Chloride, 0.4 g L-Cystine, 10 g Dextrose, 15 g Agar, 2 g Sodium Thioglycollate, 1 g Sodium Sulfoxyl Formaldehyde, 0.002 Methylene Blue

A general purpose medium for the cultivation of anaerobic bacteria.

Cat. #	Size
1001117	500 g

Antimicrobial Vial CNVT

Contents/10 ml vial:

7500 ug Colistin Sulfate, 12500 units Nystatin, 3000 ug Vancomycin, 5000 ug Trimethoprim Lactate

A Colistin Sulfate-Nystatin-Vancomycin-Trimethoprim lactate culture supplement. It is well suited for use with GC Medium Base (cat. no. 1004317).

Cat. #	Size
10013J6	6x10 ml

▷ Storage: 0 TO 5°C

Antimicrobial Vial CNVT

Contents/100 ml vial
75000 ug Colistin Sulfate,
125000 units Nystatin, 30000 ug Vancomycin, 50000 ug Trimethoprim Lactate

A Colistin Sulfate-Nystatin-Vancomycin-Trimethoprim lactate culture supplement. It is well suited for use with GC Medium Base (cat. no. 1004317).

Cat. #	Size
1001349	100 ml

▷ Storage: 0 TO 5°C

Azide Blood Agar Base

33 g per Liter
contents/liter: 10 Polipeptone
3 Beef Extract, 5 Sodium Chloride, 0.2 Sodium Azide, 15 Agar

For the isolation and cultivation of streptococci and staphylococci bacteria. Also, it may be used with blood in the determination of hemolytic reactions.

Cat. #	Size
1001417	500 g

Baird Parker Agar Base

60 g per Liter
contents/liter: 10 g Casein Peptone, 5 g Beef Extract, 1 g Yeast Extract, 5 g Lithium Chloride, 17 g Agar, 12 g Glycine, 10 g Sodium Pyruvate

For use with EY Tellurite Enrichment for the detection and enumeration of coagulase positive staphylococci in foods and other materials.

Cat. #	Size
1001517	500 g

Beef Heart For Infusion

50 g per Liter

Desiccated beef heart powder.

Cat. #	Size
1001617	500 g

Bile Esculin Agar

64.5 g per Liter
contents/liter: 5 g Peptone, bacteriological, 3 g Beef Extract, 0.5 g Ferric Citrate, 40 g Ox Bile, 1 g Esculin, 15 g Agar

Suited for the differentiation and presumptive identification of group D streptococci bacteria. It is also useful for the differentiation of enterobacteria-ceae group organisms.

Cat. #	Size
1001817	500 g

Bile Salts

This preparation functions as a selective agent by inhibiting gram-positive organisms.

Cat. #	Size
1001917	500 g

Bile Salts No. 3

Acts as a selective agent by inhibiting gram-positive organisms.

Cat. #	Size
1002017	500 g

Bismuth Sulfite Agar

52 g per Liter

contents/liter: 10 g Polipeptone, 5 g Beef Extract, 5 g Dextrose, 0.3 Ferrous Sulfate, 4 g Disodium Phosphate, 8 g Bismuth Sulfite Indicator, 0.025 Brilliant Green, 20 g Agar

Prepared for the selective isolation and cultivation of *Salmonella* species, particularly *Salmonella typhi* from food and clinical samples.

Cat. #	Size
1002117	500 g

Brain Heart Infusion Agar

37 g per Liter

contents/liter: 17.5 g Beef Heart Infusion from Solids, 2 g Dextrose, 10 g Gelatin Peptone, 2.5 g Disodium Phosphate, 5 g Sodium Chloride

Developed for the cultivation of fastidious microorganisms highly suited for fungi and yeasts. With added antibiotics, it may be used in isolating fungi.

Cat. #	Size
1002317	500 g

Brain Heart Infusion Broth

37 g per Liter

contents/liter: 17.5 g Beef Heart Infusion from Solids, 2 g Dextrose, 10 g Gelatin Peptone, 2.5 g Disodium Phosphate, 5 g Sodium Chloride

Developed for the cultivation of a large variety of fastidious and non-fastidious, aerobic and anaerobic microorganisms including bacteria, yeast and fungi (molds).

Cat. #	Size
1002417	500 g

Brilliant Green Bile 2%

40 g per Liter

contents/liter: 20 g Dehydrated Ox Bile, 10 g Lactose, 10 g Gelatin Peptone, 0.0133 g Brilliant Green

A standard methods medium for the confirmed and complete detection of coliform bacteria in food and water.

Cat. #	Size
1002517	500 g

Brilliant Green Bile Agar

20.6 g per Liter

contents/liter: 8.25g Gelatin Peptone, 1.9 g Lactose, 10.15 g Agar Special, 0.25 g Sodium Sulfite, 0.776 g Basic Fuchsin, 0.0649 g Erioglaucine, 0.0295 g Ferric Chloride, 0.0153 g Monopotassium Phosphate, 0.00295 g Oxbile, 0.000295g Brilliant Green

Prepared for the selective detection and cultivation of coliform bacteria found in food and water.

Cat. #	Size
1002617	500 g

Bushnell-Haas Broth

3.25 g per Liter

contents/liter: 0.2 g Magnesium Sulfate, 0.02 g Calcium Chloride, 1 g Monopotassium Phosphate, 1 g Dipotassium Phosphate, 1 g Ammonium Nitrate, 0.05 g Ferric Chloride

Suited for the isolation and cultivation of bacteria capable of utilizing hydrocarbons.

Cat. #	Size
1002717	500 g

Candida BCG Agar Base

66 g per Liter

contents/liter: 10 g Peptone, 1 g Yeast Extract, 40 g Dextrose: 15 g Agar, 0.02 g Brom Cresol Green

Used with Neomycin for the primary isolation and identification of *Candida* species.

Cat. #	Size
1002817	500 g

Candida Isolation Agar

41.1 g per Liter

contents/liter: 20 g Agar, 10 g Glucose, 5 g Peptone, 3 g Yeast Extract, 3 g Malt Extract, 0.1 g Aniline Blue

Prepared for the primary detection and cultivation of *Candida albicans* and other members of this species group.

Cat. #	Size
1002917	500 g

Cled Agar

(Cystine Lactose, Electrolyte-Deficient Agar)

36 g per Liter

contents/liter: 4 g Casein Peptone, 3 g Beef Extract, 4 g Gelatin Peptone, 0.128 g L-Cystine, 15 g Agar, 10 g Lactose, 0.02 g Bromthymol Blue

Typically, this medium is used for the growth of *Klebsiella pneumoniae*. However, it also serves well for the cultivation of bacteria which are isolated from urine.

Cat. #	Size
1003017	500 g

Columbia Agar Base

42.5 g per Liter

contents/liter: 10 g Polypeptone, 10 g Biotryptase, 3 g Heart Peptone, 1 g Corn Starch,
5 g Sodium Chloride, 13.5 Agar

Suited for the isolation and cultivation of non-fastidious and fastidious microorganisms from a variety of clinical and non-clinical specimens.

Cat. #	Size	Price
1003117	500 g	

Corn Meal Agar

17g per Liter

contents/liter: 15 g Corn Meal Infusion, 2 g Agar

Developed for the cultivation and maintenance of Chlamydo spores by *Candida albicans*, as well as for the cultivation of phytopathological fungi.

Cat. #	Size
1003217	500 g

Czapek Dox Broth

35 g per Liter

contents/liter: 30 g Sucrose, 3 g Sodium Nitrate, 1g Dipotassium Phosphate, 0.5 g Magnesium Sulfate, 0.5 g Potassium Chloride, 0.01 g Ferrous Sulfate

Prepared for use in cultivating and maintaining a variety of fungal and bacterial species which utilize nitrate (inorganic nitrogen) as their sole nitrogen source.

Cat. #	Size
1003317	500 g

DNase Test Agar

42 g per Liter

contents/liter: 2 g Deoxyribonucleic Acid, 15 g Casein Peptone, 5 g Soy Peptone, 5 g Sodium Chloride, 15 g Agar

Suited for the differentiation of microorganisms on the basis of deoxyribonuclease activity.

Cat. #	Size
1003417	500 g

DNase Test Agar

With Methyl Green

42 g per Liter

contents/liter: 2 g Deoxyribonucleic Acid, 20 g Tryptose, 0.05 g Methyl Green, 5 g Sodium Chloride, 15 g Agar

This preparation selectively differentiates *S. aureus* and *S. marcescens* from other organisms with similar characteristics.

Cat. #	Size
1003517	500 g

EC Medium

37 g per Liter

contents/liter: 20 g Casein Peptone, 5 g Lactose, 1.9 g Bile Salts #3, 4 g Dipotassium Phosphate, 1.5 g Monopotassium phosphate, 5 g Sodium Chloride

Used for the isolation and enumeration of coliform in water, waste-water, shellfish, foods and fecal matter.

Cat. #	Size
1003617	500 g

Egg Yolk Enrichment 50%

Enrichment supplement for microbiological media.

Cat. #	Size
1003749	100 ml

▷ Storage: 0 TO 5°C

EMB Agar

36 g per Liter

contents/liter: 10 g Gelatin Peptone, 5 g Lactose, 5 g Sucrose, 2 g Dipotassium Phosphate, 0.4 g Eosin Y, 0.065 g Methylene Blue, 13.5 g Agar

Developed for the identification and maintenance of gram-negative bacteria.

Cat. #	Size
1003817	500 g

Eugon Agar

45.4 g per Liter

contents/liter: 15 g Casein Peptone, 5 g Soy Peptone, 4 g Sodium Chloride, 0.2 g Sodium Sulfite, 0.7 g L-Cystine, 5.5 g Dextrose, 15 g Agar

Prepared for the cultivation of a broad range of microorganisms, as well as for large scale vaccine production.

Cat. #	Size
1003917	500 g

Eugon Broth

30.4 g per Liter

contents/liter: 15 g Casein Peptone, 5 g Soy Peptone, 4 g Sodium Chloride, 0.2 g Sodium Sulfite, 0.7 g L-Cystine, 5.5 g Dextrose

Well suited for large scale vaccine production and the cultivation of a broad range of organisms.

Cat. #	Size
1004017	500 g

EY Tellurite Enrichment

To be used with Baird-Parker Agar Base (10-015-17) for isolating *S. aureus*. It consists of egg yolk (30%) suspended with potassium tellurite (0.15%).

Cat. #	Size
1004149	100 ml

▷ Storage: 0 TO 5°C

Fluid Thioglycollate Medium

(FTM; Thioglycollate Fluid Medium)

29.5 g per Liter

contents/liter: 15 g Casein Peptone, 0.5 g L-Cystine, 5.5 g Dextrose, 5 g Yeast Extract, 2.5 g Sodium Chloride, 0.5 g Sodium Thioglycollate, 0.001 g Resazurin. 0.750 g Agar

Developed for the cultivation of anaerobic microaerophilic and aerobic microorganisms. It is also well suited for sterility testing of a variety of specimens.

Cat. #	Size
1004217	500 g

GC Agar Base

(GC Medium Base)

7.2 g/100 ml for 2x concentrate

contents/liter: 15 g Polipeptone, 1 g Corn Starch, 4 g Dipotassium Phosphate, 1 g Monopotassium phosphate, 5 g Sodium Chloride, 10 g Agar

Suited for the isolation and cultivation of fastidious bacteria, particularly *Neisseria* and *Haemophilus* species. It is recommended to be used with hemoglobin (cat. no.1004817) or hemoglobin 2% (cat. no. 10049J7), Antimicrobial Vial CNV (cat. no. 10012J6) or CNVT (cat. no. 10013J6), or Supplement VX (cat. no. 1010249).

Cat. #	Size
1004317	500 g

Glycerol

Microbiological Grade

Highly purified for use as a fixative, a component in bacterial preservation media and for the isolation and maintenance of a variety of microorganisms.

Cat. #	Size
1004417	500 g

Heart Infusion Agar

40 g per Liter

contents/liter: 10 g Beef Heart, Infusion from 500 g, 10 g Tryptose, 5 g Sodium Chloride, 15 g Agar

To be used with or without blood for the isolation, cultivation and maintenance of a broad range of microorganisms.

Cat. #	Size
1004517	500 g

Heart Infusion Broth

25 g per Liter

Contents/liter: 10 g Beef Heart, Infusion from 500 g, 10 g Tryptose, 5 g Sodium Chloride

To be used with or without blood for the isolation, cultivation and maintenance of a broad range of microorganisms.

Cat. #	Size
1004617	500 g

Hektoen Enter Agar

75.6 g per Liter

contents/liter: 12 g Meat Peptone, 9 g Bile Salts, 12 g Sucrose, 5 g Sodium Chloride, 1.5 g Ferric Ammonium Citrate, 0.0065 g Bornthymol blue, 3 g Yeast Extract, 12 g Lactose, 2 g Salicin, 5 g Sodium Thiosulphate, 14 g Agar, 0.1 g Acid Fuchsin

Prepared for the selective differential isolation of *salmonella* and *shigella* bacteria from other gram-negative enteric *bacilli*.

Cat. #	Size
1004717	500 g

Hemoglobin

From Beef Blood

Autoclavable preparation
To be used with GC Agar Base.

Cat. #	Size
1004817	500 g

Hemoglobin

2% Solution

To be used with GC Agar Base.

Cat. #	Size
10049J7	6x100 ml

Kligler Iron Agar

52 g per Liter

contents/liter: 20 g Polipeptone, 10 g Lactose, 1 g Dextrose, 5 g Sodium Chloride, 0.5 g Ferric Ammonium Citrate, 0.5 g Sodium Thiosulfate, 15 g Agar, 0.025 g Phenol Red

Well suited for the identification of gram-negative enteric bacilli based on dextrose and lactose fermentation and hydrogen sulfide generation.

Cat. #	Size
1005017	500 g

Lauryl Tryptose Broth

(Lauryl Sulfate Broth)

35.6 g per Liter

contents/liter: 20 g Tryptone (pancreatic digest of casein): 5 g Lactose, 2.75 g Dipotassium Phosphate, 2.75 g Monopotassium Phosphate, 5 g Sodium Chloride, .1 g Sodium Lauryl Sulfate

A preparation for the differential isolation of coliform bacteria.

Cat. #	Size
1005117	500 g

Levine EMB Agar

(Levine Eosin Methylene Blue Agar; Eosin Methylene Blue Agar, Levine)

37.5 g per Liter

contents/liter: 10 g Gelatin Peptone, 10 g Lactose, 2 g Dipotassium Phosphate, 15 g Agar, 0.4 g Eosin, 0.065 g Methylene Blue

Standard methods medium for the isolation, differentiation and cultivation of gram-negative enteric bacteria (bacilli) based on lactose fermentation.

Cat. #	Size
1005417	500 g

Liver Infusion Agar

55 g per Liter

contents/liter: 20 g Beef Liver, Infusion (from 500 g), 10 g Proteose Peptone, 5 g Sodium Chloride, 20 g Agar

Suited for the cultivation and maintenance of anaerobes, *Brucella* species and other pathogenic microorganisms.

Cat. #	Size
1005517	500 g

Liver Infusion Broth

35 g per Liter

contents/liter: 20 g Beef Liver, Infusion (from 500 g), 10 g Proteose Peptone, 5 g Sodium Chloride

Suited for the cultivation and maintenance of pathogenic microorganisms including *Brucella* species.

Cat. #	Size
1005617	500 g

Lowenstein Medium Base

37.2g per Liter

contents/liter: 3.6 g Asparagine, 2.4 g Monopotassium Phosphate, 0.24 g Magnesium Sulfate, 0.6 g Magnesium Citrate, 30 g Potato Flour, 0.4 g Malachite Green

To be used with glycerol (cat. no. 1004417) to prepare various coagulated egg media for the isolation, detection and maintenance of mycoplasma.

Cat. #	Size
1005717	500 g

M17 Agar

55 g per Liter

contents/liter: 5 g Peptone From Soy Broth, 2.5 g Peptone from Meat, 2.5 g Peptone from Casein, 2.5 g Yeast Extract, 5 g Meat Extract, 5 g D-(+)-Lactose, 0.5 g Ascorbic Acid, 19 g Na-b-Glycerophosphate, 0.25 g Magnesium Sulfate, 12.75 g Agar-Agar

Developed for the selective differentiation of mesophilic lactic streptococci organisms.

Cat. #	Size
1005817	500 g

M17 Broth

42.25 g per Liter

contents/liter: 5 g Peptone From Soy Broth, 2.5 g Peptone from Meat, 2.5 g Peptone from Casein, 2.5 g Yeast Extract, 5 g Meat Extract, 5 g D-(+)-Lactose, 0.5 g Ascorbic Acid, 19 g Na-b-Glycerophosphate, 0.25 g Magnesium Sulfate

Suited for the selective differentiation and enumeration of streptococci organisms.

Cat. #	Size
1005917	500 g

MacConkey Agar

50 g per Liter

contents/liter: 17 g Gelatin Peptone, 3 g Polipeptone, 10 g Lactose, 1.5 g Bile Salts #3, 5 g Sodium Chloride, 13.5 g Agar, 0.03 g Neutral Red, 0.001 g Crystal Violet

A preparation for the isolation of enteric bacilli based on the fermentation of lactose.

Cat. #	Size
1006017	500 g

MacConkey Agar

Without Crystal Violet

52 g per Liter

contents/liter: 17 g Gelatin Peptone, 3 g Polipeptone, 10 g Lactose, 5 g Bile Salts, 5 g Sodium Chloride, 12 g Agar, 0.04 g Neutral Red

A less selective preparation than MacConkey Agar permitting the growth of staphylococci and enterococci.

Cat. #	Size
1006117	500 g

MacConkey Agar

Without Salt

47 g per Liter

contents/liter: 20 g Gelatin Peptone, 5 g Bile Salts, 10 g Lactose, 12 g Agar, 0.075 g Neutral Red

This medium restricts the swarming of *Proteus* species which facilitates the isolation of gram-negative bacilli.

Cat. #	Size
1006217	500 g

MacConkey Agar Base

40 g per Liter

contents/liter: 17 g Gelatin Peptone, 3 g Polipeptone, 5 g Sodium Chloride, 1.5 g Bile Salts #3, 0.03 g Neutral Red, 13.5 g Agar, 0.001 g Crystal Violet

Prepared without carbohydrates for coliform fermentation studies.

Cat. #	Size
1006317	500 g

MacConkey Agar CS

For Controlled Swarming

50 g per Liter

contents/liter: 17 g Gelatin Peptone, 3 g Polipeptone, 10 g Lactose, 1.5 g Bile Salts, 5 g Sodium Chloride, 13.5 Agar, 0.03 Neutral Red, 0.001 Crystal Violet

Particularly suited for the isolation of gram-negative enteric bacilli from specimen samples which may have swarming strains of *Proteus* species.

Cat. #	Size	Price
1006417	500 g	

MacConkey Broth

35 g per Liter

contents/liter: 5 g Oxbile, 10 g Lactose, 20 g Gelatin Peptone, 0.01 g Bromocresol

Suited for the selective detection of gram-negative lactose-fermenting coliforms in food and water.

Cat. #	Size	Price
1006517	500 g	

MacConkey Sorbitol Agar

51.5 g per Liter

contents/liter: 20 g Peptone, 15 g Agar, 10 g Sorbitol, 5 g NaCl, 1.5 g Bile Salts #3, 0.03 g Neutral Red, 0.001 g Crystal Violet

A preparation for the isolation and differentiation of enteropathogenic *E. coli* serotypes.

Cat. #	Size	Price
1006617	500 g	

Malt Extract

A media supplement for yeast and fungi (mold) isolation.

Cat. #	Size	Price
1006717	500 g	

Malt Extract Agar

33.6 g per Liter

contents/liter: 12.75 g Malt Extract, 2.75 g Dextrin, 2.35 g Glycerin, 0.78 g Gelatin Peptone, 15 g Agar

Suited for the cultivation and enumeration of yeasts and filamentous fungi (mold) from cosmetics and other samples.

Cat. #	Size	Price
1006817	500 g	

Malt Extract Broth

19.2 g per Liter

contents/liter: 6 g Malt Extract, 6 g Maltose Certified, 6 g Dextrose, 1.2 g Yeast Extract

Suited for the cultivation and enumeration of yeasts and filamentous fungi (mold).

Cat. #	Size	Price
1006917	500 g	

Mannitol Salt Agar

111 g per Liter

contents/liter: 1 g Beef Extract, 75 g Sodium Chloride, 15 g Agar, 10 g Polipeptone, 10 g D-Mannitol, 0.25 g Phenol Red

Prepared for the isolation of pathogenic staphylococci bacteria.

Cat. #	Size
1007017	500 g

Marine Agar 2216

55.1 g per Liter

contents/liter: 5 g Peptone, Bacteriological, 1g Yeast Extract, 19.4 g Sodium Chloride, 8.8 g Magnesium Chloride, 3.24 g Sodium Sulfate, 1.8 g Calcium Chloride, 0.55 g Potassium Chloride, 0.16 g Sodium Bicarbonate, 0.10 g Ferric Citrate, 0.08 g Potassium Bromide, 0.034 g Strontium Chloride, 0.022 g Boric Acid, 0.004 g Sodium Silicate, 0.0024 g Sodium Fluoride, 0.0016 g Ammonium Nitrate, 0.008 g Disodium Phosphate, 5.0 g Agar

Suited for the cultivation and enumeration of heterotrophic marine bacteria.

Cat. #	Size
1007117	500 g

Marine Broth 2216

40 g per Liter

contents/liter: 5 g Peptone, Bacteriological, 1g Yeast Extract, 19.4 g Sodium Chloride, 8.8 g Magnesium Chloride, 3.24 g Sodium Sulfate, 1.8 g Calcium Chloride, 0.55 g Potassium Chloride, 0.16 g Sodium Bicarbonate, 0.10 g Ferric Citrate, 0.08 g Potassium Bromide, 0.034 g Strontium Chloride, 0.022 g Boric Acid, 0.004 g Sodium Silicate, 0.0024 g Sodium Fluoride, 0.0016 g Ammonium Nitrate, 0.008 g Disodium Phosphate

Suited for the cultivation and enumeration of heterotrophic marine bacteria.

Cat. #	Size	Price
1007217	500 g	

Mueller Hinton Agar

(Mueller Hinton Medium)

39 g per Liter

contents/liter: 3 g Beef Infusion, 17.5 g Casein Peptone H, 1.5 g Starch, 17 g Agar

Suited for antimicrobial susceptibility testing of microorganisms by agar diffusion methods. It is also useful for isolating and cultivating *Neisseria meningitidis* and *Moraxella osloensis*.

Cat. #	Size
1007317	500 g

Mueller Hinton Broth

22 g per Liter

contents/liter: 3 g Beef Infusion, 17.5 g Casein Peptone H, 1.5 g Starch

Suited for antimicrobial susceptibility testing of a variety of microorganisms.

Cat. #	Size
1007417	500 g

NIH Thioglycollate Broth

(Thioglycollate Broth NIH)

28.5 g per Liter
contents/liter: 15 g Casein Peptone, 5 g Dextrose, 0.5 g Sodium Thioglycollate, 5 g Yeast, 2.5 g Sodium Chloride, 0.5 g L-Cystine

A U.S.P. alternative for sterility testing of biological specimens which are turbid or cannot be cultivated on Fluid Thioglycollate Medium (cat. no. 1004217) due to its viscosity.

Cat. #	Size
1007517	500 g

Nutrient Agar

23 g per Liter
contents/liter: 5 g Gelatin Peptone, 3 g Beef Extract, 15 g Agar

A general purpose medium used for cultivating a broad variety of microorganisms.

Cat. #	Size
1007617	500 g

Nutrient Agar 1.5%

31 g per Liter
contents/liter: 3 g Beef Extract, 5 g Peptone, 8 g Sodium Chloride, 15 g Agar

For use with blood or supplements for cultivating fastidious microorganisms.

Cat. #	Size
1007717	500 g

Nutrient Agar

pH 6.0

23 g per Liter
contents/liter: 3 g Beef Extract, 5 g Peptone, 15 g Agar

A general purpose medium well suited for the cultivation and maintenance of microorganisms with slight pH requirements.

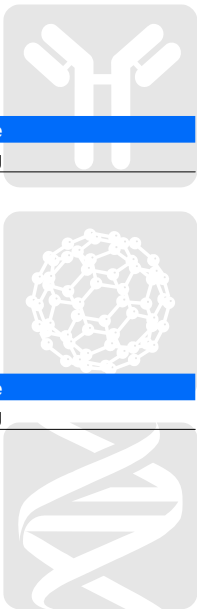
Cat. #	Size
1007817	500 g

Nutrient Broth

8 g per Liter
contents/liter: 5 g Gelatin Peptone, 3 g Beef Extract

A general purpose medium used for cultivating a broad variety of fastidious and non-fastidious microorganisms with non-exacting nutritional requirements.

Cat. #	Size
1007917	500 g



Oatmeal Agar

72.5 g per Liter
contents/liter: 60 g Oatmeal, 12.5 g Agar

Suited for the cultivation of fungi and *actinomyces* species, as well as for macrospore formation.

Cat. #	Size
1008017	500 g

Peptone Iron Agar

36 g per Liter
contents/liter: 15 g Peptone, 5 g Proteose Peptone, 0.5 g Ferric Ammonium Citrate, 1 g Sodium Glycerophosphate, 0.08 g Sodium Thiosulfate, 15 g Agar
Developed for use as an indicator of hydrogen sulfide formation.

Cat. #	Size
1008117	500 g

Peptone Water

15 g per Liter
contents/liter: 10 g Peptone, Bacteriological, 5 g Sodium Chloride

This acts as a minimal medium for cultivating non-fastidious microorganisms to study carbohydrate fermentation and performing the indole test.

Cat. #	Size
1008217	500 g

Plate Count Agar

(Standard Methods Agar)

23.5 g per Liter
contents/liter: 5 g Casein Peptone, 1 g Dextrose, 2.5 Yeast Extract, 15 g Agar

Developed for the preparation of bacteria in water, wastewater, food and dairy products.

Cat. #	Size
1008317	500 g

Plate Count Broth, m

(m TGY Broth)

17 g per Liter
contents/liter: 5 g Yeast Extract, 10 g Tryptone, 2 g Dextrose

For the non-selective determination of bacterial enumeration by membrane filter techniques.

Cat. #	Size
1008417	500 g

Potato Dextrose Agar

(PDA Agar)

39 g per Liter

contents/liter: 4 g Potato Infusion, 20 g Dextrose, 15 g Agar

Suited for the cultivation of yeasts and molds from dairy products and other foods. It may also be used to induce sporulation in many fungi.

Cat. #	Size
1008517	500 g

Potato Dextrose Broth

24 g per Liter

contents/liter: 4 g Potato Infusion, 20 g Dextrose

Suited for the cultivation of a variety of yeasts and molds from dairy products and other foods.

Cat. #	Size
1008617	500 g

Presence-absence Broth

30.8 g per Liter

contents/liter: 10 g Pancreatic digest of casein, 7.5 g Lactose, 5 g Pancreatic digest of gelatin, 3 g Beef Extract, 2.5 g NaCl, 1.375 g K₂HPO₄, 0.05 g Sodium Lauryl Sulfate, 0.0085 g Bromocresol Purple

A "one-step" method for the presumptive identification of coliforms present in water.

Cat. #	Size
1008717	500 g

Pseudomonas Agar F

37 g per Liter

contents/liter: 20 g Polipeptone, 1.5 g Dipotassium Phosphate, 1.5 g Magnesium Sulfate, 14g Agar

Used with glycerol (cat. no. 1004417) for the isolation, cultivation and differentiation of *Pseudomonas aeruginosa* on the basis of phycocyanin (pigment) production.

Cat. #	Size
1008817	500 g

Rose Bengal Agar Base

31.5 g per Liter

contents/liter: 5 g Peptone, soybean, 10 g Dextrose, 1 g Monopotassium Phosphate, 0.5 g Magnesium Sulfate, 0.05 g Rose Bengal, 15 g Agar, 0.5 g Chloramphenicol

Used with Rose Bengal Antimicrobial Supplement C (cat. no. 1010135) for the isolation and enumeration of yeast and mold found in food dairy products and environment.

Cat. #	Size
1008917	500 g

Sabouraud Dextrose Agar

65.6 g per Liter

contents/liter: 10 g Polipeptone, 40 g Dextrose, 15 g Agar, 0.5 g Chloramphenicol

Suited for the cultivation of yeasts, molds and aciduric microorganisms.

Cat. #	Size
1009017	500 g

Sabouraud Dextrose Agar

With Chloramphenicol

65 g per Liter

contents/liter: 10 g Polipeptone, 40 g Dextrose, 15 g Agar

Suited for the cultivation of yeasts and fungi.

Cat. #	Size
1009117	500 g

Salmonella Shigella Agar

(SS Agar)

60 g per Liter

contents/liter: 5 g Beef Extract, 5 g Polypeptone, 10 g Lactose, 8.5 g Bile Salts #3, 8.5 g Sodium Citrate, 8.5 g Sodium Thiosulfate, 1 g Ferric Citrate, 13.5 g Agar, 0.025 g Neutral Red, 0.330 mg Brilliant Green

Suited for the isolation and cultivation of *Salmonella* and some *Shigella* species.

Cat. #	Size
1009217	500 g

Schaedler Agar

41.9 g per Liter

contents/liter: 10 g Trypticasein Soy Broth, 2.5 g Casein Peptone, 2.5 g Meat Peptone, 5 g Dextrose, 5 g Yeast Extract, 13.5 g Agar, 0.4g L-Cystine, 0.01 g Hemin, 3 g Tris (hydroxymethyl) Aminomethane

Developed for the cultivation of both aerobic and anaerobic microorganisms.

Cat. #	Size
1009317	500 g

Schaedler Broth

28.4 g per Liter

contents/liter: 10 g Trypticasein Soy Broth, 2.5 g Casein Peptone, 2.5 g Meat Peptone, 5 g Dextrose, 5 g Yeast Extract, 0.4g L-Cystine, 0.01 g Hemin, 3 g Tris (hydroxymethyl) Aminomethane

Suited for the cultivation of both aerobic and anaerobic microorganisms.

Cat. #	Size
1009417	500 g

Selenite Cystine Broth

23 g per Liter

contents/liter: 5 g Polipeptone, 4 g Lactose, 10 g Sodium Phosphate, 4 g Sodium Selenite, 0.01 g L-Cystine

Suited for the isolation and cultivation of *Salmonella* species from food, water, dairy products and other specimens.

Cat. #	Size
1009517	500 g

Staphylococcus Broth, m

104.5 g per Liter

contents/liter: 10 g Tryptone, 2.5 g Yeast Extract, 2 g Lactose, 10 g Mannitol, 5 g Dipotassium Phosphate, 75 g Sodium Chloride

Suited for the isolation and cultivation of pathogenic enterotoxigenic staphylococci.

Cat. #	Size
1009717	ea

Staphylococcus Medium 110

(Staphylococcus Agar Number 110)

150 g per Liter

contents/liter: 2.5 g Yeast Extract, 30.5 g Gelatin, 10 g D-Mannitol, 5 g Dipotassium Phosphate, 10 g Casein Peptone, 2 g Lactose, 75 g Sodium Chloride, 15 g Agar

Suited for the selective isolation, cultivation and maintenance of *Staphylococcus* species on the basis of mannitol fermentation, pigment production and gelatinase activity.

Cat. #	Size
1009817	ea

Supplement VX

With Reconstituting Fluid

Supplements GC Agar Base (cat. no. 1004317). A sterile concentrate containing essential growth factors V and X.

Cat. #	Size
1010249	ea

TCBS Agar

(Thiosulfate-Citrate-Bile-Sucrose Agar)

88 g per Liter

contents/liter: 5 g Yeast Extract, 5 g Casein Peptone, 5 g Meat Peptone, 10 g Sodium Citrate, 10 g Sodium Thiosulfate, 5 g Bile Salts, 3 g Sodium Cholate, 20 g Sucrose, 10 g Sodium Chloride, 1 g Ferric Citrate, 0.04 g Thymol Blue, 0.04 g Bromothymol Blue, 14 g Agar

Suited for the isolation, cultivation and maintenance of *Vibrio cholerae* and other enteropathic species.

Cat. #	Size
1010317	500 g

Triple Sugar Iron Agar

59.4 g per Liter

contents/liter: 20 g Polipeptone, 5 g Sodium Chloride, 10 g Lactose, 10 g Sucrose, 1 g Dextrose, 0.2 g Ferric Ammonium Sulfate, 0.2 g Sodium Thiosulfate, 0.025 g Phenol Red, 13 g Agar

Designed for the differentiation of gram-negative bacteria (*Enterobacteriaceae*) on the basis of the fermentation of lactose, sucrose, glucose and hydrogen sulfide production.

Cat. #	Size
1010517	500 g

Tryptic Soy Agar

(Soybean Casein Digest Agar; Trypticasein Soy Agar)

59.4 g per Liter

contents/liter: 20 g Polipeptone, 5 g Sodium Chloride, 10 g Lactose, 10 g Sucrose, 1 g Dextrose, 0.2 g Ferric Ammonium Sulfate, 0.2 g Sodium Thiosulfate, 0.025 g Phenol Red, 13 g Agar

Used for the isolation and cultivation of a broad range of fastidious and non-fastidious microorganisms. Also, it may be used for sterility testing. It can be used with or without blood supplement.

Cat. #	Size
1010617	ea

Tryptic Soy Broth

(Soybean Casein Digest Medium)

30 g per Liter

contents/liter: 17g Casein Peptone, 3 g Soy Peptone, 5 g Sodium Chloride, 2.5 g Dipotassium Phosphate, 2.5 g Dextrose

Suited for the cultivation of a broad range of fastidious and non-fastidious microorganisms. It may also be used for the rapid determination of the bacteriological quality of water.

Cat. #	Size
1010717	500 g

Violet Red Bile Agar

(VRB Agar)

51.5 g per Liter

contents/liter: 3 g Yeast Extract, 7 g Gelatin Peptone, 1.5 g Bile Salts #3, 10 g Lactose, 5 g Sodium Chloride, 15 g Agar, 0.03 g Neutral Red, 0.002 g Crystal Violet, 10 g Glucose

Suited for the selective isolation and detection of coliform bacteria in water, food and dairy products.

Cat. #	Size
1010917	500 g

Violet Red Bile Agar

(VRB Agar)

41.5 g per Liter

contents/liter: 3 g Yeast Extract, 7 g Gelatin Peptone, 1.5 g Bile Salts #3, 5 g Sodium Chloride, 15 g Agar, 0.03 g Neutral Red, 0.002 g Crystal Violet, 10 g Glucose

With Glucose

Suited for the selective detection and enumeration of *Enterobacteriaceae* species from food and dairy products.

Cat. #	Size
1011017	500 g

1058

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Violet Red Bile Agar

(VRB Agar)

41.5 g per Liter

contents/liter: 3 g Yeast Extract, 7 g Gelatin Peptone, 1.5 g Bile Salts #3, 10 g Lactose, 5 g Sodium Chloride, 15 g Agar, 0.03 g Neutral Red, 0.002 g Crystal Violet

With Lactose

Suited for the selective detection and enumeration of *Enterobacteriaceae* species from food and dairy products.

Cat. #	Size
1011117	500 g

XLD Agar

(Xylosse Lysine Deoxycholate Agar).

55 g per Liter

contents/liter: 3 g Xylose, 5 g L-Lysine, 7.5 g Lactose, 7.5 g Sucrose, 5 g Sodium Chloride, 3 g Yeast Extract, 0.08 g Phenol Red, 13.5 g Agar, 2.5 g Sodium Desoxycholate, 6.8 g Sodium Thiosulfate, 0.8 g Ferric Ammonium Sulfate

Suited for the isolation and differentiation of enteric pathogens, especially *Shigella* and *Providencia* species present in stool specimens.

Cat. #	Size
1011217	500 g

Media Components and Plating Tools

Yeast Extract-B

A dried and powdered, water-soluble extract of autolysed yeast; rich in B vitamins, amino acids and peptides.

Cat. #	Size
<i>Powder</i>	
3065522	454 g (1 lb)
3065532	1 kg (2.2 lb)

Yeast Extract-B, Granulated

This type of Yeast Extract-B is formed into small granules, making it easier to handle than the fine powdered form.

Cat. #	Size
<i>Granulated Powder</i>	
4023032	1 kg (2.2 lb)
4023042	5 kg (11 lb)

Tryptone-B

Tryptone-B is a dried and powdered pancreatic digest of casein. The bacteriological grade has been chosen for optimum growth of bacteria.

Cat. #	Size
<i>Powder</i>	
1010817	500 g
<i>Capsules</i>	
3066041	5 kg (11 lb)
3066021	454 g (1 lb)

Casein Hydrolysate Enzymatic

NZ-Amine A

Inquire for bulk prices

An enzymatic hydrolysate of whole casein.

Casein hydrolysate enzymatic is a pancreatic hydrolysate of casein. This hydrolysate contains, in the form of mixed amino acids and peptides, all amino acids originally present in casein.

Cat. #	Size
101290	1 lb
	5 lb

Casein Peptone

Casein Peptone, Type I.

Cat. #	Size
<i>Powder</i>	
3066132	1 kg (2.2 lb)

Casamino Acids

Acid hydrolyzed casein; rich in amino acids except tryptophan.

Cat. #	Size
<i>Powder</i>	
3060012	227 g (0.5 lb)
3060022	454 g (1 lb)

Agar-B

Bacteriological grade Agar-B demonstrates a superior ability to promote bacterial colony growth (colony diameter after 24 and 48 hours) and phage growth (plaque diameter and morphology of both M13 and Lambda bacteriophages). Agar-B is supplied as a light, tan-colored, small granular form.

Cat. #	Size
3072031	1 kg (2.2 lb)

Carbon Sources/Sugars

Cat. #	Description	Size
4021002	D-Galactose, Ultra Pure (Powder)	25.0 g
4008012	D-Galactose, Glucose-Free (0.1% glucose)	227 g (0.5 lb)
4008022	D-Galactose, Glucose-Free (0.1% glucose)	454 g (1 lb)
4008032	D-Galactose, Glucose-Free (0.1% glucose)	1 kg (2.2 lb)
4008034	Sterile 20% Galactose, Glucose-Free (0.1% glucose)	500 ml
3055032	Glucose (Dextrose)	1 kg (2.2 lb)
3055544	Sterile 20% Glucose	500 ml
4006022	Maltose	454 g (1 lb)
3068034	Sterile 20% Maltose	100 ml
4061522	D(+) Raffinose Pentahydrate	100 g
4010012	D(+) Raffinose Pentahydrate	227 g (0.5 lb)
4010022	D(+) Raffinose Pentahydrate	454 g (1 lb)
4010032	D(+) Raffinose Pentahydrate	1 kg (2.2 lb)
4010034	Sterile 20% Raffinose	500 ml
4013032	Sucrose	1 kg (2.2 lb)
4020032	D-Sorbitol, Ultra Pure	1 kg (2.2 lb)

Antibiotics

Ampicillin, Sodium Salt

Storage temperature : 0 TO 5°C

CAS number : 69-52-3

Formula : $C_{19}H_{18}N_2O_4SNa$

MW :

Not less than 800 µg/mg

White Powder

non-sterile

Ampicillin is a selection antibiotic effective against most gram negative and gram positive bacteria. It interferes by disrupting the late stages of cell wall synthesis. The recommended working concentration is 2.5 mg/L. Storage: 0 to 5°C.

Cat. #	Product	Size
194526	Ampicillin Sodium Salt, cell culture reagent	5 g 25 g 100 g

Carbenicillin

(α-Carboxybenzylpenicillin)

Disodium Salt

CAS number :

[4800-94-6]

Formula :

 $C_{17}H_{16}N_2O_5SNa_2$

MW :

422.4

Potency:

>650 µg/mg

Crystalline Powder

Cat. #	Size
195092	250 mg 1 g 5 g

▷ Storage: 0 TO 5°C

Tetracycline

Cell Culture Reagent

Hydrochloride

CAS number :

[64-75-5]

Formula :

 $C_{22}H_{24}N_2O_8 \cdot HCl$

MW :

480.9

Not less than 900 µg/mg.

Yellow crystalline powder

Cat. #	Size
194542	1 g 5 g

▷ Storage: 0 °C

Chloramphenicol

Suggested Working Concentration: 5 -20 µg/ml.

CAS Number: 56-75-7

gamma-irradiated

White to Off-white Powder

Formula: $C_{11}H_{12}Cl_2N_2O_5$

MW: 323.1

Chloramphenicol may be used as a selection antibiotic since it interferes with RNA translation by blocking the peptidyltransferase reaction on the 50S ribosomal subunit. The recommended effective working concentration is 5 µg/ml.

Cat. #	Product	Size
194787	Molecular Biology ©	10 mg
	Reagent ©-Irradiated 20 µ©	20 mg

▷ Storage: Room Temperature

G418 Sulfate

Cell Culture Grade

CAS Number: 108321-42-2

the sterile solution should be stored at 0-5°C

Formula: $C_{20}H_{40}N_4O_{10} \cdot 2H_2SO_4$

MW: 692.7

A popular selection antibiotic (also known as Geneticin®) available from MP as a convenient ready-to-use sterile solution or as a Cell Culture grade powder. Storage: 15-30°C before reconstitution; 2-8°C after reconstitution.

Cat. #	Product	Size
158782	Crystalline powder, non-sterile potency: >450 µg/mg, purity: 98% ©	100 mg 250 mg 1 g 5 g
1672546	Sterile solution,	20 ml
1672548	50 mg/ml	50 ml

▷ Storage: 0 to 5°C before reconstitution, 0 to -20°C after reconstitution, Powder: 0 to 5°C, Liquid: 0 to -20°C

Kanamycin Sterile Solution

5 mg/ml

suggested working conc 20 ml/L

Formula: $C_{18}H_{38}N_4O_{11} \cdot H_2SO_4$

MW: 582.6

Kanamycin is an aminoglycoside antibiotic effective against most gram negative and gram positive bacteria and most types of yeast. It interrupts protein synthesis by causing a misreading of the genetic code through action on the 70S ribosome. The effective working concentration is 100 mg/L.

Cat. #	Product	Size
1672048	Sterile solution, 5 mg/ml	50 ml

▷ Storage: 0 to -20°C

Kanamycin Monosulfate, Cell Culture Reagent

Formula: $C_{18}H_{38}N_4O_{11} \cdot H_2SO_4$
 CAS Number: 25389-94-0
 MW: 582.6
 Crystalline
 Potency: 735 µg/mg
 non-sterile
 suggested working conc 100 mg/L

Cat. #	Product	Size
194531	Kanamycin Sulfate, potency: 735 µg/mg, non-sterile	1 g 5 g 25 g

▷ Storage: Room Temperature

Kanamycin Acid Sulfate

Formula: $C_{18}H_{36}N_4O_{11} \cdot 2SO_4$
 CAS Number: 64013-70-3
 MW: 676.6
 Potency: >650 µg/mg

Cat. #	Product	Size
150030	Kanamycin Acid Sulfate, potency: 650 µg/mg, non-sterile	1 g 5 g 25 g

▷ Storage: Room Temperature

IPTG *Isopropylthio-β-galactopyranoside, Ultra-Pure.*

Formula: $C_9H_{18}O_5S$
 CAS Number: 367-93-1
 MW: 238.3
 Storage: 0-5°C
 White powder

Cat. #	Size
4064102	1.0 g
4064112	5.0 g

▷ Storage: 0 to 5°C

Sterile 80% Glycerol *Easy to pipet; excellent for freezing strains.*

Formula: $C_9H_{18}O_5S$
 CAS Number: 367-93-1
 MW: 238.3
 White powder

Cat. #	Size
3055034	100 ml
3055044	500 ml

▶ Storage: 0 to 5°C

X-Gal

5-bromo-4-chloro-3-indolyl-b-D-galactopyranoside, Ultra-Pure.

Formula: $C_{14}H_{15}BrClNO_6$

CAS Number: 7240-90-6

MW:

White Powder

Cat. #	Size
4063102	1.0 g
4063112	5.0 g

▷ Storage: Room Temperature

Roll & Grow® Plating Beads

Safe and easily spread yeast and bacterial cells

- Spread cells in just seconds per plate
- Eliminate hazards of flame and ethanol
- No need for fragile glass "hockey sticks"
- Consistent, even colony distribution
- Sterile and easy to use



Roll & Grow® Plating Beads are used to spread 25-400 µl of bacterial or yeast cells across the surface of an agar plate, providing a safer, faster alternative to the traditional method of plating with a glass rod sterilized with ethanol and flame. Sterile Roll & Grow® Plating Beads are provided in two skirted 50 ml conical tubes. Between six and seven 4 mm glass beads are used per plate for a total of approximately 160 standard 100 mm plates.

Cat. #	Description	Size
5000550	Roll & Grow® Plating Beads, 2 Pack	2 tubes

Replica Plating Apparatus

Made from hardwood, the Replica Plating Apparatus can be used with velvet, gauze, or even paper towels to transfer colonies from plate to plate or plate to filter while retaining colony orientation. The Replica Plating Apparatus and Velvet Squares can be ordered to fit either 100mm or 150mm plates.



Cat. #	Description	Size
5000001	Replica Plating Apparatus	100 mm
5000007	Velvet Pad, 6 Inch Square (Pack of 10)	100 mm
5000004	Replica Plating Apparatus	150 mm
5000009	Velvet Pad, 9 Inch Square (Pack of 10)	150 mm
DOTM001	Replica Plating Apparatus with Velvet Pads	(6 Inch Square)

The introduction of nucleic acids and proteins into eukaryotic cells is an important technique for cellular and molecular biologists. There are a variety of applications that involve the delivery of nucleic acids such as *in vitro* and *in vivo* recombinant protein expression and RNA interference (RNAi) for the inhibition of gene expression. Likewise proteins can be delivered to cells directly for functional studies.

MP Biomedicals offers a variety of transfection reagents that can be matched to any given experimental need for easy and efficient nucleic acid or protein delivery.

In This Chapter:

Liposomal Transfection Reagents.....	1087
<i>in vivo</i> Transfection Reagent.....	1088
siRNA Delivery & Peptide Internalization	1089
Protein Transfection	1090
Related Products	1092

We offer a broad range of gene delivery technologies that provide solutions for any experimental scenario. Simply match your application with the appropriate key technology:

Transfection Application	Key Technologies	Advantages
Robust gene delivery to a wide range of cells	Megafectin™ lipid transfection reagent	• Well documented lipid based transfection mechanism • Stable lyophilized format • Works in the presence of serum
RNA interference	MegaFectin™ transfection reagent Penetratin™ 1 Peptide	• High performance on a broad range of cells • Highly efficient silencing • Stable lyophilized format • Serum compatible • Internalization of active siRNA in multiple cell types
<i>in vivo</i>	<i>in vivo</i> Megafectin™ transfection reagent	• Lipid transfection reagent delivers DNA, RNA, and Oligos to animals • Convenient single use vials eliminate contamination concerns
Peptide and Protein delivery	Chariot™ transfection reagent Penetratin™ 1 Peptide	• Delivers active proteins to eukaryotic cells • Rapid action, assay just two hours after transfection • Simple protocol, just three easy steps • Kit includes β-galactosidase positive control protein • Successful internalization of peptides in all cell lines tested • Mild internalization for high cell survival rate

Liposomal Transfection Reagents

MegaFectin™ Red transfection reagents

- Deliver plasmids, oligos and siRNA with high efficiency
- Are easy to use, requiring no tedious media changes
- Transfect a broad range of cell lines
- Fluorescent visualization of transfected cells

Cationic lipids are a widely used tool for delivering nucleic acid into mammalian and other cells (including insect and protozoa). The efficiency of gene delivery depends on how a particular liposomal formulation interacts with multiple variables. Four factors are known to be critical: cell type, medium composition, type of liposomes used, and DNA structure and sequence (promoter region, tertiary structure, etc) (1). If any of these variables is changed, a different liposome formulation may be required for optimal transfection.

Multiple formulations

3 formulations of MegaFectin™ Red are available to allow identification of the best formulation for a particular cell line:

MegaFectin™ 20: based on DOTAP

MegaFectin™ 40: based on DOTAP/DOPE

MegaFectin™ 60: based on DOTAP/Cholesterol

All formulations of MegaFectin™ Red favor the generation of large liposomes that promote efficient transfection. All three formulations are available as MegaFectin™ Red lipid-fluorophore conjugates that permit FACS sorting or visualization of transfected cells.

MegaFectin™ Starter kit

For rapid and economical identification of the MegaFectin™ Red formulation that results in the most robust transfection possible for a given cell line, trial sizes of the three formulations are available in a starter kit.

Ideal liposome size for transfection

All three MegaFectin™ Red reagents form uniquely large lipoplexes (300-1500 nm size-range) (Figure1) which have been proven to give superior transfection performance (1) when compared to other reagents that form smaller lipoplexes.

Cat#	Description	Size	Qty of DNA delivered	# of transfections*
GDMR020	MegaFectin™ 20 Red	5 x 200 nmol	165 µg	500
GDMR040	MegaFectin™ 40 Red	5 x 200 nmol	165 µg	500
GDMR060	MegaFectin™ 60 Red	5 x 200 nmol	165 µg	500
GDMR246	MegaFectin™ Starter Kit Red	200 nmol of each formulation	100 µg	300

*Number of transfections in 24-well plates.

>Storage: +4°C

Freeze-dried for stability and reproducibility

Each vial of MegaFectin™ contains 200 nmol of freeze-dried reagent. This improves stability until the reagent is used. Stability is a major problem with other cationic lipid reagents that are supplied as liposome suspensions since gradual hydrolysis will reduce the transfection performance of these reagents.

Fluorescent detection

MegaFectin™ Red Reagents permit visualization and FACS sorting of transfected cells following transfection (Figure 2). Maximum excitation wavelength: 565 nm Maximum emission wavelength: 585 nm (red)

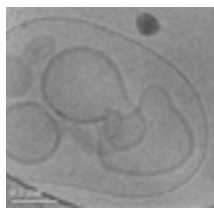
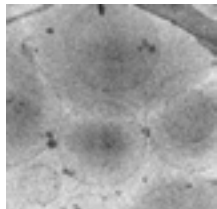


Figure 1:

Electron micrographs of DOTAP/Cholesterol liposomes (left) and DOTAP/Cholesterol/DNA lipoplexes (right) in 5% dextrose medium. Courtesy of Dmitry Simberg, Hebrew University, Jerusalem, Israel.

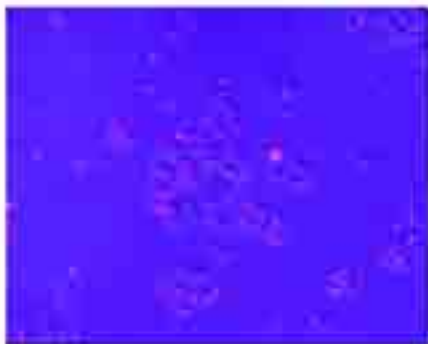


Figure 2:
NIH3T3 cells transfected with MegaFectin™ Red

References:

- (1) Kerner et al. (2001) Biochim. Biophys. Acta 1532,128-136
- (2) Zuidam et al (1999) Biochim. Biophys. Acta 1419, 207-220
- (3) Simberg et al (2001) J Biol. Chem. 276, 47453-47453

in vivo Transfection Reagent

in vivo MegaFectin™

Fluorescently tagged liposomes for in vivo transfection

MegaFectin™ *in vivo* transfection reagent is based on a special DOTAP/Cholesterol lipid formulation offering low toxicity and high transfection efficiency. This reagent is labeled with a red fluorophore for localization studies and can be used in conjunction with GFP and FITC based systems including MP Biomedicals SuperGlo™ GFP and BFP expression plasmids.

in vivo MegaFectin™ has been used to successfully deliver nucleic acids to the cells of numerous different species including mice and macaques.

Maximum Excitation Wavelength of Red Fluorophore: 565 nm Maximum Emission Wavelength of Red Fluorophore: 585 nm

All MegaFectin™ transfection reagents are provided as multiple vials of sterile lyophilized powder. This enhances product stability and avoids the risk of contamination. One vial of reagent is sufficient for the transfection of one mouse. The optimal medium for *in vivo* injection with the DOTAP/Cholesterol lipid formulation is dextrose.

Expression of GFP and co-localization of MegaFectin™ in vivo labeled complexes in mouse lungs



Cat. #	Description	Size	Size*
GDMR0300	<i>In vivo</i> MegaFectin™	5 x 1,5 µmol	5

► Storage: +4°C

* Number of transfections

siRNA, Oligonucleotide and Peptide Internalization

Penetratin™ 1 Peptide

Novel tool for peptide and siRNA delivery

- Internalize peptides, oligonucleotides and siRNA
- Convey coupled molecules directly to the cytoplasm and nucleus of the cell
- Mild internalization procedure ensures high survival rate compared to other methods

Penetratin™ 1 is a patented 16-amino acid peptide corresponding to the third helix of the homeodomain of *antennapedia* protein. This peptide is able to translocate across biological membranes by an energy-independent mechanism (1-3) and has been used successfully to internalize covalently attached peptides (4), oligonucleotides (5) and siRNA (6). Activated Penetratin™ 1 is sold ready for coupling to peptides or oligos containing thiol (-SH) functions. Biotinylated Activated Penetratin™ 1 possesses a biotin group at the C-terminal end allowing the detection of the internalized molecule with an appropriate avidin or streptavidin reagent.

Preparation of Penetratin Conjugates

The peptide, oligonucleotide or siRNA must have a free thiol group available at one end to be coupled directly to Penetratin 1. Coupling is easily accomplished in 2 hours at 37°C.

Cat. #	Description	Size
PENA0500	Activated penetratin 1 peptide	500 µg
PENB0500	Biotinylated Activated penetratin 1 Peptide	500 µg

▷ Storage: -20°C

References

1. Damante G. et al., (1996) EMBO J. 15, 4992-500
2. Dorn A. et al. (1994) Pharmac. Ther. 61,155-183
3. Prochiantz A. (1996) Curr. Opin. Neurobiol. 6, 629-634
4. Derossi D. et al., (1996) J Biol. Chem. 271,18188-18193
5. Brian R et al., (2004) J. Exp. Med 4,547-557
6. Davidson T.J. et al., (2004) J. of Neuroscience. 24 (45), 10040-10046

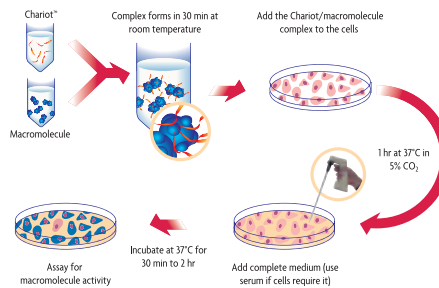
Protein Transfection

Chariot™

Simple, efficient protein delivery system

- Fast and efficient delivery
- Facilitates functional studies in living cells
- Suitable for a wide range of cell lines
- Effective for in- vivo applications
- No need for expression of fusion proteins
- Non-cytotoxic, serum independent

Chariot™ is a novel transfection reagent that eliminates many of the problems encountered with more commonly used procedures for delivering active proteins, peptides and antibodies directly into cells. Chariot™'s revolutionary technology allows quick delivery into a broad range of cell lines, with typical efficiencies between 60-95%. Within two hours post-transfection, live cells can be assayed without the need for fixing. This makes Chariot™ an ideal tool for functional studies, labeling organelles, screening peptide libraries, and studying protein half-lives and transient complementation.



Chariot™ Diagram

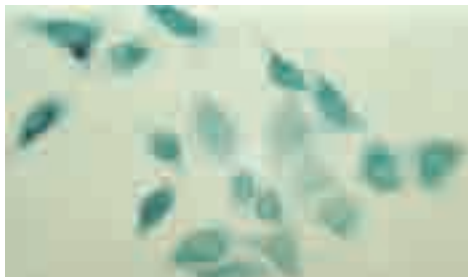
Chariot™ is very easy to use. Simply combine it with your macromolecule, wait for 30 minutes, then add to your cells. Activity can be assayed in as little as 90 minutes post-delivery.

Method of Delivery

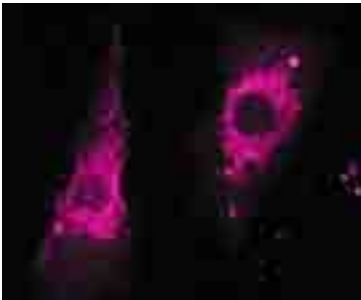
A non-covalent bond is formed between the Chariot™ peptide and the macromolecule of interest. This protects the protein from degradation and preserves its natural characteristics during the transfection process. Upon delivery, the Chariot complex dissociates, allowing release of the protein to the target organelle. Efficient delivery can occur in the presence or absence of serum, and is independent of the endosomal pathway, which can modify macromolecules during internalization. Chariot™ also bypasses the transcription-translation process, thus providing significant savings in time.

Convenient Kit Format

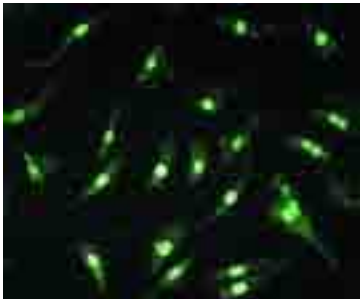
Chariot™ is available in both a 25- and 100-reaction kit format, where a reaction is defined as the amount of reagent required to deliver the β -galactosidase positive control protein to cells in one well of a 6-well plate or in a 35mm plate. Actual number of reactions will vary depending on plate size and type of macromolecule delivered.



One μg of a 119 kDa subunit of β -galactosidase was complexed with Chariot™ that had been resuspended in 20% DMSO for 30 minutes and delivered into HeLa cells in a 12-well plate. Cells were fixed and stained with X-gal 2 hours post-delivery.



Endosome labeling of HS-68 cells using a 1/500 dilution of anti-Lamp 1 antibody. Unfixed cells were observed 2 hours post-delivery.



Chariot was complexed with affluorescently labeled 51-mer nuclear protein at a 20:1 ratio and delivered into HS-68 cells. Unfixed cells were observed 90 minutes post-delivery.

Images courtesy of Dr. Giles Divita, Biophysics Dept., CNRS, Montpellier, France.

Cat. #	Description	Size*
GDSC0025	Chariot™	25 rxn
GDSC0100	Chariot™	100 rxn

Storage: +4°C

*Number of transfections in 6-well plates

Related Products

G418 Sulfate selection reagent

Use G418 to easily select and maintain cells expressing the neomycin resistant gene. G418 sulfate is the most commonly used selection reagent for engineering clonal or stable cell lines.

Cat. #	Size
158782	100 mg
	250 mg
	1 g
	5 g

SuperGlo™ GFP and BFP technologies

Superior green and blue fluorescent expression vectors, proteins and antibodies. SuperGlo™ autofluorescent proteins (AFPs) are engineered versions of wtAFPs. The mutations result in AFPs with:

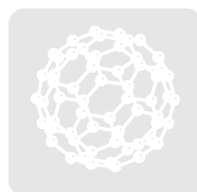
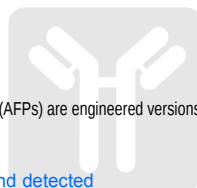
- Single peak excitation and emission spectra allowing both GFP and BFP to be used and detected simultaneously for multi-color reporting or dual-color protein tagging.
- Increased specific autofluorescence

For more information please see Gene Expression section

PhenoIX™ plasmid purification kits:

- Offer a choice of three sizes midi, maxi and giga to fit your needs
- Use unique gravity flow columns for the easiest plasmid prep possible
- Purify transfection ready plasmids

For more information see Nucleic Acid Purification section.



In This Chapter:

Introduction to the Q-mate™ Inducible Expression System	1094
Introduction to SuperGlo™ GFP and BFP	1099
GFP/BFP Vectors	1100

The Q-mate™ Inducible Expression System, offered exclusively by Qbiogene, now part of MP Biomedicals, is repressor-based and designed for the generation of stable mammalian cell lines.

MP Biomedicals offers a wide range of GFP/BFP-vectors, including mammalian expression vectors as well as mammalian cloning vectors expressing the Green Fluorescent Protein (GFP) or the Blue Fluorescent Protein (BFP). In addition, the purified GFP and BFP proteins and the anti-GFP and anti-BFP monoclonal antibodies can be acquired from MP Biomedicals.

One Call

One Source

**A World of
Biotechnology
Reagents**

MP Biomedicals

Serving every industry need - from clinical testing, to specialized areas of research, to supplying large scale quantities of fine chemicals



FastPrep®-24 System

Lyse, Homogenize
& Grind

Fine Chemicals

Custom Manufacturing
& Bulk Quantities



Encapsulated Media

Drop in Water and
Autoclave

Find out more about all of our products

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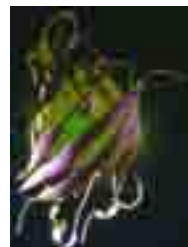


Introduction to SuperGlo™ GFP and BFP

The brightest Green and Blue fluorescent proteins available

SuperGlo™ Green Fluorescent Proteins (sgGFP™) and SuperGlo™ Blue Fluorescent Proteins (sgBFP™)-AutoFluorescent Proteins (AFPs)-are uniquely engineered variants of the green fluorescent protein of the jellyfish *Aequorea victoria*. The modifications to the chromophore sequences in wtGFP have enabled the introduction of brighter and more efficient fluorescent proteins, sgBFP™ and sgGFP™. For licensing information see end of section.

- Universal, real-time tagging of biological molecules
- Non-isotopic
- No substrate required
- Function in almost any fixed or living tissue (GFP does not work in plants)
- Act as reporter molecules in a broad range of organisms
- Intracellular localization and trafficking
- sgGFP™ and sgBFP™ can be used together as dual-color tagging system



Originally isolated⁽¹⁾ from the Pacific North West jellyfish *Aequorea victoria*⁽²⁾, GFP demonstrates unique properties making it an ideal candidate for universal, non-isotopic, real-time tagging of biological molecules in living systems. Several key advantages are conferred by native and engineered AFPs: no substrate is needed, the proteins are very stable and function in virtually any fixed or living cell or tissue (except in plants).

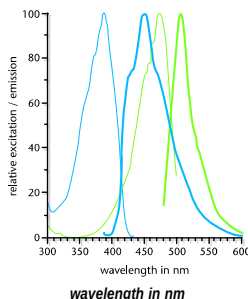
Since its cloning⁽³⁾, the heterologous expression of GFP cDNA has triggered the widespread use of GFP as a reporter molecule for gene expression, protein localization and trafficking studies in a broad variety of organisms^(4,5,6). The particular spectral properties of native GFP have led to its use as a "single-tag system". However, the presence of two excitation peaks for wtGFP has limited its utility in situations where multiple tags are required.

This limitation is overcome with SuperGlo™ Green Fluorescent Protein (sgGFP™) and SuperGlo™ Blue Fluorescent Protein (sgBFP™) which show increased specific autofluorescence and tighter spectral properties with no overlap in their respective excitation and emission spectra. Use of both sgBFP™ and sgGFP™ as reporter genes and/or as fluorescent "tags" allows for simultaneous multi-color reporting in multiparameter analyses whilst avoiding the interference of cellular autofluorescence observed at short wavelengths⁽⁷⁾. Qbiogene's sgGFP™ and sgBFP™ can be used individually or combined to tag different proteins expressed in the same cell (dual-color tagging system), to identify the intracellular localization of recombinant proteins or to study intracellular trafficking⁽⁸⁾.

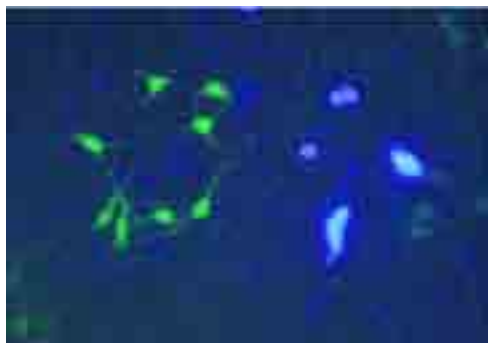
Characteristics of SuperGlo™ GFP and BFP

Excitation and Emission Peaks of AFPs®

	Excitation <u>Maxima (nm)</u>	Emission <u>Maxima (nm)</u>
wtGFP	395 (474)	509
S65T	488	507
sgGFP	474	509
sgBFP	387	450



Graphic representation of the excitation (thin lines) and emission (bold lines) spectra of SuperGlo™ BFP (blue lines) and GFP (green lines).



HEK 293 cells transfected with Qbiogene's sgGFP™ and sgBFP™ are readily visualized by fluorescent microscopy or analyzed by FACS.

References

1. Shimomura O, Johnson FH, and Saiga Y. (1962) Extraction, purification and properties of aequorin, a bioluminescent protein from the luminous hydromedusa, Aequorea. J. Cell. Comp. Physiol. 59: 223-227.
2. Ward WW (1979) Energy transfer processes in bioluminescence. In: Photochem. Photobiol. Rev. 4:1-57, ed. Smith KC. (Plenum, NY)
3. Prasher DC, Eckenrode VK, Ward WW, Pendergast FG, and Cormier MJ (1992) Primary structure of the A. victoria green fluorescent protein. Gene 111: 229-233
4. Cubitt AB, Heim T, Adams SR, Boyd AE, Gross LA, and Tsien TY (1995) Understanding, improving and using green fluorescent proteins. Trends Biochem. 20:448-455
5. Prasher DC. (1995) Using GFP to see the light. Trends Genet. 11: 320-323
6. Ward WW (1981) Properties of the Coelenterate GFPs. In Bioluminescence and Chemiluminescence: Basic Chemistry and Analytical applications. Eds. DeLuca, M. And McElroy, WD. (Academic Press, Inc., NY) pg. 235-242
7. Ormö M, Cubitt AB, Kallio K, Gross LA, Tsien RY, and Remington SJ. (1996) Crystal structure of A. victoria GFP. Science 273:1392-1395
8. Stauber RH, Gaitanaris GA, and Pavlakis GN. (1995) A dual colour screening system in molecular biology: green and blue autofluorescent proteins. Virology 213 :439-449

sgGFP™: SuperGlo™ Green Fluorescent Protein

- Broadest Stoke's shift of all green variants
- Single enhanced excitation peak

Mutations present in sgGFP™:

- F64L: improved solubility, and protein folding at 37°C; more rapid and efficient fluorophore formation
 S65C: a single excitation peak at 474 nm, and emission at 509 nm
 I167T: enhanced excitation peak at 474 nm

Qbiogene's sgGFP™ is the only available GFP with a single enhanced excitation peak at 474 nm and a green fluorescence at ~ 509 nm. All other popular variants have excitation peaks at or near 488 nm. sgGFP™ is the only GFP that has a Stoke's shift that exceeds the minimum of 30 nm recommended for easy visualization and sensitive detection. sgGFP™ can be readily detected in fluorimeters, fluorescent cell sorters (FACS) and by fluorescent microscopes. sgGFP™ is also the best partner for FRET with sgBFP™.

sgBFP™: SuperGlo™ Blue Fluorescent Protein

- Highest quantum yield of blue variants.

Mutations present in sgBFP™:

- F64L: improved solubility, and protein folding at 37°C; more rapid and efficient fluorophore formation
- Y66H: a single excitation peak at 387 nm, and emission at 450 nm
- V163A: improved solubility and protein folding

Qbiogene's sgBFP™ is the perfect partner for sgGFP™. The Y66H mutation generates the spectral shift to a blue emitting variant. The unique combination of the F64L, Y66H and V163A mutations present in sgBFP™ leads to a QY (Quantum Yield) that approaches the QY of the brightest green variants and is 2-3 fold higher than the QY of mutants without S65T. sgBFP™ is also more resistant to photobleaching than other BFPs and its spectral properties make it easy to distinguish from GFP or YFP. sgBFP™ can be readily detected in fluorimeters, FACs and by fluorescent microscopes. Furthermore, the large overlap between the emission peak of sgBFP™ and the excitation peak of sgGFP™ make them perfect partners for FRET.

Purified Recombinant AFP® Proteins

Purified recombinant SuperGlo™ GFP and SuperGlo™ BFP proteins are available. These can be used as standards to calculate expression levels and correlated to relative fluorescence intensities.

Cat. #	Description	Size
AFP5201	rGFP Protein	25 µg
AFP5202	rGFP Protein	100 µg
AFP5101	rBFP Protein	25 µg
AFP5102	rBFP Protein	100 µg

▷ Storage: -20°C

Antibodies for detecting GFP, BFP and other variants of wtGFP

Two monoclonal antibodies (mAb) are offered for the detection of Qbiogene's SuperGlo™ GFP and SuperGlo™ BFP. Both recognize also all other variants. Anti-AFP® mAbs are purified from the supernatant of mouse hybridomas.

The 11E5 mAb, which is a mouse IgG1 monoclonal antibody recognizing GFP and other variants in their denatured form, is ideal for detection in Western analyses. Use of the 11E5 mAb allows detection of as little as 10 ng of GFP using colorimetric methods, and will detect picogram quantities with chemilumi-nescent detection assays. Performing Western blots with the 11E5 mAb allows confirmation of AFP® or AFP®-fusion protein expression at the expected molecular weight.

The 3E6 mAb, an IgG2a antibody recognizing the native form of GFP, can be used for immunoprecipitation, immunocytochemistry, and ELISA assays. Purification of AFP® and AFP®-fusion proteins is possible using either protein A or protein G.

Both antibodies are highly specific for GFP and its variants in both bacterial and mammalian cell extracts, giving strong, clean signals.

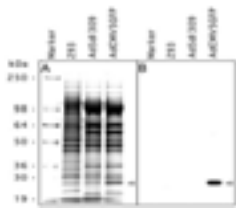


Figure 1:
Analysis of 293A cells infected with AdCMV5-GFP. (A) Coomassie-stained 10% Tris-glycine SDS PAGE and corresponding Western Blot (B). Total protein was extracted 48 hr. post infection, 15 µg total protein loaded per lane. The Western blot was analyzed using mAb 11E5, and a rabbit anti-mouse secondary Ab. (Courtesy of Dr. Bernard Massie, BRI, Montreal)

Cat. #	Description	Application	Size
AFP5001	Anti-AFPmAb11E5	Western	150 µg
AFP5002	Anti-AFP mAb 3E6	Immunoprecipitation, Immunocytochemistry ELISA	150 µg

▷ Storage: -80°C

Strong, Clear Signal

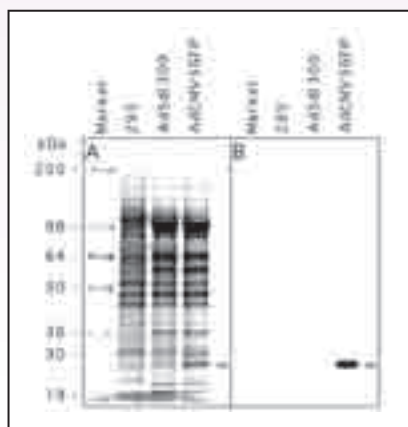
Antibodies for Detecting GFP and Variants

mAb 11E5, Mouse IgG1 Monoclonal Antibody:

- ▶ Recognizes the denatured form of GFP and variants
- ▶ Ideal for Western blots
- ▶ Detects as little as 10 ng of GFP with colorimetric methods
- ▶ Detects picogram quantities in chemiluminescent detection assays

mAb 3E6, Mouse IgG2a Antibody:

- ▶ Recognizes the native form of GFP and variants
- ▶ Ideal for immunoprecipitation, immunohistochemistry and ELISA assay



High specificity gives strong, clean signal in both bacterial and mammalian extracts

Find these products on pages
1101-1104

Online ordering and product information:

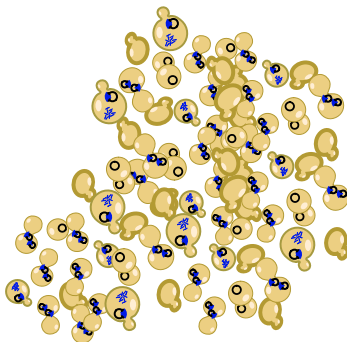
www.mpbio.com

The yeast transformation and purification kits you need are complemented by the exceptional variety of MP Biomedicals Systems yeast media. Take the confusion out of selectively growing your yeast cells by taking advantage of our years of expertise! Our wide range of yeast nitrogen bases, sugars, and amino acid dropout mixtures can be mixed together to form almost any complete media imaginable. Many of these combinations are already available off-the-shelf as pre-mixed powders. Both selective media and general growth media are available for *S. cerevisiae* and *S. pombe*, and all recipes are quantitatively and qualitatively tested before their release.

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Yeast are extremely important organisms for molecular biologists due to their relatively small and accessible genome and to their high sophistication in terms of gene modification, function, and regulation. Many yeast genes have strong homology to those found in mammalian systems, and can be used as valid model systems for many types of mammalian studies.



MP Biomedicals Systems offers a wide range of products for researchers working with either *Saccharomyces cerevisiae* or *Schizosaccharomyces pombe*:

- [Plasmid Transformation Kits](#)
- [Lysis and Purification Kits](#)
- [Growth and Selective Media for *S. cerevisiae*](#)
- [Growth and Selective Media for *S. pombe*](#)
- [Growth Media Components and Plating Tools](#)

Yeast Transformation Kits

EZ-Yeast Transformation Kit

High throughput transformation of yeast cells

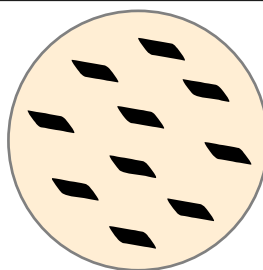
- [Designed for high-throughput requiring lower efficiency](#)
- [No need to make competent cells](#)
- [Simple and fast transformation method with minimal hands-on time](#)

The EZ-Yeast Transformation Kit is designed for high-throughput transformation with efficiencies up to 10^3 transformants per μg plasmid DNA. Perfect for a quick analysis of potentially positive two-hybrid colonies, the EZ-Yeast Transformation Kit does not require fully competent cells prior to transformation. Simply remove a 3-4 mm colony or 0.5 ml overnight culture to a new tube, add vector and carrier DNA, incubate for 30 minutes and plate on selective media.

Kit Components: *EZ-Transformation Solution, Carrier DNA*

Cat. #	Description	Size
2100200	EZ-Yeast Transformation Kit	200 preps

Yeast grown
on agar media
in patches or
overnight culture

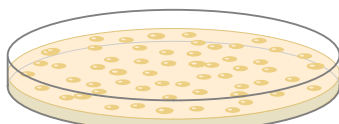


Transfer 3-4mm
size colonies or 500 μ l
of overnight culture to sterile
1.5ml tubes or 96 well plates
containing EZ Trans-
formation solu-
tion



Add carrier DNA
+ bait
or bait + library
vortex to mix
30 min. 42°C

Plate on selective media
and incubate at 30°C



Transformants are
observed after 3 days

Alkali-Cation™ Yeast Transformation Kit



High efficiency transformation of yeast cells

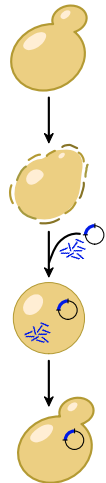
The Alkali-Cation™ Yeast Transformation Kit provides the reagents needed to perform an easy and quick transformation of yeast, while obtaining a large number of transformants. Its ease of use, robustness, and scalability make this the method of choice for the high-efficiency transformation needed in two-hybrid screens. Host cells are made competent by treatment with a lithium/cesium acetate solution. Plasmid DNA is added to the competent cells along with carefully prepared carrier DNA that has been optimized to provide high transformation efficiencies. The Alkali-Cation™ Yeast Transformation Kit has also been successfully used to transform linear DNA into *P. pastoris* for protein expression studies.

Kit Components: TE (pH 7.5), Lithium/Cesium Acetate, Carrier DNA, Histamine, PEG, TE/Cation MIXX, SOS

Cat. #	Description	Size
2200200	Alkali-Cation™ Transformation Kit	250 preps

Alkali-Cation™ Kit

1. Grow yeast to mid-log phase
2. Treat cells with Lithium/Cesium Acetate Solution
3. Introduce plasmid DNA, carrier DNA, histamine, PEG, and TE/CationMIXX
4. Heat shock and plate on regeneration media to allow cell wall reconstruction and growth of transformants



Nucleic Acid Purification Kits

The FastPrep® System is the most versatile, efficient and rapid sample preparation method available today. FastPrep® System products offer a unique means by which virtually any type of sample, no matter how difficult, can be quickly and consistently homogenized within 40 seconds. More information on the FastPrep® Instruments and FastPrep® Kits can be found in The Sample Preparation section.

FastPrep®-24 Instrument

The FastPrep® -24 Instrument is a high-speed benchtop homogenizer offering the ultimate in speed and performance for the lysis of biological samples. Indeed, simultaneous homogenization of up to 24 samples takes place within 40 seconds.

Developed for difficult and resistant samples, the FastPrep®-24 Instrument lyses thoroughly and quickly any tissues and cells and thus allows easy and reproducible isolation of stable RNA, active proteins and full-length genomic DNA.

See the Sample Preparation section for more information.

Cat. #	Description
6002500	FastPrep®-24 Instrument

FastPrep® Instrument

The FastPrep® Instrument can simultaneously lyse up to 12 samples with its patented vertical, angular motion. This rapid, reciprocating "figure-8" is unique to the FastPrep® Instrument, and causes a sample to be pulverized by specialized lysing matrices from multiple directions at once. See The Sample Preparation section for more information.

Cat. #	Description
6001100	FastPrep® FP100A Instrument, 100V
6001120	FastPrep® FP120A Instrument, 120V
6001220	FastPrep® FP220A Instrument, 220V

FastDNA® SPIN Kit

Isolation of genomic DNA from plants, animals, bacteria, yeast, algae, and fungi

The FastDNA® SPIN Kit is used with the FastPrep®-24 or FastPrep® FP120 Instrument to lyse and subsequently isolate DNA from up to 200 mg of almost any sample in less than 30 minutes. Lysing Matrix A and 3 different chaotropic buffers are provided for the homogenization of a wide variety of sample types. DNA is released within 40 seconds, and is purified by a silica-based GENECLAN® SPIN procedure. See The Sample Preparation Section for more information.

Cat. #	Description	Size
6540600	FastDNA® SPIN Kit	100 preps

FastRNA® Pro Red Kit

Isolation of total RNA from yeast and fungi

The FastRNA® Pro Red Kit is designed to efficiently isolate total RNA from yeast and fungi. Using the FastPrep®-24 or FastPrep® FP120 Instrument, up to 10⁹ cells are homogenized by Lysing Matrix C in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications. See The Sample Preparation section for more information.

Cat. #	Description	Size
6035050	FastRNA® Pro Red Kit	50 preps

FastProtein™ Red Matrix

Easy lysis of yeast cells to release recombinant proteins

The FastProtein™ Red Matrix is used with the FastPrep®-24 or FastPrep® FP120 Instrument to reproducibly lyse yeast cells within 40 seconds. Rapid release of recombinant protein saves valuable time during optimization of expression. Information from up to 24 different induction variables can be quickly obtained after one 40 second FastPrep® run followed by electrophoresis. See The Sample Preparation section for more information.

Cat. #	Description	Size
6550600	FastProtein™ Red Matrix (includes 250 ml YBB)	50 x 2 ml tubes
6550700	FastProtein™ Red Matrix (includes 500 ml YBB)	100 x 2 ml tubes

Yeast RPM® Kit

Isolation of plasmid DNA from yeast and bacterial cells

- No phenol/chloroform extractions
- No ethanol precipitation
- Proven GENECLAN® GLASSMILK® technology
- Plasmid DNA isolated from yeast or bacterial cells in less than 30 minutes

The Yeast RPM® Kit allows isolation of plasmid DNA from both yeast and bacterial cells. It uses a GLASSMILK® purification process in conjunction with SPIN modules to increase yield and achieve optimal DNA quality. The isolated DNA can be used for screening and transformations. The Yeast RPM® Kit can also be used to isolate plasmid DNA from bacterial cells. The dual nature of this kit makes it the perfect choice for screening of two-hybrid transformants.

Kit Components: Yeast Lysing Matrix, Alkaline Lysis Solution, Neutralizing Solution, GLASSMILK® Spin Buffer, Wash Solution Concentrate, SPIN Filters, Catch Tubes, Pre-Lysis Buffer

Cat. #	Description	Size
2069400	Yeast RPM® Kit	100 preps

Whole Cell Yeast PCR Kit

Quickly release DNA from yeast cells for PCR analysis

- No phenol/chloroform extraction
- One-hour incubation releases DNA
- High throughput screening of yeast colonies

The Whole Cell Yeast PCR Kit is designed to release PCR-ready DNA from yeast colonies or liquid cultures. The tough yeast cell wall is permeabilized enzymatically and the resulting cell suspension is used directly in the PCR reaction to obtain reproducible results without first purifying the DNA.

Kit Components: Enzyme Mixx, Enzyme Buffer, Control Yeast BIO 96, Control Actin PCR Primer Set

Cat. #	Description	Size
2016200	Whole Cell Yeast PCR Kit	200 preps

Yeast Cell Lysis Kit

Enzymatic digestion of yeast cell walls prior to traditional DNA purification procedures

The Yeast Cell Lysis Kit contains the necessary reagents for digestion of the yeast cell wall in preparation for efficient lysis with the GNOME® DNA Isolation Kit. It can also be used prior to other traditional DNA purification kits in which reagents alone are not sufficient to lyse yeast cell walls.

Kit Components: Yeast Suspension Buffer, Yeast Enzyme Enhancer, Spheroplast Indicating Solution, Spheroplast Control Solution, Yeast Enzyme Salts, Spheroplasting Enzyme Solution, Spheroplasting Enzyme Mixx

Cat. #	Description	Size
2015600	Yeast Cell Lysis Kit	100 preps

Yeast Lytic Enzymes

YEAST LYTIC ENZYME

From *Arthrobacter luteus*

Lytic Activity: 5000 units/g

This enzyme catalyzes the lysis of yeast cells and hydrolyzes glucose polymers with β -1,3-linkages. It is useful for preparing yeast spheroplasts.

Unit Definition: One unit will produce a $\odot A_{800}$ of 0.001 per minute at pH 7.5 and 25°C using a suspension of brewers yeast as substrate in a 3 ml reaction mixture.

Cat. #	Size
360951	5 g

► Storage: 0 TO 5°C

ZYMOLYASE 20T

From *Arthrobacter luteus*

Lytic Activity: 20,000 units/g

This is a highly purified preparation which effectively lyses cell walls of viable yeast cells.

Unit Definition: The amount of activity causing a decrease in A_{800} of 30%.

Cat. #	Description	Size
320921		1 g

► Storage: 0 TO 5°C

ZYMOLYASE 100T

From *Arthrobacter luteus*

Lytic Activity: 100,000 units/g

This is a highly purified preparation which effectively lyses cell walls of viable yeast cells.

Unit Definition: The amount of activity causing a decrease in A_{800} by 30%.

Cat. #	Description	Size
320931		500 mg
320932		250 mg

► Storage: 0 TO 5°C

Growth Media

MP Biomedicals is well known for providing high-quality growth media in a variety of formulations for every molecular biologist. We specialize in formulations for yeast and bacterial genetics, and offer more than a thousand recipes and variations.'

Each product is subjected to extensive quantitative testing, and is Molecular Biology Certified™ through qualitative, molecular biology based tests such as cell density and plasmid yield. Amino acid dropout compositions are further certified by HPLC analysis.



Wide variety of pre-mixed media formulations

Choose from an incredible variety of pre-mixed media formulations for working with *S. cerevisiae* and *S. pombe*. General growth media formulations include YPD/YEPD, YEP, YE and YES mixtures. Both synthetic and minimal defined media formulations are also available. If your experiment requires even more specialization, we can easily make a custom formulation from our Molecular Biology Certified™ raw materials.

Convenient packaging formats

MP Biomedicals is the only source for encapsulated growth media. The ultimate in ease and convenience, our patented media capsules eliminate the waste, inaccuracies, and mess associated with weighing out bulk powder. Simply drop the capsules in water and autoclave! Pre-mixed powders are also available in single-use pouches or in larger bottles and drums. Liquid media, pre-poured plates, and custom packaging options are also available. Our most popular sizes are listed here, but larger bulk sizes are often available or can be created for you. Please ask your Customer Service Representative for details!

Molecular Biology Certified™ for guaranteed quality

All MP Biomedicals Yeast Growth Media is made following strict, commercial manufacturing guidelines and Good Laboratory Practice (GLP). We provide accurate homogeneous mixtures every time for successful and reproducible experiments. Media formulations are Molecular Biology Certified™ through extensive quality control testing. Each lot exceeds standards for qualitative and quantitative assays of solubility, color, clarity, pH, and culture confluency, in addition to growth/function assays appropriate to the respective strain.

Growth Media for *Saccharomyces cerevisiae*

YEP Broth

30 g (30 Capsules) per Liter

Contents/L: 20 g Peptone, 10 g Yeast Extract-Y, pH 6.5 at 30°C

YEP Broth is YPD (YEPD) without dextrose and is used as a base for making a variation of YPD with an alternate carbon source. Add 38 ml glycerol per liter YEP Broth or Agar base to make YEP-glycerol (YEPG). Glycerol is a non-fermentable carbon source and respiratory deficient mutants will not grow on YPEG.

Cat. #	Size
Powder	
4004032	1 kg (2.2 lb)
Capsules	
4004031	1kg (2.2 lb)
4004041	5 kg (11 lb)

YPD (YEPD) Broth

50 g (50 Capsules or 10 Large Capsules) per Liter

Contents/L: 20 g Peptone-Y, 10 g Yeast Extract-Y, 20 g dextrose, pH 6.5 at 30°C

Cat. #	Size
Powder	
4001022	454 g (1 lb)
4001032	1kg (2.2 lb)
4001042	5 kg (11lb)
4001052	15 kg (33 lb)

Pouches

4001065	10x0.5 L
4001075	10 x 1.0 L

Capsules

4001021	454 g (1 lb)
4001031	1 kg (2.2 lb)

Large Capsules

4001036	1 kg (2.2 lb)
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Sterile Solution

4001034	1.0 L
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YPD (YEPD) Agar



Cat. #	Size
Powder	
4001222	454 g (1 lb)
4001232	1 kg (2.2 lb)
4001252	15 kg (33 lb)
Pouches	
4001265	10 x 0.5 L Pouches
4001275	10 x 1.0 L Pouches
Capsules	
4001231	1 kg (2.2 lb)

Synthetic Defined
Formulations for *S. cerevisiae*

MP Biomedicals offers hundreds of formulations of amino acid dropout media through combinations of our Complete Supplement Mixture (CSM), 5 carbon sources, and 9 variations of YNB. If you need amino acid ratios different from those found in our CSM mixtures, we also offer Hollenberg Supplement Mixture (HSM), Brent Supplement Mixture (BSM) and Synthetic Complete/Hopkins Mixture (SC).

As shown in the table, synthetic defined media can be ordered in a number of ways:

- ▶ Order a complete SD or SDA
- ▶ Order a dropout Base (DOB) or Dropout Base with Agar (DOBA) plus the appropriate amino acid supplement mixture (CSM)
- ▶ Order a Yeast Nitrogen Base (YNB), a carbon source, the appropriate amino acid supplement mixture (CSM), and agar if desired.
- ▶ Order all raw materials separately

Synthetic Defined Yeast Media: Formulas To Grow By!

Synthetic defined yeast media includes all necessary components for selective growth of *Saccharomyces cerevisiae*. MP Biomedicals offers synthetic defined broth (SD) and synthetic defined agar (SDA) in a variety of formats for flexibility and convenience. Use the following table to navigate through the world of yeast media choices!

SDA = SD recipe + 17 g/L of Agar; DOBA = DOB recipe + 17 g/L of Agar

<u>Salts</u>	<u>mg/Liter</u>	Yeast Nitrogen Base (YNB)	Dropout Base (DOB)	Synthetic Defined Media (SD)
Potassium Phosphate, monobasic	1000			
Magnesium Sulfate	500			
Sodium Chloride	100			
Calcium Chloride	100			
<u>Vitamins</u>	<u>mg/Liter</u>			
Biotin	0.002			
Pantothenate, calcium	0.4			
Folic Acid	0.002			
Inositol	2			
Niacin	0.4			
PABA	0.2			
Pyridoxine, HCl	0.4			
Riboflavin	0.2			
Thiamine, HCl	0.4			
<u>Trace Elements</u>	<u>mg/Liter</u>			
Boric Acid	0.5			
Copper Sulfate				
Potassium Iodide	0.1			
Ferric Chloride	0.2			
Manganese Sulfate	0.4			
Sodium Molybdate	0.2			
Zinc Sulfate	0.4			
<u>Nitrogen</u>	<u>g/Liter</u>			
Ammonium Sulfate	5			
<u>Sugar</u>	<u>g/Liter</u>			
Dextrose	20			
<u>CSM Mixture</u>	<u>mg/Liter</u>			
Adenine	10			
L-Arginine HCl	50			
L-Aspartic Acid	80			
L-Histidine HCl	20			
L-Isoleucine	50			
L-Leucine	100			
L-Lysine HCl	50			
L-Methionine	20			
L-Phenylalanine	50			
L-Threonine	100			
L-Tryptophan	50			
L-Tyrosine	50			
Uracil	20			
L-Valine				

SD and SDA Formulations

Ordering your selective media as an SD or SDA is the easiest option. Each SD or SDA formulation contains the appropriate CSM-based amino acid mixture and 1.7 g/liter YNB, 5 g/liter Ammonium Sulfate, and 20 g/liter Dextrose. SDA formulations also contain 17 g/L Agar Y.

Ordering Information for Synthetic Defined (SD) Media

Single Dropout Formulation

Cat. #	Description	Size
4810085	SDMedium-HIS	100 x 0.5 L Pouches
4811065	SDMedium-LEU	10 x 0.5 L Pouches
4811075	SDMedium-LEU	10 x 1.0 L Pouches
4812065	SDMedium-TRP	10 x 0.5 L Pouches
4812075	SDMedium-TRP	10 x 1.0 L Pouches
4812095	SDMedium-TRP	100 x 1.0 L Pouches
4813065	SDMedium-URA	10 x 0.5 L Pouches
4813085	SDMedium-URA	100 x 0.5 L Pouches
4813075	SDMedium-URA	10 x 1.0 L Pouches
4813095	SDMedium-URA	100 x 1.0 L Pouches

Double Dropout Formulations

Cat. #	Description	Size
4823065	SD Medium-LEU-TRP	10 x 0.5 L Pouches
4823075	SD Medium-LEU-TRP	10 x 1.0 L Pouches
4823095	SD Medium-LEU-TRP	100 x 1.0 L Pouches
4824065	SD Medium-LEU-URA	10 x 0.5 L Pouches

Triple Dropout Formulations

Cat. #	Description	Size
4830065	SD Medium-HIS-LEU-TRP	10 x 0.5 L Pouches
4830075	SD Medium-HIS-LEU-TRP	10 x 1.0 L Pouches
4830095	SD Medium-HIS-LEU-TRP	100 x 1.0 L Pouches

4+ Dropout Formulations

Cat. #	Description	Size
4842065	SD Medium-ADE-HIS-LEU-TRP	10 x 0.5 L Pouches
4842075	SD Medium-ADE-HIS-LEU-TRP	10 x 1.0 L Pouches
4840065	SD Medium-HIS-LEU-TRP-URA	10 x 0.5 L Pouches
4840075	SD Medium-HIS-LEU-TRP-URA	10 x 1.0 L Pouches
4840095	SD Medium-HIS-LEU-TRP-URA	100 x 1.0 L Pouches

Ordering Information for Synthetic Defined Agar (SDA) Media

Single Dropout Formulations

Cat. #	Description	Size
4811165	SDA Medium-LEU	10 x 0.5 L Pouches
4811175	SDA Medium-LEU	10 x 1.0 L Pouches
4812165	SDA Medium-TRP	10 x 0.5 L Pouches
4812185	SDA Medium-TRP	100 x 0.5 L Pouches
4812175	SDA Medium-TRP	10 x 1.0 L Pouches
4813165	SDA Medium-URA	10 x 0.5 L Pouches
4813175	SDA Medium-URA	10 x 1.0 L Pouches

Double Dropout Formulations

Cat. #	Description	Size
4822175	SDA Medium-HIS-URA	10 x 1.0 L Pouches
4823185	SDA Medium-LEU-TRP	100 x 0.5 L Pouches
4823175	SDA Medium-LEU-TRP	10 x 1.0 L Pouches

Triple Dropout Formulations

Cat. #	Description	Size
4830165	SDA Medium-HIS-LEU-TRP	10 x 0.5 L Pouches
4830175	SDA Medium-HIS-LEU-TRP	10 x 1.0 L Pouches
4833175	SDA Medium-LEU-TRP-URA	10 x 1.0 L Pouches

4 Dropout Formulations

Cat. #	Description	Size
4842165	SDA Medium-ADE-HIS-LEU-TRP	10 x 0.5 L Pouches
4842185	SDA Medium-ADE-HIS-LEU-TRP	100 x 0.5 L Pouches
4840165	SDA Medium-HIS-LEU-TRP-URA	10 x 0.5 L Pouches
4840185	SDA Medium-HIS-LEU-TRP-URA	100 x 0.5 L Pouches
4840175	SDA Medium-HIS-LEU-TRP-URA	10 x 1.0 L Pouches

Dropout Base (DOB) and Dropout Base with Agar (DOBA)

If you do not want to purchase a pre-made SD or SDA medium, or the combination of amino acids you need is not available, you can easily create your own SD or SDA by combining a DOB or DOBA with the appropriate amino acid mixture.

DOB Medium

26.7g/liter

Contents/liter: 1.7 g YNB, 5g Ammonium Sulfate, 20 g Dextrose

Cat. #	Description	Size
Powder		
4025012		227 g (0.5 lb)
4025022		454 g (1 lb)
4025032		1 kg (2.2 lb)
4025042		5 kg (11lb)

DOBA Medium

43.7g/liter

Contents/liter: DOB, 17g Agar-Y

Cat. #	Description	Size
Powder		
4026032		1kg (2.2 lb)
4026042		5 kg (11lb)

DOB 2% Galactose (glucose-free)

26.7g/liter

Contents/liter: 1.7 g YNB, 5 g Ammonium Sulfate, 20 g Galactose

Cat. #	Size
Powder	
4025522	454 g (1 lb)

DOBA 2% Galactose (glucose-free)

43.7 g/liter

Contents/liter: DOB, 2% Galactose, 17 g Agar-Y

Cat. #	Size
Powder	
4026522	454 g (1 lb)

DOB w/ Succinate

40 g/liter; use with HSM amino acid mix

Contents/liter: 1.7 g YNB, 5 g Ammonium Sulfate, 33.3 g Succinate

Cat. #	Size
Powder	
4025612	227 g (0.5 lb)

DOB 2% Raffinose (glucose-free)

26.7 g/liter

Contents/liter: 1.7 g YNB, 5 g Ammonium Sulfate, 20 g Raffinose

Cat. #	Size
Powder	
4025712	227 g (0.5 lb)
4025732	1kg (2.2 lb)

DOB 2% Galactose, 1% Raffinose

36.7 g/liter

Contents/liter: 1.7 g YNB, 5 g Ammonium Sulfate, 20 g Galactose, 10 g Raffinose

Cat. #	Size
Powder	
4025912	227 g (0.5 lb)
4025922	454 g (1lb)
4025932	1 kg (2.2 lb)

DOBA 2% Galactose, 1% Raffinose

53.7 g/liter

Contents/L: DOB 2% Galactose, 1% Raffinose, 17 g Agar-Y

Cat. #	Size
Powder	
4026912	227 g (0.5 lb)
4026932	1 kg (2.2 lb)

Yeast Nitrogen Base (YNB) Formulations

To make your own synthetic defined yeast media, start with the YNB of your choice, add a carbon source, the appropriate amino acids, and agar if necessary.

YNB w/o Ammonium Sulfate

1.7 g per liter

Contents/L: 1.7 g YNB (see below)

SALTS

	mg/liter
potassium phosphate, monobasic	1000
magnesium sulfate	500
sodium chloride	100
calcium chloride	100

VITAMINS

	mg/liter
biotin	0.002
pantothenate, calcium	0.4
folic acid	0.002
inositol	2
niacin	0.4
PABA	0.2
pyridoxine, HCl	0.4
riboflavin	0.2
thiamine, HCl	0.4

TRACE ELEMENTS

	mg/liter
boric acid	0.5
copper sulfate	0.04
potassium iodide	0.1
ferric chloride	0.2
manganese sulfate	0.4
sodium molybdate	0.2
zinc sulfate	0.4
TOTAL	1705.844

YNB w/o Ammonium Sulfate

Cat. #	Size
Powder	
4027012	227 g (0.5 lb)
4027022	454 g (1 lb)
4027032	1 kg (2.2 lb)

YNB w/ Ammonium Sulfate

6.7 g per liter

Contents/L: 1.7 g YNB, 5 g Ammonium sulfate

Cat. #	Size
4027512	227 g (0.5 lb)
4027522	454 g (1lb)
4027532	1 kg (2.2 lb)
4027542	5 kg (11 lb)

YNB Variations

Cat. #	Description	Size/Volume
4027112	YNB w/o Ammonium Sulfate, w/o Copper Sulfate, w/o Ferric Chloride (Powder)	227 g (0.5 lb)
4027412	YNB w/Ammonium Sulfate, w/o Inositol (Powder)	227 g (0.5 lb)
4027812	YNB w/Ammonium Sulfate, w/o Phosphates, w/o Sodium Chloride (Powder)	227 g (0.5 lb)
4029622	YNB w/o Ammonium Sulfate, w/o Potassium Phosphate (Powder)	454 g (1lb)
4030512	YNB w/o Ammonium Sulfate, w/o Folic Acid, w/o Riboflavin (Powder)	227 g (0.5 lb)
4030612	YNB w/Ammonium Sulfate, w/o Vitamins (Powder)	227 g (0.5 lb)
4030712	YNB w/Ammonium Sulfate, w/o hiamine HCl (Powder)	227 g (0.5 lb)

YNB Trace Elements

1.84 mg/per liter

Contents/L: see recipe on previous page

Cat. #	Size
4048012	184 mg

AMINO ACID SUPPLEMENT MIXTURES

MP Biomedicals offers three types of amino acid supplement mixtures, available in both complete and dropout formulations:

Complete Supplement Mixture (CSM)

The formulation for CSM has been time tested as a dropout supplement for virtually all strains of *S. cerevisiae*.

Brent Supplement Mixture (BSM)

For use with the Interaction Trap two-hybrid system. Add to DOB and DOBA with dextrose, raffinose or galactose as the carbon source.

Synthetic Complete ("Hopkins") Supplement Mixture (SC)

SC is also known as Hopkins Mixture [F. Spencer et. al. Methods: Companion to ME 5:173 (1993)].

Component	CSM (mg/liter)	BSM (mg/liter)	SC (mg/li)
Adenine	10*	40	21
L-Alanine			85.6
L-Arginine HCL	50	20	85.6
L-Asparagine			85.6
L-Aspartic Acid	80	100	85.6
L-Cysteine HCL			85.6
Glutamine			85.6
L-Glutamic Acid		100	85.6
Glycine			85.6
L-Histidine HCL	20	20	85.6
Myo-Inositol			85.6
L-Isoleucine	50	300	85.6
L-Leucine	100	60	173.4
L-LysineHCL	50	30	85.6
L-Methionine	20**	20	85.6
Para-Aminobenzoic Acid (PABA)		8.6	
L-Phenylalanine	50	50	85.6
L-Proline			85.6
L-Serine		375	85.6
L-Threonine	100**	200	85.6
L-Tryptophan	50	40	85.6
L-Tyrosine	50	30	85.6
Uracil	20	20	85.6
L-Valine	140	150	85.6
Total	790	1555	2000.6

*Minimum quantity for healthy growth and yet optimized to promote red color in certain adenine auxotrophs. CSM formulations are available that contain 20 or 40 mg/liter adenine.

**80 mg/liter ofDL Homoserine is substituted for L-Threonine in mixtures where L-Methionine is dropped out.

Complete Supplement Mixture (CSM)

Complete Formulations

Cat. #	Description	Size
4500012	CSM	10 g
4500022	CSM	100 g

Single Dropout Formulations (Powder)

Cat. #	Description	Size
4510012	CSM-ADE	10 g
4510022	CSM-ADE	100 g
4510112	CSM-ARG	10 g
4510122	CSM-ARG	100 g
4510312	CSM-HIS	10 g
4510322	CSM-HIS	100 g
4510512	CSM-LEU	10 g
4510522	CSM-LEU	100 g
4511422	CSM-LEU w/40 mg/L ADE	100 g
4510612	CSM-LYS	10 g
4510622	CSM-LYS	100 g
4510712	CSM-MET	10 g
4510722	CSM-MET	100 g
4511012	CSM-TRP	10 g
4511022	CSM-TRP	100 g
4512522	CSM-TRP w/20 mg/L ADE	100 g
4511212	CSM-URA	10 g
4511222	CSM-URA	100 g
4512322	CSM-URA w/20 mg/L ADE	100 g
4512722	CSM-URA w/40 mg/L ADE	100 g

Double Dropout Formulations

Cat. #	Description	Size/Volume
4520012	CSM-LEU-TRP	10 g
4520022	CSM-LEU-TRP	100 g
4520112	CSM-HIS-TRP	10 g
4520122	CSM-HIS-TRP	100 g
4520212	CSM-LEU-URA	10 g
4520222	CSM-LEU-URA	100 g
4520722	CSM-LEU-URA w/40 mg/L ADE	100 g
4520312	CSM-HIS-URA	10 g
4520322	CSM-HIS-URA	100 g
4520412	CSM-HIS-LEU	10 g
4520422	CSM-HIS-LEU	100 g
4520512	CSM-TRP-URA	10 g
4520522	CSM-TRP-URA	100 g
4520812	CSM-MET-URA	10 g
4520822	CSM-MET-URA	100 g
4521522	CSM-ADE-LEU	100 g
4523122	CSM-ARG-URA	100 g

Triple Dropout Formulations

Cat. #	Description	Size
4530112	CSM-HIS-LEU-TRP	10 g
4530122	CSM-HIS-LEU-TRP	100 g
4530522	CSM-HIS-LEU-TRP w/40 mg/L ADE	100 g
4530812	CSM-HIS-TRP-URA	10 g
4530822	CSM-HIS-TRP-URA	100 g
4530912	CSM-LEU-TRP-URA	10 g
4530922	CSM-LEU-TRP-URA	100 g
4531012	CSM-ADE-TRP-URA	10 g
4531212	CSM-HIS-LEU-URA	10 g
4531222	CSM-HIS-LEU-URA	100 g

4+ Dropout Formulations

Cat. #	Description	Size
4540012	CSM-HIS-LEU-TRP-URA	10 g
4540022	CSM-HIS-LEU-TRP-URA	100 g
4540412	CSM-ADE-HIS-LEU-TRP	10 g
4540422	CSM-ADE-HIS-LEU-TRP	100 g
4550022	CSM-HIS-LEU-LYS-TRP-URA	100 g
4550122	CSM-ADE-HIS-LEU-TRP-URA	100 g
4550412	CSM-HIS-LEU-MET-TRP-URA	10 g
4550422	CSM-HIS-LEU-MET-TRP-URA	100 g
4560122	CSM-ADE-HIS-LEU-LYS-TRP-URA	100 g
4560222	CSM-ADE-HIS-LEU-MET-TRP-URA	100 g

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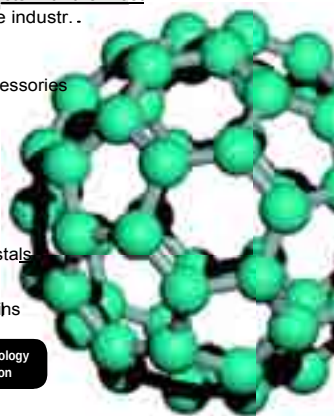
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Other Amino Acid Mixtures (HSM, BSM, SC)

BSM Dropout Formulation (Powder)

Cat. #	Description	Size
4740012	BSM-HIS-LEU-TRP-URA	25.0 g

SC Complete Formulations (Powder)

Cat. #	Description	Size
4400022	SC Amino Acid Mixture	30.0 g

SC Dropout Formulations (Powder)

Cat. #	Description	Size
4410022	SC-ADE	30.0 g
4410222	SC-HIS	30.0 g
4410322	SC-LEU	30.0 g
4410422	SC-LYS	30.0 g
4410522	SC-TRP	30.0 g
4410622	SC-URA	30.0 g
4420122	SC-TRP-URA	30.0 g
4420322	SC-CYS-MET	30.0 g
4420522	SC-HIS-LEU	30.0 g
4420622	SC-LEU-TRP	30.0 g
4420922	SC-LEU-URA	30.0 g
4430022	SC-HIS-LEU-TRP	30.0 g
4430122	SC-HIS-LEU-URA	30.0 g
4430222	SC-HIS-TRP-URA	30.0 g
4430322	SC-LEU-TRP-URA	30.0 g
4440022	SC-HIS-LEU-TRP-URA	30.0 g
4440122	SC-ADE-HIS-LEU-TRP	30.0 g
4460122	SC-ADE-HIS-LEU-LYS-TRP-URA	30.0 g
4480022	SC-ADE-ARG-HIS-LEU-MET-THR-TRP-URA	30.0 g

Growth Media for *Schizosaccharomyces pombe*

Schizosaccharomyces pombe has different nutritional needs than *S. cerevisiae*, and MP Biomedicals offers over a dozen of these special growth and minimal defined media formulations. All *S. pombe* media is certified thiamine-free for nmt1 promoter studies.

Standard Growth Formulations for *S. pombe*

Note: Many of the *S. pombe* media formulations contain 30 g/L dextrose. To prevent or minimize caramelization of glucose, mix powdered media in water for 5 minutes to completely dissolve glucose and autoclave at 15 psi for 10-15 minutes or 10 psi for 20 minutes, or filter sterilize.

YE Broth

35 g per liter
Contents/L: 5 g Yeast Extract-Y, 30 g Dextrose

Cat. #	Size
4101032	1 kg (2.2 lb)

YES Broth (Vegetative Growth)

35 g per liter
Contents/L: YE, 1x SP Supplements (50 mg each ADE, HIS, LEU, LYS, URA)

Cat. #	Size
Powder	
4101522	454 g (1 lb)
4101532	1kg (2.2 lb)

YES Agar (Vegetative Growth)

Cat. #	Size
Powder	
4101732	1 kg (2.2 lb)

Minimal Defined Formulations for *S. pombe*

EMM Broth

32.2 g per liter
Contents/L: 3 g phthalic Acid K⁺, 2.2 g Na₂HPO₄, 5 g NH₄Cl, 20 g dextrose. **Salts:** 1.05 g MgCl₂·6H₂O, 14.7mgCaCl₂·2H₂O, 1 g KCl, 0.04 g Na₂SO₄. **Vitamins:** 1 mgpantothenic acid, 10 mg nicotinic acid, 10 mg myo-inositol, 1 mg biotin. **Minerals:** 0.5 mg boric acid, 0.4 mg MnSO₄, 0.4 mg ZnSO₄·7H₂O, 0.2 mg FeCl₂·6H₂O, 40 µg molybdc acid, 0.1 mg K 40 µg CuSO₄·5H₂O, 1 mg citric acid [Nurse, P. (1975) Nature 256,547; Mitchison, M. (197 in Meth. in Cell Physiol. 4,131 (Prescott, D.M., ed.) Acad Press, NY].

Cat. #	Size
Powder	
4110012	227 g (0.5 lb)
4110022	454 g (1 lb)
4110032	1kg (2.2 lb)
4110042	5 kg (11lb)
Pouches	
4110075	10 x 1.0 L Pouches
4110095	100 x 1.0 L Pouches

EMM Agar

49.2 g per liter

Contents/L: EMM, 17 g Agar-Y

Cat. #	Size
Powder	
4110232	1kg (2.2 lb)

EMM w/o Dextrose

12.35 g per liter

Cat. #	Size
Powder	
4110112	227 g (0.5 lb)
4110132	1kg (2.2 lb)

EMM w/o Nitrogen

27 g per liter

Contents/L: EMM minus NH₄Cl, Glutamate

Cat. #	Size
Powder	
4110712	227 g (0.5 lb)

Media Components and Plating Tools

Yeast Extract-B

A dried and powdered, water-soluble extract of autolysed yeast; rich in B vitamins, amino acids and peptides.

Cat. #	Size
Powder	
3065522	454 g (1lb)
3065532	1 kg (2.2 lb)

Peptone-Y

Casein peptone optimized for yeast media formulations.

Cat. #	Size
Powder	
4018522	454 g (1 lb)
4018532	1 kg (2.2 lb)
4018542	5 kg (11lb)

Agar-Y

Superior grade for yeast cloning, growth and spheroplast regeneration.

Cat. #	Size
Powder	
4019012	227 g (0.5 lb)
4019022	454 g (1lb)
4019032	1kg (2.2 lb)

Agar-YP

Purified agar optimum for yeast colony growth.

Cat. #	Size
Powder	
4019522	454 g (1lb)
4019532	1kg (2.2 lb)

Single Amino Acids

Cat. #	Description	Size
4060012	L-Adenine	10 g
100190	L-Adenine	1 g
100190	L-Adenine	25 g
100190	L-Adenine	100 g
100190	L-Adenine	1 kg
4060112	L-Arginine HCl	10 g
100743	L-Arginine-HCl	100g
100743	L-Arginine-HCl	500g
100743	L-Arginine-HCl	1kg
4060212	L-Aspartic Acid	10 g
100809	L-Aspartic Acid	500 g
100809	L-Aspartic Acid	1 kg
100809	L-Aspartic Acid	5 kg
4060312	L-Histidine	10 g
101957	L-Histidine	100 g
101957	L-Histidine	500 g
101957	L-Histidine	1 kg
4060412	L-Isoleucine	10 g
102092	L-Isoleucine	25 g
102092	L-Isoleucine	100 g
102092	L-Isoleucine	1 kg
4060512	L-Leucine	10 g
102158	L-Leucine	25 g
102158	L-Leucine	100 g
102158	L-Leucine	1 kg
102158	L-Leucine	5 kg
4060612	L-Lysine HCl	10 g
102218	L-Lysine HCl	500 g
102218	L-Lysine HCl	1 kg
102218	L-Lysine HCl	5 kg
4060712	L-Methionine	10 g
102291	L-Methionine	25 g
102291	L-Methionine	100 g
102291	L-Methionine	500 g
102291	L-Methionine	1 kg
4060812	L-Phenylalanine	10 g
102623	L-Phenylalanine	25 g
102623	L-Phenylalanine	100 g
102623	L-Phenylalanine	250 g
102623	L-Phenylalanine	500 g
102623	L-Phenylalanine	1 kg
4060912	L-Threonine	10 g
194753	L-Threonine	25 g
194753	L-Threonine	100 g
4061012	L-Tryptophan	10 g
103151	L-Tryptophan	25 g
103151	L-Tryptophan	100 g
103151	L-Tryptophan	500 g

Cat. #	Description	Size
4061112	L-Tyrosine	10 g
103183	L-Tyrosine	50 g
103183	L-Tyrosine	100 g
103183	L-Tyrosine	500 g
4061212	Uracil	10 g
103204	Uracil	100 g
103204	Uracil	1 kg
4061312	L-Valine	10 g
104760	L-Valine	25 g
104760	L-Valine	100 g
104760	L-Valine	500 g
4061612	L-Serine	10 g
102873	L-Serine	25 g
102873	L-Serine	100 g
102873	L-Serine	5 g
4061412	L-Glutamic Acid	10 g
101793	L-Glutamic Acid	25 g
101793	L-Glutamic Acid	100 g
101793	L-Glutamic Acid	1 kg
100281	L-Alanine	5g
100281	L-Alanine	25g
100794	L-Asparagine	25 g
100794	L-Asparagine	100 g
100794	L-Asparagine	500 g
100794	L-Asparagine	1 kg
101806	L-Glutamine	5 g
101806	L-Glutamine	100 g
101806	L-Glutamine	250 g
101806	L-Glutamine	500 g
101806	L-Glutamine	1 kg
102052	L-Myo-Inositol	50 g
102052	L-Myo-Inositol	100 g
102052	L-Myo-Inositol	500 g
102052	L-Myo-Inositol	1 kg
102569	p-Aminobenzoic Acid	1 g
102569	p-Aminobenzoic Acid	25 g
102569	p-Aminobenzoic Acid	100 g
102569	p-Aminobenzoic Acid	500 g
102730	L-Proline	25 g
102730	L-Proline	100 g
102730	L-Proline	1 kg

Carbon Sources/Sugars

Cat. #	Description	Size
4008012	D-Galactose, Glucose-Free (0.1% glucose)	227 g (0.5 lb)
4008022	D-Galactose, Glucose-Free (0.1% glucose)	454 g (1lb)
4008032	D-Galactose, Glucose-Free (0.1% glucose)	1kg (2.2 lb)
4008034	Sterile 20% Galactose, Glucose-Free (0.1% glucose)	500 ml
3055032	Glucose (Dextrose)	1kg (2.2 lb)
3055544	Sterile 20% Glucose	500 ml
4006022	Maltose	454 g (1lb)
3068034	Sterile 20% Maltose	100 ml
4061522	D(+) Raffinose Pentahydrate	100 g
4010012	D(+) Raffinose Pentahydrate	227 g (0.5 lb)
4010022	D(+) Raffinose Pentahydrate	454 g (1lb) 352.92
4010032	D(+) Raffinose Pentahydrate	1kg (2.2 lb)
4010034	Sterile 20% Raffinose	500 ml

Cat. #	Description	Size
4013032	Sucrose	1kg (2.2 lb)
4020032	D-Sorbitol, Ultra Pure	1kg (2.2 lb)

5-FOA (5-Fluoroorotic Acid)

Add to media when working with yeast to select for Ura⁻. Ura⁺ cells will not grow in the presence of 1 mg/ml 5-FOA. [Boeke, J.D., et al. (1987) Meth. Enzymol. 154, 164]. Slightly soluble in water.

Cat. #	Size
4066102	1.0 g

3-AT

3-amino-1,2,4-triazole is a competitive inhibitor of the HIS3 gene product. When 3-AT is added to yeast media (1-10 mM) it will limit histidine biosynthesis and growth; used in some two-hybrid screens to "fine tune" leaky expression of the HIS3 reporter gene.

Cat. #	Size
4061722	50 g

X-GAL

5-bromo-4-chloro-3-indolyl- β -D-galactosidase, Ultra-Pure

Cat. #	Size
4063102	1.0 g
4063112	5.0 g

IPTG

Isopropylthio- β -galactosidase, Ultra-Pure

Cat. #	Size
4064102	1.0 g
4064112	5.0 g

Biotin

Cat. #	Size
4065022	400 mg

Adenine Hemisulfate Salt

Cat. #	Size
4014522	10 g

Sterile 80% Glycerol

Easy to pipet; excellent for freezing strains.

Cat. #	Size
3055034	100 ml
3055044	500 ml

Roll & Grow® Plating Beads

Safely and easily spread yeast and bacterial cells

- Spread cells in just seconds per plate
- Eliminate hazards of flame and thano
- No need for fragile glass "hockey stick"
- Consistent, even colony distribution
- Sterile and easy to use



Roll & Grow® Plating Beads are used to spread 25-400 µl of bacterial or yeast cells across the surface of an agar plate, providing a safer, faster alternative to the traditional method of plating with a glass rod sterilized with ethanol and flame. Sterile Roll & Grow® Plating Beads are provided in two skirted 50 ml conical tubes. Between six and seven 4 mm glass beads are used per plate for a total of approximately 160 standard 100 mm plates.

Cat. #	Description	Size
5000550	Roll & Grow® Plating Beads, 2 Pack	2 tubes

Replica Plating Apparatus

Made from hardwood, the Replica Plating Apparatus can be used with velvet, gauze, or even paper towels to transfer colonies from plate to plate or plate to filter while retaining colony orientation.

The Replica Plating Apparatus and Velvet Squares can be ordered to fit either 100 mm or 150 mm plates.



Cat. #	Description	Size
5000001	Replica Plating Apparatus	100 mm
5000007	Velvet Pad, 6 Inch Square (Pack of 10)	100 mm
5000004	Replica Plating Apparatus	150 mm
5000009	Velvet Pad, 9 Inch Square(Pack of 10)	150 mm
DOTM001	Replica Plating Apparatus with Velvet Pads (6 Inch Square)	10/pk.



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Growth Medium for Plant Tissue Culture

Components	Murashige & Skoog Basal Salts (g/L)	Gamborg's B5 Basal Salts (g/L)	Chu's N6 Basal Salts (g/L)
Macronutrient Salts			
Ammonium Nitrate	1.650000	n/a	n/a
Ammonium Sulfate	n/a	0.13400	0.463000
Calcium Chloride Anhydrous	0.332020	0.113240	0.125330
Magnesium Sulfate Anhydrous	0.180700	0.122090	0.090370
Potassium Nitrate	1.900000	2.500000	2.830000
Potassium Phosphate monobasic	0.170000	n/a	0.400000
Micronutrient Salts			
Boric Acid	0.006200	0.003000	0.001600
Cobalt Chloride-6H ₂ O	0.000025	0.000025	n/a
Cupric Sulfate Anhydrous	0.000025	0.000025	n/a
Ferrous Sulfate-7H ₂ O	0.027800	0.027800	0.027850
Manganese Sulfate-H ₂ O	0.016900	0.010000	0.003330
Molybdic Acid Sodium Salt-2H ₂ O	0.000250	0.000250	n/a
Na ₂ -EDTA-2H ₂ O	0.037260	0.037300	0.037250
Potassium Iodide	0.000830	0.000750	0.000800
Zinc Sulfate-7H ₂ O	0.008600	0.002000	
Total	4.331 g/L	2.950 g/L	3.981 g/L
	Murashige & Skoog Vitamins (g/L)	Gamborg's B5 Vitamins (g/L)	Chu's N6 Vitamins (g/L)
Glycine	0.002000	n/a	0.002000
myo-Inositol	0.100000	0.100000	n/a
Nicotinic acid	0.000500	0.001000	0.000500
Pyridoxine-HCl	0.000500	0.001000	0.000500
Thiamine-HCl	0.000100	0.010000	0.001000
Total	0.1031 g/L	0.112 g/L	0.004 g/L
	Murashige & Skoog Complete Medium w/Agar (g/L)	Gamborg's B5 Complete Medium w/Agar (g/L)	Chu's N6 Complete Medium w/Agar (g/L)
	Basal Salts Vitamins and:	Basal Salts Vitamins and:	Basal Salts Vitamins and:
Sucrose	30	20	20
Agar	8	8	8



Murashige & Skoog Formulations

Murashige & Skoog Basal Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
2623120	macro- and micronutrients and vitamins	10x1 L
2623122		1x10 L

Murashige & Skoog Basal Medium With Gamborg's Vitamins

Storage: 0 TO 5°C

Cat. #	Description	Size
2623220	macro- and micronutrients and Gamborg vitamins	10x1 L
2623222		1x10 L

Murashige & Skoog Basal Salt Mixture

Storage: 0 TO 5°C

Cat. #	Description	Size
2623020	macro- and micronutrients	10x1 L
2623022		1x10 L

Murashige & Skoog Micronutrient Stock Solution (10x)

Storage: 0 TO 5°C

Cat. #	Description	Size
2624726	micronutrients	1 L
2624754		500 ml

Murashige & Skoog Macronutrient Stock Solution (10x)

Storage: 0 TO 5°C

Cat. #	Description	Size
2624626	macronutrients	1 L
2624654		500 ml

Murashige & Skoog Modified Basal Salt Mixture

Storage: 0 TO 5°C

Cat. #	Description	Size
2622920	macro- and micronutrients,	10x1 L
2622922	modified by eliminating NH ₄ , NO ₃ , and KNO ₃	1x10 L

Murashige & Skoog Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
2610020	without sucrose, IAA,	10x1 L
2610022	kinetin and agar	1x10 L
2610024		1x50 L

Murashige & Skoog Plant Salt Mixture

Storage: 0 TO 5°C

Cat. #	Description	Size
2633020	without agar	10x1 L
2633022		1x10 L
2633024		1x50 L

Murashige & Skoog Vitamin Mixture (1000x) Powder

Storage: 0 TO 5°C

Cat. #	Description	Size
26248NO	Use at a concentration of	250 ml
2624849	1ml/L medium	100 ml

Murashige & Skoog Modified Vitamin Mixture (1000x) Powder

Storage: 0 TO 5°C

Cat. #	Description	Size
26250NO	Use at a concentration of	250 ml
2625049	1ml/L medium	100 ml

Murashige & Skoog Modified Vitamin Solution (1000x)

Storage: 0 TO 5°C

Cat. #	Description	Size
2625149	Use at a concentration of 1ml/L medium	100 ml

Murashige & Skoog Vitamin Mixture (1000x) Solution

Cat. #	Description	Size
2624949	Use at a concentration of 1ml/L medium	100 ml

Murashige & Skoog Modified Basal Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
2623320	macro- and micronutrients,	10x1 L
2623322	modified with the addition of thiamine, myo-inositol, and adenine hemisulfate	1x10 L

Murashige & Skoog Modified Basal Medium With Boric Acid

Storage: 0 TO 5°C

Cat. #	Description	Size
2623420	macro- and micronutrients,	10x1 L
2623422	modified with the addition of boric acid and alpha-naphthaleneacetic acid	1x10 L

Murashige & Skoog Modified Basal Medium With Kinetin

Storage: 0 TO 5°C

Cat. #	Description	Size
2623520	Macro- and micronutrients, modified with the addition of	10x1 L
2623522	boric acid, alpha-naphthaleneacetic acid, and kinetin. Also known as Murashige and Skoog Multiplication Medium C	1x10 L

Murashige & Skoog Modified Basal Medium With 2iP

Storage: 0 TO 5°C

Cat. #	Description	Size
2623620	Macro- and micronutrients,	10x1 L
2623622	modified with the addition of 2iP, adenine hemisulfate. Also known as Murashige Begonia Multiplication Medium.	1x10 L

Murashige & Skoog Modified Basal Medium With 2iP & IAA

Storage: 0 TO 5°C

Cat. #	Description	Size
2623720	Macro- and micronutrients,	10x1 L
2623722	modified with the addition of 2iP, adenine hemisulfate, and IAA. Also known as Murashige and Skoog Shoot Multiplication Medium A.	1x10 L

Gamborg's B5 Media Formulations

Gamborg's Basal Salt Mixture

Storage: 0 TO 5°C

Cat. #	Description	Size
2621620	macro- and micronutrients	10x1 L
2621622		1x10 L

Gamborg's B-5 Basal Salt Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
2621520	macro- and micronutrients and vitamins	10x1 L
2621522		1x10 L

Gamborg's Vitamin Mixture (1000x) Powder

Storage: 0 TO 5°C

Cat. #	Description	Size
2621449	Use at a concentration of 1 mL medium.	100 ml

Gamborg's Vitamin Mixture (1000x) Solution

Storage: 0 TO 5°C

Cat. #	Description	Size
2621349	Includes the vitamins as described by Gamborg, et al. , 1968. Use at a concentration of 1 mg/L medium.	100 ml

Gamborg's B5 Complete Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
5101114	(Salts, Vitamins, Sucrose)	500 ml

Gamborg's B5 Complete Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
5101125	(Salts, Vitamins, Sucrose)	1L Pouch

Gamborg's B5 Complete Agar

Storage: 0 TO 5°C

Cat. #	Description	Size
5101225	(Salts, Vitamins, Sucrose, Agar)	1L Pouch

Chu's N6 Media Formulations

Chu N6 Basal Salt Mixture

Storage: 0 TO 5°C

Cat. #	Description	Size
2620420	macro- and micronutrients	10x1 L
2620422		1x10 L

Chu N6 Basal Salt Medium With Vitamins

Storage: 0 TO 5°C

Cat. #	Description	Size
2620520	macro- and micronutrients and vitamins	10x1 L
2620522		1x10 L

Chu N6 Vitamin Solution(1000x)

Storage: 0 TO 5°C

Cat. #	Description	Size
2620649	Use at a concentration of 1 mL medium.	100 ml

Chu's N6 Complete Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
5102114	(Salts, Vitamins, Sucrose)	500 ml

Chu's N6 Complete Medium

Storage: 0 TO 5°C

Cat. #	Description	Size
5102125	(Salts, Vitamins, Sucrose)	1L Pouch

Chu's N6 Complete Agar

Storage: 0 TO 5°C

Cat. #	Description	Size
5102225	(Salts, Vitamins, Sucrose, Agar)	1L Pouch

Growth Medium for *Agrobacterium*

Agrobacterium Medium

Storage: Room Temperature

16.5gperliter

Contents/L: 5 g beef extract, 5 g peptone-Y, 5 g sucrose, 1 g yeast extract-B, 0.5 g

MgSO₄•7H₂O

Cat. #	Size
Powder	
3301012	227 g (0.5 lb)

Agrobacterium Medium Agar

Storage: Room Temperature

31.5 g per liter

Contents/L: *Agrobacterium* Medium, 15gAgar-B

Cat. #	Size
Powder	
3301212	227 g (0.5 lb)

Other Plant Cell Culture Media

Anderson's Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Anderson, 1978, 1980.

Cat. #	Size
2620020	10x1 L
2620022	1x10 L

Cape Sundew/Venus Fly Trap Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients, vitamins, and plant growth regulators required for the multiplication of carnivorous plants.

Cat. #	Size
2620120	10x1 L
2620122	1x10 L

Carrot Callus Initiation Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients, vitamins, and plant growth regulators required to initiate carrot callus from pith tissue.

Cat. #	Size
2620220	10x1 L
2620222	1x10 L

Carrot Shoot Development Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients, vitamins, and plant growth regulators required to initiate shoot development from carrot callus.

Cat. #	Size
2620320	10x1 L
2620322	1x10 L

DCR Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Gupta and Durzan, 1985.

Cat. #	Size
2620720	10x1 L
2620722	1x10 L

DKW Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Driver and Kuniyuki, 1984, and McGranahan, et al., 1987.

Cat. #	Size
2620920	10x1 L
2620922	1x10 L

DKW Basal Salt Mixture with 10.0g/l Sucrose

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Driver and Kuniyuki, 1984, and McGranahan, et al., 1987. With 10g/L sucrose.

Cat. #	Size
2621020	10x1 L
2621022	1x10 L

DKW Basal Salt Mixture with 30.0g/l Sucrose

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Driver and Kuniyuki, 1984 and McGranahan, et al., 1987. With 30g/L sucrose.

Cat. #	Size
2620820	10x1 L
2620822	1x10 L

Eriksson's Vitamin Solution (1000x)

Storage: 0 TO 5°C

Contains the vitamins as described by Eriksson, 1965. Use at a concentration of 1 ml/L medium.

Cat. #	Size
2621149	100 ml

Ferrous Sulfate/Chelate Stock Solution

Storage: 0 TO 5°C

Includes concentrations of ferrous sulfate and ethylenediaminetetraacetic acid as described by Murashige and Skoog, 1962.

Cat. #	Size
2621226	1 L
2621254	500 ml

Gressoff and Doy Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Gresshoff and Doy, 1974.

Cat. #	Size
2621720	10x1 L
2621722	1x10 L

Heller's Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Heller, 1953.

Cat. #	Size
2621920	10x1 L
2621922	1x10 L

Hoagland's Modified Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Hoagland and Arnon, 1950.

Cat. #	Size
2621820	10x1 L
2621822	1x10 L

Hosta Initiation Multiplication Medium

Storage: 0 TO 5°C

Stage I/II Hosta Medium. Includes the macro- and micronutrients as described by Murashige and Skoog, 1962. Modified with 2.01 mg/L 0.1 6-Benzylaminopurine, 160.0 mg/L adenine hemisulfate, 500.0 mg/L Casein Hydrolysate, and 0.5 mg/L NAA. Contains sucrose, glycine, agar, sodium phosphate, potassium phosphate, myo-inositol, and thiamine HCl.

Cat. #	Size
2622020	10x1 L
2622022	1x10 L

Hosta Multiplication Medium

Storage: 0 TO 5°C

Stage II Hosta Medium. Includes the macro- and micronutrients as described by Murashige and Skoog, 1962. Modified with 0.1 mg/L 0.1 6-Benzylaminopurine, 160.0 mg/L adenine hemisulfate, 500.0 mg/L Casein Hydrolysate, and 0.5 mg/L NAA. Contains sucrose, glycine, agar, sodium phosphate, potassium phosphate, myo-inositol, and thiamine HCl.

Cat. #	Size
2622120	10x1 L
2622122	1x10 L

Hosta Rooting Medium

Storage: 0 TO 5°C

Stage III Hosta Medium. Includes the macro- and micronutrients as described by Murashige and Skoog, 1962. Modified with 0.1 mg/L 0.1 6-Benzylaminopurine, 500.0 mg/L Casein Hydrolysate, and 0.5 mg/L NAA. Contains sucrose, glycine, agar, sodium phosphate, potassium phosphate, myo-inositol, and thiamine HCl.

Cat. #	Size
2622220	10x1 L
2622222	1x10 L

Knudson C Orchid Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Knudson, 1946.

Cat. #	Size
2622322	1x10 L

Lindemann's Modified Orchid Basal Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Lindemann, et al., 1970.

Cat. #	Size
2622420	10x1 L
2622422	1x10 L

Linsmaier and Skoog Basal Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Linsmaier and Skoog, 1964. Also known as Murashige and Skoog Medium with Minimal Organics.

Cat. #	Size
2622520	10x1 L
2622522	1x10 L

Lloyd and McCown's Woody Plant Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Lloyd and McCown, 1981.

Cat. #	Size
2622620	10x1 L
2622622	1x10 L

Lloyd and McCown's Wpm Micronutrient Mixture

Storage: 0 TO 5°C

Includes the micronutrients as described by Lloyd and McCown, 1981.

Cat. #	Size
2622720	10x1 L
2622722	1x10 L

Malmgren's Modified Terrestrial Orchid Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients, sucrose, agar, and organic constituents as described by Malmgren, 1996.

Cat. #	Size
2622820	10x1 L
2622822	1x10 L

Murashige African Violet/ Gloxinia Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Murashige.

Cat. #	Size
2623820	10x1 L
2623822	1x10 L

Murashige Begonia Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients, vitamins, and plant growth regulators recommended for the multiplication of Begonia.

Cat. #	Size
2624020	10x1 L
2624022	1x10 L

Murashige BC Potato Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Murashige.

Cat. #	Size
2623920	10x1 L
2623922	1x10 L

Murashige Cattaleya Orchid Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Murashige and Skoog, 1962.

Cat. #	Size
2624120	10x1 L
2624122	1x10 L

Murashige Fern Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Murashige and Skoog, 1962.

Cat. #	Size
2624220	10x1 L
2624222	1x10 L

Murashige Gerbera Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Murashige and Skoog, 1962.

Cat. #	Size
2624320	10x1 L
2624322	1x10 L

Murashige Kalanchoe Multiplication Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Murashige and Skoog, 1962.

Cat. #	Size
2624420	10x1 L
2624422	1x10 L

NB Basal Medium

Storage: 0 TO 5°C

Includes macronutrients as described by Chu, 1975 and the micronutrients and vitamins as described by Gamborg, et al., 1968.

Cat. #	Size
2625220	10x1 L
2625222	1x10 L

Nitsch and Nitsch Basal Salt Mixture

Storage: 0 TO 5°C

Includes macro- and micronutrients as described by Nitsch and Nitsch, 1969.

Cat. #	Size
2625320	10x1 L
2625322	1x10 L

Nitsch and Nitsch Vitamin Mixture (1000x) Powder

Storage: 0 TO 5°C

Includes vitamins as describe by Nitsch and Nitsch, 1969. Protect from light.

Cat. #	Size
26254NO	250 ml
2625449	100 ml

Nitsch and Nitsch Vitamin Solution (1000x)

Storage: 0 TO 5°C

Includes vitamins as described by Nitsch and Nitsch, 1969. Protect from light.

Cat. #	Size
2625549	100 ml

Orchid Maintenance Medium

Storage: 0 TO 5°C

Includes macro- and micronutrients, MES, peptone, sucrose, and activated charcoal.

Cat. #	Size
2625720	10x1 L
2625722	1x10 L

Orchid Maintenance/Replate Medium With Banana Replate Medium I

Storage: 0 TO 5°C

Includes macro-and micronutrients, MES, peptone, sucrose, vitamins, agar, banana, and activated charcoal.

Cat. #	Size
2625920	10x1 L
2625922	1x10 L

Orchid Maintenance/Replate Medium without Charcoal

Storage: 0 TO 5°C

Includes macro- and micronutrients, MES, peptone, and sucrose.

Cat. #	Size
2625620	10x1 L
2625622	1x10 L

Orchid Multiplication Medium

Storage: 0 TO 5°C

Includes macro- and micronutrients, sucrose, vitamins, MES, and peptone.

Cat. #	Size
2626120	10x1 L
2626122	1x10 L

Orchid Multiplication Medium with Agar, Mother Flask IV

Storage: 0 TO 5°C

Includes macro- and micronutrients, sucrose, vitamins, MES, and peptone. This medium was developed for the stem propagation of orchids. This is a Stage I medium used for initiation of cultures and multiplication. This medium is complete and only requires the addition of water.

Cat. #	Size
2626220	10x1 L
2626222	1x10 L

Orchid Replate Medium II

Storage: 0 TO 5°C

Complete orchid replant and seed sowing medium. Includes sucrose, banana powder, and a gelling agent. Does not contain activated charcoal. Requires reconstitution with water only.

Cat. #	Size
2626020	10x1 L
2626022	1x10 L
2626026	1 L

Orchid Seed Sowing Medium with Agar, Mother Flasking Medium II

Storage: 0 TO 5°C

Includes macro- and micronutrients, MES, peptone, sucrose, vitamins, and activated charcoal.

Cat. #	Size
2625820	10x1 L
2625822	1x10 L

Quoirin & Lepoivre Basal Salt Mixture

Storage: 0 TO 5°C

Includes macro- and micronutrients as described by Quoirin, et. al., 1977.

Cat. #	Size
2626320	10x1 L
2626322	1x10 L

Rose Initiation Medium (Stage I)

Storage: 0 TO 5°C

Developed for initial stages of rose propagation.

Cat. #	Size
2626420	10x1 L
2626422	1x10 L

Rose Initiation Medium (Stage II)

Storage: 0 TO 5°C

Developed for second stages of rose propagation.

Cat. #	Size
2626520	10x1 L
2626522	1x10 L

Schenk & Hildebrandt Basal Salt Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Schenk & Hildebrandt, 1972.

Cat. #	Size
2626620	10x1 L
2626622	1x10 L

Terrestrial (Cypripedium) Orchid Medium, Mother Flasking Medium V

Storage: 0 TO 5°C

Includes the macro- and micronutrients, glucose, and agar as described by Steele, 1996. A complete medium for the germination of Terrestrial Orchid seed. The addition of 1.0-2.0 mg/L of kinetin may enhance the germination of certain genera. This medium requires only the addition of water.

Cat. #	Size
2626720	10x1 L
2626722	1x10 L

Vacin and Went Modified Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Vacin and Went, 1949. Modified with ferrous sulfate.

Cat. #	Size
2626820	10x1 L
2626822	1x10 L

Vacin and Went Modified Basal Salt Medium

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Vacin and Went, 1949. Modified with ferrous sulfate. Includes sucrose.

Cat. #	Size
2626920	10x1 L
2626922	1x10 L

Vacin and Went Modified Basal Salt Medium, Mother Flasking Medium I

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by Vacin and Went, 1949. Modified with ferrous sulfate. Includes sucrose and agar. Complete Stage I medium which is excellent for seed sowing and germination of many orchid genera.

Cat. #	Size
2627020	10x1 L
2627022	1x10 L

White's Basal Salt Mixture

Storage: 0 TO 5°C

Includes the macro- and micronutrients as described by White, 1968.

Cat. #	Size
2627120	10x1 L
2627122	1x10 L

Plant Biochemicals & Reagents

(±)-Absciscic Acid

Storage: 0 TO 5°C

CAS number : [14375-45-2]

Purity: >98%

Cis-Trans Isomer

Crystalline

Formula : $C_{15}H_{20}O_4$

MW : 264.3

Cat. #	Size
190673	25 mg
	100 mg
	500 mg
	1 g

Acetylsalicylic Acid

Storage: Room Temperature
CAS number : [50-78-2]
Crystalline
Formula : $C_9H_8O_4$
MW : 180.2

Cat. #	Size
150245	250 g 500 g 1 kg

Agar

Storage: Room Temperature
CAS number : [9002-18-0]
Inquire for bulk pricing
Powder
Formerly N.F. grade, this Agar conforms to U.S.P. specifications.
80-100 mesh
Note: Also See MP Gel-Gro™

Cat. #	Size
100262	100 g 250 g 500 g 1 kg

Agar

Storage: Room Temperature
CAS number : [9002-18-0]
Cell Culture Reagent
Powder
80-100 mesh

Cat. #	Size
194615	100 g 250 g 500 g 1 kg 5 kg

Agar

Storage: Room Temperature
CAS number : [9002-18-0]
Bacteriological Grade

Specially purified for use in preparing solid culture media for microbiological and bacteriological applications. Produces strikingly clear gels and media. White to light yellow. **100 mesh powder.**

Note: Also See MP Gel-Gro™

Cat. #	Size
150178	100 g 250 g 500 g

Ammonium Nitrate, ACS

Storage: Room Temperature
 CAS number : [6484-52-2]
 Purity: ≥98%
 ACS Reagent Grade
 Formula : NH_4NO_3
 MW: 80.0

Cat. #	Size
193856	500 g 1 kg

Ammonium Phosphate, ACS

Storage: Room Temperature
 CAS number : [7722-76-1]
 ACS Reagent Grade
 Monobasic
 Crystalline
 Formula : $\text{NH}_4\text{H}_2\text{PO}_4$
 MW:

Cat. #	Size
191407	500 g

Ammonium Sulfate

Storage: Room Temperature
 CAS number : [7783-20-2]
 Enzyme grade
 Heavy metals (as Pb no greater than 0.0005%)
 Formula : $(\text{NH}_4)_2\text{SO}_4$
 MW: 132.1

Cat. #	Size
150373	100 g 500 g 1 kg

N⁶-Benzyladenosine

Storage: 0°C
 CAS number : [4294-16-0]
 Crystalline
 An A₁ Adenosine receptor agonist.
 Formula : $\text{C}_{17}\text{H}_{19}\text{N}_5\text{O}_4$
 MW: 357.4

Cat. #	Size
150449	100 mg

6-Benzylaminopurine (*N*⁶-Benzyladenine)

Storage: Room Temperature
CAS number : [1214-39-7]
Crystalline
Inhibitor of respiratory kinase
in plants. Increases post-harvest life of green vegetables.
Formula : $C_{12}H_{11}N_5$
MW: 225.3

Cat. #	Size
100912	500 mg 5 g 25 g

Boric Acid, ACS

Storage: Room Temperature
CAS number : [10043-35-3]
ACS Reagent Grade
Crystalline
Formula : H_3BO_3
MW:

Cat. #	Size
191411	100 g 500 g 1 kg 5 kg

Casein Hydrolysate Enzymatic (*Nz-Amine A*)

Storage: Room Temperature
Inquire for bulk prices
An enzymatic hydrolysate of whole casein.

Cat. #	Size
101290	1 lb 5 lb

Cellulase (1,4,-[1,3:1,4]-b-D-glucan)

Storage: 0 TO 5°C
CAS number : [9012-54-8]
E.C.: 3.2.1.4
From *Trichoderma viride*
For use in protoplast preparation by separation of protoplasts from plant tissues.
Activity: 1-2 units/mg solid
Unit Definition: One unit will liberate 1.0 μ mole of glucose from cellulose in 1 hour, pH 5.0 at 37°C.

Cat. #	Size
150584	2 KU 5 KU 25 KU 100 KU

Centrophenoxine

([4-Chlorophenoxy] acetic acid 2-[dimethylamino] ethyl ester; Meclofenoxate)

Storage: 0°C
 CAS number : [3685-84-5]
 Hydrochloride
 Formula : $C_{12}H_{16}ClNO_3 \cdot HCl$
 MW: 294.2

Cat. #	Size
191500	25 g 100 g 500 g

Chlorocholine Chloride

([2-Chloroethyl]trimethylammonium chloride)

Storage: Room Temperature
 CAS number : [999-81-5]
 Crystalline
 Formula : $C_5H_{13}Cl_2N$
 MW: 158.1

Cat. #	Size
154961	5 g 25 g 100 g

Chlorogenic Acid

(3-Caffeoylquinic acid)

Storage: Room Temperature
 CAS number : [327-97-9]
 Crystalline
 Formula : $C_{16}H_{18}O_9$
 MW: 354.3

Cat. #	Size
150618	100 mg 1 g 5 g

p-Chlorophenoxyacetic Acid

Storage: Room Temperature
 CAS number : [122-88-3]
 Purity: 98%
 Crystalline
 Formula : $C_8H_7ClO_3$
 MW: 186.6

Cat. #	Size
101364	100 g 500 g

Colchicine

Storage: Room Temperature
CAS number : [64-86-8]
Formula : $C_{22}H_{25}NO_6$
MW: 399.4

Special Shipping Requirements: Hazardous Material. Contact Customer Service for details. 8.00 additional service charge per shipment.

Cat. #	Size
101406	0.1 g 0.5 g 1 g 5 g

2,4-Dichlorophenoxyacetic Acid (2,4-D)

Storage: Room Temperature
CAS number : [94-75-7]
Off-white to tan crystals.
CAUTION: POISONOUS!
Formula : $C_8H_6Cl_2O_3$
MW: 221

Cat. #	Size
101553	100 g 250 g 500 g 1 kg

DL-Dihydrozeatin

Storage: 0 TO 5°C
CAS number : [14894-18-9]
Purity: ~95%
Crystalline
Formula : $C_{10}H_{13}N_5O$
MW: 221.3

Cat. #	Size
195141	5 mg

DL-Dihydrozeatin Riboside

Storage: 0°C
CAS number : [22663-55-4]
Purity: ~97%
Crystalline
Formula : $C_{15}H_{23}N_5O_5$
MW: 353.4

Cat. #	Size
195142	1 mg 5 mg

6-(γ,γ-Dimethylallylamino) Purine

Storage: 0°C
CAS number : [2365-40-4]
[N6-(⊗2-Isopentenyl)adenine]
Crystalline
Formula : C₁₀H₁₃N₅
MW: 203.2

A plant cytokinin produced during mold development and a spore germination inhibitor. It also serves as a general kinase inhibitor.

Cat. #	Size
195144	100 mg 500 mg 1 g

Ethylenediaminetetraacetic Acid

Storage: Room Temperature
CAS number : [6381-92-6]
Purity: 99%
Disodium Salt
Dihydrate
Formula : C₁₀H₁₄N₂O₈Na₂ • 2H₂O
MW: 372.2

Chelating agent. Produces colorless aqueous solutions.

Cat. #	Size
195173	100 g 250 g 500 g 1 kg

Ferric Sulfate (Iron[III] sulfate)

Storage: Room Temperature
CAS number : [10028-22-5]
Formula : Fe₂(SO₄)₃
MW: 399.9

Cat. #	Size
158042	250 g 500 g 1 kg

Fluorescein Diacetate

Storage: 0°C
CAS number : [596-09-8]
Crystalline
Used as substrate for esterases.
Formula : $C_{20}H_{16}O_7$
MW: 416.4

Cat. #	Size
101716	5 g
	10 g
	25 g
	100 g

Gel-Gro™

Storage: Room Temperature

A naturally-derived gelling polymer which can be used in place of agar. It is a highly purified heteropolysaccharide that forms clear gels in aqueous systems. Useful as a gelling agent in microbiological and plant tissue culture work. For more details, ask for our Gel-Gro™ technical bulletin.

Cat. #	Size
150180	100 g
	250 g
	500 g
	1 kg

Gibberellic Acid

Storage: Room Temperature
CAS number : [125-67-7]
Potassium Salt 10%
Plant growth hormone
Formula : $C_{19}H_{21}O_6K$
MW: 384.5i

Cat. #	Size
100282	1 g
	5 g
	10 g

Gibberellic Acid

Storage: Room Temperature
CAS number : [125-67-7]
Potassium Salt 75%
Plant growth hormone
Formula : $C_{19}H_{21}O_6K$
MW: 384.5

Cat. #	Size
100288	1 g
	5 g

β-Glycerophosphate

Storage: 0 TO 5°C
 CAS number : [819-83-0]
 Disodium Salt
 Pentahydrate
 Formula : $C_3H_7O_8PNa_2 \cdot 5H_2O$
 MW: 306

L-α-isomer impurity 1% maximum. Suitable for the Bodansky phosphatase procedure.

Cat. #	Size
195206	25 g 50 g 100 g 500 g 1 kg

Indole-3-acetic Acid

Storage: 0°C
 CAS number : [87-51-4]
 Purity: ~99%
 Plant Growth Hormone
 Off-white to tan crystals
 Formula : $C_{10}H_9NO_2$
 MW: 175.2

Cat. #	Size
102037	5 g 25 g 100 g

Indole-3-acetic Acid Ethyl Ester

Storage: -20 TO 0°C
 CAS number : [778-82-5]
 Plant Growth Hormone
 Crystalline
 Formula : $C_{12}H_{13}NO_2$
 MW: 203.2

Cat. #	Size
100638	1 g 5 g 25 g

Indole-3-acetonitrile (β-Indolylacetonitrile)

Storage: 0 TO 5°C
 CAS number : [771-51-7]
 Crystalline
 Natural plant growth hormone.
 $C_{10}H_9N_2$
 MW: 156.2

Cat. #	Size
102039	1 g 5 g

Indole-3-butyric Acid

Storage: 0 TO 5°C
CAS number : [133-32-4]
Plant Growth Hormone
Crystalline
Formula : $C_{12}H_{13}NO_2$
MW: 203.2

Cat. #	Size
102042	1 g 5 g 25 g 50 g

Indole-3-propionic Acid

Storage: 0°C
CAS number : [830-96-6]
Purity: ~99%
Crystalline
Light yellow
Formula : $C_{11}H_{11}NO_2$
MW: 189.2

Cat. #	Size
102048	1 g 5 g 10 g 25 g

Isopropyl-n-(3-chloro-phenyl)-carbamate (Chloro-IPC)

Storage: Room Temperature
CAS number : [101-21-3]
Purity: 99%
Light tan crystals
Inhibits plant metabolism
Formula : $C_{10}H_{12}NO_2Cl$
MW: 213.7

Cat. #	Size
151363	25 g

Isopropyl N-phenyl-carbamate (IPC)

Storage: Room Temperature
CAS number : [122-42-9]
Purity: 99%
Tan crystals.
Inhibitor of plant metabolism.
Formula : $C_{10}H_{13}NO_2$
MW: 179.2

Cat. #	Size
155129	5 g 10 g

Kainic Acid

(2-Carboxyl-3-carboxymethyl-4-isopropenylpyrrolidine)

Storage: Room Temperature
CAS number : [487-79-6]
Synthetic, Crystalline
Formula : $C_{10}H_{15}NO_4$
MW: 213.2

Kainic acid is a minor amino acid typically found in *Digenea simplex* seaweed, although this is a synthetic preparation.

Cat. #	Size
195264	10 mg 25 mg

Kinetin

(6-Furfurylaminopurine)

Storage: 0°C
CAS number : [525-79-1]
Purity: >95%
White crystals
Plant growth accelerator.
Formula : $C_{10}H_9N_5O$
MW: 215.2

Cat. #	Size
102117	1 g 5 g

Kinetin Riboside

(6-Furfurylaminopurine riboside; N_6 -Furfuryladenosine)

Storage: 0 TO 5°C
CAS number : [4338-47-0]
Crystalline
Formula : $C_{15}H_{17}N_5O_5$
MW: 347.3

Cat. #	Size
102118	1 g

Magnesium Sulfate, ACS

Storage: Room Temperature
CAS number : [10034-99-8]
Purity: 98.0-102.0%
ACS Reagent Grade
Crystalline
Heptahydrate
Formula : $MgSO_4 \cdot 7H_2O$
MW: 246.5

Cat. #	Size
191422	100 g 500 g 1 kg 5 kg

D-Mannitol

(Manna sugar; Mannite)

Storage: Room Temperature
CAS number : [69-65-8]
Purity: ~99%
Crystalline
Formula : $C_6H_{14}O_6$
MW: 182.2

Cat. #	Size
102248	500 g 1 kg 5 kg

MES

(2-[N-Morpholino]ethanesulfonic acid)

Storage: Room Temperature
CAS number : [4432-31-9]
Purity: ≥98%
Free Acid
Monohydrate
Crystalline
One of the Zwitterionic buffers.
 $pK_a = 6.15$ at 25°C
Formula : $C_6H_{13}NO_4S \cdot H_2O$
MW: 213.2

Ref: Good, N., et al., *Biochemistry*, **5**: 467 (1966).

Cat. #	Size
195309	10 g 25 g 100 g 250 g 1 kg

α-Naphthaleneacetic Acid

(1-Naphthylacetic acid)

Storage: Room Temperature
CAS number : [86-87-3]
Purity: ~99%
Light yellow crystals
 $C_{12}H_{10}O_2$
MW: 186.2

Cat. #	Size
102398	25 g 100 g

β-Naphthoxyacetic Acid

Storage: Room Temperature
CAS number : [120-23-0]
Free Acid
Gray crystals.
Formula : $C_{12}H_{10}O_3$
MW: 202.2

Cat. #	Size
155789	500 g

Orotic Acid

Storage: Room Temperature
CAS number : [65-86-1]
Anhydrous
Crystalline
Free Acid
Formula : $C_5H_4N_2O_4$
MW: 156.1

Cat. #	Size
151790	10 g

Pectinase

(Polygalacturonase; poly-[1,4α-D-galacturonide]glycono-hydrolase; E.C.3.2.1.15)

Storage: 0°C
CAS number : [9032-75-1]
From *Rhizopus* sp.
Crude powder
Activity: 350-400 units per gm solid.
Unit Definition: One unit will liberate one micromole of galacturonic acid from polygalacturonic acid per minute at pH 4.0 at 25°C.
Ref: Duke, D., Chao, W. and Nyman, L.P., *BioTechniques*, **10**: 2, 166-171 (1991).

Cat. #	Size
151803	500 U 1 KU 5 KU

Pectolyase

From *Aspergillus japonicus*

Storage: 0 TO 5°C

Reported to contain endopolygalacturonase (E.C.3.2.1.15), endo-pectin lyase (E.C.4.2.2.3) and a maceration stimulating factor. Lyophilized powder containing approx. 60% protein (Lowry); balance primarily lactose.
Activity: 2-4 units per mg solid.
Unit Definition: One unit will liberate 1.0 μmole of galacturonic acid from polygalacturonic acid per minute at pH 5.5 at 25°C.

Cat. #	Size
151804	25 mg 100 mg 250 mg 1 g

Percoll

Storage: 0 TO 5°C
CAS number : [65455-52-9]

Colloidal PVP coated silica for cell separation. Aseptically filled.

Cat. #	Size
195369	25 ml 100 ml 500 ml

Phloroglucinol

(1,3,5-Trihydroxybenzene)

Storage: Room Temperature
CAS number : [6099-90-7]
Dihydrate
Crystalline
Formula : $C_6H_6O_3 \cdot 2H_2O$
MW: 162.1

A reagent for pentoses, pentosans and aldehydes. Also used as a bone decalcifier in microscopy specimens.

Cat. #	Size
102640	10 g 25 g 100 g 250 g

Polyvinylpyrrolidone

(PVP K 30)

Storage: Room Temperature
CAS number : [9003-39-8]
MW: Average 30,000

Cat. #	Size
102786	100 g 500 g 1 kg 5 kg

Potassium Sulfate

Storage: Room Temperature
CAS number : [7778-80-5]
Crystalline
Formula : K_2SO_4
MW: 174.3

Cat. #	Size
153496	250 g 1 kg

Rhodamine-B-isothiocyanate

Storage: 0 TO 5°C
CAS number : [36877-69-7]
Adsorption at 2100 cm⁻¹
Biologically reproducible results on conjugation
Formula : C₂₉H₃₀ClN₃O₃S
MW: 536.1

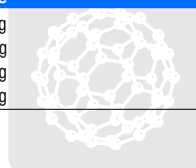
Cat. #	Size
100460	50 mg
	100 mg
	500 mg

Silver Nitrate

Storage: Room Temperature
CAS number : [7761-88-8]
Purity: 99.8%
Crystalline
Formula : AgNO₃
MW:



Cat. #	Size
195495	5 g
	25 g
	100 g
	500 g



Sodium Hypochlorite 5% Solution

Storage: Room Temperature
CAS number : [7681-52-9]
Formula : NaOCl
MW:



Cat. #	Size
2610154	500 ml

Sodium Metasilicate, ACS

Storage: Room Temperature
CAS number : [13517-24-3]
Purity: ≥97%
ACS Reagent Grade
Nonahydrate
Formula : Na₂SiO₃ • 9H₂O
MW: 284.2

Cat. #	Size
191382	100 g
	250 g
	500 g
	1 kg

Sodium Sulfate, ACS

Storage: Room Temperature
CAS number : [7757-82-6]
ACS Reagent Grade
Anhydrous
Crystalline
Formula : Na_2SO_4
MW:

Cat. #	Size
191444	500 g 1 kg 5 kg

Succinic Acid 2,2-dimethylhydrazide (Daminozide)

Storage: 0 TO 5°C
CAS number : [1596-84-5]
White powder.
Formula : $\text{C}_6\text{H}_{12}\text{N}_2\text{O}_3$
MW: 160.2

Cat. #	Size
156685	25 g 100 g

Thiabendazole (2-[4-Thiazoly]benzimidazole)

Storage: Room Temperature
CAS number : [148-79-8]
Light yellow powder
Formula : $\text{C}_{10}\text{H}_7\text{N}_3\text{S}$
MW: 201.2

Cat. #	Size
156843	100 g

2,3,5-Triiodobenzoic Acid

Storage: 0°C
CAS number : [88-82-4]
Free Acid
Off-white to yellow crystals.
Inhibits growth action of 2,4-dichlorophenoxyacetic acid.
Formula : $\text{C}_7\text{H}_3\text{I}_3\text{O}_2$
MW: 499.8

Ref: , *Phytochemistry*, **10**: 1213 (1971).

Cat. #	Size
152169	5 g 10 g 25 g 50 g

Water

Storage: Room Temperature

For Cell Culture

Double deionized via reverse osmosis.

Sterile

Cat. #	Size
1696054	500 ml

Zeatin

(6-[(E)-4-Hydroxy-3-methyl-2-butenylamino] purine)

Storage: 0 TO 5°C

Purity: >99.8% by HPLC

Synthetic

trans-isomer

White, crystalline needles

Highly potent growth hormone in plants. Stimulates cell division.

Formula : $C_{10}H_{13}N_5O$

MW: 219.2

Cat. #	Size
153854	5 mg 10 mg 50 mg 100 mg

Zeatin Riboside

Storage: 0°C

CAS number : [28542-78-1]

Crystalline

Mixed isomers

Approximately equal mixture of cis and trans-isomers.

Formula : $C_{15}H_{21}N_5O_5$

MW: 351.4

Cat. #	Size
195548	1 mg 5 mg

Zinc Nitrate

Storage: Room Temperature

CAS number : [10196-18-6]

Hexahydrate, 98%

Crystalline

Formula : $Zn(NO_3)_2 \cdot 6H_2O$

MW:

Cat. #	Size
158315	500 g 1 kg

Zinc Sulfate

Storage: Room Temperature
CAS number : [7446-20-0]
Purity: ≥98%
Heptahydrate
Formula : $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$
MW: 287.5

Cat. #	Size
193453	100 g 1 kg

Plant Media Kits & Tools

Agrobacterium Transformation Kit

Transformation solution for Agrobacterium sp.

The *Agrobacterium* Transformation Kit provides a single transformation solution with which *A. rhizogenes* or *A. tumefaciens* can be transformed with plasmid DNA using either a freeze/thaw or electroporation method. Optimized *Agrobacterium* Medium and Agar are also included, along with Roll & Grow® Plating Beads for easy spreading of transformed cells. Once media preparation is complete, this easy transformation procedure takes less than 45 minutes with minimal hands-on time.

Kit Contents: *Agrobacterium* Transformation Solution, *Agrobacterium* Medium Pouch, *Agrobacterium* Medium Agar Pouch, Roll & Grow® Plating Beads

Cat. #	Description	Size
3301100	<i>Agrobacterium</i> Transformation Kit	25 preps

Plant Surface Sterilization Kit



The Plant Surface Sterilization Kit is designed to sterilize seeds for germination and plant tissues for callus induction. Based on classical bleach/ethanol washing, the two solutions in this kit preserve plant tissue characteristics for successful growth while providing surface sterilization to remove contaminating microorganisms prior to *in vitro* incubation using sterile growth medium. The protocol is used as a standard guideline for surface sterilization and will work on a wide variety of seed and explant types.

Kit Contents: Sterilization Solution A, Sterilization Solution B, Dissecting Forceps, Reusable Polypropylene Containers

Cat. #	Description	Size
5100200	Plant Surface Sterilization Kit	50 preps

LINBRO® PTC™ Container

Non-Sterile w/lid

The PTC™ Container offers an excellent alternative for plant tissue cell culturing. It is constructed of high quality polystyrene with a high binding surface, and the high optical clarity allows for maximum light transmission for rapid and efficient culture development.

Cat. #	Description	Volume	Qty.	Size
9967100	PTC™ with lid Dimensions:	190 ml	68x68 mm	40/box
9967101	68 x 68 mm		68x68 mm	320/case
9960100	PTC™ with lid Dimensions:	175 ml	50x100 mm	45/box
9960101	50 x 100 mm		50x100 mm	315/case
9968100	PTC™ with lid Dimensions:	330 ml	68x110 mm	24/box
9968101	68 x 110 mm		68x110 mm	192/case

PlantCon™ Culture Containersq

Cover dimensions: 9.5 x 9.5 x 7.0 cm

Bottom dimensions: 9.5 x 9.5 x 3.5 cm

Provided presterilized, made of clear unbreakable plastic. These disposable, space saving containers are specifically designed for optimal plant cell culture applications.

- Unbreakable
- Presterilized
- Clear Plastic
- Disposable
- Stackable, Space-Saving
- Manufactured Under Strict QC Conditions
- Scientifically Designed for Plant Cell Culture

MP Biomedicals has designed a unique product which reduces the labor in plant cell culture. It's Plantcon™-- a line of presterilized, disposable, plastic growth containers. This labware was designed to reduce the time spent preparing an *in vitro* growth environment for plant cultures-- and to minimize the risk of contamination. Think of it-- no glass tubes, or jars, no glass breakages, no cumbersome and time consuming cleaning and sterilization procedures for glassware, as well as reduced storage problems. Whether you are culturing plants in a commercial horticulture operation or in a research laboratory, Plantcon™ is the answer to your plant cell culture needs.

Cat. #	Description	Size
2672206	PlantCon™ Container, sterile	200-sets
2672002	PlantCon™ Base, sterile	10-pack
2672102	PlantCon™ Cover, sterile	10-pack

Chee and Pool

Cat. #	Description	Size
1000822	Powdered C2d Vitis Basal Salt for plant cell culture	10 L
1000826		1 L

Plant Media Culture Dishes



Cat. #	Description	Size
5111033	Petri Dishes, Sterile Polystyrene 100 mm x 20 mm	20 plates
5111053	Petri Dishes, Sterile Polystyrene 100 mm x 20 mm	25 sleeves of 20

Plant Nucleic Acid Isolation

The FastPrep® System combines the rapid sample lysis of the unique FastPrep®-24 and FastPrep® FP120 Instruments with DNA and RNA purification kits for a wide variety of samples. Widely used by plant researchers, the FastPrep® Instruments are used to rapidly homogenize leaves, stems, roots, seeds, soil and other difficult-to-lyse materials. See The Sample Preparation Section for more information!

FastDNA® SPIN Kit

Isolation of genomic DNA from plants, animals, bacteria, yeast, algae, and fungi

The FastDNA® SPIN Kit is used with the FastPrep®-24 or FastPrep® FP120 Instrument to lyse and subsequently isolate DNA from up to 200 mg of almost any sample in less than 30 minutes. Lysing Matrix A and 3 different chaotropic buffers are provided for the homogenization of a wide variety of sample types. DNA is released within 40 seconds, and is purified by a silica-based GENECLEAN® SPIN procedure. See The Sample Preparation Section for more information.

Cat. #	Description	Size
6540600	FastDNA® SPIN Kit	100 preps

FastRNA® Pro Green Kit

Isolation of total RNA from plant and animal samples

The FastRNA® Pro Green Kit is designed to efficiently isolate total RNA from any type of plant and animal tissue or cultured cells. Using the FastPrep®-24 or FastPrep® FP120 Instrument, between 50-500 mg of tissue can be homogenized by Lysing Matrix D in impact-resistant 2 ml tubes. Total RNA is released into the proprietary, protective RNApro™ Solution. Following extraction with chloroform and precipitation, total RNA is suitable for RT-PCR analysis and other downstream applications. See The Sample Preparation Section for more information.

Cat. #	Description	Size
6045050	FastRNA® Pro Green Kit	50 preps

FLORACLEAN™ Kit

Purification of nuclear chromosomal DNA from plants

The FLORACLEAN™ Kit is a modification of the popular GNAME® DNA Isolation Kit that has been designed specifically for isolation of nuclear chromosomal DNA from plant tissues. Purified nuclei are lysed to obtain DNA free of phenolics, polysaccharides, and other contaminants that can inhibit subsequent enzymatic manipulation of the DNA and that are often difficult to eliminate from DNA preps of plant cells. No organic extractions are required. Using this kit, up to 400 µg of DNA is isolated from 1.5 g of tissue. Isolated DNA is suitable for PCR or enzymatic manipulations.

Kit Components: Nuclear Buffer Concentrate, CHO powder, Nuclear Buffer Chaotrope Solution, Nuclear Suspension Solution, Nuclear Lysis Solution, Protease Mixx, "Salt-Out" Mixture, Sieve Material

Cat. #	Description	Size
2012400	FLORACLEAN™ Kit	25 Preps

GNOME® DNA Isolation Kit

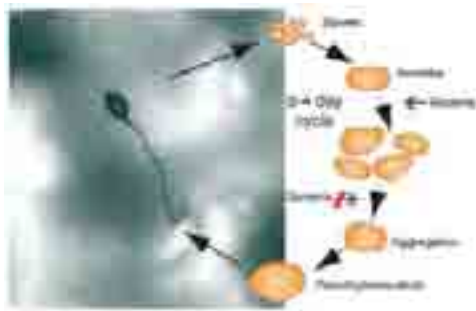
Purification of up to 100 µg of genomic DNA from a variety of sources

The GNOME® DNA Isolation Kit is a rapid and efficient method for isolation of high molecular weight genomic DNA from bacteria, plant, yeast, blood cells and other mammalian cells and tissues of all types. The kit uses RNase Mixx to eliminate RNA immediately after lysis, and Protease Mixx to rapidly degrade cellular proteins. This is followed by a proprietary "salting out" technique that precludes the need for phenol, chloroform or other organic extractions.

Kit Components: Cell Lysis/Denaturing Solution, RNase Mixx, Protease Mixx, "Salt-Out" Mixture, Cell Suspension Solution

Cat. #	Description	Size
2010400	GNOME® DNA Kit	25 Preps
2010600	GNOME® DNA Kit	100 Preps

Media for Dictyostelium discoideum



SM Growth Medium

Dictyostelium discoideum can be cultured in the lab by plating on SM Medium with bacteria as a food source. An SM Agar plate is seeded with bacteria (generally *A. aerogenes* or *E. coli*) and a few *D. discoideum* cells. The cells, feeding and dividing on the bacterial lawn, form colonies. As each colony grows, the individual slime mold amoeba in the center, where bacteria are depleted, join to form multicellular fruiting bodies. The process takes 3-4 days from plating to fruiting body formation.

SM Medium

25g/liter

Contents/L: 1.9 g KH_2PO_4 , 1.3g $\text{K}_2\text{HPO}_4 \cdot 3\text{H}_2\text{O}$, 1 g $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, 10 g glucose, 10g bactopectone, 1 g yeast extract

Cat. #	Size
Powder	
3090122	454 g (1 lb)

SM Agar

37g/liter

Contents/L: SM Medium, 17g Agar-B

Cat. #	Size
Powder	
3092222	454 g (1lb)

The simplest organism to form multicellular structures, *Dictyostelium discoideum* is often used as a model to study biological processes that impact how individual cells function.

This cellular slime mold is normally found in the soil of deciduous forests where it feeds upon a wide variety of microbes. When other organisms are readily available as a food source, *Dictyostelium* cells grow as autonomous individual amoebae. When conditions become unfavorable, single cells interact to form an aggregate that matures into a multicellular fruiting body that contains dormant spores. Under more favorable conditions, the spores are released.

HL5 Medium

Specific strains of *D. discoideum* are capable of growing axenically (without bacteria as food) in liquid culture with the undefined media HL5.

HL5 Medium

22 g/liter

Contents/L: 0.5 g KH_2PO_4 , 0.5g Na_2HPO_4 , 7 g yeast extract, 14 g proteose peptone

Cat. #	Size
Powder	
3090222	454 g (1lb)

HL5 Medium w/ Glucose

35.5g/liter

Contents/L: HL5 Medium, 13.5 g glucose

Cat. #	Size
Powder	
3090322	454 g (1lb)

Growth Media Made and Packaged to Your Specifications!

- Custom Formulations
- Specialized Packaging
- Molecular Biology Certified™ Raw Materials
- Quantitative and Qualitative Testing
- Proven and Reliable Reputation

MP Biomedicals established a proven history of high-quality production and packaging of pre-mixed media and raw materials. If you can't find the media variation you need in our extensive pre-mixed media list, we can easily make it for you out of our Molecular Biology Certified™ raw materials! Following strict, commercial manufacturing guidelines and Good Laboratory Practice (GLP), our experienced media team creates your custom recipe and helps you develop the media format that is best for your application.

Quality

As with all our prepared media, custom formulations exceed quantitative standards such as pH and clarity. Additionally, all amino acid dropouts are certified by HPLC. Unique custom recipes undergo as many qualitative tests as possible given the nature and confidentiality of the specific strain or formulation.

Packaging Convenience

Custom formulations are available in a wide variety of formats, and the guidelines below cover most typical research requests. MP Biomedicals can also work outside these parameters for contract-based packaging or private labeling of large scale projects. We are always looking for new and innovative ways to package our media. If you need something unique, please contact us with your specialized requirements.

- Pre-Mixed Powder
- Single-Use Pouches
- Encapsulated Media
- Sterile Liquid Media
- Pre-Poured Agar Plates

How to Order Custom Media

To receive a price quote for your custom media, contact the MP Biomedicals Technical Support with the following information:

- Exact recipe for your media in grams per liter
- Any specific requirements regarding the preparation and/or sterilization of your media
- Indication of any proprietary or confidential components
- Specific information on form of media (powder, pouch, capsule, liquid, plate)
- Total quantity desired for first order
- Approximate number of times this quantity could be ordered per year

Lead time from the placement of a custom media order is generally between 2-3 weeks. A custom service set-up fee may apply to the first order, but will not be part of subsequent orders of the same media recipe and format.

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Over 1,200

NEW products



in these areas:

- ▶ Tissue Lysis and Nucleic Acid Purification
- ▶ Immunology
- ▶ Nanotechnology
- ▶ Bacterial and Yeast Cell Propagation
- ▶ Bioluminescent Recombinant Proteins and Conjugates
- ▶ Purified and Recombinant Enzymes
- ▶ Protein Expression and Purification
- ▶ Labware
- ▶ PCR
- ▶ Electrophoresis and Hybridization
- ▶ Adenoviral Gene Delivery
- ▶ Dosimetry Services
- ▶ Custom Polyclonal Antibodies
- ▶ Transfection

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In keeping with our dedication to meeting the needs of researchers at all levels, a wide range of both speciality and standard products for electrophoresis and hybridization are included in this chapter. Discover novel products such as our method for eliminating ethidium bromide with the use of a “tea bag”. Browse through our vast range of loading dyes, molecular weight ladders, and high quality agarose. Unless otherwise specified, all of the reagents listed are “molecular biology grade” to guarantee the highest level of quality in molecular biology applications. This distinction is critical when applying price-performance criteria in the selection of your suppliers.

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Gel Forming Reagents Acrylamide Solutions

LIQUI-GEL™ 19:1

Storage: Room Temperature

A 40% (W/V) solution of Ultra Pure Acrylamide (38%) and bis- Acrylamide (2%) in specially deionized water.
Final ratio is 19:1

How to Use:

$$\text{ml of Liqui-Gel 19:1 use} = \frac{(\text{Final desired gel concentration})(\text{Final ml of gel to be prepared})}{(40\%)}$$

Cat. #	Size
800802	500 ml

LIQUI-GEL™ 29:1

Storage: Room Temperature

A 40% (W/V) solution of Ultra Pure Acrylamide (38.67%) and bis-Acrylamide (1.33%) in specially-prepared deionized water.
Final ratio is 29:1.

How to Use:

$$\text{ml of Liqui-Gel 29:1 use} = \frac{(\text{Final desired gel concentration})(\text{Final ml of gel to be prepared})}{(40\%)}$$

Cat. #	Size
800803	500 ml

LIQUI-GEL™ 37.5:1

Storage: Room Temperature

A 40% (W/V) solution of Ultra Pure Acrylamide (38.96%) and bis-Acrylamide (1.04%) in specially-prepared deionized water.
Final ratio is 37.5:1.

How to Use:

$$\text{ml of Liqui-Gel 37.5:1 use} = \frac{(\text{Final desired gel concentration})(\text{Final ml of gel to be prepared})}{(40\%)}$$

Cat. #	Size
800804	500 ml

Acrylamide Solution 40% (w/v)

Molecular biology grade

This ultrapure grade acrylamide solution 40% (w/v) is prepared from highly purified acrylamide (4X) using deionized ultrafiltered water.

Prepared from acrylamide powder:

CAS number : [79-06-1]
 MW: 71.08 g/mol
 UN code: UN2074
 EC No: 201-173-7
 Formula: C_3H_5NO

Specifications

Conductivity

(40% solution in H_2O , 25° C): δ 5 μ S/cm

Acrylic acid (titrimetry): δ 0.001%

$A_{290}(1\%inH_2O)$: δ 0.1

Assay: > 99.5%

Acrylamide powder purified by recrystallisation 4X

Heavy metals (as Pb): < 0.0002%

RNAse, DNAse, Protease free

Filtered through 0.2 μ m PTFE

Bottled under inert gas

Cat. #	Description	Size
ACRL4002	Acrylamide 40% solution	1 liter

► Storage: + 4°C protected from light

► Risk and Safety: Hazardous material

Please refer to the material safety data sheet for proper handling

LIQUACRYL™

Storage: Room Temperature

A 40% (W/V) solution of Ultra Pure Acrylamide in specially prepared deionized water.

How to Use:

ml of LiquAcryl to use = $(MC) \frac{(\text{Final desired gel concentration})(\text{Final ml of gel to be prepared})}{(40\%)}$

Where MC is

Monomer Content = $\frac{(\text{Parts of Monomer in final gel})}{(\text{Parts of Monomer content}) + (\text{Parts of Cross-linker content})}$

For Example: A 19:1 mixture would have a 0.05 CC (Crosslinker Content)

Cat. #	Size
800800	500 ml

Acrylamide/Bis-Acrylamide Solutions 40% (w/v)

Ultrapure grade, prepared from highly purified acrylamide (4X) and bis-acrylamide (2X) using deionized ultra-filtered water.

Final ratio:

- $\pm 7.5:1$ for the separation of high molecular weight proteins
- 29:1 for sequencing gels and the separation of proteins
- 19:1 Optimal for sequencing gels and also for the separation of peptides

UN code:

UN2074

Specifications

Conductivity

(40% solution in H_2O , 25°C): $\delta 5 \mu S/cm$

Acrylic acid (titrimetry): $\delta 0.001\%$

$A_{280}(1\%inH_2O)$: $\delta 0.1$

Acrylamide powder purified by recrystallization 4X

Bis-acrylamide powder purified by recrystallization 2X

Heavy metals (as Pb): $< 0.0002\%$

Polymerization time: $< 30 \text{ min}$

RNAse, DNAse, Protease free

Cat. #	Description	Size
BIAC3752	Acrylamide/BisAcrylamide 37.5:1,40% solution	1 liter
BIAC2902	Acrylamide/BisAcrylamide 29:1,40% solution	1 liter
BIAC1902	Acrylamide/BisAcrylamide 19:1,40% solution	1 liter

► Storage: +4°C protected from light

► Risk and Safety: Hazardous material Please refer to the material safety data sheet for proper handling

Bis-Acrylamide Solution 2% (w/v)

Molecular biology grade

This bis-acrylamide solution, 2% (w/v) (N,N-methylene-bis-acrylamide), is prepared from highly purified bis-acrylamide (2X) using deionized, ultrafiltered water.

Prepared from N,N- methylene-bis-acrylamide powder:

CAS number : [110-26-9]

MW: 154.17 g/mol

EC No: 203-750-9

Formula: $C_7H_{10}N_2O_2$

Specifications

Conductivity (2% sol, 25°C): $\delta 10 \mu S/cm$

Assay: $> 99\%$

$A_{280}(1\%H_2O)$: < 0.2

RNAse, DNAse, Protease free Aseptically filtered

Cat. #	Description	Size
BISL0202	Bis-Acrylamide 2% solution	500 ml

► Storage: +4°C protected from light

► Risk and Safety: Hazardous material

Please refer to the material safety data sheet for proper handling

LIQUABIS™

Storage: Room Temperature

A 2%(W/V) solution of Ultra Pure bis-Acrylamide (N,N2-Methylene-bis-Acrylamide) solution in specially-prepared deionized water.

$$\text{ml of LiquaBis to use} = (\text{CC}) \frac{(\text{Final desired gel concentration})(\text{Final ml of gel to be prepared})}{(2\%)}$$

Where CC is

$$\text{Cross-linker} \frac{(\text{Parts of Cross-Linker in final gel})}{(\text{Parts of Cross-linker content}) + (\text{Parts of Monomer content})}$$

For Example: A 19:1 mixture would have a 0.05 CC (Crosslinker Content)

Cat. #	Size
800801	500 ml

LIQUI-GENE™ 4%

A premixed liquid acrylamide denaturing gel mix containing bis-acrylamide, 1X TBE as a buffer, and 7M urea for use in polyacrylamide gel electrophoresis. It is available in three concentrations allowing for flexible applications and efficiency.

- Saves Time - Comes ready-to-use, no mixing or filtering necessary. Just de-gas, polymerize, and pour.
- Economical - Eliminates waste and the need for numerous separate reagents.
- Safer To Use - No exposure to acrylamide dust or concentrated solutions.
- Variable Concentrations - 4%, 6%, and 8% for different applications. The 4% gel strength suitable for traditional DNA and RNA isolation applications.

Cat. #	Size
802522	5x100ml

LIQUI-GENE™ 6%

This is a premixed liquid acrylamide denaturing gel mix for use in polyacrylamide gel electrophoresis prepared at a 6% gel strength. This concentration is optimal for DNA sequencing applications.

Cat. #	Size
802524	5x100ml

LIQUI-PRO™ 4% STACKING GEL

Acrylamide stacking gel (4%) for use with Liqui-Pro™ acrylamide mix or with "hand-made" laboratory gels. It is made with 0.125M Tris at pH 6.8.

Cat. #	Size
821675	100 ml
821676	500 ml

Acrylamide/bis-Acrylamide Premixed Powders

MP's premixed acrylamide/bis-acrylamide powders substantially reduce spillage, waste, tedious weighings and excessive handling of toxic compounds. Prepared from Ultra Pure chemicals, these premixes only require the addition of the appropriate volume of deionized water, 73.5 ml for the 30 g size and 490 ml for the 200 g size, to form a standard stock solution stable up to one month at refrigerated temperatures. Three convenient ratios in two sizes are available for most gel preparations.

Cat. #	Ratio	Size
800655	19:1	30 g
800656	19:1	200 g
800657	29:1	30 g
800658		200 g
800659	37.5:1	30 g
800660		200 g

Acrylamide Powders

Since research is highly varied, MP offers a full line of acrylamide powders to meet your requirements. When separation is most critical, MP's "Ultra Pure" acrylamide is simply unbeatable for preparing superior quality gels with the best resolution and unmatched performance. For more economical and general applications, MP offers "Electrophoresis Grade" acrylamide as a high performing, practical alternative to Ultra Pure Grade. For other specialized operations, MP's protease-free, molecular biology reagent acrylamide provides maximum results and excellent characterizations. Finally, for routine procedures and quick analysis, standard acrylamide serves as an excellent low cost alternative.

ACRYLAMIDE

Storage: Room Temperature
 Suitable for electrophoresis
 CAS number : [79-06-1]
 Formula : C_3H_5NO
 MW: 71.1

Cat. #	Size
150256	500 g 1 kg

ACRYLAMIDE

Molecular Biology Reagent

CAS number : [79-06-1]
 Purity: >99%
 No detectable DNase, RNase, or protease.
 $E_{290}^{1\%}$ (290 nm): <0.10
 Acrylic acid content: <0.001%
 Formula : C_3H_5NO
 MW:
 Storage: Room Temperature

Cat. #	Size
193982	25 g 100 g 500 g 1 kg



ACRYLAMIDE

Electrophoresis Grade

CAS number : [79-06-1]
 Purity: >99%
 $E_{290}^{1\%}$ (290nm): <0.10
 Acrylic acid content: <0.01%
 Formula : C_3H_5NO
 MW: 71.1

Cat. #	Size
814340	100 g
814346	500 g
814349	1 kg

ACRYLAMIDE

ULTRA PURE

CAS number : [79-06-1]
 3x Crystalline
 Purity: >99.9%
 $E_{290}^{1\%}$ (290 nm): <0.10
 Acrylic acid content: <0.001%
 Formula : C_3H_5NO
 MW: 71.1
 Storage: Room Temperature

Cat. #	Size
814320	100 g
814323	250 g
814329	1 kg
821830	2.5 kg
821833	5 kg

Cross-linking Reagents

The most popular cross-linking reagent used in acrylamide gel formation is bis-acrylamide (N,N2-methylene-bis-acrylamide). Cross-linkers render the polymer water-insoluble, control pore size and effect swelling characteristics. Plus, they aid in producing a gel that is easily handled. Depending upon the cross-linker selected, the final gel may be made reversible or irreversible with varying characteristics useful for various separation techniques. Thus, availability of different cross-linking reagents from MP creates greater flexibility in the choice of final gel characteristics.

N,N'-DIALLYLTARTARDIAMIDE

(DATD)

CAS number : [28843-34-7]
 Formula : $C_{10}H_{16}N_2O_4$
 MW: 228.2

Allylic cross-linker with 1,2-diol structure which can be oxidized by periodic acid.

Excellent cross-linker for isoelectric focusing and isotachopheresis techniques due to good mechanical stability and large pore size in gels. May be solubilized for sample recovery from gel by incubation (30 minutes) with 2% periodic acid at room temperature.

Cat. #	Size
808272	25 g



N,N'-CYSTAMINE-bis-ACRYLAMIDE

(N,N'-bis-Acrylylcystamine; N,N'-bis(Acryloyl)cystamine; bis-Acrylylcystamine: BAC)

CAS number : [60984-57-8]

Storage: 0 TO 5°C

Disulfide containing cross-linker. After electrophoresis, BAC cross-linked gel may be dissolved by addition of a reducing agent such as dithiothreitol or 2-mercaptoethanol. Excellent cross-linker for recovery of material from the gel under physiological conditions.

Ref.: Anal. Biochem., 76, 37-44 (1976).

Cat. #	Size
190555	1 g
	5 g



1,4-DIACRYLOYLPIPERAZINE

CAS number : [6342-17-2]

Purity: >99%

mp 94-96° C

White powder

Heavy metals (as Pb): <10ppm

Formula : C₁₀H₁₄N₂O₂

MW: 194.2

1,4-Diacryloyl piperazine is a unique polyacrylamide gel crosslinker. Used in place of Bis (N,N2-methylene-bis-acrylamide), 1,4-Diacryloyl piperazine provides increased gel strength, improved electrophoretic separation of proteins, and less background during silver staining.

Ref.: Hochstrasser, A., Patchornik, A., Merrill, C., Analytical Biochemistry, 173, 412 (1988).

Cat. #	Size
809237	5 g
809239	10 g

N,N'-METHYLENE-bis-ACRYLAMIDE

Electrophoresis Grade

Storage: Room Temperature

CAS number : [110-26-9]

Formula : C₇H₁₀N₂O₂

MW: 154.2

Cross-linking agent for preparation of polyacrylamide gels for electrophoresis.

Cat. #	Size
195316	25 g
	100 g
	250 g



N,N'-METHYLENE-bis-ACRYLAMIDE

CAS number : [110-26-9]
 Storage: Room Temperature
 Molecular Biology Reagent
 Purity: 98+%
 Ideal for precise, critical PAGE gels.
 Acrylic acid content: <0.1%
 Formula : $C_7H_{10}N_2O_2$
 MW: 154.2

Cat. #	Size
193997	10 g
	25 g
	100 g
	250 g



N,N'-METHYLENE-bis-ACRYLAMIDE ULTRA PURE

CAS number : [110-26-9]
 Purity: 99.9%
 $E_{290}^{1\%}$ (290nm): <0.2
 Acrylic acid content: <0.02%
 Formula : $C_7H_{10}N_2O_2$
 MW: 154.2

High purity cross-linker used for precise, critical PAGE gels. May be used in UV scanning gels.

Cat. #	Size
800171	10 g
800706	25 g
800173	50 g
800175	250 g



Polymerization Initiators

Initiators assist in the polymerization process of gel formation. The purity of these compounds is critically important for successful gel formation and consistent, reproducible results. Today, TEMED serves as the most common initiator for polyacrylamide gel preparations.

AMMONIUM PERSULFATE (Ammonium peroxydisulfate)

CAS number : [7727-54-0]
 Storage: Room Temperature
 Formula: $(NH_4)_2S_2O_8$
 MW: 228.2

Polymerization catalyst for polyacrylamide gel in electrophoresis

Cat. #	Description	Size
190556		100 g
		250 g
		500 g
		1 kg



AMMONIUM PERSULFATE

CAS number : [7727-54-0]
Electrophoresis Grade
Purity: >99%
Formula: $(\text{NH}_4)_2\text{S}_2\text{O}_8$
MW: 228.2

Polymerization catalyst used with TEMED for polyacrylamide gel formation.

Cat. #	Size
802811	25 g
802829	100 g

AMMONIUM PERSULFATE, ACS

CAS number : [7727-54-0]
Storage: Room Temperature
ACS Reagent Grade
Purity: $\geq 98\%$
Formula: $(\text{NH}_4)_2\text{S}_2\text{O}_8$
MW: 228.2

Cat. #	Size
193858	100 g
	500 g



AMMONIUM PERSULFATE

CAS number : [7727-54-0]
Molecular Biology Reagent
Purity: >98%
Formula: $(\text{NH}_4)_2\text{S}_2\text{O}_8$
MW: 228.2

Polymerization catalyst used with TEMED for polyacrylamide gel formation.

Cat. #	Size
193988	25 g
	100 g
	500 g



3-(DIMETHYLAMINO)-PROPIONITRILE

(DMAPN)

CAS number : [1738-25-6]
 Electrophoresis Grade
 Purity: ≥98%
 Polymerization accelerator which may be used in place of TEMED.
 Formula: $C_5H_{10}N_2$
 MW: 98.2

Cat. #	Size
800661	100 g



FLAVIN MONONUCLEOTIDE

Storage: 0°C
 CAS number : [130-40-5]
 Monosodium Salt Dihydrate
 Practical Grade
 Purity: 78-80%
 Riboflavin Content: 2-3%
 Formula: $C_{17}H_{20}N_4O_9PNa \cdot 2H_2O$
 MW: 514.4
 Our assays of some dealers' product shows our material to be better than the commercial grade most others offer.

Cat. #	Size
151128	10 g 25 g

POTASSIUM PERSULFATE

CAS number : [7727-21-1]
 Electrophoresis Grade
 Purity: >99%
 Formula: $K_2O_8S_2$
 MW: 270.3

A polymerization accelerator used in polyacrylamide gel techniques.

Cat. #	Size
800468	100 g

RIBOFLAVIN

CAS number : [83-88-5]
 Purity: >98%
 Formula: $C_{17}H_{20}N_4O_6$
 MW: 376.4

Photoinitiator for polymerization of polyacrylamide gels. Causes less denaturing than other initiators. Gel strength can be improved when used with PTO.

Cat. #	Size
800029	25 g
800033	100 g

TEMED Electrophoresis Grade

(N,N,N',N'-TETRAMETHYL- ETHYLENEDIAMINE)

CAS number : [110-18-9]
 Electrophoresis Grade
 Purity: >99%
 Formula: $C_6H_{16}N_2$
 MW: 116.2

Polymerization accelerator for polyacrylamide gel formation.
 Packed in nitrogen purged containers.

Cat. #	Size
805613	5 ml
805614	25 ml
805615	50 ml



TEMED Molecular Biology Reagent

(N,N,N',N'-TETRAMETHYL- ETHYLENEDIAMINE)

CAS number : [110-18-9]
 Storage: Room Temperature
 Molecular Biology Reagent
 Purity: <99%
 Polyacrylamide gel formation catalyst.
 1 ml = approx. 0.77 g
 Formula: $C_6H_{16}N_2$
 MW: 116.2

Cat. #	Size
194019	25 ml
	50 ml
	100 ml



TEMED (N,N,N,N -Tetramethyl-Ethylenediamine)

Molecular biology grade

TEMED is used in conjunction with ammonium persulfate (Cat.# APS00100) to accelerate acrylamide polymerization

CAS number : 110-18-9
 MW: 116.21 g/mol
 UN code: UN2372
 EC No: 203-744-6
 Formula: C_6H_{16}

Specifications

Assay: $\geq 99.0\%$
 Water: $\leq 0.5\%$
 RNase, DNase, Protease free

Cat. #	Description	Size
TEMED050	TEMED	50 ml

► Storage: Store at +4°C, protected from light

► Risk and Safety: Hazardous material

Please refer to the material safety data sheet for proper handling

Agaroses

Agarose is a natural polysaccharide isolated from agar or agar-bearing marine algae. Its physical and chemical properties are particularly suited for use as a gel medium for diffusion and electrokinetic movement of biomolecules. Agarose is essentially biologically inert and forms relatively clear, transparent gels. Agarose based gels offer several advantages:

- High gel strength permits use of low concentrations.
- The macroporous nature of the gels allows rapid diffusion of high molecular weight molecules.
- Agarose is NON-toxic.
- Agarose gels are thermally reversible facilitating sample recovery.
- Staining and destaining may be done rapidly with minimal background.

Because agarose forms macroporous gels that are electrically nonionic, it is an excellent medium for Isoelectric Focusing (IEF). A selection of different formulated agaroses with specific qualities for unique applications are available from MP.

AGAROSE *High Resolution*

CAS number : [9012-36-6]

Molecular Biology Reagent

EEO: <0.12

Gel Temperature (1%): <30°C

A 1% solution remains fluid at 37°C for up to 24 hours. Will set to a firm gel at <25°C, and not remelt until temperatures exceed 65°C. This ability to remain in solution at 30-37°C allows a second digest on a restriction enzyme fragment without need to recover it from the gel. Separates small DNA fragments (200-800 bp) with a resolution comparable to acrylamide.

Cat. #	Size
193984	25 g 100 g

AGAROSE *Pulsed Field Electrophoresis*

CAS number : [9012-36-6]

Molecular Biology Reagent

Ideal for high molecular weight DNA separation.

EEO: 0.1±0.02;

Gel Temperature (1.5%): 36°C

Also suitable for RID, counterelectrophoresis, double diffusion and other immunological procedures

Cat. #	Size
193985	25 g 100 g 250 g

AGAROSE

Pulsed Field Electrophoresis

CAS number : [9012-36-6]

Sample Preparation

Molecular Biology Reagent

Gel Temperature (1%): <30°C

Excellent for making gel plugs for high molecular weight DNA separation. When embedded in plugs constructed from this agarose, cells are easily lysed and the resulting DNA released may be digested with restriction enzymes.

Cat. #	Size
193986	500 mg 1 g

AGAROSE

Broad Range

CAS number : [9012-36-6]

Molecular Biology Reagent

EEO: <0.15

Gel Temperature: <35°C

This is a general use agarose capable of separating DNA from 50 to 1,000 base pairs on a 3% gel.

Cat. #	Size
193987	5 g 10 g 25 g 100 g 500 g

AGAROSE

Low Gel Temperature

CAS number : [9012-36-6]

Electroendosmosis: 0.1

Gel Strength 1.5% solution: $\approx 550 \text{ gm/cm}^2$

Gel Temperature (1%): <30°C

A 1% solution remains fluid at 37°C for up to 24 hours. Will set to a firm gel at <25°C, and not remelt until temperatures exceed 65°C. This ability to remain in solution at 30-37°C allows a second digest on a restriction enzyme fragment without need to recover it from the gel. Agarose LGT is also preferred for studies of cellular antibody production and the Jerne Plaque assay of immune responses.

Also used in agarose droplet macrophage inhibitory factor (MIF) assay.

Cat. #	Size
800257	25 g
800259	100 g

AGAROSE

High Gel Temperature

CAS number : [9012-36-6]

Electroendosmosis: 0.1

Gel Strength 1.5% solution: ≈ 1200 gm/cm²

Gel Temperature (2%): 42°C

Useful for antibiotic sensitivity assays since increased migratory speed and sensitivity is possible with agarose HGT. High gel strength allows gel formation at low concentrations. Suitable for RID, counterelectrophoresis, double diffusion and other immunological procedures.

Cat. #	Size
800666	25 g

AGAROSE

Genetic Technology Grade

CAS number : [9012-36-6]

Electroendosmosis:

Gel Strength 1.5% solution: ≈ 2000 gm/cm²

Gel Temperature: 36°C

Specially prepared to allow recovery of active DNA after separation, with minimal inhibition of restriction and ligation enzymes. Very high gel strength is useful for separating nucleic acid fragments greater than 1 kb. Suitable for both analytical and preparative electrophoresis procedures.

Cat. #	Size
800668	100 g
800669	500 g

AGAROSE

CAS number : [9012-36-6]

Electrophoresis Grade

Electroendosmosis: 0.13

Gel Strength: ≈ 600 gm/cm²

Gel Temperature: 36°C

This is a standard agarose with good gel strength and clarity, suitable for all general applications.

Cat. #	Size
820721	100 g
820723	500 g

AGAROSE

Electrophoresis Grade

CAS number : [9012-36-6]

Storage: Room Temperature

Suitable for most general applications in electrophoresis

Cat. #	Size
100267	5 g
	10 g
	25 g
	50 g
	100 g
	250 g
	500 g

QA-Agarose™ Standard

Standard agarose for analytical electrophoresis

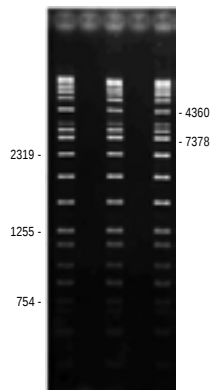
- Low EEO for complete resolution of bands >500 bp
- Highly purified, strict quality test procedures
- Tested for transfer to membrane

QA-Agarose™ Standard is a standard gelling temperature agarose with very low EEO (electroendosmosis) values giving complete resolution of bands greater than 500 bp. This agarose is recommended for analysis when sharp resolution of bands >500 bp is required. The product is quality tested on a lot basis to ensure the absence of DNases and RNases and for the absence of inhibitors to restriction enzymes. Each batch of agarose must pass a DNA transfer test whereby full DNA transfer must occur from gel to membrane in a 1 hour vacuum transfer procedure.

Specifications

Gelling Temp. (1.5% gel)	36°C +/- 2°C
Melting Temp. (1.5% gel)	89°C
Gel Strength (1% gel)	$\approx 1200 \text{ g/cm}^2$
Electroendosmosis (EEO)	δ
Sulphate	$\delta 0.14\%$
DNAse / RNAse activity	None detected
DNA blotting	Complete transfer
Inhibition of ligation and restriction enzymes	None detected

Molecular weight marker Raoul™ separated on a 1.5% QA-Agarose™ Standard Grade gel.



Cat. #	Description	Size
AGAH0100	QA-Agarose™ Standard	100 g
AGAH0250	QA-Agarose™ Standard	250 g
AGAH0500	QA-Agarose™ Standard	500 g

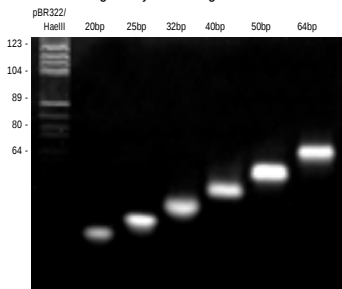
▷ Storage: Store below 22-25°C

QA-Agarose™ High Resolution

For the analysis of small nucleic acid fragments

- Separates from 20 bp to 2000 bp
- High concentrations up to 6%
- Resolves fragments differing in size by only 2 bp
- Avoids the need for PAGE
- Dissolves easily in a microwave

High Resolution QA-Agarose™ offers extremely fine sieving characteristics for the resolution of DNA fragments in the range 20 bp to 2000 bp. The gel retains manageable characteristics even at 6% concentration. In many cases this agarose can be used to replace polyacrylamide gels. This agarose has low DNA binding characteristics and can be used in blotting assays with fragments less than 600 bp.



Double-stranded oligonucleotides from 20bp to 64bp separated on a 6% QA-Agarose™ High Resolution gel

Specifications

Gelling Temp. (1.5% gel)	<26°C
Melting Temp.(1.5% gel)	<67°C
Gel Strength (1,5% gel)	>600 g/cm ²
Electroendosmosis	<
Sulphate	< 0.11%
DNAse / RNAse activity	None detected
DNA blotting	Complete transfer
Inhibition of ligation and restriction enzymes	None detected

Cat. #	Description	Size
AGAR0025	QA-Agarose™ High Resolution	25 g
AGAR0050	QA-Agarose™ High Resolution	50 g

▷ Storage: Store below 22-25°C

QA-Agarose™ Multipurpose *For preparative DNA and RNA electrophoresis*

- Versatile – separate fragments from 200 bp up to 50 kb by conventional electrophoresis
- Concentrations between 0.4% and 6%
- Suitable for use in pulsed field gel electrophoresis
- Significantly decreases electrophoresis times
- Improves separation of very large fragments
- Dissolves easily in a microwave
- Suitable for blotting assays

QA-Agarose™ Multipurpose is specially formulated and extensively tested to give excellent fragment resolution over a large size range, 200 bp to 50 kb, by conventional constant field electrophoresis. This agarose can be used at concentrations between 0.4% and 6% in all buffer systems (see figure). This agarose is also suitable for use in PFGE.

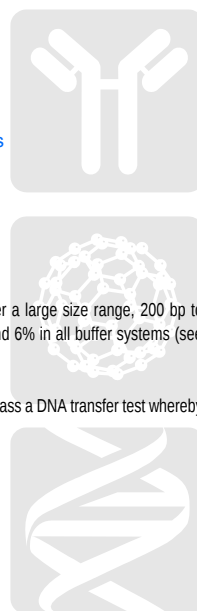
Quality tests ensure that this agarose is free from DNases, RNases and ligase inhibitors. Each batch of agarose must pass a DNA transfer test whereby quantitative transfer must occur from gel to membrane.

Specifications

Gelling Temp. (1.5% gel)	36°C +/- 1.5°C
Melting Temp.(1.5% gel)	89°C +/- 1.5°C
Gel Strength (1.5% gel)	>3200 g/cm ²
Electroendosmosis (EEO)	< 0.12%
Sulfate	< 0.07%
DNAse/RNase activity	None detected
DNA blotting	Complete transfer
Inhibition of ligation and restriction enzymes	None detected

Cat. #	Description	Size
AGAL0050	QA-Agarose™ Low Melting	50g

▷ Storage: Store below 22-25°C



QA-Agarose™ Low Melting

For preparative DNA and RNA electrophoresis

- In-gel manipulation, no gel purification necessary
- Finer sieving properties than standard melt agaroses
- High clarity
- Suitable for viral plaque assays

QA-Agarose™ Low Melting has finer sieving characteristics than standard melt agaroses and is recommended for the separation of DNA/RNA fragments greater than 500 bp. The low melting temperature (<65.5°C) permits nucleic acid recovery without denaturation or damage.

Once melted the low gelling temperature ensures that the agarose will remain in a liquid state at 37°C enabling manipulations such as enzyme digestion, ligation, DNA labeling, nick translation, random priming, PCR etc. in addition no prior purification of DNA is necessary.

Specifications

Gelling Temp. (1.5% gel)	24-28°C
Melting Temp. (1.5% gel)	δ 65.5°C
Gel Strength (1% gel)	> 300 g/cm ²
Gel Strength (1.5% gel)	> 550 g/cm ²
Electroendosmosis	<
Sulfate	< 0.12%
DNase/RNase activity	None detected
Inhibition of ligation and restriction enzymes	None detected

Cat. #	Description	Size
AGAP0100	QA-Agarose™ Multipurpose	100 g
AGAP0300	QA-Agarose™ Multipurpose	3 x 100 g

▷ Storage: Store below 22-25°C

Buffers & Biochemicals

Buffer & Solutions

MP's handy preparations simplify operations by eliminating repetitive weighing and handling numerous individual components. Premixed buffer solutions and powders offer greater convenience and allow more time to be spent on more important issues. Prepared from Ultra Pure reagents, these premixes provide more flexibility over a broad range of electrophoresis procedures. Solutions are ready-to-use or supplied as concentrates needing only the proper dilution. Powders require only the appropriate volume of deionized water. Simply mix the contents of the package with water, stir and a precise stock solution is ready-to-use.

TRIS-ACETATE-EDTA RUNNING BUFFER

(TAE Buffer)

Storage: Room Temperature

For nucleic acid work with agarose or acrylamide gels.

Supplied as premixed Tris-acetate and EDTA to make 10 liters of buffer solution, with a final concentration of 40 mM Trisacetate, 1 mM EDTA, pH 8.15.

Cat. #	Size
821804	10 liters

TAE10X

Molecular biology grade

TAE buffer (Tris acetate EDTA buffer) is used for the electrophoresis of nucleic acids and gives an excellent resolution of the DNA bands under low voltage.

Formulation TAE 10X

Tris Base:	0.4 M
Acetic acid:	0.2 M
EDTA :	0.01 M

Specifications

pH(25°C): 8.3+/-0.1

Conductivity (25°C): < 5.0 mS/cm RNase, DNase, Protease free Filtered through 0.2 µm PTFE Aseptically filled

Cat. #	Size
TAE10X01	500 ml
TAE10X03	5 liters

▷ Storage: Store at room temperature

TAE 50X *Molecular biology grade**TAE 50X buffer (Tris acetate EDTA buffer)**Formulation TAE 50X*

Tris Base:	2 M
Acetic acid:	1 M
EDTA:	0.05 M

Specifications

pH(25°C): 8.3+/-0.1

Conductivity (25°C): < 5.0mS/cm RNase, DNase, Protease free Filtered through 0.2µm PTFE Aseptically filled

Cat. #	Size
TAE50X01	1 liter

▷ Storage: Store at room temperature.

TRIS-BORATE-EDTA BUFFER

10X Concentrated Solution

This TBE buffer is a solution of 1M Tris, 0.9M boric acid and 0.01M EDTA disodium salt, prepared from MP's Ultra Pure products. It is used to prepare a 1X buffer for polyacrylamide and agarose gel electrophoresis. When diluted to a 1X concentration, it yields a TBE buffer solution that contains 100 mM Tris, 90 mM boric acid and 1 mM EDTA.

10X Solution pH at 25°C: 8.4 ±0.1

1X Solution pH at 25°C: 8.33

No detectable contaminating activity found in DNA nicking, ribonuclease and protease assays.

Cat. #	Size
816721	1 liter
816724	4 liter

TRIS-BORATE-EDTA BUFFER

0.089 M Tris
0.089 M Boric acid
0.0025 M EDTA

Empty contents of 1 packet into a 4-liter flask and add deionized water. Four liters of pH 8.3 TBE buffer are now ready to use. This non-SDS based buffer is commonly used for Polyacrylamide Gel Electrophoresis. (1 box contains 12 packets)

Cat. #	Size
816202	1 box

TBE5X

Molecular biology grade

TBE (Tris Borate EDTA buffer) is a widely used electrophoresis buffer. This optimized buffer offers a high level of resistance to the Joule effect which occurs during prolonged high voltage electrophoretic migrations.

Formulation TBE 5X

Tris:	0.445 M
Boric acid:	0.445 M
EDTA :	0.01 M

Specifications

pH(25°C):	8.3+/-0.1
Conductivity (25°C):	3.0-5.0 mS/cm RNase, DNase, Protease free Filtered through 0.2 µm PTFE Aseptically filled

Cat. #	Size
TBE5X001	5 liters

▷ Storage: Store at room temperature

TBE 10X

Molecular biology grade

Formulation TBE 10X

Tris:	0.89 M
Boric acid:	0.89 M
EDTA:	0.02 M

Specifications

pH(25°C):	8.3+/-0.1
Conductivity (25°C):	5.5 +/- 0.5 mS/cm RNase, DNase, Protease free Filtered through 0.2µm PTFE Aseptically filled

Cat. #	Size
TBE10X02	1 liter
TBE10X03	5 liters

▷ Storage: Store at room temperature.

TRIS-EDTA BUFFER

10 mM Tris HCl
0.1 mM EDTA

Empty contents of 1 packet into a 4-liter flask and add deionized water. Four liters of pH 7.4 buffer are now ready for use. This buffer is useful for DNA extractions from Low Gelling Temperature (LGT) Agarose gels.

Note: If contents of 1 packet are dissolved in only 2 liters of deionized water, this buffer is then useful for DNA isolations with cesium chloride protocols. (1 box contains 12 packets)

Cat. #	Size
816204	1 box

TE 1X *Molecular biology grade - Ready-to-use*

TE Buffer (Tris EDTA) is commonly used to resuspend nucleic acids.

Formulation TBE 1X

Tris buffer : 10 mM

EDTA : 1 mM

HCl : to adjust pH

Specifications

pH (25°C) : 8.0 +/- 0.1

Conductivity (25°C) : 900 – 1050 µS/cm RNase, DNase, Protease free Filtered through 0.2 µm PTFE Aseptically filled

Cat. #	Size
TE1X1000	1 liter

▷ Storage: Store at room temperature

TRIS-GLYCINE BUFFER

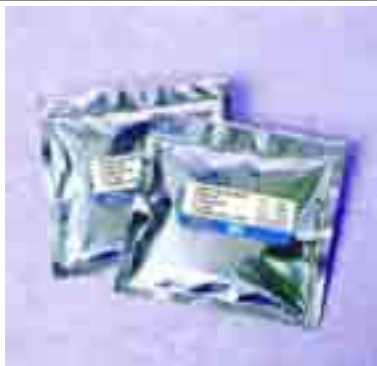
0.025 M Tris

0.192 M Glycine

Empty contents of 1 packet into a 4-liter flask, add 800 ml of methanol, and quesece to volume with deionized water. Four liters of pH 8.3 buffer are now ready to use.

This buffer is routinely used for electroblotting of proteins (Western Protein Transfer). Recommended buffer for use with our Biotrans™ Membranes for Western Transfers. (1 box contains 12 packets)

Cat. #	Size
816200	1 box

**TRIS-GLYCINE-SDS BUFFER**

0.025 M Tris

0.192 M Glycine

0.1% SDS

Empty contents of 1 packet into a 4-liter flask and add deionized water. Four liters of buffer are now ready to use.

This is a commonly used protein running buffer in electrophoresis. (1 box contains 12 packets)

Cat. #	Size
816201	1 box

TRIS-TRICINE ANODE BUFFER

10X Liquid Concentrate

Storage: 0 TO 5°C

Dilute 1 part liquid concentrate with 9 parts deionized, Ultra Pure water.

Final solution contains 200 mM Tris-HCl, approximate pH 8.9.

Cat. #	Size
821853	1 liter

Buffer Components

The following high purity chemicals are used in the preparation of buffers for electrophoresis procedures to standardize and stabilize the pH of solutions and gels.



BICINE

(*N,N*-bis [2-hydroxyethyl]glycine)

CAS number : [150-25-4]

Storage: Room Temperature

pKa = 8.3 at 25°C

Useful pH range 7.6-9.0

Formula: $C_6H_{13}NO_4$

MW: 163.2

Cat. #	Size
101005	25 g
	100 g
	250 g
	1 kg

BIS-TRIS

(2,2-Bis-(hydroxymethyl)-2,2',2''-nitrilotriethanol)

Storage: Room Temperature
 CAS number : [6976-37-0]
 Purity: 99+%
 Zwitterionic buffer
 pKa = 6.5 at 25°C
 Useful pH range 5.8-7.2.
 Formula: $C_{12}H_{19}NO_5$
 MW: 209.2

Cat. #	Size
101038	25 g 100 g 500 g 1 kg

BORIC ACID

CAS number : [10043-35-3]
 Storage: Room Temperature
 Molecular Biology Reagent
 Purity: <99%
 Mg: 85 ppm
 Fe: 85 ppm
 Pb: 820 ppm
 Formula: H_3BO_3
 MW:

Cat. #	Size
194810	500 g 1 kg 5 kg 10 kg

BSA Powder

Standard grade

Bovine Serum Albumin (Cohn, Fraction V equivalent)
 For the preparation of hybridization media. Blocking reagent in immunological reactions.
 CAS number : 9048-46-8
 MW : ~ 68 000 g/mol
 EC No: 292-322-5

Specifications

Albumin (HPLC) : > 98%
 pH (2%, H_2O , 20°C) : 7 +/- 0.5
 Loss on drying : max 3%

Cat. #	Size
BSASG100	100 g

▷ Storage: Store at +4°C

BSA Solution (20 mg/ml)

Molecular biology grade

Used for stabilizing enzyme activity in incubation or storage buffers. This albumin has been checked for the absence of contaminating DNases, RNases, and nicking enzymes.

Specifications

Aqueous solution at 20 mg/ml

Cat. #	Size
BSAS2001	1 ml

▷ Storage: Store at -20°C

CALCIUM CHLORIDE

ULTRA PURE

Storage: Room Temperature
 CAS number : [10035-04-8]
 Ultra Pure Reagent
 Dihydrate
 Purity: 99%
 Formula: $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$
 MW: 147.0

Cat. #	Size
193818	100 g
	500 g
	1 kg

Denhardt's Solution

Stock solution 100X

Suitable for nucleic acid hybridization. Denhardt's solution is a mixture of high-molecular weight polymers capable of saturating non-specific binding sites and artificially increasing the concentration of available probe. Denhardt's solution is 100 fold concentrated and should be diluted to 50 fold with distilled water.

Specifications

Appearance : clear and slightly yellow solution
 BSA fraction V: 20 g/l
 Ficoll™ 400 : 20 g/l
 Polyvinylpyrrolidone : 20 g/l
 (Ficoll™ is a Trademark of Pharmacia LTD)
 pH (25°C) : 7 ±0,2
 RNase, DNase, Protease free

Cat. #	Size
DENH1003	100 ml

▷ Storage: Store at -20°C

DITHIOERYTHRITOL

(DTE; Cleland's Reagent)

CAS number : [6892-68-8]

Storage: 0 TO 5°C

Molecular Biology Reagent

Purity: 99+%

Ideal for molecular biology applications.

Formula: $C_4H_{10}O_2S_2$

MW: 154.2

Cat. #	Size
194820	250 mg
	1 g
	5 g
	10 g
	25 g
	50 g



DL-DITHIOTHREITOL

(DTT)

CAS number : [27565-41-9]

Storage: 0 TO 5°C

Molecular Biology Reagent

Purity: >99%

Formula: $C_4H_{10}O_2S_2$

MW: 154.2

Cat. #	Size
194821	250 mg
	1 g
	5 g
	10 g
	25 g
	50 g



ETHYLENEDIAMINETETRAACETIC ACID

(EDTA)

CAS number : [60-00-4]

Electrophoresis Grade

Purity: ≥99.5%

Heavy metals (as Pb): <10 ppm

Iron (Fe): <10 ppm

Sulfated ash: <0.1%

Used as a buffer component.

Formula: $C_{10}H_{16}N_2O_8$

MW: 292.3

Cat. #	Size
800682	500 g
800683	1 kg
800684	5 kg

ETHYLENEDIAMINETETRAACETIC ACID (EDTA)

CAS number : [6381-92-6]
 Storage: Room Temperature
 Molecular Biology Reagent
 Purity: 99+%
 Disodium Salt
 Dihydrate
 Ideal for most molecular biology applications.
 Formula: $C_{10}H_{14}N_2O_8Na_2 \cdot 2H_2O$
 MW: 372.2

Cat. #	Size
194822	50 g 100 g 250 g 500 g 1 kg 5 kg

EDTA Easy Sol

EDTA Easy Sol is a convenient ready-to-use solution of the disodium salt of EDTA, supplied sterile at 0.5M, pH 8.0. It can be readily diluted into any buffer of choice. EDTA is a chelat-ing agent widely used in buffers or solutions including elec-trophoresis buffers, protein purification, etc.

Specifications

Sterile solution.
 Concentration : 0.5 M
 pH (25°C) : 8.0 +/- 0.1
 RNase, DNase, Protease free

Cat. #	Size
EDTA05M1	100ml

▷ Storage: Store at room temperature
 ► Risk and Safety: Hazardous material Please refer to the material safety data sheet

FICOLL®

CAS number : [26873-85-8]
 Storage: Room Temperature
Molecular Biology Reagent Dialyzed
 A copolymer of sucrose and epichlorohydrin.
 Component used to make density gradients for lymphocyte separation.
 Ficoll® is a registered trademark of Pharmacia, Inc.
 Approx. Mol. Wt. 400,000

Cat. #	Size
194824	5 g 10 g 25 g 100 g



GLYCEROL

CAS number : [56-81-5]
 Highly purified
 Purity: 99+%
 1 ml = approx. 1.25 gm
 Heavy metals (as Pb): <5 ppm
 Formula: $C_3H_8O_3$
 MW:

Cat. #	Size
195204	100 ml 500 ml 1 liter

GLYCEROL
ULTRA PURE

CAS number : [56-81-5]
 Purity: 99.5%
 Mercury: <10ppm
 Lead: <5 ppm
 Iron: <5 ppm
 Zinc: <2 ppm
 Formula: $C_3H_8O_3$
 MW:

Used in the concentration and storage of enzymes. Also prevents back-diffusion and protein samples into the buffer.

Cat. #	Size
800687	500 ml
800688	1 liter
800689	4 liters

GLYCINE

CAS number : [56-40-6]
 Molecular Biology Reagent
 Purity: 99+%
 Formula: $C_2H_5NO_2$
 MW:

Ideal for all molecular biology applications and buffer preparations.

Cat. #	Size
194825	100 g 500 g 1 kg 5 kg

GLYCINE

CAS number : [56-40-6]
 Electrophoresis Grade
 Purity: > 99.5%
 Heavy metals (as Pb): 20 ppm
 Used for preparation of Tris-glycine buffers.
 Formula: $C_2H_5NO_2$
 MW:

Cat. #	Size
808822	1 kg
808831	5 kg

GLYCINE, ACS

CAS number : [56-40-6]
 ACS Reagent Grade
 Heavy metals (as Pb): 20 ppm
 Formula: $C_2H_5NO_2$
 MW:

Cat. #	Size
194049	50 g
	250 g
	1 kg

Glycine

Molecular biology grade

Aminoacetic acid, glycol. Used for the preparation of buffers in pH range 9.5-10.5.

CAS number : 56-40-6
 Formula : $C_2H_5NO_2$
 EC No : 200-272-2
 MW : 75.07 g/mol

Specifications

Assay : > 99.0 %
 pH (5%, H_2O) : 6.1 +/- 0.2
 A_{280} (0.1M) : <
 A_{280} (0.1M) : <
 Heavy metals (as Pb) : < 0.001 %
 Chloride : < 0.01%
 Sulfate : < 0.01 %
 RNase, DNase, Protease free

Cat. #	Size
GINE01KG	1 kg

▷ Storage: Store at room temperature, stored dry

HYDROCHLORIC ACID, ACS

CAS number : [7647-01-0]
Storage: Room Temperature
ACS Reagent Grade
Purity: 36.5-38%
Formula: HCl
MW: 36.5

Cat. #	Size
194054	100 ml
	500 ml
	1 liter

HYDROCHLORIC ACID

CAS number : [7647-01-0]
Storage: Room Temperature
1.0 N Solution
Formula: HCl
MW: 36.5

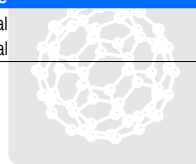
Cat. #	Size
194055	1 gal
	5 gal

MES MONOHYDRATE

(2-[N-Morpholino]ethanesulfonic acid)

CAS number : [4432-31-9]
Storage: Room Temperature
Molecular Biology Reagent
Free Acid
Purity: ≥99%
Zwitterionic buffers
pKa = 6.15 at 25°C
Formula: $C_6H_{13}NO_4 \cdot H_2O$
MW: 213.2

Cat. #	Size
194835	10 g
	25 g
	100 g
	250 g



MOPS

(3-[N-Morpholino]propanesulfonic acid)

CAS number : [1132-61-2]
Storage: Room Temperature
Molecular Biology Reagent
Purity: 99+%
Free Acid
Useful buffer range: 6.5-7.9
Formula: $C_7H_{15}NO_4S$
MW: 209.3

Cat. #	Size
194837	25 g
	100 g
	500 g

PHOSPHORIC ACID, ACS

CAS number : [7664-38-2]
Storage: Room Temperature
ACS Reagent Grade
Purity: ≥85%
Aqueous solution
Formula: H_3PO_4
MW: 98.0

Cat. #	Size
194878	100 g
	500 g

SODIUM CITRATE

CAS number : [68-04-2]
Storage: Room Temperature
Molecular Biology Reagent
Purity: <99%
Trisodium Salt
Dihydrate
Formula: $C_6H_5O_7Na_3 \cdot 2H_2O$
MW:

Cat. #	Size
194817	100 g
	500 g
	1 kg
	5 kg
	10 kg

SODIUM HYDROXIDE

1N solution

Storage: Room Temperature

Used for adjusting the pH after buffer addition

Storage temperature: 15-30°C

Cat. #	Size
1688145	10 ml



SUCROSE

CAS number : [57-50-1]

Storage: Room Temperature

Molecular Biology Reagent

Purity: 99+%

Glucose: <0.1%

Heavy metals (Pb): <5 ppm

DNase, RNase, and protease-free.

Formula: $C_{12}H_{22}O_{11}$

MW:

Cat. #	Size
194018	500 g
	1 kg
	5 kg

SUCROSE
ULTRA PURE

CAS number : [57-50-1]

Purity: 99.9%

RNase-Free

Heavy metals (as Pb): <5 ppm

Glucose: <0.1%

Arsenic: <0.001 ppm

DNase and RNase free.

Formula: $C_{12}H_{22}O_{11}$

MW: 324.3

Cat. #	Size
821713	1 kg
821721	5 kg

SODIUM CHLORIDE

CAS number : [7647-14-5]
Storage: Room Temperature
Molecular Biology Reagent
Purity: 99.5% min.
Crystalline
Ideal for all molecular biology applications.
Formula: NaCl
MW:

Cat. #	Size
194848	500 g 1 kg 5 kg 10 kg

1,1,1-TRICHLORO-2-METHYL-2- PROPANOL

(Chlorobutanol; Chloretone; b,b,b-Trichloro-t-butanol)

CAS number : [6001-64-5]
Storage: Room Temperature
Hemihydrate
Crystalline
Formula: $C_4H_7Cl_3O \cdot 1/2H_2O$
MW: 186.5

Cat. #	Size
156983	100 g 250 g 500 g

TRICINE

(N-Tris-[hydroxymethyl]methylglycine)

CAS number : [5704-04-1]
Storage: Room Temperature
Biological buffer
pKa at 25°C = 8.1
Buffering pH range 7.4-8.8
Formula: $C_6H_{13}NO_5$
MW: 179.2

Cat. #	Size
103112	25 g 100 g 250 g 1 kg

TRIS

(Tris-[hydroxymethyl]aminomethane)

CAS number : [77-86-1]

Storage: Room Temperature

Molecular Biology Reagent

Purity: 99.95% min.

Buffering pH range 7.0-9.0

pKa at 25°C = 8.1

Formula: $C_4H_{11}NO_3$

MW:

Excellent biochemical and biological buffer for all molecular biology applications.

Cat. #	Size
194855	100 g
	250 g
	500 g
	1 kg
	5 kg

TRIS

CAS number : [1185-53-1]

Hydrochloride

Purity: 99%

Heavy metals as (Pb): <0.000022%

RNAse and DNAse free

Formula: $C_4H_{11}NO_3 \cdot HCl$

MW: 157.6

Cat. #	Size
816116	100 g
816124	500 g
816100	1 kg

TRIS

(Tris-[hydroxymethyl]aminomethane)

CAS number : [77-86-1]

Storage: Room Temperature

USP Grade

Purity: 99.95% min.

Buffering pH range 7.0-9.0

pKa at 25°C = 8.1

Excellent biochemical and biological buffer for all applications

where ultra high purity is required.

Formula: $C_4H_{11}NO_3$

MW:

Cat. #	Size
195605	50 g
	100 g
	500 g
	1 kg

TRIS

CAS number : [1185-53-1]
 Storage: Room Temperature
 Molecular Biology Reagent
 Purity: ≥99%
 Hydrochloride
 Formula: $C_4H_{11}NO_3 \cdot HCl$
 MW: 157.6

Cat. #	Size
194856	100 g
	250 g
	500 g

Tris Base

Molecular biology grade

Tris (Tris-(Hydroxymethyl) aminomethane) buffer (pH 8-9) is used for the preparation of buffer solutions e.g. reaction buffers for restriction enzymes or nucleic acid modifying enzymes.

CAS number : 77-86-1
 Formula : $C_4H_{11}NO_3$ EC
 No : 201-064-
 MW : 121.14 g/mol

Specifications

Assay : > 99.8 %
 Moisture : < 0.3 %
 pH (0.5M, H₂O, 20°C) : 11 +/- 0.5
 A₂₈₀ (0.5M, H₂O) : <
 Heavy metals (as Pb) : < 0.0001%
 Iron : < 0.0001 %
 Copper : < 0.0001 %
 RNase, DNase, Protease free

Cat. #	Size
TRIS01KG	1 kg
TRIS05KG	5 kg

▷ Storage: Store at room temperature, stored dry

► Risk and Safety: Hazardous material Please refer to the material safety data sheet

TRIS

ULTRA PURE

CAS number : [77-86-1]
 Purity: 99.9%
 Heavy metals (as Pb): <5 ppm
 O.D. (260nm) of a 5% saturated solution: <0.1
 pKa at 20°C = 8.1
 Biological buffer reagent.
 Formula: $NH_2C(CH_2OH)_3$
 MW:

Cat. #	Size
819620	500 g
819623	1 kg
819638	5 kg
	

UREA

(Carbamide)

CAS number : [57-13-6]

Storage: Room Temperature

Crystalline

Reagent Grade

Suitable for most standard applications.

Formula: $\text{CH}_4\text{N}_2\text{O}$

MW: 60.1

Cat. #	Size
103209	100 g
	500 g
	1 kg
	5 kg

UREA

CAS number : [57-13-6]

Molecular Biology Reagent

Pb: <2 ppm

Formula: H_2NCONH_2

MW:

Cat. #	Size
194857	100 g
	500 g
	1 kg
	5 kg

UREA

CAS number : [57-13-6]

Storage: Room Temperature

Ultra Pure

Purity: 99%

4X Crystallized

Suitable for use as a protein denaturant

Formula: $\text{CH}_4\text{N}_2\text{O}$

MW: 60.1

Cat. #	Size
105695	1 lb
	5 lb

UREA

ULTRA PURE

CAS number : [57-13-6]
Purity: ≥99%
Heavy metals (as Pb): <0.002 ppm
O.D. (260nm) of a 7M solution: <0.05
Protein denaturant.
Formula: H_2NCONH_2
MW: 60.1

Cat. #	Size
821519	1 lb
821527	5 lb
821532	25 lb
821530	5 kg
821531	25 kg

WATER

Cat. #	Size
821932	500 ml

Ultra Pure Water

Sterile, Molecular biology grade

This high quality molecular biology grade water is indicated for reagent preparation in nucleic acid research, diagnostics, tissue culture, *in vitro* fertilization and for many other applications requiring exceptional quality water.

Specifications

Residue on evaporation : < 0.0001%
Chloride : < 0.00001%
Sulfate : < 0.00005%
Heavy metals (as Pb) : < 0.000001%
TOC : < 50 ppb
Resistivity (25°C) : ≥18 MW.cm at manufacture
RNase, DNase, Protease free
Filtered through 0.2µm PTFE

Cat. #	Size
SWATER01	10 x 100 ml

▷ Storage: Stable at room temperature

Detergents & Solubilizers

BRIJ 35

(Polyoxyethylene 23 Lauryl Ether)

CAS number : [9002-92-0]

Storage: Room Temperature

Molecular Biology Reagent

For use in Stein-Moore Chromatography and all molecular biology applications.

Ref.: Stein, W.H. and Moore, S.J., J. Biol. Chem., 211, 893 (1954).

Cat. #	Size
194840	100 g
	250 g

BRIJ 35

(Polyoxyethylene Lauryl Ether)

CAS number : [9002-92-0]

Storage: Room Temperature

Suitable for use in Stein-Moore Chromatography.

Ref.: Stein, W.H. and Moore, S.J., J. Biol. Chem., 211, 893 (1954).

Cat. #	Size
101111	1 kg
	5 kg

CHAPS

(3-[3-Cholamidopropyl]dimethylammonio- 1-propane sulfonate)

CAS number : [75621-03-3]

Purity: >98%

Formula: $C_{32}H_{59}N_2O_7S$

MW: 614.9

Zwitterionic detergent useful for solubilizing membrane proteins. Frequently used prior to electrophoresis since it generally does not denature the proteins.

Cat. #	Size
808196	5 g

N-DODECYL-N,N-DIMETHYL-3-AMMONIO-1-PROPANESULFONATE
(Lauryl sulfobetaine; SB-12)

CAS number : [14933-08-5]

Storage: Room Temperature

Formula: $C_{17}H_{37}NSO_3$

MW: 335.6

Ref.: Gonenne, A. and Ernst, R., Anal. Biochem., 87, 28 (1978).

Cat. #	Size
152488	1 g
	5 g
	25 g

FORMAZOL[®]

A specially purified and stabilized formamide for use as an RNA solubilizer. It is unlike any other commercially available formamide.

Benefits:

- Protected from RNase Degradation
- Stable for one year at +4°C
- Permits High Sample Volume applied to Formaldehyde-Agarose Gel

Ref: Chomczynski, P., Nucleic Acids, 20(4): 3791-3792 (1992)

Cat. #	Size
821827	25 ml

n-OCTYL-b-D-GLUCOPYRANOSIDE

(*n-Octyl-b-D-Glucoside*)

CAS number : [29836-26-8]

Storage: 0 TO 5°C

Crystalline

Purity: >98%

Non-ionic detergent for membrane protein.

Formula: $C_{18}H_{36}O_6$

MW: 292.4

Ref.: Gould, R.J., et al., Biochem., 20, 6776 (1981).

Cat. #	Size
150054	250 mg
	500 mg
	1 g
	5 g
	10 g
	25 g

OCTYL-b-D-THIOGLUCOPYRANOSIDE

(*Octyl-thioglucoside*)

CAS number : [85618-21-9]

Storage: 0°C

Crystalline

Formula: $C_{14}H_{28}O_5S$

MW: 308.4

A non-ionic detergent for solubilization of membrane proteins.

Ref.: Saito, S. and Tsuchiya, T., Biochem. J., 222, 829 (1984).

Cat. #	Size
152486	500 mg
	1 g
	5 g
	10 g

GUANIDINE HYDROCHLORIDE, *ULTRA PURE*
(Aminomethanamide HCl)

CAS number : [50-01-1]
Storage: Room Temperature
Crystalline
Purity: ≥99.5%
Forms clear, colorless solutions at 6.0 M concentration. O.D.
260 nm of a 6.0 M solution: <0.03.
Formula: $\text{CH}_5\text{N}_3 \cdot \text{HCl}$
MW: 95.5

Cat. #	Size
105696	25 g
	100 g
	500 g
	1 kg
	5 kg

GUANIDINE HYDROCHLORIDE, *ULTRA PURE*

CAS number : [50-01-1]
Purity: >99%
O.D. (260 nm) of a 6 M solution: <0.03
Ammeline: none detected
Protein denaturant for molecular weight determinations.
Formula: $\text{CH}_5\text{N}_3 \cdot \text{HCl}$
MW:

Cat. #	Size
820512	100 g
820539	500 g
820540	1 kg

GUANIDINE HYDROCHLORIDE

CAS number : [50-01-1]
Storage: Room Temperature
Molecular Biology Reagent
Purity: 99+%
Formula: $\text{CH}_5\text{N}_3 \cdot \text{HCl}$
MW:

Cat. #	Size
194826	25 g
	100 g
	500 g
	1 kg
	3 kg

GUANIDINE THIOCYANATE

CAS number : [593-84-0]
Research Grade
Purity: >98%
Formula: $\text{CH}_5\text{N}_3 \cdot \text{HSCN}$
MW: 118.2
Strong protein denaturant which inactivates nucleases
approximately 2.5 times faster than guanidine hydrochloride.

Cat. #	Size
820991	500 g
	

GUANIDINE THIOCYANATE

CAS number : [593-84-0]
Molecular Biology Reagent
Purity: >99%
Formula: $\text{CH}_5\text{N}_3 \cdot \text{HSCN}$
MW: 118.2

Strong protein denaturant which inactivates nucleases approximately 2.5 times faster than guanidine hydrochloride.

Cat. #	Size
194003	100 g
	250 g
	500 g

IGEPAL® CA-630

CAS number : [9002-93-1]
Storage: Room Temperature
Non-Ionic Detergent

This product is chemically equivalent to Nonidet P-40. Nonidet is no longer commercially available. Igepal® is a registered trademark of Rhne-Poulenc.

Cat. #	Size
198596	50 ml
	100 ml
	500 ml

LITHIUM DODECYL SULFATE

(LDS; Lauryl sulfate lithium salt)

CAS number : [2044-56-6]
Molecular Biology Reagent
Purity: <99%
Formula: $\text{C}_{12}\text{H}_{25}\text{SO}_4\text{Li}$
MW:

Cat. #	Size
194830	5 g
	25 g
	50 g

LITHIUM DODECYL SULFATE, *ULTRA PURE*

(LDS; Lauryl sulfate lithium salt)

CAS number : [2044-56-6]
 Purity: >99%
 Formula: $C_{12}H_{25}OSO_3Li$
 MW: 272.3

Exhibits greater solubility than SDS at lower temperatures, while maintaining similar detergency and wetting ability.

Cat. #	Size
800752	5 g
800753	25 g

MEGA-8

(Octanoyl-N-methylglucamide)

CAS number : [85316-98-9]
 Storage: Room Temperature
 Purity: <98%
 Formula: $C_{15}H_{31}NO_6$
 MW: 321.4

A nonionic detergent, transparent in UV region. Excellent for use as a membrane protein solubilizer.

Ref.: Hildreth, J.E.K., Biochem. J., 207, 3636 (1982).

Cat. #	Size
150055	1 g
	5 g
	25 g

MEGA-10

(Decanoyl-N-methylglucamide)

CAS number : [85261-20-7]
 Storage: 0°C
 Purity: <98%
 Formula: $C_{17}H_{35}NO_6$
 MW: 349.5

A nonionic detergent, transparent in UV region. Excellent for use as a membrane protein solubilizer.

Cat. #	Size
150057	1 g
	5 g
	25 g





2-MERCAPTOETHANOL

(b-Mercaptoethanol; 2-Hydroxyethylmercaptan)

CAS number : [60-24-2]

1 ml = approx. 1.12 g

Formula: C_2H_6OS

MW:

Used to reduce disulfide linkages in solubilizing proteins for gel electrophoresis. Also reduces excess oxidative polymerization of catalysts.

Cat. #	Size
190242	100 ml
	250 ml
	500 ml
	1 liter

2-MERCAPTOETHANOL

CAS number : [60-24-2]

Purity: $\geq 98\%$

Formula: C_2H_6OS

MW:

Specially purified for use in solubilizing proteins for gel electrophoresis.

Cat. #	Size
806443	25 g
806444	100 g
806445	500 g



2-MERCAPTOETHANOL

CAS number : [60-24-2]

Molecular Biology Reagent

Purity: 98+%

Formula: C_2H_6OS

MW:

Specially purified for molecular biology applications.

Cat. #	Size
194834	25 ml 100 ml 250 ml



SODIUM DODECYL SULFATE

(SDS; Lauryl sulfate sodium salt)

CAS number : [151-21-3]

Storage: Room Temperature

Purity: 99%

Formula: $C_{12}H_{25}O_4SNa$

MW: 288.4

Anionic detergent used to solubilize proteins prior to electrophoresis.

Cat. #	Size
102918	10 g 25 g 100 g 500 g 1 kg



SODIUM DODECYL SULFATE

CAS number : [151-21-3]

Molecular Biology Reagent

Purity: <99%

Formula: $CH_3(CH_2)_{11}OSO_3Na$

MW: 288.4

Cat. #	Size
194831	25 g 100 g 250 g 500 g 1 kg



SODIUM DODECYL SULFATE, *ULTRA PURE*

CAS number : [151-21-3]
Purity: >99%
E₂₈₀ (280 nm): <0.1
Heavy Metals (as Pb): <0.002%
Anionic detergent used to solubilize proteins.
Formula: CH₃(CH₂)₁₁OSO₃Na
MW: 288.4

Cat. #	Size
811033	25 g
811036	50 g
811034	100 g
811032	500 g
811030	1 kg



Sodium Dodecyl Sulfate (SDS)

Molecular biology grade

This multipurpose, anionic detergent can be used for protein solubilization, plasmid extraction from bacteria, and to reduce non-specific binding sites on membranes during nucleic acid hybridization.

(Lauryl sulfate sodium salt, SDS)

CAS number : 151-21-3
MW: 288.38g/mol
ECN: 205-788-1
Formula: C₁₂H₂₅OSO₃Na

Specifications

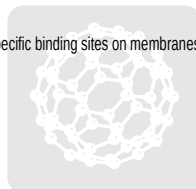
Assay (titrimetry): > 99.0%
A₂₆₀(0.1M,H₂O): < 0.005
A₂₈₀(0.1M,H₂O): < 0.005
Heavy metals (as Pb): < 0.0005%
Chloride: <0.1%
Phosphate: 0.0005%
RNase, DNase, Protease free

Cat. #	Description	Size
SDS00100	Sodium Dodecyl Sulfate	100 g
SDS00250	Sodium Dodecyl Sulfate	250 g

Storage: stable at room temperature in a dry environment

► Risk and Safety: Hazardous material

Please refer to the material safety data sheet for proper handling



SODIUM DODECYL SULFATE

CAS number : [151-21-3]

20% Solution

Purity: >99.5% alkyl sulfate

Formula: $C_{12}H_{25}NaSO_4$

MW: 288.4

A **ready-to-use** protein denaturing agent. Ideal for immediate preparation of routine gels.

>97% dodecyl sulfate (GC)

Working Concentration:>10 mg detergent per mg of protein.

Cat. #	Size
198957	100 ml 500 ml

Sodium Dodecyl Sulfate (SDS) Solution 20% (w/v) *Molecular biology grade*

This multipurpose, anionic detergent can be used for protein solubilization, plasmid extraction from bacteria, and to reduce non-specific binding during nucleic acid hybridization on membranes. This solution is provided as a convenient ready-to-use format which overcomes the need to handle powdered SDS, which is a known irritant. At low temperatures the SDS solution may precipitate; warm at 37°C for complete dissolution.

Specifications

Assay (SDS): 20 +/-1%

Heavy metals (as Pb): < 0.0005%

Chloride: < 0.1%

Phosphate: 0.0005%

RNase, DNase, Protease free

Cat. #	Description	Size
SDS20001	Sodium Dodecyl Sulfate 20% solution	500 ml
SDS20002	Sodium Dodecyl Sulfate 20% solution	1 liter

▷ Storage: room temperature

► Risk and Safety: Hazardous material Please refer to the material safety data sheet for proper handling

5-SULFOSALICYLIC ACID

CAS number : [5965-83-3]

Storage: Room Temperature

Dihydrate

Crystalline

Purity: <98%

Formula: $C_7H_6O_6S \cdot 2H_2O$

MW:

Reagent for precipitation of proteins from serum and tissue.

Also useful for detection of cobalt.

Cat. #	Size
160001	100 g 500 g 1 kg

5-SULFOSALICYLIC ACID, ACS

(2-Hydroxy-5-sulfobenzoic acid)

CAS number : [5965-83-3]

Storage: Room Temperature

Dihydrate

ACS Reagent Grade

Purity: 99.0-101.0%

Formula: $C_7H_6O_6S \cdot 2H_2O$

MW: 254.2

Cat. #	Size
152585	100 g 500 g

TRITON X-100

Cat. #	Size
807423	100 ml
807426	500 ml

TWEEN 20

(Polyoxyethylenesorbitan monolaurate)

Cat. #	Size
806576	100 g

TWEEN 20

(Polyoxyethylenesorbitan monolaurate)

CAS number : [9005-64-5]

Storage: Room Temperature

Syrup

Purity: Approx. 55% lauric acid

Cat. #	Size
103168	100 ml 500 ml 1 liter

TWEEN® 20

Cat. #	Size
194841	Tween® 20, molecular biology reagent 50 ml 100 ml

General Use Biochemicals

ACES, *ULTRA PURE*

(2-[(2-Amino-2-oxoethyl)amino]ethanesulfonic acid; N-[2-Acetamido]-2-aminoethanesulfonic acid)

CAS number : [7365-82-4]
 Storage: Room Temperature
 Ultra Pure Grade
 Purity: >99%
 pH range 6.1-7.5
 Formula: $C_8H_{10}N_2O_6S$
 MW: 182.2

Cat. #	Size
193973	5 g 25 g 100 g 250 g

AMMONIUM SULFATE

CAS number : [7783-20-2]
 Molecular Biology Reagent
 Fe: <5 ppm
 Mg: <5 ppm
 Pb: <2 ppm
 Mn: <1 ppm
 Ca: <5 ppm
 Zn: <5 ppm
 Cu: <2 ppm
 Formula: $(NH_4)_2SO_4$
 MW: 132.1
 Useful in the isolation and purification of enzymes and proteins.

Cat. #	Size
194807	100 g 500 g 1 kg 5 kg

AMMONIUM SULFATE, *ULTRA PURE*

CAS number : [7783-20-2]
 Fe: <0.5 ppm
 Mg: <0.13 ppm
 Pb: <0.1 ppm
 Mn: <0.06 ppm
 Ca: <0.1 ppm
 Zn: <0.5 ppm
 Cu: <0.21 ppm
 O.D. (260nm) of a saturated solution: <0.1
 Formula: $(NH_4)_2SO_4$
 MW: 132.2

Useful in the isolation and purification of enzymes and proteins. Supplied as a white, crystalline solid.

Cat. #	Size
808211	1 kg
808229	5 kg
808237	25 kg

CITRIC ACID

CAS number : [77-92-9]
 Electrophoresis Grade
 Anhydrous
 Purity: $\geq 99.5\%$
 Heavy metals: <10 ppm
 Residue on Ignition: $<0.05\%$
 Water: $<0.1\%$
 A useful buffer component
 Formula: $C_6H_8O_7$
 MW: 192.1

Cat. #	Size
800680	500 g
800681	1 kg



Dextran Sulfate, Sodium Salt Solution

Dextran Sulfate (50% w/v solution) is used as additive in hybridization buffers to increase hybridization efficiency. It acts as a volume exclusion agent by reducing the volume of the hybridization solution and increasing the concentration of the nucleic acid probe.

Specifications

Dextran sulfate solution in ultra-filtered and deionized water.

Dextran sulfates, sodium salt : 500 g/l
 pH (1% H₂O, 25°C) : 6,1 $\pm$ 1,1
 RNase, DNase, Protease free

Cat. #	Size
DEXT5001	10 ml
DEXT5100	100 ml

▷ Storage: Store at room temperature, stored dry

FORMAMIDE, *ULTRA PURE*

CAS number : [75-12-7]
 Purity: **99.9%**
 Iron (Fe): <1 ppm
 Copper (Cu): <1 ppm
 Lead (Pb): <1 ppm
 Zinc (Zn): <1 ppm

Used in sequencing, denaturing polyacrylamide gels, and nucleic acid hybridization. The degradation products of formamide (formic acid and ammonia) can cause the breakdown of nucleic acids, so formamide should be deionized prior to use with approx. 1 gm mixed bed ion-exchange resin/100 ml formamide.

Cat. #	Size
800685	100 g
800686	500 g



FORMAMIDE

CAS number : [75-12-7]
 Molecular Biology Reagent
 Ideal for sequencing, denaturing polyacrylamide
 gels, and nucleic acid hybridization.
 Formula CH_3NO
 MW: 45.0

Cat. #	Size
193995	100 g
	250 g
	500 g
	1 kg

Deionized Formamide

Molecular biology grade

CAS number : 75-12-7
 MW : ~ 400 000g/mol
 UN Code : UN 2810
 EC No : 200-842-0

Specifications

Appearance : Clear colorless solution
 Assay : > 99.5 %
 Conductivity (25°C) : ≤100μS
 A₂₆₀ (0.5M, H₂O) : <0.05
 A₂₈₀ (0.5M, H₂O) : <0.05
 Heavy metals (as Pb) : < 0.00005 %
 Iron : < 0.00005 %
 RNase, DNase, Protease free Filtered through 0.2 μm PFTE Bottled under inert gas

Cat. #	Size
FORMD002	500 ml
▷ Storage: Stable at +4°C	

Salmon Sperm DNA

Single stranded DNA is used to saturate non-specific sites of hybridization membranes. (Native form, non-sonicated)

Cat. #	Size
SADNA001	1 g
SADNA005	5 g
▷ Storage: Store at 4°C	

SSC 20X

Molecular biology grade

SSC buffer (Salt Sodium Citrate) is used in molecular biology as a buffer for transfer of DNA from gels to membranes, in hybridization, and in wash solutions for Southern or dot blots using membranes or coverslips. SSC 20X is a stock solution concentrated 20-fold ready-to-use solution.

Formulation 20X

Sodium chloride : 3 M Tr isodium citrate : 0.03 M

Specifications

pH (20°C, adjusted with HCl) : 7.0 +/- 0.1
RNase, DNase, Protease free

Cat. #	Size
SSC20X01	5 liters
SSC20X02	2 x 5 liters

▷ Storage: Store at room temperature

Purification Products

Saturated Phenol Solutions

In the purification of DNA and RNA, phenol is commonly used for extraction. However, redistilling and saturating phenol is labor intensive and potentially harmful.

MP's ready-to-use saturated phenol and phenol:chloroform mixtures reduce harmful risks and offer greater convenience.

Since pH affects the performance of phenol, this characteristic may be utilized to achieve specific separation and purification results. Phenol and chloroform both denature proteins and precipitate them from solution. At the interphase between the organic and aqueous layers, proteins can be collected. While either phenol or chloroform can cause this same effect, the combination of both enhances extraction efficiency. Below the pH 7.0, DNA will be denatured and can be isolated at the interphase, along with proteins, with increasing efficiency up to a maximum of pH 4.5. Above pH 7.0, both DNA and RNA partition into the aqueous (upper) layer of the phenol extraction, leaving the proteins in the interphase. This selective partitioning is typically exploited for the purification of RNA from genomic DNA.

For most DNA purifications, a 1:1 mixture of phenol:chloroform at pH 8.0 is preferred. The effects of each component is optimized at these conditions, enabling retention of DNA in the aqueous layer free of contaminating proteins. For RNA purifications, a phenol:chloroform mixture from pH 4.5 to 5.5 is typically used. Although phenol alone can be used to purify RNA, it has been found that inclusion of some chloroform enhances purification efficiency. mRNA can potentially collect with DNA at the interphase using phenol alone. The presence of some chloroform, hence a phenol:chloroform mixture, can prevent this phenomena. The ratio of phenol to chloroform may be varied, depending upon the specific tissue sample and type of RNA. A good starting point for many applications is a 5:1 ratio of phenol:chloroform.



PHENOL, SATURATED SOLUTION, pH 6.6

This is a ready-to-use saturated solution of Ultra Pure Phenol suitable for both DNA and RNA extraction. This solution is supplied at pH 6.6 and a bottle of alkaline buffer is included to adjust the pH to 7.9 for DNA applications requiring higher pH values.

Cat. #	Size
802518	100 ml
802519	400 ml



PHENOL, SATURATED SOLUTION, pH 4.5

This is a ready-to-use saturated solution of Ultra Pure Phenol suitable for denaturing DNA and purifying RNA. Also used for the purification of RNA from genomic DNA. pH 4.5

Cat. #	Size
802516	100 ml
802517	400 ml



PHENOL:CHLOROFORM SATURATED SOLUTION, pH 5.2

This is a ready-to-use saturated solution of phenol and chloroform suitable for RNA purifications. 1:1 solution, pH 5.2

Cat. #	Size
802514	100 ml
802515	400 ml



PHENOL:CHLOROFORM SATURATED SOLUTION, pH 6.7

This is a ready-to-use saturated solution of phenol and chloroform suitable for the extraction and purification of DNA. This solution is supplied at pH 6.7, and a bottle of alkaline buffer is included to adjust the pH to 8.0 if desired. 1:1 solution

Cat. #	Size
802520	100 ml
802521	400 ml



PHENOL:CHLOROFORM SATURATED SOLUTION, pH 4.7

This is a ready-to-use saturated solution of phenol and chloroform suitable for the purification of RNA from mixtures containing DNA, RNA, and other proteins. 5:1 solution, pH 4.7

Cat. #	Size
802512	100 ml
802513	400 ml



Trichloroacetic Acid Solutions

Trichloroacetic Acid is commonly used for protein precipitation. MP offers a variety of ready-to-use solutions in different concentrations for added convenience.

Cat. #	Description	Size
196057	6.1 N, approx. 100% (w/v)	100 ml
196058	0.73 N approx. 12% (w/v)	100 ml

Other Purification Reagents

ACETAMIDE

(Acetic Acid Amide)

CAS number : [60-35-5]
Storage: Room Temperature
Molecular Biology Reagent
Formula: C_2H_5NO
MW:

A 5% (w/v) aqueous acetamide added to PCR mixtures reduces non-specific annealing of primers and prevents amplification of replication artifacts.

Ref.: Reyesenbach, A.L., Appl. Environ. Microbiol., 58, 3417 (1992).

Cat. #	Size
194799	10 g 50 g

CESIUM CHLORIDE, OPTICAL GRADE II

CAS number : [7647-17-8]
Purity: 99.9%
pH: 5.5-6.5 (1% Aqueous Solution)
Loss on Drying: <0.1%
White Powder
Formula: $CsCl$
MW: 168.4

MP still offers optical grade Cesium Chloride which is widely used for virus, nucleic acid and nucleoprotein purification.

Cat. #	Size
813711	100 g
813729	500 g
813700	1 kg

CESIUM CHLORIDE

CAS number : [7647-17-8]

Storage: Room Temperature

Optical Grade I

Purity: 99.99%

 A_{260} of 50% solution <

Formula: CsCl

MW: 168.4

Solutions are clear and colorless suitable for density gradient work, nucleic acid and protein purification.

Cat. #	Size
160041	5 g
	25 g
	100 g
	500 g
	1 kg

CESIUM CHLORIDE, 99.999%, ULTRA PURE

CAS number : [7647-17-8]

Specially prepared for density gradient techniques.

Purity: >99.999%

O.D. 260 of 50% (w/v) solution: <0.02

All salts and H₂O: <0.001%

Formula: CsCl

MW: 168.4

Cat. #	Size
813061	100 g
813063	500 g
813069	1 kg



CHLOROFORM

CAS number : [67-66-3]

Storage: Room Temperature

Molecular Biology Reagent

Purity: 99+%

Each vial contains 1.5 ml.

Formula: CHCl_3

MW: 119.4

Used for PCR aqueous phase recovery overlaid with mineral oil.

Cat. #	Size
194800	1 vial 5 vials

DNAzol™

Genomic DNA isolation reagent for use with cells, tissues and liquids.

- Non-Toxic
- Simple-to-Use
- Reliable
- No Phenol Handling Required

Only 1 ml of DNAzol isolates DNA from 25-50 mg tissue or 1-3 x 10⁷ cells.

Cat. #	Size
821825	50 ml
821826	100 ml

PHENOL

CAS number : [108-95-2]

Molecular Biology Reagent

Storage: Room Temperature

Purity: 99+%

Melting Point: 40.0°C

Water: <0.5%

Heavy Metals: <0.01%

Formula: $\text{C}_6\text{H}_6\text{O}$

MW: 94.1

Distilled in glass into argon purged containers to yield a highly purified phenol for critical nucleic acid extractions. Useful for extraction of viral, plasmid and phage DNAs, and to solubilize and dissociate proteins.

Cat. #	Size
194011	25 g 100 g 500 g



PHENOL, *ULTRA PURE*

CAS number : [108-95-2]

m.p. 40.0°C

Water: <0.5%

Heavy Metals: <0.01%

Formula: C_6H_5OH

MW:

Distilled in glass into argon purged containers to yield a highly purified phenol for critical nucleic acid extractions. Useful for extraction of viral, plasmid and phage DNAs, and to solubilize and dissociate proteins.

Cat. #	Size
800672	100 g
818048	500 g
800673	1 kg



PHENYLMETHYLSULFONYLFLUORIDE

CAS number : [329-98-6]

Research Grade

Purity: >98%

Inhibitor of trypsin, chymotrypsin and protease.

Formula: $C_7H_7FO_2S$

MW: 174.2

Cat. #	Size
800263	5 g



TRICHLOROACETIC ACID

CAS number : [76-03-9]

Storage: Room Temperature

Crystalline

Protein precipitation reagent

Formula: $C_2HCl_3O_2$

MW:

Cat. #	Size
190521	100 g
	500 g
	1 kg



TRICHLOROACETIC ACID, ACS

CAS number : [76-03-9]
 Storage: Room Temperature
 ACS Reagent Grade
 Purity: ≥99.0%
 Formula: $C_2HCl_3O_2$
 MW: 163.4

Cat. #	Size
152592	250 g
	500 g
	1 kg

Stains & Tracking Dyes

Stains & Dyes for DNA

BBF Loading Dye

10x solution of Bromophenol blue and Ficoll®.
 General purpose loading dye for neutral DNA or RNA agarose gels.

Cat. #	Size
2329204	5 ml

BBFSE Loading Dye

10x solution of Bromophenol blue, Ficoll®, SDS, and EDTA. Enhances dissociation of enzymes or other proteins from DNA and RNA before electrophoresis.

Cat. #	Size
2337204	5 ml

BBG Loading Dye

10x solution of Bromophenol blue and glycerol.
 General purpose loading dye for neutral DNA or RNA agarose gels.

Cat. #	Size
2327204	5 ml
2327304	15 ml

BBS Loading Dye

10x solution of Bromophenol blue and sucrose.
 General purpose loading dye for neutral DNA or RNA agarose gels.

Cat. #	Size
2325204	5 ml

BBXF Loading Dye

10x solution of Bromophenol blue, xylene cyanol FF, and Ficoll®. Xylene cyanol migrates approximately one half as fast as bromophenol blue, and is useful as a tracking dye after bromophenol blue has run off the bottom of the gel.

Cat. #	Size
2331204	5 ml

BBXFE Loading Dye

10x solution of Bromophenol blue, xylene cyanol FF, Ficoll®, and EDTA (RNase-free).
Use with formaldehyde, 10x MOPS, and Ethidium Bromide as a loading dye for RNA.

Cat. #	Size
2343204	5 ml

BBXG Loading Dye

10x solution of Bromophenol blue, xylene cyanol FF, and glycerol.

Cat. #	Size
2333104	1 ml
2333304	15 ml

BBXS Loading Dye

10x solution of Bromophenol blue, xylene cyanol FF and sucrose.

Cat. #	Size
2335304	15 ml

BROMOCRESOL GREEN

CAS number : [62625-32-5]
Sodium Salt
Water soluble tracking dye for DNA agarose electrophoresis.
Formula: $C_{21}H_{13}Br_4O_5SNa$
MW: 720

Cat. #	Size
806348	10 g

BROMOPHENOL BLUE

CAS number : [115-39-9]
Formula: $C_{19}H_{10}Br_4O_5S$
MW: 670

Tracking dye for alkaline and neutral buffer systems.
Also used for staining histones.

Cat. #	Size
805732	10 g
805734	50 g

ETHIDIUM BROMIDE

(2,7-Diamino-10-ethyl-9-phenylphenanthridinium bromide; Homidium bromide)

CAS number : [1239-45-8]
 Storage: Room Temperature
 Molecular Biology Reagent
 Purity: 98%
 Formula: $C_{21}H_{20}N_3Br$
 MW: 394.3

Ideal for fluorometric detection of double stranded nucleic acids in gel electrophoresis. Also acts as an RNA polymerase inhibitor, and in separation of high molecular weight DNAs.

Cat. #	Size
193993	250 mg 1 g 5 g 25 g

ETHIDIUM BROMIDE TABLETS

(2,7-Diamino-10-ethyl-9-phenylphenanthridinium bromide)

CAS number : [1239-45-8]

Syn: Homidium bromide

Ethidium Bromide tablets from MP are the safest and most convenient way to prepare DNA staining solutions when using genetic molecular biochemistry procedures. The tablet form of Ethidium Bromide makes it safer and easier to dispense chemicals and enhances accuracy of results without exposure to Ethidium Bromide powder.

Ethidium Bromide tablets are useful for all applications requiring nucleic acid staining, including CsCl plasmid DNA isolation and gel electrophoresis. MP's Ethidium Bromide confers a deep red stain to DNA by acting as an intercalating agent between the starch bases. Subsequent fluorescence techniques enable the extraction and characterization of DNA bands.

100 mg per tablet

Cat. #	Size
806808	10 tabs
806810	25 tabs



ETHIDIUM BROMIDE SOLUTION

CAS number : [1239-45-8]

Storage: Room Temperature

Formula: $C_{21}H_{20}BrN_3$

MW: 394.3

A 10mg/ml easy-to-use solution of ethidium bromide in specially filtered, deionized water.

- Excellent for nucleic acid electrophoresis and purification applications.
- Eliminates the dust hazard associated with powdered ethidium bromide
- Saves time spent on weighing and mixing.

Cat. #	Size
802511	10 ml

Ethidium Bromide Solution (10mg/ml)

Molecular biology grade

CAS number : 1239-45-8

MW : 394.32 g/mol

UN No: 2810

EC No : 2149846

Formula : $C_{21}H_{20}BrN_3$ **Specifications**

Concentration : 0.95 – 1.05%

Purity (on dry basis) : > 98.0% RNase, DNase, Protease free

Fluorescent DNA and RNA intercalating agent. Used as a dye for DNA and RNA electrophoresis.

Cat. #	Size
ETBC1001	10 ml
ETBC1002	6 x 10 ml

▷ Storage: Store at + 4°C protected from light.

► Risk and Safety: Hazardous material Please refer to the material safety data sheet

“Green” Gel Dye

6x solution of Bromophenol blue, Ficoll®, ethidium bromide “Green” Gel Dye provides a significant decrease in total ethidium bromide exposure, as the EtBr is added to the sample only. DNA bands are stained as if EtBr was included in the gel.

Cat. #	Size
2410104	1 ml

METHYL GREEN

CAS number : [7114-03-6]

Formula: $C_{27}H_{38}N_3BrCl \cdot ZnCl_2$

MW: 653.2

DNA stain useful as a tracking dye in acid buffers. Also able to track native DNA in some neutral systems.

Cat. #	Size
806404	5 g
806408	25 g

METHYLENE BLUE

CAS number : [7220-79-3]

Trihydrate

A sensitive stain for RNA and ribonuclease.

Formula: $C_{16}H_{18}N_3SCl \cdot 3H_2O$

MW: 373.9

Cat. #	Size
800663	25 g

NAPHTHOL BLUE BLACK

(Amido Black 10B)

CAS number : [1064-48-8]

Formula: $C_{22}H_{14}N_6O_9S_2Na_2$

MW: 616.5

General protein and nucleic acid stain for SDS-PAGE gels. Useful in staining not only proteins, but also histones and orosomucoid.

Cat. #	Size
806712	50 g
806717	100 g

STAINS-ALL

General protein and nucleic acid stain, which stains different colors on bands of RNA (bluish purple), DNA (blue) and proteins (red).

Cat. #	Size
800128	5 g

XYLENE CYANOLE F.F.

CAS number : [2650-17-1]

A tracking dye for DNA sequencing.

Cat. #	Size
806801	10 g
806803	25 g

XYLENE CYANOLE F.F.

CAS number : [2650-17-1]

Molecular Biology Reagent

Dye Content: ~75%

A tracking dye for DNA sequencing in agarose or polyacrylamide gels.

Formula: $C_{25}H_{27}N_2O_6S_2Na$

MW: 538.6

Cat. #	Size
194020	10 g

Stains & Dyes for Proteins

AMIDO BLACK 10B

(Naphthol Blue Black; Buffalo Black NBR)

CAS number : [1064-48-8]

Storage: Room Temperature

C.I. 20470

Dye content: Approx. 85%

Formula: $C_{22}H_{14}N_6O_9S_2Na_2$

MW: 616.5

Useful dye for staining protein patterns after electrophoresis.

Stains proteins, histones, orosomucoids. Also used on SDSgels.

Cat. #	Size
100563	25 g
	100 g

BASIC FUCHSIN

CAS number : [569-61-9]

Formula: $C_{19}H_{17}N_3 \cdot HCl$

MW: 323.8

Stains glycoproteins and mucopolysaccharides. Also used as tracking dye for proteins in acidic pH systems. Post-staining with Naphthol Blue Black preserves the bands longer.

SUSPECTED CANCER AGENT!

Cat. #	Size
806421	10 g

Blue Juice

For SDS-PAGE protein gels use the following standard dye mix: 2x solution of Bromophenol blue, urea, SDS, β-mercaptoethanol.

Cat. #	Size
2400404	25 ml
2400604	100 ml

▷ Storage: Room temperature

COOMASSIE* BRILLIANT BLUE G-250

CAS number : [6104-58-1]

Electrophoresis Grade

Formula: $C_{47}H_{48}N_3O_7S_2Na$

MW: 854

Useful dye for SDS gels as it readily stains proteins with minimal background color. Protein bands can be visualized during staining.

Cat. #	Size
808274	10 g

COOMASSIE* BRILLIANT BLUE R-250

CAS number : [6104-59-2]

Electrophoresis Grade

Formula: $C_{15}H_{14}N_3O_7S_2Na$

MW: 826

Most commonly used stain in protein electrophoresis. A fast acting, sensitive dye which can be used on SDS gels, IEF gels, and standard gels.

Cat. #	Size
821616	25 g
821636	100 g

EOSIN Y

(Eosin Yellowish; Acid Red 87; 2',4',5',7'-Tetrabromofluorescein)

Storage: Room Temperature

10% Solution

Disodium Salt

Formula: $C_{20}H_6Br_4O_5Na_2$

MW: 691.9

Cat. #	Size
195700	100 ml
	500 ml
	1 liter
	1x10 liter

EOSIN Y

(2',4',5',7'-Tetrabromofluorescein; Eosin yellowish; Solvent Red 43)

CAS number : [15086-94-9]

Storage: Room Temperature

Free Acid

C.I. 45380:2

Dye content: Approx. 99%

Formula: $C_{20}H_6Br_4O_5$

MW: 647.9

Cat. #	Size
157922	5 g
	25 g

OIL RED O

(C.I. 26125; Solvent Red 27; 1-[(4-[Xylylazo]xylyl)azo]-2-naphthol)

CAS number : [1320-06-5]

Storage: Room Temperature

Lipid stain on cellulose acetate.

Green powder.

Formula: $C_{26}H_{24}N_4O$

MW: 408.5

Cat. #	Size
155984	100 g
	250 g

PHENOL RED STAIN

0.5% (w/v) Solution

Storage: Room Temperature

Storage temperature: 15-30°C

Cat. #	Size
1690049	100 ml

PHENOL RED

(Phenolsulfonphthalein)

CAS number : [34487-61-1]

Storage: Room Temperature

Sodium Salt

Water soluble

pH indicator: 6.8 (yellow)-8.2 (red)

Formula: $C_{19}H_{13}O_5SNa$

MW: 376.4

Cat. #	Size
102604	5 g 10 g 25 g

PYRONIN Y

CAS number : [92-32-0]

Molecular Biology Reagent

A marker dye for acid buffer systems which indicates the migrating boundary during electrophoresis.

Formula: $C_{17}H_{19}N_2OCl$

MW: 302.8

Cat. #	Size
800506	5 g

FAST GREEN FCF

CAS number : [2353-45-9]

Electrophoresis GradeFormula: $C_{37}H_{34}N_2O_{10}S_3Na_2$

MW: 808.8

Sensitive stain for proteins. A linear relationship exists between protein concentration and color density in the range from 5 to 50 mg.

Cat. #	Size
800662	25 g



Ethydium Bromide Decontamination

BLUE RAYON

A copper-phthalocyanine covalently linked 5 g compound with high affinity for mutagens and ethidium bromide. Contains approx. 30 μ moles/gm of copper-phthalocyanine compared to 10 μ moles/gm in Blue Cotton.

Effective for removing ethidium bromide from DNA-ethidium bromide mixtures. Also quickly removes mutagens such as heterocyclic amines, polycyclic aromatic hydrocarbons, polycyclic antibiotics, and dyes.

Cat. #	Size
808687	5 g
808688	5x5 g

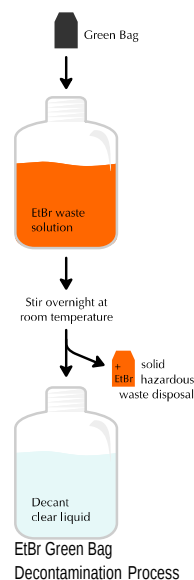
EtBr Green Bag Disposal Kit

Ethidium Bromide Safety Disposal Kit

- Rapid concentration of EtBr from large volumes of liquid into a "tea bag"
- Small bag with absorbed EtBr safely disposed in solid waste
- One kit removes 500 mg of EtBr from solutions

The EtBr Green Bag Kit allows rapid and trouble-free concentration of ethidium bromide from large volumes of solutions into a small "tea bag" which is then conveniently disposed along with other solid hazardous wastes. One kit has the capacity to remove 500 mg of ethidium bromide from solutions (10 mg EtBr/bag).

Ethidium bromide solutions used for visualizing DNA and RNA on gels are generally colorless, but these solutions are still harmful as described in standard protocols and verified by the Ames II Mutagenicity Assay. The effectiveness of the EtBr Green Bag Kit in decontaminating such solutions has been shown by the background mutagenic effect observed when tested using the Ames II assay. Additionally, colored EtBr waste solutions recovered from cesium chloride banding of plasmid DNA are rendered colorless upon decontamination with an EtBr Green Bag. Ethidium bromide waste solutions decontaminated with the EtBr Green Bag Kit display background mutagenesis similar to that of pure water.



Cat. #	Description	Size
2350200	EtBr Green Bag Disposal Kit	50 Bags

Molecular Weight Markers

DNA Molecular Weight Markers

MP offers a choice of nine different DNA molecular weight markers, providing tremendous versatility. These DNA markers range in fragment size from 8 base pairs to more than 48 Kb, making them useful in a wide variety of electrophoretic applications. Markers may be selected for discreet, defined molecular weight ranges, or for general use where a wide range of sizes are required in a single marker.

MOLECULAR WEIGHT MARKER 1 KILOBASE LADDER

Useful for fast and accurate sizing of double-stranded DNA fragments ranging from 500 bp to 10.0 kb. Each tube contains 500 µl of 10 linear double-stranded DNA bands, and provides for 100 loadings at 5 µl/assay.

Cat. #	Size
821904	500 µl

▷ Storage: Store at -20°C

MOLECULAR WEIGHT MARKER BROAD RANGE DNA MARKER

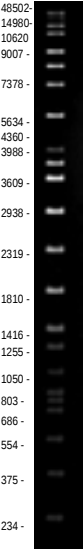
This marker is a combination of our Low Range and High Range Markers and shows 24 fragments ranging from 0.1 kb to 48.5 kb. Excellent for resolving a variety of DNA fragments of many sizes.

Cat. #	Size
821909	200 µg

▷ Storage: Store at -20°C

Raoul™ - Unique wide-spectrum marker

Range 200 bp to 48000 bp



Raoul™ marker provides 22 evenly-spaced fragments from 200bp to 48,000 bp. The smaller fragments are at a high concentration relative to the larger fragments to facilitate detection after ethidium bromide staining. To facilitate orientation the 4360 bp is slightly less fluorescent than neighbouring bands. In Southern blotting, labeling of Raoul™ marker may not always be necessary since most bands are revealed by hybridization to probes derived from pBR322 or pUC.

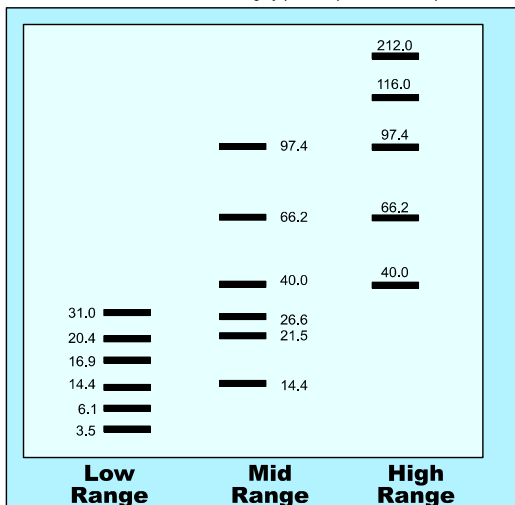
Raoul™ is available as a 100 ng/µl solution in 1xTE buffer and also as a 25 ng/µl solution in gel loading buffer with bromophenol blue. Raoul™ is not available dephosphorylated.

Cat. #	Description	Size
MWRAU300	Standard Raoul™	30 µg
MWRAU30R	Ready-to-use Raoul™	20 µg

▷ Storage: Store at -20°C

Protein Molecular Weight Markers

In estimating the molecular weights of proteins run on SDS-PAGE gels, molecular weights markers are essential. MP offers three protein markers that cover a broad spectrum of fragment sizes. Each marker is a mixture of highly purified proteins which provide bands of equal intensity when stained.



Molecular Weight Marker High Range Protein Marker

This protein MW marker is useful for sizing proteins in the range of 40 kDa to 212 kDa. The High Range marker is suitable for use on 6 to 8% polyacrylamide gels.

Protein Bands	Molecular Weight (kDa)
Myosin	212.0
®-Galactosidase	116.0
Phosphorylase B	97.4
Bovine Serum Albumin	66.2
Aldolase.....	40.0

Cat. #	Size
821912	800 µl

▷ Storage: Store at -20°C

Molecular Weight Marker Kit

25 mg each of 8 proteins
Enzyme-free protein electrophoresis grade used for calibrating gel electrophoresis

Protein	Sub-Unit MW
Bacitracin	1,450
Cytochrome C (Horseheart).....	13,000
Myoglobin (Horseheart)	18,000
Chymotrypsinogen A	24,000
Ovalbumin.....	45,000
Bovine Serum Albumin	67,000
Gamma Globulin (Human)	160,000
Apoferitin	480,000

Cat. #	Size
990515	1 Kit

Molecular Weight Marker Kit

100 mg each of 8 proteins
Enzyme-free protein electrophoresis grade used for calibrating gel electrophoresis

Protein.....	Sub-Unit MW
Bacitracin	1,450
Cytochrome C (Horseheart).....	13,000
Myoglobin (Horseheart)	18,000
Chymotrypsinogen A	24,000
Ovalbumin.....	45,000
Bovine Serum Albumin	67,000
Gamma Globulin (Human)	160,000
Apoferitin	480,000

Cat. #	Size
990822	1 Kit

Molecular Weight Marker Mid Range Protein Marker

This protein MW marker is useful for sizing proteins in the range of 14.4 kDa to 97.4 kDa. This general-purpose marker is suitable for use on 8 to 15% polyacrylamide gels.

Protein Bands	Molecular Weight (kDa)
Phosphorylase B	97.4
Bovine Serum Albumin	66.2
Aldolase.....	40.0
Triose Phosphate Isomerase.....	26.6
Soybean Trypsin Inhibitor	21.5/19.7 (Doublet)
Lysozyme	14.4

Cat. #	Size
821911	1 ml

▷ Storage: Store at -20°C

Blotting Kits Western Blotting

Aurora™ Chemiluminescence Western Blot Kits

The Aurora™ Western Blot protein detection system offers rapid, "ultrasensitive" detection of membrane bound protein without the use of radioisotopes. The system utilizes StarLight™ Chemiluminescent Substrate a specialized substrate which binds with alkaline phosphatase resulting in prolonged light emission. StarLight™ allows for high sensitivity protein detection, rapid film exposures, and superior band resolution.



Versatile

The Aurora™ Western Blot system works with nylon, nitrocellulose, and PVDF blotting membranes, and it produces blots which can be easily reprobed if necessary. Additionally, it produces hard copy film images that may be archived for later reference. Following incubation of the membrane with StarLight™ chemiluminescent substrate, protein detection is done on either X-ray or instant film.

Rapid Detection

The Aurora™ system provides results quickly. For PVDF membranes, exposure time varies from 30 seconds to 15 minutes. Nylon membranes require 5-15 minutes of exposure time, and nitrocellulose membranes need 10-45 minutes of exposure for detection. An excellent advantage of the StarLight™ substrate based system is prolonged light emission following incubation of the blot which makes multiple exposures possible for up to two days.

Ultra-Sensitive

This system rivals the sensitivity of methods incorporating radioactive iodine (125I). Plus, it is unsurpassed in detection and sensitivity when compared to other chemiluminescence systems currently available. As little as 3.6 picograms of protein have been detected using the Aurora™ Western Blot system.

Non-Radioactive

The Aurora™ Chemiluminescence Western Blot system eliminates all concerns associated with the handling, storage and licensing of radioactive compounds. Also, the need for regular reordering of fresh isotope label is no longer necessary. Finally, there is no radiation exposure risk or disposal issues.

Kit Contents

Each system performs a minimum of 10 or 40 blots (10 cm x 10 cm), depending on the size of the kit. Typically, the number of blots exceeds the minimum. Included in each kit is the StarLight™ Chemiluminescence Substrate, Opti-Membrane Reagent (needed for nitrocellulose and PVDF membranes), secondary antibody-alkaline phosphatase conjugate, Aurora Blocking Reagent, DEA buffer, glycerol, and a detailed protocol.

Cat. #	Product	Size
821539	Goat, Anti-Rabbit IgG	40 blot
821536	Goat, Anti-Mouse IgG/IgM	10 blot
821537		40 blot

ImmuMark™ Western Blot Systems

MP's universal western blot detection kits provide easy labeling of mouse and rabbit primary antibodies. The streptavidin-biotin amplification method is employed with either AP or HRP label to stain and detect the primary antibodies. Experts at MP have matched the protocol and components to create a highly sensitive and versatile detection system. Each kit contains enough reagent for 2 (15 x 15 cm) blots.

Kit Components

Total protein stain, biotinylated link antibody, enzyme labeled streptavidin, enzyme chromogen, western buffer, ImmuBlok™ blocking agent, PVDF membranes (15 x 15 cm), detailed protocol.

Cat. #	Product	Size
689081	Mouse link antibody + AP-Strep. reagent	1 set
689391	Rabbit link antibody + HRP-Strep. reagent	1 set

Southern Blotting

Aurora™ Southern Blot System

The Aurora™ Southern Blot DNA detection system provides rapid, "ultrasensitive" detection of membrane bound DNA without the use of radioisotopes. This system utilizes StarLight™ Chemiluminescent Substrate a specialized substrate which binds with alkaline phosphatase resulting in long-lasting light emission. StarLight™ allows for high sensitivity protein detection, rapid film exposures, and superior band resolution.



Rapid Detection

Depending on the membrane, results are obtained with exposures from 5 to 120 minutes. StarLight™ has prolonged light emission following incubation with the blot which makes multiple exposures possible for up to two days.

Non-Radioactive

The Aurora™ Chemiluminescence Southern Blot system eliminates the concerns associated with handling, storage, disposal, and licensing of radioactive compounds. Also, the need for regular reordering of fresh isotope label is no longer necessary. Finally, there is no radiation exposure risk or disposal issues.

Versatile

The Aurora™ Southern Blot system may be used with biotin labeled DNA and RNA probes. It also operates in conjunction with digoxigenin, fluorescein, and alkaline phosphatase labeled probes. Membranes can be efficiently stripped of both DNA probe and chemiluminescent material for subsequent reprobing. Non-radioactive probes may be stored for up to one year, saving reagents and preparation time.

Ultra-Sensitive

With biotin labeled probes, the system detects less than 1 picogram of membrane bound DNA. For Southern blots with direct-linked alkaline phosphatase oligonucleotide probes, single copy gene detection is possible with as little as 0.25 µg of DNA.

Kit Contents

The system is available in two sizes and contains sufficient reagents for a minimum of 10 or 50 blots (10 cm x 10 cm), though typically the number of blots exceeds the minimum. Included in each kit is the Star-Light™ Chemiluminescent Substrate, Actibind-AP™ streptavidin-alkaline phosphatase conjugate, Aurora Blocking Reagent, DEA buffer, and a detailed protocol.

Cat. #	Size
821559	10-20 blot

AURORA™ BLOCKING REAGENT

Aurora™ Blocking Reagent is a highly purified casein-based blocking reagent specifically selected to provide the highest signal to noise performance in chemiluminescent applications using 1,2-dioxetane enzyme substrates such as MP's StarLight™. Aurora™ Blocking Reagent is superior to both dried milk and BSA, and unlike other casein-based blocking reagents is essentially biotin-free. Suggested working concentration is 0.2% (w/v) for immunoassays and protein detection on membranes (neutral nylon, nitrocellulose and PVDF). For best results, use of MP Biotrans, Biotrans(+) and Biotrans PVDF membranes are recommended.

Cat. #	Size
821548	30 g

AURORA 10X ASSAY BUFFER

For use with Aurora Western and Southern Blot kits.

Cat. #	Size
821709	50 ml
821710	150 ml

Membranes

OPTI-MEMBRANE™ REAGENT

Opti-Membrane™ Reagent enhances the signal for both nitrocellulose and PVDF membranes used in chemiluminescent assays. This reagent permits shorter exposure times, enhanced intensity of the chemiluminescent signal, and higher sensitivity. It is a component in the Aurora™ Western Blot Kit from MP.

Cat. #	Size
821549	20 ml

Neutral™ Membrane

Nylon amphoteric hybridization membrane

Neutral™ membrane is manufactured specifically for nucleic acid blotting applications under strictly controlled conditions. Users of Neutral™ membrane benefit from excellent sensitivity and batch-to-batch reproducibility. The surface groups of Neutral™ membrane comprise 50% amine and 50% carboxyl groups giving a hydrophilic surface with an isoelectric point of pH 6.5.

Cat. #	Description	Size
MEMN0001	Neutral Membrane	3 m x 0.3 m

PVDF Membrane

For protein blotting

This PVDF membrane is much stronger than nitrocellulose and has a much longer shelf-life. The membrane is highly consistent from lot to lot and offers excellent sensitivity with low background.

Cat. #	Description	Size
MEMV0001	PVDF membrane	3 x 0.3 m

Positive™ Membrane

Positively charged Nylon hybridization membrane

The intrinsic positive charge of this membrane ensures higher sensitivity and superior results even after multiple reprobing. Unlike some other positively charged membranes Positive™ is designed and produced specifically for blotting. The proprietary manufacturing method does not involve post-casting treatment steps and so results in greater lot-to-lot reproducibility. The membrane keeps its positive charge from pH 3 to pH 12.

Cat. #	Description	Size
MEMP0001	Positive membrane	3 m x 0.3 m
MEMP0002	Positive membrane	3 m x 0.2 m
MEMP0003	Positive membrane	22.2 x 22.2 cm (50)

Pore size: 0.45 µm

Positive HCD Membrane

For optimum results with non-isotopic detection methods

Positive HCD Membrane is a positively charged Nylon 66 membrane with a very high surface charge density for tight binding of target DNA nucleic acid and blocking agents. This new premium grade membrane is designed to give exceptionally low background noise and is highly recommended for all chemiluminescent, fluorimetric and colorimetric detection systems. Positive HCD Membrane also gives excellent results when using radioactively labeled probes.

Cat. #	Description	Size
MEMH0001	Positive HCD membrane	3 m x 0.3 m

Pore size: 0.45 µm

Decontamination Reagents

RNase ERASE™

- Completely removes RNase contamination from glass and plastic
- Proven effective at removing high concentrations of RNase
- Ideal for cleaning work surfaces and equipment that must be RNase-free
- No baking or DEPC solutions required

Working with RNA requires special measures to assure an RNase-free environment. Even trace quantities of RNase can lead to lower yields during *in vitro* transcription reactions, degradation during purification procedures and variability in RPAs and Northern transfers.

To combat the ubiquitous presence of RNase, MP offers RNase-Erase™, a cleaning agent that efficiently and effectively removes ALL traces of RNase contamination. It contains three ingredients active against RNase and has proven successful in removing contamination from glassware, plastic surfaces, counter - tops and pipettes in numerous research laboratory settings. Additionally, RNase- Erase™ will inhibit RNase contamination from microcentrifuge tubes without effect to subsequent enzymatic reactions.

Comparison of available decontamination products for RNase removal.



Two micrograms of total RNA from mouse liver was added to each microcentrifuge tube that was precontaminated with RNase A and then cleaned using different commercially available RNase decontamination products- "a", "b", "RNase-Erase™." The tubes were then rinsed twice with water prior to the addition of the mouse liver RNA in 20 microliters of TE. The samples were incubated at 37°C for 30 minutes, and then 10 microliters of the sample was resolved on a 1.5% agarose gel (TAE) and visualized using a UV light box. **Removal of dried-on RNase decontamination**



Five micrograms of RNase A was vacuum-dried at the bottom of two microcentrifuge tubes. One tube was then rinsed three times with water, and the other was rinsed once with RNase-Erase™ and twice with water.

Two micrograms of total RNA from mouse liver were added to each of the microcentrifuge tubes, incubated at 37°C for 30 minutes and then loaded on a 1.5% agarose gel.

Cat. #	Description	Size
821682	Spray Bottle	250 ml
821683	Dropper Bottle	2x125 ml
821684	Refill Bottle	250 ml
821890	Refill Bottle	1 liter

DNA-Erase™

- Completely removes DNA contamination
- Eliminates PCR artifacts
- Convenient, ready-to-use formulation
- Non-corrosive and non-carcinogenic
- Stable at room temperature
- Heat resistant



MP's DNA-Erase™ effectively decontaminates laboratory surfaces, apparatus and pipettes. It is specially formulated to remove ALL contaminating DNA and eliminate PCR artifacts. DNA-Erase™ is supplied ready-to-use.

Cat. #	Size
821805	500 ml

DNase, RNase-free Water

MP's DNase, RNase-free Water is specially formulated for the most critical procedures where DNase and RNase is absolutely unacceptable. This purified grade of water is deionized and treated with 0.001% Diethylpyrocarbonate (DEPC). It is then filtered through a 0.2 micron filter and autoclaved yielding water which is 100% free of any detectable DNase (both exo and endo) and RNase. It is ideal for use with RNase-Erase™, DNA-Erase™ and for electrophoresis buffer preparation. Contact your local MP office for a sample today!



Cat. #	Size
821739	500 ml

7X[®] Laboratory Detergents

The laboratory detergent researchers have trusted for over 40 years!

- Available exclusively from MP
- Environmentally safe, phosphate-free formulations available
- Ideal for cell culture and all general laboratory labware
- Cleans glass and plastic labware
- Contains powerful sequestering agents
- Effective and safe cleaning
- Complete solubility in water at any concentration
- Drains completely from glassware in seconds
- Available in hand and automatic washer formulations



For more than forty years, 7X[®] detergents have been used in laboratories throughout the world as safe and effective cleaning solutions from manual washing of apparatus, benchtops, and instruments to use in automatic washers. 7X[®] is a concentrated liquid made of an anionic surface active agent and special solvents. Alkaline salts, such as complex phosphates, are added as builders. The ES and PF formulations are biodegradable and devoid of toxic phosphates. All formulations are immediately and completely soluble at any concentration without any agitation required. Continued use of any formulation eliminates undissolved particles and prevents their redeposition. Furthermore, 7X[®] drains completely in seconds leaving no film or residue which is vital in tissue culture applications where such contaminants may interfere with results.

Powerful dispersion and deflocculation are important properties of all 7X[®] detergents. Also, you can rest assured that they will not etch or scratch delicate glass - ware and plastic labware. The standard pH range is 6.0-9.0 depending on the concentration, and the shelf life is indefinite at room temperature.

Cat. #	Description	Size
7667094	7X [®] Detergent	4x1 gal.
7667095		5 gal.
7667098		55 gal.
7667194	ES 7X [®] Detergent	4x1 gal.
7667195		5 gal.
7667198		55 gal.
7667121	7X-PF Detergent	2x5 liter
7667127		1x20 liter
7667129		1x200 liter
7667494	7X [®] O-Matic Detergent	4x1 gal.
7667495		5 gal.
7667498		55 gal.
7667594	ES 7X [®] O-Matic Detergent	4x1 gal.
7667595		5 gal.
7667598		55 gal.
7667521	7X-PF-O-Matic Detergent	2x5 liter
7667527		1x20 liter

Transfert to membrannes

Cat #	Description		
11INSB8302	PLASTIC MASKS VACUUM BLOTTER		
1121008401	Porous Plate TransDNA		



11INSB8101	VACUUM BLOTTER 110V
11INSB8100	VACUUM BLOTTER 220V

Mini Gel Electrophoresis



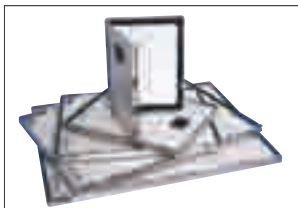
Cat #	Description		
11INSE1100	MINICUVE 8.10 ELECTROPHORESIS		
11INSE1201	ANALYTICAL 9-TOOTH COMB 5X1 MM		
11INSE1202	ANALYTICAL 12-TOOTH COMB 3X1MM		
11INSE1203	PREPARATIVE COMB 60 MM X 1 MM		
11INSE1204	GEL TRAY FOR MINICUVE		
11INSE1204B	GEL TRAY - BLUE COLOURED BASE		
11INSE1205	ANALYTICAL 9-TOOTH COMB 5X2MM		
11INSE1206	ANALYTICAL 12-TOOTH COMB 3X2MM		
11INSE1207	PREPARATIVE COMB 60 MM X 2 MM		
11INSE1208	GEL CASTING TRAY W/O GEL TRAYS		
11INSE1209	CASTING TRAY SET, WITH 6 TRAYS		
11INSE1210	ANALYTICAL 18-TOOTH COMB 2 MM		
11INSE1211	2-GEL CASTING TRAY DUO		
11INSE1212	9-WELL COMB FOR MULTICHANNEL P		
11INSE1213	10-WELL COMB (1 MM THICK)		

Hybridization accessories

Cat #	Description		
1122012303	HYBRIDIZATION. BOTTLE WITH CAP 25x3.5 cm		
11INSH2304	HYBRIDIZATION. BOTTLE WITH CAP 30X7CM		
11INSH2305	HYBRIDIZATION. BOTTLE WITH CAP 30X3.5CM		
11INSH2306	HYBRIDIZATION. BOTTLE WITH CAP 15X3.5CM		
11INSH2307	INTERCALATING MESHES 23X23 5X		
11INSH2308	INTERCALATING MESHES 15X10 5X		
11INSH2309	RACK FOR 6 TUBES 3.5CM		
11INSH2310	SCREW CAPS DIAM. 3.5CM		
11INSH2311	HYBRIDIZATION. BOTTLE WITH CAP 37X3.5CM		

Autoradiography Cassettes and Screens

Cat #	Description		
11INSC0100	AUTORADIOGRAPHY CASSETTE 13 X 18 CM		
11INSC0101	AUTORADIOGRAPHY CASSETTE 18 X 24 CM		
11INSC0102	AUTORADIOGRAPHY CASSETTE 24 X 30CM		
11INSC0103	AUTORADIOGRAPHY CASSETTE 30 X 40 CM		
11INSC0104	AUTORADIOGRAPHY CASSETTE 30 X 60 CM		
11INSC0106	AUTORADIOGRAPHY CASSETTE 35X43 14X17		
11INSC0107	AUTORADIOGRAPHY CASSETTE 20 X 40 CM		



11INSC0119	AUTORADIOGRAPHY.CASSETTE 20X25CM (8X10inch)
11INSC0304	INTENSIFYING SCREENS 13X18CM
11INSC0304A	INTENSIFYING SCREENS 13x18cm NP800
11INSC0305	INTENSIFYING SCREENS 18X24CM
11INSC0306	INTENSIFYING SCREENS 24X30CM
11INSC0307	INTENSIFYING SCREENS 30X40CM
11INSC0309	ANTISTATIC CLEANING FLUID
11INSC0310	INTENSIFYING SCREENS 35X43CM
11INSC0311	INTENSIFYING SCREENS 30X60CM
1122010312	INTENSIFYING SCREENS 35,6x35,6 cm
11INSC0314	INTENSIFYING SCREENS 20X40CM
11INSC0321	INTENSIFYING SCREENS 20X25CM (8X10inch)
11INSC0321A	INTENSIFYING SCREENS 8x10inch NP800

Ultra Violet Tools

Cat #	Description		
11INSU9103	TRANSILLUMINATOR. 20X40 LARGE SIZE		
11INSU9209	Portable UV Lamp 312 NM		
11INSU9300	COMPACT 302 NM DUAL INTENSITY		
11INSU9301	COMPACT TRANSILLUMINATOR. 365/302NM		
11INSU9302	TRANSILLUMINATOR. COMP. 365/302/254NM		
11INSU9312	UV Tube 6W 312 nm		
11INSU9303	UV TUBE 8W 302 NM		
11INSU9304	UV TUBE 8W 254 NM		
11INSU9305	UV TUBE 8W 365 NM		
1122009224	UV TUBE 15W 312 NM		
1122009233	UV TUBE 15W 365 NM		
11INSU9307	UV TUBE 15W 302 NM		
11INSU9309	UV TUBE 15W 365 NM		
11INSU9406	UV/WHITELIGHT CONVERTER SCREEN		

**See chapter 12 for more
information on these products**

7X

the IDEAL CLEANING SOLUTION
for manufacturing and laboratory environments

**Bulk
Quantities
Available**



- Formulations for soaking and automated washing
- Green formulation
- Thorough, safe and effective cleaning
- Cleans minute crevices
- Can be autoclaved
- Eliminates undissolved particles
- Will not etch delicate glassware

Available exclusively from MP Biomedicals

Find this product on pages **1245** and **1272**

Online ordering and product information:

www.mpbio.com

