sample prep

thermo scientific | applied biosystems | invitrogen

DNA reference guide

Sample preparation and purification solutions

ThermoFisher SCIENTIFIC

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Introduction

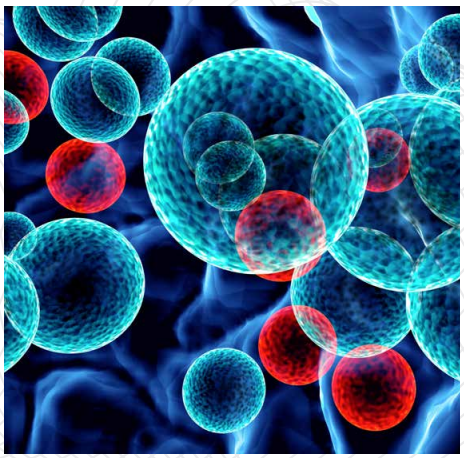
How can we better understand our predisposition to disease and well-being? What traits have we inherited from our ancestors? The answers are in our DNA.

For decades, Thermo Fisher Scientific has been empowering scientists to answer these vital questions about life. From studying ancient civilizations to analyzing criminal investigations, DNA is at the forefront of innovative and groundbreaking research.

Whether it be in the field on an archaeological dig or in an agricultural lab genetically modifying crops, we have the solutions you need. We offer organic extraction reagents, columns, and magnetic beads to isolate DNA for the most sensitive downstream applications.

No matter what your sample type, volume, or experience level is, you can be confident in our portfolio of reagents, kits, and systems. So use our purification solutions to fuel your research and get to know your DNA.

Contents



Purification and isolation technologies	5
Organic extraction	6
Column purification	10
Genomic DNA	10
Plasmids	17
Magnetic beads	23
MagMAX magnetic beads	24
Instruments	28
KingFisher purification systems	28
Qubit Flex fluorometer	30
NanoDrop spectrophotometers	31
Tips and tricks for specialty samples	32
Sample prep essentials	34
Services and support	39

Purification and isolation technologies

You have samples to purify. We have the perfect solutions. Thermo Fisher Scientific offers simple, optimized solutions to meet the complex needs of every experiment and research project. Our purification methods range from organic extraction reagents all the way to spin columns and magnetic beads.

Table 1. Summary of DNA purification technologies.

Method	Organic extraction	Column	Magnetic beads
Chemistry	Separation via phenolic compounds	Separation via filtration membranes or resins seated at the bottom of a column tube	Separation via magnetic beads that act as charged surfaces to attract DNA, and reagents optimized for DNA isolation
Sample type(s)	• Cell • Tissue • Blood • Plant samples	• All sample types	• All sample types
Technique	Reagent based	Centrifugation and vacuum-assisted	Magnetic separation without liquid transfer
Purity	Medium	High	Highest
Throughput	Low	Medium-high	High
Advantages	• Efficient lysis and isolation • Scalable format • Great for difficult samples • 30–60 min procedure	• Ease of use • Can process many sample types and volume • High yield and purity	• No risk of clogging • Highest yields and efficiency • Reproducibility • Rapid collection • Automatable on magnetic particle handlers
Difficulties	• Hazardous—chemical fume hood required • Use of chlorinated organic reagents • Laborious	• Propensity to clog • Fixed binding capacity	• Magnet stand required • Instrument required for automatic processing • Hard to scale for large quantities of plasmid preparation
Recommended for	• Most sample types, but is best tor extraction of DNA from high-fat tissues such as brain, mammary tissue, or infectious samples	• Columns—ideal for low- to medium-throughput processing (12–24 samples) • 96-well filter plate—ideal for high-throughput processing	• High-throughput sample processing and automation (>24 samples)

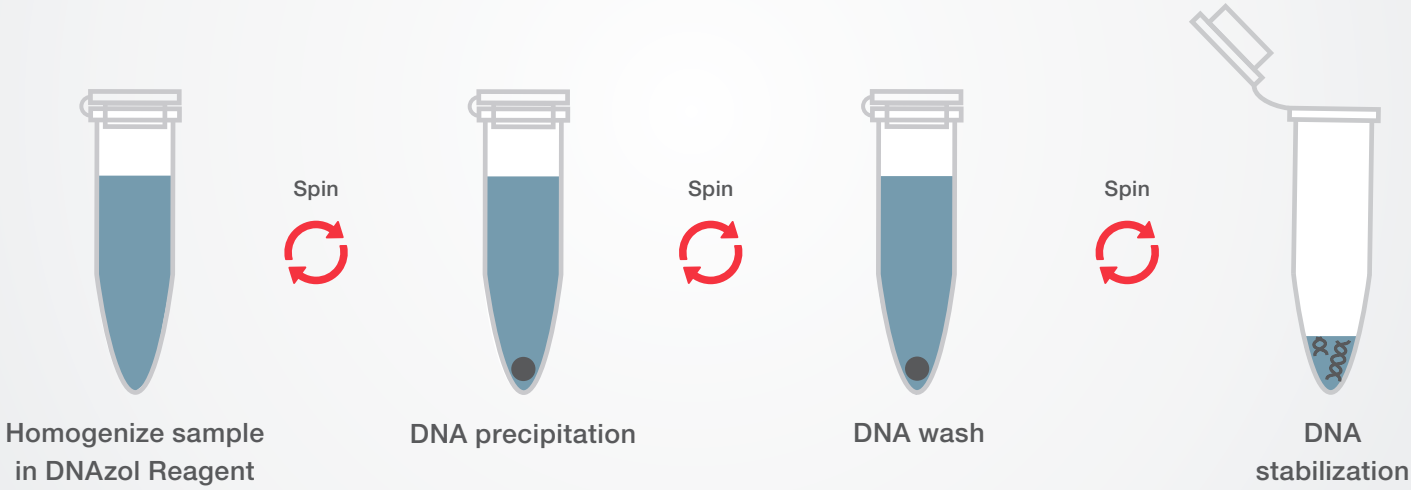
Organic extraction

Invitrogen™ DNAzol™ Reagent—reliable, efficient, and simple
Get in the hood with DNAzol Reagent, a complete and ready-to-use organic reagent for the isolation of gDNA from solid and liquid samples of animal, plant, yeast, and bacterial origin.

gDNA isolation with DNAzol Reagent
DNAzol Reagent uses a novel guanidine-detergent lysing solution that hydrolyzes RNA and allows the selective precipitation of DNA from the lysate. During isolation, a biological sample is lysed (or homogenized) in DNAzol Reagent, and the gDNA is then precipitated from the lysate with ethanol. Following an ethanol wash, DNA may be solubilized in either water or 8 mM NaOH.

During isolation using Invitrogen™ Plant DNAzol™ Reagent, plant samples are pulverized in liquid nitrogen or homogenized, and gDNA is extracted from the homogenate with the Plant DNAzol Reagent. Following extraction, plant debris is removed by centrifugation and DNA is precipitated from the supernatant with ethanol and solubilized with TE buffer (pH 8.0).

DNAzol Reagent in action



Featured DNA isolation reagents

DNAzol Reagent

DNAzol Reagent is an advanced DNA isolation reagent that combines both reliability and efficiency with simplicity of the isolation protocol.

- Selectively precipitates DNA from a cell lysate
- 30–60 min procedures
- Rapid isolation and high recovery of gDNA
- Enables isolation of gDNA from 50 mg of tissue or 1 x 10^7–3 x 10^7 cells with 1 mL of reagent
- Isolation of gDNA from a large number of samples of small or large volumes

Plant DNAzol Reagent

Plant DNAzol Reagent is an extra-strength, ready-to-use organic reagent formulated for the isolation of high-quality gDNA from a variety of plant samples.

- Efficient isolation of gDNA from a variety of plant tissues such as leaf, seed stem, root, and callus
- 60–70 min procedure
- Can isolate gDNA from 0.1 g of plant tissue with 0.3 mL of reagent
- Novel guanidine detergent–based lysing solution hydrolyzes RNA and allows the selective precipitation of DNA from the lysate (please make this first bullet)

Did you know?
Unlike traditional methods for plant DNA extraction, Plant DNAzol Reagent is quicker, does not require RNase A to remove RNA from gDNA preparations, and in the majority of tissues, does not require phenol.

Pro tip:
Plant DNAzol Reagent generates yields from plant tissues that are comparable with the traditional CTAB method.

DNAzol Reagent workflow

DNAzol Reagent can be used in a variety of downstream applications

Mammalian cell culture with our Gibco products

Isolate DNA in less than 30 min with DNAzol Reagent

Amplify using CLA GlobalFiler PCR Amplification Kit

Fragment analysis by capillary electrophoresis (CE)

Figure 1. DNA isolation from mammalian cell culture for cell line characterization. With our DNAzol Reagent, DNA purified from mammalian cells is ready for cell line authentication using short tandem repeat (STR) analysis. Authenticating your cell culture lines will reduce the risk of misidentified or contaminated cell culture lines compromising your research.

For more information on the above workflow, use your mobile phone's camera app to scan the QR codes below.

Applied Biosystems™ CLA GlobalFiler™ PCR Amplification Kit

Applied Biosystems™ SeqStudio™ Genetic Analyzer

Array of options

Table 2. DNAzol Reagent product selection guide.

Product	DNAzol Reagent	DNAzol BD Reagent	Plant DNAzol Reagent
Product size		100 mL	
Time	10–30 minute	30 min	60–70 min
Sample input	• Cells • Tissue	• Blood	• Plant
Final product		gDNA	
Recommended for		• Cloning • Restriction endonuclease digestion • PCR • Sequencing • Southern blotting	

Shop our DNAzol Reagent products

Ordering information

Product	Quantity	Cat. No.
DNAzol Reagent	100 mL	10503027
DNAzol BD Reagent	100 mL	10974020
Plant DNAzol Reagent	100 mL	10978021

Column purification

A spin on gDNA purification

Obtaining high-quality, intact gDNA is often the first and most critical step in many fundamental molecular biology applications such as cloning, sequencing, and genotyping. Our spin columns are designed for sensitive and scalable extraction, with flexible, ultraclean, and optimized features. We offer a wide range of DNA column purification kits, plus the technical support you may need to obtain high yields of pure intact DNA from a wide variety of sample types.

Get to know our column purification system

Column purification utilizes solid-phase extraction techniques to bind and isolate DNA within columns containing silica or glass fiber filter membranes. Samples are digested using an optimized buffer that aids in protein denaturation and enhances Proteinase K activity. RNase A is added to remove any residual RNA, and the sample is lysed using a Invitrogen™ PureLink™ lysis and binding buffer. The lysate is then mixed with ethanol to precipitate the gDNA.

The prepared lysate is then passed through the silica or glass fiber membrane using centrifugal force. The column is washed to remove remaining impurities such as residual proteins and salts. The gDNA is then eluted in a low-salt elution buffer and is ready to use in a wide variety of downstream applications such as cloning, PCR, next-generation sequencing (NGS), genotyping, and Southern blotting.

Let your sample prep spin

See our simple 4-step protocol for column purification

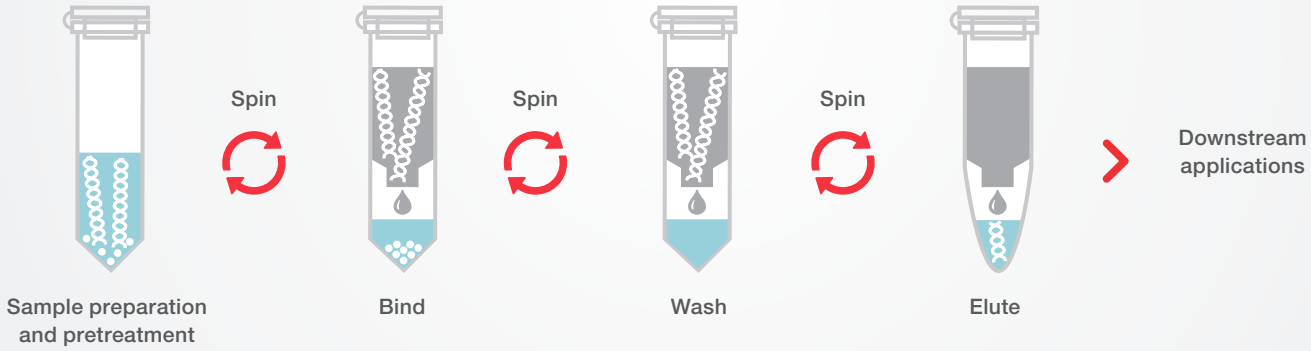


Figure 2. Spin column purification protocol. The procedure for purifying genomic DNA from your samples using the Invitrogen™ PureLink™ purification kits uses 4 simple steps—lyse, wash, elute, and purify.

Did you know?

Solid-phase gDNA purification techniques are more efficient than conventional methods such as liquid-liquid purification. For example, issues like incomplete phase separation can be avoided when using a solid-phase system dependent on pH and salt content.

Optimized purification systems for a wide variety of sample types

Invitrogen™ PureLink™ Genomic DNA Mini Kit

- One kit with optimized protocols for a variety of sample types and sizes
- Process sample inputs up to 25 mg with one spin column in 15 min
- Isolate up to 10 µg of gDNA* from tissue using silica spin column technology
- Minimal contamination of DNA product allows for successful downstream applications like genotyping, PCR, sequencing, and Southern blotting

* Isolated gDNA is 20-50 kb in size.

Pro tip:
Purify high-yield, high-purity gDNA from tissue, blood, bacteria, cells, saliva, and more. With just one kit, you can isolate gDNA from various sample types, allowing you the flexibility you desire in your lab.

Obtain higher yields of DNA with the PureLink Genomic DNA Mini Kit

See how our PureLink Genomic DNA Mini Kit performs

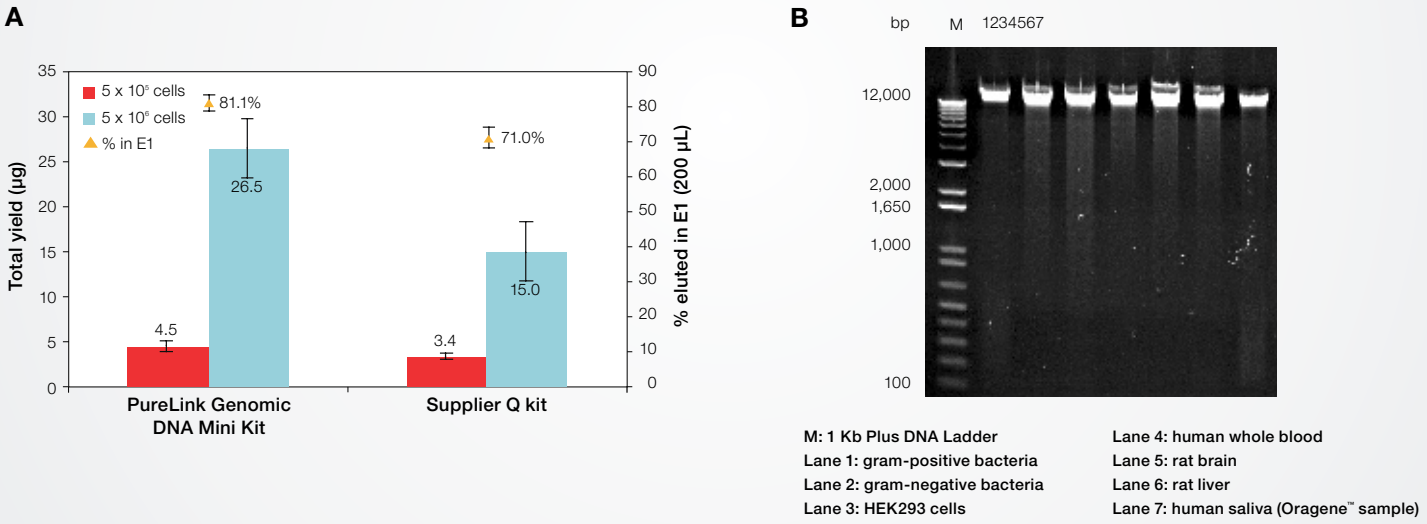


Figure 4. Purification of high-yield, high-quality DNA. (A) Obtain higher yields of gDNA using PureLink Genomic DNA Mini Kit. DNA was extracted from HEK293 cells using the PureLink Genomic DNA Mini Kit. DNA concentration was measured using spectrophotometry (A_{260}) and compared to the DNA yields obtained from Supplier Q's kit. **(B)** Obtain higher quality and integrity gDNA using the PureLink Genomic DNA Mini Kit. gDNA from various samples was purified using the PureLink Genomic DNA Mini Kit. Tight, sharp DNA bands high on the gel without smearing are indicative of high-quality DNA with minimal shearing or degradation.

Invitrogen™ PureLink™ *Pro* 96 Genomic DNA Purification Kit

- One kit for a variety of sample types and sizes (bacteria, yeast, blood, cells, tissue, formalin-fixed, paraffin-embedded (FFPE) samples, forensic samples, buccal samples)
- Process up to 96 individual sample inputs of up to 25 mg in 35 minutes
- Isolate up to 10 µg of gDNA from tissue using silica filter plate technology
- Obtain high-yield, high-purity gDNA in a plate format
- Minimal contamination of DNA product allows for successful downstream applications like cloning, genotyping, next-generation sequencing, PCR, sequencing, and Southern blotting

Did you know?

Our high throughput–compatible PureLink *Pro* 96 Genomic DNA Purification Kit can be processed with a centrifuge or with automated vacuum platforms.

Spin like a pro

Obtain high yields of gDNA for your high-throughput needs

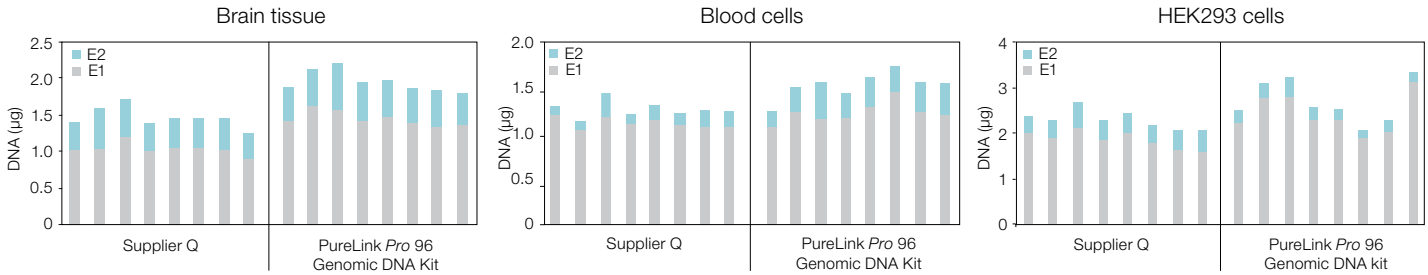


Figure 5. Achieve higher gDNA yields from a variety of sample types using the PureLink *Pro* 96 Genomic DNA Purification Kit. DNA was extracted from brain tissue, blood, and HEK293 cells. Comparison of DNA yields after elution 1 (E1) and elution 2 (E2) demonstrates that more gDNA is extracted using the PureLink *Pro* 96 Genomic DNA Purification Kit than when using another supplier's kit.

Invitrogen™ PureLink™ Viral RNA/DNA Mini Kit

- One kit to simultaneously purify viral RNA/DNA from plasma, serum, cerebrospinal fluid, and cell culture supernatants
- Rapid and efficient purification of high-quality viral nucleic acid using spin column–based centrifugation with no sample cross-contamination
- Specifically designed to purify viral RNA and DNA from ≤500 µL of cell-free samples within 45 min
- Ability to elute viral nucleic acids devoid of proteins and nucleases and in low elution volumes to allow sensitive downstream analysis

Did you know?

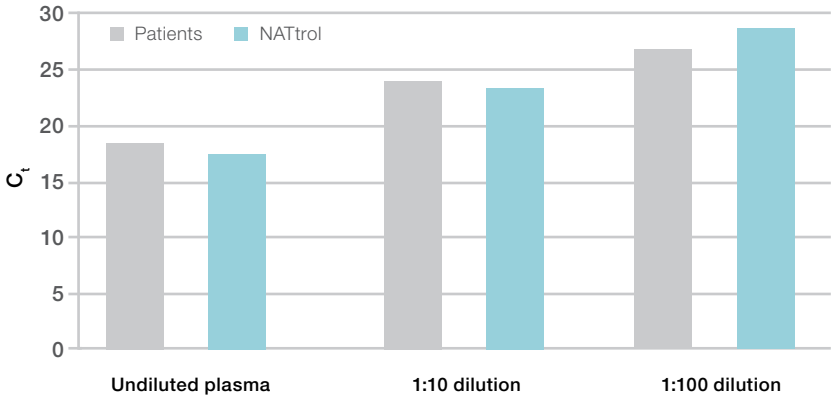
The PureLink Viral RNA/DNA Mini Kit accommodates starting volumes of up to 500 µL, and elution volumes as low as 10 µL.

Our kits are optimized to work with tough samples

See the PureLink Viral RNA/DNA Mini Kit in action

Hepatitis B virus (HBV) is one of the most difficult viruses to extract due to its rigid protein coat. Sensitive detection requires strong lysis and pure DNA. To assess the ability of the PureLink Viral RNA/DNA Mini Kit to efficiently extract HBV, samples of infectious patients' plasma and plasma spiked with ZeptoMetrix NATtrol™ HBV nucleic acid test control were purified.

In this study, recovery of NATtrol HBV was comparable to infectious virus in patient plasma, suggesting that the PureLink Viral RNA/DNA Mini Kit can efficiently and effectively extract even the most challenging samples.



Pro tip:
Have high-throughput needs? Check out our PureLink *Pro* 96 Viral RNA/DNA Purification Kit. This system is the only 96-well silica plate that can extract both viral RNA and DNA from 200 µL of cell-free fluids, which uses a low-depth 96-well centrifuge bucket for ease of use, all without any loss in sensitivity.

Figure 6. Equivalent recovery of HBV in patients' plasma samples and plasma spiked with NATtrol HBV using PureLink Viral RNA/DNA Mini Kit. HBV was extracted from infectious plasma and spiked with ZeptoMetrix NATtrol HBV using the PureLink Viral RNA/DNA Kit. Recovery of NATtrol HBV was comparable to infectious virus in patient plasma. qPCR was performed using Invitrogen™ Platinum™ SYBR™ Green qPCR SuperMix-UDG with ROX.

Invitrogen™ PureLink™ Microbiome DNA Purification Kit

- One kit for a variety of sample types (bacteria, swabs, stool, urine, saliva, transport media, growth media, soil, cells, food)
- Isolate up to 25 µg of gDNA from biological samples using silica filter technology
- Efficient lysis of all microorganisms (including durable species with thicker and more complex cell walls) by a combination of heat, chemical, and mechanical disruption with specialized beads
- Recovery of high-purity DNA compatible with common downstream applications such as qPCR and NGS

Did you know?
The human body is populated by 100 trillion bacteria, archaea, fungi, protists, and viruses, all of which play a fundamental role in our well-being. Deviations from healthy microbial compositions have been linked to many human diseases, including inflammatory bowel disease, obesity, cancer, asthma, diabetes, and allergies.

See how the PureLink Microbiome DNA Purification Kit performs

Identify the full spectrum of microbes present in your sample

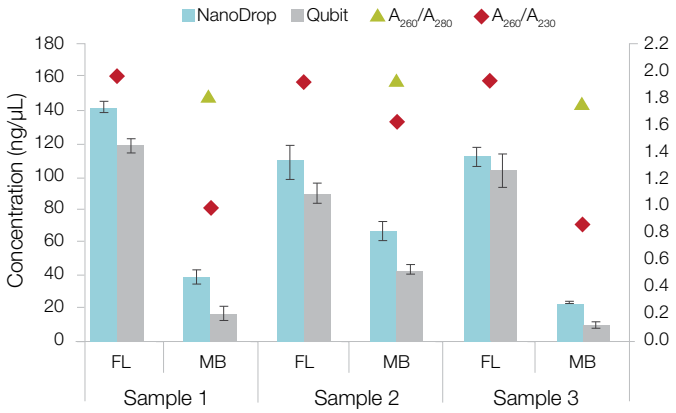


Figure 7. Achieve higher yields of microbial and host DNA from human stool using the PureLink Microbiome DNA Purification Kit. DNA was isolated from 0.2 g stool samples with the PureLink Microbiome DNA Purification Kit (FL) and another leading supplier's kit (MB). DNA concentration and purity (A_{260}/A_{230}, A_{260}/A_{280} ratios) were measured using a Thermo Scientific™ NanoDrop™ spectrophotometer and Invitrogen™ Qubit™ fluorometer. The PureLink Microbiome DNA Purification Kit typically recovers 2–5 times more DNA than the leading supplier's kit.

Options that spin

Table 3. DNA column purification kit selection guide.

	PureLink Genomic DNA Mini Kit	PureLink *Pro* 96 Genomic DNA Purification Kit	PureLink Viral RNA/DNA Mini Kit	PureLink *Pro* 96 Viral RNA/DNA Purification Kit	PureLink Genomic Plant DNA Purification Kit	PureLink Microbiome DNA Purification Kit	RecoverAll Total Nucleic Acid Isolation Kit for FFPE
Technology	Silica spin column	Silica filter plate	Silica spin column	Silica filter plate	Silica spin column	Silica spin column	Silica spin column
Product size	10 preps 50 preps 250 preps	4 x 96 preps	50 preps	4 x 96 preps	50 preps	50 preps	40 preps
Time	15 min	35 min	45 min	30 min	40 min	45 min	• 4.5 hr (total time for 16 samples) • 2.5 hr hands-on time
Sample input	• Bacteria • Blood • Cells • Tissue	• Bacteria • Blood • Cells • Tissue • Buccal samples • Saliva • Tail biopsies • FFPE samples • Yeast	• Plasma • Serum • Cerebrospinal fluid • Cell-free fluids	• Plasma • Serum • Cerebrospinal fluid • Cell-free fluids	• Fungi • Plant samples	• Bacteria • Buccal samples • Cells • Food samples • Environment samples	• FFPE samples • Fixed samples
Final product	gDNA	gDNA	gDNA	gDNA	gDNA	gDNA	• gDNA • Total RNA • MicroRNA
Recommended for	• Cloning • Genotyping • PCR • qPCR • Sequencing • NGS • Southern blotting		• Cloning • PCR • qPCR • RT-PCR • Sequencing • NGS • Southern blotting • Northern blotting		• Cloning • PCR • Sequencing • NGS • Southern blotting	• Cloning • PCR • qPCR • Sequencing • NGS	• Cloning • PCR • qPCR • RT-PCR • Sequencing • NGS • Southern blotting • Northern blotting • cDNA library construction • MicroRNA analysis

Shop our spin column purification kits

Ordering information

Product	Quantity	Cat. No.
Genomic DNA purification kits		
PureLink Genomic DNA Mini Kit	10 preps	K182000
	50 preps	K182001
	250 preps	K182002
RecoverAll Total Nucleic Acid Isolation Kit for FFPE	40 preps	AM1975
PureLink *Pro* 96 Genomic DNA Mini Kit	4 x 96 preps	K182104A
PureLink *Pro* 96 Viral RNA/DNA Purification Kit	4 plates (4 x 96 rxns)	13380096A
PureLink Viral RNA/DNA Mini Kit	50 preps	12280050
PureLink Genomic Plant DNA Mini Kit	50 preps	K183001
PureLink Microbiome DNA Purification Kit	50 preps	A29790

Spin with plasmid purification

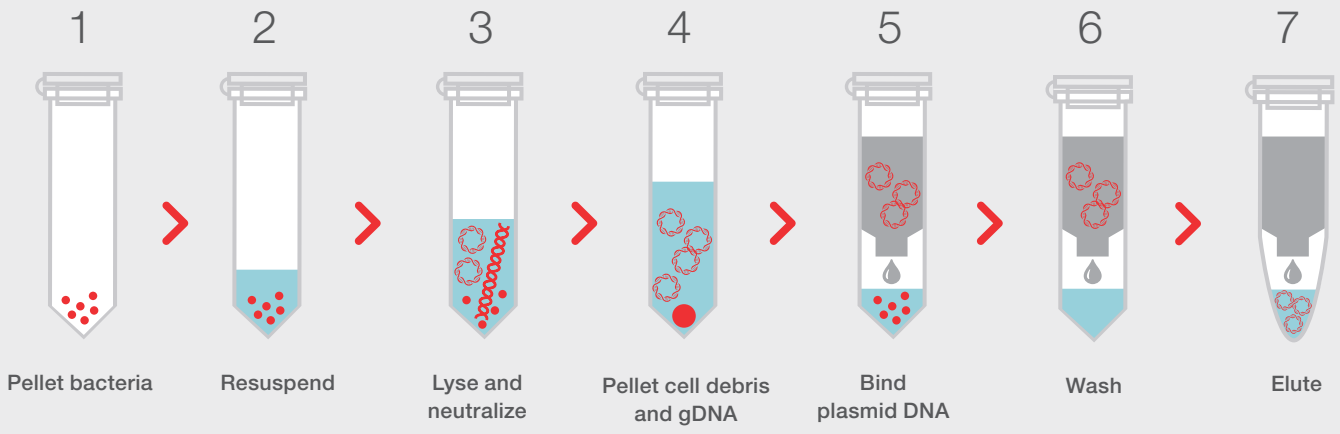
Plasmid purification is a basic technique performed in many research laboratories. Our range of Thermo Scientific™ GeneJET™ and Invitrogen™ PureLink™ plasmid purification kits have been designed and developed with the customer's experimental specifications, plasmid purity, and throughput demands in mind.

Let's explore our filter options

Our plasmid column purification products are made with different chemistries, including silica membranes, advanced silica membranes, anion exchange resins, and advanced ion exchange membranes.

Silica membrane filters, also known as glass fiber filters, allow fast and easy plasmid DNA purification, resulting in pure DNA that can be used in most molecular applications (sequencing, cloning, PCR).

- Faster than gravity flow methods
- High yields
- Supported by centrifuge and vacuum methods
- Lowest purity level/molecular grade



Let's explore our filter options (cont.)

Advanced silica membrane filters combine silica membrane's ease with improved speed of processing. They offer the fastest low-endotoxin protocol and are suitable for transfection of robust cells.

- Faster than conventional silica membrane format
- No alcohol precipitation steps
- Low-endotoxin–grade purity
- Requires vacuum to achieve speed
- Higher binding capacity than conventional silica membrane format
- Colored buffers for easy identification and error-proofing

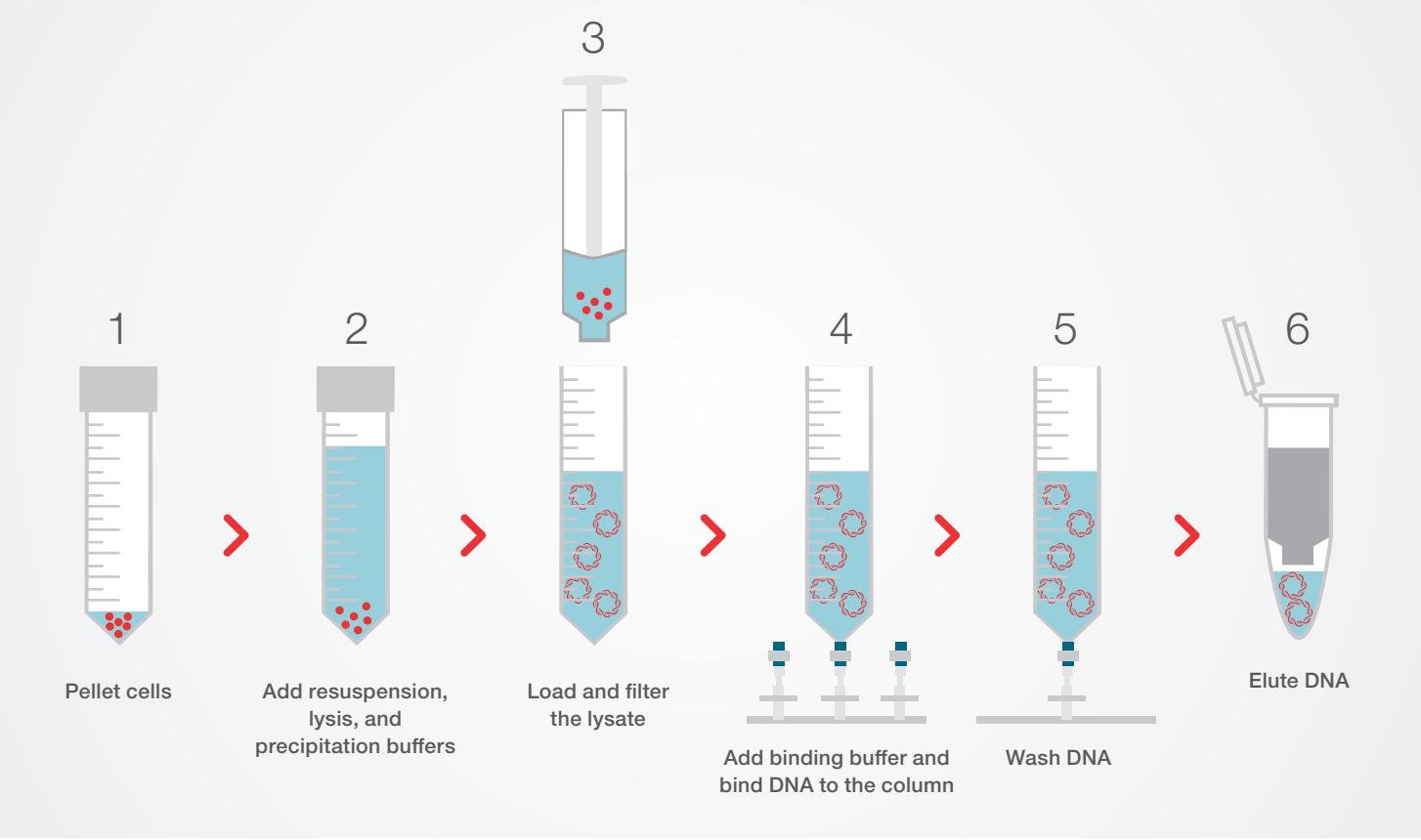
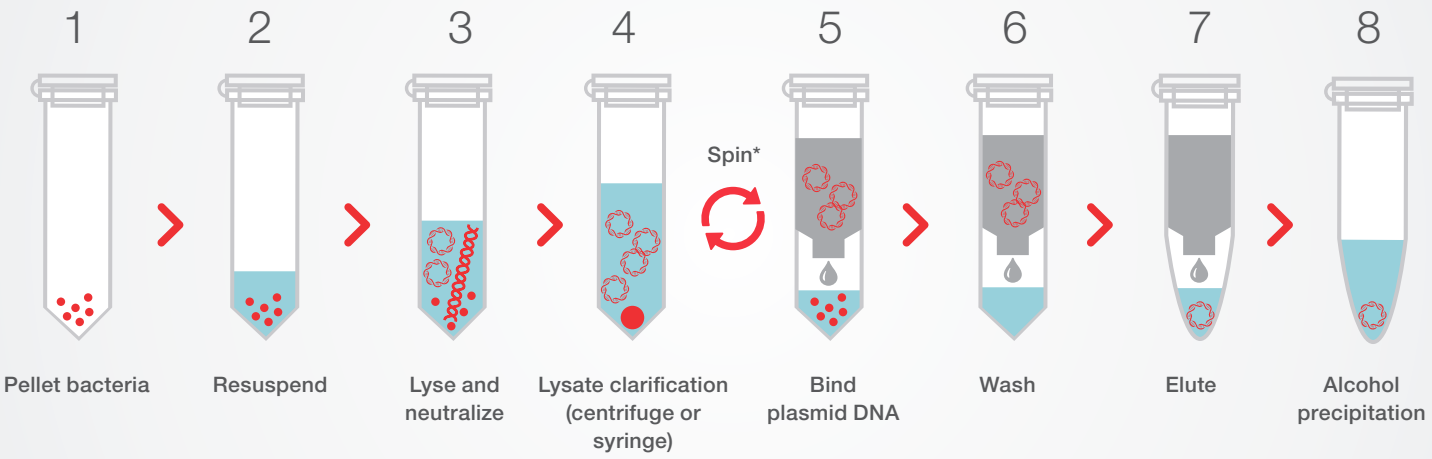


Table 4. Filter technology comparison guide for plasmid purification kits.

Silica membrane	Anion exchange resin	Advanced silica membrane	Advanced anion exchange membrane
Molecular grade (>10 EU/µg)	Low endotoxin (<1 EU/µg)		Endotoxin free (<0.1 EU/µg)
• Silica/glass fiber filter membrane for molecular biology applications • Fast protocol, low price	• Traditional anion exchange resin • Requires alcohol precipitation (unless using precipitator module) • Lysate clarification via centrifugation (unless using syringe filtration option)	• Faster than anion exchange resin workflows • No alcohol precipitation required • Vacuum-assisted protocol for fastest processing	• Proprietary advanced anion exchange membrane offers highest purity with improved processivity compared to traditional anion exchange resin • Includes proprietary buffers for endotoxin removal • Vacuum-assisted protocol for faster processing
Ideal for cloning, PCR, sequencing	Ideal for transfection of robust cell lines such as HEK293 and CHO, as well as molecular biology applications		Ideal for transfection of sensitive cell lines and *in vivo* studies

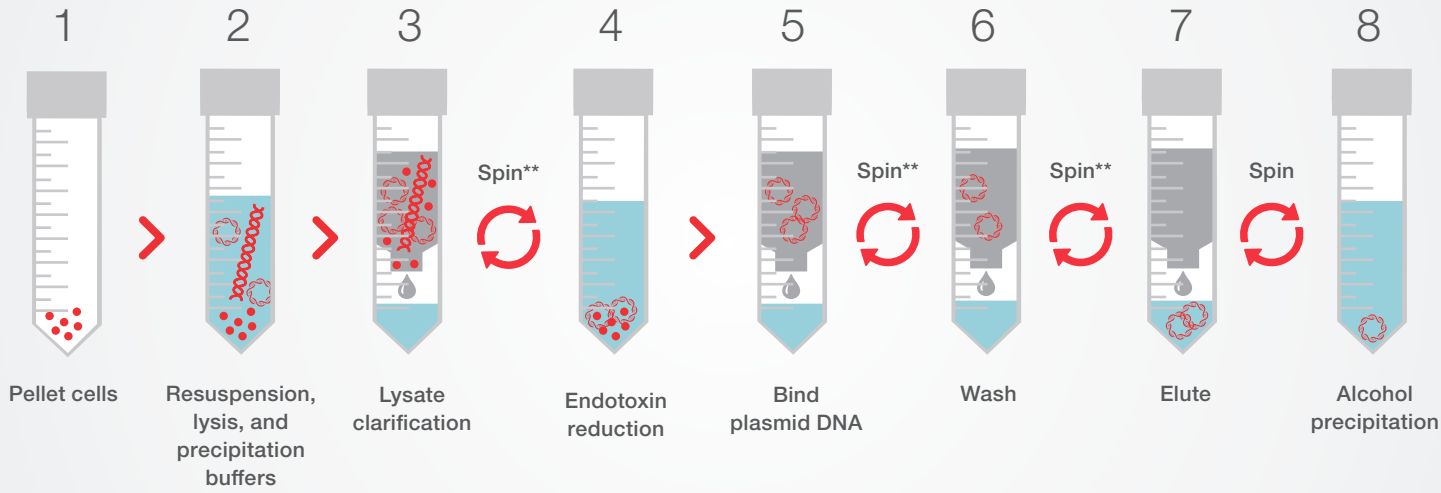
Anion exchange resin (conventional) is time-tested, proven technology employing a positively charged resin to bind negatively charged plasmid DNA.

- Provides low-endotoxin–grade purity
- No separate step for endotoxin reduction
- Conventional format requires centrifuge-based lysate clearing and isopropanol precipitation
- Alternative workflows allow for non-centrifuge–based lysate clearing and precipitation



Advanced anion exchange membranes use a unique anion exchange membrane (not resin) that offers improved purity while allowing the fastest processing speed for endotoxin-free plasmid.

- Proven technology in improved membrane format
- Vacuum-assisted for rapid processing
- Endotoxin-free–grade purity
- No separate step for endotoxin reduction (part of the DNA-binding step)
- Conventional format requires centrifuge-based lysate clearing and isopropanol precipitation



* Or use syringe.
** Or use vacuum.

Molecular-grade plasmid purification kit

Thermo Scientific™ GeneJET™ Plasmid Mini Kit utilizes a silica-based membrane technology in the form of a convenient spin column. The kit recovers up to 20 µg of high-copy plasmid DNA per isolation procedure.

- High yields of up to 20 µg of high-quality plasmid DNA
- Fast procedure, which takes less than 14 min
- No phenol/chloroform extraction or alcohol precipitation required

Low-endotoxin and endotoxin-free plasmid purification products

Invitrogen™ PureLink™ HiPure kits use conventional anion exchange resins to purify transfection-grade (<1 EU/µg) plasmid DNA. Scales from mini to giga are supported.

- Depending on scale, typical yields range from 20 µg (mini) to 15 mg (giga)
- Obtain low-endotoxin plasmid that contains <1 EU/µg endotoxins
- Centrifuge or syringe-filtration option for lysate clearing (midi and maxi kits only)
- Precipitator module option to remove alcohol precipitation step (midi and maxi kits only)

Invitrogen™ PureLink™ Fast Low-Endotoxin plasmid purification kits use advanced silica membranes that enable isolation of transfection-grade (<1 EU/µg) plasmid DNA. These kits are suitable for standard transfections and all molecular biology applications such as cloning and sequencing.

- Ultrafast protocol
- Low-endotoxin plasmid that contains <1 EU/µg endotoxins
- Isolate up to 1.5 mg of high-quality plasmid DNA
- Colored buffers that permit error-free visualization of complete bacterial cell lysis and subsequent neutralization
- DNA is immediately ready to use

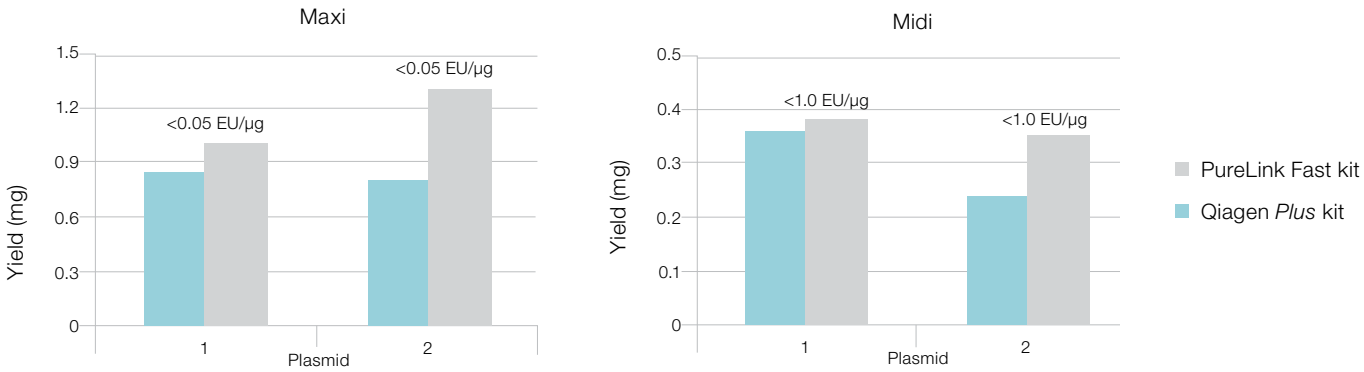


Figure 8. Achieve high yields of low-endotoxin, advanced transfection–quality plasmid DNA with PureLink Fast kits when compared with kits from another supplier. Two high-copy plasmids with different backbones were purified using PureLink Fast and Qiagen Plasmid *Plus* midiprep and maxiprep kits as described in the product manuals. Data for plasmid yields are shown in the graph. Endotoxin values (EU/µg) were measured using Charles River Endosafe™ nexgen-PTS™ spectrophotometer; values are provided only for PureLink Fast preparations.

The **Invitrogen™ PureLink™ Expi Endotoxin-Free plasmid purification kits** use a novel anion exchange membrane to isolate ultraclean, advanced transfection–grade plasmid DNA in about half the time of current standard protocols. The enhanced membrane with the vacuum-assisted workflow reduces total purification time to less than 2 hr (Figure 9).

- Vacuum-assisted workflow, no waiting period for gravity-flow columns
- 90 min for maxiprep kit protocols and 2 hr for megaprep and gigaprep kit protocols
- Isolate up to 1.5 mg (maxiprep), 5 mg (megaprep), or 15 mg (gigaprep) of high-quality plasmid DNA
- Obtain plasmid DNA with less than 0.1 EU/µg of endotoxins, ideal for transfection of sensitive cell lines or *in vivo* experiments

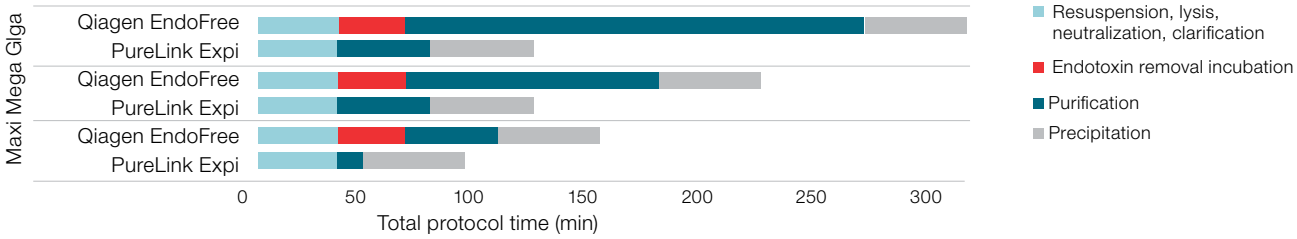


Figure 9. Endotoxin-free plasmid purifications in about half the time. PureLink Expi membrane-based anion exchange columns and vacuum-assisted or centrifugation-based protocols enable quick and simple plasmid isolation, solving the dreaded long protocol times of older-generation resin-filled drip columns.

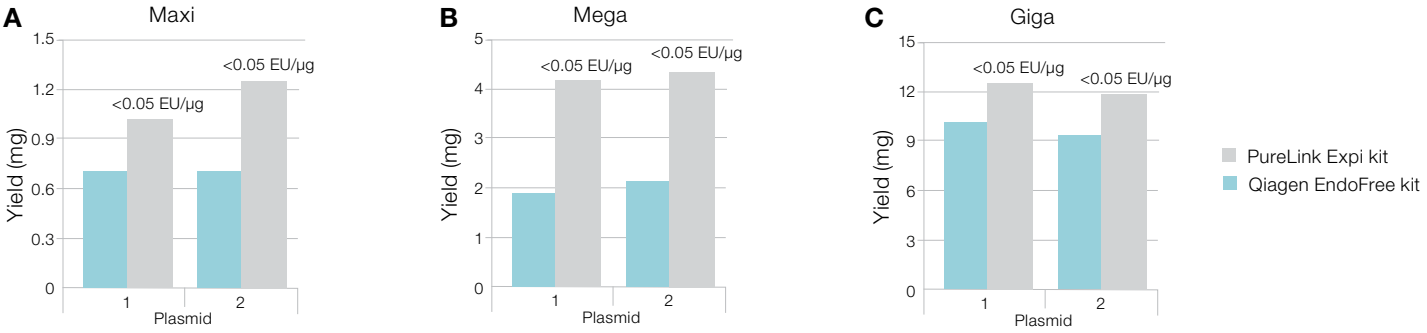


Figure 10. Higher yields of endotoxin-free, advanced transfection–quality plasmid DNA obtained with PureLink Expi purification kits than with kits from another supplier. Two high-copy plasmids with different backbones were purified using PureLink Expi and Qiagen EndoFree **(A)** maxiprep, **(B)** megaprep, and **(C)** gigaprep kits as described in the product manuals. Endotoxin values (EU/µg) were measured using the EndoSafe-nextgen-PTS test and are provided only for the PureLink Expi preparations.

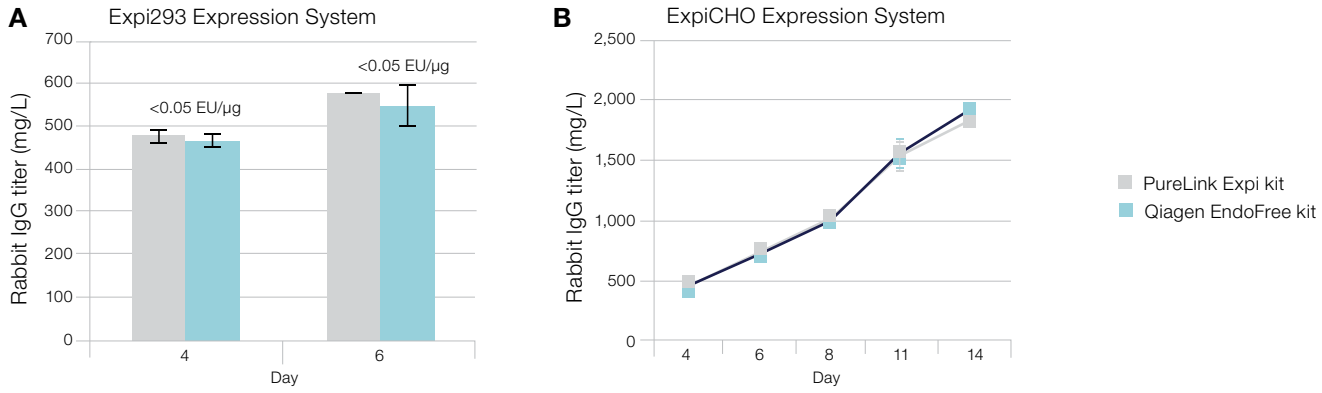


Figure 11. Plasmid DNA purified with PureLink Expi kits is compatible with the Gibco™ Expi293™ and ExpiCHO™ Expression Systems. Using the **(A)** Expi293 and **(B)** ExpiCHO Expression Systems, cells were transfected with positive controls of rabbit IgG heavy-chain and light-chain plasmids that were purified using the PureLink Expi megaprep kit or the Qiagen EndoFree megaprep kit. The above titer values fall within the expected outputs of the Expi293 and ExpiCHO Expression Systems.

Plasmid column purification workflow

Our columns are compatible with a variety of downstream applications

Figure 3. DNA isolation using PureLink kit for protein expression analysis. DNA purified from cell culture using the PureLink Genomic DNA Mini Kit is ready for downstream analysis in cell culture. This workflow can result in key findings such as protein localization and protein expression.

Explore the above workflow further and use your mobile phone's camera app to scan the QR codes below. Gain immediate access to:

The PCR and Real-Time PCR Solutions brochure for more information on our thermal cyclers and real-time PCR instruments and the first-class plastics, reagents, and services that go with them

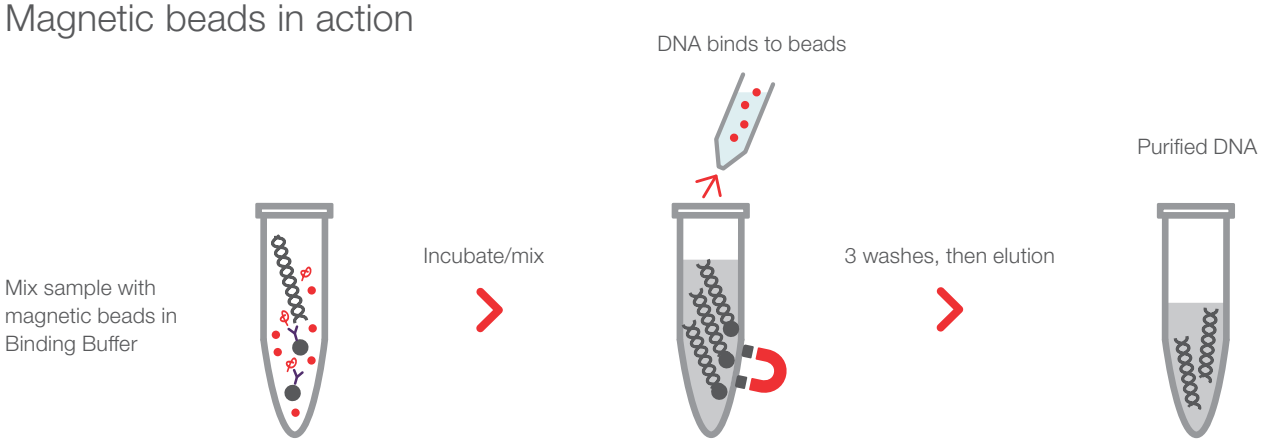
More information on our protein expression products and instruments

Magnetic beads

Make your research magnetic

Our wide range of magnetic bead kits and reagents, which include Applied Biosystems™ MagMAX™ magnetic beads kits and Invitrogen™ Dynabeads™ magnetic beads, help ensure the best balance of high yield and reproducibility with low nonspecific binding, and they can be used on Thermo Scientific™ KingFisher™ instruments for higher-throughput applications.

Magnetic beads in action



MagMAX magnetic beads

Walk away from centrifugation and into the future with MagMAX magnetic bead technology. Our uniform, monosized superparamagnetic beads are paired with an improved elution buffer to enable high binding efficiency and reproducibility with greater sample capture. Every MagMAX magnetic bead kit is designed to make sensitive, high-quality nucleic acid extraction simple, rapid, and automation-friendly for even the most difficult of sample types. These kits remain the hallmark of matching magnetic beads with optimized chemistry.

Applied Biosystems™ MagMAX™ DNA Multi-Sample Ultra 2.0 Kit

The MagMAX DNA Multi-Sample Ultra 2.0 Kit combines multiple laborious sample processing steps together into a single step to minimize the time and effort traditionally required by other methods without compromising yield and purity. Process a broad range of sample volume inputs simultaneously without sample normalization or reagent volume adjustments for hassle-free sample prep.

- Process 6–96 samples in 45 min with 5 min hands-on time
- Isolate gDNA from 50 µL–2 mL of sample using a simple protocol in SBS microtiter plates
- Skip sample and buffer volume normalization steps for hassle-free processing
- Download validated Thermo Scientific™ BindIt™ Software automation scripts for Thermo Scientific™ KingFisher™ Duo Prime and Flex Purification Systems
- Automation-friendly stand-alone MagMAX DNA Multi-Sample Ultra 2.0 reagent bottle options available

Did you know?

These kits were specifically made to be paired with KingFisher automated instruments. Maximize your kits by combining them with a KingFisher instrument for less manual time, consistent results, and reproducible recovery of high-quality RNA with less variation in each run.

Applied Biosystems™ MagMAX™ Viral/Pathogen Nucleic Acid Isolation Kit

The MagMAX Viral/Pathogen Nucleic Acid Isolation Kit is designed to extract viral nucleic acid from a range of sample types with a range of viral loads.

- Unique enzymatic solution that eliminates the bead beating step by taking out the mechanical lysis with simplified enzymatic digestion
- Recover nucleic acid from a wide range of microorganisms without additional processing steps
- Ability to process 200 µL–2 mL using only 2 protocol options
- Optimized to work with KingFisher instruments

This kit provides a sensitive and simple method for nucleic acid extraction from virus-containing samples, as demonstrated by successful detection of as few as 50 copies of input into multiple sample types. This is an efficient workflow that can address one of the critical issues in viral disease research and management.

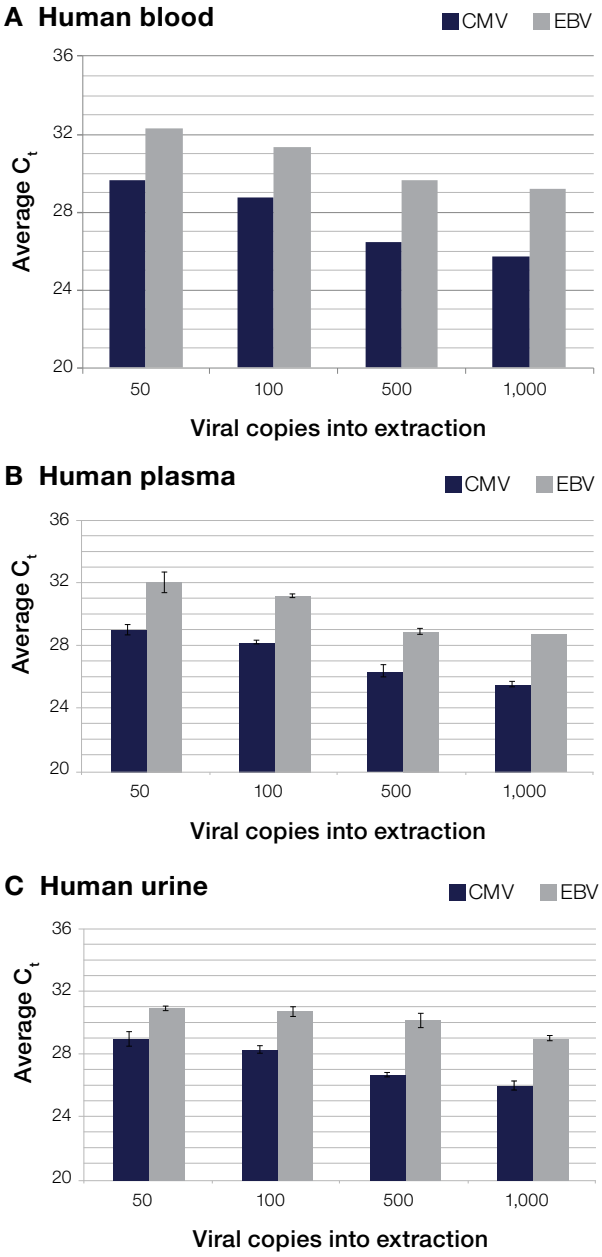


Figure 12. Average C_t values for a range of input copies of EBV and CMV in Applied Biosystems™ TaqMan® Assays using real-time PCR. Results from spike-in controls in **(A)** blood, **(B)** plasma, and **(C)** urine samples.

MagMAX Microbiome Ultra Nucleic Acid Isolation Kit

Stool and soil are some of the most challenging samples to extract RNA and DNA from, until now. The MagMAX Microbiome Ultra Nucleic Acid Isolation Kit enables efficient, high-throughput nucleic acid extraction from stool and soil samples. This kit utilizes MagMAX magnetic bead technology to ensure reproducible recovery of high-quality nucleic acid.

- Fast procedure allows for 96 samples to be processed in ~60 minutes
- Compatible with stool, soil, and swabs contained in transport medium
- Mechanical disruption via bead beating in 96-well plate or individual tubes
- Elution volumes ranging from 50 to 200 µL
- Automation-ready protocols designed for the KingFisher Flex and KingFisher Duo Prime systems

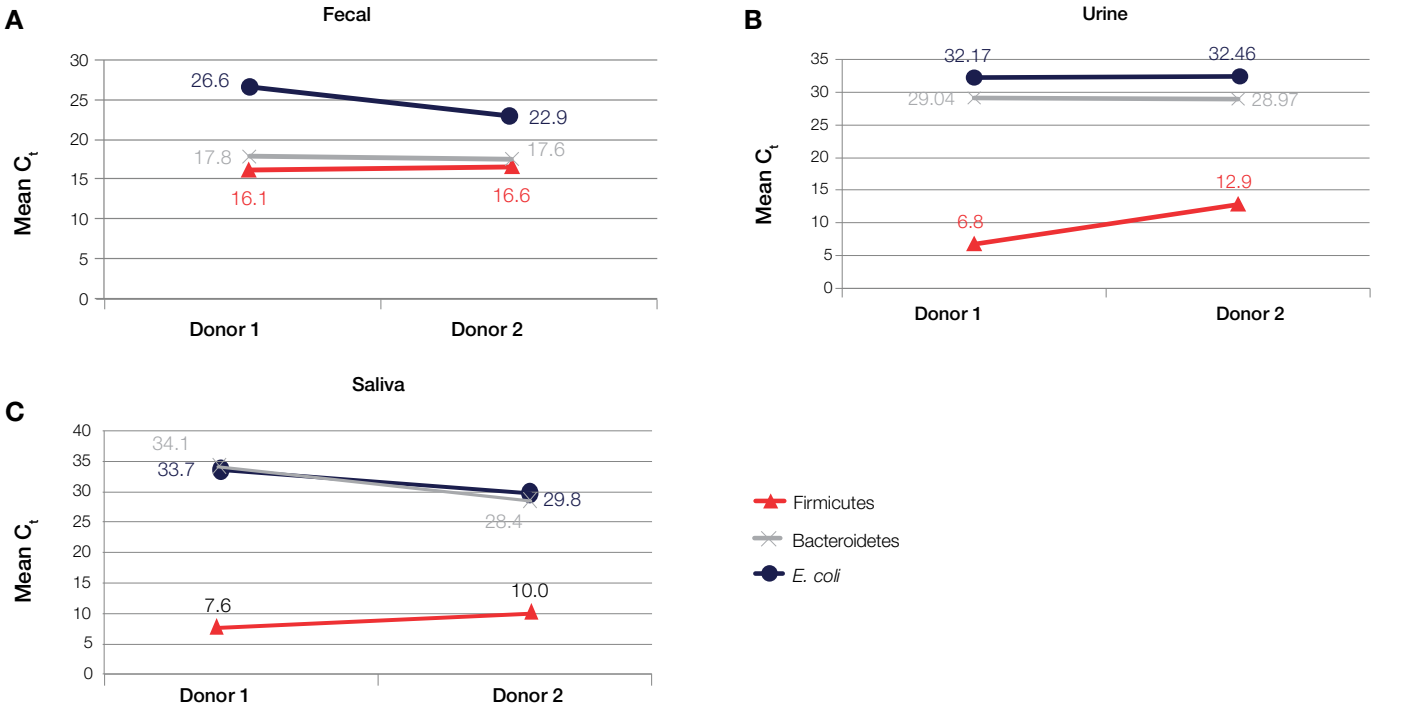


Figure 13. qPCR analysis of DNA purified from (A) fecal, (B) urine, and (C) saliva samples of two donors, with the MagMAX Microbiome Ultra Nucleic Acid Isolation Kit. Applied Bisystems™ TaqMan® Fast Advanced Master Mix was utilized for one category of gram-positive (Firmicutes) and two categories of gram-negative (Bacteroidetes and *E. coli*) bacteria. The total nucleic acid samples were diluted 1:100 for the Firmicutes and Bacteroidetes assays, whereas the input was not diluted for the *E. coli* assay. A TaqMan Assay with Applied Biosystems™ Xeno™ DNA and RNA controls showed no inhibition from the total nucleic acid preparations, confirming that the MagMAX Microbiome Ultra Nucleic Acid Isolation Kit enables isolation of high-quality, inhibitor-free nucleic acid, even from the most challenging samples.

Table 6. Magnetic-bead purification product selection guide.

	MagMAX DNA Multi-Sample Ultra Kit 2.0	MagMAX Cell-Free DNA Isolation Kit	MagMAX Cell-Free Total Nucleic Acid Kit	MagMAX FFPE DNA/RNA Ultra Kit	MagMAX Plant DNA Isolation Kit	MagMAX Viral/ Pathogen Nucleic Acid Isolation Kit	MagMAX Microbiome Ultra Nucleic Acid Isolation Kit
Product size	1 kit–100 preps*	24 samples*	50 samples for 2 mL plasma input, 25 samples for 4 mL plasma input	96 samples total (48 RNA and 48 DNA samples)	96, 384, 1,000 preps*	100, 1,000 preps*	100 preps*
Time	45 min	30–45 min	90 min	96 samples in 4 hr or less	96 samples in 45 min	96 samples in <60 min	96 samples in <60 min
Sample input	• Buccal swab • Whole blood • Saliva • Buffy coat	• Plasma • Serum • Urine • EDTA (Streck) cfDNA tube	• Plasma • Serum • Urine	• Up to five 40 µm thick FFPE sections	• 10–100 mg plant tissue	• Serum • Plasma • Urine • Cerebrospinal fluid (CSF) • Universal viral transport media • Whole blood • Bronchoalveolar lavage (BAL) • Swabs • Toenail fungus	• Stool • Swabs • Transport media • Culture media • Urine • Saliva • Soil
Final product	gDNA	cfDNA	cfRNA and cfDNA	DNA or RNA	DNA	Viral DNA and viral RNA	DNA and RNA
Recommended for	• Microarray analysis • Real-time PCR	• NGS • Real-time PCR • Digital PCR	• NGS • Real-time PCR • Digital PCR	• NGS • Real-time PCR	• NGS • Real-time PCR	• NGS • PCR • Real-time PCR	• NGS • PCR • Real-time PCR

* The reagents that come with this kit can be purchased in bulk.

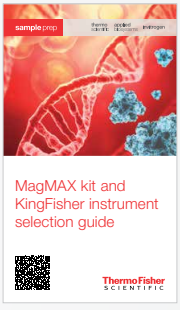
Ordering information

Product	Quantity	Cat. No.
MagMAX Cell-Free DNA Isolation Kit*	1 kit	A29319
MagMAX Cell-Free Total Nucleic Acid Isolation Kit	1 kit	A36716
MagMAX DNA Multi-Sample Ultra 2.0 Kit*	1 kit	A36570
MagMAX FFPE DNA/RNA Ultra Kit	1 kit	A31881
MagMAX Microbiome Ultra Nucleic Acid Isolation Kit, with bead plate*	100 preps	A42357
MagMAX Microbiome Ultra Nucleic Acid Isolation Kit, with bead tubes*	100 preps	A42358
MagMAX Plant DNA Isolation Kit*	96 preps	A32549
	384 preps	A32580
MagMAX Saliva gDNA Isolation Kit*	100 preps	A39059
	500 preps	A39060
MagMAX Viral/Pathogen Nucleic Acid Isolation Kit*	100 preps	A42352
	1,000 preps	A48310
MagMAX Viral/Pathogen Ultra Nucleic Acid Isolation Kit*	100 preps	A42356

* Bulk reagents available for purchase separately.

For more information on our MagMAX isolation kits, use your mobile phone's camera app to scan the QR code:

Gain immediate access to our MagMAX kit and KingFisher instrument online selection guides.



Instruments

The KingFisher instruments provide a complete automated purification system with easy-to-follow, optimized protocols for DNA isolation from most sample types for nearly every downstream application. Save valuable time by removing manual steps and reducing overall processing time, while minimizing user error and increasing reproducibility of your results.

The KingFisher instruments automate extraction of DNA, RNA, proteins, and cells by moving magnetic beads (not liquids), leading to clean extractions and enabling consistent results. Using a simple 4-step process—lyse, bind, wash, and elute—the KingFisher instruments can automate the extraction of any analyte of interest with a bead on it.

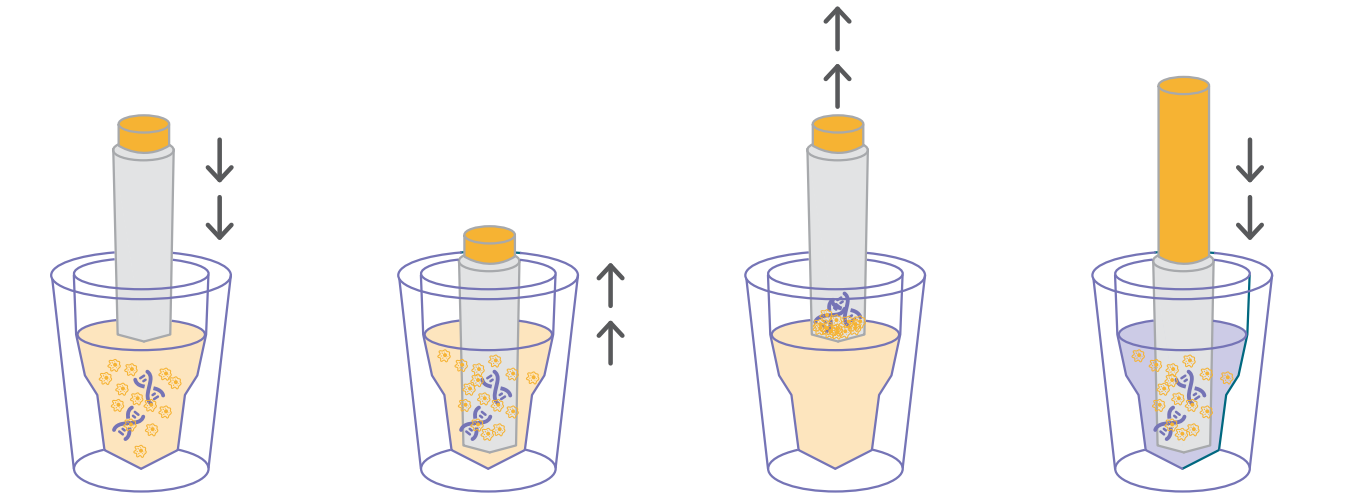


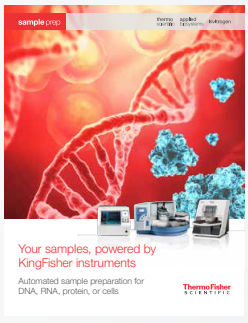
Figure 14. How KingFisher instruments work. Magnetic beads mix with sample and bind to the desired target. The instrument's magnetic rod lowers into the homogenate and attracts the magnetic beads bound to desired target at the bottom of the tip comb. The magnetic rod retracts and moves the beads bound to desired target to a new set of wells. The tip comb mixes reagents with the beads, as the magnetic head moves up and down. This process is repeated until desired target is completely purified and unbound from magnetic beads.

Table 7. KingFisher instrument selection guide.

KingFisher instrument	Duo Prime	Flex	Presto
Instrument size	Compact benchtop	Benchtop	Benchtop—integrates with robotic liquid handler
Throughput level	Low to medium	Medium to high	Ultrahigh
Processing volume range	• 50–1,000 µL: 12-pin magnet head • 200–5,000 µL: 6-pin magnet head	• 20–100 µL: 96-well PCR plate, skirted • 20–200 µL: 96-well plate • 50–1,000 µL: 96 deep-well plate • 200–5,000 µL: 24 deep-well plate	• 50–1,000 µL: 96 deep-well plate • 200–5,000 µL: 24 deep-well plate • 50–150 µL: 96-well KingFisher standard plate
Samples per run	6 or 12	24 or 96	24 or 96
Customizable protocols	Yes, with PC software	Yes, with PC software	Yes, with PC software
Heating/cooling	• 10°C–75°C (plate row block A) • 4°C–75°C (elution strip block)	• From 5°C above ambient temperature to 115°C	• From 5°C above ambient temperature to 115°C
Ultraviolet lamp	8 W (up to 16 hr)	No	No

Find out more about KingFisher instruments and reagents by using your mobile phone's camera app to scan the QR codes below. Gain immediate access to:

The KingFisher instruments and automated sample prep brochure

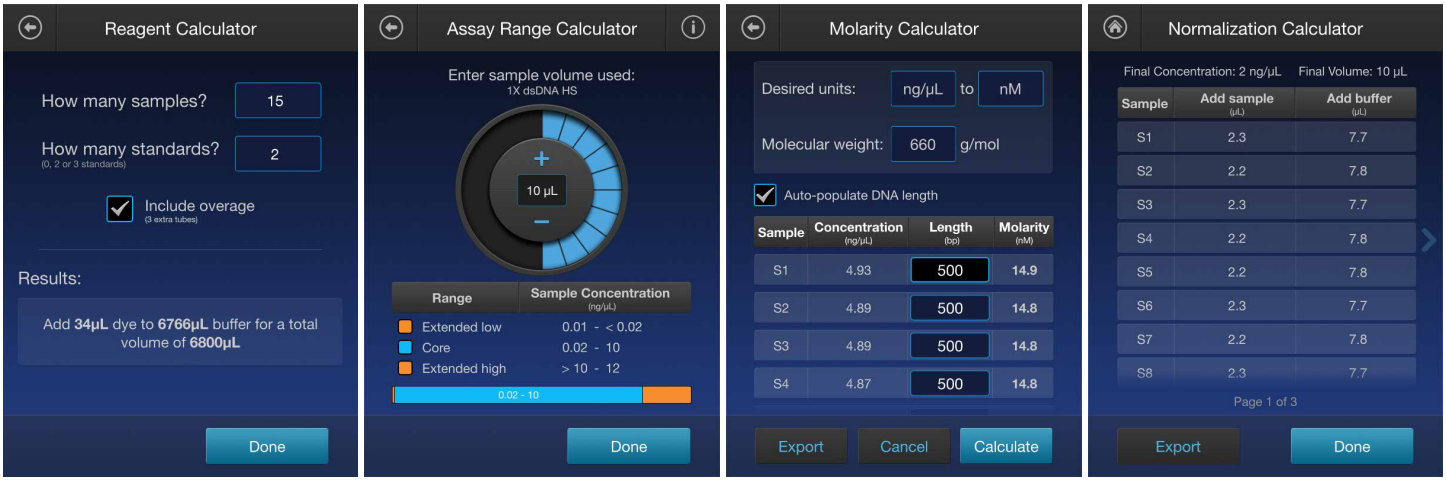


How much intact DNA did you purify? There are two ways to find out

Invitrogen™ Qubit™ Flex Fluorometer

The Qubit Flex Fluorometer is a benchtop fluorometer designed for highly accurate quantification of DNA, RNA, miRNA, and protein. Paired with Qubit reagents, the Qubit Flex Fluorometer is part of an optimized workflow that generates highly accurate and reproducible results.

- Measures up to 8 samples and quantifies DNA, RNA, and protein up to 50% faster than single-sample readers
- Works seamlessly with Qubit reagents to generate reliable, sensitive, and specific results
- Highly accurate measurements using only 1–20 µL of sample, even with very dilute samples
- Quickly generates Qubit working solution preparation instructions and determines the molarity of your samples



- The **reagent calculator** can determine the amount of working solution needed based on sample quantity.
- The **assay range calculator** displays the core sample concentration range for which the selected assay is most accurate, as well as the extended low and high ranges, based on sample volume. This range estimate can help determine which Qubit assay provides the most accurate measurement.
- The **molarity calculator** can quickly calculate the molarity of your samples based on nucleic acid length and concentration.
- The **normalization calculator** replaces spreadsheet calculations and can easily normalize to a desired mass, concentration, or molarity.

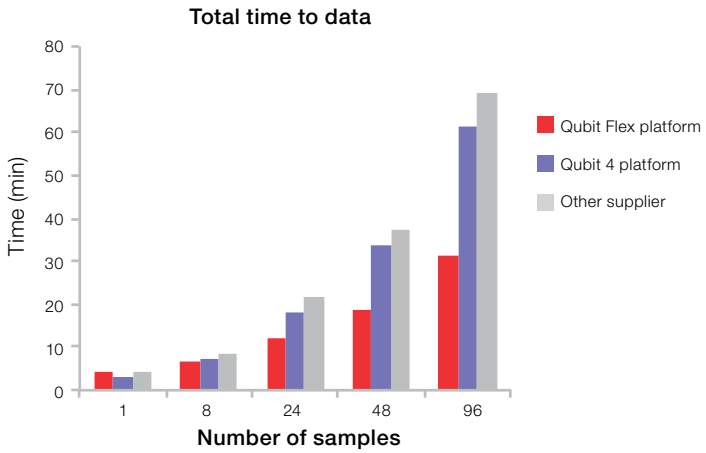


Figure 15. Time savings with Qubit Flex Fluorometer. Time trial on 1 to 96 samples shows up to 50% time savings with the Qubit Flex Fluorometer. Time savings began with 8 samples, with more time saved when measuring even more samples.

Thermo Scientific™ NanoDrop™ One and One^{C} Microvolume UV-Vis Spectrophotometers

Check the quantity and quality of DNA, RNA, and protein with only 1–2 µL of sample in seconds with no dilutions using the NanoDrop One and One^{C} spectrophotometers. Gain a more complete understanding of sample quality before using samples in downstream applications, with Thermo Scientific™ Acclaro™ Sample Intelligence technology built into every NanoDrop One instrument.

- Achieve accurate results with full spectral data
- Identify sample contaminants with sophisticated Acclaro algorithms (phenol, guanidinium salts, protein), report corrected concentrations
- Easy data transfer to PC or network via Wi-Fi, USB, or Ethernet
- Print results from on-board control
- Access data anywhere, anytime with Connect, our cloud-enabled platform

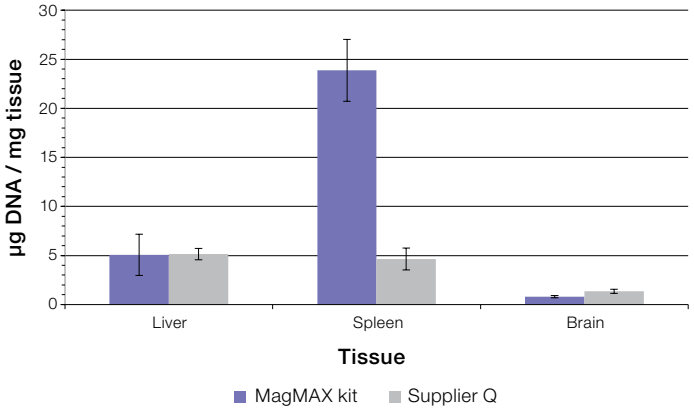


Figure 16. DNA yield by measuring the absorption at A_{260} (mg DNA per mg tissue) using a NanoDrop device. DNA was isolated using the MagMAX DNA isolation kit and Supplier Q DNA isolation kit. A single 2 µL aliquot of each eluate was measured on a NanoDrop spectrophotometer.

Ordering information

Product	Cat. No.
Qubit Flex Fluorometer	Q33327
Qubit Flex System Verification Assay Kit	Q33254
Qubit Flex Assay Reservoirs	Q33253
Qubit Flex Assay Tube Strips	Q33252
Qubit Flex Quantitation Starter Kit	Q45894
NanoDrop One Microvolume UV-Vis Spectrophotometer with Wi-Fi	ND-ONE-W
NanoDrop One^{C} Microvolume UV-Vis Spectrophotometer with Wi-Fi	ND-ONEC-W

Tips and tricks for specialty sample

DNA sample types

With technological advances such as PCR and NGS, new information can be obtained from as little as a cheek swab or small soil sample. Selecting the right purification technology is the first step toward impactful results.

The best sample preparation for your sample will depend on the biological nature of the sample and the number of samples that you would like to process. Plants, yeast, and bacteria all have a cell wall that must be disrupted to release the DNA. This wall is harder to lyse than mammalian cell membranes. As a result, different methods are needed to break different types of cell walls and membranes. Here are important considerations for different sample types.

Cell-free

By definition, cell-free samples do not require cell lysis. However DNA is present at lower concentrations in these samples, so kits with higher input volumes are recommended.

Cells, blood, and buccal swabs

Cultured cells, blood, and buccal samples can be easily lysed with Proteinase K, lysis buffers, or organic reagents such as DNAzol Reagent. DNA is then extracted by columns or ethanol precipitation.

Tissue

Tissues can be more difficult to break down, requiring stronger lysis buffer or homogenization prior to gDNA purification.

Plants

In addition to a cell wall, plants contain significant quantities of polysaccharides, carbohydrates, tannins, phenolics, and other compounds. These can negatively impact downstream applications. Plant-specific DNAzol Reagent, and PureLink and MagMAX kits have been designed to overcome the challenges of working with plants.

FFPE

Extracting DNA from FFPE blocks requires special handling to remove the paraffin from the sample. This can be done using a solvent such as CitriSolv™ solvent, and a clearing agent or xylene. When using the Applied Biosystems™ MagMAX™ FFPE DNA/RNA Ultra Kit (Cat. No. A31881), Applied Biosystems™ AutoLys M Tubes and Caps (Cat. No. A38738) can be used to eliminate deparaffinization steps.

Viruses

Viruses are often present at low concentrations, so a higher sample volume may be necessary to extract viral DNA. With a low elution volume, PureLink Viral RNA/DNA Mini Kits purify and concentrate nucleic acids to allow downstream detection.

Bacteria

Bacterial DNA can be difficult to extract due to their cell wall. Most gDNA isolation is for the study of the microbiome, which contains a mixture of different kinds of bacteria. The PureLink Microbiome DNA Purification Kit contains beads to beak down the cell walls. This kit is optimized for a variety of samples, including stool, soil, swabs, saliva, and urine.

Yeast

The yeast cell wall can be broken down with Zymolyase or beads to allow DNA extraction.

Table 8. Specialty kits for DNA purification.

Sample type	1–24 samples	>25 samples
Cell-free	PureLink Viral RNA/DNA Mini Kit (Cat. No. 12280050), p 17	MagMAX Cell-Free Total Nucleic Acid Kit (Cat. No. A29319), p 27
Cultured cells	DNAzol Reagent (Cat. No. 10503027), p 7 PureLink Genomic DNA Mini Kit (Cat. No. K182000-02), p 12	MagMAX DNA Multi-Sample Ultra 2.0 Kit (Cat. No. A36570), p 24 PureLink Pro 96 Genomic DNA Purification Kit (Cat. No. K182104A), p 13
Blood	PureLink Genomic DNA Mini Kit (Cat. No. K182000-02), p 12	MagMAX DNA Multi-Sample Ultra 2.0 Kit (Cat. No. A36570), p 24 PureLink Pro 96 Genomic DNA Purification Kit (Cat. No. K182104A), p 13
Tissues	DNAzol BD Reagent (Cat. No. 10974020), p 9 PureLink Genomic DNA Mini Kit (Cat. No. K182000-02), p 12	MagMAX DNA Multi-Sample Ultra 2.0 Kit (Cat. No. A36570), p 24 PureLink Pro 96 Genomic DNA Purification Kit (Cat. No. K182104A), p 13
FFPE samples	RecoverAll Total Nucleic Acid Isolation Kit for FFPE (Cat. No. AM1975), p 16	MagMAX FFPE DNA/RNA Ultra Kit (Cat. No. A31881), p 27
Plant	Plant DNAzol Reagent (Cat. No. 10978021), p 7 PureLink Genomic Plant DNA Purification Kit (Cat. No. K183001) p 16	MagMAX Plant DNA Isolation Kit (Cat. No. A32549 and A32580), p 27
Yeast	PureLink Genomic DNA Mini Kit (Cat. No. K182000-02), p 12	MagMAX Viral/Pathogen Ultra Nucleic Acid Isolation Kit (Cat. No. A42352), p 26
Bacteria (from stool, soil, swabs, and other samples)	DNAzol Reagent (Cat. No. 10503027), p 7 PureLink Microbiome DNA Purification Kit (Cat. No. A29790), p 16	MagMAX DNA Multi-Sample Ultra 2.0 Kit (Cat. No. A36570), p 24
Viral	PureLink Viral RNA/DNA Mini Kit (Cat. No. 12280050), p 14	MagMAX DNA Multi-Sample Ultra 2.0 Kit (Cat. No. A36570), p 24 MagMAX Viral/Pathogen Nucleic Acid Isolation Kit (Cat. No. A42352), p 26 MagMAX Viral/Pathogen Ultra Nucleic Acid Isolation Kit (Cat. No. A42356), p 25

Sample prep essentials

What's on your bench?

Avoid high levels of contaminating DNA and RNA by protecting your sample prep with these essentials. See our lab bench below for product features and tips.

Invitrogen™ DNA*Zap*™ solution for surface decontamination

- Instantaneously degrade high levels of contaminating DNA and RNA from surfaces, tips, and tubes without inhibiting subsequent enzymatic reactions
- Ideal for cleaning PCR tubes, PCR instruments, pipettors, lab benches, and more

Nuclease-free tips and tubes

- Autoclave-safe, nuclease-free tips and tubes that are compatible with other pipettor brands
- PCR, microcentrifuge, and conical tubes available

Invitrogen™ Nuclease-Free Water

- Use to prepare reagents and resuspend precipitated DNA
- Wipe down surfaces that have been cleaned with DNA*Zap* solution
- DEPC-treated and non–DEPC-treated options available

Invitrogen™ nuclease-free buffers and reagents

- Use in your experiments involving RNA and DNA to prevent unwanted nuclease activity
- Our selection includes Tris buffer, TE buffer, PBS, glycogen, Proteinase K solution, and more
- Quality checked for nonspecific endonuclease, exonuclease, and RNase activities

Invitrogen™ Ambion™ DNase I (RNase-free)

- Ambion DNase I (RNase-free) is a nonspecific endonuclease that degrades double- and single-stranded DNA and chromatin
- DNase I can be used to remove template DNA following *in vitro* transcription, contaminating DNA in total RNA preparations, and is used for ribonuclease protection assays, cDNA library construction, and RT-PCR

DNA cleanup solutions for every downstream application

Whether isolating a DNA of a specific size from complex PCR mixtures or recovering it from agarose gels, we have solutions that will meet your needs. Kit formats offer simple and rapid PCR cleanup using spin columns or magnetic beads; 96-well plates, with flexible size selection; and one-tube, 5-minute protocols.

Table 9. Comparison of DNA cleanup solutions.

Product	PureLink PCR Purification Kit	PureLink *Pro* 96 PCR Purification Kit	PureLink PCR Micro Kit	PureLink Quick Gel Extraction Kit	PureLink Quick Gel Extraction Kit and PCR Purification Combo Kit	ChargeSwitch-Pro PCR Clean-Up Kit	Centri-Sep Spin Columns
Format	Silica spin/ vacuum column	96-well silica plate	Silica spin column	Silica spin/ vacuum column	Silica spin/ vacuum column	Derivatized spin/ vacuum column	Spin column
Product size	• 50 preps • 250 preps	• 4 plates (4 x 96 rxns)	• 10 preps • 50 preps • 250 preps	• 50 preps • 250 preps	• 50 preps	• 10 preps • 50 preps • 250 preps	• 100 columns • 32 columns
Time	<15	20	≤10	<30	10–30	<10	<5
Elution volume	50	50–150	5–20	30–100	30–100	50	20
Recovery	>80%	>70%	>80%	Up to 95%	Gel cleanup: >80% PCR cleanup: >95%	Not stated	Not stated
Primer removal	>99%	Not stated	>95%	Not stated	>99%	Not stated	>98%
DNA cleanup application	PCR cleanup	PCR cleanup	PCR cleanup	Gel extraction	PCR cleanup and gel extraction	PCR cleanup	Sequencing reaction cleanup

Ordering information

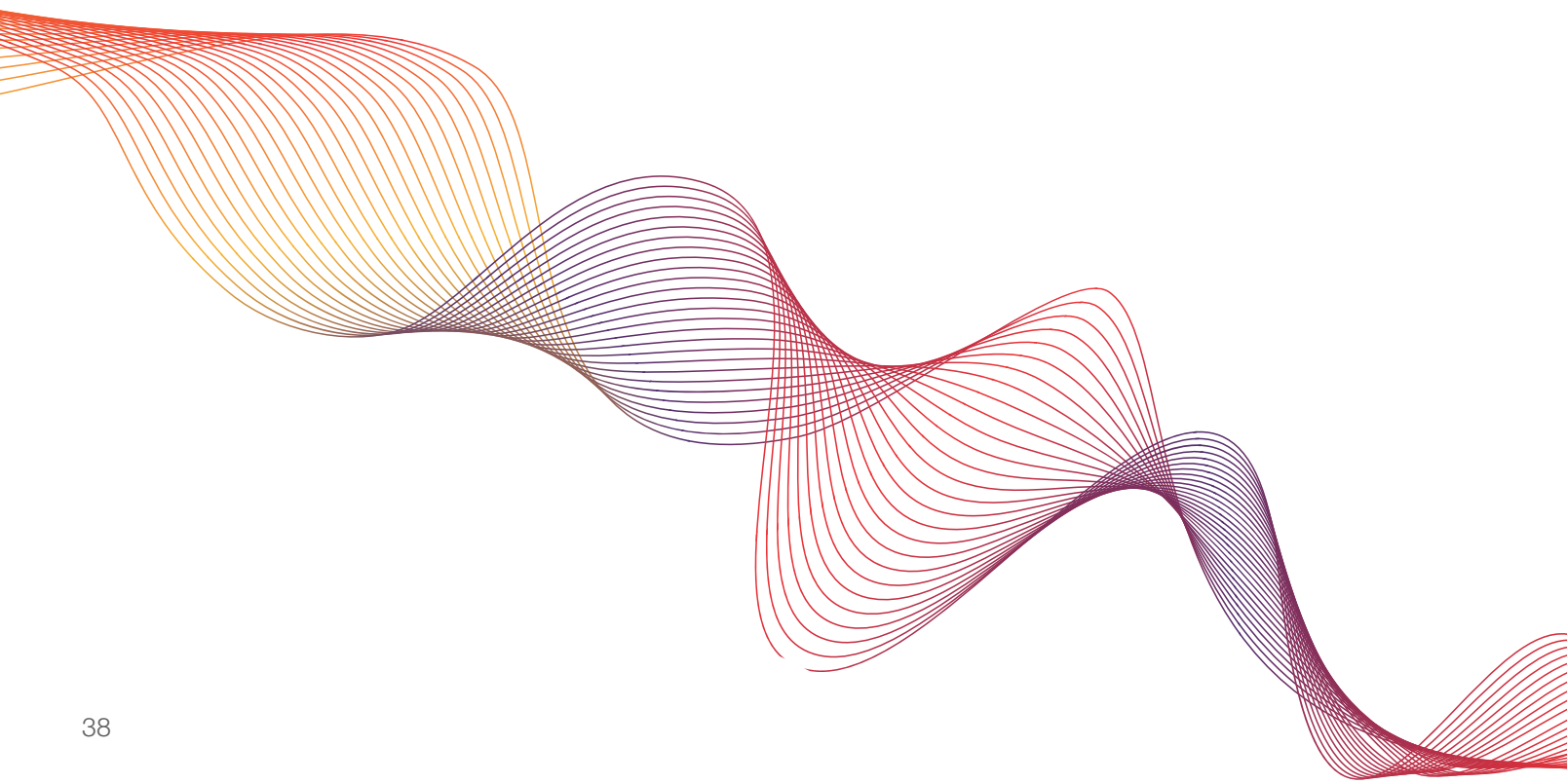
Product	Quantity	Cat. No.
PCR cleanup and gel extraction kits		
PureLink Quick Gel Extraction and PCR Purification Combo Kit	50 preps	K220001
PureLink Quick Gel Extraction Kit	50 preps	K210012
	250 preps	K210025
PureLink PCR Purification Kit	50 preps	K310001
	250 preps	K310002
PureLink *Pro* 96 PCR Purification Kit	4 plates (4 x 96 rxns)	K310096A
PureLink PCR Micro Kit	50 preps	K310050
ChargeSwitch-Pro PCR Clean-Up Kit	10 preps	CS32050
	50 preps	
	250 preps	
Centri-Sep Spin Columns	32 columns	401762
	100 columns	

Ordering information

Product	Quantity	Cat. No.
DNA lab essentials		
Ambion DNase I (RNase-free)	2,000 units	AM2222
	5 x 2,000 units	AM2224
DNase I Buffer (10X)	1 mL	AM8170G
DNaseAlert QC System	5 x 96 rxns	AM1970
DNA*Zap* PCR DNA Degradation Solutions	250 mL	AM9890
EDTA (0.1 mM), pH 8.0, RNase-free	50 mL	AM9912
TE, pH 7.0, RNase-free	10 x 1 mL	AM9860
TE, pH 7.0, RNase-free	50 mL	AM9861
Tris (1 M), pH 8.0, RNase-free	100 mL	AM9855G
Tris (1 M), pH 8.0, RNase-free	500 mL	AM9856
TE, pH 8.0, RNase-free	500 mL	AM9849
TE, pH 8.0, RNase-free	1 L	AM9858
PBS - Phosphate-Buffered Saline (10X) pH 7.4, RNase-free	500 mL	AM9624
PBS - Phosphate-Buffered Saline (10X) pH 7.4, RNase-free	1 L	AM9625
Glycogen (5 mg/mL)	5 tubes	AM9510
GlycoBlue Coprecipitant (15 mg/mL)	300 µL	AM9515
GlycoBlue Coprecipitant (15 mg/mL)	5 x 300 µL	AM9516
Proteinase K Solution (20 mg/mL)	1.25 mL	AM2546
Proteinase K Solution	20 mg/mL	AM2548
DEPC-Treated Water	10 x 50 mL	AM9906
	1 x 100 mL	AM9915G
	5 x 100 mL	AM9916
	1 x 500 mL	AM9920
	1 x 1,000 mL	AM9922
	4 x 1,000 mL	4387937
Nuclease-Free Water (not DEPC-treated)	10 x 50 mL	AM9937
	1 x 100 mL	AM9938
	5 x 100 mL	AM9939
	1 x 500 mL	AM9930
	1 x 1,000 mL	AM9932
	4 x 1,000 mL	4387936
RT-PCR Grade Water	10 x 1.5 mL	AM9935
UltraPure DNase/RNase-Free Distilled Water	500 mL	0977015
	10 x 500 mL	0977023

Ordering information

Product	Quantity	Cat. No.
Tips and tubes		
RNase-Free Tips (200 µL)	10 racks	AM12650
RNase-Free Tips (1,000 µL)	10 racks	AM12660
Barrier (Filter) Tips (10 µL) (compatible with Eppendorf pipettors)	10 racks	AM12635
Barrier (Filter) Tips (20 µL)	10 racks	AM12645
Barrier (Filter) Tips (100 µL)	10 racks	AM12648
Barrier (Filter) Tips (200 µL)	10 racks	AM12655
Barrier (Filter) Tips (1,000 µL)	10 racks	AM12665
RNase-Free PCR Tubes, thin-walled, frosted lid (0.2 mL)	1,000 tubes	AM12225
RNase-Free PCR Tubes and Caps (0.2 mL, 8-strip format)	125 strips	AM12230
RNase-Free PCR Tubes, thin-walled, domed cap (0.5 mL)	1,000 tubes	AM12250
RNase-Free PCR Tubes, thin-walled, frosted lid (0.5 mL)	1,000 tubes	AM12275
RNase-Free Microfuge Tubes (0.5 mL)	1,000 tubes	AM12300
Nonstick, RNase-Free Microfuge Tubes (0.5 mL)	500 tubes	AM12350
RNase-Free Microfuge Tubes (1.5 mL)	500 tubes	AM12400
RNase-Free Microfuge Tubes (2.0 mL)	500 tubes	AM12425
Conical Tubes (15 mL) (racked)	500 tubes	AM12500
Conical Tubes (50 mL) (racked)	200 tubes	AM12501
Elution Tubes (2.0 mL)	100 tubes	AM12480
Barrier (Filter) Tips, 10 µL size	10 racks	AM12640



Services and support

Providing fast responses by experienced scientists

More than 1,300 service and support specialists worldwide can partner with you to help enable your scientific success through:

Service plans—planned maintenance and guaranteed response times to help you avoid unnecessary downtime, reduce strain on laboratory staff, and extend the life of your instruments

Compliance services—timely, cost-effective, and audit-ready documentation managed by a compliance specialist to help ensure your instrument is installed, operating, and performing to the manufacturer's specifications

Analytical validation (AV) consulting services—technical project management, data analysis support, and documentation of your lab's AV are provided to help develop and optimize your assay validation workflow for required parameters

Bioinformatics and IT services—optional consulting services with a bioinformatics application scientist to review software, applications, workflow optimization, and data management

Education services—application and instrument training programs are available at our training centers located throughout the world, within your lab, or through web-based instruction

Find out more about our services and support at
thermofisher.com/instrumentservices

DNA online technical resources

One resource for all your nucleic acid purification and analysis support needs

Navigate through the DNA support categories below to obtain relevant technical information, view tips and tricks when starting an experiment, and find answers to everyday problems.

Support

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