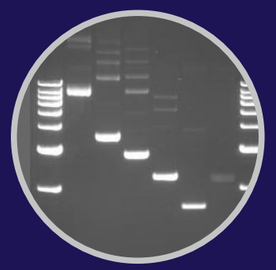
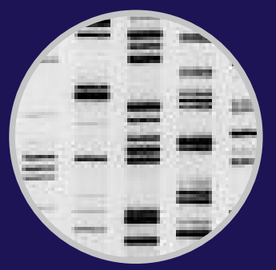
GeNei™

PRODUCT CATALOGUE



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MSME MICRO, SMALL & MEDIUM ENTERPRISES

TÜVINDIA TUV INDIA PVT. LTD. ISO 9001 tuv-nord.com/in

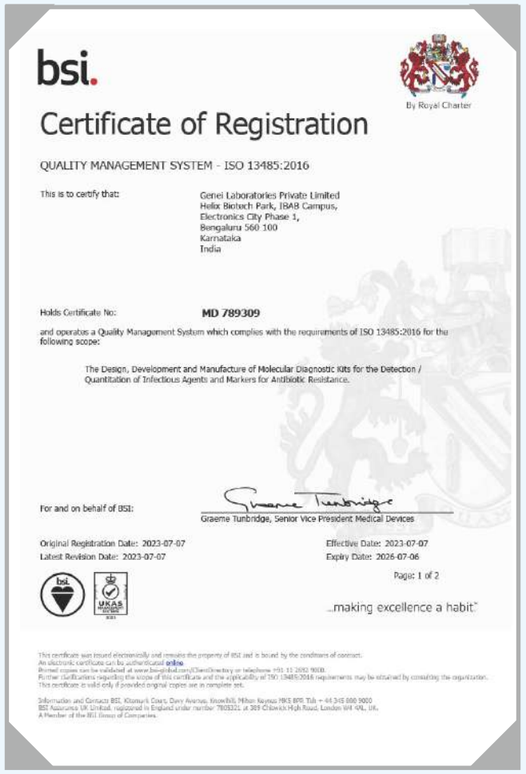
GeNei™

Genei Laboratories Pvt. Ltd.

No. 6, 6th Main, BDA Industrial Suburb
Near SRS Road, Peenya, Bengaluru 560 058
✆ +91 80 28396894 | +91 80 28391453
✉ info@geneilabs.com | sales@geneilabs.com
techsupport@geneilabs.com

www.geneilabs.com

CERTIFICATIONS



bsi.

By Royal Charter

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 13485:2016

This is to certify that: Genei Laboratories Private Limited
Helix Biotech Park, IBAB Campus,
Electronics City Phase 1,
Bengaluru 560 100
Karnataka
India

Holds Certificate No: **MD 789309**

and operates a Quality Management System which complies with the requirements of ISO 13485:2016 for the following scope:

The Design, Development and Manufacture of Molecular Diagnostic Kits for the Detection / Quantitation of Infectious Agents and Markers for Antibiotic Resistance.

For and on behalf of BSI:

Graeme Tunbridge, Senior Vice President Medical Devices

Original Registration Date: 2023-07-07
Latest Revision Date: 2023-07-07

Effective Date: 2023-07-07
Expiry Date: 2026-07-06

Page: 1 of 2

...making excellence a habit.

TÜVINDIA

Certificate

Management system as per
ISO 9001:2015

TÜVINDIA
TUV INDIA PVT. LTD.
ISO 9001:2015

The Certification Body TUV INDIA PVT. LTD. hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

GENEI LABORATORIES PRIVATE LIMITED
No.6, 6th Main, College Road,
Near SRS Road, Peenya, Bengaluru – 560 058,
Karnataka,
India

GeNei™

operates a management system in accordance with the requirements of ISO 9001 : 2015 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope

Design, Development & Manufacture of Research and Educational Products, Custom Research Services For Bioscience Applications.

Certificate Registration No. **QM 08 01504**
Audit Report No. **Q 8191/2017**

Valid from **10.01.2024**
Valid until **12.11.2026**
Initial certification **13.11.2017**

Visit our database to verify the validity of this certificate.

Mumbai, **10.01.2024**
Certification Body at TUV INDIA PVT. LTD.

TUV INDIA PVT. LTD.
801, Raheja Plaza 1, L.B.S Marg,
Ghatkopar (W) Mumbai – 400 086,
India
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NABCB GM 002

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TUVNORDGROUP

GeNei

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GeNei

ORDERING INFORMATION

General Information

Product Use: All Genei products are for the purchaser's research use only and are to be used only by qualified individuals with research experience. Our products may not be redistributed, transferred outside your laboratory nor used for commercial purposes without written permission. Genei's products are not to be administered to humans or animals or used for any pharmaceutical purposes.

Limited Warranty: Genei warrants that all of its products will perform according to the specifications stated on the certificate of analysis. We will replace, free of charge, any product that does not meet those specifications. This warranty limits Genei liability only to the cost of the product. No warranty is granted for products beyond their listed expiration date. No warranty is applicable unless all product components are stored in accordance with instructions. Genei reserves the right to select the method(s) used to analyze a product for defects unless we agree to a specified method in writing prior to acceptance of the order.

Exclusive Terms of Sale: Genei does not agree to and is not bound by any other terms or conditions, unless those terms and conditions have been expressly agreed to in writing by a duly authorized officer of Genei Laboratories Pvt Ltd.

Notice to Buyer/User: Information presented herein is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Nothing herein is to be construed as recommending any practice or any product in violation of any patent or in violation of any law of regulation. It is the user's responsibility to determine for himself or herself the suitability of any material and/or procedure for a specific purpose and to adopt such safety precautions as may be necessary.

Please Note: To place an order with GeNeiTM range of products please refer and mention the New Catalogue Number in the purchase orders. The PI Numbers are only for your reference.

Legal References

Trade Mark/Service Mark

GeNei™

This is the registered trademark of Genei Laboratories Pvt Ltd and registered at the Indian Patent and Trademark office by Genei Laboratories Pvt Ltd, Bangalore, India.

FicollÒ is a registered trademark of Pharmacia Biotech AB.

SepharoseÒ, SephadexÒ are registered trademark of Pharmacia Biotech AB.

TritonÒ is a registered trademark of Union Carbide Chemicals & Plastics Technology Corporation. OITweenÒ is a registered trademark of ICI Americas, Inc.

Patents/Disclaimer: Some products/ processes mentioned in this catalogue may be covered by patents issued and applicable in certain countries for certain periods. Because purchase of our products does notinclude a licence to perform patented applications (in these countries) users have to ensure that they have the necessary licence for use.

Disputes: All disputes subject to Indian Jurisdiction at Bangalore.

GeNei™

Terms & Conditions

Rate Contract: We can offer special discount for the annual rate contract to your institute. To avail this facility, please write to us **sales@geneilabs.com** OIPart Shipment: Please allow part shipment in your order since some items may be out of stock because of strict quality control followed by the company.

Payment: Payments are to be made by Bank RTGS / Drafts or Cheques only. It must be drawn in favour of Genei Laboratories Pvt Ltd.' payable at Bangalore.

Credit of Payment, if allowed by us, is for 'Thirty Days' only. Failure to make full pay- ment within Thirty Days will attract interest of 21% p.a on the invoice value which will be calculated from the date of invoice.

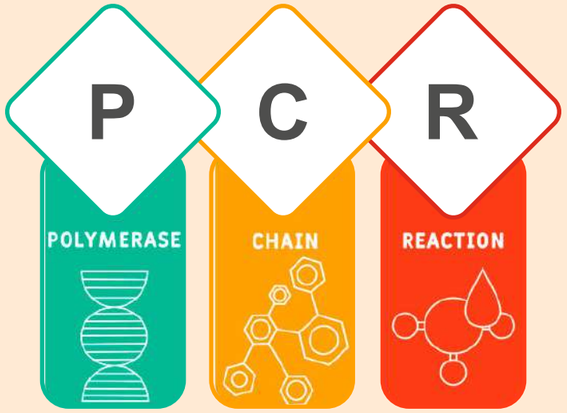
Replacement: All goods manufactured by Genei Laboratories Pvt Ltd, a subsidiary Division of Rivaara Group.of companies, comes with 'Satisfaction Guarantee' i.e. we shall replace products which have not performed under proper conditions. Please mention lot no, date of purchase and our invoice no. for our follow up within 20 days to the Tech Support. Send your quires/ complaints by email to:

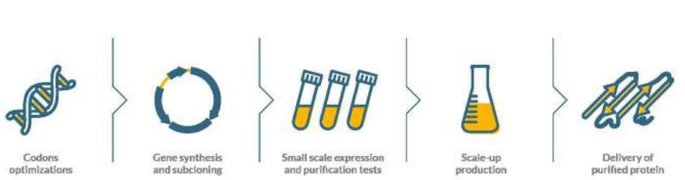
techsupport@geneilabs.com.

Disputes: All disputes subject to Bangalore Jurisdiction.

ORDERING INFORMATION

GeNei





New Genomic Products

New Proteomic Products

Custom Oligonucleotide Synthesis

NEW GENOMIC PRODUCTS

EvaGen™ Green qPCR Master

Description :

EvaGen™ Green qPCR Master Mix is a ready-to-use 2x solution optimized for dye-based quantitative polymerase chain reaction (qPCR). The Pre-mix contains antibody-mediated hot-start DNA polymerase, dNTPs, MgCl2, EvaGreenTM dye, enhancers, and stabilizers for robust fluorescent signals. EvaGreenTM is a fluorescent nucleic acid dye with similar spectral properties to SYBR green I and more stable during PCR conditions, storage, and handling. A combination of antibody modified DNA polymerase with the optimized EvaGenTM Green qPCR master mix eliminates the nonspecific amplification of DNA in PCR reactions.

Characterization Studies :

- Superior gene expression results.
- Enhanced efficiency, specificity, and sensitivity.
- High throughput quantitative PCR applications.
- High resolution melt curve analysis.
- Amplification of RNA by reverse transcription-quantitative real time PCR (RT-qPCR).

Applications :

- Detection of pathogenic targets with high specificity and sensitivity.
- Nucleic acid amplification and gene expression profiling.
- Genotyping and genetic variation analysis.
- Detection of viral loads.
- Detection of copy number variations.

Ordering Information:

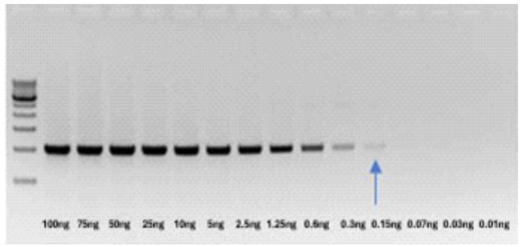
Cat. No	PI No.	Product Description
0606100021730	MME61L	EvaGen™ Green qPCR Master Mix, (200 x 25 µL rxns)

KOD Xpress™ DNA Polymerase

Description :

KOD Xpress™ DNA Polymerase is derived from recombinant expression of a genetically modified form of thermostable DNA polymerase from hyperthermophilic archaeon Thermococcus kodakaraensis expressed in E. coli. The 94kDa enzyme catalyzes 5' to 3' polymerase activity, 3' to 5' exonuclease (proofreading) activity and has no 5' to 3' exonuclease activity. KOD XpressTM DNA Polymerase is ideal for standard PCR templates up to 14Kb.

Sensitivity :



Bacterial genomic DNA was used as template. Different concentrations of template were prepared from a $_{100}$ng stock and $_{1}$Kb gene was amplified using the optimized master mix and the amplification protocol. The bands were visualized by agarose gel electrophoresis. The KOD XpressTM DNA Polymerase amplified template at a concentration as low as $_{0.15}$ng.

Features :

- High Fidelity DNA Polymerase.
- Fast extension speed and high proofreading activity.
- Robust amplification with minimum optimization.
- High accuracy and yields of PCR products.
- Amplification of long targets up to 14kb.

Applications :

- Real-time PCR.
- End point PCR.
- Highly specific amplification of GC - rich templates.
- Generation of blunt - ended PCR product suitable for blunt - end cloning.

- Amplification from different sources of template: E. coli, Human, Plant, Lambda and Plasmid DNA.

Ordering Information:

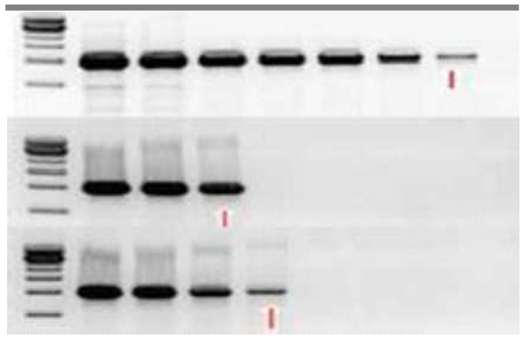
Cat. No	PI No.	Product Description
0605900021730	MME59L	KOD XpressTM DNA Polymerase (1U/µl), 100 Units
0605900031730	MME59J	KOD Xpress™ olymerase (2.5U/µl), 250 Units

NeoTaq™ DNA Polymerase

Description :

NeoTaq™ DNA Polymerase is derived from recombinant expression of a genetically modified form of thermostable DNA polymerase from thermophilic bacterium *Thermus aquaticus expressed in E.coli*. The 98kDa enzyme catalyzes 5' to 3' polymerase activity and lacks 3' to 5' exonuclease (proof reading) activity but has an inherent 5' to 3' exonuclease activity. The enzyme has been genetically modified to offer high sensitivity and amplification efficiency as compared to standard Taq DNA polymerases. NeoTaqTM DNA Polymerase is ideal for standard PCR templates up to 6.4 kb.

Sensitivity :



Bacterial genomic DNA was used as template for $_{1}$kb gene amplification. Different concentration of template was prepared from a $_{100}$ng stock and amplified using the optimized buffer and the amplification protocol and visualized by gel electrophoresis. NeoTaq™ DNA Polymerase amplified template at a concentration as low as $_{0.3}$ ng.

Features :

- High sensitivity
- Higher functional activity compared to conventional Taq DNA polymerase
- Robust amplification with minimum optimization
- Higher yields of PCR products
- Amplification of long targets up to 6.4 kb from genomic DNA.

Applications :

- Real- time PCR
- Highly specific amplification of GC rich templates
- End point PCR
- Amplification from different sources of template: E.coli, Human, Plant and Plasmid DNA
- Very low copy targets
- Multiplex primer reaction
- High throughout PCR Procedures

Ordering Information:

Cat. No	PI No.	Product Description
0605600021730	MME56L	NeoTaq™ DNA Polymerase (1 U/µl), (Includes Enzyme, Assay buffers: 2 vials, 25mM MgCl2: 1 vial and Magic Solution: 1 vial)
0605600031730	MME56J	NeoTaq™ DNA Polymerase (1 U/µl), (Includes Enzyme, 2 Assay buffers: 2 X 7 bottles, 25mM MgCl2: 1 bottle and Magic Solution: 1 bottle)
0605600041730	MME56B	NeoTaq™ DNA Polymerase (1 U/µl), (Includes Enzyme, 2 Assay buffers: 2 X 7 bottles, 25mM MgCl2: 1 bottle and Magic Solution: 1 bottle)

NEW PRODUCTS

GENOMICS

0605700021730	MME57L	NeoTaq™ DNA Polymerase (3 U/µl), (Includes Enzyme, Assay buffers: 2 vials, 25mM MgCl2: 1 vial and Magic Solution: 1 vial)
0605700031730	MME57J	NeoTaq™ DNA Polymerase (3 U/µl), (Includes Enzyme, Assay buffers: 2 X 4 vials, 25mM MgCl2: 1 vial and Magic Solution: 1 vial)
0605700041730	MME57B	NeoTaq™ DNA Polymerase (3 U/µl), (Includes Enzyme, 2 Assay buffers: 2 X 7 bottles, 25mM MgCl2: 1 bottle and Magic Solution: 1 bottle)
0605800021730	MME58L	NeoTaq™ DNA Polymerase (5 U/µl), (Includes Enzyme, Assay buffers: 2 vials, 25mM MgCl2: 1 vial and Magic Solution: 1 vial)
0605800031730	MME58J	NeoTaq™ DNA Polymerase (5 U/µl), (Includes Enzyme, Assay buffers: 2 X 4 vials, 25mM MgCl2: 1 vial and Magic Solution: 1 vial)
0605800041730	MME58B	NeoTaq™ DNA Polymerase (5 U/µl); (Includes Enzyme, 2 Assay buffers: 2 X 7 bottles, 25mM MgCl2: 1 bottle and Magic Solution: 1 bottle) 5000Units

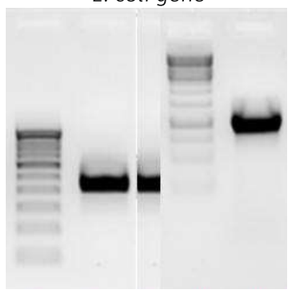
NesTaq™ Ab Master Mix

Description :

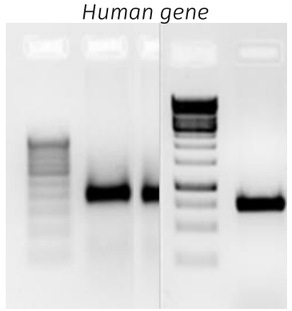
NesTaq™ Ab Master Mix is a premixed, ready-to-use 2x solution containing antibody-mediated hot-start NeoTaqTM DNA polymerase, dNTPs, MgCl2, enhancers and stabilizers for efficient amplification. NesTaqTM Ab Master Mix prevents non-specific product formation and allows polymerase chain reactions (PCR) to proceed at ambient temperature, which has been achieved using antibody modified polymerase.

Amplification with multiple template sources :

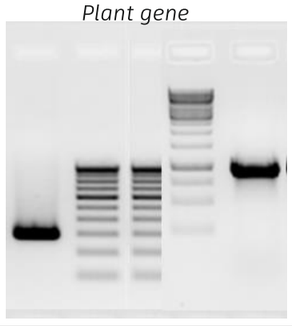
E. coli gene



Human gene



Plant gene



Genes of different sizes from various sources such as Escherichia coli *(E. coli)*, plant, and human were amplified using NesTaq™ Ab PCR master mix and six parallel amplifications were performed. The PCR products were analyzed under UV light after agarose gel electrophoresis. Amplification of the target gene was observed in all the samples.

NEW PRODUCTS

GENOMICS

Features :

- Monoclonal antibody reversibly blocks the polymerase activity.
- Amplification of wide range of DNA templates.
- Enhanced PCR efficiency, specificity, and sensitivity.
- Amplification of long targets up to 6.4kb genomic DNA.
- Detection of low copy number of target DNA.

Applications :

- Detection of infectious agents in patient samples, genetic analysis, and forensics.
- High throughput PCR screening.
- PCR-based DNA fingerprinting.
- Microarray analysis.

Ordering Information:

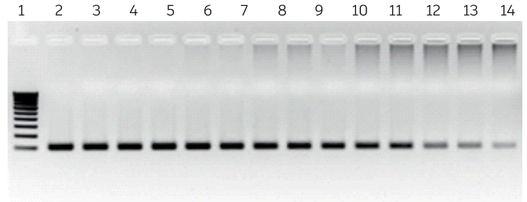
Cat. No	PI No.	Product Description
0606300021730	MME63L	NesTaq™ Ab Master Mix, (2X), 1 x 100 rxns (25 µl/rxn)
0606300031730	MME63J	NesTaq™ Ab Master Mix (2X), 5 x 100 rxns (25 µl/rxn)

JetStart™ Taq DNA Polymerase

Description :

NesTaq™ Ab Master Mix is a premixed, ready-to-use 2x solution containing antibody-mediated hot-start NeoTaqTM DNA polymerase, dNTPs, MgCl2, enhancers and stabilizers for efficient amplification. NesTaqTM Ab Master Mix prevents non-specific product formation and allows polymerase chain reactions (PCR) to proceed at ambient temperature, which has been achieved using antibody modified polymerase.

Sensitivity :



JetStart™ Taq DNA polymerase was evaluated for its sensitivity with various concentrations of *E. coli* genomic DNA using the optimized hot start buffer and reaction conditions. The PCR products were visualized under UV light after agarose gel electrophoresis. Amplification up to 0.01ng was observed.

Lane 1	100bp ladder	Lane 6	10ng	Lane 11	0.3ng
Lane 2	100ng	Lane 7	5ng	Lane 12	0.15ng
Lane 3	75ng	Lane 8	2.5ng	Lane 13	0.07ng
Lane 4	50ng	Lane 9	1.25ng	Lane 14	0.03ng
Lane 5	25ng	Lane 10	0.6ng	Lane 15	0.01ng

Features :

- Monoclonal antibody reversibly blocks the polymerase activity.
- High functional activity compared to commercial.
- Increased PCR product yield.
- Amplification of long targets up to 6.4kb genomic DNA.
- Enhanced specificity and sensitivity.
- Amplification of low-copy targets.

Applications :

- Suitable for Real-time and end- point PCR.
- Development of master mix.
- One step Reverse Transcriptase- PCR.
- Amplification of templates from different sources: Escherichia coli *(E. coli)*, Human, Plant and Plasmid DNA.

Ordering Information:

Cat. No	PI No.	Product Description
0606200021730	MME62L	JetStartTM Taq DNA Polymerase - Ab modified, (Includes Enzyme, Assay buffers: 2 vials, 25mM $MgCl_2$: 1 vial and Magic Solution: 1 vial)
0606200031730	MME62J	JetStartTM Taq DNA Polymerase - Ab modified, (Includes Enzyme, Assay buffers: 2 X 4 vials, 25mM $MgCl_2$: 1 vial and Magic Solution: 1 vial)

NEW PRODUCTS

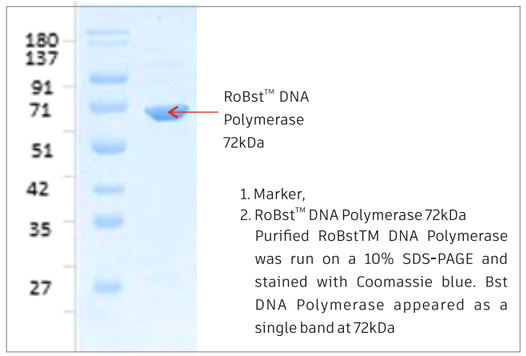
GENOMICS

RoBst™ DNA Polymerase

Description :

RoBst™ DNA polymerase I (large fragment) from Bacillus stearothermophilus (Bst), is a robust polymerase used for various isothermal amplification reactions. The recombinant enzyme is prepared from an Escherichia *coli (E.coli)* strain containing the gene encoding for RoBst™ DNA Polymerase. Due to its strand displacement activities, the enzyme is used for the implementation of loop- mediated isothermal amplification (LAMP). The thermostable enzyme detects low sensitivity nucleic acids with higher efficiency and specificity. The enzyme with a molecular weight of 72kDa catalyses 5' to 3' Polymerase activity and lacks 5' to 3' exonuclease activity.

Purity by SDS-PAGE :



1. Marker,
2. RoBst™ DNA Polymerase 72kDa

Purified RoBstTM DNA Polymerase was run on a 10% SDS-PAGE and stained with Coomassie blue. Bst DNA Polymerase appeared as a single band at 72kDa

Features :

- Efficient strand displacement activity.
- Rapid amplification rate compared to conventional PCR.
- Higher processivity, increased salt tolerance and catalytic efficiency.
- Suitable for amplification of low concentration of templates.

Applications :

- Purity: >95% by SDS-PAGE.
- Nuclease assays: No detectable endonuclease, exonuclease, and RNase activity.
- E. coli host contamination: No
- E. coli DNA contamination was detected in qPCR with specific primers targeting 16S rRNA gene.
- Functional assay: RoBst™ DNA polymerase tested extensively for its reproducible performance in LAMP assays.

Ordering Information:

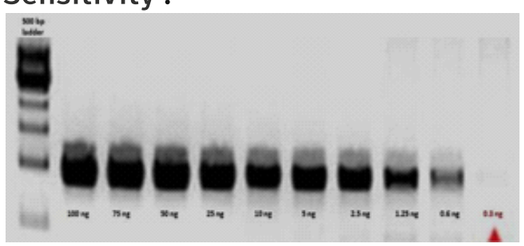
Cat. No	PI No.	Product Description
0606000021730	MME60L	RoBst™ DNA Polymerase (8 U /µl)
0606000021730	MME60J	RoBst™ DNA Polymerase (8 U /µl)

Neo Gold™ Taq DNA Polymerase

Description :

Neo Gold™ Taq DNA Polymerase is derived from recombinant expression of a genetically modified form of thermostable DNA polymerase from thermophilic bacterium Thermus aquaticus expressed in E. coli. The 98kDa enzyme catalyzes 5' to 3' polymerase activity and lacks 3' to 5' exonuclease (proof reading) activity but has an inherent 5' to 3' exonuclease activity. The enzyme has been genetically modified to offer high sensitivity and amplification efficiency as compared to standard Taq DNA polymerases. Neo Gold™ Taq DNA Polymerase is ideal for standard PCR templates up to 6.4 kb.

Sensitivity :



NEW PRODUCTS

GENOMICS

Features :

Bacterial genomic DNA was used as template for 1kb gene amplification. Different concentration of template was prepared from a 100ng stock and amplified using the optimized buffer and the amplification protocol and visualized by gel electrophoresis. Neo GoldTM Taq DNA Polymerase amplified template at a concentration as low as 0.3 ng.

Features :

- High sensitivity
- Higher functional activity compared to conventional Taq DNA polymerase
- Robust amplification with minimum optimization
- Higher yields of PCR products
- Amplification of long targets up to 6.4 kb from genomic DNA

Applications :

- Real-time PCR
- Highly specific amplification of GC rich templates
- End point PCR
- Amplification from different sources of template: *E. coli*, Human, Plant and Plasmid DNA
- Very low copy targets
- Multiplex primer reaction
- High throughout PCR Procedures

Ordering Information:

Cat. No	PI No.	Product Description
0605610021730	MME56GL	Neo Gold™ Taq DNA Polymerase (1 U/µl), 250 Units (Includes Enzyme, Assay buffers: 2 vials, 25mM $MgCl_2$: 1 vial and Magic Solution: 1 vial)
0605610031730	MME56GJ	Neo Gold™ Taq DNA Polymerase (1 U/µl), 1000 Units (Includes Enzyme, Assay buffers: 2 X 4 vials, 25mM $MgCl_2$: 1 vial and Magic Solution: 1 vial)
0605710021730	MME57GL	Neo Gold™ Taq DNA Polymerase (3 U/µl), 250 Units (Includes Enzyme, Assay buffers: 2 vials, 25mM $MgCl_2$: 1 vial and Magic Solution: 1 vial)
0605710031730	MME57GJ	Neo Gold™ Taq DNA Polymerase (3 U/µl), 1000 Units (Includes Enzyme, Assay buffers: 2 X 4 vials, 25mM $MgCl_2$: 1 vial and Magic Solution: 1 vial)

Trichrome StepUp™ DNA Ladders and Rulers

Features :

- Ladder or Rulers with three tracking Dyes.
- Three tracking Dyes are Bromophenol Blue, Xylene cyanol FF and Orange G.
- Bromophenol Blue migrates through 1% agarose gel at approximately the same rate as linear dsDNA 300bp on 1% agarose gel. Xylene cyanol FF migrates approximately the same rate as linear dsDNA at 4Kb in length and Orange G migrates approximately the same rate as linear dsDNA at 50bp in length.

Highlights :

- Ready to use Ladder/ Ruler
- Quantitative Ladder /Ruler
- The Orange G dye indicates the position of the lower DNA fragment (below 50bp) on 1% agarose gel
- No masking of dye with the DNA.
- Formulated 3 different tracking dyes.

Ordering Information:

Cat. No	PI No.	Product Description
2663180501730	TMBD31	Trichrome StepUp™ 50bp DNA Ladder, Ready To Use (100 loads), 50µg
2662680501730	TMBD13	Trichrome StepUp™ 100bp DNA Ladder, Ready To Use (100 loads), 50µg

2663080501730	TMBD30	Trichrome StepUp™ 250bp DNA Ladder, Ready To Use (100 loads), 50µg	2662780501730	TMBD27	Trichrome StepUp™ Low Range DNA Ruler Plus, Ready To Use (100 loads), 50µg
2661980501730	TMBD19	Trichrome StepUp™ 500bp DNA Ladder, Ready To Use (100 loads), 50µg	2662880501730	TMBD28	Trichrome StepUp™ Medium Range DNA ruler (100 loads), Ready To Use 50µg
2662080501730	TMBD20	Trichrome StepUp™ 1 kb DNA Ladder, Ready To Use (100 loads), 50µg	2652980501730	TMBD29	Trichrome StepUp™ High Range DNA Ruler, Ready To Use (100 loads), 50µg
2662180501730	TMBD21	Trichrome StepUp™Supermix DNA Ladder, Ready To Use (100 loads),50µg	2663280501730	TMBD32	Trichrome Quantum™ PCR Marker Low Range, Ready To Use (100 loads), 50µg
2652380501730	TMBD23	Trichrome StepUp™ Low Range DNA Ruler, Ready To Use (100 loads), 50µg	2663380501730	TMBD33	Trichrome Quantum™ PCR Marker Medium Range, Ready To Use (100 loads), 50µg
2662480501730	TMBD24	Trichrome StepUp™ 20bpDNA Ruler, Ready To Use (100 loads), 50µg			

PLASMID DNA PURIFICATION

GeneiUltrapure™ Plasmid Midi Purification Kit

Description :

The GeNei™ Plasmid DNA Purification Midi Kit is designed for the isolation of purified plasmid DNA with anion-exchange technology. This kit uses a gravity-flow column that increases efficiency of DNA binding capacity. Plasmids can be purified by directly loading alkaline lysed cell cultures onto gravity flow Anion Exchange Columns. It is designed for the easy and efficient extraction of pure plasmid DNA. The isolated DNA is ready for enzymatic reactions or molecular biology applications.

Specifications :

Principle	Ion exchange chromatography (Gravity-flow column)
Sample Source	Plasmid DNA From *E Coli*
Plasmid Size	3kb-10kb
Sample Size	120 ml of bacterial culture
High Copy Yield	400-450 ug
Low Copy Yield	100-150 ug
Hands On Time	60 Minutes
Column Binding Capacity	≤650 µg DNA/Column

Flow Chart :

Cell Culture
Incubation Harvesting

Cell Culture
Resuspension Lysis Neutralization

Gravity Flow
Column equilibration DNA Binding Wash Elution

DNA Precipitation
Column equilibration DNA Binding Wash Elution

Characteristics :

High Yield: Plasmid DNA midi extraction methods typically yield a relatively large amount of high-quality plasmid DNA, making them suitable for applications requiring a substantial quantity of DNA.

Purity: Midi-scale plasmid DNA extraction methods often result in highly purified DNA, equivalent to Cs-Cl gradient free from contaminants such as genomic DNA, RNA, and proteins, which is crucial for downstream applications.

Cost-Effectiveness While midi-scale extraction may require slightly more resources compared to mini-scale extraction, it is more cost-effective when large quantities of plasmid DNA are needed, as it reduces the need for repeated extractions.

Time Efficiency: Midi-scale plasmid DNA extraction methods are time-efficient compared to mini-scale methods, as they allow for the isolation of larger amounts of DNA in a single extraction, reducing the overall processing time.

Versatility: Midi-scale plasmid DNA extraction methods are versatile and can be adapted to isolate various types of plasmids, including high-copy or low-copy plasmids, as well as plasmids of different sizes and complexity

Applications :

Molecular Cloning: Plasmid DNA extraction is often used in molecular cloning experiments where researchers need to insert foreign DNA into plasmids for various purposes such as gene expression studies, protein production, or genetic engineering.

Gene Therapy: Plasmid DNA can be used as a vector for gene therapy applications, where therapeutic genes are inserted into plasmids and delivered into target cells to treat genetic disorders or diseases.

Recombinant Protein Expression: Plasmid DNA extraction is essential for producing recombinant proteins in bacteria or other expression systems. Researchers can clone the gene of interest into a plasmid vector and then express the protein in bacterial cells.

Transgenic Organism Generation: Plasmid DNA extraction is used in the generation of transgenic organisms by introducing foreign genes into the genome of plants or animals.

PCR Template Preparation: Plasmid DNA can serve as a template for PCR (Polymerase Chain Reaction) amplification, enabling the rapid and efficient amplification of specific DNA sequences.

Ordering Information:

Cat. No	PI No.	Product Description
612116100011730	KT161S	GeneiUltrapure™ Plasmid Midi Purification Kit
612116100021730	KT161	GeneiUltrapure™ Plasmid Midi Purification Kit

Guinea Pig Serum

Description :

Guinea Pig Serum are obtained from non-haemolyzed blood that is collected from healthy animals. The blood is centrifuged, and the serum is collected. This product was aseptically filtered through a 0.22-micron filter into clean, pre-sterilized containers. And supplied in frozen condition. Each manufactured batch is rigorously controlled, from the collection of serum and throughout all stages of its treatment and production through to final packaging on our premises.

Applications :

Guinea pig serum is suitable blocking agent and negative control in immunoassays. Guinea Pig Serum is used as a supplement to cell culture media. Guinea Pig Serum is also suitable for use as a component of bioassays, immunoassays, or enzyme assays. Guinea Pig Serum provides a broad spectrum of macromolecules, carrier proteins for lipoid substances and trace elements, attachment and spreading factors, low molecular weight nutrients, and hormones and growth factors that promote cell growth and health. These serums provide excellent growth promoting components for tissue culture and microbiological organisms. Guinea Pig Serum is ideal for investigators in Cancer, Immunology, and Cell Biology research.

Store: -$_{20}$°C
Store in smaller aliquots to avoid repeated freeze-thaw cycles.

CD4 Monoclonal Antibody

Description :

The CD4 antigen is involved in the recognition of MHC class II molecules and is a co-receptor for HIV. CD4 is primarily expressed in a subset of T-lymphocytes, also referred to as T helper cells, but may also be expressed by other cells in the immune system, such as monocytes, macrophages, and dendritic cells. At the tissue level, CD4 expression may be detected in thymus, lymph nodes, tonsils, and spleen, and in specific regions of the brain, gut, and other non-lymphoid tissues. CD4 functions to initiate or augment the early phase of T-cell activation through its association with the T-cell receptor complex and protein tyrosine kinase, Lck. It may also function as an important mediator of direct neuronal damage in infectious and immune-mediated diseases of the central nervous system. Multiple alternatively spliced transcripts have been identified in this gene.

Applications :

Antibodies that detect CD4 can be used in several scientific applications, including Flow Cytometry, Immunohistochemistry, Western Blot, Immunocytochemistry and Immunoprecipitation. These antibodies target CD4 in Human, Mouse, Rat, Canine and Avian samples. These antibodies have been verified by Relative expression and Cell treatment to confirm specificity to Cd4.

Western blot titer: 1:10 – 1:100
Western blot analysis of CD4 was performed by loading 20 µg of Jurkat and CTLL cell lysates onto an SDS polyacrylamide gel. Proteins were transferred to a PVDF membrane and blocked at 4ºC overnight. The membrane was probed with a CD4 monoclonal at a dilution of 1:20 overnight at 4°C, washed in TBST, and probed with an HRP-conjugated secondary antibody for 1 hr at room temperature in the dark. Chemiluminescent detection was performed using ECL Western Blotting Substrate.

Store: -$_{20}$°C
·Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Modified Freund's Incomplete Adjuvant (FIA-M)

Description :

Freund's Incomplete Adjuvant is a nonspecific stimulator of the immune response for use in antibody production immunization process. This product comes in 10 mL ampules that are convenient and ready-to-use. The water-and-oil emulsion greatly enhances immune responses to immunogens when mixed and injected with the prepared antigen and is typically used for booster injections. The ampules comprise conveniently sized aliquots that provide long shelf life.

Freund's Incomplete Adjuvant is a mixture of 85% paraffin oil and 15% mannide monooleate. It is used for making emulsion of immunogen. Emulsified immunogen on injecting to any host (animal) causes slow release of immunogen causing high and prolonged antibody response. Freund's Incomplete Adjuvant lacks the mycobacteria found in Complete Freundffs Adjuvant thereby minimizing the side-effects.

Highlights :

- Commonly known as Incomplete Freund's Adjuvant
- Water-in-oil emulsion without Mycobacterium
- Enhances immune response in booster injections.
- Typically used for subsequent boosts after initial injection with FCA

Applications :

Adjuvants are nonspecific stimulators of the immune response. When mixed with an antigen or immunogen, adjuvants help to deposit or sequester the injected material thereby helping to increase antibody response. Adjuvants enhance the immune response to compounds that are already immunogenic; they do not confer immunogenicity to non-immunogenic biomolecules. To make prospective antigens more immunogenic, it is necessary to conjugate them to a carrier protein or some other complex, immunogenic molecule.

Modified Freund's Complete Adjuvant (FCA-M)

Description :

Freund's Complete Adjuvant is a popular nonspecific stimulator of the immune response for use in antibody production immunization process.

This product comes in 10 mL ampules that are convenient and ready to use. The water-and-oil emulsion greatly enhances immune responses to immunogens when mixed and injected with the prepared antigen and is typically used for initial injections.

Freund's Complete Adjuvant (FCA), also known as Complete Freund's Adjuvant (CFA), comprises non-metabolizable oils like paraffin and mannide monooleate, and heat killed mycobacteria. These non-metabolizale oils help in formation of water in oil emulsion with aqueous antigen which helps in retention of antigen for longer times at the site of injection and therefore helps in boosting immune response. Furthermore, heat-killed mycobacteria attract macrophages and initiate cell-mediated immune response which is long lasting

Applications :

Antigens are typically mixed with an equal volume of the adjuvant to form an emulsion.

Freund's Adjuvants may be used to produce water-in-oil emulsions of immunogens. Antigens in water-in-oil emulsions stimulate high and long-lasting antibody responses which can be attributed to the slow release of antigen.

The mycobacteria in Complete Freund's adjuvant attracts macrophages and other cells to the injection site which enhances the immune response. For this reason, Complete Freund's Adjuvant is used for initial injections and Incomplete Freund's Adjuvant for subsequent boosts.

Store: Room temperature (15° - 30° C).

Thimerosal

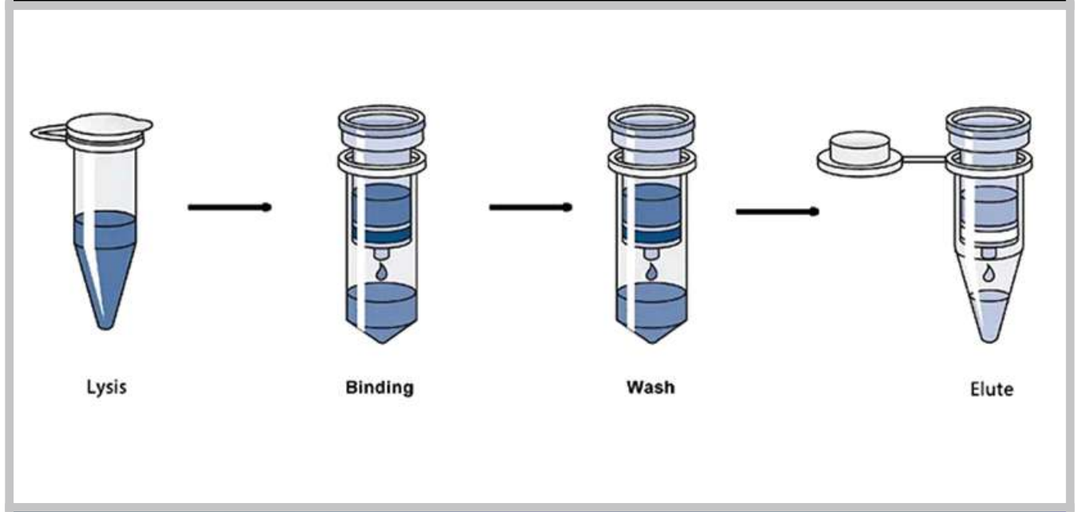
Description :

Thiomersal (also known as thimerosal, Merthiolate) is an organomercurial derivative of ethyl mercury that has been used very widely, and for a very long time, as a preservative in vaccines in their bulk formulations. Its primary purpose has been to prevent microbial growth in the product during storage and use. It has also been used during vaccine production both to inactivate certain organisms and toxins and to maintain a sterile production line.

Store: Room temperature (15° - 30° C).

Ordering Information:

Cat. No	PI No.	Product Description
3110482501730	NS2	Guinea Pig Serum, 50ml
3110492501730	MAB1	CD4 Monoclonal Antibody, 200µl
1640280401730	FIA-M	Modified Freund's Incomplete Adjuvant, 100ml
1640180401730	FCA-M	Modified Freund's Complete Adjuvant, 100ml
2131600011730	FC104	Thimerosal, 1kG



Solution Based

- PureSol™ Plasmid Isolation Kit
- UniFlex™ DNA Isolation Kit
- GeNei™ Plant DNA Extraction Kit (for PCR Amplification)
- GeNei™ CTAB Plant DNA Extraction Kit
- GeNei™ Whole Blood DNA Extraction Kit (from Fresh / Frozen Blood)
- GeNei™ Gel Extraction Kit, $_{100}$ preps
- TriSol
- STET Lysis Solution

GeneiPureTM DNA Purification Kits

- GeneiPure™ Plasmid Purification Kit
- GeneiPure™ Bacterial DNA Purification Kit
- GeneiPure™ Yeast DNA Purification Kit
- GeneiPure™ Plant Genomic DNA Purification Kit
- GeneiPure™ Genomic DNA Purification Kit- Mammalian Tissues
- GeneiPure™ Genomic DNA Purification Kit- Cells and Blood
- GeneiPure™ Quick PCR Purification Kit
- GeneiPure™ Gel Extraction Kit
- GeneiPure™ Fungal Genomic DNA Purification Kit
- gDNA Purification Kit- Cotton Leaves, Seed and Lint

GeneiPureIDTM DNA Isolation Kits

- GeneiPureID™ DNA Isolation Kit- Dried Blood
- GeneiPureID™ DNA Isolation Kit for Semen
- GeneiPureID™ DNA Isolation Kit- Bone
- GeneiPureID™ DNA Isolation Kit- Saliva
- GeneiPureID™ DNA Isolation Kit- Skin

Products for RNA

- RaFlex™ Total RNA Isolation Kit (for Plants)
- RaFlex™ Total RNA Isolation Kit (for Bacteria, Blood, Animal Cells & Tissues)
- Plant RNA Isolation Kit

GeneiPure™ Total RNA Isolation Kits

- GeneiPure™ Total RNA Isolation Kit- Bacteria
- MicroRNA Isolation Kit- Cells & Tissues
- Total RNA Isolation Kit- Blood
- GeneiPure™ Total RNA Isolation Kit- Yeast
- GeneiPure™ Total RNA Isolation Mini Kit – Plants

GenPro™ $_3$-in-$_1$ Isolation Kits

- GenPro™ 3-in-1 Isolation Kit- Cells and Tissues
- GenPro™ 3-in-1 Isolation Kit- Blood
- GenPro™ 3-in-1 Isolation Kit- Plant
- GenPro™ 3-in-1 Isolation Kit- Bacteria

Nuclease free Buffers

- Tris-Cl 1M (pH 8.0)
- Saturated Phenol (Water) (Protease, DNase & RNase Free)
- Saturated Phenol (Water)
- 50X Denhardt's Reagent
- Saturated Phenol (Tris-HCl)
- Lymphocyte Separating Solution
- 0.5M EDTA (DNase & RNase Free)
- 10X TE (DNase & RNase Free)
- Sodium Acetate 3M (DNase & RNase Free)
- Nuclease Free Water
- 3M Potassium Acetate, pH 5.5 (DNase & RNase Free)

Agarose Gel Electrophoresis Reagents

- Agarose
- StepUp™ 50 bp DNA Ladder
- StepUp™ 100 bp DNA Ladder
- StepUp™ 250 bp DNA Ladder (100 Loads)
- StepUp™ 500 bp DNA Ladder
- StepUp™ 1 kb DNA Ladder
- Supermix DNA Ladder
- 20 bp DNA Ruler
- Low Range DNA Ruler (100bp – 3 kb)
- Midium Range DNA Ruler (100bp – 5 kb)
- High Range DNA Ruler (100bp – 10 kb)
- Quantum™ PCR Marker Low Range Ready to Use
- Quantum™ PCR Marker Medium Range Ready to Use
- Lambda DNA / *EcoR* I Digest, Ready to Use
- pBR322 DNA / *Hae* III Digest
- pBR322 DNA / *Msp* I Digest
- X174 / *Hae* III Digest
- Lambda DNA / *EcoR* I Digest
- Lambda DNA / *Hind* III Digest
- Proteases

GeNei™

TOOL FOR GENOMIC RESEARCH

Restriction enzymes

Genei's restriction enzymes are thoughtfully provided in convenient pack sizes and optimal concentrations, with a specific emphasis on offering high concentrations for efficient genomic DNA digestions. Each enzyme lot undergoes rigorous scrutiny to ensure both its integrity and functional purity throughout and after the manufacturing process. Regular assays for enzyme activity are conducted quarterly, further affirming the quality and reliability of our products.

Stability checks have demonstrated that most of these enzymes maintain their effectiveness even when stored at -20°C for over a year. This longevity is particularly advantageous for concentrated enzymes, which tend to retain their activity for extended durations compared to their more diluted counterparts.

For user convenience, our restriction enzymes are categorized into five groups based on assay conditions, with color-coded enzyme and buffer vials for easy identification. Additionally, we provide a 10X assay buffer and 100X nuclease-free BSA (wherever required) with the enzyme, all supplied at no extra cost. Should you have additional requirements for reaction buffers, our catalogue includes a reference index for your convenience.

Quality Checks :

The catalytic activity of our offered restriction enzymes is gauged by determining the minimum quantity of enzyme needed to generate the enzyme-specific final fragment pattern of ƛ DNA, which holds true in most instances.

Unit Definition :

Our unit definition is standardized: one unit is the quantity of enzyme necessary to achieve a complete digest of 1 µg of lambda DNA in a reaction volume of 50 µl over 60 minutes. This measurement is conducted under optimal conditions of salt concentration, pH, and temperature. This stringent and well-defined unit definition allows for accurate and reproducible assessments of the enzyme's catalytic efficiency, ensuring reliable and consistent results for our users.

In some cases, the determination of the unit is based on digestion of ƛ dam- DNA, pBR 322 DNA, Ad2 DNA, ƛ/ EcoR I digest or ƛ/ Hind III digest.

Overnight Non-specific Nuclease Assay :

We employ an overnight non-specific nuclease assay as a rigorous quality control measure for each batch of our restriction enzymes. In this assay, different units of the enzyme are incubated with 1 µg of substrate DNA under the recommended assay conditions, within a 50 µl reaction volume, for a duration of 16 to 20 hours.

The assessment of the assay relies on the resulting banding pattern. A sharp, unaltered banding pattern is indicative of enzyme purity, demonstrating the absence of detectable non-specific nucleases. The certificate of analysis supplied with each enzyme includes information on the highest number of units that produced a sharp, unaltered pattern in this assay. This meticulous testing process ensures that our restriction enzymes meet the highest standards of quality and purity, providing researchers with reliable tools for their molecular biology experiments.

Non-Specific Endonuclease assay :

The Non-Specific Endonuclease assay is specifically conducted for enzymes that lack recognition sites in the supercoiled plasmid substrate. In this test, the enzymes are incubated with 1 µg of supercoiled (RFI form) DNA within a 0.05 ml reaction volume for a duration of 4 hours, adhering to the recommended assay conditions.

During the incubation period, a single non-specific nick in the supercoiled form results in the production of the nicked form (RF-II). These two distinct forms can be visually differentiated on an agarose gel. The assay allows for the estimation of

the percentage of conversion, providing valuable insights into the enzyme's behavior in the absence of specific recognition sites on the supercoiled plasmid substrate.

This meticulous assay contributes to our comprehensive quality control processes, ensuring that our enzymes meet the highest standards and perform reliably in diverse experimental conditions.

Ligation/Recut Assay :

The Ligation/Recut Assay is employed to assess the integrity and purity of DNA fragments produced through a 3 -100 fold excess of restriction enzyme digestion. In this assay, the DNA fragments are subjected to ligation. Subsequently, the ligated DNA fragments are recut using the same restriction enzyme.

An unaltered banding pattern observed after the recut process serves as an indication of intact 5' and 3' termini, as well as the absence of contaminating nucleases. The success of this assay is determined by the estimated levels of ligation and re-cleavage, both of which must exceed 70-90%. This stringent criterion ensures that the DNA fragments maintain their structural integrity and that the restriction enzyme used is free from contaminants that could compromise the accuracy of downstream applications.

Blue/White Standard Assay :

The Blue/White Standard Assay is a highly sensitive method employed for evaluating restriction enzymes used in cloning applications. This assay enables the detection of low levels of nuclease contamination within restriction enzymes, specifically those with recognition sites in the multiple cloning regions within the Lac Zα gene of the plasmid.

In this assay, the plasmid is cleaved with a 3-50 fold excess of the enzyme. The cleaved DNA is then ligated and used to transform competent Dh5α E. coli cells. The transformed cells are cultured on a selective medium to ensure that all growing colonies originate from E. coli cells transformed with the ligated vector. These colonies are subsequently tested for the integrity of the polylinker site by examining the presence of the functional β-galactosidase locus. Only colonies that turn blue upon addition of X-gal and IPTG have an intact β-galactosidase locus, indicating an unchanged polylinker site within this structural gene due to cut and re-ligation.

For enzymes generating sticky ends, the permissible percentage of white colonies is up to 2%, while for enzymes generating blunt ends, the acceptable percentage is up to 10%. This assay offers a stringent evaluation of the restriction enzymes, ensuring their suitability for precise cloning applications.

Star activity :

Star activity occurs when a restriction enzyme displays non-specific cleavage at sites other than its canonical recognition sequence, especially under conditions that deviate from the optimal. The recommendation for careful use serves to prevent unintended cleavage and ensures the reliability of experimental outcomes when employing these specific enzymes.

Regarding star activity, it's crucial to exercise caution and adhere to precise assay conditions when using certain enzymes. Genei specifically recommends careful handling of a subset of enzymes that are particularly sensitive to variations in conditions. Enzymes prone to star activity under conditions of high units per microgram of DNA and/or prolonged incubation periods include BamH I, EcoR I, Kpn I, Nco I, Hinf I, PvuII, Sau3A I, Ssp I, Sal I, Nhe I, and Kpn I.

Factors Influencing Restriction Enzyme Activity

Nature of DNA :

The nature of the substrate strongly influences the activity of restriction enzymes. The most important parameters are:

- Base distribution in natural DNA
- Tertiary structure of DNA
- Base composition of the flanking sequence
- The position of the cleavage site with respect to each other.

The nature of the substrate strongly influences the activity of restriction enzymes. The most important parameters are:

Temperature:
Temperature is a critical factor influencing the efficiency of DNA digestion, and the optimal temperature varies across different restriction enzymes. Genei provides a range of restriction enzymes, some of which have optimum incubation temperatures differing from the standard 37° C. The enzymes falling into this category are listed below. It's important to be aware of and adhere to the recommended temperature conditions for each specific enzyme to achieve optimal results in DNA digestion experiments.

Enzymes	Assay Temperature
Taq I	65° C

Tris Hcl is the most commonly used buffering agent in reaction mixtures. The buffer system is temperature dependent, the change in pH per 10° C amounts to approx. 0.3. The optimal activity of restriction enzymes is significantly influenced by the appropriate ionic environment. Magnesium ions (Mg2+) are an absolute requirement for all restriction enzymes. The addition of other salt components, however, varies among different nucleases.

Moreover, the presence of Bovine Serum Albumin (BSA) in the reaction mix can play a crucial role in enzyme activity. BSA serves multiple functions, including enzyme stabilization, binding of certain impurities, and prevention of enzyme adsorption to the surfaces of test tubes. These factors underscore the importance of carefully considering and adjusting the ionic conditions and the inclusion of BSA to ensure the optimal performance of restriction enzymes in experimental setups.

Methylation of DNA :

Restriction endonucleases are part of prokaryotic restriction/modification systems. The digestion of DNA isolated during cloning steps in bacterial cells can be strongly affected by the methylation of specific adenosine or cytosine residues in the recognition sequence of the restriction enzyme of interest.

Many E.coli host strains possess two nucleotide sequence specific methylases; the dam methylase which modifies adenine residues to N^6-methyladenine in the sequence GATC and the dcm methylase which modifies the internal cytosine residues to 5-methylcytosine in CCAGG or CCTGG sequences.

Restriction enzymes affected by dam and dcm methylation are listed below.

Enzymes inhibited		Enzymes inhibited bydcm methylation
Mbo I	+ /GATC	+ *Stu* I AGG/CCT
Taq I	+ T/CGA	
Xba I	+ T/CTAGa	

CpG Methylation is found in higher eukaryotes. These enzymes (e.g. Dnmt1) transfer a methyl group to the C5 position of cytosine residues. Patterns of CpG methylation are heritable, tissue specific, and correlate with gene expression. Consequently CpG methylation has been postulated to play a role in differentiation and gene expression.

This CpG methylation patterns will not be retained once the DNA is cloned into a bacterial host.

Genei Restriction Enzymes inhibited by CpG methyltion are listed below.

Enzymes inhibited by CpG methylation	
Sal I	G/TCGAC

Reaction Buffer for Restriction Enzymes

Genei provides colour coded10X assay buffer with each restriction enzyme to ensure optimal activity. Some restriction enzymes require BSA at a final concentration of 100 µg/ml for optimal activity. BSA is supplied as 10 mg/ml (100 X) stock when required and should be added to the reaction mixture.

Final Concentration in mM (1X Recipe)

Buffer	Tris HCl	Tris - Acetate	Sodium Chloride	Magnesium Chloride	Magnesium Acetate	Potassium Acetate	Potassium Chloride	DTT	pH	Enzymes
A	10	_	150	7	_	_	_	1	7.9	*EcoR* V, *Not* I*, *Sal* I
B	10	_	100	10	_	_	_	1	8.0	*Bgl* I, *Bgl* II, *Hinc* II, *Mlu* I, *Ssp* I.
C	10	_	50	10	_	_	_	1	7.8	*Alu* I, *Hae* III, *Hinf* I, *Msp* I, *Nhe* I, *Pvu* II, *Stu* I, *Xba* I.
D	Optimised Conc	_	_	10	_	_	Optimised Conc	_	Optimised Conc	*BamH* I, *BstE* II, *EcoR* I, *Hind* III, *Mbo* I, *Mlu* I, *Nsi* I, *Taq* I, *Pst I*, *Pvu* I, *Spe* I, *Nco* I, *Nde* I, *Nru* I
L	10	_	_	10	_	_	_	1	7.4	*Hpa* II, *Sac* I, *Xma* I
E	1	33	_	_	10	66	_	0.5	7.9	*Apa* I, *Ava* I, *Cla* I, *Dra* I, *Hpa* I, *Nae* I, *Sau3A* I, *SnaB* I, *Sfi* I, *Sma* I, *Xho* I, *Xmn* I.

Note:

1. Not I* Buffer A with 0.01% Triton X 100.
2. The enzymes printed bold need BSA for optimum activity.
3. Incase of Taq I, use unique buffer supplied

List of Isozymes

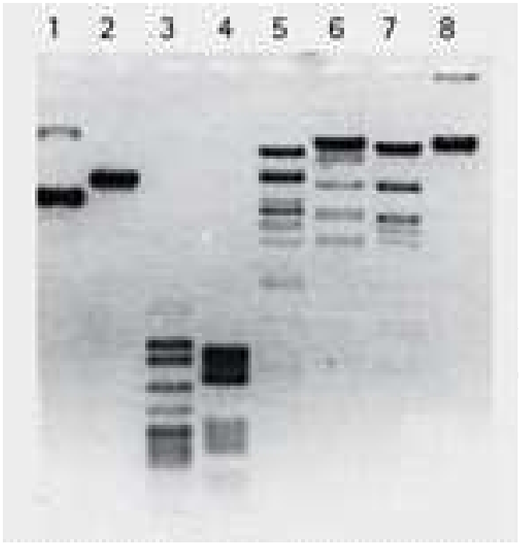
Sl. No.	Restriction Enzymes	Sequence	Isozymes
1	*EcoR* V	GAT↓ATC	*Eco32* I
2	*Hae* III	GG↓CC	*Bsh* I, *BsuR* I, *Pal* I
3	*Kpn* I	GGTAC↓C	*Acc65* I, *Asp718*
4	*Mbo* I	↓GATC	*BscF* I, *Bsp143* I, *Dpn* II, *Kz09* I, *Nde* II, *Sau3A* I
5	*Msp* I	C↓CGG	*Bsi S* I, *Hap* II, *Hpa* II
6	*Nco* I	C↓CATGG	*Bsp19* I
7	*Nde* I	CA↓TATG	*FauND* I
8	*Not* I	GC↓GGCCGC	*CciN* I
9	*Sac* I	GAGCT↓C	*Ecl136* II, *Eco ICR* I, *Psp124B* I, *Sst* I
10	*Spe* I	A↓CTAGT	*AclN* I, *Bcu* I
11	*Taq* I	T↓CGA	*TthHB8* I
12	*Xho* I	C↓TCGAG	*PaeR7* I, *Sfr274* I, *Tli* I

Relative Activity of Restriction Enzymes in Genei Assay Buffer System

Sl. No.	Restriction Enzymes	10XAssay Buffers					
		A	B	C	D	E	L
1	BamH I	25	50	50	**100**	50	50
2	EcoR I	25	50	50	**100**	50	0
3	EcoR V	**100**	75	50	100	50	0
4	Hae III	75	100	**100**	100	100	25
5	Hind III	0	0	25	**100**	25	0
6	Kpn I	0	0	75	25	50	**100**
7	Mbo I	50	75	50	**100**	50	0
8	Msp I	25	75	**100**	25	100	100
9	Nco I	0	50	50	**100**	50	50
10	Nde I	25	75	25	**100**	25	25
11	Not I	**100**	100	75	100	0	0
12	Pst I	50	50	50	**100**	25	50
13	Pvu I	0	25	**100**	75	50	25
14	Sac I	25	25	50	50	100	**100**
15	Sal I	**100**	50	0	25	0	0
16	Spe I	25	25	50	100	50	50
17	Ssp I	25	**100**	100	100	100	100
18	Taq I	25	**75**	25	25	50	25
19	Xba I	0	0	**100**	50	100	0
20	Xho I	100	100	100	**100**	75	25

Note:

1. Supplies the buffers that are typed in italics and bold with the respective enzymes.
2. Chart serves as a guide to choose the compatible buffer for double digestion.
3. In case of Taq I, the percentage activity is reported with respect to the unique buffer supplied.



Lane 1 : pBR322 uncut
Lane 2 : pBR322 cut with Bam HI
Lane 3 : pBR322 cut with Msp I
Lane 4 : pBR322 cut with Hae III
Lane 5 : λ DNA cut with Pst I
Lane 6 : λ DNA cut with Nde
Lane 7 : λ DNA cut with Hind III
Lane 8 : Uncut λ DNA

Fig. 1: 1µg each of pBR322 plasmid and λ phage DNA were digested with Restriction Enzymes and electrophoresed on 1.2% agarose gel.

References :

- Roberts RJ (April 2005). "How restriction enzymes became the workhorses of molecular biology". Proceedings of the National Academy of Sciences of the United States of America. 102 (17)
- Roberts RJ, Vincze T, Posfai J, Macelis D (January 2007). "REBASE--enzymes and genes for DNA restriction and modification". Nucleic Acids Research.
- Primrose SB, Old RW (1994). Principles of gene manipulation: an introduction to genetic engineering. Oxford: Blackwell Scientific. ISBN 0-632-03712-1.
- Micklos DA, Bloom MV, Freyer GA (1996). Laboratory DNA science: an introduction to recombinant DNA techniques and methods of genome analysis. Menlo Park, Calif: Benjamin/Cummings Pub. Co.
- Massey A, Kreuzer H (2001). Recombinant DNA and Biotechnology: A Guide for Students. Washington, D.C: ASM Press.

Applications :

- **DNA Cloning:** Restriction enzymes are widely used in DNA cloning procedures. They cleave both plasmid vectors and foreign DNA at specific recognition sites, allowing researchers to insert foreign DNA into the vector for the creation of recombinant DNA.
- **Construction of Recombinant DNA Molecules:** Restriction enzymes facilitate the construction of recombinant DNA molecules by cutting DNA at specific sites. This is crucial for the creation of genetically engineered organisms, gene therapy vectors, and the production of recombinant proteins.
- **Gene Mapping:** Restriction enzymes are employed in genetic mapping studies to identify and map specific DNA sequences. By digesting genomic DNA with various restriction enzymes, researchers can create a restriction map that shows the positions of recognition sites.
- **Southern Blotting:** Restriction enzymes are used in Southern blotting to digest genomic DNA, generating fragments that can be separated by gel electrophoresis. These fragments are then transferred to a membrane and probed with labelled DNA or RNA to detect specific sequences.
- **DNA Fingerprinting:** Restriction fragment length polymorphism (RFLP) analysis, which relies on the variations in DNA fragment sizes generated by restriction enzymes, is used in DNA fingerprinting for genetic identification and paternity testing.
- **Polymerase Chain Reaction (PCR) Analysis:** Some applications of PCR involve the use of restriction enzymes. For example, after amplifying a specific DNA region, researchers may use a restriction enzyme to analyze polymorphisms or specific mutations in the amplified product.
- **Site-Directed Mutagenesis:** Restriction enzymes are utilized in site-directed mutagenesis to introduce specific changes into a DNA sequence. After introducing a mutation, the DNA can be ligated back together, and the altered gene can be expressed or studied.
- **Gene Expression Studies:** By using restriction enzymes to digest genomic DNA, researchers can study the structure and organization of genes and regulatory elements. This is particularly relevant in studies of gene expression and regulation.
- **Creation of DNA Fragments for Cloning Libraries**: Restriction enzymes are used to generate defined DNA fragments from a larger genomic DNA sample. These fragments can be cloned into vectors to create genomic DNA libraries.
- **Vector Preparation for DNA Sequencing:** Restriction enzymes are employed to linearize plasmid vectors for DNA sequencing. Linearized vectors serve as templates for DNA sequencing reactions.
- **Molecular Diagnosis of Genetic Disorders**: Restriction enzymes play a role in detecting specific genetic mutations associated with disorders. The digestion patterns obtained can aid in the diagnosis of genetic diseases.
- **Golden Gate Cloning and Synthetic Biology:** In synthetic biology, researchers use a modular cloning technique known as Golden Gate cloning, which involves the sequential use of type II restriction enzymes for the assembly of DNA fragments in a predetermined order.

Nature of DNA :

Inefficient excision of uracil from loop regions of DNA oligomers by E.coli uracil DNA glycosylase N.Vinay Kumar and U.Varshney* Centre for Genetic Engineering, Indian Institute of Science, Bangalore 560012, India

Ordering Information:

Cat. No	PI No.	Product Description \
0100100021730	*MBE1S*	*BamH* I, 2000Units, 10 U/µl
0100300021730	*MBE3S*	*EcoR* I, 4000Units, 20 U/µl
0100300041730	*MBE3L*	*EcoR* I, 20000Units, 20 U/µl
0100900021730	*MBE9S*	*EcoR* V, 1200Units, 10 U/µl
0101000041730	*MBE10L*	*Hae* III, 4000Units, 10 U/µl
0100600021730	*MBE6S*	*Hind* III, 4000Units, 20 U/µl
0102200041730	*MBE22L*	*Kpn* I, 4000Units, 10 U/µl
0102700041730	*MBE27L*	*Mbo* I, 400Units, 10 U/µl
0103100021730	*MBE31S*	*Msp* I, 400Units, 10 U/µl
0101500041730	*MBE15L*	*Nco* I, 400Units, 10 U/µl
0106200021730	*MBE62S*	*Nde* I, 4000Units, 20 U/µl
0101600041730	*MBE16L*	*Not* I, 400Units, 10 U/µl
0101200021730	*MBE12S*	*Pst* I, 1200Units, 10 U/µl
0101800041730	*MBE18L*	*Sac* I, 2000Units, 10 U/µl
0100400041730	*MBE4L*	*Sal* I, 2000Units, 20 U/µl
0100700021730	*MBE7S*	*Taq* I, 800Units, 10 U/µl
0101100041730	*MBE11L*	*Pvu* II, 2000Units, 10 U/µl
0104100041730	*MBE41L*	*Ssp* I, 500Units, 10 U/µl
0102300021730	*MBE23L*	*Xba* I, 1000Units,10 U/µl
0102400021730	MBE24S	*Xho* I, 1000Units, 10 U/µl
0103800041730	MBE38L	*SPE* I, 400Units, 100U/ul

MODIFYING ENZYMES

Unit definitions

Unit definition varies from enzyme to enzyme and is given in the product description of this catalogue

Performance Test

Each enzyme is tested for its performance using tests that are mentioned in product description.

Assay for non-specific endonuclease

All modifying enzymes are checked for the absence of non-specific endonuclease activity by incubating excess of the enzyme with supercoiled plasmid DNA for several hours and determining the level of nicking in supercoiled form. The highest number of units producing unaltered pattern is reported on the data sheet supplied with the enzyme.

Assay for exonuclease activity

The absence of exonuclease activity is checked for all the enzymes by incubating the enzyme with lambda substrate for several hours and running on an agarose gel. The sharp pattern indicates the absence of exonuclease. The highest number of units producing unaltered pattern is reported on the data sheet supplied with the enzyme.

Assay for RNase

The absence of contaminating RNases is tested by incubating total RNA from HeLa cells with excess of enzyme for 4 hours at 37°C and checking for any degradation on gel.

Purification

All modifying enzymes are purified to near homogenity using the procedures developed at Genei.

Stability

All batches of modifying enzymes are routinely tested for stability by checking unit activity. Most of the enzymes are stable for more than 12 months when stored at -20°C. Exposure to temperatures greater than -20°C should be minimised whenever possible.

T4 DNA Ligase

Description :

The search for an enzyme that could join DNA molecules had begun in earnest. The breakthrough came at the beginning of 1967, when Marty Gellert at the NIH showed that extracts of Escherichia coli could convert hydrogen-bonded circles of bacteriophage λ DNA into a covalently closed, circular form. Within a few months, Gellert's and several other groups had independently purified an enzymatic activity that catalysed the formation of phosphodiester bonds between apposing 3' hydroxyl and 5' phosphoryl termini in a strand of DNA held in a double stranded configuration by Watson – Crick pairing.

Ligation of DNA is a three-step reaction

(I) Formation of a covalent ligase-AMP intermediate,

(ii) Transfer of the AMP to the 5' -phosphoryl terminus of DNA, and

(iii) Attack on the AMP–DNA bond by the opposing 3' hydroxyl group the nick in the DNA is sealed and AMP is liberated (for review, see Pascal 2008).

These three sequential steps are carried out by three different ligase domains that form a catalytic region encircling the DNA substrate with each domain in contact with the DNA duplex. DNA ligases used in molecular cloning are either of bacterial origin or bacteriophage encoded. All eubacteria, whether thermophilic or mesophilic, contain a single ligase gene that encodes an NAD+ - dependent enzyme (Olivera and Lehman 1967; Takahashi et al. 1984). During the first step of a ligation reaction, the diphosphate linkage of NAD+ is used as a phosphor anhydride and the adenyl group is transferred to the ‘-amino group of a lysine residue in DNA ligase. The adenyl residue is then transferred to the 5' -phosphoryl terminus of the DNA substrate, which becomes vulnerable to nucleophilic attack by the opposing 3' hydroxyl group. This results in the formation of a phosphodiester bond, elimination of AMP, and covalent joining of the DNA strands (for reviews, see Pascal 2008; Shuman 2009)

T4 DNA Ligase is used to covalently join DNA fragments with cohesive ends or blunt ends as well as repair single stranded nicks in ds DNA and RNA. The enzyme does not act on single stranded nucleic acids.

- **Unit Definition :** One Cohesive end ligation unit is defined as the amount of enzyme required to give approximately 50% ligation of 1 g DNA/Hind III digest in 30 minutes at 16°C in 20 l reaction mixture.
- Storage Buffer: T4 DNA supplied in 10 mM Tris-HCl (pH 7.5), 50 mM KCl, 0.1 mM EDTA, 1 mM DTT, 50% glycerol and 200g/ml Nuclease free BSA.
- Reagents Supplied with Enzyme: 10X Ligase Assay Buffer, and Dilution Buffer.
- 1 X Ligase Assay Buffer: 50mM Tris-HCl (pH 7.4 at 25°C), 10mM MgCl2, 20 mM DTT, 50 g/ml Nuclease free BSA and 1 mM ATP.
- Store: Store Enzyme Assay Buffers and Reagents at -20°C.

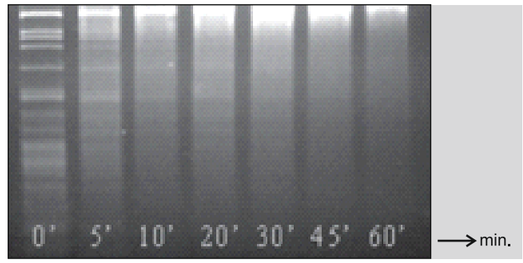
Note:
- ✓ Cohesive end ligation unit approximately equals 0.015 ATP-PP exchange unit (Weiss unit).
- ✓ Store buffer as aliquots to avoid freeze-thaw cycles.
- ✓ Carryout Cohesive End ligation at 16°C.
- ✓ Carryout Blunt End ligation at 25°C.

Quality control assays :

- **Absence of Nuclease Activity:** T4 DNA Ligase when incubated for 16 hours with 1 g of DNA digest at 37°C and 16°C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** T4 DNA Ligase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37°C and 16°C showed unaltered pattern without nicking on 1% agarose gel.

Performance Test :

- Ligation-Recut Assay: T4 DNA Ligase is routinely used for quality checks of all cohesive and blunt end generating restriction enzyme in ligation recut assay.
- Blue-White Assay: T4 DNA Ligase is routinely used in Blue-White selection assays as quality checks for restriction enzymes.
- Cloning Assay: T4 DNA Ligase was used in cloning experiments by ligating cohesive and blunt ended inserts to suitable vectors. The clones thus generated were checked for expression.



Blunt End Ligation: Ligation of λ/Hae III blunt ended fragments using 1 µl of T4 DNA ligase at 25°C at different time points from 0-60 minutes.

Applications :

DNA Cloning: T4 DNA ligase is widely used in DNA cloning procedures to join DNA fragments with compatible cohesive ends (sticky ends). This is essential for creating recombinant DNA molecules and plasmids.

Plasmid Ligation: T4 DNA ligase is used to ligate foreign DNA fragments into plasmid vectors. This is a critical step in the construction of recombinant plasmids for gene cloning or expression studies.

Gene Synthesis: T4 DNA ligase can be employed in gene synthesis by ligating synthetic DNA oligonucleotides or DNA fragments to assemble a full-length gene.

Site-Directed Mutagenesis: T4 DNA ligase is used in site-directed mutagenesis protocols to ligate mutagenic oligonucleotides to a circular DNA template, introducing specific nucleotide changes in the target gene.

Adapter Ligation for Next-Generation Sequencing (NGS): T4 DNA ligase is used to ligate adapters to DNA fragments during library preparation for NGS, enabling the sequencing of DNA fragments with high-throughput technologies.

Linker Ligation for DNA Amplification: T4 DNA ligase is employed in linker ligation reactions, where specific DNA linkers are ligated to DNA fragments to facilitate subsequent PCR amplification.

RNA/DNA Chimeric Molecule Formation: T4 DNA ligase can be used to ligate RNA and DNA molecules together, allowing the creation of chimeric molecules for various applications, including RNA-protein interaction studies.

CircLigase-Independent Cloning (CIRCLE): T4 DNA ligase is utilized in some variations of the CircLigase-Independent Cloning (CIRCLE) method, which is used for the circularization and cloning of circular DNA molecules.

Library Construction for Nucleic Acid Selection: T4 DNA ligase is used in library construction for techniques like SELEX (Systematic Evolution of Ligands by Exponential Enrichment) to create diverse nucleic acid libraries.

Joining DNA Fragments for In Vitro Transcription Templates: T4 DNA ligase can be used to join DNA fragments in the construction of templates for in vitro transcription reactions.

Citation :

Intramolecular triplex potential sequence within a gene down regulates its expression in vivo Partha S.Sarkarl and Samir K.Brahmachari 2, * Molecular Biophysics Unit and 2Centre for Genetic Engineering, Indian Institute of Science, Bangalore 560 012, India

References :

- A comprehensive approach for genome-wide efficiency profiling of DNA modifyingenzymes.
- Cell Reports Methods 28 March 2022- Charalampos Kyriakopoulos, Karl Nordström,Pascal Giehr.

Ordering Information:

Cat. No	PI No.	Product Description
1100100021730	MME1S	T4 DNA Ligase, 8000Units, 400U/µl
1100100041730	MME1L	T4 DNA Ligase, 40000Units, 400U/µl
1160100021730	MME1HC	T4 DNA Ligase (High Conc.), 100000Units, 1000 U/µl

Instant Ligation Kit

The INSTANT Ligation Kit is specially designed for efficient ligation of both cohesive and blunt ended DNA fragments in just 5 minutes at room temperature (25°C). The kit consists of INSTANT T4 DNA ligase and 2X INSTANT ligation buffer that significantly speeds up the process of ligation compared to overnight incubation. The ligated products can be directly used for transformation without any further purification steps.

This kit is supplied with reagents sufficient to perform 20 reactions.

Unique features :

- Ligation of both blunt and cohesive ends using same buffer.
- Incubation for just 60 minutes at room temperature (25°C)
- No additional purification steps required prior to transformation.

Kit Contents :

- Instant T4 DNA Ligase
- 2X INSTANT Ligation buffer
- Instruction Manual

Storage : -20°C

Buffer set for Ligation –
Dilution buffer for T4 DNA ligase, 0.5 ml X 2

Applications :

- **DNA Cloning:** Ligation kits are extensively used in DNA cloning procedures. They facilitate the joining of DNA fragments with compatible cohesive ends (sticky ends) or blunt ends, allowing the creation of recombinant DNA molecules.
- **Plasmid Construction:** Ligation kits are employed to ligate foreign DNA fragments into plasmid vectors, an essential step in constructing recombinant plasmids for gene cloning or expression studies.

- **Gene Synthesis:** Ligation kits are used in gene synthesis protocols to ligate synthetic DNA fragments or oligonucleotides, assembling a full-length gene.
- **Adapter Ligation for Next-Generation Sequencing (NGS):** Ligation kits are used in library preparation for NGS. Adapters containing specific sequences are ligated to DNA fragments, allowing them to be sequenced using high-throughput technologies.
- **Linker Ligation for PCR Amplification:** Ligation kits can be used to ligate specific DNA linkers to DNA fragments, enabling subsequent PCR amplification for various applications, including the creation of DNA libraries.
- **Site-Directed Mutagenesis:** Ligation kits are used in site-directed mutagenesis protocols to ligate mutagenic oligonucleotides to circular DNA templates, introducing specific nucleotide changes in the target gene.
- **RNA/DNA Chimeric Molecule Formation:** Ligation kits may be used to ligate RNA and DNA molecules together, allowing the creation of chimeric molecules for applications such as RNA-protein I nteraction studies.
- **Construction of Fusion Genes:** Ligation kits can be used to join different DNA fragments, enabling the construction of fusion genes or chimeric proteins.
- **DNA Concatenation:** Ligation kits can be used to concatenate DNA fragments, allowing the

References :

- Lehman IR (November 1974). "DNA ligase: structure, mechanism, and function". Science. 186 (4166): 790
- Foster JB, Slonczewski J (2010). Microbiology: An Evolving Science (Second ed.). New York: W. W. Norton & Company.
- Yang Y, LiCata VJ (February 2018). "Pol I DNA polymerases stimulate DNA end-joining by Escherichia coli DNA ligase". Biochemical and Biophysical Research Communications. 497 (1): 13–18.

Ordering Information:

Cat. No	PI No.	Product Description
1660300011730	KT91	GeNei™ Instant Ligation Kit, 20 reactions
1150400011730	MELB4	Buffer Set for Ligation - Dilution Buffer for T4 DNA Ligase, 0.5 ml x 2

T4 polynucleotide kinase (PNK)

Description: T4 polynucleotide kinase (PNK), a member of the bifunctional enzyme family, exhibiting both 5'-kinase and 3'-phosphatase activities that play crucial roles in RNA and DNA repair processes. T4 PNK forms a homotetramer, featuring a C-terminal phosphatase domain and an N-terminal kinase domain.

The crystal structure of the isolated kinase domain, determined at 2.0 Å resolution, reveals a tunnel-like active site running through the center of the enzyme. This active site, with an entrance on the 5' OH acceptor side, is designed to accommodate a single-stranded polynucleotide.

Unit Definition: The unit of T4 polynucleotide kinase activity is defined as the amount of enzyme capable of catalysing the production of one nanomole (nmol) of acid-insoluble ^32p in 30-minute incubation period at 37°C.

Assay Buffer (1X): 70 mM Tris-HCl (pH 7.6), 10 mM $MgCl_2$ and 5 mM DTT. Buffer supplied at 10X concentration.

Storage Buffer: 10 mM Tris-HCl (pH 7.4), 0.1 mM EDTA, 10 mM 2- Mercaptoethanol, 50 mM KCl, 50% Glycerol and 200 µg/ml Nuclease free BSA.

Quality control assays :

- **Absence of Nuclease Activity:** T4 Polynucleotide Kinase when incubated for 16 hour with 1 g of DNA digest at 37° C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** T4 Polynucleotide Kinase when incubated for 16 hour with 1 g of supercoiled plasmid DNA at 37°C showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of Phosphatase Activity:** T4 Polynucleotide Kinase when incubated for 30 minutes at 37°C with suitable substrate was determined to be free of phosphatase contamination.

- **Performance Test:** Dephosphorylated pUC18 DNA/EcoR I digest was kinased, ligated and transformed into E.coli host along with proper controls and kination efficiency was determined.

Applications :

- **5' End Labeling of DNA and RNA:** T4 PNK catalyzes the transfer of a phosphate group to the 5' hydroxyl terminus of DNA or RNA molecules. This makes it valuable for labeling the 5' ends of nucleic acids with radioactive or non-radioactive markers, facilitating downstream applications like DNA sequencing, Northern blotting, or primer extension assays.
- **Blunting DNA Ends:** T4 PNK can be used to fill in or blunt DNA ends by phosphorylating the 5' terminus of one strand and removing the 3'phosphate from the other strand. Blunting is often required for subsequent DNA ligation reactions.
- **3' End Labeling of DNA:** T4 PNK can be utilized to label the 3' ends of DNA by transferring a phosphate group to the 3' hydroxyl terminus. This labeled DNA can be used in applications such as DNA sequencing or hybridization studies.
- **Repair of DNA Nicks**: T4 PNK can repair single-stranded nicks in DNA molecules by phosphorylating the 5' terminus of the nicked strand. This is important in DNA repair processes.
- **Preparation of Cloning Vectors:** T4 PNK is used to treat linearized DNA vectors by phosphorylating their ends. This ensures that the vector ends are compatible for ligation with insert DNA fragments during cloning procedures.
- **RNA 5' End Labelling:** T4 PNK can be used to label the 5' ends of RNA molZecules, which is useful in studies involving RNA-protein interactions, RNA localization, or RNA turnover.
- **Preparation of Kinase-Dead Substrates:** T4 PNK can be used to generate kinase-dead versions of substrates for experiments where phosphorylation is undesirable or needs to be controlled.
- **Treatment of DNA for Kinase-Independent Ligations:** T4 PNK treatment can be part of a protocol to prepare DNA for ligation reactions, particularly in situations where kinase-independent ligations are desired.
- **Labelling Oligonucleotide Probes:** T4 PNK is commonly used to label oligonucleotide probes for hybridization-based assays, such as Southern or Northern blotting.
- **Preparation of Radiolabelled ATP:** T4 PNK can be used to radiolabel ATP for use in various enzymatic assays.

Citations :

- Angle and locus of the bend induced by the MspI DNA methyltransferase in a sequence-specific complex with DNA Ashok K. Dubey* and Sanjoy K. Bhattacharya Department of Biochemical Engineering and Biotechnology, Indian Institute of Technology-Delhi, Hauz Khas, New Delhi-110016, India
- Hairpin duplex equilibrium reacted in the A®B transition in an undecamer quasi-palindrome present in the locus control region of the human b-globin gene cluster Mahima Kaushik, Ritushree Kukreti1 , Deepak Grover1 , Samir K. Brahmachari1 and Shrikant Kukreti* Department of Chemistry, University of Delhi (North Campus), Delhi 110007, India and 1 Institute of Genomics and Integrative Biology (CSIR), Delhi University Campus, Delhi 110007, India
- Intramolecular triplex potential sequence within a gene down regulates its expression in vivo Partha S.Sarkarl and Samir K.Brahmachari 2, * Molecular Biophysics Unit and 2Centre for Genetic Engineering, Indian Institute of Science, Bangalore 560 012, India

References :

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC126130/
- Developmentally Regulated Dual-Specificity Kinase from Peanut That Is Induced by Abiotic Stresses1 Parvathi Rudrabhatla and Ram Rajasekharan* Department of Biochemistry, Indian Institute of Science, Bangalore 560012, India

GeNei™

GENOMICS

MODIFYING ENZYMES

Ordering Information:

Cat. No	PI No.	Product Description
1100400051730	MME4L	T4 Polynucleotide Kinase, 1000Units, 10U/µl

Alkaline Phosphatase

Description :

Alkaline phosphatase (ALP) is an enzyme classified as a hydrolase, specifically functioning as a phosphatase. Its primary role involves the removal of phosphate groups from a variety of substrates, including proteins and nucleotides. This dephosphorylation activity is integral to various biological processes and analytical techniques in molecular biology, where ALP is frequently employed for dephosphorylating DNA or RNA to prevent self-ligation during cloning procedures, among other applications.

Unit Definition:

One unit is defined as the amount of enzyme that hydrolyzes 1 micromole of p-nitrophenyl phosphate to p-nitrophenol in 1 minute at 37° C in a volume of 1 milliliter.

Assay buffer (1X):

50 mM NaCl, 10 mM Tris-HCl (pH 7.9), 10 mM $MgCl_2$ and 1 mM DTT. Buffer Supplied at 10X concentration.

Storage buffer: 50 mM KCl, 10 mM Tris-HCl (pH 8.2), 1 mM $MgCl_2$, 0.1 mM $ZnCl_2$ and 50% glycerol.

Quality control assays :

- **Absence of Nuclease Activity:** Alkaline Phosphatase when incubated for 16 hours with 1 g of DNA digest at 37° C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** Alkaline Phosphatase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37° C showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of Ribonuclease:** Alkaline Phosphatase when incubated for 4 hours with 1 g *E.coli* RNA at 37° C showed no degradation of RNA as visualized on agarose gel.

Performance Test :

- pUC18 DNA/EcoR I digest was dephosphorylated, kinased ligated and transformed into *E.coli* host along with proper controls and dephosphorylation efficiency was determined.

Storage: -20° C

Applications :

- **Dephosphorylation of Vector DNA:** CIP is used to dephosphorylate the 5' ends of linearized vector DNA. This prevents the vector from self-ligating and ensures that only DNA inserts with compatible ends can be ligated into the vector.
- Dephosphorylation of PCR Products: CIP treatment of PCR products can be employed to remove 5' phosphate groups. This is useful when unincorporated primers or nucleotides with 5' phosphates could interfere with downstream applications.
- **RNA 5' Dephosphorylation:** CIP can be used to dephosphorylate the 5' ends of RNA molecules, which is beneficial in certain applications such as RNA dephosphorylation prior to ligation reactions or in studies of RNA structure.
- Removal of 5' Phosphates for Kinase-Dead Substrates: CIP can be used to generate kinase-dead versions of substrates for experiments where phosphorylation is undesirable or needs to be controlled.
- **Dephosphorylation of Oligonucleotides:** CIP is used to dephosphorylate the 5' ends of oligonucleotides, especially when preparing probes for labeling or in studies requiring modified oligonucleotides.
- **Dephosphorylation of Restriction Enzyme-Digested DNA:** CIP treatment of DNA fragments generated by restriction enzyme digestion can be used to remove 5' phosphates, preventing the

self-ligation of fragments, and facilitating subsequent DNA manipulations.

- Preparation of Vector for Blunt-End Cloning: CIP treatment is employed in the preparation of vectors for blunt-end cloning. It dephosphorylates the 5' ends of the linearized vector to prevent self-ligation and promote the ligation of blunt-ended inserts.
- **Treatment of DNA for Kinase-Independent Ligations**: CIP treatment can be part of a protocol to prepare DNA for ligation reactions, particularly in situations where kinase-independent ligations are desired.
- **Removal of 5' Phosphates in DNA-Protein Crosslinks:** CIP treatment can be used in experiments involving DNA-protein crosslinks, helping to remove 5' phosphates and modify DNA ends for further analyses.
- **End-Repair of DNA Fragments:** CIP can be used as part of an end-repair process for DNA fragments, preparing them for subsequent applications such as cloning or library preparation.

References :

- Schlesinger MJ, Barrett K (November 1965). "The reversible dissociation of the alkaline phosphatase of Escherichia coli. I. Formation and reactivation of subunits
- A Histochemical Procedure for Localizing and Evaluating Leukocyte Alkaline Phosphatase Activity in Smears of Blood and Marrow-LEONARD S. KAPLOW
- Yeh MF, Trela JM (May 1976). "Purification and characterization of a repressible alkaline phosphatase fromThermus aquaticus". The Journal of Biological Chemistry.

Ordering Information:

Cat. No	PI No.	Product Description
1100800031730	MME8S	Alkaline Phosphatase (CIP) (Molecular Biology

NUCLEASES

DNase I

DNase I an endonuclease of the DNase family coded by the human gene DNASE I[5]. DNase I is a nuclease that cleaves DNA preferentially at phosphodiester linkages adjacent to a pyrimidine nucleotide, yielding 5'-phosphate-terminated polynucleotides with a free hydroxyl group on position 3', on average producing tetranucleotides. It acts on single-stranded DNA, double-stranded DNA, and chromatin. In addition to its role as a waste-management endonuclease, it has been suggested to be one of the deoxyribonucleases responsible for DNA fragmentation during apoptosis.

Deoxyribonuclease, I catalyses random degradation of both single and double-stranded DNA to produce 5'-P terminal oligonucleotides. The source of this enzyme is from the Bovine pancreas .The enzyme loses its activity irreversibly by heat treatment at 80°C for 10 minutes. DNase I is also inhibited by EDTA, EGTA and SDS and requires bivalent cations for maximal activity. Supplied as white lyophilised powder which dissolves readily at 5 mg/ml in 0.15 M sodium chloride/glass distilled water to give a clear colourless solution.

Features :

- Unit definition : One unit is that amount of enzyme causing an increase in absorbance at 260 nm by 0.001 per min. at 25° C and pH 5.0.
- Activity : ~ 600 units/mg (Kunitz)
- Appearance : White Crystalline powder.
  Storage : -20° C

Applications :

- Deoxyribonuclease I (bovine pancreas) is used to catalyze random degradation of both single and double-stranded DNA producing 5'-P terminal oligonucleotides.
- Cell lysis- to remove the viscosity caused by the DNA content in bacterial cell lysates or to remove the DNA templates from RNAs produced by in vitro transcription.
- DNase is often included in tissue dissociation protocols to digest DNA that has leaked into the dissociation medium because of cell damage.

References :

- Junowicz, E. (1973). "Studies on bovine pancreatic deoxyribonuclease A. II. The effect of different bivalent metals on the specificity of degradation of DNA". Biochim. Biophys. Acta.
- Ohkouchi, S.; Shibata, M; Sasaki, M; Koike, M; Safig, P; Peters, C; Nagata, S; Uchiyama, Y (2013). "Biogenesis and proteolytic processing of lysosomal DNase II".
- Suck, D.; Oefner, C.; Kabsch, W. (1984). "Three-dimensional structure of bovine pancreatic DNase I at 2.5 A resolution". The EMBO Journal.

Ordering Information:

Cat. No	PI No.	Product Description
2150280011730	FC28B	DNase I, 1gm
2150280501730	FC28L	DNase I, 50mg

DNase I (RNase Free)

DNase I (bovine pancreas) is a glycoprotein and double strand specific endonuclease which is made free of RNase activity. It is best suited for specific applications, where maintenance of RNA integrity is critical. The protein requires divalent cations for maximal activity.

Unit Definition : One unit is that amount of enzyme required to digest 1 µg of plasmid DNA to oligonucleotides in 10 mins. at 37° C.

Quality control assays :

- **Absence of RNase contamination:** Incubation of RNA transcript with DNase I Ribonuclease not deteactable
- **Performance Test:** One unit of DNase I completely degrades 1ug of plasmid DNA in 10 Minutes at 37° C

Applications :

- DNase I (RNase free) is used in purification of DNA- free RNA made by in-vitro synthesis using SP6 or T7 RNA Polymerase system.

- Used for radioactive labeling by nick translation.
- To remove traces of DNA during RNA isolation prior to RT-PCR(in-vitro transcription)
- **Clinical Applications:** Human DNase I exhibits polymorphism that can be used for forensic identification and for correlation with certain diseases. Variations in serum DNase activities have been implicated as the result of disease states and measurements of DNase activities are often used for diagnosis and prognosis. Recombinant human DNase I has been administered in cystic fibrosis patients to improve mucociliary clearance and pulmonary function.

Storage : -20°C.

References :

- Purification and characterization of deoxyribonuclease from small intestine of camel Camelus dromedarius-Somia S. Abdel-Gany,a Mohamed O. El-Badry,a Afaf S. Fahmy,a and Saleh A. Mohamed[a,b,*]

Ordering Information:

Cat. No	PI No.	Product Description
0655600011730	FC56	DNase I (RNase Free), 1000Units

RNase A (DNase free)

Description :

Bovine pancreatic ribonuclease A belongs to the superfamily of pancreatic ribonucleases. It functions as an endo phosphodiesterase, hydrolyzing the internal phosphate linkage of single-stranded RNA into its constituent nucleotides. This enzyme exhibits specificity for cleaving at the 3'-end of a C or U residue, with the 5' side being either a pyrimidine or purine residue, resulting in the formation of a 3'-phosphorylated C or U product.

Storage : -20°C

Related Product:
RNase A (DNase Free)

Quality Assays :

Absence of DNase contamination:
- Final concentration of 100-200µg/ul is free of nickase and at 37° C for 4 hours
- Nuclease

Performance Test:
- 1 µg of plasmid DNA isolated by alkaline lysis method was incubated with RNase A, at a final concentration of 20 µg/ml, for 30 minutes at 37° C in a 50 µl reaction volume. Sample DNA then loaded on a 1% agarose gel along with controls showed >90% degradation of RNA.

Applications :

- **RNA Purification:** RNase A is used to degrade RNA contaminants in DNA preparations. It is often added to DNA extraction or purification protocols to remove RNA, ensuring the purity of the isolated DNA.
- **RNA Digestion in Protein Purification:** In protein purification processes, particularly when isolating nucleic acid-binding proteins, RNase A is added to remove RNA contaminants that may co-purify with the protein of interest.
- **DNase I Inactivation:** After DNase I treatment to remove DNA contamination from RNA samples, RNase A can be added to degrade the remaining DNase I and prevent it from interfering with downstream applications.
- **RNA Cleanup in Molecular Biology Procedures:** RNase A is used to clean up RNA samples by digesting residual RNA in molecular biology procedures. This is particularly important in experiments where removing traces of RNA is critical.
- **Cell Culture Media Treatment:** RNase A can be added to cell culture media to remove RNA released from lysed cells. This prevents RNA contamination in cell culture experiments, especially when studying RNA-dependent processes.
- **Removal of RNA from Protein Preparations:** In protein biochemistry, RNase A is added to protein preparations to remove co-purifying RNA molecules. This step is essential for obtaining pure protein samples.
- **Mapping RNA Secondary Structure:** RNase A is used in RNA structure studies to cleave single-stranded regions. By examining the cleavage pattern, researchers can gain insights into the secondary structure of RNA molecules.
- **RNA Labeling and Probing:** RNase A is utilized in RNA labeling and probing experiments. It can be used to digest unbound or non-specifically bound RNA, leaving only the specifically labeled or probed RNA molecules.
- **Removal of RNA in Protein-RNA Co-Immunoprecipitation (RNA-IP):** In RNA-IP experiments where proteins associated with specific RNA molecules are immunoprecipitated, RNase A can be used to remove the RNA component, allowing the isolation of protein-RNA complexes for analysis.
- **Analysis of RNA in Tissue Sections:** RNase A treatment can be applied to tissue sections in situ to remove RNA, allowing researchers to specifically study protein localization or other features without interference from RNA.
- **Preparation of RNA-Free DNA Templates:** RNase A is used in the preparation of RNA-free DNA templates for various applications, such as PCR or DNA sequencing

References :

- Cuchillo CM, Nogués MV, Raines RT (September 2011). "Bovine pancreatic ribonuclease: fifty years of the first enzymatic reaction mechanism"

Ordering Information:

Cat. No	PI No.	Product Description
2150380501730	FC34S	RNase A, 50mg
2150382501730	FC34L	RNase A, 250mg
2150480101730	FC25S	RNaseA (DNase free), 10 mg
2150480501730	FC25L	RNaseA (DNase free), 50 mg
2150481001730	FC25J	RNaseA (DNase free), 100 mg

RECOMBINANT RNASE INHIBITOR

Description :

Recombinant RNase Inhibitor is the engineered version of Human Placental RNase Inhibitor, produced through the cloning and expression of the complete open reading frame (ORF) of the gene in Escherichia coli (E. coli). This is the recombinant form of RNase inhibitor isolated from human placenta. The complete ORF of the gene is cloned and expressed in E. coli. The protein has a molecular weight of ~ 51 kDa. A minimum concentration of 1 mM/L dithiothreitol is required to maintain RNase inhibitor in a fully active form. RNase inhibitor inactivates RNase by binding non-covalently to the enzyme. The binding ratio of RNase inhibitor to RNase A is 1:1.

Unit Definition: One unit is defined as the amount of RNase Inhibitor required to inhibit the activity of 5 nanograms of RNase A by 50%.

This standardized unit provides a measure of the inhibitory capacity of the RNase Inhibitor, specifically in terms of its effectiveness in preventing the activity of RNase A by half under specified conditions.

Storage buffer: 20 mM HEPES-KOH (pH 7.6), 50 mM KCl, 5 mM DTT and 50% glycerol.

Note: 5 mM DTT concentration is critical for RNase Inhibitor and so has to be maintained during long and repeated uses

Quality control Assay :

- **Absence of Nuclease Activity:** RNase inhibitor when incubated for 16 hours with 1 g of DNA digest at 37° C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity RNase** inhibitor when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37° C showed unaltered pattern without nicking on 1% agarose gel.

- **Absence of Residual RNase activity:** RNase inhibitor when incubated with E.coli total RNA along with p-chloro mercuric benzoic acid (PCMB), 1X assay buffer and 50 mM DTT for 30 minutes at 37°C showed no degradation of RNA on 2% agarose gel. Note: PCMB inhibits RNase inhibitor activity.

Applications :

- **RNA Isolation and Purification**: RNase Inhibitor is added to RNA extraction and purification protocols to protect RNA from degradation by endogenous or exogenous RNases. It helps ensure the integrity of RNA samples during the isolation process.
- **Reverse Transcription (cDNA Synthesis):** RNase Inhibitor is commonly included in reverse transcription reactions to prevent degradation of RNA templates during the synthesis of complementary DNA (cDNA). This is crucial for obtaining accurate and representative cDNA for downstream applications.
- **In Vitro Transcription:** RNase Inhibitor is used in-vitro transcription reactions to protect RNA transcripts from degradation by RNases. This ensures the production of intact RNA molecules for various applications, such as RNA probes or in vitro translation studies.
- **PCR with RNA Templates:** When using RNA as a template in reverse transcription PCR (RT-PCR) or quantitative PCR (qPCR), RNase Inhibitor is added to prevent RNA degradation during the reaction, ensuring accurate and reliable amplification.
- **RNA Storage:** RNase Inhibitor is often included in RNA storage solutions to protect RNA samples from degradation during long-term storage. This is particularly important when working with precious or rare RNA samples.

References :

- Kobe B, Deisenhofer J (Dec 1996). "Mechanism of ribonuclease inhibition by ribonuclease inhibitor protein based on the crystal structure of its complex with ribonuclease A". Journal of Molecular Biology. 264 (5): 1028–43
- Yakovlev GI, Mitkevich VA, Makarov AA (2006). "Ribonuclease inhibitors". Molecular Biology. 40 (6): 867–874

Ordering Information:

Cat. No	PI No.	Product Description
1101200011730	FC73S	Recombinant RNase inhibitor, 1000 Units, 10U/µl

Proteases

Proteinase K :

Proteinase K is a serine protease, and its primary function is to break down proteins by cleaving peptide bonds. It possesses a broad-spectrum proteolytic activity, allowing it to efficiently digest a wide array of proteins, including those that may prove resistant to other proteases.

In the fields of molecular biology and biochemistry, Proteinase K finds extensive utility. It serves as a valuable tool for the digestion of structural proteins and enzymes, facilitating the study and manipulation of biomolecules. One of its key advantages lies in its remarkable stability across a broad range of conditions, including variations in pH and temperature. Moreover, Proteinase K exhibits resilience to various detergents and denaturing agents, further enhancing its versatility.

Proteinase K is supplied in.

- Ready to use solution format with 50% glycerol and the powder is dissolved in a specially formulated storage buffer.
- Concentration supplied at 20mg/mL.
- Convenient and safe in handling
- Active in presence of SDS, EDTA, urea and has a pH optimum of 7.5 – 10.5.
- Nuclease free

Applications :

- **Nucleic Acid Extraction:** Proteinase K is often used in DNA and RNA extraction protocols to degrade and remove proteins that may co-purify with nucleic acids.
- **RNA and DNA Digestion:** Proteinase K can be used to digest RNA or DNA molecules in specific applications, such as in RNA or DNA mapping experiments or removing unwanted nucleic acid fragments from a sample.
- **Protein Structure Studies:** Proteinase K is employed in structural biology studies to cleave and remove specific protein domains or regions for crystallography and other structural analysis methods.
- **Environmental Sample Processing:** Proteinase K can be used in environmental studies to break down proteins in soil, water, or sediment samples, allowing for the analysis of microbial DNA or RNA.

References :

- https://en.wikipedia.org/wiki/Proteinase_K
- https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/proteinase-k

Ordering Information:

Cat. No	PI No.	Product Description
2150581001730	PK2L	Proteinase K, Solution, 5 X1 ml (20 mg/ml)
2150180251730	PK1S	Proteinase K, 25 mg
2150181001730	PK1L	Proteinase K, 100 mg
2150100011730	PK1B	Proteinase K, 1 g

Storage :

- PK2 -20°C
- PK1 - 20°C

Products for PCR

Polymerase Chain Reaction (PCR) is an effective tool to synthesize defined sequences of DNA using thermostable polymerases. PCR exploits the inherent stability of these enzymes at high temperatures to amplify about a million copies of desired DNA fragment using two specific oligonucleotide primers that anneal to opposite strands flanking the target DNA sequence to be amplified. PCR is now widely used in cloning and sequencing DNA fragments, as a diagnostic tool and to generate labelled probes. To cater to these varied applications, Genei has a range of PCR enzymes, buffers, kits and optimized protocols.

1. **Taq DNA Polymerase :** Taq DNA Polymerase, a thermostable enzyme used in most routine PCR amplifications for sizes ranging from 100 bp to 3 kb, is a highly pure enzyme that lacks 3'-5' exonuclease (proof reading) activity. The enzyme can also be used in applications like RAPD, RFLP and AFLP studies to detect variations within the genomes of species.
2. **HotStart Taq DNA Polymerase:** HotStart Taq DNA Polymerase, used for improved PCR specificity, is an optimized mixture of highly purified Taq DNA Polymerase with high affinity anti-Taq monoclonal antibody that inhibits polymerase activity at suboptimal temperatures by binding to Taq DNA Polymerase.
3. **Effi-Taq™ DNA Polymerase:** Effi-Taq™ DNA Polymerase, a modified form of Taq DNA Polymerase is supplied in an inactive state that has no polymerase activity at ambient temperature. It is suitable for PCR systems with complex genomic templates, complex cDNA templates (RT-PCR), very low copy targets, multiple primers reaction (Multiplex PCR), high throughput PCR procedures and systems that are prone to form Primer Dimer.
4. **PR Polymerase:** PR Polymerase, used in PCR reactions that require high fidelity synthesis, is a thermostable enzyme that exhibits strong Proof Reading activity. The 3'-5' exonuclease mediated proofreading activity enables the enzyme to repair mis-incorporated nucleotides and reduce errors during polymerisation. This enzyme is ideal for high fidelity amplifications of short stretches of target DNA (< 1.5 kb). An improved and more defined range of long PCR enzymes

with higher fidelity is now made available to the scientists. For higher sensitivity and better yield, we have two sets of long PCR enzyme systems.

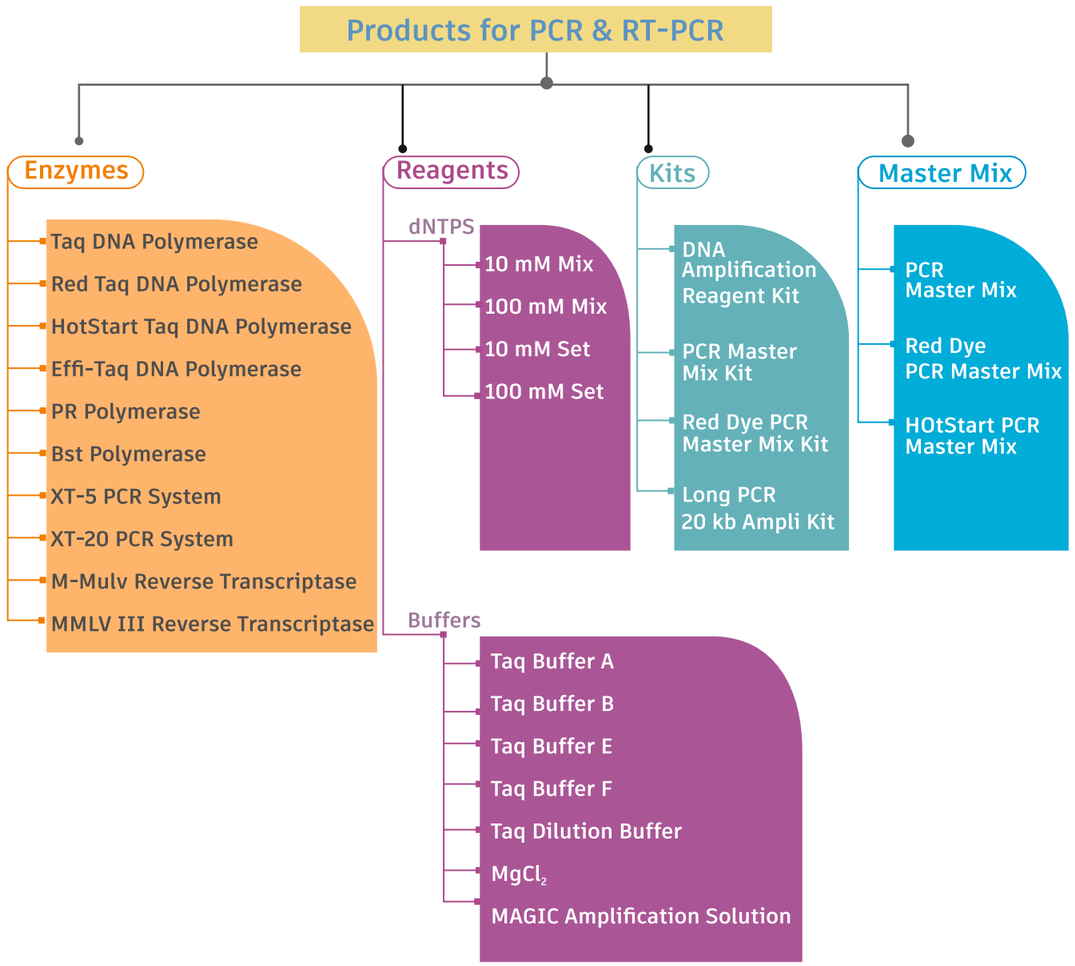
5. **Bst Polymerase:** Bst Polymerase, Large Fragment isolated from Bacillus stearothermophilus contains 5´ → 3´ polymerase activity, but lacks 5´ → 3´ exonuclease activity. DNA can be synthesized at a constant temperature, and the synthesis is not inhibited by the secondary structure of DNA.

6. **XT-5 PCR System :** XT-5 PCR System, a unique enzyme blend that utilizes the powerful processivity of Taq DNA polymerase and the Proof Reading activity of PR polymerase. This system is particularly useful for amplifications of long target DNA from genomic DNA templates (guaranteed upto 5kb).

7. **XT-20 PCR System :** XT-20 PCR System, a unique enzyme mix optimised for amplification of longer target DNA (guaranteed upto 20 kb) from genomic DNA templates

Patents/Disclaimer : Some products/processes mentioned in this catalogue may be covered by patents issued and applicable in certain countries for certain periods. Because purchase of our products does not include a licence to perform patented applications (in these countries) users have to ensure that they have the necessary licence for use.

All Products are for Research use only



Thermophilic Polymerase Selection Guide:

Product	Product size	Yield	Specificity	Fidelity	3'-A over hang	Ease	GC rich templates	Application
Taq DNA Polymerase	Upto 3kb	●	●	●	●●	●	●	Routine PCR, RAPD
PCR Master Mix	Upto 3kb	●	●	●	●	●	●	RT-PCRColony PCR
Red Taq DNA Polymerase	Upto 3kb	●	●	●	●●	●●	●	High through put PCR
Red Dye PCR Master Mix	Upto 3kb	●	●●	●	●●	●●●	●	PCR based Diagnosis
HotStart Taq DNA Polymerase	Upto 3kb	●●●	●	●	●●	●	●	Multiplex PCR
HotStart Master Mix	Upto 3kb	●●●	●●●	●	●●	●●	●	Note: Taq pol and its variant can be used in all the above-mentioned applications, choice is based on the end user requirements for yield, specificity etc.,
Effi-Taq™ DNA Polymerase (Hot Start)	Upto 2kb	●●●	●	●	●●	●	●	Hot Start Enzymes are preferred for Sensitive applications.
PR Polymerase	Upto 5kb	●	●	●●	●	●	●	Gene Cloning Long PCR
XT-5 Polymerase	Upto 5kb	●●●	●	●●	●	●	●	Long RT-PCR
XT-20 Polymerase	Upto 20kb	●●●	●	●	●●	●	●	Invitro Mutagenesis XT-PCR systems are preferred for Long PCR

● Good
● Better
● Best
● To be supplemented with MAGIC Amplification Solution

Taq Polymerase

Description :

Taq DNA Polymerase is a 94 kDa enzyme known for its thermostability, making it ideal for DNA amplification. Its optimal activity temperature falls between 55°C and 75°C. What sets Taq apart is its absence of 3' to 5' exonuclease (proofreading) activity. However, it possesses a 5' to 3' exonuclease activity, allowing it to trim nucleotides from the 5' end of a DNA strand when necessary.

Unique Properties :

- Amplification of DNA fragments of varied sizes ranging from about 100 bp to 3kb by PCR.
- The enzyme can be used in RAPD studies to detect polymorphism.
- Seed testing-GMO detection
- DNA fingerprinting-Forensics
- Diagnostics-DNA based.
- Nucleases free enzymes.

Molecular weight: 94 kDa monomer

Storage conditions: The Taq Polymerase should be stored at -20ºC. Stable up to 3 year on recommended conditions.

Specification: The enzyme is supplied at concentrations of 1 U/µl, 3 U/µl, 5 U/µl.

One unit is defined as the amount of enzyme required to convert 10 nmoles of total deoxyribonucleoside-triphosphates into acid precipitable DNA in 30 minutes at 72° C.

Taq DNA Polymerase Buffers:

Buffer	Concentration	10X Buffer Composition
Taq Buffer A	10X	Tris (pH9.0), KCl, 15 mM $MgCl_2$, Gelatin
Taq Buffer B	10X	Tris (pH9.0), KCl, Gelatin
Taq Buffer E	10X	Tris (pH 9.0), KCl, 15mM $MgCl_2$, TritonX-100
Taq Buffer F	10X	Tris (pH 9.0), KCl, TritonX-100

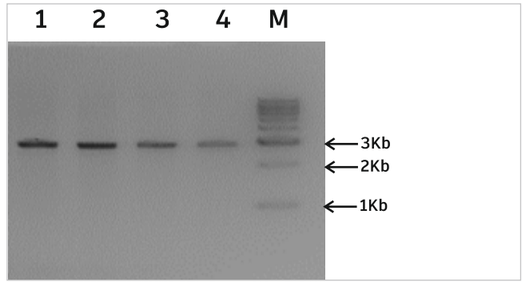
Quality control assays :

Absence of Nuclease Activity: Taq DNA Polymerase when incubated for 16 hours with 1 g of DNA digest at 37° C and 72° C showed sharp unaltered pattern on 1% agarose gel.

Absence of Nickase Activity: Taq DNA Polymerase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37°C and 72°C showed unaltered pattern without nicking on 1% agarose gel.

Thermo Stability: Taq DNA Polymerase was incubated at 94°C for 1 hour and subsequently checked for activity. >90% activity was retained as determined by primer extension assay.

Performance Assay of Taq DNA Polymerase



Amplification of 3.0 kb tPa gene using 100 ng of Human Genomic DNA as template with different amount of enzyme

Lane 1 - 2.5 units of enzyme
Lane 2 - 1.0 units of enzyme
Lane 3 - 0.5 units of enzyme
Lane 4 - 0.3 units of enzyme
Lane M - StepUp 1 Kb DNA ladder

Remarks: Specific amplicon with linear decrease in the amount of amplicon observed from 2.5units to 0.3 units of enzyme.

References :

- Laboratory Approaches in Molecular Pathology–The Polymerase Chain Reaction W.B. Coleman, G.J. Tsongalis, in Diagnostic Molecular Pathology, 2017

Publications with MME5 :

- Optimization of PCR reagents for amplification of microsatellites in oil palm M. Jayanthi*, G. Sujatha and P.K. Mandal National Research Centre for Oil Palm Pedavegi, West Godavari District
- Development of tomato (solanum lycopersicon) lines with tolcv resistance gene and their authentication through molecular marker D. Datta, Aashish kumar, H.C. Prasanna, Sanjeev kumar, A.B. Rai and Mathura Rai Indian Institute Of Vegetable Research, P.O. Jakhini-Shahanshahpur, Varanasi.

GeNei™

GENOMICS

PRODUCTS FOR PCR

Ordering Information:

Cat. No	PI No.	Taq DNA Polymerase (Supplied with 10X Buffer containing Gelatin and 15 mM $MgCl_2$)
0601600031730	MME5L	Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial;10X Taq Buffer A: 1 vial), 250Units
0601600051730	MME5J	Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial;10X Taq Buffer A: 4 vials), 1000Units
0601600061730	MME5B	Taq DNA Polymerase, 2 x 2500U (3 U/µl) (Includes Enzyme: 2 vials;10X Taq Buffer A: 7 bottles x 3 ml), 5000Units
0602300051730	MME23L	Taq DNA Polymerase (5 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer A: 4 vials), 1000Units
0602300061730	MME23B	Taq DNA Polymerase, 2 x 2500U (5 U/µl) (Includes Enzyme: 2 vials; 10X Taq Buffer A: 7 bottles x 3 ml), 5000Units
0602400051730	MME24L	Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer A: 4 vials), 1000Units
		Taq DNA Polymerase (Supplied with 10X Buffer containing Gelatin, separate vial of 25 mM $MgCl_2$)
0602500051730	MME25J	Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer B: 4 vials; 25 mM $MgCl_2$: 4 vials), 1000Units
602500061730	MME25B	Taq DNA Polymerase, 2 x 2500U(3 U/µl) (Includes Enzyme: 2 vials; 10X Taq Buffer B: 7 bottles x 3 ml; 25 mM $MgCl_2$: 7 bottles x 3 ml), 5000Units
0602700051730	MME27L	Taq DNA Polymerase (5 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer B: 4 vials; 25 mM $MgCl_2$: 4 vials), 1000Units
0602700061730	MME27B	Taq DNA Polymerase, 2 x 2500U (5 U/µl) (Includes Enzyme: 2 vials; 10X Taq Buffer B: 7 bottles x 3 ml; 25 mM $MgCl_2$: 7 bottles x 3 ml), 5000Units
0602800051730	MME28L	Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer B: 4 vials; 25 mM $MgCl_2$: 4 vials), 1000Units
		Taq DNA Polymerase (Supplied with 10X Buffer containing TritonX-100 and 15 mM $MgCl_2$)
0602900051730	MME29J	Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer E: 4 vials), 1000Units
0603000051730	MME30L	Taq DNA Polymerase (5 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer E: 4 vials), 1000Units
0603100051730	MME31L	Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer E: 4 vials), 1000Units
		Taq DNA Polymerase (Supplied with 10X Buffer containing TritonX-100, separate vial of 25 mM $MgCl_2$)
0603200051730	MME32J	Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer F: 4 vials; 25 mM MgCl2: 4 vials), 1000Units
0603300051730	MME33L	Taq DNA Polymerase (5 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer F: 4 vials; 25 mM MgCl2: 4 vials), 1000Units
0603400051730	MME34L	Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer F: 4 vials; 25 mM MgCl2: 4 vials), 1000Units

Buffers:

Cat. No	PI No.	Product Description
		Taq DNA Polymerase Buffers containing Gelatin
0653100011730	METB1	Taq Buffer A (Tris with 15 mM $MgCl_2$),1ml
0653200011730	METB2	Taq Buffer B (Tris without $MgCl_2$), 1ml
		Taq DNA Polymerase Buffers containing TritonX-100
0653300011730	METB13	Taq Buffer E (1 ml) (Tris with 15 mM $MgCl_2$),1ml
0653400011730	METB14	Taq Buffer F (1 ml) (Tris without $MgCl_2$), 1ml
0653500011730	METB5	$MgCl_2$ 25mM, 2ml.

PCR Master Mix

PCR master mix is a versatile and indispensable tool in molecular biology and genetics, enabling the amplification, detection, and analysis of DNA in numerous research applications. Its convenience and consistency make it a valuable resource in the laboratory.

The PCR Master Mix is a pre-prepared reagent with a 2X concentration, making it highly convenient for instant and efficient DNA amplification. This Master Mix includes Genei's Taq DNA Polymerase with deoxyribonucleotide triphosphates (dNTPs), and an optimized reaction buffer(1.5mMMagnesium Chloride),. This ready-to-use mixture ensures robust and dependable performance, making it an excellent choice for routine PCR (Polymerase Chain Reaction) applications. It simplifies the PCR process, allowing for quick and reliable results, and is a valuable tool in molecular biology and genetics research. It is supplied in 2X concentration to accommodate the addition of template primers, and (if necessary) addition of Magnesium chloride, additives like BSA, DMSO, glycerol, etc.,

Key Highlights :

- User-Friendly: Easy to use, simplifying laboratory procedures.
- Enhanced Consistency: Reduces experimental variabilities, ensuring reliable results.
- Contamination Prevention: Minimizes the risk of contamination for accurate outcomes.
- Reliable Performance: Provides consistent and dependable results.
- Time-Efficient: Saves time in the setup of reactions, streamlining laboratory workflows.

Storage : -20°C

Applications :

- DNA Amplification: PCR master mix is primarily used for DNA amplification, enabling the selective and exponential replication of specific DNA sequences. This application is fundamental to a wide range of downstream experiments.

References :

https://en.wikipedia.org/wiki/Master_mix_(PCR)

Plant Direct GenAmp PCR Kit

Description :

The Plant Direct GenAmp PCR Kit is fast, easy to perform and consequently ideal for large sample numbers. In addition, only a very small sample (0.5 cm leaf punch, for example) is enough for the assay. The protocol involves direct PCR amplification from the plant material without a DNA extraction step. The leaf material is crushed in one buffer, followed by dilution and incubation in a second buffer. The Plant Direct GenAmp PCR Kit represents a considerable simplification of present approaches by eliminating DNA isolation prior to PCR amplification.

Unique Features :

- Excludes the need for DNA extraction.
- Fast and simple protocol requiring minimal amount of sample.
- Ideal for large number of samples.
- Tested with a wide variety of plant species. (Leaf samples of plants tested with Plant Direct GenAmp PCR Kit) 1. Tomato 2. Banana Citrus 3. Coriander 4. Spinach 5. Chilly 6. Catharanthus 7. Bhindi/ Ladies finger/Okra, 8. Cauliflower 9. Sorghum 10. Pumpkin 11. Arabidopsis 12. Jatropa 13. Ocimum 14. Piper Longum 15. Rice 16. Sugarcane 17. Rubber 18. Potato 19. Maize 20. Mulberry 21. Onion 22. Papaya 23. Arabidopsis 24. Tobacco 25. Mustard 26. Wheat.

Key Contents :

- I-Buffer
- Forward Primer (Control Primer Set (A)
- Reverse Primer (Control Primer Set (A)
- 10X Buffer for HotStart Gen Amp DNA Polymerase
- dNTPs Mix (2.5 mM each)
- HotStart Gen Amp DNA Polymerase
- PCR Grade Water
- G-Buffer
- Tissue Grinders

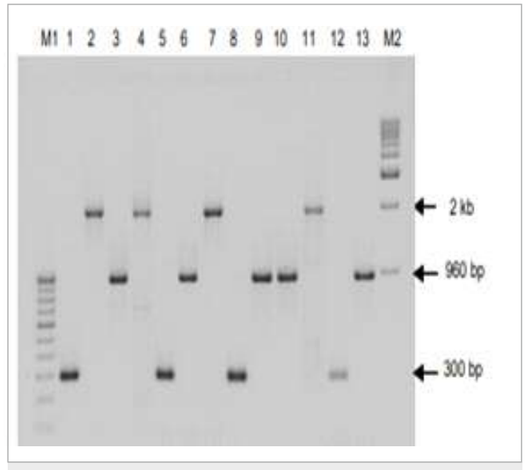


Fig 1: Amplification of 300bp, 960 bp and 2Kb fragments/amplicons from different plant leaf samples using Plant Direct GenAmp PCR Kit.

M1 - StepUp™100 bp DNA ladder
Lane 1 - Citrus leaf sample amplified with Primer Set A (300bp)
Lane 2 - Mulberry leaf sample amplified with Primer Set C (2Kb)
Lane 3 - Catharanthus leaf sample amplified with primer Set B (960bp)
Lane 4 - Rice leaf sample amplified with primer Set C (2 Kb)
Lane 5 - Catharanthus leaf sample amplified with Primer Set A (300bp)
Lane 6 - Banana leaf sample amplified with Primer Set B (960bp)
Lane 7 - Citrus leaf sample amplified with Primer Set C (2Kb)
Lane 8 - Banana leaf sample amplified with Primer Set A (300bp)
Lane 9 - Mulberry leaf sample amplified with Primer Set B (960 bp)
Lane 10 - Rice leaf sample amplified with Primer Set B (960 bp)
Lane 11 - Catharanthus leaf sample amplified with Primer Set C (2 Kb)
Lane 12 - Rice leaf sample amplified with Primer Set A (300 bp)
Lane 13 - Citrus leaf sample amplified with Primer Set B (960 bp)
M2 - StepUp™1 Kb DNA ladder

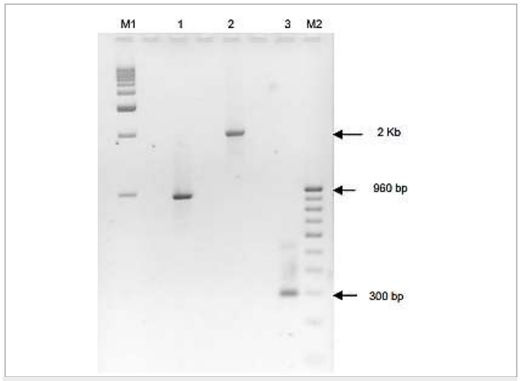


Fig 2: Amplification of 300bp, 960 bp and 2Kb fragments from Arabidopsis leaf sample using Plant Direct GenAmp PCR Kit.

M1 - StepUp™ 1 Kb DNA Ladder
Lane 1 - Arabidopsis leaf sample amplified with primer set B (1 Kb)
Lane 2 - Arabidopsis leaf sample amplified with primer set C (2 Kb)
Lane 3 - Arabidopsis leaf sample amplified with primer set A (300 bp)
M2 - StepUp™100 bp DNA Ladder

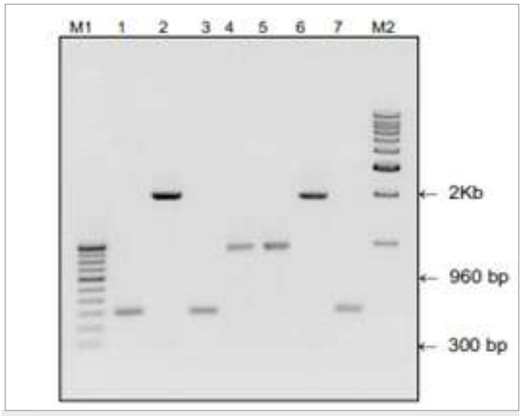


Fig 3: Amplification of 300bp, 960 bp and 2Kb fragments from different seed samples using Plant Direct GenAmp PCR Kit

M1 - StepUpTM100 bp DNA ladder
Lane 1 - Wheat seed sample amplified with Primer Set A (300bp)
Lane 2 - Mustard seed sample amplified with Primer Set C (2Kb)
Lane 3 - Tobacco seed sample amplified with primer Set A (300bp)
Lane 4 - Tobacco seed sample amplified with primer Set B (960 bp)
Lane 5 - Tomato seed amplified with Primer Set B (960bp)

Lane 6 - Tomato seed amplified with Primer Set C (2 Kb)
Lane 7 - Arabidopsis seed amplified with Primer Set A (300 bp)
M2 - StepUpTM 1 Kb DNA Ladder

Key Contents :

- This kit is useful in plant studies and downstream applications like High throughput plant genomic PCR, Phylogenetic or population-based plant DNA barcoding, plant seed fidelity testing etc. It is also suitable for DNA amplification across a broad range of plant species

References :

- Doyle, J. J. and J. L. Doyle (1987). A rapid DNA isolation procedure for small quantities of fresh leaf tissue. Phytochemical Bulletin 19: 11–15.
- Taberlet, P. L., P. Gielly, G. Patou, and J. Bouvet (1991). Universal primers for the amplification of three noncoding regions of chloroplast DNA. Plant Molecular Biology 17: 1105–1109.
- Aljanabi, S. M., and I. Martinez. (1997). Universal and rapid salt extraction of high quality DNA for PCR-based techniques. Nucleic Acids Research 25: 4692 – 4693.

Ordering Information:

Cat. No	PI No.	Product Description
0681300011730	KT234M	Plant Direct GenAmp PCR Kit, 50 reactions
0681300021730	KT234L	Plant Direct GenAmp PCR Kit,250 reactions

GeNei™ DNA Amplification Reagent Kit (with Marker)

Description :

The Polymerase Chain Reaction Invented in 1983 by Kary Mullis or PCR is a reliable and routinely used tool in Molecular Biology and Biotechnology. The purpose of PCR is to rapidly amplify and make a large number of copies of any gene starting from a very small number. Kary Mullis was awarded the Nobel Prize in Chemistry for his work in 1993.

The reaction is very simple and requires no more than a test tube, a few simple reagents and a source of heat. The reaction mixture comprises of the following:

- A target or template dsDNA which is the DNA that is to be amplified l Two short and specific primers which are responsible for initiation of amplification called forward and reverse primers. They contain sequences complementary to the target DNA and are single stranded
- A thermostable DNA polymerase which brings about the polymerization of the dNTPs.
- dNTPs or nucleotides which get added to form the new strand - the DNA building blocks
- Buffers including divalent and monovalent cations to support the reaction

Key Contents :

- Taq DNA Polymerase
- dNTPs
- 10X Assay Buffer with 15mM $MgCl_2$
- 10X Assay Buffer without $MgCl_2$
- 25mM $MgCl_2$
- Control DNA and Primers
- DNA Marker.
- Instruction Manual.

Storage: -20°C

References :

- Saiki R.K et.al. (1985) Science 230, 1350-1354.
- Mullis K.B et.al. (1987) Methods Enzymol. 155, 335-350
- Saiki R.K et.al. (1988) Science 239, 487-491.
- PCR Technology, H. Erlich Ed., Stockton press, New York, 1989.
- PCR Topics, A. Rolfs, H.C. Schumacher, P. Marx Eds. Springer-Verlag, New York, 1991.
- PCR Protocols, Current methods and applications Ed. Bruce A. White, Volume 15, Humana press, Totowa, New Jersey,1993.

Ordering Information:

Cat. No	PI No.	Product Description
0660300051730	KT03	GeNei™ DNA Amplification Reagent Kit (with Marker) ,100 reactions
0660500011730	KT03I	GeNei™ DNA Amplification Kit (with Marker), 50 reactions
0660400051730	KT03C	GeNei™ DNA Amplification Core Kit (with Marker), 100 reactions

GenAmp Direct PCR Kit (for Mammalian Cell lines, Bacteria and Yeast)

Description :

The Direct PCR Kit for Mammalian Cell lines, Bacteria and Yeast enables DNA amplification directly from mammalian cell lines, bacteria and yeast samples without any prior DNA extraction. The protocol is fast and easy, without the need for steps like phenol extraction, DNA precipitation and column purification. The method involves grinding and incubation of various cell pellets in lysis buffer for 10 minutes at 95° C.Cool at RT add lysis buffer II and spin.After centrifugation, 1-2 µl of the supernatant can be used directly for PCR amplification. The GenAmp Direct PCR Kit serves as a simple, quick and inexpensive method for amplification of genomic DNA from various samples like bacteria, yeast and mammalian cell lines.

Unique Features :

- Direct amplification of genomic DNA from various sources like bacteria, yeast and mammalian cell lines.
- Simple buffer system – without the need of Proteinase K treatment.
- Consistent – highly reproducible with low turnaround time.
- Fast and easy protocol - Eliminates need for a separate DNA extraction step prior to PCR and enables rapid extraction of DNA from cells.

Applications :

- Genomic DNA amplification from various mammalian cell lines, bacteria and yeast.
- Molecular biology and PCR applications

Key Contents :

- Red Dye PCR Master Mix (2X)
- Lysis Buffer I
- Lysis Buffer II

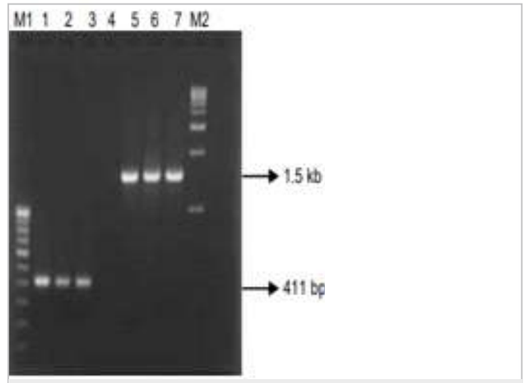


Fig1: Analysis of PCR products of 2 different sizes from 3 strains of Bacteria using GenAmp Direct PCR Kit (for Mammalian Cell lines, Bacteria and Yeast) on Agarose gel.

M1 : StepUp™ 100 bp DNA ladder
Lane 1 - Staphylococcus Aureus amplified with primer set giving an amplicon size of 411 bp
Lane 2 - DH5α amplified with primer set giving an amplicon size of 411 bp
Lane 3 - Bacillus Subtilis amplified with primer set giving an amplicon size of 411 bp
Lane 4 - Negative PCR control
Lane 5 - Staphylococcus Aureus amplified with primer set giving an amplicon size of 1.5 Kb
Lane 6 - DH5α amplified with primer set giving an amplicon size of 1.5 Kb
Lane 7 - Bacillus Subtilis amplified with primer set giving an amplicon size of 1.5 Kb
M2 : StepUp™ 1 Kb DNA ladder

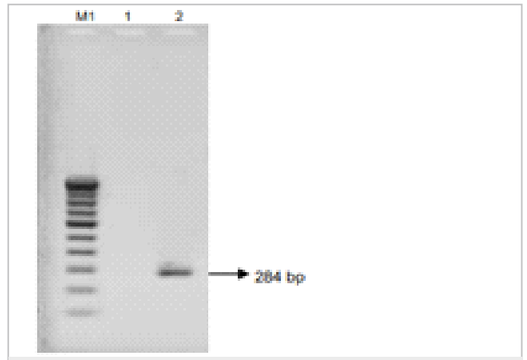


Fig 2: Analysis of PCR product from Pichia Pastoris strain of yeast using GenAmp Direct PCR Kit (for Mammalian Cell lines, Bacteria and Yeast) on 1.5% Agarose gel.

M1 - StepUp™ 100 bp DNA ladder
Lane 1 - Negative PCR control
Lane 2 - Pichia Pastoris amplified with primer set giving an amplicon size of 284 bp

Fig 3: Analysis of PCR products of 2 different sizes from 3 mammalian cell lines using GenAmp Direct PCR Kit (for Mammalian Cell lines, Bacteria and Yeast) on 1.5% Agarose gel.

M1 : StepUp™ 100 bp DNA ladder

Lane 1 - Jurkat cell pellet amplified with primer set giving an amplicon size of 434 bp

Lane 2 - MCF-7 cell pellet amplified with primer set giving an amplicon size of 434 bp

Lane 3 - HEK 293 cell pellet amplified with primer set giving an amplicon size of 434 bp

Lane 4 - Jurkat cell pellet amplified with primer set giving an amplicon size of 558 bp

Lane 5 - MCF-7 cell pellet amplified with primer set giving an amplicon size of 558 bp

Lane 6 - HEK 293 cell pellet amplified with primer set giving an amplicon size of 558 bp

References :

- Rudbeck, L. and J. Dissing. (1998). Rapid, simple alkaline extraction of human genomic DNA from whole blood, buccal epithelial cells, semen and forensic stains for PCR BioTechniques 25: 588-592
- Von Ashen, N., M. Oellerich, and E. Schutz. (2000). Use of two reporter dyes without interference in single-tube rapid-cycle PCR: alpha (1)-antitrypsin genotyping by multiplex real-time fluorescence PCR with the Light Cycler Clin. Chem. 46:156-161.
- Planelles, D., F. Llopis, N. Puig and J.A. Montoro. (1996). A new, fast andz simple DNA extraction method for HLA and VNTR genotyping by PCR amplification. J. Clin. Lab. Anal. 10: 125-128
- Saiki R.K et.al. (1985) Science 230, 1350-1354.
- Mullis K.B et.al. (1987) Methods Enzymol. 155, 335-350
- Saiki R.K et.al. (1988) Science 239, 487-491.
- PCR Technology, H. Erlich Ed., Stockton press, New York, 1989.
- PCR Topics, A. Rolfs, H.C. Schumacher, P. Marx Eds. Springer-Verlag, New York, 1991.
- PCR Protocols, Current methods and applications Ed. Bruce A. White, Volume 15, Humana press, Totowa, New Jersey,1993.

Ordering Information:

Cat. No	PI No.	Product Description
2125300021730	KT253	GeNei™ Direct PCR Kit (for Mammalian Cell lines, Bacteria & Yeast), 50 reactions

Mouse Tissue Direct GenAmp PCR Kit

The Mouse Tissue Direct PCR Kit enables DNA amplification directly from mouse tissues like liver, kidney, spleen, heart, lungs, ear and tail without the need of time-consuming conventional DNA extraction. The protocol is fast and easy, without the need for steps like tissue homogenisation, phenol extraction, DNA precipitation and column purification. In addition, it does not require overnight incubation and Proteinase K treatment. The method involves incubation of 1-2 mm of mouse tissue in lysis buffer for 10 minutes followed by dilution with the second buffer (without any further incubation). 1-2 µl of this lysate can be used directly for PCR amplification. The Mouse tissue Direct PCR Kit serves as a simple, quick and inexpensive method for amplification of genomic DNA from various mouse tissues.

Unique Features :

- Direct amplification of genomic DNA from various mouse tissues.
- Simple buffer system – without the need of Proteinase K treatment.
- Consistent – highly reproducible with low turnaround time.
- Fast and easy protocol - Eliminates need for a separate DNA extraction step prior to PCR and enables rapid extraction of DNA from tissues.
- Forward Primer (Control Primer Set A)

Key Contents :

- Reverse Primer (Control Primer Set A)
- HotStart Master Mix (2X)
- Lysis Buffer I
- Lysis Buffer II
- Nuclease free water
- Tissue Grinder

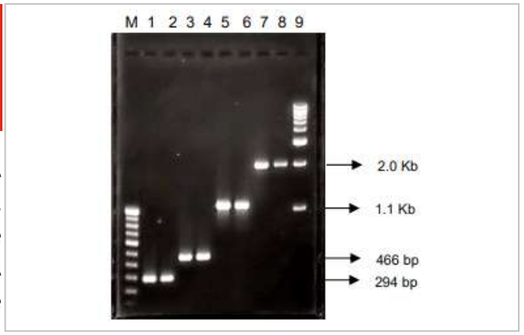


Fig 1: Analysis of 294 bp, 466 bp, 1.1 Kb and 2 Kb amplicon from mouse tail and ear tissues using Mouse Tissue Direct GenAmp PCR Kit, on 1.5% Agarose gel.

M : StepUp™ 100 bp DNA ladder

Lane 1 - 294 bp amplicon from Mouse tail tissue

Lane 2 - 294 bp amplicon from Mouse ear tissue

Lane 3 - 466 bp amplicon from Mouse tail tissue

Lane 4 - 466 bp amplicon from Mouse ear tissue

Lane 5 - 1.1 Kb amplicon from Mouse tail tissue

Lane 6 - 1.1 Kb amplicon from Mouse ear tissue

Lane 7 - 2 Kb amplicon from Mouse tail tissue

Lane 8 - 2 Kb amplicon from Mouse ear tissue

Applications :

- Mouse genotyping.
- Genomic DNA amplification from various mouse tissues

References :

- Harald, L., Andreas, H., N. Rieger, R. D. Wanke and E. Wolf. (1998). Identification of transgenic mice by direct PCR analysis of lysates of epithelial cells obtained from the inner surface of the rectum. Transgenic Research 7: 131-134
- Drews, R., W. N. Drohan and H. Lubon. (1994). Transgene detection in mouse tail digests. BioTechniques 17: 866-867. 3. Chen, S., and G. A. Evans. (1990). A simple screening method for transgenic mice using the polymerase chain reaction. BioTechniques 8: 32-33.

Ordering Information:

Cat. No	PI No.	Product Description
2125400021730	KT254	Mouse Tissue Direct GenAmp PCR Kit, 50 reactions

Red Taq polymerase

Red Taq DNA Polymerase is a blend of Taq DNA Polymerase and an inert red dye. This dye enables quick visual confirmation of enzyme addition and reaction mixing. After amplification, the product can be directly loaded on to agarose gel without the addition of gel loading dye. The mobility of the red dye is slightly ahead of bromophenol blue dye.

Unit Definition: One unit is defined as the amount of enzyme required to convert 10 nmoles of total deoxyribonucleoside-triphosphates into acid precipitable DNA in 30 minutes at 72° C.

Reagents Supplied with Enzyme: 10X Assay Buffer (Taq Buffer A). 1X Assay Buffer: 10 mM Tris-HCl (pH 9.0 at 25° C), 1.5 mM $MgCl_2$,50 mM KCl and 0.01% gelatin.

Storage: Store enzyme and assay buffer at -20° C.

Note: On observation of any kind of precipitate in Taq Buffer A warm the buffer at 35-40° C till precipitate dissolves

Quality control assays :

- **Absence of Nuclease Activity:** Red Taq DNA Polymerase when incubated for 16 hours with 1 g of DNA digest at 37° C and 72° C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** Red Taq DNA Polymerase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37° C and 72° C showed unaltered pattern without nicking on 1% agarose gel.

Performance Test :

- Red Taq DNA Polymerase was used in RAPD of rice DNA with a 10 mer primer. Expected band pattern was observed on 1.8% agarose gel.
- Red Taq DNA Polymerase was routinely used for generating specific amplified products of varying sizes from 100 bp to 3 kb with different template sources.

References :

- Laboratory Approaches in Molecular PathologyThe Polymerase Chain Reaction W.B. Coleman, G.J. Tsongalis, in Diagnostic Molecular Pathology, 2017

Ordering Information:

Cat. No	PI No.	Product Description
GeNei™ Red Taq DNA Polymerase (Supplied with 10X Buffer containing Gelatin and 15 mM $MgCl_2$)		
0603500051730	MME35J	GeNei™ Red Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer A: 4 vials), 1000Units
GeNei™ Red Taq DNA Polymerase (Supplied with 10X Buffer containing Gelatin, separate vial of 25 mM $MgCl_2$)		
0603600051730	MME36J	GeNei™ Red Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer B: 4 vials; 25 mM $MgCl_2$: 4 vials), 1000Units
GeNei™ Red Taq DNA Polymerase (Supplied with 10X Buffer containing TritonX-100 and 15 mM $MgCl_2$)		
0603700051730	MME37J	GeNei™ Red Taq DNA Polymerase (1 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer E: 4 vials), 1000Units

GeNei™ Red Dye PCR Master Mix (2X)

Description :

The Red dye Master Mix consists of a unique inert red dye in addition to all basic components necessary to do PCR: Taq DNA Polymerase, dNTPs, reaction buffer (with 1.5 mM Magnesium chloride) at optimum concentrations. The mobility of the red dye is slightly ahead of bromophenol blue dye. The Genei Red dye PCR Master Mix is supplied at 2X concentration to accommodate the addition of template, primers and (if necessary) addition of magnesium chloride, additives like BSA, DMSO, glycerol, etc.

What sets this PCR Master Mix apart is its unique formulation, allowing for direct loading of the amplified product onto an agarose gel without the necessity of additional gel loading dye. This streamlined approach not only saves time but also enhances the overall workflow efficiency.

Whether utilized for PCR generated fragments or genomic DNA amplification through techniques such as PCR or restriction digestion, this Ready To Use Red Dye PCR Master Mix guarantees robust and dependable performance. Its versatility, coupled with the elimination of additional steps in gel loading, makes it an invaluable tool for molecular biology laboratories seeking efficiency without compromising on quality

Note:

- Aliquot 2X Genei Red Dye Master Mix into single use tubes to prevent multiple freeze thaw cycles and to minimize contamination.
- Use PCR Master Mix supplied at 1X concentration
- Mix can be used to perform PCR reaction of volumes greater than 25 µl.
- Lysis Buffer I
- Lysis Buffer II
- Nuclease free water
- Tissue Grinder

Direction to use :

- Thaw the master mix, gently mix and aliquot 12.5 µl into PCR tubes.
- Add template, primers and (If required, add additional magnesium chloride, additives like DMSO, glycerol etc.,) and make up the volume to 25 µl
- Start the thermal cycling.
- Load the samples directly on to agarose gel.

Quality control assays :

- **Absence of Nuclease Contamination:** Individual components of the mix have been extensively tested for the absence of any contaminating nucleases.
- **Performance Test:** Genei Red Dye master mix is tested for amplification of 0.8 kb and 2.1 kb fragments using respective template and specific primer combinations.

Key Highlights :

- **User-Friendly:** Simplifying your laboratory workflow, this product is designed for ease of use, catering to both novice and experienced researchers.
- **Direct Gel Loading:** The convenience of loading the product directly onto the gel streamlines the experimental process, saving time and effort in sample preparation.
- **Reduced Experimental Variabilities:** Ensuring reliability in your results, this product minimizes experimental variabilities, contributing to the consistency of your data.
- **Minimal Contamination Risk:** With a focus on maintaining the integrity of your samples, the design of this product minimizes the risk of contamination, enhancing the reliability of your experiments.
- **Consistent Results:** The product is engineered to deliver consistent and reproducible results, providing a reliable foundation for your research outcomes.
- **Time-Efficient:** By saving reaction setup time, this

product contributes to the efficiency of your experimental pipeline, allowing you to allocate your time and resources more effectively.

Related Product-KT78 :

This kit consists of all the reagents required to perform 100 standard PCR reactions.

Materials Provided :

- 5 vials of Red Dye PCR Master Mix(2X)
- Sterile water
- StepUp™ 100bp DNA ladder (Ready to use)

Storage: -20°C

Quality control assays :

- **Absence of Nuclease Activity:** Red Taq DNA Polymerase when incubated for 16 hours with 1 g of DNA digest at 37°C and 72°C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** Red Taq DNA Polymerase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37°C and 72°C showed unaltered pattern without nicking on 1% agarose gel.

Applications :

- **Routine PCR:** Standard PCR for amplifying DNA fragments for various applications, such as cloning, sequencing, or genotyping.
- **Endpoint PCR:** For basic DNA amplification where the final PCR product is visualized by gel electrophoresis or other detection methods.
- **Colony PCR:** Identification of bacterial colonies carrying the desired plasmid or DNA fragment.
- **Screening PCR:** High-throughput screening of samples for the presence or absence of specific DNA sequences.
- **Genotyping:** Analysis of genetic variations, such as single nucleotide polymorphisms (SNPs) or insertions/deletions, in a population.
- **RT-PCR (Reverse Transcription PCR):** For the amplification of complementary DNA (cDNA) from RNA templates, commonly used in gene expression studies.
- **Multiplex PCR:** Simultaneous amplification of multiple target DNA sequences in a single reaction.
- **Forensic PCR:** Amplification of DNA for forensic analysis, such as DNA profiling and paternity testing.

Ordering Information

Cat. No	PI No.	Product Description
0602100011730	MME21S	GeNei™ Red Dye PCR Master Mix (2X) , 100 reactions
0602100031730	MME21	GeNei™ Red Dye PCR Master Mix (2X) , 5X100 reactions
0602100051730	MME21L	GeNei™ Red Dye PCR Master Mix (2X), 2000 reactions
0667800041730	KT78	GeNei™ Red Dye PCR Master Mix Kit (2X) (with 100 bp DNA Ladder). 5X20 reactions

GeNei™ HotStart Taq DNA Polymerase

Description :

HotStart Taq DNA Polymerase is an antibody based HotStart Taq DNA Polymerase, that possesses 5' 3' polymerase activity and 5' 3' exonuclease activity.

Unit Definition: One unit is defined as the amount of enzyme required to convert 10 nmoles of total deoxyribonucleoside-triphosphates into acid precipitable DNA in 30 minutes at 72°C.

Storage Buffer: Taq DNA Polymerase is supplied in Tris-HCl (pH 8.0), KCl, EDTA, DTT, Tween -20, Igepal and Glycerol.

Reagents Supplied with Enzyme: 10X Assay Buffer (Taq Buffer A). 1X Assay Buffer: Tris-HCl (pH 9.0 at 25°C), 1.5 mM MgCl2, KCl and gelatin.

Quality control assays :

- **Absence of Nuclease Activity:** 6 units of HotStart Taq DNA Polymerase when incubated for 16 hours with 1 g of DNA digest at 37°C and 72°C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** 9 units of HotStart Taq DNA Polymerase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37°C and 72°C showed unaltered pattern without nicking on 1% agarose gel.
- **Inhibition/Reactivation assay:** Inhibition of activity in HotStart Taq DNA Polymerase was evaluated in DNA polymerization activity assay that measured the percent of enzyme inhibition at 60°C for 1 hour. More than 95% of enzyme activity was found to be inhibited. On reactivation at 95°C for 5 minutes, complete activity was restored. Polymerization activity of Taq DNA Polymerase was the referral control used.

Performance Test :

- Hotstart Taq DNA Polymerase is tested extensively for its reproducible performance in critical PCR amplifications and in RT-PCR.
- Enzyme is tested for amplification of 131 bp fragment of TNF gene and 400 bp fragment of -globin gene from human genomic DNA using non-optimal primers.
- Enzyme is tested for detecting different subtypes of Human Papilloma virus (HPV) using consensus primers

Storage: Store enzyme and assay buffer at -20°C.

Amplification of 250 bp fragment with varied sample dilutions using consensus primers

Lane 1 & 14 - StepUp™ 100 bp DNA Ladder
Lane 2-7 - Amplification with Taq DNA Polymerase (10-1 to 10-6 dilutions)
Lane 8-13 - Amplification with HotStart Taq DNA Polymerase (10-1 to 10-6 dilutions)

References :

- Sharkey DJ, Scalice ER, Christy KG, Atwood SM, Daiss JL (May 1994). "Antibodies as thermolabile switches: high temperature triggering for the polymerase chain reaction"
- Kaboev, O. K.; Luchkina, L. A.; Tret'iakov, A. N.; Bahrmand, A. R. (2000-11-01). "PCR hot start using primers with the structure of molecular beacons (hairpin-like structure)". Nucleic Acids Research.
- Hotstart Taq DNA Polymerase is tested extensively for its reproducible performance in critical PCR amplifications and in RT-PCR.
- Enzyme is tested for amplification of 131 bp fragment of TNF gene and 400 bp fragment of -globin gene from human genomic DNA using non-optimal primers.
- Enzyme is tested for detecting different subtypes of Human Papilloma virus (HPV) using consensus primers

Ordering Information

Cat. No	PI No.	Product Description
GeNei™ HotStart Taq DNA Polymerase (Supplied with 10X Buffer containing Gelatin and 15 mM $MgCl_2$)		
0602000031730	MME20L	GeNei™ HotStart Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer A: 1 vial), 250Units
0602000051730	MME20J	GeNei™ HotStart Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer A: 4 vials), 1000Units
GeNei™ HotStart Taq DNA Polymerase (Supplied with 10X Buffer containing Gelatin, separate vial of 25 mM $MgCl_2$)		
0604000051730	MME40J	GeNei™ HotStart Taq DNA Polymerase (3 U/µl) (Includes Enzyme: 1 vial; 10X Taq Buffer B: 4 vials; 25 mM MgCl2: 4 vials), 1000Units

GeNei™ HotStart PCR Master Mix (2X)

Description :

HotStart PCR Master Mix is a premixed, ready-to-use solution, containing Hot start Taq DNA Polymerase, dNTPs, Standard Taq Reaction Buffer, and stabilizers. It is supplied in 2X concentration to accommodate the addition of template, primers and if necessary, addition of Magnesium chloride, additives like BSA, DMSO, glycerol, etc.

Storage:

- **At 4°C for immediate use.**
- **At –20°C for long term use**

Note: Aliquote 2X HotStart PCR Master Mix into single use tubes to prevent multiple freeze thaw cycles and to minimize contamination.

Features :

- Improves PCR specificity
- Saves valuable time
- Reduces the number of reagent handling steps
- Avoids chances of costly errors and improves reproducibility.
- Allows for room temperature reaction assembly
- Low contamination risk

Kit Contents :

- I-Buffer
- Forward Primer (Control Primer Set (A)
- Reverse Primer (Control Primer Set (A)
- 10X Buffer for HotStart Gen Amp DNA Polymerase
- dNTPs Mix (2.5 mM each)
- HotStart Gen Amp DNA Polymerase
- PCR Grade Water
- G-Buffer
- Tissue Grinders

Quality control assays :

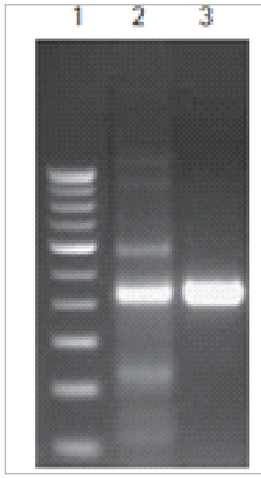
- Absence of Nuclease Contamination: Individual components of the mix have been extensively tested for the absence of any contaminating nucleases.
- Performance Test: HotStart PCR Master Mix is tested extensively for its reproducible performance in critical PCR amplifications and in RT-PCR. Mix is tested for amplification of 131bp fragment of TNFgene and 400bp of -Globin gene from human genomic DNA using non-optimal primers. Mix is tested for detecting different subtypes of human Papilloma virus (HPV) using consensus primers.

Related Product:MME44

Description :

The GeNei™ HotStart Blue Dye PCR Master Mix is a premixed, ready to use solution containing Hot Start Taq DNA Polymerase, dNTPs, standard reaction buffer, stabilizers and easy to track blue loading dye. Inclusion of tracking dye allows the direct loading & analysis of PCR products by Agarose gel electrophoresis following PCR amplification. The dye migrates at 5kb.

The GeNei™ HotStart Blue Dye PCR Master Mix is supplied in 2X concentration to accommodate the addition of Magnesium chloride, additives like BSA,DMSO, glycerol etc.



Amplification of 400 bp fragment of ß-globin gene from Human Genomic DNA

Lane 1 - StepUp™ 100 bp DNA Ladder
Lane 2 - Amplification with PCR master mix Taq (400 bp)
Lane 3 - Amplification with HotStart PCR master mix (400 bp)

Storage:
At 4°C for immediate use.
At –20°C for long term use

Applications :

- High -specificity PCR amplification
- High-sensitivity PCR amplification
- TA-vector cloning.
- Amplification prior to in vitro transcription

References :

- Sharkey DJ, Scalice ER, Christy KG, Atwood SM, Daiss JL (May 1994). "Antibodies as thermolabile switches: high temperature triggering for the polymerase chain reaction"
- Kaboev, O. K.; Luchkina, L. A.; Tret'iakov, A. N.; Bahrmand, A. R. (2000-11-01). "PCR hot start using primers with the structure of molecular beacons (hairpin-like structure)". Nucleic Acids Research.

Ordering Information:

Cat. No	PI No.	Product Description
0604200011730	MME42S	GeNei™ HotStart PCR Master Mix (2X), 1 X 50 reactions
0604200031730	MME42L	GeNei™ HotStart PCR Master Mix (2X), 5 X 50 reactions
0604400021730	MME44	GeNei™ HotStart Blue Dye PCR mastermix (2X) 1X100 reactions

Effi-Taq™ DNA Polymerase

Description :

Effi-Taq™ DNA Polymerase a modified form of Taq DNA Polymerase is supplied in an inactive state that has no polymerase activity at ambient temperature. This prevents extension of non-specifically annealed primers and primer dimers formed at low temperature during PCR setup and initial PCR cycle. Effi-Taq™ DNA Polymerase is activated by a 20-minute incubation at 95°C, which can be incorporated into any existing thermal-cycler program. Every lot of Effi-Taq™ DNA Polymerase is subjected to a comprehensive range of quality control tests, including a stringent PCR specificity and reproducibility assay in which low-copy targets are amplified.

Unique Features :

- Higher Sensitivity
- Higher Specificity
- Convenient Room Temperature PCR Setup
- Minimal Optimization- saving time and money
- Generates PCR Products with 3'dA overhangs

Unit Definition :

One unit is defined as the amount of enzyme required to convert 10 nmoles of total deoxyribonucleoside-triphosphates into acid precipitable DNA in 30 minutes at 72°C.

Storage Buffer :

Taq DNA Polymerase is supplied in 20 mM Tris-HCl (pH 8.0), 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, 0.5% Tween -20, 0.5 % Igepal and 50% Glycerol & Stabilizers Reagents Supplied with Enzyme: 1vial each of 10X Assay Buffer containing 15 mM MgCl2, 25mM Mgcl2 & MAGIC Amplification solution.

1X Assay Buffer :

10 mM Tris-HCl (pH 9.0 at 25°C), 1.5 mM MgCl2, 50 mM KCl and 0.1% TritonX-100

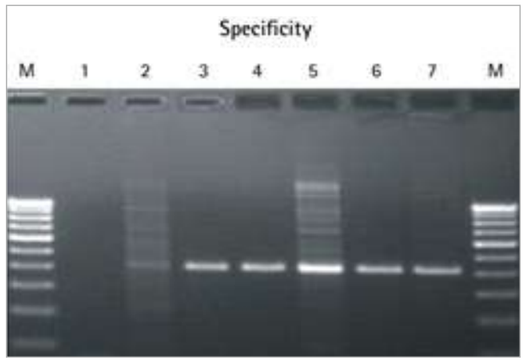
Quality control assays :

- **Absence of Nuclease Activity:** 10 units of Effi-Taq DNA Polymerase when incubated for 16 hours with 1 g of DNA digest at 37°C and 72°C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** 10 units of Effi-Taq DNA Polymerase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37°C and 72°C showed unaltered pattern without nicking on 1% agarose gel.
- **Inhibition/Reactivation assay:** Inhibition of activity in Effi-Taq DNA Polymerase was evaluated in DNA polymerization activity assay that measured the percent of enzyme inhibition at 60°C for 1 hour. More than 95% of enzyme activity was found to be inhibited. On reactivation at 95°C for 20 minutes, activity was restored.

Polymerization activity of Taq DNA Polymerase was the referral control used.

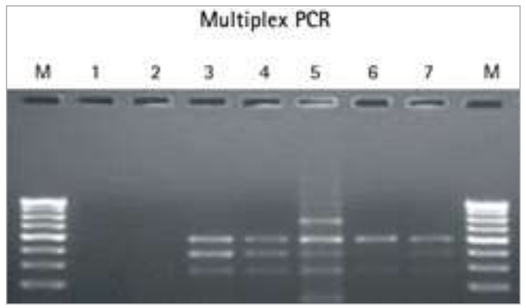
Performance Test :

- **Assay for Sensitivity:** Amplification of less than 10 copies of 201bp Male specific Target (SRY gene) in a high background of female DNA
- **Assay for Specificity:** A 400bp region of the human Beta globin was amplified using non-optimized primers.
- **Assay for GC rich Templates:** Amplification of an 80-85% GC-rich region of the human FMRI gene



Amplification of 400bp region of the human ß-globin gene using non-optimized Primers

Lane M - SteUp™ 100 bp DNA Ladder Lane 1 : Reagent Control
Lane 2 - Taq DNA Polymerase
Lane 3 - Effi-Taq™ DNA Polymerase
Lane 4-7 - Competitor



Amplification of 5 different loci of Cotton Genomic DNA

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - Reagent Control
Lane 2 - Taq DNA Polymerase
Lane 3 - Effi-Taq™DNA Polymerase
Lane 4-7 - Competitor

References :

- DNA polymerases as useful reagents for biotechnology - the history of developmental research in the field". Frontiers in Microbiology. Ishino S, Ishino Y (2014).
- Domain exchange: chimeras of Thermus aquaticus DNA polymerase, Escherichia coli DNA polymerase I and Thermotoga neapolitana DNA polymerase"- Villbrandt B, Sobek H, Frey B, Schomburg D (September 2000).
- Improvement of the 3'-5' exonuclease activity of Taq DNA polymerase by protein engineering in the active site". Molecules and Cells.- Park Y, Choi H, Lee DS, Kim Y (June 1997).

Ordering Information:

Cat. No	PI No.	Product Description
0604300031730	MME43L	Effi-Taq™ DNA Polymerase, 5 Units/µl, 250Units

PR Polymerase

Description :

PR Polymerase, utilized in PCR reactions demanding high-fidelity synthesis, is a thermostable enzyme recognized for its robust Proof-Reading activity. The proofreading mechanism, facilitated by the 3'-5' exonuclease, allows the enzyme to correct mis-incorporated nucleotides, thereby minimizing errors during polymerization. This polymerase is well-suited for achieving high-fidelity amplifications, especially in short stretches of target DNA (< 1.5 kb). Its distinctive properties make it an ideal choice for applications where precision and accuracy are paramount.

PR Polymerase stands out as the enzyme of choice for high-fidelity DNA synthesis. It is particularly well-suited for high-fidelity PCR amplification of DNA fragments intended for applications such as gene cloning, site-directed mutagenesis, and various other genetic manipulations.

The enzyme's robust proofreading activity and thermostability make it a reliable tool for achieving accurate and precise amplification, crucial for downstream molecular biology applications. PR Polymerase is recommended for use in PCR and primer extension reaction that require high fidelity.

Unique feature : PR polymerases are characterized by their exceptional thermostability, retaining over 90% of their activity even after prolonged incubation, such as for one hour, at a high temperature of 94° C.

Assay Buffer (1X) : Tris-HCl (pH 8.8), $(NH_4)_2 SO_4$, KCl, 2mM $MgSO_4$, Triton X 100 and Nuclease free BSA.

Quality control assays :

- **Absence of Nuclease Activity:** 1 g of DNA digest was incubated with PR Polymerase with 1X assay buffer at 37°C and 72°C for 16 hours. The DNA visualized on 1% agarose gel showed sharp unaltered pattern.
- **Absence of Nickase Activity:** 1 g of super coiled DNA was incubated with PR Polymerase with 1X assay buffer at 37°C and 72°C for 16 hours. The DNA visualized on a 1% agarose gel showed unaltered pattern without nicking.
- **Thermo Stability:** PR Polymerase is a highly thermostable enzyme. The enzyme was incubated at 94°C for 1 hour and subsequently checked for activity. >90% activity was retained as determined by primer extension assay. Performance Test: PR Polymerase was extensively tested for PCR amplification of specific DNA fragments using both lambda DNA and human genomic DNA as templates. It was observed that for products 2Kb, further optimization is required. The conditions need to be optimized for each individual system. Increasing the enzyme concentration may increase the chance of primer degradation due to inherent 3' 5' exonuclease (proof reading) activity of the enzyme.

Storage: -20°C

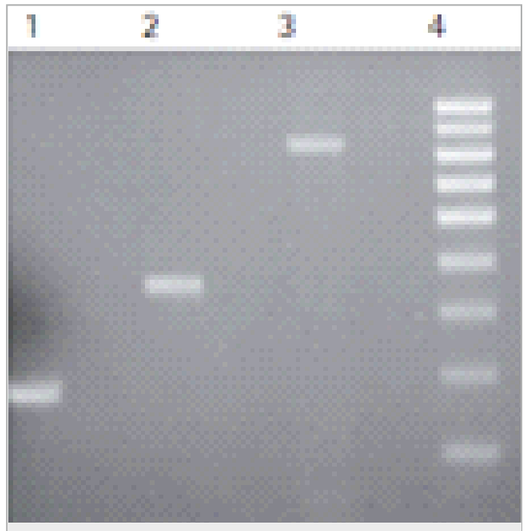


Fig 1: Amplification of human genomic DNA with ARMS primers (For ß-Thalassemia) using 1 unit of PR Polymerase, analysed on 2% agarose gel.

Applications :

- DNA Amplification: PR polymerase primarily used for DNA amplification, enabling the selective and exponential replication of specific DNA sequences. This application is fundamental to a wide range of downstream experiments.of Effi-

Ordering Information:

Cat. No	PI No.	Product Description
0601700031730	MME17M	PPR Polymerase, 250 U (Enzyme 3 U / µl): 1 Vial:10XPR Polymease Assay Buffer: 1 vial

XT-5 PCR system

XT-5 PCR system is a unique mixture of thermostable enzymes – Taq DNA Polymerase and PR (Proof Reading) Polymerase. This enzyme blend utilizes the powerful 5'-3' polymerase activity of Taq DNA Polymerase and the 3'-5' exonuclease mediated proof-reading activity of PR polymerase, resulting in high fidelity PCR products. This is particularly useful to amplify up to 5 kb target DNA from genomic DNA templates. A well-defined ratio of enzymes along with a highly optimized buffer system (XT-Polymerase buffers 5B) ensures specific PCR products. Assay buffer system 5B is best utilized for higher yields

Reagents Supplied with Enzyme: 1 vial of assay buffer 5B (Supplied as 10X

- **XT-Polymerase Buffer 5B:** (For higher yield) 1X Buffer composition: Tris-HCl (pH 9.0 at 25°C), $(NH_4)_2SO_4$ and 1.5mM $MgCl_2$.

Storage: Store enzyme and assay buffers at -20°C.

Quality control assays :

- **Absence of Nuclease Activity:** 1 g of DNA digest was incubated with XT-5 PCR System with 1X assay buffer at 37°C and 72°C for 16 hours. The DNA visualized on 1% agarose gel showed sharp unaltered pattern.
- **Absence of Nickase Activity:** 1 g of supercoiled DNA was incubated with XT-5 PCR System with 1X assay buffer at 37°C and 72°C for 16 hours. The DNA visualized on 1% agarsose gel showed unaltered pattern without nicking.
- **Thermo Stability:** XT-5 PCR system is most active at temperatures around 72°C and does not lose activity considerably even after prolonged incubation at high temperatures. Performance Test: XT-5 PCR system is tested for PCR amplification of fragment sizes 0.2 kb to 8 kb using both human genomic DNA and lambda DNA as templates. Sequence specific primers were used for amplifications.

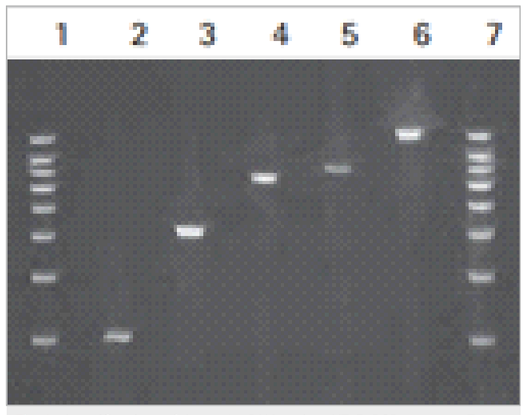


Fig 1: Amplification of Lambda DNA using XT-5 PCR system. Target sequences of 2.0 to 10.0 kb were amplified using sequence specific primers and 1.5 units of XT-5 PCR system and analysed on 1% agarose gel

Applications :

- Useful for high efficiency PCR amplifications. The products obtained can be used for gene cloning and other genetic manipulations.
- Ensures higher yields of the amplified product with improved fidelity
- Screening PCR: High-throughput screening of samples for the presence or absence of specific DNA sequences.
- Genotyping: Analysis of genetic variations, such as single nucleotide polymorphisms (SNPs) or insertions/deletions, in a population.
- RT-PCR (Reverse Transcription PCR): For the amplification of complementary DNA (cDNA) from RNA templates, commonly used in gene expression studies.

References :

- Prasad R, Çağlayan M, Dai DP, Nadalutti CA, Zhao ML, Gassman NR, et al. (December 2017). "DNA polymerase β: A missing link of the base excision repair machinery in mammalian mitochondria
- Subba Rao K, Martin GM, Loeb LA (October 1985). "Fidelity of DNA polymerase-beta in neurons from young and very aged mice". Journal of Neurochemistry

Ordering Information:

Cat. No	PI No.	Product Description
0601800031730	MME18L	XT-5 PCR system 250 U, (3 U/µl) (Enzyme: 1 Vial; XT-5 10X Assay Buffer 5B: 1 Vial)
0601800051730	MME18J	XT-5 PCR system 1000 U, (3 U/µl) (Enzyme: 1Vial; XT-5 10x Assay Buffer 5B:2 Vials)

XT-20 PCR system

Description :

XT-20 PCR system is a unique mixture of thermostable enzymes - Taq DNA polymerase and PR (Proof Reading) polymerase. This enzyme blend utilizes the powerful 5'-3' polymerase activity of Taq DNA polymerase while the 3'-5' exonuclease mediated proof-reading activity of PR polymerase ensures high fidelity PCR products. This system is particularly useful to amplify long target DNA upto 20 kb from genomic DNA templates. A well-defined ratio of enzymes along with a set of highly optimized buffer systems (Assay buffers 20A and 20B) ensures specific PCR products. Assay buffer system 20A is optimized for amplifications of 8.0 kb to 12.0kb target sequences and assay buffer system 20B is optimized for 12.0kb to 20.0kb amplifications.

Reagents Supplied with Enzyme :

- 10X Assay Buffer XT-20A & 20B, 1 ml each with packsize of 100-250 U
- 10X Assay Buffer XT-20A & 20B, 2 ml each with pack size of 1000 U
- XT-Polymerase Buffer 20A: (For amplifications of 8.0 kb to 12.0 kb) 1X Buffer composition: Tris-HCl (pH 9.0 at 25° C), (NH4)2SO4 and 2 mM MgCl2.
- XT-Polymerase Buffer 20B: (For amplifications of 12.0kb to 20.0kb) 1X Buffer composition: Tris-HCl (pH 9.0 at 25° C), (NH4)2SO4 and 2.75 mM MgCl2.

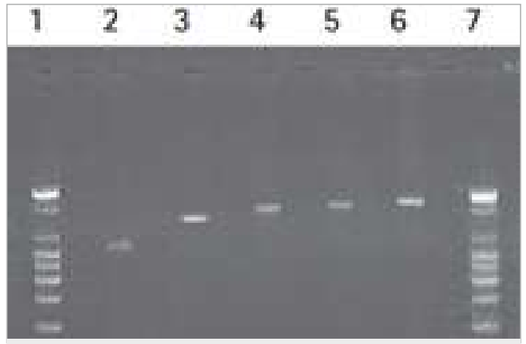


Fig 1:Amplification of human genomic DNA using XT-20 PCR system. Specific target sequences of 8.0 to 22.0 kb were amplified using tPA gene sequence specific primers and 2.0 units of XT-20 PCR system and analysed on 0.6% agarose gel.

Lane 1 & 7 - Super Mix DNA ladder
Lane 2 - 8055 bp
Lane 3 - 12026 bp
Lane 4 - 15036 bp
Lane 5 - 17703 bp
Lane 6 - 22466 bp

Quality control assays :

- **Absence of Nuclease Activity:** 1 g of DNA digest was incubated with XT-20 PCR System with 1X assay buffer at 37°C and 72°C for 16 hours. The DNA visualized on 1% agarose gel showed sharp unaltered pattern.
- **Absence of Nickase Activity:** 1 g of supercoiled DNA was incubated with XT-20 PCR System with 1X assay buffer at 37°C and 72°C for 16 hours. The DNA visualized on 1% agarose gel showed unaltered pattern without nicking.
- **Thermo Stability:** XT-20 PCR system is most active at temperatures around 72°C and does not lose activity considerably even after prolonged incubation at high temperatures.

Performance Test :

- XT-20 PCR system is tested for PCR amplification of fragment sizes 8.0 kb to 25 kb using both human genomic DNA and lambda DNA as templates. Sequence specific primers were used for amplifications

Related Product: KT76 :

- Long PCR 20 kb Ampli kit is ideal for amplifications of longer target DNA fragments, upto 20kb, from genomic DNA templates using sequence specific primers. The kit provides all essential reagents to perform 50 individual reactions. Control DNA and sequence specific primers are included to perform 10 control reactions.
- XT-20 PCR system is a unique enzyme mix that combines the powerful 5'-3' polymerase activity of Taq DNA polymerase and the 3'-5' exonuclease mediated proofreading activity of PR polymerase, resulting in high fidelity PCR products.
- Highly optimised buffer systems (XT-Polymerase buffers 20A and 20B) guarantee better performance.
- Human genomic DNA with sequence specific primers to amplify 15.0 kb DNA fragment of tPA gene for 10 control amplification reactions are provided.

Kit contents :

- XT-20 Polymerase
- XT-Polymerase buffers 20A and 20B.
- 30mM dNTP Mix
- Mineral Oil
- Control DNA with sequence specific primers to perform 10 control reactions.
- DNA Marker
- Instruction Manual

Storage: Store enzyme and assay buffers at -20°

Applications :

- Useful for high efficiency PCR amplifications. The products obtained can be used for gene cloning and other genetic manipulations.
- Ensures higher yields of the amplified product with improved fidelity.
- Screening PCR: High-throughput screening of samples for the presence or absence of specific DNA sequences.
- Genotyping: Analysis of genetic variations, such as single nucleotide polymorphisms (SNPs) or insertions/deletions, in a population.
- RT-PCR (Reverse Transcription PCR): For the amplification of complementary DNA (cDNA) from RNA templates, commonly used in gene expression studies.

References :

- Prasad R, Çağlayan M, Dai DP, Nadalutti CA, Zhao ML, Gassman NR, et al. (December 2017). "DNA polymerase ✧: A missing link of the base excision repair machinery in mammalian mitochondria
- Subba Rao K, Martin GM, Loeb LA (October 1985). "Fidelity of DNA polymerase-beta in neurons from young and very aged mice". Journal of Neurochemistry

Ordering Information:

Cat. No	PI No.	Product Description
0601900031730	MME19L	XT-20 PCR system 250 U, (3 U/µl) (Enzyme: 1Vial; 10x Assay Buffer 20A: 1 Vial; 10X Assay Buffer 20B: 1 Vial)
0601900051730	MME19J	XT-20 PCR system 1000 U, (3 U/µl)(Enzyme: 1Vial; 10x Assay Buffer 20A: 2 Vials; 10X Assay Buffer 20B: 2 Vials)
0667600011730	KT76	GeNei™ Long PCR 20 kb Ampli Kit, 50 reactions

MAGIC Amplification Solution (2.5X)

Amplification of templates with high GC content is difficult due to its robust secondary structure leading to inefficient template denaturation. MAGIC solution is a PCR enhancer that facilitates successful amplification of GC-rich sequences (up to 80%).

Unique Features :

- A PCR enhancer facilitating amplification of GC-rich templates (up to 80%)
- Does not adversely affect normal amplification reactions
- Does not alter fidelity of PCR enzymes
- Can be used with Taq DNA Polymerase as well as Long PCR Polymerase systems

Related Product: KT92 :

The kits include all the essential reagents required for standard amplifications along with a unique MAGIC solution. MAGIC solution is a unique blend that enhances PCR by eliminating secondary structure denaturation-related limitations caused by GC-rich template, and thereby ensuring specific amplification of such products. MAGIC solution can be used in combination with both Taq DNA Polymerase as well as XT-5 PCR System. Control DNA with primers that amplify a 600 bp fragment having 75 % GC-rich sequence, is supplied for 10 control reactions.

Kit contents :

- Taq DNA polymerase and Assay Buffer
- 2.5X MAGIC Amplification Solution
- 10 mM dNTP Mix
- Control DNA and Primers for 10 reactions
- StepUp™ 100 bp DNA Ladder (Ready to use)
- Instruction Manual

GeNei™

GENOMICS

PRODUCTS FOR PCR

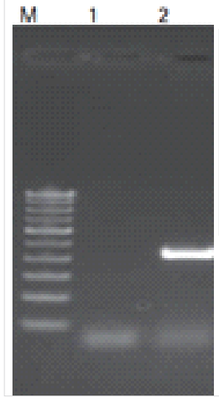


Fig 1: Amplification of GC-rich template (80%) from human Fragile-X using MAGIC solution.

Lane 1 - XT-5 PCR System without MAGI solution

Lane 2 - XT-5 PCR System with MAGIC solution

Lane M- StepUp™ 100 bp DNA ladder

Applications :

- Amplification of GC-rich (up to 80%) templates
- Amplification of repeat sequences
- Multiplex PCR amplification from GC-rich templates

References :

- Sarkar et al; Nucleic Acids Research, Vol. 18, No. 24; 1990. Formamide can dramatically improve the specificity of PCR
- Frey et al; Nature Protocols 3, 1312 - 1317 (2008). PCR-amplification of GC-rich regions: 'slowdown PCR'
- Saiki,R.K. et al. (1988) Science 239, 487-494.
- McConlogue,L. et al. (1988) Nucl. Acids Res. 16, 9869.
- Haqqi,T.M. et al. (1988) Nucl. Acids Res. 16, 11844. 6. Grandy,D.K. et al. (1989) Proc. Natl. Acad. Sci. USA 86, 9762-9766.
- Sommer,S.S. et al. (1990) In PCR Protocols: A Guide to Methods and Applications. Academic Press, pp. 197-205.
- Sarkar,G. and Sommer,S.S. (1989) Science 244, 331-334.
- Hung,T. et al. (1990) Nucl. Acids Res. 18, 4953.

Ordering Information:

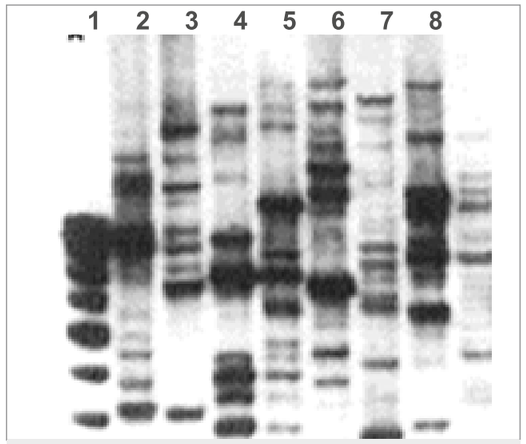
Cat. No	PI No.	Product Description
0653880011730	FC58L	MAGIC Amplification Solution (2.5X), (for GC-rich template), 1ml
0669200011730	KT92	GeNei™ MAGIC Amplification Kit 1 (for GC-rich template) Using Taq DNA Polymerase, 50 Reactions

RAPD primer sets

RAPD (Random Amplified Polymorphic DNA) is a polymorphism assay which is based on the amplification of random DNA segments using sets of primers of arbitrary nucleotide sequence. In theory, the primer anneals to many regions of the genome simultaneously. However, geometric amplification only occurs in those regions in which the 3' end of the annealed primers face one another on opposite strands and are no more than 3 Kb apart. Thus, the technique essentially scans a genome for these small inverted repeats and amplifies intervening DNA sequences of variable length. The RAPD Primer Set is designed for different organisms. There are five different primer sets available for bacteria, fungi, plants, animals and humans. It enables the user to choose the appropriate primer set for fingerprinting.

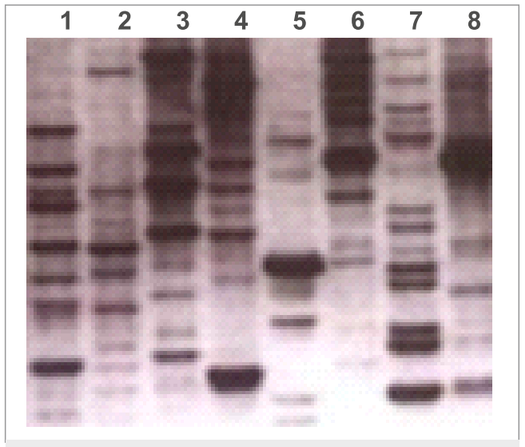
1. RBa-D

Sl .No	Name of the primer	Accession Numbers
1	RBa 1	AM911690
2	RBa 2	AM773311
3	RBa 3	AM773772
4	RBa 4	AM911679
5	RBa 5	AM911680
6	RBa 6	AM773778
7	RBa 7	AM773318
8	RBa 8	AM911681
9	RBa 9	AM911682
10	RBa10	AM911683
11	RBa11	AM911684
12	RBa 12	AM911685
13	RBa 13	AM750047
14	RBa 14	AM911686
15	RBa 15	AM911687
16	RBa 16	AM765831
17	RBa 17	AM750058
18	RBa 18	AM773319
19	RBa 19	AM911688
20	RBa 20	AM911689
21	RBa 21	AM911691
22	RBa 22	AM911692
23	RBa 23	AM911693
24	RBa 24	AM911694
25	RBa 25	AM750048



RAPD profile of B.subtilis & E.coli using 4 different primers showing polymorphism

Lane 1: 100bp Ladder
Lane 2 & 3 - B.subtilis & E.coli DNA with Primer RBa 1
Lane 4 & 5 - B.subtilis & E.coli DNA with Primer RBa 2
Lane 6 & 7 - B.subtilis & E.coli DNA with Primer RBa 3
Lane 8 & 9 - B.subtilis & E.coli DNA with Primer RBa 4



RAPD profile of S.cerevesiae & Fusarium sp., using 4 different primers showing polymorphism

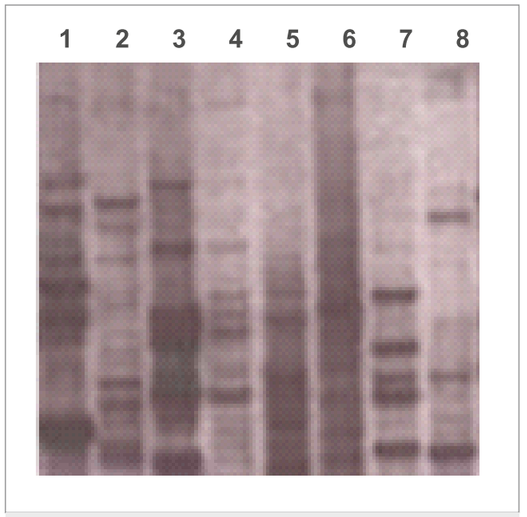
Lane 1 & 2 - S. cerevesiae & Fusarium sp., DNA with Primer Rfu 1
Lane 3 & 4 - S. cerevesiae & Fusarium sp., DNA with Primer Rfu 2
Lane 5 & 6 - S. cerevesiae & Fusarium sp., DNA with Primer Rfu 3
Lane 7 & 8 - S. cerevesiae & Fusarium sp., DNA with Primer Rfu 4

2. RFu-D

Sl. No.	Name of Primer	Accession Numbers
1	RFu 1	AM911695
2	RFu 2	AM911696
3	RFu 3	AM911697
4	RFu 4	AM773320
5	RFu 5	AM911698
6	RFu 6	AM765822
7	RFu 7	AM911699
8	RFu 8	AM773321
9	RFu 9	AM773779
10	RFu10	AM765832
11	RFu11	AM911700
12	RFu 12	AM911701
13	RFu 13	AM911702
14	RFu 14	AM911703
15	RFu 15	AM765823
16	RFu 16	AM750053
17	RFu 17	AM911704
18	RFu 18	AM773322
19	RFu 19	AM773324
20	RFu 20	AM750056
21	RFu 21	AM911705
22	RFu 22	AM911706
23	RFu 23	AM750047
24	RFu 24	AM911707
25	RFu 25	AM911708

3. Rpl-D

Sl. No.	Name of Primer	Accession Numbers
1	RPl 1	AM765819
2	RPl 2	AM750044
3	RPl 3	AM773310
4	RPl 4	AM773769
5	RPl 5	AM773770
6	RPl 6	AM773771
7	RPl 7	AM773312
8	RPl 8	AM773773
9	RPl 9	AM773315
10	RPl 10	AM750045
11	RPl 11	AM911709
12	RPl 12	AM773316
13	RPl 13	AM750046
14	RPl 14	AM773774
15	RPl 15	AM773775
16	RPl 16	AM773776
17	RPl 17	AM911710
18	RPl 18	AM765830
19	RPl 19	AM773777
20	RPl 20	AM773317
21	RPl 21	AM765820
22	RPl 22	AM911711
23	RPl 23	AM911712
24	RPl 24	AM765821
25	RPl 25	AM750054



RAPD profile of Horse gram and Cotton DNA using 4 different primers showing polymorphism

Lane 1 & 2 - Horse gram and Cotton DNA with Primer RPI1
Lane 3 & 4 - Horse gram and Cotton DNA with Primer RPI2
Lane 5 & 6 - Horse gram and Cotton DNA with Primer RPI3
Lane 7 & 8 - Horse gram and Cotton DNA with Primer RPI4

Applications :

- It plays a crucial role in gene mapping by identifying the position of linked genes in the chromosome which inherited together.
- It also detects any alteration in a sequence of DNA or any genetic oddity. It ascertains genes involved in genetic disorders.
- It is used to determine different characters in a DNA sequence which is used to distinguish between individuals, populations, or species.

Ordering Information:

Cat. No	PI No.	Product Description
0692100251730	RBa-D	Bacterial Primer Set - Full, 25 Nos
0692300251730	RFu-D	Fungal Primer Set - Full, 25 Nos
0692800251730	Rpl-D	Plant Primer Set - Full, 25 Nos

References :

- Sambrook, J., Fritsch, E.F., and Maniatis, T., in Molecular Cloning: A Laboratory Manual. Cold Spring Harbor Laboratory Press, NY, Vol. 1, 2, 3 (1989).
- Austin, D.F. 1988. The taxonomy, evolution and genetic diversity of sweet potatoes and related wild species. In: P. Gregory (ed.). Exploration, maintenance, and utilization of sweet potato genetic resources. CIP, Lima, Peru. p. 27-60.

Citations :

- Multi-loci Molecular Characterisation of Endophytic Fungi Isolated from Five Medicinal Plants of Meghalaya, India Ranjan Kumar Bhagobaty# and S. R. Joshi*
- Complication of Salmonella Bacteraemia in a Case of Treated Fungal Endophthalmitis J. Malathi,1 M. Sowmiya,1 Vikas Khetan,2 K. Lily Therese,1 and H. N. Madhavan1

dNTPs mix, Set and Solution

Deoxynucleotide triphosphates (dNTPs) are essential components in the formation of DNA. These molecules consist of nucleoside triphosphates with deoxyribose as their sugar component. When they become part of the DNA structure during replication, they shed two of their phosphate groups. The family of dNTPs encompasses deoxyadenosine triphosphate (dATP), deoxythymidine triphosphate (dTTP), deoxycytidine triphosphate (dCTP), deoxyguanosine triphosphate (dGTP), and deoxyuridine triphosphate (dUTP). These dNTPs play a pivotal role as the fundamental building blocks in the intricate process of DNA synthesis.

Quality control assays :

- **Absence of nuclease activity:** 1 µg of pUC 18 digest incubated with 10 mM EDTA at 37°C for 16 hrs showed sharp unaltered pattern on 1.2% agarose gel.
- **Absence of nickase activity:** 1 µg supercoiled plasmid DNA incubated with 10 mM of EDTA at 37°C for 16 hrs showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of RNase activity:** 1 µg of total RNA incubated for 4 hours at 37°C with 10 mM EDTA in 20 µl reaction volume showed no degradation of RNA on 2% agarose gel.

Related Products :

FC6Hl, FC7HL, FC8HL, FC8HL :

dNTP solutions are supplied in sterile double distilled water at 10 mM and 100 mM concentrations adjusted to neutral pH. These are supplied as individual products containing dATP, dCTP, dGTP and dTTP in separate tubes. dNTP solutions are used in applications that require highly pure dNTPs such as PCR, dideoxy sequencing, mutagenesis and cDNA synthesis

Performance Test :

- dNTP solutions are tested for their performance in RAPD of rice DNA with 10 mer primer using Taq DNA Polymerase.
- Tested in long PCR amplifications of specific targets having sizes ranging from 2 to 20 kb from human genomic DNA.

All dNTP solutions supplied in 10 mM and 100 mM concentration.

Storage: -20°C

Applications :

- **DNA Replication:** dNTPs are the substrates for DNA polymerases, the enzymes responsible for copying DNA during replication.
- **PCR (Polymerase Chain Reaction):** PCR is a widely used technique in molecular biology for amplifying specific DNA sequences. It relies on the use of dNTPs along with a DNA template, primers, and a DNA polymerase enzyme to generate multiple copies of a target DNA region.
- **DNA Sequencing:** dNTPs are used in various DNA sequencing methods, including Sanger sequencing and next-generation sequencing (NGS) technologies, to determine the sequence of nucleotides in a DNA molecule.
- **DNA Labeling:** dNTPs can be labelled with radioactive isotopes, fluorescent dyes, or other tags. Labelled dNTPs are used in techniques like DNA hybridization, Southern blotting, and fluorescence in situ hybridization (FISH) to detect and visualize specific DNA sequences.

References :

- https://www.academia.edu/35906600/SecondI_Edition_Methods_in_Molecular_Biology_1415

  Citations:
- Optimization of PCR reagents for amplification of microsatellites in oil palm M. Jayanthi*, G. Sujatha and P.K. Mandal National Research Centre for Oil Palm Pedavegi, West Godavari District, Andhra Pradesh 534 450

Ordering Information:

Cat. No	PI No.	Product Description
0652300031730	FC23J	dNTP Mix, 10 mM (2.5 mM each), 1000 µl
0652400021730	FC24L	dNTP Mix, 10 mM (2.5 mM each), 4 x 200 µl
0652400041730	FC24J	dNTP Mix, 10 mM (2.5 mM each), 4 x 1000 µl
0652200011730	FC23HL	dNTP Mix, 100 mM (25 mM each), 100 µl
0652200021730	FC23HJ	dNTP Mix, 100 mM (25 mM each), 1000 µl
0652300021730	FC23M	dNTP Mix, 40 mM (10 mM each), 1000 µl
dNTP Set		
0651200011730	Fc10	dNTP Set, 10 mM, 4 x 100 µl
0651200031730	FC10J	dNTP Set, 10 mM, 4 x 500 µl
0651300021730	Fc13L	dNTP Set, 10 mM, [5 x (4 x200 µl)] (20 vials)
0651000031730	FC10HJ	dNTP Set, 100 mM, 4 x 250 µl
dNTP Solution		
0650600011730	FC6HL	dATP, 100 mM, 100 µl
0650700011730	FC7HL	dGTP, 100 mM, 100 µl
0650800011730	FC8HL	dTTP, 100 mM, 100 µl
0650900011730	FC9HL	dCTP, 100 mM, 100 µl

Mineral Oil

Description :

Mineral oil is any of various colorless, odorless, light mixtures of higher alkanes from a mineral source, particularly a distillate of petroleum, as distinct from usually edible vegetable oils.

The name 'mineral oil' by itself is imprecise, having been used for many specific oils over the past few centuries. Other names, similarly imprecise, include 'white oil', 'paraffin oil', 'liquid paraffin' (a highly refined medical grade).

Most often, mineral oil is a liquid obtained from refining crude oil to make gasoline and other petroleum products. Mineral oils used for lubrication are known specifically as base oils. More generally, mineral oil is a transparent, colorless oil, composed mainly of alkanes and cycloalkanes, related to petroleum jelly. It has a density of around 0.8–0.87 g/cm3

Storage: Room temperature.

Applications :

- Mineral oil is often used in PCR reactions to prevent the evaporation of reaction mixtures during thermal cycling.
- In reverse transcription reactions for cDNA synthesis, mineral oil can be used to create a barrier that helps maintain a stable reaction environment.
- Mineral oil is sometimes used in in situ hybridization reactions to prevent the drying of hybridization mixtures on tissue sections or cells.
- Mineral oil can be used in phenol-chloroform extractions during nucleic acid purification. The addition of mineral oil aids in the separation of phases and prevents the loss of aqueous samples during extraction steps

References :

- "Mechanical properties of materials". Kaye and Laby Tables of Physical and Chemical Constants. National Physical Laboratory.
- Suwarno Darma, I.S.; Darma, I. S. (2008). "Dielectric properties of mixtures between mineral oil and natural ester.

Ordering Information:

Cat. No	PI No.	Product Description
3601281001730	FC21L	Mineral Oil, 100ml

DNA Diagnosis & Reagents

WHITE SPOT SYNDROME VIRUS (WSSV)

Description :

White spot syndrome virus (WSSV) infection has become the most dreaded disease problem affecting the farmed shrimp in India, causing mass mortalities and crop failures with huge economic losses for the farmers. White spot syndrome associated baculovirus is the causative agent of the disease. Affected shrimp develops white spots on the carapace and other parts of the body and mortality reaches upto 100% within 3 to 10 days after the first signs of the disease. Some do not succumb to the disease, but are carriers and are able to spread the pathogen. Therefore, it is very important to eliminate the carriers from the shrimp farming system. Till date, no treatment is known to control the disease. Hence, early diagnosis followed by suitable management practices is the only way in curtailing the disease. Conventional diagnosis fails to detect early stages of infection, and are also time consuming and less sensitive, whereas this kit is based on the principle of single-tube nested PCR (polymerase chain reaction), which is a powerful and sensitive diagnostic tool for identification of pathogens even at a very early stage (asymptomatic/carrier stage) of infection. This single-tube nested PCR involves an enzymatic hot start nested PCR in a single closed tube. In the

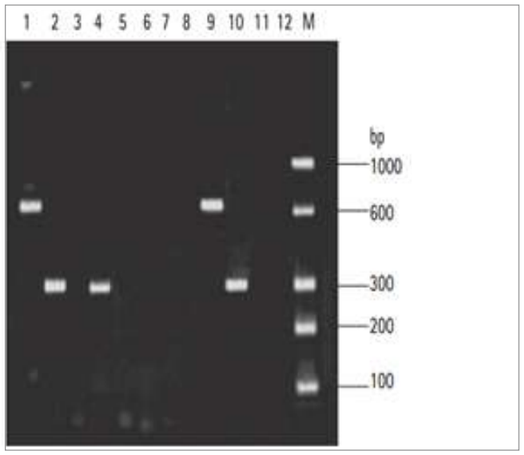
standard nested PCR, the second round PCR is setup using the first PCR product as template, which increases the chances of assay contamination by the product DNA. This is prevented by a single-tube nested PCR since all the amplification cycles take place in a single closed reaction tube not opened until the PCR is completed. In this assay, 3 sense and 1 antisense WSSV specific primers which produces either 3,2 or 1 PCR products (942bp, 525bp and 204bp) are used. Based on the severity of the infection, very high concentration of virus (105 viral particles) produces all the three fragments (942bp, 525bp and 204bp) whereas moderate to high concentration (103 viral particles) produces 2 fragments (525bp and 204bp) and low concentration of virus (10 to 200 viral particles) produces only the 204bp fragment. G

Unique Features :

- A single tube nested PCR reaction – Less chance of contamination.
- Followed nested PCR principles enabling very high sensitivity of virus detection.
- Distinguishes the degree of severity of infection – Severe, Moderate and Low.
- Detects up to 10 virus particles in 3.5 to 4 hours
- Fast and simple DNA extraction protocol
- Convenient aliquots of reagents – Ease of work and reduced chances of contamination
- Sterile disposable grinders for easy sample processing

Unique Features :

- DNA Extraction Buffer
- First PCR Pre-mix
- Nested PCR Pre-mix
- Taq DNA Polymerase
- Positive Control DNA
- Negative Control
- DNA Molecular Weight Marker
- Gel Loading Buffer
- Tissue Grinders, 1.5- & 0.5-ml vials



Lane 1 - Sample No.1 First PCR product Sample with high infection
Lane 2 - Sample No.1 Nested PCR product
Lane 3 - Sample No.2 First PCR product Sample with Low infection
Lane 4 - Sample No 2 Nested PCR product
Lane 5 - Sample No 3 First PCR product Sample with No infection
Lane 6 - Sample No. 3 Nested PCR product
Lane 7 - Negative control First PCR product
Lane 8 - Negative control Nested PCR product
Lane 9 - Positive control First PCR product
Lane 10 - Positive control Nested PCR product
Lane 11 - Reagent control First PCR product
Lane 12 - Reagent control Nested PCR product
Lane M - DNA Molecular Weight Marker

References :

- Wang, HC; Hirono, I; Maningas, MBB; Somboonwiwat, K; Stentiford, G; ICTV Report, Consortium (July 2019). "ICTV Virus Taxonomy Profile: Nimaviridae". Th.,m,e Journal of General Virology
- The white spot syndrome virus DNA genome sequence
- - Van Hulten, M. C. W.; J. Witteveldt; S. Peters; N. Kloosterboer; R. Tarchini; F. Fiers; H. Sandbrink; R. K. Lankhorst & J. M. Vlak (2001)
- Chen, S. N. (1995). "Current status of shrimp aquaculture in Taiwan.". In C. L. Browdy; J. S. Hopkins (eds.)

Ordering Information:

Cat. No	PI No.	Product Description
0680400011730	WSSV25	WSSV Detection Kit, (25 tests)
0680500051730	WSSV100A	WSSV Detection Kit, 100 tests with Gel electrophoresis consumables
Single Tube WSSV Detection Kit		
0680300011730	STWSSV50	Single Tube WSSV Detection Kit, 50 tests

GeNei™

GENOMICS

DNA DIAGNOSIS

GeNei™ Amplification Reagents Set for Malarial Parasites

Description :

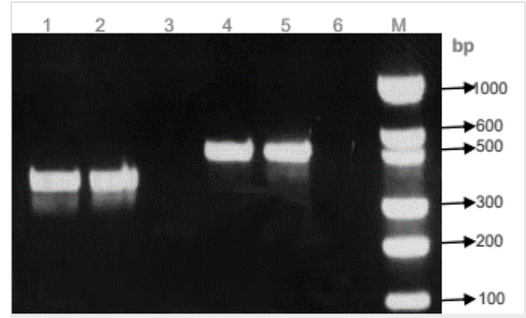
Malaria is an acute parasitic disease that kills an estimated 3 million people per year, mainly children, in developing countries. Global resistance to malaria is caused by insecticide resistance, spread of antimalarial drug resistance and increased movement of population. Early detection as well as species identification is a must for accurate treatment and follow-up of the disease. The classic diagnostic procedure remains as microscopic examination of Giemsa-stained blood smears that allows both the detection and identification of Plasmodium species. However, it is a technique that depends on experience and subjectivity of the observer. It is time-consuming, labor intensive and has limited sensitivity when parasitaemia is low. Serological tests are available, but they cannot always be used to distinguish between past and present infection because antimalarial antibodies may persist even after cure. Antigen detection methods are fast and simple to perform, but for patients with low levels of parasitaemia, the sensitivity decreases. The quantitative buffy coat (QBC) method is more sensitive, rapid and practical than microscopy, but is a relatively new technique and the limits of its sensitivity and specificity are still being explored. Reagents set is based on the principle of semi-nested multiplex PCR, a powerful and sensitive diagnostic tool and is used for the identification of Plasmodium falciparum and Plasmodium vivax species. It is a two-step sequential assay (nested PCR) and is based on the amplification of the sequences of the 18S small subunit ribosomal RNA (ssrRNA) gene. In first PCR reaction amplification observed at 750 bp using Plasmodium genus specific external primers. The second amplification is carried out with the same Plasmodium genus specific forward primer and two species-specific reverse primers for Plasmodium falciparum and Plasmodium vivax species, to amplify 395 bp and 499 bp amplification product respectively.

Unique Features :

- Amplification set helps in the detection of Plasmodium falciparum and Plasmodium vivax by standard amplification methods.
- Reagents are packed in convenient aliquots to reduce the chances of contamination.
- Results can be obtained within 5-6 hours.

Kit contents :

- I Amplification Pre-mix*
- II Amplification Pre-mix**
- Taq DNA Polymerase (3U/µl)
- Positive Control DNA 1
- Positive Control DNA 2
- 100bp DNA ladder (Ready to use)
- Proteinase K
- Gel Loading Buffer
- Lysis Buffer (For Blood)
- RT Wash Buffer I (concentrate)
- RT Wash Buffer II (concentrate)
- RT Elution Buffer
- Spin Columns
- Collection Tubes
- Dilution Buffer



Positive: Band at 395bp – P. falciparum Band at 499 bp - P. vivax Both 395 and 499 bp bands – mixed infection Negative: Absence of band

Lane 1 - Sample1: Sample positive for P. falciparum
Lane 2 - Sample 2: Sample positive for P. falciparum
Lane 3 - Sample 3: Negative sample
Lane 4 - Sample 4: Sample positive for P. vivax
Lane 5 - Sample 5: P. vivax positive control
Lane 6 - Reagent control
Lane M - Molecular weight marker

www.geneilabs.com

References :

- Korenromp E, Williams B, de Vlas S, Gouws E, Gilks C, Ghys P, Nahlen B (2005). "Malaria attributable to the HIV-1 epidemic, sub-Saharan Africa". Emerging Infectious Diseases.
- Bartoloni A, Zammarchi L (2012). "Clinical aspects of uncomplicated and severe malaria". Mediterranean Journal of Hematology and Infectious Diseases.
- O'Brien C, Henrich PP, Passi N, Fidock DA (2011). "Recent clinical and molecular insights into emerging artemisinin resistance inPlasmodium falciparum"

Ordering Information:

Cat. No	PI No.	Product Description
0670200011730	MAL25	GeNei™ Amplification Reagents Set for Malarial Parasites, 25 tests

GeNei™ Amplification Reagents Set for Human Papilloma Virus

Description :

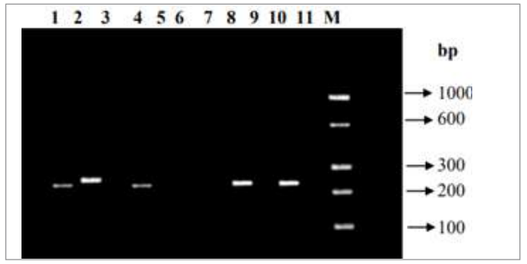
Cancer of the uterine cervix is the most common malignant tumour in women world-wide and represents a major public health problem in south-east Asia. Human Papilloma virus (HPV) has emerged as a major pathogen associated with this disease. Human Papilloma Viruses are members of papova virus family and contain a double-stranded, circular DNA genome with a typical size of about 7900 bp. It has been shown from several studies that HPV infection is a good marker for women with cervical neoplasia and pre-cancerous lesion. Women persistently infected with certain "oncogenic" HPV types show a high rate of progression of dysplasia to invasive cancer of the cervix. Therefore, in best traditions of medical practice, the clinicians are obligated to seek out the presence of causal agents of the disease – the oncogenic types of HPV. Thus diagnosis of HPV infection may facilitate early identification of women at increased risk of developing cervical cancer. Pap screening program has been the mode of cervical screening for several decades. The biggest limitation of Pap test is the poor sensitivity (50-80%) and the need for frequent repetition. This kit allows the detection of oncogenic HPV types. An amplification product of size varying between 230 – 270 bp is indicative of an infection with oncogenic HPV. The product size dependents on the type of HPV. This set detects oncogenic HPV types HPV 16, 18, 31, 33, 35, 45, 52b and 58. Due to its high specificity, the set allows quick screening in a variety of samples and an early detection of oncogenic genotypes.

Unique Features :

- This set greatly facilitates and hastens the detection of HPV by standard amplification methods.
- Fast and simple DNA extraction protocol.
- The reagents are packed in convenient aliquots to reduce the chances of contamination.
- The results can be obtained within 4-5 hours.
- Use of GeNei™ HotStart Taq DNA Polymerse enhances the sensitivity and specificity.

Kit contents :

- DNA Extraction Buffer
- Proteinase K
- HPV Amplification Mix
- GeNei™ HotStart Taq DNA Polymerase
- Positive Control DNA **
- DNA Molecular Weight Marker (Ready To Use)
- Gel Loading Buffer
- Sample Collection Buffer
- Sample Wash Buffer
- Lysis Buffer II
- Wash Buffer I (Concentrate)
- RT Wash Buffer II (Concentrate)
- Elution Buffer
- Spin Columns
- Collection Tube



Lane 1 - Sample Positive for oncogenic HPV
Lane 2 - Sample Positive for oncogenic HPV*
Lane 3 - Sample Negative for oncogenic HPV
Lane 4 - Sample Positive for oncogenic HPV
Lane 5 - Sample Negative for oncogenic HPV
Lane 6 - Sample Negative for oncogenic HPV
Lane 7 - Sample Negative for oncogenic HPV
Lane 8 - Sample Positive for oncogenic HPV
Lane 9 - Sample Negative for oncogenic HPV
Lane 10 - Positive control
Lane 11 - Negative control
LaneM - DNA Molecular Weight Marker (Ready to use)

References :

- Milner DA (2015). Diagnostic Pathology: Infectious Diseases. Elsevier Health Sciences.
- Meyers J, Ryndock E, Conway MJ, Meyers C, Robison R (June 2014). "Susceptibility of high-risk human papillomavirus type 16 to clinical disinfectants"
- Chen Z, Schiffman M, Herrero R, Desalle R, Anastos K, Segondy M, et al. (2011). "Evolution and taxonomic classification of human papillomavirus 16 (HPV16)-related variant genomes: HPV31, HPV33, HPV35, HPV52, HPV58 and HPV67"

Ordering Information:

Cat. No	PI No.	Product Description
0670100011730	HPV25	GeNei™ Amplification Reagents Set for Human Papilloma Virus, 25 tests

GeNei™ Amplification Reagents Set for Mycobacterium Tuberculosis

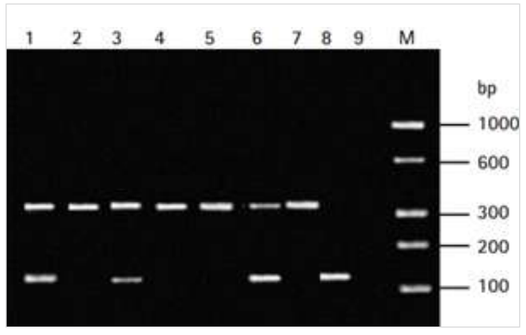
Tuberculosis continues to be the leading cause of morbidity and mortality by an infectious disease worldwide. Effective treatment of TB requires the rapid detection of Mycobacterium tuberculosis. This set is based on the principle of single tube nested PCR targeting the IS6110 sequence that is present in multiple copies in the genome of the Mycobacterium tuberculosis complex. Studies have shown that highest sensitivity is obtained by using IS6110 nested PCR when compared to PCR targeting other regions. The diagnosis of TB is made by microscopy and culture. Direct Microscopy lacks sensitivity and specificity. Culture is more sensitive and is still the yardstick for diagnosis, but the time required and frequent negative results in paucibacillary specimens are the limitations. PCR is widely used for the detection of Mycobacterium tuberculosis in clinical specimens because the tests are rapid, sensitive, and specific

Specifications :

- Detects specifically Mycobacterium tuberculosis complex present in samples.
- Based on the principles of nested PCR for increased specificity and sensitivity.
- Uses HotStart Taq DNA Polymerase for increased specificity.
- Carryover contamination prevention by dUTP-UDG system.
- Rapid Spin column-based DNA extraction for effective removal of PCR inhibitors from the sample.
- Results obtained in 4 hours.
- Convenient aliquots of reagents to reduce the chances of contamination.
- Internal control DNA provided for the identification of processed specimens containing substances that could inhibit PCR.
- Simulated positive controls included in the set.

Kit contents :

- Tris Buffer (50X)
- Proteinase K
- Lysis Buffer I
- Lysis Buffer II
- Wash Buffer I (concentrate)
- Wash Buffer II (concentrate)
- Elution Buffer
- Spin Columns
- Collection Tubes
- I Amplification Premix
- II Amplification Premix
- HotStart Taq DNA Polymerase
- Uracil DNA Glycosylase (UDG)
- Positive Control DNA
- DNA Molecular Weight Marker
- Internal Control DNA Gel Loading Buffer



Lane 1 - Sample 1 - Sample Positive for Mtb
Lane 2 - Sample 2 - Negative Sample
Lane 3 - Sample 3 - Sample Positive for Mtb
Lane 4 - Sample 4 - Negative Sample
Lane 5 - Sample 5 - Negative Sample
Lane 6 - Sample 6 - Sample Positive for Mtb
Lane 7 - Sample 7 - Negative Sample
Lane 8 - Sample 8 - Positive Control
Lane 9 - Sample 9 - Negative Control
Lane M - Molecular Weight Marker

References :

- https://microbenotes.com/mycobacterium-tuberculosis

Ordering Information:

Cat. No	PI No.	Product Description
0670300011730	MTB25	GeNei™ Amplification Reagents Set for Mycobacterium Tuberculosis , (for 25 tests)
0670300021730	MTB50	GeNei™ Amplification Reagents Set for Mycobacterium Tuberculosis, (for 50 tests)

M-MuLV Reverse Transcriptase

Description :

M-MuLV Reverse Transcriptase (M-MuLV RT) is a RNA dependent DNA polymerase that uses Single Stranded RNA or DNA as template. M-MuLV RT lacks endonuclease activity and has lower RNase H activity.

Unit Definition :

One unit of M-MuLV Reverse Transcriptase is defined as amount of enzyme which incorporates 1 nanomole of [3H] dTMP into an acid insoluble product in 10 minutes at 37°C using poly (A) - oligo (dT) as template - primer.

Storage Buffer :

20 mM Tris-HCl (pH 7,4), 100 mM NaCl, 1 mM EDTA, 1 mM DTT, 0.1% Igepal and 50% glycerol.

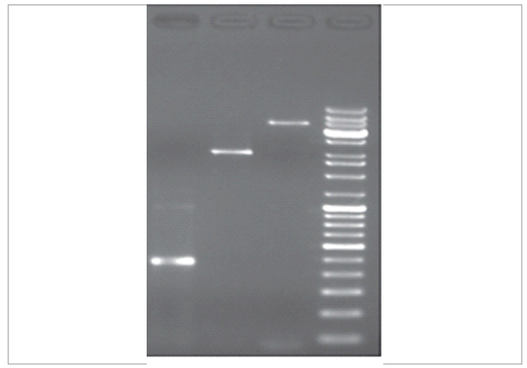
Reagents Supplied with Enzyme :

5X Assay Buffer. 1X Assay Buffer: 50 mM Tris-HCl (pH 8.5 at 25°C), MgCl2 (optimised concetration), KCl (optimised concetration), and 10 mM DTT.

Quality control assays :

- **Absence of Nuclease Activity**: M-MuLV Reverse Transcriptase when incubated for 16 hours with 1 g of DNA digest at 37°C showed sharp unaltered pattern on 1% agarose gel.
- **Absence of Nickase Activity:** M-MuLV Reverse Transcriptase when incubated for 16 hours with 1 g of supercoiled plasmid DNA at 37°C showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of Ribonuclease:** M-MuLV Reverse Transcriptase when incubated for 4 hours with 1 g E.coli RNA at 37°C showed no degradation of RNA as visualized on agarose gel.
- Performance Test: M-MuLV Reverse Transcriptase was tested in RT-PCR reaction of 500 bp fragment from GAPDH gene (cDNA) from total HeLa RNA and 2.1 kb fragment of polEgene from HeLa RNA.

Storage: Store enzyme and assay buffer at -20°C.



RT-PCR Amplified Products analysed. on 1% Agarose gel

Applications :

- RT-PCR is used to prepare cDNA from eukaryotic mRNA, which lacks introns and can be inserted into prokaryotes. RT-PCR is used in monitoring the result of gene insertion and gene therapy. These procedures are supposed to show gene expression and code for a particular protein, hence translating specific types of mRNA sequence. This specific mRNA sequence can be analyzed using RT-PCR.
- **Gene Expression:** RT-PCR, we can amplify the minute mRNA sample and study the sequence of nucleotides, thus analyzing the gene expression. It is used in studying and identifying multidrug-resistant genes and their expressions in pathogens.
- **Species Identification:** RT-PCR is used to identify viruses like HIV, SARS viruses, dengue viruses, HCV, etc. Besides, other microorganisms and even

higher organisms are identified by studying their rRNA and mRNA.

- **Molecular Diagnostics:** Diagnosis of different types of viral infection, bacterial infection, fungal and parasite infection, cancer cell, and genetic diseases are done using the RT-PCR technique in clinical laboratories.
- RT-PCR can detect and quantify tissue-specific mutant alleles. It can also detect any undesired changes in the mRNA sequence and unique mRNAs, which are produced only by the different types of cancer cells in our body.

References :

- Ferris AL, Hizi A, Showalter SD, Pichuantes S, Babe L, Craik CS, Hughes SH (April 1990). "Immunologic and proteolytic analysis of HIV-1 reverse transcriptase structure
- Temin HM, Mizutani S (June 1970). "RNA-dependent DNA polymerase in virions of Rous sarcoma virus
- Hurwitz J, Leis JP (January 1972). "RNA-dependent DNA polymerase activity of RNA tumor viruses. I. Directing influence of DNA in the reaction". Journal of Virology.

Ordering Information:

Cat. No	PI No.	Product Description
0601300051730s	MME13S	M-MuLV Reverse Transcriptase, 1000Units, 50 reaction, 20 U/ µl
0601300061730	MME13L	M-MuLV Reverse Transcriptase, 5000Units, 250 reactions, 20 U/ µl

MMLV III Reverse Transcriptase

Reverse transcriptases (RTs) are enzymes using RNA as a template for DNA synthesis. Since the discovery in 1970, RTs have taken place in a common laboratory practice, which value hardly could be overestimated. RTs are applied to solve numerous tasks when RNA is a matter of concern, from pathogen detection or cloning to single-cell transcriptome analysis, allowing the possibility of working freely with fragile RNA molecules.

Among all known RTs, the reverse transcriptase from a Moloney Murine Leukemia Virus (M-MuLV RT) is one of the most scrupulously studied and well-known. M-MuLV RT was one of the first discovered RTs and served as a model for researching RTs properties and catalysis. Structure, catalysis, temperature optimum, thermostability, fidelity of DNA synthesis, processivity, optimal buffer composition, bypass of DNA damage, RNase H activity, strand transfer, and strand displacement activities – all biochemical properties of M-MuLV RT has been extensively investigated.

MMLV III Reverse Transcriptase (MMLV RTIII) is a ~ 70kDa RNA dependent DNA polymerase that uses Single Stranded RNA or DNA as template. MMuLV III RT lacks endonuclease activity and has lower RNase H activity.

Isolated from a recombinant source E.coli strain which harbours codon optimized gene from Moloney Murine Leukemia Virus

Unit Definition :

One unit of MMLV III Reverse Transcriptase is defined as amount of enzyme which incorporates 1 nanomole of [3H] dTMP into an acid insoluble product in 10 minutes at 37°C using poly (A) - oligo (dT) as template - primer.

Storage Buffer: 20 mM Tris-HCl (pH 7,4), 100 mM NaCl, 1 mM EDTA, 1 mM DTT, 0.1% Igepal and 50% glycerol.

Unique Features :

- RNase DNAse Free
- Lacks DNA endonuclease activity and has a lower RNase H activity.
- High purity/high quality control
- Thermostable reverse transcriptase active between42- 50°C.

Reagents Supplied with Enzyme :

5X Assay Buffer. 1X Assay Buffer: 50 mM Tris-HCl (pH 8.5 at 25°C), MgCl2(optimised Conc.) , KCl(optimised Conc.) and 10 mM DTT.

Storage :-20°C

Applications :

M-MLV Reverse Transcriptase has been used:

- To synthesize cDNA
- In quantitative Real Time-Polymerase chain reaction (RT-qPCR)
- In Reverse Transcription
- Preparation of cDNA libraries or for first strand cDNA synthesis
- For use in a 2-step RT-PCR assay
- For the synthesis of cDNA that is further used in cloning

References :

M-MLV Reverse Transcriptase has been used:

- To synthesize cDNA
- In quantitative Real Time-Polymerase chain reaction (RT-qPCR)
- In Reverse Transcription
- Preparation of cDNA libraries or for first strand cDNA synthesis
- For use in a 2-step RT-PCR assay
- For the synthesis of cDNA that is further used in cloning
- Verma, I.M. (1977) Reverse Transcriptase in THE ENZYMES Vol.14A (P.D. Boyer, ed.) Pg.87-104 Academic Press, New York.
- Zagurski, R.J. Baumeister,K., Lomax,N., Berman, H.L. (1985) Rapid and easy sequencing of large double stranded DNA and supercoiled plasmid DNA. Gene Anal. Technologies 2:89-94.
- Roth,H. J. Tanese,N. and Goff, S.P. Purification and characterization of Murine retroviral reverse transcriptase Biochem. Biophysics. Acta 442:324-330
- George tzertzinis,Stanley Tabor, and Nicole M Nicols. Current protocols in Molecular Biology; Vol.3, Supplement 34, Unit 3.7.1-3.7.3.
- Sambrook, J. Fritsch, F.F., Maniatis, T. (1989) Reverse Transcriptase (RNA dependent DNA Polymerase), Molecular Cloning: A Laboratory Manual, Second Edition, 5.52-5.55.
- M-MuLV reverse transcriptase: Selected properties and improved mutants--Igor P. Oscorbin* and Maxim L. Filipenko
- Yasukawa K., Mizuno M., Inouye K. Characterization of Moloney murine leukaemia virus/avian myeloblastosis virus chimeric reverse transcriptases.

Ordering Information:

Cat. No	PI No.	Product Description
0604500011730	MME45S	MMLV III Reverse Transcriptase (100U/µl),1000 U
0604500021730	MME45L	MMLV III Reverse Transcriptase (100U/µl), 5000U
0604500031730	MME45B	MMLV III Reverse Transcriptase (100U/µl), 10000U
0604500041730	MME45HS	MMLV III Reverse Transcriptase (200U/µl), 2000U
0604500051730	MME45HC	MMLV III Reverse Transcriptase (200U/µl), 10000U

M-MuLV RT-PCR Kit

Description :

The M-MuLV RT-PCR Kit provides a system for the detection, quantitation and analysis of mRNA. RNA is reverse transcribed to cDNA and amplified using the PCR process. The detection of the reverse transcription polymerase chain reaction (RT-PCR) product is done using gel electrophoresis. The kit includes all the necessary reagents for both cDNA synthesis and DNA amplification for 20 reactions. The kit uses M-MuLV (Moloney Murine Leukemia virus) Reverse Transcriptase which is a RNA dependent DNA polymerase. M-MuLV Reverse Transcriptase functions at 37°C and helps in removal of secondary structures in template RNA. The enzyme is not suitable for long cDNA synthesis (>5 kb). Total RNA and specific primers for GAPDH (glyceraldehyde 3 phosphate dehydrogenase) are supplied to carry out four control reactions. Template RNA concentration, primers, additives for high GC rich templates and cDNA to be used in the PCR reaction need to be optimized to get specific target amplification

Unique Features :

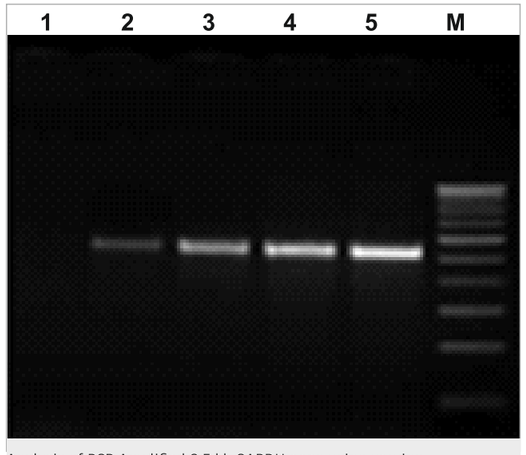
- Two-step RT-PCR
- Can be used for prokaryotic and eukaryotic systems
- First-strand cDNA synthesis
- Amplification of full-length cDNA
- Kit includes all the necessary reagents for both cDNA synthesis and DNA amplification.

Kit contents :

- Control Forward Primer
- Control Reverse Primer
- Oligo dT Primer
- Random Hexamer
- Total RNA
- M-MuLV Reverse Transcriptase
- 5X Assay Buffer M-MuLV
- Reverse Transcriptase Taq DNA Polymerase
- 10X Taq DNA Polymerase Assay Buffer
- RNasin
- 30mM dNTP Mix
- Nuclease Free Water
- DTT(100 mM)
- Dilution Buffer for Taq DNA Polymerase.

Applications :

- Gene expression analysis
- Quantitative RT-PCR
- Cloning and gene expression studies.
- Detection of differential expression of gene
- Identification of multiple gene targets



Analysis of PCR Amplified 0.5 kb GAPDH gene using varying amounts of Total HeLa RNA, on agarose gel.

Lane 1 - 2 µg Total RNA (Negative Control)
Lane 2 - 100 ng Total RNA
Lane 3 - 250 ngTotal RNA
Lane 4 - 1 µg Total RNA
Lane 5 - 2 µg Total RNA
Lane M - StepUp™ 100 bp DNA Ladder

RTIII RT- PCR Kit

Description :

The RTIII RT-PCR Kit provides a system for the detection, quantitation and analysis of mRNA. RNA is reverse transcribed to cDNA and amplified using the PCR process. The detection of the reverse transcription polymerase chain reaction (RT-PCR) product is done using gel electrophoresis. The kit includes all the necessary reagents for both cDNA

synthesis and DNA amplification for 20 reactions. The kit uses MMLV III Reverse Transcriptase which is a RNA dependent DNA polymerase.

MMLV III Reverse Transcriptase functions at 50°C and helps in removal of secondary structures in template RNA. The

enzyme is not suitable for long cDNA synthesis (>5 kb). Total RNA and specific primers for GAPDH (glyceraldehyde

3 phosphate dehydrogenase) are supplied to carry out 4 control reactions. Template RNA concentration, primers, additives for high GC rich templates and cDNA to be used in the PCR reaction need to be optimized to get specific target amplification.

References :

- Verma, I.M. (1977) Reverse Transcriptase in THE ENZYMES Vol.14A (P.D. Boyer, ed.) Pg.87-104 Academic Press, New York.
- Zagurski, R.J. Baumeister,K., Lomax,N., Berman, H.L. (1985) Rapid and easy sequencing of large double stranded DNA and supercoiled plasmid DNA. Gene Anal. Technologies 2:89-94.
- Roth,H. J. Tanese,N. and Goff, S.P. Purification and characterization of Murine retroviral reverse transcriptase Biochem. Biophysics. Acta 442:324-330
- George tzertzinis,Stanley Tabor, and Nicole M Nicols. Current protocols in Molecular Biology; Vol.3, Supplement 34, Unit 3.7.1-3.7.3.
- Sambrook, J. Fritsch, F.F., Maniatis, T. (1989) Reverse Transcriptase (RNA dependent DNA Polymerase), Molecular Cloning: A Laboratory Manual, Second Edition, 5.52-5.55.

Ordering Information

Cat. No	PI No.	Product Description
0667400011730	KT74	GeNei™ M-MuLV RT-PCR Kit, 20 reactions
2113080011730	KT308	RTIII RT-PCR Kit, 20 reactions

GeNei™

GENOMICS

PRODUCTS FOR RT-PCR

One Step M-MuLV RT-PCR Kit

Description :

One Step Reverse Transcription PCR (RT-PCR) protocol is the method of choice when many RNA samples have to be analyzed simultaneously or if sample cross contamination is a certain risk. Both reverse transcription (RT) and PCR, excluding RNA template denaturation step, are set up and carried out in one reaction mix in a single tube.This is not only convenient, but also helps in eliminating sample to sample contamination. High sensitivity can be achieved using this protocol as all the synthesized cDNA is used as a template for the PCR step . The One Step M-MuLV RT-PCR kit provides a convenient format for highly efficient and specific RT-PCR using any RNA. The kit contains optimized components that allow both Reverse Transcription and PCR amplification to take place in what is commonly referred to as a "One Step Reaction".

The kit consists of two major components: RT-PCR Enzyme Mix and 2X RT-PCR Reaction Mix. The RT-PCR enzyme mix supplied with this kit is a mixture of Moloney Murine Leukemia virus (M-MuLV) Reverse Transcriptase, HotStart Taq DNA polymerase and a Fidelity Enzyme. The M-MuLV RT enzyme in the mixture can synthesize cDNA at a temperature range of 40-50°C, detect product upto 3 kb with varying amount of Total RNA (25 ng to 2 µg). The HotStart Taq DNA Polymerase included in the mix provides Hot Start PCR for highly specific amplification. During Reverse Transcription, HotStart Taq DNA Polymerase is completely inactive and does not interfere with the Reverse Transcription reaction. After Reverse Transcription by M-MuLV, reactions are heated to 95°C for five minutes to activate the HotStart Taq DNA Polymerase and to simultaneously inactivate the Reverse Transcriptase.

This procedure using HotStart Taq DNA polymerase eliminates extension from non specifically annealed primers and primer-dimers in the first RT cycle ensuring highly specific and reproducible PCR.

Although all the enzymes are present in the reaction mix, the use of HotStart Taq DNA Polymerase ensures the temporal separation of Reverse Transcription and PCR allowing both processes to be performed sequentially in a single tube. Only one reaction mix needs to be setup. No additional reagents are added after the reaction starts. 2X RT-PCR Reaction Mix, included in this kit, consists of an optimized single reaction buffer for Reverse Transcription and PCR , and includes MgSO4 to a final concentration of 2.5 mM which will produce satisfactory result in most cases, it also includes deoxyribonucleotide Triphosphates (dNTPs) and stabilizers. Sufficient reagents are provided for 25 or 100 amplification reactions of 50 µl each.

Unique Features :

- Fast and convenient
- Avoids contamination
- Can be used for prokaryotic and eukaryotic system
- High sensitivity

Kit contents :

- RT-PCR Enzyme Mix
- 2X RT-PCR Reaction Mix
- Water (DNase and RNase free)

RT-PCR amplified products of ß-actin gene from different no of HeLa and MCF-7 cells using One Step Reverse Transcription PCR (RT-PCR)kit analyzed on 1% agarose gel.

Applications :

- Gene expression analysis
- Quantitative RT-PCR
- Cloning and gene expression studies.
- Detection of differential expression of gene
- Identification of multiple gene targets

References :

- Verma, I.M. (1977) Reverse Transcriptase in THE ENZYMES Vol.14A (P.D. Boyer, ed.) Pg.87-104 Academic Press, New York.

- Zagurski, R.J. Baumeister,K., Lomax,N., Berman, H.L. (1985) Rapid and easy sequencing of large double stranded DNA and supercoiled plasmid DNA. Gene Anal. Technologies 2:89-94.
- Roth,H. J. Tanese,N. and Goff, S.P. Purification and characterization of Murine retroviral reverse transcriptase Biochem. Biophysics. Acta 442:324-330
- George tzertzinis,Stanley Tabor, and Nicole M Nicols. Current protocols in Molecular Biology; Vol.3, Supplement 34, Unit 3.7.1-3.7.3.
- Sambrook, J. Fritsch, F.F., Maniatis, T. (1989) Reverse Transcriptase (RNA dependent DNA Polymerase), Molecular Cloning: A Laboratory Manual, Second Edition, 5.52-5.55.

Ordering Information

Cat. No	PI No.	Product Description
0661700021730	KT117M	GeNei™ One Step M-MuLV RT-PCR Kit, 50 reactions
0661700051730	KT117L	GeNei™ One Step M-MuLV RT-PCR Kit, 100 reactions

cDNAdirect™ Kit

Description :

cDNAdirect Kit is an optimized procedure to synthesize firststrand cDNA directly from cultured mammalian cells without isolating RNA. The synthesized first-strand cDNA is ready to be used in PCR, RT-PCR and other downstream applications such as quantifying mRNA level from a small number of cells. In cDNAdirect Kit, cultured cells are washed in PBS to remove cell culture medium and extracellular contaminants. Cells are then incubated with specially designed Lysis Buffer at 75°C to rupture the cells and inactivate the endogenous RNases. The crude cell lysate is treated with DNase I to degrade the genomic DNA and is ready to use for first strand cDNA synthesis and PCR using either a one-step or two-step Reverse Transcriptase-PCR.

Unique Features :

- No RNA isolation or purification required.
- Simple protocol and generates high quality cDNA for use in a variety of downstream applications.
- Kit is optimized for synthesizing cDNA from small number of cells.
- Synthesized cDNA is free of genomic DNA contamination.
- Single step procedure to recover cDNA in 30 minutes.
- Allows detection of rare transcripts.
- Compatible with wide range of mammalian cell types.

Kit contents :

- 10X PBS
- cDNAdirect Lysis Buffer
- DNase I (RNase free)
- cDNAdirect RT mix
- M-MuLV III Reverse Transcriptase
- RNase inhibitor
- Random Hexamer
- Positive RNA control
- Positive control sense primer
- Positive control antisense primer
- Nuclease Free Water

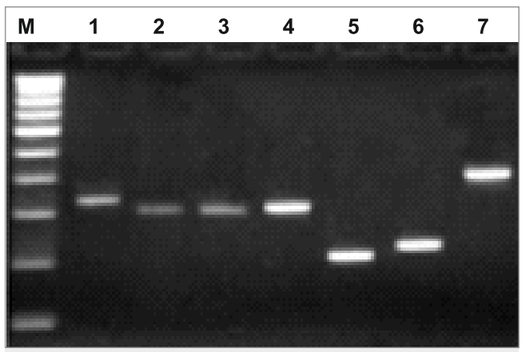


Fig 1: RT-PCR amplified products of different genes in NIH-3T3 cell line using cDNAdirect Kit.

Lane M - StepUpTM100 bp DNA ladder
Lane 1 - 326 bp fragment of RXRB gene
Lane 2 - 305 bp fragment of CASP9 gene
Lane 3 - 304 bp fragment of p53 gene
Lane 4 - 309 bp fragment of c-myc gene
Lane 5: - 208 bp fragment of PCNA gene
Lane 6 - 223 bp fragment of GAPDH gene
Lane 7 - 405 bp fragment of β–actin gene
Lane 5: - 208 bp fragment of PCNA gene
Lane 6 - 223 bp fragment of GAPDH gene
Lane 7 - 405 bp fragment of β–actin gene

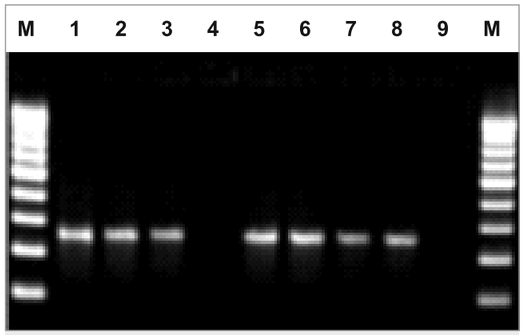


Fig 2: RT-PCR amplification of -actin gene fragment (323 bp) from different number of HeLa & MCF-7 cells using cDNAdirect Kit.

References :

- Hrdlickova, Radmila; Toloue, Masoud; Tian, Bin (January 2017). "RNA-Seq methods for transcriptome analysis.
- R, Kansal; K, Kuhar; I, Verma; Rn, Gupta; Vk, Gupta; Kr, Koundal (December 2008). "Improved and Convenient Method of RNA Isolation From Polyphenols and Polysaccharide Rich Plant Tissues.
- Temin H.M., Mizutani S. RNA-dependent DNA polymerase in virions of Rous sarcoma virus.

Ordering Information

Cat. No	PI No.	Product Description
0667800021730	KT178S	cDNAdirect™ Kit, 20 preps

Random Hexamer

Description :

Random hexamer is a mixture of random hexanucleotide primers that anneal to sequences throughout the target RNA, resulting in reverse transcription of both polyadenylated and non-polyadenylated RNAs.

The concentration of random hexamers in the reaction mixture is critical. As the ratio of hexamers to mRNA increases, the average length of the cDNA decreases. It is therefore essential to optimize the ratio of random primers and mRNA template in a series of pilot reactions. The average size of the first-strand cDNA generated in each of the pilot reactions should be measured by alkaline agarose gel electrophoresis and autoradiography using DNA markers of known size. When setting up a large-scale reaction to synthesize first-strand cDNA, use the highest ratio of random primer to mRNA that generates cDNA of the maximum average length.

Random Hexamer Sequence: (CATG) 6
Quantity Supplied : A260 OD 7 g
Additional purification : PAGE Purified
Dissolving solvent : Sterile Distilled water
Storage : -20°C

Applications :

- DNA probe synthesis for use in Northern and Southern blots, and in situ hybridization applications.
- Partially degraded RNA samples.
- RNA without poly(A) tail such as ribosomal RNAs.
- RNA with strong secondary structure.

References :

- Hansen, KD; Brenner, SE; Dudoit, S (2010). "Biases in Illumina transcriptome sequencing caused by random hexamer priming.

Ordering Information

Cat. No	PI No.	Product Description
0692470071730	Rh6	Random Hexamer (6 mer), 7µg

Oligo dT primer pd (T)

References :

The repeated sequences of deoxy-thymidine nucleotide sequence is used as oligos. It is usually used as a primer for cDNA synthesis (reverse transcription). It initiates the synthesis of the first strand by annealing to the 3' end of poly(A). Also, this primer is not suitable for RNA lacking poly-A tail or degraded RNA.In reverse transcription, an oligo(dT) primer is first annealed to the poly(A) sequences universally present at the 3' end of nearly every mRNA by T:A base-pairing. The reverse transcriptase then extends from the annealed oligo(dT) primer along the mRNA template, resulting in the copying of the mRNA sequence into the cDNA sequence In reverse transcription, an oligo(dT) primer is first annealed to the poly(A) sequences universally present at the 3' end of nearly every mRNA by T:A base-pairing. The reverse transcriptase then extends from the annealed oligo(dT) primer along the mRNA template, resulting in the copying of the mRNA sequence into the cDNA sequence.

Sequence: 5' – TTT TTT TTT TTT TTT TTT- 3'
Appearance: White Lyophilizate.
Dissolving Solvent: Sterile Distilled Water
Storage: -20°C

Applications :

- RT-PCR, PCR
- For the construction of cDNA libraries for gene identification.
- DNA probe synthesis for use in Northern and Southern blots, and in situ hybridization applications.

Ordering Information

Cat. No	PI No.	Product Description
0690970071730	DT 18	Oligo dT primer pd (T)18, 7µg

CLONING AND EXPRESSION

pUC18

Description :

pUC18 DNA is a commonly used E.coli cloning vector. The high copy number plasmid is a double stranded circular DNA, 2686 bp in length. There is a 54 bp multiple cloning site (MCS) polylinker region that has unique sites for 13 restriction endonucleases. The MCS is inframe with lacZgene, allowing insertion screening in colonies by - complementation. The DNA is isolated from E.coli strain by alkaline lysis method and further purified by density gradient. pUC18 DNA has ampicillin (Amp) resistance gene as selectable marker. The DNA is supplied in 10 mM Tris-HCl (pH 8.0) and 1 mM EDTA. pUC18 DNA is identical to pUC19 DNA except that the MCS region is inverted (nt397-454).

Storage: -20°.

Quality Control Assay

Analysis	Specification
Electrophoresed 1 µg of DNA on a 1% agarose gel	More than 80% of observed DNA is in the supercoiled form
Absorption ratio A260:A280	1.5 to 2.0
Cleavage pattern verification Using Restriction enzymes(Eco RI, HaeIII ,PvuII & Xba I)enzymes followed by electrophoretic analysis on 1 – 1.5% agarose gel.	Typical cleavage pattern with clear sharp bands without Using Restriction enzymes(Eco RI, smear.
Self incubation with Genei assay buffers for 16 hours at 37° C to verify absence of detectable levels of nuclease activity.	Supercoiled form without nicks or linear band as visualized on 1% agarose gel.
MCS orientation in pUC18 DNA verified enzymes followed by electrophoretic analysis on 2% agarose gel.	3 bands of molecular sizes 2364, 176 and 146 bp.

References :

- Yanisch-Perron, C.; Vieira, J.; Messing, J. (1985). "Improved M13 phage cloning vectors and host strains: Nucleotide sequences of the M13mp18 and pUC19 vectors.
- Wang, Nam Sun. "Summary of Sites on pUC19". Department of Chemical & Biomolecular Engineering University of Maryland.

Ordering Information

Cat. No	PI No.	Product Description
1600270101730	MBV1S	pUC18, 10µg
1600270501730	MBV1L	pUC18, 50µg
1600170501730	MBV1CL	pUC18 (Cesium Chloride Purified), 50µg

pUC19

Description :

pUC19 DNA is a commonly used E.coli cloning vector. The high copy number plasmid is a double stranded circular DNA, 2686 bp in length. There is a 54 bp multiple cloning site (MCS) polylinker region that has unique sites for 13 restriction endonucleases. The MCS is in frame with lacZ gene, allowing insertion screening in colonies by - complementation. The DNA is isolated from E.coli strain by alkaline lysis method and further purified by cesium chloride density gradient. pUC19 DNA has ampicillin (Amp) resistance gene as selectable marker. The DNA is supplied in 10 mM Tris-HCl (pH 8.0) and 1 mM EDTA. pUC19 DNA is identical to pUC18 DNA except that the MCS region is inverted (nt397-454).

Storage: -20°C

References :

- Yanisch-Perron, C.; Vieira, J.; Messing, J. (1985). "Improved M13 phage cloning vectors and host strains: Nucleotide sequences of the M13mp18 and pUC19 vectors.
- Wang, Nam Sun. "Summary of Sites on pUC19". Department of Chemical & Biomolecular Engineering University of Maryland.

Ordering Information:

Cat. No	PI No.	Product Description
1600470501730	MBV2L	pUC19, 50µg
1600370501730	MBV2CL	pUC19 (Cesium Chloride Purified), 50µg

Quality Control Assay

Analysis	Specification
Electrophoresed 1 µg of DNA on a 1% agarose gel.	More than 80% of observed DNA is in thesupercoiled form.
Absorption ratio A260:A280	1.5 to 2.0
Cleavage pattern verification Using Restriction Enzymes (EcoR I, Pvu II, Xba I & Sma I) enzymes followed by electrophoretic analysis on 1 – 1.5% agarose gel..	Typical cleavage pattern with clear sharp bands without smear.
Self incubation with Genei assay buffers for 16 hours at 37° C to verify absence of detectable levels of nuclease activity.	Supercoiled form without nicks or linear band as visualized on 1% agarose gel.
MCS orientation in pUC19 DNA verified by digestion with EcoR I and Pvu II enzymes followed by electrophoretic analysis on 2% agarose gel.	3 bands of molecular sizes 2364, 232 and 90 bp.

pBR322

Description :

pBR322 is a commonly used E.coli cloning vector. The DNA is isolated from E.coli strain by alkaline lysis method and further purified by cesium chloride density gradient. The plasmid is double stranded circular DNA, 4361 base pairs in length. pBR322 has ampicillin (Amp) and tetracycline (Tet) resistance genes as selectable markers. pBR322 can be amplified with chloramphenicol. The DNA is supplied in 10 mM Tris-HCl (pH 8.0) and 1 mM EDTA.

Storage: -20°C

Ordering Information

Cat. No	PI No.	Product Description
1600670101730	MBV3S	pBR322, 10µg
1600670501730	MBV3L	pBR322, 50µg
1600570501730	MBV3CL	pBR322 (Cesium Chloride Purified), 50µg

Quality control assays

Analysis	Specification
Electrophoresed 1 µg of DNA on a 1% agarose gel.	More than 80% of observed DNA is in the supercoiled form.
Absorption ratio A260:A280	1.5 to 2.0
Cleavage pattern verification using EcoRI, Hae III & Not I enzymes followed by electrophoretic analysis on 1 – 1.5% agarose gel.	Typical cleavage pattern with clear sharp bands without . smear
Self incubation with Genei assay buffers for 16 hours at 37°C to verify absence of detectable levels of nuclease activity.	Supercoiled form without nicks or linear band as visualized on 1% agarose gel.

References :

- Watson, N. (1988). "A new revision of the sequence of plasmid pBR322". Gene
- Balbás P, Soberón X, Merino E, Zurita M, Lomeli H, Valle F, Flores N, Bolivar F (1986). "Plasmid vector pBR322 and its special-purpose derivatives--a review

GeNei™ Instant Cloning Kit

TA Cloning is a simple and efficient method for cloning of PCR products. The procedure exploits the terminal transferase activity of certain thermophilic polymerases including Taq DNA Polymerase. Taq DNA polymerase preferentially adds a single adenosine residue to the 3' ends of the double stranded molecule and thus most of the molecules amplified by Taq DNA Polymerase possess single 3'-A overhang. The use of a linearised T-vector with 3'-T overhangs on both ends allows direct high efficiency cloning of PCR products carrying 3'-A overhang.

This kit includes 2X INSTANT ligation buffer and high activity INSTANT T4 DNA ligase to enhance single overhang ligation. The ligation reaction can be carried out for 1 hour at room temperature (25°C). Ligation can be continued at 4°C overnight to obtain maximum number of transformants. (or can be frozen at -20°C till use)

Genei T vector is a high copy number vector with pMB1 origin of replication. In addition, the vector also has f1 origin from filamentous phage f1 for the preparation of ss-DNA. The vector carries Ampicillin resistance marker. The Multiple Cloning Site (MCS) is within the lac Z α fragment that allows for blue-white screening. The insert can be released by double digestion (Ref Fig 1). The cloning region is flanked by SP6 and T7 RNA Polymerase promoter sequences.

Unique Features :

- 1 hour ligation at room temperature (25° C).
- No enzymatic manipulation of the product.
- Direct ligation of amplified product into T vector.
- Reduced background as self-ligation of the linearised T vector cannot occur.
- Easy screening with blue white selection
- Insert can be released by double digestion with suitable enzymes.
- Sequencing of insert can be done using SP6 and T7 promoter primers.
- 30-60% clones expected depending on the insert.

Applications :

- T-vector can be used to clone any double-stranded DNA fragment, including PCR products amplified by any DNA polymerase, as well as all blunt- and sticky-ended DNA species.

References :

- Holton, T.A.; Graham, M.W (1991-03-11). "A simple and efficient method for direct cloning of PCR products using ddT-tailed vectors
- Clark, J. M. (1988). Novel non-templated nucleotide addition reactions catalyzed by procaryotic and eucaryotic DNA polymerases. Nucleic acids research, 16(20), 9677-9686.
- Hu, G. (1993). DNA Polymerase-catalyzed addition of nontemplated extra nucleotides to the 3′ of a DNA fragment. DNA and cell biology, 12(8), 763-770.
- Liu, Q., Dang, H. J., Wu, Y. H., Li, M., Chen, Y. H., Niu, X. L., ... & Luo, L. J. (2018). pXST, a novel vector for TA cloning and blunt-end cloning. BMC biotechnology, 18(1), 1-7.

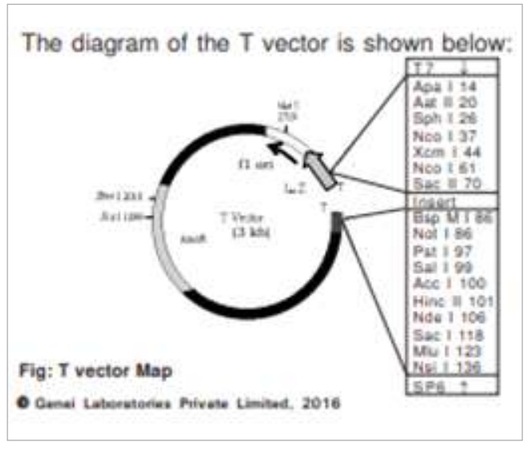


Fig: T vector Map

Kit Contents :

- Linearised T-vector
- Instant T4 DNA Ligase
- 2X Instant Ligation Buffer
- Nuclease Free Water
- Control DNA Insert
- Instruction Manual

Ordering Information

Cat. No	PI No.	Product Description
1660630011730	KT63A	GeNei™ Instant Cloning Kit, 10 reactions

GeNei™ Competent Cells Preparation Kit (A), 50 reactions (Calcium Chloride method)

Description :

Bacterial transformation is a process in which bacterial cells take up free/external DNA from the environment/surrounding medium. Cells which are capable of taking up DNA are said to be competent cells. The bacterial cells then acquire new traits because of the foreign DNA that is taken up by them. The ability to take up DNA efficiently by most bacteria is limited in nature. Natural competence is evident in B. subtilis, Streptococcus, Azotobacter, Haemophilus, Neisseria, and Thermus. Competence is a phenotype conferred by one or more proteins. Competence occurs late in the exponential phase of bacterial growth. The duration of competence varies from a few minutes in Streptococcus to hours in Bacillus. However bacterial cells can be artificially induced to take up DNA by treating them with calcium chloride. Culture of such cells that are capable of taking up DNA is said to be competent. The conditions required to produce competence vary from species to species. The efficiency of competent cells depends upon the strain, phase of growth arrested, competent cells preparation buffer etc. Transformation is a very basic technique that is

routinely used in a molecular biology lab. The purpose of this technique is to introduce a foreign plasmid DNA into bacteria and to use these bacteria to amplify the plasmid DNA

The kit makes use of a Calcium, Magnesium, Manganese chloride based buffer for the preparation of competent cells. The cations in the buffer neutralize the negative charges on the DNA backbone and cell membrane thereby allowing DNA to enter the cells. Competent cells of efficiency 107 per microgram of plasmid DNA can be obtained using this kit. The efficiency obtained varies with the strains and experimental conditions. Efficiency stated here is with respect to DH5α strain transformed with pUC18 plasmid DNA.

Highlights :

- Competent cells of efficiency of 105 - 106 per microgram of plasmid DNA can be obtained using this kit
- Efficiency stated here is with respect to DH5α strain transformed with pUC18 plasmid DNA.
- The calcium chloride method, saves time and efforts

Applications :

- Competent cells have a wide variety of applications in Molecular Biology Research.
- Transformation experiments
- Preparation of cDNA or genomic libraries

References :

- Sambrook, J., E.F. Fritsch, and T. Maniatis. 1989. Molecular Cloning: A Laboratory Manual. 2nd ed., 1.25-1.28. Cold Spring Harbor Laboratory Press, Cold Spring harbor, NY, USA.
- Dubnau, D., Provvedi, R. (2000). Internalizing DNA. Research in Microbiology, 151: 475-480
- Hanahan, D. Studies on Transformation of Eschrichia coli with Plasmids. J. Mol. Biol. 1983, 166, 557-580

Ordering Information

Cat. No	PI No.	Product Description
1660100011730	KT26	GeNei™ Competent Cells Preparation Kit (A), 50 reactions (Calcium Chloride method)

GeNei™ Competent Cells Preparation Kit (B), 50 reactions (Modified Calcium Chloride method)

Description :

Bacterial transformation is a process in which bacterial cells take up free/external DNA from the environment/surrounding medium. Cells which are capable of taking up DNA are said to be competent cells. The bacterial cells then acquire new traits because of the foreign DNA that is taken up by them. The ability to take up DNA efficiently by most bacteria is limited in nature. Natural competence is evident in B. subtilis, Streptococcus, Azotobacter, Haemophilus, Neisseria, and Thermus. Competence is a phenotype conferred by one or more proteins. Competence occurs late in the exponential phase of bacterial growth. The duration of competence varies from a few minutes in Streptococcus to hours in Bacillus. However bacterial cells can be artificially induced to take up DNA by treating them with calcium chloride. Culture of such cells that are capable of taking up DNA is said to be competent. The conditions required to produce competence vary from species to species. The efficiency of competent cells depends upon the strain, phase of growth arrested, competent cells preparation buffer etc. Transformation is a very basic technique that is routinely used in a molecular biology lab. The purpose of this technique is to introduce a foreign plasmid DNA into bacteria and to use these bacteria to amplify the plasmid DNA

The kit makes use of a Calcium, Magnesium, Manganese chloride based buffer for the preparation of competent cells. The cations in the buffer neutralize the negative charges on the DNA backbone and cell membrane thereby allowing DNA to enter the cells. Competent cells of efficiency 107 per microgram of plasmid DNA can be obtained using this kit. The efficiency obtained varies with the strains and experimental conditions. Efficiency stated here is with respect to DH5α strain transformed with pUC18 plasmid DNA.

Unique Features :

- Easy methods, saves time and efforts Competent cells of efficiency 107 per µg of plasmid can be obtained using this kit.
- The efficiency stated here is with respect to DH5 α strain transformed per microgram of pUC 18 DNA.
- The efficiency varies with strain type and experimental conditions. High efficiency cells are particularly useful for difficult cloning.

Applications :

- Competent cells have a wide variety of applications in Molecular Biology Research.
- Transformation experiments
- Preparation of cDNA or genomic libraries
- High throughput cloning and protein expression.
- Sub cloning, TA cloning

References :

- Sambrook, J., E.F. Fritsch, and T. Maniatis. 1989. Molecular Cloning: A Laboratory Manual. 2nd ed., 1.25-1.28. Cold Spring Harbor Laboratory Press, Cold Spring harbor, NY, USA.
- Dubnau, D., Provvedi, R. (2000). Internalizing DNA. Research in Microbiology, 151: 475-480
- Hanahan, D. Studies on Transformation of Eschrichia coli with Plasmids. J. Mol. Biol. 1983, 166, 557-580
- Holton, T.A.; Graham, M.W (1991-03-11). "A simple and efficient method for direct cloning of PCR products using ddT-tailed vectors
- Clark, J. M. (1988). Novel non-templated nucleotide addition reactions catalyzed by procaryotic and eucaryotic DNA polymerases. Nucleic acids research, 16(20), 9677-9686.
- Hu, G. (1993). DNA Polymerase-catalyzed addition of nontemplated extra nucleotides to the 3' of a DNA fragment. DNA and cell biology, 12(8), 763-770.
- Liu, Q., Dang, H. J., Wu, Y. H., Li, M., Chen, Y. H., Niu, X. L., ... & Luo, L. J. (2018). pXST, a novel vector for TA cloning and blunt-end cloning. BMC biotechnology, 18(1), 1-7.

Ordering Information

Cat. No	PI No.	Product Description
1660200011730	KT27	GeNei™ Competent Cells Preparation Kit (B), 50 reactions (Modified Calcium Chloride method)

GENOMIC DNA

Calf Thymus DNA

Description :

pUC18 DNA is a commonly used E.coli cloning vector. The high copy number plasmid is a double stranded circular DNA, 2686 bp in length. There is a 54 bp multiple cloning site (MCS) polylinker region that has unique sites for 13 restriction endonucleases. The MCS is inframe with lacZgene, allowing insertion screening in colonies by - complementation.

The DNA is isolated from E.coli strain by alkaline lysis method and further purified by density gradient. pUC18 DNA has ampicillin (Amp) resistance gene as selectable marker. The DNA is supplied in 10 mM Tris-HCl (pH 8.0) and 1 mM EDTA. pUC18 DNA is identical to pUC19 DNA except that the MCS region is inverted (nt397-454).

Storage: -20°.

Quality control assays :

Nuclease Assay : Absence of detectable levels of nuclease activity is verified by self incubation with Genei Buffers for 16 hours followed by gel electrophoresis.

Storage:- For continous use, keep the product refrigerated. For extended use, the product can be stored frozen in smaller aliquots

Applications :

- Used as a substrate for Deoxyribonuclease.
- Activated calf thymus DNA is a suitable substrate for unit estimation of DNA polymerases.
- Calf thymus DNA is used for studying the DNA binding agents, such as DNA binding anti-cancer agents.

References :

- Molecular complexes of calf thymus DNA with

various bioactive compounds: Formation and characterization-Chuye Ji [1], Xin Yin [1], Hongwei Duan [2], Li Liang [3]

Ordering Information

Cat. No	PI No.	Product Description
5100680011730	CTS	Calf Thymus DNA, 1mg
5100780041730	CTL	Calf Thymus DNA, 4 x 1 mg

Lambda DNA

Description :

Lambda DNA is a double stranded linear molecule, 48502 base pairs in length, isolated from bacteriophage lambda by standard purification procedure. The phage is isolated from heat inducible lysogen, E.coli CI857 Sam7 and purified using cesium chloride block gradient. Lambda DNA is used as a substrate in restriction enzyme activity assays and in preparation of DNA molecular weight markers. The DNA is supplied in 10 mM Tris-HCl (pH 8.0) and 1 mM EDTA.

Storage: -20°C

Quality control assays

Analysis	Specification
Cleavage pattern verification using Hind III , BamH I and EcoR I enzymes followed by electrophoretic analysis on 1 – 1.5% agarose gel	Typical cleavage pattern with clear sharp bands without additional bands and smear.
Absorption ratio A260 : A280	1.5 to 2.0
Self incubation with Genei assay buffers for 16 hours at 37°C to verify absence of detectable levels of nuclease activity.	Clear sharp band without additional bands and smear as visualized on 1% agarose gel.

References :

- Casjens SR, Hendrix RW (May 2015). "Bacteriophage lambda: Early pioneer and still relevant
- Lederberg E (January 1950). "Lysogenicity in Escherichia coli strain K-12". Microbial Genetics Bulletin. 1: 5–8.; followed by Lederberg EM, Lederberg J (January 1953). "Genetic Studies of Lysogenicity in Escherichia Coli.

Ordering Information

Cat. No	PI No.	Product Description
1600770601730	MBV6S	Lambda DNA, 60µg
1600773001730	MBV6L	Lambda DNA, 300µg

BACTERIAL STRAINS

E coli JM101

Description :

JM101 is supplied in lyophilized form.

Genotype: supE, thi, (lac-proAB), [F', traD36, proAB, lac 1qZM15]

Features :

- JM101 strain carries the F' episome for pili allowing infection by filamentous phage such as M13 and by M13 helper phage for single stranded rescue from phagemid vectors.
- F' episome also has the lac Iq repressor gene producing 10-fold more lac repressor than is found in most strains, thereby ensuring more stringent repression of toxic proteins.
- F' episome has the lacIqm15 mutation which provides the complementation of the -galactosidase gene.
- This host allows blue / white colour selection assay for the plaques on plates supplemented with X-gal and IPTG.
- Used for methylation of plasmid DNA to allow efficient transfer to an hsdR+ E.coli host which is hsdM+

Growth Conditions :

Temperature : 37° C Medium : Luria Bertini broth (LB)
Store: 4°C

E coli JM109

Description :

JM109 is supplied in lyophilized form.

Genotype: end A1, rec A1, gyr A96, thi, hsd R17 (rk - , mk +), rel A1, supE44, (lac - pro AB), [F', tra D36, proAB, lac Iq ZM15].

Features :

- JM109 strain carries the F' episome for pili allowing infection by filamentous phage such as M13 and by M13 helper phage for single stranded rescue from phagemid vectors.
- F' episome also has the lac Iq repressor gene producing 10 fold more lac repressor than is found in most strains thereby ensuring more stringent repression of toxic proteins.
- F' episome has the IqZ M15 mutation which provides the complementation of the -galactosidase gene allowing blue/white selection assay.
- Insert stability is ensured due to rec A- status. This strain also lacks the E.coli K restriction system thus preventing restriction of cloned DNA.
- end A1 mutation ensures quality and improved yield of plasmid DNA.
- Allows cloning with cleavage of transformed DNA by endogenous restriction endonucleases. DNA prepared from these strains can be used to transform rk + E.coli. strains.

GrowthConditions :

Temperature : 37° C Medium : Luria Bertini broth (LB)
Store: 4°C

References :

- Jeffrey H Miller A short Course in Bacterial Genetics CSHL Press 1992
- Yanisch-Perron, C.et al (1985), Gene, 33, 103.

Ordering Information

Cat. No	PI No.	Product Description
5101500011730	EC5	E.coli JM101, 1 vial
5101600011730	EC6	E.coli JM109, 1 vial

MUTAGENESIS

GeNei™ InSite PCR-Based Site Directed Mutagenesis Kit

Description :

The Genei InSite PCR- Based Site Directed Mutagenesis Kit introduces point mutations and detects confirmed mutants with an unprecedented level of confidence of more than 95%. The DNA fragments to be mutated are cloned in a mutagenesis vector (pRVK2) and subjected to PCR. The protocol involves two steps of PCR reactions. In the first PCR, the mutation primer along with Primer I is used to introduce a unique restriction site Not I. The product of the first PCR is used as primer for second PCR for obtaining cloned vector with mutation. The second PCR products are transformed and colonies are screened by Not I digestion. Not I positive clones are mutants with more than 95% level of confidence.

Unique Features :

- The mutants are predicted at more than 95% level of confidence.
- High fidelity XT-5 Polymerase ensures the absence of unwanted mutations, essential for protein expression studies.
- Easy detection of mutants by unique restriction enzyme digestion.
- Easy five step protocol.

Kit Contents :

- Mutagenesis Vector
- Primer I
- XT-5 Polymerase
- 10 X Assay Buffer 5B
- dNTP mix.
- Not I Enzyme with 10 X Assay Buffer.(Not I)

Applications :

- Generate point mutation, insertion, and deletion.
- Switch amino acids, delete or insert single or multiple amino acids.

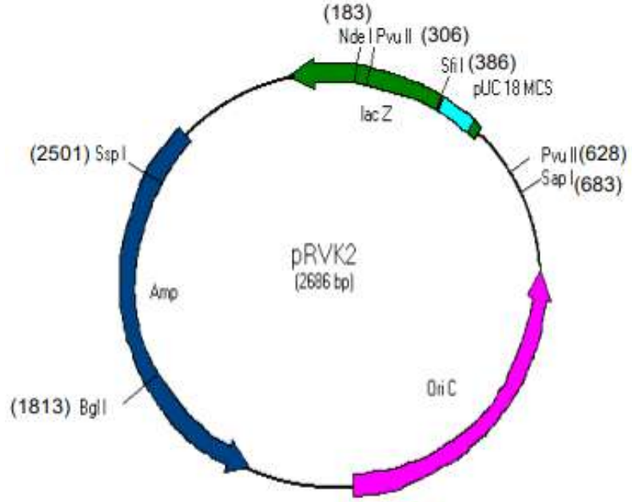
References :

- Site-directed mutagenesis-Julia Bachman
- An efficient one-step site-directed and site-saturation mutagenesis protocol-Lei Zheng 1, Ulrich Baumann, Jean-Louis Reymond

Ordering Information

Cat. No	PI No.	Product Description
0667100021730	KT71	GeNei™ InSite PCR-Based Site Directed Mutagenesis Kit, 10 reactions

The mutagenesis vector map is given below:



MUTAGENESIS VECTOR

DNA ISOLATION KITS SELECTION GUIDE

Sl. No.	Product Name	Starting Material	Yield	Time	Highlights
1	PuresSol™ Plasmid Isolation Kit	Plasmid Culture	High Copy: 10-15 µg (1.5 ml culture) Low Copy: 2-5 µg (3 ml culture)	45 min/24 preps	• Fast and economical • Suitable for large scale screening from E.coli • Suitable for Restriction digestion, PCR, ligation etc.
2	GeneiPure™ Plasmid Purification Kit		10-15 µg from 1.5-5 ml culture (High Copy) 10-15 µg from 10 ml culture (Low Copy)	50-60 min/ 12 preps	• Purify 2-25kb plasmids • Up to 80% recovery with >80% supercoiled form • No genomic DNA or RNA • Sequencing grade plasmid for downstream application like cloning, restriction digestion etc.
3	GeneiPure™ Bacterial DNA Purification Kit	Bacterial Culture	10-15 µg from 0.5-1.0 ml (Gram -ve) 8-10 µg from 1-2 ml (Gram+ve)	4 hrs	• Suitable for purifying up to 5 ml culture • High Yield • High quality DNA suitable for restriction Digestion, PCR, RAPD etc.
4	UniFlex™ DNA Isolation kit	Plant Tissue Bacterial Culture Yeast Culture Tissues Fecal matter	The yield varies according to the source: Blood: 8-10 µg Bacteria: 20-30 µg Feacal Matter: 5-6 µg Plant (leaves): 20-30 µg	90 min	• Fast and economical • Suitable for scale up • Suitable for restriction digestion • Purified DNA suitable for PCR, RAPD etc.
5	GeneiPure™ Yeast DNA Purification Kit	Yeast Culture	5-8 µg from 4-5 ml Culture	3 hrs	Unique Lysis Buffer and Lyticase provided for effective lysis
6	GeneiPure™ Plant Genomic DNA Purification Kit	Plant & Fungi (Different parts of plant & Seeds)	Rose leaves: 4-6 µg Mango Stem: 3-5 µg Algae: 1.5-2.5 µg Wheat leaves: 5-7 µg Cotton: 3-5 µg ample size: 100 mg	3 hrs.	• Fast and Economical • Two different Lysis buffer for processing different samples • Spin filters included for clarification of Lysate • Improved Lysis buffers for high yield and purity from variety of plant species and their parts
7	GeneiPure™ Mammalian Genomic DNA Purification Kit	Mammalian tissue (fresh, frozen, burnt or decayed), Insects, Nematodes, Cell lines etc.	Liver: 30-50 µg Heart: 5-10 µg (Mouse) Mouse Tail: 5-7 µg Lung: 5-10 µg (Mouse) Sample size: 10-20 mg of tissue HeLa Cells (1-2x10^6 Cells): 8-9 µg Jurkat Cells (1-2x10^6 Cells): 4-5 µg	2-4 hrs	Fast, economical, suitable for wide variety for tissue samples.High quality DNA suitable for restriction digestion, PCR, RAPD etc.
8	GeneiPure™ Blood Genomic DNA Purification Kit	Blood, Serum, Buffy coat, Saliva, body fluids & Cell lines	Human Blood (0.2 ml): 4-6 µg	< 1hr or < 30 min	• Fast, Economical and suitable for screening • experiments High yield from fresh or frozen blood Removes PCR inhibitors effectively Suitable for PCR, RAPD etc.
9	GeneiPure™ Quick PCR DNA Purification Kit	PCR Product	Yield up to 80-90%	20min/6-12 prep	>95% removal of Primer DimerSuitable for sequencing, Cloning etc.
10	Gel Extraction Kit	Gel Extraction Kit	Yield up to 80-90%	20 min-30 min/6 preps	0.1-10 kb DNA can be purified DNA suitable for PCR, RAPD, restriction digestion etc.
11	GeneiPure™ Gel Extraction Kit		>70% Yield	20-30 min	Purified DNA suitable for PCR, RAPD, restriction digestion, cloning etc.

SOLUTION BASED

PureSol™ Plasmid Isolation Kit

Description :

PureSol™ Plasmid Isolation Kit contains ready to use reagents for high quality plasmid DNA isolation from overnight grown E.coli cultures. The method is very simple, rapid and cost effective, as it does not need any columns and can be carried out in a single tube per sample. PureSol™ Plasmid Isolation Kit is an efficient protocol for screening clones in a short time and obtaining sequencing grade DNA.

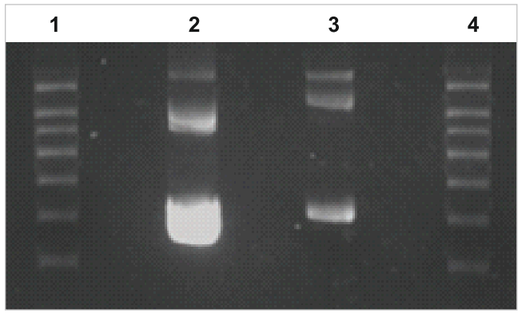
Unique Features :

- Minimum starting material required for isolation of pure and intact plasmid DNA.
- High recovery of DNA from both low copy number and high copy number plasmid.
- Rapid and simple isolation. No columns required.
- No/ Minimal genomic DNA contamination.
- No RNA contamination.
- Good quality of DNA for subsequent use in molecular biology experiments like Restriction Enzyme Digestion, PCR, Ligation, Transformation and Sequencing.

Kit Contents :

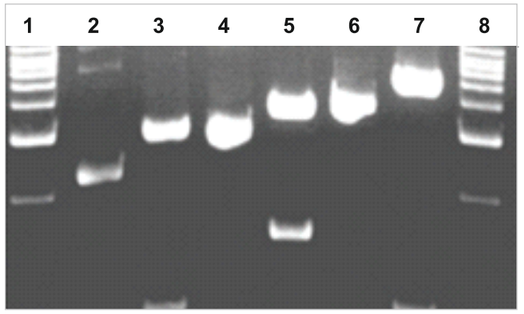
- PureSol™ Solution A
- PureSol™ Solution B
- RNase A
- Lysozyme

Storage: RNase A and Lysozyme at -20° C. Buffers at room temperature.

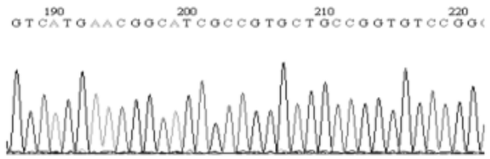


Purification of Plasmid DNA using PureSol™ Plasmid Isolation Kit.

Lane 1 - Supercoiled plasmid DNA Ladder
Lane 2 - High copy number plasmid
Lane 3 - Low copy number plasmid
Lane 4 - Supercoiled Plasmid DNA Ladder



Lane 1 - StepUp™ 1 kb DNA Ladder
Lane 2 - Uncut plasmid (4 Kb)
Lane 3 - Plasmid digested with BamH I
Lane 4 - Uncut plasmid (5 Kb)
Lane 5 - Plasmid digested with BamH I
Lane 6 - Uncut plasmid (6Kb)
Lane 7 - Plasmid digested with Hind III
Lane 8 - StepUp™ 1 Kb DNA Ladder



Electropherogram of the plasmid DNA purified using PureSol™ Plasmid Isolation Kit.

References :

- Sambrook, J. et al., (1989) Molecular cloning: a laboratory manual, 2nd ed., Cold Spring Harbor Laboratory Press.
- Ausubel, F.M. et al., eds. (1991) Current protocols in molecular biology, Wiley Interscience, New York

Ordering Information

Cat. No	PI No.	Product Description
2116900021730	KT169	PureSol™ Plasmid Isolation Kit, 50 preps

UniFlex™ DNA Isolation Kit

Description :

Several applications of Molecular Biology require pure preparations of DNA isolated from various types of cells. Various techniques have been employed for nucleic acids isolation. The method used in the kit uses a phenol: chloroform extraction followed by ethanol precipitation of DNA. The method involves, firstly, removal of cellular proteins, in presence of salt, by a mixture of equal volumes of phenol: chloroform resulting in biphasic solution - an upper aqueous phase and a lower organic phase (mainly chloroform). Nucleic acid (RNA/DNA) partitions in the aqueous phase, while protein partitions in organic phase. In case of DNA extraction, RNase is added to remove RNA. In a last step, DNA is recovered from the aqueous phase by precipitation with 2-propanol or ethanol. Ethanol precipitation is a commonly used technique for concentrating and desalting nucleic acid (DNA or RNA) preparations in aqueous solution. The basic procedure is that salt and ethanol are added to the aqueous solution, which forces the nucleic acid to precipitate out of solution. The precipitated nucleic acid can then be separated from the rest of the solution by centrifugation. The pellet is washed in cold 70% ethanol then after a further centrifugation step the ethanol is removed, and the nucleic acid pellet is allowed to dry before being resuspended in clean aqueous buffer. The basic steps involved in the isolation of DNA with UniFlex DNA isolation Kit are: a) Sample collection and processing b) DNA isolation and c) DNA precipitation

The UniFlex DNA Isolation Kit provides a single solution for a simple, fast, reliable, reproducible, and convenient extraction of high amount of pure genomic DNA from various samples (bacterial, fungal, plant, and animal tissue). The kit uses specialized lysis solution and precipitation solution for purifying the DNA thus obtained.

Unique Features :

- Two step, effective and simple protocol for DNA isolation from wide variety of organisms and tissues.
- Solution based, giving high recovery. Does not involve any columns or beads.
- Can be easily scaled up to isolate DNA from larger amounts of tissues.
- Purified DNA is of high quality and ready for down processing like restriction analysis, PCR, Fingerprinting.

Sample	Starting Material (amount)	Yield (µg)
Plant leaves	100 mg	10-20
Green Gram seeds	100 mg	5-10
Saliva	100 µl	2-3
Faecal pellet	100 mg	5-6
Urine	0.2 ml	~1
Mouse Tissue	100 mg	10-30
Semen	200 µl	5-7
Bacterial pellet	1ml	10-15
Fungal Pellet	100 mg	20-30
Blood	0.2ml	8-10

Kit Contents :

- RNAse™ A
- UniFlex™ Buffer I
- UniFlex™ Buffer II
- UniFlex™ Elution Buffer

Applications :

- Using this kit, DNA can be isolated from the following:
- Bacterial cultures
- Fungal and yeast cultures
- Animal tissues, human tissues, body fluids like semen, urine, saliva.
- Plant tissues: Isolated genomic DNA is ideal for use in common molecular biology procedures,

including PCR and qPCR, conventional restriction digestion, Southern blotting, Cloning, Finger printing analysis.

References :

- Chomczynski, P. & Sacchi, N. (1987). "Single-step method of RNA isolation by acid guanidinium thiocyanate-phenol-chloroform extraction". Anal. Biochem. 162: 156–159. 2.
- Chomczynski, P. & Sacchi, N. (2006). "Single-step method of RNA isolation by acid guanidinium thiocyanate-phenol-chloroform extraction: Twentysomething years on". Nature Prot. 1 (2): 581–585.
- Molecular Cloning: A Laboratory Manual (Third Edition) by Joseph Sambrook, Peter MacCallum Cancer Institute, Melbourne, Australia; David Russell, University of Texas Southwestern Medical Center, Dallas
- Zeugin JA, Hartley JL (1985). "Ethanol Precipitation of DNA"Focus 7 (4): 1–2. 5. Crouse J, Amorese D (1987). "Ethanol Precipitation: Ammonium Acetate as an Alternative to Sodium Acetate". Focus 9 (2): 3–5.

Ordering Information

Cat. No	PI No.	Product Description
2117000051730	KT170	UniFlex™ DNA Isolation Kit, 100 preps

GeNei™ Plant DNA Extraction Kit (for PCR amplification)

Description :

Plant DNA extraction kit is specifically designed to deal with carbohydrates, phenolics, and other compounds abundant in plant tissues. This kit yields high quality genomic DNA from tender leaf tissue at affordable cost. The DNA obtained can be directly used for PCR amplification and where lower quantity of DNA is required from several samples. The DNA is extracted from the leaf sample by dry ice/liquid nitrogen treatment followed by addition of Solution A (lysis buffer). Dry ice treatment makes the tissue vulnerable to lysis. Solution A lyses the plant cells by degrading cell walls and subsequent temperature treatment leads to a more complete lysis. DNA is concentrated in alcohol, dried, and rehydrated in Solution B. This kit yields enough DNA to serve as template for 7-15 PCR reactions depending upon the plant source and the resulting amplification patterns are indistinguishable from those generated from rigorous large-scale DNA extractions.

Unique Features :

- Quick, Single-tube method
- No tissue homogenization required.
- Does not involve phenol extractions for many samples like sugarcane, rice, tomato etc.
- The resulting amplification patterns are indistinguishable from those generated from rigorous large-scale DNA extractions.

Note: We have tested in our lab various dicot & monocot leaf samples and have found reproducible RAPD results. However, good results were obtained only with very tender tissue. DNA yields were lower with tissues after certain degree of ageing.

Kit Contents :

- Solution A
- Solution B
- 3M Sodium Acetate

References :

- Chomczynski, P. & Sacchi, N. (1987). "Single-step method of RNA isolation by acid guanidinium thiocyanate-phenol-chloroform extraction". Anal. Biochem. 162: 156–159. 2.
- Zeugin JA, Hartley JL (1985). "Ethanol Precipitation of DNA"Focus 7 (4): 1–2. 5. Crouse J, Amorese D (1987). "Ethanol Precipitation: Ammonium Acetate as an Alternative to Sodium Acetate". Focus 9 (2): 3–5.

Ordering Information

Cat. No	PI No.	Product Description
2102200051730	KT22	GeNei™ Plant DNA Extraction Kit (for PCR amplification), 100 preps

GeNei™ CTAB Plant DNA Extraction Kit

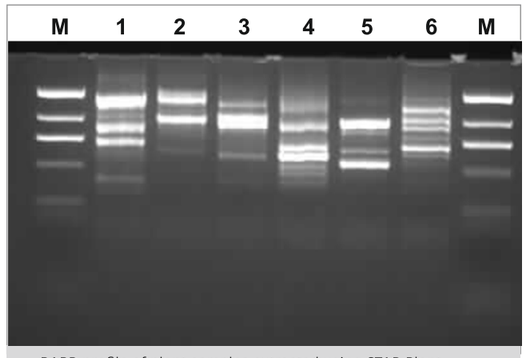
Description :

was initially used in bacteria (Jones, 1963) & later modified to obtain DNA from plants (Murray & Thompson 1980). The major difficulty in obtaining pure DNA samples from plants is that there are high concentrations of polyphenols, polysaccharides, terpenols and other substances. The CTAB method is one of the most widely used methods of DNA extraction and ensures high yields of pure DNA since it complexes with nucleic acids.

This kit elaborates the protocol of isolating plant DNA using CTAB. When the initial NaCl concentration is lowered to ~ 0.5 M, CTAB forms an insoluble complex with nucleic acids. Polysaccharides, phenolic compounds & other enzyme inhibiting contaminants found in plant cells are efficiently removed in the supernatant as these do not precipitate under the conditions described. The nucleic acid – CTAB complex formed is soluble only in high salt TE solution. DNA is precipitated with 80% ethanol washes remove residual CTAB. Additionally beta mercapto ethanol is added because it is a strong reducing agent which can remove tannins and other polyphenols often present in the crude plant extract.

Kit contents :

- Solution A 40 ml RT
- Solution B 5 ml RT
- Solution C 50 ml RT
- Solution D 10 ml RT 1XTE



RAPD profile of plant samples extracted using CTAB Plant DNA Extraction Kit

Lane M - QuantumTM PCR Marker (Low Range)
Lane 1-3 - RAPD profile of Papaya leaf DNA with 3 different Plant RAPD primers
Lane 4-6 - RAPD profile of Tomato leaf DNA with 3 different Plant RAPD primers

Applications :

- RAPD analysis from plants.
- Zygosity and seed testing

References :

- C. Neal Stewart, Jr., and Laura E. Via. A Rapid CTAB DNA Isolation technique Useful for RAPD Fingerprinting and Other PCR Applications. BioTechniques 1993 article Vol. 14(5):748-749
- Doyle, J.J. and J.L. Doyle. 1987. A rapid DNA isolation procedure for small quantities of fresh leaf tissue. Phytochem. Bull. 19:11-15.
- Doyle, J.J. and J.L. Doyle. 1990. Isolation of plant DNA from fresh tissue. Focus 12:13-15.
- Jones A.S. and R.T. Walker, 1963, Isolation and analysis of the deoxyribonucleic acid of Mycoplasmamycoides var. Capri. Nature, 180, pp. 588-589.
- Mace ES, Buhariwalla HK, and Crouch JH (2003) A high-throughput DNA extraction protocol for tropical molecular breeding programs. Plant Mol Biol Rep 21: 459a-459hMurray M.G. and W.F. Thompson, 1980, Rapid isolation of high molecular weight plant DNA. Nucleic Acid Research, 8 (19), pp. 4321-4325

Ordering Information

Cat. No	PI No.	Product Description
2105500011730	Kt55	GeNei™ CTAB Plant DNA Extraction Kit (from leaves), 10 preps

GeNei™ Whole Blood DNA Extraction Kit (from fresh / frozen blood)

Description :

DNA extraction kit from whole blood is designed to provide quick, reliable, and reproducibly higher yields of genomic DNA from fresh blood as well as frozen blood. To avoid clotting, blood should be collected in EDTA coated collection vials/ tubes. The first step in the extraction procedure is the lysis of the red blood cells using Solution A, followed by lysis of the white blood cells and their nuclei using chaotropic Solution B. Finally, genomic DNA is concentrated and desalted by alcohol precipitation. The kit ensures extraction of highly pure DNA that can be used directly for PCR amplification and restriction digestion.

Unique Features :

- No binding resin - avoids shearing.
- No RNase treatment l Does not involve phenol extractions.
- Quick protocol

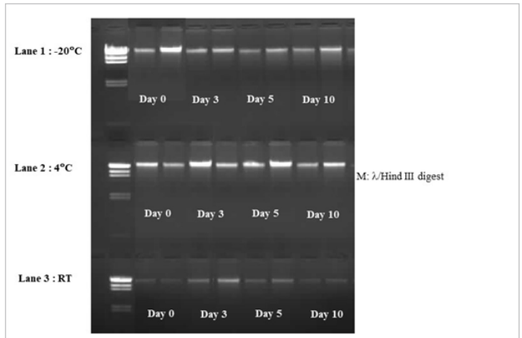
- Recovery from 300 µl of fresh Human Blood (8-10 µg)
- Recovery from 300 µl Frozen Human Blood (3 - 5 µg)

Kit contents :

- Solution A
- Solution
- Solution C

Application :

- Purified DNA can be used for downstream applications like PCR, Restriction Digestion.
- Diagnostics



Analysis of Human genomic DNA purified using Whole Blood Genomic DNA Extraction kit from blood samples (collected using EDTA as the anticoagulant), stored at 4C, -20C and room temperature (RT) for 10 days, on 1% agarose gel

References :

- Albarino CG. V. Romanowski.Phenol extraction revisited: a rapid method for the isolation and preservation of human genomic DNA from whole blood. Mol Cell Probes 1994;8:423-7. 2.
- Parzer S, Mannhalter C. A rapid method for the isolation of genomic DNA from citrated whole blood. The Biochemical journal 1991;273(Pt 1):229-31 from citrated whole blood. Biochem J 273Pt 1 1991:229-31 4.
- Pochi R, Genomic DNA. Subbarayan, Malancha(et al) Isolation of from Human Whole Blood. BioTechniques December 2002;33 SRC - GoogleScholar:1231-4.

Ordering Information

Cat. No	PI No.	Product Description
2102300011730	KT23	GeNei™ Whole Blood DNA Extraction Kit (from fresh / frozen blood), 50 preps

GeNei™ Gel Extraction Kit, 100 preps

Description :

Gel Extraction Kit is designed to purify DNA fragments from standard or low melting agarose gels. The protocol is very rapid yielding ~70% DNA of high purity. The Gel Extraction Kit contains a specially formulated glass powder that binds single and double stranded DNA without binding DNA contaminants. The Kit contains enough reagents to perform 100 Preps.

Unique features :

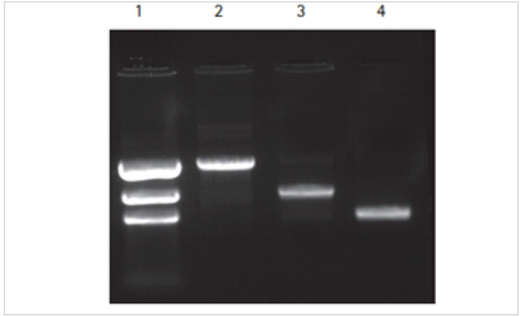
- Rapid - 20 to 30 minutes.
- 70% of DNA is recovered.
- No alcohol precipitation.
- DNA obtained is of high purity.
- Can purify 0.5 kb - 4 kb DNA fragment.

Kit contents :

- Silica
- Sodium Iodide
- Wash Buffer

Application :

- Isolation of DNA fragment of interest from any grade of Agarose.
- To remove impurities like RNAs and proteins.
- In rapid preparation of sequencing grade plasmid DNA and purification between enzymatic reactions, like restriction digests, dephosphorylation with CIP, ligations, or transformations.
- To remove residual phenol or chloroform.
- To remove unincorporated nucleotides from reaction mixtures.
- To remove primers from PCR products and excess linkers after ligations.
- As an alternative to ethanol precipitation.



Purified pUC/Taq I fragments using KT02

Lane 1	- pUC18/Taq I Digest	Lane 3	- 736 bp fragment
Lane 2	- 1444 bp fragment	Lane 4	- 476 bp fragment

References :

- Molecular Biology Problem Solver: A Laboratory Guide. Edited by Alan S. Gerstein by Wiley-Liss, Inc. ISBNs: 0-471-37972-7 (Paper); 0-471-22390-5 chapter 7 page no 167-195.
- Current Protocols in Molecular Biology; Preparation and Analysis of DNA Vol 1 Supplement 58 , Page 2.0.1-2.12.7.
- Molecular Biology Current Innovations and Future Trends- part I, Edited by Annette M.Griffin, Hugh G.Griffin, Page-39.

Ordering Information

Cat. No	PI No.	Product Description
2100200051730	KT02	GeNei™ Gel Extraction Kit, 100 preps (Silica - Solution Based)

TriSol

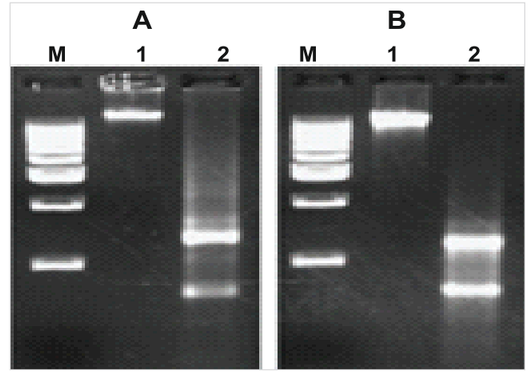
Description :

TRIsoln is ready to use single reagent containing guanidium thiocynate and phenol with propreitory components that helps in isolating total RNA. This reagent is based on the technology developed by Chomczynski and Sacchi. Tissue samples are lysed in TRIsoln, followed by addition of chloroform that separates RNA in the aqueous phase. TRIsoln comes with a dye which allows clear distinction of aqueous and organic phases. The aqueous phase contains RNA while the organic phase contains DNA and proteins that can be recovered by sequential precipitation. The isolated RNA/ DNA and proteins are suitable for all downstream applications.

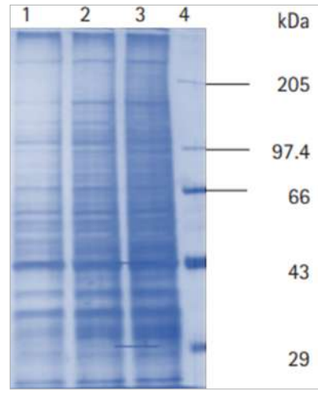
Storage: 4°C

Applications :

- Total RNA extracted can be used for downstream applications like RT-PCR. cDNA synthesis, Northern blotting, Invitro translation etc.
- DNA extracted can be used for restriction digestion, PCR amplification etc.
- Proteins obtained can be used for Western blotting, gene expression analysis etc.



Agarose gel showing simultaneous extraction of RNA from the same sample
Isolation Kit. (A) Hela cells (B) Mouse Liver tissue



Coomassie stained proteins extracted from Hela cells using TRISol
Lane 1 - Proteins extracted by conventional method.
Lane 2 and 3 - Proteins extracted using TRISol.
Lane 4 - Medium Range Protein Molecular Weight Marker.

References :

- Maniatis, T. Fritsch, E.F. & Sambrook, J. (1982), Molecular cloning: A laboratory manual p. 202, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York

Ordering Information

Cat. No	PI No.	Product Description
2106481001730	FC64	GeNei™ TRIsoln, 100ml

STET Lysis Solution

Description :

STET Lysis Solution is a commonly used buffer for the lysis of bacterial cells such as E. coli for plasmid DNA isolation. Its provided in a ready-to-use solution format for rapid and efficient bacterial lysis. The buffer contains Sucrose, Triton X, EDTA and Tris which help in maintaining the osmotic pressure, cleaving the cell wall, chelating agent and buffering of the solution respectively in the plasmid isolation procedure.

Quality control assays :

Performance Test: Plasmid prepared from small culture volume (3-5 ml) using STET Lysis Solution. Quality of Plasmid obtained from this method is tested for Restriction Digestion by using ~ 1 µg of plasmid DNA

References :

- Linke, Dirk (2009-01-01). "Chapter 34 Detergents: An Overview". In Richard R. Burgess; Murray P. Deutscher (eds.)
- Ji, Hong (2010-08-01). "Lysis of Cultured Cells for Immunoprecipitation". Cold Spring Harbor Protocols. 2010 (8): pdb.prot5466
- Brown, Robert B; Audet, Julie (2008-10-06). "Current techniques for single-cell lysis". Journal of the Royal Society Interface

Ordering Information

Cat. No	PI No.	Product Description
3100780501730	FC85M	STET Lysis solution, 50 ml

GeneiPure™ DNA Purification Kits

GeneiPure™ Plasmid Purification Kit

Description :

A plasmid is a small, Circular, double-stranded DNA molecule that is distinct from a cell's chromosomal DNA. A plasmid is an independent, self-replicating DNA molecule that carries only a few genes. Plasmids naturally exist in bacterial cells, and they also occur in some eukaryotes. Plasmids are easy to manipulate and isolate (Alkali lysis method or Boiling method). Scientists have taken advantage of plasmids to use them as tools to clone, transfer, and manipulate genes. Plasmids that are used experimentally for these purposes are called vectors. A foreign DNA fragment can be inserted into a plasmid vector, creating a recombinant plasmid. This plasmid can be introduced into a bacterium by the process of transformation. Since bacteria divide rapidly, they serve as factories to copy DNA fragments in large quantities. Vectors have selectable antibiotic marker, an origin of replication and a multiple cloning site (i.e site for various restriction endonucleases). Expression vectors contain promoter sequence that drives the expression of transgene. Besides this plamid vectors may contain genetic markers, epitope, protein purification tags and reporter genes. Thus, plasmids are important genetic engineering tools as they are used multiply, manipulate, study and express genes.

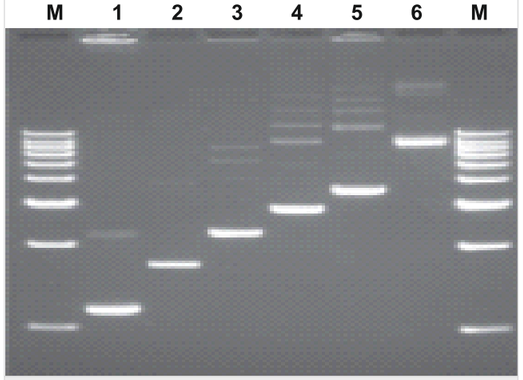
GeneiPureTM Plasmid Purification Kit is designed for rapid purification of high-quality plasmid DNA from bacterial cultures. Bacteria are lysed by the Lysis Buffer and the addition of high salt containing buffer facilitates neutralization and binding of DNA to the GeneiPureTM Column. Contaminants like metabolites, proteins, salts and other small molecules are removed by the two-step wash procedure with Wash Buffer I and Wash Buffer II. Pure Plasmid DNA is eluted using Elution Buffer under low ionic and slightly alkaline conditions.

Unique Features :

- Purify high copy and low copy plasmids
- Plasmids upto 15kb can be isolated
- No detectable genomic DNA or RNA contamination
- Upto 80% recovery of DNA compared to conventional miniprep
- High recovery: High copy - 10-15 µg of DNA from 1-5 ml bacterial culture . Low copy - 5-10 µg DNA from 5-10 ml bacterial culture.
- Fast and simple- 12 preps/25 minutes.
- Culture volumes upto 10 ml can be processed owing to the high binding capacity of the new GeneiPure Column.

Kit Contents :

- RNase A (lyophilized)
- Solution G1
- Wash Buffer II (Concentrate)
- Elution Buffer
- Solution G2
- Solution G3
- Wash Buffer I
- GeneiPure™ DNA
- Spin Columns
- Collection Tubes



Analysis of various sizes of Plasmid DNA purified using GeneiPure™ Plasmid Purification Kit

Marker (M) - StepUpTM 1kb DNA Ladder
Lane 1 - **2 Kb** Plaskind DNA (Low Copy)
Lane 2 - **3 Kb** Plaskind DNA (High Copy)
Lane 3 - **4 Kb** Plaskind DNA (High Copy)
Lane 4 - **5 Kb** Plaskind DNA (High Copy)
Lane 5 - **6 Kb** Plaskind DNA (High Copy)
Lane 6 - **10 Kb** Plaskind DNA (Low Copy)

Applications :

- Purified plasmid prepared is suitable for all downstream applications like restriction digestion, transformation, PCR, sequencing etc.

References :

- Lezin G, Kosaka Y, Yost HJ, Kuehn MR, Brunelli L (2011). "A one-step miniprep for the isolation of plasmid DNA and lambda phage particles
- Serghini MA, Ritzenthaler C, Pinck L (May 1989). "A rapid and efficient 'miniprep' for isolation of plasmid DNA". Nucleic Acids Research
- Kovalenko SA, Tanaka M, Ozawa T (December 1994). "Simple methods for preparation of plasmid DNA yielding long and accurate sequence data". Nucleic Acids Research.

Ordering Information

Cat. No	PI No.	Product Description
2115200031730	KT152L	GeneiPure™ Plasmid Purification Kit, 50 preps

GeneiPure™ Bacterial DNA Purification Kit

Description :

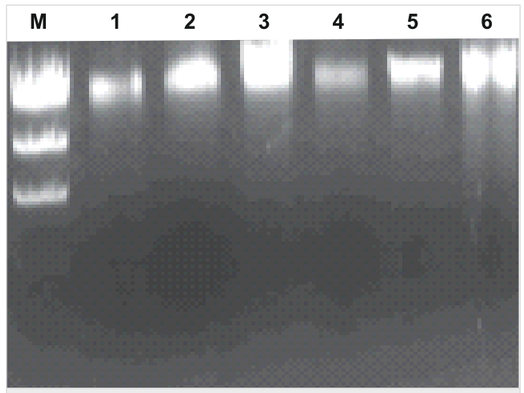
GeneiPure™ Bacterial DNA Preparation Kit provides a rapid, simple method for the isolation of ready to use genomic DNA from gram positive & gram-negative bacteria. Bacterial samples are lysed using Proteinase K and Lysis Buffers and then loaded on to GeneiPureTM Column. DNA selectively binds to the membrane under high salt conditions while the contaminants pass through. Other impurities are completely removed by an effective wash step and pure nucleic acid is eluted in minimal volume of Elution Buffer. The purified genomic DNA is ready-to-use in downstream applications like: PCR Cloning Restriction digestion.

Unique Features :

- Improved yield, upto 8-10 µg of DNA from 0.5-1 ml of E.coli culture and upto 5-10 µg of DNA from 1-1.5 ml Bacillus subtilis
- Unique lysis buffer optimized for Bacterial DNA Purification.

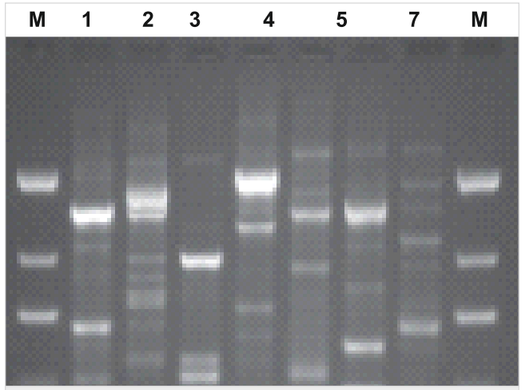
Kit Contents :

- Proteinase K 1
- RNase A
- Lysozyme
- Bacterial Lysis Buffer
- Elution Buffer
- Lysis Buffer I
- Lysis Buffer II
- Wash Buffer I (Concentrate)
- Wash Buffer II (Concentrate)
- GeneiPureTM Columns
- Collection Tubes



DNA Purified from different Bacterial Strains using GeneiPure™ Bacterial DNA Purification Kit

Lane (M) - Lambda/Hind III Marker
Lane 1 - Staphylococcus Aureus 3A
Lane 2 - Bacillus amyloliquefaciens
Lane 3 - Bacillus globigi
Lane 4 - Klebsiella pneumonia
Lane 5 - Neisseria sicca
Lane - Escherichia coli C



RAPD profile of Mycobacterium smegmatis DNA purified using Bacterial DNA Purification Kit

Lane (M) - Quantum™ Low Range PCR Marker
Lane 1-7 - RAPD of DNA Purified from Mycobacterium Smegmatis using (different primers of bacterial primer set).

Applications :

- The purified genomic DNA is ready-to-use in downstream applications like: PCR Cloning Restriction digestion.
- Identification of new species of microorganisms.
- Whole genome sequencing.

References :

- A single protocol for extraction of gDNA from bacteria and yeast-Laurie Vingataramin and Eric H. Frost
- Heat Treatment of Bacteria: A Simple Method of DNA Extraction for Molecular Techniques Kuwait Medical Journal 2009; 41 (2): 117-122 Ali A Dashti1 , Mehrez M Jadaon1 , Abdulsamad M Abdulsamad2 , Hussein M Dashti3 1 Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Health Science Center, Kuwait University, Kuwai.

Ordering Information

Cat. No	PI No.	Product Description
2115900021730	KT159M	GeneiPure™ Bacterial DNA Purification Kit, 20 preps
2115900031730	KT159L	GeneiPure™ Bacterial DNA Purification Kit, 50 preps

GeNei™

GENOMICS

DNA KITS

GeneiPure™ Yeast DNA Preparation Kit

Description :

GeneiPure™ Yeast DNA Purification Kit provides a rapid, simple method for the isolation of ready to use genomic DNA from Yeast. Samples are lysed using Proteinase K and Lysis Buffers and then loaded onto silica membrane column. After a brief centrifugation, DNA is selectively bound to the membrane under high salt conditions while contaminants pass through. Other impurities are completely removed by effective wash steps and pure nucleic acid is eluted using the Elution Buffer.

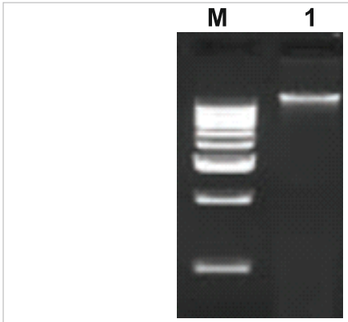
Unique Features :

- Improved yield, upto 5-8 µg of DNA from 4-5 ml of Saccharomyces cerevisiae culture
- Unique Yeast Lysis Buffer with lyticase for effective and complete lysis.
- Purified genomic DNA is ready-to-use in downstream applications like: PCR, Cloning and Restriction digestion etc.

Kit Contents :

- Buffer
- Proteinase K
- Lyticase
- RNase A
- Lysis Buffer I
- Lysis Buffer II
- Wash Buffer I (Concentrate)
- Wash Buffer II (Concentrate)
- Elution Buffer
- GeneiPureTM Columns
- Collection Tubes

Sample	Amount	Yield (µg)
Saccharomyces cerevisiae	4-5mL culture	5-8



Agarose gel showing extraction of DNA from 1 ml of S.cerevisiae culture using yeast DNA preparation Kit

Lane M - StepUp™ 1kb DNA ladder.
Lanes 1 - Yeast Genomic DNA

Applications :

- Host for Biopharmaceutical therapeutic proteins - Biopharmaceutical therapeutic proteins have been known since the 1980s and are produced by S. cerevisiae using modern biology techniques (e.g., genetic manipulation and monoclonal antibodies produced using hibridoma technology). Insulin and its analogues produced using S. cerevisiae are one example of a significant advance in the treatment of diabetes.
- Saccharomyces cerevisiae and S. pombe have been widely used in genetics and cell biology because they are simple eukaryotic cells that serve as models for all eukaryotes, including humans. Besides that, they allow researchers to investigate fundamental cellular processes such as the cell cycle, DNA replication, recombination, cell division, and metabolism.

References :

- Ling M, Merante F, Robinson BH. A rapid and reliable DNA preparation method for screening a large number of yeast clones by polymerase chain reaction. Nucleic acids research
- Akada R, Murakane T, Nishizawa Y. DNA extraction method for screening yeast clones by PCR. BioTechniques. 2000;28:668–670. 672, 674
- Amberg DC, Burke DJ, Strathern JN. Methods in Yeast Genetics: A Cold Spring Harbor Laboratory Course Manual. 2005 Edition 2005.

Ordering Information

Cat. No	PI No.	Product Description
2115800021730	KT158M	GeneiPure™ Yeast DNA Preparation Kit, 20 preps

Plant Genomic DNA Purification Kit

Description :

Several methods are available for extracting plant DNA. The protocol of isolating DNA using CTAB (Cetyltrimethyl ammonium bromide), a non ionic detergent, was initially used in bacteria (Jones, 1963) & later modified to obtain DNA from plants (Murray & Thompson 1980). Alternatively SDS (Sodium Dodecyl Sulphate) can be used to lyse of plant cells. The major difficulty in obtaining pure DNA samples from plants is the high concentration of polyphenols, polysaccharides, terpenols and other substances. The CTAB method is one of the most widely used methods of DNA extraction and ensures high yields of pure DNA since it complexes with nucleic acids. For Rapid and simple purification of plant DNA, spin column technology has been employed.

GeneiPure Plant Genomic DNA Purification Kit can be used for heterogeneous plant samples containing different metabolites like polyphenols, polysaccharides, or acidic components. Lysis Buffers have been optimized for processing some of the most common plant species. Optimized Wash Buffers completely remove proteins, RNA and other PCR inhibitors. Plant cells are homogenized and lysed with the Lysis Buffer containing chaotropic salts, detergents and denaturing agents. The lysate is cleared by centrifugation/ filtration this step removes the cell debris, polysaccharides and other contaminants. The supernatant is mixed with the Binding Buffer in order to facilitate optimum binding onto the GeneiPure TM Column. The contaminants are washed away using different buffers during the washing steps. DNA is eluted with a low salt Elution Buffer which is ready for further downstream applications.

Unique Features :

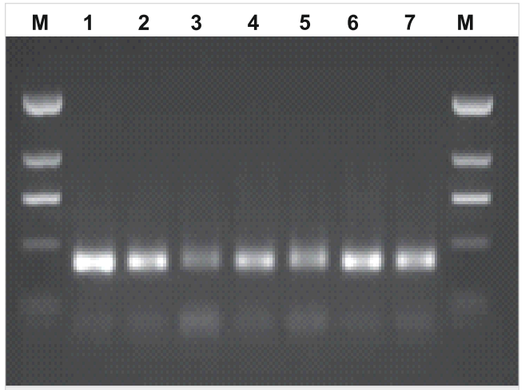
- Silica membrane technology
- High yield from 5 µg - 30 µg DNA
- DNA obtained can be directly used for cloning, PCR, restriction digestion etc.
- Filter column supplied helps in clearing the lysate before loading onto the GeneiPure TM Column.

Kit Contents :

- RNase A
- Lysis Buffer
- Precipitation Buffer
- Binding Buffer (Conc)
- Wash Buffer I (Conc)
- Wash Buffer II (Conc)
- Elution Buffer
- GeneiPure™ Columns
- Filter column
- Collection Tubes

Applications :

- DNA Extraction from Plant tissues
- Purified DNA can be used in downstream applications like PCR, RAPD, Southern Blotting and other enzymatic reaction.



PCR of Plant DNA purified using GeneiPure™ Plant Genomic DNA Kit from various plant sources with actin primers.

Lane M – Low Range PCR Marker
Lane 1 – Banana leaf
Lane 2 – Curry leaf
Lane 3 - Mango stem
Lane 4 - Hibiscus flower

References :

- Plant genomic DNA isolation: An art or a science-Astha Varma, Harish Padh, Neeta Shrivastava.
- Extraction of DNA from plant tissues Scott O. Rogers & Arnold J. Bendich

Ordering Information

Cat. No	PI No.	Product Description
2115700021730	KT157M	GeneiPure™ Plant Genomic DNA Purification Kit, 20 preps
2115700031730	KT157L	GeneiPure™ Plant Genomic DNA Purification Kit, 50 preps

GeneiPure™ Genomic DNA Purification Kit- Mammalian tissues

Description :

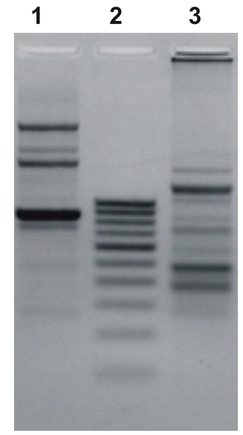
GeneiPure™ Genomic DNA purification kit – Mammalian tissues provides a simple and rapid method for purification of genomic DNA from mammalian tissues (liver, brain, heart etc). Lysis is achieved by incubation of the sample with Sodium Dodecyl Sulphate (SDS) and Proteinase K solution and incubating at 55C. Addition of chaotropic salt and ethanol to the lysate facilitates binding of the DNA to the membrane. Salts, metabolites and other macromolecules are removed by two subsequent washes with Wash Buffers. Pure genomic DNA is eluted using a slightly alkaline Elution Buffer.

Unique Features :

- High recovery: upto 15-25 g of pure genomic DNA from 10 mg of tissue
- Sample size: 10-20 mg tissue
- No RNA contamination
- DNA purified can be used for many downstream applications like restriction analysis, PCR, sequencing, and other enzymatic reaction.

Kit Contents :

- Lysis Buffer I
- Lysis Buffer II
- Wash Buffer I (Concentrate)
- Wash Buffer II (Concentrate)
- Elution Buffer
- Proteinase K
- RNase A
- GeneiPureTM Column
- Collection Tubes
- Instruction Manual



RAPD of DNA samples purified from decaying mouse tissue using GeneiPure™ Mammalian Genomic DNA Purification Kit

Yields of DNA obtained using GeneiPure Mammalian Genomic DNA

Material	Amount	Yield (ug)
Liver Tissue (mouse)	15 mg	15-20
Spleen Tissue (mouse)	10 mg	15-20
Heart Tissue (mouse)	20 mg	5-10
Lung Tissue (mouse)	20 mg	5-10

References :

- Isolation of genomic DNA from mammalian cell- Cheryl M Koh.
- Isolation of High-Molecular-Weight DNA from Mammalian Tissues Using Proteinase K and Phenol.-Green MR, Sambrook J.

Ordering Information

Cat. No	PI No.	Product Description
2115500031730	KT155L	GeneiPure™ Genomic DNA Purification Kit - Mammalian tissues, 50 preps

GeneiPure™ Genomic DNA Purification Kit- Cells and Blood

Description :

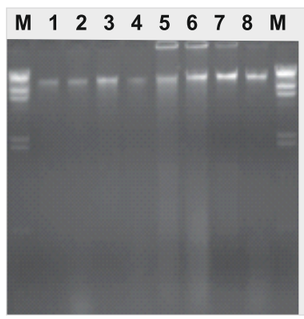
GeneiPure™ Genomic DNA Purification Kit - Cells & Blood has been designed to purify genomic DNA from fresh blood, serum, buffy coat, plasma or other body fluids. Blood treated with citrate, EDTA or heparin can be used. Cells are lysed in presence of chaotropic salt and Proteinase K. Binding to the GeneiPure Column is facilitated by addition of ethanol, this binding is reversible and is specific to nucleic acids. Contaminants like soluble macromolecules, salts and other metabolites are removed by wash buffers. Pure genomic DNA is eluted with a slightly alkaline elution buffer.

Unique Features :

- Silica membrane technology
- Sample size: Upto 200 µl of blood
- Recovery: 4-10 µg
- Ready-to-use DNA in 30 minutes
- Removal of PCR inhibitors

Applications :

Purified DNA can be used for downstream applications like PCR, Restriction Digestion, Cloning etc.



Genomic DNA Purified from various Blood Samples & Cell Lines using GeneiPure™ Genomic DNA Purification Kit-Cells & Blood (1/50th of Eluate loaded)

Lane M - λ / HindIII Digest
Lane 1 - Goat Blood (Heparin)
Lane 2 - Rabbit Blood (EDTA)
Lane 3 - Goat Frozen Blood (Heparin)
Lane 4 - Rabbit Frozen Blood (Heparin)
Lane 5 - HeLa Cells (Frozen)
Lane 6 - COS7 Cells (Frozen)
Lane 7 - MCF7 Cells (Frozen)
Lane 8 - NIH3T3 Cells (Frozen)

Amplification of DNA purified from various cell lines using GeneiPure™ Genomic DNA Purification Kit-Cells & Blood

Lane M - Quantum PCR marker (Low Range)
Amplification using BRCA Primers
Lane 1 - MCF (Mouse)
Lane 2 - COS7 (Monkey)
Lane 3 - HeLa (Human)
Lane 4 - NIH3T3 (Human)
Amplification using RXRB Primers
Lane 5 - MCF (Mouse)
Lane 6 - COS7 (Monkey)
Lane 7 - Hela (Human)
Lane 8 - NIH3T3 (Human)

- Molecular Biology Problem Solver: A Laboratory Guide. Edited by Alan S. Gerstein Copyright © 2001 by Wiley-Liss, Inc.ISBNs: 0-471-37972-7 (Paper); 0-471-22390-5 chapter 7 page no 167-195.
- Current protocols in molecular biology; preparation and analysis of DNA Vol 1 Supplement 58 , Page 2.0.1-2.12.7.
- Molecular biology current innovations and future trendspart I, Edited by Annette M.Griffin, Hugh G.Griffin, Page39.

Ordering Information

Cat. No	PI No.	Product Description
2115600031730	KT156L	GeneiPure™ Genomic DNA Purification Kit - Cells and Blood, 50 preps

GeneiPure™ Quick PCR Purification Kit

Description :

The kit is designed for purification of PCR products by removal of primer, primer-dimers and low molecular weight DNA fragments generated by non-specific amplification. DNA binds to silica membrane in presence of chaotropic salt present in the Binding Buffer. This mixture is applied onto silica membrane column. Contaminants like salts, soluble macromolecules, enzyme etc are removed by washing with an ethanolic Wash Buffer. Pure DNA is eluted using a slightly alkaline Elution Buffer or water.

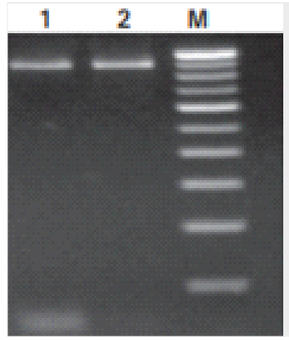
Unique Features :

- Complete removal of primers and primer-dimers
- Optimized Wash Buffers for greater purity of DNA
- Rapid DNA purification - 6 Preparations/15 minutes

Kit Contents :

- Binding Buffer
- Wash Buffer I
- Wash Buffer II (Concentrate)
- Elution Buffer
- GeneiPure™ Columns
- 2 ml Collection Tubes
- Instruction Manual

Storage: Room temperature



Analysis of 0.9 kb PCR product purified using GeneiPure™ Quick PCR Purification Kit.

Lane 1 - Unpurified 0.9 kb PCR fragment
Lane 2 - Purified 0/9 kb PCR fragment
Lane M - StepUp™100 bp DNA Ladder

Applications :

- Purified DNA can be used directly for downstream applications like sequencing, cloning, restriction digestion or any other enzymatic manipulation.

References :

- An efficient method for purification of PCR products for sequencing Hao Ma 1, Stephen Difazio
- Simple preparation method of PCR fragments for automated DNA sequencing.-Høgdall E, Boye K, Vuust J
- Rapid re-amplification of PCR products purified in low melting point agarose gels.-Zintz CB, Beebe DC

Ordering Information

Cat. No	PI No.	Product Description
2115300031730	KT153L	GeneiPure™ Quick PCR Purification Kit, 50 preps
2115300051730	KT153J	GeneiPure™ Quick PCR Purification Kit, 250 preps

Description :

GeneiPure™ Gel Extraction Kit

Electrophoresis of DNA using polyacrylamide or agarose gels is one of the core techniques used in molecular biology. This method is used to separate, identify and purify DNA fragments. Agarose gels can be used to effectively separate fragments from 50 bp to several thousand bases in length by varying the porosity of the gel and application of current. Migration of DNA through the pores of gel depends upon the size and conformation of DNA. Electrophoresed DNA can be purified from gels by a number of methods such as: Electroelution, electrophoresis onto DEAE Cellulose/Nitrocellulose (NA45) paper, using β-Agarase (from Low Melting Agarose) or using glass beads/silica etc. GeneiPureTM Gel Extraction Kit provides a rapid method to extract and purify DNA fragments from standard or low melting agarose gels prepared in either Tris acetate (TAE) or Tris borate (TBE) buffer. DNA fragments ranging from 100bp to 10kb can be extracted and purified and DNA obtained can be directly used for downstream applications.

The kit utilizes a Gel Solubilization solution for melting the agarose gel containing DNA. Chaotropic salt present in it facilitates binding of DNA to the silica membrane. Contaminants like salts, and soluble macromolecules are removed by washing the column with Wash Buffer. Pure DNA is eluted using Elution Buffer

Unique Features :

- No phenol-chloroform extraction or enzymatic digestion of agarose
- Rapid DNA purification - 6 Preparations in 15 minutes
- High yield- upto 90% yield
- Both TAE and TBE gels can be used
- Low Melting and Low EEO Agarose gels can be used
- Wide range of DNA fragments 100bp-10kb can be purified.

Applications :

- DNA obtained can be used for various downstream applications like restriction digestion, PCR, sequencing .

Fig 1: Analysis of varying amounts of 8kb DNA fragment purified from agarose gel using GeneiPure™ Gel Extraction Kit

Lane M - StepUp™ 1 Kb DNA Ladder
Lane 1 - 0.5 µg of 8kb fragment
Lane 2 - 2.0 µg of 8kb fragment
Lane 3 - 4.0 µg of 8kb fragment
Lane 4 - 6.0 µg of 8kb fragment
Lane 5 - 8.0 µg of 8kb fragment
Lane 6 - 10 µg of 8kb fragment

Fig 2: Analysis of various size DNA fragments purified from agarose gel using GeneiPure™ Gel Extraction Kit.

Lane M - StepUp™ 1 Kb DNA Ladder
Lane1 - 1Kb fragment
Lane 2 - 3Kb fragment
Lane3 - 6Kb fragment
Lane 4 - 10Kb fragment

References :

- Recovery of DNA from Low-Melting-Temperature Agarose Gels: Organic Extraction.-Green MR, Sambrook J
- A rapid method for extracting DNA from agarose gels Author links open overlay panelMark Finkelstein 1, Robert H. Rownd 1

Ordering Information

Cat. No	PI No.	Product Description
2115400021730	KT154M	GeneiPure™ Gel Extraction Kit, 20 preps
2115400031730	KT154L	GeneiPure™ Gel Extraction Kit, 50 preps

GeneiPure™ Fungal Genomic DNA Purification Kit

Description :

GeneiPure™ Fungal Genomic DNA Purification Kit can be used for heterogeneous Fungal samples containing different metabolites like polyphenols, polysaccharides or acidic components. Lysis Buffer has been optimized for processing some of the most common Fungal species. Optimized Wash Buffers completely remove proteins, RNA, & other PCR inhibitors. Fungal cells are homogenized and lysed with the Lysis Buffer containing chaotropic salts, detergents and denaturing agents. The lysate is cleared by centrifugation/ filtration, this step removes the cell debris, polysaccharides and other contaminants. The contaminants are washed away using different buffers during the washing steps. DNA is eluted with a low salt Elution Buffer which is ready for further downstream applications.

Unique Features :

- Silica membrane technology
- Yield from 2-5 µgs DNA
- DNA obtained can be directly used for sequencing, PCR, restriction digestion etc.
- Lysis Buffer for the maximum yield from variety of Fungal samples.

Kit Contents :

- RNase A (Lyophilized)
- Proteinase K
- Lysis Buffer
- Wash Buffer I (W1) (concentrate)
- RT Wash Buffer II (W2) (concentrate)
- Elution Buffer (EB)
- GeneiPure™ DNA Spin Columns
- Collection Tubes (2 ml)

References :

- https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/fungus-isolation
- hen L, Fang Y, Zhu T, Gu Q, Zhu W (2008). "Gentisyl alcohol derivatives from the marine-derived fungus Penicillium terrestre".

Ordering Information

Cat. No	PI No.	Product Description
2117300021730	KT-300	GeneiPure™ Fungal DNA Purification Kit, 20 preps

gDNA Purification Kit - Cotton leaves, Seed and Lint

Description :

Several methods are available for extracting plant DNA. The protocol of isolating DNA using CTAB (Cetyltrimethylammonium ammonium bromide), a nonionic detergent, was initially used in bacteria (Jones, 1963) & later modified to obtain DNA from plants (Murray & Thompson 1980). Alternatively, SDS (Sodium Dodecyl Sulphate) can be used to lyse of plant cells. The major difficulty in obtaining pure DNA samples from plants is the high concentration of polyphenols, polysaccharides, terpenols and other substances. The CTAB method is one of the most widely used methods of DNA extraction and ensures high yields of pure DNA since it complexes with nucleic acids. For Rapid and simple purification of plant DNA, spin column technology has been employed. The gDNA Purification Kit – Cotton Leaves, Seed & Lint can be used for cotton plant samples containing different metabolites like polyphenols, polysaccharides or acidic components. Lysis Buffers have been optimized for processing cotton leaves, seed and lint Optimized Wash Buffers completely remove proteins, RNA and other PCR inhibitors. Tissue is homogenized and lysed with the Lysis Buffer containing chaotropic salts, detergents and denaturing agents. The lysate is cleared by centrifugation/ filtration this step removes the cell debris, polysaccharides and other contaminants. The supernatant is mixed with the Binding Buffer in order to facilitate optimum binding onto the GeneiPure TM Column. The contaminants are washed away using different buffers during the washing steps. DNA is eluted with a low salt Elution Buffer which is ready for further downstream applications.

Unique Features :

- Silica membrane technology
- High yield from 5 µg - 30 µg DNA
- DNA obtained can be directly used for cloning, PCR, restriction digestion etc.
- Filter column supplied helps in clearing the lysate before loading onto the GeneiPure TM Column.

Kit Contents :

- RNase A (Lyophilized)
- Lysis Buffer
- Precipitation Buffer
- Binding Buffer (Conc)
- Wash Buffer I (Conc)
- Wash Buffer II (Conc)
- Elution Buffer
- GeneiPure™ Columns
- Filter column
- Collection Tubes

Storage:Room temperature

Applications :

- DNA Extraction from Plant tissues
- Purified DNA can be used in downstream applications like PCR, RAPD, Southern Blotting and other enzymatic reaction.

References :

- Neal Stewart, Jr., and Laura E. Via. A Rapid CTAB DNA Isolation technique Useful for RAPD Fingerprinting and Other PCR Applications. BioTechniques 1993 article Vol. 14(5):748-749.
- Doyle, J.J. and J.L. Doyle. 1987. A rapid DNA isolation procedure for small quantities of fresh leaf tissue. Phytochem. Bull. 19:11-15.
- Doyle, J.J. and J.L. Doyle. 1990. Isolation of plant DNA from fresh tissue. Focus 12:13-15.
- Jones A.S. and R.T. Walker, 1963, Isolation and analysis of the deoxyribonucleic acid of Mycoplasmamycoides var. Capri. Nature, 180, pp. 588- 589.
- Mace ES, Buhariwalla HK, and Crouch JH (2003) A high- throughput DNA extraction protocol for tropical molecular breeding programs. Plant Mol Biol Rep 21: 459a-459h
- Murray M.G. and W.F. Thompson, 1980, Rapid isolation of high molecular weight plant DNA. Nucleic Acid Research, 8 (19), pp. 4321-4325.

Ordering Information

Cat. No	PI No.	Product Description
2113050021730	KT305	gDNA Purification Kit - Cotton leaves, Seed and Lint, 20 preps

GeneiPureID™ DNA Isolation Kits

GeneiPureID™ DNA Isolation Kit -Dried Blood

Description :

The ability to prepare and isolate pure nucleic acids from a variety of sources is an important step in many molecular biology protocols. The extraction of nucleic acids from biological samples is being practiced for example, in genetic engineering and construction of DNA probes. Various techniques have been employed for nucleic acid isolation. These techniques are widely used on a laboratory scale, but require technical skills and are difficult to reproduce. Forensic science demands the efficient purification of small amounts of DNA from a wide range of low-volume and trace samples. Blood, dried or fresh is a very important evidence in most of the forensic related cases. The presence of blood can associate a suspect to a victim or a suspect/victim to a crime scene. The type of bloodstains and dried blood recovered from a crime spot has added value as evidence in a criminal investigation. The physical appearance, staining for confirmation of human blood and DNA isolation are few of the methods used for further analysis of these blood samples.

The conventional nucleic acid isolation techniques have the following drawbacks:

- the starting amount of sample
- sample specificity for a kit
- yield of the DNA.

This kit requires minimum amount of sample for extraction of DNA from Dried Blood derived from crime scenes or subjects. The basic steps of DNA isolation includes: a) Sample collection b) Sample Lysis c) Binding of DNA to the column and Washes d) Elution

Unique Features :

- Silica membrane technology
- Minimal amount of sample can be used
- Purified DNA obtained can be directly used for PCR.

Kit Contents :

- Lysis Buffer I – Dried Blood
- RT Lysis Buffer II – Dried Blood
- Wash Buffer – Dried Blood (Concentrate)
- Elution Buffer – Dried Blood
- GeneiPureID Columns
- Collection Tubes

Storage : Room Temperature

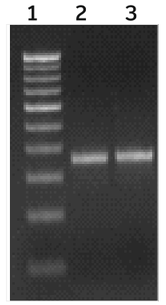


Fig 1: PCR Amplification of 350 bp product of Human genomic DNA isolated from dried blood using this kit with cyt-b primers.

Lane 1 - StepUp™ 100 Kb DNA Ladder
Lane 2 - PCR product of Dried Blood DNA from Paper
Lane 3 - PCR product of Dried Blood DNA from Cloth

Applications :

- DNA isolated from forensic samples may be too scanty to visualize on an agarose gel. Hence it is amplified using PCR for detection.
- For screening and testing.

References :

- Albarino CG. V. Romanowski.Phenol extraction revisited: a rapid method for the isolation and preservation of human genomic DNA from whole blood. Mol Cell Probes 1994;8:423-7.
- Parzer S, Mannhalter C. A rapid method for the isolation of genomic DNA from citrated whole blood. The Biochemical journal 1991;273(Pt 1):229-31 from citrated whole blood. Biochem J 273Pt 1 1991:229-31 4.
- Pochi R, Genomic DNA. Subbarayan, Malancha(et al) Isolation of from Human Whole Blood. BioTechniques December 2002;33 SRC - GoogleScholar:1231-4.

Ordering Information

Cat. No	PI No.	Product Description
2117900021730	KT179	GeneiPureID™ DNA Isolation Kit -Dried Blood, 10 preps
2117900031730	KT179L	GeneiPureID™ DNA Isolation Kit -Dried Blood, 50 preps

GeneiPureID™ DNA Isolation Kit for semen

Description :

The ability to prepare and isolate pure nucleic acids from a variety of sources is an important step in many molecular biology protocols. The extraction of nucleic acids from biological samples is being practiced, for example, in genetic engineering and in construction of DNA probes. Various techniques have been employed for nucleic acid isolation and are widely used on a laboratory scale but require technical skills and are difficult to reproduce. Forensic science demands the efficient isolation of small amounts of DNA from a wide range of low-volume and trace samples. Recovery of high molecular weight genomic DNA

The GeneiPureIDTM DNA Isolation Kit- Semen provides a rapid, organic free method for the isolation of genomic DNA from fresh, frozen, and dry semen sample including semen spots found on filter paper, floor, cloth etc. The optimized protocol results in high quality and quantity of DNA suitable for all downstream applications. The kit allows single or multiple processing of samples simultaneously, does not require any Phenol/chloroform extractions and is less time consuming. Semen samples after proper washing are lysed using appropriate lysis buffer with DTT. Following lysis, the inhibitors and other contaminants are removed in the presence of high salt concentration and then loaded on to silica membrane column. After a brief centrifugation, DNA is selectively bound to the membrane while the contaminants pass through. Inhibitors are completely removed by effective washes and pure nucleic acid is eluted in minimal volume of elution buffer.

Unique Features :

- Recovery of genomic DNA upto10-15µg from 100ul of fresh semen (Refer Fig 1).
- Quick and Simple.
- No RNA Contamination.
- No Phenol/ Chloroform Extraction.
- Good quality DNA for downstream applications.

Kit Contents :

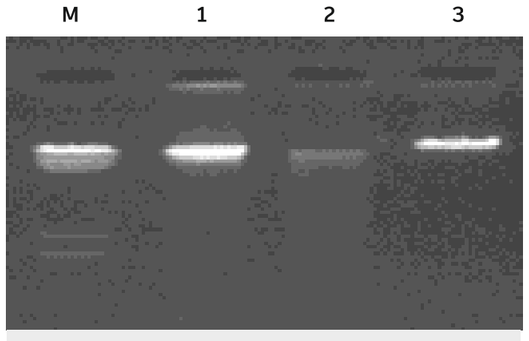
- Lysis Buffer - Semen
- Binding Buffer - Semen
- Wash Buffer I - Semen
- Wash Buffer II – Semen
- Elution Buffer - Semen
- GeneiPureIDTM Columns
- 2 ml Collection Tubes
- Instruction Manual

Storage: Room Temperature

Applications :

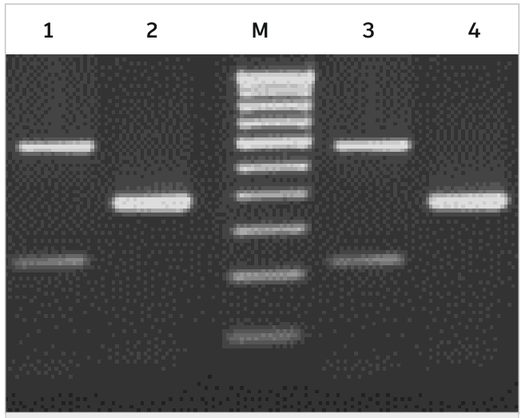
The purified genomic DNA is ready for use in downstream applications like:

- Restriction Analysis
- PCR
- Southern Blotting
- Human forensic
- Haploid DNA study
- Diagnostics



Analysis of DNA isolated from fresh and dry semen using GeneiPure IDTM DNA Isolation Kit on agarose gel.

Lane M - YDNA/HindIII marker
Lane 2 - Fresh semen DNA
Lane3 - Fillter paper blotted semen DNA
Lane 4 - Y DNA (undigested)



Analysis of PCR amplicons of DNA from fresh and dry semen using Alu PCR of Plat gene and Cyt-b primers

Lane 1 - Alu PCR of Plat gene from fresh semen
Lane 2 - Cyt-b from fresh semen
Lane M - 100 bp ladder
Lane 3 - Alu PCR of Plat gene from dry semen
Lane 4 - Cyt-b from dry semen

References :

- Shiurba R, Nandi S. Isolation and characterization of germ line DNA from mouse sperm. Proc. Natl. Acad. Sci. USA. 1979;76:3947–3951
- Griffin J. Methods of sperm DNA extraction for genetic and epigenetic studies. Methods Mol. Biol. 2013;927:379–384.

Ordering Information

Cat. No	PI No.	Product Description
2118000021730	KT180	GeneiPureID™ DNA Isolation Kit-Semen, 10 preps

GeneiPureID™ DNA Isolation Kit-Bone

Description :

The ability to prepare and isolate pure nucleic acids from a variety of sources is an important step in many molecular biology protocols. The extraction of nucleic acids from biological samples is being practiced, for example, in genetic engineering and in construction of DNA probes. Various techniques have been employed for nucleic acid isolation and are widely used on a laboratory scale, but require technical skills and are difficult to reproduce. Forensic science demands the efficient isolation of small amounts of DNA from a wide range of low-volume and trace samples.

The GeneiPureID DNA Isolation Kit - Bone provides a rapid and simple method for the isolation of ready to use genomic DNA from fresh, cooked and ancient bones. The protocol results in high quality and quantity of DNA, which can be used for PCR and other downstream applications for various studies. Bone samples after complete decalcification are lysed using lysis buffer with Proteinase K. Following lysis, inhibitors and other contaminants are removed in presence of high salt concentration and then loaded on to a silica membrane column. After a brief centrifugation, DNA is selectively bound to the membrane while the contaminants pass through. Inhibitors are completely removed by effective washes and pure nucleic acid is eluted in minimal volume of elution buffer.

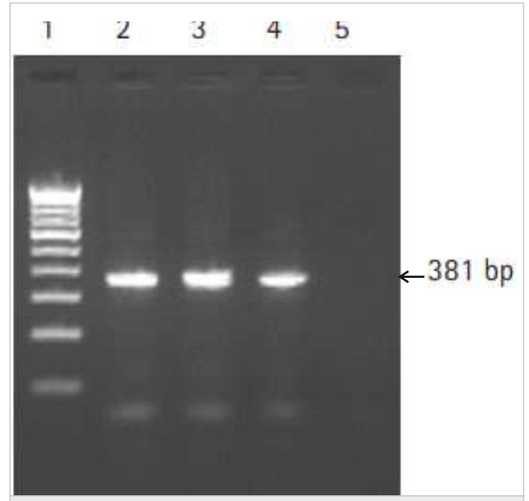
Unique Features :

- Recovery of genomic DNA upto10-15µg from 250 mg of fresh bone and 100-900ng from cooked and ancient bone.
- Quick and Simple.
- No RNA Contamination.
- No Phenol/ Chloroform Extraction.
- Good quality DNA for downstream applications.

Kit Contents :

- Lysis Buffer I- Bone
- Lysis Buffer II - Bone
- Binding Buffer - Bone
- Wash Buffer I - Bone
- Wash Buffer II - Bone
- Elution Buffer- Bone
- GeneiPureID™ Columns
- Collection Tubes
- EDTA
- Instruction Manual

Storage: Room Temperature.



1% agarose gel showing PCR amplicons of bone DNA with Cyt-b primer

Lane 1 - StepUp™ 100 bp DNA marker
Lane 2 - Fresh Bone
Lane 3 - Cooked Bone
Lane 4 - Ancient Bone
Lane 5 - Negative- PCR

Applications :

The pure genomic DNA is ready for use in downstream application like:

- Restriction analysis
- PCR
- Phylogenetic studies
- Population genetics
- Wild life and human forensics

References :

- High efficiency DNA extraction from bone by total demineralization Forensic Sci. Int. Genet.
- Comparison of three methods of DNA extraction from human bones with different degrees of degradation -Int. J. Legal Med

Ordering Information

Cat. No	PI No.	Product Description
2118100021730	KT181	GeneiPureID™ DNA Isolation Kit-Bone, 10 preps
2118100031730	KT181L	GeneiPureID™ DNA Isolation Kit-Bone, 50 preps

GeneiPureID™ DNA Isolation Kit-Saliva

Description :

The ability to prepare and isolate pure nucleic acids from a variety of sources is an important step in many molecular biology protocols. The extraction of nucleic acids from biological samples is being practiced, for example, in genetic engineering and in construction of DNA probes. Various techniques have been employed for nucleic acid isolation and are widely used on a laboratory scale, but require technical skills and are difficult to reproduce. Forensic science demands the efficient isolation of small amounts of DNA from a wide range of low-volume and trace samples. Saliva is a very significant sample in many forensic cases e.g. traces of Saliva on the dress, envelope, crime spot, buccal swabs, cigarette butts stained with saliva etc. Saliva analysis is part of a routine autopsy examination. It is analyzed by different methods such as Gas/liquid chromatography, DNA isolation etc.

The conventional nucleic acid isolation techniques have the drawbacks of

- the starting amount of sample
- sample specificity of a kit,
- yield of DNA.

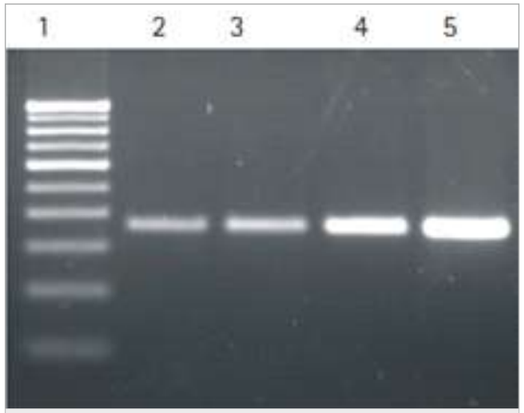
Unique Features :

- Silica membrane technology
- Minimal amount of sample can be used
- Purified DNA obtained can be directly used for PCR with gene specific primers.

Kit Contents :

- Lysis Buffer I - Saliva
- Lysis buffer II - Saliva
- Wash Buffer (concentrate) - Saliva
- Elution Buffer – Saliva
- GeneiPureID™Columns
- 2 ml Collection Tubes
- Instruction Manual

Storage: Room Temperature



Amplification product of human genomic DNA isolated from different starting amount of saliva using cyt-b primer

Lane 1 - StepUp™ 100 bp DNA ladder
Lane 2 - 5 µl of Saliva
Lane 3 - 50 µl of Saliva
Lane 4 - 200 µl of Saliva
Lane 5 - 2 ml of Saliva

Applications :

The pure genomic DNA is ready for use in downstream application like:

- Restriction analysis
- PCR
- Phylogenetic studies

References :

- Comparison of different collection procedures and two methods for DNA isolation from saliva Jaroslava Durdiakov á 1,2 , Nat á lia Kamodyov á 1 , Daniela Ostatn í kov á 2 , Barbora Vlkov á 1 and Peter Celec 1,3
- Herraez DL, Stoneking M. High fractions of exogenous DNA in human buccal samples reduce the quality of large-scale genotyping. Anal Biochem 2008;383:329 – 31
- Nedel F, Conde MC, Oliveira IO, Tarquinio SB, Demarco FF. Comparison between DNA obtained from buccal cells of the upper and lower gutter area. Braz Dent J 2009;20:275 – 8

Ordering Information

Cat. No	PI No.	Product Description
2118400021730	KT184	GeneiPureID™ DNA Isolation Kit-Saliva, 10 preps

GeNei™

GENOMICS

DNA KITS

GeneiPureID™ DNA Isolation Kit-Skin

Description :

Skin is the outer covering of the body. In humans, it is the largest organ of the integumentary system made up of multiple layers of mesodermal tissues that guards the underlying muscles, bones, ligaments and internal organs. Skin plays a key role in protecting the body against pathogens and excessive water loss. The ability to prepare and isolate pure nucleic acids from a variety of sources is an important step in many molecular biology protocols. The extraction of nucleic acids from biological samples is being practiced, for example, in genetic engineering and in construction of DNA probes. Various techniques have been employed for nucleic acid isolation and are widely used on a laboratory scale, but require technical skills and are difficult to reproduce. Forensic science demands the efficient isolation of small amounts of DNA from a wide range of low-volume and trace samples. The GeneiPureID DNA Isolation Kit - Skin provides a rapid, simple organic free method for the isolation of ready to use genomic DNA from skin. The protocol results in high quality of DNA from fresh / dry and burnt / decayed skin which can be used for PCR and other downstream applications.

Unique Features :

- Quick and Simple.
- No RNA Contamination.
- No Phenol/ Chloroform Extraction.
- Good quality DNA for downstream applications.

Kit Contents :

- Proteinase K
- Lysis Buffer
- Binding Buffer
- Wash Buffer I
- Wash Buffer II
- Elution Buffer
- GeneiPureID™ Spin Column
- Collection Tubes

Storage: Room Temperature

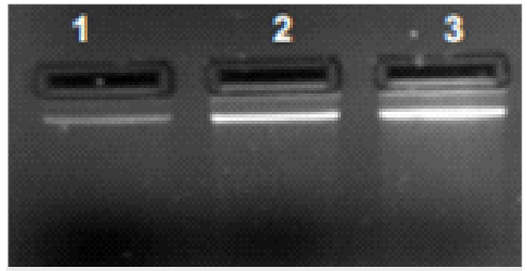


Fig 1: Analysis of high molecular weight DNA isolated from 25 mg goat skin using GeneiPureID™ DNA Isolation Kit – Skin

Lane 1 - 2 µl Eluted DNA | **Lane 2** - 5 µl Eluted DNA | **Lane 3** - 8 µl Eluted DNA

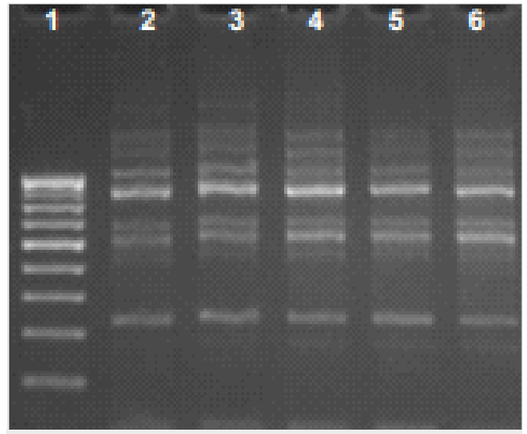


Fig 2: RAPD profile of DNA isolated from goat skin (25 mg) using 18 mer primer

Lane 1 - StepUp™ 100bp DNA Ladder
Lane 2&3 - DNA from fresh skin
Lane 4&5 - DNA from decayed skin
Lane 6 - DNA from bumt skin

Applications :

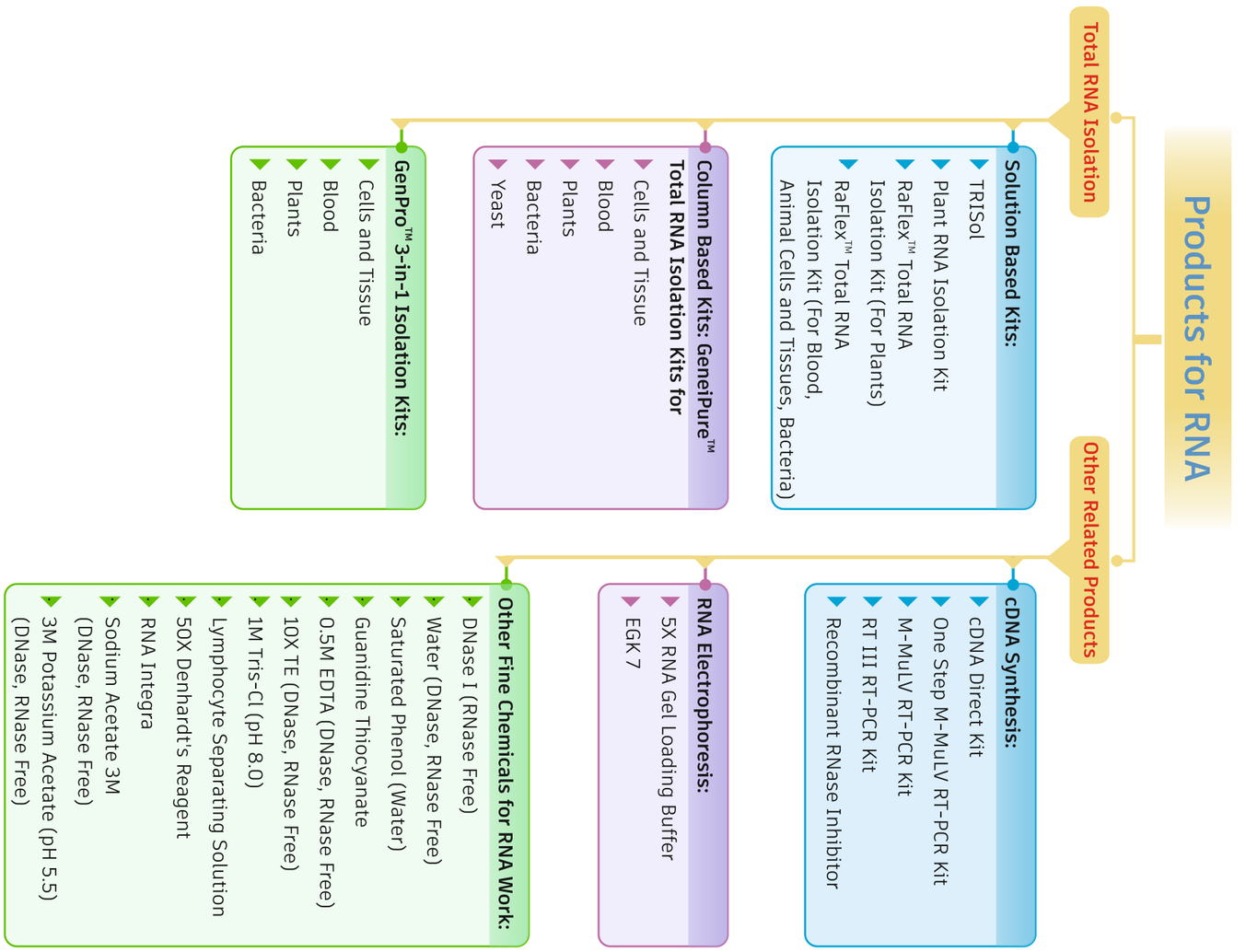
- Phylogenetic studies
- Wild life and human forensics
- Clinical study

References :

- Effects of sampling strategy and DNA extraction on human skin microbiome investigations-Rie Dybboe Bjerre, Luisa Warchavchik Hugerth, Fredrik Boulund, Maike Seifert, Jeanne Duus Johansen & Lars Engstrand
- Hugerth, L. W. et al. A comprehensive automated pipeline for human microbiome sampling, 16S rRNA gene sequencing and bioinformatics processing. bioRxiv, 286526.

Ordering Information

Cat. No	PI No.	Product Description
2121000011730	KT210	GeneiPureID™ DNA Isolation Kit-Skin, 10 preps



Total RNA Isolation Selection Guide

Sl. No	Product Name	Starting material	Yield	Highlights	Process speed	Purity	RT-PCR
1	RaFlex™Total RNA isolation kit (For Plants)	Plant tissue	• 130-150µg from 100mg Arnabialeaf • 80-90µg from 100mg Picrorhizaroot • 15-20µg from 10mg of tea leaves • 15-20µg from 100mg almond bark • 40-50µg from 100mg tomato stem • 80-100µg from 100mg of lemongrass	• Solution based • Universal kit for all types of tissues • Highly efficient evenfor difficult plant tissues with high quantity of pigments and secondary metabolites. • Supplied with RNA Integra (RNA storage buffer).	***	**	Yes
2	RaFlex™ Total RNA isolation kit (ForBlood,Animalcells and tissues, bacteria)	Animal cells and tissue,Blood, Bacteria	• 130-150µg from $2x10^6$ Hela cells • 200-220µg from 100mg mouseliver • 90-100µg from 1ml of Overnight gown culture of gram+vebacteria • 1.5-2µg from 0.1ml of blood	• Solution based • Maximum yield • No RBC lysis required for Blood • Supplied with RNA Integra (RNA storage buffer).	***	**	Yes
4	TRISoln	Animal cells and tissue, bacteria	• 70-100µg from $2x10^6$ Hela cells • 70-100ug from 100mg mouseliver/brain/heart	• Single reagent for isolation of RNA DNA and protein	**	**	Yes
5	Plant Total RNA isolation kit	Plant tissues	• 80-120µg from 100mg of green gram sprouts	Solution based • Lithium chloride based method	*	**	Yes
6	GeNeiPure™ Total RNA isolation kit-cells and tissue	Animal cells and tissues	• 40-60µg from$2x10^6$ Hela cells • 50-60µg fom 10mg of mouse livertissue • 7-10µg from 10mg Mouse hearttissue		***	***	Yes
7	GeNeiPure Total RNA isolation kit-Bacteria	Bacteria	• 15-50µg from 1ml overnight culture		****	***	Yes

Process speed is the time taken complete the experiment:
****<60 minutes
***60 to 90minutes
**90 to 120 minutes
*>120 minutes

Purity is the ratio 260/230nm
***=1.8 to 2
**=1.5 to 1.8

Note:
The solution based kits are convenient in scaling up
The column based kits are convenient for high throughputs creening
RNA purified using all the above kits perform in Rewerse Transcription reaction

RaFlex Total RNA Isolation Kit (for Plants)

Description :

Isolation of intact RNA is a pre-requisite for the analysis of gene expression. One of the most important criterion in the isolation of Total RNA is to prevent its degradation during the isolation procedure. RNA is generally isolated by using strong denaturants like guanidine thiocyanate and phenol-chloroform with a reducing agent, -mercaptoethanol, to inhibit the RNase activity. Most methods do not yield DNA free RNA and would require the samples to be further treated with DNase I. Other methods include the use of Lithium chloride to selectively precipitate RNA. Successful isolation of RNA depends on the suppression of endogenous RNAses during cell / tissue lysis and avoiding contamination with exogenous RNAses during the isolation procedure.

RaFlex™ Total RNA Isolation Kit is a convenient, rapid and efficient way of extracting RNA from plant tissue. RaFlex™ Total RNA isolation kit is a solution based method for the isolation of RNA. It is optimized for high yield, intact total RNA extraction from a wide variety of tissues. This procedure involves tissue homogenisation, centrifugation and precipitation of RNA. The precipitated RNA pellet is stabilized and stored in RNAIntegra™, a unique storage buffer safeguarding the integrity of RNA much longer than when stored in nuclease free water or Tris buffer.

Unique Features :

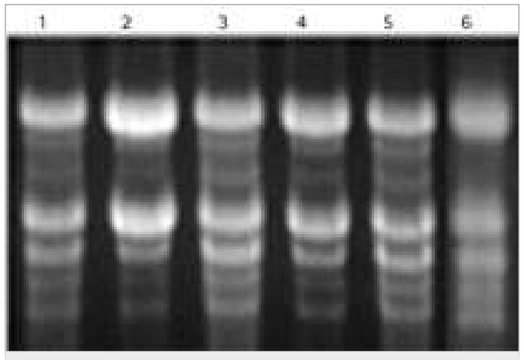
- Rapid: Total time taken per isolation is about 1-2 hours.
- Flexible: Mini, Midi and Maxi preps can be done using the same kit.
- Consistent and highly reproducible results.
- Tested and proved in 39 plant tissues across various plant species belonging to diverse genera and those rich in various types of secondary metabolites:
- Works exceptionally well even with Jatropha, Witahnia (root) and Cotton, wherein the performance of most other RNA isolation systems are not satisfactory.
- RNAIntegra™ a unique buffer for suspending the purified RNA is provided in the kit that enhances the shelf life of the purified RNA.

Kit Contents :

- RNAIntegra™
- RaFlex™ Solution I
- RaFlex™ Solution II
- RaFlex™ Solution III

Applications :

- RNA obtained can be used for several downstream applications such as cDNA synthesis, Northern blotting, RT-PCR, mRNA purification etc



RNA isolated from various plant samples using RaFlex™

Lane 1 - Rheum Leaf
Lane 2 - Arabidopsis Leaf
Lane 3 - Tea Leaf
Lane 4 - Caragana Buds
Lane 5 - Stevia Leaf
Lane 6 - Arnebia Leaf

References :

- Chomczynski P and Sacchi N (1987) Single-step method of RNA isolation by acid guanidium thiocyanate-phenolchloroform extraction. Anal Biochem, 162: 156-159.
- Chomczynski P (1993) A reagent for the Single-step simultaneous isolation of RNA, DNA and Proteins from cell and tissue samples BioTechniques. 15: 532-537..
- Mackey K and Chomczynski P (1996) Long term stability of RNA isolation reagents. J NIH Res, 8: 72-78. 4. Chomczynski P and Mackey K (1995) Substitution of chloroform with Bromochloropropane in the single-step method of RNA isolation Anal Biochem. 225: 163-164.

Ordering Information

Cat. No	PI No.	Product Description
2115100021730	KT151L	RaFlex Total RNA Isolation Kit (for Plants), 50 preps

RaFlex™ Total RNA Isolation Kit (for Bacteria, Blood, Animal Cells & Tissues)

Description :

Isolation of intact RNA is a pre-requisite for the analysis of gene expression. One of the most important criterion in the isolation of Total RNA is to prevent its degradation during the isolation procedure. RNA is generally isolated by using strong denaturants like guanidine thiocyanate and phenol-chloroform with a reducing agent, -mercaptoethanol, to inhibit the RNase activity. Most methods do not yield DNA free RNA and would require the samples to be further treated with DNase I. Other methods include the use of Lithium chloride to selectively precipitate RNA. Successful isolation of RNA depends on the suppression of endogenous RNAses during cell / tissue lysis and avoiding contamination with exogenous RNAses during the isolation procedure.

RaFlex™ Total RNA Isolation Kit is a convenient, rapid and efficient way of extracting RNA from plant tissue. RaFlex™ Total RNA isolation kit is a solution based method for the isolation of RNA. It is optimized for high yield, intact total RNA extraction from a wide variety of tissues. This procedure involves tissue homogenisation, centrifugation and precipitation of RNA. The precipitated RNA pellet is stabilized and stored in RNAIntegra™, a unique storage buffer safeguarding the integrity of RNA much longer than when stored in nuclease free water or Tris buffer.

Unique Features :

- Rapid: Total time taken per isolation is about 1-2 hours.
- Flexible: Mini, Midi and Maxi preps can be done using the same kit.
- Consistent and highly reproducible results.
- Tested for various cells and tissue samples.
- Erythrocyte lysis step not required for blood samples.
- RNAintegra™ a unique buffer for re-suspending the purified RNA, provided in the kit, enhances the shelf life of the purified RNA.

Kit Contents :

- RNAIntegra™
- RaFlex™ Solution I
- RaFlex™ Solution II

Storage : Room Temperature

Applications :

- RNA obtained is can be used for several downstream applications such as cDNA synthesis, Northern blotting, RT-PCR, mRNA purification etc

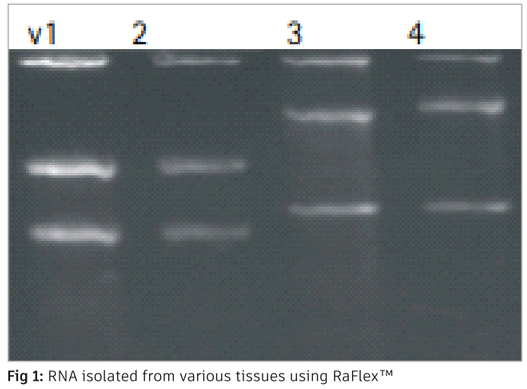


Fig 1: RNA isolated from various tissues using RaFlex™

Lane 1 - Gram Positive Bacteria
Lane 2 - Gram Negative Bacteria
Lane 3 - Heart Tissue
Lane 4 - Hela Cells

References :

- Chomczynski P and Sacchi N (1987) Single-step method of RNA isolation by acid guanidium thiocyanate-phenolchloroform extraction. Anal Biochem, 162: 156-159.

- Chomczynski P (1993) A reagent for the Single-step simultaneous isolation of RNA, DNA and Proteins from cell and tissue samples BioTechniques. 15: 532-537..
- Mackey K and Chomczynski P (1996) Long term stability of RNA isolation reagents. J NIH Res, 8: 72-78. 4. Chomczynski P and Mackey K (1995) Substitution of chloroform with Bromochloropropane in the single-step method of RNA isolation Anal Biochem. 225: 163-164.

Ordering Information

Cat. No	PI No.	Product Description
2115100031730	KT151A	RaFlex Total RNA Isolation Kit (Animal Cells & Tissues,Blood, Bacteria), 50 preps

Plant RNA isolation kit

Description :

Plant RNA isolation kit produces high yields of intact total RNA from a variety of plant tissues. The protocol involves tissue disruption by SDS followed by acid-phenol-chloroform extraction and selective precipitation of RNA. RNA obtained is good for several downstream applications such as cDNA synthesis, mRNA purification, RT-PCR etc. The quality and quantity of RNA extracts were tested by measurement of A260/A280 ratio and subsequently by electrophoresis on formaldehyde agarose gel.

Storage: 4°C

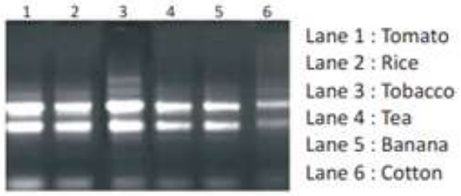
Unique Features :

- Reproducible, reliable, economical and rapid method of RNA isolation
- Higher yields of RNA obtained when compared to traditional methods
- Isolated RNA suitable for RT-PCR, cDNA synthesis, mRNA purification etc.
- Ratio of A_{260}/A_{280} is greater than 1.7

Applications :

- RNA obtained can be used for several downstream applications such as cDNA synthesis, Northern blotting, RT-PCR, mRNA purification etc

Biological Source	Yield total RNA(µg)
Plant (500 mg leaves)	
• Tomato Leaf	475-525
• Tomato Green Fruit	80-90
• Withania Leaf	600-650
• Banana	55-60
• Tea	50-60



Total RNA isolated from different plant species.

References :

- Maniatis, T. Fritsch, E.F. & Sambrook, J. (1982), Molecular cloning: A laboratory manual p. 202, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York.

Ordering Information

Cat. No	PI No.	Product Description
2109800011730	KT98	GeNei™ Plant RNA Isolation Kit, 10 preps

GeneiPure™ Total RNA Isolation

GeneiPure™ Total RNA Isolation Kit-Cells and Tissues

Description :

Isolation of intact RNA is a pre-requisite for the analysis of gene expression. One of the most important criterion in the isolation of total RNA is to prevent its degradation during the isolation procedure. Description: The GeneiPure Total RNA isolation kit provides a fast and simple method of isolating total RNA from animal cells and tissues. The procedure represents a well-established spin column technology for RNA purification. Cell and

Tissue samples are first lysed and homogenized by incubating in a solution containing large volumes of chaotropic ions. The Lysis Buffer immediately inactivates RNases and creates an appropriate binding condition, which favours adsorption of RNA to the silica membrane. The washing steps with two different wash buffers remove salts, metabolites and macromolecular cellular components. Pure RNA is eluted under low ionic strength conditions with RNase-free water.

Unique Features :

- Spin column technology.
- Quick and simple procedure- recovery of pure and intact RNA in less than 30 minutes.
- No phenol/chloroform extraction or ethanol precipitation.
- Compatible with wide range of cell lines and tissues.
- Highly pure RNA is obtained with A260/A280 of 2.0-2.1
- Minimal or no genomic DNA contamination.
- RNA obtained is of high quality and can be directly used for all downstream applications.

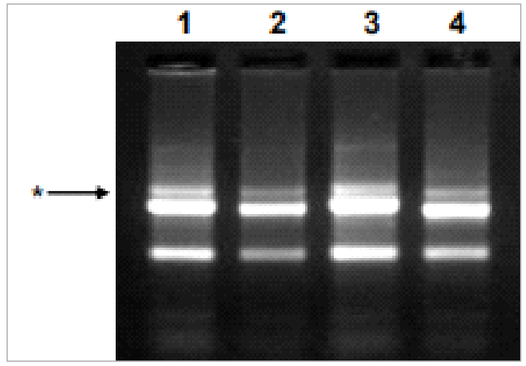
Kit Contents :

- Proteinase K
- Lysis BufferCells and Tissue
- Wash Buffer ICells &Tissues (concentrate)
- Wash Buffer IICells &Tissues (concentrate)
- Elution Buffer
- Filtration Columns
- GeneiPure RNA Columns
- Collection Tubes

Applications :

The purified RNA is ready for use in downstream applications such as:

- RT-PCR and Real-Time RT-PCR
- cDNA Synthesis
- Northern Blot
- RNase/S1 Nuclease Protection
- Primer Extension
- Microarrays



Analysis of Total RNA isolated from 1x106 cells from different mammalian cell lines using GeneiPure Total RNA Isolation Kit- Cells and Tissues, on 1% Agarose Gel.

Lane 1 - Total RNA isolated from HeLa cells
Lane 2 - Total RNA isolated from MCF-7 cells
Lane 3 - Total RNA isolated from COS-7 cells
Lane 4 - Total RNA isolated from NIH3T3 cells

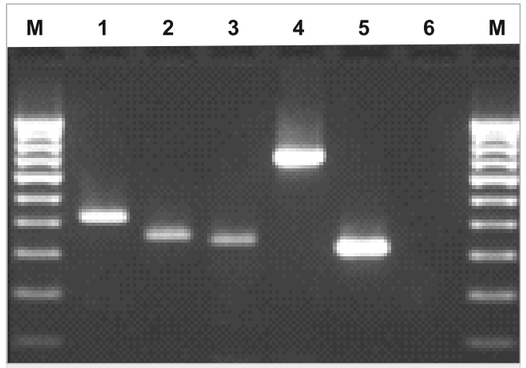
Yield of total RNA obtained from different Mouse tissues using GeneiPure Total RNA Isolation Kit-

Tissue (10 mg)	Yield of Total RNA (µg)
Liver	50-60
Kidney	20-30
Pancreas	30-35
Spleen	25-30
Heart	7-10
Skeletal muscle	12-15
Brain	7-10
Lung	10-15
Ovary	6-8
Testis	5-8

Analysis of Total RNA isolated from 1x106 cells from different mammalian cell lines using GeneiPure Total RNA Isolation Kit- Cells and Tissues, on 1% Agarose Gel.

Analysis of RT-PCR of different gene fragments amplified from total RNA isolated from HeLa cells using GeneiPureÔ Total RNA Isolation Kit- Cells and Tissues, on a 2% agarose gel.

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - 412 bp fragment of p53 gene
Lane 2 - 353 bp fragment of BRCA2
Lane 3 - 339 bp fragment of c-myc gene
Lane 4 - 716 bp fragment of b-action gene
Lane5 - 323 bp fragment of GAPDH gene
Lane 6 - Negative RT-PCR



Analysis of RT-PCR amplified 323 bp GAPDH gene fragment from varying number of HeLa cells, on a 2% agarose gel.

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - RT-PCR amplification of GAPDH gene from 10^3 cells
Lane 2 - RT-PCR amplification of GAPDH gene from 10^4 cells
Lane 3 - RT-PCR amplification of GAPDH gene from 10^5 cells
Lane 4 - Negative RT-PCR

References :

- Mackey K and Chomczynski P (1996) Long term stability of RNA isolation reagents. J NIH Res, 8: 72-78. 4. Chomczynski P and Mackey K (1995) Substitution of chloroform with Bromochloropropane in the single-step method of RNA isolation Anal Biochem. 225: 163-164.
- Maniatis, T. Fritsch, E.F. & Sambrook, J. (1982), Molecular cloning: A laboratory manual p. 202, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York

Ordering Information

Cat. No	PI No.	Product Description
2117100021730	KT171	GeneiPure™ Total RNA Isolation Kit-Cells and Tissues, 20 preps

GeneiPure™ Total RNA Isolation Kit -Bacteria

Description :

GeneiPure™ Total RNA Isolation Kit provides a fast and simple method of isolating total RNA from various biological samples like animal cells and tissues, blood (white blood cells), yeast, bacteria and plants. The procedure represents a well established silica membrane technology with a spin column format for rapid, bind-wash and elute method to prepare high quality total RNA. Biological samples are first lysed and homogenized by using a single lysis buffer containing chaotropic ions which immediately inactivate RNases and create an appropriate binding condition, which favors adsorption of RNA to the silica membrane. Following different washes to remove salts metabolites and macromolecular cellular components pure RNA is eluted under low ionic strength conditions with RNase -free water.

Unique Features :

- High recovery of pure and intact RNA
- Quick and Simple.
- No DNA Contamination.
- No Phenol/Chloroform Extraction. Complete column based purification

Kit Contents :

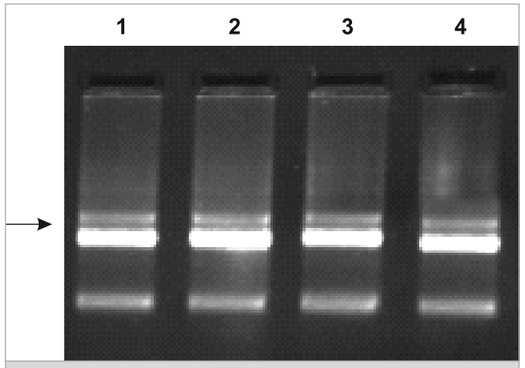
- Proteinase K
- Lysozyme
- Lysis Buffer - Bacteria
- Wash Buffer I - Bacteria (concentrate)
- Wash buffer IIBacteria (concentrate)
- 1X TE Buffer
- Elution Buffer
- Filtration Columns
- GeneiPure RNA Columns
- Collection Tubes

Applications :

- The purified RNA is ready for use in downstream applications such as: cDNA Synthesis RT-PCR and Real-Time PCR Northern Blot Microarray

Yield of total RNA obtained from 1 ml of bacterial strains using GeneiPure Total RNA Isolation KitBacteria

Bacterial species	Yield of Total (µg)
B. subtilis	15-25
Staphylococcus sp.	20-30
E. coli	30-50
Pseudomonas sp.	15-25



*Represents high molecular weight RNA

- Analysis of Total RNA from different Bacterial strains using GeneiPure Total RNA Isolation Kit- Bacteria on a 1% Agarose Gel.

Lane 1 - Total RNA isolated from B. subtilis
Lane 2 - Total RNA isolated from Staphylococcus sp.
Lane 3 - Total RNA isolated from E. coli
Lane 4 - Total RNA isolated from Pseudomonas sp.

References :

- Chomczynski P and Sacchi N (1987) Single-step method of RNA isolation by acid guanidium thiocyanate-phenol-chloroform extraction. Anal Biochem, 162: 156-159.
- Chomczynski P (1993) A reagent for the Singlestep simultaneous isolation of RNA, DNA and Proteins from cell and tissue samples. BioTechniques, 15: 532-537.
- Mackey K and Chomczynski P (1996) Long term stability of RNA isolation reagents. J NIH Res, 8: 72-78. 4. Chomczynski P and Mackey K (1995) Substitution of chloroform with Bromochloropropane in the single-step method of RNA isolation. Anal Biochem, 225: 163-164

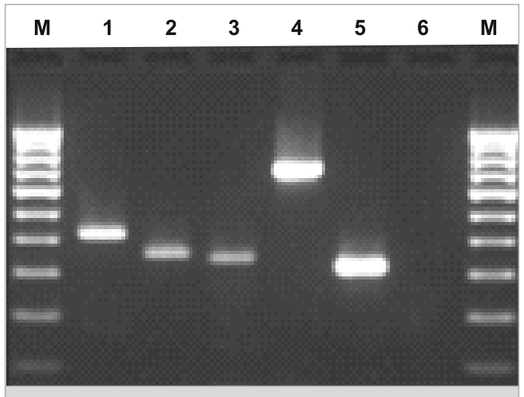
Ordering Information

Cat. No	PI No.	Product Description
2117500021730	KT175	GeneiPure™ Total RNA Isolation Kit - Bacteria, 20 preps

MicroRNA Isolation Kit- Cells & tissues

Description :

GeneiPure™ Total RNA Isolation Kit provides a fast and simple method of isolating total RNA from various biological samples like animal cells and tissues, blood (white blood cells), yeast, bacteria and plants. The procedure represents a well established silica membrane technology with a spin column format for rapid, bind-wash and elute method to prepare high quality total RNA. Biological samples are first lysed and homogenized by using a single lysis buffer containing chaotropic ions which immediately inactivate RNases and create an appropriate binding condition, which favors adsorption of RNA to the silica membrane. Following different washes to remove salts metabolites and macromolecular cellular components pure RNA is eluted under low ionic strength conditions with RNase -free water.



Analysis of RT-PCR amplified 323 bp GAPDH gene fragment from varying number of HeLa cells, on a 2% agarose gel.

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - RT-PCR amplification of GAPDH gene from 10^3 cells
Lane 2 - RT-PCR amplification of GAPDH gene from 10^4 cells
Lane 3 - RT-PCR amplification of GAPDH gene from 10^5 cells
Lane 4 - Negative RT-PCR

- Mackey K and Chomczynski P (1996) Long term stability of RNA isolation reagents. J NIH Res, 8: 72-78. 4. Chomczynski P and Mackey K (1995) Substitution of chloroform with Bromochloropropane in the single-step method of RNA isolation Anal Biochem. 225: 163-164.
- Maniatis, T. Fritsch, E.F. & Sambrook, J. (1982), Molecular cloning: A laboratory manual p. 202, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York

Ordering Information

Cat. No	PI No.	Product Description
2117100021730	KT171	GeneiPure™ Total RNA Isolation Kit- Cells and Tissues, 20 preps

GeneiPure™ Total RNA Isolation Kit -Bacteria

Description :

GeneiPure™ Total RNA Isolation Kit provides a fast and simple method of isolating total RNA from various biological samples like animal cells and tissues, blood (white blood cells), yeast, bacteria and plants. The procedure represents a well established silica membrane technology with a spin column format for rapid, bind-wash and elute method to prepare high quality total RNA. Biological samples are first lysed and homogenized by using a single lysis buffer containing chaotropic ions which immediately inactivate RNases and create an appropriate binding condition, which favors adsorption of RNA to the silica membrane. Following different washes to remove salts metabolites and macromolecular cellular components pure RNA is eluted under low ionic strength conditions with RNase -free water.

Unique Features :

- High recovery of pure and intact RNA
- Quick and Simple.
- No DNA Contamination.
- No Phenol/Chloroform Extraction. Complete column based purification

Kit Contents :

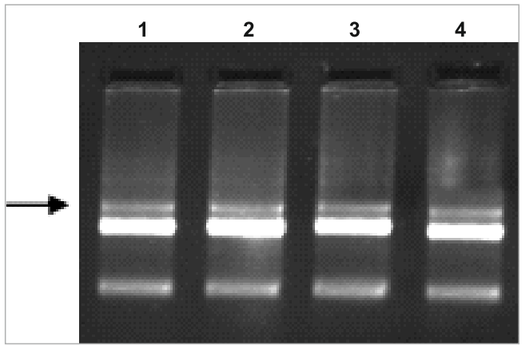
- Proteinase K
- Lysozyme
- Lysis Buffer - Bacteria
- Wash Buffer I - Bacteria (concentrate)
- Wash buffer IIBacteria (concentrate)
- 1X TE Buffer
- Elution Buffer
- Filtration Columns
- GeneiPure RNA Columns
- Collection Tubes

Applications :

- The purified RNA is ready for use in downstream applications such as: cDNA Synthesis RT-PCR and Real-Time PCR Northern Blot Microarray

Yield of total RNA obtained from 1 ml of bacterial strains using GeneiPure Total RNA Isolation KitBacteria

Bacterial species	Yield of Total (µg)
B. subtilis	15-25
Staphylococcus sp.	20-30
E. coli	30-50
Pseudomonas sp.	15-25



*Represents high molecular weight RNA

- Analysis of Total RNA from different Bacterial strains using GeneiPure Total RNA Isolation Kit- Bacteria on a 1% Agarose Gel.

Lane 1 - Total RNA isolated from B. subtilis
Lane 2 - Total RNA isolated from Staphylococcus sp.
Lane 3 - Total RNA isolated from E. coli
Lane 4 - Total RNA isolated from Pseudomonas sp.

References :

- Chomczynski P and Sacchi N (1987) Single-step method of RNA isolation by acid guanidium thiocyanate-phenol-chloroform extraction. Anal Biochem, 162: 156-159.
- Chomczynski P (1993) A reagent for the Singlestep simultaneous isolation of RNA, DNA and Proteins from cell and tissue samples. BioTechniques, 15: 532-537.
- Mackey K and Chomczynski P (1996) Long term stability of RNA isolation reagents. J NIH Res, 8: 72-78. 4. Chomczynski P and Mackey K (1995) Substitution of chloroform with Bromochloropropane in the single-step method of RNA isolation. Anal Biochem, 225: 163-164

MicroRNA Isolation Kit- Cells & tissues

Description :

MicroRNA (miRNA) are non-coding approximately 20-24 nucleotide small RNAs which are naturally expressed in animal cells and tissues. MicroRNAs are involved in various biological processes and are actively involved in cellular differentiation, signal transduction, protein degradation, response to biological stress and pathogen invasion. They also regulate the expression of various important genes.

MicroRNA Isolation Kit for Animal Cells and Tissues provides a simple, rapid and efficient column-based method for purifying and enriching pure and high-quality microRNA (miRNA) from a wide range of animal cells and tissues within 30 minutes. The formulation of the buffer is such that it will help to extract and selectively bind small RNA to the silica membrane in the presence of an organic solvent.

This kit helps in the isolation of enriched fraction of pure small RNA below 250bp including tRNA, 5S rRNA, 5.8S rRNA and regulatory RNA molecules such as microRNAs (miRNA).

Unique Features :

- Spin column technology.
- Rapid purification and enrichment of microRNA within 30 minutes
- Minimizes contamination with large RNA and DNA molecules
- Suitable for isolating small RNA
- Ideal for miRNA, siRNA, snRNA analysis.
- Compatible with wide varieties of animal tissues and cell lines.

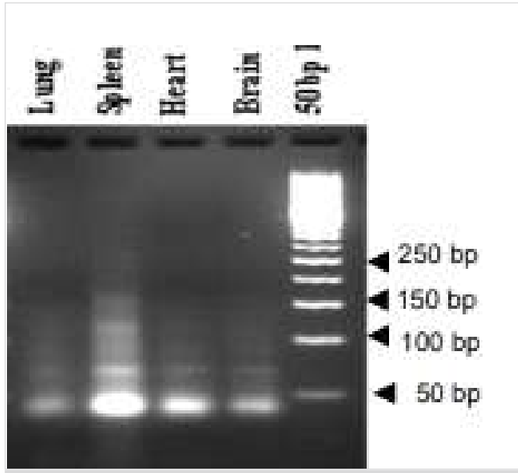
Kit Contents :

- Cells & Tissue miRNA Lysis Buffer
- Cells & Tissue miRNA Wash Buffer-I
- Cells & Tissue miRNA Wash Buffer-II
- Filtration Column
- Enrichment Column
- Collection Tubes
- Elution Buffer

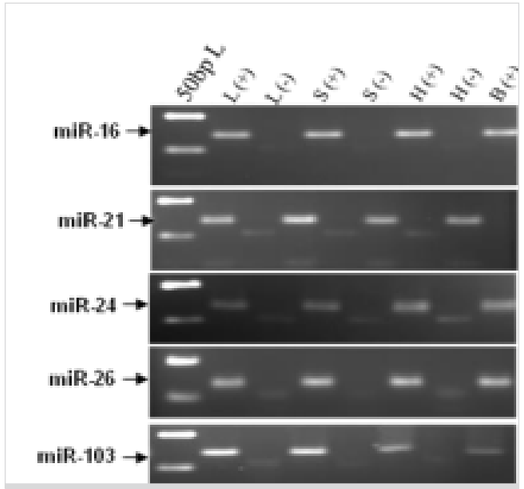
Applications :

The purified small RNA are suitable for applications like:

- Relative Quantification with Real Time PCR
- Microarray Hybridization Assay
- Reverse Transcriptase PCR



Analysis of miRNA isolated fro, different mouse tissues using miRNA isolation Kit - Cells and Tissues on a 1.5 % Agarose formaldehyde gel.



Validation of microRNA.- miR- RTPCR of specific miRNA'S (miR-16, miR- 21, miR -24, miR26 and miR- 103) isolated from mouse tissues. (L=Lung, S= Spleen, H= Heart, B= Brain)

References :

- BALCELLS I, CIRERA S, BUSK PK: Specific and sensitive quantative RT-PCR of miRNA with DNA primer. BMC Biotechnology 2011, 11:7
- Mráz M, Malinova K, Mayer J, Pospisilova S. MicroRNA isolation and stability in stored RNA samples. Biochem Biophys Res Commun. 2009;390:1–4. doi: 10.1016/j.bbrc.2009.09.061.
- Kosaka N, Iguchi H, Ochiya T. Circulating microRNA in body fluid: a new potential biomarker for cancer diagnosis and prognosis. Cancer Sci. 2010;101:2087–92.

Ordering Information

Cat. No	PI No.	Product Description
2124500021730	KT245	MicroRNA Isolation Kit- Cells & tissues, 20 preps

Total RNA Isolation Kit- Blood

Description :

Isolation of intact RNA is a prerequisite for the analysis of gene expression. One of the important criteria in the isolation of total RNA is to prevent degradation of the RNA during the isolation procedure. Description: The GeneiPure Total RNA isolation kit- Blood is a fast and easy method for isolation of total cellular RNA from fresh, human and animal whole blood. Multiple blood samples can be processed simultaneously within a short time. The principle is based on lysis of blood cells by two independent procedures, Erythrocyte lysis and leukocyte lysis. This procedure uses selective lysis of erythrocytes to isolate leukocytes, which are the target for RNA isolation. Contaminants and enzyme inhibitors such as haemoglobin and heparin are completely removed, leaving behind purified RNA

Unique Features :

- Spin column technology.
- Quick and simple procedure- recovery of pure and intact RNA within 2 hours.
- No phenol/chloroform extraction or ethanol precipitation.
- Compatible with different blood samples and collection methods.
- Highly pure RNA is obtained with A260/A280 of 2.0-2.1
- Minimal or no genomic DNA contamination.
- RNA obtained is of high quality and can be directly used for all downstream applications

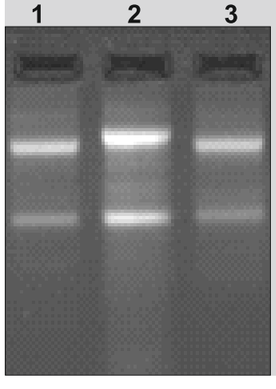
Kit Contents :

- Erythrocyte Lysis Buffer (10X)
- Lysis Buffer- Blood
- Wash Buffer I- Blood (concentrate)
- Wash Buffer II- Blood (concentrate)
- Elution Buffer
- Filtration Columns
- GeneiPure RNA Columns
- Collection Tubes

Applications :

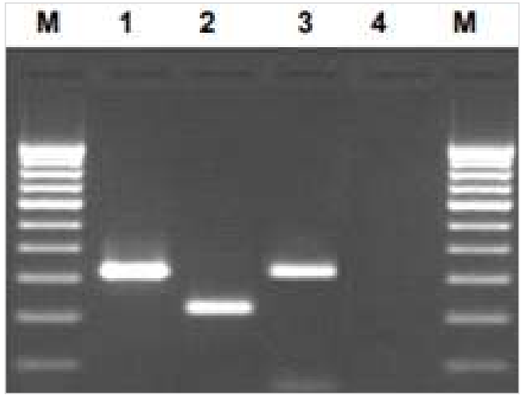
This RNA ready for use in downstream applications such as:

- RT-PCR and Real time RT-PCR
- cDNA Synthesis
- Northern Blotting
- RNase/ S1 Nuclease Protection
- Microarrays



Analysis Total RNA isolated from 1.5 ml of whole blood from different species using GeneiPure Total RNA Isolation Kit- Blood on 1 % Agarose Gel.

Lane 1 - Total RNA isolated from Human Blood
Lane 2 - Total RNA isolated from Mouse blood
Lane 3 - Total RNA isolated from Rabbit blood



Lane M - StepUp™ 100 bp DNA ladder
Lane 1 - RT-PCR amplification of human GAPDH gene (323 bp)
Lane 2 - RT-PCR amplification of mouse GAPDH (223 bp)
Lane 3 - RT-PCR amplification of rabbit GAPDH gene (315)
Lane 4 - Negative RT-PCR

MicroRNA Isolation Kit- Cells & tissues

Analysis of RT-PCR amplified GAPDH gene from 500 ng of total RNA isolated from blood of different species using GeneiPure Total RNA Isolation Kit-Blood on a 2% agarose gel.

References :

- Optimized protocol for the extraction of RNA and DNA from frozen whole blood sample stored in a single EDTA tube-Hirotaka Yamagata
- Comparison of protocols and RNA carriers for plasma miRNA isolation. Unraveling RNA carrier influence on miRNA isolation-Luis A. Ramón-Núñez
- Debey-Pascher, S. et al. RNA-stabilized whole blood samples but not peripheral blood mononuclear cells can be stored for prolonged time periods prior to transcriptome analysis. J. Mol. Diagn

Biological Source (Yeast (1 ml Culture)	Yield total RNA(µg)
S.cerevisiae	40-50
Pistia pastoris	20-30

Ordering Information

Cat. No	PI No.	Product Description
2117300021730	KT173	Total RNA Isolation Kit- Blood, 20 preps

Total RNA Isolation Kit- Yeast

Description :

GeneiPure™ Total RNA Isolation Kit - Yeast provides a rapid and easy method of isolating total RNA from different strains of yeast. Overnight grown yeast cultures are first lysed using an enzyme Lyticase followed by incubating in a lysis buffer containing large volume of chaotropic ions. The purified RNA is ready to be used in downstream applications. The kit provides sufficient reagents for 20 Preps

Unique Features :

- Recovery of pure and intact RNA in an hour.
- Compatible with wide range of strains.
- Highly pure RNA is obtained with A_{260}/A_{280} of 2.0-2.1
- No salt carry over.

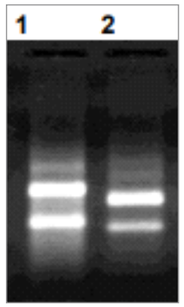
Kit Contents :

- Lysis Buffer- Yeast
- Wash Buffer I- Yeast (concentrate)
- Wash Buffer II- Yeast (concentrate)
- SE Buffer
- Elution Buffer (Nuclease Free water)
- Filtration Columns
- GeneiPure RNA Columns
- Lyticase 2000 U
- Collection Tubes

Storage: Lyticase at -20°C Buffers at room temperature (RT).

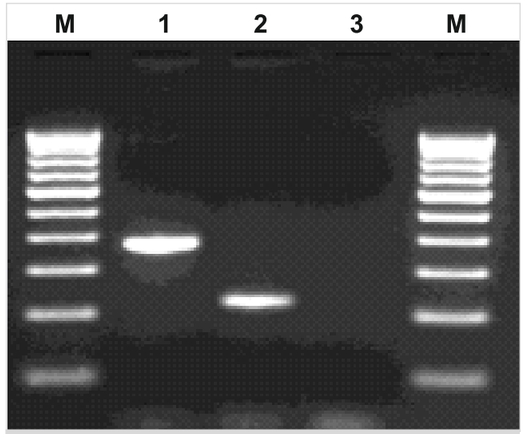
Applications :

- The purified RNA is ready to be used in downstream applications such as:
- RT-PCR and Real-time PCR
- cDNA Synthesis
- Northern Blotting
- RNase/S1 Nuclease Protection
- Micro arrays



Total RNA isolated from different yeast strains using GeneiPure Total RNA Isolation Kit- Yeast. Total RNA was eluted in 50 µl and 5 µl was loaded on 1% Agarose Gel.

Lane 1 - Saccharomyces cerevisiae
Lane 2 - Pischia pastoris



RT-PCR amplification of 390 bp & 250 bp of ITS3 and ITS4 gene fragment from total RNA isolated from different strains of yeast using GeneiPure Total RNA Isolation KitYeast

Lane M - 100 bp DNA ladder
Lane 1 - Saccharomycescerevisiae
Lane 2 - Pischia pastoris
Lane 3 - Negative control

References :

- Krawetz SA, States JC, Dixon GH. Isolation and fractionation of total nucleic acids from tissues and cells. J Biochem Biophys Methods 1986;12:29–36.
- Wise JA. Preparation and analysis of low molecular weight RNAs and small ribonucleoproteins. Methods Enzymol 1991;194:405–415.
- Koch H, Friesen JD. Individual messenger RNA half-lives in Saccharomyces cerevisiae. Mol Gen Genet 1979;170:129–135.

Ordering Information

Cat. No	PI No.	Product Description
2117400021730	KT174	Total RNA Isolation Kit- Yeast, 20 preps

GeneiPure™ Total RNA Isolation Mini Kit-Plants

Description :

Isolation of intact RNA is a prerequisite for the analysis of gene expression. One of the important criteria in the isolation of total RNA is to prevent its degradation during the isolation procedure. The GeneiPure Total RNA Isolation Kit - Plants provides ready to use reagents for isolation of RNA from plant cells and tissues. This kit provides a rapid and simple, silica-based spin column technology to isolate pure and intact RNA within minutes. Plant samples are first lysed and homogenized by incubating in a solution containing large volumes of chaotropic ions. The Lysis Buffer immediately inactivates RNases and creates an appropriate binding condition, which favours the adsorption of RNA to the silica membrane. The washing steps with two different Wash Buffers remove salts, metabolites, and macromolecular cellular components. Pure RNA is eluted under low ionic strength conditions with Elution Buffer.

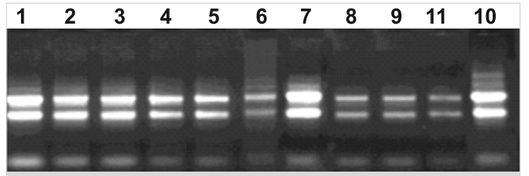
Unique Features :

- Spin Column technology.
- Quick and simple procedure- recovery of pure and intact RNA in less than an hour.
- No phenol/chloroform extraction or ethanol precipitation.
- Compatible with wide range of plant tissues and explants.
- Highly pure RNA is obtained with A260/A280 of 2.0-2.1
- Minimal or no genomic DNA contamination.
- RNA obtained is of high quality and can be directly used for all downstream applications.

Kit Contents :

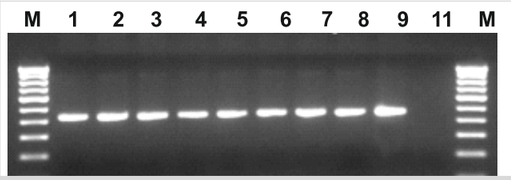
- Lysis Buffer- Plants
- Wash Buffer IPlants (concentrate)
- Wash Buffer IIPlants (concentrate)
- Elution Buffer
- Filtration Columns
- GeneiPure RNA Columns
- Collection Tubes

Storage: Room Temperature.



Analysis of Total RNA isolated from 50 mg of leaf tissue of different plant species using GeneiPure Total RNA Isolation Kit – Plants on 1% Agarose Gel.

Lane M - Tomato
Lane 1 - Rice
Lane 2 - Maize
Lane 3 - Tea
Lane 4 - Banana
Lane 7 - Papaya
Lane 8 - Sandal
Lane 9 - Caconut
Lane 10 - Arecanut
Lane 11 - Tobacco



Analysis of RT-PCR amplification of 420 bp Rubisco gene fragment from 500ng of total RNA isolated from leaf tissue of different plant species using GeneiPure Total RNA Isolation Kit – Plants.

Applications :

The purified RNA is ready for use in downstream applications such as:

- RT-PCR and Real-Time RT-PCR
- cDNA Synthesis
- Northern Blotting
- RNase/S1 Nuclease Protection
- Microarrays

References :

- Rezadoost, M. H., Kordrostami, M. & Kumleh, H. H. An efficient protocol for isolation of inhibitor-free nucleic acids even from recalcitrant plants.
- Wang, L. & Stegemann, J. P. Extraction of high quality RNA from polysaccharide matrices using cetlytrimethylammonium bromide.
- Chang, S., Puryear, J. & Cairney, J. A simple and efficient method for isolating RNA from pine trees.

Ordering Information

Cat. No	PI No.	Product Description
2117200021730	KT172	GeneiPure™ Total RNA Isolation Mini Kit-Plants, 20 preps
2117200031730	KT172L	GeneiPure ™ Total RNA Isolation Mini Kit-Plants, 50 preps

GenPro™ 3-in 1 Isolation Kit

Genpro™ 3-in-1 Isolation Kit-Cells and Tissues

Description :

Simultaneous extraction of DNA/RNA/Proteins is pre-requisite to study the genome, transcriptome and proteome from a single sample, for gene expression studies, mRNA knockdown, biomarker discovery and characterization of cultured cell lines. One of the important criteria in the isolation of proteins and nucleic acid is to prevent degradation of biomolecules during the isolation procedure. GenPro™ 3-in-1 Isolation Kit – Cells & Tissues provides a rapid and easy method for the simultaneous extraction of Total RNA, genomic DNA and Total protein from the same sample using spin column technology in about 1 hour. This quick, reliable and consistent technique provides a simple and effective way to study protein and nucleic acids simultaneously from cells and tissues without affecting yield and quality. GenPro™ 3-in-1 Isolation Kit – Cells and tissues is suitable for isolating macromolecules from precious samples, such as biopsy materials or small subsets of stem cells without fractionating the samples. The obtained DNA, RNA and protein have been tested for relevant downstream application with minimal cross contamination.

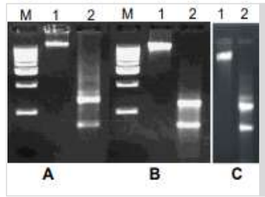
Unique Features :

- Spin column technology.
- Quick and simple procedure.
- Sequentially isolate nucleic acids and proteins from single lysate-no need to fractionate the lysate.
- No phenol/chloroform extraction or ethanol precipitation of nucleic acids.
- Compatible with wide range of cells and tissues.
- Suitable for extraction of DNA /RNA and proteins from embryonic stem cell lines.
- High quality total RNA and genomic DNA

- High yields of isolated proteins
- DNA/RNA/Protein obtained can be directly used for all downstream applications.

Kit Contents :

- Lysis Buffer
- gDNA Wash Buffer I - CTB (concentrate)
- RT gDNA Wash Buffer II - CTB (concentrate)
- RNA Wash Buffer I - CTB (concentrate)
- RNA Wash Buffer II - CTB (concentrate)
- DNA Elution Buffer
- RNA Elution Buffer
- GeneiPure™ DNA Spin Columns
- GeneiPure™ RNA Spin Columns
- Collection tubes

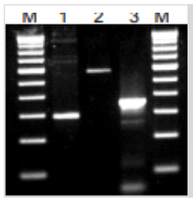


Analysis of simultaneously extracted DNA and RNA from the same sample using GenPro™ 3-in-1 Isolation Kit-Cells and tissue on Agarose gel.

Lane 1 and 2 represent the DNA and RNA respectively.
(A) Hela cells
(B) Mouse Liver tissue
(C) Mouse embryonic stem cell line
Lane M: StepUp™ 1 kb DNA LAdder

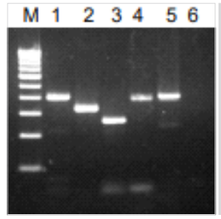
Ordering Information

Cat. No	PI No.	Product Description
2117400021730	KT174	Total RNA Isolation Kit- Yeast, 20 preps



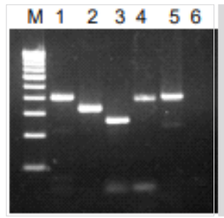
Analysis of PCR amplified genomic DNA isolated from HeLa cells using GenPro TM 3-in-1 Isolation kit-Cells and Tissues.

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - PCR amplification with STR Ioci specific primers
Lane 2 - Alu PCR of plat gene
Lane 3 - PCR amplification with cyt-b primers



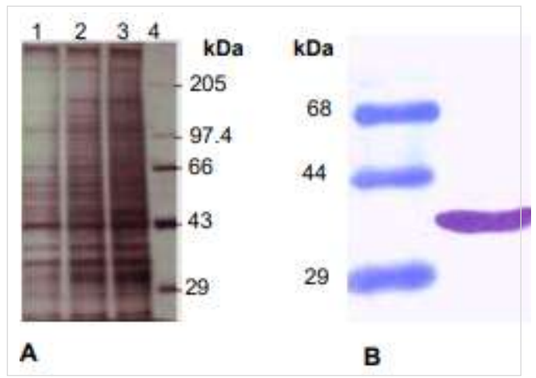
Analysis of RT-PCR amplicons of different genes from Total RNA Isolated from HeLa cells using GenPro™ 3-in-1 Isolation Kit-Cells and Tissues on Agarose gel.

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - p53 gene
Lane 2 - BRCA-2 gene
Lane 3 - c-myc gene
Lane 4 - Retinoid X receptor ß gene (RXRB)
Lane 5 - GAPDH gene
Lane 6 - Negative RT-PCR



Analysis of RT-PCR amplicons of different genes from Total RNA Isolated from HeLa cells using GenPro™ 3-in-1 Isolation Kit-Cells and Tissues on Agarose gel.

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - p53 gene
Lane 2 - BRCA-2 gene
Lane 3 - c-myc gene
Lane 4 - Retinoid X receptor ß gene (RXRB)
Lane 5 - GAPDH gene
Lane 6 - Negative RT-PCR



A. Detection of Proteins extracted from HeLa cells using conventional method (Lane 1) and GenPro™ 3-in-1 Isolation Kit-Cells and Tissues (Lane 2 and 3), by silver staining. Lane 4 represents Medium Range Protein Molecular Weight Marker.

B. Western Blot analysis of the protein extracted from HeLa cells using GenPro™ 3-in-1 Isolation Kit-Cells and Tissues

Sample	DNA (µg)	RNA (µg)	Protein (µg)
Cells (1x10⁶)			
HeLa	6-8	15-18	150-250
NIH-3T3	6-8	8-10	80-100
COS-7	5-8	28-35	80-100
Mouse tissues (15 mg)			
Liver	15-20	55-60	350-450
Heart	10-14	6-10	250-300

The average yields of Genomic DNA, Total RNA and proteins obtained from simultaneous extraction of nucleic acids and protein from different cells and tissues samples using GenPro™ 3-in-1 Isolation Kit-Cells and Tissues.

Applications :

- gDNA isolated from this kit finds its downstream application PCR, Southern blotting and SNP analysis.
- Total RNA isolated from this kit finds its downstream application, In vitro translation, Northern Blotting , RT-PCR ,Real time PCR
- Total Proteins isolated from this kit finds its downstream application, SDS-PAGE, Western Blotting and 2-D Electrophoresis.

References :

- Parzer S, Mannhalter C. A rapid method for the isolation of genomic DNA from citrated whole blood. The Biochemical journal 1991;273(Pt 1):229-31 from citrated whole blood. Biochem J 273Pt 1 1991:229-31
- Sambrook, J. et al., (1989) Molecular cloning: a laboratory manual, 2nd ed., Cold Spring Harbor Laboratory Press

Ordering Information

Cat. No	PI No.	Product Description
2120400021730	KT204	Genpro™ 3-in-1 Isolation Kit-Cells and Tissues, 20 preps

Genpro™ 3-in-1 Isolation Kit-Blood

Description :

Simultaneous extraction of DNA/RNA/Proteins from the same sample is prerequisite for studying the genome, transcriptome and proteome. One of the important criterion in the isolation of proteins and nucleic acid is to prevent degradation during the isolation procedure.

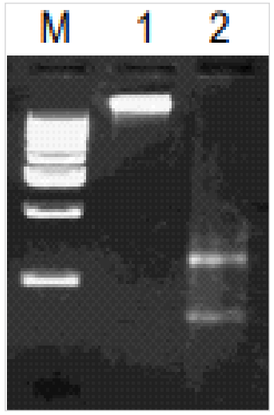
GenPro™ 3-in-1 Isolation Kit provides a rapid and easy method for the simultaneous extraction of total RNA, genomic DNA and Total proteins from the same sample using spin column technology. The Total RNA, genomic DNA and protein are purified in about 1 hour. This quick, reliable and consistent technique provides a simple and effective way to study protein and nucleic acids simultaneously from blood without affecting the yield and quality. GenPro™ 3-in-1 Isolation Kit - Blood is suitable for isolating macromolecules from precious samples without fractionating the samples. The obtained DNA, RNA and protein have been tested for relevant downstream applications without any cross contamination.

Unique Features :

- Spin column technology.
- Quick and simple procedure.
- Sequentially isolate nucleic acids and proteins from single lysate-no need to fractionate the lysate.
- No phenol/chloroform extraction or ethanol precipitation of nucleic acids.
- Compatible with wide range of cells and tissues.
- Suitable for extraction of DNA /RNA and proteins from embryonic stem cell lines.
- High quality total RNA and genomic DNA
- High yields of isolated proteins
- DNA/RNA/Protein obtained can be directly used for all downstream applications.

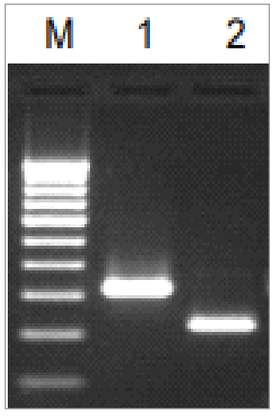
Kit Contents :

- 10X Erythrocyte Lysis Buffer
- Lysis Buffer –CTB
- Wash Buffer I – CTB (concentrate)
- gDNA Wash Buffer II – CTB (concentrate)
- Wash Buffer I – CTB (concentrate)
- RNA Wash Buffer II – CTB (concentrate)
- GeneiPureTMDNA spin Columns
- GeneiPureTMRNA spin Columns
- Collection tubes
- DNA Elution Buffer
- RNA Elution Buffer



Analysis of DNA and RNA extracted simultaneously from human blood sample using GenProTM 3-in-1 Isolation Kit-Blood on Agarose gel

Lane M - StepUp™ 1 kb DNA Ladder
Lane 1 - DNA from Human Blood
Lane 2 - RNA from Human Blood



Analysis of DNA and RNA extracted simultaneously from human blood sample using GenProTM 3-in-1 Isolation Kit-Blood on Agarose gel

Lane M - StepUp™ 100 bp DNA Ladder
Lane 1 - RT-PCR amplification of human GAPDH gene (323bp)
Lane 2 - RT-PCR amplification of mouse GAPDH gene (223bp)

Sample	DNA (ug)	RNA(ug)	Protein (ug)
Whole blood (1 ml)			
Human	5-8	4-6	150-180
Mice	3-6	2-3	120-160

Average yields of DNA, RNA and Protein obtained by simultaneous extraction of nucleic acids and protein from blood of different species using GenPro™ 3-in-1 Isolation Kit – Blood

Applications :

- gDNA isolated from this kit finds its downstream application PCR, Southern blotting and SNP analysis.
- Total RNA isolated from this kit finds its downstream application, In vitro translation, Northern Blotting , RT-PCR ,Real time PCR
- Total Proteins isolated from this kit finds its downstream application, SDS-PAGE, Western Blotting and 2-D Electrophoresis.

References :

- Albarino CG. V. Romanowski.Phenol extraction revisited: a rapid method for the isolation and preservation of human genomic DNA from whole blood. Mol Cell Probes 1994;8:423-7. 2.
- Parzer S, Mannhalter C. A rapid method for the isolation of genomic DNA from citrated whole blood. The Biochemical journal 1991;273(Pt 1):229-31 from citrated whole blood. Biochem J 273Pt 1 1991:229-31 4.
- Pochi R, Genomic DNA. Subbarayan, Malancha(et al) Isolation of from Human Whole Blood. BioTechniques December 2002;33 SRC - GoogleScholar:1231-4.

Ordering Information

Cat. No	PI No.	Product Description
2120500021730	KT205	Genpro™ 3-in-1 Isolation Kit-Blood, 20 preps

Genpro™ 3-in-1 Isolation Kit-Plant

Description :

Simultaneous extraction of DNA/RNA/Proteins from the same sample is prerequisite for studying the genome, transcriptome and proteome of the sample. One of the important criteria in the isolation of proteins and nucleic acid is to prevent degradation of the biomolecules during the isolation procedure.

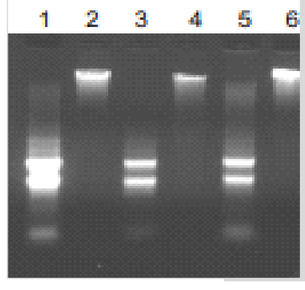
GenProTM 3-in-1-Isolation Kit provides a rapid and easy method for the simultaneous extraction of total RNA, genomic DNA and proteins from the same sample, using spin column technology without fractionating the sample in less than 1 hour. This quick, reliable, and consistent technique provides a simple and effective way to study protein and nucleic acids simultaneously from a variety of plant species without affecting yield and quality. The kit is suitable for isolating macromolecules from precious samples without fractionating the samples. The obtained DNA, RNA and protein have been tested for relevant downstream applications without any cross contamination.

Unique Features :

- Parzer S, Mannhalter C. A rapid method for the isolation of genomic DNA from citrated whole blood. The Biochemical journal 1991;273(Pt 1):229-31 from citrated whole blood. Biochem J 273Pt 1 1991:229-31
- Sambrook, J. et al., (1989) Molecular cloning: a laboratory manual, 2nd ed., Cold Spring Harbor Laboratory Press

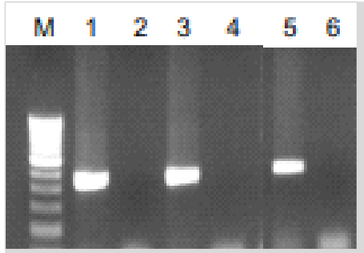
Kit Contents :

- Lysis Buffer–BYP
- gDNA Wash Buffer I- BYP (concentrate)
- gDNA Wash Buffer II- BYP (concentrate)
- RNA Wash Buffer I- BYP (concentrate)
- RNA Wash Buffer II- BYP (concentrate)
- DNA Elution Buffer
- RNA Elution Buffer
- GeneiPureTM DNA Spin Columns
- GeneiPureTM RNA Spin Columns 20
- Collection Tubes



Analysis of DNA and RNA isolated from Leaf tissue of different plant species using GenPro™ 3-in-1 Isolation Kit – Plants on agarose gel.

Lane 1 - RNA from Tomato
Lane 2 - DNA from Tomato
Lane 3 - RNA from Rice
Lane 4 - DNA from Rice
Lane 5 - RNA from Tea
Lane - DNA from Tea



Analysis of RT-PCR amplified RUBISCO gene from total RNA of various plant species isolated using GenProTM 3-in-1 Isolation Kit- Plants.

Lane M -StepUp™ 100 bp DNA Ladder
Lane 1 -Tomato (Positive RT-PCR)
Lane 2 -Tomato (Negative RT-PCR)
Lane 3 - Rice (Positive RT-PCR)
Lane 4 - Rice (Negative RT-PCR)
Lane 5 - Tea (Positive RT-PCR)
Lane 6 - Tea (Negative RT-PCR)

Leaf (50 mg)	DNA (ug)	RNA(ug)	Protein (ug)
Human	5-8	4-6	150-180
Mice	3-6	2-3	120-160

Average yields of DNA RNA and proteins obtained from simultaneous extraction of nucleic acids and protein from different plant samples using GenProTM 3-in-1 Kit - Plants.

Applications :

- gDNA isolated from this kit finds its downstream application PCR, Southern blotting and SNP analysis.
- Total RNA isolated from this kit finds its downstream application, In vitro translation, Northern Blotting , RT-PCR ,Real time PCR
- Total Proteins isolated from this kit finds its downstream application, SDS-PAGE, Western Blotting and 2-D Electrophoresis.

References :

- C. Neal Stewart, Jr., and Laura E. Via. A Rapid CTAB DNA Isolation technique Useful for RAPD Fingerprinting and Other PCR Applications. BioTechniques 1993 article Vol. 14(5):748-749
- Doyle, J.J. and J.L. Doyle. 1987. A rapid DNA isolation procedure for small quantities of fresh leaf tissue. Phytochem. Bull. 19:11-15.
- Doyle, J.J. and J.L. Doyle. 1990. Isolation of plant DNA from fresh tissue. Focus 12:13-15.
- Mace ES, Buhariwalla HK, and Crouch JH (2003) A high-throughput DNA extraction protocol for tropical molecular breeding programs. Plant Mol Biol Rep 21: 459a-459hMurray M.G. and W.F. Thompson, 1980, Rapid isolation of high molecular weight plant DNA. Nucleic Acid Research, 8 (19), pp. 4321-4325.

Ordering Information

Cat. No	PI No.	Product Description
2120600021730	KT206	Genpro™ 3-in-1 Isolation Kit-Plant, 20 preps

Genpro™ 3-in-1 Isolation Kit-Bacteria

Description :

Simultaneous extraction of DNA/RNA/Proteins from the same sample is prerequisite for studying the genome, transcriptome, and proteome. One of the important criterion in the isolation of proteins and nucleic acid is to prevent degradation during the isolation procedure.

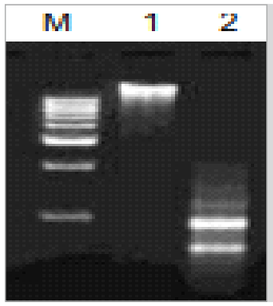
GenPro™ 3-in-1 Isolation Kit provides a rapid and easy method for the simultaneous extraction of total RNA, genomic DNA and proteins from a single sample using spin column technology. Total RNA, genomic DNA and protein are purified in less than 1 hour. This quick, reliable and consistent technique provides a simple and effective way to study protein and nucleic acids simultaneously from different gram-positive and gram-negative bacterial strains without affecting the yield and quality. GenPro™ 3-in-1 Isolation Kit - Bacteria is suitable for isolating macromolecules from precious samples without fractionating the samples. The obtained DNA, RNA and protein isolated using this kit, have been tested for relevant downstream applications without any cross contamination.

Unique Features :

- Spin column technology.
- Quick and simple procedure.
- Sequentially isolate nucleic acids and proteins from single lysate-no need to fractionate the lysate.
- No phenol/chloroform extraction or ethanol precipitation of nucleic acids.
- Compatible with wide range of cells and tissues.
- Suitable for extraction of DNA /RNA and proteins from embryonic stem cell lines.
- High quality total RNA and genomic DNA
- High yields of isolated proteins
- DNA/RNA/Protein obtained can be directly used for all downstream applications.

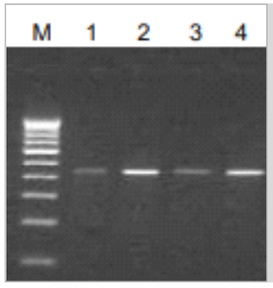
Kit Contents :

- Lysozyme
- Lysis Buffer-BYP
- gDNA Wash buffer I- BYP (concentrate)
- gDNA Wash Buffer II- BYP (concentrate)
- RNA Wash Buffer I - BYP (concentrate)
- RNA Wash Buffer II- BYP (concentrate)
- GeneiPure™ DNA Spin Columns (Green)
- GeneiPure™ RNA Spin Columns (Blue)
- Collection Tubes 40 Nos.
- DNA Elution Buffer
- RNA Elution Buffer



Analysis of DNA and RNA isolated from E.coli culture using GenProTM 3-in-1 Isolation Kit - Bacteria.

Lane M - StepUp™ 1 kb DNA LAdder
Lane 1 - DNA from E.coli
Lane 2 - RNA from E.coli



Analysis of RT-PCR amplified 23S rRNA gene from total RNA isolated from different bacterial strains using GenPro™ 3-in-1 isolation Kit - Bacteria.

Lane M - StepUp™ 100 bp DNA ladder
Lane 1 - Bacillus subtilis
Lane 2 - Staphylococcus sp.
Lane 3 - E. coli
Lane 4 - Pseudomonas sp.

Sample	DNA (µg)	RNA (µg)	Protein (µg)
Bacterial cultures (1 ml)			
E.coli	2-3	10-15	200-300
S.aureus	8-10	50-60	300-600

Average yields of DNA, RNA and Protein obtained by simultaneous extraction of nucleic acids and protein from different bacterial cultures using GenPro™ 3-in-1 Isolation Kit - Bacteria.

Applications :

- gDNA isolated from this kit finds its downstream application PCR, Southern blotting and SNP analysis.
- Total RNA isolated from this kit finds its downstream application, In vitro translation, Northern Blotting , RT-PCR ,Real time PCR
- Total Proteins isolated from this kit finds its downstream application, SDS-PAGE, Western Blotting and 2-D Electrophoresis.

References :

- Preparation of genomic DNA from bacteria -K Wilson
- Marmur J. A procedure for the isolation of deoxyribonucleic acid from micro-organisms. J Mol Bio. 1961;3(2):208–218. doi: 10.1016/S0022-2836(61)80047-8.

Ordering Information

Cat. No	PI No.	Product Description
2120800021730	KT208	Genpro™ 3-in-1 Isolation Kit-Bacteria, 20 preps

Quality control assays :

Performance Test: Routinely used for buffering enzyme preparations, in assay buffers and as rehydrating solution in DNA extraction.

Applications :

- Forms the basic component for the extraction buffer (Edwards buffer),DNA Resuspension (TE),DNA electrophoresis buffer (TAE)
- SDS-PAGE analysis buffer components -Stacking and ruining gel preparations of SDS-PAGE, Towbin buffer (the running buffer for SDS-PAGE)

References :

- FISCHER, Beda E.; HARING, Ulrich K.; TRIBOLET, Roger; SIGEL, Helmut (1979). "Metal Ion/Buffer Interactions. Stability of Binary and Ternary Complexes Containing 2-Amino-2(hydroxymethyl)-1,3-propanediol (Tris) and Adenosine 5'-Triphosphate (ATP)"
- https://cshprotocols.cshlp.org/content/2011/2/pdb.rec12394.full

Ordering Information

Cat. No	PI No.	Product Description
2151581001730	FC50	Tris-Cl 1M (pH 8.0), (DNase, RNase Free) 100 ml

NUCLEASE FREE BUFFERS

Tris-Cl 1M

Description :

Tris is the main buffering component; its principal role is to preserve the pH of the buffer at a stable point, usually 8.0. Moreover, tris probable relates with the LPS (lipopolysaccharide) in the membrane, serving to destabilize the membrane further.

Tris-Cl (pH 8.0) is commonly used buffer for molecular biology experiments. This buffer system is markedly temperature dependent. The change in pH per 10° C amounts to approximately 0.3 pH.

Storage: 4° C / Room Temperature

Saturated Phenol (Water) (Protease, DNase & RNase Free)

Description :

Phenol is redistilled and saturated with DEPC water, ready to be equilibrated with required buffer. Contains antioxidant.

- Molecular Weight : 94.11
- Formula : C_6H_5OH
- pH : 5.5 – 6

Application: Used in RNA extractions to remove contaminating proteins.

Storage: 4° C, Protect from light.

Highly corrosive and toxic. Causes severe burns. Handle with care.

Quality control assays :

Performance Test: Functional performance is evaluated in nucleic acid extraction and integrity of extracted nucleic acid is determined by gel analysis. Performance tested in RNA extraction.

References :

- Smith, Michael B.; March, Jerry (2007), Advanced Organic Chemistry: Reactions, Mechanisms, and Structure

Ordering Information

Cat. No	PI No.	Product Description
2151880601730	FC5	Saturated Phenol (Water) (Protease, DNase & RNase Free), 60 ml

Saturated Phenol (Water)

Phenol is redistilled and saturated with water, ready to be equilibrated with required buffer. Contains antioxidant.

- Molecular Weight : 94.11
- Formula : C_6H_5OH
- pH : 5.5 – 6.3

Applications :

- Used in DNA and RNA extractions to remove contaminating proteins.
- Directions to use : For use in DNA extraction, equilibrate with Tris-HCl and adjust pH to 7 – 7.5.

Storage : 4°C, Protect from light.

Highly corrosive and toxic. Causes severe burns. Handle with care.

Quality control assays :

Performance Test: Functional performance is evaluated in nucleic acid extraction and integrity of extracted nucleic acid is determined by gel analysis.

References :

- Smith, Michael B.; March, Jerry (2007), Advanced Organic Chemistry: Reactions, Mechanisms, and Structure
- Phenol extraction of proteins for proteomic studies of recalcitrant plant tissues- Mireille Faurobert 1, Esther Pelpoir, Jamila Chaïb

Ordering Information

Cat. No	PI No.	Product Description
2151683001730	FC3	Saturated Phenol (Water), 300 ml

50X Denhardt's Reagent

Description :

Denhardt's Solution is a mixture of blocking agents used in membrane-based hybridization protocols. The solution contains 1% Ficoll (type 400), 1% polyvinylpyrrolidone, and 1% bovine serum albumin. The solution is filter sterilized and dispensed into sterile bottles.

Note: Supplied at 50X concentration. Dilute in Prehybridization or hybridization buffer as per the requirement.

Application :

- Denhardt's Solution is a blocking reagent for preventing unspecific binding of nucleic acids to nitrocellulose or nylon membranes in hybridisation experiments. Denatured DNA binds to nitrocellulose membranes, pre-treatment of the membrane with Denhardt's solution prevents the binding of single stranded or (unspecific) denatured DNA. However, the specific 'annealing' of denatured DNA to its complementary DNA is not inhibited by this pre-treatment.

Storage: -20°C.

Quality control assays :

- **Absence of nuclease activity:** 1 µg of λ EcoR I digest incubated with 1X Denhardt's Solution, at 37°C for 16 hrs in 50 µl reaction volume, showed sharp unaltered pattern on 1 % agarose gel.
- **Absence of nickase activity:** 1 µg supercoiled plasmid DNA incubated with 1X Denhardt's Solution, at 37°C for 16 hrs in 50 µl reaction volume, showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of RNase activity:** 1 µg of total RNA incubated for 16 hours at 37°C with 1X Denhardt's Solution, in 20 µl reaction volume, showed no degradation of RNA on 2% agarose gel

References :

- https://cshprotocols.cshlp.org/content/2008/12/pdb.rec11538.
- Taub, Floyd (1983). "Laboratory methods: Sequential comparative hybridizations analyzed by computerized image processing can identify and quantitate regulated RNAs

Ordering Information

Cat. No	PI No.	Product Description
2602980501730	FC78S	50X Denhardt's Reagent, 50 ml

Saturated Phenol (Tris-HCl)

Description :

Phenol is redistilled and saturated with Tris-HCl (pH 8.0). Contains antioxidant.

- Molecular Weight : 94.11
- Formula : C_6H_5OH
- pH : 7.9 – 8.1

Applications :

Performance Test: Functional performance is evaluated in nucleic acid extraction and integrity of extracted nucleic acid is determined by gel analysis. Performance tested in RNA extraction.

Storage : 4°C, Protect from light.

Highly corrosive and toxic. Causes severe burns. Handle with care.

Quality control assays :

- **Performance Test:** Functional performance is evaluated in nucleic acid extraction and integrity of extracted nucleic acid is determined by gel analysis

References :

- Smith, Michael B.; March, Jerry (2007), Advanced Organic Chemistry: Reactions, Mechanisms, and Structure
- Phenol extraction of proteins for proteomic studies of recalcitrant plant tissues- Mireille Faurobert 1, Esther Pelpoir, Jamila Chaïb

Ordering Information

Cat. No	PI No.	Product Description
2151780601730	FC3T	Saturated Phenol (Tris-HCl), 60 ml

Lymphocyte separating solution.

Lymphocyte Separating Solution product is used for in vitro isolation of lymphocytes from peripheral blood. The procedure is based on Boyum's method of rapid separation of lymphocytes using centrifugation through a Ficoll-Sodium diatrizoate solution. Diluted blood is layered over the Ficoll-Sodium diatrizoate solution and centrifuged at a low speed for a short time. Erythrocytes and granulocytes sediment to the bottom of the tube and the mononuclear cells (lymphocytes) and platelets are collected from the interface between the two phases.

Storage: 4°C

Quality control assays :

Appearance	Specification	Result
Appearance (Turbidity)	Clear	**Clear**
Appearance (Form)	Liquid	**Liquid**
Appearance (Colour)	Colorless	**Colorless**
Sterility	Pass	**Passes**
Lymphocyte Separation	Lymphocyte cells to be seen under light microscope after separation.	**Passes**

References :

- A new, fast and convenient method for layering blood or bone marrow over density gradient medium.-A Islam
- Harris R, Ukaejiofo EO. Tissue typing using a routine one-step lymphocyte separation procedure. Br J Haematol. 1970 Feb;18(2):229–235

Ordering Information

Cat. No	PI No.	Product Description
2100280501730	FC88M	Lymphocyte separating solution, 50 ml

0.5M EDTA (DNase, RNase Free)

Description :

- Ethylenediaminetetraacetic acid (EDTA), is an aminopolycarboxylic acid. This white, water-soluble solid is widely used to bind to iron (Fe2+/Fe3+) and calcium ions (Ca2+), forming water-soluble complexes even at neutral pH. It is thus used to dissolve Fe- and Ca-containing scale as well as to deliver iron ions under conditions where its oxides are insoluble. EDTA is available as several salts, notably disodium EDTA, sodium calcium edetate, and tetrasodium EDTA, but these all function similarly

  Ethylenediaminetetraacetic acid, (EDTA) is supplied as an aqueous solution having 0.5 M concentration and pH 8.0.
- Molecular weight : 372.20.
- pH : 8 ± 0.2 at 25° C

Application :

- EDTA is a chelator of divalent cations and routinely added in the buffers used for the preparation of nucleic acids, proteins etc.

Storage : 4° C.

Quality control assays :

- **Absence of nuclease activity:** 1 µg of pUC 18 digest incubated with 10 mM EDTA at 37° C for 16 hrs showed sharp unaltered pattern on 1.2% agarose gel.
- **Absence of nickase activity:** 1 µg supercoiled plasmid DNA incubated with 10 mM of EDTA at 37° C for 16 hrs showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of RNase activity:** 1 µg of total RNA incubated for 4 hours at 37° C with 10 mM EDTA in 20 µl reaction volume showed no degradation of RNA on 2% agarose gel.

References :

- Norvell, W. A.; Lindsay, W. L. (1969). "Reactions of EDTA Complexes of Fe, Zn, Mn, and Cu with Soils.
- Sinex, Scott A. "EDTA – A Molecule with a Complex Story". University of Bristol.

Ordering Information

Cat. No	PI No.	Product Description
2151280501730	FC43	0.5M EDTA (DNase, RNase Free), 50ml

10X TE (DNase, RNase Free)

Description :

- TE buffer is a commonly used buffer solution in molecular biology, especially in procedures involving DNA, cDNA or RNA. "TE" is derived from its components: Tris, a common pH buffer, and EDTA, a molecule that chelates cations like Mg2+. The purpose of TE buffer is to solubilize DNA or RNA, while protecting it from degradation.
- Tris-EDTA, pH 8 is prepared using molecular biology reagent Trizma base and EDTA disodium salt. Product supplied is at 10X concentration (100 mM Tris-HCl and 10 mM EDTA).
- Appearance : Clear colourless solution.
- Store : 4° C/Room Temperature.
- pH Test : 8.0 ± 0.2 at 25° C (1X in water)
- DNase, RNase : None detected

Note: Prepare 1X concentration in double distilled water.

- Used as rehydrating solution in DNA extraction at 1X concentration.

Applications :

- Yagi N, Satonaka K, Horio M, Shimogaki H, Tokuda Y, Maeda S (1996). "The role of DNase and EDTA on DNA degradation in formaldehyde fixed tissues". Biotechnic & Histochemistry.

Ordering Information

Cat. No	PI No.	Product Description
2151381001730	FC44	10X TE (DNase, RNase Free), 100ml

Sodium Acetate 3M (DNase, RNase Free)

Description :

Sodium acetate 3M (pH 5.2) is prepared using molecular biology grade reagents and double distilled water. A solution of sodium acetate (a basic salt of acetic acid) and acetic acid can act as a buffer to keep a relatively constant pH level. This is useful especially in biochemical applications where reactions are pH-dependent in a mildly acidic range (pH 4–6).

- Formula : C2H3O2Na
- Appearance : Clear colourless solution.
- pH : 5.2 ± 0.2 at 25° C.

Applications :

Used in DNA precipitation.

Storage : Room Temperature .

Quality control assays :

- **Absence of nuclease activity:** 1 µg of pUC 18 digest incubated with 0.3 M Sodium acetate at 37° C for 16 hrs in 50 µl reaction volume, showed sharp unaltered pattern on 1.2% agarose gel.
- **Absence of nickase activity:** 1 µg supercoiled plasmid DNA incubated with 0.3 M Sodium acetate at 37° C for 16 hrs in 50 µl reaction volume, showed unaltered pattern without nicking on 1% agarose gel.
- **Absence of RNase activity:** 1 µg of total RNA incubated for 4 hours at 37° C with 0.3 M Sodium acetate in 20 µl reaction volume, showed no degradation of RNA on 2% agarose gel.
- **Performance Test:** • Sodium acetate is routinely used in DNA precipitations.

References :

- Acetic acid, sodium salt, hydrate (1:1:3) in Linstrom, Peter J.; Mallard, William G. (eds.); NIST Chemistry WebBook, NIST Standard Reference Database Number 69, National Institute of Standards and Technology, Gaithersburg (MD)
- Hsu, Leh-Yeh; Nordman, C. E. (1983). "Structures of two forms of sodium acetate, Na+.C2H3O2-

Ordering Information

Cat. No	PI No.	Product Description
2151481001730	FC45	Sodium Acetate 3M (DNase, RNase Free), 100ml

Nuclease Free water

Description :

DEPC-treated water serves as a crucial tool in maintaining the fidelity of RNA-related experiments, where the avoidance of nuclease contamination is paramount for accurate and reliable results.These enzymes pose a potential threat by degrading RNA and DNA, respectively.

DEPC(Diethypyrocarbonate) is used in molecular cloning to inactivate trace amounts of RNases that may contaminate solutions, glassware, and plasticware that are to be used for the preparation of nuclear RNA or mRNA It is a highly reactive alkylating agent that destroys the enzymatic activity of RNase chiefly by ethoxy formylation of histidyl groups. In addition to reacting with histidine residues in proteins, DEPC can form alkali-labile adducts with the imidazole ring N7 of unpaired purines, resulting in cleavage of the glycosidic bond and generation of an alkali-labile a basic site. Because of its high reactivity and specificity, DEPC has been used as a chemical probe of secondary structure in DNA and RNA. Unpaired adenine residues are strongly reactive as are guanine residues in Z-DNA. A diminution in the reactivity of purines with DEPC can therefore be used to measure binding between Z-DNA and specific proteins.

Quality control assays :

- **Absence of nuclease activity:** 1 µg of l DNA digest incubated with 50 µl of water at 37° C for 16 hours showed sharp unaltered pattern on 1% agarose gel.
- **Absence of nickase activity:** 1 µg supercoiled plasmid DNA incubated with 50 µl of water at 37° C for 16 hours showed unaltered pattern without nicking on 1% agarose gel.

- Absence of RNase Activity: 1 µg of total RNA incubated for 4 hours at 37°C with 20 µl water showed no degradation of RNA on 2% agarose gel.

RNA Isolation: DEPC-treated water is used in the preparation of reagents for RNA isolation procedures to ensure that the RNA extracted remains intact and free from RNase contamination.

cDNA Synthesis (Reverse Transcription): When synthesizing complementary DNA (cDNA) from RNA templates, **DEPC-treated** water is used to prepare reaction buffers and dilution solutions to prevent RNA degradation during the reverse transcription process.

PCR (Polymerase Chain Reaction): DEPC-treated water is often used in the preparation of PCR reaction mixes to prevent DNA contamination. DNases, if present, can degrade the DNA template, leading to inaccurate or failed PCR amplification.

Northern Blotting: In experiments involving Northern blotting, where RNA molecules are transferred to a membrane and probed for specific sequences, DEPC-treated water is used in various steps to maintain RNA integrity.

RNase-Free Buffer Preparation: DEPC-treated water is used to prepare various buffers and solutions required for RNA-related experiments to ensure that they are free from RNase contamination.

Storage: Room Temperature

References :

- How to Win the Battle with RNase-Michael R. Green and Joseph Sambrook
- https://www.sciencedirect.com/topics/medicine-anddentistry/diethyl-pyrocarbonate

Ordering Information

Cat. No	PI No.	Product Description
2151181001730	FC41L	Water (DNase, RNase Free), 100ml
2151100011730	FC41J	Water (DNase, RNase Free), 5 x 100 ml

3M Potassium acetate, pH 5.5 (DNase,RNase free)

Description :

Potassium acetate 3M (pH 5.5) is prepared using molecular biology grade reagents and water. 3M Potassium acetate pH 5.5 (DNase and RNase-free) is a ready-to-use, sterile solution that is free of nucleases.

- Formula : $KC_2H_3O_2$
- Appearance : Clear colourless solution.
- pH : 5.5 ± 0.2 at 25°C.

Storage : 4°C

Applications :

- Commonly used buffer in the alkaline lysis method of plasmid DNA purification. ·
- Used for Nucleic acid precipitation
- Precipitation of RNA following in vitro transcription.

Quality control assays :

- Absence of nuclease activity: 1 µg of Lambda DNA digest incubated with 0.15 M Potassium acetate at 37°C for 16 hrs in 50 µl reaction volume, showed sharp unaltered pattern on 1.2% agarose gel.
- Absence of nickase activity: 1 µg supercoiled plasmid DNA incubated with 0.15 M Potassium acetate at 37°C for 16 hrs in 50 µl reaction volume, showed unaltered pattern without nicking on 1% agarose gel.
- Absence of RNase activity: 1 µg of total RNA incubated for 16 hours at 37°C with 0.15 M Potassium acetate in 20 µl reaction volume, showed no degradation of RNA on 2% agarose gel

References :

- Acetic acid, potassium salt in Linstrom, Peter J.; Mallard, William G. (eds.); NIST Chemistry WebBook, NIST Standard Reference Database Number 69, National Institute of Standards and Technology, Gaithersburg (MD) (retrieved 2014-05-18)
- https://chem.nlm.nih.gov/chemidplus/rn/127-08-2

Ordering Information

Cat. No	PI No.	Product Description
3100180501730	FC79M	3M Potassium acetate, pH 5.5 (DNase,RNase free), 50 ml

AGAROSE GEL ELECTROPHORESIS REAGENTS

Agarose

Description :

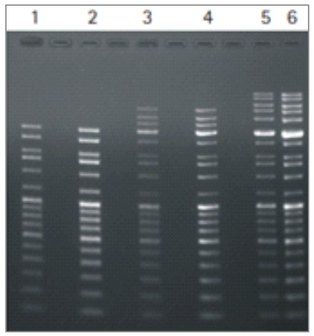
Agarose, a neutral polysaccharide derived from the cell walls of specific Rhodophyceae algae, often referred to as agarophyte seaweeds, consists of repeating units of D-galactose and 3,6-anhydro-L-galactose. Is not only non-toxic but also boasts specific properties and specifications that render it indispensable as a gelling agent across numerous applications. Its unique chemical structure confers upon agarose the remarkable ability to form robust gels, even at low concentrations. These gels exhibit a macroreticular structure, characterized by an open and adjustable mesh that can be fine-tuned by varying the concentration of agarose.

The macro reticule within the agarose gel is primarily shaped by hydrogen bonds, granting it thermo-reversible properties that cause the gel to undergo liquefaction upon heating. What sets agarose apart is its exceptional hysteresis, denoting a significant difference between its gelling and melting temperatures, surpassing other hydrocolloids. Furthermore, the absence of ionic groups imparts a neutral character to the gel, preventing interactions with hydrophilic macromolecules navigating the gel mesh.

Applications :

- Agarose finds utility in nucleic acid electrophoresis, immunodiffusion techniques and gel plates.
- A prominent application is in gel electrophoresis, a widely used technique in life science laboratories for the separation and detection of biological molecules based on their size, exemplified in DNA separation and analysis.

The quality of Agarose supplied shows the best resolution of the DNA bands on the gel in the below image.



Lane 1 & - DNA Low Range Ruler 0.5 µg and 1 µg
Lane 3 & 4 - DNA Medium Range Ruler 0.5 µg and 1 µg
Lane 5 & 6 - DNA High Range Ruler 0.5 µg and 1 µg

Storage: Room Temperature

References :

- https://www.sciencedirect.com/science/article/pii/B9780443069017500080
- https://pubchem.ncbi.nlm.nih.gov/compound/Agarose'

Ordering Information

Cat. No	PI No.	Product Description
2600200101730	FC37	Low Melting Agarose (DNase, RNase Free), 10 g
2600201001730	FC37B	Low Melting Agarose (DNase, RNase Free), 100 g
2600501001730	AGE1	Agarose for Nucleic Acid Electrophoresis-100g
2600502501730	AGE2	Agarose for Nucleic Acid Electrophoresis-250g
2600505001730	AGE3	Agarose for Nucleic Acid Electrophoresis-500g
2600510001730	AGE4	Agarose for Nucleic Acid Electrophoresis-1000g

StepUp™ 50bp ladder

The StepUp™ 50 bp DNA ladder is a quantitative versatile molecular weight marker, featuring a spectrum of 20 bands of double-stranded DNA fragments ranging from 50 to 1000 bp, with a uniform size increment of 50 bp. This ladder is specifically crafted to excel in sizing DNA fragments generated from a number of proprietary plasmids purified by cesium chloride gradient,digested to completion with restriction enzyme, ethanol precipitated

One noteworthy attribute of this DNA ladder is the inclusion of a strategically spiked 500 bp band. This serves as a reference point, enhancing the ease of detection in your experimental analyses. Whether you are engaged in routine DNA fragment sizing or complex molecular biology procedures, the StepUp™ 50 bp DNA ladder offers a precise and reliable solution, elevating the accuracy and efficiency of your laboratory work.

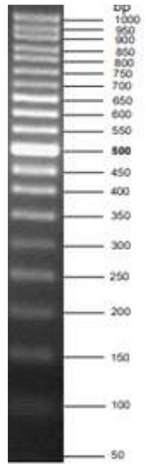
Storage: -20°C.

Storage Conditions: Supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

Related Product: 2663170501730 - RMBD31L - StepUp 50bp DNA ladder Ready to use (100 loads)

Applications :

- Determination of Fragment Sizes: DNA ladders are most used to estimate the size of DNA fragments in an electrophoresis gel.
- PCR Product Verification: After performing polymerase chain reaction (PCR), researchers can use a DNA ladder to confirm that the PCR amplification has produced the expected DNA fragment sizes. This is particularly important when conducting experiments that require the precise sizing of PCR products.
- DNA Purification: When purifying DNA from a gel after electrophoresis, DNA ladders can help identify the target DNA fragments for excision and extraction.
- The approximate mass of DNA in each of the bands on loading 1µg of StepUp 50bp DNA Ladder.



Fragment	Base Pairs	DNA Mass ng/µg
1	1000	47
2	950	41
3	900	42
4	850	40
5	800	37
6	750	35
7	700	30
8	650	61
9	600	54
10	550	51
11	**500**	**203**
12	450	61
13	400	52
14	350	49
15	300	28
16	250	35
17	200	37
18	150	49
19	100	27
20	50	21

1 µg of StepUp 50 bp DNA Ladder visualized by ethidium bromide staining on a 2% agarose gel.

References :

- https://microbenotes.com/dna-ladders/
- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- Zhang, G., Fenyö, D., & Neubert, T. A. (2008). Use of DNA ladders for reproducible protein fractionation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) for quantitative proteomics. Journal of proteome research, 7(2), 678–686. https://doi.org/10.1021/pr700601y

Citations :

- Indian Journal of Clinical Biochemistry, 2008 / 23 (2) 123-129 HIGHER ALLELES OF APOLIPOPROTEIN B GENE 3' VNTR: RISK FOR GALLSTONE DISEASE Manjusha Dixit, Anvesha Srivastava* , Gourdas Choudhuri* and Balraj Mittal Departments of Genetics and *Gastroenterology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow (India)

Ordering Information

Cat. No	PI No.	Product Description
2653170501730	MBD31	StepUp™ 50bp DNA Ladder (100 loads), 50 µg
2663170501730	RMBD31L	StepUp™ 50bp DNA Ladder Ready To Use (100 loads), 50 µg

GeNei™

GENOMICS

REAGENTS

StepUp™ 100bp DNA Ladder

The StepUp™ 100 bp DNA ladder is a quantitative molecular marker designed for molecular biology applications. It comprises ten distinct bands of double-stranded DNA fragments, each with varying sizes, ranging from 100 to 1000 base pairs (bp). The increments in size between these bands are precisely 100 bp.

This DNA ladder is particularly useful for determining the sizes of DNA fragments from a number of proprietary purified plasmids, digested to completion with appropriate restriction enzyme, ethanol precipitated and supplied in 10mM Tris.HCL (pH8.0) & 10mM EDTA. When separated on an agarose gel, these ladder bands serve as a reliable reference for estimating the sizes of other DNA fragments in your sample.

Notably, the StepUp™ ladder includes two prominent bands, one at 600 bp and another at 1000 bp. These bands are strategically included as reference points, making it easier to detect and assess the sizes of other DNA fragments in your experiments.

Storage: -20°C

References :

2662670501730- RMBD13 – StepUp 100bp DNA Ladder (100 Loads)

Note:

- StepUp 100 bp DNA Ladder is suitable for use as Quantitative molecular weight standard for agarose gel electrophoresis and not for polyacrylamide gel electrophoresis.
- 100 bp DNA ladder is shipped with 6X gel loading buffer
- Ready to use Ladder is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.
- Recommended loading volume is 5 µl/lane.

Applications :

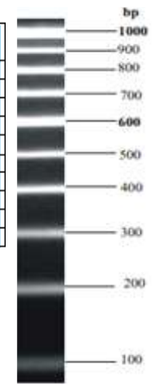
Determination of Fragment Sizes: DNA ladders are most used to estimate the size of DNA fragments in an electrophoresis gel.

PCR Product Verification: After performing polymerase chain reaction (PCR), researchers can use a DNA ladder to confirm that the PCR amplification has produced the expected DNA fragment sizes. This is particularly important when conducting experiments that require the precise sizing of PCR products.

DNA Purification: When purifying DNA from a gel after electrophoresis, DNA ladders can help identify the target DNA fragments for excision and extraction.

Fragment	Base Pairs	DNA Mass ng/µg
1	**1000**	**209**
2	900	75
3	800	93
4	700	82
5	**600**	**150**
6	500	77
7	400	74
8	300	80
9	200	80
10	100	80

1 µg of StepUp 100 bp DNA Ladder visualized by ethidium bromide staining on a 2% agarose gel.



References :

- https://microbenotes.com/dna-ladders/
- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- Zhang, G., Fenyö, D., & Neubert, T. A. (2008). Use of DNA ladders for reproducible protein fractionation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) for quantitative proteomics. Journal of proteome research, 7(2), 678–686. https://doi.org/10.1021/pr700601y

Citations :

- Detection of l1 cam mutation in a male child with mental retardation M. Swarna, M. Sujatha, P. Usha Rani and P.P. Reddy Institute of Genetics and Hospital for Genetic Diseases, Begumpet, Hyderabad-500 016, A.P., India
- Quadruplex PCR for Simultaneous Detection of Serotype, Biotype, Toxigenic Potential, and Central Regulating Factor of Vibrio cholerae Hemant Kumar Khuntia, Bibhuti Bhusan Pal, and Guru Prasada Chhotray* Regional Medical Research Centre, Chandrasekharpur, Bhubaneswar, Pin-751023, Orissa, India
- Prevalence of periodontal pathogens in coronary atherosclerotic plaque of patients undergoing coronary artery bypass graft surgery-Jaideep Mahendra1 · Little Mahendra2 · Kurian VM3 · Jaishankar K4 · Mythilli R5 1 Associate Professor Dept. of Periodontics, Meenakshi Ammal Dental College, Chennai 2 Lecturer 5 Professor Dept. of Periodontics, Annamalai University, Chidambaram 3 Senior Consultant, Department of Cardiovascular Thoracic Surgery 4 Consultant, Department of Cardiology Madras Medical Mission, Chennai
- Stage-specific Localization and Expression of c-kit in the Adult Human Testis Sreepoorna K. Unni, Deepak N. Modi, Shilpa G. Pathak, Jayesh V. Dhabalia, and Deepa Bhartiya Stem Cell Biology Department (SKU,DB), Molecular Cell Biology Department (DNM), and Neuroendocrinology Department (SGP), National Institute for Research in Reproductive Health, Mumbai, India, and Department of Urology, King Edward Memorial Hospital and Seth Gordhandas Sunderdas Medical College, Mumbai, India (JVD

- PCR-Based Identification and Characterization of Fusarium sp. Associated with Mango Malformation M. Arif,1, 2 D. R. Pani,2 N. W. Zaidi,1 and U. S. Singh1 1Department of Plant Pathology, G. B. Pant University of Agriculture and Technology, Pantnagar (U. S. Nagar), Uttarakhand 263145, India 2Department of Molecular Biology & Genetic Engineering, G. B. Pant University of Agriculture and Technology, Pantnagar (U. S. Nagar), Uttarakhand 263145, India Correspondence should be addressed to M. Arif, marif181@gmail.com

Ordering Information

Cat. No	PI No.	Product Description
2652670501730	MBD13	StepUp™ 100bp DNA Ladder (100 loads), 50 µg
2662671001730	MBD13J	StepUp™ 100 bp DNA Ladder, (200 loads)100 µg
2662670501730	RMBD13	StepUp™ 100 bp DNA Ladder Ready To Use (100 loads), 50 µg

StepUp™ 250bp DNA Ladder (100 loads)

The StepUp™ 250 bp DNA ladder is a versatile quantitative molecular weight marker, featuring a spectrum of 20 bands of double-stranded DNA fragments ranging from 250 to 5000 bp, with a uniform size increment of 250 bp. This ladder is specifically crafted to excel in sizing DNA fragments generated through techniques like PCR and restriction digestion, particularly when separated on an agarose gel.

One noteworthy attribute of this DNA ladder is the inclusion of a strategically spiked 2000 bp band. This serves as a reference point, enhancing the ease of detection in your experimental analyses. Whether you are engaged in routine DNA fragment sizing or complex molecular biology procedures, the StepUp™ 250 bp DNA ladder offers a precise and reliable solution, elevating the accuracy and efficiency of your laboratory work.

Storage: -20°C

Note:

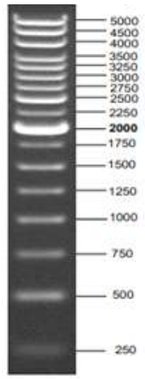
- Stepup 250bp DNA ladder is shipped with 6X gel loading buffer
- StepUp™ 250 bp DNA Ladder is suitable for use as Quantitative molecular weight standard for agarose gel electrophoresis and not for polyacrylamide gel electrophoresis.
- 2000 bp fragment serves as reference band.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of 250 bp DNA Ladder on a 0.8 % agarose gel.

References :

2663070501730 - RMBD30L Ready to use Ladder is supplied at a concentration of 100 µg/ml, premixed with gel loading buffer.

The approximate mass of DNA in each of the bands on loading 1 µg of StepUp 250 bp DNA Ladder is as follows

Fragment	Base Pairs	DNA Mass (ng/µg)
1	5000	81
2	4500	73
3	4000	65
4	3500	48
5	3250	53
6	3000	49
7	2750	45
8	2500	81
9	2250	36
10	**2000**	**188**
11	1750	28
12	1500	45
13	1250	41
14	1000	44
15	750	36
16	500	61
17	250	26



1 µg of StepUp™ 250 bp Ladder visualized by ethidium bromide staining on a 0.8% agarose gel

References :

- https://microbenotes.com/dna-ladders/
- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- Zhang, G., Fenyö, D., & Neubert, T. A. (2008). Use of DNA ladders for reproducible protein fractionation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) for quantitative proteomics. Journal of proteome research, 7(2), 678–686. https://doi.org/10.1021/pr700601y

Ordering Information

Cat. No	PI No.	Product Description
2653070501730	MBD30	StepUp™ 250bp DNA Ladder (100 loads), 50µg
2663070501730	RMBD30L	StepUp™ 250bp DNA Ladder Ready To Use (100 loads), 50 µg

StepUp™ 500bp DNA Ladder

Applications :

StepUp 500 bp DNA Ladder is a quantitative ladder generated from a number of proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzymes, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

StepUp 500 bp DNA ladder consists of 10 double stranded DNA fragments of 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500 & 5000 base pairs.

- Shipped with 6X gel loading buffer.
- Ready to use Ladder is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.

Recommended loading volume is 5 µl/lane.

Features :

- StepUp 500 bp DNA Ladder is suitable for use as quantitative molecular weight standards for agarose gel electrophoresis and not for polyacrylamide gel electrophoresis.
- The 3 kb fragment is ~3 fold more intense to serve as reference band.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of StepUp 500 bp DNA Ladder on a 0.8% agarose gel.

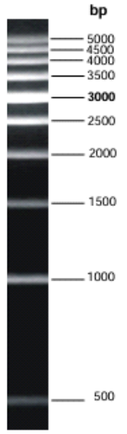
Quality control assays :

- Absence of Nuclease Activity: 1 µg of StepUp 500bp DNA Ladder was incubated with Genei Buffer for 16 hours at 37° C. Sharp unaltered band pattern was seen without smear on a 0.8% agarose gel.

Storage: -20C

The approximate mass of DNA in each of the bands on loading 1 µg of StepUp 500 bp DNA Ladder is as follows:

Fragment	Base Pairs	DNA Mass ng/µg
1	5000	73
2	4500	73
3	4000	73
4	3500	73
5	**3000**	**262**
6	2500	76
7	2000	76
8	1500	94
9	1000	94
10	500	106



1 µg of StepUp 500bp DNA Ladder visualized by ethidium bromide staining on a 0.8% agarose gel.

References :

- https://microbenotes.com/dna-ladders/
- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- Zhang, G., Fenyö, D., & Neubert, T. A. (2008). Use of DNA ladders for reproducible protein fractionation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) for quantitative proteomics. Journal of proteome research, 7(2), 678–686. https://doi.org/10.1021/pr700601y

Citations :

- Cadmium induces lung inflammation independent of lung cell proliferation: a molecular approach Subhadip Kundu2, Suman Sengupta2, Soumya Chatterjee2, Soham Mitra2 and Arindam Bhattacharyya*1,2 Address: 1Department of Zoology, University of Calcutta, 35, Ballygange Circular Road, Kolkta-700019, India and 2Department of Environmental Science, University of Kalyani, West Bengal-741235, India
- Regulatory T Cells Suppress T Cell Activation at the Pathologic Site of Human Visceral Leishmaniasis Ambak K. Rai1 , Chandreshwar P. Thakur2 , Amar Singh1 , Tulika Seth3 , Sandeep K. Srivastava1 , Pushpendra Singh1 , Dipendra K. Mitra1 * 1 Cellular Immunology Division, Department of T.I.I., All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi, India, 2 Balaji Utthan Sansthan, Patna, Bihar, India, 3 Department of Hematology, All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi, India

Ordering Information

Cat. No	PI No.	Product Description
2651970501730	MBD19	StepUp™ 500 bp DNA Ladder, 50 µg (100 loads)
2661970501730	RMBD19	StepUp™ 500 bp DNA Ladder, Ready To Use, 50 µg, (100 Loads)

StepUp™ 1 kb DNA Ladder

Description :

The StepUp 1 kb DNA Ladder is a quantitative ladder generated from several proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzyme, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

This DNA ladder contains 9 bands of double stranded linear DNA fragments ranging from 1 kb to 10 kb with a size increment of 1 kb. These are suitable for sizing of DNA fragments generated by PCR or restriction digestion, genomic DNA fragments, etc., separated on agarose gel.

Storage: -20°C

Note:
- Shipped with 6X Gel Loading Buffer.
- Ready to use Ladder is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.
- Recommended loading volume is 5 µl/lane.

Features :

- StepUp 1 kb DNA Ladder is suitable for use as quantitative molecular weight standard for agarose gel electrophoresis and not for polyacrylamide gel electrophoresis.
- The 3 kb fragment is ~2.5 fold more intense to serve as reference band.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of StepUp 1 kb DNA ladder on a 0.8 – 1% agarose gel.
- Approximate concentration of DNA can be determined based on visual estimation.

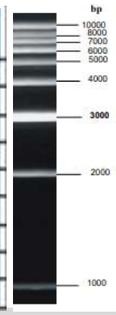
Quality control assays :

Absence of Nuclease Activity: 1 µg of StepUp 1 kb DNA Ladder was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 0.8% agarose gel.

Store: -20C

The approximate mass of DNA in each of the bands on loading 1 µg of StepUp 500 bp DNA Ladder is as follows:

Fragment	Base Pairs	DNA Mass ng/µg
1	10000	91
2	8000	91
3	7000	91
4	6000	91
5	5000	91
6	4000	91
7	**3000**	**228**
8	2000	113
9	1000	113



1 µg of StepUp 1 kb DNA Ladder visualized by ethidium bromide staining on a 0.8% agarose gel.

References :

- https://microbenotes.com/dna-ladders/
- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- Zhang, G., Fenyö, D., & Neubert, T. A. (2008). Use of DNA ladders for reproducible protein fractionation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) for quantitative proteomics. Journal of proteome research, 7(2), 678–686. https://doi.org/10.1021/pr700601y

Citations :

- Cadmium induces lung inflammation independent of lung cell proliferation: a molecular approach Subhadip Kundu2, Suman Sengupta2, Soumya Chatterjee2, Soham Mitra2 and Arindam Bhattacharyya*1,2 Address: 1Department of Zoology, University of Calcutta, 35, Ballygange Circular Road, Kolkta-700019, India and 2Department of Environmental Science, University of Kalyani, West Bengal-741235, India
- Regulatory T Cells Suppress T Cell Activation at the Pathologic Site of Human Visceral Leishmaniasis Ambak K. Rai1 , Chandreshwar P. Thakur2 , Amar Singh1 , Tulika Seth3 , Sandeep K. Srivastava1 , Pushpendra Singh1 , Dipendra K. Mitra1 * 1 Cellular Immunology Division, Department of T.I.I., All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi, India, 2 Balaji Utthan Sansthan, Patna, Bihar, India, 3 Department of Hematology, All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi, India

Ordering Information

Cat. No	PI No.	Product Description
2652070501730	MBD20	StepUp™ 1 kb DNA Ladder, 50 µg, (100 loads)
2662070501730	RMBD20	StepUp™ 1 kb DNA Ladder Ready To Use, 50 µg, (100 loads)

Supermix DNA Ladder

Description :

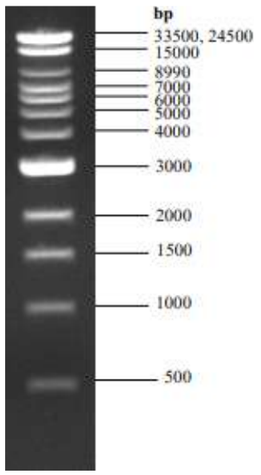
Supermix DNA ladder is generated from a number of proprietary plasmids and lambda DNA purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzymes, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

Supermix DNA ladder consists of 13 double stranded DNA fragments of 500, 1000, 1500, 2000, 3000, 4000, 5000, 6000, 7000, 8990, 15000, 24500 & 33500 base pairs.

Shipped with 6X gel loading buffer.

Storage : -20°C.

Note:
- Supermix DNA Ladder is suitable for use as molecular weight standards for agarose gel electrophoresis.
- Not intended for use in quantitative analysis.
- The 3 kb fragment is 2.5 fold more intense to serve as reference band.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of Supermix DNA ladder on a 0.8% agarose gel.



1 µg of Supermix DNA Ladder visualized by ethidium bromide staining on a 0.8% agarose gel

Quality control assays :

Absence of Nuclease Activity: 1 µg of Supermix DNA Ladder was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 0.8% agarose gel.

References :

- https://microbenotes.com/dna-ladders/
- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- Zhang, G., Fenyö, D., & Neubert, T. A. (2008). Use of DNA ladders for reproducible protein fractionation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) for quantitative proteomics. Journal of proteome research, 7(2), 678–686. https://doi.org/10.1021/pr700601y

Ordering Information

Cat. No	PI No.	Product Description
2652171001730	MBD21J	Supermix DNA Ladder, 100 µg, (200 loads)

20 bp DNA Ruler

Description :

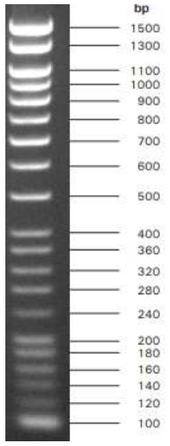
20 bp DNA ruler is generated from several proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzyme, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. 20 bp DNA ruler contains 20 individual double stranded, blunt-ended, linear DNA fragments containing ~ 50% GC – rich sequences of 100, 120, 140, 160, 180, 200, 240, 280, 320, 360, 400, 500, 600, 700, 800, 900, 1000, 1100, 1300 & 1500 bp. Shipped with 6X gel loading buffer.

Note:
- 20 bp DNA ruler is suitable for use as Quantitative molecular weight standard for agarose gel electrophoresis and for polyacrylamide gel electrophoresis.
- The ruler can be run on Agarose gel (2-3%) or native polyacrylamide gel (8-10%)
- The lower bands in agarose gel might appear slightly diffused while polyacrylamide gel are suitable for better resolution of the fragments
- To avoid frequent freeze-thaw cycles, store as aliquots at -20°C.

Storage: -20C

Absence of Nuclease Activity: 1 µg of 20 bp DNA Ruler was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 2% agarose gel

Fragment	Base Pairs	DNA Mass ng/µg
1	1500	112
2	1300	104
3	1100	91
4	1000	81
5	900	67
6	800	64
7	700	58
8	600	48
9	500	37
10	400	32
11	360	29
12	320	26
13	280	23
14	240	19
15	200	33
16	180	28
17	160	25
18	140	23
19	120	20
20	100	80



1 µg of 20 bp DNA Ruler visualized by ethidium bromide staining on a 2% agarose gel

References :

- Roberts, M. A.; Crawford, D. L. (1 June 2000). "Use of Randomly Amplified Polymorphic DNA as a Means of Developing Genus- and Strain-Specific Streptomyces DNA Probes"
- Higgins, L. (April 2012). "DNA Ladder for Gel Electrophoresis". Lewis & Clark College

Related Product :

2662470501730 - RMBD24 – 20 bp DNA Ruler, Ready to use, (100 Loads)

Ordering Information

Cat. No	PI No.	Product Description
2652470501730	MBD24	20 bp DNA Ruler, 50 µg, 100 loads
2662470501730	RMBD24	20 bp DNA Ruler Ready To Use, 50 µg,100 loads

Low Range DNA Ruler (100 bp – 3 kb)

Description :

Low Range DNA Ruler is a quantitative ruler generated from a number of proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzymes, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. Low Range DNA Ruler consists of 9 double stranded DNA fragments of 100, 200, 300, 600, 1000, 1500, 2000, 2500 & 3000 base pairs. Shipped with 6X gel loading buffer.

Note:
- Low Range DNA Ruler is suitable for use as quantitative molecular weight standards for agarose gel electrophoresis
- 1 kb fragment is ~2 fold more intense, to serve as reference band.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of Low Range DNA Ruler on a 1.5 % agarose gel.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20° C.

Storage: -20C

Quality control assays :

- Absence of Nuclease Activity: 1 µg of Low Range DNA Ruler was incubated with Genei Buffer for 16 hours at 37° C. Sharp unaltered band pattern was seen without smear on a 1.5% agarose gel.

Fragment	Base Pairs	DNA Mass ng/µg
1	3000	78
2	2500	82
3	2000	84
4	1500	88
5	**1000**	**196**
6	600	118
7	300	118
8	200	118
9	100	118

1 µg of Low Range DNA Ruler visualized by ethidium bromide staining on a 1.5% agarose

References :

- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.

Ordering Information

Cat. No	PI No.	Product Description
2652370501730	MBD23	Low Range DNA Ruler (100 bp - 3 kb), 50 µg, (100 loads)

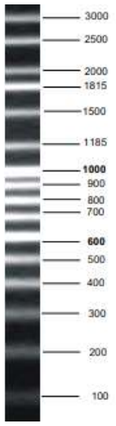
Low Range DNA Ruler plus (100 bp – 3kb)

Description :

Low Range DNA Ruler Plus is a quantitative ruler generated from a number of proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzymes, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. Low Range DNA Ruler Plus consists of 16 double stranded DNA fragments of 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1185, 1500, 1815, 2000, 2500 & 3000 base pairs. Shipped with 6X gel loading buffer.

Note:
- Low range DNA Ruler Plus is suitable for use as quantitative molecular weight standards for agarose gel electrophoresis
- The 600 and 1000 fragments are 2.5 fold more intense to serve as reference bands.
- Clear resolved bands are visualized on loading 0.5–1.0 µg of Low range DNA Ruler Plus on 1% agarose gel.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20° C

Approximate mass of DNA in each of the bands on loading 1 µg of low Range DNA Ruler is as follows



Fragment	Base Pairs	DNA Mass ng/µg
1	3000	49
2	2500	49
3	2000	50
4	1815	80
5	1500	53
6	1185	52
7	**1000**	**139**
8	900	50
9	800	62
10	700	56
11	**600**	**100**
12	500	51
13	400	50
14	300	53
15	200	53
16	100	53

1 µg of Low Range DNA Ruler Plus visualized by ethidium bromide staining on a 1% agarose gel

Quality control assays :

- Absence of Nuclease Activity: 1 µg of Low Range DNA Ruler Plus was incubated with Genei Buffer for 16 hours at 37° C. Sharp unaltered band pattern was seen without smear on a 1% agarose gel

References :

- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.

Ordering Information

Cat. No	PI No.	Product Description
2652770501730	MBD27	Low Range DNA Ruler Plus (100 bp - 3 kb), 50 µg, (100 loads)
2662770501730	RMBD27	Low Range DNA Ruler Plus (100 bp - 3 kb) Ready To Use, 50 µg, (100 loads)

Medium Range DNA Ruler (100 bp - 5 kb)

Description :

Medium Range DNA Ruler is a quantitative ruler generated from several proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzymes, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. Medium Range DNA Ruler consists of 19 double stranded DNA fragments of 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1185, 1500, 1815, 2000, 2500, 3000, 3500, 4000 & 5000 base pairs. Shipped with 6X gel loading buffer.

Related Product: RMBD28 :

Ready to use Ruler is supplied at a concentration of 100 µg/ml premixed with gel loading buffer. Recommended loading volume is 5 µl/lane.

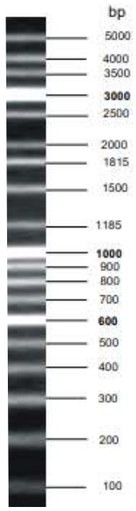
Storage: -20C

Note:
- Medium Range DNA Ruler is suitable for use as quantitative molecular weight standards for agarose gel electrophoresis
- The 600,1000 and 3000bp fragments are ~2.3 fold more intense to serve as reference bands.
- Clear resolved bands are visualized on loading 0.5–1.0 µg of Medium Range DNA Ruler on 1% agarose gel.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20° C.

Quality control assays :

·Absence of Nuclease Activity: 1 µg of Medium Range DNA Ruler was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 1% agarose gel.

Approximate mass of DNA in each of the bands on loading 1 µg of Medium Range DNA Ruler is as follows



Fragment	Base Pairs	DNA Mass ng/µg
1	5000	30
2	4000	30
3	3500	33
4	**3000**	**101**
5	2500	34
6	2000	34
7	1815	53
8	1500	35
9	1185	35
10	**1000**	**129**
11	900	46
12	800	52
13	700	51
14	**600**	**92**
15	500	47
16	400	46
17	300	49
18	200	49
19	100	49

1 µg of Medium Range DNA Ruler visualized by ethidium bromide staining on a 1% agarose gel

References :

- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.

Ordering Information

Cat. No	PI No.	Product Description
2652870501730	MBD28	Medium Range DNA Ruler (100 bp - 5 kb), 50 µg, (100 loads)
2662870501730	RMBD28	Medium Range DNA Ruler (100 bp - 5 kb) Ready To Use, 50 µg, (100 loads)

High Range DNA Ruler (100 bp - 10 kb)

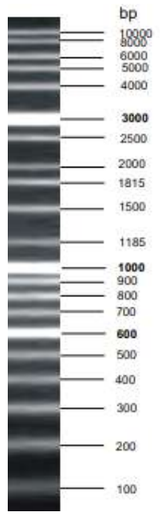
Description :

High Range DNA Ruler is a quantitative ruler generated from a number of proprietary plasmids purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzymes, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. High Range DNA Ruler consists of 21 double stranded DNA fragments of 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1185, 1500, 1815, 2000, 2500, 3000, 3500, 4000, 5000, 6000, 8000 &10000 base pairs. Shipped with 6X gel loading buffer.

Note:
- High Range DNA Ruler is suitable for use as quantitative molecular weight standards for agarose gel electrophoresis
- The 600, 1000 and 3000bp fragments are ~2-3 fold more intense to serve as reference bands.
- Clear resolved bands are visualized on loading 0.5–1.0 µg of High Range DNA Ruler on 1% agarose gel.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20°C.

Storage: -20C

Approximate mass of DNA in each of the bands on loading 1 µg of High Range DNA Ruler is as follows



Fragment	Base Pairs	DNA Mass ng/µg
1	10000	30
2	8000	30
3	6000	30
4	5000	30
5	4000	30
6	**3000**	**106**
7	2500	29
8	2000	31
9	1815	37
10	1500	33
11	1185	24
12	**1000**	**123**
13	900	44
14	800	55
15	700	48
16	**600**	**89**
17	500	46
18	400	44
19	300	47
20	200	47
21	100	47

1 µg of High Range DNA Ruler visualized by ethidium bromide staining on a 1% agarose gel

References :

- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.
- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.

Ordering Information

Cat. No	PI No.	Product Description
2652970501730	MBD29	High Range DNA Ruler (100 bp - 10 kb), 50 µg, (100 loads)

Quantum™ PCR Marker Low Range Ready to Use

Description :

The Quantum™ PCR Marker Low Range is a quantitative Marker generated from a proprietary plasmid purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzyme, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

The Quantum™ PCR Marker (Low Range) consists of 6 double stranded DNA fragments ranging from (50-1900 bp). The 1900, 900, 550, 300 and 100 bp are prominently visible and useful in quantification. Ready to use Marker is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.

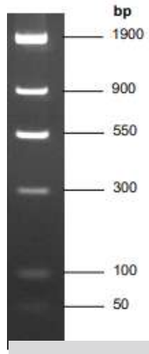
Note:
- Quantum™ PCR Marker Low Range is suitable for use as Quantitative molecular weight standard for agarose gel electrophoresis and not for polyacrylamide gel electrophoresis.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of Quantum™ PCR Marker (Low Range) on a 1.5 % agarose gel.
- The 6th band of 50bp is faint and may not be visible.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20°C.

Storage: -20C

Quality control assays :

Absence of Nuclease Activity: 1 µg of Ready to use Quantum™ PCR Marker Low Range was incubated for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 1.5% agarose gel.

Approximate mass of DNA in each of the bands on loading 1 µg of High Range DNA Ruler is as follows



Fragment	Base pairs	DNAMass (ng/µg)
1	1900	422.22
2	900	200.00
3	550	244.44
4	300	66.66
5	100	44.44
6	50	22.22

1 µg of Marker visualized by ethidium bromide staining on a 1.5 % agarose gel

References :

- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.

Ordering Information

Cat. No	PI No.	Product Description
2663270501730	RMBD32L	Quantum™ PCR Marker Low Range Ready To Use (100 loads), 50 µg

Quantum™ PCR Marker Medium Range Ready to Use

Description :

The Quantum™ PCR Marker Medium Range is a quantitative marker generated from a proprietary plasmid purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzyme, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

The Quantum™ PCR Marker (Medium Range) consists of 5 double stranded DNA fragments ranging from (100 - 4500 bp). The 4500, 2000, 1000 and 400 bp are prominently visible and useful in quantification. Shipped with 6X gel loading buffer.

Note:

- Quantum™ PCR Marker Medium Range is suitable for use as Quantitative molecular weight standard for agarose gel electrophoresis and not for polyacrylamide gel electrophoresis.
- Clear resolved bands are visualized on loading 0.5 – 1.0 µg of Quantum™ PCR Marker (Medium Range) on a 1 % agarose gel.
- The 5th band of 100bp is faint and may not be visible on loading 0.5-1 µg of Quantum™ PCR Marker (Medium Range).
- To avoid frequent freeze-thaw cycles, store as aliquots at -20°C.

Related Product: RMBD28 :

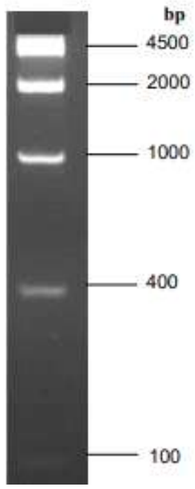
The Quantum™ PCR Marker (Medium Range) is a quantitative marker generated from a proprietary plasmid purified by Cesium Chloride gradient, digested to completion with appropriate restriction enzyme, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA.

The Quantum™ PCR Marker (Medium Range) consists of 5 double stranded DNA fragments ranging from (100 - 4500 bp). The 4500, 2000, 1000 and 400 bp are prominently visible and useful in quantification. Shipped with 6X gel loading buffer.

Quality control assays :

Absence of Nuclease Activity: 1 µg of Quantum™ PCR Marker Medium Range was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 1% agarose gel.

Approximate mass of DNA in each of the bands on loading 1 µg of Quantum PCR Marker (Medium Range) is as follows



Fragment	Base pairs	DNAMass (ng/µg)
1	4500	562.50
2	2000	250.00
3	1000	125.00
4	400	50.00
5	100	12.50

1 µg of Marker visualized by ethidium bromide staining on a 1 % agarose gel

References :

- A. Cooney, "Techniques and high resolution DNA size markers for pulsed field gel electrophoresis," Molecular Biotechnology, vol. 2, no. 2, pp. 119–127, 1994.
- R. C. Parker, R. M. Watson, and J. Vinograd, "Mapping of closed circular DNAs by cleavage with restriction endonucleases and calibration by agarose gel electrophoresis," Proceedings of the National Academy of Sciences of the United States of America, vol. 74, no. 3, pp. 851–855, 1977.
- S. V. Polyarush, S. S. Egamberdiev, D. R. Mansurov, and S. S. Azimova, "Preparation of DNA markers based on E. coli plasmid DNA," Chemistry of Natural Compounds, vol. 39, no. 6, pp. 592–594, 2003.

Ordering Information

Cat. No	PI No.	Product Description
2653370501730	MBD33	Quantum™ PCR Marker Medium Range (100 loads), 50µg

Lambda DNA/*EcoR* I Digest, Ready to Use

Description :

- DNA is completely digested with *EcoR* I yielding 6 fragments of 21226, 7421, 5804, 5643, 4878 and 3530 base pairs. Heating the digest at 65°C for 5 mins and rapid cooling on ice will ensure the presence of the 3530 base pair fragment.
- Ready to use Marker is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.

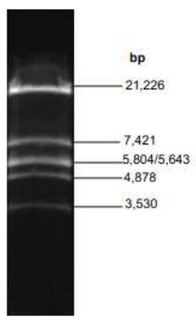
Storage: -20C

Note:

- The marker is supplied as single aliquot.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20°C.

Quality Assays :

Absence of Nuclease Activity: 1 µg of DNA / *EcoR* I digest was incubated for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 0.7% agarose gel.



1 µg of DNA/ *EcoR* I digest visualized by ethidium bromide staining on a 0.7% agarose gel

References :

- Bacteriophage lambda DNA: the beginning of the end.-A Becker and H Murialdo.

Ordering Information

Cat. No	PI No.	Product Description
2660170501730	RMBD1	Lambda DNA/*EcoR* I Digest, Ready To Use, 50 µg, 100 loads

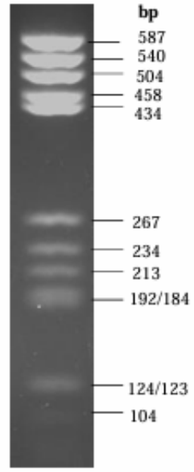
pBR322 DNA / *Hae* III Digest

Description :

- pBR322 plasmid DNA was purified by cesium chloride gradient, digested to completion with *Hae* III, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. pBR322 DNA / *Hae* III digest consists of 22 double stranded DNA fragments of 587, 540, 504, 458, 434, 267, 234, 213, 192, 184, 124, 123, 104, 89, 80, 64, 57, 51, 21, 18, 11 and 7 base pairs.

Quality Assays :

Absence of Nuclease Activity: 1 µg of pBR322 / *Hae* III digest was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 2% agarose gel.



1 µg of pBR322 / *Hae* III digest visualized by ethidium bromide staining on a 2% agarose gel

Storage: -20C

Ordering Information

Cat. No	PI No.	Product Description
2650870501730	MBD8L	pBR322 DNA / *Hae* III Digest, 50µg, (100 Loads)

pBR322 DNA/*Msp* I Digest

Description :

pBR322 plasmid DNA was purified by cesium chloride gradient, digested to completion with Msp I, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. pBR322 DNA / Msp I digest consists of 26 double stranded DNA fragments of 622, 527, 404, 309, 242, 238, 217, 201, 190, 180, 160, 160, 147, 147, 123, 110, 90, 76, 67, 34, 34, 26, 26, 15, 9 & 9 base pairs.

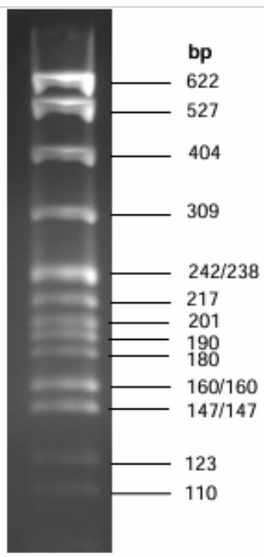
Note:

- pBR322 / *Msp* I digest is suitable for use as molecular weight standards for agarose gel electrophoresis.
- Clear resolved bands are visualized on loading 1.0 µg of pBR322 / Msp I digest on a 2.5% agarose gel.
- Shipped with 6X gel loading buffer.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20° C.

Storage: -20C

Quality control assays :

Absence of Nuclease Activity: 1 µg of pBR322 / *Msp* I digest was incubated with Genei Buffer for 16 hours at 37° C. Sharp unaltered band pattern was seen without smear on a 2.5% agarose gel.



1 µg of pBR322 / Msp I digest visualized by ethidium bromide staining on a 2.5% agarose gel

Ordering Information

Cat. No	PI No.	Product Description
2651070501730	MBD10L	pBR322 DNA/*Msp* I Digest,50 µg, (100 loads)

ϕX174 / *Hae* III Digest

Description :

ϕX174 plasmid DNA was purified by cesium chloride gradient, digested to completion with Hae III, ethanol precipitated and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. X174 / Hae III digest consists of 11 double stranded DNA fragments of 1353, 1078, 872, 603, 310, 281, 271, 234, 194, 118 & 72 base pairs.

Note:

- ϕX174 / *Hae* III digest is suitable for use as molecular weight standards for agarose gel electrophoresis.
- ϕXClear resolved bands are visualized on loading 1.0 µg of X174 / *Hae* III digest on a 2% agarose gel.
- Shipped with 6X gel loading buffer
- To avoid frequent freeze-thaw cycles, store as aliquots at -20° C.

Related product:-RMBD5 :

Ready to use Marker is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.

As the fragments are present in molar ratio, the smaller fragments will be visible only when >1 µg of marker is loaded on gel.

Storage: -20C

Quality control assays :

Absence of Nuclease Activity: 1 µg of X174 / Hae III digest was incubated with Genei Buffer for 16 hours at 37° C. Sharp unaltered band pattern was seen without smear on a 2% agarose gel.

1 µg of ϕX174 / Hae III digest visualized by ethidium bromide staining on a 2% agarose gel

Ordering Information

Cat. No	PI No.	Product Description
2660570101730	RMBD5	PhiX174 DNA/Hae III Digest Ready To Use, 50 µg, (100 loads)
2650570501730	MBD5	PhiX174 DNA/Hae III Digest, 50 µg, (100 loads)

Lambda DNA/*EcoR* I Digest

Description :

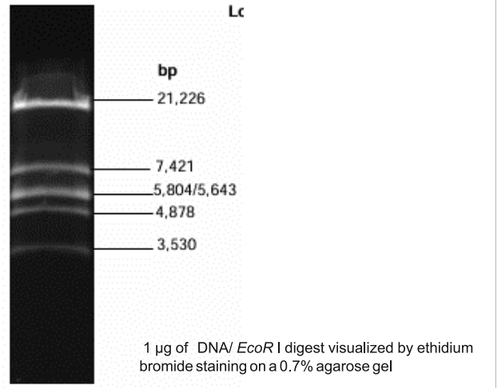
- DNA was purified by cesium chloride gradient, digested to completion with *EcoR* I, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. DNA / *EcoR* I digest consists of 6 double stranded DNA fragments of 21226, 7421, 5804,5643, 4878 and 3530 base pairs.

Note: DNA / *EcoR* I

- This DNA digest is suitable for use as molecular weight standards for agarose gel electrophoresis.
- Heating the digest at 65oC for 5 mins and rapid cooling on ice will ensure the presence of the 3530 base pair fragment.
- Clear resolved bands are visualized on loading 1.0 µg of DNA / *EcoR* I digest on a 0.7 % agarose gel.
- Cannot be used for ligation experiments.
- Shipped with 6X gel loading buffer
- To avoid frequent freeze-thaw cycles, store as aliquots at -20° C.

Quality control assays :

Absence of Nuclease Activity: 1 µg of DNA / EcoR I digest was incubated with Genei Buffer for 16 hours at 37° C. Sharp unaltered band pattern was seen without smear on a 0.7% agarose gel.



1 µg of DNA/ *EcoR* I digest visualized by ethidium bromide staining on a 0.7% agarose gel

Ordering Information

Cat. No	PI No.	Product Description
2650170501730	MBD1	Lambda DNA/*EcoR* I Digest, 50 µg, (100 loads)

Lambda DNA/ *Hind* III Digest:

Description :

DNA was purified by cesium chloride block gradient, digested to completion with *Hind* III, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. DNA / *Hind* III digest consists of 8 double stranded DNA fragments of 23130, 9416, 6557, 4361, 2322,2027, 564, and 125 base pairs.

Note:

- This DNA / *Hind* III digest is suitable for use as molecular weight standards for agarose gel electrophoresis.
- Heating the digest at 65oC for 5 mins and rapid cooling on ice will ensure the presence of the 4361 base pair fragments.
- Clear resolved bands are visualized on loading 1.0 µg of DNA / Hind III digest on a 0.7 % agarose gel.
- Cannot be used for ligation experiments.
- Shipped with 6X gel loading buffer

Store: -20C

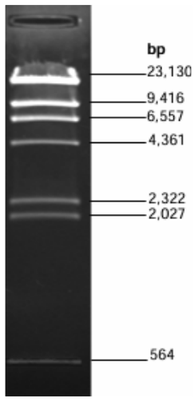
To avoid frequent freeze-thaw cycles, store as aliquots at -20° C.

Related product: - RMBD2 :

Ready to use Marker is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.

Quality control assays :

Absence of Nuclease Activity: 1 µg of DNA / Hind III digest was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 0.7% agarose gel.



µg of DNA/ Hind III digest visualized by ethidium bromide staining on a 0.7% agarose gel

Ordering Information

Cat. No	PI No.	Product Description
2660270501730	RMBD2	Lambda DNA/Hind III Digest, Ready To Use, 50 µg, (100 loads)
2650270501730	MBD2	Lambda DNA/Hind III Digest, 50 µg, (100 loads)

Lambda DNA/EcoR I / HindIII Double Digest

Description :

DNA was purified by cesium chloride gradient, digested to completion with *EcoR* I and Hind III, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. DNA / *EcoR* I -*Hind* III double digest consists of 13 double stranded DNA fragments of 21226, 5148, 4973, 4268, 3530, 2027, 1904, 1584, 1375, 947, 831, 564 and 125 base pairs.

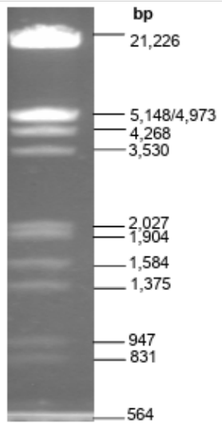
DNA was purified by cesium chloride gradient, digested to completion with *EcoR* I and Hind III, phenol extracted and supplied in 10 mM Tris-HCl (pH 8.0) and 10 mM EDTA. DNA / *EcoR* I -*Hind* III double digest consists of 13 double stranded DNA fragments of 21226, 5148, 4973, 4268, 3530, 2027, 1904, 1584, 1375, 947, 831, 564 and 125 base pairs.

Note:

- The DNA / EcoR I -*Hind* III double digest is suitable for use as molecular weight standards for agarose gel electrophoresis.
- Heating the digest at 65oC for 5 mins and rapid cooling on ice will ensure the presence of the 3530 base pair fragment.
- As the fragments are present in molar ratio, the smaller fragments will be visible only when >1 µg of marker is loaded on gel.
- Cannot be used for ligation experiments.
- Shipped with 6X gel loading buffer.
- To avoid frequent freeze-thaw cycles, store as aliquots at -20°C.

Quality control assays :

Absence of Nuclease Activity: 1 µg of DNA / EcoR I -Hind III double digest was incubated with Genei Buffer for 16 hours at 37°C. Sharp unaltered band pattern was seen without smear on a 0.7% agarose gel.



1 µ g of DNA/ Eco RI Hind III double digest visualized by ethidium bromide staining on a 0.7% agarose gel.

Related product: - RMBD3 :

Ready to use Marker is supplied at a concentration of 100 µg/ml premixed with gel loading buffer.

Ordering Information

Cat. No	PI No.	Product Description
2660370501730	RMBD3	Lambda DNA/*EcoR*I-*Hind* III Double Digest, Ready To Use, 50 µg, (100 loads)
2650370501730	MBD3	Lambda DNA/*EcoR* I / *Hind* III Double Digest, 50 µg, (100 loads)

PRODUCTS FOR RNA ELECTROPHORESIS

RNA Gel Loading Buffer

Description :

RNA gel loading buffer is used to load RNA sample on a formaldehyde agarose gel. It consists of two tracking dyes, Bromophenol blue that runs equivalent to 300 bp linear double stranded DNA and Xylene cyanol that has mobility equivalent to 4kb linear double stranded DNA molecule. This mobility does not change in agarose gel concentration ranging from 0.5 - 1.4%.

Note:

- Buffer is supplied at 5X concentration.
- Working concentration is 1X. Z

Quality control assays :

- Absence of nuclease activity: 1 µg of EcoR I digest incubated with 1X RNA gel loading buffer, at 37° C for 16 hrs in 50 µl reaction volume, showed sharp unaltered pattern on 1% agarose gel.
- Absence of nickase activity: 1 µg supercoiled plasmid DNA incubated with 1X RNA gel loading buffer, at 37° C for 16 hrs in 50 µl reaction volume, showed unaltered pattern without nicking on 1% agarose gel.
- Absence of RNase activity: 1 µg of total RNA incubated for 4 hours at 37°C with 1X RNA gel loading buffer, in 20 µl reaction volume, showed no degradation of RNA on 2% agarose gel

Storage: 4°C

Applications :

RNA Gel Electrophoresis: RNA sample buffer is often used to denature RNA samples before loading them onto a formaldehyde gel for electrophoresis. This allows for the separation of RNA molecules based on size.

Northern Blotting: Before transfer to a membrane for Northern blotting, RNA samples are typically treated with RNA sample buffer to denature the RNA and prevent secondary structure formation. This ensures accurate sizing and detection of RNA species.

References :

•Staining Nucleic Acids Michael R. Green and Joseph Sambrook

Ordering Information

Cat. No	PI No.	Product Description
2606100011730)	FC61	5X RNA Gel Loading Buffer (For Electrophoresis), 4 x 0.25 ml

RNA Gel Electrophoresis Kit

Description :

RNA electrophoresis is used for RNA detection, quantification, separation by size, and quality assessment; since RNA molecules are negatively charged, they migrate toward the anode in the presence of electric current. The overall quality of an RNA preparation may be assessed by electrophoresing it on a denaturing agarose gel.

A denaturing gel system is required because most RNA form extensive secondary structure via intra molecular base pairing, and this prevents it from migrating strictly according to its size. A positive

control RNA can be loaded along with the samples so that unusual results can be attributed to a problem with the gel or a problem with the RNA under analysis. The integrity and size distribution of total RNA can be checked by denaturing agarose gel electrophoresis and ethidium bromide. The respective ribosomal bands should appear as sharp bands on the stained gel. 28s ribosomal RNA bands should be present with an intensity approximately twice that of the 18s rRNA band. If the ribosomal bands in a given lane are not sharp, but appear as a smear of smaller sized RNAs, it is likely that the RNA sample suffered major degradation during preparation.

Kit Contents :

- RNA Sample Buffer
- RNA Gel Loading Buffer
- Agarose
- 10X MOPS buffer (Powder blend)
- Formaldehyde

References :

- Sambrook, J. et. Al., Molecular cloning: A Laboratory Manual, Cold Spring Harbor Laboratory
- Ogden, R.C. and Adams, D.A, Electrophoresis in agarose and acrylamide gels. Meth. Enzymol. 152, 61-87, (1987)

Ordering Information

Cat. No	PI No.	Product Description
2602400011730	EGK7	RNA Gel Electrophoresis Kit, 10 gels of 50ml

FINE CHEMICALS, REAGENTS & BUFFERS

IPTG

Description :

Isopropyl β-D-Thiogalactopyranoside (IPTG) serves as a potent inducer of gene expression in bacterial systems, playing a crucial role in regulating the transcription of target genes. It mimics the structure of lactose and acts as an analog that binds to the lac repressor protein. This binding prevents the repression of the lac operon, allowing for the expression of genes under its control.

IPTG is a fundamental tool in molecular biology research, providing researchers with a controlled and inducible system for studying gene function, protein expression, and cellular processes.

Mol Wt. : 238.3, Purity: 99.7%

Storage: -20°C

Applications :

- IPTG has been utilized in studies involving Lactobacillus reuteri GroEL and its mutants. The induction of protein expression in this context highlights its versatility in various bacterial systems.
- IPTG is widely employed in Escherichia coli for the induction of protein expression. This application underscores its significance in recombinant protein production and molecular biology studies using E. coli as a model organism.

References :

- https://pubmed.ncbi.nlm.nih.gov/33782752/
- https://pubmed.ncbi.nlm.nih.gov/35247611/

Ordering Information

Cat. No	PI No.	Product Description
3600185001730	FC1S	IPTG, 500 mg
3600100011730	FC1L	IPTG, 1000 mg
3600100101730	FC1B	IPTG, 10 g

GeNei™

GENOMICS

FINE CHEMICALS

X-Gal

Description :

X-Gal (5-bromo-4-chloro-3-indolyl-beta-D-galacto-pyranoside), serves as an inert chromogenic substrate specifically for beta-galactosidase, a commonly used reporter gene in molecular biology. The enzyme hydrolyzes X-Gal, resulting in the formation of a blue precipitate. Induction of the lacZ gene with IPTG (Isopropyl β-D-Thiogalactopyranoside) leads to the synthesis of beta-galactosidase. In the presence of X-Gal, the hydrolysis of the substrate results in blue colonies. This phenomenon is widely used in blue-white selection assays.

Mol. wt.: 408.6., Purity by TLC >99%.

Storage: -20°C Light sensitive store in dark place

Applications :

- Blue-White Screening in Cloning: X-Gal is often used in blue-white screening of bacterial colonies transformed with plasmids containing lacZ (β-galactosidase) reporter genes. In the presence of X-Gal, colonies expressing lacZ turn blue, aiding in the identification of recombinant (white) colonies from non-recombinant (blue) colonies.
- Identification of LacZ Reporter Gene Expression: X-Gal is used to identify the expression of lacZ reporter genes in various experimental systems. This can include both prokaryotic and eukaryotic systems where lacZ has been incorporated as a reporter for gene expression.
- Analysis of Promoter Activity: X-Gal is employed to assess the activity of promoters.
- Visualization of Recombinant Viruses: X-Gal is used in virology to visualize the expression of lacZ reporter genes in recombinant viruses. This aids in assessing the efficiency of virus-mediated gene transfer.

Applications :

- RNA Gel Electrophoresis: RNA sample buffer is often used to denature RNA samples before loading them onto a formaldehyde gel for electrophoresis. This allows for the separation of RNA molecules based on size.
- Northern Blotting: Before transfer to a membrane for Northern blotting, RNA samples are typically treated with RNA sample buffer to denature the RNA and prevent secondary structure formation. This ensures accurate sizing and detection of RNA species.

References :

- https://pubmed.ncbi.nlm.nih.gov/31622532/
- https://pubmed.ncbi.nlm.nih.gov/25308773/
- https://pubmed.ncbi.nlm.nih.gov/31622532/

Ordering Information

Cat. No	PI No.	Product Description
3600281001730	FC5L	X-Gal, 100 mg
3600200011730	FC5B	X-Gal, 1 g

DTT (1,4-Dithiothreitol)

Description :

DTT maintains monothiols (single thiol groups) in a reduced state. By preventing the formation of disulfide linkages, DTT helps keep individual thiol groups in their reduced, active form.

One of the key functions of DTT is its ability to quantitatively reduce disulfide bonds present in proteins. Disulfide linkages can form between cysteine residues, influencing the tertiary and quaternary structure of proteins. DTT breaks these disulfide bridges, restoring the native conformation.

DTT can restore the activity of proteins that have undergone oxidative damage. Its ability to reduce disulfide bonds and reverse oxidation-induced changes contributes to the recovery of protein function.

DTT finds extensive use in molecular biology techniques, such as protein extraction, purification, and manipulation. It is an essential component in maintaining the redox state of thiol-containing proteins

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References :

- https://pubmed.ncbi.nlm.nih.gov/23298582/

Ordering Information

Cat. No	PI No.	Product Description
3601000021730	FC22S	DTT (1,4-Dithiothreitol), 2 g
3601000101730	FC22L	DTT (1,4-Dithiothreitol), 10 g
3601000501730	FC22B	DTT (1,4-Dithiothreitol), 50 g

Ficoll

Description :

Ficoll is a neutral, hydrophilic polysaccharide, making it suitable for use in biological solutions without causing significant chemical interactions. It has a high molecular mass, contributing to its ability to form stable density gradients in solutions.

DNase, RNase: None detected.

Storage: Room temperature.

Applications :

Ficoll is a crucial component of Ficoll-Paque, a density gradient medium widely used in laboratories for the separation of blood components.

Ficoll density gradient centrifugation is also used for the isolation of cells from other tissues and cell cultures.

Ordering Information

Cat. No	PI No.	Product Description
3600800101730	FC39	Ficoll, 10 gms

Tris-Base

Description :

Tris(hydroxymethyl)aminomethane, commonly known as TRIS or Tris base, is a widely used buffer in biochemistry and molecular biology due to its properties as a weak base.

Purity: 99.5%,

Molecular Weight: 121.14

Storage: Room Temperature

Applications :

- TRIS is commonly used as a buffering agent to maintain a stable pH in various biochemical and molecular biology assays, such as enzyme assays, nucleic acid isolation, and protein purification.
- TRIS is frequently used as a component of electrophoresis buffers for DNA, RNA, and protein gel electrophoresis.
- TRIS is a common constituent in the running buffer for polyacrylamide gel electrophoresis, especially for the separation of proteins at neutral pH.
- TRIS is used in the formulation of cell culture media to control and maintain the pH of the media, creating an optimal environment for cell growth.
- TRIS is employed in various steps of nucleic acid extraction and purification protocols. It helps maintain the pH of the buffers.

Ordering Information

Cat. No	PI No.	Product Description
3600701001730	FC30S	Tris-Base, (Molecular Biology Grade), 100 g
3600710001730	FC30L	Tris-Base, (Molecular Biology Grade), 1 Kg
3600750001730	FC30B	Tris-Base, (Molecular Biology Grade), 5 Kg

Tween®-20

Description :

Tween®20 is a polyoxyethylene sorbitol ester that belongs to the polysorbate family. Tween®20 is a nonionic detergent classified under the polysorbate family. It is characterized by its polyoxyethylene sorbitol ester structure. The molecular weight is approximately 1,225 daltons, with a composition of 20 ethylene oxide units, 1 sorbitol, and 1 lauric acid as the primary fatty acid. The ethylene oxide subunits contribute to the hydrophilic character of Tween®20, making it soluble in aqueous solutions. At the same time, the lauryl group imparts a hydrophobic element. This balanced hydrophilic-hydrophobic nature is advantageous in solubilizing hydrophobic molecules in aqueous environments.

pH Stability: Stable pH 6.5 - 7.5.

Storage: Room temperature. Protect from light.

Applications :

- It is widely used as a solubilizing agent, facilitating the dispersion of hydrophobic substances (such as lipids, proteins, or small molecules) in water-based solutions.
- It is utilized as a blocking agent in immunoassays to prevent nonspecific binding.
- It serves as a washing agent to remove unbound molecules, contributing to the specificity of the assay.
- Tween®20 is often included in buffers or solutions to enhance the permeability of cell membranes, allowing antibodies to access intracellular targets more effectively.

Ordering Information

Cat. No	PI No.	Product Description
3601181001730	FC31	Tween® -20, 100 ml

Guanidine Hydrochloride

Description :

Guanidine hydrochloride ($NH_2C(=NH)NH_2 \cdot HCl$) is a Strong chaotropic agent useful for the denaturation and subsequent refolding of proteins. This strong denaturant can solubilize insoluble or denatured proteins such as inclusion bodies.

Molecular Weight: 95.53

Purity: > 98%

Storage: Room Temperature

Applications :

It is used as a component of the extraction buffer for the extraction of proteoglycans

It is used in extraction during protein fractionation of ATDC5 cell lines

It is used as a chemical additive to study its effective absorbance spectra in structural analysis

It is used in RNA isolation to dissociate nucleoproteins and inhibit RNase

It plays a role in inhibiting heat shock protein 104 (Hsp104) adenosine triphosphatase (ATPase) activity in vivo.

It is a potent denaturant and inactivator of several enzymes and proteins. GuHCl can inactivate aminoacylase and papain

References :

- https://pubmed.ncbi.nlm.nih.gov/31622532/
- https://pubmed.ncbi.nlm.nih.gov/25308773/
- https://pubmed.ncbi.nlm.nih.gov/31622532/

Ordering Information

Cat. No	PI No.	Product Description
3600800101730	FC39	Ficoll, 10 gms

CTAB Powder

Description :

Hexadecyltrimethylammonium Bromide (CTAB) is a cationic surfactant belonging to the quaternary ammonium salt family. Also known as cetyltrimethylammonium bromide, it consists of a hydrophilic quaternary ammonium cation (head) and a hydrophobic hexadecyl chain (tail). The molecular structure of CTAB features a positively charged ammonium group with three methyl groups attached to a long hydrophobic carbon chain containing 16 carbon atoms (hexadecyl).

Molecular Formula: $C_{19}H_{42}BrN$

Molecular Weight: 364.5

Purity: 99%

Storage: Room Temperature

Applications :

In molecular biology, CTAB is employed in DNA and RNA extraction methods, such as the CTAB method for plant genomic DNA extraction. It helps in the removal of proteins, polysaccharides, and other contaminants.

CTAB plays a crucial role in the synthesis of nanoparticles, particularly gold and silver nanoparticles. It acts as a stabilizing agent, preventing the agglomeration of particles during formation.

Due to its cationic nature, CTAB exhibits antimicrobial properties. It is incorporated into products like shampoos and mouthwashes for its ability to disrupt bacterial cell membranes.

CTAB is soluble in water, forming micelles at concentrations above its Critical Micelle Concentration (CMC). These micelles are essential in various processes, such as solubilization, emulsification, and stabilizing colloidal systems

References :

https://pubmed.ncbi.nlm.nih.gov/2329858

Ordering Information

Cat. No	PI No.	Product Description
3600600501730	FC36	Guanidine Thiocyanate, 50g

PRODUCTS FOR NUCLEIC ACID ELECTROPHORESIS

High Resolution Agarose

High Resolution Agarose is white fine homogeneous powder used in gel electrophoresis.

- Gel Strength (g/cm2) : 448g/cm2
- Gelling temp : 32.5° C
- Melting temp : 75° C
- Moisture : 5.6%
- EEO (-Mr) : 0.05

Store : Room Temperature

Note: Cool the solution to 50° C to 60° C prior to casting. Once the gel is cast, allow the molten agarose to cool and gel at room temperature.

Performance Test :

Gel electrophoresis of 20 bp DNA Ruler on 2% gel was performed, expected band patterns were visualized by ethidium bromide stain.

References :

Jeppsson JO, Laurell CB, Franzén B (April 1979). "Agarose gel electrophoresis". Clinical Chemistry. 25 (4): 629–38.

Akari C (1956). "Structure of the agarose component of agar-agar". Bulletin of the Chemical Society of Japan

Ordering Information

Cat. No	PI No.	Product Description
2600301001730	HAG4	High Resolution Agarose, 100g

AGAROSE BUFFERS FOR ELECTROPHORESIS

50X TAE

Description :

In 1946, Gomori (1946) suggested that organic polyamines could be used to control pH in the range 6.5–9.7. One of the three compounds he investigated was Tris(2-amino-2-hydroxymethyl-1,3-propanediol), which had been first described in 1897 by Piloty and Ruff. One of Tris' first commercial successes, which received wide attention, was the reduction of mortality during handling and hauling of fish. Tris [Tris(hydroxymethyl)aminomethane] has a very high buffering capacity, is highly soluble in water, and is inert in a wide variety of enzymatic reactions. However, Tris also has a number of deficiencies. The pKa of Tris is pH 8.0 (at 20˚C), which means that its buffering capacity is very low at pHs 9.0.

TAE (Tris-Acetate-EDTA) buffer stands as a widely utilized buffer solution in molecular biology, finding prominence, especially in the realm of agarose gel electrophoresis. This buffer serves a pivotal role in providing the necessary ionic environment for the separation of nucleic acids, such as DNA or RNA, during electrophoresis. Use of weak acids provide the proper ion concentration and maintain appropriate pH while nucleic acids move through the agarose matrix.

Applications :

- **DNA Fragmentation and Separation:** TAE is crucial for separating DNA fragments in agarose gels according to their molecular size. This is a fundamental step in various molecular biology applications, including DNA fingerprinting, DNA profiling, and the analysis of PCR products.
- **DNA Gel Extraction:** TAE can be used in procedures where specific DNA fragments are excised from agarose gels for further analysis or downstream applications. This is common in techniques like gel extraction or PCR purification.

Storage: Room Temperature, for long term storage at 4° C

References :

- Brody, J.R., Kern, S.E. (2004) History and principles of conductive media for standard DNA electrophoresis. Anal Biochem. 333(1):1-13. doi:10.1016/j.ab.2004.05.054 PMID 15351274 PDF
- Sambrook, Fritsch, and Maniatis (1989) Molecular Cloning: A Laboratory Manual, 2nd ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, volume 3, apendices B.11 and B.23 ISBN 0-87969-309-6

Ordering Information

Cat. No	PI No.	Product Description
2601182001730	FC14	50X TAE, 200 ml
2601110001730	FC14J	50X TAE, 1000 ml

10X TBE

TBE buffer, Tris-Borate-EDTA, is a common buffer solution used in molecular biology and biochemistry for various applications, especially in nucleic acid electrophoresis. The buffer is named after its three main components: Tris, boric acid (borate), and EDTA. TBE is useful in the separation of short fragments lesser than 1 Kb and has a significantly higher buffering capacity, but borate involved in this buffer could potentially inhibit the activity of enzymes. Thus if the electrophoresis is followed by nucleic acid isolation from the gel and other steps (e. g. ligation)TBE is not preferred.TBE has a higher buffering capacity than TAE, so it works better for a longer run. The effective range of Tris is 7-9. The effective range of boric acid is 8-10,the overlap of buffering properties of both is 8-9, thus mostly used pH 8.3 was found to be optimal.

Applications :

Agarose Gel Electrophoresis: TBE is commonly used as a running buffer for agarose gel electrophoresis, a technique used to separate nucleic acids (DNA or RNA) based on size.

Polyacrylamide Gel Electrophoresis (PAGE): TBE is also used in polyacrylamide gel electrophoresis for higher resolution separation of nucleic acids.

Nucleic Acid Electrophoresis: TBE is suitable for the electrophoretic separation of DNA and RNA fragments. It provides the necessary ions for electrical current and maintains a stable pH.

Southern Blotting and Northern Blotting: TBE is often used in the preparation of agarose gels for these blotting techniques, where nucleic acids are transferred to a membrane for further analysis.

Buffer for Enzymatic Reactions: TBE can be used as a buffer for various enzymatic reactions involving nucleic acids.

Storage: Room Temperature

Ordering Information

Cat. No	PI No.	Product Description
2601282001730	Fc40	10X TBE, 200 ml
2601285001730	FC40L	10X TBE, 500 ml
2601210001730	FC40J	10X TBE, 1000 ml

MOPS Buffer

MOPS is a zwitterionic biological buffer with a useful buffering range of 6.5-7.9, specially tested and certified to be free of DNase, RNase, and protease activity for molecular biology application.

Molecular Weight: 209.3

Formula: $C_7H_{15}NO_4S$

CAS No.: 1132-61-2

Useful pH Range: 6.5-7.9

Solubility: Soluble in water

Storage: Room Temperature

The MOPS buffer solution, formulated at a 10X concentration with a pH of 7.0, serves as a low ionic strength buffer specifically designed for the electrophoretic separation of formaldehyde-denatured RNA. This buffer is carefully crafted to provide optimal conditions for the migration of RNA molecules during electrophoresis, ensuring efficient and accurate separation based on size. The low ionic strength of the MOPS buffer is particularly advantageous for maintaining the denatured state of RNA, allowing for precise analysis and resolution of RNA fragments in various molecular biology applications.

Applications :

RNA Gel Electrophoresis: MOPS buffer is commonly used as a running buffer for agarose or polyacrylamide gel electrophoresis of RNA molecules. It helps separate RNA fragments based on size.

Northern Blotting: MOPS buffer is used in the preparation of agarose or polyacrylamide gels for northern blotting. In this technique, RNA molecules separated by gel electrophoresis are transferred to a membrane and probed for specific sequences.

RNA Isolation: MOPS buffer is sometimes used in procedures involving the isolation of RNA. It can be employed in various RNA extraction protocols.

cDNA Synthesis (Reverse Transcription): MOPS buffer may be used in reverse transcription reactions, where RNA is converted into complementary DNA (cDNA) using reverse transcriptase.

In Vitro Transcription Reactions: MOPS buffer can be used in the preparation of buffers for in vitro transcription reactions, where RNA is synthesized from a DNA template using RNA polymerase.

Protein Electrophoresis: While MOPS buffer is more commonly associated with RNA applications, it can also be used in certain protein electrophoresis applications, particularly in native gel electrophoresis.

Buffer for Enzymatic Reactions: MOPS buffer can serve as a suitable buffer in various enzymatic reactions involving nucleic acids, including certain restriction enzyme digestions.

Quality Control in RNA Studies: MOPS buffer may be used in the assessment of RNA quality, especially in situations where maintaining RNA stability is crucial.

Native Gel Electrophoresis: MOPS buffer can be employed in native gel electrophoresis, a technique used to separate biomolecules under conditions that preserve their native structures.

Ordering Information

Cat. No	PI No.	Product Description
3601805001730	FC96M	MOPS, Molecular Biology Grade, 500 g
3601905001730	FC97M	MOPS Sodium Salt, Molecular Biology Grade, 500 g

DNA GEL LOADING BUFFERS

Applications :

- The inclusion of a densifying agent in DNA Gel Loading buffers serves a pivotal role in ensuring that the sample efficiently settles at the bottom of the well during gel loading. Additionally, the presence of a metal ion binder in the buffer plays a crucial role by binding divalent metal ions, thereby inhibiting nuclease action and providing protection to the DNA.
- Moreover, the incorporation of 6X dyes in the buffer facilitates the visual tracking of DNA migration during electrophoresis. This not only aids in real-time monitoring but also eliminates any masking of the DNA bands when exposed to UV light. These dyes find versatile applications in the analysis of DNA samples, whether through Agarose or polyacrylamide gel electrophoresis, providing researchers with a reliable and efficient tool for accurate DNA characterization.

6X Gel Loading Buffer

- The 6X DNA Loading Dye is tailored for the preparation of DNA markers and samples intended for agarose gel. This formulation integrates two dyes, facilitating visual tracking of DNA migration during electrophoresis. Incorporating glycerol is pivotal, promoting the formation of a distinct layer at the well's bottom for even loading of DNA ladders and samples. This ensures precise positioning, facilitating subsequent DNA band analysis.
- The buffer consists of two dyes - Bromophenol Blue and Xylene cyanol FF. Bromophenol Blue migrates through agarose gels at approximately the same rate as linear ds DNA 300 bp in length whereas xylene cyanol FF migrates at approximately the same rate as linear ds DNA 4 kb in length. These relationships are not significantly affected by the concentration of agarose in the gel over the range of 0.5% - 1.4%.
- 1X Gel Loading Buffer:

· 0.04% Bromophenol Blue, 0.04% Xylene Cyanol FF, 2.5% Ficoll and 10 mM EDTA.

- Buffer supplied at 6X concentration.
- Working concentration is 0.5 – 1X

Storage: -20° C

6X Orange Gel Loading Buffer:

The 6X Orange Gel Loading Buffer stands out as a highly beneficial dye for agarose gel electrophoresis when used at a 1X concentration. Comprising a single dye, Orange G, it offers distinctive advantages in DNA fragment analysis. Notably, the Orange G dye exhibits faster migration compared to Bromophenol blue, and its mobility aligns approximately with a 50 bp DNA fragment. This unique property facilitates efficient tracking and visualization of DNA migration during electrophoresis, particularly in the lower size range of DNA fragments.

- Buffer supplied at 6X concentration.
- Working concentration is 1X.

Storage: -20°C

6X Tri Gel Loading Buffer

6X Tri gel loading buffer is used as DNA tracking dye in agarose gel electrophoresis. The buffer consists of three dyes - Bromophenol Blue, Xylene cyanol FF and OrangeG. Bromophenol Blue migrates through agarose gels at approximately the same rate as linear ds DNA 300 bp in length, xylene cyanol FF migrates at approximately the same rate as linear ds DNA 4 kb in length whereas Orange G migrates at approximately the same rate as linear ds DNA 50 bp in length. These relationships are not significantly affected by the concentration of agarose in the gel over the range of 0.5% - 1.5%.

Note: On a short run bromophenol blue and orange G interact with each other and may fluoresce in the UV light

1X Tri Gel Loading Buffer: 0.013% Bromophenol Blue, 0.01% Xylene Cyanol FF, 0.05% Orange G and 8 mM EDTA.

Quality control assays :

- **Absence of Nuclease Activity:** 1 µg of buffered /EcoR I digest was incubated for 16 hours with 1X gel loading buffer at 37°C. Sharp unaltered banding pattern without smear was visualized on 1% agarose gel.
- **Absence of Nickase Activity:** 1 g of buffered supercoiled plasmid DNA when incubated with 1X Gel loading buffer at 37°C showed unaltered pattern without nicking.

Storage: -20°C

NanoGreen DNA Elpho Buffer,400ml

NanoGreen DNA Elpho Buffer is a safe alternative to Ethidium bromide for visualization of DNA electrophoresed on agarose gel. It is a reagent used in preparation of agarose gels and as electrophoretic (Running) buffer. The purified DNA can be used for restriction digestion, ligation, amplification and cloning applications.

Storage: Room Temperature

Quality control assays :

- Sensitivity test: On using 1X concentration of NanoGreen DNA Elpho Buffer, as low as 50 ng of lambda DNA was visualized.
- Performance Test: NanoGreen DNA Elpho Buffer (1X) was used to electrophorese PCR product (~1.1 kb) on agarose gel. Subsequent extraction and purification was done. Purified product thus obtained could be cloned successfully into linearized pUC-vector.

6X Orange G/ Cresol red DNA loading dye

6X Orange–G/Cresol Red DNA Loading Dye is used as DNA tracking dye in agarose gel electrophoresis. The dye consists of orange–G, Cresol Red sodium salt dissolved in tris buffer and glycerol. Orange-G/Cresol-Red dye migrates through the 1% Agarose gel at approximately the same rates linear 1.5 kb for cresol red 40-50 bp for orange–G. Dye migration rate on different agarose gel concentration is mentioned below.

Sl. no	% of agarose gel	Migration rate of Orange G
1	0.7%	100 bp
2	1.0%	50 bp
3	1.5%	20 bp
4	2.0%	<10 bp
5	3.0%	<10 bp

1X Orange-G/Cresol-Red DNA Loading Dye Composition:

- Cresol Red Sodium Salt - 0.04%
- Glycerol – 6.6%
- Tris – 1.7mM
- Orange –G – 0.04%
- EDTA – 10mM

Storage: -20°C

6X Cresol-Red DNA Loading Dye

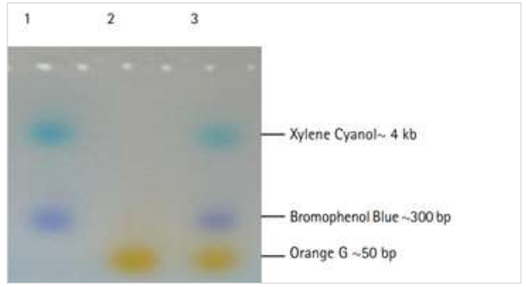
6X Cresol Red DNA Loading Dye is used as DNA tracking dye in agarose gel electrophoresis. The Gel Loading Dye consists of Cresol Red sodium salt dissolved in tris buffer and glycerol. Cresol Red dye migrates through the agarose gels at approximately 1.5 kb. Dye migration rate on different agarose gel concentration is mentioned below

Sl. no	% of agarose gel	Migration rate of Cresol Red
1	0.7%	3000 bp
2	1.0%	1500 bp
3	1.5%	900 bp
4	2.0%	300 bp
5	3.0%	>100 bp

1X Cresol Red DNA Loading Dye Composition:

- Cresol Red Sodium Salt - 0.04%
- Glycerol – 6.6%
- Tris – 1.7mM
- EDTA – 10mM

Storage: -20°C



Lane 1 - Cat No. 612601480061730
Lane 2 - Cat No. 612601580061730
Lane 3 - Cat No. 612601680061730

- DNA Gel Electrophoresis: Gel loading buffer is commonly used to prepare DNA samples for agarose gel electrophoresis. The tracking dyes provide visual cues for the migration of DNA through the gel, and the density agents ensure that the sample sinks into the gel wells.
- RNA Gel Electrophoresis: Like DNA, gel loading buffer is used to prepare RNA samples for electrophoresis. The dyes aid in tracking RNA migration, and the density agents help load the sample into the gel.
- Size Fractionation: Gel loading buffer is essential for preparing samples when the goal is to separate molecules based on size, as in DNA, RNA, or protein electrophoresis.
- Quality Control: Gel loading buffer is used in quality control procedures to assess the integrity and size distribution of nucleic acids or proteins.
- Monitoring Electrophoresis Run: The tracking dyes in the gel loading buffer allow researchers to monitor the progress of the electrophoresis run, ensuring that samples are migrating appropriately through the gel.
- Agarose Gel Extraction: After electrophoresis, samples in gel loading buffer can be purified or extracted for further downstream applications, such as DNA fragment isolation.
- Enzyme Digestion Quality Control: Gel loading buffer is used to assess the success of enzyme digestion reactions by checking the size distribution of DNA fragments after digestion.

References :

- Products: Color Markers for Electrophoresis". Science. 277 (5328): 979. 1997-08-15

https://pubchem.ncbi.nlm.nih.gov/summary/summary.

Ordering Information

Cat. No	PI No.	Product Description
2601480061730	FC15	6X Gel Loading Buffer, 6 ml
2601580061730	FC48	6X Orange Gel Loading Buffer, 6 ml
2602584001730	FC101M	NanoGreen DNA Elpho Buffer,400ml
2601680061730	FC63	6X Tri Gel Loading Buffer, 6 ml
2602680061730	FC75	6X Orange G/ Cresol red DNA loading dye, 6X1 ml
2602580061730	FC74	6X Cresol-Red DNA Loading Dye, 6 x 1 ml

Nucleic Acid Agarose Gel Electrophoresis Kit

Nucleic acid agarose gel electrophoresis is a widely used technique in molecular biology for the separation and analysis of DNA and RNA molecules. The gel matrix allows the molecules to migrate through it based on size, and this separation is visualized by staining the nucleic acids with a fluorescent dye.

Applications :

- Agarose gel electrophoresis is commonly used to determine the size of DNA or RNA fragments. By comparing the migration of unknown fragments to that of a known molecular weight marker, researchers can estimate the size of the sample molecules.
- Agarose gel electrophoresis is used to assess the purity of DNA or RNA samples. Contaminants, such as proteins or other nucleic acids, can be visualized as additional bands or smearing on the gel.
- Agarose gel electrophoresis is routinely used to analyze PCR products. It allows researchers to confirm the presence, size, and purity of the amplified DNA fragments.
- Agarose gel electrophoresis is employed to confirm the presence and size of plasmid DNA after cloning procedures. It helps researchers verify the success of plasmid preparation and the insertion of desired DNA fragments.

Ordering Information

Cat. No	PI No.	Product Description
2600480101730	FC38	Ethidium Bromide, 10 mg
2602300011730	EGK6	Nucleic Acid Agarose Gel Electrophoresis Kit (consumables) (with Ethidium Bromide), 25 gels of 100ml

Silver staining-DNA

- Silver staining is a highly sensitive method for staining DNA, an excellent method for characterization of DNA in polyacrylamide gels. This method for visualizing bands of DNA separated on polyacrylamide gels is more sensitive than the Ethidium bromide method for double stranded DNA. It can detect nano gram quantities of DNA and can also detect single stranded DNA or RNA with equal sensitivity. Silver staining of gels creates a permanent record of the gels and visualization does not need any special equipment. The staining is a multi-step procedure requiring high quality reagents. Nucleic acids reduce silver cations to insoluble silver which deposits in the gel around the DNA bands. The bands appear dark brown or black and the reaction is stopped by altering the pH.
- The silver staining process consists of the following steps: Fixing, sensitization, silver impregnation, development, stopping, and gel preservation with intermittent water washes.
- Fixing – makes the macromolecules in the gel insoluble and prevents them from diffusing out of the gel during subsequent staining steps.
- Sensitization – The gel is treated with reagents that render the DNA more reactive towards silver and accelerate the subsequent reduction of silver ion. Excess sensitization reagent result in a high level of background staining.
- Silver impregnation - Gel is treated with silver nitrate under mildly acidic conditions thus preventing silver ion from being reduced to metallic silver.
- Development – The development solution contains formaldehyde, which reduces silver ion to metallic silver only at high pH. Hence, sodium carbonate is included to render the development solution alkaline.
- Stopping and gel preservation - The stopping solution prevents further reduction of silver ion. The preservation can be done using glycerol, which prevents the gel from cracking during drying.
- DNA Silver Staining Kit is highly sensitive, fast, reproducible, and non-radioactive method of staining DNA in polyacrylamide gels.

Features :

- Ready-to-use solutions for maximum ease of use and reliability.
- The kit is supplied with a suitable DNA Molecular Weight Marker
- Low background
- Non-radioactive
- Fast detection- nucleic acid bands are visualized within 2 hours.
- Reproducible
- Highly sensitive, stains up to100pg of nucleic acid, which is 50 times more sensitive than Ethidium Bromide Method

Applications :

- Sensitive detection of DNA electrophoresed on native polyacrylamide gels

References :

- Berry, M. J. and Samuel, C. E., (1982) "Detection of Subnanogram Amounts of RNA in Polyacrylamide Gels in Presence and Absence of Protein by Staining with Silver," Anal. Biochem., 124, 180.
- McNeilage, L. J. and Whittingham, S., (1984) "Use of Bio Rad Silver Stain to Identify Gel Purified RNA Components of Small Nuclear Ribonucleoprotein Antigens," J. Immunol. Methods, 66, 253
- Goldman, D. and Merril, C. R., (1982) "Silver Staining of DNA in Polyacrylamide Gels: Linearity and Effect of Fragment Size," Electrophoresis, 3, 24
- Beidler, J. L., et al., (1982) "Ultrasensitive Staining of Nucleic Acids with Silver," Anal. Biochem., 126, 374

Ordering Information

Cat. No	PI No.	Product Description
2602100011730	KT86	DNA Silver staining Kit, 10 gels (15 x 18 cm)

GeNei™

www.geneilabs.com

TOOLS FOR PROTEIN RESEARCH

Kits for Protein Purification & Analysis

Protein Estimation Kits

Electrophoresis Chemicals

BUFFERS, STAINING & FIXING SOLUTIONS FOR PAGE

Kits for Protein Purification & Analysis

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POLYCLONAL ANTIBODIES

CONJUGATES OF SECONDARY ANTIBODIES

Tools for Proteomic Research

Purification of His Tag fusion protein (NTA based) Kit

Description :

The development of expression vectors designed to provide various fusion tags to the expressed protein have made recombinant protein purification much easier. The expression vectors that provide polyhistidine tags (6X His) are widely used for rapid purification of the expressed protein of interest. Metal chelate or immobilized metal affinity chromatography (IMAC) is a powerful technique for isolating recombinant fusion proteins under mild conditions. A metal chelating group immobilized on a chromatographic medium, binds a multivalent metal ion (usually Cu2+, Ni2+, Zn2+, or Co2+) in a way that leaves some coordination sites free for selective interaction with proteins. Typically, 5–6 histidine residues ("tag") are added to the C- or N-terminus of a target protein using recombinant techniques. The tag specifically interacts with the chelated metal ions, thereby holding these proteins on the medium. Other components bind weakly or not at all. Elution of the fusion protein is usually performed by increasing the concentration of a competitive eluting agent, such as Imidazole. Description: His tag fusion protein purification kit is a cross linked agarose based resin pre-charged with Ni2+ions. Binding of the protein is based on the interaction between the polyhistidine tag of the recombinant protein and immobilized Ni2+ions.· Nickel is chelated on CL-Agarose through nitrilotriacetic acid which enables strong and efficient binding of target protein due to its affinity for 6X His Tag. This enables rapid purification of polyhistidine tag fusion protein from bacterial lysate. Nitrilotriacetic acid (NTA) is a tetra-dentate chelator which occupies 4 of the 6 binding sites in the coordination sphere of Ni2+ions. The remaining 2 coordination sites are usually occupied by water molecules and can be exchanged with histidine residues of the recombinant protein.

Features :

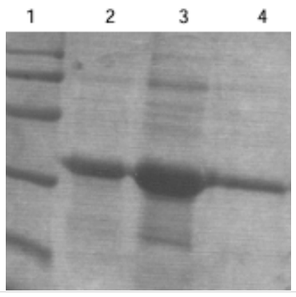
- Fast and easy method.
- Powerful method of purification
- One step purification.

Kit Contents :

- Nickel CL-Agarose column
- 2X Equilibration Buffer
- 2X Wash Buffer
- Elution Buffer

Applications :

For purification of his-tagged proteins.



Analysis of Crude lysate and His-tag protein purified using His-tag Fusion Protein Purification Kit by SDS-PAGE.

Lane 1 : Protein Molecular Weight Marker, Medium Range
Lane 2 : Purified His tag fusion protein 5µg
Lane 3 : Purified His tag fusion protein 25µg
Lane 4 : Purified His tag fusion protein 2µg

References :

- Lindner, P., et al. (1992) Purification of Native Proteins from the Cytoplasm and Periplasm of Escherichia coli Using IMAC and Histidine Tails: A Comparison of Proteins and Protocols. METHODS: A Companion to Methods in Enzymology 4: 41–56.
- Porath, J. (1992) Immobilized Metal Ion Affinity Chromatography. Protein Expression and Purification 3: 263–281.

Ordering Information:

Cat. No	PI No.	Product Description
2160900011730	KT237	Purification of His Tag fusion protein (NTA based) Kit, 4 preps

GeNei™

PROTEOMICS

PROTEIN PURIFICATION

His - Tag Fusion Protein Purification Kit (IDA Based)

Description :

The development of expression vectors designed to provide various fusion tags to the expressed protein have made recombinant protein purification much easier. The expression vectors that provide polyhistidine tags (6X His) are widely used for rapid purification of the expressed protein of interest. Metal chelate or immobilized metal affinity chromatography (IMAC) is a powerful technique for isolating recombinant fusion proteins under mild conditions. A metal chelating group immobilized on a chromatographic medium, binds a multivalent metal ion (usually Cu2+, Ni2+, Zn2+, or Co2+) in a way that leaves some coordination sites free for selective interaction with proteins. Typically, 5–6 histidine residues ("tag") are added to the C- or N-terminus of a target protein using recombinant techniques. The tag specifically interacts with the chelated metal ions, thereby holding these proteins on the medium. Other components bind weakly or not at all. Elution of the fusion protein is usually performed by increasing the concentration of a competitive eluting agent, such as Imidazole. Description: His tag fusion protein purification kit is a cross linked agarose based resin pre-charged with Ni2+ions. Binding of the protein is based on the interaction between the polyhistidine tag of the recombinant protein and immobilized Ni2+ions. Nickel is chelated on CL-Agarose through nitrilotriacetic acid which enables strong and efficient binding of target protein due to its affinity for 6X His Tag. This enables rapid purification of polyhistidine tag fusion protein from bacterial lysate. Nitrilotriiacetic acid (NTA) is a tetra-dentate chelator which occupies 4 of the 6 binding sites in the coordination sphere of Ni2+ions. The remaining 2 coordination sites are usually occupied by water molecules and can be exchanged with histidine residues of the recombinant protein.

Features :

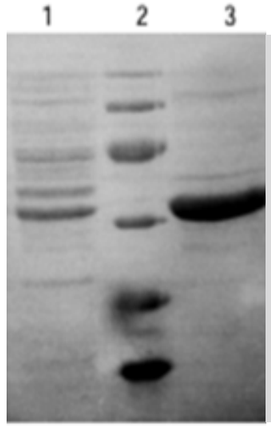
- Fast and easy method.
- Powerful method of purification
- One step purification.

Kit Contents :

- Nickel CL-Agarose column
- 5X Equilibration Buffer
- 5X Wash Buffer
- 5X Elution Buffer

Applications :

For purification of his-tagged proteins.



Analysis of Crude lysate and His-tag protein purified using His-tag Fusion Protein Purification Kit by SDS-PAGE.

Lane 1: Crude Lysate (25 µl)
Lane 2: Protein Molecular Weight Marker
Lane 3: Purified His Tag Fusion Protein

References :

- Lindner, P., et al. (1992) Purification of Native Proteins from the Cytoplasm and Periplasm of Escherichia coli Using IMAC and Histidine Tails: A Comparison of Proteins and Protocols. METHODS: A Companion to Methods in Enzymology 4: 41–56.
- Porath, J. (1992) Immobilized Metal Ion Affinity Chromatography. Protein Expression and Purification 3: 263–281.

Ordering Information:

Cat. No	PI No.	Product Description
2160700011730	KT65	His - Tag Fusion Protein Purification Kit, 5 preps

GST - Fusion Protein Purification Kit

Description :

GeNei™ The expression and purification of recombinant proteins is central to protein regulation, structure, and function studies. Most recombinant proteins are expressed as fusions with short affinity tags or small proteins, such as glutathione S-transferase (GST). The use of Glutathione S-transferase (GST) gene fusion proteins is a method for inducible, high-level protein expression and purification from bacterial cell lysates. The use of GST as a fusion tag is desirable because it can act as a chaperone to facilitate protein folding, and frequently the fusion protein can be expressed as a soluble protein rather than in inclusion bodies. Additionally, the GST fusion protein can be affinity purified facilely without denaturation or use of mild detergents. The fusion protein is captured by immobilized glutathione and impurities are washed away. The fusion protein then is eluted under mild, non-denaturing conditions using reduced glutathione. If desired, the removal of the GST affinity tag is accomplished by using a site-specific protease recognition sequence located between the GST moiety and the target protein.

GST Fusion Protein Purification Kit is designed for rapid affinity purification of glutathione S-transferase (GST) fusion protein from bacterial cell lysate. This protein binds specifically to reduced glutathione (GSH) in near-neutral, non-denaturing conditions (e.g., Tris buffer). Bound protein is easily dissociated (eluted) by competitive displacement with buffer containing free, reduced GSH (oxidized glutathione, GSSH is not effective for this purpose). When proteins of interest are expressed as fusions with GST and glutathione is immobilized to an solid support, this protein-substrate system enables affinity purification of recombinant proteins, as well as various other experiments with those proteins

Features :

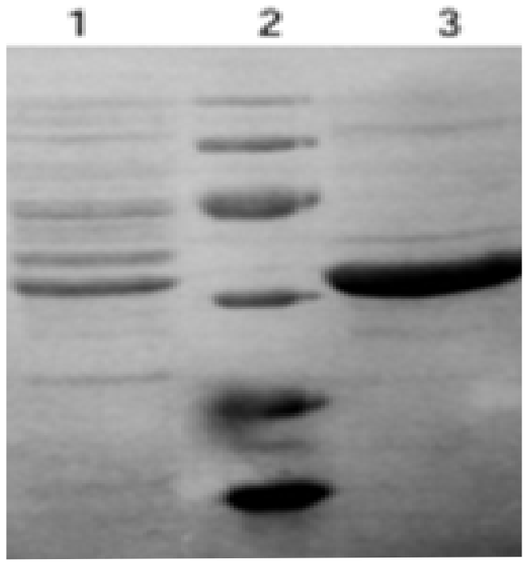
- Fast and easy method.
- Powerful method of purification
- One step purification.

Kit Contents :

- Nickel CL-Agarose column
- 5X Equilibration Buffer
- 5X Wash Buffer
- 5X Elution Buffer

Application :

For purification of his-tagged proteins.



Analysis of Crude lysate and His-tag protein purified using His-tag Fusion Protein Purification Kit by SDS-PAGE.

Lane 1: Crude Lysate (25 µl)
Lane 2: Protein Molecular Weight Marker
Lane 3: Purified His Tag Fusion Protein

References :

- Lindner, P., et al. (1992) Purification of Native Proteins from the Cytoplasm and Periplasm of Escherichia coli Using IMAC and Histidine Tails: A Comparison of Proteins and Protocols. METHODS: A Companion to Methods in Enzymology 4: 41–56.
- Porath, J. (1992) Immobilized Metal Ion Affinity Chromatography. Protein Expression and Purification 3: 263–281.

Ordering Information:

Cat. No	PI No.	Product Description
2160600011730	KT64	GST - Fusion Protein Purification Kit, 5 preps

Protein Estimation Kit by BCA Method

Description :

Protein estimation based on Bicinchoninic acid (BCA) is the most sensitive and detergent compatible method for the colorimetric detection and quantitation of total protein. BCA method is based on the principle of the reduction of Cu++ to Cu+ by protein in an alkaline medium and highly sensitive and the selective colorimetric detection of the cuprous cation (Cu+) with reagent containing Bicinchoninic acid1. The purple colored reaction product of this assay is formed by the chelation of two molecules of BCA with one cuprous ion. This water-soluble complex exhibits a strong absorbance at 562 nm.

Features :

- Kit contains highly sensitive and stable reagents.
- Kit provides a linear range of estimation from 10µg to 1000 µg of protein with linear increase in absorbance at 562nm.
- The rate of color development is slow and hence large number of samples can be processed simultaneously for estimation of protein.

Kit Contents :

- Reagent A
- Reagent B
- Standard Protein (BSA)

Note:

- This kit contains sufficient reagents for 250 tests with 2ml reaction volume.
- Should either Reagent A or Reagent B precipitate upon shipping in cold weather or during long-term storage, dissolve the precipitate by gently warming the solution with stirring.
- If any of the kit components shows discoloration or evidence of microbial contamination, discard the reagent.
- This kit is not suitable for estimation of protein concentration less than 2 µg.
- The following substances have been reported to interfere with the accurate estimation of protein concentration with the BCA Protein Estimation Reagent. These should be avoided as components of the sample buffer: Ascorbic Acid, Catecholamines, Creatinine, Cysteine, EGTA, Impure Glycerol, Hydrogen peroxide, Hydrazides (Na_2BH_4 and $NaCNBH_3$), Iron, Lipids, Melibiose, Phenol Red, Impure Sucrose, Tryptophan, Tyrosine, Uric Acid.

Application :

- For Total Protein estimation and determining the unknow concentration using a standard BSA.

References :

- Smith, P.K., Krohn, R.I., Hermanson, G.T., Mallia, A.K., Gartner, F.H., Provenzano, M.D., Fujimoto, E.K., Goeke, N.M., Olson, B.J. and Klenk, D.C (1985). Measurement of protein using bicinchoninic acid. Anal. Biochem. 150, 76 85.
- Wiechelman, K., Braun, R. and Fitzpatrick, J. (1988). Investigation of the bicinchoninic acid protein assay: Identification of the groups responsible for color formation. Anal Biochem. 175, 231-237.
- Brown, R., Jarvis, K. and Hyland, K. (1989). Protein measurement using bicinchoninic acid: elimination of interfering substances. Anal. Biochem.
- Peterson, G.L. (1979) . Review of the folin phenol protein quantitation method of Lowry, Rosebrough, Farr and Randall. Anal. Biochem. 100, 201-220.

Kirschbaum, G. (1986). Use of the bicinchoninic acid assay in measuring urinary proteins. Clin. Chem. 32, No. 3, Letter to the Editor, 572.

Ordering Information:

Cat. No	PI No.	Product Description
2603100011730	KT31	Protein Estimation Kit by BCA Method, 250 reactions

Protein Estimation Kit by Bradford Macro Method

Description :

Bradford protein assay is a simple and accurate spectophotometric/colorimetric procedure for determining the concentration of protein in solution using the Coomassie G-250 dye. The Bradford method of estimation of proteins was first described by Dr Marion Bradford in 1976. The method is based on the principle of binding of Coomassie G-250 dye to proteins. The dye exists in three forms: cationic (red), neutral (green), and anionic (blue). Under acidic conditions, the dye is predominantly in the doubly protonated red cationic form (Amax = 465 nm). When the dye binds to a protein in an acidic environment, it is converted to a stable unprotonated blue form (Amax = 595 nm), resulting in a spectral shift from absorbance maximum 465 nm of reddish brown form of the dye to an absorbance maximum of 595nm which is the blue form of the dye.

The presence of certain basic amino acids such as Arginine, Lysine and Histidine in the protein are responsible for the development of color in Coomassie dye-based (Bradford) protein assays. The dye first donates its free protons to the protein being tested, causing disruption of its native state and exposing its hydrophobic sites. These hydrophobic pockets on the protein chain then bind non-covalently to the non- polar region of dye by Vander Waal forces. As a result of the proximity between positive amine group positions with the negative charge of the dye, this ionic interaction gets further strengthened and stabilizes the blue color. The amount of color complex present in the solution is an estimation of the protein concentration, which can be measured at 595nm spectrophotometrically.

The number of positive charges on the protein decides the number of dye molecules bound to the protein. Free amino acids, peptides and low molecular weight proteins do not produce color with Coomassie dye reagents. It should be noted that some chemical-protein and chemical- dye interactions interfere with the assay. Interference from non protein compounds is due to their ability to shift the equilibrium levels of the dye among the three colored species. In general, the mass of a peptide or protein to be assayed with this reagent must be at least 3000 Daltons. This protein estimation assay requires the use of a protein standard. The ideal protein to use as a standard is a purified preparation of the protein being assayed. In the absence of an absolute reference protein, another protein must be selected as a relative standard. The two most common protein standards used for protein assays are Bovine Serum Albumin (BSA) and gamma-globulin.

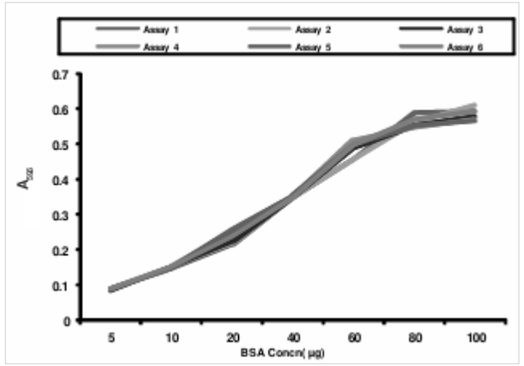
Protein Estimation Kit (By Bradford's Method) provides Bovine Serum Albumin (BSA) as the Protein Standard. The concentration of stock BSA is known and hence can be used to plot a Standard Curve of Absorbance vs concentration. This Standard Curve can be used to determine the concentration of an unknown protein between 10 µg and 150 µg using Bradford's Reagent

Note:

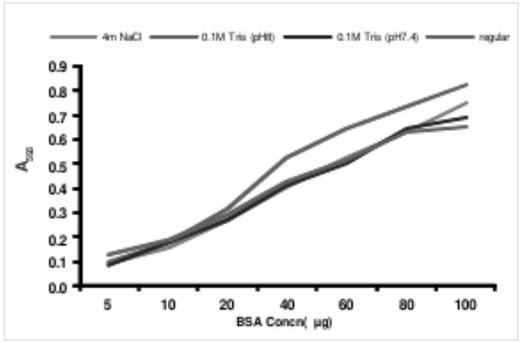
- This kit is not suitable for estimating less than 10 µg of protein.
- Presence of following in a sample are known to interfere in the assay hence should be avoided High molarity buffers of high/ low pH
- b. Detergent c. Ammonium sulphate d. Traces of Sucrose/EDTA.

Kit Contents :

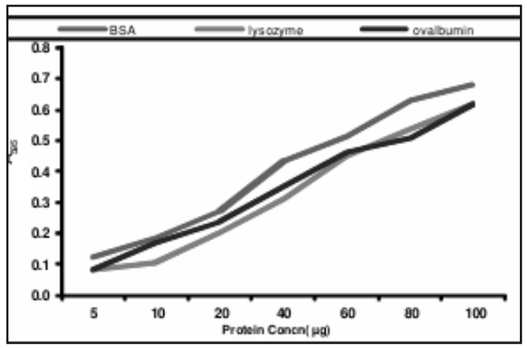
- Bradford Reagent
- Standard Protein (BSA)



A typical curve for Bovine Serum Albumin as Standard with Bradford's reagents (Performed on 6 different occasions)



A typical curve for Bovine Serum Albumin as Standard with Bradford's reagent using different buffer conditions



A typical curve for different proteins (Bovine Serum Albumin, Lysozyme and Ovalbumin) as Standard with Bradford's reagent.

References :

- Bradford, M. (1976). Anal. Biochem. 72, 248-254. A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. Anal. Biochem. 72:248-54.
- Sedmak, J.J. and Grossberg, S.E. (1977). A rapid, sensitive and versatile assay for protein using Coomassie brilliant blue G-250. Anal. Biochem. 79:544-52.
- VanKley, H. and Hale, S.M. (1977). Anal. Biochem. 81, 485-487.
- Spector T, Refinement of the Coomassie blue method of protein quantitation. A simple and linear spectrophotometric assay for less than or equal to 0.5 to 50 micrograms of protein, Anal Biochem 86, 142-146 (1978)
- Compton, S.J. and Jones, C.J. (1985). Mechanism of dye response and interference in the Bradford protein assay. Anal. Biochem. 151:369-74.
- Messenger, M.M., et.al. (2002). J. Biol. Chem 277, 23054 23064
- Stoscheck, CM. Quantitation of Protein. Methods in Enzymology 182: 50-69 (1990).

Ordering Information:

Cat. No	PI No.	Product Description
2603300011730	KT33	Protein Estimation Kit by Bradford Macro Method, 250 reactions

Protein Estimation Kit by Lowry's Method

Description :

The Lowry protein assay is a biochemical assay for determining the total level of protein in a solution. The total protein concentration is exhibited by a color change of the sample solution in proportion to protein concentration, which can then be measured using colorimetric techniques. It is named after the biochemist Oliver H. Lowry who developed the reagent in the 1940s. The method combines the reactions of copper ions with the peptide bonds under alkaline conditions (the Biuret test) with the oxidation of aromatic protein residues. The Lowry method is best used with protein concentrations of 0.01-1.0 mg/ml. and is based on the reaction of Cu+, produced by the oxidation of peptide bonds, with Folin-Ciocalteu reagent (a mixture of phosphotungstic acid and phosphomolybdic acid in the Folin Ciocalteu reaction).

The reaction mechanism is not well understood but involves reduction of the Folin reagent and oxidation of aromatic residues (mainly tryptophan, also tyrosine). Experiments have shown that cysteine is also reactive towards the reagent. Therefore, cysteine residues in a protein probably also contribute to the absorbance seen in the Lowry Assay. The concentration of the reduced Folin reagent is measured by absorbance at 660 nm. As a result, the total concentration of protein in the sample can be deduced from the concentration of Tryptophan and Tyrosine residues that reduce the Folin reagent.

The phenolic group of Tyrosine and Tryptophan residues (amino acid) in a protein will produce a blue purple color complex. Thus the intensity of

color depends on the amount of these aromatic amino acids present and will thus vary for different proteins.

Most proteins estimation techniques use Bovine Serum Albumin (BSA) universally as a standard protein, because of its low cost, high purity and ready availability. The Lowry's method is sensitive down to about 10 µg/ml and is probably the most widely used protein assay despite its being only a relative method , subject to interference from Tris buffer, EDTA, non-ionic and cationic detergents, carbohydrate, lipids and some salts. The incubation time is very critical for a reproducible assay. The reaction is also dependent on pH and a working range of pH 9.0 to 10.5 is essential.

The Protein Estimation Kit comes with Solution I (which contains copper solution), Solution II (which contains a alkaline tartarate solution), Solution III (which contains dilute folin reagent) and BSA.

Features :

- Best used with protein concentrations of 0.01-1.0 mg/ml.
- Sensitive down to about 10 µg/ml
- Simple assay
- No special equipment required
- Rapid and sensitive method

Application :

The Lowry Protein Estimation Kit is ideal for Lowry method users who would like the increased convenience of a stable, pre-formulated product.

Kit Contents :

- Protein Standard BSA
- Solution I
- Solution II
- Solution III
- Instruction Manual

Note:

- Presence of the following compounds in sample are known to interfere with the assay and they should be avoided.
- Substances containing amine group.
- High molarity buffers of low pH.
- The pH of reaction mixture should be in the range of 10-10.5.
- Detergents. -Ammonium sulphate (>3%), Sodium phosphate (>0.2M) and Cesium bicarbonate

References :

- Lowry, O.H., et al. (1951). Protein measurement with the Folin Phenol Reagent. J Biol Chem 193:267-75.
- Vallejo, C.G. and Lagunas, R. (1970). Interferences by sulfhydryl, disulfide reagents, and potassium ions on protein determination by Lowry's method. Anal Biochem 36:207-12.

Ordering Information:

Cat. No	PI No.	Product Description
2601800011730	KT18	Protein Estimation Kit by Lowry's Method, 250 reactions

GeNei™ Protein Estimation Kit (Bradford Micro method)

Description :

Bradford's assay is a rapid and accurate method for estimation of protein concentration. Moreover, when compared with the Lowry's Method it is subject to less interference by common reagents and non-protein components of biological sample. Consequently it is useful when the amount of the unknown protein is limited.

The assay relies on the binding of the dye Coomassie blue G250 to protein. The quantity of protein can be estimated by determining the amount of dye in the blue ionic form. This is usually achieved by measuring the absorbance of the solution at 595 nm or 625 nm.

GeNei™

PROTEOMICS

ESTIMATION KITS

Protein Estimation Kit (Bradford's Micro Method) provides Bovine Serum Albumin (BSA) as the Protein Standard. The concentration of stock BSA is known and hence can be used to plot a Standard Curve of Absorbance vs concentration. This Standard Curve can be used to determine the concentration of an unknown protein between 1 µg and 10µg using Bradford's Reagent.

Kit Contents :

- Protein standard, BSA.
- Bradford's reagent

Note:

Presence of the following compounds in sample are known to interfere in the assay and they should be avoided.

- High molarity buffers of low/high pH or strong bases.
- Detergents.
- Ammonium sulphate > 3%.
- Sucrose > 0.2M
- EDTA > 10 mM

References :

- Bradford, M. (1976). Anal. Biochem. 72, 248-254. A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. Anal. Biochem. 72:248-54.
- Sedmak, J.J. and Grossberg, S.E. (1977). A rapid, sensitive and versatile assay for protein using Coomassie brilliant blue G-250. Anal. Biochem. 79:544-52.
- VanKley, H. and Hale, S.M. (1977). Anal. Biochem. 81, 485-487.
- Spector T, Refinement of the Coomassie blue method of protein quantitation. A simple and linear spectrophotometric assay for less than or equal to 0.5 to 50 micrograms of protein, Anal Biochem 86, 142-146 (1978)
- Compton, S.J. and Jones, C.J. (1985). Mechanism of dye response and interference in the Bradford protein assay. Anal. Biochem. 151:369-74.
- Messenger, M.M., et.al. (2002). J. Biol. Chem 277, 23054 23064
- Stoscheck, CM. Quantitation of Protein. Methods in Enzymology 182: 50-69 (1990).

Ordering Information:

Cat. No	PI No.	Product Description
2624800021730	KT248B	GeNei™ Protein Estimation Kit (Bradford Micro method), 250 reactions

Protein Estimation Kit by Biuret method

Description :

Quantification of proteins is an integral part of proteomics and analysis of proteins. Several methods are available for protein quantification. Some are dye binding assays; others are based on alkaline copper. The Biuret method is the simplest method of protein estimation. Its sensitivity is moderately constant from protein to protein and because of its simple procedure and quick results, it can be widely used to estimate protein in a crude extract over a large range of concentration. This method can also be used to monitor the concentration of a protein during its purification.

Under alkaline conditions, substances containing two or more peptide bonds from a purple complex with copper salts in the reagent, which absorbs at A560 nm. The intensity of the charge transfer absorption bond resulting from the Cu-protein complex is linearly proportional to the mass of the protein present in the solution. The chromophore on light absorbing centre seems to be a complex between the peptide backbone and cupric ions. The Biuret reagent is made up of KOH and hydrated copper sulfate, together with potassium sodium tartrate. The test gets its name from its positive reaction with the peptide-like bonds in the Biuret molecule. The intensity of the color developed is directly proportional to the number of peptide bonds as per the Beer-Lambert Law.

Features :

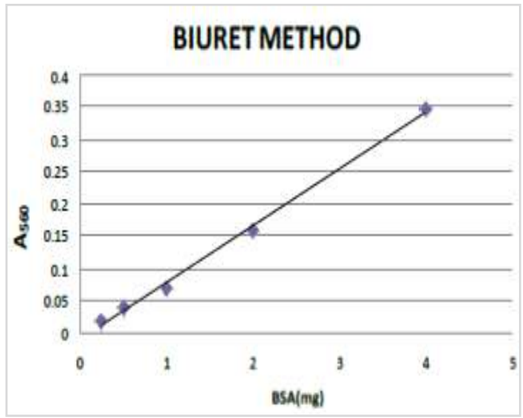
- Sensitivity of assay: 0.25mg
- Range of assay:0.25-4.0 mg
- User friendly protocol to estimate given protein.
- Ready to use reagents for rapid estimation of protein concentration.
- Consistent results.
- Quantitative test

Kit Contents :

- BSA, Protein Standard
- Biuret Reagent (4X)
- Biuret Reagent Diluent

Note:

- **Sample preparation:** solubilize protein in an aqueous buffer and remove any cellular debris/ particulate matter. Take precautions to prevent microbial growth in the sample.
- Presence of the following in a sample are known to interfere with the assay and should be avoided.
  - ➢ Substances containing amine groups.
  - ➢ High molarity buffers of low pH or strong acids.
  - ➢ Detergents.
  - ➢ Ammonium sulphate > 3%.
  - ➢ Sodium phosphate > 0.2M
  - ➢ Cesium bicarbonate
- The pH of reaction mixture should be in the range of 10 - 10.5.



References :

- Gornall, A.G., Bardawill, C.J. and David, M.M. (1949) J. Biol. Chem. 177, 751-766
- Ryan, M.T. and Chopra, R.K. (1976) Biochim. Biophys. Acta 427, 337-349
- Ohnishi, S. T., Barr, J. K., A simplified method of quantitating protein using the biuret and phenol reagents. Anal. Biochem. 86, 193-200, (1978).
- Layne, E.Spectrophotometric and Turbidometric methods for measuring proteins. Methods in Enzymology 10:447-455, (1957).

Ordering Information:

Cat. No	PI No.	Product Description
2601900011730	KT19	Protein Estimation Kit by Biuret method, 250 reactions

Native PAGE Reagent Kit, with Marker

Description :

Proteins are commonly separated using polyacrylamide gel electrophoresis (PAGE) to characterize individual protein in a complex sample or to examine multiple proteins within a single sample. PAGE can be used as a preparative tool to obtain a pure protein sample, or as an analytical tool to provide information on the mass, charge, purity or presence of a protein. Non-denaturing PAGE, also called Native PAGE, separates proteins according to their mass-charge ratio. As there are no denaturants in native PAGE, subunit interactions within a multimeric protein are generally retained and information may be gained about the quaternary structure of the protein. Proteins may be recovered from a native gel by electro-elution.

This kit should be used for the electrophoresis of acidic and neutral proteins only. A set of 5 proteins are supplied to characterize the proteins separated in poly-acrylamide gel in their native state. The proteins supplied have a range of size from 18.4kD to 240kD. Ovalbumin is characterized with two closely spaced bands (Charge isomers). The marker is ready to load marker set. 10µl of each protein should be loaded in each well of the native gel.

Kit Contents :

- Protein Standard Marker (5 proteins)
- 30% Acrylamide
- 1.5M Tris, pH 8.8
- 0.5M Tris, pH 6.8
- Electrophoresis Buffer(10X)
- Sample Loading Buffer (5X)
- Ammonium Per-Sulphate
- TEMED

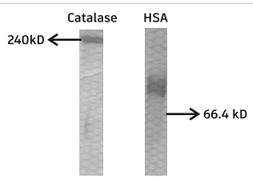
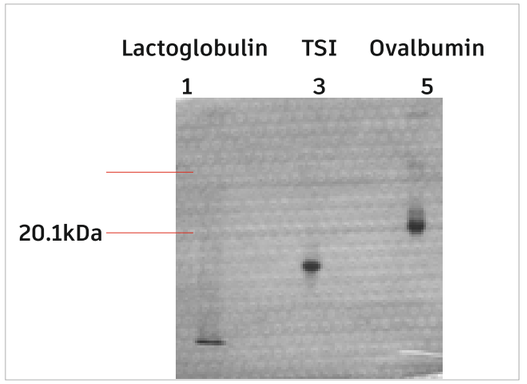


Fig 2: 8% Native PAGE indicating the separation of Catalase and HSA.

Protein	MW given in (kD)	% of gel
Catalase	240	5-8
Human Serum Albumin	66.4	5-8
Ovalbumin	43	8-10
Trypsin Soyabean Inhibitor (TSI)	20.1	8-10



10% Native PAGE indicating the separation of catalase and BSA

Reference :

- Kita, Y. and Arakawa, T. (2002). Salts and glycine increase reversibility and decrease aggregation during thermal unfolding of ribonuclease-A. Biosci. Biotechnol. Biochem. 66, 880-882.
- Eubel, H., Braun, H. P., and Millar, A. H. (2005) Blue Native PAGE in Plants: A Tool in Analysis of Protein- Protein Interactions. Plant Methods 1, 11
- Graham, J. M., and Rickwood, D. (1997) Subcellular Fractionation: A Practical Approach., OxFord University Press, Inc., New York
- Manchenko, G. P. (1994) Handbook of Detection of Enzymes on Electrophoretic Gels, CRC Press, Boca Raton
- Schagger, H. (2001) Blue Native Gels to Isolate Protein Complexes from Mitochondria. Meth. Cell Biol. 65, 231- 244.
- Schagger, H., Cramer, W. A., and von Jagow, G. (1994) Analysis of Molecular Masses and Oligomeric States of Protein Complexes by Blue Native Electrophoresis and Isolation of Membrane Protein Complexes by Two- dimensional Native Electrophoresis. Anal. Biochem. 217, 220-230.
- Schagger, H., and von Jagow, G. (1991) Blue Native Electrophoresis for Isolation of Membrane Protein Complexes in Enzymatically Active Form. Anal. Biochem. 199, 223-231.
- Zerbetto, E., Vergani, L., and Dabbeni-Sala, F. (1997) Quantification of Muscle Mitochondrial Oxidative Phosphorylation Enzymes via Histochemical Staining of Blue Native Polyacrylamide Gels.Electrophoresis 18, 2059 2064.

Ordering Information:

Cat. No	PI No.	Product Description
3163100011730	ER31	Native PAGE Reagent Kit, with Marker, for 10 PAGEs

Silver Staining Kit with Marker (Protein)

Description :

Among the various protein detection methods following electrophoresis of polyacrylamide gels, silver staining has gained wide popularity because of its sensitivity (in the very low ng range). It can be achieved with simple and cheap laboratory reagents and does not require complicated and expensive hardware for the read out. The rationale of silver staining is quite simple. Protein bound to silver ions which can be reduced under appropriate conditions to build up a visible image made of finely divided silver metal. However, silver staining is quite tricky and has its own artefacts.

The sequential phases of silver staining are :

- Protein fixation, to get rid of interfering compounds.
- Sensitization and rinses to increase sensitivity and contrast of staining.
- Silver impregnation with either silver nitrate solution or a silver ammonia complex solution.
- Rinses and development to build up the silver metal image
- Strip and rinse to end development prior to excessive background formation and to remove excess silver ion and other chemicals prior to further processing.

The kit is supplied with a Protein Marker of Medium range suitable for silver staining. The Protein Marker is supplied as a mixture of proteins as shown in figure. The concentration of each of the proteins in this mixture is 0.1 mg/ml.

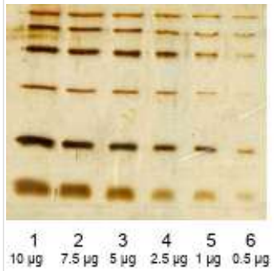
Kit Contents :

- Fixing Solution
- Wash Solution
- 500X Sensitizing Solution
- 100X Silver Staining Solution
- 2X Developing Solution
- 37% Formaldehyde

- Stop Solution
- Protein Molecular Weight Marker (Silver Staining)

Features :

- Highly sensitive.
- Detects up to nanogram level of protein.
- No background



Protein MW	Approx.
Phosphorylase b	97,000
Bovine Serum Albumin	66,000
Ovalbumin	43,000
Carbonic Anhydrase	29,000
Lactoglobulin	18,400
Aprotinin	6,500

Detection of proteins by Silver Staining: Protein Molecular Weight Marker electrophoresed on a 12% polyacrylamide.

Application :

- Silver Staining

References :

- Eschenbruch M, Burk RR. Experimentally improved reliability of ultra sensitive silver staining of protein in polyacrylamide gel. Anal Biochem 1982 Sep 1; 125 (1) 96 99.
- Merril CR, Gold man D, Sedman SA. Ebert MH. Ultra sensitive stain for protein in polyacrylamide gels shows regionalvariation in CSF proteins. Science 1981 Mar 27; 211 (4489): 1437-8.
- Chevallet M, Luche S, Rabilloud T. Silver staining of protein in polyacrylamide gels. Nat. Protoc. 2006; 1 (4): 1852-8.
- Rabilloud T. Mechanism of protein silver staining in polyacrylamide gels: a 10-year synthesis. Electrophoresis 1990 Oct; 11 (10): 785-94.

Ordering Information:

Cat. No	PI No.	Product Description
3162300011730	ER23	Silver Staining Kit with Marker (Protein), for 10 PAGEs

Western Blot Development Kit for Human Antibody

Description :

Immunoassay using enzyme labeled antibodies together with a substrate is highly specific and provides an excellent method for the detection and characterization of a particular protein in a mixture. The Western blot technique, introduced by Towbin et al in 1979, involves detection of a protein bound to a nitrocellulose or PVDF membrane using antibodies and is one of the most widely used analytical technique. A mixture of proteins is first separated by gel electrophoresis (SDS-PAGE); these proteins are then transferred to membrane. After blocking, the antigen of interest is detected by using either a labeled antibody or an unlabeled antibody followed by a labeled secondary antibody specific to the unlabelled antibody. Finally a detection method (substrate) is used to identify the antibody bound to the protein on the immobilized membrane. Biotin-Streptavidin help amplify the reaction leading to better sensitivity.

Western Blot Development Kit (For Human antibodies) utilizes direct detection technique to detect Human antibody. The antigen-immobilized membrane is incubated with its specific antibody which is of Human origin. The antibody is allowed to bind to a biotinylated secondary antibody (anti Human IgG biotin conjugate).Biotinylated secondary antibody increases the sensitivity of the reaction . Biotin has strong affinity for Streptavidin, which is labeled with Alkaline Phosphatase (ALP). The membrane is then incubated with Streptavidin ALP conjugate that binds to biotin on the antibody. This in turn is detected by BCIP/NBT, substrate specific for alkaline phosphatase. The development of blue-grey color indicates a positive reaction and hence the presence of antigen on the membrane and the antibody which has bound to it.

Features :

- Highly sensitive and specific due to Biotin–Streptavidin system
- Saves time, efforts
- Low background
- Control Strips enable to validate the procedure

Kit contents :

- Goat Anti-Human IgG Biotin Conjugate
- Wash Buffer (25X)
- Blocking Buffer (5X)
- Assay Buffer (10X)
- Streptavidin ALP conjugate
- BCIP/NBT substrate
- Control Strips

Applications :

- Characterization and quantitation of IgG of Human origin.
- Used to identify immobilized Human Immunoglobulin G Sensitivity of Western blot development kit for Human IgG

References :

- Towbin, H., et al. (1979). Electrophoretic transfer of proteins from polyacrylamide gels to nitrocellulose sheets: procedure and some applications. Proc. Natl. Acad. Sci. USA 76, 4350-4354.
- Bers, G. and Garfin, D. (1985). Protein and nucleic acid blotting and immunobiochemical detection. BioTechniques 3, 276-288.
- Bjerrum, O.J. and Heegaard, N.H.H. (1988). Handbook of Immunoblotting of Proteins. Volume 1. Technical Descriptions. CRC Press, Boca Raton.
- Gershoni, J. (1988). Protein blotting. Meth. Biochem. Anal. 33, 1-58.
- Gershoni, J.M. and Palade, G.E. (1983). Protein blotting: principles and applications. Anal. Biochem. 131, 1-15.
- Malik, V.S. and Lillehoj, E.P. (1994). Antibody Techniques. Academic Press, Inc., San Diego, CA.
- Ramlau, J. (1987). Use of secondary antibodies for visualization of bound primary reagents in blotting procedures. Electrophoresis 8, 398-402.
- Spinola, S.M. and Cannon, J.G. (1985). Different blocking agents cause variation in the immunologic detection of proteins transferred to nitrocellulose membranes. J. Immunol. Meth. 81, 161.
- Towbin, H. and J. Gordon. 1984. J. Immunol. Meth. 72:313-340

Ordering Information:

Cat. No	PI No.	Product Description
2601300011730	KT13	Western Blot Development Kit for Human Antibody, 10 blots

Western Blot Development Kit for Mouse Antibody

Description :

Immunoassay using enzyme labelled antibodies together with a substrate is highly specific and provides an excellent method for the detection and characterization of a particular protein in a mixture. The Western blot technique, introduced by Towbin et al in 1979, involves detection of a protein bound to a nitrocellulose or PVDF membrane using antibodies and is one of the most widely used analytical technique. A mixture of proteins is first separated by gel electrophoresis (SDS-PAGE); these proteins are then transferred to membrane. After blocking, the antigen of interest is detected by using either a labelled antibody or an unlabelled antibody followed by a labelled secondary antibody specific to the unlabelled antibody. Finally a detection method (substrate) is used to identify the antibody bound to the protein on the immobilized membrane. Biotin-Streptavidin help amplify the reaction leading to better sensitivity.

Western Blot Development Kit (For mouse antibodies) utilizes direct detection technique to detect Mouse antibody. The antigen-immobilized membrane is incubated with its specific antibody which is of Mouse origin. The antibody is allowed to bind to a biotinylated secondary antibody (anti mouse IgG biotin conjugate).Biotinylated secondary antibody increases the sensitivity of the reaction . Biotin has strong affinity for Streptavidin, which is labelled with Alkaline Phosphatase (ALP). The membrane is then incubated with Streptavidin

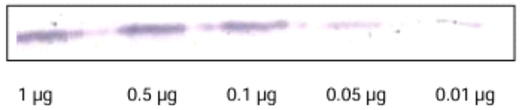
ALP conjugate that binds to biotin on the antibody. This in turn is detected by BCIP/NBT, substrate specific for alkaline phosphatase. The development of blue-grey color indicates a positive reaction and hence the presence of antigen on the membrane and the antibody which has bound to it.

Features :

- Highly sensitive and specific due to Biotin–Streptavidin system
- Saves time, efforts
- Low background
- Control Strips enable to validate the procedure

Kit Contents :

- Goat Anti-Mouse IgG Biotin Conjugate
- Wash Buffer (25X)
- Blocking Buffer (5X)
- Assay Buffer (10X)
- Streptavidin ALP conjugate
- BCIP/NBT substrate
- Control Strips



Sensitivity of Western blot development kit for Mouse IgG

References :

- Towbin, H., et al. (1979). Electrophoretic transfer of proteins from polyacrylamide gels to nitrocellulose sheets: procedure and some applications. Proc. Natl. Acad. Sci. USA 76, 4350-4354.
- Bers, G. and Garfin, D. (1985). Protein and nucleic acid blotting and immunobiochemical detection. BioTechniques 3, 276-288.
- Bjerrum, O.J. and Heegaard, N.H.H. (1988). Handbook of Immunoblotting of Proteins. Volume 1. Technical Descriptions. CRC Press, Boca Raton.
- Gershoni, J. (1988). Protein blotting. Meth. Biochem. Anal. 33, 1-58.
- Gershoni, J.M. and Palade, G.E. (1983). Protein blotting: principles and applications. Anal. Biochem. 131, 1-15.
- Malik, V.S. and Lillehoj, E.P. (1994). Antibody Techniques. Academic Press, Inc., San Diego, CA.
- Ramlau, J. (1987). Use of secondary antibodies for visualization of bound primary reagents in blotting procedures. Electrophoresis 8, 398-402.
- Spinola, S.M. and Cannon, J.G. (1985). Different blocking agents cause variation in the immunologic detection of proteins transferred to nitrocellulose membranes. J. Immunol. Meth. 81, 161.
- Towbin, H. and J. Gordon. 1984. J. Immunol. Meth. 72:313-340

Ordering Information:

Cat. No	PI No.	Product Description
2601400011730	KT14	Western Blot Development Kit for Mouse Antibody, 10 blots

Protein Electrophoresis & Western Blotting Reagents.

Pre-stained Protein Marker

Introduction :

Pre-stained Protein Marker is a mixture of purified and pre-stained proteins whose molecular weights are well calibrated. It is available in a ready to use format (boiling not required) and is suitable for sizing proteins in SDS PAGE.

A coloured chromophore is covalently bound to all the proteins, which are visible during electrophoresis or electrophoretic transfer from the gel to a membrane as blue bands. A green, pink, and orange reference band, respectively, enable easier identification.

Features :

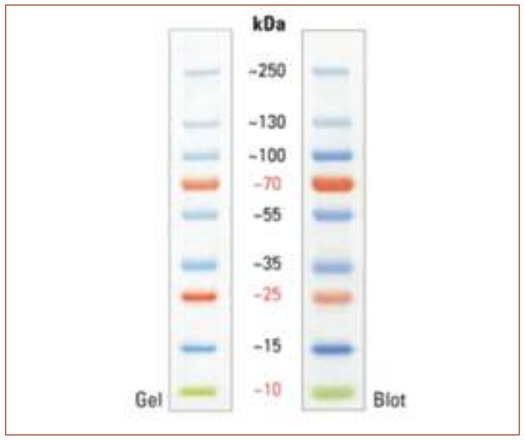
- Monitoring protein transfer onto membranes after Western blotting.
- Monitoring protein migration during SDS PAGE.
- Sizing of proteins on SDS PAGE and Western blots.

Storage: -20°C.

Genei has different range of Protein marker to meet customer requirement.

1. Pre-Stained Protein Marker, 10-250kD

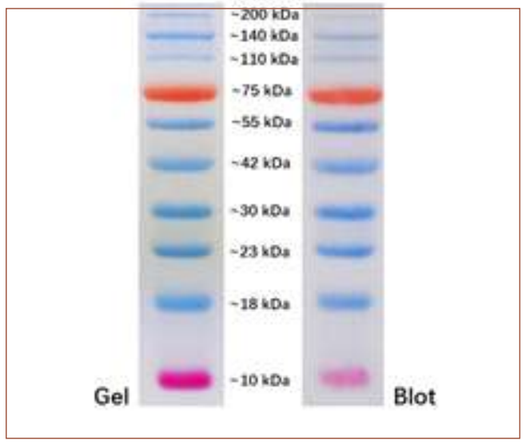
Specifications	
Number of bands	9
Product Type	Protein ladder
Ready to Use	Yes
Size Range	10-250kD
Gel Compatibility	Tris-Glycine Gels, SDS PAGE Gels
Stain Type	6 blue, 2 orange and 1 green
Molecular Weight	250, 130, 100, 75, 55, 35, 25, 15, 10kD
Quantity	250µl
System Type	Western Blotting, SDS-PAGE



12% Tris Glycine SDS PAGE

2. Pre-Stained Protein Marker, 10-200kD

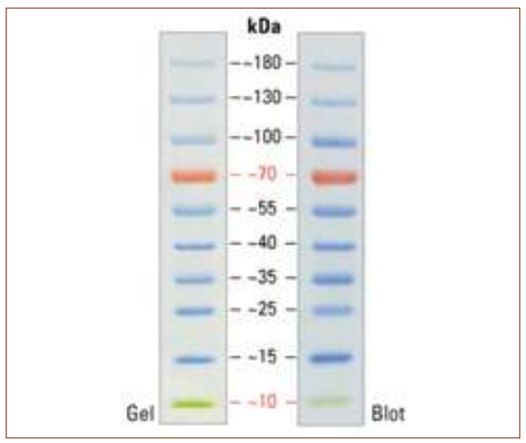
Specifications	
Number of bands	10
Product Type	Protein ladder
Ready to Use	Yes
Size Range	10-200kD
Gel Compatibility	Tris-Glycine Gels, SDS PAGE Gels
Stain Type	8 blue, 1 orange and 1 pink
Molecular Weight	200, 140, 110, 75, 55, 42, 30, 23, 18, 10kD
Quantity	250µl
System Type	Western Blotting, SDS-PAGE



12% Tris Glycine SDS PAGE

3. Pre-Stained Protein Marker, 10-180kD

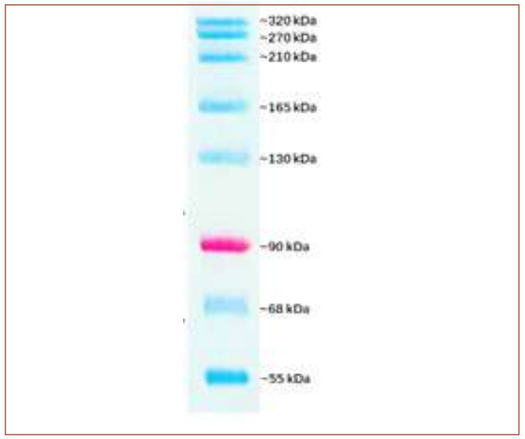
Specifications	
Number of bands	10
Product Type	Protein ladder
Ready to Use	Yes
Size Range	10-180kD
Gel Compatibility	Tris-Glycine Gels, SDS PAGE Gels
Stain Type	8 blue, 1 orange and 1 green
Molecular Weight	180, 130, 100, 70, 55, 40, 35, 25, 15, 10kD
Quantity	250µl
System Type	Western Blotting, SDS-PAGE



10% Tris Glycine SDS PAGE

4. Pre-Stained Protein Marker, 55-320kD

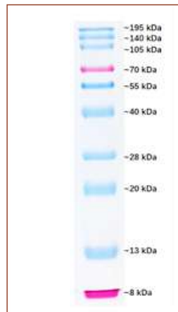
Specifications	
Number of bands	8
Product Type	Protein ladder
Ready to Use	Yes
Size Range	55-250kD
Gel Compatibility	Tris-Glycine Gels, SDS PAGE Gels
Stain Type	7 blue, 1 pink
Molecular Weight	320, 270, 210, 165, 130, 90, 68, 55kD
Quantity	250µl
System Type	Western Blotting, SDS-PAGE



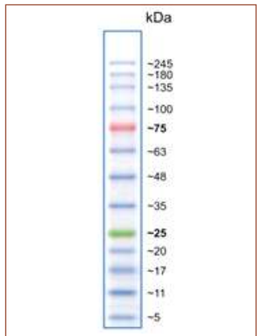
6% Tris Glycine SDS PAGE

5. Pre-Stained Protein Marker, 8-195kD

Specifications	
Number of bands	10
Product Type	Protein ladder
Ready to Use	Yes
Size Range	8-195kD
Gel Compatibility	Tris-Glycine Gels, SDS PAGE Gels
Stain Type	8 blue, 2 pink
Molecular Weight	195, 140, 105, 70, 55, 40, 28, 20, 13, 8kD
Quantity	250µl
System Type	Western Blotting, SDS-PAGE



12% Tris Glycine SDS PAGE



4-20% Tris Glycine SDS PAGE

6. Pre-Stained Protein Marker, 3.5 - 245kD

Specifications	
Number of bands	13
Product Type	Protein ladder
Ready to Use	Yes
Size Range	3.5 - 245kD
Gel Compatibility	Tris-Glycine Gels, SDS PAGE Gels
Stain Type	11 blue, 1 red and 1 green
Molecular Weight	245, 180, 135, 100, 75, 63, 48, 35, 25, 20, 17, 11, 3.5kD
Quantity	250µl
System Type	Western Blotting, SDS-PAGE

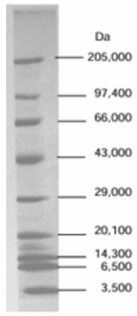
Ordering Information:

Product	Cat #	PI No.
Pre-stained Protein Marker, 0.25ml; 10-180kD	3110482501730	PPMWA
Pre-stained Protein Marker, 0.25ml; 10-200kD	3110492501730	PPMWB
Pre-stained Protein Marker, 0.25ml; 10-250kD	3110502501730	PPMWC
Pre-stained Protein Marker, 0.25ml; 55-320kD	3110512501730	PPMWD
Pre-stained Protein Marker, 0.25ml; 8-195kD	3110522501730	PPMWE
Pre-stained Protein Marker, 0.25ml; 3.5-245kD	3110532501730	PPMWF

Protein Molecular Weight Marker, Broad Range

Description :

Protein molecular weight marker is a mixture of individually purified proteins mixed to give bands of approximately equal intensity when electrophoresed on a sodium dodecyl sulphate polyacrylamide gel (SDS-PAGE). The marker is supplied in 10 mM Phosphate buffer (pH 7.0), 0.15 M KCl and 50% glycerol. The protein, their respective molecular weights (MW) are as follows



Sl.No.	Protein	MW (Da)
1	Myosin, Rabbit Muscle	205,000
2	Phosphorylase b	97,400
3	Bovine Serum Albumin	66,000
4	Ovalbumin	43,000
5	Carbonic Anhydrase	29,000
6	Soyabean Trypsin Inhibitor	20,100
7	Lysozyme	14,300
8	Aprotinin	6,500
9	Insulin (α and β chains)	3,500

10 µl of protein molecular weight marker visualized on a 8 - 20% gradient SDS-PAGE after coomassie blue staining.

Storage: -20C

Note:

- Always store marker at -20° C.
- Mix content of the vial by tapping before pipetting and return the vial to -20° C immediately.
- Repeated freeze -thaw is not recommended.

Applications :

- The protein molecular weight marker can be used to size molecular weights of unknown proteins

References :

- Doucet, A. & Beauregard, M. A sodium dodecyl sulfate-polyacrylamide gel electrophoresis protein ladder made of disulfide-bridged proteins. Anal. Biochem
- Harold H (1951). "Origin of the Word 'Protein.'". Nature. 168

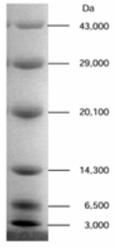
Ordering Information:

Cat. No	PI No.	Product Description
3110475001730	PMWB	Protein Molecular Weight Marker, Broad Range (50 lanes), 0.5 ml
3110472501730	PMWB1	Protein Molecular Weight Marker, Broad Range (25 lanes), 0.25 ml

Protein Molecular Weight Marker, Lower Range

Description :

Protein molecular weight marker is a mixture of individually purified proteins mixed to give bands of approximately equal intensity when electrophoresed on a sodium dodecyl sulphate polyacrylamide gel (SDS-PAGE). The marker is supplied in 10 mM Phosphate buffer (pH 7.0), 0.06 M KCl and 50% glycerol. The protein, their respective molecular weights (MW) are as follows.



Sl.No.	Protein	MW (Da)
1	Ovalbumin	43,000
2	Carbonic Anhydrase	29,000
3	Soyabean Trypsin Inhibitor	20,100
4	Lysozyme	14,300
5	Aprotinin	6,500
6	Insulin (α and β chains)	3,500

10 µl of protein molecular weight marker visualized on a 12% SDS-PAGE after Coomassie blue staining.

Related Product:-RPMWM :

The marker is supplied in 25 mM Tris-HCl pH 6.8, 0.8% SDS, 2% -mercaptoethanol, 0.004% bromophenol blue and 50% glycerol. The marker is supplied in gel loading buffer and does not require boiling.

Storage: -20C

Note:

- Always store marker at -20° C.
- Mix content of the vial by tapping before pipetting and return the vial to -20° C immediately.
- Repeated freeze -thaw is not recommended.
- A faint band above Ovalbumin (43 kDa) may be observed.

Applications :

- The protein molecular weight marker can be used to size molecular weights of unknown proteins

References :

- Doucet, A. & Beauregard, M. A sodium dodecyl sulfate-polyacrylamide gel electrophoresis protein ladder made of disulfide-bridged proteins. Anal. Biochem
- Harold H (1951). "Origin of the Word 'Protein.'". Nature. 168

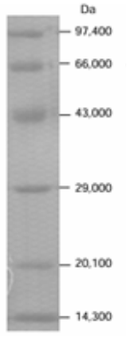
Ordering Information:

Cat. No	PI No.	Product Description
3110175001730	PMWL	Protein Molecular Weight Marker, Lower Range (50 lanes), 0.5 ml

Protein Molecular Weight Marker, Medium Range

Description :

Protein molecular weight marker is a mixture of individually purified proteins mixed to give bands of approximately equal intensity when electrophoresed on a sodium dodecyl sulphate polyacrylamide gel (SDS-PAGE). The marker is supplied in 10 mM Phosphate buffer (pH 7.0), 0.06 M KCl and 50% glycerol. The protein, their respective molecular weights (MW) are as folllows.



Sl.No.	Protein	MW (Da)
1	Phosphorylase b	97,400
2	Bovine Serum Albumin	66,000
3	Ovalbumin	43,000
4	Carbonic Anhydrase	29,000
5	Soyabean Trypsin Inhibitor	20,100
6	Lysozyme	14,300

10 µl of protein molecular weight marker visualized on a 15% SDS-PAGE after Coomassie blue staining.

Related Product:-RPMWM :

The marker is supplied in 25 mM Tris-HCl pH 6.8, 0.8% SDS, 2% -mercaptoethanol, 0.004% bromophenol blue and 50% glycerol. The marker is supplied in gel loading buffer and does not require boiling.

Storage: -20C

Note:
- Always store marker at -20°C.
- Mix content of the vial by tapping before pipetting and return the vial to -20°C immediately.
- Repeated freeze -thaw is not recommended.

Applications :

- The protein molecular weight marker can be used to size molecular weights of unknown proteins

References :

- Doucet, A. & Beauregard, M. A sodium dodecyl sulfate-polyacrylamide gel electrophoresis protein ladder made of disulfide-bridged proteins. Anal. Biochem
- Harold H (1951). "Origin of the Word 'Protein.'". Nature. 168

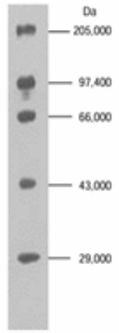
Ordering Information:

Cat. No	PI No.	Product Description
3110275001730	PMWM	Protein Molecular Weight Marker, Medium Range (50 lanes), 0.5 ml
3111275001730	RPMWM	Ready to use PMW Marker, Medium Range, 25 lanes, 0.5ml

Protein Molecular Weight Marker, Higher Range

Description :

Protein molecular weight marker is a mixture of individually purified proteins mixed to give bands of approximately equal intensity when electrophoresed on a sodium dodecyl sulphate polyacrylamide gel (SDS-PAGE). The marker is supplied in 10 mM Phosphate buffer (pH 7.0), 0.06 M KCl and 50% glycerol. The protein, their respective molecular weights (MW) are as follows:



Sl.No.	Protein	MW (Da)
1	Myosin, Rabbit Muscle	205,000
2	Phosphorylase b	97,400
3	Bovine Serum Albumin	66,000
4	Ovalbumin	43,000
5	Carbonic Anhydrase	29,000

10 µl of protein molecular weight marker visualized on a 8% SDS-PAGE after Coomassie blue staining.

Storage: -20C

Related Product:-RPMWH :

The marker is supplied in 25 mM Tris-HCl pH 6.8, 0.8% SDS, 2% -mercaptoethanol, 0.004% bromophenol blue and 50% glycerol. The marker is supplied in gel loading buffer and does not require boiling.

Note:
- Always store marker at -20°C.
- Mix content of the vial by tapping before pipetting and return the vial to -20°C immediately.
- Repeated freeze -thaw is not recommended.

Applications :

- The protein molecular weight marker can be used to size molecular weights of unknown proteins

References :

- Doucet, A. & Beauregard, M. A sodium dodecyl sulfate-polyacrylamide gel electrophoresis protein ladder made of disulfide-bridged proteins. Anal. Biochem
- Harold H (1951). "Origin of the Word 'Protein.'". Nature. 168

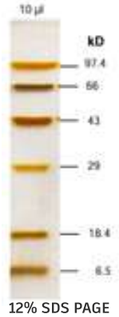
Ordering Information:

Cat. No	PI No.	Product Description
3110375001730	PMWH	Protein Molecular Weight Marker, Higher Range (50 lanes), 0.5 ml
3111375001730	RPMWH	Ready to use PMW Marker, Higher Range, 25 lanes, 0.5ml

Protein Molecular Weight Marker, for Silver Staining

Description :

Protein molecular weight marker is a mixture of individually purified proteins mixed to give bands of approximately equal intensity when electrophoresed on a sodium dodecyl sulphate polyacrylamide gel (SDS-PAGE). The marker is supplied in 10 mM phosphate buffer (pH 7.0), 45 mM KCl and 50% glycerol. The protein, their respective molecular weights (MW) are as follows



12% SDS PAGE

Sl.No.	Protein	MW (Da)
1	Phosphorylase b	97,400
2	Bovine Serum Albumin	66,000
3	Ovalbumin	43,000
4	Carbonic Anhydrase	29,000
5	Lactoglobulin	18,400
6	Aprotinin	6,500

Storage: -20°C

Note:
- Aprotinin may appear as doublet.
- Intensity of individual band will depend on staining method. Increase load volume to 15-20 µl. If any of the bands appear faint on staining.
- Always store marker at -20°C.
- Mix content of the vial by tapping before pipetting and return the vial to -20°C immediately
- Repeated freeze -thaw is not recommended.

References :

- Switzer RC 3rd, Merril CR, Shifrin S (Sep 1979). "A highly sensitive silver stain for detecting proteins and peptides in polyacrylamide gels". Anal.
- Hempelmann E, Schulze M, Götze O (1984). "Free SH-groups are important for the polychromatic staining of proteins with silver nitrate.
- Lelong C, Chevallet M, Luche S, Rabilloud T (2009). Silver staining of proteins in 2DE gels

Ordering Information:

Cat. No	PI No.	Product Description
3110572501730	PMWSS	Protein Molecular Weight Marker, for Silver Staining (25 lanes), 0.25 ml

Native PAGE Protein Molecular Weight Marker

Description :

Native PAGE Protein molecular weight marker is a set of five proteins with molecular weight ranging from 240kD to 18.4kD, to characterize the proteins separated in poly-acrylamide gels in their native state.

Protein MW (Da) Recommended % of gel

Sl.No.	Protein	MW (Da)	Gel Percentage
1	Catalase	240,000	5-8
2	Human Serum Albumin	66400	5-8
3	Ovalbumin	43,000	8-10
4	Soyabean Inhibitor	20,100	8-10
5	Lactoglobulin	18,400	8-10

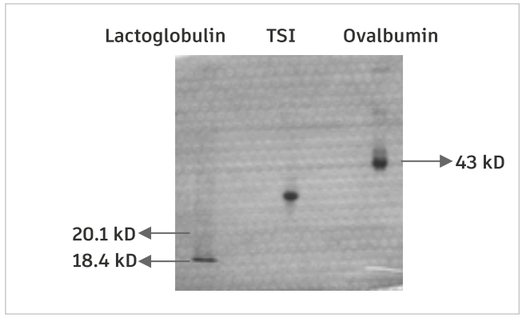


Fig1: 10% Native PAGE indicating the separation of Lactoglobulin, Ovalbumin and TSI.

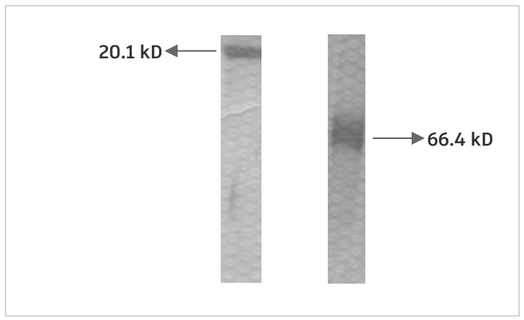


Fig 2: 8% Native PAGE indicating the separation of Catalase and HSA.

Note:
- Always store the marker at -20° C.
- Repeated freeze -thaw is not recommended.
- Mix content of the vial by tapping before pipetting and return the vial to -20° C immediately.
- Protein Marker should be electrophoresed at 50V.
- Avoid heating of apparatus during electrophoresis to prevent splitting of protein bands.
- Ovalbumin and Lactoglobulin are observed as two closely spaced bands.(charge isomers)
- Do not mix the proteins & load.

References :

- Determination of molecular weight of native proteins by polyacrylamide gradient gel electrophoresis-H Nishizawa 1, N Kita, S Okimura, E Takao, Y Abe.

Ordering Information:

Cat. No	PI No.	Product Description
3110600011730	PMWN	Native PAGE Protein Molecular Weight Marker, 5 x 0.5 ml

Acrylamide

Features :

- **Formula:** $CH_2CHCONH_2$
- **Molecular Weight :** 71.08
- **Appearance :** White crystalline powder.
- **Purity :** 99%.

Storage : Room Temperature.

Note: Neurotoxic, always handle with glove..

Ordering Information:

Cat. No	PI No.	Product Description
3171301001730	ER13	Acrylamide, 100 g

Bis-acrylamide

Description :

N,N,-Methylene-bis-acrylamide (bis-acrylamide) serves as a crosslinking agent during polymerization of acrylamide.

- **Formula :** C7H10O2N2
- **Molecular Weight :** 154.2
- **Appearance :** White powder.
- **Purity :** 98%.
- **Acrylic acid content :** < 001%
- **Conductance of 2% Solution:** < 10 µmho
- **Store :** Room Temperature.

Note: Neurotoxic, always handle with glove..

Ordering Information:

Cat. No	PI No.	Product Description
3171301001730	ER13	Acrylamide, 100 g

Acrylamide/ Bis-acrylamide solution 30%, 19:1 ratio

Description :

Acrylamide/Bisacrylamide Solution 19:1 ratio is ready to use Acrylamide Solution for preparation of Polyacrylamide Gels for protein electrophoresis. The stock solution can be used for making gel of desired percentage.

Storage: 4° C

Gel	Separating					Stacking
Volume	10 ml					5 ml
Acrylamide Conc.	6%	8%	10%	12%	15%	5%
Deionised water	5.4	4.7	4.1	3.4	2.4	3.45
30% Acrylamide	2.0	2.7	3.3	4.0	5.0	0.83
Separating gel buffer	2.5	2.5	2.5	2.5	2.5	--
Stacking gel buffer	--	--	--	--	--	0.63
20% APS	0.05	0.05	0.05	0.05	0.05	0.025
TEMED	0.008	0.006	0.004	0.004	0.004	0.005

Quality control assays :

- Performance Test: 12% SDS-PAGE was prepared with acrylamide/bisacrylamide solution and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer.

Note: Neurotoxic , always handle with gloves

References :

- https://cshprotocols.cshlp.org/content/2006/1/pdb.rec10481

Ordering Information:

Cat. No	PI No.	Product Description
3100181001730	ER01	Acrylamide/Bis-acrylamide solution 30%, 19:1 ratio, 100 ml

Acrylamide/ Bis-acrylamide solution 30%, 29:1 ratio

Description :

Acrylamide/Bisacrylamide Solution 29:1 ratio is ready to use Acrylamide Solution for preparation of Polyacrylamide Gels for protein electrophoresis. The stock solution can be used for making gel of desired percentage.

Storage: 4° C

Gel	Separating					Stacking
Volume	10 ml					5 ml
Acrylamide Conc.	6%	8%	10%	12%	15%	5%
Deionised water	5.4	4.7	4.1	3.4	2.4	3.45
30% Acrylamide	2.0	2.7	3.3	4.0	5.0	0.83
Separating gel buffer	2.5	2.5	2.5	2.5	2.5	--
Stacking gel buffer	--	--	--	--	--	0.63
20% APS	0.05	0.05	0.05	0.05	0.05	0.025
TEMED	0.008	0.006	0.004	0.004	0.004	0.005

Quality control assays :

Performance Test: 12% SDS-PAGE was prepared with acrylamide/bisacrylamide solution and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer.

Note: Neurotoxic , always handle with gloves

References :

- https://cshprotocols.cshlp.org/content/2006/1/pdb.rec10481

Ordering Information:

Cat. No	PI No.	Product Description
3100281001730	ER02	Acrylamide/Bis-acrylamide solution 30%, 29:1 ratio, 100 ml
3100210001730	ER02B	Acrylamide/Bis-acrylamide solution 30%, 29:1 ratio, 1000 ml

Ammonium persulphate (APS)

Description :

Ammonium persulfate is used for preparation of polyacrylamide gels as polymerization initiator.

- **Formula :** $(NH4)_2S_2O_8$
- **Molecular Weight :** 228.2
- **Appearance :** White powder.

Storage: Room Temperature (Desiccate)

Notes: Ammonium persulfate decays slowly in solution, so replace the stock solution every 2-3 weeks

- Dissolve the content of each vial (i.e 100 mg pack) in 0.5 ml deionized water.
- Incase 10 g pack, weigh 100 mg in 0.5 ml deionized water.Store the resuspended samples at 4°C, use within a week after reconstitution.

Ordering Information:

Cat. No	PI No.	Product Description
3171100101730	ER11B	Ammonium persulphate (APS) (Bulk pack), 10 g
3171100077730	ER11	Ammonium persulphate (APS) (Jumbo pack), 10 X 100g

TEMED

Description :

TEMED - N, N, N', N' tetramethylethylenediamine Light sensitive, store in dark. 5 ml Polymerization accelerator. Ammonium persulfate is used as a catalyst for the copolymerization of acrylamide and bisacrylamide gels. The polymerization reaction is driven by free radicals generated by an oxido-reduction reaction in which a diamine (e.g., TEMED) is used as the adjunct catalyst

Store: Room Temperature

Reference :

- https://cshprotocols.cshlp.org/content/2006/1/pdb.rec8237.full

Ordering Information:

Cat. No	PI No.	Product Description
3171280051730	ER12S	TEMED, 5 ml

Thimerosal

Description :

Thiomersal (also known as thimerosal, Merthiolate) is an organomercurial derivative of ethyl mercury that has been used very widely, and for a very long time, as a preservative in vaccines in their bulk formulations. Its primary purpose has been to prevent microbial growth in the product during storage and use. It has also been used during vaccine production both to inactivate certain organisms and toxins and to maintain a sterile production line.

Store: Room temperature ($_{15}$°-$_{30}$°C).

Ordering Information:

Cat. No	PI No.	Product Description
2131600011730	FC104	Thimerosal, 1kG

Tris-SDS, pH 8.8

Description :

Tris–SDS pH 8.8 is a ready to use buffer used for preparation of Polyacrylamide Gel (i.e Separating Gel Mix) used for analysis of proteins. Its pKa of 8.1 makes it an excellent buffer in the 7-9 pH range. This makes it a good choice for most biological systems. SDS in the buffer helps keep the proteins linear. In the resolving gel, the pH changes from 6.8 to 8.8 and the pores are smaller. As pH increases, the N-terminal amino groups are deprotonated. Amino acids and proteins are more negatively charged at equilibrium than in stacking gel. As a result, glycine moves faster than proteins and helps the protein to resolve faster with .

Quality control assays :

- Performance Test: 12% SDS-PAGE was prepared with acrylamide/bis-acrylamide solution and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer.

Store: 4°C

Ordering Information:

Cat. No	PI No.	Product Description
3100481001730	ER04	Tris-SDS, pH 8.8, 100 ml, 1.5M

Tris-SDS, pH 6.8

Description :

Tris –SDS pH 6.8 is use to prepare Stacking Gel Solution of Polyacrylamide Gel Electrophoresis used for analysis of proteins. Stacking gel is a low concentrated polyacrylamide gel that is placed on the top of more concentrated resolving gel (separating gel) in SDS-PAGE technique. The stacking gel is used to improve the resolution of electrophoresis. The resolution increases because of the difference between concentrations of stacking gel and resolving gel that effect on the proteins in the sample. Since the concentration of polyacrylamide in stacking gel is low, the pore size is higher. This also helps in increasing the separation.

The stacking gel is a loose polyacrylamide gel with big pores of about 5% polyacrylamide. These pores do not act as a considerable barrier for large protein molecules. Hence this gel affects slightly on the mobility of those proteins. This makes separation according to the mobility and size of protein by concentrating them in between two gels. The pH of the stacking gel is 6.8. Its pH is acidic than that of resolving gel by 2 pH units. This pH implies a lower ionic strength hence a higher electrical resistance. This provokes the mobility of proteins than other charged particles present in the gel.

Quality control assays :

- Performance Test: 12% SDS-PAGE was prepared with Tris SDS pH 8.8 and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer.

Store: 4°C

Ordering Information:

Cat. No	PI No.	Product Description
3100581001730	ER05	Tris-SDS, pH 6.8, 100 ml , 1M

Tris-glycine-SDS Buffer

Description :

Tris –Glycine SDS Buffer (Gel Running Buffer) is used for electrophoresis of protein sample on polyacrylamide gel. Solution is supplied as 10X Concentration.

Quality control assays :

- Performance Test: 12% SDS-PAGE was prepared with acrylamide/bisacrylamide solution and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer

Storage: Room Temperature • Do not store in the refrigerator

References :

• https://cshprotocols.cshlp.org/content/2014/7/pdb.rec081117.full

Ordering Information:

Cat. No	PI No.	Product Description
3100690011730	ER06	Tris-glycine-SDS Buffer, 1000 ml, 10X

Sample Loading Buffer for SDS PAGE

Description :

Sample Loading Buffer is required to electrophorese protein sample in denatured condition and the blue color dye also helps to track the running status of the samples at any point of time. The solution is supplied at 5X Concentration.

Quality control assays :

- Performance Test: 12% SDS-PAGE was prepared with acrylamide/bisacrylamide solution and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer

References :

- Modification of the Laemmli Sodium Dodecyl Sulfate–Polyacrylamide Gel Electrophoresis Procedure to Eliminate Artifacts on Reducing and Nonreducing Gels.

Store: 4°C

Ordering Information:

Cat. No	PI No.	Product Description
3100780101730	ER07	Sample Buffer for SDS PAGE (2ml x 5 Nos), 5X

10X Tris Tricine SDS Buffer

Description :

Tris-Tricine-SDS running buffer is the combination of Cathode (upper reservoir) buffer and Anode (lower reservoir) buffer for SDS-polyacrylamide gel electrophoresis of proteins using the Schagger and von Jagow method. The Schagger and von Jagow method is designed for the separation of small molecular weight proteins. It differs from the Laemmli method in that the glycine is replaced with tricine.

Quality control assays :

- Performance Test: 16.5% SDS-PAGE was prepared with acrylamide/bisacrylamide solution and Protein Molecular Weight Marker, Lower Range (PMWL) was electrophoresed. Sharp, well separated protein bands of PMWL were observed on staining with Brilliant Blue R Gel Stainer.

Storage: Room Temperature

Ordering Information:

Cat. No	PI No.	Product Description
3103782501730	ER37	10X Tris Tricine Buffer, 250 ml

Coomassie Gel Destainer

Description :

Coomassie brilliant blue R-250 based dye stains protein bands on polyacrylamide gel reversibly. An optimal destaining with Coomassie Gel Destainer, improves the sensitivity, thereby leading to better visualization of stained protein bands on the gel.

Destainer is supplied at 4X concentration.

Storage: Room Temperature

Note: Do not store in the refrigerator, as it may cause precipitation.

Procedure :

- Gel staining: Stain the polyacrylamide gel by gently shaking with Coomassie Gel Stainer on a rocker for 1-2 hours. Overnight staining can be done if required. For a mini gel typically 20-40ml of stainer is required. For better results use Coomassie Gel Stainer at 1X concentration.
- Gel destaining: Dilute the 4X Coomassie Gel Destainer to 1X with deionized water. Rinse the gel after staining, with deionized water and destain with several changes of 1X Destainer until the bands become visible against a clear background.

Quality control assays :

- Sensitivity: Protein (BSA) was detected after 2 hours of staining followed by destaining of 12% SDS Polyacrylamide Gel.

Ordering Information:

Cat. No	PI No.	Product Description
3103385001730	ER33	Coomassie Gel Destainer, 500 ml , 4X

Coomassie Gel Stainer

Description :

Coomassie Gel Stainer is a brilliant blue R-250 based protein stain for the detection of protein bands on polyacrylamide gels. It forms strong but non-covalent intensely coloured complexes with proteins, mostly based on a combination of van der Waal's forces and electrostatic interactions. Coomassie Gel Stainer is highly sensitive and can detect as little as 0.5µg protein per cm3 of the gel. Stainer is supplied at 2X concentration.

Storage: Room Temperature Do not store in the refrigerator, as it may cause precipitation.

Features: Easy detection, higher sensitivity and reversible staining.

Procedure :

- Gel rinsing: Place the gel in a suitable tray and rinse with deionized water 3 times for 5 minutes each, to remove the SDS in the gel to avoid background.
- Gel staining: Dilute 2X Coomassie Gel Stainer to 1X with deionized water. For a mini gel typically 20-40 ml of stainer is required. Gently shake the gel by placing the tray on a rocker for 1-2 hours. Overnight staining can be done if required.
- Gel destaining: For optimal results destain the gel with several changes of 1X Coomassie gel destainer until the bands become visible against a clear background.

Quality control assays :

- Sensitivity: Protein (BSA) was detected after 2 hours of staining followed by destaining of 12% SDS Polyacrylamide Gel.

Ordering Information:

Cat. No	PI No.	Product Description
3103485001730	ER34	Coomassie Gel Stainer, 500 ml , 2X

10 X PBS, pH 7.2

Description :

Phosphate buffered saline (abbreviated PBS) is a buffer commonly used as a diluent as well as Wash Buffer in ELISA applications. It is supplied at 10X concentration. Dilute to 1X before use.

Store: 4° C

Direction to Use: Dilute by adding 1 part 10X PBS to 9 parts of autoclaved deionized water. Mix and use.

Note: Buffer may precipitate and form clear crystals at low temperature. Bring the buffer to room temperature to dissolve any precipitate before use.

Quality control assays :

Analysis	Specification
Appearance	Clear Colourless liquid
pH@25°C (1X Concentration)	7.2±0.2

Ordering Information:

Cat. No	PI No.	Product Description
3101580101730	ELR7	10 X PBS, pH 7.2, 1000 ml

10X ELISA Blocking buffer (BSA)

Description :

ELISA Blocking Buffer is formulated using Phosphate Buffered Saline (PBS) containing 0.02% Sodium azide as preservative along with Bovine Serum Albumin (BSA). It aids in minimizing non-specific reactions in Western Blotting, ELISA and immunohistochemistry-based protocols.

Storage: 4°C:

Note:
- DO NOT REUSE Blocking Buffer.
- The blocking buffer is most compatible with high protein binding ELISA plates.
- For blotting membranes, immerse membranes completely for 2-4 hours at room temperature or overnight at 4° C.

Ordering Information:

Cat. No	PI No.	Product Description
3200981001730	ELR9	10X ELISA Blocking buffer (BSA), 100 ml

ELISA Blocking Buffer (Casein)

Description :

ELISA Blocking Buffer is formulated using Phosphate Buffered Saline (PBS) containing 0.02% Sodium azide as preservative along with Casein powder (supplied separately). It aids in minimizing non specific reactions in Western Blotting, ELISA and immunohistochemistry-based protocols.

Storage: 4°C

Note:
- DO NOT REUSE Blocking Buffer.
- Add Casein powder just before use.
- To increase the solubility add 1 N NaOH drop wise if required.
- The blocking buffer is most compatible with high protein binding ELISA plates.
- For blotting membranes, immerse membranes completely for 2-4 hours at room temperature or overnight at 4° C.

Ordering Information:

Cat. No	PI No.	Product Description
3200481001730	ELR4	ELISA Blocking Buffer (Casein), 100 ml

2X ELISA Blocking Buffer (Gelatin)

Description :

ELISA Blocking Buffer is formulated using Phosphate Buffered Saline (PBS) containing 0.02% Sodium azide as preservative along with Gelatin powder (supplied separately). It aids in minimizing non specific reactions in Western Blotting, ELISA and immunohistochemistry-based protocols.

Storage: Room Temperature

Note:
- DO NOT REUSE Blocking Buffer
- The blocking buffer is most compatible with high protein binding ELISA plates.
- For blotting membranes, immerse membranes completely for 2-4 hours at room temperature or overnight at 4° C.

Ordering Information:

Cat. No	PI No.	Product Description
3200681001730	ELR6	2X ELISA Blocking Buffer (Gelatin), 100 ml

5X Blot Transfer Buffer

Description :

The standard Transfer Buffer for Western Blots, called Towbin buffer which contains 25mM Tris, 192 mM Glycine, pH 8.3 with 5% methanol and 0.1% SDS. This Transfer Buffer has both low ionic strength and low conductivity, which is optimal for tank wet blotting and for semi dry apparatus. Blot Transfer Buffer is supplied at 5X concentration.

Storage: Room Temperature

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PROTEOMICS

BUFFERS

Quality control assays :

- Performance Test: Protein Molecular Weight Marker, Medium Range (PMWM) was separated on 12% SDS-PAGE, were blotted on to Nitrocellulose Membrane using 1X Blot Transfer Buffer. 90-95 % of Transfer achieved for Proteins between 14.3 kDa - 97.4 kDa which were detected as red color band after staining for 5-10 minutes in Ponceau S Stain followed by destaining with water.

Ordering Information:

Cat. No	PI No.	Product Description
3103585001730	ER35	5X Blot Transfer Buffer, 500 ml

Ezee blue Gel Stainer (No destaining required)

Description :

Ezee Blue Gel Stainer is a ready-to-use brilliant blue G-250 based protein stain for 'one-step' detection of protein bands on polyacrylamide gels. The staining is done in 30 to 60 minutes and no destaining is required. Fixing is also not required prior to staining. Ezee Blue Gel Stainer stains only proteins with relatively clean background, so protein bands are seen during staining. An optional destaining with water can be done to improve the sensitivity.

Storage: Room Temperature
- Do not store in the refrigerator.

Quality control assays :

- Performance Test: 12% SDS-PAGE was prepared with acrylamide/bisacrylamide solution and Protein Molecular Weight Marker, Medium Range (PMWM) was electrophoresed. Sharp, well separated protein bands of PMWM were observed on staining with Ezee Blue Gel Stainer.

Ordering Information:

Cat. No	PI No.	Product Description
3102485001730	ER24	Ezee blue Gel Stainer (No destaining required), 500 ml

Ready to Use Ponceau-S Stain

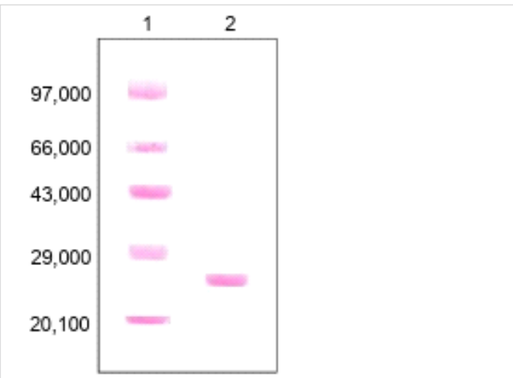
Description :

The ready-to-use Ponceau S stain is for rapid and reversible detection of protein bands transferred on to nitrocellulose, PVDF and cellulose acetate membranes. Staining can be done in 5-10 minutes following which lanes could be cut out and probed with different antibodies. Destaining is achieved by rinsing the membrane strips with excess of 1X PBS. The stain is highly sensitive and can detect even low molecular weight proteins and peptides transferred onto nitrocellulose membrane. The resultant red bands can be photographed upon fixation.

Storage: Room Temperature
- Do not store in the refrigerator.

Quality control assays :

- Proteins separated on SDS-PAGE were blotted onto nitrocellulose membrane. The membrane was stained for 5-10 minutes in Ponceau S. The protein bands appeared red in colour on the membrane when rinsed with 1X PBS.



PMW-M and Protein stained with Ponceau-S and fixed with Ponceau-S fixative

Ordering Information:

Cat. No	PI No.	Product Description
2652982501730	ER29	Ready to Use Ponceau-S Stain, 250 ml

Protein A - CL Agarose

Description :

Purified Protien A is covalently coupled to crosslinked beaded agarose by cyanogen bromide activation method. The product is supplied as 1:1 suspension in 10mM sodium phosphate, pH 7.2 with 0.02% sodium azide. Specifications:

Storage: 4° C · Do not freeze.

Quality control assays :

- Performance Test: The binding capacity of Protein A CL-Agarose for human IgG was determined as follows.

Column packed	:	**0.5 ml**
Normal human serum loaded	:	**2 ml**
Binding buffer	:	**20 mM phosphate buffer pH 7.2**
Binding buffer volume	:	**5 ml (10 bed volumes)**
Wash buffer	:	**20 mM phosphate buffer pH 7.2**
Wash buffer volume	:	**12.5 ml (25 bed volumes)**
Elution buffer	:	**0.1 M glycine buffer pH 3.0**
Elution buffer volume	:	**5 ml (10 bed volumes), 1 ml fractions**

Ordering Information:

Cat. No	PI No.	Product Description
2110180011730	LIA1S	Protein A - CL Agarose, 1 ml
2110180051730	LIA1M	Protein A - CL Agarose, 5 ml

Glutathione - CL Agarose

Purification of Glutathione – S Transferase (GST) fusion proteins using glutathione-agarose beads is well documented (*). Glutathione is immobilized on cross-linked, beaded 4% agarose by epoxy method using a 10-atom spacer. GST fusion proteins require only single step purification with Glutathione – CL Agarose column. Cellular lysate is passed over the column and the bound GST fusion protein is eluted using a buffer containing reduced glutathione.

Column packed	:	1.0 ml
Clarified GST lysate loaded	:	10 ml
Binding buffer	:	15 mM Sodium phosphate, pH 7.4 and 0.15 M NaCl.
Binding buffer volume	:	5 ml (5 bed volumes)
Wash buffer	:	15 mM Sodium phosphate, pH 7.4 and 0.15 M NaCl.
Wash buffer volume	:	20 - 25 ml (20 – 25 bed volumes)
Elution buffer	:	50 mM Tris, pH 8.0 containing 5 mM reduced glutathione.
Elution buffer volume	:	10 ml (10 bed volumes). 1 ml fractions

References :

- Frangioni, John V. and Benjamin G. Neel (1993). Solubilization and purification of enzymatically active glutathione s-transferase (pGEX) fusion proteins. Anal. Biochem. 210, 179-187.
- Simons, Peter C. and David L.VanderJagt (1977). Purification of gluathione S-transferases for human liver by glutathione-affinity chromatography. Anal. Biochem. 82, 334-341.

Ordering Information:

Cat. No	PI No.	Product Description
2110480051730	LIA35	Glutathione - CL Agarose, 5 ml

Nickel - CL Agarose

Description :

Metal chelate affinity chromatography is gaining wide spread popularity for its use in protein purification. In addition, the technique has been used in analytical applications involving metal ion transfer between proteins,1 peptide mapping and amino acid analysis2 and studies of protein surface structure.3 The development of vectors that allow the expression of 6xHis fusion proteins has lead to the use of immobilized nickel (Ni+2) and cobalt (Co+2) columns in the purification of these recombinant fusion proteins.

The immobilized metals interact with proteins primarily through surface histidine residues. Another example of very strong metal ion/group-specific interaction is that between ferric iron (Fe+3) and compounds that contain phosphate groups.5 In general, it is best to perform the chromatography in the presence of a high ionic strength (0.5-1.0 M NaCl) binding buffer. This condition works to minimize nonspecific electrostatic interaction between the metal ion and the charged proteins in the sample. When little is known about the protein of interest, immobilized copper (Cu+2) is a good metal ion to try in an initial purification protocol. If the protein is difficult to elute under non-denaturing conditions, other metal ions can be utilized.

Storage: 4° C Do not freeze

Binding capacity of Nickel - CL Agarose was determined as follows:

1. Matrix	:	Cross linked 4% beaded agarose
2. Ligand	:	Nickel
3. Coupling	:	Chelaed through immobilized ininodiacetic acid
4. Column paked	:	1.0 ml.
5. Load	:	Fusion Protein
6. Binding buffer	:	500 mM NaC1, 200 mM Sodium Po4 (pH7.0)
7. Binding vol	:	5-10 (B.V)
8. Wash buffer	:	Same as Binding buffer at 20 m Imidazole
9. Wash buffer	:	20-25 B.V-20 ml
10. Elution Buffer:		200 mM EDTA Imidazole
11. Elution Buffer vol:		10 BV (10 ml) 1 ml fraction
12. pH Stability	:	3-10
13. Storage	:	In distilled water with 0.5% sodium azide

References :

- Muszynska, G., Zheo, Y.-J. and Porath, J. (1986). Carboxypeptidase A: a model for studying the interaction of proteins with immobilized metal ions. J. Inorg. Biochem. 26, 127-135.
- Yip, T.T., Nakagawa, Y. and Porath, J. (1989). Evaluation of the interaction of peptides with Cu(II), Ni(II), and Zn(II) by high-performance immobilized metal ion affinity chromatography. Anal. Biochem. 183, 159-171.
- Hemdan, E.S., Zhao, Y.-J., Sulkowski, J. and Porath, J. (1989). Surface topography of histidine residues: a facile probe by immobilized metal ion affinity chromatography. Proc. Natl. Acad. Sci. USA 86, 1811-1855.
- Hochuli, E., Dobeli, H. and Schacher, A. (1987). New metal chelate adsorbent selective for proteins and peptides containing neighbouring histidine residues. J. Chromatogr. 411, 177-184.
- Andersson, L. and Porath, J. (1986). Isolation of phosphoproteins by immobilized metal (Fe +3) affinity chromatography. Anal. Biochem. 154, 250-254.

Ordering Information:

Cat. No	PI No.	Product Description
2110580051730	LIA37	Nickel - CL Agarose, 5 ml

Protein A - CL Agarose Pre-packed column

Description :

Purification of immunoglobulins from antisera, ascites fluid or normal sera that can binds to Protein A. 1-6 The Column Genei's prepacked columns are made of inert polystyrene, which is biocompatible, and non-reactive with biomolecules. The affinity matrices are packed in the column with top and bottom porous frits which allow free flow of solvents and prevents column getting dry when not in use. The columns can be used without any appliances by manually adding the sample or buffers. Affinity matrix Genei's, prepacked column, Catalogue # PC201 is packed with 2 ml cross-linked 6% beaded agarose coupled to Protein A. The column provides simple and easy method for isolation of immunoglobulin-G fraction from biological fluids. Protein-A immobilized gel matrix has been widely used for the purification antibodies and normal immunoglobulins.

Column Characteristics

1. Bed Volume	:	2 ml
2. Column Size (dia. X height)	:	8mm X 45mm
3. Matrix	:	Cross Linked 6% beaded agarose
4. Ligand	:	Protein A
5. Coupling	:	By CNBr method
6. Ligand Amont	:	4.4 mg/ml drained gel.
7. Binding Capacity	:	13.1 mg/ml drained gel.
8. pH Stabillty	:	5 - 10
9. Stoge	:	At neutral pH with 0.05% sodium azide

References :

- Ey P.L. et al, (1978) Biochemistry 15: 429-436.
- Richman D.D. et al, (1982) J. Immunol 128: 2300-2305.
- Lindmark R. et al, (1983) J. Immunol Method 62: 1-13.
- Jungbauer A. et al, (1989) J. Chrom. 476: 257-268.
- Hermanson, G.T. et al, (1992) immobilized affinity Techniques, Academic, San Diego, CA.
- Kerr M.A. et al, (1994) in immunochemistry lab fax Scientific, Oxford, U.K. pp 83-114.

Ordering Information:

Cat. No	PI No.	Product Description
2120100011730	PC201	Protein A - CL Agarose Pre-packed column, 2 ml

Desalting Column

Description :

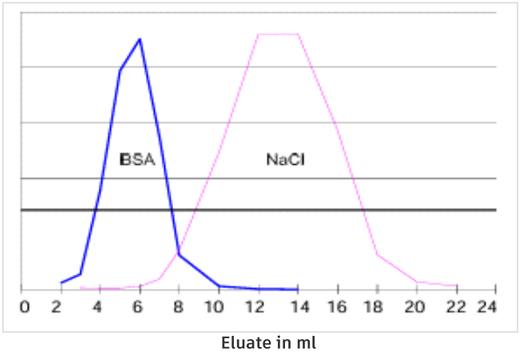
The Desalting columns are prepared by packing size exclusion matrix. The matrix is made of beads of cross-linked dextran with epichlorohydrin. The matrix allows excellent resolution with good flow rates. The fractionation range for globular proteins is between 1,000 – 5,000 Da, with an exclusion limit of approximately 5,000 Da. This ensures group separations of proteins or peptides larger than 5,000 Da, from those with a molecular weight less than 1,000 Da. Desalting column can be used with aqueous solutions in the pH range 2-12. It is stable with all commonly used buffers, solutions of urea (8M), Guanidine hydrochloride (6M), and all non-ionic and ionic detergents. Lower alcohols (methanol, ethanol, propanol) may be used in the buffer or the sample, but we recommend that the concentration be kept below 20% (v/v).

Desalting columns are pre-packed, ready-to-use columns for group separation of high and low molecular weight proteins and peptides.

Features

- Suitable for buffer exchange before or after different chromatographic steps,
- Removal of low molecular weight contaminants and Removal of reagents used to terminate a reaction

Profile of BSA and NaCl on Ds03 column



2 ml BSA 10 mg/ml in 1 M NaCl loaded on 10 ml column and 1 ml fractions collected

References :

- J. Porath and P Flodin, Gel Filtration: A method for desalting and group separation. Nature, 183 (1959)1657– 1659.
- Gel Filtration: Principles and Methods, 7th edition, Pharmacia Biotech, 1997.
- L. Hagel, (1989) Gel Filtration in Protein Purification, Principles, High Resolution Methods, and Applications. J.- C. Janson and L. Rydén (editors), VCH Publishers Inc., New

Ordering Information:

Cat. No	PI No.	Product Description
2122300041730	DS03	Desalting Column (10 ml), 4 Nos

CD4 Monoclonal Antibody

Description :

The CD4 antigen is involved in the recognition of MHC class II molecules and is a co-receptor for HIV. CD4 is primarily expressed in a subset of T-lymphocytes, also referred to as T helper cells, but may also be expressed by other cells in the immune system, such as monocytes, macrophages, and dendritic cells. At the tissue level, CD4 expression may be detected in thymus, lymph nodes, tonsils, and spleen, and in specific regions of the brain, gut, and other non-lymphoid tissues. CD4 functions to initiate or augment the early phase of T-cell activation through its association with the T-cell receptor complex and protein tyrosine kinase, Lck. It may also function as an important mediator of direct neuronal damage in infectious and immune-mediated diseases of the central nervous system. Multiple alternatively spliced transcripts have been identified in this gene.

Applications :

Antibodies that detect CD4 can be used in several scientific applications, including Flow Cytometry, Immunohistochemistry, Western Blot, Immunocytochemistry and Immunoprecipitation. These antibodies target CD4 in Human, Mouse, Rat, Canine and Avian samples. These antibodies have been verified by Relative expression and Cell treatment to confirm specificity to CD4.

Western blot titer: 1:10 – 1:100

Western blot analysis of CD4 was performed by loading 20 µg of Jurkat and CTLL cell lysates onto an SDS polyacrylamide gel. Proteins were transferred to a PVDF membrane and blocked at 4ºC overnight. The membrane was probed with a CD4 monoclonal at a dilution of 1:20 overnight at 4° C, washed in TBST, and probed with an HRP-conjugated secondary antibody for 1 hr at room temperature in the dark. Chemiluminescent detection was performed using ECL Western Blotting Substrate.

Store: -20° C

- Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Ordering Information:

Cat. No	PI No.	Product Description
3110492501730	MAB1	CD4 Monoclonal Antibody, 200µl

Polyclonal Antibodies

Introduction :

Antibodies to human and animal whole serum are developed in rabbit and goat. The antibodies are evaluated by IEP and ODD. These antibodies are used in immunological techniques as controls and in preparation of immunological reagents. The antibodies are presented as whole serum.

Nomenclature of polyclonal antibody in this catalogue follows the syntax "Host anti antigen". Thus "Rabbit anti human IgG" refers to antibody against "Human IgG" raised in Rabbit. Genei's polyclonal antibodies are raised against pure antigen using carefully selected animals and optimal long-term immunization protocol. The antibodies are raised in rabbit or goat and isolated from serum.

Quality control assays :

- Quantitative Precipitin Assay: Antibody concentration in the serum was determined by quantitative precipitin assay.
- Immunoelectrophoresis: Specificity of the antiserum to human IgG was determined by Immunoelectrophoresis using human serum.

Rabbit anti human IgG (whole serum)

The antiserum is developed in rabbit using IgG isolated from normal human serum as the immunogen. The antiserum is filter sterilized and frozen.

Storage: -20° C

- Store in smaller aliquots to avoid repeated freeze-thaw cycles

Quality control assays :

- Ouchterlony double diffusion: The presence of Rabbit Anti-human IgG was confirmed by ODD.
- Immunoelectrophoresis: Specificity of the antiserum to human IgG was determined by Immunoelectrophoresis using human serum.

Goat anti mouse IgG (whole serum)

The antiserum is developed in goat using IgG isolated from normal mouse serum as the immunogen. The antiserum is filter sterilized and frozen.

Storage: -20°C Store in smaller aliquots to avoid repeated freeze-thaw cycles

Quality control assays :

- **Ouchterlony double diffusion:** The presence of goat anti mouse IgG was confirmed by
- **Immunoelectrophoresis:** Specificity of the antiserum to mouse IgG was determined by immunoelectrophoresis using mouse serum.

Rabbit anti human serum (whole serum)

The antiserum is developed in rabbit using normal human serum as the immunogen. The antiserum is filter sterilized and frozen.

Storage: -20°C Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Quality Control Assay :

- **Immunoelectrophoresis:** Presence of antibody to human serum proteins in the antiserum was checked by Immunoelectrophoresis using normal human serum.
- Multiple arcs of precipitin lines seen for albumin, IgG and IgM.

Ordering Information:

Cat. No	PI No.	Product Description
0600380051730	AS3M	Goat anti-human IgG (whole serum), 5 ml
0600280051730	AS2M	Rabbit anti-human IgG (whole serum), 5 ml
0600580051730	AS5M	Goat anti-rabbit IgG (whole serum), 5 ml
0600780051730	AS7M	Rabbit anti-bovine IgG (whole serum), 5 ml
0600680251730	AS6L	Goat anti-mouse IgG (whole serum), 25 ml
0601280051730	AS22S	Rabbit anti human serum, 5 ml

Guinea Pig Serum

Description :

Guinea Pig Serum are obtained from non-haemolyzed blood that is collected from healthy animals. The blood is centrifuged, and the serum is collected. This product was aseptically filtered through a $_{0.22}$-micron filter into clean, pre-sterilized containers. And supplied in frozen condition. Each manufactured batch is rigorously controlled, from the collection of serum and throughout all stages of its treatment and production through to final packaging on our premises.

Applications :

Guinea pig serum is suitable blocking agent and negative control in immunoassays. Guinea Pig Serum is used as a supplement to cell culture media. Guinea Pig Serum is also suitable for use as a component of bioassays, immunoassays, or enzyme assays. Guinea Pig Serum provides a broad spectrum of macromolecules, carrier proteins for lipoid substances and trace elements, attachment and spreading factors, low molecular weight nutrients, and hormones and growth factors that promote cell growth and health. These serums provide excellent growth promoting components for tissue culture and microbiological organisms. Guinea Pig Serum is ideal for investigators in Cancer, Immunology, and Cell Biology research.

Store: -$_{20}$°C

- Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Ordering Information:

Cat. No	PI No.	Product Description
3110482501730	NS2CD4	Guinea Pig Serum, 50ml

Goat Serum

Normal goat serum is prepared from healthy non-immunized goats. Normal serum is filter sterilized, and supplied in frozen condition with 0.05% sodium azide.

Serum is use as blocking agent for Histological staining non-specific antibody binding in tissue and cell staining, and in other applications of antibodies. Serum can be used directly for blocking, or as a constituent of a blocking

Storage: -20°C

- Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Quality control assays :

- Ouchterlony double diffusion (ODD): The specificity of serum was tested by ODD.

Rabbit Serum

Normal Rabbit serum is prepared from healthy non-immunized goats. Normal serum is filter sterilized and supplied in frozen condition with 0.05% sodium azide.

Serum is use as blocking agent for Histological staining non-specific antibody binding in tissue and cell staining, and in other applications of antibodies. Serum can be used directly for blocking, or as a constituent of a blocking

Storage: -20°C

- Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Quality control assays :

Ouchterlony double diffusion (ODD): The specificity of serum was tested by ODD.

References :

- In Vitro Cell Dev Biol Anim. 2017 Jul 19;:null - PubMed
- Proc Soc Exp Biol Med. 1971 Nov;138(2):432-7 - PubMed
- PDA J Pharm Sci Technol. 2010 Sep-Oct;64(5):458-64 - PubMed
- Biologicals. 2010 Mar;38(2):211-3 - PubMed

Ordering Information:

Cat. No	PI No.	Product Description
1630180101730	NS1	Goat Serum, 10 ml
1630380101730	NS3	Rabbit Serum, 10 ml

Immunoglobulin-G

Immunoglobulin-G (G-IgG) is fractionated from normal serum by ammonium sulfate precipitation and further purified by an ion exchange chromatography column.

IgG was constituted in 0.01M sodium phosphate pH 7.2 and 0.15M NaCl. IgG is supplied as lyophilized powder.

Storage: 4°C prior to reconstitution.

- Reconstitute with 1 ml of sterile deionized water.

Storage: -20°C. After reconstitution.

- Store in smaller aliquots to avoid repeated freeze-thaw cycles.

Quality control assays :

- Ouchterlony Double Diffusion: Identity of -IgG was confirmed by ODD test.
- SDS-PAGE: The purity of IgG by SDS-PAGE.
- Immunoelectrophoresis: Specificity of IgG was determined by immunoelectrophoresis

Ordering Information:

Cat. No	PI No.	Product Description
1620180101730	IGP1	Goat IgG, 10mg
1620280101730	IGP2	Human IgG, 10mg
1620380011730	IGP3	Mouse IgG, 1mg
1620480101730	IGP4	Rabbit IgG, 10mg
1620580101730	IGP5	Bovine IgG, 10mg

Affinity Purified IgG

Antiserum to Animal immunglobulin-G (IgG) is developed in Animal-2 using purified Animal- 1 as the immunogen. Antibody, specific to Animal-1 IgG is isolated from the antiserum using IgG from affinity column, Animal-1 IgG CL agarose.

The antibody is supplied as a solution in 10 mM sodium phosphate (pH 7.2), 150 mM sodium chloride.

Storage: -20°C

Note: Store in smaller aliquots to avoid repeated freeze – thaw cycles

Quality control assays :

- SDS-PAGE: The purity of antibody confirmed by SDS-PAGE.

Immunoelectrophoresis:

- Specificity of the affinity purified anitibody was determined by immunoelectrophoresis using normal serum. A single precipitation arc was seen.

Ordering Information:

Cat. No	PI No.	Product Description
0610180051730	AA1M	Rabbit-anti goat IgG (Affinity Purified), 5mg
0610280051730	AA2M	Rabbit-anti human IgG (Affinity Purified), 5mg
0610380051730	AA3M	Goat-anti human IgG (Affinity Purified), 5 mg
0610580051730	AA5M	Goat-anti rabbit IgG (Affinity Purified), 5 mg
0610680051730	AA6M	Goat-anti mouse IgG (Affinity Purified), 5 mg
0610780051730	AA7M	Rabbit anti Bovine IgG (Affinity Purified), 5mg

Alkaline Phosphatase Conjugates

Antibody specific to Animal-1 IgG is isolated by affinity purification from the antiserum developed in Animal -2. The affinity isolated antibody is then conjugated with ALP, by maleimide method. 0.1% sodium azide is added as preservative.

Specification: Antibody concentration 0.5-1.5 mg/ml

Quality control assays :

- Direct ELISA (dELISA): Microtiter plates were coated with purified Animal IgG. 100 µl of diluted ALP conjugate was allowed to bind for 30 minutes at 37° C. Concentration of bound conjugate was estimated directly using p-nitro phenyl phosphate, 1 mg/ml in 1 M diethanolamine pH 9.8. The dilution which corresponds to a reading of 1.0 to 1.2 at 405 nm in ELISA reader is quoted as titer
- Western Blotting: Confirmed by Direct or Indirect ELISA

Ordering Information:

Cat. No	PI No.	Product Description
1100180011730	ALP1M	Goat anti-rabbit IgG - ALP, 1 ml
1100280011730	ALP2M	Goat anti-human IgG - ALP, 1 ml
1100480011730	ALP4M	Goat anti-mouse IgG - ALP, 1 ml
1100680011730	ALP6M	Rabbit anti-goat IgG - ALP, 1 ml
1100980011730	ALP9M	Rabbit anti-mouse IgG - ALP, 1 ml

Streptavidin - ALP

Streptavidin is conjugated with alkaline phosphatase, by maleimide method. 0.1% sodium azide is added as preservative. Specification: Activity of streptavidin 15 Units/mg. Protein concentration 1 mg/ml

Storage: 4° C

Do not freeze

Directions to use: Working dilution will depend on assay condition. Due to differences in assay systems, these titers may not reflect the user's actual working dilution.

Quality control assays :

- Indirect ELISA (dELISA): Microtiter plates were coated with purified Rabbit IgG at 5 µg/ml concentration (0.5 µg/100 µl) in 0.05M carbonate-bicarbonate buffer pH 9.6. Streptavidin ALP conjugate indirectly titrated by allowing to bind 100 µl of 1:10,000 diluted Goat anti Rabbit IgG biotin conjugate at 37° C for 30 minutes. Different dilution of streptavidin ALP conjugate was then added and incubated for 15 minutes at 37° C. ALP conjugate was estimated using p-nitro phenyl phosphate having concentration of 1 mg/ml in 1M diethanolamine pH 9.8. The dilution which corresponds to a reading of 1.0 to 1.2 at 405 nm in ELISA reader is quoted as titer. Indirect ELISA titer is 1:10000
- Western Blotting: Rabbit IgG detected indirectly using 10 µg of protein under reducing conditions on SDS-PAGE. The protein was then transferred to nitrocellulose membrane, blocked with 1% ovalbumin, incubated with Goat anti Rabbit IgG biotin conjugate 1:5000 diluted). Membrane was washed and incubated with streptavidin ALP conjugate and blot developed with BCIP/NBT (SFE2). Western Blot titer is 1:15000

Ordering Information:

Cat. No	PI No.	Product Description
1100575001730	ALP5	Streptavidin - ALP, 0.5 ml

GOLD CONJUGATE

Protein A Gold Conjugate

Staphylococcal Protein A contains five high-affinity binding sites that are capable of interacting with Fc region from IgG of several species. Protein A is affinity-isolated and covalently coupled to Colloidal Gold to produce Protein A Gold conjugate, which can be used in detection systems such as immunoblotting- western or dot blot.

Storage: 4° C

Quality control assays :

- Performance Test: Dot Blot

Ordering Information:

Cat. No	PI No.	Product Description
1130480011730	GA04	Protein A Gold Conjugate

Rabbit anti bovine IgG Gold Conjugate

Antibody specific to Bovine IgG is purified by affinity purification from the antiserum developed in rabbit. The antibody is then conjugated with Colloidal Gold, which can be used in detection systems such as immunoblotting western or dot blot. Specification:

Storage: 4° C

Quality control assays :

- Performance Test: Dot Blot

Ordering Information:

Cat. No	PI No.	Product Description
1130780011730	GA07	Rabbit anti bovine IgG Gold Conjugate

FLUORESCEIN CONJUGATES

Fluorescein and tetramethylrhodamine conjugates to protein or dextran were used to determine subcellular pH. The pH dependence of fluorescence of fluorescein isothiocyanate (FITC) conjugates could be described by a single proton dissociation (pKa' ~6.8). This allowed pH to be derived accurately from spectra using the simple Henderson-Hasslebach equation

LABEL	FITC
Excitation Maximum nm	494
Emission Maximum nm	520
Conjugation method	Thiocyanate
Molar Incorporation	2-5
Antibody or protein	1-1.2 mg/ml
Storage	4-C
Titre	PIFA 1:40 to 1:80
Applications	Immunohistochemistry Immunocytochemistry

- Antibody specific to Source-1 IgG is isolated by affinity purification from the antiserum developed in Source-2. The affinity isolated antibody is then conjugated with fluorescein isothiocyanate.
- **Specification:** Fluorescein to antibody molar ratio is definedAntibody concentration

Storage: 4°C

Note:
- For continuous use, keep the product refrigerated.
- For extended use, the product can be stored frozen in smaller aliquots.
- Repeated freeze-thaw cycles not recommended.

Ordering Information:

Cat. No	PI No.	Product Description
1120180011730	FTC1	Goat anti human IgG - FITC, 1ml
1120280011730	FTC2	Goat anti rabbit IgG - FITC, 1 ml
1120380011730	FTC3	Goat anti mouse IgG - FITC, 1 ml
1120480011730	FTC4	Rabbit anti goat IgG - FITC, 1ml
1120580011730	FTC5	Rabbit anti mouse IgG - FITC, 1ml

RHODAMINE CONJUGATES

Rhodamine 110 is a xanthene dye first synthesized by Maurice Ceresole over a century ago . Its fluorescence is bright and pH-insensitive, and its emission and excitation wavelengths are ideal for biological assays . To adapt rhodamine 110 as a reporter of enzymatic catalysis, we have employed the “trimethyl lock” as a trigger that couples fluorescence generation to a designated chemical reaction . The trimethyl lock is an o-hydroxydihydrocinnamic acid derivative in which steric interactions between three methyl groups leads to rapid lactonization to a dihydrocoumarin ring with concomitant release of an alcohol or amine.

The isothiocyanate derivative of the fluorophore, fluorescein, or rhodamine, is coupled to the amino groups of IgG antibody in a one-step procedure and excess label is removed by gel filtration.

Storage: 4° C

Ordering Information:

Cat. No	PI No.	Product Description
1150180011730	RTC1	Goat anti human IgG - TRITC, 1ml
1120680011730	RTC2	Goat anti rabbit IgG - TRITC, 1ml
1150380011730	RTC3	Goat anti mouse IgG - TRITC, 1ml
1120780011730	RTC4	Rabbit anti goat IgG - TRITC, 1ml
1120880011730	RTC5	Rabbit anti mouse IgG - TRITC, 1ml

PEROXIDASE CONJUGATES

Horseradish peroxidase (HRP) is an enzyme used to amplify signal in photometric assays by catalyzing the conversion of chromogenic or chemiluminescent substrates for the detection of targets such as proteins, carbohydrates, and nucleic acids.

Antibody specific to Source-1 IgG is isolated by affinity purification from the antiserum developed in Source-2. The affinity isolated antibody is then conjugated with horseradish peroxidase, by periodate method.

Ordering Information:

Cat. No	PI No.	Product Description
1140180011730	HPO1	Rabbit anti-human IgG - HRP, 1 ml
1140280011730	HPO2	Goat anti-human IgG - HRP, 1 ml
1140380011730	HPO3	Goat anti-rabbit IgG - HRP, 1 ml
1140480011730	HPO4	Rabbit anti-goat IgG - HRP, 1 ml
1140580011730	HPO5	Rabbit anti-mouse IgG - HRP, 1 ml
1140680011730	HPO6	Goat anti-mouse IgG - HRP, 1 ml
1140975001730	HPO9	Streptavidin - HRP, 0.5 ml
1141380011730	HPO13	Rabbit anti horse IgG - HRP, 1 ml
1141480011730	HPO14	Rabbit anti rat IgG - HRP, 1 ml
1142075001730	HPO20	Goat anti-rabbit IgG - HRP, Adsorbed with Bovine, Human, Mouse Serum Proteins (0.5ml)
1142175001730	HPO21	Goat anti-mouse IgG - HRP Adsorbed with Bovine, Human, Rabbit Serum Proteins (0.5ml)

ENZYME FOR ELISA

Alkaline phosphatase

Description :

Alkaline phosphatase serves as both a model enzyme for studies on the mechanism and kinetics of phosphomonoesterases and as a reporter in enzyme-linked immunosorbent assays (ELISAs) and other biochemical methods. The tight binding of the enzyme to its inorganic phosphate product leads to strong inhibition of catalysis and confounds measurements of alkaline phosphatase activity.

- Source : Bovine intestinal mucosa.
- Storage Solution : A solution in 50% glycerol containing 5 mM Tris (pH ~ 7.0), 0.005 M MgCl2 and 0.1 mM zinc chloride.
- **Unit Definition : 1** unit of enzyme is defined as the amount of enzyme required to hydrolyze 1 micromole of 4-nitro phenyl phosphate in 1 minute at 37° C in 0.9 ml of 1M diethanolamine buffer pH 9.8, 0.25mM $MgCl_2$.
- **Specific Activity :** Lot Specific
- **Protein Concentration :** Lot Specific

Storage : 4° C, Do not freeze.

Ordering Information:

Cat. No	PI No.	Product Description
1650180051730	EE1L	Alkaline phosphatase, 5 mg

SUBSTRATES FOR ELISA

TMB/H_2O_2 for ELISA (20 X Conc.)

Description :

TMB/H_2O_2 is chromogenic substrate for enzyme Horseradish Peroxidase (HRP). TMB/H_2O_2 (Tetramethyl benzidine/Hydrogen peroxide) produces a soluble blue color with HRP. This reaction can be stopped with equal volume of 1N sulfuric acid. The optical density of resulting yellow color can be read at 450nm. TMB is reported to be non-carcinogenic and more sensitive than O-phenylenediamine dihydrochloride (OPD).

Storage: 4° C.

Quality control assays :

- pH Check: pH of 1X concentration is 4.5
- Color: 20X TMB/H_2O_2 appears as clear yellow solution.
- Performance Test: 1X TMB/H_2O_2 is tested in ELISA to detect Horse radish peroxidase activity which yields a blue colour that changes to yellow (Amax = 450 nm) upon addition of 1N H_2SO_4 stop solution.

Applications :

- Enzyme-Linked Immunosorbent Assay (ELISA): TMB/H_2O_2 is widely used in ELISA for the detection of antigens or antibodies. The reaction between peroxidase-conjugated antibodies or antigens and TMB/H_2O_2 produces a colored product, and the intensity of the color is proportional to the amount of bound antibody or antigen.
- Enzyme Activity Assays: TMB/H_2O_2 is used in assays to detect and quantify the activity of peroxidase enzymes in biological samples. The color change is indicative of the enzymatic reaction and can be measured spectrophotometrically for quantitative analysis.
- Colorimetric Assays: It is used in various plate-

based assays, such as colorimetric assays for detecting enzyme activities, quantifying biomolecules, or screening for specific analytes.

Ordering Information:

Cat. No	PI No.	Product Description
1610180101730	SFE1	TMB/H_2O_2 for ELISA (20 X Conc.), 10 ml

BCIP/NBT

Description :

BCIP/NBT (5-bromo-4-chloro-3-indolyl phosphate/nitro blue tetrazolium) is a commonly used substrate for use with alkaline phosphatase. The reaction results in the formation of an insoluble, colored product, and the intensity of the color is directly proportional to the concentration of the alkaline phosphatase enzyme.

Unique features :

- **Substrate Components:** BCIP (5-bromo-4-chloro-3-indolyl phosphate): A colorless substrate for alkaline phosphatase that produces a blue precipitate upon enzymatic cleavage.
- **NBT (nitro blue tetrazolium):** A yellow tetrazolium salt that reacts with the cleaved BCIP to form an insoluble, bluish-grey to black precipitate.
- **Color Intensity and Enzyme Concentration:** The intensity of the bluish-grey to black color is directly proportional to the concentration of alkaline phosphatase in the sample. This makes the substrate useful for both qualitative detection and quantitative analysis.
- **Readout and Visualization:** The color development can be visually inspected, and the results can be documented by photography or imaging systems. The appearance of a colored band or spot indicates the presence of alkaline phosphatase.
- **Ready-to-Use Solution:** Researchers can directly apply the substrate solution to the membrane or other assay format.
- Substrate Stability: BCIP/NBT solutions are typically light-sensitive and should be stored in the dark, 4°C. Prolonged exposure to light may result in substrate degradation and reduced sensitivity.
- Color Development Control: The color development can be stopped by washing or immersing the membrane or assay in a buffer containing an alkaline phosphatase inhibitor or by using an acidic solution.
- High Sensitivity: BCIP/NBT is known for its high sensitivity, allowing the detection of low levels of alkaline phosphatase activity.

Ordering Information:

Cat. No	PI No.	Product Description
1610280501730	SFE2	BCIP/NBT, 50 ml

TMB/H_2O_2 for Localization

Description :

TMB/H_2O_2(Tetramethyl benzidine/Hydrogen Peroxide) is a chromogenic substrate predominantly useful in development of blots, especially for the detection of Horseradish Peroxidase (HRP) activity.

Features :

- **Chromogenic Substrate:** TMB/H_2O_2 serves as a chromogenic substrate specifically for Horseradish Peroxidase (HRP).
- **Insoluble Reaction Product:** The enzymatic reaction between HRP and TMB/H_2O_2 results in the formation of an insoluble reaction product.
- **Bluish Precipitates:** The insoluble reaction product manifests as bluish precipitates, providing a visual indication of HRP activity.
- **Membrane Applications:** TMB/H_2O_2 is particularly useful in membrane-based applications. In these applications, the bluish precipitates deposit on the immobilized HRP, facilitating detection.

Applications :

- **Western Blotting:** TMB/H_2O_2can be used to visualize proteins in Western blotting. Horseradish peroxidase (HRP)-conjugated secondary antibodies bind to specific proteins, and the subsequent reaction with TMB/H_2O_2 produces a colored signal on the membrane, allowing the detection of target proteins.
- **Immunohistochemistry (IHC) an Immuno -cytochemistry (ICC):** TMB/H_2O_2 is employed for the visualization of antigens in tissue sections (IHC) or cultured cells (ICC). The peroxidase enzyme is often used to label primary or secondary antibodies, and the TMB/H_2O_2 reaction produces a visible signal at the site of the target antigen.
- **Hybridization Assays:** TMB/H_2O_2 can be employed in hybridization assays, where peroxidase-labelled probes are used to detect nucleic acid targets. The reaction produces a visible signal that indicates the presence of the target nucleic acid.
- **Reagent Concentration:** The supplied reagent has a 10X concentration. The reagent is diluted to 1X (1:10) in distilled water just before use. The diluted reagent not recommended to be stored.

Quality control Assay :

- **Performance Test:** Performance of TMB/H2O2 was tested in membrane application for detection of horse radish peroxidase TMB/H2O2

Storage: 4° C.

References :

- Josephy, P. D., Eling, T., and Mason, R. P. (1982) The horseradish peroxidase-catalyzed oxidation of 3,5,32,52-tetramethylbenzidine. Free radical and charge-transfer complex intermediates. J. Biol. Chem. 257, 3669–3675.
- Sambrook, J., Fritsch, E. F., and Maniatis, T. (1989) Molecular Cloning: A Laboratory Manual. 2nd ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY

Ordering Information:

Cat. No	PI No.	Product Description
1610380101730	SFE3	TMB/H2O2 for l ocalization, (10 X Conc.) 10 ml

DAB Solution (for HRP) - ELISA

Description :

3-3'-Diaminobenzidine (DAB) is the most commonly used chromogen for demonstrating the presence of horseradish peroxidase in immunohistochemistry or immunoblotting. It produces a stable water/alcohol insoluble reddish brown product OR blackish color with enhancer. The stable DAB (50X) concentrate supplied is sufficient for making 100 ml working solution. Appearance: The DAB (50X) concentrate is an amber solution and the working solution is a light pink clear solution. All other solutions are clear.

Features :

- **Commonly Used Chromogen:** 3,3'-Diaminobenzidine (DAB) is a widely utilized chromogen in immunohistochemistry (IHC) and immunoblotting.
- **Detection of Horseradish Peroxidase (HRP):** DAB is specifically employed for demonstrating the presence of Horseradish Peroxidase (HRP) in biological samples.
- **Color Development:** The chromogenic reaction with HRP results in the formation of a stable, water/alcohol-insoluble product. The typical color produced is reddish-brown, providing a clear visual indication.
- **Enhancement for Intensified Color:** In some cases, an enhancer can be used to intensify the color development, leading to a blackish color.
- Stable DAB (50X) Concentrate: The supplied DAB concentrate is at a 50X concentration, offering high efficiency. This concentrate is sufficient for preparing a working solution, making it cost-effective.
- **Working Solution Preparation:** Researchers typically dilute the concentrate to create a working solution suitable for their specific experimental needs.

- **Insoluble Product Formation:** The DAB chromogen produces a water/alcohol-insoluble product, contributing to the stability of the reaction.
- **Colorimetric Signal Stability:** The reddish-brown color or intensified blackish color remains stable over time, allowing for reliable visual interpretation.

Quality control assays :

- **Performance Test:** Performance of 3-3'-diaminobenzidine tetra hydrochloride (DAB) was tested in detection of horseradish peroxidase (HRP).

Storage: 4°C

Applications :

- DAB is a crucial component in immunohistochemical staining procedures, where the visualization of specific antigens is essential.
- It is also employed in immunoblotting techniques for protein detection.
- Due to its versatility, stability, and common usage, DAB is a staple in laboratories performing immunohistochemistry and related applications.

References :

- D.A.B. (Diaminobenzidine)"
- Chesapeake Bay Division, International Association for Identification. Archived from the original on 23 December 2007. Retrieved 2007-11-09

Ordering Information:

Cat. No	PI No.	Product Description
1610900011730	SFE9	DAB (50X), 2 ml

DAB System

Description :

3-3'-diaminobenzidine tetrahydrochloride (DAB) is a substrate for horseradish peroxidase that yields a colored deposit insoluble in aqueous medium, alcohol and xylene. DAB is suitably packed so as to avoid unnecessary handling of DAB by investigator.

DAB should be used immediately after dissolving. Do not store.

- DAB should be used immediately after dissolving. Do not store.

Kit Contents :

DAB system consists of

- DAB
- Dilution Buffer
- H_2O_2

Store: 4°C.

Quality control assay :

Performance Test: Performance of 3-3' – diaminobenzidine tetra hydrochloride (DAB) was tested in detection of horse radish peroxidase (HRP).

Applications :

- **Compatibility with Tissue Processing:** The insolubility of the colored deposit in xylene enhances compatibility with standard tissue processing protocols commonly utilized in histology.
- **Visual Detection Under Microscopy:** The colored deposit formed by DAB facilitates easy visual detection under a microscope, aiding researchers in precisely localizing target antigens within tissue sections.
- **Immunohistochemical Staining:** DAB plays a crucial role as a substrate in the immunohistochemical staining process, enabling the visualization of specific proteins or antigens in tissues.

References :

- D.A.B. (Diaminobenzidine)" Chesapeake Bay Division, International Association for Identification. Archived from the original on 23 December 2007. Retrieved 2007-11-09

Ordering Information:

Cat. No	PI No.	Product Description
1610500011730	SFE5	DAB System (Buffer + Substrate + Chromogen + Metal Enhancer), 10x6mg

BSA (Bovine Serum Albumin)

Description :

BSA or Bovine Serum Albumin, is a protein commonly derived from bovine serum. BSA is a single polypeptide chain consisting of about 583 amino acids with a molecular weight of approximately 68,000 Daltons. It belongs to the albumin family of proteins.

Serum albumin may be referred to as Fraction V. This naming convention is taken from the original Cohn method of fractionating serum proteins using cold ethanol precipitation. Serum albumin was found in the fifth ethanol fraction using Cohn's method.

Serum albumins is purified from a variety of primary methods including the true Cohn fractionation method, modified ethanol fractionation methods, heat shock and chromatography. Additional purification steps may include crystallization or charcoal filtration. BSA(fraction V) is one of the purest forms of BSA available It is extensively purified to remove impurities, contaminants, and other proteins

Applications :

- Bovine Serum Albumin Fraction V can be used in a variety of applications:
- Standard protein for protein estimation Assays.
- Blocking agent of all protein binding sites in ELISAs, Southern blots, and western blots.
- Stabilizer for restriction enzyme buffers
- Media supplement; for media that require addition of protein.
- Carrier protein for peptides in antibody production.
- Molecular weight: 68 kDa

Storage conditions: 4°C

Ordering Information:

Cat. No	PI No.	Product Description
1650500501730	B5	BSA (Bovine Serum Albumin), 50 g

MODIFIED FREUND'S COMPLETE ADJUVANT AND FREUND'S INCOMPLETE ADJUVANT

Modified Freund's Complete Adjuvant (FCA-M)

Description :

Freund's Complete Adjuvant is a popular nonspecific stimulator of the immune response for use in antibody production immunization process.

This product comes in 10 mL ampules that are convenient and ready to use. The water-and-oil emulsion greatly enhances immune responses to immunogens when mixed and injected with the prepared antigen and is typically used for initial injections.

Freund's Complete Adjuvant (FCA), also known as Complete Freund's Adjuvant (CFA), comprises non-metabolizable oils like paraffin and mannide monooleate, and heat killed mycobacteria. These non-metabolizale oils help in formation of water in oil emulsion with aqueous antigen which helps in retention of antigen for longer times at the site of injection and therefore helps in boosting immune response. Furthermore, heat-killed mycobacteria attract macrophages and initiate cell-mediated immune response which is long lasting.

Application :

Antigens are typically mixed with an equal volume of the adjuvant to form an emulsion.

Freund's Adjuvants may be used to produce water-in-oil emulsions of immunogens. Antigens in water-in-oil emulsions stimulate high and long-lasting antibody responses which can be attributed to the slow release of antigen.

The mycobacteria in Complete Freund's adjuvant attracts macrophages and other cells to the injection site which enhances the immune response. For this reason, Complete Freund's Adjuvant is used for initial injections and Incomplete Freund's Adjuvant for subsequent boosts.

Store: Room temperature ($_{15}$°- $_{30}$°C).

Modified Freund's Inomplete Adjuvant (FIA-M)

Description :

Freund's Incomplete Adjuvant is a nonspecific stimulator of the immune response for use in antibody production immunization process. This product comes in $_{10}$ mL ampules that are convenient and ready-to-use. The water-and-oil emulsion greatly enhances immune responses to immunogens when mixed and injected with the prepared antigen and is typically used for booster injections. The ampules comprise conveniently sized aliquots that provide long shelf life.

Freund's Incomplete Adjuvant is a mixture of $_{85}$% paraffin oil and $_{15}$% mannide monooleate. It is used for making emulsion of immunogen. The emulsified immunogen on injecting to any host (animal) causes slow release of immunogen causing high and prolonged antibody response. Freund's Incomplete Adjuvant lacks the mycobacteria found in Complete Freund's Adjuvant thereby minimizing the side-effects.

Application :

Adjuvants are nonspecific stimulators of the immune response. When mixed with an antigen or immunogen, adjuvants help to deposit or sequester the injected material thereby helping to increase antibody response. Adjuvants enhance the immune response to compounds that are already immunogenic; they do not confer immunogenicity to non-immunogenic biomolecules. To make prospective antigens more immunogenic, it is necessary to conjugate them to a carrier protein or some other complex, immunogenic molecule.

References :

- Adjuvant activity of incomplete Freund's adjuvant-FC Jensen 1, JR Savary, JP Diveley, JC Chang
- J. Freund, J. Casals, E.P. Hosmer, Sensitization and antibody formation after injection of tubercle bacilli and paraffin oil, Proc. Soc. Exp. Biol. 37 (1937) 509–513.
- J. Freund, Some aspects of active immunization, Annu. Rev. Microbiol. 1 (1947) 291–308.
- J. Freund, The effect of paraffin oil and mycobacteria on antibody formation and sensitization: a review, Am. J. Clin. Pathol. 21 (1951) 645–656.

Ordering Information:

Cat. No	PI No.	Product Description
1640280401730	FIA-M	Modified Freund's Incomplete Adjuvant, 100ml
1640180401730	FCA-M	Modified Freund's Complete Adjuvant, 100ml

Note: Bulk pack available on request (1ml / 5 ml/ 10 ml)

Albumin depletion kit

Description :

One major challenge in functional proteomics is the separation of complex samples prior to comparative analysis. The best source of proteins for identification of potential disease markers are body fluids such as serum, cerebrospinal fluid, plasma etc., However, the main drawback of a comprehensive analysis of body fluids is the high abundance of serum albumin. Serum albumin can constitute 60-70% of the total serum protein. The concentration of this protein causes loss of resolution of lower abundance proteins difficult in two-dimensional gel electrophoresis (2 DGE). Depletion of albumin removes approximately 50% of 75% of total serum proteins, so that 3-4 times more enriched sample can be loaded on 2DGE, allowing the visualization and analysis of the remaining proteins easier.

The Genei Albumin Kit provides a fast, reproducible, highly specific and efficient method to deplete albumin from body fluids, such as plasma or serum.

The matrix is a blue dye conjugated to an agarose based resin

Features :

- Efficient removal of albumin - facilitating analysis and visualization of low abundance proteins.
- Easy-to-use spin column format is a fast procedure - saving time and streamlining analysis.
- Can be used for multiple species without protocol change
- Can be used for different samples like serum, plasma and cerebrospinal fluid.
- 80-90% of albumin is removed.

Kit Contents :

- Blue Agarose Suspension
- Equilibration Buffer
- Extraction Buffer
- Spin Columns

Applications :

- Albumin Depleted enriched samples can be loaded on 2 DGE, allowing visualization of proteins of low abundance

References :

- Olver CS, Webb TL, Long LJ, Scherman H, Prenni JE. Vet Clin Pathol. (2010) Sep Comparison of methods for depletion of albumin and IgG from equine serum. 39(3):337-45
- Rengarajan, K. et al., BioTechniques, (1996) Removal of albumin from multiple human serum samples. 20, 30-32

Ordering Information:

Cat. No	PI No.	Product Description
166010001730	KT118	Albumin depletion kit, 5 preps.

Albumin and IgG depletion kit

Description :

One of the major challenges in functional proteomics is the separation of complex samples prior to comparative analysis. The best sources of proteins for identification of potential disease markers are body fluids such as serum, cerebrospinal fluid, plasma, etc. However, the main drawback of a comprehensive analysis of body fluids is the high abundance of serum albumin and IgG. Serum albumin can constitute 60-70% of the total serum protein and IgG 10-25%. The concentration of these proteins may cause loss of resolution of lower abundance proteins in two-dimensional electrophoresis (2DGE). Depletion of Albumin and IgG removes approximately 50-75% of total serum proteins, so that 3-4 times more enriched sample can be loaded on 2DGE, allowing the visualization and analysis of the remaining proteins easy.

The Genei Albumin and IgG Depletion Kit provides a fast, reproducible, highly specific and efficient method to deplete albumin and IgG from body fluids, such as plasma or serum.

The matrix is a mixture of two media:

- A blue dye conjugated to an agarose base resin
- Protein A Agarose for the capture of IgG.

Kit Contents :

- Blue Sepharose and IgG Depletion Medium
- Equilibration Buffer
- Extraction Buffer
- Spin Columns

Features :

- Efficient removal of albumin and IgG, facilitating the analysis and visualization of low abundance proteins.
- Easy to use column format is a fast procedure, saving time and streamlining analysis.

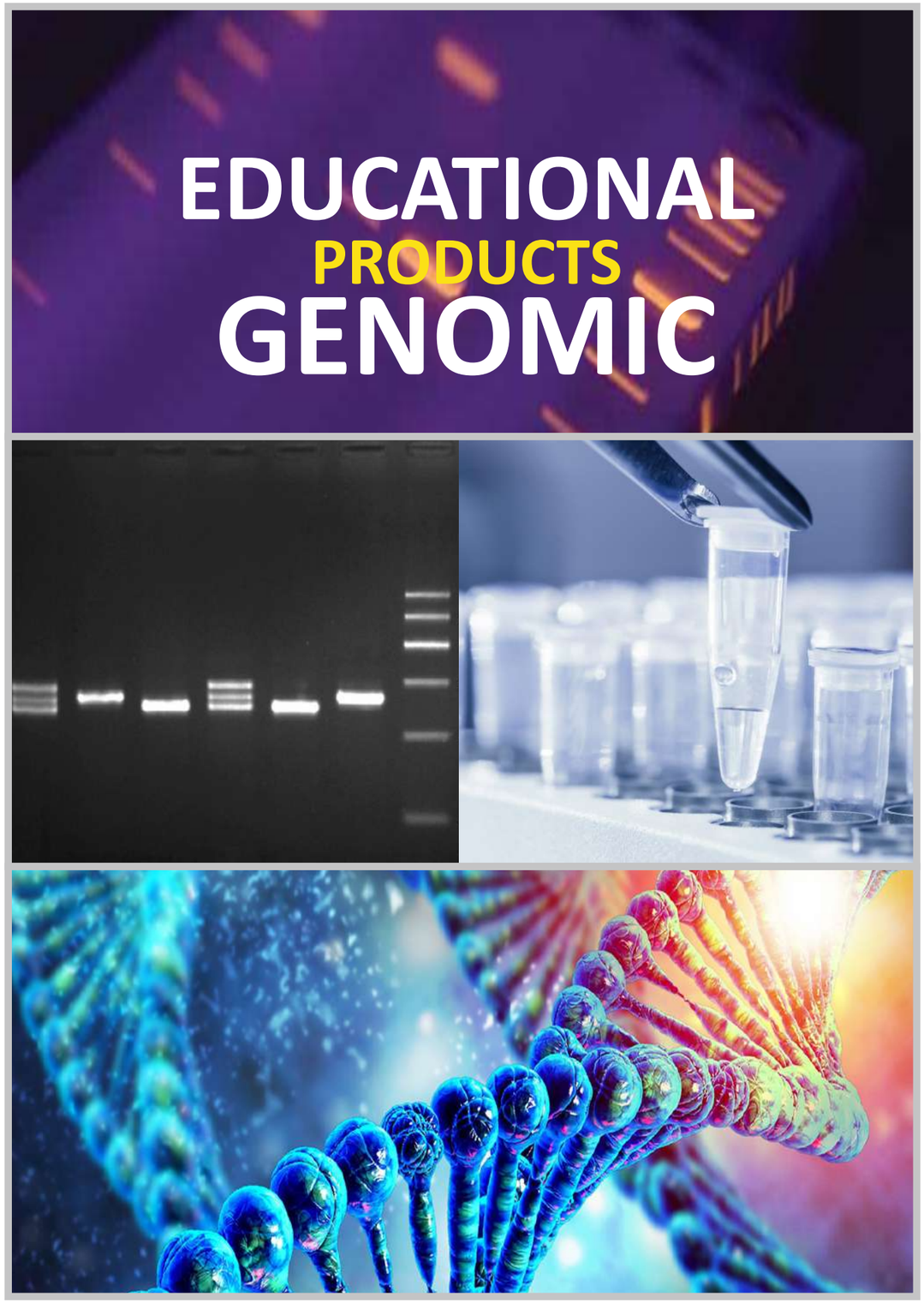
- Can be used for multiple species without protocol change.
- Can be used for different samples like serum, plasma.
- 70 -75% of Albumin and IgG are removed.

References :

- Olver CS, Webb TL, Long LJ, Scherman H, Prenni JE. Vet Clin Pathol. (2010) Sep Comparison of methods for depletion of albumin and IgG from equine serum. 39(3):337-45
- Rengarajan, K. et al., BioTechniques, (1996) Removal of albumin from multiple human serum samples. 20, 30-32

Ordering Information:

Cat. No	PI No.	Product Description
166020001730	KT119	Albumin and IgG depletion kit, 5 preps



EDUCATIONAL PRODUCTS

Teaching Kits

Molecular Biology Educational Products

Basic Molecular Biology Techniques:

Nucleic Acid Isolation and Purification:

Cloning & Expression Techniques

PCR Related Techniques

DNA Finger Printing Techniques

Blotting Techniques

Microbial Genetics

Basic Microbiology Techniques

Immunology Educational Products

Immunoelectrophoresis Techniques

ELISA Techniques

Immunodiffusion Techniques

Basic Microbiology Techniques

Immunoprobing Techniques

Labelling Techniques

Protein Chromatography Techniques

Protein Electrophoresis Techniques

Protein Analysis Techniques

Techware Equipment for College Labs

Educational Products

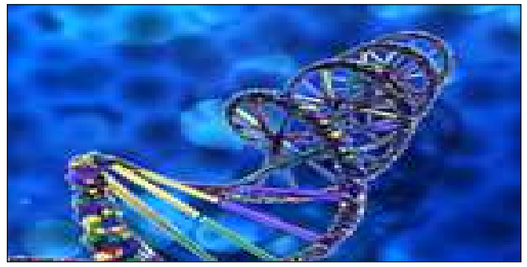
Genei ushers in a wide range of educational kits dealing in frontier areas of biology. Our association and experience with products for biological research is over a decade old. Therefore, we take pleasure in extending this service/experience to the teaching fraternity. Integrating Genei's education kits along with the curriculum at under and postgraduate level will certainlygive synergistic effect to the quality of the course currently conducted.

Microbiology

Why Genei Teaching Kits.....???

- Genei kits have been developed with continuous interaction with faculty members in colleges/academic institutions
- Wide range of kits-from the very basic to the advanced biological techniques
- Easy to handle, complete with detailed instruction manual
- Can be performed within the allotted practical time & facility
- Basic storage facility is sufficient
- Kits are designed & developed by trained scientific staff
- Consistent & reproducible
- Undergoes elaborate quality checks & strict quality checks criteria
- Crystal clear results without any ambiguity
- All components manufactured in-house which ensures continuous supply
- Good technical support staff to guide the faculty & students
- Stable for a period of six months.

Molecular

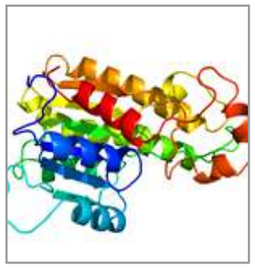


On-site Training Program

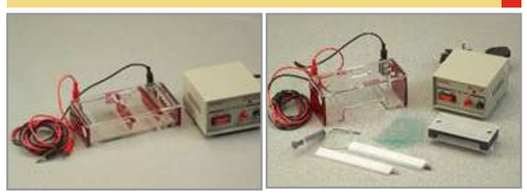
- Exclusive demonstration and hands on training is extended for faculty & student levels
- Choice of comprehensive list of bio-techniques to enhanceyour hands on skills
- Techniques taught by team of experienced scientists
- Good platform for Academia-industry interaction
- Flexible and custom-made training slots available
- Techniques ranging from serial dilution to cutting edge techniques Affordable packages

Immunology

Proteomics



Techware



- Good technical support staff to guide the faculty & students
- Stable for a period of six months.

Selection Guide: Molecular Biology Educational Products

BASIC MOLECULAR BIOLOGY TECHNIQUES

Cat. No	PI No.	Product Description
		BASIC MOLECULAR BIOLOGY TECHNIQUES
6113000031730	KT130	GeNei™ Agarose Gel Electrophoresis Teaching Kit
6100100011730	KT01	GeNei™ Restriction Digestion Teaching Kit
6100800011730	KT08	GeNei™ Ligation Teaching Kit
6106600011730	KT66	GeNei™ DNA Molecular Size Determination Teaching Kit
6110300011730	KT103	GeNei™ Restriction Mapping Teaching Kit
		NUCLEIC ACID ISOLATION AND PURIFICATION
6100600011730	KT06	GeNei™ Plasmid Preparation Teaching Kit
6102800011730	KT28	GeNei™ Genomic DNA Extraction Teaching Kit (from Bacteria)
6106700011730	KT67	GeNei™ Genomic DNA Extraction Teaching Kit (from Leaves)
6112500011730	KT125A	GeNei™ Fungal Genomic DNA Extraction Teaching Kit
6112500011730	KT129B	GeNei™ Whole Blood DNA Extraction Teaching Kit
6113200011730	KT132	GeNei™ Total RNA Extraction Teaching Kit
6112600011730	KT126A	GeNei™ Plasmid DNA Purification Teaching Kit (using DNA Binding Membrane)
6112800011730	KT128A	GeNei™ Genomic DNA Purification Teaching Kit (using DNA Binding Membrane)
6104300011730	KT43B	GeNei™ Gel Extraction Teaching Kit (Solution Based)
6104300011730	KT134A	GeNei™ Gel Extraction Teaching Kit (membrane based)
6114800011730	KT148A	GeNei™ Total RNA Extraction Teaching Kit
		CLONING & EXPRESSION TECHNIQUES
6106000011730	Kt60	GeNei™ GFP Cloning Teaching Kit
6106900011730	KT69	GeNei™ Bacterial Gene Expression Teaching Kit (using Lac Promoter System)
6113100011730	KT131A	GeNei™ In-vitro Transcription Teaching Kit
		PCR RELATED TECHNIQUES
6104400011730	Kt44	GeNei™ Student PCR Teaching Kit
6110000021730	KT100B	GeNei™ RAPD Application Teaching Kit (Rice Varieties Identification)
6110200011730	KT102A	GeNei™ Genotyping Analysis Teaching Kit
6113600011730	KT136	GeNei™ Student RT PCR Teaching Kit
6110700011730	KT107A	GeNei™ Multiplex PCR Teaching Kit
6110800011730	KT108A	GeNei™ GMO Detection Teaching Kit (Simulation Study)
		BLOTTING TECHNIQUES
6109600031730	KT96	GeNei™ Southern Hybridization Teaching Kit
6113800011730	KT138	GeNei™ Northern Blotting Teaching Kit

BASIC MOLECULAR BIOLOGY TECHNIQUES

Cat. No	PI No.	Product Description
		DNA FINGERPRINTING TECHNIQUES
6109400011730	KT94	GeNei™ DNA Fingerprinting Teaching Kit (Using RFLP technique)
6109500011730	KT95B	GeNei™ DNA Fingerprinting Teaching Kit (Using RAPD technique)
6109900011730	KT99A	GeNei™ Single Nucleotide Polymorphism (SNP)
6114700011730	KT147A	GeNei™ AFLP Teaching Kit
		MICROBIAL GENETICS
6100500011730	KT05	GeNei™ Phage Titration Teaching Kit
6119000021730	KT90	GeNei™ Plasmid Curing Teaching Kit
6119000021730	KT45	GeNei™ Bacterial Conjugation Teaching Kit
6112300011730	KT123	GeNei™ Bacterial Transduction Teaching Kit
6112400011730	KT124B	GeNei™ Bacterial Transposons Teaching Kit
		BASIC MICROBIOLOGY TECHNIQUES
6112400011730	KT46	GeNei™ Bacterial Growth Curve Teaching Kit
6106800011730	KT68	GeNei™ Bacterial Antibiotic Sensitivity Teaching Kit
6109000011730	KT90	GeNei™ Isolation and Identification of Soil Bacteria Teaching Kit

Selection Guide:
Immunology Educational Products Teaching Kits

Cat. No	PI No.	Product Description
		IMMUNOPRECIPITATION TECHNIQUES
6101100011730	KT11	GeNei™ Quantitative Precipitin Assay (QPA) Teaching Kit
6112200011730	KT122	GeNei™ Immuno-precipitation Teaching Kit
		IMMUNODIFFUSION TECHNIQUES
6107000011730	KT70	GeNei™ ODD (For Antigen Antibody Patterns) Teaching Kit
6100900011730	KT09S	GeNei™ ODD (For Antibody Titration) Teaching Kit
6101000011730	KT10S	GeNei™Radial Immuno Diffusion Teaching Kit
		IMMUNOELECTROPHORESIS TECHNIQUES
6102000031730	KT20	GeNei™ Immunoelectrophoresis Teaching Kit
6104700011730	KT47	GeNei™ Rocket Immunoelectrophoresis Teaching Kit
6102900011730	KT29	GeNei™ Counter Current Immunoelectrophoresis Teaching Kit
		AGGLUTINATION TECHNIQUES
6105300011730	KT53	GeNei™ Latex Agglutination Teaching Kit ELISA based Techniques
		ELISA TECHNIQUES
6101200011730	KT12S	GeNei™ Dot ELISA Teaching Kit
6105000011730	KT50	GeNei™ Antigen Capture ELISA Teaching Kit
6105100011730	KT51	GeNei™ Antibody Capture ELISA Teaching Kit
6105200011730	KT52	GeNei™ Sandwich ELISA Teaching Kit

Cat. No	PI No.	Product Description
		KITS FOR IMMUNOPROBING
6102100031730	KT21	GeNei™ Western Blotting Teaching Kit
		LABELLING TECHNIQUES
6104800011730	KT48	GeNei™ Antibody-HRP Conjugation Teaching Kit
		BASIC MICROBIOLOGY TECHNIQUES
6112400011730	Kt46	GeNei™ Bacterial Growth Curve Teaching Kit
6106800011730	KT68	GeNei™ Bacterial Antibiotic Sensitivity Teaching Kit
6109000011730	KT90	GeNei™ Isolation and Identification of Soil Bacteria Teaching Kit

Selection Guide:
Protein Purification and Analysis Techniques Teaching Kits

Cat. No	PI No.	Product Description
		PROTEIN CHROMATOGRAPHY TECHNIQUES
6103900011730	KT39	GeNei™ Gelfiltration Chromatography Teaching Kit
6104000011730	KT40	GeNei™ Ion Exchange Chromatography Teaching Kit
6104100011730	KT41	GeNei™ Affinity Chromatography Teaching Kit
6110600011730	KT106	GeNei™ Immunoglobulin G Isolation Teaching Kit
6120300011730	KT203	GeNei™ Recombinant Protein Purification Kit
6120200011730	KT202	GeNei™ Hydrophobic Chromatography Teaching Kit
		PROTEIN ANALYSIS TECHNIQUES
6119290021730	KT192	GeNei™ Thin Layer Chromatography Teaching Kit with TLC Chamber
6108900011730	KT89	GeNei™ Enzyme Kinetics Teaching Kit
6102100031730	KT21	GeNei™ Western Blotting Teaching Kit
6119600011730	KT196	GeNei™ Protein Fingerprinting Teaching Kit
		PROTEIN ELECTROPHORESIS TECHNIQUES
6103000011730	KT30	GeNei™ SDS-PAGE Teaching Kit
6114500011730	KT145	GeNei™ 2D - PAGE Teaching Kit

EDUCTAIONAL PRODUCTS GENOMICS

Agarose Gel Electrophoresis Teaching Kit

Description :

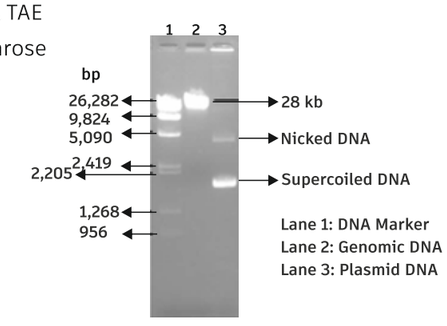
Electrophoresis is a technique used to separate charged molecules. DNA is negatively charged at neutral pH and when electric field is applied across the gel, the DNA migrates towards the anode. Migration of DNA through the gel is dependent upon:

- Molecular size of DNA
- Agarose concentration
- Conformation of DNA
- Applied current

Matrix of agarose gel acts as a molecular sieve through which DNA fragments move on application of electric current. Higher concentration of agarose gives firmer gels, i.e., spaces between cross-linked molecules is less and hence smaller DNA fragments easily crawl through these spaces. As the length of the DNA increases, it becomes harder for the DNA to pass through the spaces. Lower concentration of agarose helps in the movement of larger DNA fragments as the spaces between the cross-linked molecules is more. The progress of gel electrophoresis is monitored by observing the migration of a visible dye (tracking dye) through the gel. Two commonly used dyes are Xylene cyanol and Bromophenol blue that migrate at the same speed as double stranded DNA of size 5000 bp and 300 bp respectively. These tracking dyes are negatively charged, low molecular weight compounds that are loaded along with each sample at the start of electrophoresis, when the tracking dye reaches towards the anode, electrophoresis is terminated. As the voltage applied to a gel is increased, larger fragments migrate proportionally faster than the smaller fragments. Best resolution of fragments is attained by applying no more than 5 volts per cm to the gel. Different buffers have been recommended for electrophoresis of DNA. The most used are TAE (Tris-Acetate-EDTA) and TBE (Tris-Borate EDTA). DNA fragments migrate at somewhat different rates in these two buffers due to differences in their ionic strength. Buffers not only maintain the pH but also provide ions to support conductivity. Visualisation of DNA Fragments: Since DNA is not naturally coloured, it is not visible on the gel. Hence the gel, after electrophoresis, is stained with a dye specific to the DNA. Discrete bands are observed when there is enough DNA material present to bind the dye to make it visible, otherwise the band is not detected. The gel is observed against a light background wherein DNA appears as dark coloured bands. Alternatively, an intercalating dye like Ethidium Bromide (EtBr) is added to agarose gel and location of bands determined by examining the gel under UV light. The DNA bands appear fluorescent.

Kit Contents :

- Genomic DNA
- Plasmid DNA
- DNA Marker
- 2.5X GLB
- 50X TAE
- Agarose



Mobility of two types of DNA on 1% Agarose Gel

Ordering Information:

Cat. No	PI No.	Product Description
6113000011730	KT130A	GeNei™ Agarose Gel Electrophoresis Teaching Kit, 10 expts.
6113000031730	KT130	GeNei™ Agarose Gel Electrophoresis Teaching Kit with ETS1,10 expts.

Restriction Digestion Teaching Kit

Description :

Restriction digestion is a defense mechanism developed by bacteria against bacteriophages in the form of enzymes called endonucleases that cleave any foreign DNA. The restriction endonuclease cleavage is a precise DNA-excising process that occurs at specific sites on the DNA sequence.

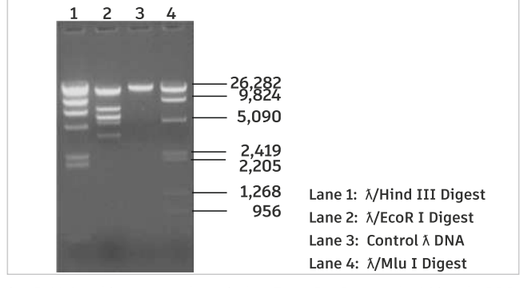
This mechanism has made way for the discovery of different types of restriction enzymes which help in cloning.

This kit demonstrates.

- The action of restriction enzymes-, *EcoR* I and *Hind* III, which selectively cleaves Lambda (λ) DNA a linear double stranded DNA, 48502 base pairs at specific sites.
- The size of the fragments is determined when electrophoresed along with a standard DNA marker on an agarose gel.

Kit Contents :

- 2X Assay Buffer
- λ/*Mlu* I Digest
- Gel Loading Buffer
- Lambda DNA (substrate)
- Restriction Enzymes: *EcoR* I, *Hind* III
- Control λ DNA
- Agarose
- 50X TAE
- 1.5 ml Vials



λ DNA digested with EcoR I and *Hind* III, electrophoresed on 1% Agarose gel (stained with EtBr)

Ordering Information:

Cat. No	PI No.	Product Description
6100100011730	KT01A	GeNei™ Restriction Digestion Teaching Kit, 5 expts.
6100100021730	KT01B	GeNei™ Restriction Digestion Teaching Kit, 20 expts.

GeNei™ Restriction Mapping Teaching Kit

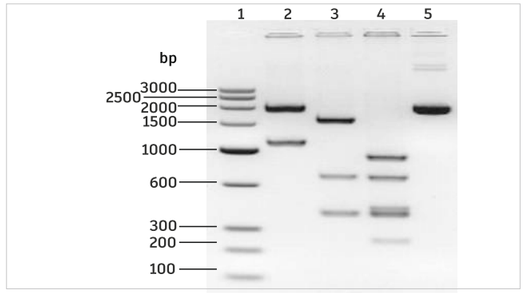
Description :

Restriction enzymes are endonucleases that cleave both strands of DNA at specific sequences of bases called recognition sites. The location of the cleavage site is important for mapping of DNA and molecular cloning experiments. DNA mapping involves the determination of the relative positions of the Restriction enzyme cleavage sites (RE sites)in a plasmid molecule. This is done by determining the size of the DNA fragments generated by single or combination of Restriction enzymes and subsequent construction of the DNA map. A Restriction map is a description of restriction endonucleases cleavage sites within a DNA sequence. Generating such a map is usually the first step in characterizing an unknown DNA and a pre-requisite for manipulating it for other purposes.

Using this kit, students will perform the restriction digestion of plasmid DNA with two different enzymes i.e. Ssp I and Bgl I.

Kit Contents :

- Plasmid DNA
- Restriction Enzymes: Bgl I and Ssp I
- Assay Buffer
- Low Range DNA Ruler (Ready to use)
- 2.5X Gel Loading Buffer
- Agarose
- 50X TAE
- 1.5 ml vials
- Instruction Manual



Lane 1: Low Range DNA Ruler
Lane 2: Bgl I Digest
Lane 3: Ssp I Digest
Lane 4: Bgl I/Ssp I Digest
Lane 5: Control DNA

Ordering Information:

Cat. No	PI No.	Product Description
6110300011730	KT103A	GeNei™ Restriction Mapping Teaching Kit, 5 expts.
6110300021730	KT103B	GeNei™ Restriction Mapping Teaching Kit, 20 expts.

GeNei™ Ligation Teaching Kit

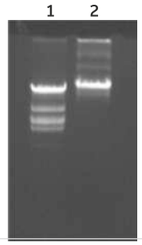
Description :

Construction of recombinant DNA molecule is dependent on the ability to covalently seal single stranded nicks in the DNA. This process is accomplished both in vivo and in vitro by the enzyme DNA ligase. This enzyme catalyzes the formation of phosphodiester bonds between juxtaposed 5' phosphate and a 3' hydroxyl terminus of double stranded DNA. It can repair single stranded nicks in double stranded DNA and join double stranded DNA restriction fragments having either blunt ends or homologous cohesive ends. (Fig. 1). E. coli ligase and T4 DNA ligase are the two DNA ligases used in nucleic acid research. They differ in their requirement of energy source and in their ability to ligate blunt ends. T4 DNA ligase is approximately 60000 dalton (60 kD) protein produced by Bacteriophage T4 requiring ATP as the energy source. T4 DNA ligase has the unique ability to join sticky and blunt ended fragments. Cohesive end ligation is carried out at 12° C to 16° C to maintain a good balance between annealing of ends and activity of the enzyme. If reaction is set at higher temperatures annealing of the ends become difficult, while lower temperatures diminish the ligase activity.

In this kit, λ/EcoR I digest supplied, is obtained by digestion of λ DNA with EcoR I. EcoR I having 5 sites on λ DNA, produces 6 fragments of varied sizes with cohesive ends. By the action of ligase enzyme, the fragments will be joined end to end. Following ligation, the samples will be analyzed by agarose gel electrophoresis, wherein the ligated sample will appear as a single band as against 6 bands of λ/EcoR I digest.

Kit Contents :

- λ/ *EcoR* I Digest
- 2X Ligase Assay Buffer
- T4 DNA Ligase
- Gel Loading Buffer
- Agarose
- 50X TAE
- 1.5 ml vials



Ligated sample electrophoresed on 1% agarose gel. (Stained with EtBr)

Lane 1 : λ /*EcoR* I Digest
Lane 2 : λ /***EcoR I*** Digest after ligation

From the gel, one can observe that the six double stranded fragments formed by digestion of λ DNA with EcoR I are ligated by T4 DNA Ligase to give a single band.

Ordering Information:

Cat. No	PI No.	Product Description
6100800011730	KT08A	GeNei™ Ligation Teaching Kit, 5 expts.
6100800021730	KT08B	GeNei™ Ligation Teaching Kit, 20 expts.

GeNei™ DNA Molecular Size Determination Teaching Kit

Description :

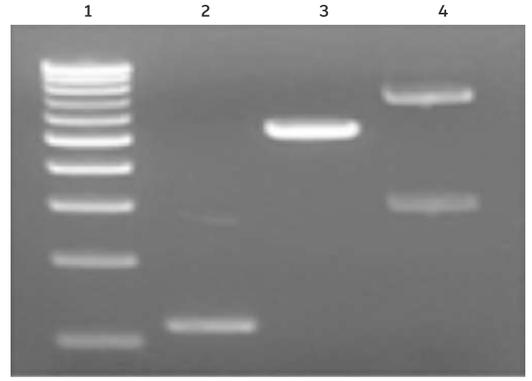
Agarose gel electrophoresis is a commonly used technique for resolving nucleic acids. It can also be used to determine the size of linear double stranded DNA molecule by comparing its electrophoretic mobility with that of Standard molecular weight DNA marker. The relative molecular size of a gel fractionated macromolecule (band) is determined from a standard curve that is based on a set of macromolecules of known relative molecular size (DNA marker) that covers the separation range of the gel system and is loaded on one or both of the outer lanes of the same gel as the samples. The log

of the relative molecular size of a DNA marker is related to its relative mobility (Rf) through a gel. The value Rf is defined as the distance traveled by a band divided by the distance traveled by the tracking dye. The relationship between the logarithm of the relative molecular size of each band of Standard DNA marker and its Rf value is plotted. Using this standard curve, molecular size of test samples can be determined. The standard DNA markers are included in the same gel as the test samples, as the extent of mobility of a macromolecule(s) varies from one electrophoretic run to the next.

Using this kit, students will determine the molecular size of four linear double stranded DNA fragments. These samples are electrophoresed along with a Standard molecular weight DNA marker. The marker is a 500 bp ladder wherein 10 bands are visuailized ranging from 500 bp to 5000 bp. By measuring the distances migrated from the well by each of the test samples, marker and dye, the size of the test samples will be determined.

Kit Contents :

- StepUp™ 500 bp DNA Ladder (Ready to use)
- Test sample 1
- Test sample 2
- Test sample 3
- 6X Staining dye
- 50X TAE Agarose

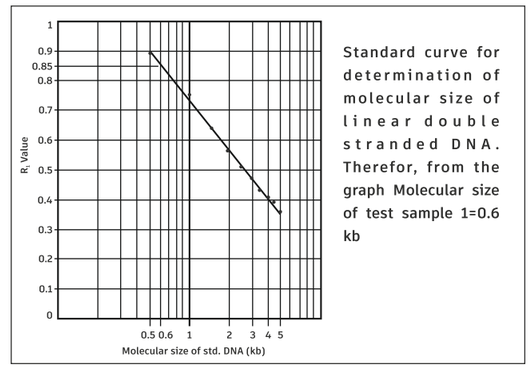


StepUp™ 500 bp DNA ladder & Test samples electrophoresed on a 1% agarose gel. (Stained with EtBr)

Lane 1 : StepUp™ 500 bp DNA Ladder
Lane 2 : Test Sample 1
Lane 3 : Test Sample 2
Lane 4 : Test Sample 3

SI No.	Molecular size of Standard (in kb)	Distance traveled by DNA (in cm)	R_1 Value
1	0.5	7.4	0.89
2	1.0	6.3	0.75
3	1.5	5.35	0.64
4	2.0	4.7	0.57
5	2.5	4.3	0.51
6	3.0	3.9	0.47
7	3.5	3.65	0.43
8	4.0	3.45	0.41
9	4.5	3.3	0.39
10	5.0	3.1	0.36
11	Test sample	7.15	0.85

Rf values of Standard molecular weight DNA marker.



Standard curve for determination of molecular size of linear double stranded DNA. Therefor, from the graph Molecular size of test sample 1=0.6 kb

Ordering Information:

Cat. No	PI No.	Product Description
6106600011730	KT66A	GeNei™ DNA Molecular Size Determination Teaching Kit, 5 expts.

DNA Quantitation Teaching kit

Description :

After isolation of DNA, quantification and analysis of quality are necessary to ascertain the approximate quantity of DNA obtained and the suitability of DNA sample for further analysis. This is important for many applications including digestion of DNA by restriction enzymes or PCR amplification of target DNA. The most used methodologies for quantifying the amount of nucleic acid in a preparation are:

- Agarose Gel Electrophoresis Method DNA can be quantitated in an agarose gel by comparing the intensity of the fluorescence emitted by an ethidium bromide-stained DNA sample relative to a dilution series of a DNA standard of known concentration
- Determination of DNA Concentration Analysis of UV absorption by the nucleotides provides a simple and accurate estimation of the concentration of nucleic acid in a sample. Purines and pyrimidines in nucleic acid show absorption maxima around 260nm (eg., dATP: 259nm; dCTP: 272nm; dTTP: 247nm) if the DNA sample is pure without significant contamination from proteins or organic solvents (DNA concentration can be estimated by measuring the absorbance at 260nm (A260), adjusting the A260 measurement for turbidity (measured by absorbance at 320nm), multiplying by the dilution factor, and using the relationship that an A260 of 1.0 = 50µg/ml pure DNA.
- Colorimetric Determination of DNA Concentration: Diphenylamine Reaction DNA and RNA are nucleic acids made of nucleotide subunits. One major difference between DNA and RNA is their sugar: DNA contains deoxyribose, whereas RNA contains ribose. DNA can be identified chemically with the Dische diphenylamine test. The reaction between the Dische reagent and 2-deoxypentose results in the development of a blue color. The reaction depends on the conversion of the pentose to - hydroxylaevulinic aldehyde which then reacts with diphenylamine to give a blue colored complex. The intensity of the blue color is proportional to the concentration of DNA. Dische reagent does not react with the ribose sugar in RNA and does not form a blue-colored complex. The concentration of colored product is proportional to the initial concentration of the DNA being assayed. Since optical density is proportional to the concentration of colored substances, the optical density will also be proportional to the concentration of the DNA being assayed.

In this kit students will determine the concentration of DNA by colorimetric method and spectrophotometric method. In colorimetric method the Standard DNA Solution and the Test DNA Solution will be made to react with Diphenylamine (DPA) which results in the hydrolysis of DNA to produce a blue colored compound. The intensity of this colored compound will be measured at 660nm in a spectrophotometer or colorimeter and a standard curve will be plotted using the absorbance values of the Standard DNA Solution. The concentration of the Test DNA Solution will be determined by comparing with a standard curve. In spectrophotometric method the Test DNA Solution will be diluted, and its concentration will be determined by measuring the intensity of absorbance of the Test DNA Solution at a wavelength of 260 nm in a spectrophotometer.

Kit Contents :

- Diphenylamine (DPA)
- Standard DNA Solution
- Test DNA solution

Ordering Information:

Cat. No	PI No.	Product Description
6121900011730	KT219	**DNA** Quantitation Teaching kit, 5 expts.

NUCLEIC ACID ISOLATION AND PURIFICATION:

GeNei™ Plasmid Preparation Teaching Kit

Plasmids carry genes that offer bacterial genetic advantages, such as resistance to antibiotics. During bacterial cell division, all the plasmids within the cell are duplicated, ensuring that each daughter cell inherits a copy of every plasmid. This mechanism has marked its significance in recombinant DNA technology.

This Kit demonstrates.

- The mini preparation of pUC_{18} plasmid using the alkali lysis method from E. coli strain. It is a commonly used cloning vector of size $_{2686}$ bp with an Ampicillin resistance gene.
- Following isolation and RNase treatment, samples will be analyzed by agarose gel electrophoresis.
- Interpretation of the quality and quantity of the extracted plasmid DNA.

Kit Contents :

- Ampicillin
- Control DNA (Ready to Use)
- Solution I, II and III
- 2.5X Gel Loading Buffer
- Host (Lyophilised Vial)
- RNase A
- 1X TE
- Agarose
- Solution IV
- 50X TAE
- LB Broth
- Agar
- 1.5 ml Vials

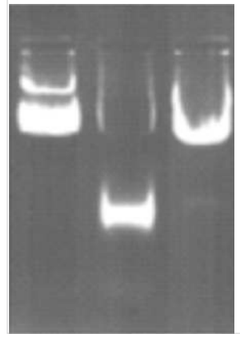


Fig 1 : pUC 18 plasmid DNA electrophoresed on 1% agarose gel. (Stained with EtBr)

Lane 1 : Nicked DNA & Supercoiled DNA
Lane 2 : DNA masked by RNA
Lane 3 : Supercoiled DNA

Ordering Information:

Cat. No	PI No.	Product Description
6100600011730	KT06A	GeNei™ Plasmid Preparation Teaching Kit, 25 expts. (5 x 5 preps)
6100600021730	KT06B	GeNei™ Plasmid Preparation Teaching Kit, 100 expts. (20 x 5 preps)

GeNei™ Plasmid DNA Purification Teaching Kit, 10 expts. (Binding Membrane)

Description :

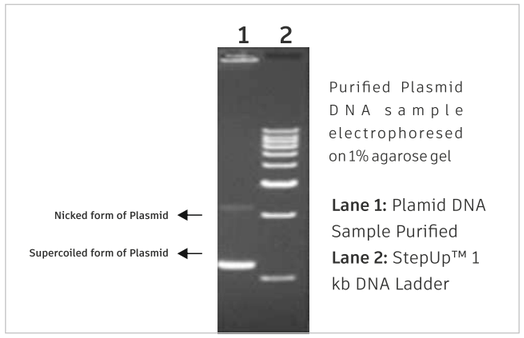
Silica gel membrane technology yields high purity nucleic acids suitable for most molecular biology applications such as restriction digestion, ligation, labeling, PCR, hybridization etc. Silica gel membrane selectively binds either RNA or DNA and separates nucleic acids. Optimized buffers (Binding Buffer and Wash Buffer) are used to obtain maximum separation between the nucleic acids during adsorption and washing steps. The purification steps involve a simple bind wash-elute procedure. Nucleic acids are adsorbed to the silica-gel membrane in the presence of high concentrations of chaotropic salts. Polysaccharides and proteins do not adsorb and are removed in the wash step of the

procedure. Nucleic acids are eluted under low salt conditions in small volumes, and these are ready to be used in any downstream applications without further concentration.

The kit contains reagents and silica membrane columns for purification of plasmid DNA from E.coli strain. Bacterial cells are harvested, lysed by alkaline lysis method using solution G1, G2, G3 buffers and the lysate is cleared by centrifugation. The lysate is then applied to the silica-gel membrane column where plasmid DNA adsorbs to the silica gel membrane. Impurities are washed away and pure DNA is eluted in a small volume of elution buffer.

Kit Contents :

- Solution G1,G2,G3
- Wash Buffer I
- Wash Buffer II
- Elution Buffer
- Spin Column
- RNase A
- 2 ml Collection Tubes
- Lyophilized Strain
- Ampicillin
- 1.5 ml Vials Agarose 50X TAE Control DNA Instruction Manual



Purified Plasmid DNA sample electrophoresed on 1% agarose gel

Lane 1: Plamid DNA Sample Purified
Lane 2: StepUp™ 1 kb DNA Ladder

Ordering Information:

Cat. No	PI No.	Product Description
6112600011730	KT126A	GeNei™ Plasmid DNA Purification Teaching Kit, 10 expts. (Binding Membrane)

GeNei™ Genomic DNA Extraction Teaching Kit, (from Bacteria)

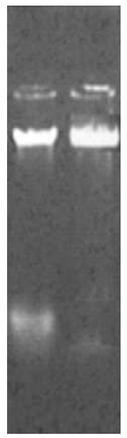
The genetic material (genome) in bacteria is not very well organized as compared to the eukaryotic genome, which is highly condensed and is present as nucleosomes. Hence extraction of bacterial genomic DNA is simple. Three major types of techniques or a combination of them are employed in isolation of nucleic acids: differential solubility, adsorption methods or density gradient centrifugation. The choice of the method depends on the source of DNA being isolated and its application. A major goal of nucleic acid isolation is removal of proteins. This is accomplished due to differences in their chemical properties.

Most nucleic acid isolation protocols involve the following steps:

- Cell lysis step
- Enzymatic treatment
- Differential solubility (phenol extraction or adsorption to solid support) and
- Precipitation

Kit Contents :

- Bacterial Lyophilized vial
- Control DNA (Ready to use)
- LB Broth
- Agar
- Solution A
- Solution B
- Alcohol
- Agarose
- Gel Loading Buffer
- 50X TAE
- 1.5 ml Vials



Bacterial Genomic DNA electrophoresed on 1% agarose gel (stained with EtBr)

Lane 1 : Bacterial DNA (RNA moves faster than DNA
Lane 2: Control DNA ~50 kb

Cat. No	PI No.	Product Description
6102800011730	KT28A	GeNei™ Genomic DNA Extraction Teaching Kit, (from Bacteria) 10 expts
6102800021730	KT28B	GeNei™ Genomic DNA Extraction Teaching Kit, (from Bacteria) 20 expts

GeNei™ Genomic DNA Extraction Teaching Kit (from leaves)

Description :

Plants contain three types of DNA: nuclear, mitochondrial and chloroplast. Although quite elaborate methods exist for the isolation of each type of DNA, most experiments require only a simple preparation of total DNA. The two main problems in isolating DNA from plants are the presence of DNases that degrade the DNA and the presence of other macromolecules (polysaccharides, polyphenols) that co-purify with or polymerize to the DNA during isolation procedure. Three major techniques or a combination of them are employed in isolation of nucleic acids: differential solubility, adsorption methods or density gradient centrifugation. The choice of the method depends on the type of the DNA being isolated and the application. The Major goal of nucleic acid isolation is removal of proteins, which is accomplished due to their different chemical properties. Most nucleic acid isolation protocols involve:

- Cell lysis step
- Enzymatic treatments
- Differential solubility (phenol extraction or adsorption to solid support)
- Precipitation.

Kit Contents :

- Solution A
- Solution B
- Sodium acetate
- Alcohol
- Control DNA (ready to use)
- Gel Loading Buffer
- Agarose
- 50X TAE

Lane 1: Leaf genomic DNA
Lane2: Control DNA

Ordering Information:

Cat. No	PI No.	Product Description
6106700011730	KT67A	GeNei™ Genomic DNA Extraction Teaching Kit (from leaves) 5 expts
6112500011730	KT125A	GeNei™ Fungal Genomic DNA Extraction Teaching Kit, 10 expts.

GeNei™ Fungal Genomic DNA Extraction Teaching Kit

Description :

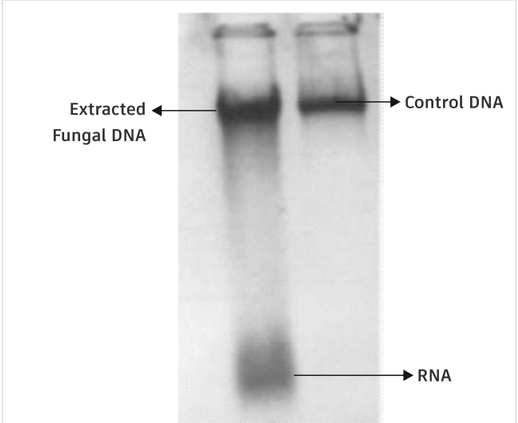
To analyze the complex genome of eukaryotes, it is necessary to prepare pure and high molecular weight genomic DNA. Varied protocols are available for the purification of genomic DNA from fungal mycelium. The principle involves breakage of cells to release nuclei and subsequent treatment with detergents and salt to degrade most of the contaminating proteins. Fungal species are known to produce a lot of proteins and exo-polysaccharides which interfere with the extraction of DNA. The contaminating molecules are effectively removed by Cetyl trimethylammonium bromide (CTAB). CTAB complexes with both polysaccharides and residual proteins and these are effectively removed by

chloroform:isoamyl alcohol extraction. The DNA is further recovered by alcohol precipitation. This procedure is effective in producing a good yield of genomic DNA with minimal shearing.

In this kit, Fungal Cell Pellets are provided which will be lysed using the Lysis Buffer containing CTAB and detergent (SDS), using a tissue grinder. The Lysis buffer apart from cell lysis, effectively removes proteins and polysaccharides by forming a complex. This complex is removed by a mixture of Chloroform: Isoamylalcohol. The DNA is then precipitated with alcohol. The DNA will then be solubilized in solution D and the extracted DNA will be analysed by agarose gel electrophoresis along with Control Genomic DNA provided.

Kit Contents :

- Fungal Cell Pellet
- Control DNA
- Lysis Buffer A
- Solution B
- Solution D
- 2.5X Gel Loading Buffer
- Alcohol
- Agarose
- 50X TAE
- Tissue Grinder



Ordering Information:

Cat. No	PI No.	Product Description
6112500011730	KT125A	GeNei™ Fungal Genomic DNA Extraction Teaching Kit, 10 expts.

GeNei™ Whole Blood DNA Extraction Teaching Kit

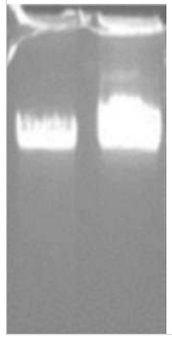
Description :

Blood is a complex mixture of cells, proteins ,metabolites, and many other substances. About 56% of human blood volume is comprised of cells, more than 99% of which are erythrocytes. Human erythrocytes and thrombocytes platelets (which constitutes 0.5% of blood components) do not contain nuclei and are unsuitable for preparation of genomic DNA, the only blood cells that contain nuclei are leukocytes (0.3% of cellular blood components). The number of leukocytes / WBC vary in different blood samples depending upon the health of the donor (human/animal). Healthy blood samples contain fewer leukocytes compared to infected blood samples. Different protocols are available for the extraction of genomic DNA from blood for various downstream applications. This kit provides an easy, safe, reproducible method of purification. Blood sample is used for extraction from which the serum is separated by centrifugation. RBC lysis buffer supplied contains detergents and salts which creates a hypertonic condition resulting in lysis of RBC. The white pellet (ie WBC) then obtained is lysed with a buffer containing Guanidium thiocynate salt and detergents which effectively remove the contaminating proteins releasing the DNA. The DNA is precipitated by alcohol and rehydrated in Tris buffer.

In this kit all the reagents required to extract Genomic DNA from fresh blood are provided. Use EDTA coated tubes to collect blood sample. Blood is centrifuged to remove the serum followed by lysis of RBCs by Solution A. Whitish pellet of WBC obtained is lysed by Solution B which is a Guanidium thiocyanate-based buffer. DNA is then precipitated by alcohol and the DNA pellet rehydrated using Solution C (Tris buffer). Extracted DNA is then analysed by agarose gel electrophoresis and compared along with control DNA provided.

Kit Contents :

- Solution A (3X)
- Solution B
- Solution C
- Control DNA (Ready to use)
- Alcohol
- 2.5X Gel Loading
- Buffer EDTA
- Agarose
- 50X TAE
- 1.5 ml vials
- Instruction Manual



Analysis of Control DNA and Whole Blood DNA extracted using Whole Blood DNA Extraction Kit, on a 1% Agarose Gel.

Lane 1 : Control DNA
Lane2 : Extracted Whole Blood DNA

Ordering Information:

Cat. No	PI No.	Product Description
6112900011730	KT129A	GeNei™ Whole Blood DNA Extraction Teaching Kit, 10 expts.

GeNei™ Plant Mitochondrial DNA Isolation Teaching Kit

Description :

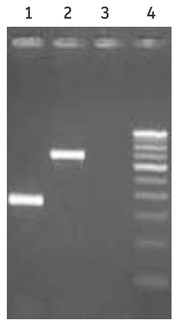
Mitochondrial DNA (mtDNA) is a small, maternally inherited molecule which has been used to study genetic variation, particularly the relationships between different taxa. In order screen large sample sizes a single and inexpensive method of mitochondrial DNA isolation is essential. Mitochondrial DNA isolation is done by

conventional Cesium chloride gradient centrifugation. In the basic method mitochondrial DNA is contaminated by the nuclear DNA and DNA from other organelles. Nuclear DNA can be removed by DNase treatment, Cesium chloride gradient separation or physical separation e.g. by using a column.

Using this kit the students will isolate mitochondrial DNA (mtDNA) from plant samples. Reagents are provided to perform DNA isolation from plant mitochondria, starting from leaf or cotyledons. The mtDNA isolated would be further amplified using mitochondrial and/or nuclear specific primers for confirmation of the mtDNA along with plant nuclear DNA provided, as control. The amplified products are then analyzed on 1.5% agarose gel along with a marker. The students will observe a single band with mitochondrial primers for mitochondrial DNA but not with nuclear DNA supplied as control. StepUp™ DNA marker is a 100bp ladder wherein, 10 bands are seen ranging from 100bp to 1Kb.

Kit Contents :

- Dnase I
- Control DNA
- Taq DNA polymerase
- 10X Taq DNA Buffer
- 10mM dNTP mix
- Primer Set I - FP
- Primer Set I - RP
- Primer Set II - FP
- Primer Set II - RP
- Nuclease Free Water
- StepUp™ 100 bp DNA Ladder
- 2.5X Gel Loading Buffer
- Buffer Mft - 1
- Buffer Mft - 2
- Buffer Mft - 3
- Buffer Mft - 4
- Buffer Mft - 5
- Buffer Mft - 6
- Buffer Mft - 7
- Agarose
- Mineral Oil
- 50X TAE
- PCR Tubes



Lane 1 : Test DNA with Primer Set I
Lane 2 : Control DNA with Primer Set II
Lane 3 : Control DNA with Primer Set I
Lane 4 : StepUp™ 100 bp DNA ladder

Analysis of PCR products of plant mitochondrial DNA on a 1.5% agarose gel.

Lane # 1 shows a band (350 bp) specific for a house keeping gene of Mitochondrial DNA. The amplified product in lane # 2 shows amplification of a nuclear housekeeping gene (700 bp). The condition has been optimized to give highly specific products of 350 bp (for mitochondrial specific locus) and 700 bp (for nuclear specific locus). This shows that mitochondrial DNA was successfully isolated from plant tissue.

Ordering Information:

Cat. No	PI No.	Product Description
6114800011730	KT148A	GeNei™ Plant Mitochondrial DNA Isolation Teaching Kit, 5 expts.

GeNei™ Total RNA Extraction Teaching Kit

Description :

Ribonucleic acid (RNA) is a nucleic acid polymer consisting of covalently bound ribonucleotides which contain ribose sugar, a phosphate and a base (uracil or adenine and guanine or cytosine) RNA is transcribed from DNA, and it serves as the template (mRNA) for translation of genes into proteins, transferring amino acids to the ribosome to form proteins (tRNA) and also translating the transcript into proteins (rRNA). Living cell whether prokaryotic/eukaryotic contain three major types of RNA: ribosomal RNA (rRNA), transfer RNA (tRNA) & messenger RNA (mRNA). For eg: A single mammalian cell contains a total of approximately 1x10-5 µg of RNA of which 80 - 85% is ribosomal RNA (rRNA) with three subunits of 28s, 18s and 5s. 15-20% is composed of a variety of low molecular weight species transfer RNA (tRNA), small nuclear RNAs etc and 1-5% is messenger RNA (mRNA).

The basic steps involved in the isolation of RNA are:

- Disruption of cells or tissue
- Denaturation of nucleic acid: protein complexes.
- Inactivation of endogenous ribonucleases.
- Purification of the RNA from contaminating DNA and protein.

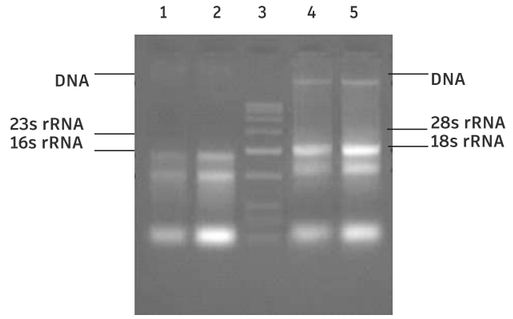
RNA is generally isolated by using strong denaturant like guanidine thiocyanate and phenol-chloroform with a reducing agent, β-mercaptoethanol, to inhibit the RNase activity. These methods work well but require the use of toxic compounds and are cumbersome. Most methods do not yield DNA free RNA and would further require the samples to be treated with DNase I. Other methods include the use of Lithium chloride to selectively precipitate RNA

Using this kit, students will isolate total RNA from a prokaryote *(E coli* strain) and a eukaryote (green gram sprout). Protocol used in this kit does not involve use of toxic chemicals and can be completed within a short time. However, the method employed does not remove DNA completely and hence it is seen as a contaminating band (as indicated in figure 1).The purpose of the kit is only to show the diffrent steps involved in extracting total RNA using this kit include:

- Homogenization
- Phase Separation
- RNA Precipitation
- RNA Wash
- RNA Solubilization

Kit Contents :

- Proteinase K
- DTT
- Low Range DNA Ruler (Ready to Use)
- Nuclease Free Water
- 2.5X Gel Loading Buffer
- Extraction Buffer
- 3M Sodium acetate
- E.coli (Lyophilized vial)
- Alcohol
- Tissue Grinder
- Agarose
- 50X TAE 40
- LB Broth
- Agar



Lane 1 & 2 : Total RNA from E.coli (4 µl and 8 µl)
Lane 3 : Low Range DNA Ruler
Lane 4 & 5 : Total RNA from green gram sprout (2 µl and 4 µl)

Total RNA extracted from E.coli and green gram sprout, electrophoresed on 1.5% agarose gel stained with EtBr.
Note: Low Range DNA Ruler supplied is not for sizing the rRNA bands

Ordering Information:

Cat. No	PI No.	Product Description
6113200011730	KT132A	GeNei™ Total RNA Extraction Teaching Kit, 10 expts.

GeNei™ Gel Extraction Teaching Kit (Solution Based)

Description :

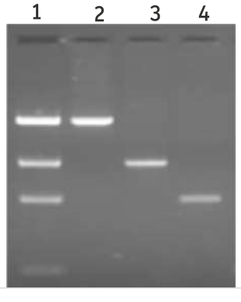
binds Electrophoresis of DNA using polyacrylamide or agarose gels is one of the core techniques used in molecular biology. This method is used to separate, identify and purify DNA fragments. Agarose gels can be used to effectively separate fragments from 50 bp to several thousand bases in length by varying the porosity of the gel and application of current. Migration of DNA through the pores of gel depends upon the size and conformation of DNA. Electrophoresed DNA can be purified from gels by a number of methods such as: Electroelution, electrophoresis onto DEAE Cellulose / Nitrocellulose (NA45) paper, using β-Agarase (from Low Melting Agarose) or using glass beads / silica etc. In this kit, DNA is purified from agarose gel using silica / glass powder of a specified size. It is based on the fact that DNA to silica under specific conditions of salt and pH. This method works best for purification of fragments between approximately 500 bp to 5000

bp as DNA of smaller sizes (< 500 bp) bind strongly to silica thereby resulting in lower yields, while larger DNA fragments (> 5 kb) tend to get sheared by glass beads. DNA binds to silica in presence of a chaotropic salt, Sodium iodide (NaI) independent of its base composition and topology. Chaotropic salts are known to disrupt the hydrogen bonds of water, thus increasing the solubility of non-polar substances in water. Hence, due to dehydration of phosphodiester backbone by chaotropic salts, the exposed phosphate residues of DNA adsorb to silica. Once adsorbed, double stranded DNA remains in either native / partially denatured state and cannot be eluted from the matrix by solvents that displace other biopolymers such as RNA / carbohydrates / proteins. When rehydrated with aqueous buffer, DNA is eluted.

In this kit, students are provided with a DNA Marker, having 4 fragments of sizes 2317 bp, 1126 bp, 684 bp and 234 bp. These fragments will be separated by electrophoresis, excised out of the gel and only first 3 fragments will be purified individually using silica. Each purified fragment will then be analyzed on agarose gel, along with Marker

Kit Contents :

- DNA Marker
- Silica
- Sodium iodide Solution
- 1X TE
- 2.5X Gel Loading Buffer
- Wash Buffer
- Agarose
- 50X TAE
- 6X Staining Dye
- 1.5 ml Vials



Lane 1 : Marker
Lane 2 : 2317 bp fragment
Lane 3 : 1126 bp fragment
Lane 4 : 684 bp fragment

Purified Marker fragments electrophoresed on 1% agarose gel (Stained with EtBr)

Ordering Information:

Cat. No	PI No.	Product Description
6104300011730	KT43A	GeNei™ Gel Extraction Teaching Kit (Solution Based), 5 expts.

GeNei™ Gel Extraction Teaching kit (membrane based)

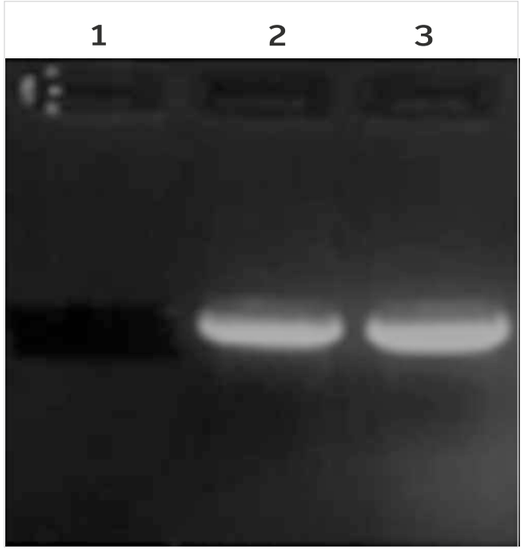
Description :

Electrophoresed DNA can be purified from the gel by a number of methods such as electroelution, electrophoresis onto DEAE Cellulose / Nitrocellulose (NA45) paper, using β-Agarase (from low melting agarose) or using glass beads / silica etc. DNA binds to silica in presence of a chaotropic salt, independent of its base composition and topology. Chaotropic salts are known to disrupt the hydrogen bonds of water, thus increasing the solubility of non-polar substances in water. Hence, due to dehydration of phosphodiester backbone by chaotropic salts, the exposed phosphate residues of DNA adsorb to silica. Once adsorbed, double stranded DNA remains in either native / partially denatured state and cannot be eluted from the matrix by solvents that displace other biopolymers such as RNA/carbohydrates/proteins. When rehydrated with aqueous buffer, DNA is eluted out. There is no shearing of DNA. Purification of DNA fragment from agarose gel using silica membrane in spin column format is an improvisation over silica solution. This technique is useful in rapid purification of DNA fragments from agarose gel.

In this kit, students are provided with DNA digest (Ready to use), which has 1 fragment of size 2686 bp. This fragment will be separated by electrophoresis on an agarose gel. The band of interest will be purified using spin columns. The purified fragment will then be analyzed on agarose gel, along with DNA digest.

Kit Contents :

- DNA Digest (ready to use)
- 2.5X Gel Loading Buffer
- Gel Solubilizer
- Wash Buffer (conc. 4X)
- Diluent for Wash Buffer
- Binding Buffer
- Elution Buffer
- Spin Columns
- Collection Tubes
- Agarose
- 50X TAE
- 1.5 ml Vials



Analysis of the Purified / Eluted DNA fragment with the control.

Lane 1 : DNA Digest
Lane 2 : Eluted DNA
Lane 3 : Control DNA Digest

Ordering Information:

Cat. No	PI No.	Product Description
6113400011730	KT134A	GeNei™ Gel Extraction Teaching kit (membrane based), 5 expts

CLONING & EXPRESSION TECHNIQUES

GeNei™ GFP Cloning Teaching Kit

Description :

Molecular cloning, or gene cloning, is a process that encompasses the insertion of a DNA fragment, often a gene of interest, into a cloning vector. The resulting recombinant is then introduced into a compatible host strain, thereby generating the desired clones based on screening.

The GFP Cloning Teaching Kit empowers students with the cloning GFP gene in the following steps.

- Preparation of competent cells
- Ligation of the Green Fluorescent Protein (GFP) gene into the linearized pUC vector
- Transformation of the above ligation mixture.
- Screening of recombinants observed as luminescent green colonies when exposed to UV light.
- Calculation of the transformation efficiency

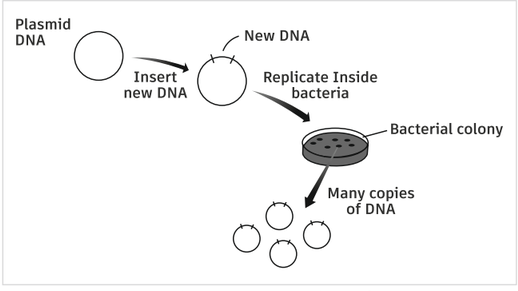


Figure: Illustrating DNA cloning -Ligation and Transformation

Ordering Information:

Cat. No	PI No.	Product Description
6106000011730	KT60	GeNei™ GFP Cloning Teaching Kit, 5 expts.

GeNei™ Bacterial Gene Expression Teaching Kit

Description :

Molecular cloning or gene cloning involves insertion of a DNA segment of interest into an autonomously replicating DNA molecule, i.e., a cloning vector. Transforming the vector into a suitable host organism results in the production of large amounts of the inserted DNA fragment. For expression of genes, the insert DNA should be flanked by correctly oriented control sequences for RNA and protein synthesis. Hence, one uses an expression vector, such that the host produces large quantities of RNA and subsequently the protein which can be isolated and purified. Five major expression systems have been developed:

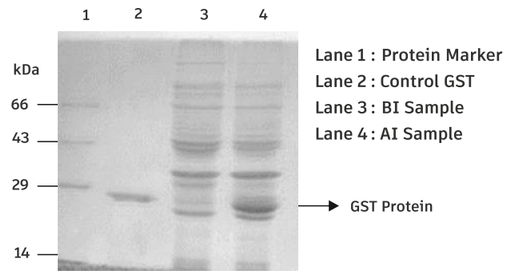
- Bacterial expression system
- Yeast expression system
- Bacillus expression system
- Baculovirus expression systems
- Mammalian expression system

Bacterial expression vectors contain necessary elements for bacterial transcription and translation, including a strong bacterial promoter with appropriate recognition sequences for RNA polymerase. A suitable ribosome binding site (Shine Dalgarno sequence) is required for efficient translation initiation. These sequences are placed in the plasmid at an appropriate distance upstream from the inserted DNA fragment. It is important that the gene is inserted into the plasmid in a proper reading frame to ensure expression of the right protein.

The kit supplies an E.coli strain having a recombinant expression vector. Glutathione-S-transferase (GST) gene is cloned into the expression vector having tac (lac + trp) promoter and lac I operator elements. Students will grow recombinant cells to mid-log phase and induce it with IPTG to allow expression of GST protein. Cells will then be lysed and the GST protein (26 kDa) analysed by SDS-PAGE. The expression will be verified by comparing samples before and after induction for the amount of GST protein produced.

Kit Contents :

- *E.coli* strain (Lyophilized)
- Ampicillin
- 0.1M IPTG
- Control GST Protein
- Cell Lysis Buffer
- Tris-SDS pH 8.8
- Sample Loading Buffer
- Protein Marker
- 30% Acrylamide mix
- Ammonium persulpphate
- TEMED
- 10X Reservoir Buffer (Tris Glycine SDS Buffer)
- Stainer (Ezee blue)
- LB Broth
- 1.5 ml vials



GST Protein analyzed on SDS-PAGE before and after IPTG induction.

Ordering Information:

Cat. No	PI No.	Product Description
6106900011730	KT69A	GeNei™ Bacterial Gene Expression Teaching Kit, 5 expts.

GeNei™ In-Vitro Transcription Teaching Kit

Description :

Transcription is the process of RNA synthesis from a DNA template. It is an important step as the genetic information encoded in the DNA is passed onto RNA for synthesis of proteins in vivo. The ability to synthesize RNA in the laboratory is critical to many techniques and is referred to as In-vitro transcription. In-vitro transcription requires a pure linear DNA template containing a promoter, ribonucleotide triphosphates (rNTP), a buffer that includes Dithiothrietol (DTT) and magnesium ions, and an appropriate phage RNA Polymerase. RNA Polymerases are DNA template-dependent with distinct and very specific promoter sequence requirements. The common RNA Polymerases used in in-vitro transcription reactions are SP6, T7 and T3 Polymerases, representing the bacteriophages from which they were cloned. The bacteriophage promoters, T7, T3 and SP6 consist of 23 base pairs numbered -17 to +6, where +1 indicates the first base of the coded transcript. An important observation is that, of the +1 through +6 bases, only the base composition of +1 and +2 are critical and must be a Guanine (G) and purine, respectively, to yield an efficient transcription template.

T7 RNA Polymerase binds to its double stranded DNA promoter and Polymerase separates the two DNA strands to initiate transcription at a specific base in the template. It uses the 3'-5' strand as template for the synthesis of a complementary 5'-3' RNA strand with good fidelity until the end of the lower DNA strand is reached.

Using this kit, students will carry out In-vitro-transcription with two different DNA templates. One of these templates has the T7 promoter region which will give an RNA transcript while the other template lacking the T7 promoter region will not yield RNA transcript. Following transcription with T7 RNA Polymerase students will analyze the samples on agarose gel, stain the gel then destain with water. On visualizing the gel under UV transilluminator, DNA will be seen as a sharp green fluorescent band & RNA transcript as a diffused orange band.

Kit Contents :

- Template 1
- Template 2
- Rnase Inhibitor
- RNase Inhibitor
- T7 RNA Polymerase
- 2.5X Gel Loading Buffer
- 5X T7RNA Polymerase Buffer
- rNTP Mix
- Nuclease Free Water
- Rinse Buffer
- Staining Solution
- 50X TAE
- Agarose

Ordering Information:

Cat. No	PI No.	Product Description
6113100011730	KT131A	GeNei™ In-Vitro Transcription Teaching Kit, 10 expts.

PCR RELATED TECHNIQUES

GeNei™ Student PCR Teaching Kit

PCR-Polymerase Chain Reaction is an in vitro method of enzymatic synthesis of specific DNA sequences. This technique was developed by Kary Mullis in 1983. PCR encompasses the utilization of brief synthetic DNA fragments, known as primers, to target and select the specific genomic segment for amplification. Multiple rounds of DNA synthesis are then executed to magnify the chosen segment. PCR consists of three basic steps:

- Denaturation: During this step, the two strands of DNA melt open to form single stranded DNA and all enzymatic reactions stop. This is generally carried out at 92° C – 96° C.
- Annealing: Annealing of primers to each original strand for new strand synthesis is carried out between 45° C – 55° C.
- Extension: The polymerase adds 2'-deoxynucleoside-5'-triphosphates (dNTPs) complementary to the template at the 3' end of the primers. Since both strands are copied during PCR, there is an exponential increase in the number of copies of the gene.

This Kit demonstrates the:

- PCR amplification of specific target sequence from genomic DNA.
- Analysis of the amplified product by agarose gel electrophoresis.

Kit Contents :

- Taq DNA Polymerase
- 10X Assay Buffer
- dNTP Mix
- StepUp™ 100 bp DNA Ladder (Ready to Use)
- Template DNA
- Forward Primer
- Reverse Primer
- Nuclease Free Water
- Mineral Oil
- Agarose
- Gel Loading Buffer
- 50X TAE
- PCR Tubes
- dInstruction Manual

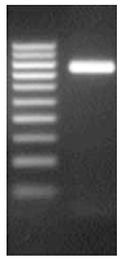


Fig 1 : PCR amplified product electrophoresed on a 1.5% Agarose gel (Stained with EtBr).

Lane 1 & 2 : StepUp™ 100 bp DNA Ladder (100 bp to 1000 bp).
Lane 3 : PCR Amplified 0.8 kb fragment electrophoresing alongside 0.8 kb fragment of StepUp™ 100 bp DNA ladder

Ordering Information:

Cat. No	PI No.	Product Description
6104400011730	KT44A	GeNei™ Student PCR Teaching Kit, 10 expts.
6104400021730	KT44B	GeNei™ Student PCR Teaching Kit, 20 expts.

GeNei™ Multiplex PCR Teaching Kit

Description :

PCR – Polymerase Chain Reaction is an in vitro method of enzymatic synthesis of specific DNA sequences. This technique was developed by Kary Mullis in 1983. It is a very simple and inexpensive technique for characterizing, analyzing and synthesizing any specific piece of DNA or RNA from virtually any living organism (plant / animal / virus / bacteria). It exploits the natural function of the polymerases, present in all living things, to copy genetic material or perform "Molecular Photocopying.

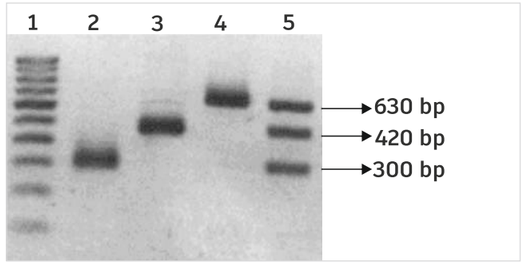
The basic principle of multiplex PCR is the same as PCR, with the variation that two or more loci i.e. 4 or more primers are used to amplify multiple regions at a time. Especially important for the successful multiplex PCR assays are the

- Relative concentration of primers at the various loci
- Concentration of PCR buffer
- Cycling temperature Balance between the MgCl2 and deoxynucleotide triphosphate concen tration.

This kit provides reagents to perform multiplex PCR using DNA template containing the three loci considered for amplification. Using this kit, students will carry out 4 PCR reactions of which 3 primers will give a single product and the fourth will give all the 3 product in multiplex. Six primers (3 forward and 3 reverse) are used to amplify 3 regions of the template that result in three fragments of 300bp, 420bp and 630bp, respectively. The amplified products are then analyzed on a 1.5% agarose gel along with a marker. The DNA marker is a StepUp™ 100bp DNA Ladder wherein, 10 bands are seen ranging from 100bp to 1Kb.

Kit Contents :

- Taq DNA Polymerase
- 10X Assay Buffer
- dNTP Mix
- Template DNA
- Primer Set #1
- Primer Set #2
- Primer Set #3
- Nuclease Free Water
- StepUp™ 100 bp DNA Ladder (Ready to Use)
- 2.5X Gel Loading Buffer
- Agarose 5g
- RT Mineral Oil
- 50X TAE
- PCR Tubes



PCR amplified product analyzed on 1.5% Agarose gel (Stained with EtBr)

Lane # 1 : StepUp™ 100 bp DNA Ladder
Lane # 2 : Primer set # 1
Lane # 3 : Primer set # 2
Lane # 4 : Primer set # 3
Lane # 5 : All the 3 primers

As observed on agarose gel, PCR amplification of the template using specific primers results in a product of a particular size. The PCR conditions have been optimized to give highly specific product of 300, 420, 630 bp as is observed by the absence of any non-specific product. In lane 5 all the primers when used in single reaction gives all three products size.

Ordering Information:

Cat. No	PI No.	Product Description
6110700011730	KT107A	GeNei™ Multiplex PCR Teaching Kit, 5 expts.

GeNei™ GMO Detection Teaching Kit (Simulation Study)

Description :

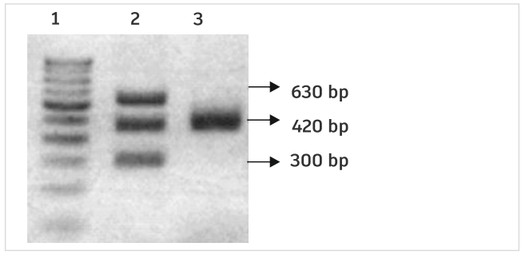
Genetically modified organisms (GMOs) have recently attracted the attention of agricultural, medical, food scientists and governments of many countries in the world due to an increasing concern that the recombinant gene (s) inserted into an organism may result in unforeseen effects. Therefore, there is a need to regulate each transgenic event so that the officially approved events will be the only products for commercial use. However, for controlling the unauthorized use of the unregulated transgenic events, their early detection is necessary. These detection methods are primarily based on identifying the inserted DNA sequence (DNA-based techniques) or the specific proteins

resulted from the inserted gene (protein-based techniques). The DNA based techniques are currently the major detection methods that are widely used due to their ease and accuracy. However, detection for the presence or absence alone is not sufficient for regulation of GMOs. Rather, identification of the transgenic event (authorized or not) and their amount in a given lot should also be quantified to determine the threshold level. Hitherto, PCR (polymerase chain reaction)-based approaches are the most reliable methods for the quantification of genetic modification both in raw as well as processed products. For every country expected to use genetically engineered crops or food products resulted from them, detection and quantification capacity should be readily available.

In this kit reagents are provided to perform multiplex PCR using DNA containing the three loci considered to be amplified as a template. Six primers (3 forward and 3 reverse) are used to amplify 3 regions of the template that result in three bands, 300 bp 420 bp and 630 bp respectively. The amplified products are then analyzed by electrophoresis on 1.5% agarose gel along with a marker. The DNA marker is a StepUp™ 100bp DNA ladder wherein, 10 bands are seen ranging from 100bp to 1Kb.

Kit Contents :

- Taq DNA Polymerase
- 10X Assay Buffer
- 10 mM dNTP Mix
- Template DNA
- Control DNA
- Primer Set #1
- Primer Set #2
- Primer Set #3
- Nuclease Free Water
- StepUp™ 100bp DNA Ladder (Ready to Use)
- Gel Loading Buffer (2.5X)
- Agarose
- Mineral Oil
- 50X TAE
- PCR Tubes



PCR amplified product electrophoresed on 1.5 % agarose gel (stained with EtBr)

Lane 1 : StepUp™ 100 bp DNA Ladder
Lane 2 : Template DNA
Lane 3 : Control DNA

Lane 3 shows a single band of the control while PCR product in lane 2 shows amplification of all the 3 bands in a single tube, thus explaining the concept of multiplexing to detect the GMO sample. The condition has been optimized to give highly specific products of 300 bp, 420 bp and 630 bp.

Ordering Information:

Cat. No	PI No.	Product Description
6110800011730	KT108A	GeNei™ GMO Detection Teaching Kit (Simulation Study), 5 expts.

GeNei™ RAPD Application Teaching Kit

Description :

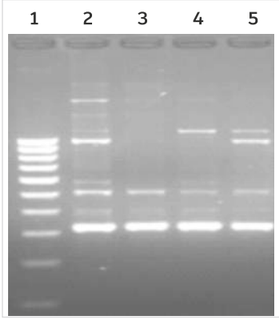
A DNA fingerprint can be called a genetic photograph of an individual. RAPD is a very general method for obtaining a molecular fingerprint of a species or strain. Low stringency PCR amplification of genomic DNA using a single short primer (10-22 mer) of arbitrary sequence is used to generate a set of fragments that is characteristic of the variety from which the DNA was isolated. Each fragment in the profile is the result of hybridization and extension of a primer on opposite DNA strands in the appropriate orientation and separated by such a distance allowing efficient PCR. This random primer is able to bind under appropriate conditions to a number of partially or perfectly complementary sequences at unknown locations in the genome of an organism. If the binding sites occur in a spacing

and orientation that allows amplification of DNA fragments, fingerprinting patterns are produced. By performing similar experiments with different primers and many crop varieties, quantitative data can be derived which can be then used to prepare dendrograms for taxonomic studies. A particular band can also be considered to be a "Mendelian" trait of an organism and can be used as a molecular marker to study the segregation of other traits of economic significance.

This kit demonstrates the sensitivity of the RAPD technique, which differentiates one rice variety from the other. The kit provides 4 samples of rice genomic DNA (4 different varieties), random primer and components for setting up a PCR reaction. The PCR can be performed and then analyzed by electrophoresis of the product on an agarose gel and visualizing the RAPD pattern

Kit Contents :

- Genomic DNA (4 Varieties of Rice DNA)
- Random Primer
- Taq DNA Polymerase
- 10XAssay buffer
- 10mM dNTP Mix
- 2.5X Gel Loading Buffer
- Nuclease Free Water
- StepUp™ 100bp DNA Ladder (Ready to Use)
- Mineral Oil
- 50X TAE
- Agarose
- PCR Tubes



Analysis of the DNA fingerprint of 4 different rice varieties by RAPD on a 2% agarose gel.

Lane 1 : StepUp™ 100 bp DNA Ladder
Lane 2 : Rice Variety 1
Lane 3 : Rice Variety 2
Lane 4 : Rice Variety 3
Lane 5 : Rice Variety 4

All the 4 varieties of rice DNA have generated a signature RAPD profile with minor variations within themselves. The study establishes the robustness of RAPD technique that can distinguish genomes even with minor variations. This variation is seen as a difference in either intensities or number (presence or absence) of DNA bands.

Ordering Information:

Cat. No	PI No.	Product Description
6110000011730	KT100A	GeNei™ RAPD Application Teaching Kit, 5 expts.
6110000021730	KT100B	GeNei™ RAPD Application Teaching Kit, 20 expts.

GeNei™ PCR Application Teaching Kit

Description :

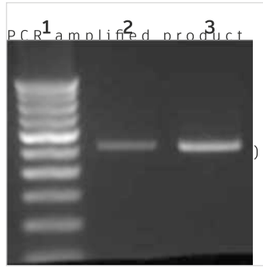
PCR – Polymerase Chain Reaction is an in vitro method of enzymatic synthesis of specific DNA sequences. This technique was developed by Kary Mullis in 1983. It is a very simple and inexpensive technique for characterizing, analyzing and synthesizing any specific piece of DNA or RNA from virtually any living organism (plant / animal / virus / bacteria). It exploits the natural function of the polymerases, present in all living things, to copy genetic material or perform "Molecular Photocopying." PCR consists of three basic steps: Denaturation: During this step, the two strands melt open to form single stranded DNA and all enzymatic reactions stop. This is generally carried out at 92°C – 96°C. Annealing: Annealing of primers to each original strand for new strand synthesis is carried out between 45°C – 55°C. Extension at 72°C: The polymerase adds 2'-deoxy ribonucleoside-5' triphosphate (dNTPs) complementary to the template at the 3' end of the primers. Since both strands are copied during PCR, there is an exponential increase in the number of copies of the

gene. These 3 steps are repeated 20-30 times in an automated thermocycler that can heat and cool the reaction mixture in tube within a very short time. This results in exponential accumulation of specific DNA fragments, ends of which are defined by 5' ends of the primers.

This kit demonstrates the use of a simple and non-invasive protocol for isolation and purification of Human genomic DNA from cells of the buccal mucosa. The Human genomic DNA thus isolated from cells of buccal mucosa is used as a template for the amplification of the 500 bp Interferon gene by PCR using gene specific primers 1 and 2. The amplified product is then analyzed by electrophoresis on a 1.5% agarose gel along with a marker. The DNA marker provided is StepUp™ 100 bp DNA Ladder, with 10 bands ranging from 100 bp to 1 kb.

Kit Contents :

- Primer-1
- Primer-2
- Control DNA
- StepUp™ 100 bp DNA Ladder
- 10X Assay Buffer
- Taq DNA Polymerase
- 10 mM dNTP
- 2.5X Gel Loading Buffer
- Nuclease Free Water
- Solution A
- Solution B
- Solution C
- 1.5 ml Vials
- Scraper
- Agarose
- 50X TAE
- PCR Tubes
- Mineral Oil



Ordering Information:

Cat. No	PI No.	Product Description
6110100021730	KT101B	GeNei™ PCR Application Teaching Kit, 20 expts.

GeNei™ Genotyping Analysis Teaching Kit

Description :

Genotyping is the process of determining differences in the genetic makeup (genotype) of an individual by examining the individuals DNA sequence using biological assays and comparing it to another individual's DNA sequence or a reference sequence. This can be done using methods like Restriction Fragment Length Polymorphism (RFLP), Random Amplified Polymorphic Detection (RAPD). Amplified Fragment Length Polymorphism Detection (AFLPD), PCR etc. Microsatellites, also known as Simple Sequence Repeats (SSRs) or Short Tandem Repeats (STRs) are repeating sequences of 2-6 base pairs of DNA. They are used as molecular markers in genetics, for kinship, population and other studies. Microsatellite can be amplified for identification by the Polymerase Chain Reaction (PCR) process, using the unique sequences of flanking regions as primers, thus permitting the amplification of various alleles. Multiplex PCR is a variant of PCR which enables simultaneous amplification of many targets of interest in one reaction by using more than one pair of primers. This method was first described by Chamberlain et. al. in 1988 and is now being widely used in many areas of DNA testing like deletion analysis, mutations and polymorphisms etc. Typically it is used for genotyping applications where simultaneous analysis of multiple markers is required or for detection of pathogens or genetically modified organism (GMO) or for microsatellite analyses.

This kit demonstrates the use of multiplex PCR in context to parentage determination. Two different parent DNA samples (mother - 2 nos and father - 2 nos) and one sample of child are supplied along with a set of primer mix containing primers required for multiplex PCR. Students will carry out PCR amplification of the DNA templates using the primer mixes provided, and analyze the amplified products on agarose gel to determine the parentage of the child.

Kit Contents :

- Template DNA
- Forward Primer Mix
- Reverse Primer Mix
- 10X Assay Buffer
- 10mM dNTP Mix
- Taq DNA Polymerase (1 U/µl)
- StepUp™ 100 bp DNA Ladder (Ready to use)
- 2.5X Gel Loading Buffer
- Nuclease Free Water
- Mineral Oil
- Agarose
- 50X TAE
- PCR Vial

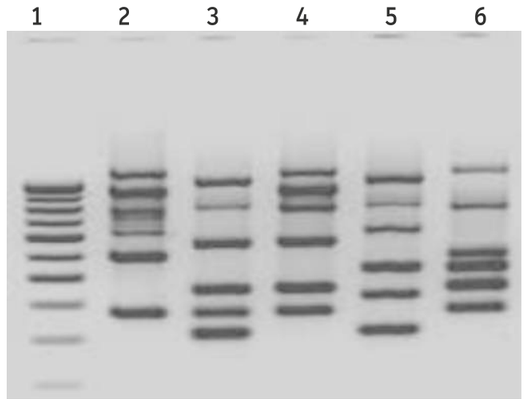


Fig: Analysis of amplified products of Multiplex PCR of Parents and Child on a 2% agarose gel

Lane 1 : StepUp™ 100 bp DNA Ladder
Lane 2 : Mother 1
Lane 3 : Father 1
Lane 4 : Child
Lane 5 : Mother 2
Lane 6 : Father 2

Analysis of amplified products of Multiplex PCR of Parents and Child on a 2% agarose gel.

All the bands present in the child are present either in the father 1 or in the mother 1 (that is F1 and M1 respectively). Hence it can be concluded that couple #1 i.e. M1 and F1 are the real parents of the child.

All the 4 varieties of rice DNA have generated a signature RAPD profile with minor variations within themselves. The study establishes the robustness of RAPD technique that can distinguish genomes even with minor variations. This variation is seen as a difference in either intensities or number (presence or absence) of DNA bands.

Ordering Information:

Cat. No	PI No.	Product Description
6110200011730	KT102A	GeNei™ Genotyping Analysis Teaching Kit, 5 expts.

GeNei™ Student RT PCR Teaching Kit

Description :

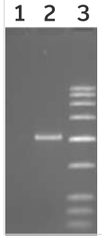
Reverse Transcription Polymerase Chain Reaction (RT-PCR) is a modification of polymerase chain reaction for amplifying data contained in RNA. The RNA strand (mRNA) is first reverse transcribed into its DNA compliment or complimentary DNA (cDNA), a reaction catalyzed by reverse transcriptase. Reverse transcriptase is a common name for the enzyme that functions as RNA Dependant DNA Polymerase. This is encoded by retroviruses which copy viral RNA into DNA prior to its integration into host cells. Thereafter the cDNA is amplified by PCR using thermo stable Taq DNA Polymerase. RT PCR can be done using either total RNA or purified mRNA as the starting material. There are three ways to prime mRNA for cDNA synthesis: either by using Gene specific primers or using Oligo dT or using Random hexamer. In the first method a 3' gene specific primer is annealed to the mRNA and extended with reverse transcriptase. In the second and third method entire population of mRNA molecules are first converted to cDNA, two gene specific primers are then added in the PCR step for amplification. For the eukaryotic mRNA all three methods of priming can be used whereas for prokaryotic mRNA only the gene specific primer and random hexamer can be utilized. The reaction also requires assay buffer, Dithiothreitol (DTT) a reducing agent, deoxyribonulcleotides (dNTPs) for

new strand synthesis, RNase inhibitor (RNasin) which inhibits RNase and Moloney murine leukemia virus Reverse transcriptase (MMuLV RT).

The kit provides enough reagents to perform 5 sets of experiments; each set of experiment includes 2 positive reactions and one negative control. Using this kit, the students will perform a cDNA synthesis reaction from Total RNA of Mouse Liver. In the PCR reaction, the cDNA is used as template and GD3PH a house keeping gene is amplified using specific primers. The reactions are carried out in two steps. Step I: Total RNA is taken in a vial and primed with the oligo dT followed by addition of RT enzyme and RT mix and incubated at 37° C to generate cDNA. Step II: cDNA synthesized is taken as template for PCR to amplify the GD3PH gene (~1000 bp fragment) using gene specific primers provided. A negative control experiment will be performed for every 2 positive reactions. For the negative control reaction the students will carryout step I and step II without the addition of Reverse transcriptase (MMuLV RT). The amplified products are analyzed on a 1.5% agarose gel, along will a Low Range DNA Ruler

Kit Contents :

- Total RNA
- Oligo dT Primer
- Rnasin
- M-MuLV Reverse Transcriptase
- RT Mix
- PCR Mix
- Taq DNA Polymerase
- Low Range DNA Ruler (Ready to use)
- Nuclease Free Water
- Gel Loading Buffer
- Mineral Oil
- Agarose
- 50X TAE
- RT PCR Tubes



1.5% Agarose gel showing amplification of GD3PH gene from cDNA using this kit.

Lane 1 : Negative Control
Lane 2 : Positive Control
Lane 3 : Low Range DNA Ruler

Ordering Information:

Cat. No	PI No.	Product Description
6113600011730	KT136A	GeNei™ Student RT PCR Teaching Kit, 4 reactions each, 5 expts.

DNA FINGER PRINTING TECHNIQUES

GeNei™ DNA Fingerprinting Teaching Kit (RFLP)

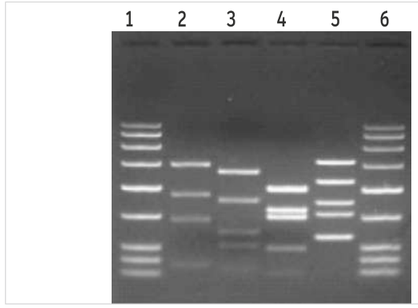
Description :

DNA Fingerprinting is a technique that is used to identify No two individual have identical DNA so this procedure can be used to identify if a sample DNA come from a particular individual. The technique requires that the DNA be cutup into small fragments. Restriction enzymes (REs) are used to perform this digestion. The technique takes advantage of the polymorphism in the genetic codes of individuals which result in variations in phenotype. RFLP Methodology involves cutting a particular region of DNA with known variability, with REs, then separating the DNA fragments by Agarose Gel Electrophoresis (AGE) and determining the number of fragments and their relative sizes. RFLP is one technique used by forensic scientists in DNA finger printing. It is also used for tracing ancestry, to study evolution and migration of wildlife and detection and diagnosis of certain diseases

The kit is designed to identify the bacterial isolate that has acquired a Multiple Drug Resistant (MDR) plasmid using RFLP method. Five plasmids isolated from individual isolates (one Control and four Test Samples) are supplied. Following restriction digestion and resolution of fragments on agarose gel, students will compare the DNA band pattern of four Test Samples with that of the Control. On analyzing the results, they will identify the isolate that has acquired the MDR plasmid.

Kit Contents :

- Restriction Enzyme: Ssp I
- 10X Assay Buffer
- Control DNA
- Test Samples (1, 2, 3, 4) (each)
- Low Range DNA Ruler (Ready to use)
- Gel Loading Buffer (2.5 X)
- Agarose
- 50X TAE
- 1.5 ml vials



DNA Fingerprint from Test plasmid DNA sample

Lanes 2.5 : Test Plasmid DNA digested with restriction nzymes
Lanes 1&6 : Low Range DNA Ruler

The Test plasmid DNA that has similar restriction profile as that of MDR Control plasmid DNA, would impart multiple drug resistance to the host. The restriction enzyme recognizes and cuts only a particular base sequence unique to it. Any mutation in this unique sequence, would mean that there is a loss of a site, hence giving rise to different band pattern. It is this specificity that helps in achieving reproducible restriction profile on digestion of a DNA sample.

Ordering Information:

Cat. No	PI No.	Product Description
6109400011730	KT94A	GeNei™ DNA Fingerprinting Teaching Kit, 5 expts. (RFLP)
6109400021730	KT94B	GeNei™ DNA Fingerprinting Teaching Kit 25 expts. (RFLP)

GeNei™ DNA Fingerprinting Teaching Kit (RAPD)

Description :

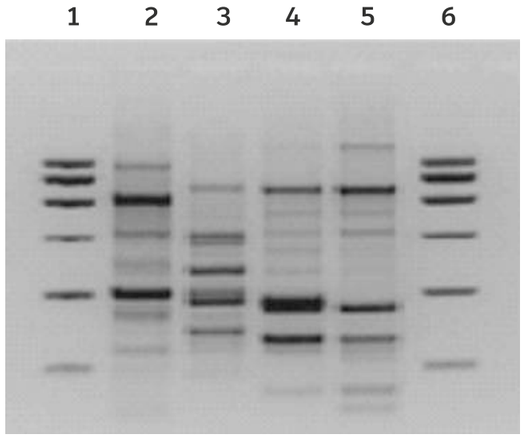
A DNA fingerprint can be called a genetic photograph of an individual. RAPD is a very general method for obtaining a molecular fingerprint of a species or strain. Low stringency PCR amplification of genomic DNA using a single short primer (10-22mer) of arbitrary sequence is used to generate a set of fragments that is characteristic of the variety from which the DNA was prepared. Each fragment in the profile is the result of hybridization and extension of a primer on opposite DNA strands in the appropriate orientation and separated by such a distance allowing efficient PCR. This random primer can bind under appropriate conditions to a number of partially or perfectly complementary sequences at unknown locations in the genome of an organism. If the binding sites occur in a spacing and orientation that allows amplification of DNA fragments, fingerprinting patterns are produced. By performing similar experiments with different primers and many crop/varieties, quantitative data can be derived which can be then used to prepare dendrograms for taxonomic studies. A particular band can also be a "Mendelian" trait of an organism and can be used as a molecular marker to study the segregation of other traits of economic significance.

The kit demonstrates the use of RAPD technique in context of bacterial strain typing / identification. Genomic DNA from four different strains is supplied as reference along with the Test Genomic DNA. Identification of the Test Genomic DNA is done by comparing its pattern with the reference genomic DNA provided. Students will carry out RAPD PCR using random primer, analyze on agarose gel and identify the strain.

Kit Contents :

- Serratia marcescens Genomic DNA
- Bacillus subtilis Genomic
- E.coli B Genomic

- E.coli K12 Genomic DNA
- Test Genomic DNA
- Random Primer
- Low Range DNA Ruler (Ready to use)
- Taq DNA Polymerase
- 10X Assay Buffer
- 10 mM dNTP Mix
- 2.5X Gel Loading Buffe
- Nuclease Free Water
- Mineral Oil
- Agarose
- 50X TAE
- PCR vials



Analysis of DNA fingerprints (by RAPD) of Test DNA and 4 Control Genomic DNAs on a 2% Agarose gel.

Lane 1 & 6 : Low Range DNA Ruler
Lane 2 : RAPD Pattern of Serratia marcescens
Lane 3 : RAPD Pattern of Bacillus subtilis
Lane 4 : RAPD Pattern of E.coil B
Lane 5 : RAPD Pattern of E.coil K12

Ordering Information:

Cat. No	PI No.	Product Description
6109500011730	KT95A	GeNei™ DNA Fingerprinting Teaching Kit, 5 expts. (RAPD)
6109500021730	KT95B	GeNei™ DNA Fingerprinting Teaching Kit, 25 expts. (RAPD)

GeNei™ Single Nucleotide Polymorphism (SNP)Teaching kit

Description :

Single Nucleotide Polymorphism or SNPs (pronounced “snips”) are DNA sequence variations changes that can occur within an individuals DNA sequence. The Genetic code is specified by the four nucleotides A (Adenine), G (Guanine), C (Cytosine) and T (Thymine). SNP occurs when a single nucleotide (A, T, G or C) in the DNA sequence is altered. An example for SNP is AAGGTTA is altered to ATGGTTA where the second nucleotide (A) in the first snippet is replaced by T in the second snippet. PCR based SNP detection facilitates scientific research in variety of fields ranging from population genetics and evolutionary biology to large-scale disease and drug associated studies. In this technique selected regions of a DNA sequence from multiple individuals sharing a common trait are compared, The PCR includes 3 primers, one specific for the SNP region and one specific for a consensus region. One of the primers (forward or reverse) is common to both normal and SNP type DNA. The consensus primers will amplify the consensus region (an 800 bp fragment) in both normal and SNP type DNA, while the SNP specific primers will amplify a 550 bp fragment from the SNP type DNA and not normal DNA (refer fig. 1 and fig. 2). This is because the SNP specific primer will bind to normal DNA inadequately forming mismatch at the 3’ end where as in the SNP type DNA it makes a perfect match.

Two different DNA samples (normal and SNP type) are provided along with a primer mix containing 3 different primers required for PCR. Primers specific to the SNP will amplify only if the SNP is present but the consensus primers will amplify both in the normal as well as the SNP type DNA. Thus , the PCR product from the SNP type DNA will show 2 bands (800bp and 550bp) whereas the PCR product from the normal DNA will show only one band (800 bp Refer Fig 3). Students will carry out PCR using the 2 templates and the primer mix, analyze the PCR products on agarose gel and determine which DNA has the SNP.

Kit Contents :

- Template DNA 1
- Template DNA 2
- Primer Mix
- 10X Assay Buffer
- 10 mM dNTP Mix
- StepUp™ 100 bp DNA Ladder (Ready to use)
- Taq DNA Polymerase (3 U/µl)
- 2.5X Gel Loading Buffer
- Nuclease Free Water
- Mineral Oil
- Agarose
- 50X TAE
- RT PCR vials

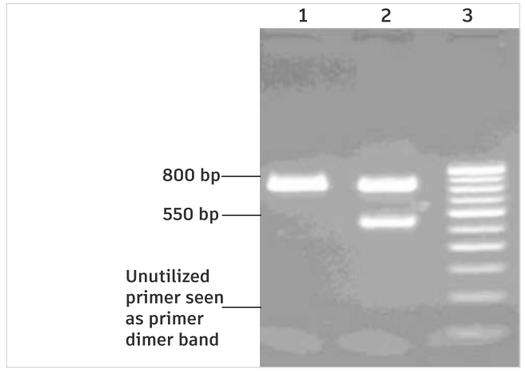


Fig 3 : Analysis of amplified products from Normal and SNP DNA on 2% Agarose Gel.

Lane 1 : Normal DNA
Lane 2 : SNA DNA
Lane 3 : StepUp™ 100 bp DNA Ladder

Analysis of amplified products from Normal and SNP DNA on a 2% Agarose Gel.

Amplification using SNP type DNA gives 2 bands of 800bp and 550bp whereas amplification using normal DNA gives only one band of 800 bp. Hence it can be concluded that DNA Template 1 is normal and DNA Template 2 is of SNP type.

Ordering Information:

Cat. No	PI No.	Product Description
6109900011730	KT99A	GeNei™ Single Nucleotide Polymorphism (SNP)Teaching kit, 5 expts.

GeNei™ AFLP Teaching Kit

Description :

All DNA fingerprinting methods study patterns associated with genetic markers; however, individual techniques differ in terms of the number and type of genetic markers examined. For example, some approaches allow the examination of a marker at a single locus (called single-locus markers), whereas others allow the simultaneous investigation of multiple loci (called multi-locus markers). Some approaches focus on co-dominant markers, which provide information about both alleles present at a given locus. In contrast, other techniques are concerned with dominant markers, which only report the presence or absence of a given allele and cannot provide information about whether an individual is homozygous for that allele. The oldest method used in DNA fingerprinting studies is restriction fragment length polymorphism (RFLP) analysis. A second DNA fingerprinting technique focuses on microsatellite regions of the genome that contain simple sequence repeats (SSRs), which are short stretches of two to six nucleotides that are repeated multiple times. Yet another approach to DNA fingerprinting, called random amplified polymorphic DNA (RAPD) analysis, uses PCR primer sets designed to randomly amplify DNA fragments scattered throughout the genome. Researchers are now increasingly turning to AFLP-PCR in their DNA fingerprinting efforts. AFLP-PCR uses many of the same steps as RFLP, SSR, and RAPD, however, this method includes additional steps that permit high-resolution interrogation of the entire genome, and it yields highly specific, reproducible genotypic data.

This technique involves five major steps, as described in the following sections.

Step 1: Preparing the AFLP Template and Restriction of the Genomic DNA AFLP analysis starts with the isolation and purification of a sample of genomic DNA. This is digested with a pair of restriction enzymes, often Mse I / Taq I and EcoR I. Mse I recognizes 5’-TTAA-3’ and cleaves after the first

5′-T, Taq I recognizes 5′-TCGA-3′ and cleaves after 5′-T, whereas EcoR I recognizes 5′-GAATTC-3′ and cleaves after the 5′-G. Mse I and EcoR I generate DNA fragments with 5′ overhangs (5′-TA-3′ and 5′-AATT-3′, respectively) that are distinct from each other and are non-complementary. Three types of restriction fragments are generated: One with EcoR I cut at both ends, one with EcoR I cut at one end, and Taq I cut with other end and one with Taq I cuts at both ends.

Step2: Ligation Reaction with Restriction Fragments and Adaptors Double-stranded adapters consist of a core sequence and an enzyme-specific sequence. They are specific for either the EcoRI site or the Taq I site. Ligation of the adapter to the restricted DNA alters the restriction site to prevent a second restriction from taking place after ligation has occurred.

Step 3: Pre-Selective Amplification: 25 Primers used in this step consist of a core sequence, an enzyme specific sequence and a selective single-base extension at the 3′-end. Sequences of the adapters and restriction sites serve as primer binding sites for the “pre selective PCR amplification.” Each pre-selective primer has a “selective” nucleotide that will recognize the subset of restriction fragments having the matching nucleotide downstream from the restriction site. The primary products of the pre-selective PCR are those fragments having one Taq I cut and one EcoR I cut and having the matching internal nucleotide.

Example of an EcoRI Adapter sequence is as follows: 5'-ATG TTA GAG TGC GTA CCA ATT C-3': Core Sequence: ATG TTA GAG TGC GTA CC Enzyme Specific sequence: A ATT Selective single-base extension: C

Step 4: Selective Amplification The selective amplification step consists of an identical sequence to the pre-selection primers plus two additional selective nucleotides at the 3′-end (i.e., a total of three selective nucleotides). These two additional nucleotides can be any of the 16 possible combinations of the four nucleotides. From the huge number of fragments generated by the two restriction enzymes, only that subset of fragments having matching nucleotides at all three positions will be amplified at this stage (50-200 fragments).

This step reduces the complexity of the PCR product mixture by 256-fold. Different primer combinations will generate different sets of fragments. Preliminary screening is used to choose primer pairs that generate suitable levels of variation for the taxa being studied.

Step 5: Scoring AFLP Products: AFLP-PCR products can be separated and scored with a variety of techniques, ranging from simple agarose gel electrophoresis to automated genotyping. Polyacrylamide gel electrophoresis provides maximum resolution of AFLP banding patterns to the level of single nucleotide length differences, whereas fragment length differences of less than 10 nucleotides are difficult to score on agarose gels. Although agarose gels provide the least resolution, they are user friendly, inexpensive and require minimal equipment.

Kit Contents :

- Yeast Genomic DNA
- EcoRI
- Taq I
- Assay Buffer E
- Adapter – EcoR I
- Adapter – Taq I
- Ligase Buffer
- Instant Ligase
- Primer 1
- Primer 2
- Primer 3
- Primer 4
- Primer 5
- Primer 6
- dNTP mix
- Taq DNA Polymerase
- Taq DNA Polymerase 10X Assay Buffer
- 2.5X Gel Loading Buffer
- Nuclease Free Water
- 20bp DNA Ruler (Ready to use)
- 30% Acrylamide mix
- 10X TBE
- Ammonium persulphate (APS)
- TEMED
- Mineral Oil
- PCR Tubes

Ordering Information:

Cat. No	PI No.	Product Description
6114700011730	KT147A	GeNei™ AFLP Teaching Kit, 5 expts.

BLOTTING TECHNIQUES

GeNei™ Southern Hybridization Teaching Kit

Description :

Principle: Southern Hybridization technique involves transfer of DNA fragments separated in electrophoretic gels to nylon membrane for detection of specific base sequences using complementary probes. Prof. E. M. Southern developed this technique in 1975, hence referred to as Southern transfer. Southern blots are used to identify and quantitate specific DNA sequences, in analysis of genome organization and expression, in the study of genetic diseases, in DNA fingerprinting and analysis of PCR products. In this technique, DNA molecules are size fractionated on agarose gel and transferred to a nitrocellulose or nylon membrane by capillary or electrophoretic transfer. The DNA is immobilized on the membrane by UV crosslinking or by baking at 80°C. The membrane is washed, prehybridized and then hybridized with a biotin labeled probe. After hybridization, the unbound probe is removed by washing the membrane. The membrane is then incubated with a protein block to reduce non-specific interaction. The bound (hybridized) probe is detected by incubating the membrane with streptavidin enzyme conjugate and finally developed with the substrate solution until sufficient colour (blue) develops.

The kit demonstrates the technique of Southern Hybridization. The students will carry out agarose gel electrophoresis of the DNA Marker supplied, transfer the DNA bands electrophoretically onto positively charged nylon membrane, hybridize with biotin labeled probe specific to one of the DNA bands in the DNA Marker and detect the hybridized DNA by adding streptavidin-HRP (Horse radish peroxidase) conjugate. The enzyme conjugate is detected by the addition of the substrate TMB/H_2O_2 (Tetramethyl benzidine H_2O_2 substrate) that reacts with HRP to give a blue coloured DNA band on the nylon membrane.

Kit Contents :

- DNA Marker (Ready to use)
- Biotinylated Probe
- Prehybridization Buffer
- Hybridization Buffer
- 2X Wash Buffers (A, B, C and D) each
- Blocking Buffer
- Streptavidin HRP Conjugate
- Conjugate Dilution Buffer
- 10X Substrate
- 10X Electrotransfer Buffer
- Blocking Powder
- Tween-20
- Agarose
- 50X TAE
- Filter Paper
- Nylon Membrane
- Petridish

Observation:

Observe for a single blue band on the nylon membrane.

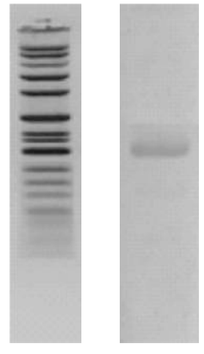


Fig. 1

Fig. 2

Fig. 1 : Electrophoretic separation of bands in the DNA Marker on a 1.0% agarose gel before transfer.
Fig. 2 : A single blue band on the nylon membrane after electroblotting, hybridization and detection.

In this non-isotopic detection technique, a Biotinylated Probe (sequence complementary to the target DNA) is used. The probe binds to the complementary sequences of the DNA Marker. This hybridized complex (probe-target complex) is detected by Streptavidin-HRP Conjugate, an enzyme that binds to biotin molecule of the probe. On addition of the Substrate solution, the enzyme reacts with the substrate to form the blue coloured precipitate which is seen as a band as shown in

figure 2. The probe-target complex is seen as the major blue band however 1 or 2 very less intense blue bands may be seen due to random nonspecific annealing of the probe to the DNA bound on the membrane.

Ordering Information:

Cat. No	PI No.	Product Description
6109600011730	KT96A	GeNei™ Southern Hybridization Teaching Kit, 5 expts.
6109600031730	KT96	GeNei™ Southern Hybridization Teaching Kit with ETS5, 5 expts.

GeNei™ Northern Blotting Teaching Kit

Description :

Northern blotting is a fundamental technique used in the detection and quantitation of specific mRNA in a given population of cells. It is a variation of the Southern blotting technique developed by Southern et al, in 1975. This technique was developed by Arwine and his co-workers and involved blot transfer of RNA onto chemically reactive paper where it binds covalently. Northern blotting differs from Southern Blotting in that the RNA can be probed using either a RNA probe or DNA probe, also referred to as RNA-DNA/RNA-RNA hybridization, whereas Southern blotting refers only to DNA-DNA hybridization.

Northern Blotting technique involves the following steps:

1. RNA isolation (total or poly(A) RNA)
2. Probe generation
3. Denaturing agarose gel electrophoresis
4. Transfer to solid support and immobilization
5. Prehybridization and hybridization with probe
6. Washing
7. Detection

Using this kit, students will electrophorese Total RNA samples on denaturing agarose gel and transfer the RNA onto nylon membrane by upward capillary action. Following UV fixation and baking, 28s Ribosomal RNA (rRNA) of the Total RNA sample will be probed with biotin labeled DNA probe in the hybridization step. Low stringency and high stringency washes will be carried out to remove un-hybridized probe and non-specifically hybridized probe. 28s rRNA will then be detected by adding a conjugate which is Streptavidin labeled with alkaline phosphatase (ALP). Finally the substrate (BCIP/NBT) is added which when reacted upon by the enzyme ALP will result in a purple color band on the membrane, corresponding to the position of the 28s rRNA on the membrane.

Kit Contents :

- Biotinylated Probe
- Total RNA
- RNA Sample Buffer
- Gel Loading Buffer
- Hybridization Butter
- Hybrizaion Buffer
- Streptavidin ALP Conjugate
- Dilution Buffer
- Substate
- Low Stringency Wash Buffer
- High Stringency Wash Buffer
- 10X Electrophoresis Buffer
- Blocking Power
- Agarose
- Wicks
- Nylon Membrane
- Filter Paper
- Petridish
- Tween - 20
- Formaldehyde
- Transfer Buffer
- Blotting She

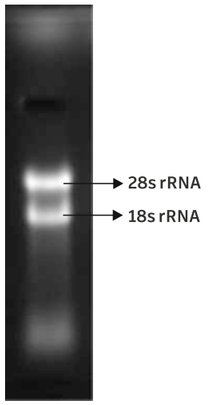


Fig 1A

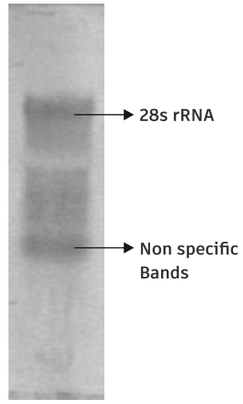


Fig 1B

Fig 1A : Total RNA on 1% denaturing agarose gel
Fig1B :Nylon membrane after hybridization & detection

Northern Blotting is a hybridization technique used to probe the gene of interest. In this non-isotopic method of detection, a Biotinylated DNA probe is used which binds to the 28s rRNA due to sequence complementarity. The DNA-RNA (Probe Target) complex is detected by Streptavidin-ALP Conjugate, an enzyme that binds to the Biotin molecule of the probe. On addition of Substrate solution, the enzyme reacts with its substrate to form a purple colored precipitate which appears as a purple band on the membrane.

- idate RNA-Seq data by confirming the presence and expression levels of specific RNA transcripts.
- Cell and Tissue-Specific Expression Studies: Northern blotting is applied to study cell and tissue-specific expression patterns of RNA molecules, helping to characterize gene expression in different biological contexts.
- Investigation of RNA Modifications: Northern blotting can be adapted to study RNA modifications, such as methylation or pseudouridylation, by detecting changes in mobility or hybridization patterns.

Ordering Information:

Cat. No	PI No.	Product Description
6113800011730	KT138A	GeNei™ Northern Blotting Teaching Kit, 5 expts.

MICROBIAL GENETICS

GeNei™ Bacterial Conjugation Teaching Kit

Description :

Transfer of genetic material from one bacterial strain (donor) to another strain (recipient) is a common event that occurs in nature with the objective of mixing the gene pool, in otherwise asexually reproducing organisms. DNA transfer among bacteria is mediated in three ways viz., transfection, transduction, and conjugation. Conjugation is the most widespread process of transferring genetic material from one bacterial cell to another. It is a process in which unidirectional transfer of DNA is mediated by conjugal plasmids or conjugal transposons requiring cell-to-cell contact. The process of bacterial conjugation was discovered by Lederberg and Tatum in 1946. Conjugation is best understood by considering properties of the 'F' factor, which is a small circular plasmid DNA that can replicate autonomously in the cell or can integrate into the host chromosome and thus transfer host chromosomal markers. When individual cells with an integrated 'F' are isolated and allowed to form pure colonies, the resulting strain can transfer chromosomal markers at very high frequency and are termed Hfr strains.

This kit demonstrates:

- Two E. coli strains are provided, A and B referred to as parental strains. Strain A carries an antibiotic resistance gene in the 'F' plasmid coding for Tetracycline, while Strain B is devoid of any 'F' factor but carries Streptomycin resistance gene in its chromosome.
- Both the strains will grow on medium containing the respective antibiotics to which they are resistant. On conjugating the two parental strains, the resulting bacteria will be resistant to both the antibiotics, i.e., the "conjugated bacteria" when plated on a medium containing both Tetracycline and Streptomycin, will survive suggesting that gene transfer has taken place from Strain A to Strain B.

- The parental strains when plated on the same medium do not survive as they are sensitive to either one of the antibiotics.

Kit Contents :

- *E. coli* strain(Donor) (Lyophilised Vial A)
- E. coli strain (Recipient) (Lyophilised Vial B)
- Streptomycin
- Tetracycline
- Agar
- LB Broth
- Instruction Manual.

Ordering Information:

Cat. No	PI No.	Product Description
6104500011730	KT45	GeNei™ Bacterial Conjugation Teaching Kit, 5 expts.
6104500021730	KT45A	GeNei™ Bacterial Conjugation Teaching Kit, 20 expts.

GeNei™ Plasmid Curing Teaching Kit

Description :

Curing is the process of removing plasmids from the bacterial cells, as a result of which the bacterium will no longer have the genetic advantages contained on the plasmid. This can be achieved by the use of compounds, which will act as DNA intercalating agent and interfere with DNA replication and consequently result in the elimination of plasmid. Curing can be achieved with high copy number plasmids by growing cells for many generations without a selective agent (e.g antibiotic). Curing can be accelerated with the addition of curing agents, at concentrations that will not inhibit or kill the host organisms. Large category of plasmids carry genes which render bacteria resistant to chemotherapeutic drugs. Plasmids can carry up to ten different resistance genes. Major epidemics with high morbidity and mortality have been caused by plasmid carrying multiresistant pathogens. Efforts have been made in numerous laboratories to discover and develop chemical compounds which will eliminate plasmid from the host bacteria. The most prominent category of plasmid eliminating compounds are those which bind to plasmid DNA by intercalation and inhibit the conjugational replication of this DNA. Among such substances are phenanthridines such as Ethidium and Propidium salts, antibiotics such as mitomycin, Rifampicin etc. Clearly, the elimination of plasmids from their host bacteria emerges as a current topic in chemotherapy research.

Using this kit, students will cure the plasmid carrying Green Fluorescent Proteins (GFP) gene from E.coli strain using a curing agent. The presence of ampicillin resistance gene in the plasmid will help in selecting cured and non cured cells. Students will revive the strain and grow the E.coli for seven generations in the growth medium along with the curing agent, followed by plating on selective medium to identify the cured cells.

Kit Contents :

- Ampicillin
- Host (Lyophilized)
- Curing Agent
- LB broth
- Agar
- 1.5 ml vials

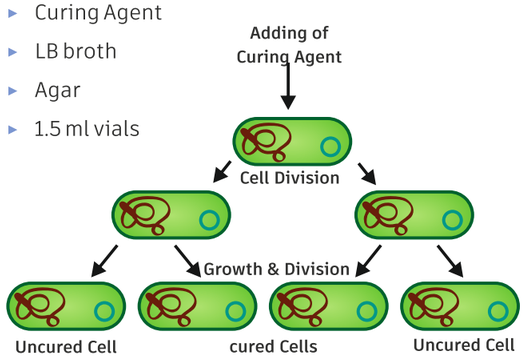


Fig : Diagrammatic representation of the Process of Plasmid Curing

Ordering Information:

Cat. No	PI No.	Product Description
6119000021730	KT190	GeNei™ Plasmid Curing Teaching Kit, 5 expts.

GeNei™ Bacterial Transduction Teaching Kit

Description :

may then be integrated into the recipient's nucleoid by various mechanisms and it confers a new property to the recipient cell like antibiotic resistance or production of some amino acids etc Natural mechanism of genetic recombination in bacteria include

- Transformation
- Transduction
- Conjugation

Transduction is the transfer of fragments of DNA from one bacterium to another bacterium by a bacteriophage. This genetic transfer occurs in both Gram-positive and Gram-negative bacteria. Transduction is observed with temperate bacteriophage (those that can form prophages) A prophage is a bacterial virus that has integrated its DNA into the DNA of a bacterial cell. This process of integration of viral DNA into bacterial DNA is called lysogenization.

In this kit, an E.coli phage is supplied, which exhibits both lytic and lysogenic life cycle. Three E.coli strains (Donor, Recipient and Susceptible host) are provided in the lyophilized forms. This kit simulates the process of transduction: i.e. genetic transfer of antibiotic resistant gene from one E.coli (Donor) strain to another (Recipient) through the bacteriophage. The donor strain is resistant to chloramphenicol and the recipient is sensitive to this antibiotic but resistant to ampicillin. Upon phage infection, phage DNA enters the donor cell and integrates into the bacterial chromosome. On temperature induction, the phage DNA is excised from the bacterial chromosome, the phage replicates and the host cell lyses releasing mature phage particles. These phage particles are then taken up for infecting the recipient strain (chloramphenicol sensitive) where lysogenization occurs. The screening of the transductants is based on the antibiotic selection marker. The recipient strain which will acquire the chloramphenicol resistant gene from the phage will survive on LB chloramphenicol plate, thus indicating the transfer of the gene from donor to recipient through a bacteriophage. To confirm the presence of the phage in lysogenized recipient strain, the phage is induced and titrated against the given susceptible host.

Kit Contents :

- Donor strain
- Recipient strain
- Susceptible host
- Phage lysate
- 0.1M $CaCl_2$
- $MgSO_4$
- Chloramphenicol
- 20% Maltose
- Ampicillin
- LB broth
- Agar
- 1.5 ml vials

Ordering Information:

Cat. No	PI No.	Product Description
6112300011730	KT123	GeNei™ Bacterial Transduction Teaching Kit, 5 expts.

GeNei™ Bacterial Transposons Teaching Kit

Description :

Transposons are 'Transposable elements' which are able to move from one place to another within a cell's genome. Sometimes a copy is made and the entire copy moves. This kind of insertion requires target DNA sequences. In the process they may cause mutations, increase or decrease in the amount of DNA in the genome, promote gene rearrangements, regulate gene expression or induce chromosome breaks or rearrangements. These mobile segments of DNA are sometimes

referred to as 'Jumping genes'. The first Transposable elements (TEs) were discovered in maize (Zea mays), by Barbara McClintock in 1948, for which she was awarded a Nobel Prize in 1983. She noticed insertions, deletions, and translocations, caused by these elements which lead to a change in the color of corn kernel. There are two distinct types of transposons: DNA Transposons, consisting only of DNA that moves directly from one place to place and Retrotransposons, which first transcribe DNA into RNA and then use Reverse Transcriptase to make a DNA copy of the RNA to insert in a new location. In bacteria, transposons can jump from chromosomal DNA to plasmid DNA and back. Usually, these are additional gene that serves a purpose other than transposition, which has resistance to antibiotics. This class of bacterial transposons is associated with the Tn family when the transposable elements lack an additional gene, they are called insertion sequence.

Using this kit, students can learn the process of transposition occurring naturally between two strains. Two E.coli strains are provided of which Strain A is resistant to Ampicillin and Chloramphenicol. Then Ampicillin Resistance Marker is present on a transposable plasmid. Strain B is resistant to streptomycin. When these two strains are grown together in appropriate conditions, Ampicillin resistance gene from one strain will get transferred to the other making it resistant to ampicillin along with streptomycin. This can be observed by the growth of the recipient on ampicillin plate and also by colony morphology. To confirm the transfer of the ampicillin resistance gene, DNA miniprep (Plasmid Isolation) is carried out.

Kit Contents :

- E.coli Strain A
- E.coli Strain B
- Chloramphenicol
- Ampicillin
- Streptomycin
- Solution I
- Solution II
- Solution III
- Solution IV
- 2.5X Gel Loading Buffer
- RNase A
- 1X TE
- Agarose
- 50X TAE
- LB Broth
- Agar
- 1.5 ml Vials

Ordering Information:

Cat. No	PI No.	Product Description
6112400011730	KT124A	GeNei™ Bacterial Transposons Teaching Kit, 5 expts.

GeNei™ Phage Titration Teaching Kit

Description :

Viruses that infect bacteria are referred to as bacteriophages, meaning bacteria eaters. These were first identified and described by Frederick Twort and Felix D' Herelle in 1917. Over the years, phages have become indispensable molecular tools in genetic engineering and related areas. Structurally three kinds of phages are recognized Icosahedral head (tail less), Icosahedral head with tail and Filamentous phage. The phage genome can be either circular or linear, single or double stranded DNA or linear RNA with one or more proteins. The proteins form a capsid around the nucleic acid and protect them from host nucleases. Bacteriophages remain in a state of dormancy in the environment and do not express any genes during this state and essentially persist until they come in contact with a susceptible host cell. On entering bacteria, the phage genome either integrates with the host genome (lysogeny) or independently produces prophages and lyse the host (lytic infection), resulting in death of the host cell and release of progeny phage particles. Each phage adsorbs to one cell and initiates an infection resulting in the release of about 100 phages/cell, these viruses infect the surrounding bacteria thereby releasing more virus particles. Due to successive rounds of infection, a

spreading zone of lysis results in a clear area against a turbid background (due to growth of host bacteria). This clearing is referred to as plaque. The number of plaques formed is equivalent to the number of phage particles. Phage capable of only lytic growth is called virulent.

In this kit, an E. coli lambda phage is supplied, which is a Temperate phage. The DNA of λ phage is linear double stranded having 48,502 base pairs. The 5' terminus of each strand, has a 12 nucleotide single stranded extension, complementary to each other, called the cohesive (cos) ends. The phage recognizes specific receptor on the surface of the host cell i.e., Maltose Binding Protein for the purpose of adsorption. Hence, the host E.coli is grown in a medium containing Maltose and Magnesium which further facilitates the process of adsorption. On entering the host cell, the DNA circularizes due to base pairing between cohesive ends of the DNA. This serves as a template for transcription of phage genes during early stages of infection. The phage DNA then replicates by rolling circle mechanism, synthesizes new capsid proteins, tail fiber protein and packages its DNA into capsids. Once assembled, prophage then brings about lysis of host cells and releases new infectious virus particles. Using this kit, students will prepare host plating cells, infect it with the phage lysate supplied and estimate the phage titre value.

Kit Contents :

- Host 1
- Phage Lysate
- 20% Maltose (sterile)
- SM Buffer
- LB Broth
- Agarose
- Mineral Oil
- 1.5 ml vials

Ordering Information:

Cat. No	PI No.	Product Description
6100500011730	KT05	GeNei™ Phage Titration Teaching Kit, 5 expts
6100500021730	KT05A	GeNei™ Phage Titration Teaching Kit, 20 expts. .

BASIC MICROBIOLOGY TECHNIQUES

GeNei™ Bacterial Growth Curve Teaching Kit

Description :

Bacterial growth usually refers to reproduction, increase in cell population number, size or both. Population growth is studied by analyzing the Growth Curve of a microbial culture. A wide variety of techniques can be used to study microbial growth, like changes in the total cell number, in a population of viable microorganisms, cell mass or dry weight determination, direct counting of cells under light microscope and turbidity measurements. Turbidity (cloudiness) of a broth culture relates to increase in cell number. Determination of bacterial growth involves inoculation of a sterile broth medium with bacteria and incubation of the culture under optimum conditions like temperature, pH, and oxygen. Since no fresh medium is provided to the bacteria during incubation, nutrient levels decline and concentration of waste increases. When the growth of microorganism reproducing by Binary Fission is plotted as the logarithm of cell number versus incubation time, the resulting curve is composed of 4 distinct phases. These are:

- Lag phase
- Log phase
- Stationary phase and
- Death phase

During the Lag Phase, there is no increase in cell number. The bacteria are preparing for reproduction, synthesizing DNA and various enzymes required for cell division. During the Log Phase of growth (so named because the logarithm of the bacterial biomass increases linearly with time), bacterial reproduction occurs at a maximal rate for the specific set of growth conditions. This growth phase is also called the Exponential Growth

Phase because the number of cells increase as an exponential function of 2n. During active bacterial growth, the size of the microbial population is doubling. The time required to achieve a doubling of the population size, known as Doubling Time or Generation Time, is the unit of measure of the microbial growth rate. Stationary Growth Phase is reached when there is no fresh nutrient available and there is no further net increase in bacterial cell number. The transition between the exponential and stationary phases involves a period of unbalanced growth during which the various cellular components are synthesized at unequal rates. During the Stationary Phase, the growth rate is equivalent to death rate. Death Phase represents the result of the inability of bacteria to carry out further reproduction.

In this kit E.coli strain and Luria Bertini (LB) media are supplied. Growth Curve of this strain is studied by measuring the optical density using a Spectrophotometer at regular time intervals of its growth and there after plotting a graph of time versus optical density.

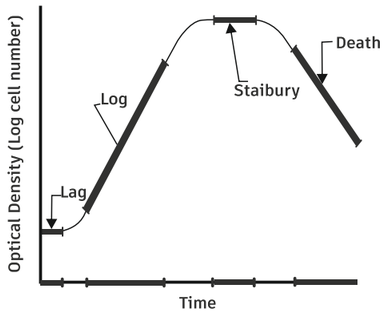


Fig 1 : A typical Bacterial Growth Curve, showing the four typical phases of growth.

Kit Contents :

- E.coli Strain
- LB Broth
- Agar

Ordering Information:

Cat. No	PI No.	Product Description
6104600011730	KT46	GeNei™ Bacterial Growth Curve Teaching Kit, 5 expts.

GeNei™ Bacterial Antibiotic Sensitivity Teaching Kit

Description :

The principle of antibiotic sensitivity test is based on the Bauer-Kirby Disc diffusion method. It is a standard qualitative test wherein the bacterial culture is spread onto the surface of Mueller-Hinton agar, followed by addition of antibiotic impregnated discs to the agar surface. The antibiotic diffuses through the agar to form a concentration gradient. This concentration gradient influences the growth of the bacterial strain. If an organism is susceptible to an antibiotic, a clear zone appears around the disc where the growth has been inhibited called the zone of inhibition. If resistant, no clear zone of inhibition appears. The diameter of the zone of inhibition surrounding the antibiotic disc is measured to determine whether the microorganism is sensitive (S), intermediately sensitive (I) or resistant (R) to a particular antibiotic. The size of zone of inhibition depends on: • The rate of diffusion of the antibiotic through agar and • The concentration of the antibiotic disc Hence, by determining the susceptibility of a pathogen, clinicians can select the most appropriate agent for treating the disease. The test also helps in studying microbial strains.

Using this kit, students will perform antibiotic sensitivity tests for three different strains E. coli, P. aeruginosa and S. aureus. Five different antibiotic discs- Chloramphenicol, Tetracycline, Kanamycin, Gentamycin and Vancomycin are provided against which the sensitivity of each of the strains will be tested. By measuring the diameter of zone of inhibition, students will determine the sensitivity of each of the strains against the five antibiotics using the zone size interpretative chart.

Kit Contents :

- Antibiotic discs
  - Chloramphenicol
  - Tetracycline
  - Kanamycin
  - Gentamycin
  - Vancomycin
- Lyophilized Strains
  - Escherichia coli
  - Staphylococcus aureus
  - Pseudomonas aeruginosa
- Cotton Swab
- Mueller- Hinton media
- Agar

Ordering Information:

Cat. No	PI No.	Product Description
6106800011730	KT68	GeNei™ Bacterial Antibiotic Sensitivity Teaching Kit, 5 expts.

GeNei™ Isolation and Identification of Soil Bacteria Teaching Kit

Description :

There are many methods of isolating bacteria from soil. Among them the most commonly used method is by serial dilution. In this method, soil is suspended in sterile water and serially diluted, thus decreasing the number of organisms in each dilution. This helps in isolating organisms in pure form when plated on agar surface. The serial dilution technique also helps in determining the number of organisms that may be present in a given soil sample and this in turn helps in determining the quality of the soil sample. Bacteria are identified and classified based on morphological, physiological, metabolic, serological bacteria phage typing, ecological, genetic, biochemical tests, staining and molecular characteristics. The kit focuses on the identification of the isolated bacteria by colony morphology and microscopic observation post Gram staining.

The colony morphology identification includes the following:

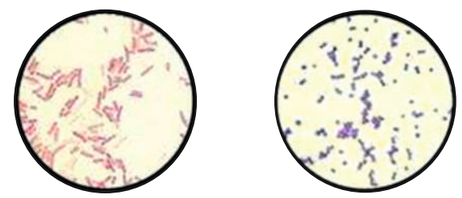
Form: Punctiform, Circular, Filamentous, Irregular, Rhizoid, Spindle

- Elevation: Flat, Raised, Convex, Pulvinate, Umbonate Margin: Entire, Undulate, Lobate, Erose, Filamentous, Curled
- Colour: Golden, Yellow, Red, Creamish, White
- Density: Opaque, Translucent
- Consistency: Rough, Smooth, Mucoid, Butyrous, Powdery

The kit contains medium for isolating bacteria, Gram staining reagents for identification of the isolated bacteria and 5 reference strains for easy identification. It enables the students to learn techniques like spread plate and streak plate method, serial dilution and preparation of medium

Kit Contents :

- Strains:
  - Serratia marcescens
  - Bacillus subtilis
  - Micrococcus luteus
  - Staphylococcus aureus
  - Nocardia sp.
- LB broth
- Agar
- Crystal violet stain
- Safranin stain
- Gram's iodine
- Decolourizing solution
- Glass spreader
- Glass slides



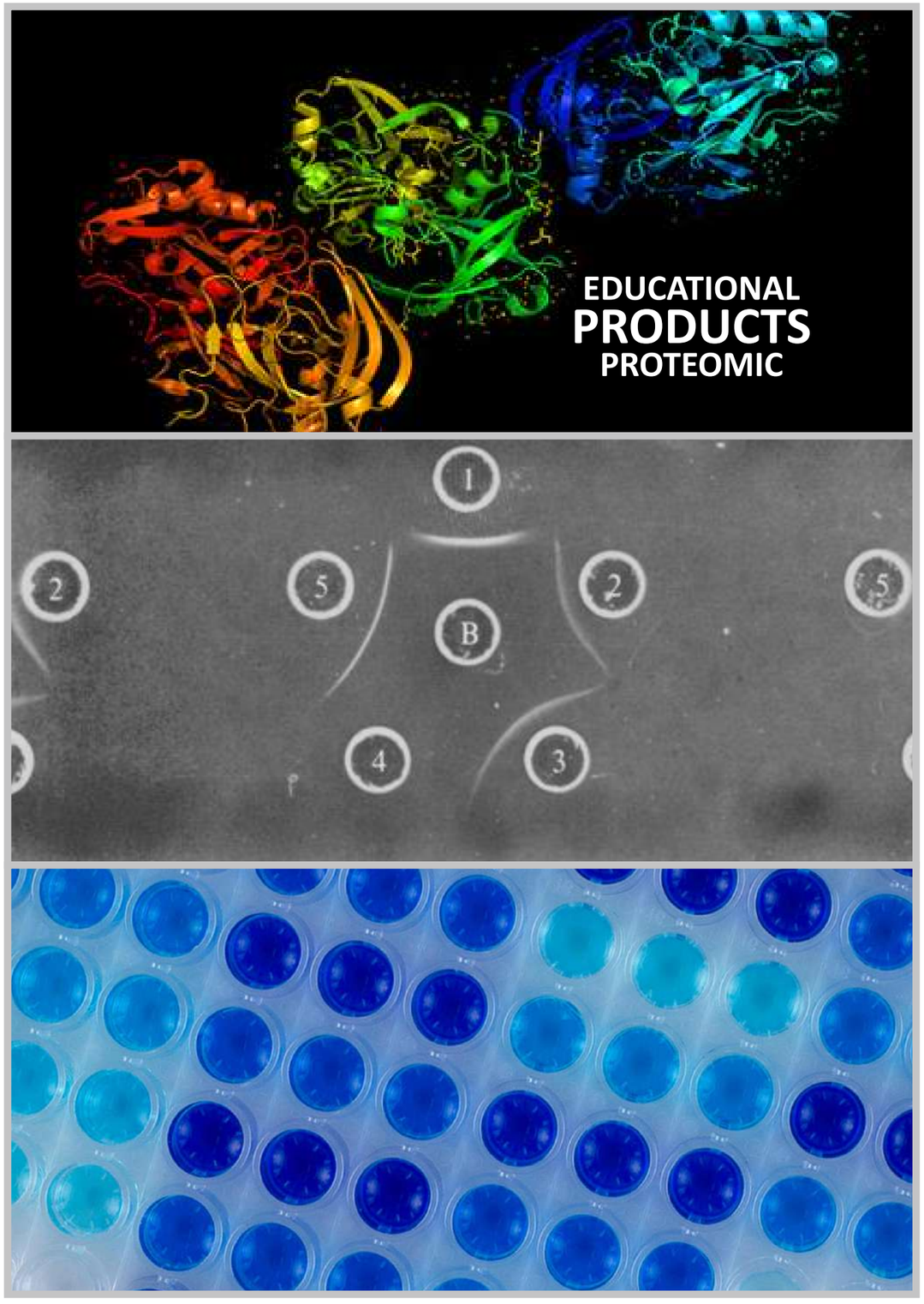
Gram Negative rods

Gram Positive Cocci (in cluster & in pairs)

Gram Staining of Bacteria

Ordering Information:

Cat. No	PI No.	Product Description
6109000011730	KT90	**GeNei™** Isolation and Identification of Soil Bacteria Teaching Kit, 5 expts.



IMMUNOPRECIPITATION TECHNIQUES

GeNei™ Quantitative Precipitin Assay Teaching Kit

Description :

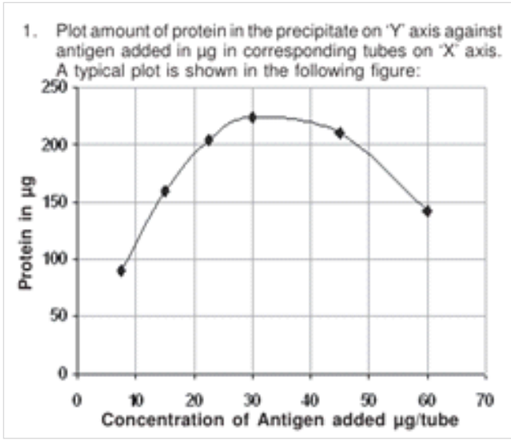
Polyclonal antibodies are obtained from immunized animals. These antibodies are used either directly or after processing to certain level of purity. In order to use these antibodies in immunological techniques it is essential to know the exact concentration of the active antibodies. One of the first observations of antigen-antibody interaction was their ability to precipitate when combined in certain proportions. Increasing amounts of antigen are added to a constant amount of antibody and the weight of precipitate formed in each tube is determined. The Quantitative Precipitin technique is a simple technique that is routinely used in the analysis of antibody and antigen interactions and for the estimation of the antibody as antigen content is a sample. It is based on the interaction of antibody and antigen to form a large protein complex that in certain solutions (buffer) will result in precipitation.

Using this kit, students will add a increasing amount of antigen to constant amount of antibody and determine the amount of antibody from the precipitate obtained. The difference in these two values is the amount of antibody present. Maximal precipitation occurs when all the antigen and all the antibody is incorporated into a lattice. When either antigen or antibody is in excess, smaller antigen-antibody complexes are former resulting in decreased precipitation.

Kit Contents :

- Antigen
- Antiserum
- 10X Assay Buffer
- 2X Resuspension Buffer
- 1.5 ml vials

1. Plot amount of protein in the precipitate on 'Y' axis against antigen added in µg in corresponding tubes on 'X' axis. A typical plot is shown in the following figure:



The quantitative precipitin assay enables environmental scientists to monitor and measure the presence of specific antigens or antibodies in environmental samples. This helps in identifying pollution sources, tracking pathogen outbreaks, and evaluating the impact of environmental factors on the immune system of organisms.

The applications of the quantitative precipitin assay are diverse and encompass fields like medical diagnosis, immunological research, forensic science, food allergy testing, and environmental monitoring. Its ability to

References :

- Heidelberger, Michael; Kendall, Forrest E. (30 November 1929). "A Quantitative Study of the Precipitin Reaction Between Type III Pneumococcus Polysaccharide and Purified Homologous Antibody". Journal of Experimental Medicine.

Ordering Information:

Cat. No	PI No.	Product Description
6101100011730	KT11	GeNei™ Quantitative Precipitin Assay Teaching Kit, 10 expts.

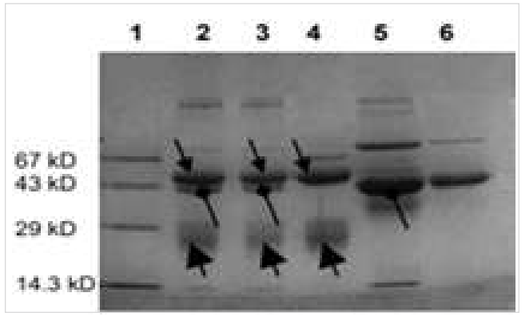
GeNei™ Immuno-precipitation Teaching Kit

Immunoprecipitation (IP) is the technique of precipitating a protein antigen out of solution using an antibody that specifically binds to that protein. This process can be used to isolate and concentrate a particular protein from a sample containing many thousands of different proteins. Immunoprecipitation requires that the antibody be coupled to a solid substrate at some point in the procedure. In the Direct method, antibodies that are specific for a particular protein (or group of proteins) are immobilized on a solid-phase substrate such as microscopic agarose beads. The beads with bound antibodies are then added to the protein mixture and the proteins that are targeted by the antibodies are captured onto the agarose beads via the antibodies, in other words, they become immune-precipitated. In the In-direct method, antibodies that are specific for a particular protein, or a group of proteins, are added directly to the mixture of protein. The antibodies have not been attached to a solid-phase support yet. The antibodies are free to float around the protein mixture and bind their targets. As time passes, the beads coated in protein A/G are added to the mixture of antibody and protein. At this point, the antibodies, which are bound to their targets, will stick to the agarose beads. an be utilized in a number of downstream applications.

Using this kit, students will prepare a complex of Protein A Agarose (PAA) and antibody (from rabbit antiserum sample) is made which is further used for immuno-precipitation of Antigen (egg white in this case). The kit is also supplied with specific Antiserum (used to make a complex with PAA), Protein Standard (to help identify the different components of the PAA complex) and Antigen control (in this case ovalbumin), to compare with the crude egg white-PAA antibody complex.

Kit Contents :

- Protein A Agarose beads
- Antiserum
- Antigen (ovalbumin)
- Protein Standard
- Wash Buffer (10X)
- Acrylamide 30%
- Tris-SDS pH 8.8
- Tris-SDS pH 6.8
- Ammonium persulphate
- Reservoir Buffer (10X)
- Sample Loading Buffer
- TEMED



Analysis of Antigen-Antibody-PAA complex with appropriate control by SDS-PAGE

Lane 1 - Protein Standard (Vial 3) with 4 prominent bands. with molecular weigh ranging from 67kD to 14.3 kD
Lane 2-3 - Antigen-antibody-PAA immune-precipitated complex (vial 1)
Lane 4 - vial 2 without antigen
Lane 5 - Proteins present in Crude egg white (vial 5)
Lane 6 - Antigen control (vial 4)

Note. → Indication antibody heavy chain
→ Indication antibody light chain
→ Indicates antigen

Ordering Information:

Cat. No	PI No.	Product Description
6112200011730	KT122	GeNei™ Immuno-precipitation Teaching Kit, 5 expts.

IMMUNOELECTROPHORESIS TECHNIQUES

Immunoelectrophoresis (IEP) Teaching Kit

Description :

Immunoelectrophoresis is a process for the identification of proteins in serum or other fluid separated into its component parts. The term "Immunoelectrophoresis" was first coined by Grabar and Williams in 1953.

It is a technique using a combination of protein electrophoresis and an antigen-antibody interaction, to separate mixtures of proteins and identify the electrophoresed antigens with antiserum to form precipitin bands. Antigens thus resolved by electrophoresis are subjected to immunodiffusion with antiserum added in a trough cut in the agarose gel. Due to diffusion, density gradient of antigen and antibody are formed and at zone of equivalence antigen antibody complex precipitates to form an opaque arc shaped line in the gel. The precipitin line indicates the presence of antibody, specific to the antigen. If the antibody is homogeneous only one precipitin line is visible. Presence of more than one precipitin line establishes the heterogeneity of antibody, while the absence of precipitin line indicates that the antiserum does not have antibody to any of the antigens separated by electrophoresis.

Iin this kit, 2 types of antisera raised against a particular antigen are supplied. Antiserum A supplied has antibodies against rabbit whole serum raised in goat. It thus contains a mixture of antibodies against serum proteins and will thus form more than one precipitin line indicating the heterogeneity of the antisera. While Antiserum B supplied has antibody against rabbit IgG raised in goat. Since it contains a single antibody, only one precipitin line will be formed indicating the specificity of the antibody against the antigen. Following Immunoelectrophoresis, students will be able to establish the homogeneity/heterogeneity of the antisera.

Available Picture
Slide showing precipitin lines following immunoelectrophoresis.

Kit Contents :

- Agarose
- 5X Electrophoresis buffer
- Antigen
- Test Antiserum-A
- Test Antiserum-B

Ordering Information:

Cat. No	PI No.	Product Description
6102000011730	KT20A	GeNei™ Immunoelectrophoresis Teaching Kit, 5 expts.
6102000021730	KT20B	GeNei™ Immunoelectrophoresis Teaching Kit, 10 expts.
6102000031730	Kt20	GeNei™ Immunoelectrophoresis Teaching Kit with ETS2, 5 expts.

GeNei™ Latex Agglutination Teaching Kit

Description :

Latex agglutination is observed when a sample containing the specific antigen (or antibody) is mixed with an antibody (or antigen) which is coated on the surface of latex particles. All methods of detecting or quantitating antigen or antibody take advantage of the fact that they react to form a complex. At the optimum antigen-antibody concentration, this complex precipitates out. However, if the antigen is particulate in nature, agglutination of antigen-antibody complex is observed.

Agglutination Reactions: The reaction between a particulate antigen and an antibody result in visible clumping called agglutination. Antibodies that produce such reactions are known as agglutinins. The principle of Agglutination reactions is similar to precipitation reactions; they depend on the cross linking of polyvalent antigens. When the antigen is an erythrocyte, it is called hemagglutination. Theoretically all antibodies can agglutinate particulate antigens but IgM, due to its high specificity is a particularly good agglutinin. There is no agglutination observed when the concentration of antibody is high, (lower dilutions), and then the sample is diluted, agglutination occurs. Prozone effect is defined as the invisibility of agglutination at high concentrations of antibodies. It is due to the reason that excess antibody forms very minute complexes that do not clump to form visible agglutination. The latex agglutination test is a clinical method to detect certain antigens or antibodies in a variety of bodily fluids such as blood, saliva, urine or cerebrospinal fluid.

The sample Latex agglutination test includes some of the advantages. They are: 1. Ability to obtain semi quantitative results. 2. A low individual test cost. 3. Relatively short time to obtain results to be tested is sent to the lab and where it mixed with latex beads coated with a specific antigen or antibody. The clumping of latex beads (agglutination) indicates the presence of suspected particles. By performing 2- to 10-fold dilutions of specimens we can obtain the semi quantitative results. Latex agglutination test has some disadvantages also which include 2. Need to carefully interpret marginal results and 3. Problems with specificity due to interfering substances in many assays. Positive result will show development of an agglutinated pattern showing clearly visible clumping of the latex particles. Negative result will show no agglutination and the milky appearance remains unchanged throughout the test. Latex agglutination tests have been applied in clinical laboratories for the detection of infectious diseases and in 1956 Singer and Plotz first described Rheumatoid Factor Test, a test based on latex agglutination. In rheumatoid arthritis (RA), IgG antibodies produced by lymphocytes in the synovial joint react with the IgM antibodies (RF, rheumatoid factor) to generate immune complexes that activate the complement and cause the tissue destruction. The RA is of diagnostic significance. Since then, tests to detect microbial and viral infections, autoimmune diseases, hormones, drugs and serum proteins have been developed and marketed by many companies worldwide. The principle is used for diagnosing many infections such as Hepatitis B, H. influenzae, N. meningitis, etc

In this kit, Latex Beads, Antigen and Test Antiserum are provided. The experiment involves coating of the latex beads with the Antigen followed by blocking of the unreacted sites. The coated latex beads are then reacted with the Test Antiserum and if the Antiserum is specific for the antigen coated on them agglutination is observed. The specificity of the agglutination is further checked by Agglutination Inhibition Reaction.

Kit Contents :

- Latex Beads
- Glycine-Saline Buffer
- Blocking Buffer
- Antigen for Coating
- Test Antiserum
- Glass Plates

Ordering Information:

Cat. No	PI No.	Product Description
6105300011730	KT53	GeNei™ Latex Agglutination Teaching Kit, 10 expts.
6105300021730	KT53A	GeNei™ Latex Agglutination Teaching Kit, 20 expts.

GeNei™ Counter Current Immunoelectrophoresis Teaching Kit

Description :

CCIEP is a rapid version of Ouchterlony Double Diffusion (ODD) technique and can be performed within an hour. It is primarily a qualitative test, although from the thickness of the precipitin line relative measure of quantity can be obtained. The antigen is placed in a well at the cathode and antibody is placed at the anode. During electrophoresis molecules placed in an electric field acquire a charge depending on their pI (Isoelectric Point). Hence they move towards the appropriate electrode. For e.g. negatively charged antigen moves towards the anode. The Antibody (Immunoglobulin) at pH 7.6 has a charge nearing zero. During electrophoresis, the agarose matrix absorbs OH- ions on the surface resulting in a net increase in positive ions at a distance from the matrix. These positive ions migrate towards the negative pole with a solvent shield, resulting in a net solvent flow called Endosmosis. Hence antibody molecules which have no charge move towards cathode along with solvent shield due to this phenomenon. Thus the antigen and antibody travel towards each other and at a point where there is optimum concentration of both a Line Of Precipitation (band) is formed.

Using this kit, students will test for the presence of antibody in 3 different test antisera samples. The antigen supplied is Bovine Serum Albumin (BSA), which has negative charge at pH 7.6. BSA will be loaded into wells near the Cathode and antisera (positive control and 3 test samples) towards the Anode. During electrophoresis, the antigen will migrate towards the anode and the antibody towards the cathode. At the equivalence point, a precipitin line will be formed in those antisera samples which have antibody against BSA.

Kit Contents :

- Antigen
- Test Antiserum
- Positive Control
- Antiserum Electrophoresis Buffer (5X)
- Agarose

Cat. No	PI No.	Product Description
6102900011730	KT29A	GeNei™ Counter Current Immunoelectrophoresis Teaching Kit,10 expts

Rocket Immuno-electrophoresis (RIEP)

Description :

Rocket Immunoelectrophoresis (also referred to as electro immunoassay) is a simple, quick, and reproducible method for determining the concentration of a specific protein in a protein mixture. The method, originally introduced by Laurell involves a comparison of the sample of unknown concentration with a series of dilutions of a known concentration of the protein and requires a monospecific antiserum against the protein under investigation.

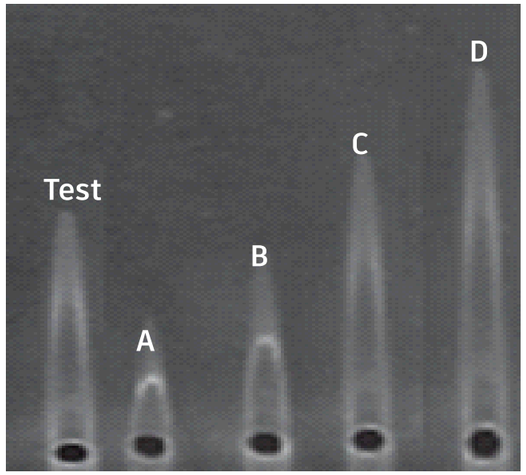
As the samples electrophorese farther through the gel, more antibody molecules are encountered that interact with the antigen and when the “equivalence point” is reached, the Ag-Ab complex precipitates. This precipitin line is seen in the form of of the precipitin bands in the shape of cone-like structures (rocket appearance) at the end of the reaction.

This kit equips students with the knowledge and hands on skills required for RIEP preparation and helps with the analysis of the precipitin bands formed.

Kit Contents :

- 5X Electrophoresis Buffer
- Antiserum*
- Standard Antigen (A, B, C & D) (each)
- Test Antigen (1 and 2)

Ordering Information:



Sample	Std conc(mg/mL)	Rocket height(cm)
Test	-	19
A	0-125	11
B	0.25	18
C	0.5	27
D	1.0	39

Standard concentration with series of rockets of increasing heights(A,B,C,D) are seen that is proportional to amount of antigen in the well. Therefore, a direct measurement of the height of rocket will reflect upon the antigen concentration which will determine the concentration of the test. A standard graph of antigen concentration versus peak height is then constructed and from the peak height of the unknownsample, concentration of antigen is determined.

References :

https://microbenotes.com/rocket-immunoelectrophoresis/

Ordering Information:

Cat. No	PI No.	Product Description
6104700011730	KT47A	GeNei™ Rocket Immunoelectrophoresis Teaching Kit, 5 expts.

ELISA TECHNIQUES

Dot ELISA Teaching Kit

Description :

Dot-ELISA is a special modification for ELISA assay. The Dot-ELISA, short form for the dot enzyme-linked immunosorbent assay, stands as a remarkably versatile solid-phase immunoassay designed for the detection of antibodies or antigens. The application of minuscule quantities of reagents, which are meticulously dotted onto solid surfaces, including materials like nitrocellulose and other paper membranes that possess a strong affinity for binding proteins. After incubation with antigen-specific antibody and enzyme-conjugated anti-antibody, the addition of a precipitable, chromogenic substrate causes the formation of a coloured dot on the solid phase which is visually read.

It has more advantages than the indirect ELISA as it can be performed using a minute volume of reagents and is easily read visually.

This kit equips students with the knowledge and hands on skills required for Dot-ELISA and for the analysis against the standard

Kit Contents :

- Dot ELISA Strip
- 10X Assay Buffer
- Antibody-HRP Conjugate
- 10X TMB/H_2O_2
- Test Serum Samples (A, B & C)

References :

- Recent applications of the Dot-ELISA in immunoparasitology author links open overlay panel Michael G. Pappas*

Ordering Information:

Cat. No	PI No.	Product Description
6101200011730	KT12S	GeNei™ DOT ELISA Teaching Kit, 15 expts

GeNei™ Antigen Capture ELISA Teaching Kit, (Competitive ELISA)

Description :

ELISA or enzyme linked immunosorbent assay is a sensitive laboratory method used to detect the presence of antigens (Ag) or antibodies (Ab) of interest in a wide variety of biological samples. These assays require an immunosorbent i.e., antigen or antibody immobilized on solid surface such as wells of microtiter plates or membranes. Antigen capture ELISA is the most useful immunosorbent assay for detecting antigen, since it is 2-5 fold more sensitive than assays in which antigen is directly bound onto the solid phase. In this assay, constant and limiting amount of antibody is immobilized onto a solid support. A fixed amount of labelled antigen [i.e., antigen coupled with enzyme like Horse Radish Peroxidase (HRP), alkaline phosphatase (ALP) etc.] is added and allowed to compete with unlabelled antigen (Standard or Test Sample) for the immobilized antibody. The amount of labelled antigen bound is then estimated by a suitable assay for the label. The amount of labelled antigen that binds is inversely proportional to the amount of unlabelled antigen in the reaction mixture. Thus, the estimate of label in the well decreases with increase in the antigen concentration in the Standard or Test Sample.

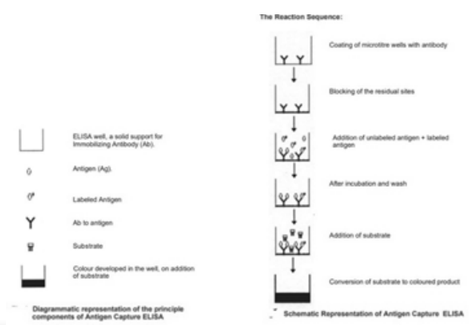
In this kit, an Antibody for immobilization, unlabelled antigen (Standard and Test) and HRP Labelled Antigen are supplied. Students will immobilize the Antibody in the wells of a microtiter plate. To this they will add unlabelled antigen (Test Antigen or varying amounts of Standard Antigen) and a fixed amount of HRP Labelled Antigen. The two antigens compete to bind to immobilized Antibody. At higher concentrations of Standard Antigen, the amount of Labelled Antigen that binds to the antibody will be lower. The amount of HRP-Labelled Antigen bound will then be estimated using Hydrogen Peroxide (H2O2) as the substrate and Tetramethylbenzidine (TMB) as a chromogen. HRP acts on H2O2 to release nascent oxygen, which oxidizes TMB to TMB oxide, a blue-coloured product. The intensity of the colour will be measured spectrophotometrically. Hence, by using various amounts of the Standard Antigen, students will plot a standard curve and then determine the concentration of the antigen in the three Test Samples provided.

Kit Contents :

- Standard Antigen
- 100X Antibody
- Test Samples (1, 2 and 3)
- 1000X HRP Labelled Antigen
- Blocking Buffer
- 10X TMB/H_2O_2
- Coating Buffer
- 10X PBST
- 5X Stop Solution
- Microtiter wells

References :

- Engvall, E (1972-11-22). "Enzyme-linked immunosorbent assay, Elisa". The Journal of Immunology. 109 (1): 129–135.
- Crowther, J.R. (1995). "Chapter 2: Basic Principles of ELISA". ELISA: Theory and Practice. Methods in Molecular Biology.



Ordering Information:

Cat. No	PI No.	Product Description
6105000011730	KT50	GeNei™ Antigen Capture ELISA Teaching Kit, (Competitive ELISA) 4 expts.

GeNei™ Antibody Capture ELISA Teaching Kit, (Indirect ELISA)

Description :

ELISA or enzyme linked immunosorbent assay is a sensitive laboratory method used to detect the presence of antigens (Ag) or antibodies (Ab) of interest in a wide variety of biological samples. These assays require an immunosorbent i.e., antigen or antibody immobilized on solid surface such as wells of microtitre plates or membranes. Indirect ELISA or antibody capture ELISA method is useful for screening an antiserum for specific antibodies. Antibodies are detected by coating the wells of microtitre plate with the antigen and incubating the coated wells with test solution containing specific antibodies (primary antibody). Unbound antibodies are washed and the bound antibody is detected with a secondary antibody conjugated to an enzyme [eg., Horse radish peroxidase (HRP), alkaline phosphatase (ALP) etc.]. After incubation, unbound conjugate is washed and substrate solution is added. After a second incubation, amount of substrate converted to coloured product is assessed using a spectrophotometer. The measured amount is directly proportional to the amount of antibody or the antigen in the test solution.

In this kit, a Standard Primary Antibody and three test Antibody Samples are supplied. Students will immobilize the corresponding antigen in the wells and to this add primary antibody (test antibody or varying concentrations of the Standard primary antibody). The amount of primary antibody bound will be detected with a Secondary Antibody conjugated to Horse Radish Peroxidase (HRP), which in turn is detected by incubating with substrate, Tetramethylbenzidine (TMB) requiring H2O2. HRP acts on the H2O2 to release nascent oxygen, which in turn acts on the chromogen, Tetramethylbenzidine (TMB) resulting in the formation of a blue coloured product. The intensity of the colour is directly proportional to the amount of secondary antibody conjugate bound to the primary antibody and is measured spectrophotometrically. Hence, by using various amounts of Standard Primary Antibody, students will plot a Standard Curve and then determine the concentration of the antibody in the three Test Samples provided.

Kit Contents :

- Antigen for coating
- Standard Primary Antibody
- Test Samples (1, 2 and 3)
- 1000X Secondary antibody-HRP conjugate
- Blocking Buffer
- 10X TMB/H_2O_2
- Coating Buffer
- 10X PBST
- 5X Stop Solution
- Microtiter wells

References :

- Engvall, E (1972-11-22). "Enzyme-linked immunosorbent assay, Elisa". The Journal of Immunology. 109 (1): 129–135.
- Crowther, J.R. (1995). "Chapter 2: Basic Principles of ELISA". ELISA: Theory and Practice. Methods in Molecular Biology.

Ordering Information:

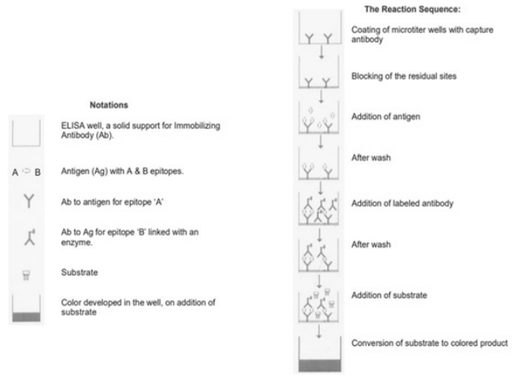
Cat. No	PI No.	Product Description
6105100011730	KT51	GeNei™ Antibody Capture ELISA Teaching Kit, (Indirect ELISA) 4 expts.

GeNei™ Sandwich ELISA Teaching Kit

Description :

ELISA or Enzyme Linked Immunosorbent Assay is a sensitive laboratory method used to detect the presence of antigens (Ag) or antibodies (Ab) of interest in a wide variety of biological samples. This assay requires an immunosorbent, i.e., antigen or antibody immobilized on solid surface such as the wells of microtiter plates or membranes. In this method, two antibodies that can bind to two different epitopes on the same antigen are required. One of the antibodies is immobilized on a microtiter well and is referred to as capture antibody and the other antibody is labelled with a suitable enzyme [e.g., horse radish peroxidase (HRP), alkaline phosphatase (ALP) etc.] and is referred to as labelled antibody. Sample (standard and test) containing the antigen is allowed to react with the immobilized antibody. After the well is washed, labelled antibody is added and allowed to react with the bound antigen. Unreacted labelled antibody is washed out and the enzyme bound to solid support is estimated by adding a chromogenic substrate. The colour developed is measured spectrophotometrically which is directly proportional to the antigen concentration.

In this kit, a Standard Antigen, three Test Samples, Capture Antibody and Antibody-HRP Conjugate are supplied. Students will immobilize the Capture Antibody in the ELISA wells and to this add antigen (Test Antigen or varying amounts of Standard Antigen). The amount of antigen bound will be detected by the addition of HRP labelled antibody, which in turn will be estimated using Tetramethylbenzidine (TMB) as substrate. HRP acts on H2O2 to release nascent oxygen which oxidizes TMB to TMB oxide, a blue-coloured product. The intensity of the colour will be measured using a spectrophotometer at 450 nm. Hence, by using various amounts of the Standard Antigen, students will plot a standard curve and then determine the concentration of antigen in three Test Samples provided.



Kit Contents :

- Antigen for coating
- Standard Primary Antibody
- Test Samples (1, 2 and 3)
- 1000X Secondary antibody-HRP conjugate
- Blocking Buffer
- 10X TMB/H_2O_2
- Coating Buffer
- 10X PBST
- 5X Stop Solution
- Microtiter wells

References :

- Aydin S. A short history, principles, and types of ELISA, and our laboratory experience with peptide/protein analyses using ELISA. Peptides. 2015 Oct;72:4-15.
- Engvall E. The ELISA, enzyme-linked immunosorbent assay. Clin Chem. 2010 Feb;56(2):319-20.
- Shah K, Maghsoudlou P. Enzyme-linked immunosorbent assay (ELISA): the basics. Br J Hosp Med (Lond). 2016 Jul;77(7):C98-101.
- Konstantinou GN. Enzyme-Linked Immunosorbent Assay (ELISA). Methods Mol Biol. 2017;1592:79-94.

Ordering Information:

Cat. No	PI No.	Product Description
6105200011730	KT52	GeNei™ Sandwich ELISA Teaching Kit, 4 expts

IMMUNODIFFUSION TECHNIQUES

Ouchterlony Double Diffusion (ODD) Teaching Kit (For Antibody Titration)

Description :

The Ouchterlony Double Diffusion (ODD) test centers on the formation of a distinct antigen-antibody precipitin line within an agar gel medium, making it an invaluable tool for the screening of both antigens and antibodies.

In the figure below, we observe a typical antibody titration using the kit. The antibody dilutions, starting with 1;2 upto 1:32, are strategically placed in the wells in a clockwise sequence beginning with Ab-1. What becomes evident is that the intensity of the precipitin line decreases as the antibody dilution increases. This decline in intensity is a crucial observation in the antibody titration process.

Antibodies have at least two antigen binding sites, thus large aggregates or lattices of antigen and antibody are formed. Precipitation will not occur if excess antigen is present or if excess antibody is present. Cross- linking and lattice formation will only occur when antigen and antibody concentrations are optimal. An increasing amount of antigen is added to a constant amount of antibody in solution. This is called the antibody-excess zone (Prozone phenomenon). The Ag and Ab concentrations are relatively higher near their respective wells. As they diffuse farther from the wells, their concentration decreases. An antigen will react with its specific antibody to form an Ag-Ab complex. As more antigens are added, the amount of protein precipitated increases until the antigen/antibody molecules are at an optimal ratio. This is known as the equivalence zone or equivalence point. When the amount of antigen in solution exceeds the amount of antibody, the amount of precipitation will decrease. This is known as the antigen excess zone (Prozone phenomenon).

This kit equips students with the knowledge and hands on skills required for ODD preparation and helps with the analysis of the antibody titration.

Kit Contents :

- Agarose
- 10X Assay Buffer
- Antigen
- Test Antiserum
- Glass Plate
- Gel Punch with Syringe
- Template

Antisera dilutions in wells 1-6:

Well No.	Dilution of Test Antiserum
1.	Neat
2	1:2
3	1:4
4	1:8
5	1:16
6	1:32

The centre well contains antigen.

Titre value: A, 1:2 B, 1:16

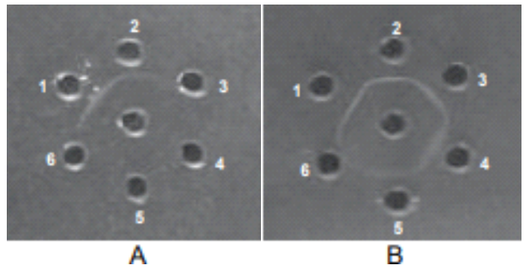


Figure: Typical ODD pattern for antibody titration.

References :

https://microbenotes.com/ouchterlony-double-immunodiffusion-technique/

Ordering Information:

Cat. No	PI No.	Product Description
6100900011730	KT09S	GeNei™ Ouchterlony Double Diffusion Teaching Kit for Antibody Titration, 15 expts.

Radial Immunodiffusion (RID) Teaching Kit

Description :

Single Radial Immunodiffusion, also known as Mancini technique, is a quantitative immunodiffusion technique used to detect the concentration of antigen by measuring the diameter of the precipitin ring formed by the interaction of the antigen and the antibody at optimal concentration.

The antigen-antibody precipitation is made more sensitive by the incorporation of antiserum in the agarose. Antigen (Ag) is then allowed to diffuse from wells cut in the gel in which the antiserum is uniformly distributed. Initially, as the antigen diffuses out of the well, its concentration is relatively high and soluble antigen-antibody adducts are formed. However, as Ag diffuses farther from the well, the Ag-Ab complex reacts with a larger amount of antibody resulting in a lattice that precipitates to form a precipitin ring.

The size of the precipitin rings depends on:

- Antigen concentration in the sample well
- Antibody concentration in the agarose gel
- Size of the sample well
- Volume of the sample.

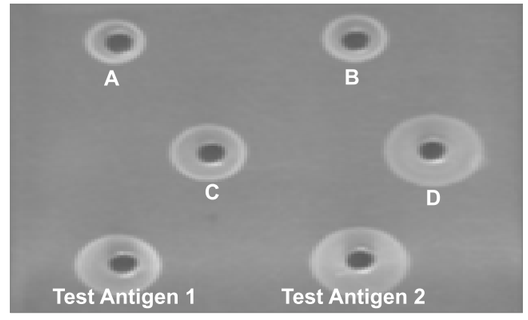
This kit equips students with the knowledge and hands on skills required for RID preparation and helps with the analysis of the precipitin ring formed.

Molecular cloning or gene cloning involves insertion of a DNA segment of interest into an autonomously replicating DNA molecule, i.e., a cloning vector. Transforming the vector into a suitable host organism results in the production of large amounts of the inserted DNA fragment. For expression of genes, the insert DNA should be flanked by correctly oriented control sequences for RNA and protein synthesis. Hence, one uses an expression vector, such that the host produces large quantities of RNA

Kit Contents :

- Agarose
- 10X Assay Buffer
- Standard Antigens (A, B, C & D)
- Test Antigen (1 & 2)
- Antiserum
- Gel Punch with syringe
- Glass Plate
- Template

RID test results using the kit is shown in the below figur



Sample No.	Std. Ag Conc. (in mg/ml.)	Ring Diameter (in mm)
A	0.25	6
B	0.5	8
C	1.0	10
D	2.0	12
Test Antigen 1	1.5	11
Test Antigen 2	0.7	9

By loading a range of known antigen concentrations on the gel and by measuring the diameters of their precipitin rings, a calibration graph is plotted. Concentrations of unknown antigens, can be

determined by measuring the diameter of precipitin rings and extrapolating this value on the calibration graph

References :

Immunological Methods in Microbiology Sukhadeo B. Barbuddhe, ... Deepak B. Rawool, in Methods in Microbiology, 2020

Ordering Information:

Cat. No	PI No.	Product Description
6101000011730	KT10S	GeNei™ Radial Immuno Diffusion Teaching Kit, 15 expts.

Ouchterlony Double Diffusion (ODD) Teaching Kit

(For Antigen Antibody Patterns)

Description :

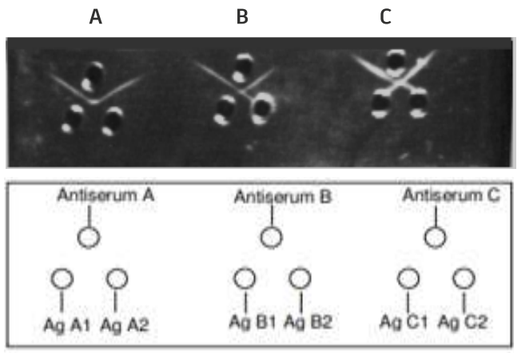
The Ouchterlony double diffusion (ODD) method stands as one of the fundamental techniques for testing antisera to detect antibodies against a specific antigen and to determine their quantity. This ingenious method owes its existence to the brilliant mind of Orjan Ouchterlony.

This approach has found extensive application in the realm of detection and qualitative diagnostic procedures. What makes it truly unique is the "double" aspect. In this process, both antibodies and antigens are allowed to migrate towards each other within a gel medium, and where they meet, a specific precipitation line materializes. This precipitation phenomenon is highly selective and discriminative.

This kit equips students with the knowledge and hands on skills required for ODD preparation and helps with the analysis of the similarity between the antigens.

Kit Contents :

- Agarose
- 10X Assay Buffer
- Antiserum (A, B and C)
- Test Antigens (A1, A2, B1, B2, C1, C2) (each)
- Glass Plate
- Gel Punch with Syringe
- Template



GST Protein analyzed on SDS-PAGE before and after IPTG induction.

Figure : Plate showing pattern of lines obtained following Ouchterlony double diffusion.

References :

https://microbenotes.com/ouchterlony-double-immunodiffusion-technique/

Ordering Information:

Cat. No	PI No.	Product Description
6107000011730	KT70	GeNei™ Ouchterlony Double Diffusion Teaching Kit for Antigen-Antibody patterns, 15 expts.

IMMUNOPROBING TECHNIQUES

GeNei™ Western Blotting Teaching Kit

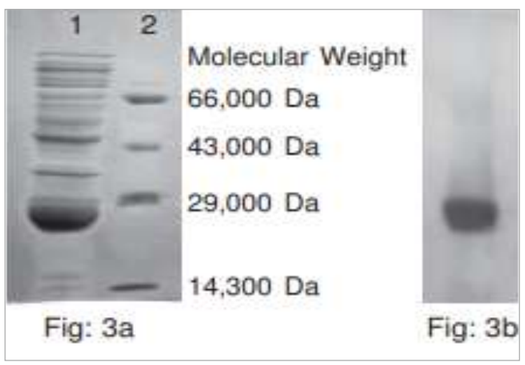
Description :

Immunoblotting or western blotting technique was introduced by Towbin, et al. in1979 its precise identification of target proteins within a complex mixture of unrelated protein species makes it widely used for protein analysis. The specificity of the antibody-antigen interaction enables a target protein to be identified amid a complex protein mixture. Western blotting can produce qualitative and semi-quantitative data about the protein of interest.

The process typically unfolds as follows:

- Proteins are first separated through electrophoresis and then transferred onto membranes, typically nitrocellulose membranes or PVDF followed by blocking.
- The membrane is then treated with a primary antibody to recognize the specific target protein.
- Subsequently, a secondary antibody is applied, which is often labeled with enzymes, for visual detection chromogenic substrate is used.

This kit equips students with the knowledge and hands on skills required for western blotting preparation and analysis of the blot.



Lane 1 - Bacterial Lysate

Lane 2 - Protein Marker - Standard proteins ranging in molecular weight from 66 kD - 14.3 kD

Kit Contents :

- Acrylamide 30%
- Tris-SDS pH 8.8
- Tris-SDS pH 6.8
- Sample Loading Buffer
- Protein Standard
- Protein sample*
- 10X Diluent Buffer
- 10X Assay Buffer
- 25X Wash Buffer
- Primary Antibody*
- 1000X HRP Conjugate
- 10X TMB/H_2O_2
- TEMED
- Ammonium persulphate (APS)
- 10X Reservoir Buffer
- 20X Blotting Buffer Component A
- 20X Blotting Buffer Component B
- Blocking Agent
- Nitrocellulose (NC)
- Filter Paper
- Stainer

Figure : Protein bands as detected by Coomassie blue staining of SDS-Polyacrylamide gel and Immunodetection of GST on blotted NC membrane.

References :

https://microbenotes.com/western%20blotting/

Ordering Information:

Cat. No	PI No.	Product Description
6102100011730	KT21A	GeNei™ Western Blotting Teaching Kit, 5 expts.
6102100021730	KT21B	GeNei™ Western Blotting Teaching Kit, 20 expts.
6102100031730	KT21	GeNei™ Western Blotting Teaching Kit with ETS3, 5 expts.

LABELLING TECHNIQUES

GeNei™ Antibody-HRP Conjugation Teaching Kit

Description :

The most commonly used method for labeling IgG molecules with Horse Radish Peroxidase (HRP) exploits the glycoprotein nature of the enzyme. The saccharide residues of HRP are oxidized with Sodium Meta-periodate to produce aldehyde groups that can react with the amino groups of the IgG molecule and the Schiff base formed is then reduced by Borohydride to give a stable conjugate. Desalting is done using a gel filtration column to remove the Borohydride. The conjugate is stored in PBS. The efficacy of the enzyme-labeled antibody is tested by direct Dot-ELISA and is expressed as the titre value of the conjugate. Nitrocellulose membrane on which the appropriate antigen is immobilized, is incubated with various dilutions of the conjugate. The amount of HRP-labeled antibody bound is assayed by adding the substrate for HRP, Tetramethylbenzidine (TMB/H_2O_2). HRP acts on the hydrogen peroxide to release nascent oxygen that oxidizes TMB, a chromogen giving a blue coloured product, TMB oxide.

In this kit, the antibody supplied will be labeled with HRP by the periodate method. Following labeling and desalting, the titre of the antibody-HRP conjugate will be determined by direct Dot-ELISA, using antigen spotted and blocked Nitrocelluose strips, provided with the kit.

Kit Contents :

- Antigen Spotted Strip
- Antibody for Coupling
- Carbonate Buffer
- Desalting Column
- Oxidation Tubes
- Reductant Solution
- Stabilizer
- 10X ELISA Buffer
- 10X PBS (Phosphate Buffered Saline)
- 10X TMB/H_2O_2

References :

- Engvall E. The ELISA, enzyme-linked immunosorbent assay. Clin Chem. 2010 Feb;56(2):319-20.
- Shah K, Maghsoudlou P. Enzyme-linked immunosorbent assay (ELISA): the basics. Br J Hosp Med (Lond). 2016 Jul;77(7):C98-101.

Ordering Information:

Cat. No	PI No.	Product Description
6104800011730	KT48	**GeNei™** Antibody-HRP Conjugation Teaching Kit, 5 expts.

PROTEIN CHROMATOGRAPHY TECHNIQUES

GeNei™ Gel Filtration Chromatography Teaching Kit

Description :

Gel-filtration chromatography, also called size-exclusion or gel-permeation chromatography, separates molecules based on the differences in their size. The sample is applied on top of a column containing porous beads. As the molecules pass through the column of porous beads of crosslinked agarose, they get separated as follows:

- Large molecules cannot enter the pores and elute as the first peak in the chromatogram. They elute fast and this is called total exclusion.
- Intermediate molecules may enter the pores and may have an average residence time in the particles depending on their size and shape. Different molecules therefore have different total transit times through the column. This portion of a chromatogram is called the selective permeation region.
- Small molecules enter the pores and have the longest residence time in the column and elute together as the last peak in the chromatogram. This last peak in the chromatogram is the total permeation limit.

In this kit, a mixture of three different biomolecules ranging in molecular size from 376 Da to 2000 kDa are supplied. These are separated based on their size through a gel filtration column. The movement of the samples through the column is easily monitored as the biomolecules are coloured, which also aids in collection of the resolved biomolecules.

Kit contents :

- Gel Filtration Column
- Gel Filtration Buffer
- Sample

References :

- Wilson, K., Walker, J. (2018). Principles and Techniques of Biochemistry and Molecular Biology (8 eds.). Cambridge University Press: New York.
- www.ncbi.nlm.nih.gov/pmc/articles/PMC5206469/

Ordering Information:

Cat. No	PI No.	Product Description
6103900011730	KT39	GeNei™ Gel Filtration Chromatography Teaching Kit, 5 expts.

GeNei™ Ion Exchange Chromatography Teaching Kit

Description :

Ion exchange chromatography works on the basic principle that oppositely charged particles are attracted to each other. The stationary phase consists of fixed charges on a solid support. These charges can be either negative or positive. Hence, there are two types of ion exchangers i.e., cation and anion exchangers. Cation exchangers possess negatively charged groups and attract positively charged molecules, eg, Carboxymethylcellulose or CM-cellulose. Conversely, anion exchangers have positively charged groups that attract negatively charged molecules and thus separate anionic molecules. eg, Diethylaminoethyl-cellulose (DEAE Cellulose). Proteins are complex ampholytes i.e., they have both positive and negative charges and can be separated from a mixture of compounds on the basis of net positive or negative charge that they carry. The Isoelectric point of a protein (pI) is the pH at which its net charge is zero (i.e., number of positive and negative charges are equal). Therefore, proteins will have either a net negative charge or net positive charge depending on the pH of the solution and thus, it is possible to use either an anion exchanger or a cation exchanger for purification

In ion exchange chromatography, a solution containing protein of interest is applied to the ion exchanger. The binding of protein to the ion exchanger is dependent on net charge of the protein at that particular pH and on the ionic strength of the mobile phase. The Bound protein is then eluted out from the stationary phase by increasing the concentration of counter ions or by changing the pH, which alters the charge on the protein. A weakly charged protein is displaced from the stationary phase with lower concentration of counter ions than a highly charged protein. This results in separation of protein based upon its net charge. The extent of purification of a protein (eg., enzyme) can be determined by computing its specific activity. Specific activity is the ratio of enzyme activity to mass of protein in the sample, usually expressed as units of activity per milligram of protein (U/mg). As the enzyme is purified (through a number of steps) other proteins in the mixture are eliminated while most of the enzyme activity is retained. This results in an increase in the specific activity of the enzyme. Hence, by determining the specific activity before and after purification, one can determine the fold purification and yield of the enzyme.

Using this kit, students will carry out purification of lysozyme from chicken egg white by Ion Exchange Chromatography. The pI of lysozyme is 10.5 and it carries a net positive charge at pH below 10.5. Hence, at pH 7.0 it binds to negatively charged column or a cation exchanger, CM-cellulose

supplied in the kit. The Wash buffer (pH 9.0) will then be used to remove the proteins that have pI less than or equal to 9.0. The lysozyme will be eluted out by increasing concentration of cations. Cations compete with the positively charged groups of lysozyme for binding sites on the column, resulting in the elution of lysozyme

Kit Contents :

- CM-Cellulose
- 10X Equilibration Buffer (pH7.0)
- 10X Wash Buffer (pH 9.0)
- 5X Elution Buffer
- Neutralizing Solution
- 5M Sodium chloride
- 0.5 M Phosphate Buffer (pH 7.0)
- Tube for mixing
- Micrococcus luteus
- Lysozyme Standard
- Column

References :

- Okada T. Nonaqueous ion-exchange chromatography and electrophoresis Approaches to nonaqueous solution chemistry and design of novel separation. Journal of Chromatography A 1998; 804 17-28.
- Levison PR. Large-scale ion exchange column chromatography of proteins Comparison of different formats. Journal of Chromatography B 2003;790 17-33.

Ordering Information:

Cat. No	PI No.	Product Description
6104000011730	KT40	GeNei™ Ion Exchange Chromatography Teaching Kit, 5 expts.

GeNei™ Affinity Chromatography Teaching Kit

Description :

Affinity chromatography is a method of selectively and reversibly binding proteins to a solid support matrix based on the fact that biological affinities exist between molecules, e.g., antigen with antibody. One of the components, the ligand is immobilized on a solid matrix, which is then used to selectively purify the target protein. By Including a competing ligand in the mobile phase or by changing the pH, the target protein is eluted. The performance of affinity chromatography is determined by comparing the specific activity of the protein before and after affinity purification. The Specific activity of the protein (enzyme) is defined as its activity per mg of protein. In order to determine the specific activity, enzyme activity and protein concentration are determined. Lectins are plant proteins that have high affinity for particular sugars such as those present in glycoproteins. HRP is a glycoprotein, which helps in its selective binding to the column. Pure protein will then be eluted out using a free sugar (eg., fructose) that competes with the glycoproteins for the immobilized lectin. HRP acts on hydrogen peroxide to release nascent oxygen that oxidizes ABTS to give coloured product.

Using this kit, students will carry out affinity purification of Horse Radish Peroxidase (HRP) from crude extract using a lectin column (Con A).

Kit Contents :

- ABTS
- Column
- Concanavalin A- Agarose suspension
- Suspension Crude Sample
- Elution Buffer
- Hydrogen Peroxide
- Sodium Acetate Buffer
- BSA (Protein Standard)
- Solution I
- Solution II
- Solution III

References :

- Zachariou, Michael, ed. (2008). Affinity Chromatography: Methods and Protocols (2nd ed.). Totowa, N.J.: Humana Press. pp. 1–2.
- Singh, Naveen K.; DSouza, Roy N.; Bibi, Noor S.; Fernández-Lahore, Marcelo (2015). "Direct Capture of His6-Tagged Proteins Using Megaporous Cryogels Developed for Metal-Ion Affinity Chromatography

Ordering Information:

Cat. No	PI No.	Product Description
6104100011730	KT41	GeNei™ Affinity Chromatography Teaching Kit, 5 expts.

GeNei™ Immunoglobulin G Isolation Teaching Kit

Affinity chromatography is a method of selectively binding protein to its corresponding affinity ligand, immobilized to a solid support matrix, which is then used to selectively purify the target protein.

IgG is isolated from serum based on Affinity chromatography on Protein A Agarose. In this technique, the property of Protein A to bind to the Fc region of the Immunoglobulin G molecule is exploited for its purification from serum (Refer Fig 1). Staphylococcal Protein A binds to IgG subclasses of many species and has been widely used to detect and purify IgG. Protein A has varying affinity for IgG of various species (refer table 1). Protein A is isolated from culture supernatant of Staphylococcus aureus and immobilized on cross linked agarose by Cyanogen bromide activation method. The matrix is then used for purification of IgG. Table 1: Relative binding affinity of Protein A to IgG of various species is as follows: Species Relative binding affinity Human ++++ Rabbit ++++ Dog +++ Mouse ++ Chicken-Goat-)

Using this kit, students will carry out purification of IgG from serum using a Protein A Agarose matrix to which the IgG will bind. The IgG will then be eluted from the matrix by reducing the pH. The protein content of the pooled fractions will be checked by absorbance method and the isolated IgG analyzed on 12% SDS PAGE. The purified IgG will be electrophoresed along with the Protein Standard. Post staining, the bands developed will give an indication of the purity of the IgG. The molecular weight of IgG will be determined by comparing its relative mobility with that of the Protein Standard, which has four proteins of known molecular weight: 66 kD, 43 kD, 29 kD and 14.3 kD.

Kit Contents :

- Protein A Agarose Column
- 10X Equilibration Buffer
- 5X Elution Buffer
- 10X Storage Buffer
- Neutralizing Buffer
- Serum Samples
- Protein Standard
- 30% Acrylamide
- 1.5M Tris SDS pH 8.8
- 1 M Tris SDS pH 6.8
- Ammonium persulphate (APS)
- 10X Reservoir Buffer
- Sample Loading Buffer
- Stainer

References :

- Mayers, G. L., & van Oss, C. J. (1998). AffinityChromatography. Encyclopedia of Immunology
- GODING, J. W. (1996). Affinity Chromatography. Monoclonal Antibodies.

Ordering Information:

Cat. No	PI No.	Product Description
6110600011730	KT106A	GeNei™ Immunoglobulin G Isolation Teaching Kit for 5 expts.

GeNei™ Thin Layer Chromatography Teaching Kit

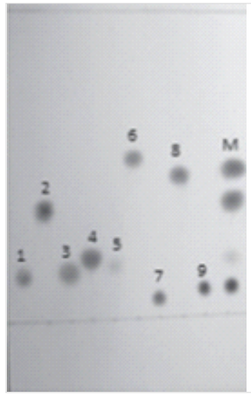
Description :

Thin Layer Chromatography is a method of separating components in a mixture based on their differential affinity for two chemicals, one of which is immobilized ("Stationary Phase") and the other mobile ("Mobile Phase"). As the Mobile Phase travels across a layer of Stationary Phase, it will carry with it the components in the mixture. The components that interact well with the Mobile Phase but poorly with the Stationary Phase, will travel along with the Mobile Phase while those that interact poorly with the Mobile Phase but strongly with the Stationary Phase, will not travel as quickly. When the Mobile Phase is stopped, the components in a mixture would have traveled different distances. TLC is a simple and inexpensive technique that is often used to check the purity of a synthesized compound or to indicate the extent of progress of a chemical reaction. TLC analysis involves a number of steps like preparing a spotting capillary, marking the TLC plate, spotting the TLC plate, developing the TLC plate, drying the plate, visualizing the spots and measuring the Rf values.

Using this kit, students will perform the separation and identification of amino acids in the mixture provided and calculate the Rf values of individual amino acids by using Thin Layer Chromatography. Students will spot and dry the different amino acids along with a test sample on the TLC plate, which will be placed in a TLC chamber for separation using the solvent provided. After migration of the solvent, the Developing Reagent has to be added for visualization of the different amino acids and test sample. The individual components in the Test sample are identified based on their Rf values.

Kit Contents :

- Glutamine
- Valine
- Glycine
- Threonine
- Proline
- Tryptophan
- Histidine
- Iso Leucine
- Arginine
- Test Sample
- TLC plates
- Developing Reagent
- Solution A (Solvent for TLC)
- Solution B (Solvent for TLC)



1. Glutamine
2. Valine
3. Glycine
4. Threonine
5. Proline
6. Tryptophan
7. Histidine
8. ISO Leucine
9. Argenine
M. Test Sample

Amino acid spots developed on a TLC plate.

References :

- Silver, Jack (2020-12-08). "Let Us Teach Proper Thin Layer Chromatography Technique!". Journal of Chemical Education.
- Santiago, Marina; Strobel, Scott (2013-01-01), "Chapter Twenty-Four - Thin Layer Chromatography", in Lorsch, Jon (ed.), Cell, Lipid and Carbohydrate.

Ordering Information:

Cat. No	PI No.	Product Description
6119290021730	KT192	GeNei™ Thin Layer Chromatography Teaching Kit, (with TLC chamber) 10 expts.
6119200021730	KT192A	GeNei™ Thin Layer Chromatography Teaching Kit, 10 expts.

GeNei™ Recombinant Protein Purification Teaching Kit

Description :

Some proteins are present in low abundance in their natural source – cells and tissues of plants and animals or are of high value. In such cases, scientists use Recombinant DNA Technology to develop cells that will produce large quantities of the desired protein, known as expression system. Recombinant expression allows the protein to be tagged for example His-Tag, to facilitate its purification. They can improve the variable yield and poor solubility of many recombinant proteins without altering their conformation or loss of biological activity. Protein tag are peptide sequences genetically grafted on to a recombinant protein. Often this tags are removable by chemical agents or by enzymatic means. Affinity tags are appended to proteins so that they can be purified from their crude biological source using and affinity technique. These include Maltose Binding Protein (MBP) and Glutathione S-Transferase (GST). MBP is a natural affinity tag and can be exploited to facilitate purification of the passenger protein as well as prevent its proteolytice degradation. It also has a remarkable ability to enhance the solubility of its fusion partner.

The Recombinant Protein Purification kit demonstrates the basic principles of purifying recombinant tagged protein. In this kit, approximately 70 kD maltose binding fusion protein is purified using suitable oligosaccharide immobilized on cross linked agarose. The bound fusion protein is eluted using high concentration of a specific sugar. The purified tagged protein is then analyzed by SDS Polyacrylamide gel.

Kit Contents :

- Sample (Lyophilized)
- Column Matrix
- 5X Equilibration Buffer
- 5X Elution Buffer
- Regeneration Buffer
- Protein Standard
- Control MBP
- 30% Acrylamide
- Tris-SDS pH 8.8
- Tris-SDS pH 6.8
- APS
- Sample Loading buffer
- TEMED
- 10X Reservoir Buffer
- Stainer
- Column

References :

- Zachariou, Michael, ed. (2008). Affinity Chromatography: Methods and Protocols (2nd ed.). Totowa, N.J.: Humana Press. pp. 1–2.
- Singh, Naveen K.; DSouza, Roy N.; Bibi, Noor S.; Fernández-Lahore, Marcelo (2015). "Direct Capture of His6-Tagged Proteins Using Megaporous Cryogels Developed for Metal-Ion Affinity Chromatography

Ordering Information:

Cat. No	PI No.	Product Description
6120300011730	KT203	GeNei™ Recombinant Protein Purification Teaching Kit, 5 expts.

GeNei™ Hydrophobic Chromatography Teaching Kit

Description :

Hydrophobic chromatography is a separation technique that uses the properties of hydrophobicity to separate protein from one another. A chromatography column that is packed with hydrophobic beads is called a hydrophobic interaction matrix. Hydrophobic ("water hating") substances do not mix well with water. When they are dropped into high salt solution they tend to stick together. Side chains of some of the amino acid that make up proteins are very hydrophobic. In the presence of salt, these parts of a protein tend to

adsorb to the hydrophobic group on the matrix. High salt causes the three-dimensional structure of the protein to actually change so that the hydrophobic regions of the proteins are more exposed on the surface of the protein and the hydrophilic ("water-loving") regions are more shielded. When the sample is loaded onto the matrix in salt solution, the hydrophobic proteins in the sample will stick to the beads in the column. The more hydrophobic they are the more tightly they will stick. When the salt is removed, the three-dimensional structure of the protein changes again so that the hydrophobic regions of the protein now move to the interior of the protein and the hydrophilic ("water-loving") regions move to the exterior. The result is that the hydrophobic proteins no longer adsorb to the hydrophobic groups on the column matrix and move to the bottom of the column and are thus separated from the other proteins. The main factors influencing hydrophobic interaction chromatography are ligand type, type of base matrix, concentration of salt, pH, temperature and buffer additives.

Using this Kit students will purify Green Fluorescent Protein (GFP) by Hydrophobic Interaction Chromatography (HIC) technique. Green Fluorescent Protein (GFP) is a protein with several stretches of hydrophobic amino acids which results in the total protein being very hydrophobic. When the supernatant, rich in GFP, is loaded on the column in presence of high salt buffer (Binding Buffer) the hydrophobic regions of the GFP adsorb to the column matrix. Other proteins that are less hydrophobic (or more hydrophilic), pass right through the column. This single procedure allows the purification of GFP from a complex mixture of bacterial proteins. The protein of interest is eluted using low salt Elution Buffer, which disrupts the hydrophobic interaction between the GFP and column matrix, causing GFP to let go and "elute" from the column. The eluted protein is observed under ultra violet light for fluorescence

Kit Contents :

- Thiophilic Matrix
- Lysate Samples
- Binding Buffer
- Equilibration Buffer
- Wash Buffer
- Elution Buffer
- Storage Buffer

References :

- Hofstee BH and Otillio NF (1978). Non-ionic adsorption chromatography of proteins. J Chromatogr 159, 57–69. PMID: 649758
- Jennissen HP (1978). Multivalent interaction chromatography as exemplified by the adsorption and desorption of skeletal muscle enzymes on hydrophobic alkyl-agaroses. J Chromatogr 159, 71–83. PMID: 418077

Ordering Information:

Cat. No	PI No.	Product Description
6120200011730	KT202	GeNei™ Hydrophobic Chromatography Teaching Kit, 5 expts

PROTEIN ELECTROPHORESIS TECHNIQUES

SDS-PAGE Teaching Kit:

Description :

SDS-PAGE is an analytical technique to separate proteins based on their molecular weight. The method is called sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE). The most used system is also called the Laemmli method after U.K. Laemmli, who was the first to publish a paper employing SDS-PAGE in a scientific study.

Polyacrylamide gels are prepared by mixing acrylamide with bis-acrylamide to form a crosslinked polymer network when the polymerizing agent, ammonium persulfate (APS), is added. TEMED (N,N,N',N'-tetramethylenediamine) catalyses the polymerization reaction by promoting the production of free radicals by APS finally polyacrylamide. In the presence of SDS and a reducing agent that cleaves disulfide bonds critical for proper folding, proteins unfold into linear chains with negative charge proportional to the polypeptide chain length. When subjected to electrophoresis, proteins migrate through the gel strictly according to the size with very little effect from compositional differences. The fact that only microgram quantities of proteins are required, SDS-PAGE has become the most widely used method for determination of molecular mass in a protein sample.

This kit equips students with the knowledge and hands on skills required for SDS-PAGE preparation and analysis of the results.

- To estimate the size of the protein.
- For peptide mapping.
- To compare the polypeptide composition of different structures.
- To estimate the purity of the proteins.
- In Western Blotting and protein ubiquitination.
- To analyse post-translational modifications.

Kit Contents :

- Acrylamide (30%)
- Tris-SDS pH 8.8
- Tris-SDS pH 6.8
- Ammonium persulphate (APS)
- 10X Reservoir Buffer
- Sample Loading Buffer
- Protein Samples
- Protein Marker
- TEMED
- ·Ezee Blue (Gel Stainer)

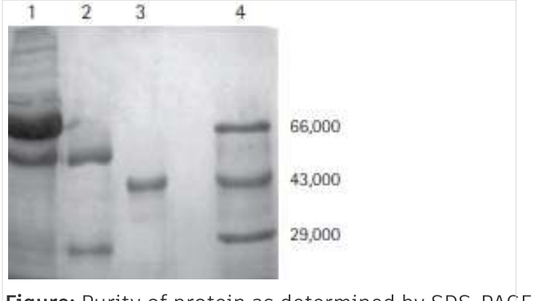


Figure: Purity of protein as determined by SDS-PAGE.

Ordering Information:

Cat. No	PI No.	Product Description
6103000011730	KT30A	GeNei™ SDS-PAGE Teaching Kit, 10 expts.
6103000021730	KT30B	GeNei™ SDS-PAGE Teaching Kit, 20 expts.

GeNei™ 2D-PAGE Teaching Kit

Description :

Two Dimensional Poly-acrylamide Gel Electrophoresis (2D PAGE) is a technique utilizing two parameters of the protein, size and Iso-electric point giving information on thousands of proteins in a single analysis. Separation on the basis of two parameters, usually size and iso-electric point, lowers the probability of two proteins overlapping, and allows greater resolution of proteins. Iso-electric focusing (IEF) gives a measurement of the iso-eletric point (pI) of a protein. The term pI is defined as, the pH at which the proteins net charge is zero, and hence it will not migrate in an electric field. The first dimension also termed as Rod Gel Electrophoresis usually employs iso-electric focusing (IEF) based on pI of the protein. The tube gel is over-laid across the top of the second dimension gel which is SDS-PAGE wherein separation occurs based on the size of proteins.

In this kit, Students will cast the first dimensional gel by using the Rod gel accessories (provided with Cat # 6114500031730) and perform iso-electric focusing of Sample on day 1. Serum is provided as Sample which contains many proteins. The proteins are separated in first dimension according to the pI value of the proteins. Example: Transferrin (pI 6.2) and Immunoglobulin (pI 5.4-8.9). On Day 2, they will cast the second dimensional gel (i.e SDS PAGE) for analyzing the iso-electric focused proteins with Protein Marker. Proteins are separated based on molecular weight. Example: Transferrin (80 kD), Immunglobulin heavy chain (50 kD) and Immunoglobulin light chain (25 kD). The gel is then stained with the stainer.

Kit Contents :

- 2D Boiling Buffer
- 2DSample Loading Buffer (SLB)
- 30% Acrylamide
- Gel Equilibration Buffer
- Ampholyte
- 1.5M Tris-SDS, pH 8.8
- 0.5M Tris-SDS, pH 6.8
- Ammonium per sulphate (APS)
- 10X Reservoir Buffer
- Sample Loading Buffer - SLB (For SDS-PAGE)
- Protein Marker
- Sample 5 vials
- Agarose
- Urea
- Triton X 100
- 5X Anode Buffer
- 5X Cathode Buffer
- TEMED
- Stainer

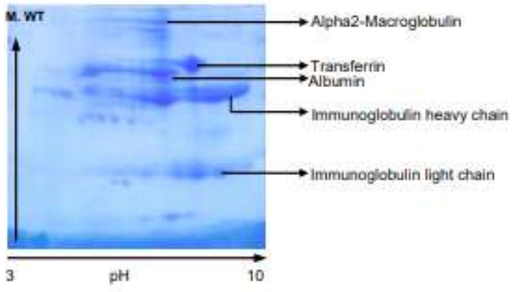


Fig 3: Separation of proteins on a 2 Dimension polyacrylamide gel.

References :

- O'Farrell, PH (1975). "High resolution two-dimensional electrophoresis of proteins". J. Biol. Chem. 250 (10): 4007–21. doi:10.1016/S0021-9258(19)41496-8.
- Mikkelsen, Susan; Cortón, Eduardo (2004). Bioanalytical Chemistry. John Wiley & Sons, Inc. p. 224

Ordering Information:

Cat. No	PI No.	Product Description
6114500011730	KT145A	GeNei™ 2D-PAGE Teaching Kit, 5 expts.

PROTEIN ANALYSIS TECHNIQUES

GeNei™ Enzyme Kinetics Teaching Kit

Description :

Enzyme kinetics is the study of the chemical reactions that are catalysed by enzymes. In enzyme kinetics, the reaction rate is measured and the effects of varying the conditions of the reaction is investigated. Studying an enzyme's kinetics in this way can reveal the catalytic mechanism of this enzyme, its role in metabolism, how its activity is controlled, and how a drug or an agonist might inhibit the enzyme. Enzymes are usually protein molecules that manipulate other molecules – the enzymes' substrates. These target molecules bind to an enzyme's active site and are transformed into products through a series of steps known as the enzymatic mechanism. These mechanisms can be divided into single-substrate and multiple-substrate mechanisms. Kinetic studies on enzymes that only bind one substrate, aim to measure the affinity with which the enzyme binds this substrate and the turnover rate. Enzyme kinetics can also show the sequence in which these substrates bind and the sequence in which products are released. Although these mechanisms are often a complex series of steps, there is typically one rate-determining step that determines the overall kinetics. This rate-determining step may be a chemical reaction or a conformational change of the enzyme or substrates, such as those involved in the release of product(s) from the enzyme. The activity of an Enzyme is affected by its environmental conditions. Changing these alter the rate of reaction caused by the enzyme. In nature, organisms adjust the conditions of their enzymes to produce an Optimum rate of reaction, where necessary, or they may have enzymes which are adapted to function well in extreme conditions.

In this kit, Horse-Radish Peroxidase (HRP) is provided as a enzyme with its chromogen/substrate - Guaiacol and Hydrogen peroxide. Students will perform the experiments to understand the factors affecting the rate of enzyme – catalyzed reaction namely. Enzyme concentration Substrate concentration, Temperature pH.

Kit Contents :

- HRP (enzyme)
- Guaiacol
- H_2O_2
- Assay buffer (pH 3.0)
- Assay buffer (pH 5.0)
- Assay buffer (pH 7.0)
- Assay buffer (pH 9.0)

References :

- David Hames and Nigel Hooper (2005). Biochemistry. Third ed. Taylor & Francis Group: New York.
- Smith, C. M., Marks, A. D., Lieberman, M. A., Marks, D. B., & Marks, D. B. (2005). Marks' basic medical biochemistry: A clinical approach. Philadelphia: Lippincott Williams & Wilkins

Ordering Information:

Cat. No	PI No.	Product Description
6108900011730	KT89	GeNei™ Enzyme Kinetics Teaching Kit, 5 expts.

GeNei™ Protein Fingerprinting Teaching Kit

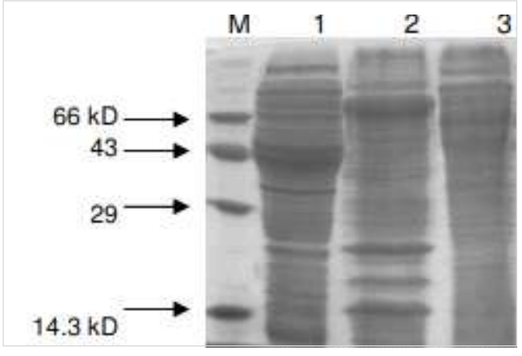
Description :

Protein Electrophoresis is one of the key tools of biology research, to visualize and analyze the molecular "fingerprints" of protein content in tissue. Since proteins are encoded by specific DNA sequences, protein fingerprints can reflect genetic similarities as well as differences among organisms. This experiment engages students to think critically about the molecular basis for such similarities and differences, the connection between genes and functions, and the implications of evolutionary relationships among species, from a perspective deeper than outward body forms.

By using Protein Fingerprinting Kit students can analyze proteins from different bacterial sources by electrophoretic separation of the proteins on a polyacrylamide gel and comparing the banding patterns of prominent proteins between the samples. Students prepare the samples for protein electrophoresis from three bacterial sources provided in the kit. Following electrophoretic separation of the proteins based on their molecular weight, the gel is stained to visualize the proteins and the distribution of proteins known as the Protein Fingerprint. The protein fingerprint of different bacteria is then compared to understand the protein distribution.

Kit Contents :

- Organism - I
- Organism - II
- Organism - III
- Acrylamide Solution
- Tris-SDS (pH-8.8)
- Tris-SDS (pH-6.8)
- Sample Loading Buffer (SLB)
- Protein Marker
- Re-suspension Buffer
- Reservoir Buffer (10X)
- Stainer
- Ammonium persulfate (APS)
- TEMED



Lane M : Protein Molecular Weight Marker
Lane 1 : Protein Finger print of Organism I
Lane 2 : Protein Finger print of Organism II
Lane 3 : Protein Finger print of Organism III

Fig 2: Anakysis of the Protein Finger prints from 3 bacterial samples on on 12% SDS - PAGE

References :

- 7(3): 115-124.
- Hjernø K. Protein identification by peptide mass fingerprinting//Mass Spectrometry Data Analysis in Proteomics. Humana Press, 2007: 61-75.

Ordering Information:

Cat. No	PI No.	Product Description
6119600011730	KT196	GeNei™ Protein Fingerprinting Teaching Kit, 5 expts

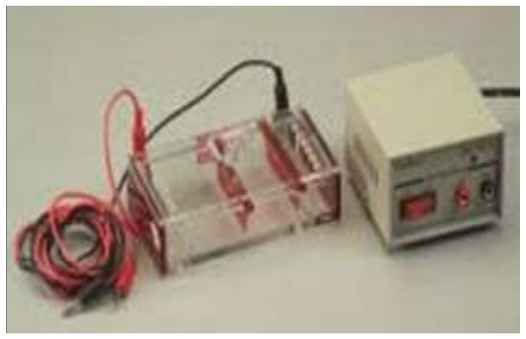
TECHWARE EQUIPMENT FOR COLLEGE LABS

ETS Series

Genei offers different type of educational teaching kits for different application. Horizontal electrophoresis,Vertical electrophoresis, Vertical with electro transfer units etc.

ETS-1

ETS 1 contains main buffer tank with gel casting unit. Gel can be casted inside the unit and can run without the gel running tray. Two 8 well combs will be supplied as a standard accessory. Small 50/100 volts power supply will be supplied along with the kit to run the gel. So it is a complete unit for educational purpose.

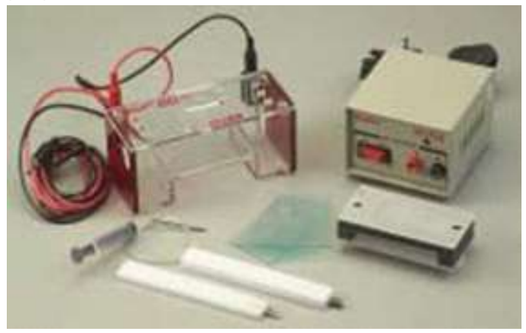


Specification:

Make	: Genei
PI. No.	: ETS-1
Cat No.	: 107070GB
Principal Material	: Acrylic
No. of combs	: 2 x 8 Well
Connecting Cord supply	: Red and Black- 1 set Power : 50/100 Volts fixed voltage.
Gel Size	: 15 x 7 cm
Input voltage	: 230 Volts, 50 Hz. A.C. Supply.

ETS-2

ETS-2 is a small Immuno electrophoresis system for educational purpose. It contains small buffer tank with Glass plates ,Gel cutter, Gel remover, Gel Puncher etc., along with 50/100V D.C. Power supply, supplied as a standard accessory. So it is an complete Immuno electrophoresis for educational purpose.



Specification:

Make	: Genei
PI. No.	: ETS-2
Cat No.	: 107073GB
Principal Material	: Acrylic
No. of glass plates	: 6 nos.
Gel cutter	: 1 No.
Gel Remover	: 1 No.
Gel Puncher	: 1 No.
Universal Gel Puncher	: 1 No.
Connecting cord	: Red and Black-1 set.
Power supply	: 50/100 Volts fixed voltage.
Gel Size	: 135 x 50 mm
Input voltage	: 230 Volts, 50 Hz. A.C. Supply

ETS-3

ETS-3 comes with small vertical electrophoresis and Small electro transfer unit. Which contains 8X7 Cm.Gel size vertical electrophoresis and 8X7 Cm. Electro transfer unit.0.5mm spacer will be supplied along with the instrument. Small 50/100Volts fixed power supply will be supplied as a standard accessory.

Specification:

Make	: Genei
PI. No.	: ETS-3
Cat No.	: 107074GB
Principal Material	: Acrylic
No. of glass plates	: 1 set
Comb	: 5 well tefflon
Glass plate	: 1 set
Electro transfer unit	: 1 complete unit
Lid	: 1 no.
Cushion Pad	: 6 Nos
Filter Pad	: 6 Nos.
Connecting cord	: Red and Black-1 set.
Power supply	: 50/100 Volts fixed
voltage. Gel Size	: 8 x 7 cm
Input voltage	: 230 Volts,50 Hz. A.C. Supply.

ETS-4

ETS4 Contains Vertical unit for 5 samples. Glass plate and 0.5mm spacer will be supplied as a standard accessory.50/100 Volts power supplMake Genei

Specification:

Make	: Genei
PI. No.	: ETS4
Cat No.	: 107079GB
Principal Material	: Acrylic
Gel Size	: 8 x 7 cm
No. of Glass plates	: Notched and rectangular
1 each. Comb	: 5 well 1 no.
Spacer	: 0.5mm 2 Nos. Main Buffer
tank	: 1 No.
Lid	: 1 No.
Connecting cord	: Red and Black 1no. Power
supply	: 50/100 fixed voltage.
Input voltage	: 230 V,50 Hz, A.C. Supply,

ETS-5

ETS-5 contains main buffer tank with gel casting unit. Gel can be casted inside the unit and can run without the gel running tray. Two 8 well combs will be supplied as a standard accessory. 8x7 Cm. Gel size Electro transfer unit is supplied as a standard accessory along with the instrument. Small 50/100 volts power supply will be supplied along with the kit to run the gel. So it's a complete unit for educational purpose.

Specification:

Make	: Genei
PI. No.	: ETS-3
Cat No.	: 107074GB
Principal Material	: Acrylic
No. of glass plates	: 1 set
Comb	: 5 well tefflon
Glass plate	: 1 set
Electro transfer unit	: 1 complete unit

Lid : 1 no.
Cushion Pad : 6 Nos
Filter Pad : 6 Nos.
Connecting cord : Red and Black-1 set.
Power supply : 50/100 Volts fixed
voltage. Gel Size : 8 x 7 cm
Input voltage : 230 Volts,50 Hz. A.C.
Supply.

ETS-6

ETS-6 is an 2D electrophoresis system, which contains vertical electrophoresis system with 2D facility. Initially it can be used as a Rod gel electrophoresis and later sample can be transferred to vertical electrophoresis. Total kit contains vertical electrophoresis and accessories for rod gel electrophoresis like Glass tubes, rubber grommet, gel preparing accessories, Glass plates and spacers.

Specification:

Make : Genei
PI. No. : ETS-6
Cat No. : 116676GB
Principal Material : Acrylic
Rubber grommet : 3 nos.
Glass tube : 4
Glass tube stand : 1 no.
Glass plates : Notched and rectangular 1 set.
Teflon Spacers : 0.5 mm x 2 Nos.
Vertical Tank : 1 No.
Lid : 1 No.
Connecting Cord : Black and Red 1 Set. Metal
Clips : 2 Nos.

Ordering Information:

Cat No.	PI. No.	Product	Pack Size
		ETS Series	
107070GB	ETS1	ElphoKit	1 Pack
107071GB	ETS-1-05	CombStandfor 107070	1 N o.
107072GB	ETS-1-06	CombStandfor 107070 (7 wells) 1/Pack	1 No.
107073GB	ETS-2	ElphoKit forimmunoelectrophoresis	1 Pack
107074GB	ETS-3	ElphoKit forPAGE & Electrotransfer	1 Pack
107075GB	ETS-3-01	GlassPlatesfor 107074	1 Pack
107079GB	ETS-4	ElphoKit forPAGE	1 Pack
107089GB	ETS-5	ElphoKit forSubmarine & Electro Transfer includes power supply	1 Pack
116676GB	ETS-6	ElphoKit for2-Dimensional Polyacrylamide Gele Electrophoresis	1 Pack

TECHWARE EQUIQMENT

Electrophoresis Systems & Accessories

Transilluminators

Rockers, Shakers, Mixers and Stirrers

Rockers

Shakers

Mixers

Stirrers

General Lab Equipments

ETS Series -Elpho Kits (College Models)

Lab Coolers

Glass Columns

Plasticwares

Submarine Electrophoresis Systems & Accessories

The most efficient way to separate DNA fragments in Agarose Gels is by "Submarine" electrophoresis. In this technique, the entire gel is submerged in the buffer.

Genei Laboratories offers different types of models for different applications like Mini, Midi, Maxi, Maxi XL, Maxi XXL etc. The Regular Mini, Midi, Maxi gel systems, as additional accessories UV Transparent gel running trays and UV Transparent gel scoops are available. To be ordered separately.

UVT (UV Transparent) Systems are built with in-built gel running tray. Hence No Separate Gel running tray and Gel casting units are not provided for Cat. Nos. 106471GB (03-01UV), 106509GB (03-02UV), 106563GB (03-03UV), 106590GB (03-04UV),

Apart from regular standard combs we also provide custom-made combs against orders. The order copy should mention the exact specifications of the custom sized combs.

Selection Guide - Submarine Electrophoresis System

Specification	Mini Sub System	Mini Sub System	Midi Sub Prep System	Maxi Sub System	Maxi Sub XL System	Maxi Sub XXL System
Dimensions (l x b x h) cm	20x10x10	24x18x10	37x18x10	33x23x10	40X33X12	42X34X8
Gel Size (cm)	10x7	13x13	13x25	20x20	30x25	20x30
No. of Samples	8	13	13	26	99	120
Water Cirrculation	NO	No	NO	No	Yes	Yes
PI. No.	03-01	03-02	03-03	03-04	03-07	03-09
Cat NoO.	106470GB	106508GB	106562GB	106589GB	106614GB	106627GB
Recommended Power Packs	12-01, 12-02 10-01	12-05, 12-06 10-02	13-01, 13-02 13-03	12-02, 13-01 12-05	12-02, 13-01 12-05	12-02, 13-01 12-05

Mini Sub System

Specification:

Make : Genei
Model : Mini Sub System
PI. No : 03-01
Cat No. : 106470GB
Principal Material : Acrylic
Inner tank dimension : 190 x 80 x 55 mm No. of trays : 100 x 70 mm-1 no. 50 x 70 mm-2 nos.
No. of combs : 8 well x 4 nos, 3 well preparative comb 1 no.
No. of gel casting tray : 1 universal.
Connecting cord : 1 set (1 black and 1 red)
No. of Platinum electrodes : 1 anode and 1 cathode.
Lid : 1 no.
Recommended power supplies : 12-01, 12-02, 10-01

Midi Sub System

Specification:

Make : Genei
Model : Midi Sub System
PI. No : 03-02
Cat No. : 106508GB
Principal Material : Acrylic
Inner tank dimension : 215 x 141 x 55 mm
No. of trays : 130 x 130 mm - 1 no, 130 x 65 mm - 2 nos, 65 x 60 mm - 4 nos.
No. of combs : 13 well 8 well x 1.5 mm - 1 no, 3 well, 3 mm preparative x 1 no.
No. of gel casting tray : 1 universal.
Connecting cord : 1 set (1 black and 1 red) of Platinum electrodes: 1 anode and 1 cathode. Lid : 1 no.
Recommended power supplies : 12-05, 12-06, 10-02

Midi Sub Preparation System

Specification:

Make : Genei
Model : Midi Sub Preparation Systems.
PI. No. : 03-03
Cat No. : 10562GB
Principal Material : Acrylic
Inner tank dimension : 385 x 143 x 70 mm No. of trays : 250 x 130 mm - 1 no.
No. of combs : 13 well 1.5 mm - 1 no, 3 well, 3 mm and 3 well 6 mm preparative - 1 no. each.
No. of gel casting tray : 1 x 250 mm x 130 mm
Connecting cord of Platinum electrodes : 1 set (1 black and 1 red) No. 1 anode and 1 cathode.
Lid : 1 no.
Recommended power supplies : 13-01, 13-02, 13-03

Maxi Sub System

Specification:

Make : Genei
Model : Maxi sub system
PI. No. : 03-04
SAP No. : 106589GB
Principal Material : Acrylic
Inner tank dimension : 310 x 215 x 68 mm
No. of trays : 200 x 200 mm - 1 no
No. of combs : 26 x 1.5 mm - 1 no, 3 well x 3 mm, 3 well x 6 mm - 1 each Connecting cord : 1 set (1 black and 1 red)
No. of Platinum electrodes : 1 anode and 1 cathode.
Lid : 1 no.
Recommended power supplies : 106857GB, 116740GB, 106859GB

Maxi Sub XL System

Specification:

Make	: Genei
Model	: Maxi Sub XL System
PI. No.	: 03-07
Cat No.	: 106614GB
Principal Material	: Acrylic
Inner tank dimension	: 355 x 310 x 65 mm
No. of trays	: 300 x 250 mm - 1 No.
No. of combs	: 33 well x 2 mm - 3 Nos.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies	: 12-02, 13-01, 12-05

Maxi Sub XXL System

Specification:

Make	: Genei
Model	: Maxi Sub XXL System
PI. No.	: 03-09
Cat No.	106627GB
Principal Material	: Acrylic
Inner tank dimension of trays	: 380 x 300 x 50 mm No. : 300 x 200 mm - 1 No.
No. of combs	: 5, 8, 16, 20 x 2 mm-1 each.40 well x 2 mm - 3 Nos.3 well x 3 mm - 1 no.
Gel casting tray table. Connecting cord	: 1 No. with Levelling : 1 set(1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies	: 12-02, 13-01, 12-05

GeNei™

TECHWARE

SUBMARINE

Ordering Information:

Cat No.	PI. No.	Product Description
		Submarine Electrophoresis Systems
6470GB	**03-01**	Mini Sub System: Small model gel size 10 x 7 cm (for 8 samples)
		Accessories for Mini Sub Systems
6478GB	03-01-01	Gel running tray 100 x 70 mm, compatible for 106470GB
6479GB	03-01-01UV	UV transparent gel running tray 100 x 70 mm, compatible for 106470GB
6476GB	03-01-02	Gel running tray 70 x 50 mm (2 / pack), compatible for 106470GB
6504GB	03-01-03	Gel casting tray for 100 x 70 mm, compatible for 106470GB
6503GB	03-01-04	Gel casting tray for 70 x 50 mm, compatible for 106470GB
6501GB	03-01-05	Acrylic comb mini 8 well 1.5 mm, compatible for 106470GB
6502GB	03-01-06	Acrylic comb mini 3 well preparative 3.0 mm, compatible for 106470GB
6506GB	03-01GS	Gel Scoop for 10 x 7 cm Gels, compatible for 106470GB
7040GB	EL-03-01	Spare electrodes 2 nos, compatible for 106470GB
6508GB	**03-02**	Midi Sub System: Analytical model gel size 13 x 13 cm (for 13 samples)
		Accessories for Midi Sub Systems
6560GB	03-02GS	Gel Scoop for 13 x 13 cm Gels, compatible for 106508GB
7041GB	EL-03-02	Spare Electrodes 2 nos, compatible for 106508GB
6527GB	03-02-01	Gel running tray 130 x 130 mm, compatible for 106508GB
6528GB	03-02-01UV	UV transparent gel running tray (130 mm x 130 mm), compatible for 106508GB
6525GB	03-02-02	Gel running tray 130 x 60 mm (2/pack), compatible for 106508GB
6526GB	03-02-02UV	UV transparent gel running tray 130 x 60 mm, compatible for 106508GB
6523GB	03-02-03	Gel running tray 60 x 65 mm (4/pack), compatible for 106508GB
6524GB	03-02-03UV	UV - transparent gel running tray 60 x 65 mm, compatible for 106508GB
6556GB	03-02-04	Gel casting tray for 130 x 130 mm, compatible for 106508GB
6555GB	03-02-05	Gel casting tray for 130 x 60 mm, compatible for 106508GB
6552GB	03-02-06	Gel casting tray for 60 x 65 mm, compatible for 106508GB
6539GB	03-02-07	Acrylic comb analytical 13 well 1.5 mm, compatible for 106508GB
6529GB	03-02-08	Acrylic comb mini 8 well 1.5 mm, compatible for 106508GB

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Ordering Information:

Cat No.	PI. No.	Product Description
		Submarine Electrophoresis Systems
106562GB	**03-03**	**Midi Sub Prep System: Preparative model gel size 13 cm x 25cm (for 13 samples)**
		Accessories for Midi Prep Sub Systems
106575GB	03-03GS	Gel scoop for 130x250mm , compatible for 106562GB
107042GB	EL-03-03	Spare Electrodes 2 nos, compatible for 106562GB
106568GB	03-03-01	Gel running tray (250 mm x 130 mm) , compatible for 106562GB
106569GB	03-03-01UV	UV transparent gel running tray (250 mm x 130 mm) , compatible for 106562GB
106588GB	03-03-02	Gel casting tray for 250 mm x 130 mm , compatible for 106562GB
106585GB	03-03-03	Acrylic comb preparative 3 well 3.0 mm, compatible for 106562GB
106586GB	03-03-04	Acrylic comb preparative 3 well 6.0 mm, compatible for 106562GB
106539GB	03-02-07	Acrylic 13 -well comb 1.5 mm , compatible for 106562GB
106994GB	CC-1	Connecting cord (2 / Pack)
106995GB	CC-2	Adapter set (2 mm/ 4 mm) to be used with Imported power packs
106589GB	**03-04**	**Maxi Sub System: Large model gel size 20 cm x 20 cm (for 26 samples)**
		Accessories for Maxi Sub Systems
107043GB	EL-03-04	Spare Electrodes 2 nos, compatible for 106589GB
106595GB	03-04-01	Gel running tray (200 mm x 200 mm) , compatible for 106589GB
106596GB	03-04-01UV	UV transparent gel running tray (200 mm x 200 mm) , compatible for 106589GB
106611GB	03-04-02	Gel casting tray for (200 mm x 200 mm) , compatible for 106589GB
106597GB	03-04-03	26-Well acrylic comb 1.50 mm , compatible for 106589GB
106598GB	03-04-04	3-Well comb preparative 3.00 mm , compatible for 106589GB
106599GB	03-04-05	3-Well comb preparative 6.00 mm , compatible for 106589GB

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Ordering Information:

Cat No.	PI. No.	Product Description
		Submarine Electrophoresis Systems
106614GB	**03-07**	**Maxi Sub XL System: Extra Large Model (Custom built) Gel Size 30cmx25cm (for 33x3=99 samples) with inbuilt comb stand Multi Channel Pipette Compatible**
		Accessories for Maxi XL Sub Systems
107044GB	EL-03-07	Spare electrodes 2 no's, compatible for 106614GB
106617GB	03-07-01	Gel running tray (300 mm x 250 mm) with combs, compatible for 106614GB
106618GB	03-07-01UV	UV transparent gel running tray (300 mm x 250 mm), compatible for 106614GB
106619GB	03-07-02	33-Well acrylic comb (2 mm), compatible for 106614GB
106620GB	03-07-03	Gel casting tray for (300 mm x 250 mm), compatible for 106614GB
106627GB	**03-09**	**Maxi Sub XXL Systems (for 40x3=120 samples) Gel Size 20cm x 37cm with inbuilt comb stand Multi Channel Pipette Compatible combs 3,5,8,16,20,40x3 wells**
		Accessories for Maxi Sub XXL Systems
106633GB	EL-03-09	Platinum Electrode 2 set, compatible for 106627GB
106630GB	03-09-01	Gel Running Tray 200x370 mm, compatible for 106627GB
106636GB	03-09-01UV	Gel running tray 200x370 mm UV, compatible for 106627GB
106631GB	03-09-02	Gel Casting Tray 200 x 370 mm, compatible for 106627GB
106634GB	03-09-03	Acrylic combs 60-well 1.0, 1.5mm, compatible for 106627GB
106628GB	03-09-04	Acrylic combs 3mm x 3 well, 2mm x 1 each (5, 8, 16, 20 & 40 wells), compatible for 106627GB

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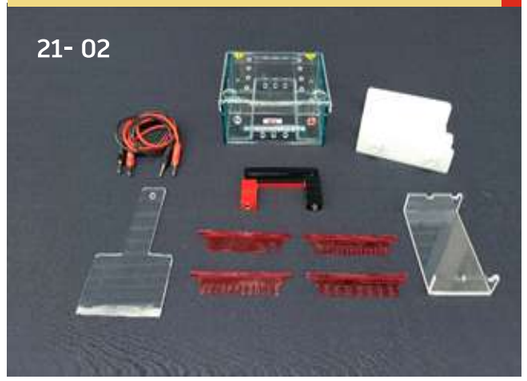
Imported Submarine Electrophoresis System.

The most efficient way to separate DNA fragments in Agarose Gels is by "Submarine" electrophoresis. In this technique, the entire gel is submerged in the buffer. Bangalore Genei offers complete system with moulded basic unit and electrode. Connecting cord and lid can be removed easily while loading the sample. As basic tank is an moulded unit there is no chances of buffers leakage from the tank. Gel Electrophoresis System, accompanies with 10X7cm tray, one15X1.0mm teeth and one 20X1.0mm teeth fixed height combs.

Specification:

Model	: Imported Submarine Electrophoresis System
PI.No.	: ISE1
Cat No.	: 106668GB
Principal Material	: Acrylic
Unit dimension	: 21 x 09 x 09 cm
No. of combs	: 2 no
Recommended power supplies	: 10-01, 10-02, 12-02

UV Transparent Systems



UVT Submarine Gel electrophoresis system is well known to reduce gel handling hazards by means of having UV transparent base. The system is supplied with UV transparent acrylic running tray, thereby allowing direct viewing of nucleic acid bands over the UV transilluminator without removing the gel.Genei manufactures different type of UV transparent systems for different applications.

Miniphor & Maxiphor UVT System

The Miniphor and Maxiphor UVT system contains separate UV Transparent gel running tray with removable electrodes. Gel running tray can be placed directly on the transilluminator to view the gel. Instrument will be supplied along with the gel casting tray and different type of combs for different volume of samples.

Specification:

Make	: Genei
Model	: Miniphor UVT Systems
PI. No.	: 21-02
Cat No.	: 106888GB
Principal Material	: UV Transparent Acrylic Inner tank dimension : 125 x 115 x 35 mm
No. of trays	: 100 x 70 mm - 1 no. UV transparent.
No. of combs	: 8, 12, 16 x 1.5 mm each.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-01,10-02,12-02

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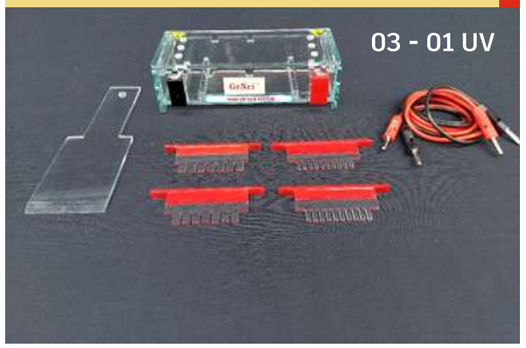
Maxiphor UVT System

Specification:

Make	: Genei
Model	: Maxiphor UVT Systems
PI. No.	: 21-03
Cat No.	: 106901GB
Principal Material	: UV Transparent Acrylic.
Inner tank dimension	: 210 x 200 x 60 mm
No. of trays	: 150 x 130 mm - 1 no. UV transparent.
No. of combs	: 8, 14, 20 well, 1.5 mm each.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-01,10-02,12-02

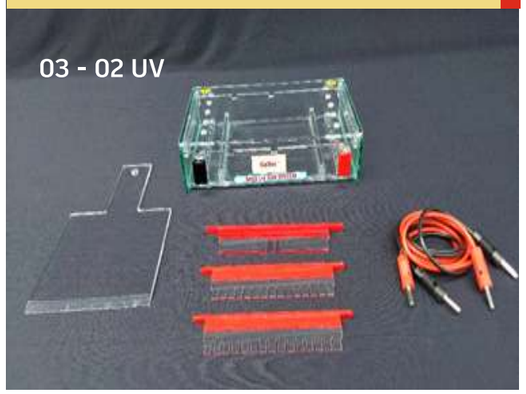
Mini sub system UV transparent



Specification:

Make	: Genei
Model	: Mini sub system UV transparent
PI. No	: 03-01 UV
Cat No.	: 106471GB
Principal Material	: Acrylic
Inner tank dimension	: 180 x 70 x 3 5 mm
Gel size	: 100 x 70 mm - 1 no. UV transparent.
No of trays	: Inbuilt
No. of combs	: 10 well, 1.5 mm - 1 no, 3 well 3 mm - 1 no.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes fixed.	: 1 anode and 1 cathode
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-01, 10-02, 12-02

Midi Sub System UV Transparent



Specification:

Make	: Genei
Model	: Midi sub system UV transparent
PI.No.	: 03-02 UV
Cat No.	: 106509GB
Principal Material	: Acrylic
Inner tank dimension	: 210 x 130 x 35 mm
Gel size	: 130 x 130 mm. UV transparent.
No of trays	: Inbuilt
No. of combs	: 15 x 1.5 mm - 1 no, 3 well 3 mm - 1 no.
Connecting cord	: 1 set(1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode fixed.
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-01, 10-02, 12-01

Midi prep system UV transparent

Specification:

Make	: Genei
Model	: Midi prep system UV transparent.
PI. No.	: 03-03 UV
Cat No.	: 106563GB
Principal Material	: Acrylic
Inner tank dimension	: 335 x 130 x 30 mm
Gel size	: 250 x 130 mm. UV transparent.
No of trays	: Inbuilt
No. of combs	: 15 x 1.5 mm - 1 no, 3 well 3 mm - 1 no, 3 well x 6 mm - 1 no.
Connecting cord	: 1 set(1 black and 1 red)
No. of Platinum electrodes fixed.	: 1 anode and 1 cathode
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-01,10-02,12-01

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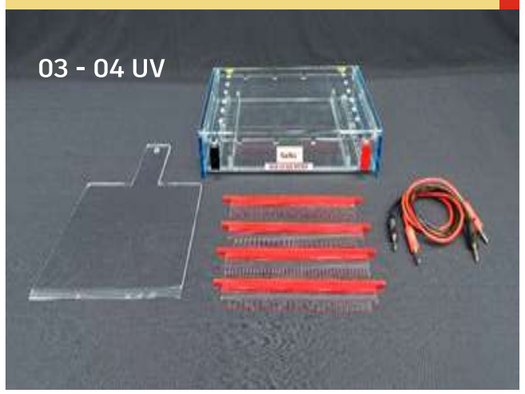
Maxi Sub System UV Transparent



Specification:

Make	: Genei
Model	: Maxi.sub system UV Transparent.
PI. No.	: 03-04 UV
Cat No.	: 106590GB
Principal Material	: Acrylic
Inner tank dimension	: 310 x 215 x 68 mm
Gel size	: 200 x 200 mm. UV transparent.
No of trays	: Inbuilt
No. of combs	: 26 x 1.5 mm - 1 no, 3 well 3 mm - 1 no, 3 well 6 mm - 1 no.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes fixed.	: 1 anode and 1 cathode
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-02, 12-02

Ordering Information:

Cat No.	PI. No.	Product
		Imported Submarine Electrophoresis Systems
106668GB	ISE1	Submarine Electrophoresis System (Imported) 7cmx7cm & 10 cm x 7 cm
100051GB	ISE2	Midi Sub System: 10 X 7 & 10 X 10 cms (2 Combs x 16 samples)
100052GB	ISE3	Midi Plus Horizontal System: 15 X 7: 15 x 10: 15 x 15 & 10 x 10 cm (2 Combs x 20 samples)
100053GB	ISE4	Maxi Horizontal System: 20 x10: 20x20: 20x25 cms (2 Combs x 20 samples)
100054GB	ISE5	Maxi Plus Horizontal System: 26 X 16: 26 x 24: 26 x 32cms (6 Combs x 28 samples)
		UV Transparent Submarine Electrophoresis Systems
106888GB	21-02	Miniphor UVT System Complete Set with 8, 12, 16 well combs Accessories for Miniphor UVT System
106889GB	21-02-05	Acrylic combs for Miniphor 8/12/16 & prep combs (4 Nos), compatible for 106888GB
106900GB	21-02C	Cooling unit for Miniphor UVT System, compatible for 106888GB

Cat No.	PI. No.	Product
1106709GB	21-03-03	Acrylic comb 8,14,20 well (1.5 mm), compatible for 106888GB
106901GB	21-03	Maxiphor UVT System Complete Set with inbuilt gel casting tray- 8, 14, 20 well combs Accessory for Maxiphor UVT System106902GB21-03C Cooling unit for Maxiphor- Analytical UVT System, compatible for 106901GB
106471GB	03-01UV	Mini Sub System UV Transparent: Small model gel size (10 X 7cm), 10 samples Accessories for Mini Sub System UV Transparent
106507GB	03-01UV-GS	Gel Scoop for 10 x 7 cm Gels - UV Transparent, compatible for 106471GB
106472GB	03-01UV-01	Acrylic comb 10 well for 106471GB
106477GB	03-01-03UV	UV transparent gel running tray 70 x 50 mm, compatible for 106471GB
106473GB	03-01UV-02	Acrylic preparative comb 3 well (3.0 mm), compatible for106471GB
106509GB	03-02UV	Midi Sub System UV |Transparent: Analytical model gel size (13 X 13cm), 15 samples Accessories for Midi Sub System UV Transparent
106561GB	03-02UV-GS	Gel Scoop for 13 x 13 cm Gels - UV Transparent, compatible for 106471GB
106520GB	03-02UV-01	Acrylic comb 15 well (1.5 mm), compatible for 106471GB
106521GB	03-02UV-02	Acrylic preparative comb 3 well (3.0 mm), compatible for 106471GB

Ordering Information:

Cat No.	PI. No.	Product
106563GB	03-03UV	Midi Prep Sub System UV Transparent: Preparative model gel size (25 cm x 13 cm15 samples Accessories for Midi Prep Sub System UV Transparent
106564GB	03-03UV-01	Acrylic comb 15 well (1.5 mm), compatible for 106563GB
106565GB	03-03UV-02	Acrylic preparative comb 3 Well (3 mm), compatible for 106563GB
106566GB	03-03UV-03	Acrylic preparative comb 3 well (6.0 mm), compatible for 106563GB
106590GB	03-04UV	Maxi Sub System UV Transparent: Large model gel size (20 cm x 20 cm) 26 samples Accessories for Maxi Sub System UV Transparent
106591GB	03-04UV-01	Acrylic comb 26 well (1.5 mm), compatible for 106590GB
106592GB	03-04UV-02	Acrylic preparative comb 3 well (3.0 mm), compatible for 106590GB
106593GB	03-04UV-03	Acrylic preparative comb 3 well (6.0 mm), compatible for 106590GB

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IMMUNOELECTROPHORESIS SYSTEMS

Mini Immuno Electrophoresis systems

Specification:

Make	: Genei
Model	: Mini Immuno Electrophoresis systems.
PI. No	: 02-01
Cat No.	: 106402GB
Principal Material	: Acrylic
Inner tank dimension	: 95 x 195 x 85 mm
Glass plate size	: 50 x 50 mm - 6 nos, 75 x 50 mm - 6 nos.
Acrylic template	: 1 no with well former
Gel puncher	: 4 mm OD - 1no.. Connecting
cord	: 1 set (1 black and 1 red)
Comb stand	: 1 well with supporting
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-01, 10-02,12-02

Midi Immuno Electrophoresis systems

Specification:

Make	: Genei
Model	: Midi Immuno Electrophoresis systems.
PI. No.	: 02-02
SAP No.	: 106413GB
Principal Material	: Acrylic
Inner tank dimension	: 195 x 175 x 85 mm
Glass plate size	: 50 x 50 mm - 6 nos, 75 x 50 mm - 6 nos.
Acrylic template	: 1 no with well former
Gel puncher	: 4mm OD 1 no ,CIE Template 1 set, Acrylic template with well former U spacers 1 no
Connecting cord of Platinum electrodes	: 1 set (1 black and 1 red) No. : 1 anode and 1 cathode.
Lid	: 1 no.
Gel scoop	: 1 no.
Recommended power supplies	: 10-02, 12-02

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Immuno Submarine Multipurpose System

Miniphor UVT systems

Make : Genei
Model : Immuno Submarine Multipurpose
PI. No. : 02-03
SAP No. : 106419GB
Principal Material : Acrylic
Inner tank dimension : 285 x 230 x 25 mm Glass plate
size : 100 x 80 mm - 6 Nos,
200 x 90 mm - 1 Set,
100 x 150 mm - 1set,
130 x 260 mm - 1 set.

Acrylic template : Variable radius template, with well former 5well templates, 8 well Template, multiple template with holder and spacer Graber Williams template with holder. template for electrofocusing 130 x 260 mm (1 set).
Gel puncher : 3.4.5 mm OD 1 each, CIE Template 1 set, Acrylic template with well former
U shape 1 no Comb : 8 well 1.5 mm - 2 nos, 13 well x 1.5 mm - 1 no.
Comb stand : 1 no.
Gel Running tray : 130 x 130 mm - 1no, 130 x 60 mm - 2 nos.
Levelling table : 1 no.
Connecting cord : 1 set (1 black and 1 red) No. of
Platinum electrodes : 1 anode and 1 cathode.
Lid : 1 no.
Gel cutter : 1 no.
Gel remover : 1no.
Recommended power supplies: 12-02

Ordering Information:

Cat No.	PI. No.	Product
		Immuno Electrophoresis Systems
106402GB	02-01	Mini Immuno-electrophoresis System Accessories for Mini Immunoelectrophoresis System
107215GB	02-01-01	1-Well comb with stand, compatible for 106402GB
106410GB	02-01-02	Template with spacer, compatible for 106402GB
106411GB	02-01-03	Glass plates (50 mm x 50 mm) (12/pack), compatible for 106402GB
106412GB	02-01-04	Glass plates (75 mm x 50 mm) (12/pack), compatible for 106402GB
106413GB	02-02	Midi Immuno-electrophoresis System
106419GB	02-03	Immuno/Submarine Multipurpose System Accessories For Midi and Multipurpose System
106414GB	02-02-01	Immuno diffusion template- 75 mm x 50 mm, compatible for 106413GB & 106419GB
106415GB	02-02-02	CIE template, compatible for 106413GB & 106419GB

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Cat No.	PI. No.	Product
106417GB	02-02-03	Gel punchers (3,4,5 mm o.d), compatible for 106413GB & 106419GB
106437GB	02-03-01E	lectrofusion plate with 0.5 mm spacer, compatible for 106413GB & 106419GB
106438GB	02-03-02	Electrofusion plate with 1.0 mm spacer, compatible for 106413GB & 106419GB
106440GB	02-03-03	Electro fusion plate with 1.5 mm spacer, compatible for 106413GB & 106419GB
106527GB	02-02-04	Gel running tray (130 mm x 130 mm), compatible for 106413GB & 106419GB
106556GB	02-02-12	Gel casting tray (130 mm x 130 mm), compatible for 106413GB & 106419GB
106441GB	02-03-05	Gel running tray (130 mm x 60 mm) (2 / pack), compatible for 106413GB & 106419GB
106447GB	02-03-15	Gel casting tray (130 mm x 60 mm), compatible for 106413GB & 106419GB
106539GB	03-02-06	Acrylic comb 13 well 1.5 mm, compatible for 106413GB & 106419GB
106529GB	03-02-05	Acrylic comb 8 well 1.5 mm, compatible for 106413GB & 106419GB
106442GB	02-03-08	Acrylic comb preparative 3-well 3.0 mm, compatible for 106413GB & 106419GB
106443GB	02-03-09	Acrylic comb preparative 3-well 6.0 mm, compatible for 106413GB & 106419GB
106444GB	02-03-10	Developing tray for PAGE, compatible for 106413GB & 106419GB
106446GB	02-03-12	Universal punchers & templates, compatible for 106413GB & 106419GB
106994GB	CC-1	Connecting cord (2/Pack)
106448GB	02-03-16	Glass plates (100 mm x 80 mm), compatible for 106413GB & 106419GB
106449GB	02-03-17	Glass plates (100 mm x 115 mm), compatible for 106413GB & 106419GB
106460GB	02-03-18	Glass plates (210 mm x 90 mm), compatible for 106413GB & 106419GB
106461GB	02-03-19	Glass plates (260 mm x 130 mm), compatible for 106413GB & 106419GB

PAPER ELECTROPHORESIS SYSTEM

Basic unit consists of anode and cathode buffer reservoirs capable of accommodating suitable electrode assembly. In case of Vertical model, paper supporting vertical stands with cross rods are provided in between reservoirs, whereas, a removable horizontal supporting stand has been provided in horizontal model. In both the cases transparent acrylic covers are provided for controlling buffer evaporation and for electrical safety.

TECHWARE

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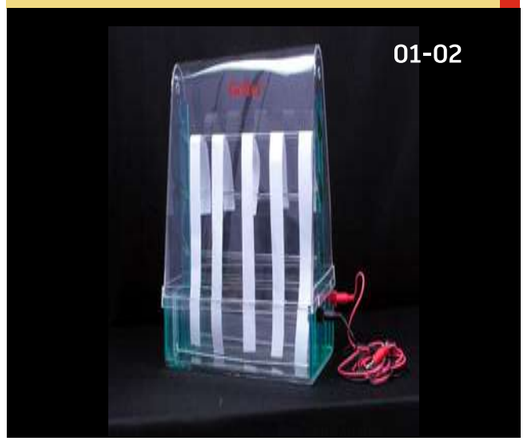
Vertical Mini

Specification:

Make	: Genei
PI. No.	: 01-01
Cat No.	: 116723GB
Principal Material	: Acrylic
Inner tank dimension	: 145 x 145 x 60 mm
Paper supporting rod	: 3 Nos.
Connecting cord	: 1 set(1 black and 1 red)
No. of Platinum electrodes cathode. Lid	: 1 anode and 1 : 1 no.
Recommended power supplies	: 12-02

Vertical Large



Specification:

Make	: Genei
PI. No.	: 01-02
Cat No.	: 116721GB
Principal Material	: Acrylic
Inner tank dimension	: 300 x 150 x 60 mm Paper
supporting rod	: 3 Nos.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies	: 12-02

Horizontal Large for 6 strips

Specification:

Make	: Genei
PI. No	: 01-03
Cat No.	: 116720GB
Principal Material	: Acrylic
Inner tank dimension	: 310 x 200 x 60 mm Paper
supporting frame	: 1 No.
Connecting cord	: 1 set(1 black and 1 red) No.
of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies	: 12-02

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Ordering Information:

Cat No.	PI. No.	Product
		Paper Electrophoresis Systems
106723GB	01-01	Paper Electrophoresis System (Vertical Mini for 3 strips)
106721GB	01-02	Paper Electrophoresis System (Vertical Large for 6 strips)
106720GB	01-03	Paper Electrophoresis System (Horizontal Model for 6 strips)

Vertical Slab Gel Electrophoresis Systems

Genei Laboratories offers a complete range of vertical slab gel electrophoresis systems, suitable for a wide variety of modern electrophoretic techniques. The MINI model answers the demand for small, conventional electrophoresis unit for fast, high resolution protein separations in 8 x 7 cm gel. The REGULAR model is used for electrophoresis in 16 x 14 cm gel. The DUAL models are versatile ones for running two gels, under similar conditions simultaneously. Gels can be cast in three different thicknesses with the GEL CASTING UNIT.

GeNei offers advanced gel casting units as additional accessories, which comes with 'U' Shaped rubber spacers of different thickness, gives a comfort of casting gel without any leakage of PAGE reagents also gives a comfort of casting the gels as easy of Agarose gels.

Note: Gel Casting units are additional accessories available for all REGULAR and DUAL models.

Selection Guide - Vertical Electrophoresis System

Specification	Vertical Mini Gel System	Vertical Dual Mini Gel System	Vertical Midi Gel System	Vertica Dual Midi Gel System	Vertical Maxi Gel System	Vertical Dual Maxi Gel System	Vertical Extra Large gel system	Dual Vertical Extra Large gel system
Dimensions (l x b x h) cm	15x18x15	16x20x15	25x20x27	23x18x27.5	29x20x21	29x22x23	27x55x24	27x55x24
Gel Size (cm)	8x7 (1gel)	8x7 (2gels)	16x14 (1gel)	16x14 (2gels)	16x20 (1gel)	16x20 (2 gels)	41x20 (1 gel)	41x20 (2 gels)
No. of samples	7	7 x 2	13	13 x 2	20	20 x 2	80	100 x 2
Buffer Required (ml)	100 + 150	150 +200	150 + 200	250 + 500	300 + 600	300 + 700	600 + 200	600 + 200
Water Circulation	No	Yes	No	Yes	No	Yes	No	No
PI. No.	05 01	05 02	05 03	05 04	05 05	05 06	05 07	05 08
Cat No.	106680GB	106724GB	106725GB	106782GB	106783GB	106784GB	107946GB	107947GB
Recommended Power Packs:	**12-01 12 02 10-01**	**12-05 12 06 10-02**	**13-01 13 02 13-03**	**12-02 13 01 12-05**	**12-02 13 01 12-05**	**12-02 13 01 12-05**	**12-02 13 01 12-05**	**12-02 13 01 12-05**

Mini Gel System

The MINI model answers the demand for small, conventional electrophoresis unit for fast, high resolution protein separations in 8 x 7 cm gel.

Specification:

Make	: Genei
Model	: Mini gel system
PI. No.	: 05-01
Cat No.	: 106680GB
Gel Size	: 8 x 7 cms,
Principal Material	: Acrylic
Upper buffer tank dimension	: 70 x 60 x 40 mm Lower
buffer tank dimension	: 130 x 60 x 50 mm
No. of combs	: 0.5,1,1.5 mm - 1each
Tefflon spacers	: 0.5,1,1.5mm - 2 each.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode.
Lid	: 1 no.
Leveling screws	: 3 nos.
Glass plate	: Notched and rectangular 2 sets.
Gasket	: Fixed
Clamp and screws	: 1 set.
Gel casting unit	: Optional.
Recommended power supplies	: 10-01, 10-02, 13-01, 12-05

Vertical Dual Mini

Specification:

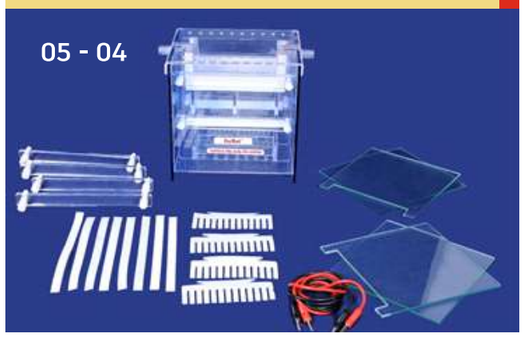
Make	: Genei
Model	: Dual mini gel system
PI. No.	: 05-02
Cat No.	: 106724GB
Gel Size	: 8 x 7 cms x 2
Principal Material	: Acrylic
Upper buffer tank dimension	: 70 x 70 x 43 mm Lower
buffer tank dimension	: 150 x 130 x 115 mm No. of
combs	: 7 well 0.5,1 mm-2 nos.
Teflon spacers	: 0.5 mm x 4 1 mm-2 nos.
Connecting cord (1 black and 1 red)	: 1 set
No. of Platinum electrodes cathode.	: 1 anode and 1
Lid	: 1 no.
Glass plate sets.	: Notched and rectangular 2
Gasket	: Fixed
Clamp and screws	: 2 sets.
Water circulation	: Yes
Gel casting unit	: Optional,
Recommended power supplies	: 10-01, 10-02,10-03,12-05

Midi gel system

Specification:

Make	: Genei
Model	: Midi gel system
PI. No	: 05-03
Cat No.	: 106725GB
Gel Size	: 16X14cms.
Principal Material	: Acrylic
Upper buffer tank dimension0	: 140 x 60 x 25 mm
Lower buffer tank dimension	: 200 x 60 x 60 mm No. of
combs each	: 13 x 0.5, 1 - 1.5 mm
Tefflon spacers	: 0.5, 1, 1.5 mm - 2 each
Connecting cord (1 black and 1 red)	: 1 set
No. of Platinum electrodes cathode	: 1 anode and 1
Lid	: 1 no.
Leveling screws	: 3 nos.
Glass plate sets.	: Notched and rectangular 2
Gasket	: Fixed
Clamp and screws	: 1 set.
Gel casting unit	: Optional, No
Recommended power supplies	: 10-01, 10-02,10-03,12-05

Dual Midi Gel System



Specification:

Model	: Dual Midi gel system
PI. No.	: 05-04
Cat No.	: 106782GB
Gel Size	: 16 x 14 cms. x 2 gels
Principal Material	: Acrylic
Upper buffer tank dimension	: 140 x 70 x 20 mm
Lower buffer tank dimension	: 200 x 160 x 190 mm
No. of combs	: 13 x 0.5, 1mm - 2 nos.
Tefflon spacers	: 0.5, 1 x 4 each.
Connecting cord	: 1 set(1 black and 1 red)
No. of Platinum electrodes cathode fixed.	: 1 anode and 1
Lid	: 1 no.
Glass plate	: Notched and rectangular 2 sets.
Gasket	: Fixed
Clamp and screws	: 4 sets.
Gel casting unit	: Optional, No
Recommended power supplies	: 10-01, 10-02, 10-03, 12-05

Maxi Gel Systems

Specification:

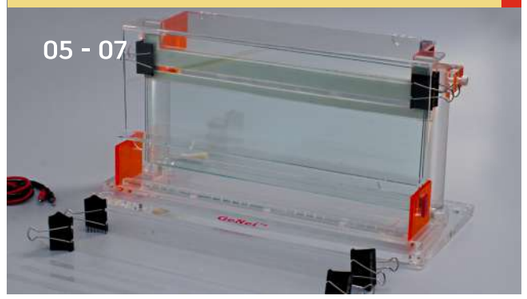
Make	: Genei
Model	: Maxi gel system
PI. No.	: 05-05
Cat No.	: 106783GB
Gel Size	: 16X20cms.
Principal Material	: Acrylic
Upper buffer tank dimension	: 200 x 60 x 25 mm
Lower buffer tank dimension	: 270 x 60 x 60 mm
No. of combs	: 20x 1 mm - 2 nos.
Tefflon spacers	: 1 mm - 6 nos.
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes cathode	: 1 anode and 1
Lid	: 1 no.
Leveling screws	: 3 nos.
Glass plate	: Notched and rectangular 2 sets.
Gasket	: Fixed
Clamp and screws	: 2 sets.
Gel casting unit	: Optional, No
Recommended power supplies	: 10-01, 10-02,10-03,12-05

Dual Maxi Gel System

Specification:

Make	: Genei
Model	: Dual Maxi gel system
PI. No.	: 05-06
Cat No.	: 106784GB
Gel Size	: 16 x 20 cms x 2 gels
Principal Material	: Acrylic
Upper buffer tank dimension	: 200 x 75 x 20 mm
Lower buffer tank dimension	: 270 x 100 x 115 mm
No. of combs	: 20 x 1 mm - 2 nos
Teflon spacers	: 1 mm x 6 nos.
Connecting cord Platinum electrodes	: 1 set (1 black and 1 red) No. of : 1 anode and 1 cathode.
Lid	: 1 no.
Water circulation	: yes.
Glass plate	: Notched and rectangular 2 sets.
Gasket	: Fixed
Clamp and screws	: 4 sets.
Gel casting unit	: Optional, No
Recommended power supplies	: 10-01, 10-02,10-03,12-05

Vertical Extra large System



Specification:

Make	: Genei
Model	: Vertical Extra Large System.
PI. No.	: 05-07
Cat No.	: 107946GB
Gel Size	: 40X20cm.
Principal Material	: Acrylic
Upper buffer tank dimension	: 400 x 65 x 20 mm
Lower buffer tank dimension	: 470 x 65 x 60 mm
No. of combs	: 80 well shark tooth, 80 well rectangular 1 each.
Teflon spacers	: 0.5 mm - 6 nos.
Connecting cord Platinum electrodes	: 1 set (1 black and 1 red) No. of : 1 anode and 1 cathode.
Leveling screws	: 3 nos.
Lid	: 1 no.
Glass plate	: Notched and rectangular 2 sets.
Gasket	: Fixed.
Metal Clips	: 6 nos.
Gel casting unit	: Optional, No
Recommended power supplies	: 10-01, 10-02, 10-03, 12-05

Vertical Imported Electrophoresis System

Specification:

Model	: Vertical Imported Electrophoresis system
PI. No	: IVE1
Cat No.	: 116667GB
Gel Size	: 7.5 x 8 cm
Principal Material	: Acrylic
Unit dimension	: 15 x 13 x 15 cm
No. of combs	: 10 well - 2 nos
Tefflon spacers	: 0.75 mm - 4 nos
Connecting cord	: 1 Set (1 black and 1 red)
No. of Platinum electrodes	: 1 anode and 1 cathode
Lid	: 1 no.
Glass plate	: Notched and rectangular 5 sets
Gasket	: Fixed
Clamp and screws	: 1 set.
Gel casting units	: 2 Nos.
Recommended power supplies	: 10-01, 10-02, 10-03,12-05

Ordering Information:

Cat No.	PI. No.	Product
		Submarine Electrophoresis Systems
106470GB	**03-01**	**Mini Sub System: Small model gel size 10 x 7 cm (for 8 samples)**
		Accessories for Mini Sub Systems
106478GB	03-01-01	Gel running tray 100 x 70 mm, compatible for 106470GB
106479GB	03-01-01UV	UV transparent gel running tray 100 x 70 mm, compatible for 106470GB
106476GB	03-01-02	Gel running tray 70 x 50 mm (2 / pack), compatible for 106470GB
106504GB	03-01-03	Gel casting tray for 100 x 70 mm, compatible for 106470GB
106503GB	03-01-04	Gel casting tray for 70 x 50 mm, compatible for 106470GB
106501GB	03-01-05	Acrylic comb mini 8 well 1.5 mm, compatible for 106470GB
106502GB	03-01-06	Acrylic comb mini 3 well preparative 3.0 mm, compatible for 106470GB
106506GB	03-01GS	Gel Scoop for 10 x 7 cm Gels, compatible for 106470GB
107040GB	EL-03-01	Spare electrodes 2 nos, compatible for 106470GB
106508GB	03-02	Midi Sub System: Analytical model gel size 13 x 13 cm (for 13 samples) Accessories for Midi Sub Systems
106560GB	03-02GS	Gel Scoop for 13 x 13 cm Gels, compatible for 106508GB
107041GB	EL-03-02	Spare Electrodes 2 nos, compatible for 106508GB
106527GB	**03-02-01**	**Gel running tray 130 x 130 mm, compatible for 106508GB**
106528GB	03-02-01UV	UV transparent gel running tray (130 mm x 130 mm), compatible for 106508GB
106525GB	03-02-02	Gel running tray 130 x 60 mm (2/pack), compatible for 106508GB
106526GB	03-02-02UV	UV transparent gel running tray 130 x 60 mm, compatible for 106508GB
106523GB	03-02-03	Gel running tray 60 x 65 mm (4/pack), compatible for 106508GB
106524GB	03-02-03UV	UV - transparent gel running tray 60 x 65 mm, compatible for 106508GB
106556GB	03-02-04	Gel casting tray for 130 x 130 mm, compatible for 106508GB
106555GB	03-02-05	Gel casting tray for 130 x 60 mm, compatible for 106508GB
106552GB	03-02-06	Gel casting tray for 60 x 65 mm, compatible for 106508GB
106539GB	03-02-07	Acrylic comb analytical 13 well 1.5 mm, compatible for 106508GB
106529GB	03-02-08	Acrylic comb mini 8 well 1.5 mm, compatible for 106508GB

Cat No.	PI. No.	Product
		Vertical Slab Gel Electrophoresis Systems
106763GB	05-03-06	Teflon comb 13 well 1.5 mm, compatable for 106725GB & 106782GB
106764GB	05-03-08	Teflon spacers 0.5 mm (6 / Pack), compatable for 106725GB & 106782GB
106765GB	05-03-09	Teflon spacers 1.0 mm (6 / Pack), compatable for 106725GB & 106782GB
106766GB	05-03-10	Teflon spacers 1.5 mm (6 / Pack), compatable for 106725GB & 106782GB
106767GB	05-03-11	Teflon spacers 3.0 mm (6 / Pack), compatable for 106725GB & 106782GB
106768GB	05-03-12	Acrylic comb prep. 3 well 3.0 mm, compatable for 106725GB & 106782GB
106769GB	05-03-13	Acrylic comb prep. 3 well 6.0 mm, compatable for 106725GB & 106782GB
106780GB	05-03-14	Acrylic clamp (1) and screws (2), compatable for 106725GB & 106782GB
106781GB	05-03-15	Levelling screws (3/Pack), compatable for 106725GB & 106782GB
106994GB	CC-1	Connecting cords (2/Pack)
106995GB	CC-2	Adapter set (2 mm/ 4 mm) to be used with Imported power packs
106783GB	05-05	Vertical Maxi Gel System: Large model gel size (16 x 20) cm (HxW) for 20 samples
106784GB	05-06	Vertical Dual Maxi Gel System: Large dual model gel size 2 (16 x 20) cm, (HxW) for 40 samples Accessories for Maxi Gel/Dual Maxi Gel System (16 x 20) cm gel
106785GB	05-06-01	Glass plates (Notched and Rectangular), compatable for 106783GB & 106784GB
107047GB	EL-05-05	Spare electrodes, 2 nos, compatable for 106783GB & 106784GB
106787GB	05-06-02	AMaxi Gel Multi Caster (for 2 gels) (1 No./Pack) (With Silicone Gasket), compatable for 106783GB & 106784GB
106788GB	05-06-03	Gel developing tray with gel holder, compatable for 106783GB & 106784GB
106789GB	05-06-04	Teflon comb 0.50 mm 20 Well, compatable for 106783GB & 106784GB
106810GB	05-06-05	Teflon comb 1.00 mm 20 Well, compatable for 106783GB & 106784GB
106811GB	05-06-06	Teflon comb 1.50 mm 20 Well, compatable for 106783GB & 106784GB
106812GB	05-06-07	Teflon spacers 0.50 mm (6 / pack), compatable for 106783GB & 106784GB
106813GB	05-06-08	Teflon spacers 1.00 mm (6 / pack), compatable for 106783GB & 106784GB
106814GB	05-06-09	Teflon spacers 1.50 mm (6 / pack), compatable for 106783GB & 106784GB
106815GB	05-06-10	Acrylic clamp (1) and screws (2), compatable for 106783GB & 106784GB

Cat No.	PI. No.	Product
		Vertical Slab Gel Electrophoresis Systems **Vertical Extra Large System**
107946GB	**05-07**	**Vertical Extra Large System: 27x55x24 cm (80 Samples)**
107947GB	**05-08**	**Dual Vertical Extra Large System: 27x55x24 cm (200 Samples)**
		Accessories for Vertical Extra Large System
107977GB	05-07-01	Glass plates notched and rectangular, compatable for 107946GB & 107947GB
107978GB	05-07-02	AGel casting unit (With Silicone Gasket), compatable for 107946GB & 107947GB
107979GB	05-07-03	Teflon comb 80 Well 0.5 mm, compatable for 107946GB & 107947GB
108000GB	05-07-04	Teflon comb 80 Well 1.0 mm, compatable for 107946GB & 107947GB
108001GB	05-07-05	Shark Tooth comb 80 Well 0.5 mm, compatable for 107946GB & 107947GB
108002GB	05-07-06	Shark Tooth comb 80 Well 1.0 mm, compatable for 107946GB & 107947GB
108003GB	05-07-07	Acrylic spacers 0.5 mm (6 / pack), compatable for 107946GB & 107947GB
108004GB	05-07-08	Acrylic spacers 1.0 mm (6 / pack), compatable for 107946GB & 107947GB
108005GB	05-07-09	Gel developing tray with gel holder - XL, compatable for 107946GB & 107947GB

ELECTRO TRANSFER UNITS

In electrophoretic transfer (blotting) method, the gel containing the separated sample is sandwiched between immo- bilizing membranes. When an electric field is applied, the separated molecules are transferred from the gel to the membrane, where they are bound and readily accessible for further analysis. We offer GeNei™ Blot models: Mini Model (8 x 7 cm gel) & Regular Model (16 x 14 cm gel) are single cassette models for western blotting of proteins onto membrane filters. Dual models of the same are for the electrophoretic transfer of two gels simultaneously and are provided with heat exchanger which controls the temperature of the system and increases the transfer efficiency considerably.

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Electro Transfer Mini System

Specification:

Make	: Genei
Model	: Electro Transfer Mini System
PI. No.	: 08-01
Cat No.	: 106816GB
Principal Material	: Acrylic
Buffer Reservoir	: 1 no.
Buffer Volume	: 350 ml.
Gel Cassette	: 1 no
Gel Size	: 8 x 7 cm
Filter pads	: 6 nos.
Cushion Pads	: 12 nos.
Connecting cord (1 black and 1 red)	: 1 set
No. of Platinum electrodes cells	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies	: 12-02,12-05

Electro Transfer Mini Dual Model

Specification:

Make	: Genei
Model	: Electro Transfer Mini Dual System
PI. No.	: 08-02
Cat No.	: 106819GB
Principal Material	: Acrylic
Buffer Reservoir	: 1 no.
Buffer Volume	: 600 ml.
Gel Cassette	: 2 no
Gel Size	: 8X7cm
Filter pads	: 1pkt.
Cushion Pads	: 1pkt.
Heat Exchanger	: 1 no
Connecting cord	: 1 set (1 black and 1 red)
No. of Platinum electrodes cells	: 1anode and 1 cathode
Lid	: 1 no.
Recommended power supplies	: 12-02,12-05

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Electro Transfer Midi Dual System

Specification:

Make	: Genei
Model	: Electro Transfer Midi System
Old Cat.No	: 08-03
SAP No.	: 106850GB
Principal Material	: Acrylic
Buffer Reservoir	: 1 no.
Buffer Volume	: 1000 ml.
Gel Cassette	: 1 no
Gel Size	: 16 x 14 cm
Filter pads	: 6 nos.
Cushion Pads	: 12 nos.
Connecting cord	: 1 set(1 black and 1 red)
No. of Platinum electrodes cells	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies:	12-02, 12-05

Electro Transfer Midi Dual System

Specification:

Make	: Genei
Model	: Electro Transfer Midi Dual SystemOld
Cat.No	: 08-04
Cat..No	: 106853GB
Principal Material	: Acrylic
Buffer Reservoir	: 1 no.
Buffer Volume	: 1500 ml.
Gel Cassette	: 2 no
Gel Size	: 16X14 cm
Filter pads	: 6 nos.
Cushion Pads	: 12 nos.
Heat Exchanger	: 1 no
Connecting cord	: 1 set(1 black and 1 red)
No. of Platinum electrodes cells	: 1 anode and 1 cathode.
Lid	: 1 no.
Recommended power supplies	: 10-02, 12-02, 13-02

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Ordering Information:

Cat No.	PI. No.	Product
		Electrotransfer Mini, Midi System
106816GB	08-01	Electrotransfer Mini System Gel Size (8 cm x 7 cm)
106819GB	08-02	Electrotransfer Mini Dual System Gel Size 2 (8 cm x 7 cm)
106850GB	08-03	Electrotransfer Midi System Gel Size (16 cm x 14 cm)
106853GB	08-04	Electrotransfer Dual Midi System Gel Size 2 (16 cm x 14 cm)
		Accessories for Electrotransfer Mini, Midi System
106817GB	08-01-01	Filter pads (8 cm x 7 cm) (6 / pack) compatable for 108816GB & 106819GB
106819GB	08-01-02	Cushion pads (8 cm x 7 cm) (12 / pack) compatable for 108816GB & 106819GB
106851GB	08-03-01	Filter pads (16 cm x 14 cm) (6 / pack) compatable for 10850GB & 106853GB
106852GB	08-03-02	Cushion pads (16 cm x 14 cm) (12 / pack) compatable for 10850GB & 106853GB
106994GB	CC-1	Connecting cord (2/pack)

E-Blotter system

E-Blotter system is an ideal system for effective electro-transfer applications. It includes E-Blotter buffer tank, E- Blotter module.

Technical Specification:

E-Blotter buffer tank dimension	: 20 x 13 x 16.5 (cm) (L x W x H)
E-Blotter module dimension	: 22 x 6.8 x 11 (cm) (L x W x H)
E-Blotter transfer gel size	: 11 x 7.5 (cm) (W x H)

Ordering Information:

Cat. No	PI No.	Product Description
116744GB	Eb1	E-Blotter Complete System - Mini

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Seque GeNei™ DNA Sequencer

The Seque GeNei™ vertical sequencing apparatus is ideal for analytical Polyacrylamide Gel Electrophoresis of oligonucleotides. The system offers many advantages:

- Heat proof glass plates.
- Anodized aluminium heatsink that provides uniform temperature control.
- Imported combs and spacers.
- Safety at high voltage.
- Removable buffer tanks

Technical Information:

Specification	Model
Igel Size (cm)	45 x 21.5 cm
Buffer Required (ml)	750
Power required	2000 V;100mA
No. of slots : Shark tooth comb - 36 well & 27 well	1 each
Cat	#106999GB
PI #DS1Power Pack Required	HVPS

Ordering Information:

Cat No.	PI. No.	Product
106999GB samples	DS-01	Seque GeNeiTM DNA Sequencer gel size (21.5 x 45 cm) (WxH) \ for 27 & 36
		Accessories for DNA Sequencer
107912GB	DS-01-01	Shark tooth Comb - 36 well, compatable for 106999GB
107913GB	DS-01-02	Shark tooth comb - 27 well, compatable for 106999GB
107930GB	DS-01-03	Spacers, compatable for 106999GB
106996GB	DS-01-04	Glass plates - notched & rectangular, compatable for 106999GB
106997GB	DS-01-05	Metal Clips, compatable for 106999GB
106998GB	DS-01-06	Acrylic Glass Plate Stand, compatable for 106999GB

UV Cross Linkers

UV Cross linkers are used to bind nucleic acids to membrane using ultra violet energy. The correct ultra violet dosage can be set using the membrane switch key pad, in either energy units or in time. There are nine preset programs in energy exposure and time exposure.

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Applications:

- Fixing of nucleic acids to nylon or nitrocellulose membranes.
- Elimination or reduction of PCR Contamination.
- Gene mapping for creating cleavage inhibiting thym- ine dimers.
- Ultravoilet curing of polymers, adhesives and links.
- Ultraviolet sterilisation

Specification:

PI. No.	: UVC-3
Cat #	: 117801GB
External Dimension	: 30.5 x 36 x 35 cm. (hxdxw)
Internal Dimension	: 14.5 x 33 x 26 cm (hxdxw)
Ultravoilet wavelength	: 312 nm.
Ultra violet source	: 6 x 8 watt tubes
Multiple set functions	: 9 preset UV energy exposure 9 preset UV exposure time Manual setting of UV Energy exposure min. 0.025 joules/ Max 99.99 Joules. Manual setting of UV exposure time min 10 seconds/max.599
Energy display	: 2 measurement ranges 0.0 to 9.999 joules/00.00 to 99.99 joules
Exposure time display	: 2 measurement ranges 00.0 to 99.59 min/seconds/000.0 to 599.5 min

Ordering Information:

Cat. No	PI No.	Product Description
117801GB	UVC-3	UV Cross Linker

Hybridisation Oven

Hybridisation Oven is made out of Heavy Gauge MS with powder coated body. Temperature is maintained from above ambient to 60 Deg C with an accuracy of 0.5°C with the help of powerful centrifugal blower. D.C. motor is used to get accuracy in speed and for low noise levels. Speed can be controlled from 10 rpm to 60 rpm with an accuracy of 2 rpm. Front door is made out of acrylic with locking system.

Specification:

Make	: Genei
PI. No.	: HBO
Cat No.	: 116729GB
Temperature Range	: Above Amb to 60°C
Temperature Controller	: Digital
Temperature Accuracy	: ± 0.5°C Rpm : 0 to 60 rpm
RPM Indicator	: Analogue
Construction	: Aluminium with powder coated body
Capacity	: 44 Lts
Motor	: D.C. Motor
Weight	: 12 kgs
Size	: 406 x 360 x 360 mm
Input Voltage	: 230 V, 50 Hz. A.C. Supply

Ordering Information:

Cat. No	PI No.	Product Description
116729GB	HBO	Hybridization Oven

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Gel Dryer

The GeNei™ gel slab dryers are convenient and reliable units for preserving fragile electrophoresis gels for stor- age.

Gel Drying surface: 25 cm x 35 cm, (in Junior Model) and 35 cm x 45 cm (in Senior Model).

Gel Dryers have been designed to accommodate all vari- ous gel sizes made on Hoefer Biorad and Pharmacia electrophoresis instruments. GeNei provides versatile models to suit various gel sizes. Gels (1.5 mm) take only 30 mins to dry, and the unit shuts off automatically after lapse of set time. Both models have unique audio and visual alarm to indicate end of run. Clear silicon sheet permits easy viewing while gels dry on powerful heaters (400 W in Junior Model and 800 W in Senior Model). The temperature (upto120° C) and time (up to 4hrs) can be electronically controlled by knobs provided. The gel dryer will work most efficiently if connected to a vacuum pump delivering more than 22 PSI (560 mm Hg). The Senior gel dryer is provided with a Vacuum gauge and tubing connectors. The instrument sizes are, Junior (LWH) 540 x 300 x 80 mm, Senior (LWH) 640 x 395 x 80 mm and are encased in a shock proof light weight FRP body. It is supplied with a power cord and a plug.

Power requirements: 230 V ± 10% AC.

Rotary Vane Vaccum Pump

This vaccum pump is perfect for electrophoresis gel drying, requiring a continuous vaccum up to 150 liter/ min. The pump works well with the junior or senior Gel Dryer. The glass moisture trap can be used in crushed ice to incerease the efficiency of the Gel Dryer.

Ordering Information:

Cat No.	PI. No.	Product
		GEL DRYER
107104GB	GD-1	Gel dryer junior (25 cm x 35 cm)
107105GB	GD-2	Gel dryer senior (35 cm x 45 cm) 107148GBSS-1Silicone sheet - junior (381 mm x 300 mm)
107149GB	SS-2	Silicone sheet - senior (500 mm x 410 mm)
107146GB	SM-1	Stainless steel mesh junior (330 mm x 230 mm)
107147GB	SM-2	Stainless steel mesh senior (420 mm x 320 mm)
		ROTARY VANE VACUUM PUMP
107210GB	VP-1	Vacuum pump (150 Ltr/min)
107112GB	MT-1	Moisture trap (for use with crushed ice

Pipettes

Genei deals with different type of pipettes like normal pipettes for regular use, Autoclavable pipettes, Imported pipettes, Multi channel pipettes etc**Fully Autoclavable Imported Pipettes**

Specification:

Model : BNP

PI. No. : BNP10, BNP20, BNP100, BNP200, BNP10z00

Cat No. : 106912GB, 106915GB, 106913GB, 106930GB, 106914GB

Non Autoclavable Pipettes

Specification:

Model : BNP

PI. No. : BGCS10, BGCS100, BGCS200, BGCS1000

Cat No. : 106903GB, 106904GB, 106906GB, 106905GB

Autoclavable Pipettes

Specification:

Model : BNP

PI. No. : BGMP1, BGMP2, BGMP3, BGMP4, BGMP5

Cat No. : 116737GB, 116735GB, 116734GB, 116733GB, 116732GB

Ordering Information:

Cat No.	PI. No.	Product
		DIGITAL VARIABLE VOLUME PIPETTE (AUTOCLAVABLE)
106912GB	BNP-10	Micropipette 0.5-10 µl (increment 0.1 µl)
106915GB	BNP-20	Micropipette 2-20 µl (increment 0.1 µl)
106913GB	BNP-100	Micropipette 10-100 µl (increment 0.1 µl)
106930GB	BNP-200	Micropipette 20-200 µl (increment 1.0 µl)
106914GB	BNP-1000	Micropipette 100-1000 µl (increment 5.0 µl)
116737GB	BGMP1	Micropipette, 0.2 - 2 µl (increment 0.1 µl)
116735GB	BGMP2	Micropipette, 0.5 - 10 µl (increment 0.1 µl)
116734GB	BGMP3	Micropipette, 2 - 20 µl (increment 0.1 µl)
116733GB	BGMP4	Micropipette, 20 - 200 µl (increment 1 µl)
116732GB	BGMP5	Micropipette, 100 - 1000 µl (increment 10 µl)
116730GB	BGMCP	18-Channel Pipette, 5 - 50 µl
116727GB	BGMCP	28-Channel Pipette, 40 - 300 µl
116726GB	BGMCP3	12-Channel Pipette, 5 - 50 µl
116724GB	BGMCP4	12-Channel Pipette, 40 - 300 µl

Cat No.	PI. No.	Product
		VARIABLE VOLUME MICROLITRE PIPETTE - POPULAR MODEL
106903GB	BGCS10	Variable Micropipette 0.5 - 10 µl (increment 0.1 µl)
106904GB	BGCS100	Variable Micropipette 20-100 µl (increment 1 µl)
106906GB	BGCS200	Variable Micropipette 40-200 µl (increment 1 µl)
106905GB	BGCS1000	Variable Micropipette 200-1000 µl (increment 10 µl)

Power Supplies

Popular digital models operate in constant voltage and constant current mode with automatic cross over between modes when preset limits are reached. As a result, these power supplies can handle most electrophoresis applications. Genei manufactures different types of power supplies starting from 100 volts to 3000 Volts. Customers can choose the Genei range of Power supplies according to their requirement and number of samples to be loaded on to the gel.

Analog models are handy for quick run gels and for academic demonstrations. Whereas digital models are designed with the precision for research applications and have a provision for fine tuning of constant volts/ constant current supply. Advanced Digital models would have an option of Multiple ports (2 – 4) to enable multiple apparatus to run simultaneously. Isolated power supply models enable the user the ability to program each port with their desired programs.

Technical & Ordering Information

	Popular Digital Model					Fixed Voltage Model			
Specification	GeNei Digital PS 100	GeNei Digital PS 500	GeNei Digital PS 3000	GeNei Digital HVPS	Euro Model	GeNei PS 200	GeNei PS 100	Programmable Model	
								IPPS-1*	IPPS-3*
Input AC Voltage	220 V ± 10%	220 V ± 10%	220 V ± 10%	220 V ± 10%	220 V ± 10%	220 V ± 10%	220 V ± 10%	230 V ± 10%	230 V ± 10%
Output DC Voltage	0-300 V	0-500 V	10-250 V	30-3000 V	10-300 V	100, 150,200, 250 V	50, 100, 150, 200, 250 V	500 V	3000 V
Max. Output Current	0-100 mA	0-500 mA	3A	2-150 mA	4-500 mA	200 mA	100 mA	500 mA	150 mA
Timer	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Display	LED Digital	LED Digital	LED Digital	LED Digital	LED Digital	--	--	LED	LED
Output	one, 4 mm socket	two, in parallel 4 mm socket	two, in parallel 4 mm socket	four, in parallel 4 mm socket	four, in parallel 4 mm socket	one, 4 mm socket	one, 4 mm socket	Four	Four
PI. No.	12-01	12-02	12-04	13-02	12-05	10-02	10-01	13-01	13-03
Cat. No.	106860GB	106857GB	106858GB	107237GB	106859GB	106855GB	106854GB	107236GB	107238GB

Selection Guide - Power Supplies

Cat. No	PI. No	Model	Feature*	Voltage	Current Outlets	Power
106857GB	12-02	Digital	CC/CV	500 V	500 mA	2
106858GB	12-04	Digital	CV	250 V	3 A	2
106860GB	12-01	Digital	CC/CV	300 V	100 mA	1
106854GB	10 01	PS100 Analog	CP	50, 100, 150 200, 250 V	100 mA	1
106855GB	10-02	PS200 Analog	CP	100, 150, 200, 250	200 mA	1
106856GB	10-03	Analog	CC/CV	300V	150mA	2
107236GB	13-01	Digital	CC/CV	500 V	500 mA	2
107238GB	13-03	Digital	CC/CV	300 V	400 mA	4
107237GB	13 02	Digital	CC/CV/CP	30 3000 V	2 150 mA	4
106859GB	12 05	Digital	CC/CV/Timer	300 V	400 mA	4

Note: *CC : Constant Current, *CV : Constant Voltage , *CP : Constant Power

Selection Guide - Electrophoresis by Application

Application		Elpho Unit	Power Supply
Vertical Gel:			
Standard PAGE/SDS		106725GB 106782GB	106857GB/116740GB
Mini PAGE/SDS		106680GB 106724GB 106784GB	106857GB/106855GB/ 116740GB
Submarine Gel:			
Analytical & Preparative Studies of Nucleic acids			
	- Small	106470GB	106857GB/106854GB /116740GB
	- Analytical	106508GB	10685GB7/106855GB/116740GB
	- Preparative	106562GB	106857GB/116740GB
	- Maxi Sub XL	106614GB	106857GB/116740GB
	- Maxi Sub XXL	106627GB	106857GB/116740GB
Submarine UV T	- Miniphor	106888GB	106856GB/116740GB
Electrophoresis	- Maxiphor	106901GB	106857GB/106855GB/116740GB
(UV - Transparent Model)			
Immunoelectrophoresis		106413GB	106857GB/116740GB
DNA Sequencing		106999GB	106870GB/116738GB
Electrotransfer	- Standard	106850GB/	106858GB
	- Mini	106853GB 106816GB/ 106819GB	106858GB

GeNei PS 100 Analog Power Supplies for Low voltage and Low Current Application

Specification:

Make	: Genei
Model	: Genei PS100
PI. No.	: 10-01
Cat No.	: 106854GB
Output DC Voltage	: 50,100,150,200,250V Output
current	: Maximum 100 mA
Display	: LED Indicator
Output	: one, 4 mm socket
Body	: MS with powder coated body.
Size	: 165 x 95 x 80 mm
Weight	: 800 gms
Input voltage	: 230V,50Hz,A.C.

Specification:

Make	: Genei
Model	: Genei PS200
PI. No.	: 10-02
Cat No.	: 106855GB
Output DC voltage	: 100,150,200,250 Output
current	: 200mA
Display	: One LED indicator
Output	: One, 4 mm socket
Body	: MS with powder coated body
Size	: 165 x 100 x 50 mm
Weight	: 1.2 kgs
Input voltage	: 230V,50Hz,A.C

Digital models with timer for all the applications

Popular digital models operate in constant voltage and constant current mode with automatic cross over between modes when preset limits are reached. As a result, these power supplies can handle most electrophoresis applications. Genei manufactures different types of power supplies starting from 100 volts to 3000 Volts. Customers can choose the Genei range of Power supplies according to their requirement and number of samples to be loaded on to the gel.

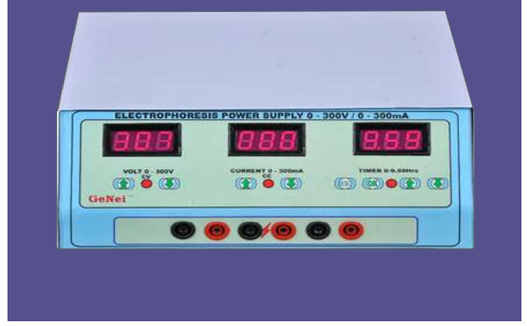
GeNei PS200

GeNei Digital PS 100

Specification:

Make	: Genei
Model	: Genei Digital PS 100
PI. No.	: 12-01
Cat No.	: 106856GB
Output DC voltage	: 300V,Variable
Output Current	: 100mA,Variable
Output	: One, 4mm socket.
Display	: Digital
Timer	: 15 mins. to 4 Hours.
Body	: MS with powder coated body
Size	: 290 x 180 x 150 mm
Weight	: 3 kgs approx.
Input voltage	: 230V,50Hz,A.C.

GeNei Digital PS 500



Specification:

Make	: Genei
Model	: Digital PS500
PI. No.	: 12-02
Cat No.	: 106857GB
Output DC Voltage	: 0-500Volts variable Output
current	: 0-500mA Variable
Output	: Two parallel outputs, 4 mm socket
Display	: Digital
Timer	: 15mins to 4 hours
Body	: MS with powder coated body
Size	: 360 x 285 x 160 mm
Weight	: 3 kgs approx.
Input Voltage	: 230V, 50Hz, A.C.

Isolated Programmable Power Supply

Specification:

Make	: Genei
Model	: Programmable
PI. No.	: 13-01
SAP No.	: 116740GB
Output DC voltage	: 0-500V Variable
Output Current	: 0-500mA. Variable
Output	: 4 Parallel outputs.
No. of programmes	: 5.
Timer	: Min/hours/cont.
Output watts	: 90 watts.
Display	: Digital
Body	: MS with powder coated
Size	: 260 x 230 x 130 mm
Weight	: 3 kgs approx.
Input voltage	: 230V,50Hz,A.C.

Isolated Programmable Power Supply

Specification:

Material	: MS Power Coated
Inner Dimensions	: 25x27x12cm
Output Voltage	: 0-300V
Output Current	: 0-300mA
Output Terminal	: 2 Output
Display	: LED
Timer	: 0-9.59 Hours
Power Cord	: Yes
Input Rating	: 200-260 Vac/50hz

BGPS 300/500 Euro Model Digital

Specification:

Make	: Genei
Model	: Euro Model Digital
PI. No.	: 12-05
Cat No.	: 106859GB
Output DC voltage	: 10-300Volts variable
Output current	: 4-500mA Variable
Output	: 4 parallel outputs, 4mm socket.
Display	: Digital
Timer	: 1-99mins/cont.
Body	: Plastic
Size	: 310 x 200 x 70 mm
Weight	: 1 kg approx.
Input Voltage	: 230V,50Hz,A.

Programmable High Voltage Power Supplies

Specification:

Make	: Genei
Model	: 10-250V
PI. No.	: 12-04
Cat No.	: 106858GB
Output DC Voltage current	: 0-250Volts variable Output : 0-3000mA Variable
Output socket	: 2 parallel outputs, 4 mm
Display	: Digital
Timer	: Analogue
Body	: MS with powder coated body
Size	: 260 x 230 x 130 mm
Weight	: 18 kgs approx.
Input Voltage	: 230V,50Hz,A.C.

Programmable 500V: 500mA Power Supplies

High voltage power supplies are used for DNA Sequencer, Extra Large Vertical Systems. Where the application lies in between High Voltage and low current. Genei deals with imported and indigenous high voltage power packs. These power supplies can be programmed as per our requirement.

Specification:

Model	: Programmable Power Pack.
PI. No.	: 13-01
Cat No.	: 116740GB
Output DC Voltage current	: 500 Volts variable Output : 500mA
Output	: 4 parallel outputs
No. of programs	: 5
Output watts	: 90 Watts
Timer	: 0-60 min/Hour/cont..
Display	: LED
Body	: MS With Powder coated
Size	: 110mmx235mmx240mm
Weight	: 3 Kgs. Approx.
Input voltage	: 230V, 50Hz. A.C.

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SUBMARINE

Digital HVPS Imported 3000V: 200mA

Specification:

Model	: Digital HVPS
PI. No.	: 13-02
Cat No.	: 106870GB
Output DC Voltage current	: 3000 Volts variable Output : 2000mA
Output	: 4 parallel outputs
No. of programs	: 9
Output watts	: 75 Watts
Timer	: 99 mins/cont.
Display	: LCD
Body	: Plastic
Size	: 300 x 250 x 140 mm
Weight	: 4 kgs. Approx
Input voltage	: 230V, 50Hz. A.C

Isolated Programmable Power Supply 300V: 400mA

Specification:

Model	: Programmable High Voltage Power Pack.
PI. No.	: 13-03
Cat No.	: 116738GB
Output DC Voltage current	: 300 Volts variable Output : 400mA
Output	: 4 parallel outputs
No. of programs	: 5
Output watts	: 75Watts
Timer	: 0-60 min/Hour/cont..
Display	: LE D
Body	: MS With Powder coated
Size	: 100 x 235 x 240 mm
Weight	: 3 kgs. Approx.
Input voltage	: 230V, 50Hz. A.C.

Ordering Information:

Cat No.	PI. No.	Product
		ELECTROPHORESIS POWER SUPPLIES ANALOG MODEL: FIXED VOLTAGE
106854GB	10-01	GeNei PS 100:Mini Model 50, 100, 150, 200, 250 V Fixed , 100 mA with LED display
106855GB	10-02	GeNei PS 200: Mini Model 100, 150, 200, 250 V Fixed , 200 mA
117802GB	12-06	300/300 Power Supply
		POPULAR DIGITAL MODEL
106856GB	12-01	GeNei™ Digital PS 100: EPS 300 Model ; 0-300 V; 0-100 mA ; Variable with timer Constant Current ; Constant Voltage ; Digital display
106859GB	12-05BG	PS 300/400:Euro Model Digital Powersupply light weight; 10-300 V; 4-400 mA Max 75 W, 4 outlets; Variable with timer;Constant Current ; Constant Voltage ; Digital display
106857GB	12-02	GeNei™ Digital PS 500:EPS 500 Model ;0-500 V; 0-500 mA ; Variable with timer Constant Current ; Constant Voltage ; Digital display
106858GB	12-04	GeNei™ Digital PS 3000 Electro transfer Model ; 10-250 V ; 3000 mA; Variable with timer Constant Voltage ; Digital display
116740GB	13-01	Programmable Power Supply (500 V, 500 mA)116738GB13-03Programmable High Voltage Power Supply (0 - 3000 V; 0 - 150 mA)

www.geneilabs.com

TECHWARE

SUBMARINE

Cat. No	PI No.	Product Description
HIGH VOLTAGE POWER SUPPLY- IMPORTED MODEL		
106870GB	13-02	GeNei™ Digital HVPS: Programmable High voltage power supply (30 - 3000 V ; 2 - 150 mA ; 2 - 150 W)

Centrifuges

Genei offers microcentrifuge which has impact resistant housing. It has been tested in our laboratory under various conditions. You will find it an excellent companion for all small volume centrifugation in 1.5 ml tubes in cold room or at room temperature. Genei™ manufactures three different types of centrifuges like 6000rpm,10000rpm and 14000rpm centrifuges with 1.5 ml fixed rotor.

Applications:

- Cell Pelleting
- Quick Spins for Enzyme Reaction
- Initial Spin for DNA Sequencing
- Quick Spin for Primer An- nealing / Hybridization
- Serum Sampling
- Other Short Spin Runs.

Micro Centrifuge (Fixed Rotor 6000 rpm) (fixed rpm)

Specification:

Make	: Genei
PI. No.	: MC-1
Cat No.	: 107110GB
Maximum RPM	: 6000
Maximum capacity	: 6X1.5/2 ml fixed.
Maximum time usage	: 10 mins
Body	: Plastic
Input Voltage	: 230V,50Hz,
A.C.Supply Size	: 150 x 140 mm
Weight	: 800 gms.

Micro Centrifuge (Fixed Rotor 10000 rpm) (variable speed)

Specification:

Make	: Genei
PI. No.	: MC-3
Cat No.	: 107944GB
Maximum RPM	: 10000
Maximum capacity	: 6X1.5/2 ml fixed
Maximum time usage	: 20 mins/cont.
Timer	: Digital LED Speed
controller	: Touch Pad.
Body	: MS with powder coated
Input Voltage	: 230V,50Hz,
A.C.Supply Size	: 160 x 140 x 130 mm
Weight	: 3 kgs. Approx

Microcentrifuge With Timer (fixed rotor speed 14000 rpm)

Specification:

Make	: Genei
PI. No.	: MC-4
Cat No.	: 117792GB
Maximum RPM	: 14000
Maximum capacity	: 12X1.5/2 ml fixed.
Maximum time usage	: 20mins/cont.

TECHWARE

SUBMARINE

Timer	: Digital LED
Speed controller	: Analogue Knob
Body	: MS with powder coated
Input Voltage	: 230V,50Hz,A.C.Supply
Size	: 240 x 220 x 215 mm
Weight	: 4 kgs. Approx.

Cat No	PI No.	Product Description
CENTRIFUGEL		
107110GB	MC-1	Microcentrifuge (fixed rotor speed 6000 rpm)
107944GB	MC-3	Microcentrifuge (fixed rotor speed 10000 rpm) with digital timer
117792GB	MC-4	Microcentrifuge (fixed rotor speed 14000 rpm) with digital timer

Acrylic Gradient Maker

Genei deals with different type of Gradient makers for different volumes. Full body is made out of transparent acrylic. There is a stopper in between the two chambers.

Specification:

Make	: Genei
PI. No.	: MC-4
Cat No.	: 117792GB
Maximum RPM	: 14000
Maximum capacity	: 12X1.5/2 ml fixed.
Maximum time usage	: 20mins/cont.
Timer	: Digital LED
Speed controller	: Analogue Knob
Body	: MS with powder coated
Input Voltage	: 230V,50Hz,A.C.Supply
Size	: 240 x 220 x 215 mm
Weight	: 4 kgs. Approx.

Thermal Cyclers

Thermal cyclers are used for In-vitro enzymatic amplification of DNA. Genei offers a compact unit with 96 X0.2ml micro tube formats. Genei thermal cyclers can be programmed with password protection. Maximum of 80 programmes can be stored in this equipment.

Highlights:

- Fast track programming with free software upgrades
- More Reliable with high performance
- Portable dual voltage
- Fast ramping rate: up to 3.6°C/Sec
- PC control and networking options

96 well Thermal Cycler

Technical Information:

Blocks Formats

0.5ml capacity	: 60
0.2ml capacity	: 96
384-well block	: Yes
In-situ block	: Yes
User interchangeable	: Yes

Block Temperature Specifications

Maximum ramp rate*	: 2.6°C/sec
Block uniformity at 50°C*	: <±0.3°C
Temperature range	: 4°C to 99°C
Temperature set point precision	: 0.1°C

Heated Lid

Selectable heated lid temperature	: 100°C - 115°C
Heated lid enable/disable	: Yes
Over temperature cut out	: Yes
Regulated lid pressure	: Yes
Heated lid only comes on if block is set above	: 35°C

Programming

Number of programs #	: 80
Password protection	: Yes
Programming	: 4-line alphaN
Graphical display	: No

Incremental/decremental temperature	:	Yes
Incremental/decremental hold time	:	Yes
Maximum hold time	:	18 hrs
Minimum hold time	:	1 sec
Variable programmable ramp rate	:	0.1°C/sec steps
Run end time calculation:		Yes
Pause and stop facility	:	Yes
End of program alarm (enable/disable)	:	Yes
Auto restart on power failure	:	Yes
Miscellaneous Serial port	:	RS232
Dual Voltage (120/230V)	:	Yes
Temperature sensor	:	Thermistor
Peltierelements/block	:	8
Dimensions L x W x H (in inches)	:	16.5 x 8.6 x 10.2
Footprint L x W (in inches)	:	142 in2
Connection to PC	:	Yes control program
Free software upgrades from website	:	Yes
Power consumption	:	620 Watts
Frequency	:	50 - 60 Hz
Net weight	:	11kg (total)

* Given are typical values of a standard 0.2ml block, in an ambient temperature of 20°C.# Actual numbers are dependent on complexity of the programs. The instrument is supplied with one 96 well block.

96 well Gradient Thermal Cycler

Technical Information :

Block Formats

0.5ml capacity	: 60
0.2ml capacity	: 96
384 well block	: yes
Gradient block	: 0.5ml,0.2ml,384
In-situ block	: yes
User interchangable	: yes

Block Temperature

Gradient Range	: 20°C to 70°C
Maximum Gradient	: 30°C (16°C for 384 well)
Maximum ramp rate	: 3.0°C/sec
Block uniformity at 50Deg C uniformity with a 10°C Gradient	: 0.3°C Column :
0.3°C Temperature Range	: 4°C to 99°C
Temperature set point precision	: 0.1°C

Heated Lid

Selectable heated lid temperature	: 100°C to 115°C
Heated lid enable/disable	: yes
Over temperature cut out	: yes
Regulated lid pressure	: yes

Programming

Memory cards	: yes
Number of programs	: 50 or 500 (with card)
Password protection	: yes
Programming	: touch screen
Graphical diplay	: Real time graph
Incremental/decremental temperature	: yes
Incremental/decremental hold time	: yes
Maximum hold time	: 99 hrs
Minimum hold time	: 1 sec
Variable programmable ramp rate	: 0.1°C/secsteps
Run end time calculation	: yes
Pause and stop facility	: yes
End of program alarm	: yes
Auto restart on power failure	: yes

Miscellaneous

Serial port	: RS232/485
Dual Voltage 115/230V	: yes
Temperature sensor	: Thermistor
Peltier elements/block	: 8
Dimensions LxWxH(mm)	: 420X220X260
Foot print (LxW)	: 420 MM x
220 MM Connection to PC control program	: yes
Free software upgrades from website	: yes
Power consumption	: 620 Watts
Frequency	: 50-60 Hz
Voltage	: 230/115V or 100 V

Instrument is supplied with one 96 well block

Cat. No	PI No.	Product Description
96 WELL THERMAL CYCLER		
117805GB	GTC3	96 well Thermal Cycler
117561GB	GTC4	96 well Gradient Thermal Cycler

PCR Workstations

Polymerase chain reaction (PCR) is a technique which is used to amplify several fold a specific region of DNA of interest. This technique can be used to identify DNA sequence specific to viruses and / or bacteria causing diseases. As PCR is capable of amplifying as little as a single molecule of DNA, precautions should be taken to guard against contamination of the reaction mixture with even trace amounts of foreign DNA that could serve as template.

The PCR Workstation is designed to protect against contamination in sensitive PCR amplification reactions in the following ways. Genei manufactures Mini and Midi PCR workstations for different applications.

Mini PCR Workstation

Mini PCR Workstation:

Specification:

Make	: Genei
Model	: WS-1Mini PCR workstation
Principal Material	: MS with powder coated body
Working table	: Stainless Steel
Inner chamber dimension	: 220 x 110 x 100 mm
No. of UV Tubes	: 1
Front door	: Acrylic
Input Voltage	: 230 V, 50Hz,A.C.Supply
Size	: 230 x 125
Weight	: 3 kgs.

Midi PCR Workstation

Midi PCR Workstation

Specification:

Make	: Genei
Model	: WS-2Midi PCR workstation
Principal Material	: MS with powder coated body
Working Table	: Stainless Steel
Pipette stand	: 1
Inner chamber dimension	: 275 x 225 x 175 mm
No. of UV Tubes	: 2
White Light	: 1
Front door	: Acrylic
Input Voltage	: 230 V, 50Hz,A.C.Supply
Size	: 285 x 240 x 190
Weight	: 8 kgs.

Midi PCR Workstation with HEPA Filter

Specification

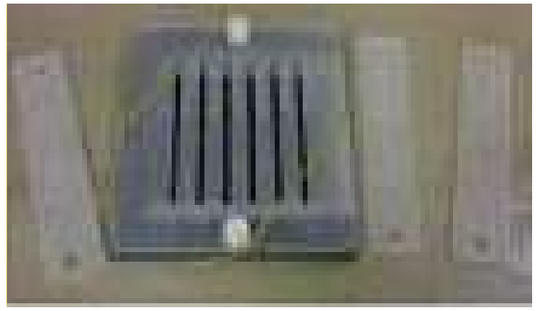
Make	: Genei
Model with HEPA Filter	: WS-3Midi PCR workstation
Principal Material body	: MS with powder coated
Working Table	: Stainless Steel
Pipette stand	: 1
Inner chamber dimension	: 450 x 600 x 300 mm No. of UV
Tubes	: 2
White Light	: 1
Front door	: Acrylic
Input Voltage	: 230 V, 50Hz,A.C.Supply
Size	: 285 x 240 x 190
Weight	: 45 kgs.

Gel Preparing Accessories:

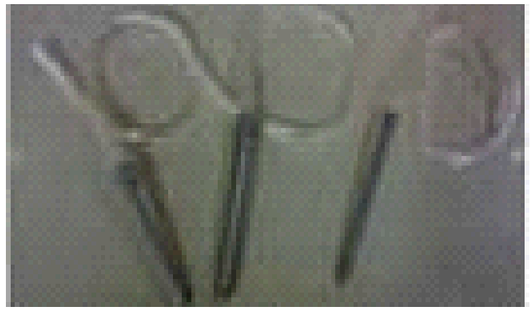
Gel casting units for vertical electrophoresis:

Gel Developing trays:

Gel Scoops:



Multi Gel casters:



Gel Punchers:

Gel Cutters:

Ordering Information:

Cat No.	PI. No.	Product
		PCR WORKSTATIONS
1107214GB	WS-2	Midi PCR Workstation(HxWxD: 45x60x30) cm(Designed for UV Irradiation of PCR Chemicals & Instruments)
107211GB	WS-1	Mini PCR Workstation(29 x 13 cm)(Designed for UV Irradiation of PCR Chemicals)
		PCR SUBMARINE ELECTROPHORESIS SYSTEM (with combs for Multi-Channel Pipettor Loading)
106621GB	03-08	PCR sub system: (for 30 samples) Gel Size 20 x 27 cms complete unit (with combs for Multi-Channel Pipettor Loading & power supply EPS 500 Model ; 0-500 V; 0-500 mA ; Variable with timer Constant Current ; Constant Voltage ; Digital display
106626GB	03-08	APCR sub system: Elpho unit (for 30 samples) Gel Size 20 x 27 cms with combs for Multi-Channel Pipettor Loading without power supply
106622GB	03-08-01	Gel Casting Tray, Gel Running Tray with combs
		ACCESSORIES
106623GB	03-08-01UV	UV Transparent Gel Casting Tray, Gel Running Tray with combs
106624GB	03-08-02	Acrylic Comb 30 well (1.5 mm)
106625GB	03-08-03	Acrylic Developing Chamber Light Proof - PCR sub system

Gel.Pro CCD Professional Gel Documentation System

The GeNeiTM Fire Reader Gel Documentation System is a compact system for acquiring gel photographs and can be easily accommodated in any part of the laboratory.

- Ideal for documentation, quantification & publication.
- GLP/GMP certified
- Upgradeable to Chemiluminescence
- Versatile and upgradeable.
- Simple, portable, safe and robust
- Steel and stainless steel darkroom. Epoxy-painted for chemical resistance.
- Black body imaging grade
- Built-in roll-out transilluminator.
- UV timer & security

Epi-Bright multi-wavelength epi-illumination source single (312nm.) As a measure of safety,

- Suitable for both routine documentation & critical quantitative applications
- Massive 16-bit performance (65 536 grey levels) - 1.4 Megapixels
- Scientific Sony chip CCD camera - USB connection
- 6 wavelength illumination options. Biofluorescence & multiplexing ready. Multi-position filter slide. Custom filters available
- Versatile and upgradeable
- "One touch" fully automated image acquisition program
- Autofocus & focusing gauge - Motorized or manual scientific zoom lens

Gel Doc Fire Reader Documentation System UVI Tech U.K

Pixel Size	: 1.4 Pixels
Dynamic Range	: 3 Orders of magnitude
Pixel Resoluation	: 1.4 Mega Pixels

Motorized zoom lens's-Mount Fire wire interface with USB connection

Illumination Modes	: Trans UV, epi White
Excitation source	: 312nm
Filter position	: Universal filter with 3 position

filter wheel Transillumination area : 20X20cm

Upgradeable to Chemilunescent

Software Compatibility : Windows 98,XP and Vista

Weight : 35 Kgs. Approx.

Transilluminator.

Wavelength 312nm with dual intensity. 8 watt 6 UV tubes

Quartz filter

Detection limit is 0.01ng of stained DNA. White light converter for Protein estimation.

Dark room.

Rollout Transilluminator. Versatile and elegant look.

Upgradeable to Chemiluminescence.

Steel and stainless-steel darkroom. Epoxy-painted for chemical resistance.

Software. With TLC. Software Unlimited UVI Band software

Features: Image Acquisition, Contrast adjustment, Rotate, Line annotation, Cropping, Vertical Mirror, Horizontal Mirror, zoom (IRIS, Zoom and focusing)

Specialized tool for Quantity calculation, Density, Molecular weight, Dendrogram, RF,

Regression Curve fitting, Background subtraction, Concentration Volume, Height Area.

Print, export to Excel and tiff files. UVI Band software

Image can be captured in one computer and can be analyzed in any corner of the lab.

Image rotation: Image can be rotated as per our requirement in degrees and radius.

Volume Analysis: To quantitative the area.

1D and 3D analysis options for closely spaced bands.

Colony counting: Very easy and accurate to count the colonies.

Help menu: Makes software easier to use.

Annotation tools: Helps the user to annotate the picture for prepublication work.

Filter wizard: Helps the user to select the right filter to delete the noises to get good quality picture.

Flexibility array tools: Provides ability to quantitative low to high density arrays.

Image transfer: Provide complete tools to quickly visualize the faintest bands.

Automatic Band and Lane detection.

Lane based analysis: Detects the lanes automatically, Gets the result quickly and allows for overlaying quantization on top.

Band detection: Detects the band automatically, manual based band addition and deletion.

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Matching: Bands can be matched by using dendrogram software.

Report data: Can be printed, exported to excel as per the user requirement.

Export: PEG or TIFF Files.

Calculate Molecular weight: Determination of Molecular weight, Height, Area of the detected bands.

Quick Guides: Online guide to use the software, so that user can use the software without any worries.

GLP/GMP Mode: Helps eliminate user to user variability in color in calculation etc.

File history: Saves a record of modifications to image.

Unique user setting: Each user can save their settings separately.

Image background subtraction: Corrects for uneven or high background values.

Ordering Information:

Cat. No	PI No.	Product Description
GeNei™ Fire Reader Gel Documentation System		
117804GB	Gi2	GeNei™ Fire Reader Gel Documentations System

Transilluminators

Genei Range of Transilluminators are designed and manufactured in Europe to the highest possible specification which find wide applications for DNA analysis. All models have high output UV tubes, which have an average life expectancy of 5000 hours. The UV filters are polished to give blemish free viewing of the gel.

College Model with Filter

Specification:

Make	: Genei
Model	: College model transilluminator
PI. No.	: TCM1
Cat No.	: 107171GB
Wavelength	: 312nm fixed
No.of Tubes	: 6
Wattage	: 8 Watts
Detection limit	: 200 ng
Filter area	: 25X13cms
Body	: MS with powder coated.
UV Protection shield	: Yes.

Imported Transilluminator with Filter

Specification:

Model	: Transilluminator with filter
PI. No.	: T20
Cat No.	: 107161GB
Wavelength	: 312nm fixed/Dual Intensity
No.of Tubes	: 6
Wattage	: 8 Watts
Detection limit area	: 0.01 ngm. Of stained DNA. Filter : 20x20Cms.
Filter	: Quartz UV filter
Body	: MS with powder coated.
UV Protection shield	: Yes.

UV and White Light Transilluminator with Filter

Specification:

Model	: Transilluminator with filter
PI. No.	: T21
Cat No.	: 120025GB
Wavelength	: 302nm fixed Intensity
No.of Tubes	: 6
Wattage	: 8 Watts
Detection limit	: 0.01 ngm. Of stained DNA.
Filter area	: 20x20Cms.
Filter	: Quartz UV filter
Body	: MS with powder coated.
UV Protection shield	: Yes

UV Transilluminator with Filter Research Model

Specification:

Model	: Transilluminator with filter
PI. No.	: T23
Cat No.	: 120027GB
Wavelenght	: 312nm fixed
No.of Tubes	: 6
Wattage	: 8 Watts
Detection limit	: 0.50 ngm. Of stained DNA. Filter
area	: 20x20Cms.
Filter	: Acrylic UV filter
Body	: MS with powder coated. UV
Protection shield	: Yes.

Dual Wavelength Transilluminator with 254 nm and 312 nm

Specification:

Model	: Transilluminator with filter
PI. No.	: T24
Cat No.	: 120028GB
Wavelength	: 254nm & 312nm Dual
No. of Tubes	: 6
Wattage	: 8 Watts
Detection limit	: 0.25 ngm. of stained DNA. Filter
area	: 20x20Cms.
Filter	: Acrylic UV filter
Body	: MS with powder coated. UV
Protection shield	: Yes.

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White Light Transilluminator for Protein analysis

Specification:

Make	: Genei
Model	: White LightTransilluminator
PI. No.	: TCM2
Cat No.	: 107172GB
No.of Tubes	: 6
Wattage	: 8 Watts
Filter area	: 20x20Cms.
Body	: MS with powder coated.

Handheld UV Lamps

It is a dual wavelength (365 and 254 nm) UV lamp, fitted with two UV tubes. The operator friendly shape permits lamps to be held easily with gloved hands. The lamp can be used for electrophoresis gel viewing

Specification:

Make	: Imported
PI. No.	: LF206LS
Cat No.	: 107108GB
Wavelength	: 254nm and 365nm.
Filter	: yes.
Input voltage	: 230V,50Hz,A.C.Supply.

UV Face Shields

Face shield

The eyewear is intended to protect the eyes from harmful Ultraviolet radiation emitted from UV Lamps. The eyewear is designed for eye protection from lamps emitting wavelength of 254nm to 365nm.This ultraviolet blocking eyewear also reduce longwave ultraviolet for optimum viewing.

UV radiation is dangerous for unprotected eyes and skin, therefore its mandatory for the user to wear UV protective face shield. Genei deals with imported face shield. The dia of the shield can be adjusted.

Specification:

Make	: Imported
PI. No.	: SF850
SAP No.	: 107145GB
Material	: UV protective acrylic.
Dia	: 195 mm
Weight	: 600 gms.

Ordering Information:

Cat No.	PI. No.	Product
		TRANSILLUMINATOR COLLEGE MODEL
107171GB	TCM-1	UV Transilluminator without filter (25 cm x 13 cm) (For detection of more than 500 ng of DNA)
107179GB	UVT-2	UV Tube 8 W for Cat # 107171
		TRANSILLUMINATORS
107161GB	T20	UV Transilluminator with filter (312 nm) 20 cm x 20 cm Imported
107145GB	SF850	UV Face Shield Imported
107108GB	LF206	LSHandheld UV Lamp 6 Watt 50 mm x150 mm (365, 254 nm) Imported
107177GB	UVT	Spare 8W UV Tube107172GBTCM-2White Light Transilluminator (25 cm x 25 cm)
107178GB	UVT-1	White Light Tube 8 W for Cat # 107172

Rockers, Shakers, Mixers and Stirrers Rockers

Gel Rocker Without Timer

Gel Rocker can be used for many applications like gel staining, culture aeration, bathing, blotting membranes etc. A metal platform with non-slip rubber mat moves in a gentle 'See Saw' motion. The movement is controlled precisely with a DC motor. Cushion and rubber feet prevent unit from 'slipping'.

Specification:

Make : Genei
Model : Gel Rocker
PI. No. : GR-1
Cat No. : 107106GB
Motor : D.C.
Maximum RPM : 20
Speed controller : Analogue
Platform Size : 30 x 30 cms
Weight : 4 kgs
Dimension : 30 x 30 x 11.5 cms
Input Voltage : 230V,50Hz,A.C.Supply

Gel Rocker with Electronic Timer

Gel Rocker can be used for many applications like gel staining, culture aeration, bathing, blotting membranes etc. A metal platform with non-slip rubber mat moves in a gentle 'See Saw' motion. The movement is controlled precisely with a DC motor. Cushion and rubber feet prevent unit from 'slipping'. Time can be set from 1min to 99 mins. or continuous.

Specification:

Make : Genei
Model : Gel Rocker
PI. No. : GR-2
Cat No. : 107107GB
Motor : D.C.
Maximum RPM : 60 Speed controller : Analogue
Timer : Digital
Time range : 1-99mins/Cont.
Platform Size : 25 x 25 cm
Weight : 4 kgs.
Dimension : 25 x 25 x 17.5 cms
Input Voltage : 230V,50Hz,A.C.Supply

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Dual Platform Rocker

Gel Rocker can be used for many applications like gel staining, culture aeration, bathing, blotting membranes etc. A metal platform with non-slip rubber mat moves in a gentle 'See Saw' motion. The movement is controlled precisely with a DC motor. Cushion and rubber feet prevent unit from 'slipping'. Time can be set from 1min to 99 mins. or continuous. In dual platform rocker 2 samples can be stained at a time.

Specification:

Make : Genei
Model : Gel Rocker
PI. No. : GR-3
Cat No. : 117793GB
Motor : D.C.
Maximum RPM : 60
Speed controller : Analogue
Timer : Digital
Time range : 1-99 mins/Cont.
Platform Size : 25 x 25 cms
Weight : 5 kgs.
Dimension : 25 x 25 x 26 mm
Input Voltage : 230V, 50Hz, A.C.Supply

Micro Plate Shaker

Micro Plate Shakers are used to stir very low volume of many samples.

Micro Plate Shaker is made out of powder coated heavy gauge MS body. D.C. motor is used to get very accurate speed control and for very low noise level. At a time four micro plates can be used.

Specification:

Make : Genei
Model : Microplate Shaker
PI. No. : OS3
Cat No. : 116739GB
Speed : 0-1500 rpm
Controller : Electronic DC Control Plate
Capacity : 4 Micro Plates
Tray Size : 200 mm x 270 mm
Input Voltage : 230V /50 Hz.AC

Orbital Shaker

Orbital Shakers are made out of powdercoated heavy gauge MS body. Instrument is designed in such a way that it can accommodate 50 ml, 100 ml, 250 ml, 500 ml,1000 ml Flasks with universal try.. D.C. motor is used is used to get the accurate speed control and low

Noise level. Standard instrument comes with 16X250ml Flask.

Specification:

Make : Genei
Model : Orbital Shaker
PI. No. : OS1
Cat No. : 116731GB
Motion : Orbital
Speed : 30-250 rpm
Speed Controller : Digital
Platform Size : 410 mm x 410 mm
Input Voltage : 230 V.50 Hz. A.C. Supply.

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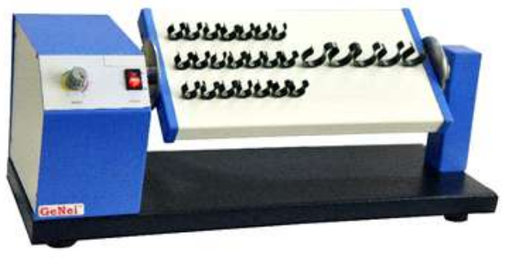
Incubator Orbital Shaker

Specification:

Make	: Genei
Model	: Incubator Orbital Shaker
PI. No.	: OS2
Cat No.	: 116736GB
Motion	: Orbital
Speed	: 30-250 rpm
Speed Controller	: Digital
Platform Size	: 410 mm x 410 mm
Temperature Range	: above ambient to 60°C(Checked at 28°C.)
Controller	: Digital PID Controller
Accuracy	: ± 0.5°C
Circulation	: Forced air circulation for uniform temperature
Body	: MS with powder coated.
Inner Chamber Dimension	: 430 mm x 450 mm x 550 mm
Input Voltage	: 230V.50Hz. AC Supply

Tube Rotator



Tube rotators are used to mix the samples of different volume.

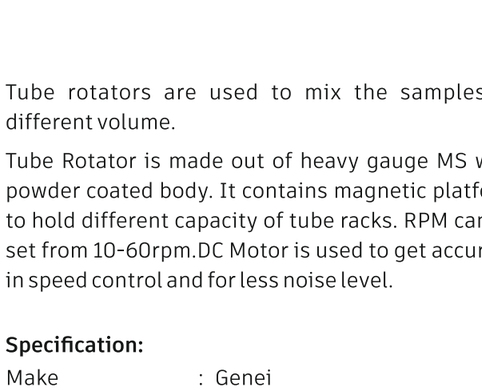
Tube Rotator is made out of heavy gauge MS with powder coated body. It contains magnetic platform to hold different capacity of tube racks. RPM can be set from 10-60rpm.DC Motor is used to get accuracy in speed control and for less noise level.

Specification:

Make	: Genei
Model	: Tube Rotator
PI. No.	: TR-1
Cat No.	: 116669GB
Speed	: 10-60rpm
Platform	: Magnetic Base
Motion	: Circular
Control	: Variable DC Control RPM
Indicator	: Analogue
Working condition	: 4 to 60°C ambient.
Platform Size	: 300 mm x 220 mm (dual Side)
Input Supply	: 230V,50Hz.A.C.Supply

Instrument will be supplied with two trays which can hold 10 tubes of 1.5ml and 15ml.

Vortex mixer



Vortex mixers are used to mix very low volume of samples for short time application. There are two modes of operations, touch mode and constant mode. Genei supplies one cup attachment and one micro tube insert along with the instrument. In tube insert attachment totally 13 tubes can be placed.

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Specification:

Model	: Vortex Mixer
Old Cat. No.	: 18-01
SAP No.	: 106887GB
Speed	: 100- 3200rpm.
Operation	: Touch/Continuous
Working condition	: 4 to 60°C ambient.
Body	: MS with powder coated.
Input Voltage	: 230V,50Hz,A.C.Supply

Bottle Roller

Specification:

Make	: Genei
PI. No.	: BR1
Cat No.	: 118796GB
Platform Size	: 15' X 13'
Rubberized rollers	: 6
Rotating speed	: 10 to 60 rpm variable or continuous
Bottle capacity	: 1.5 liters.

Incubator Shaker Floor model

Specification:

Make	: Genei
PI. No.	: OS4
Cat No.	: 118797GB
Speed	: 30-200rpm
Motion	: Orbital
Control	: Feedback Control System
Platform Size	: 430 x 480 mm (Universal flask holding assembly)
Temperature range	: Above ambient to 60 Deg.C.
Controller	: Digital PID Controller
Accuracy	: 0.5 Deg. C.
Flask capacity	: 250mlX16/Universal
Air Circulation	: Blower assembly for uniform temperature
Inner chamber dimension	: 675X535X690mm.
Body	: MS with powder coated body.
Weight	: 24Kgs. Approx.
Input voltage	: 230 Volts,50 Hz. A.C. Supply.

Ordering Information:

Cat. No	PI No.	Product Description
BOTTLE ROLLER & INCUBATOR SHAKER FLOOR MODEL		
118796GB	Br1	Bottle Roller
118797GB	Os4	Incubator Shaker Floor Model

Magnetic Stirrers

Bangalore Genei offers Magnetic stirrers with advanced technology. The accurate speed control assuring trouble free continuous operation. The free spinning rotating magnet spins a Teflon stirring bar (not a standard accessory) to stir liquids in open and closed vessels. The solid state feed back control system maintains excellent speed stability despite viscosity or volume changes or voltage fluctuations. Genei manufactures different type of stirrers for different application like 10 ltrs stirrers for more samples, Magnetic Stirrers with Hot plate, Digital hot plate with magnetic stirrer for temperature related applications.

Specification:

Make	: Genei
PI. No.	: ES-1
Cat No.	: 107408GB
Stirring Speed	: 100 rpm to 1400 rpm.
Stirring Capacity	: 2 to 5 liters maximum (at Viscosity of water) Power
Supply	: 220 V 50/60 Hz
Weight	: 2.0 Kgs appox.
Magnet	: High power steel magnet
Control	: Feedback control system (For linear precise control)
Platform	: SS316
Cabinet	: Chemical resistant
Working condition	: 4 to 60°C
Dimension	: 150 X 160 X 10cm

10 Ltrs. Stirrer.

Specification:

Make	: Genei
PI. No.	: ES-3
Cat No.	: 107945GB
Stirring Speed	: 100 rpm to 1400 rpm.
Stirring Capacity	: 10 Ltrs. maximum (at Viscosity of water)
Power Supply	: 220 V 50/60 Hz
Weight	: 6.0 Kgs appox.
Magnet	: High power steel magnet
Control	: Feedback control system (For linear precise control)
Platform	: SS316
Cabinet	: Chemical resistant
Working condition	: 4 to 60°C Dimension

Magnetic stirrer with hot plate

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Magnetic Stirrer having a inbuilt hot plate, where in the temperature can be controlled from above ambient to 160°C at an accuracy of ± 5°C with the help of imported thermostat. Strip heaters are used to get uniformity of the temperature. Working table is made out 1.8 mm stainless steel sheet to withstand high temperature.

Specification:

PI. No.	: ES4
Cat No.	: 116663GB
Temperature Range	: Above Ambient to 160°C
Speed	: 200 to 2000RPM
Heating coil	: Strip Heater
Temperature Controller	: Analogue
Construction	: Mild steel with Powder coated body.
Stirring capacity	: 2 ltrs.
Stirring speed	: 100 To 1400rpm
Control	: Feedback control
Rpm Indicator	: Analogue
Platform	: SS 316
Working Condition	: 4 to 60°C.
Input Voltage	: 230V/50Hz.A.C.
Dimension (WDH)	: 16 5 mm x 180 mm x 120mm
Weight	: 4 Kgs.Approx.

Digital Hot plate with Magnetic Stirrer

Magnetic Stirrer having a inbuilt hot plate, where in the temperature can be controlled from above ambient to 160°C at an accuracy of ± 5°C with the help of imported thermostat. Clearly visible inbuilt digital display with timer and temperature indication. Strip heaters ensure that temperature uniformity is maintained evenly across the platform. Working table is made out 1.8 mm stainless steel sheet to withstand high temperature

Specification:

PI. No.	: ES5
Cat No.	: 117795GB
Temperature Range	: Above Ambient to 160°C
Speed	: 100-1400rpm
Heating coil	: Strip Heater
Temperature Controller	: Digital
Temperature accuracy	: +/-5°C.
Construction	: Mild steel with Powder coated body.
Stirring capacity	: 2 ltrs.
Stirring speed	: 100 To 1400 rpm
Control	: Feed back control
Rpm Indicator	: Analogue
Platform	: SS 316 Working
Condition	: 4 to 60°C.
Input Voltage	: 230V/50Hz.A.C.
Dimension (WDH)	: 165mm x180mm x120mm
Weight	: 4 Kgs.Approx.

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Ordering Information:

Cat No.	PI. No.	Product
		ROCKERS, SHAKERS, MIXERS & STIRRERS
107106GB	GR-1	Platform rocker I (One Platform)
107107GB	GR-2	Platform rocker II (One Platform with Electronic Timer)
117793GB	GR-3	Dual rocker
116731B	Os1	Orbital Shaker (for 250 ml x 16 Flasks)
116736GB	Os2	Incubator Orbital Shaker (with 250 ml x 16 Flasks)
117798GB	OS5	Universal Flask Holder for Incubator Shaker
116739GB	OS3	Microplate Shaker (can hold 4 Microplates)
116669GB	Tr1	Tube Rotator
116663GB	Es4	Magnetic Stirrer with hot plate - 2 Liters
117795GB	Es5	Digital Hot Plate with Stirrer
107048GB	ES-1	Magnetic stirrer 100 - 1400 rpm max. 5 liters
107049GB	ES-2	Magnetic paddles (30 x 9 mm)
107945GB	ES-3	Magnetic stirrer 100 - 1400 rpm max. 10 liters
106887GB	18-01	Vortex mixer

General Lab Equipments

Dry Bath

The Dry Bath is designed to uniformly heat the contents of 24 tubes from ambient to 100° C. The microprocessor controls with digital display ensures accurate temperature control and avoids contamination of samples, unlike in a water bath.

The Dry Bath has soft touch keys enabling easy setting of temperature. It is compact, rugged and easy to handle. Each dry bath is provided with a solid anodized aluminum combi block (standard) to hold 24 tubes (1.5 ml - 8 tubes; 0.5 ml - 8 tubes and 5 ml - 8 tubes). It is housed in a recessed chamber. The microprocessor controls ensure aluminum block temperature to be within ± 0.5°C of set value. It is designed for continuous use and there is no need to unplug. The Aluminum block can be autoclaved to avoid contamination.

Applications:

Enzyme Assays

◆Digestions

◆.Marking DNA Specimen

◆.Incubating melted Agar

◆.Chemical Oxygen Demand (COD) Reactor - for

Specification:

Make	: Genei
Model	: Dry Bath
Old Cat No.	: TC-1
SAP No.	: 107170GB
Temperature Controller	: Digital
Temperature range	: Ambient to 100°C (Ambient at 25°C)
Temperature Accuracy	: +/-0.5°C.
Block size	: 9.5 x 7.5 x 5 cms
Block Capacity	: 0.5 ml x 8, 1.5 ml x 8, 5 ml, 0.2 ml x 8
Size	: 16 x 21 x 13 cms
Weight	: 5 kgs. Approx.
Input Voltage	: 230V,50Hz, A.C.Supply.

Water Bath

The Water Bath can be used to heat the samples through water. There is a separate circulation inside the chamber to maintain the uniform temperature across the corners. Genei uses PID controller to maintain very accurate temperature. Controller has got auto tuning and self-calibration modes. Controller can be calibrated by using natural water with the help of external thermometer. The controller can be operated without supervision. Inner body made out of SS and outer body mode out of MS with powder coated. Controller portion can be taken out easily to clean the tank.

Specification:

Make	: Genei
PI. No.	: WC1
SAP No.	: 107931GB
Capacity	: 10Ltrs.
Temperature Range	: Above Ambient to 99.9°C. (Ambient at 25°C).
Temperature controller	: Digital.
Temperature Sensitivity	: +/- 0.5°C. Temperature
sensor	: PID
Body	: Inner body SS and outer body MS with powder Coated.
Water Circulation	: Inside the tank. Tank
Dimension	: 28 x 25 x 15 cms.
Instrument Dimension	: 38 x 20 x 18 cms
Weight	: 12 kgs.
Input Voltage	: 230V,50 Hz,15 amps(max). A.C. Supply.

pH Meter

Genei's pH meter is a uniquely designed manual/auto temperature compensated pH meter suitable for day-to-day use in the laboratory with high resolution and accuracy. Asymmetric and slope controls kept hidden are adjusted by inserting a small screwdriver to avoid unintentional or accidental adjustment after setting with standard buffer solutions. The instrument is supplied with the best quality combined electrode and temperature probe (PT100).

Specification:

Make	: Genei
PI. No.	: PHM-1
Cat No.	: 117800GB
pH range	: 0-14 or continuous
MV range	: 0-1999 with auto polarity
Accuracy pH	: 0.01pH +/_ 1 Digit.
MV	: 1 mV +/_ 1digit
Input Impedance	: More than 10/12 Ohms
Buffer Calibration	: pH 7.0, pH 4.0/ 9.2
Electrode	: Unbreakable
Display	: 3½ Digit display with seven segment green 0.5" LED.
Temp. Compensation	: 0-100°C with ATC.
Body	: MS With powder coated body
Weight	: 2 kgs.
Size	: 23 x 17 x 10 cms
Input Voltage	: 230V,50Hz, A.C.Supply.

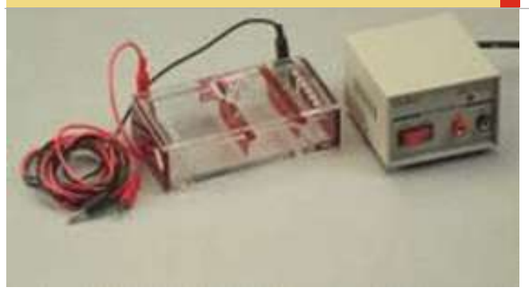
Ordering Information:

Cat No.	PI. No.	Product
		GENERAL LAB EQUIPMENTS
107170GB	TC1	Dry bath with standard heating block
107173GB	TCSP-1	Heating block (Extra) 1.5 ml
107174GB	TCSP-2	Heating block (Extra) 0.5 ml
107175GB	TCSP-3	Heating block (Extra) 0.2 ml
107931GB	WC-1	Water bath with 10 liters water tank
117800GB	PHM-1	pH meter

ETS Series

Genei offers different type of educational teaching kits for different application. Horizontal electrophoresis, Vertical electrophoresis, Vertical with electro transfer units etc.

ETS-1

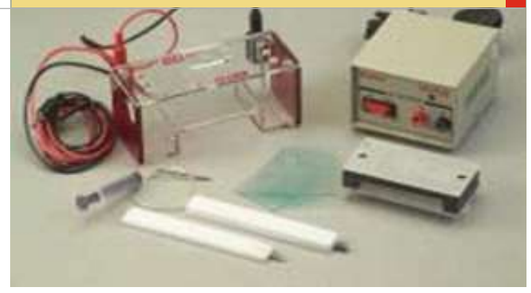


ETS 1 contains main buffer tank with gel casting unit. Gel can be casted inside the unit and can run without the gel running tray. Two 8 well combs will be supplied as a standard accessory. Small 50/100 volts power supply will be supplied along with the kit to run the gel. So it is a complete unit for educational purpose.

Specification:

Make : Genei
PI. No. : ETS-1
Cat No. : 107070GB
Principal Material : Acrylic No. of combs 2 x 8 Well
Connecting Cord : Red and Black- 1 set Power supply : 50/100 Volts fixed voltage.
Gel Size : 15 x 7 cm
Input voltage : 230 Volts,50 Hz. A.C. Supply.

ETS-2



ETS-2 is a small Immuno electrophoresis system for educational purpose. It contains small buffer tank with Glass plates ,Gel cutter, Gel remover, Gel Puncher etc., along with 50/100V D.C. Power supply, supplied as a standard accessory. So it is an complete Immuno electrophoresis for educational purpose.

Specification:

PI. No. : ETS-2
Cat No. : 107073GB
Principal Material : Acrylic No. of glass plates : 6 nos. Gel cutter : 1 No.
Gel Remover : 1 No.
Gel Puncher : 1 No. Universal
Gel Puncher : 1 No.
Connecting cord : Red and Black-1 set. Power supply : 50/100 Volts fixed voltage.
Gel Size : 135 x 50 mm
Input voltage : 230 Volts,50 Hz. A.C. Supply

ETS-3

ETS-3 comes with small vertical electrophoresis and Small electro transfer unit. Which contains an 8X7 Cm Gel size vertical electrophoresis and 8X7 Cm. Electro transfer unit.0.5mm spacer will be supplied along with the instrument. Small 50/100Volts fixed power supply will be supplied as a standard accessory.

Specification:

Make : Genei
PI. No. : ETS-3
Cat No. : 107074GB
Principal Material : Acrylic
No. of glass plates : 1 set
Comb : 5 well Teflon
Glass plate : 1 set
Electro transfer unit : 1 complete unit
Lid : 1 no.
Cushion Pad : 6 Nos
Filter Pad : 6 Nos.
Connecting cord : Red and Black-1 set. Power supply : 50/100 Volts fixed voltage.
Gel Size : 8 x 7 cm
Input voltage : 230 Volts,50 Hz. A.C.Supply.

ETS-4

ETS4 Contains Vertical unit for 5 samples. Glass plate and 0.5mm spacer will be supplied as a standard accessory.50/100 Volts power supply comes with a kit to run the gel.

Specification:

Make : Genei
PI. No. : PHM-1
Cat No. : 117800GB
pH range : 0-14 or continuous
MV range : 0-1999 with auto polarity
Accuracy pH : 0.01pH +/_ 1 Digit.
MV : 1 mV +/_ 1digit
Input Impedance : More than 10/12 Ohms
Buffer Calibration : pH 7.0, pH 4.0/ 9.2
Electrode : Unbreakable
Display : 3½ Digit display with seven segment green 0.5" LED.
Temp. Compensation : 0-100°C with ATC.
Body : MS With powder coated body
Weight : 2 kgs.
Size : 23 x 17 x 10 cms
Input Voltage : 230V,50Hz, A.C.Supply.

ETS-5

ETS-5 contains main buffer tank with gel casting unit. Gel can be casted inside the unit and can run without the gel running tray. Two 8 well combs will be supplied as a standard accessory. 8x7 Cm. Gel size Electro transfer unit is supplied as a standard accessory along with the instrument. Small 50/100 volts power supply will be supplied along with the kit to run the gel. So it's a complete unit for educational purpose

Specification:

Make	: Genei
PI. No.	: ETS-5
Cat No.	: 107089GB
Principal Material	: Acrylic
No. of combs	: 2 x 8 Well
Connecting Cord	: Red and Black- 1 set
Electro transfer unit	: 1 no.
Filter Pad	: 6 Nos.
Power supply	: 50/100 Volts fixed voltage.
Gel Size	: 8 x 7 cm
Input voltage	: 230 Volts,50 Hz. A.C. Supply.

ETS-6

ETS-6 is an 2D electrophoresis system, which contains vertical electrophoresis system with 2D facility. Initially it can be used as a Rod gel electrophoresis and later sample can be transferred to vertical electrophoresis. Total kit contains vertical electrophoresis and accessories for rod gel electrophoresis like Glass tubes, rubber grommet, gel preparing accessories, Glass plates and spacers.

Specification:

Make	: Genei
PI. No.	: ETS-6
Cat No.	: 116676GB
Principal Material	: Acrylic
Rubber grommet	: 3 nos.
Glass tube	: 4
Glass tube stand	: 1 no.
Glass plates	: Notched and rectangular 1 set.
Teflon Spacers	: 0.5 mm x 2 Nos.
Vertical Tank	: 1 No.
Lid	: 1 No.
Connecting Cord	: Black and Red 1 Set.
Metal Clips	: 2 Nos

Ordering Information:

Cat No.	PI. No.	Product
		ETS Series
107070GB	ETS1	ElphoKit
107071GB	ETS-1-05	CombStandfor 107070
107072GB	ETS-1-06	CombStandfor 107070 (7 wells) 1/Pack
107073GB	ETS-2	ElphoKit for immunoelectrophoresis
107074GB	ETS-3	ElphoKit forPAGE & Electrotransfer
107075GB	ETS-3-01	GlassPlatesfor 107074
107079GB	ETS-4	ElphoKit forPAGE
107089GB	ETS-5	ElphoKit forSubmarine & Electro Transfer includes power supply
116676GBE	TS-6	ElphoKit for2-Dimensional Polyacrylamide Gele Electrophoresis

Lab Coolers

Genei Coolers

GeNei™ Cooler, thermal container is ideal for ultra-low temperature and conventional freezer storage. It is ideal for storage of restriction enzymes, nucleic acids and other biochemical or biological samples, requiring sub-freezing temperatures. It replaces the conventional ice box.

- It helps to maintain temperature stability for stored samples in the freezer during vial handling or power failure.
- It maintains subzero temperatures for up to 3 hours, when used at the bench top at normal room temperature. It eliminates numerous trips back and forth to the laboratory freezer
- It may also be used to freeze mammalian and insect cells prior to ultra-low temperature storage.
- Two sizes, 12 or 24 tube storage modules are available for 1.5 ml or 0.5 ml standard size conical tubes. Genei deals with different type of coolers where the sample can be stored for two to two and half hours in vials.

Specification:

Make	: Genei
Capacity	: 12 x 1.5 ml. Principal
Material	: Acrylic
PI. No.	: GC1
Cat No.	: 107100GB

Make	: Genei
Capacity	: 12 x 0.5 ml. Principal
Material	: Acrylic
PI. No.	: GC2
Cat No.	: 107101G

Make	: Genei
Capacity	: 24 x 0.5 ml. Principal
Material	: Acrylic
PI. No.	: GC3
Cat No.	: 107944GB

Make	: Genei
Capacity	: 24 x 0.5 ml. Principal
Material	: Acrylic
PI. No.	: GC4
Cat No.	: 107103GB

Glass Columns for Chromatography

Specification:

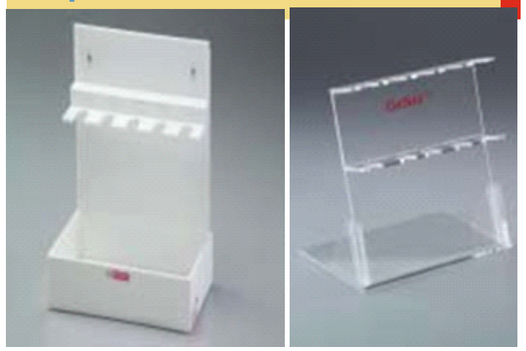
Make	: Genei
Size	: 1.2 x 50 cm, 3 x 12 cm, 2 x 8 cm, 1.7 x 8 cm
Principal Material	: Glass
PI. No.	: C11050, C3012, C2088, C1708
Cat No.	: 106990, 106993, 106992, 106991GB

Ordering Information:

Cat No.	PI. No.	Product
		LAB COOLERS AND GLASS COLUMNS GeNei™ COOLER
107100GB	GC-1	GeNei™ Bench Top cooler (24 x 1.5 ml tube)
107101GB	GC-2	GeNei™ Bench Top cooler (12 x 1.5 ml tube)
107102GB	GC-3	GeNei™ Bench Top cooler (24 x 0.5 ml tube)
107103GBG	C-4	GeNei™ Bench Top cooler (12 x 0.5 ml tube)
		GLASS COLUMNS
106990GB	C11050	Glass column for gel filtration (1.1 cm x 50 cm)
106993GB	C3012	Glass column for ion exchange (3.0 cm x 12 cm)
106992GB	C2008	Glass column for ion exchange (2.0 cm x 8 cm)
106991GB	C1708	Glass column for affinity (1.7 cm x 8 cm)

Plasticwares

Pipette Stands



Pipette stand made of white acrylic with an option for 5 individual fixed / variable volume micropipettes or three multichannel micropippetts.

Glass Plate Stands

Glass Plate Stands are used to hold Glass Plates used in Vertical Electrophoresis Systems of different sizes.

- Glass Plate Stand (for Cat # 106680GB & 106724GB Vertical Electrophoresis System)
- Glass Plate Stand (for Cat # 106725GB & 106782GB Vertical Electrophoresis System)
- Glass Plate Stand (for Cat # 106783GB & 106784GB Vertical Electrophoresis System

PCR Tubes & PCR Racks

- The PCR tubes are specifically designed for use in thermal transfer applications.
- The tube walls are ultra-thin and consistent so thermal transfer is precise and even along the surface of the tube.
- The PCR tubes are made from highly polished molds and are free of lubricant, dye, and heavy metals or fillers. The difference is clearly amazing.
- The PCR tubes are certified to be DNase and RNase free.
- The unique cap design guarantees a perfect fit which ensures no sample evaporation during thermal cycling.

PCR Racks:

Cat No. 106933GB (PI. No. BPCRR-96-B) Storage rack for PCR-0.2 ml (96 wells) 1 No.

Universal Fit Tips & Racked Tips

The universal tips are engineered for a wide variety of pipettes and are ideal for laboratories with multiple brands of pipettes - even multi-channel pipettes. That's because the universal tips feature the "uni-grip" design using flexible materials with a series of bands and supports. You can even squeeze this tip, they are that flexible! These tips are autoclavable with their racks.

Microcentrifuge Tubes

Snap lock microtubes are engineered to close with a "snap" and stay closed during centrifugation up to 20,000 x G. Tubes are clear with frosted caps for labelling, with frosted writing surfaces on the side. Tubes are autoclavable.

106907 Microcentrifuge tubes (0.5 ml) 1000 tubes

106908 Microcentrifuge tubes (1.5 ml) 1000 tubes

106909 Microcentrifuge tubes (2.0 ml) 1000 tubes

Micro Tube Racks

Suitable for storing 80 nos. Microtubes also available Micro Tube Racks with lid for 96 tubes.

106910 Micro centrifuge tube rack for 80 tubes 1 No.

106911 Micro centrifuge tube rack with lid for 96 tubes 1 No.

Autoclavable Gloves

106934GB Superior nitrile gloves 50 pairs

PCR Tubes:

Cat No. 106931GB (PI. No. BPCR-02 D-C) 0.2 ml Thin Wall PCR Tubes (Domed) 1000 tubes

Cat No. 106932GB (PI. No. BPCR-05-C) 0.5 ml Thin Wall PCR Tubes (Flat Cap) 1000 tubes

Ordering Information:

Cat No.	PI. No.	Product
		PIPETTE STAND
107141GB	PIP-4	Pipette stand (for 5 pipettes)
107142GB	PIP-5	Multichannel pipette stand (3 Pipettes)
		GLASS PLATE STAND
116666GB	05-01-16	Glass Plate Stand(for 106680 & 106724 Vertical Electrophoresis System)
116665GB	05-03-16	Glass Plate Stand(for 106725 & 106782 Vertical Electrophoresis System)
116662GB	05-06-11	Glass Plate Stand(for 106783 & 106784 Vertical Electrophoresis System)
		PCR TUBES
1106931GB	BPCR-02-D-C	0.2 ml Thin Wall PCR Tubes (Domed)
106932GB	BPCR-05-C	0.5 ml Thin Wall PCR Tubes (Flat Cap)
		PIPETTE STAND
107141GB	PIP-4	Pipette stand (for 5 pipettes)
107142GB	PIP-5	Multichannel pipette stand (3 Pipettes)
		GLASS PLATE STAND
116666GB	05-01-16	Glass Plate Stand (for 106680 & 106724 Vertical Electrophoresis System)
116665GB	05-03-16	Glass Plate Stand (for 106725 & 106782 Vertical Electrophoresis System)
116662GB	05-06-11	Glass Plate Stand (for 106783 & 106784 Vertical Electrophoresis System)
		PCR TUBES
1106931GB	BPCR-02-D-C	0.2 ml Thin Wall PCR Tubes (Domed)
106932GB	BPCR-05-C	0.5 ml Thin Wall PCR Tubes (Flat Cap)
		PCR RACKS
106933GB	BPCRR-96-B	Storage rack for PCR-0.2 ml (96 wells)
		UNIVERSAL FIT AUTOCLAVABLE TIPS
106938GB	BT-200-Y	Yellow tips, (1-200 µl)
106937GB	BT-200-C	Clear tips, (1-200 µl)
106935GB	BT-1000-B	Blue tips, (200-1000 µl)
106978GB	BTGL-200	Ultra micro gel loading tips, (200 µl)
106970GB	BT-300	Clear tips siliconized (Fits pipette P2-P10, volume 0.5-10 µl)
106972GB	BT-400	Clear micro tips (Fits eppendorf ultra micro pipette, volume 0.5-10 µl)
106975GB	BTF-20	Universal fit aerosol filter barrier tips, volume 20 µl
106976GB	BTF-200	Universal fit aerosol filter barrier tips, volume 200 µl
106977GB	BTF-300	Filter barrier aerosol tips for ultra micro (0.5-10 µl)
106974GB	BTF-1000	Universal fit aerosol filter tips (1000 µl)
		AUTOCLAVABLE RACKED TIPS
106939GB	BT-200-YR	Racked tips: yellow tips (volume 200 µl)
106936GB	BT-1000-BR	Racked tips: blue tips (volume 1000 µl)
106979GB	BTGL-200-R	Racked tips: gel loading tips (volume 200 µl)
106971GB	BT-300-R	Racked tips: mini micro P2-P10 tips (volume 0.5-10 µl)
106973GB	BT-400-R	Racked tips: clear micro tips (volume 0.5-10 µl)

GeNei™

TECHWARE

SUBMARINE

Ordering Information:

Cat No.	PI. No.	Product
		MICROCENTRIFUGE TUBES
106907GB	BMCT-060-C	Microcentrifuge tubes (0.5 ml)
106908GB	BMCT-175-C	Microcentrifuge tubes (1.5 ml)
106909GB	BMCT-200-C	Microcentrifuge tubes (2.0 ml)
		MICRO TUBE RACKS
106910GB	BMCT-R-80	Micro centrifuge tube rack for 80 tubes
106911GB	BMCT-R-96-C	Micro centrifuge tube rack with lid for 96 tubes
		GLOVES
106934GB	BSGM-PF	Superior nitrile gloves