

Nucleic Acid and Protein Sample Preparation:

Take the DNA from a plant, store it on an FTA[®] Card, track plant mutations and create a gene library. Just two applications of many.

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Nucleic Acid and Protein Sample Preparation

Whatman has been manufacturing quality paper products since 1740 and is recognized as the world leader in filter separation technologies and products.

With all this knowledge and remarkable testimonies to quality, Whatman has taken its products to a new level, in the genomics/proteomics industry. Our area of expertise in this evolving industry lies in sample preparation, where our FTA Cards - an innovative patented technology for collecting, transporting, purifying and archiving DNA and RNA all on a single card stored at room temperature - have become market leaders.

The nucleic acid sample preparation products incorporate unique Whatman technologies, which offer several outstanding advantages to molecular biologists. These include the encapsulation of solid media into devices, DNA separation products, services and products designed for the collection, transportation, purification and analysis of nucleic acids. All of these new Whatman products create breakthrough applications that yield accurate results much faster than previously possible. Offering an extensive, leading-edge product range and an efficient contract service means that all your DNA processing requirements are met by one established provider.



FTA Classic Card

Whatman offers an extensive range of products to facilitate genomic studies of humans, animals, plants and microorganisms. Collection, storage and analysis of DNA and RNA all benefit from the use of FTA and other Whatman tools.

Collection, Storage and Purification

FTA Technology

Collect, Transport, Archive and Isolate Nucleic Acids - All at Room Temperature

FTA Cards utilize patented Whatman FTA Technology that simplifies the handling and processing of nucleic acids.

FTA Cards contain chemicals that lyse cells, denature proteins and protect nucleic acids from nucleases, oxidation and UV damage. FTA Cards rapidly inactivate organisms, including blood-borne pathogens, and prevent the growth of bacteria and other microorganisms. Try FTA, and you'll soon find it's an indispensable part of your DNA toolbox. US Patent Nos. 5496562, 5756126, 5807527, 5972386, 5985327 and other patents pending.

Features and Benefits

- Capture nucleic acid in one easy step
- Captured nucleic acid is ready for downstream applications in less than 30 minutes
- Nucleic acids collected on FTA Cards are stable for years at room temperature
- FTA Cards are stored at room temperature before and after sample application, reducing the need for laboratory freezers
- Suitable for virtually any cell type
- Indicating FTA Cards change color upon sample application to facilitate handling of colorless samples
- FTA Cards are available in a variety of configurations to meet application requirements
- Custom configurations are available on request

Applications

- Forensics
- Transgenics
- Transfusion Medicine
- Plasmid Screening
- Food and Agriculture Testing
- Drug Discovery
- Genomics
- STR Analysis
- Animal Identification
- Diagnostics
- Pharmacogenomics
- Molecular Biology

Capture Nucleic Acids in One Easy Step

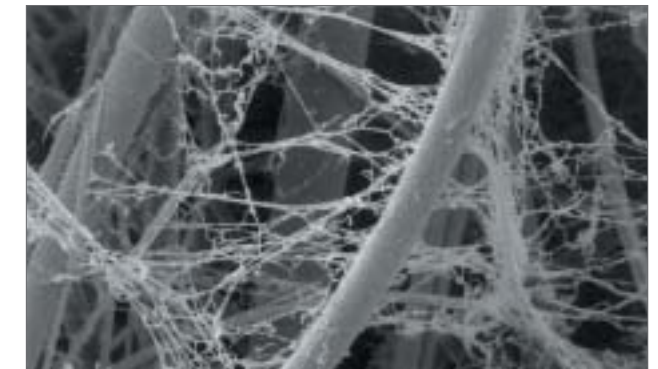
Simply apply your sample to the FTA Card. Cell membranes and organelles are lysed and the released nucleic acids are entrapped in the fibers of the card. The nucleic acids remain immobilized and are stabilized for transport, immediate processing or long-term room temperature storage.

Since captured nucleic acids are stabilized, FTA Cards facilitate sample collection in remote locations and simplify sample transport. For example, you can collect samples deep in a rain forest without worrying about immediate refrigeration. Ship your samples back to the lab without expensive special handling or dry ice, and process at your convenience.

Indicating FTA Cards are recommended for colorless samples. These FTA Cards change from pink to white when sample is applied, verifying the location of the sample.



Whatman FTA Cards



Electron micrograph showing DNA entrapped within the FTA matrix (magnification x 10,000)

FTA Cards Used With Virtually Any Sample Type

- Blood
- Cultured Cells
- Buccal Cells
- Plant Material
- Bacteria
- Plasmids
- Microorganisms
- Solid Tissue
- Viral Particles
- M13 Plaques...and more

Captured Nucleic Acid is Ready for Downstream Applications in Less than 30 Minutes

Captured nucleic acids are ready for purification when you are. Just take a punch from the FTA Card, wash with FTA Purification Reagent and rinse with TE⁻¹ buffer. DNA on the washed punch is ready to use in applications such as PCR, SNP analysis and RT-PCR. Since PCR products remain in solution, the punch can be used for multiple amplifications.

Store Nucleic Acids at Room Temperature for Years

Genomic DNA stored on FTA Cards at room temperature for over 14 years (and counting) has been successfully amplified by PCR.

Sample integrity is optimized when FTA Cards are stored in a Multi-Barrier Pouch with a Desiccant Packet.

FTA Cards offer a compact room-temperature storage system that reduces the need for precious freezer space.

FTA Classic Card

Four sample areas for application of up to 500 µL whole blood or 100 µL plant homogenate per card. Convenient for multiple applications of the same specimen or collection of multiple animal or plant samples on one card. Different samples can be processed independently.

Indicating FTA Classic Card

Same as FTA Classic Card with a color indicator that changes from pink to white when sample is applied. Recommended for use with colorless samples such as buccal or cultured cells.

FTA Mini Card

Two sample areas for application of up to 250 µL whole blood or 50 µL plant homogenate per card. Convenient for protocols that require different locations for testing and archiving samples. Different samples can be processed independently.

Indicating FTA Mini Card

Same as FTA Mini Card with a color indicator that changes from pink to white when sample is applied. Recommended for use with clear samples such as buccal or cultured cells.

FTA Micro Card

One sample area for application of up to 125 µL whole blood or 25 µL plant homogenate per card. Recommended when only one sample is needed.

Indicating FTA Micro Card

Same as FTA Micro Card with a color indicator that changes from pink to white when sample is applied. Recommended for use with clear samples such as buccal or cultured cells.

FTA Gene Card

An FTA Card enclosed in a rigid card frame. Three sample areas for application of up to 225 µL whole blood or 30 µL plant homogenate per card. Can be utilized in many automatic dispensing/pipetting systems when used with the FTA Gene Card Tray (WB100030).

PlantSaver™ FTA Card

Plant friendly FTA Card, in a Classic Card format. Features a laminated flap that allows you to vigorously pound the plant sample into the FTA matrix without damaging the FTA Card.

FTA Kit

Includes: 25 FTA Micro Cards, 2 x 25 mL FTA purification reagent, 2 Harris Uni-Core Punches with cutting mat, instructions.

FTA Plant Kit

Includes: 20 FTA PlantSaver cards, 2.0 mm UniCore Punch with cutting mat, 2 x 25 mL FTA purification reagent, 1 pair of nitrile gloves and 1 cutting mat and round bottom test tube for sample application, instructions.

FTA Starter Pack

Includes: 1 FTA Classic Card, 1 FTA Mini Card, 1 FTA Micro Card, 1 Indicating FTA Mini Card, 1 FTA Indicating Micro Card, 2 foam-tipped applicator swabs, 1 multi-barrier pouch with desiccant, 25 mL FTA purification reagent, 2 Harris Uni-Core Punches with cutting mat, instructions.



FTA Plant Kit

Ordering Information - FTA Nucleic Acid Collection, Storage and Purification

Catalog Number	Description	Cards/Pack	Sample Areas/Card	Maximum Volume/ Sample Area (µL)	Maximum Total Volume/Card (µL)
WB120067	FTA Kit ¹	25	-	-	-
WB120068	FTA Plant Kit ²	20	-	-	-
WB120061	FTA Starter Pack	N/A	-	-	-
WB120305	FTA Classic Card	25	4	125	500
WB120205	FTA Classic Card	100	4	125	500
WB120306	Indicating FTA Classic Card	25	4	125	500
WB120206	Indicating FTA Classic Card	100	4	125	500
WB120355	FTA Mini Card	25	2	125	250
WB120055	FTA Mini Card	100	2	125	250
WB120356	Indicating FTA Mini Card	25	2	125	250
WB120056	Indicating FTA Mini Card	100	2	125	250
WB120310	FTA Micro Card	25	1	125	125
WB120210	FTA Micro Card	100	1	125	125
WB120311	Indicating FTA Micro Card	25	1	125	125
WB120211	Indicating FTA Micro Card	100	1	125	125
WB120308	FTA Gene Card	25	3	75	225
WB120208	FTA Gene Card	100	3	75	225
WB120365	PlantSaver FTA Card	25	4	-	-
WB120065	PlantSaver FTA Card	100	4	-	-
WB120217	FTA Card/Pouch/Desiccant	1000	-	-	-

¹ Includes: 25 FTA Micro Cards, 2 x 25 mL FTA purification reagent, 2 x Uni-Core Punches with cutting mat, instructions

² Includes: 20 FTA PlantSaver cards, 2.0 mm Uni-Core Punch and cutting mat, 2 x 25 mL FTA purification reagent, 1 pair of nitrile gloves with 1 cutting mat and round bottom test tube for sample application, instructions.

FTA[®] Elute

FTA Elute Technology

Collect, Transport, Archive and Isolate Nucleic Acids - All at Room Temperature

FTA Elute Cards utilize patented Whatman FTA Technology that simplifies the handling and processing of nucleic acids. DNA can be extracted in an easy step, providing you with DNA for your amplification needs.

The FTA Elute matrix is chemically treated with proprietary reagents that lyse cells upon contact causing the release of nucleic acids. DNA is recovered from the FTA Elute matrix through a simplified elution process using water and heat. Inhibitory components, such as hemoglobin, are retained on the FTA Elute matrix.

Features and Benefits

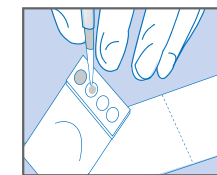
- Capture nucleic acid in one easy step
- Captured nucleic acid is easily released for multiple downstream applications in less than 30 minutes
- Sample processing requires a simple water elution procedure to isolate DNA eliminating the cost of using a purification kit
- DNA collected on FTA Elute Cards are stable for years at room temperature
- FTA Elute Cards are stored at room temperature before and after sample application, reducing the need for laboratory freezers
- FTA Elute rapidly inactivates organisms including blood borne pathogens and eliminates the risk of contamination for the individuals handling the sample
- FTA Elute Cards are available in a variety of configurations to meet application requirements
- Custom configurations are available on request



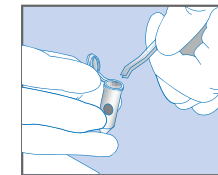
FTA Elute

Collect and Isolate Samples Quickly and Easily

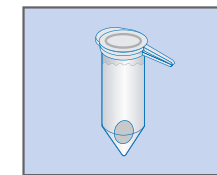
Blood Sample Collection and Isolation of DNA Template



1. Blood sample collection on FTA Elute. Dry thoroughly.

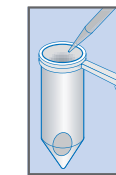


2. Punch out a 3 mm sample with a sterile punch and place into a sterile microcentrifuge tube.

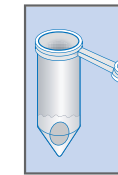


3. Rinse punch in 500 µL of dH₂O by vortexing 3x for 5 seconds.

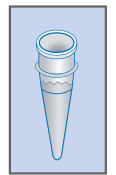
30 Minute Isolation



4. Using a sterile pipette, remove water; centrifuge 5 seconds; shake off pipette excess.



5. Add 50 µL sterile water. Heat to 95°C for 30 min. DNA template is now ready.



6. Add 5-10 µL template to PCR reaction mixture.

Use FTA Elute for a wide range of applications:

- Multiple PCR
- Sequencing
- SNP Analysis
- STR Analysis
- HLA Typing
- Whole Genome Amplification
- Quantitative PCR

FTA Elute Classic Card

Four sample areas for application of sample per card. Convenient for multiple applications of the same specimen or collection of multiple samples on one card. Different samples can be processed independently.

FTA Elute Micro Card

One sample area for application of sample per card. Recommended when only one sample is needed.

Ordering Information - FTA Elute Technology

Catalog Number	Description	Cards/Pack	Sample Areas/Card
WB120403	FTA Elute Classic Card	25	4
WB120405	FTA Elute Classic Card	100	4
WB120401	FTA Elute Micro Card	25	1
WB120410	FTA Elute Micro Card	100	1

FTA® Reagent and Accessories

For Collection, Storage, Processing and Shipping FTA Cards

FTA Purification Reagent

- For purification of nucleic acids stored on FTA Cards
- Ensures superior quality DNA for PCR or SNP analysis
- Removes heme, PCR inhibitors and other potential contaminants
- Non-toxic, hypoallergenic aqueous solution

FTA Gene Card Tray

- Holds 2 FTA Gene Cards for use in automatic dispensing/pipetting systems
- Tray footprint conforms to SBS Standards

Harris Micro Punches (1.2 mm, 2.0 mm or 3.0 mm) and Cutting Mat

- Recommended for the precise punching of FTA Cards. No sample carryover when recommended procedures are used. Tips provide up to 2000 punches. Polished steel tip is case hardened and can be sterilized. The cutting mat ensures clean sample cuts and extends the life of the cutting tip.
- 1.2 mm punch recommended for use with FTA Cards containing whole blood and samples with high DNA content
- 2.0 mm punch recommended for use with FTA Cards containing buccal cells, plasmids and other samples with lower DNA content
- 3.0 mm punch recommended for use with FTA Elute Cards

Harris Uni-Core Punches

- Disposable punch recommended for punching of FTA Cards. No sample carryover when recommended procedures are used.
- 1.2 mm punch recommended for use with FTA Cards containing whole blood and samples with high DNA content
- 2.0 mm punch recommended for use with FTA Cards containing buccal cells, plasmids and other samples with lower DNA content
- 3.0 mm punch recommended for use with FTA Elute Cards

Sterile Foam Tipped Applicator

- For the collection of saliva and buccal cells
- Non-abrasive foam head is same size as sample area on Indicating FTA Cards to facilitate sample application



FTA Purification Reagent



Harris Micro Punches



Harris Uni-Core Punches

Sterile Omni Swab

This is a non-invasive device for the collection of saliva and cheek buccal cells. Sterile Omni Swab features a unique brush-like swab head that easily ejects from the stem of the swab for transfer of samples into tubes and multiwell plates. Sterile Omni Swabs are pre-sterilized and individually wrapped for single use.



Sterile Omni Swab

Multi-Barrier Pouches

Large

- For transporting or storing FTA and FTA Elute Classic Cards
- Seven laminated layers protect the card from exposure to gas or liquid contamination
- Tamper-evident seal maintains sample security
- Outer paper surface for labeling or writing

Small

- Same construction in a smaller size for storing FTA Gene Cards, Mini Cards or Micro Cards

Desiccant Packets

- Ensure that FTA Cards remain dry during transport or storage
- Change from blue to pink to indicate absorption of moisture



Multi-Barrier Pouches

Ordering Information - FTA Reagent and Accessories

Catalog Number	Description	Quantity/Pack
WB120204	FTA Purification Reagent	500 mL
WB100030	FTA Gene Card Tray	20
WB100032	Sterile Foam Tipped Applicators	100
WB100005	Harris Micro Punch 1.2 mm (with cutting mat)	1
WB100006	Replacement Tip 1.2 mm	1
WB100007	Harris Micro Punch 2.0 mm (with cutting mat)	1
WB100038	Harris Micro Punch 3.0 mm (with cutting mat)	1
WB100008	Replacement Tip 2.0 mm	1
WB100020	Replacement Cutting Mat	1
WB100036	Multi-Barrier Pouch, Small (8 x 7 cm)	100
WB100037	Multi-Barrier Pouch, Large (9 x 15 cm)	100
WB100003	Desiccant Packets (1 gm)	1000
WB100025	Harris Micro Punch 1.2 mm Replacement Plunger	1
WB100026	Harris Micro Punch 2.0 mm Replacement Plunger	1
WB100028	Harris Uni-Core Punch 1.2 mm	4
WB100029	Harris Uni-Core Punch 2.0 mm	4
WB100039	Harris Uni-Core Punch 3.0 mm	4
WB100040	Harris Uni-Core Punch 6.0 mm	4
WB100035	Sterile Omni Swab	100

Clone Archiving

Whatman offers a unique patented technology to collect, store, back-up and process clone samples. This revolutionary FTA technology is available in two formats: 96 Well card and 384 Well plate.

CloneSaver® Card

FTA Technology in 96 Well Format for High-Throughput Applications

Designed for the collection, long-term storage and purification of plasmid and BAC DNA from bacterial clones in a 96 Well format.

Prepare BAC and Plasmid DNA with Amazing Ease

- Apply 5 µL bacterial culture, resuspended colony or glycerol stock. Cells are lysed and plasmid or BAC DNA is stabilized for long-term storage or immediate processing.
- Bacteriophages are inactivated
- DNA is easily accessible for downstream applications
- Store up to 96 samples on each card

Store Sample DNA for Years at Room Temperature

Plasmid DNA stored on CloneSaver Cards is stable at room temperature for at least four years...and counting.

DNA is Easily Accessible for Downstream Applications

Transformation

Plasmid DNA can be eluted or used directly on a punch to transform bacteria either by electroporation or heat-shock methods.

PCR

Immobilized plasmid DNA on a CloneSaver Card punch can be used directly in a PCR. The PCR products remain in solution, do not bind to the punch and are easily recoverable. Plasmid DNA can also be eluted for PCR or other studies.

Sequencing

Plasmid DNA eluted from a CloneSaver punch can be amplified by rolling circle amplification, such as GE Healthcare's (formerly Amersham Biosciences) TempliPhi™ and then sequenced without the need for culture regrowth and plasmid purification.

CloneSaver Resealable Multi-Barrier Pouches

Used for transporting or storing the CloneSaver Card. The pouch is constructed with seven laminated layers that protect the card from exposure to gas or liquid contamination. There is a zip-lock resealable closure for easy access to the CloneSaver Card. The tamper-evident seal maintains sample security and the outer paper surface can be used for labeling or writing.

SPOT CloneSaver Holder

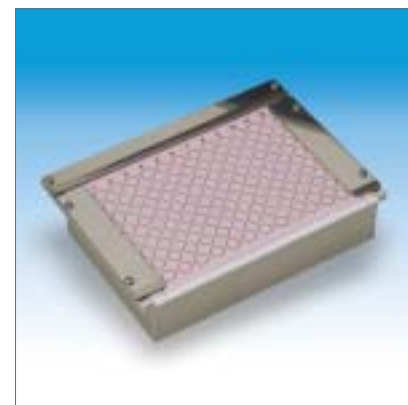
SPOT CloneSaver Holder is a rigid frame that allows automated spotting to standard CloneSaver Cards. It keeps the card flat for uniform and precise spotting of biological samples. The 96 Well card is easily inserted into the SBS-compatible frame, which can then be placed onto a liquid-handling deck just like a multiwell plate.



Sample Application to CloneSaver Card



CloneSaver Card with Multi-Barrier Pouches



SPOT Holder

The SPOT CloneSaver Holder is compatible with standard liquid handlers manufactured by companies such as Beckman Coulter and Tecan Instruments.

CloneSaver Starter Kit

Includes: 2 CloneSaver Cards, 2 Uni-Core Punches (2 mm) with cutting mat and instructions.

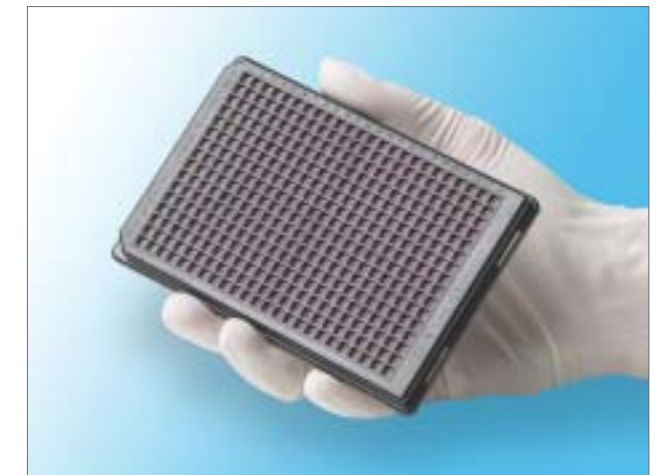
Ordering Information - Clone Archiving

Catalog Number	Description	Cards/Pack	Sample Areas/Card	Maximum Volume/Sample Area (µL)	Maximum Total Volume/Card (µL)
WB120052	CloneSaver Starter Kit	N/A	96 Well format	5	480
WB120028	CloneSaver Card	2	96 Well format	5	480
WB100024	CloneSaver Resealable Multi-Barrier Pouch	50	N/A	N/A	N/A
WB100034	SPOT CloneSaver Holder for Semi-Automated Spotting	1	N/A	N/A	N/A

EasyClone™ 384 Plate

The Whatman EasyClone 384 Plate replaces traditional freezer storage methods and offers a first of its kind, single device for entire sample archiving and purification workflow, enabling faster DNA mining and discovery.

The EasyClone 384 Plate can be used by biotechnology, pharmaceutical, government and academic laboratories for archiving, shipping and purifying clones - all at room temperature.



EasyClone 384 Plate

Relying on proven Whatman FTA technology, which allows for the collection, storage and purification of DNA from a variety of biological samples, EasyClone consists of a 384 Well storage and extraction plate with a piercable foil bottom and FTA disks pre-cut into each well. The design and format of the EasyClone 384 plate enables the genomics market to use FTA as a replacement for both purification kits and freezer storage.

Ordering Information - EasyClone 384 Plate

Catalog Number	Description	Quantity/Case
WB120069	EasyClone 384 plate	50

DNA/Protein Purification

Whatman offers a line of DNA purification kits to simplify your testing processes.

GenSpin™ Genomic DNA Purification Kit

The GenSpin Purification Kit is designed to purify high quality, PCR-ready, single-stranded DNA in solution from whole blood and cultured cells in as little as 25 minutes.

This simple protocol uses a single micro centrifuge tube and small sample volume (5-50 µL) to produce high quality DNA for amplification by PCR. DNA for up to 80 amplification reactions can be obtained from a 50 µL fresh or anticoagulant-treated blood sample.

GenSpin incorporates patented FTA technology, which lyses cell and nuclear membranes on contact. The DNA is reversibly entrapped within this type of FTA filter matrix and can be stored for weeks at room temperature prior to purification. Cellular debris and proteins are removed by washing with GenSpin buffer and TE⁻¹ buffer using a centrifuge. The purified DNA is released from this specialized filter matrix by heat elution and is ready for immediate PCR amplification.

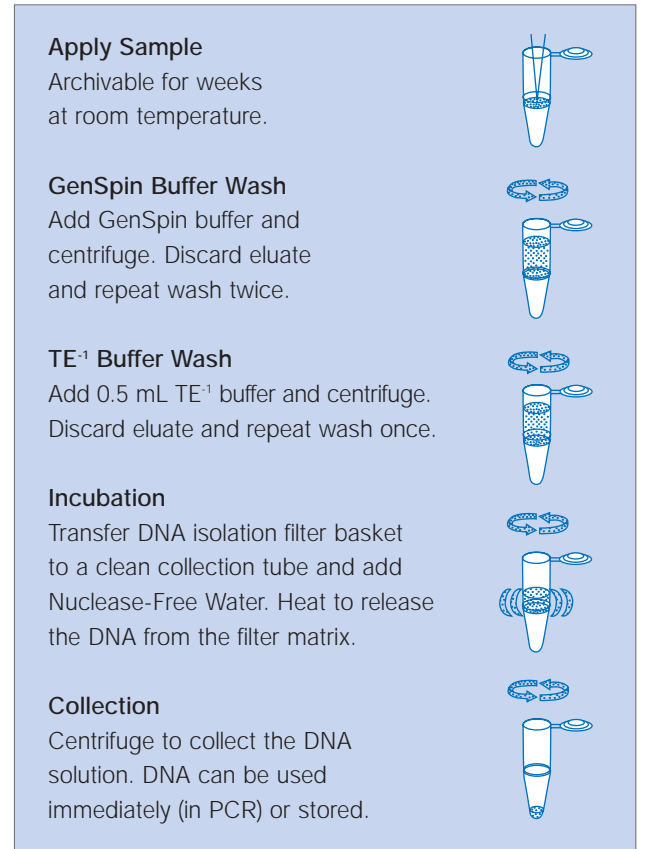


GenSpin Genomic DNA Purification Kit

GenSpin™ Genomic DNA Purification Kit

Features and Benefits

- Simple, single tube protocol. Purify single stranded DNA from whole blood and cultured cells in less than 25 minutes.
- FTA technology lyses cells, denatures proteins and inactivates viral contaminants. Allows room temperature storage of DNA and safe sample transport and handling prior to purification.
- High quality DNA. Enables full length PCR amplification.
- Highly efficient method. Enables purification of DNA for up to 80 amplification reactions from a 50 µL blood sample.
- No precipitation steps. DNA is ready for immediate analysis.



Apply Sample

Archivable for weeks at room temperature.

GenSpin Buffer Wash

Add GenSpin buffer and centrifuge. Discard eluate and repeat wash twice.

TE⁻¹ Buffer Wash

Add 0.5 mL TE⁻¹ buffer and centrifuge. Discard eluate and repeat wash once.

Incubation

Transfer DNA isolation filter basket to a clean collection tube and add Nuclease-Free Water. Heat to release the DNA from the filter matrix.

Collection

Centrifuge to collect the DNA solution. DNA can be used immediately (in PCR) or stored.

Ordering Information - GenSpin Genomic DNA Purification Kits

Catalog Number	Description	Size
WB120005	GenSpin Genomic DNA Purification Kit	50 purifications
WB120111	GenSpin Sample Kit	5 purifications

GenSpin Genomic DNA Purification Kit Contents

Quantity	Item
50	DNA Isolation Filter Baskets in 2 mL Microcentrifuge Tubes
50	2 mL Microcentrifuge Tubes
1	GenSpin Buffer 110 mL
1	Nuclease Free Water 25 mL
1	User Manual

GenSpin™ Plant DNA Purification Kit

The GenSpin Plant DNA Purification Kit is designed for the rapid preparation of double-stranded DNA in solution from small quantities of plant material for PCR analysis.

Using a single micro centrifuge tube, this simple protocol enables the recovery of DNA for more than 50 amplification reactions from just 10 mg of plant tissue. The small sample capability is ideally suited for rapid analysis studies such as identification of genetically-modified plants and cultivar screening.

Plant material is homogenized at room temperature and applied to the GenSpin Filter Basket, which incorporates FTA technology to immediately stabilize the DNA at room temperature. Nucleases are inactivated and the DNA is protected from UV and environmental damage. The immobilized DNA is entrapped in the fibers of the matrix and can either be purified immediately or stored at room temperature for more than four weeks. The filter is washed with two reagents to remove contaminants that would inhibit PCR. The DNA is then eluted from the filter by heating and collected by centrifugation.

Apply Sample
Apply plant homogenate to GenSpin Filter Basket. Spin for 15 seconds. Archive for weeks if desired.

Wash Reagent
Add wash reagent and centrifuge for 1 minute. Discard eluate and repeat wash.

Rinse Reagent
Add rinse reagent and centrifuge for 1 minute. Discard eluate and repeat rinse.

Incubation
Transfer filter basket to a clean collection tube and add TE⁻¹ buffer. Heat to release the DNA from the matrix.

Collection
Centrifuge to collect the DNA solution. DNA can be used immediately (in PCR) or stored.

Features and Benefits

- Simple, single tube protocol. Eliminates need for organic solvents, liquid nitrogen and time-consuming precipitation steps.
- Fast purification of DNA. Purify DNA in less than 30 minutes for quick sample screening. Up to 50 amplifications from only 10 mg of plant material.
- PCR-ready double-stranded DNA. Reliable amplification of DNA for a wide range of applications including cultivar screening and identification of genetically modified plants.
- FTA technology protects DNA from degradation. Enables room temperature storage for weeks.

Table 1. Comparison of GenSpin Plant and a Common Manual DNA Isolation Method

Extraction Time	GenSpin Plant 25 minutes	Manual Method* 90 minutes
Homogenization	Room Temperature	Liquid Nitrogen
Precipitation/Resuspension	Not Required	Required
All Reagents Aqueous	Yes	No
Archiving Capability	Yes	No
PCR of Low-Copy Loci	Yes	Yes
Double-Stranded DNA	Yes	Yes
gDNA Isolation from Other Cell Types (bacteria, blood)	Yes	No
Pathogen Inactivation	Yes	No

* Manual method (Dellaporta et. al. 1983) does not include time required for full resuspension after DNA precipitation
Reference: Dellaporta et. al. (1983) A plant DNA miniprep. *Plant Molecular Biology Reporter* 1:19-21

Table 2. Plant Species - Typical DNA Yields from 10 mg of Young Leaf Tissue

Plant Species	Double-Stranded DNA Yield (ng)
Alfalfa	800
<i>Arabidopsis thaliana</i>	110
Barley*	670
<i>Brassica</i> sp.	800
Corn*	120
Cotton	450
Potato	2200
Rice	120
Ryegrass	340
Soybean*	500
Spinach	340
Tobacco	1100
Tomato	1800
Wheat*	710

contd >

* Extraction of these plant species requires the addition of DTT to Homogenization Buffer
 DNA yields can vary depending on plant species, tissue age and growing conditions
 Double-stranded DNA was quantified using PicoGreen™ Reagent

Ordering Information - GenSpin Plant DNA Purification Kits

Catalog Number	Description	Size
WB120046	GenSpin Plant DNA Purification Kit	50 Purifications
SWB120046	GenSpin Plant DNA Purification Sample Kit	5 Purifications

GenSpin Plant DNA Purification Kit Contents

Quantity	Item
50	GenSpin Purification Tube with Filter Basket
50	GenSpin Collection Tube
1 bottle	Homogenization Buffer 25 mL
1 bottle	Wash Reagent 60 mL
1 bottle	Rinse Reagent 60 mL
1	Instruction Booklet

Elu-Quik® DNA Purification Kit

The Elu-Quik kit provides a convenient and versatile method for purifying DNA from 500-base to 200 Kb. The kit is recommended for the isolation of genomic DNA from whole cells and tissues, as well as purification of single- and double-stranded fragments from gel slices or plasmid minipreps.

The Elu-Quik Kit relies on the affinity of DNA for glass particles in the presence of sodium perchlorate binding buffer. After several washing steps to remove contaminants and cellular debris, the DNA is eluted from the glass in TE⁻¹ buffer or water. The highly pure DNA is ready for further experiments without the need for ethanol precipitation. The optimized buffers in the kit provide high yields, and unique rod-shaped glass particles reduce shearing of genomic DNA. Yields typically are greater than 650 µg from 10⁸ cells.



Elu-Quik DNA Purification Kit

Features and Benefits

- Optimized buffer system provides high DNA yields
- Versatile kit allows isolation of DNA from a variety of sources
- Samples are eluted in TE⁻¹ buffer or water, ready for further assays without ethanol precipitation
- Uniform glass rods minimize shearing of DNA

Ordering Information - Elu-Quik DNA Purification Kit

Description	Catalog Number
Elu-Quik DNA Purification Kit* includes:	10 462 620
5 mL Glass Concentrate in Binding Buffer	
125 mL Sodium Perchlorate Binding Buffer	
20 mL Lysis Buffer	
125 mL Wash Buffer Concentrate (2x)	
125 mL Salt Reduction Buffer	

* For 250 isolations

Elutip-d® Purification Minicolumns

High Recovery of DNA

The Elutip-d minicolumns are designed for purification of DNA with high recovery rates. They provide a simple and convenient method for purification of DNA in the 15-base to 50 Kb range.

The Elutip-d columns are ideal for removal of unincorporated nucleotides and other contaminants from radiolabeling reactions to reduce background levels and increase sample activity. They also provide an excellent method for isolation of nucleic acids from low-melt agarose gels.



Elutip-d

The Elutip-d column matrix binds nucleic acids in high quantities upon sample application under low salt conditions. Contaminants are washed through the column and the purified DNA is then eluted with high salt. The eluted sample is ready for use in a variety of assays that require high purity of the nucleic acid.

Elutip-d columns are used with standard syringes. Optional prefilters contain non-binding cellulose acetate membranes and are designed to increase efficiency by removing gel pieces that could otherwise clog the column.

Features and Benefits

- High recovery of single- and double-stranded DNA
- Eliminates contaminants that can cause high background or interfere with sample activity
- Sample is eluted in a small volume
- 100 µg capacity

Ordering Information - Elutip-d Purification Minicolumns

Description	Quantity/Pack	Catalog Number
Elutip-d Starter Kit includes: 15 Columns 15 Elutip Prefilters (0.45 µm Cellulose Acetate Membrane)	1	10 462 615
Elutip-d Columns	50	10 462 617
Elutip-d Columns	250	10 462 618
Elutip-d Prefilters	50	10 484 224

Elutrap® Electroelution System

Elution of Nucleic Acids and Proteins from Gel Slices

The Elutrap System is designed to isolate nucleic acids and proteins from agarose or polyacrylamide gel slices by electroelution. Samples are purified with excellent recovery into volumes as low as 200 µL, without requiring sample pretreatment or special buffers.

The Elutrap System can be used with most horizontal gel electrophoresis chambers. The Elutrap Electroelution Chamber allows for the most efficient flow of current through the device and can be used for up to four samples simultaneously.

Assembly of the Elutrap System is very easy. Gel slices are placed in the middle of the Elutrap device, which is then placed into a horizontal electrophoresis chamber. Molecules migrate from the gel slice into a trap area formed by BT1 and BT2 membranes. The membrane placement is adjustable, allowing final elution trap volumes to be optimized for the particular assay. The Elutrap System can also be used for concentration of dilute solutions.

Features and Benefits

- Versatile system can be used for nucleic acids and proteins
- Purifies nucleic acids 14-bases to 150 Kb; proteins larger than 3-5 kD
- No salt cushions or special buffers required for elution
- Adjustable trap allows optimization of final sample volume
- Electrophoresis chamber holds up to four Elutraps simultaneously



Elutrap Electroelution System

Ordering Information - Elutrap Electroelution System

Description	Catalog Number
Elutrap Starter Kit includes: 1 Elutrap Device, 50 BT1 Membranes, 50 BT2 Membranes	10 447 700
Elutrap System Starter Kit includes: 1 Elutrap Device, 1 Electrophoresis Chamber, 50 BT1 Membranes, 50 BT2 Membranes	10 447 724
Elutrap System Kit - 4-pack - includes: 4 Elutrap Devices, 1 Electrophoresis Chamber, 50 BT1 Membranes, 50 BT2 Membranes	10 447 705
Replacement Membranes	
BT1 - 100/pk	10 404 090
BT2 - 100/pk	10 404 092

PCR Cleanup UNIFILTER®

Process 96 or 384 samples quickly with greater than 85% recovery. The Whatman PCR Cleanup UNIFILTER eliminates time-consuming precipitations and labor-intensive resin purifications. Purified DNA is ready for sequencing, hybridization assays and microarrays.

The PCR Cleanup UNIFILTER can be used with both vacuum and centrifuge techniques. (Centrifugation is recommended for final elution with the 384 Well UNIFILTER.)



Ordering Information - PCR Cleanup UNIFILTER

Catalog Number	Well Format	Well Volume (µL)	Plate Material	Filter Media	Quantity/Case
7700-2810	96	800	Clear Polystyrene	DNA Binding	25
7701-5250*	96	250	Natural Polypropylene	N/A	50
7700-2110	384	100	Clear Polystyrene	DNA Binding	50
7701-1100	384	100	Clear Polystyrene	N/A	50

*Does not comply with SBS standards

Dye Terminator Removal UNIFILTER® 96 Well and 384 Well

The Whatman Dye Terminator Removal plates are available in 96 Wells and 384 Well formats. These plates can be used with gel filtration media for high-throughput sequencing reaction cleanup, including removal of dye blobs.



They are constructed from rigid polystyrene that can withstand centrifugation. Laboratory packing of gel filtration media is less expensive than pre-packed plates or spin columns.

Ordering Information - 96 Well Dye Terminator Removal UNIFILTER

Catalog Number	Well Format	Well Volume (µL)	Plate Material	Well Bottom	Quantity/Case
7700-2801	96	800	Polystyrene	Filter, LDD*	25
7701-5750	96	750	Natural Polypropylene	Round	25

* Long drip director

Ordering Information - 384 Well Dye Terminator Removal UNIFILTER

Catalog Number	Well Format	Well Volume (µL)	Plate Material	Well Bottom	Quantity/Case
7700-1101	384	100	Polystyrene	Filter, LDD*	50
7701-5101	384	80	Natural Polypropylene	Round to V	50

* Long drip director

GenXTrak™ Purification Service

Whatman provides a comprehensive contract service for the purification, quantification and normalization of DNA. The service is specifically designed to meet the individual needs of the client on a confidential basis at all stages of the project.

Please note: This service is only available in Europe.

Plasmid/BAC Sample Preparation

96 Well Bacterial Growth Plate

The Whatman high-throughput Bacterial Growth Plate can simplify and accelerate the growth of 96 individual 1.5 mL bacterial cultures. It is used for both overnight cultivation and the initial 'spin down' of bacteria. Made of medical grade polypropylene with a clear polystyrene lid, this gamma-irradiated plate eliminates the need to grow multiple, discrete cultures. It also optimizes space and efficiency in the incubator.

96 Well Lysate Clarification UNIFILTER

The Whatman Lysate Clarification UNIFILTER can utilize either vacuum or a centrifuge. The vacuum process is significantly easier to automate with consistency across all wells. It also has an average DNA recovery rate 10-30% higher than the manual centrifuge method. This method filters out cell debris to obtain plasmid DNA in the aqueous phase. Whatman filter technology results in high particle retention and fast flow rates while producing a clean lysate. The Lysate Clarification plate is an important tool for high-throughput plasmid DNA purification.

96 Well DNA Binding UNIFILTER

Whatman Plasmid DNA Binding UNIFILTER works either as a stand-alone or as part of our high-throughput miniprep system. Plasmid DNA is bound to the filter under chaotropic conditions, washed twice and then vacuumed to dryness on a vacuum manifold. The plasmid DNA is eluted by vacuum in a final volume of 100 µL into a non-binding polypropylene collection plate using water or TE⁻¹ buffer. The DNA is ready to use and further ethanol precipitation is unnecessary. The final concentration is 50-100 ng/µL, depending on the original culture. The OD₂₆₀/280 ratio is 1.9 and the yields in all 96 wells 'max out' at 6 µg. Full protocol is available at www.whatman.com

The Plasmid DNA Binding plate can be used with both vacuum and centrifuge techniques, making it a vital and flexible tool in every high-throughput lab.

384 Well DNA Binding UNIFILTER

The 384 Well DNA Binding UNIFILTER plate effectively binds and purifies DNA molecules. It provides highly reproducible results with yields exceeding 2 µg/well, from bind-wash-elute processing with collection by filtration. Minimal liquid hang up allows for reduced elution volume, enabling DNA concentration as high as 150 ng/µL. Further ethanol precipitation is unnecessary. The DNA is ready to use.

High-Throughput Genomics UNIFILTER

With increasing demand for simple and fast methods to purify DNA from bacterial cultures, the Whatman Genomics microplate is the ideal solution for the clarification of lysates containing large insert vectors.

This microplate has a cellulose acetate membrane with a special support, which clears non-chaotropic bacterial lysates, and long drip directors. Without further purification, the DNA is clean enough for further enzymatic manipulation. Cellulose acetate acts as both a depth filter and a fine particle filter. The 0.45 µm pores do not block because of the depth effect of the membrane. Cellulose acetate is also inert and does not bind either DNA or protein.

Ordering Information - Plasmid/BAC Sample Preparation

Catalog Number	Well Format	Well Volume	Plate Material	Irradiated with Lid	Quantity/Case
96 Well Bacterial Growth Plate					
7701-5205	96	2 mL	Polypropylene	Yes	25 (individually bagged)
96 Well Lysate Clarification UNIFILTER					
7720-2830	96	800 µL	Clear Polystyrene	Lysate Clarification	25
96 Well DNA Binding UNIFILTER					
7700-2810	96	800 µL	Clear Polystyrene	DNA Binding	25
384 Well DNA Binding UNIFILTER					
7700-2110	384	100 µL	Clear Polystyrene	DNA Binding	50
7701-1100	384	100 µL	Clear Polystyrene	N/A	50
High-throughput Genomics UNIFILTER					
7700-2808	96	800 µL	Clear Polystyrene	0.45 µm CA *	25
7701-5203	96	2 mL	Natural Polypropylene	N/A	25
7701-5205	96	2 mL	Natural Polypropylene	N/A	25
7701-5750	96	750 µL	Natural Polypropylene	N/A	25 (individually bagged)

* CA = cellulose acetate