VWR®

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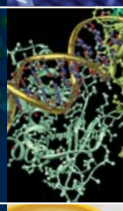

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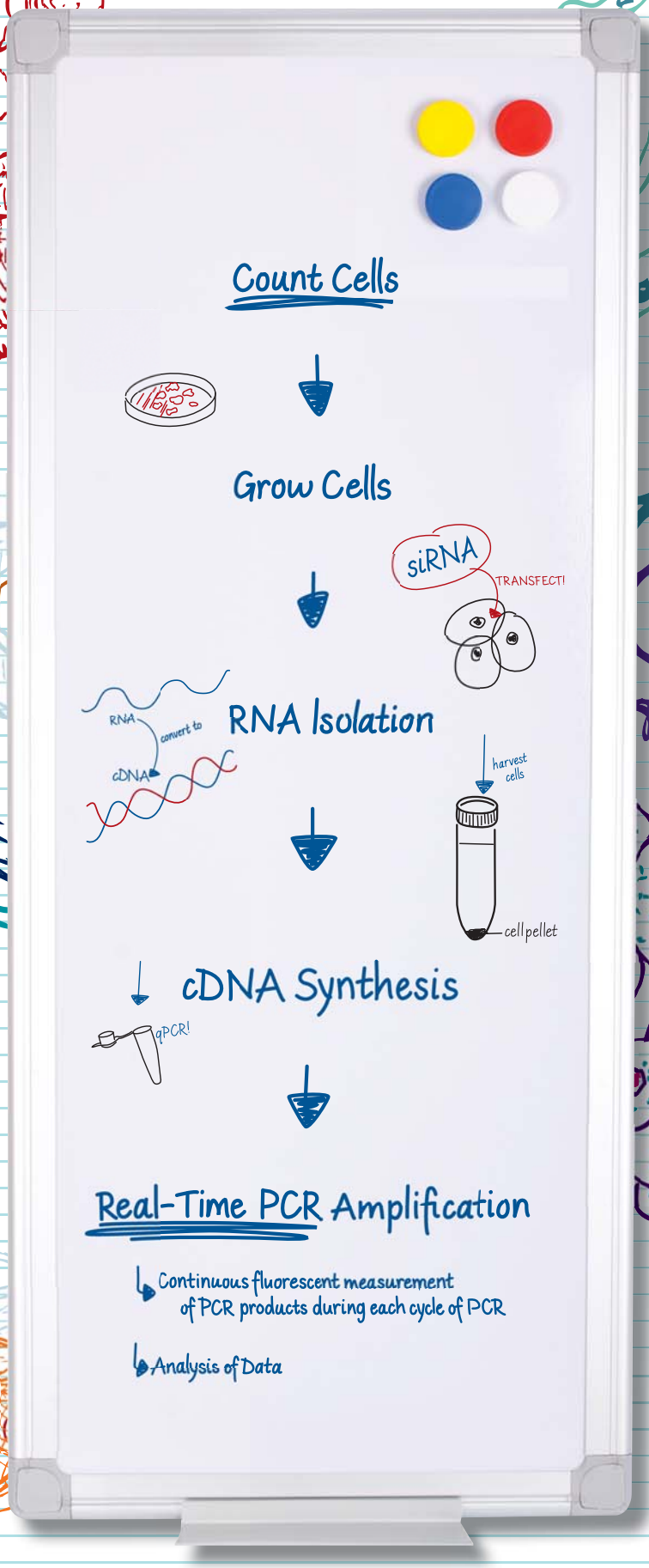


RNA Expression Workflow

Weining Tang and Travis Butts - Omega Bio-Tek; Jennifer Bayraktar - AMRESCO®; Christian Dyott - Techne; and Will Geist - Quanta BioSciences

Abstract

The following article will explore the various aspects of RNA expression workflow including RNA purification, RNA quality analysis, and qPCR. This technical paper explores the efficacy and integrity of RNA extraction through qPCR, using RNA purification kits from Omega Bio-Tek, Formaldehyde-Free RNA Gel Kits from AMRESCO®, qPCR instruments and software from Techne, and cDNA and qPCR kits from Quanta BioSciences. VWR International offers a complete line of products for all stages of the gene expression workflow.

Introduction

Gene expression analysis is one of the most powerful tools in biological and biomedical research. By measuring the abundance of certain target RNA species, investigators can quantify the expression level of genes producing RNA and shed light on the underlying biological or pathological processes.

Typically, A Gene Expression Study Involves Three Stages:

RNA Isolation – The key to a successful expression study is in the initial RNA quality. Tissue samples are homogenized and cells are lysed to release the total nucleic acid content. RNA is then selectively separated from DNA, protein, and other cellular components by means of silica filter media, magnetic beads, or solution-based chemistry. Due to the labile nature of RNA molecules, the extraction methods of choice should be robust, easy to process, and able to maintain maximum RNA integrity. Additionally, depending on the scope of the study, small RNAs such as micro RNA (miRNA) or highly fragmented RNA derived from FFPE samples must also be preserved.

RNA QC – RNA quality is measured by denaturing agarose gel electrophoresis. The two major bands (for example, the 28S and 18S ribosomal RNA bands for animal tissue) provide a convenient way to assess the overall intactness of total RNA. Alternatively, RNA quality can be evaluated by using the Bioanalyzer chips to calculate the RNA Integrity Number (RIN) which measures for RNA integrity.

RNA Analysis – Real-Time quantitative reverse transcription PCR (qRT-PCR), is the gold standard of RNA analysis. It is the most reliable, sensitive, robust, and flexible method for analyzing gene expression for both a moderate number of target genes and thousands of samples. Although whole-genome approaches such as high-density whole transcriptome microarrays, targeted microarrays, and the fast developing next generation sequencing RNASeq are the preferred platforms for the discovery phase, any findings from such experiments must be validated through qRT-PCR. In addition, qRT-PCR has also demonstrated successful utility in biomarker monitoring and is widely used in clinical tests. In a typical one-step or two-step qRT-PCR, RNA is converted to cDNA which in turn serves as a template for target-specific PCR. Amplification is monitored using a Real-Time PCR instrument via either a probe-based (e.g. TaqMan®) or intercalating dye-based (e.g. SYBR Green®) chemistry. A quantification cycle value (Cq) or cycle threshold (Ct) is calculated and used for gene expression quantification.

Materials & Methods

The E.Z.N.A.® Total RNA Kit I and Total RNA Kit II, from Omega Bio-Tek, offer fast and reliable methods for isolation of total RNA from cultured cells and soft tissues. The key is the systems' HiBind matrix, which allows processing in a microcentrifuge or vacuum and eliminates the need for organic extractions or alcohol precipitations. The E.Z.N.A. Total RNA Kit II is designed for difficult to lyse samples including tissue with high lipid content, and can be used for cultured cells, tissue, and plant samples. The kit utilizes an RNA Solv reagent, (a phenol/guanidine thiocynate based solution), to effectively lyse and deactivate RNases. After a chloroform extraction, samples are applied to a Hibind RNA column where they are further purified and pure RNA is eluted.

AMRESCO offers a Formaldehyde-Free RNA Gel Kit that combines convenience, time-savings, and improved safety for denaturing electrophoresis of RNA. The novel kit replaces hazardous formaldehyde in conventional denaturing gels with a non-volatile substitute. This can be used on the open benchtop and is effective in eliminating RNA secondary structure to ensure optimal resolution during electrophoresis. The Formaldehyde-Free RNA Gel Kit does not require extended sample incubation or buffer recirculation. AMRESCO's Formaldehyde-Free RNA Gel Loading Buffer (2X) contains a non-mutagenic, fluorescent dye that allows for RNA visualization immediately upon UV illumination. The presence of the dye in the loading buffer eliminates the need for ethidium bromide or any post-electrophoresis staining and destaining. RNA bands appear bright green and may be imaged using a green filter, such as one commonly used for SYBR Green. The sensitivity of RNA detection with the Formaldehyde-Free RNA Gel Loading Buffer is approximately 60ng, which is similar to that obtained using ethidium bromide with a conventional denaturing RNA gel.

Techne's Quantica®, the new Real-Time nucleic acid detection system, was designed with the advantage of having an open architecture and chemistry format to allow the end user full flexibility of methods and research. The Quansoft® software and reporting that accompanies Quantica provides the ability to run a program without initially defining your plate layout and analysis criteria. It can export raw data and change from first-order derivative to fit points into the results analysis.

Quanta BioSciences PerfeCTa® SYBR Green FastMix™ is a 2X concentrated, ready-to-use reaction cocktail that contains all components (except primers and template) for Real-Time quantitative PCR systems that do not require an internal reference dye. This unique combination of buffer, stabilizers, and AccuFast™ Taq DNA polymerase deliver maximum PCR efficiency, sensitivity, specificity, and robust fluorescent signal using either fast or conventional cycling protocols. Quanta's qScript™ cDNA SuperMix provides a sensitive, easy-to-use solution for two-step RT-qPCR. This 5X concentrated master mix provides all necessary components (except RNA template) for first-strand synthesis including: buffer, dNTPs, $MgCl_2$, primers, RNase inhibitor protein, qScript reverse transcriptase, and stabilizers.

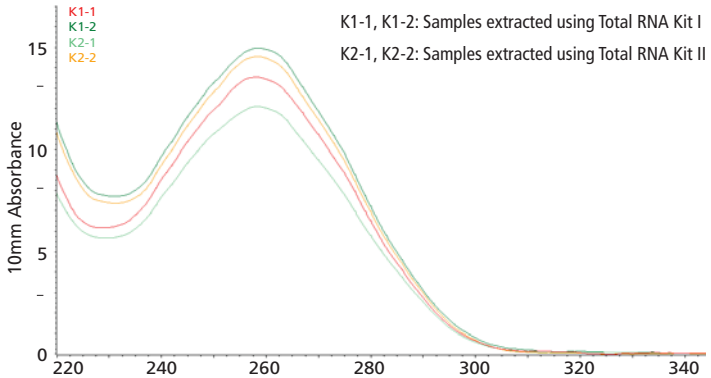
Materials & Methods (Cont.)

Four dishes of HEK 293 cells were grown in culture medium to ~10^6 cell count and harvested by centrifugation. Two aliquots were extracted using the Omega Bio-Tek E.Z.N.A Total RNA Kit I (**101319-240**) and the other two with the E.Z.N.A Total RNA Kit II (**101319-260**), following manufacturer's standard protocols. The RNA concentrations (OD260/280 and OD260/230) were measured on a NanoDrop 2000 spectrophotometer. A 1% formaldehyde-free agarose gel was prepared using the AMRESCO agarose (**97062-246**) and the Formaldehyde-Free RNA Gel Kit (**97064-300**), as per manufacturer's instructions. Quantities of 5 and 2µg RNA were denatured with the Formaldehyde-Free RNA Gel Loading Buffer and resolved by electrophoresis. The gel image was taken using a SYBR Green filter on a Kodak® gel imager.

For qRT-PCR analysis, 1µg RNA was converted to first-strand cDNA using the Quanta BioSciences qScript cDNA SuperMix (**101414-104**), following the manufacturer's standard protocol. cDNA samples corresponding to a five-order dynamic range (50ng, 5ng, 500pg, 50pg, and 5pg) were assayed by qPCR using the Quanta PerfeCTa SYBR Green FastMix on a Techne Quantica Real-Time Nucleic Acid Detection System. Primers specific to the human ribosomal protein gene RPL13a were used for amplification. Each reaction was performed in triplicates. The amplification profile was as follows: 95°C for 1 min, 45 cycles of 95°C for 1 sec, and 60°C for 30 sec, followed by a dissociation curve analysis from 70-90°C. All data analysis and reports were performed using the Quansoft software. Both First Derivative Maximum and Fit Points algorithms were used to calculate the Cq values.

Results & Discussion

Both RNA extraction kits from Omega Bio-Tek, either with or without organic extraction, produced high yield and high quality RNA. The average yield for the four samples in this study reaches 27.4µg, sufficient for any typical downstream applications.



Sample ID	RNA Conc. (ng/µL)	Yield (µg)	A260/A280	A260/A230
K1-1	**536.7**	**26.8**	2.07	**2.18**
K1-2	**595.4**	**29.8**	2.07	**1.94**
K2-1	**480.8**	**24**	2.09	**2.13**
K2-2	**578.1**	**28.9**	2.09	**1.96**

Figure 1: NanoDrop Analysis of the RNA
RNA concentration and quality was analyzed on a NanoDrop 2000. Yield calculation was based on 50µL elution volume. OD260/280 and OD260/230 were shown to demonstrate the quality of the RNA.

Spectrophotometer readings indicate that the RNA are of high quality. OD260/280 averages 2.08 (pure RNA has a theoretical OD260/280 ratio of 2.0) and OD260/230 averages greater than 2.

The Formaldehyde-Free RNA Gel Kit from AMRESCO provides a safe alternative to the traditional formaldehyde-based agarose gel. Sharp rRNA bands are visible under a standard UV transilluminator, and gel images can be taken using a SYBR Green optical filter.

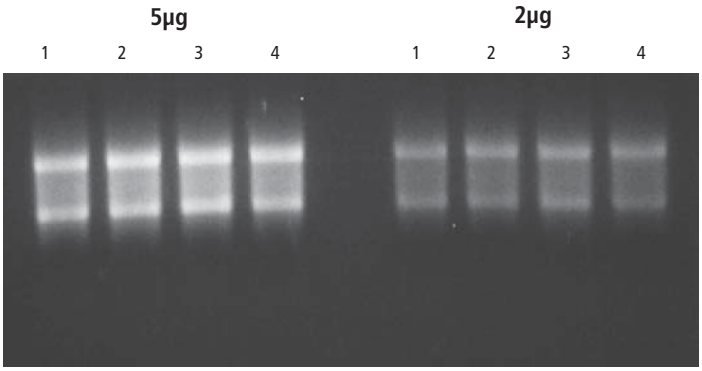


Figure 2: Agarose Gel Electrophoresis Analysis of the RNA
Four aliquots of HEK 293 cells (cell count ~10^6) were prepared and total RNA extracted using the Omega Bio-Tek E.Z.N.A Total RNA Kit I (**101319-240**) and E.Z.N.A Total RNA Kit II (**101319-260**). Quantities of 5 and 2µg RNA were resolved on a 1% agarose gel prepared using the AMRESCO agarose (**97062-248**) and the Formaldehyde-Free RNA Gel Kit (**97064-300**). Gel image was taken using a SYBR Green filter.

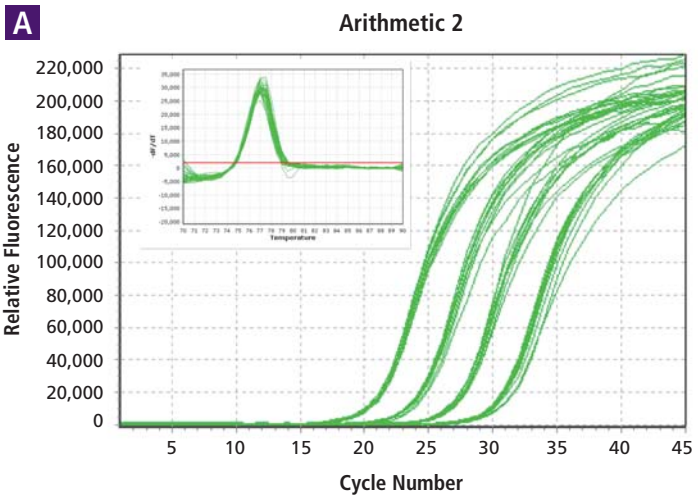
1, 5: Sample 1 extracted using Total RNA Kit I

2, 6: Sample 2 extracted using Total RNA Kit I

3, 7: Sample 3 extracted using Total RNA Kit II

4, 8: Sample 4 extracted using Total RNA Kit II

The Techne Quantica Real-Time Nucleic Acid Detection System is fully compatible with both probe-based chemistry and SYBR Green chemistry. In this study, a cDNA synthesis kit and a SYBR Green Real-Time PCR kit from Quanta BioSciences were selected because of their high sensitivity and ease-of-use (both are supplied as a mastermix, minimizing the amount of pipetting). Linearity is demonstrated over a 5-point series of 10-fold dilutions (R^2 = 0.999). A dissociation curve analysis programmed at the end of the PCR cycle confirms the specificity of the amplicons.



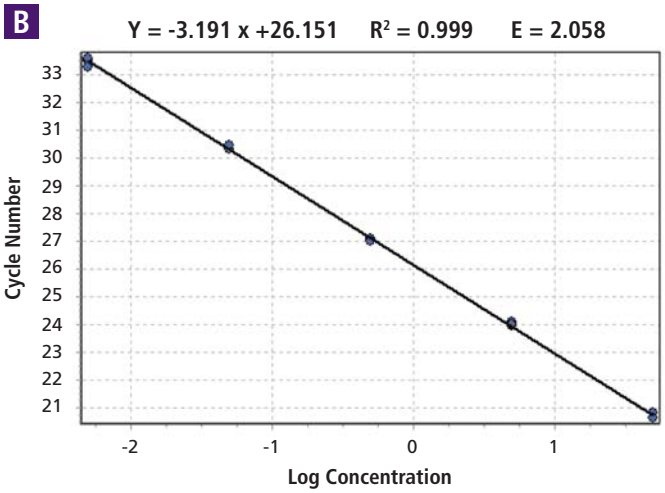


Figure 3: Real-Time Quantitative PCR Analysis of the RNA
Total RNA was converted to first-strand cDNA using the Quanta BioSciences qScript cDNA SuperMix (**95048-500**). cDNA samples corresponding to a 5-order dynamic range were assayed by Real-Time quantitative PCR using the Quanta PerfeCta SYBR Green FastMix on a Techne Quantica Real-Time Nucleic Acid Detection System. All data analysis and reports were performed using the Quansoft software. **(A)** Amplification plot representing initial RNA quantity of 50ng, 5ng, 500pg, 50pg, and 5pg (left to right) for each of the four samples. All reactions were run in triplicates. Dissociation curves shown as insert. **(B)** Standard curve of a representative RNA sample demonstrating linear resolution over five orders of dynamic range.

VWR's 96-Well PCR and Real-Time PCR Plates (**83007-374**) were selected because they are compatible with most Thermal Cyclers and are ideal for high-throughput screening thermocycler applications. Plates are autoclavable and certified free of RNase, DNase, and human DNA (lot-by-lot certificates available) and have a working capacity of 200µL per well. In addition, the semi-skirted plate design reduces the plate distortion that can result in high-throughput screening.

RNA extraction is the initial and critical step of the RNA expression workflow. The Omega Bio-Tek Total RNA Kit I and Total RNA Kit II provide a fast and convenient method for isolating high-quality total RNA.

AMRESCO's Formaldehyde-Free RNA Gel Kit was tested and demonstrated to effectively resolve brightly stained, sharp rRNA bands without requiring gel preparation and running in a hood or special disposal.

In addition to Quantica, Techne offers the most complete range of PCR machines, each with an industry-leading four year warranty. Quanta BioSciences leads the development of qPCR reagents for research and drug discovery. Their Real-Time PCR and cDNA synthesis reagents provide reproducible, quality results. VWR, offers a wide range of products for Life Science research in Cell Biology, Genomics, Microbiology, and Proteomics.

VWR AMRESCO Quanta BIO SCIENCES TECHNE OMEGA bio-tek Innovations in nucleic acid isolation

Materials Used in RNA Expression Workflow

Description	Cat. No.	Price
Omega Bio-Tek		
E.Z.N.A. Total RNA Kit I, 50 preps	**101319-240**	Ea./ **162.00**
E.Z.N.A. Total RNA Kit I, 200 preps	**101319-242**	Ea./ **521.00**
E.Z.N.A. Total RNA Kit II, 50 preps	**101319-260**	Ea./ **162.00**
E.Z.N.A. Total RNA Kit II, 200 preps	**101319-262**	Ea./ **521.00**
AMRESCO		
Formaldehyde-Free RNA Gel Kit	**97064-300**	Ea./ **204.43**
High Purity Agarose I, 25 g	**97062-248**	Ea./ **51.14**
RNA EZ-Vision® Dye as Loading Buffer, 2 x 1.5 mL	**97064-294**	Ea./ **101.14**
EZ-Vision PCR Ladder for 50 Lanes, 500 µL	**97063-346**	Ea./ **125.00**
Techne*		
Quantica Real-Time Nucleic Acid Detection System†, 100-230 V, 50/60 Hz	**71002-824**	Ea./ **30,995.00**
Real-Time Nucleic Acid Detection System Filters		
Red, ROX, 580 nm Excitation Wavelength, 615 nm Emission Wavelength	**71002-832**	Ea./ **945.00**
Yellow, HEX, 530 nm Excitation Wavelength, 560 nm Emission Wavelength	**71002-830**	Ea./ **945.00**
Blue, Cy5, 640 nm Excitation Wavelength, 685 nm Emission Wavelength	**71002-834**	Ea./ **945.00**
Green, FAM|SYBR, 485 nm Excitation Wavelength, 520 nm Emission Wavelength	**71002-828**	Ea./ **945.00**
FAM multiplex, 460 nm Excitation Wavelength, 500 nm Emission Wavelength	**71002-826**	Ea./ **1,750.00**
Quanta BioSciences		
qScript cDNA SuperMix, 25 rxns	**101414-102**	Ea./ **129.00**
qScript cDNA SuperMix, 100 rxns	**101414-104**	Ea./ **2,775.00**
qScript cDNA SuperMix, 500 rxns	**101414-106**	Ea./ **517.00**
qScript cDNA SuperMix, 5 x 96	**101414-108**	Ea./ **2,525.00**
qScript One-Step qRT-PCR Kit, 200 rxns	**101414-172**	Ea./ **607.00**
PerfeCTa qPCR ToughMix™	**97065-954**	Ea./ **998.00**
PerfeCTa SYBR Green Fast-Mix, 250 x 20 µL rxns	**101414-276**	Ea./ **203.00**
PerfeCTa SYBR Green Fast-Mix, 1,250 x 20 µL rxns	**101414-270**	Ea./ **917.00**
PerfeCTa SYBR Green Fast-Mix, 1,250 x 20 µL rxns	**101414-272**	Ea./ **3,414.00**
VWR		
96-Well PCR/Real-Time PCR Plates, Half-Skirted	**83007-374**	Pk. 10/ **63.45**

**For additional information, see below.*

Quantica® Real-Time Thermal Cycler

Multiple Capability & Chemistry Versatility

- 96-Well (x 0.2mL well) low profile microplate format with heat-sealed optical film
- 8 x Peltier block employing quad-circuit technology to enhance performance
- Block uniformity of better than ±0.25°C
- Temperature range 4°C to 99°C
- Robust CD-type block loading mechanism
- Temperature controlled heated lid between 10°C above ambient and 110°C

Techne's Quansoft is an intuitive software that enables you to run an experiment without a preprogrammed layout, use the software while running your experiments, see your raw data, and choose your own disposables and chemistries!

TECHNE

Description	Cat. No.	Each
Quantica Real-Time Nucleic Acid Detection System†, 100-230 V, 50/60 Hz	**71002-824**	**30,995.00**
Filters		
Multiplex, FAM	**71002-826**	**1,750.00**
Green, FAM|SYBR®	**71002-828**	**945.00**
Yellow, HEX	**71002-830**	**945.00**
Red, ROX	**71002-832**	**945.00**
Blue, Cy5	**71002-834**	**945.00**

†Filters for all current chemistries included with unit.

Performance Matters: DNA Purification and Isolation

Cyclo-Prep™ Plasmid DNA Purification Kit

The Cyclo-Prep Plasmid DNA Purification Kit is a spin column-based kit for rapid purification of plasmid DNA from 1-2mL liquid cultures. The DNA isolated from Cyclo-Prep is suitable for automated fluorescent sequencing, PCR, *in vitro* transcription, transformation, and restriction enzyme digestion. All reagents can be stored at room temperature and the protocol is easily performed using a pipettor and a bench-top microcentrifuge.

- Safe alternative to phenol-based products
- Obtain up to 15µg DNA per mL of *E. coli* culture in 15 minutes
- Isolated DNA compatible with automated fluorescent sequencing

Size	Cat. No.	Each
50 rxns	**97064-828**	**126.82**

Cyclo-Prep™ Genomic DNA Isolation Kit

The Cyclo-Prep Genomic DNA Isolation Kit efficiently isolates genomic DNA for PCR amplification, RFLP analysis, Southern blotting, DNA fingerprinting, and bacterial-genome sequencing using a table top microcentrifuge. This kit is fast, convenient, and yields highly purified DNA. All components are room-temperature stable.

- Safe alternative to phenol-based products
- Isolate genomic DNA from animal tissue or bacterial cells
- Purify genomic DNA in as little as 20 minutes

Size	Cat. No.	Each
50 rxns	**97064-844**	**209.43**

Proteinase K

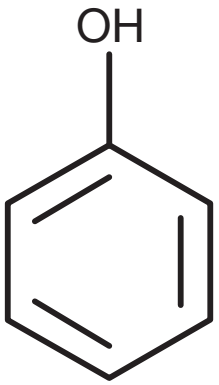
Proteinase K is a non-specific serine protease with a molecular weight of approximately 18kDa. This enzyme exhibits high stability and activity in the presence of SDS, EDTA, and Urea as well as over a wide pH range. Proteinase K is useful for the inactivation of nucleases during the isolation of DNA and RNA.

- Active over a broad pH range
- High purity

Size	Cat. No.	Each
100 mg	**97062-238**	**79.90**
500 mg	**97062-242**	**389.77**
1 g	**97062-240**	**600.00**
5 mL	**97062-670**	**112.05**
25 mL	**97062-668**	**448.07**

Phenol Blends for DNA Purification

Liquid-stable phenols were pioneered in the late 1980's and AMRESCO was one of the first biochemical companies to successfully provide "liquid-stable" phenol products. Saturated phenol is packaged at pH 6.6, while a supplemental alkaline buffer is provided to allow an increase in pH to 7.9 for DNA purification. The 1:1 saturated phenol: chloroform mixture is ideal for the extraction of protein from DNA preparations. Packaged at pH 6.7, this product is accompanied by a separate alkaline buffer which allows the researcher to increase the pH to 8.0.



- Double-distilled, high-purity phenol packaged under nitrogen
- Safer, easier alternative to crystalline phenol
- Long term stability >1 year at 4°C

Description	Size, mL	Cat. No.	Each
Phenol	100	**97064-702**	**40.91**
Phenol	400	**97064-704**	**99.77**
Phenol-Chloroform	100	**97064-692**	**40.68**
Phenol-Chloroform	400	**97064-694**	**109.55**

Isothermal, Exponential Amplification of Genomic or Plasmid DNA

89168-784

95042-266

illustra™ GenomiPhi DNA Amplification Kits provide an easy way to prepare or replenish genomic DNA from limiting stocks or source materials. With as little as 10ng of starting DNA, GenomiPhi can generate µg amounts of amplified DNA which can be used in a variety of downstream genotyping and cloning applications. Illustra TempliPhi DNA amplification kits allow preparation of DNA directly from bacterial colonies or glycerol stocks thus eliminating overnight cultures and conventional plasmid mini preps. This amplified DNA can be used directly in downstream DNA sequencing without further purification.

- TempliPhi exponentially amplifies single or double stranded DNA (including BACs, fosmid)
- GenomiPhi exponentially amplifies genomic DNA, excellent for rare samples
- Accurate proofreading activity of Phi29 DNA polymerase

Distributor
GE Healthcare

illustra Kits	No. of rxns	Cat. No.	Each
TempliPhi Amplication	100	**89131-608**	**240.00**
TempliPhi Amplication	500	**89131-612**	**1,139.00**
TempliPhi Amplication	2,000	**89134-006**	**3,161.00**
TempliPhi Large Construction	1,000	**89131-614**	**2,532.00**
TempliPhi Sequence Resolver	20	**89168-784**	**237.00**
TempliPhi Sequence Resolver	50	**89131-616**	**581.00**
TempliPhi Sequence Resolver	200	**89131-618**	**2,148.00**
illustra GenomiPhi HY	25	**95042-268**	**613.00**
illustra GenomiPhi HY	100	**95040-348**	**1,826.00**
illustra GenomiPhi HY	1,000	**95040-350**	**17,331.00**
illustra GenomiPhi V2 DNA Amplification	25	**95042-266**	**177.84**
illustra GenomiPhi V2 DNA Amplification	100	**95040-352**	**491.00**
illustra GenomiPhi V2 DNA Amplification	500	**95040-354**	**2,323.00**

Nucleic Acid Purification from Formalin-Fixed Paraffin-Embedded (FFPE) Tissue Section Samples

89167-354

Omega Bio-Tek isolation FFPE systems are specially designed for isolation of nucleic acid from formalin-fixed, paraffin-embedded tissue sections. The samples are first processed by heating coupled with the use of a specialized lysis buffer which effectively removes the paraffin, deactivates RNases/DNases, and releases nucleic acid from crosslinking. The FFPE purification kits are available in easy-to-use, silica-based column format for isolation of total RNA or DNA. Also available are magnetic bead and 96-Well formats that are ideal for automation on robotic platforms.

- Rapid high-quality nucleic acid purification
- Complete removal of contaminants and inhibitors

OMEGA bio-tek
Innovations in nucleic acid isolation

Description	No. of Preps	Cat. No.	Each
E-Z 96 Mag-Bind FFPE RNA Kit	1 x 96	**89167-354**	**406.00**
E-Z 96 Mag-Bind FFPE RNA Kit	20 x 96	**89167-358**	**5,519.00**
E.Z.N.A FFPE Total RNA Kit	5	**89167-336**	**20.00**
E.Z.N.A FFPE Total RNA Kit	200	**89167-340**	**876.00**
FFPE DNA Kit	200	**89167-386**	**418.00**

A Single-Step Solution to Superior Sequencing Results

USB HT ExoSAP-IT® High-Throughput PCR Product Cleanup

USB HT ExoSAP-IT High-Throughput reagent is an alternative formulation of ExoSAP-IT PCR Product Cleanup specifically designed for the unique requirements of high-throughput, automated platforms. It is designed for PCR cleanup for downstream applications, such as DNA sequencing or SNP analysis. When PCR amplification is complete, any unused dNTPs and primers remaining in the PCR product mixture will interfere with these methods. USB HT ExoSAP-IT High-Throughput reagent removes these contaminants.

HT ExoSAP-IT reagent has a decreased viscosity for robotic pipetting, yet maintains the same convenience and stability that you have come to expect from the ExoSAP-IT method. HT ExoSAP-IT High-Throughput PCR Cleanup reagent is designed to provide accurate and consistent results in high throughput applications.

- New formulation for use with robotics
- Treat reaction volumes from 5µL to 5L
- Recover 100% of PCR product
- Conveniently available in strips and plates for robotic platforms

Affymetrix® | USB® Products

USB HT ExoSAP-IT, No. of Reactions	Cat. No.	Each
480	**97067-422**	**369.00**
1,000	**97067-428**	**729.00**
5,000	**97067-430**	**3,162.00**
5,760	**97067-424**	**4,196.00**
23,040 (4 x 5,760)	**97067-426**	**15,106.00**

The Fastest and Easiest Way to Recover High Quality DNA from Your Storage Cards

Innovative prepGEM™ and forensicGEM™ Kits for Blood and Saliva Storage Cards

The availability of simple DNA sample preparation methods is becoming increasingly important in fast-paced research settings, as the use of nucleic acid-based analyses continues to expand rapidly. ZyGEM's prepGEM and forensicGEM DNA extraction technology can extract high-quality DNA from a broad range of sample materials in less than 20 minutes. The extracted DNA can be used directly with analytical platforms based on PCR, quantitative PCR, or capillary electrophoresis. Unlike most DNA preparation methods that require multiple steps and special handling (which increases the risk of error or contamination), ZyGEM's DNA extraction technology uses a single tube and a simple two-step temperature cycle to prepare DNA for analysis, greatly reducing sample preparation time and the risk of sample contamination.

- **Closed tube:** protects sample integrity
- **Hands-off:** saves labor costs
- **One-step:** maximizes yields and decreases repeat rate
- **Easily automated:** compatible with most low-cost, off-the-shelf liquid handling robots
- **Tested:** proven on a range of samples and types

Storage Card DNA Extraction Kits	Cat. No.	Each
prepGEM for Storage Cards		
Blood, 50 Preps	**95044-106**	**92.00**
Blood, 200 Preps	**95044-062**	**303.67**
Blood, 500 Preps	**95044-064**	**558.68**
Blood, 5,000 Preps	**95044-066**	**3,866.95**
Saliva, 50 Preps	**95044-108**	**92.00**
Saliva, 200 Preps	**95044-044**	**303.67**
Saliva, 500 Preps	**95044-046**	**558.68**
Saliva, 5,000 Preps	**95044-048**	**3,866.95**
forensicGEM for Storage Cards		
Blood, 50 Preps	**95044-096**	**95.87**
Blood, 200 Preps	**95044-016**	**331.52**
Blood, 500 Preps	**95044-018**	**642.50**
Blood, 1,000 Preps	**95044-020**	**1,152.73**
Saliva, 50 Preps	**95044-098**	**95.87**
Saliva, 200 Preps	**95044-022**	**331.52**
Saliva, 500 Preps	**95044-024**	**642.50**
Saliva, 1,000 Preps	**95044-026**	**1,152.73**

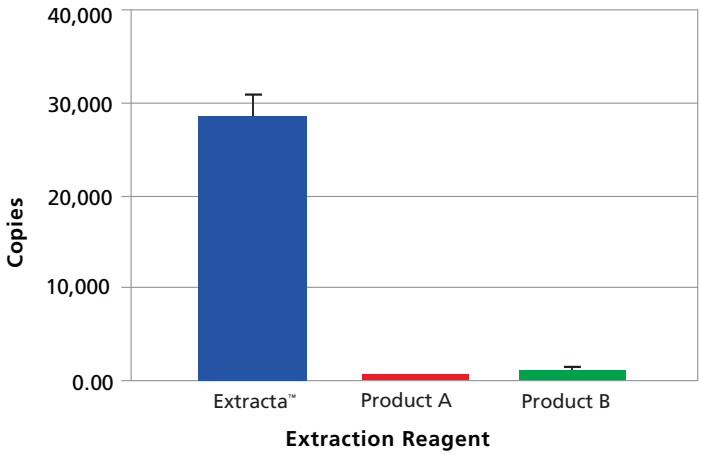
Rapid and Efficient Extraction of PCR Ready Genomic DNA from Mammalian Tissue

PCR Grade DNA in 35 Minutes

Extracta™ DNA Prep for PCR is a two-component reagent kit for rapid extraction of PCR-ready genomic DNA from mammalian tissues. Tissues are processed in 35 minutes with little hands-on time. Compared to a conventional proteinase-K process, this is significantly faster with fewer handling steps. The genomic DNA is suitable for sensitive downstream PCR applications including end-point PCR, high resolution melt analysis (HRM), and quantitative real-time PCR (qPCR) without requiring any additional clean-up. In addition, the extracted DNA may be used in multiplexed PCR applications such as transgene or knock-out analyses. Tissue extractions can be done in tubes, plates, or deep-well blocks to allow for adaptation to workflow and automation on liquid-handling workstations.

- Simple, fast protocol
- Works with wide range of tissue including hair, buccal swabs, and mouse tails
- DNA is suitable for qPCR, high resolution melt analysis, endpoint PCR, and other applications

Comparison of Extract Yield: Mouse Tails



Extracta DNA Prep	Cat. No.	Each
25 mL	**97065-350**	**124.00**
250 mL	**97065-352**	**1,051.00**

Gel/PCR DNA Fragment Extraction Kits

IBI Gel/PCR fragment kits are designed to recover or concentrate DNA fragments from an agarose gel, PCR, or other enzymatic reaction. The standard Gel/PCR extraction kit will recover DNA from an agarose gel and concentrate DNA fragments from PCR from 100bp to 10kb. The small fragment kit has been optimized to extract and concentrate DNA fragments from gel or PCR from 50bp to 200bp, and the large fragment extraction kit has been optimized to extract DNA fragments from an agarose gel from 8kb to 50kb in size. IBI also offers replacement extraction columns and collection tubes to allow the use of left-over kit reagents. IBI columns and collection tubes are compatible with nearly all lysis-based extraction kit reagents on the market.

- Gel extraction and PCR clean-up from the same kit
- Best per/prep value and replacement columns and collection tubes to use up those extra reagents sitting around the lab
- Optimized for a variety of molecule sizes

IBI SCIENTIFIC

No. of Tests	Cat. No.	Each
96-Well PCR Clean-Up Kits		
4 x 96-Wells	**95039-646**	**448.60**
10 x 96-Wells	**95039-648**	**1,022.23**
Gel/PCR DNA Fragment Extraction Kits		
4	**95039-640**	**7.36**
100	**95039-642**	**113.47**
300	**95039-644**	**343.55**
PCR/Gel Extract Column, Amp, & Tubes		
25	**71002-354**	**26.77**
50	**71002-356**	**45.30**
100	**71002-358**	**78.27**
Large DNA Fragment Extraction Kits		
4	**97060-562**	**7.35**
100	**97060-564**	**112.38**
300	**97060-566**	**336.09**
Small DNA Fragment Extraction Kits		
4	**97060-556**	**7.35**
100	**97060-558**	**110.28**
300	**97060-560**	**338.18**

AxyPrep Mag™ Simplifies Next-Gen and Sanger Sequencing Sample Prep from DNA Isolation to Clean-Up

AxyPrep Mag utilizes a unique paramagnetic bead-based chemistry for the purification and clean-up of nucleic acids compatible with a variety of genomics downstream applications such as next-gen and Sanger sequencing, genotyping, and gene expression. The AxyPrep Mag product line not only improves genomics workflow processing efficiency, it also significantly reduces operational cost.

- **Flexible PCR Clean-Up:** High recovery of amplicons with the option to choose recovery of primer-dimer free >60bp or >100bp fragments
- **Saves Time and Money:** Significant BigDye savings without incurring extra cost and processing time with the unneeded BigDye signal enhancer buffer, while maintaining high QV20+ scores
- **Scalable:** Tube, 96 and 384-Well Microplate formats for both manual and automated processing

AXYGEN BIOSCIENCES

Description	No. of Preps	Cat. No.	Each
Magnetic DyeClean	800	**97067-458**	**250.00**
Magnetic DyeClean	5,000	**97067-460**	**1,375.00**
Magnetic DyeClean	25,000	**97067-470**	**5,750.00**
Magnetic PCR Clean-Up	110	**97067-616**	**150.00**
Magnetic PCR Clean-Up	1,110	**97067-612**	**675.00**
Magnetic PCR Clean-Up	5,550	**97067-620**	**2,250.00**

KingFisher® Nucleic Acid Purification Kits

Unique High Throughput Workflow

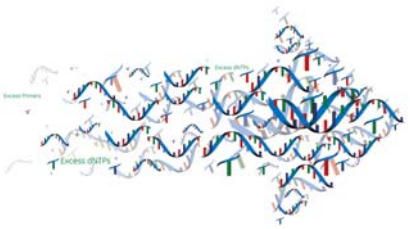
KingFisher Nucleic Acid Purification Kits have been designed and optimized for use with the Thermo Scientific KingFisher magnetic particle processors, providing a unique automated workflow. Enabling the fast and accurate purification of DNA and RNA, the kits contain all relevant buffers and reagents for a range of different sample types. As a unique, open, and flexible instrument, the KingFisher system enables users to select a kit that best meets their specific application demands. As a result, you can employ a single instrument for a broad range of protocols. Therefore, the KingFisher Nucleic Acid Purification Kits enable you to create a complete workflow, from sample preparation to downstream application analysis, from a single source.

- Flexible KingFisher system with optimized purification kits
- Customized kits for wide variety of sample types

Thermo SCIENTIFIC

KingFisher DNA Kit, 1 x 96	Cat. No.	Each
Blood DNA	**97060-408**	**246.86**
Cell and Tissue DNA	**97060-416**	**259.86**
Plant DNA	**97060-422**	**258.86**
Total RNA	**97060-412**	**242.86**
Viral Nucleic Acid	**97060-420**	**249.86**

Take Your PCR Reaction Clean-up to a New Level



illustra™ ExoStar™ is an enzymatic alternative to conventional column-based PCR cleanup. ExoStar uses alkaline phosphatase and exonuclease I to degrade PCR reaction components (primers and nucleotides) that might otherwise interfere with the downstream use of your PCR product. For a limited time only, qualify to receive a FREE 20 reaction trial size for evaluation. To get your FREE sample, visit **www.vwr.com/gesamplerequest**, while supplies last.

- No columns – enzymatically digests unwanted primers and nucleotides in your PCR reaction without centrifugation
- Prepares PCR samples for numerous downstream applications – including DNA sequencing, cloning, genotyping, or further DNA modification reactions
- Fast, easy and automation-friendly – simple pipetting, incubation, and heating steps performed directly in your PCR reaction tube/well. Minimal hands-on time.

Distributor
GE Healthcare

No. of Reactions	Cat. No.	Each
20	**71002-798**	**25.00**
100	**71002-800**	**67.00**
500	**71002-802**	**264.00**
2,000	**71002-804**	**946.00**
5,000	**71002-806**	**2,149.00**

Deoxyribonucleotides: (dNTP); Building Blocks for DNA Amplification

Deoxyribonucleotides are the foundation of DNA. It takes thousands of these nucleotides to make-up a DNA molecule. DNA consists of a sugar molecule (deoxyribose), a nitrogenous base (purine in adenine and guanine, pyrimidine in thymine or cytosine), and a phosphate molecule.

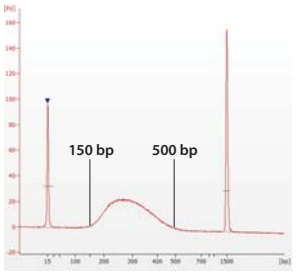
AMRESCO's high-purity grade deoxyribonucleotides are ideal for the amplification of DNA.

AMRESCO®

Description	Size	Cat. No.	Each
dATP, 100 mm Solution, pH 7.0	40 µm	**97062-862**	**79.32**
dATP, Disodium Salt, Trihydrate	50 mg	**97061-812**	**110.23**
dATP, Disodium Salt, Trihydrate	100 mg	**97061-810**	**208.41**
dCTP, 100 mm Solution, pH 7.0	40 µm	**97062-864**	**79.32**
dCTP, (2'-Deoxycytidine-5'-Triphosphate) Trisodium Salt Dihydrate	50 mg	**97061-840**	**90.00**
dCTP, (2'-Deoxycytidine-5'-Triphosphate) Trisodium Salt Dihydrate	100 mg	**97061-838**	**163.75**
dGTP, 100 mm Solution, pH 7.0	40 µm	**97062-866**	**79.32**
dGTP, Trisodium Salt, Dihydrate	50 mg	**97061-848**	**103.86**
dGTP, Trisodium Salt, Dihydrate	250 mg	**97061-846**	**453.41**
dTTP, 100 mm Solution, pH 7.0	40 µm	**97062-872**	**79.32**
dTTP, Trisodium Salt, Dihydrate	50 mg	**97061-872**	**141.25**
dTTP, Trisodium Salt, Dihydrate	100 mg	**97061-870**	**234.32**
dNTP Mixture, 10 mm Solution	0.5 mL	**97063-232**	**20.85**
dNTP Mixture, 25 mm Solution	40 µm	**97062-924**	**66.14**
dNTP Kit, includes dATP, dCTP, dTTP, and dNTP; 40 µm of 100 mm Solution, pH 7.0	Kit	**97063-552**	**171.93**

E.Z.N.A.® Size Select-IT

Precisely isolate your fragments



The E.Z.N.A. Size Select-IT Kit is a convenient system for fast and reliable processing of library size selection step during the Next Generation Sequencing Process. The system is optimized for use with common platforms such as Illumina® HiSeq/MiSeq and Roche 454. The E.Z.N.A. Size Select-IT Kit can selectively and precisely recover DNA fragments between 150-700bp free of oligonucleotides, nucleotides, and polymerase with a recovery rate exceeding 50%. The unique buffer system uses silica columns to eliminate the need for agarose gel extractions.

- Eliminates gel extraction steps
- Recovery of fragments in less than ten minutes

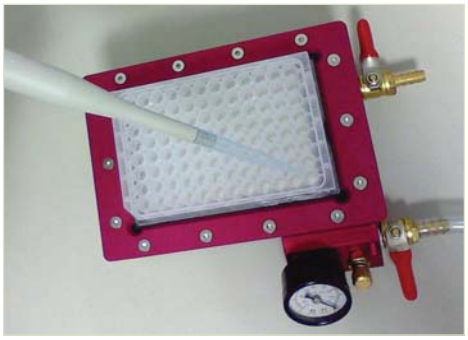
Flexible to get the exact fragment size you need

BCS Buffer (µL) Low Cut-off	Size Range (bp)	ACD Buffer (µL) High Cut-off
4-10	100-500	6
12	110-500	6
14	120-500	6
16	130-500	6
18	140-500	6
20	150-700	3
20	150-500	6
20	150-400	8
20	150-300	10
20	150-250	12

OMEGA bio-tek
Innovations in nucleic acid isolation

No. of Preps	Cat. No.	Each
10	**89236-732**	**25.00**
50	**89236-734**	**123.00**
200	**89236-736**	**440.00**

Vacuum Manifold for 96-Well DNA Purification Applications



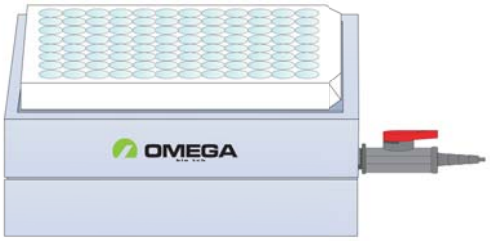
The IBI vacuum manifold for 96-Well plates is made of anodized aluminum for long life and easy cleaning. Fits most standard 96-Well extraction and collection plates. Thin upper body of manifold prevents well-to-well cross-contamination. Easily assembled, it can be used for plasmid purification, genomic DNA extraction, viral DNA & RNA isolation, and total RNA isolation and PCR/Gel purification. IBI 96-Well purification kits are designed for optimal use with the 96-Well manifold.

- **Dimensions:** 17 x 12 x 8cm (L x W x H)
- Contains vacuum gauge, inlet and outlet valves with hose-barb connections and vacuum adjust valve
- Constructed of anodized aluminum

IBI SCIENTIFIC

Description	Cat. No.	Each
96-Well Vacuum Manifold	95039-726	1,400.45

Vacuum Manifold for DNA/RNA Purification in 96-Well Filter Plates



The E-Z 96® Vacuum manifold is designed for DNA/RNA sample preparation with E-Z 96® DNA/RNA Plates. The lower plate consists of the chamber with a lever operated gate valve or pressure gauge. A custom-fitted O-ring provides an airtight interface between the plates during operation. The chamber can be used either as a simple dump for waste filtrate or as receptacle for a standard 96-Well microtiter plate (collection plate). The upper plate has a machined recess that fits our filter plate and contains a custom gasket as well. The top plate has locating holes which correspond directly to the locating pins in the bottom plate. The manifold is also compatible with semi-skirted filter plates.

- Accelerate purification process
- Reduce sample handling

OMEGA bio-tek
Innovations in nucleic acid isolation

Description	Cat. No.	Each
E-Z 96 Vacuum Manifold	101414-962	286.00

Multi-Well Plate Vacuum Manifold

Pall's multi-well vacuum manifold is designed to perfectly fit SBS-conforming filter plates. The spacer block has been optimized to reduce the space between the receiver plate and the filter plate during vacuum filtration. The adapter collar holds filter plates tightly to receiver plates for centrifugation.

- Comes complete with necessary O-ring and gasket. Control block includes vacuum pressure gauge, vacuum metering valve, vacuum release valve, and ¼ in. hose barb for vacuum line attachment
- Manifold includes a Delrin spacer block for 350µL receiver plates
- Optional spacer block available for use with 1mL receiver plates

PALL Life Sciences

Description	Cat. No.	Each
Multi-Well Plate Vacuum Manifold	16003-836	1,145.88

Vac-Man® 96 Vacuum Manifold

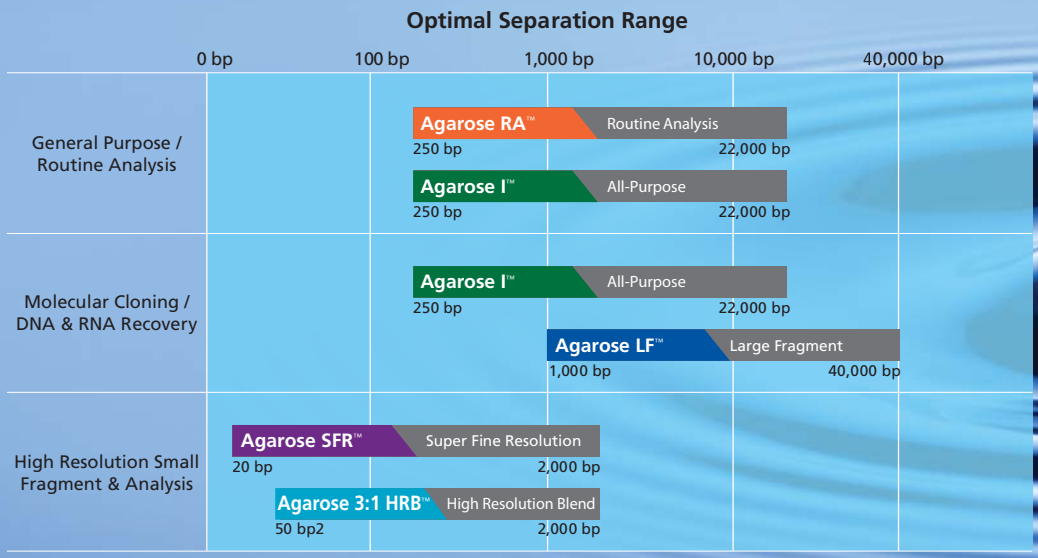
The Vac-Man 96 Vacuum Manifold is designed for isolating up to 96 samples simultaneously. The unique manifold design allows the delivery of filtrate waste and wash solutions to an external waste trap (not included), eliminating the need to disassemble the manifold during processing to remove collected waste. Includes: vacuum manifold base (with vacuum port and guide pins), manifold collar (with vacuum port), and manifold bed (with guide pins).

- **Safe:** Eliminates the need to handle waste during nucleic acid purification
- **Flexible:** Adapts for use alone or with robotic nucleic acid purification platforms
- For manual use with the Wizard® SV 96 Plasmid DNA Purification System, Wizard® SV 96 Genomic DNA Purification System, Wizard® SV 96 PCR Clean-up System, and the Wizard® SV 96 Total RNA Isolation System

Promega

Description	Cat. No.	Each
Vac-Man 96 Vacuum Manifold, 96 Samples	PAA2291	356.71

Premium Agarose for Gel Electrophoresis



AMRESCO offers premium quality agaroses for a wide-range of nucleic acid and protein electrophoresis applications. Due to the superior particle size of AMRESCO agarose blends, lower background fluorescence is routinely achieved following ethidium bromide staining. All agaroses are rigorously tested to meet the highest quality control standards and to ensure success in molecular biology applications.

Description	Cat. No.	Each
Agarose I™	97062-246	244.82
Agarose LF™	97063-362	331.25
Agarose RA™	97064-254	273.33
Agarose SFR™	97064-136	620.23
Agarose 3:1 HRB™	97062-986	474.09

Size is 250 g for all listed. Other quantities available at vwr.com.

The Original Low-Melting Temperature Agarose

SeaPlaque™ Agarose is the original low-melting temperature agarose and has been a staple in labs for over 40 years. This molecular biology grade agarose produces gels with greater sieving capabilities from 200bp to 25kb, and with higher clarity than standard melting temperature agarose. SeaPlaque™ GTG™ Agarose is the Genetic Technology Grade Agarose that is quality tested to certify performance.

- Designed for cloning of tissue culture cells and viral plaque assays
- Optimal separation for DNA and RNA recovery
- Ideal for In-gel reactions

Lonza

Description	Size, g	Separation Range	Cat. No.	Each
SeaPlaque Agarose	25	200 bp–25 kb; ≥600 kDa	**12001-900**	**164.22**
SeaPlaque Agarose	125	200 bp–25 kb	**12001-902**	**633.42**
SeaPlaque GTG Agarose	25	200 bp–25 kb; ≥600 kDa	**12001-904**	**181.56**
SeaPlaque GTG Agarose	125	200 bp–25 kb	**12001-898**	**476.34**

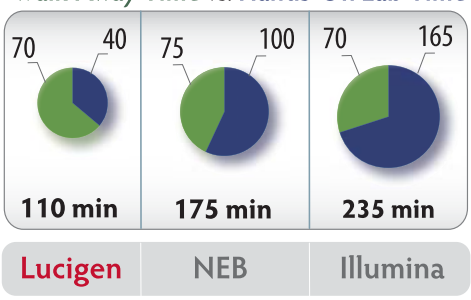
NxSeq™ DNA Sample Prep Kits

The Future of DNA Library Prep for Next Generation Sequencing

Time Comparison

From Sheared DNA to Size Selection

Walk-Away Time vs. Hands-On Lab Time

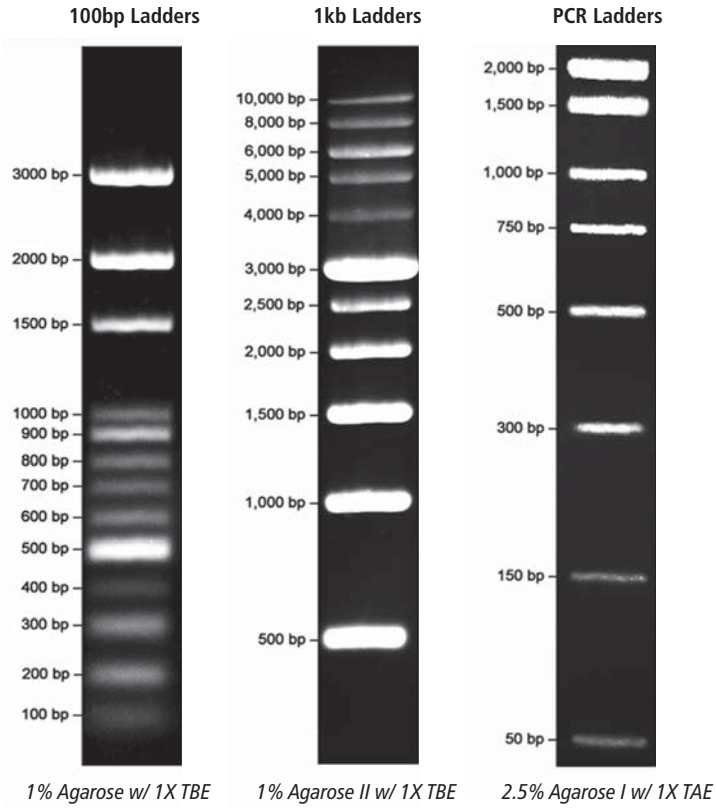


- Save up to 2 hours off your library prep
- Reduce chimeras and false junctions
- Cut NGS costs
- All without compromising data quality
- Less hands-on time, twice as fast as Illumina®

Lucigen®

Description	Size, rxn	Cat. No.	Each
NXSEQ DNA Library Prep 1	10	**89236-098**	**250.00**
NXSEQ DNA Library Prep 1	20	**89236-100**	**475.00**
NXSEQ DNA Library Prep 2	10	**89236-102**	**230.00**
NXSEQ DNA Library Prep 2	20	**89236-104**	**437.00**

DNA Ladders and Molecular Weight Markers



1% Agarose w/ 1X TBE | *1% Agarose II w/ 1X TBE* | *2.5% Agarose I w/ 1X TAE*

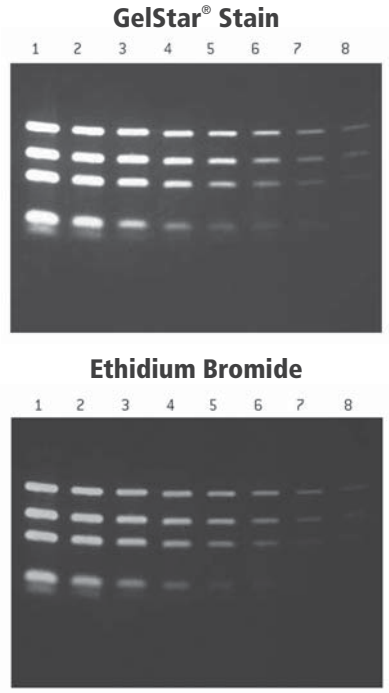
Molecular weight markers are valuable tools for estimating the size of nucleic acid fragments by agarose or acrylamide electrophoresis. AMRESCO's DNA molecular weight markers are available in a variety of different formulations to provide you with maximum versatility and accurate fragment size estimation.

- EZ-Vision® Ladders are premixed with loading and visualization dyes
- Ready Ladders™ are premixed with loading dye
- DNA MicroMarker™ contains 9 fragments 80-587bp
- Ready Ladder 50bp contains 10 fragments 50-500bp

amresco®

Description	No. of Preps	Size, µL	Cat. No.	Each
EZ-Vision DNA Ladder, 100 bp	50	300	**97063-350**	**92.05**
EZ-Vision DNA Ladder, 1 kb	100	600	**97063-348**	**96.59**
EZ-Vision PCR Ladder	50	500	**97063-346**	**125.00**
DNA MW Marker, 100 bp Ladder	50	250	**97063-488**	**85.11**
DNA MW Marker, 1 kb Ladder	100	500	**97063-490**	**99.77**
DNA MicroMarker	50	200	**97063-048**	**172.88**
Ready Ladder, 50 bp	50	500	**97063-302**	**102.27**
Ready Ladder, 100 bp	50	300	**97063-208**	**121.20**
Ready Ladder, 1 kb	100	600	**97064-212**	**98.98**
PCR DNA Marker™	100	1,000	**97063-054**	**110.68**
PCR DNA Marker w/Loading Dye	50	500	**97063-654**	**121.14**

Highly Sensitive In-Gel Stain for DNA and RNA



Serial dilution of SimplyLoad™ DNA QuantLadder on 2% Reliant™ Precast Gels post-stained w/ 1X GelStar® Stain (top) or 0.5µg/mL Ethidium Bromide (bottom) for 45 minutes.

GelStar® Nucleic Acid Gel Stain is a highly sensitive fluorescent stain for detecting both DNA and RNA. Add GelStar Stain to your agarose solution prior to casting, or post-stain your gels. GelStar Stain exhibits exceptional signal-to-noise ratio with minimal background.

- Complete staining solution for all types of nucleic acids
- Maximum sensitivity that can detect as little as 20pg of dsDNA or 3ng RNA
- Versatile for use with agarose or polyacrylamide gel electrophoresis
- Ideal alternative to silver staining

Lonza

Description	Size	Cat. No.	Each
GelStar Nucleic Acid Stain	2 x 250 µL	**12001-804**	**161.16**
GelStar Stain Photographic Filter	3 in. Square	**12001-926**	**63.75**

Perfect DNA™ Markers

Easy-to-Remember Sizes for Routine Use in Plasmid Cloning

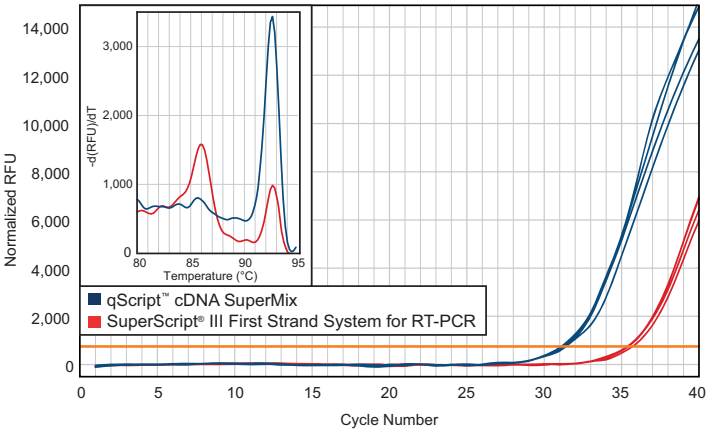
The Perfect DNA Markers contain sets of DNA species having convenient, easy-to-remember sizes for agarose gel analysis. The markers have uniform band intensities except for the easily identifiable reference bands, which are useful for instant size recognition. An extra vial of 6X DNA Gel Loading Buffer is included.

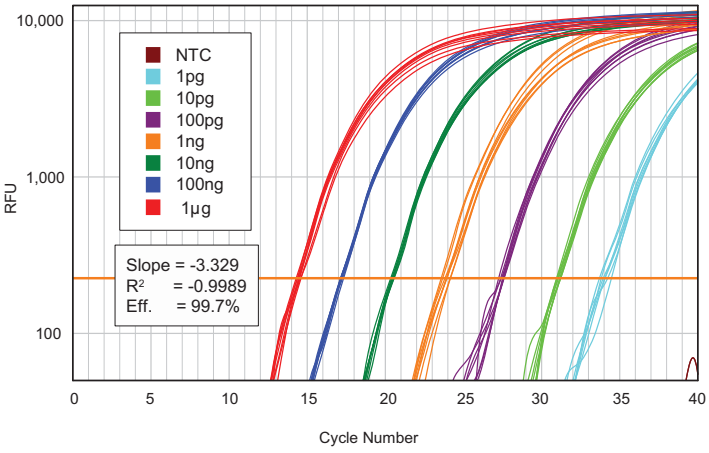
- Avoid freeze/thaw
- Store at 2°C to 8°C

EMD MILLIPORE

Ranges, kbp	Cat. No.	Each
0.05–10	**80030-890**	**100.06**
0.5–12	**80030-932**	**100.05**
0.1–12	**80031-040**	**96.05**

Perfecting qPCR: Exceptional Representation with Less Starting Material Every Time



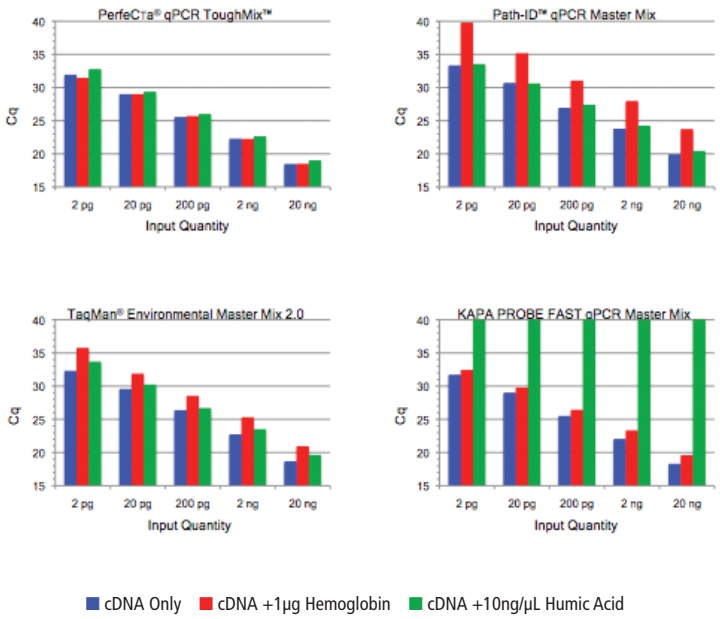


qScript™ cDNA SuperMix Sets a New Standard for Reproducibility, Specificity, Speed, and Convenience in qPCR and RT-PCR Applications

qScript cDNA SuperMix provides a sensitive and easy-to-use solution for two-step RT-PCR. This 5X concentrated master mix provides all necessary components (except RNA template) for first-strand synthesis including: buffer, dNTPs, $MgCl_2$, primers, RNase inhibitor protein, qScript reverse transcriptase, and stabilizers. qScript is an RNase H(+) derivative of MMLV reverse transcriptase, optimized for reliable cDNA synthesis over a wide dynamic range of input RNA. The unique blend of oligo (dT) and random primers in the qScript cDNA SuperMix works exceptionally well with a wide variety of targets. This blend is optimized for the production of targets <1kb in length. qScript cDNA SuperMix produces excellent results in both Real-Time and conventional PCR.

- Easy-to-use; one-tube or 96-Well format
- High sensitivity across a broad range of RNA template concentrations
- Unbiased cDNA synthesis – complete 3–5ft. RNA sequence representation

cDNA SuperMix	Cat. No.	Each
25 rxns	**101414-102**	**129.00**
100 rxns	**101414-106**	**517.00**
500 rxns	**101414-108**	**2,525.00**
5 x 96-Well Plates	**101414-104**	**2,775.00**



Whip Your Gene Expression Experiments Into Shape with the Toughest Mix Around

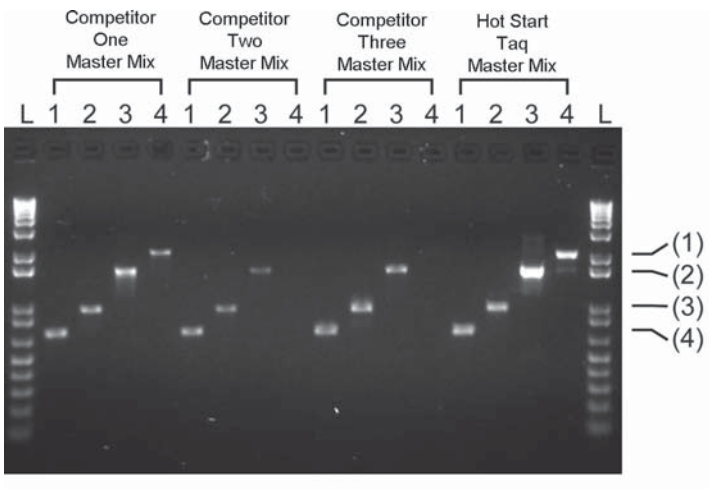
Many sample types are rich in PCR inhibitors. These PCR scoundrels operate by shutting down PCR amplification at threshold concentrations, or by quenching fluorescent signal. Expensive or time-consuming purification steps are no longer required to eliminate inhibitors — PerfeCTa® qPCR ToughMix neutralizes problem-causing inhibitors in crude lysates and other difficult samples. PerfeCTa qPCR ToughMix is a ready-to-use 2X concentrated hotstart PCR mix containing additives which prevent inhibition of PCR or quenching of fluorescent signal by common PCR inhibitors. AccuFast™ DNA Polymerase is a low DNA hot-start preparation in which residual DNA is undetectable.

- **Bullet-Proof qPCR:** easily overcome tough PCR inhibitors
- **Short Run Times:** fast cycling protocols enable more experiments
- **Repeatable Results:** hot-start polymerase highly stable at ambient temperature

Quanta BIO SCIENCES

No. of Reactions, 20µL	Package Size, mL	Cat. No.	Each
PerfeCTa qPCR ToughMix			
250	2 x 1.25	**97065-976**	**194.00**
1,250	10 x 1.25	**97065-972**	**874.00**
5,000	1 x 50	**97065-974**	**2,730.00**
PerfeCTa qPCR ToughMix, ROX			
250	2 x 1.25	**97065-964**	**220.00**
1,250	10 x 1.25	**97065-960**	**998.00**
1,250	10 x 1.25	**97065-962**	**3,707.00**
PerfeCTa qPCR ToughMix, L-ROX			
250	2 x 1.25	**97065-970**	**220.00**
1,250	10 x 1.25	**97065-966**	**998.00**
5,000	1 x 50	**97065-968**	**3,707.00**

Hot Start PCR Master Mixes and Reagents



(1) 714-bp REEP3 (2) 856-bp BRCA1 (3) 1.3-kb CBP (4) 2.0-kb APC

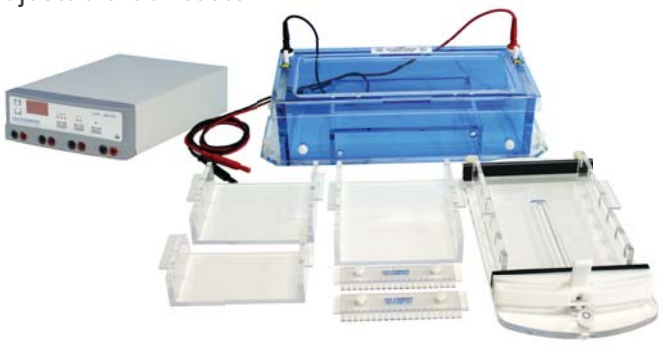
These ready-to-use reaction cocktails contain all required components for routine PCR amplification of DNA fragments up to 4kb. Hot start formulation prevents non-specific primer extension/primer dimers and allows for room temperature reaction setup. Inclusion of tracking dyes in the Hot Start PCR-to-Gel Taq Master Mix, 2X allows direct loading and analysis of PCR products by agarose gel electrophoresis following PCR amplification. Other reagents available for reverse transcription include AMRESCO's M-MLV Reverse Transcriptase and RNase Inhibitor, Recombinant.

- Ready-to-use solutions for efficient PCR amplification
- Optimized for superior performance

Quantity	Package Size, mL	Cat. No.	Each
Hot Start Taq PCR Mix, 2X			
50	1 x 1.25	**97068-146**	**33.21**
100	2 x 1.25	**97068-140**	**64.53**
500	10 x 1.25	**97068-142**	**320.33**
2,000	1 x 50	**97068-144**	**1,218.58**
PCR-To-Gel Taq Master Mix, 2X			
50	1 x 1.25	**97068-154**	**33.21**
100	2 x 1.25	**97068-148**	**64.53**
500	10 x 1.25	**97068-150**	**320.33**
2,000	1 x 50	**97068-152**	**1,218.53**
RNase Inhibitor, Recombinant			
2.5 KU	1 x 62.5	**97068-158**	**106.61**
10 KU	1 x 250	**97068-160**	**256.61**
M-MLV Reverse Transcriptase			
40 KU	1 x 200	**97068-174**	**238.46**
200 KU	1 x 1,000	**97068-176**	**944.90**

Flexicast Horizontal 4-in-1 System

Includes Four Different Gel Tray Sizes and Adjustable Gel Caster



The Flexicast System is our most versatile horizontal system offering the greatest choice in gel lengths and tray configurations. Large comb selection and a variety of gel tray pathlength options can accommodate 10 to 162 samples per run. All gel trays are 14cm (W). Available lengths include 8cm, 12cm, 16cm, and 20cm (L) (shown in caster). The Continuously Adjustable Caster is easy to use and adjusts to fit all four of the gel trays included. Each gel tray friction fits between a stationary gasket and a gasketed sliding gate that locks with a finger cam. Two adjustable-height polycarbonate combs are also included. The Flexicast Midi-Horizontal with a choice of three different gel tray lengths with gel bed dimensions of 16 x 14cm (L x W) is also available. The recommended power supply for either Flexicast System is the **CBEPS-300X**.

- Save running time and expense by selecting the shortest gel tray needed for your application
- Gel trays are winged for easy handling
- Fast and easy casting method

Description	Cat. No.	Each
Flexicast Horizontal 4-in-1 System	**CBWSGE-014**	**441.64**
Flexicast Midi-Horizontal 3-in-1 System	**CBWMGE-600**	**472.74**
Power Supply, Maximum Output 90W*	**CBEPS-300X**	**471.00**

**Output Voltage: 5–300 V, CC or CV in 1 V steps; output current: 4–500 mA, in 1 mA steps*

Power Supplies for Electrophoresis Systems

Compact Design with Small Footprint

For a wide range of applications including DNA, RNA, and protein separation, isoelectric focusing, and blotting. Compatible with most electrophoresis systems, including VWR® horizontal and vertical electrophoresis systems. Each unit features operating modes for constant voltage or constant current with automatic crossover. Model 202 (**93000-746**) also features a constant power operating mode.

Description	Electrical	Cat. No.	Each
Model 202	250 V, 3,000 mA, 300 W	**93000-746**	**959.80**
Model 302	300 V, 500 mA, 90 W	**93000-744**	**553.30**

DNA Separation & Detection in 8 Minutes

Get Straight to Your Results with the FlashGel™ System

Complete Separation and Recovery in eight minutes

- Get nearly instant separation of DNA and RNA
- Recover DNA without band excision or UV light

Watch Bands Migrate and Capture Images at the Bench

- Get sharp, uniform band resolution
- Visualize and photograph gel images without UV

Conserve Precious Samples

- Detect <0.1ng DNA or <10ng total RNA
- Recover up to 100% of your DNA without purification

FlashGel System (**95045-604**) includes:

- Camera
- FlashGel dock
- Nine DNA cassettes with precast, prestained agarose gels (1.2% agarose) and buffer, in 12+1 well, single tier format
- Loading dye
- DNA marker (100bp-4kb)

Lonza

Description	Cat. No.	Price
FlashGel System	**95045-604**	Ea./ **1,045.50**
DNA Starter Kit	**95015-612**	Ea./ **530.40**
RNA Starter Kit	**95015-614**	Ea./ **291.72**
Recovery Starter Kit	**95053-314**	Ea./ **424.32**
Camera	**95045-602**	Ea./ **605.88**
Dock System Only	**95015-616**	Ea./ **435.54**
System Components		
DNA Cassette 1.2%, 12+1 Well, Single Tier	**95015-618**	Pk. 9/ **107.10**
DNA Cassette 1.2%, 16+1 Well, Double Tier	**95015-620**	Pk. 9/ **107.10**
DNA Cassette 2.2%, 12+1 Well, Single Tier	**95015-623**	Pk. 9/ **107.10**
DNA Cassette 2.2%, 16+1 Well, Double Tier	**95015-624**	Pk. 9/ **107.10**
RNA Cassette 1.2%, 12+1 Well, Single Tier	**95015-626**	Pk. 9/ **107.10**
RNA Cassette 1.2%, 16+1 Well, Double Tier	**95015-628**	Pk. 9/ **107.10**
Recovery Buffer, 2 x 500 µL	**95053-312**	Ea./ **136.68**
Recovery Cassette, 1.2% Agarose, 8+1 (18-Well), Double Tier	**95053-310**	Pk. 9/ **107.10**
Recovery Cassette, 2.2% Agarose, 8+1 (18-Well), Double Tier	**89135-718**	Ea./ **123.00**

Gel Imager Plus Imaging System

Capture and print images with this easy to use, compact gel imager. Fluorescent gels can be viewed through the unique viewport window. The window blocks UV and allows users to safely see gels when illuminated by the UV transilluminator. Save and transfer images using the USB drive or connect and transfer to a PC.

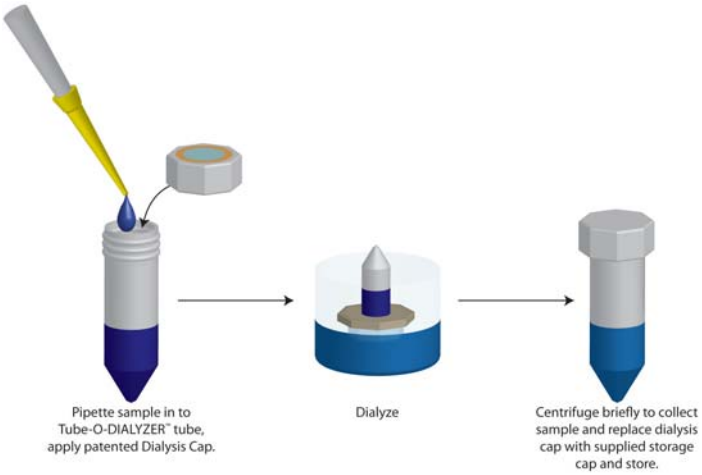
System Includes:

- 1.3 monochrome CCD camera
- Large 8in. touchscreen
- EtBr filter
- Choice of transilluminator
- Side access doors

VWR

VWR Gel Imager Plus	Cat. No.	Each
20 x 20 cm Transilluminator		
115 V, 302 nm Wavelength	**89131-396**	**8,241.14**
230 V, 302 nm Wavelength	**89131-398**	**8,241.14**
115 V, 302-365 nm Wavelength	**89131-404**	**8,449.08**
230 V, 302-365 nm Wavelength	**89131-406**	**8,449.08**
21 x 26 cm Transilluminator		
115 V, 302 nm Wavelength	**89131-400**	**8,447.05**
230 V, 302 nm Wavelength	**89131-402**	**8,447.05**
115 V, 302-365 nm Wavelength	**89131-408**	**8,653.98**
230 V, 302-365 nm Wavelength	**89131-410**	**8,653.98**
Accessories		
Doc-It LS Analysis Software	**14223-348**	**1,580.97**
Digital Thermal Printer	**14226-846**	**1,701.05**
UV to White Light Converter Plate, 21W x 26L cm	**21474-892**	**315.19**
Visi-Blue™ Converter Plate, 21W x 26L cm	**15000-088**	**370.23**
Gel Fluorescent Ruler, 25 cm	**21475-524**	**17.31**

Tube-O-DIALYZER™ No Loss Dialysis System for Small Samples



G-Biosciences manufactures a unique dialysis device that allows efficient dialysis and ensures 100% sample recovery, even if precipitation occurs. The Tube-O-DIALYZER micro dialysis system is designed for small sample volumes of 20µL to 2.5mL. The patented tube design of Tube-O-DIALYZER permits easy sample loading, sample handling and manipulation, without the use of specialized loading devices, costly syringes, or hazardous needles.

For sample recovery, simply pipette your sample into the Tube-O-DIALYZER and seal with the dialysis cap. Dialyze, then centrifuge for five seconds to collect 100% of your sample. For storage of the dialyzed sample, replace the dialysis cap with the supplied storage cap. The Tube-O-DIALYZER tube comes in two ideal sizes, the micro or the medi unit, both available with membranes with molecular weight cutoffs (MWCO) of 1k, 4k, 8k, 15k, and 50k Daltons.

- 100% sample recovery every time, even if sample precipitates
- No use of specialized loading devices, costly syringes, or hazardous needles
- Storage caps provided for convenient storage of dialyzed samples

Description	Packaging, Units	Cat. No.	Each
20-250 µL Sample Range			
1K	20	**95057-588**	**122.00**
4K	20	**95057-590**	**122.00**
8K	20	**95057-592**	**122.00**
15K	20	**95057-594**	**122.00**
50K	20	**95057-596**	**122.00**
0.2-2.5 mL Sample Range			
1K	20	**95057-598**	**137.00**
4K	20	**95057-600**	**137.00**
8K	20	**95057-602**	**137.00**
15K	20	**95057-604**	**137.00**
50K	20	**95057-606**	**137.00**
20-250 µL; 0.2-2.5 mL Sample Range			
1K	10 Micro, 10 Medi	**95057-608**	**132.00**
4K	10 Micro, 10 Medi	**95057-610**	**132.00**
8K	10 Micro, 10 Medi	**95057-612**	**132.00**
15K	10 Micro, 10 Medi	**95057-614**	**132.00**
50K	10 Micro, 10 Medi	**95057-616**	**132.00**

Protect Your Proteins from Proteases and Phosphatases with Inhibitor Tablets

Thermo Scientific Pierce® Protease, Phosphatase, and combination Protease and Phosphatase Inhibitor Tablets are broad-spectrum inhibitor formulations ideal for preventing proteolytic degradation and/or dephosphorylation during cell lysis and protein extraction.

The Pierce Protease and Phosphatase Inhibitor Tablets have been formulated to provide excellent protection against cellular proteases and phosphatases during protein sample preparation. The combined tablet is the only commercially available tablet formulation that provides protection against both proteases and phosphatases. The tablet formulations have been thoroughly evaluated for inhibitor activity using a variety of protease and phosphatase substrates and perform favorably compared to other commercial blends.

The easy-to-use tablets are conveniently provided in perforated blister packaging, and may be reconstituted before extract preparation for maximum protection. The formulations are available with or without EDTA. Pierce Protease and Phosphatase Inhibitor Tablets are stable at 4°C for up to 12 months, and each tablet is sufficient for 10mL of solution.

- **Complete:** each tablet contains a broad spectrum of protease and/or phosphatase inhibitors
- **Easy-to-use:** tablets are easily removed from perforated blister packs and disperse readily into solution
- **Compatible:** use with commercially available cell lysis reagents or those prepared by your lab

Description	Sample Size, mL	No. of Tablets	Cat. No.	Each
Protease Inhibitor Tablets	300	30	**PI88660**	**138.00**
Protease Inhibitor Tablets, EDTA Free	300	30	**PI88661**	**138.00**
Protease and Phosphatase Inhibitor Tablets	200	20	**PI88663**	**250.00**
Protease and Phosphatase Inhibitor Tablets, EDTA Free	200	20	**PI88664**	**250.00**
Phosphatase Inhibitor Tablets	200	20	**PI88662**	**180.00**

Easily Eliminate Endotoxin Contamination in Your Protein Sample

Endotoxin contamination is a common problem with recombinant proteins purified from gram-negative bacteria such as *E. coli.* Thermo Scientific Pierce High-Capacity Endotoxin Removal Resin selectively binds and removes endotoxins from protein, peptide, and antibody samples using a modified ϵ-poly-L-lysine [poly(ϵ-lysine)] affinity ligand. Endotoxin levels in biological samples are reduced by ≥99% in as fast as one hour using our spin column format, and protein recovery is ≥85%. Pierce® High-Capacity Endotoxin Removal Resin is available to pack a custom column or in convenient pre-packed, single-use spin columns optimized for different sample volumes.

- **High-Capacity:** bind up to 2,000,000EU/mL to eliminate >99% of endotoxins
- **Durable:** reuse resin up to 10 times
- **Selective:** recover ≥85% of your protein sample
- **High Performance:** complies with FDA guidelines by reducing final EU concentration to <5EU/mL
- **Fast:** our new spin column format enables endotoxin depletion within one hour
- **Clean:** single-use spin columns avoid cross contamination of samples
- **Optimized:** spin columns are optimized for different sample volumes

Thermo SCIENTIFIC

Size, mL	Cat. No.	Each
Endotoxin Removal Resin		
10	**PI88270**	**250.00**
100	**PI88271**	**2,000.00**
250	**PI88272**	**4,500.00**
Endotoxin Removal Spin Columns, 5 Column Pk.		
0.25	**PI88273**	**40.00**
0.5	**PI88274**	**50.00**
1	**PI88276**	**150.00**
Endotoxin Removal Spin Columns, 25 Column Pk.		
0.5	**PI88275**	**175.00**
1	**PI88277**	**500.00**
LAL Chromogenic Endotoxin Quantitation Kit, 50 Tests		
Kit	**PI88282**	**200.00**

One-step Sample Concentration in a Single Tube for Minimal Sample Handling and Reduced Sample Loss

Vivaspin™ sample concentrators are designed for fast, non-denaturing concentration of biological samples by membrane ultrafiltration. Up to 30-fold concentration of the sample can be achieved with recovery of the target molecule typically exceeding 95%. The entire process is performed in a single tube with an upper compartment containing sample and a lower compartment separated by a semipermeable membrane with a molecular weight cut-off (MWCO) selected by the user. Centrifugation is applied to force solvent through the membrane, leaving a more concentrated sample in the upper chamber.

- Exclusive dead-stop technology ensures that samples cannot be concentrated to dryness and enables direct concentrate recovery
- Vertical polyethersulfone (PES) membrane minimizes membrane blockage and tolerates high flow rates
- Easy contact-free storage by reverse spinning the concentrate into the recovery cap (Vivaspin 2)

Distributor
GE Healthcare

Description	Cat. No.	Pack of
Vivaspin 2		
3 kDa	**95055-988**	25/ **114.89**
10 kDa	**95055-992**	25/ **114.89**
50 kDa	**95055-996**	25/ **114.89**
Vivaspin 6		
3 kDa	**95055-826**	25/ **128.34**
10 kDa	**95055-830**	25/ **128.34**
50 kDa	**95055-834**	25/ **128.34**
Vivaspin 20		
3 kDa	**95056-124**	12/ **121.11**
10 kDa	**95056-128**	12/ **121.11**
50 kDa	**95056-132**	12/ **121.11**
Vivaspin 500		
3 kDa	**95056-172**	25/ **94.19**
10 kDa	**95056-176**	25/ **94.19**
50 kDa	**95056-180**	25/ **94.19**

Do You Like The Strong, Sensitive Type?

Try BioTrace™ NT Transfer Membranes for Nucleic Acid and Protein Detection

Try Pall's FluoroTrans® PVDF Transfer Membranes if you need sensitive protein detection with low background and burn through.

- Strong, durable, and less likely to crack than competitors' membranes
- Broad compatibility with commonly used solvents
- Optimized for western transfer applications
- BioTrace NT transfer membrane offers pure unsupported nitrocellulose ideally suited for colony/plaque lifts and protein transfers
- FluoroTrans W transfer membrane is optimized for western transfer applications

PALL Life Sciences

Description	Format	Cat. No.	Price
BioTrace NT Nitrocellulose Transfer Membrane			
7 x 8.5 cm	Sheet	**28139-306**	Pk. 10/ **64.57**
20 x 20 cm	Sheet	**27377-000**	Pk. 10/ **163.33**
30 cm x 3 m	Roll	**27376-991**	Ea. / **245.45**
FluoroTrans W PVDF Transfer Membranes			
7 x 8.5 cm	Sheet	**29301-852**	Pk. 10/ **84.76**
20 x 20 cm	Sheet	**29301-854**	Pk. 10/ **246.39**
26 cm x 3.3 m	Roll	**29301-856**	Ea. / **338.91**

Note: All listed products are non-sterile.

VWR® Antibody Selector

Narrow Your Antibody Selection Using the Following Characteristics:

- Antigen
- Type
- Host
- Species Reactivity
- Conjugation
- Clone
- Monoclonal/Polyclonal
- Application

Visit **us.vwr.com/antibodies** to find your antibody now!

Acrylamide and Bis-Acrylamide

AMRESCO offers an extensive line of acrylamide and bis-acrylamide pre-weighed powder blends, pre-mixed stock solutions, and ready-to-use solutions for customized PAGE of nucleic acids. Our ultra pure (>99.9%) acrylamide and bis-acrylamide powders provide the flexibility to prepare solutions having concentrations and ratios for all electrophoresis applications. Liquid blends minimize the handling of neurotoxic acrylamide.

- Ultra-pure powders with acrylamide purity >99.9%
- Convenient and ready-to-use

amresco®

Description	Size	Cat. No.	Each
Acrylamide, Ulra-Pure Powder	500 g	**97064-568**	**104.55**
Bis-Acrylamide, Ultra-Pure Powder	250 g	**97061-140**	**66.02**
Acryl/Bis™ 37.5:1, Premixed Powder	200 g	**97064-696**	**116.36**
Acryl/Bis 37.5:1, Solution	500 mL	**97064-542**	**104.77**
Acryl/Bis 29:1, Solution	500 mL	**97064-556**	**65.00**
Acryl/Bis 19:1, Solution	500 mL	**97064-608**	**58.30**

Amersham™ ECL™ Prime Western Blotting Detection

The latest addition to the Amersham ECL family, Amersham ECL Prime, consolidates and builds on the benefits of our ECL legacy to deliver a detection system that is sensitive, stable, quantitative, and conservative in its consumption of expensive antibody reagents.

Specifications

Detection Limit:	2pg
Signal Duration:	Up to 3hrs., using constant exposure
Working Solution Shelf Life:	24hrs. at room temperature
Stock Shelf Life:	12 months at 4-8°C
Recommended Dilution Range	
Primary Antibody:	1:1,000 - 1:250,000
Secondary Antibody:	1:50,000 - 1:250,000

Examples of Application

- Detection and quantitation of post-translational modifications
- Detection of different protein levels as a response to treatment

Distributor
GE Healthcare

Description	Cat. No.	Each
ELC Prime Western Blotting Detector	**89168-782**	**247.00**

AcroPrep™ Advance Filter Plates for Ultrafiltration

Pall's AcroPrep Advance 96-Well filter plates for ultrafiltration provide rapid, efficient separation of biomolecules. The filter plate's Omega™ membrane provides high recovery and typically results in greater than or equal to 90% recovery of target biomolecules. Applications for this plate include size exclusion, PCR clean-up, nucleic acid purification, and protein separation.

- New well design results in faster, more uniform filtration rates across the plate
- Reduced hold-up volume offers maximum sample recovery
- AcroPrep Advance filter plates have short fluid directors to direct the flow of the filtration without cross-contamination

PALL Life Sciences

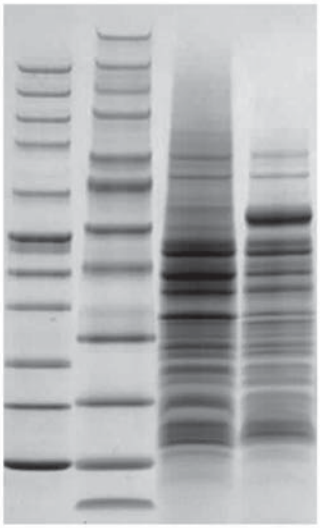
Description	Cat. No.	Pack of
AcroPrep Advance Filter Plates, 96-Well, 350 µL with Omega		
3K	**97052-106**	10/ **332.92**
10K	**97052-108**	10/ **332.92**
30K	**97052-110**	10/ **344.08**
100K	**97052-112**	10/ **343.79**
AcroPrep Advance Filter Plates, 96-Well, 1 mL with Omega		
3K	**89135-696**	5/ **203.00**
10K	**89135-698**	5/ **203.00**
30K	**89135-700**	5/ **203.00**
100K	**89135-702**	5/ **203.00**

Take Your Protein Research from Hours to Minutes

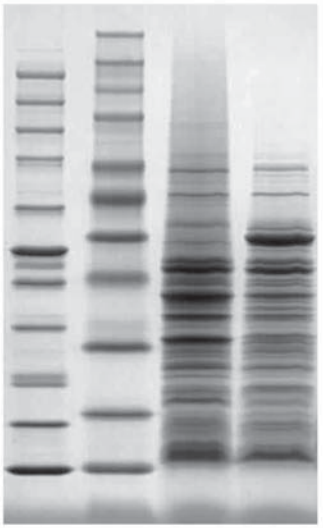
Speed Past the Twists and Turns in Protein Research with New Protein Products

Get protein results faster without changing your methods or compromising results. New ProSieve™ EX Running Buffer and ProSieve™ EX Transfer/Western Blot Buffer are modified buffer formulations that perform just like tris-glycine, but significantly accelerate run and transfer times. Complete separation and transfer in just 30 minutes!

- Separate proteins in half the time, and transfer in 10 minutes
- Compatible with standard gel systems and protocols
- Razor sharp resolution over a wide protein range



15min. Run w/ProSieve™ EX Buffer



40min. Run w/TrisGlycine Buffer

Lonza

Description	Size, L	Cat. No.	Each
ProSieve EX Running Buffer, 10X	1	**71002-836**	**127.00**
ProSieve EX Running Buffer, 10X	4	**71002-938**	**174.00**
ProSieve EX Transfer/Wester Blot Buffer, 10X	1	**71002-838**	**113.00**

Simplify Mini-Gel Workflow

An Efficient Workflow Process from Start to Finish

Simplify gel imaging with UVP's GelMax™ Imager. Simply place the gels on the transillumination plate and then capture brilliant color images. The streamlined software interface guides you through the image capture process with automated capture buttons. The option to define settings for quick, personalized image capture is also available. Gels can be analyzed using the user-friendly software. This compact Imager is truly plug and play, requiring no training.

- Capture brilliant publication-quality images of precast and mini gels up to 11.5 x 16cm
- Analyze and generate quantitative results using simple workflow-focused software
- Reduces lab space requirements with the compact design – footprint is smaller than 13 x 13in.
- Illuminate nucleic acid and protein gels with interchangeable transillumination sources; white, blue, midrange and longwave UV

Maximize Imaging Capabilities

The GelMax Imager features a built-in midrange 302nm UV transilluminator. Imaging capabilities can be expanded by adding interchangeable sample plates to view a wide range of fluorophore and colorimetric stains. Sample plates can accommodate mini gels up to 11.5 x 16cm.

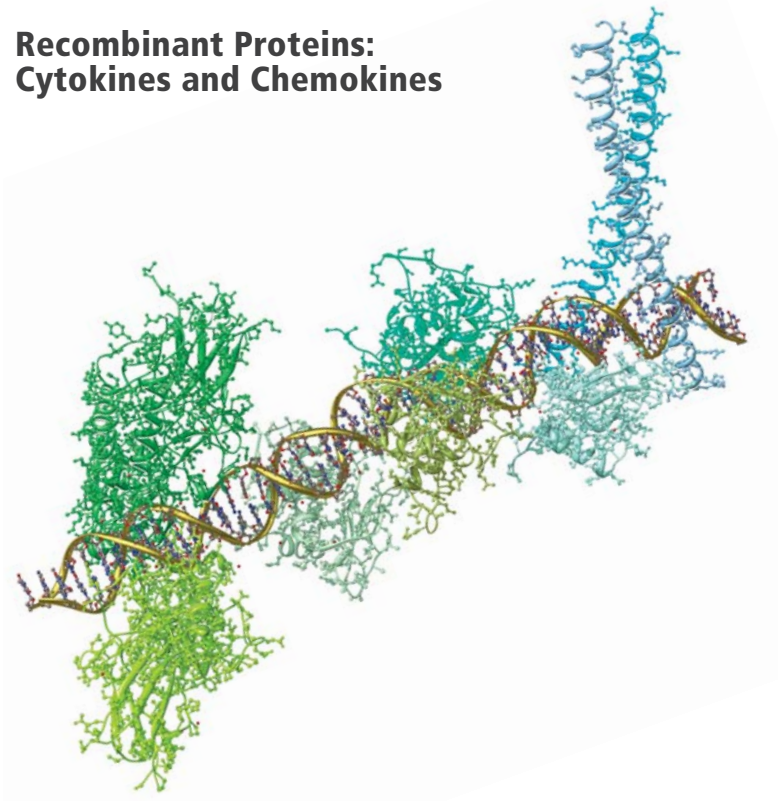
Available sample plates include:

- **Visi-Blue™ Light Plate:** Converts UV to 460/470nm for viewing stains including SYBR Green™, GelRed™, and GelGreen™
- **White Light Plate:** Converts UV to white light for viewing Coomassie Blue and Silver Stained gels
- **Black Sample Plate:** included with the GelMax for placement of samples not requiring transillumination lighting. A Sample Plate Holder is available for storage of the plates

UVP

Description	Cat. No.	Each
GelMax Imager w/Plates, 115V	**89233-422**	**8,495.00**
Accessories		
Visi-Blue Light Converter Plate, 25 x 26 cm	**82026-880**	**390.28**
White Light Converter Plate, 25 x 26 cm	**82026-878**	**324.19**
Sample Plate Holder	**89233-432**	**195.00**

Recombinant Proteins: Cytokines and Chemokines



IBI Scientific has developed an extensive line of animal model and human model recombinant proteins for research applications. These proteins provide superior performance at an exceptional value. IBI proteins are expressed in a eukaryotic system *(Pichia pasotris)* which provides excellent bio-activity for cell culture applications. Proteins are purified without HIS-tags or any other tags and lyophilized and packaged without a carrier protein. Reconstitute in sterile PBS with 0.1% carrier protein.

Does your research require a specific protein not currently found in our listing? New proteins are being expressed on regular basis.

- Proteins are expressed in a yeast *(Pichia pastoris)* system which promotes folding and post-translational modifications
- 100% of the protein purchased is usable, stretching your research dollars
- No endotoxins expressed in a yeast system, proteins behave more like their native host

IBI SCIENTIFIC

Recombinant Protein	Molecular Weight, kDa	Alias/ Gene ID	Size, µg	Cat. No.	Each
Bovine, CCL11	8.6	Eotaxin/404072	25	**71004-634**	**295.00**
Canine, IL-2	15.5	NA/403989	25	**71004-746**	**295.00**
Chicken, CCL20	8.3	LARC; EXODUS-1/359082	25	**71004-782**	**295.00**
Dolphin, IL-8	9.2	CXCL8/NA	25	**71004-842**	**295.00**
Equine, CCL5	7.9	RANTES/100033925	25	**71004-862**	**295.00**
Equine, IL-15	13	NA/100034058	25	**71004-894**	**295.00**
Feline, IFN GAMMA	17	NA/493965	25	**71004-930**	**295.00**
Feline, TNF ALPHA	17.2	TNFSF2/493755	25	**71004-962**	**295.00**
Human, IFN GAMMA	16.8	NA/3458	100	**71005-094**	**855.00**
Mouse, APRIL	16.4	TNFSF13/69583	100	**71005-106**	**855.00**
Rabbit, IFN GAMMA	16.9	100008602/RPU-100	25	**71004-966**	**295.00**
Swine, CCL2	8.6	MCP-1/397422	25	**71004-986**	**295.00**
Turkey, IGF-1	7.7	Somatomedin C/678666	25	**71005-074**	**295.00**

Premixed LB Media

Lysogeny broth (LB) is a nutritionally rich medium primarily used for the growth of bacteria. LB continues to be one of the most common media used for maintaining and cultivating recombinant strains of *Escherichia coli*. AMRESCO offers powdered LB in pre-mixed Miller or Lennox formulations. Additionally, AMRESCO offers ReadyPack™ pouches of LB which prepare 1L of media.

- Save time using pre-mixed and ready-to-use media
- Prepare only the volume of media needed
- Homogenous and high quality powders

Description	Cat. No.	Each
LB Agar, Lennox Formulation, Ready-Pack™	**97063-558**	**86.48**
LB Agar, Miller Formulation, Ready-Pack	**97064-104**	**86.48**
LB Broth, Lennox Formulation	**97063-554**	**86.48**
LB Broth, Miller Formulation, Ready-Pack	**97064-108**	**86.48**

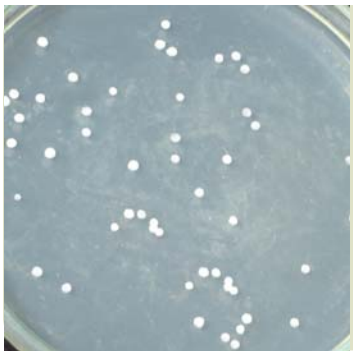
Bacterial Freezing Media

AMRESCO offers high purity bacterial freezing media. The media contains 0.5mL of LB broth (Miller) with 30% glycerol per tube. Simply add 1mL of saturated culture to the vial, vortex and store at -70°C.

- 85% Post-thaw viability of frozen cultures
- Easy-to-label vials
- 25 x 2mL cryotubes in a convenient storage box

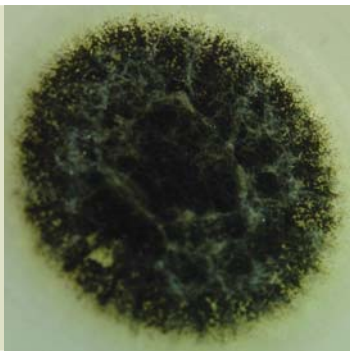
Description	Cat. No.	Each
Freezing Media, 25 Pack	**97063-178**	**78.39**

Animal-Free Dehydrated Media



MV211
Brain Heart Infusion Agar, HiVeg™
(Special Infusion Agar, HiVeg™)
Staphylococcus aureus ATCC 25923

M096
Potato Dextrose Agar
Aspergillus niger ATCC 16404



For quantitative or qualitative work in microbiology or just growing *E. coli* or yeast clones, HiMedia® offers international quality products at a price friendly to your research budget. We offer over 1,000 formulations in standard pack sizes, all manufactured using the latest technology.

For researchers looking for innovation in every aspect of their work, HiMedia offers the most extensive line of animal-free vegetable based media (HiVeg™) that are completely unique to the market. These products are analogs to the traditional culture media. HiMedia offers both ready-to-use, pre-blended complete media and base raw materials for your own custom formulations. Packaging sizes include 500g, 2.5kg, 5kg, and larger.

- Highest quality in dehydrated microbiology culture media
- Full line of animal-free vegetable based media; HiVeg
- Freedom from BSE/TSE worries

Description, 500 g	Cat. No.	Each
Agar Powder, Bacteriological	**95022-838**	**88.08**
Brain Heart Infusion Agar, HiVeg	**61000-754**	**117.85**
Brain Heart Infusion Broth, HiVeg	**61000-752**	**92.68**
Luria Bertani HiVeg Agar, Miller	**61000-490**	**86.96**
Luria Bertani HiVeg Broth, Miller	**61000-592**	**82.09**
MacConkey Agar, HiVeg	**61000-356**	**74.62**
Peptone, HiVeg	**61001-508**	**72.65**
Potato Dextrose Agar	**95020-250**	**88.57**
Super HiVeg Broth	**61000-640**	**122.64**
Terrific HiVeg Broth	**61000-600**	**58.63**
Tryptic Soy Agar, HiVeg	**61000-848**	**61.57**
Tryptic Soy HiVeg Broth	**61000-240**	**42.23**
Tryptone HiVeg (HiVeg Hydrolysate)	**61001-548**	**74.01**
Yeast Extract Powder	**61001-572**	**48.90**
Yeast Malt HiVeg Agar	**61001-000**	**99.46**
Yeast Malt HiVeg Broth	**61001-002**	**92.34**

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For Environmental Monitoring Sample Security

The BD RODAC™ SNAP LID was designed by environmental monitoring professionals to provide additional security during sampling and transport from a controlled environment to the laboratory.

- Ensures the integrity of the sample
- Withstands accidental drop from height of a bench-top workspace
- Prevents unintentional opening of the dish
- Protects media from accidental cross contamination
- 60mm plates

BD
Helping all people live healthy lives

RODAC SNAP LID, Packaging	Cat. No.	Price
DE Neutralizing Agar		
Sterile, Triple Wrap, VHP Resistant	**71003-758**	Pk. 10/ **31.58**
Sterile, Double Wrap	**71003-778**	Pk. 10/ **30.46**
Sterile, Double Wrap	**71003-776**	Cs. 100/ **292.77**
SDA w/Lecithin and Polysorbate 80		
Sterile, Triple Wrap, VHP Resistant	**71003-756**	Pk. 10/ **29.38**
Sterile, Double Wrap	**71003-782**	Pk. 10/ **28.15**
Sterile, Double Wrap	**71003-780**	Cs. 100/ **269.74**
TSA w/Lecithin and Polysorbate 80		
Sterile, Triple Wrap,VHP Resistant	**71003-784**	Pk. 10/ **29.54**
Sterile, Triple Wrap,VHP Resistant	**71003-786**	Cs. 100/ **295.40**
Sterile, Double Wrap	**71003-766**	Pk. 10/ **28.05**
Sterile, Double Wrap	**71003-768**	Cs. 100/ **268.66**
Aseptic Fill, Single Wrap	**71003-770**	Pk. 20/ **50.38**
Aseptic Fill, Single Wrap	**71003-772**	Cs. 100/ **237.89**
TSA w/Lecithin, Polysorbate 80, and Penicillinase		
Sterile, Triple Wrap, VHP Resistant	**71003-760**	Pk. 10/ **34.65**
Sterile, Triple Wrap, VHP Resistant	**71003-762**	Cs. 100/ **346.50**
Sterile, Double Wrap	**71003-774**	Pk. 10/ **32.42**
Sterile, Double Wrap	**71003-764**	Cs. 100/ **321.95**

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FoodChek's Actero™ Enrichment Media is AOAC PERFORMANCE TESTED RESEARCH INSTITUTE LICENSE NUMBER: 120702 Pending

Actero™ Enrichment Media / E. coli
Actero™ Enrichment Media / Listeria
Actero™ Enrichment Media / Salmonella

FoodChek's "Patent Pending" Actero™ Enrichment Media...

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- Makes the timeline for the sample enrichment growth phase up to 30% faster for *E. coli* O157 and *Listeria*, and up to an amazing 70% faster for *Salmonella*
- Can be used with ANY pathogen testing system

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Food safety, simplified.

Description	Size	Cat. No.	Price
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MICT Reader	–	**97068-806**	Ea. / **15,000.00**
MICT Cleaning Cassette	–	**97068-808**	Pk. 10/ **45.00**
MICT Verification Cassette	–	**97068-810**	Ea. / **130.00**
Actero Enrichment Media			
E. coli Enrichment Media	500 g	**97068-832**	Ea. / **347.50**
Listeria Enrichment Media	500 g	**97068-838**	Ea. / **347.50**
Modified Tryptone Soya Broth (mTSB)	500 g	**97068-828**	Ea. / **248.86**
mTSB Enrichment Media Pouches	24.75 g	**97068-830**	Pk. 20/ **347.50**
Salmonella Enrichment Media	500 g	**97068-834**	Ea. / **316.66**
Salmonella & STEC Enrichment Media	500 g	**97068-836**	Ea. / **477.83**
STEC Enrichment Media	500 g	**97068-840**	Ea. / **348.33**
E. coli O157 Test Kits			
E. coli O157 Test Kit	20 Tests	**97068-812**	Cs. 2/ **391.60**
E. coli O157 Bulk Media	20 Tests	**97068-814**	Cs. 2/ **554.21**
E. coli O157 Prepack Media	20 Tests	**97068-816**	Cs. 2/ **542.50**
E. coli O157 Carcass Sponge Kit	20 Tests	**97068-818**	Cs. 2/ **733.75**
E. coli O157 Cassettes	20 Tests	**97068-824**	Pk. 20/ **161.70**
Listeria Test Kits			
Listeria spp. Test Kit	20 tests	**97068-820**	Cs. / **471.91**
Listeria spp. Sampling Swabs	–	**97068-822**	Cs. 100/ **376.11**
Listeria spp. Assay Cassettes	20 Tests	**97068-826**	Pk. 20/ **161.70**

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Moxi Z Mini Automated Cell Counter	97065-500	Ea./ 2,995.00
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Cassettes Type M, 2 Tests/Cassette	97065-502	Pk. 25/ 87.50
Cassettes Type S, 2 Tests/Cassette	71003-046	Pk. 25/ 87.50
Cassette Dispenser	97065-504	Ea./ 49.50
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Genomics																				
Nucleic Acid Sample Prep and Purification					●			●					●							●
Genotyping, Gene Expression and qPCR/PCR			●			●							●	●			●			●
Endpoint and Real Time Thermal Cyclers													●				●			
Reverse Transcription and cDNA Synthesis													●							●
Nucleic Acid Quantitation, Labeling and Dyes				●		●							●	●						
Nucleic Acid Electrophoresis and Blotting					●	●								●	●					
Imaging Systems																				
Film							●									●				
Cloning Kits and Vectors, Competent Cells																				●
Microarrays				●		●														
Molecular Biology Reagents					●	●									●					●
Proteomics																				
Protein Extraction and Fractionation						●														●
Sample Preparation						●														●
Protein Electrophoresis and Blotting				●		●	●							●	●	●				●
Protein Labeling, Stains and Dyes					●	●								●						
Protein Concentration																				●
Protein Assay						●								●						●
Peptides					●				●											●
Microbiology																				
Microbiology Instrumentation		●										●								●
Dehydrated Media						●				●										●
Prepared Media										●		●								
Reference Microorganisms												●								
Environmental Monitoring		●								●		●								●
Identification Tests										●		●								●
Anaerobic Supplies and Gas Generators										●		●								
Antibiotics										●										●
Biological Stains and Indicators										●		●		●						●
Rapid Tests												●								●
Cell Biology																				
Primary and Secondary Antibodies	●										●			●					●	●
Cell Counters																				
Transfection																				●
Serum																		●		
Electroporators																				
Classical Media																		●		
Serum-Free Media																		●		
Additives and Supplements																		●		
Microcarriers and Reagents																				
Cellular Assays and Immunoassays											●			●						●
Dyes and Stains														●						
Inhibitors and Biochemicals																				●
Extracellular Matrices and Coated Plates										●								●		
Insect Cell Culture																		●		
Plant Cell Culture																				
Antibiotics																		●		●
Mycoplasma Detection and Removal																				

	Enzo® Life Sciences	Eppendorf®	**FoodChek**	**G-Biosciences**	GE Healthcare	**GenScript**	**Global Cell Solutions**	**Greiner Bio-One**	Harvard Apparatus®	**HiMedia**	HyClone®	**IBI Scientific**	InterLab®	**Jule Inc.**	Kapa Biosystems	KPL	Lonza	**Lucigen®**	MP Biomedicals	**NuSep®**
Genomics																				
Nucleic Acid Sample Prep and Purification					●							●								
Genotyping, Gene Expression and qPCR/PCR															●			●	●	
Endpoint and Real Time Thermal Cyclers		●																		
Reverse Transcription and cDNA Synthesis					●													●		
Nucleic Acid Quantitation, Labeling and Dyes					●												●			
Nucleic Acid Electrophoresis and Blotting					●							●					●			
Imaging Systems																	●			
Film					●															
Cloning Kits and Vectors, Competent Cells																		●		
Microarrays					●															
Molecular Biology Reagents				●	●							●					●		●	
Proteomics																				
Protein Extraction and Fractionation				●	●							●								
Sample Preparation				●	●							●								
Protein Electrophoresis and Blotting				●	●	●						●		●		●	●			●
Protein Labeling, Stains and Dyes				●	●											●				
Protein Concentration				●	●															
Protein Assay				●								●								
Peptides																				
Microbiology																				
Microbiology Instrumentation			●																	
Dehydrated Media			●							●										
Prepared Media																				
Reference Microorganisms																				
Environmental Monitoring										●			●							
Identification Tests																				
Anaerobic Supplies and Gas Generators																				
Antibiotics																				
Biological Stains and Indicators																				
Rapid Tests			●																	
Cell Biology																				
Primary and Secondary Antibodies	●				●	●										●			●	
Cell Counters																				
Transfection																				
Serum					●						●						●			
Electroporators		●							●											
Classical Media											●						●			
Serum-Free Media											●						●			
Additives and Supplements											●						●			
Microcarriers and Reagents							●													
Cellular Assays and Immunoassays	●				●											●			●	
Dyes and Stains	●																			
Inhibitors and Biochemicals																			●	
Extracellular Matrices and Coated Plates							●	●												
Insect Cell Culture										●	●						●			
Plant Cell Culture										●									●	
Antibiotics										●										
Mycoplasma Detection and Removal					●			●											●	

	Omega bio-tek	**ORFLO®**	**Pall Life Sciences**	Pierce® (US Only)	**Polyplus-transfection**	Promega® (US Only)	**Quanta BioSciences**	**Rockland Immunochemicals, Inc.**	**Rocky Mountain Biologicals, Inc.**	**Seradigm**	**Solulink™**	**Techne®**	**TEKnova**	**TeleChem International, Inc.**	Thermo Scientific®	Trevigen®	UVP	**VWR**	**ZyGem**
Genomics																			
Nucleic Acid Sample Prep and Purification	●		●			●	●	●							●				●
Genotyping, Gene Expression and qPCR/PCR	●					●	●												●
Endpoint and Real Time Thermal Cyclers												●							
Reverse Transcription and cDNA Synthesis						●	●												
Nucleic Acid Quantitation, Labeling and Dyes																			
Nucleic Acid Electrophoresis and Blotting	●												●					●	
Imaging Systems																	●	●	
Film				●															
Cloning Kits and Vectors, Competent Cells						●													
Microarrays														●					
Molecular Biology Reagents	●							●					●						
Proteomics																			
Protein Extraction and Fractionation			●	●															
Sample Preparation			●	●															
Protein Electrophoresis and Blotting			●	●				●							●				
Protein Labeling, Stains and Dyes				●				●			●								
Protein Concentration			●	●															
Protein Assay				●									●						
Peptides																			
Microbiology																			
Microbiology Instrumentation																			
Dehydrated Media													●						
Prepared Media													●						
Reference Microorganisms																			
Environmental Monitoring																			
Identification Tests																			
Anaerobic Supplies and Gas Generators																			
Antibiotics													●						
Biological Stains and Indicators																			
Rapid Tests																			
Cell Biology																			
Primary and Secondary Antibodies				●		●		●								●			
Cell Counters		●																	
Transfection					●	●													
Serum								●		●									
Electroporators																			
Classical Media																			
Serum-Free Media																			
Additives and Supplements								●	●										
Microcarriers and Reagents																			
Cellular Assays and Immunoassays						●		●								●			
Dyes and Stains																			
Inhibitors and Biochemicals				●															
Extracellular Matrices and Coated Plates								●								●			
Insect Cell Culture																			
Plant Cell Culture																			
Antibiotics													●						
Mycoplasma Detection and Removal								●											

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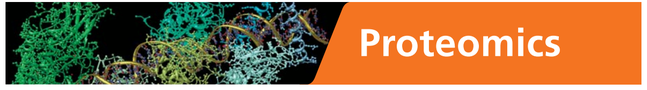

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Narrow Your Antibody Selection Using the Following Characteristics:

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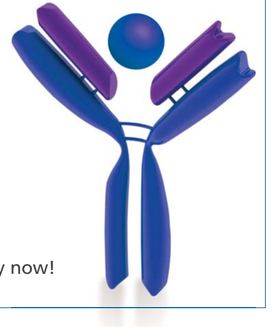
- Type
- Host
- Species Reactivity
- Conjugation
- Clone
- Monoclonal/Polyclonal
- Application



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Description	Size	Cat. No.	Each
Blue Bandit™ Protein Stain	1 L	MP97065-002	61.37
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EZ-Vision® 1kb DNA Ladder	600 µL	MP97063-348	72.44
EZ-Vision 100 bp DNA Ladder	300 µL	MP97063-350	69.04
EZ-Vision® In-Gel, 10000X	0.5 mL	MP97064-174	63.92
EZ Vision In-Gel Dropper Bottle	5 mL	MP97068-178	67.50
EZ Vision In-Gel Dropper Bottle	15 mL	MP97068-180	121.50
Formaldehyde-Free RNA Gel Kit	Kit	MP97064-300	153.32
Formaldehyde-Free RNA Gel Kit	Kit	MP89230-112	165.32
Gentle ReView™ Stripping Buffer	500 mL	MP97064-220	44.75
Gentle ReView Stripping Buffer	1 L	MP97064-218	70.06
Gold-N-Gel™ RNA Dye	5 mL	MP89230-108	30.75
Gold-N-Gel RNA Dye	12.5 mL	MP97064-304	75.21
Gold-N-Gel RNA Dye	15 mL	MP89230-106	90.00
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Ensure the integrity and modification state of purified proteins by using protease and phosphatase inhibitor cocktails and highly specific individual inhibitors in cell lysates and tissue extracts.

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- Consistent high quality ensures reproducibility and excellent inhibition over a wide range of protease classes

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Save over $2,000 on a full Mastercycler pro system, and receive an Eppendorf Xplorer single-channel (0.5 - 10µL) electronic pipette FREE!

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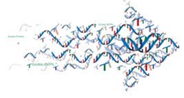

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500	MP29008602	527.80
2,000	MP29008603	1,891.40
5,000	MP29008604	4,298.00
20, Trial Size	MP29008600	49.00

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- Great silencing efficiency
- Excellent cell viability
- Compatible with serum and antibiotics

Description	Size, mL	Cat. No.	Each
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Buy two boxes of Transfer Membranes and get one box of the same product FREE.

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20 x 20 cm Sheets	27377-000	Pk. 10/ 163.33
30 cm x 3 m Roll	27376-991	Ea./ 245.45
FluoroTrans W PVDF Transfer Membrane		
7 x 9 cm Sheets	29301-852	Pk. 10/ 84.76
20 x 20 cm Sheets	29301-854	Pk. 10/ 246.39
26 cm x 3.3 m Roll	29301-856	Ea./ 338.91

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Description	Cat. No.	Each
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Microtiter Deepwell 96 Plate, V-bottom, polypropylene	11388-566	FREE
KingFisher 96 KingFisher Plate, 200 µL, 48 plates/box	83007-596	FREE
KingFisher 96 Tip Comb for DW magnets, 10 x 10 per box	83007-594	FREE
Four KingFisher Kits, 1 x 96	*	FREE
KingFisher Duo	89201-712	23,630
KingFisher Duo Combi Pk. For Microtiter 96 Deepwell Plate	89201-720	FREE
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- Universal rotor compatibility
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Protein Concentrator, Size, mL	MWCO	Cat. No.	Each
7	20k	MP87750BOGO	65.00
20	20k	MP87751BOGO	116.00
7	9k	MP87748BOGO	65.00
20	9k	MP87749BOGO	116.00
2x10 Package Size			

25% OFF New Thermo Scientific Pierce Protease Inhibitor Tablets PROMO CODE 3537

Thermo SCIENTIFIC

- **Economical:** more cost-effective than other commercially available formulations
- **Easy-to-use:** simply pop from the pack and add to buffers and lysis reagents
- **Compatible:** use with cell lysis reagents and Thermo Scientific Protein Assays

Offer valid 7/2/12 - 12/28/12. Must use special Cat. No. listed here to receive special discount at time of purchase. Not valid with other offers and discounts.

Description	Size	Cat. No.	Each
Pierce Protease Inhibitor Tablets	30 tablets	MP88660SPCL	103.00
Protease Inhibitor Tablets, EDTA-free	30 tablets	MP88661SPCL	103.00

Sufficient for 300 mL of sample.

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BioSpectrum 600	71003-698	48,900.00
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in vivo DNA and siRNA Non-Viral Delivery

in vivo-jetPEI® Delivery Reagent: An Easy Way to Perform Functional Studies in Animal Models

Anne-Laure Bolcato-Bellemin, Ph.D., RNAi R&D Manager and Géraldine Guérin-Peyrou, MSc., Senior Scientific & Technical Support Specialist

Introduction

Recombinant viruses are currently the most widely used means of nucleic acid delivery in living organisms due to their intrinsic ability to infect cells. However, viral vectors have limitations due to mutagenesis, carcinogenesis, immune response, and time cost. Non-viral vectors such as *in vivo*-jetPEI offer a reliable and safe alternative[1]. *in vivo*-jetPEI is a polymer-based reagent, successfully used to deliver DNA and siRNA for research purposes such as functional studies, RNA interference *in vivo* studies[2], gene therapy[3], or genetic vaccination[4]. In addition, *in vivo*-jetPEI is currently used for the delivery of therapeutic nucleic acids in several clinical trials.

Successful *in vivo* Delivery In Many Organs

in vivo-jetPEI mediates gene expression or silencing (depending on the delivered molecule) in many organs such as lung, heart, spinal cord, brain, and tumors *(**Table 1**, pg. 31)*. A wide panel of delivery routes has been tested in many species (e.g. mouse, rat, hamster, shrimp, rabbit, piglet, etc.).

An Easy to Handle Protocol

The protocol of *in vivo*-jetPEI is very easy-to-use *(**Figure 1**)*. It requires mixing the nucleic acid and the reagent in 5% glucose and then injecting the complexes into the animal. This method is fast and suitable for numerous administration routes. The formation of the *in vivo*-jetPEI/nucleic acids complexes in 5% glucose results in 50nm stable nanoparticles, hence sufficiently small to diffuse into the tissues and enter the cells via endocytosis.

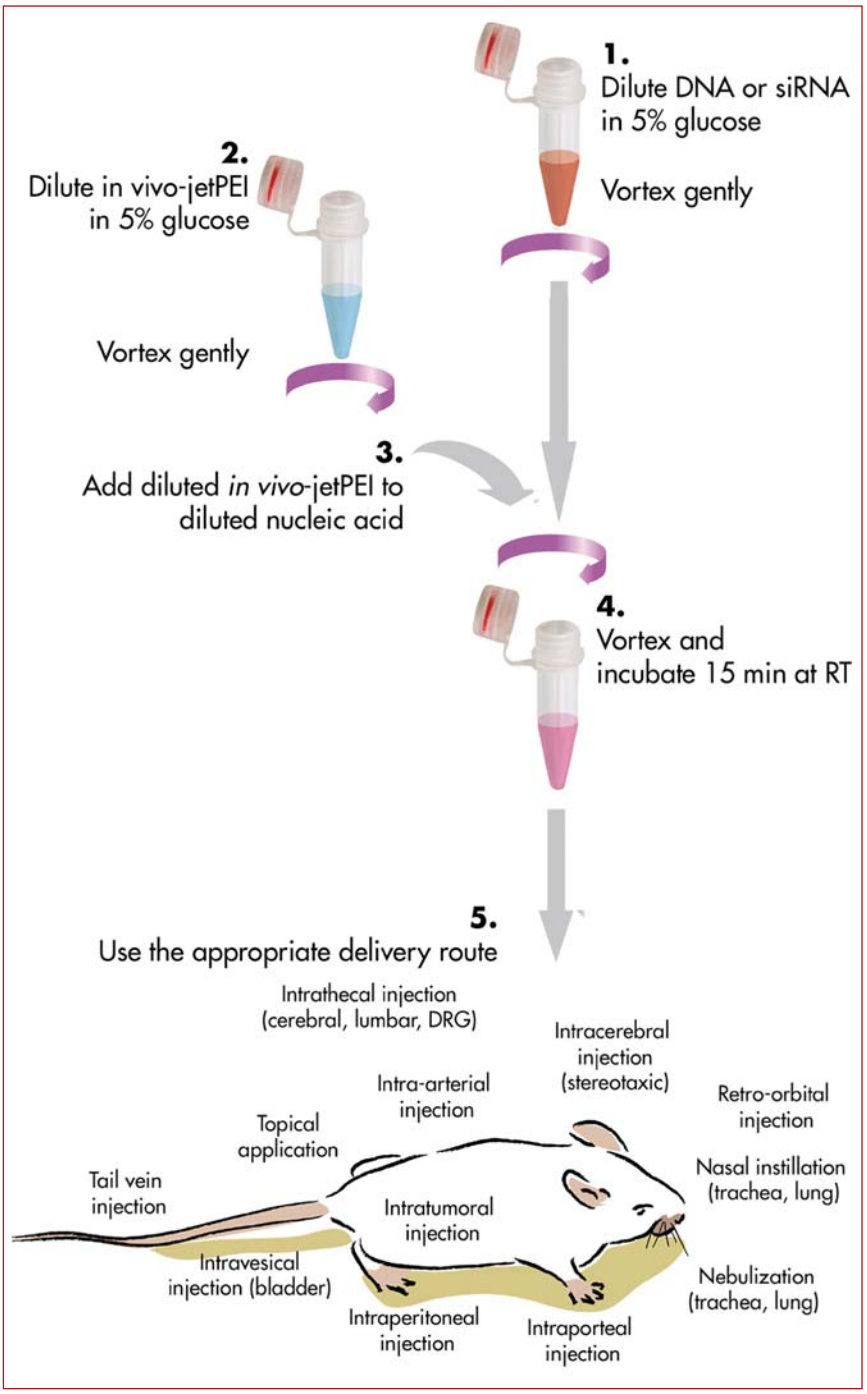

Figure 1: ***in vivo*-jetPEI Delivery Protocol**

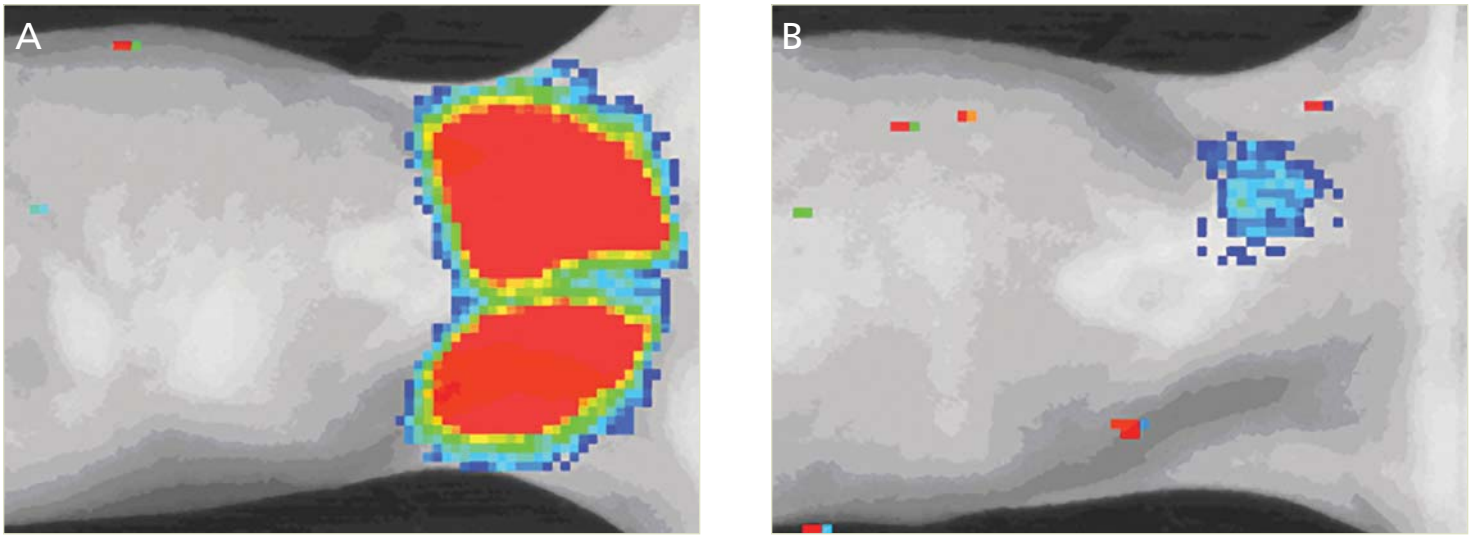

Figure 2: *in vivo* delivery of DNA and siRNA using *in vivo*-jetPEI. pCMV-Luc was co-transfected with a control siRNA **(A)** or with a siRNA directed against luciferase **(B)** using *in vivo*-jetPEI by tail vein injection in mice. Luciferase gene expression was monitored in living mice 24 hours later using bioluminescence imaging.

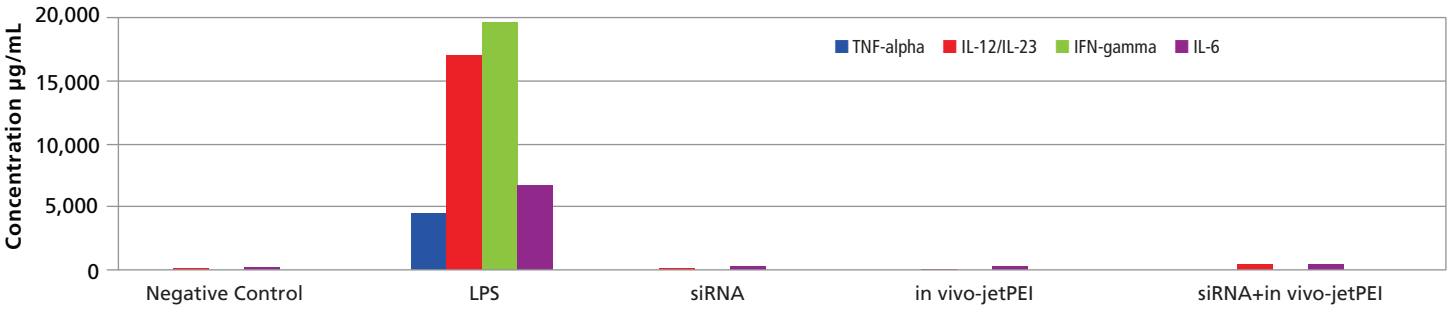

Figure 3: Serum concentration of TNF-α, IL12/IL23, IFNγ and IL6 following tail vein siRNA delivery using *in vivo*-jetPEI (N/P=8) respectively measured 1h, 6h, 12h and 6h after injection. The negative control consists of 5% glucose solution and the positive control consists of *E.coli* LPS. siRNAs were delivered with or without *in vivo*-jetPEI.

A Reliable and Safe DNA and siRNA Delivery Reagent

The success of nucleic acid therapy relies on the ability to efficiently deliver the appropriate therapeutic materials into the target tissue or cells with low toxicity and limited immune response.

To explore the potential of *in vivo*-jetPEI for delivering both plasmid DNA and siRNA in animals, we first systemically administered a plasmid expressing the luciferase gene, which resulted in maximal luciferase expression in the lung.

In a second experiment, siRNA matching the luciferase sequence was mixed with the plasmid and complex with *in vivo*-jetPEI prior to systemic injection ***(Figure 2B)***. A scramble siRNA was used as a negative control ***(Figure 2A)***. Systemic administration of a siRNA directed against luciferase showed a mean silencing rate >90% as compared to the negative control. Therefore specific inhibition of protein synthesis can be achieved through *in vivo*-jetPEI mediated siRNA delivery in animal models.

No Detectable Inflammatory Response

Viral vectors can elicit an immune response following injection; however avoiding side effects is crucial for *in vivo* research experiments and subsequent clinical applications. Following *in vivo*-jetPEI systemic delivery of DNA and siRNA, there is no induction of major pro-inflammatory cytokines such as TNF-alpha, IL-6 and IL-12/IL-23 ***(Figure 3)***. In addition, no increase in sera levels of hepatic enzymes are detected 24 hours after complex injection, suggesting that *in vivo*-jetPEI does not trigger hepatotoxicity[5]. Therefore, *in vivo*-jetPEI does not induce any significant inflammatory response after systemic injection of DNA or siRNA, making it the reagent of choice for safe *in vivo* DNA and siRNA delivery experiments.

Conclusion

in vivo-jetPEI provides versatile, reproducible, safe and reliable nucleic acid delivery in animals. It has been selected as the delivery vector of choice at an early stage in several drug development programs, due to its safety, high delivery efficiency, and its easy-to-handle protocol. It is available at cGMP grade for use in humans in preclinical and clinical trials and is supported by the appropriate manufacturing quality controls. *in vivo*-jetPEI is the delivery reagent of choice for functional studies and RNA interference experiments *in vivo*. It is also well-suited as a delivery vehicle for therapeutic goals, including viral diseases and cancer.

Target Organ	Delivery Routes	Nucleic Acid	References
Bladder	Bladder Instillation	DNA	Amit et al., Int J Clin Exp Med, 2011
Brain	Intracerebral Injection	DNA	Uchida et al., J Neurosci, 2010
	Intracerebral Injection	shRNA Plasmid	Hassani et al., Nucl Acid Res, 2007
Eye	Intravitreal Injection	shRNA Plasmid	Liao et al., Biotechniques, 2007
Heart	Retroorbital Injection	DNA	Dallabrida et al., Faseb J, 2008
	Intracardiac Injection	siRNA	Cilenti et al., J Mol Cell Cardiol, 2011
Immune Cells	Tail Vein Injection		Takagi et al., Immunity, 2011
	Topical Application	DNA	Lisziewicz et al., Current Drug Deliv, 2006
	Intraperitoneal Injection	Poly(I:C)	Tormo et al., Cancer Cell, 2009
Liver	Mesenteric Vein Injection	shRNA Plasmid	Paranjpe et al., Am J Pathol, 2010
	Superior Temporal Vein	DNA	Wong et al., J Control Rel, 2011
Lung	Intravenous Injection	DNA	Ansaldi et al., PLoS One, 2011
	Tail Vein Injection	shRNA Plasmid	Zeng et al., Microvasc res, 2010
	Tail Vein Injection	siRNA	Lively et al., J Allergy Clin Immunol, 2008
Spinal Cord	Intrathecal Injection	siRNA	Liu et al., Brain Res, 2010
Tumors	Intraperitoneal Injection	DNA	Hine et al., Mol Ther, 2011
	Intratumoral Injection	siRNA	Wang et al., Oncotarget, 2011
	Intraperitoneal Injection	Poly(I:C)	Wu et al., Cancer Immunol Immunother, 2011

Table 1: Successfully targeted organs using *in vivo*-jetPEI for nucleic acid delivery, according to different administration routes.

Polyplus transfection™

in vivo-jetPEI Delivery Reagent Size	Glucose Solution Size	Cat. No.	Each
0.1 mL	10 mL	**89129-960**	**405.00**
0.5 mL	2 x 10 mL	**89129-962**	**1,467.00**

References

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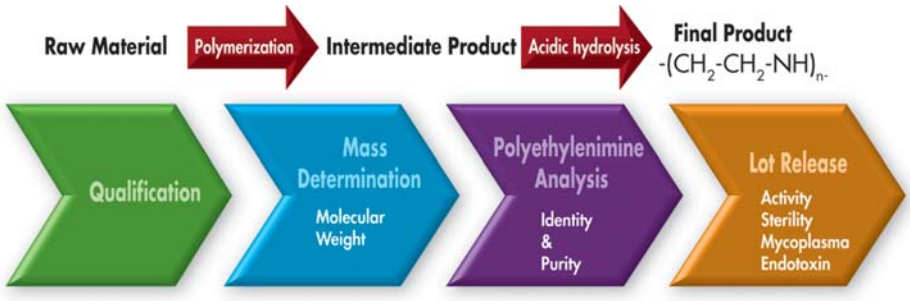

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Ultimate Grade FBS, Heat Inactivated	500	**97068-106**	**409.11**
Premium Grade FBS	100	**97068-076**	**75.00**
Premium Grade FBS	500	**97068-084**	**312.00**
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- Maintain high viability at high cell densities
- Easily scalable to support high density, large scale production volumes

Lonza

Description	Size,	Cat. No.	Each
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L-Glutamine 200 mM	500 mL	**12001-700**	**57.85**
PowerCHO-2	1 L	**12002-188**	**69.00**
ProCHO-5	1 L	**12001-628**	**62.00**
ProFreeze™, NAO Freezing Medium	100 mL	**12002-076**	**130.09**
ProHT Supplement	100 mL	**12002-184**	**28.00**

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Supplier I	Not reported	≥700µg/mg
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Secondary antibodies bind to the primary antibody to assist in detection, sorting, and purification of target antigens. To enable detection, the secondary antibody must have specificity for the antibody species and isotype of the primary antibody being used and generally is conjugated. Horseradish Peroxidase (HRP) Conjugated Secondary antibodies are used throughout various types of assays, including ELISA, Immunohistochemistry, or Western Blotting. The secondary antibody type is selected according to the source of the primary antibody, the class of the primary antibody (e.g., IgG or IgM), and the kind of label which is preferred. Rockland also produces Alkaline Phoshpatase, Biotin, DyLight, FITC, IRDye, Phycoerythrin, Rhodamine, and Texas Red conjugated antibodies.

ROCKLAND antibodies & assays

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Anti-Goat IgG, H&L	Rabbit	2.0	**RL605-4302**	**110.00**
Anti-Goat IgG, H&L, Pre-Adsorbed	Donkey	1.0	**RL605-703-125**	**180.00**
Anti-Human IgG, H&L, Pre-Adsorbed	Goat	1.0	**RL609-103-123**	**190.00**
Anti-Mouse IgG, H&L	Rabbit	2.0	**RL610-4302**	**115.00**
Anti-Mouse IgG, H&L, Pre-Adsorbed	Goat	1.0	**RL610-103-121**	**180.00**
Anti-Mouse IgM, μ Chain	Rabbit	1.0	**RL610-4307**	**180.00**
Anti-Rabbit IgG, H&L, Pre-Adsorbed	Goat	1.0	**RL611-103-122**	**190.00**
Anti-Rat IgG, H&L	Rabbit	2.0	**RL612-4302**	**115.00**
Anti-Sheep IgG, H&L	Rabbit	2.0	**RL613-4302**	**115.00**
Protein G Streptavidin, Horseradish Peroxidase	–	1.0	**RLS000-03**	**135.00**

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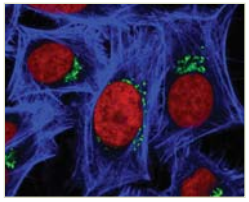

RedDot1 and RedDot2 are two far-red DNA-binding dyes. Spectrally similar to Draq™5 and Draq™7, the RedDot dyes are excitable by several common laser lines and emit fluorescence in the far-red spectral region. RedDot fluorescence emission is well separated from the emission peaks of other popular fluorescent probes, making RedDot dyes ideal counterstains for multicolor imaging. Cell permeable RedDot1 stains the nuclei of live cells rapidly and specifically. Cell membrane-impermeable RedDot2 has excellent selectivity for dead cells. RedDot2 also provides excellent nuclear counterstaining in fixed and permeabilized cells and tissue sections. The dyes are highly photostable, ideal for demanding applications such as confocal microscopy.

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- RedDot2 for selective dead cell staining or nuclear counterstaining of fixed cells and tissue sections
- RedDot1 for cell number normalization for LICOR® In Cell Western™

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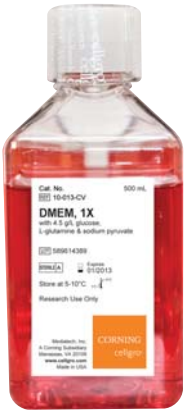
250 µL	**71002-678**	**187.00**
25 µL Trial Size	**71002-682**	**45.00**
RedDot2, 200X in DMSO		
1 mL	**71002-686**	**451.00**
250 µL	**71002-684**	**275.00**
25 µL Trial Size	**71002-688**	**71.50**

Cell Culture Media and Molecular Biology Reagents



Corning® Cellgro® produces a broad range of high-quality cell culture media and molecular biology reagents for tissue and cell culture applications, including culture media, basal salt solutions, antibiotics, and specialty media. We offer selective media used for growth of only specific microorganisms as well as differential media used to distinguish one microorganism type from another on the same media.

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- Good Manufacturing Practices (GMPs) employed

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Dulbecco's Modified Eagle's Medium: w/4.5 g/L Glucose, and L-Glutamine, w/o Sodium Pyruvate	500 mL	**45000-312**	Pk. 6/ **90.44**
Dulbecco's Modified Eagle's Medium/Ham's F-12 50/50 Mix: w/L-Glutamine & 15 mM HEPES	500 mL	**45000-350**	Pk. 6/ **141.54**
Dulbecco's Phosphate-Buffered Saline Concentrate: 10X, w/o Calcium & Magnesium, Sterile	500 mL	**45000-428**	Pk. 6/ **125.29**
Dulbecco's Phosphate-Buffered Saline Solution: w/o Calcium & Magnesium, Sterile	1 L	**45000-436**	Pk. 6/ **123.38**
G418 Sulfate, Powder	5 g	**45000-626**	Ea. / **354.11**
G418 Sulfate, 1M Solution	100 mL	**45001-076**	Ea. / **430.70**
HEPES, 1M Solution	100 mL	**45000-690**	Pk. 6/ **263.13**
Iscove & Apos S Modified DMEM: 25 mM HEPES & L-Glutamine, w/o α & β -Thioglycerol Mercaptoethanol	1 L	**45000-368**	Pk. 6/ **205.95**
Minimum Essential Medium, Eagle: w/Earle's Salts & L-Glutamine	500 mL	**45000-380**	Pk. 6/ **90.46**
Water, Molecular Grade, Sterile	1 L	**45001-044**	Pk. 6/ **126.16**
Penicillin-Streptomycin, 1M Solution, 100X	100 mL	**45000-652**	Pk. 6/ **90.08**
RPMI 1640: w/L-Glutamine	1 L	**45000-398**	Pk. 6/ **137.23**
RPMI 1640: w/L-Glutamine	500 mL	**45000-396**	Pk. 6/ **90.22**
Trypsin EDTA 0.25%: Dissociation Enzyme, w/o Calcium, Magnesium, & Sodium Bicarbonate	100 mL	**45000-664**	Pk. 6/ **50.42**

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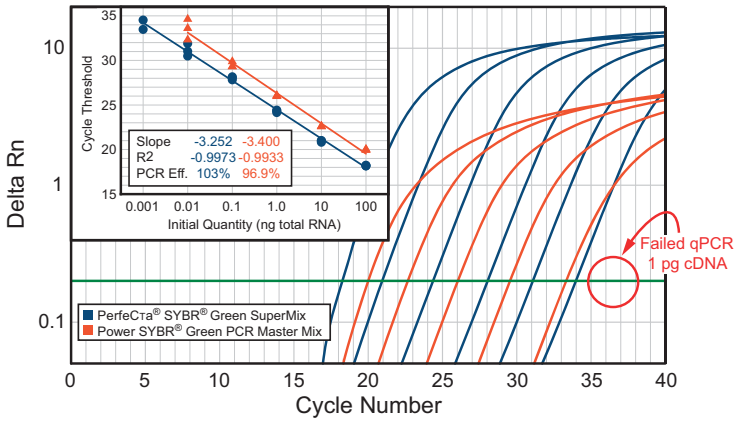

PKCA Target: qScript™ cDNA from HeLa cell total RNA, Log-fold serial dilutions (100ng to 0.1pg) in triplicate, run on ABI 7500.