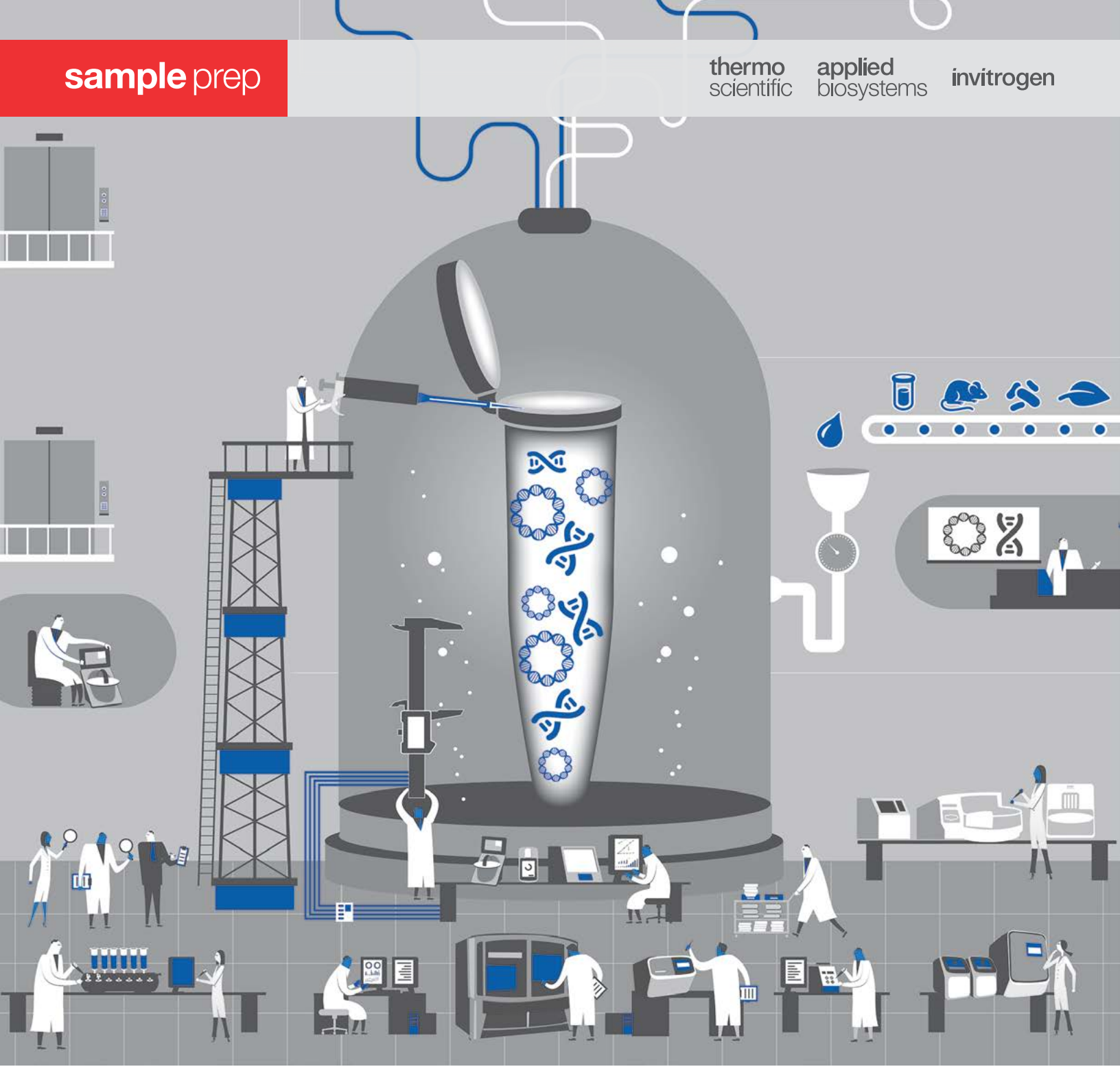
sample prep

thermo scientific | applied biosystems | invitrogen



DNA purification and analysis

Maximize yield, purity, and integrity

ThermoFisher SCIENTIFIC

From genomic to plasmid DNA and from manual to automated isolation, products from Thermo Fisher Scientific bring flexible, innovative solutions designed to meet virtually all of your needs for performing genomics research.

Explore our portfolio of innovative solutions, kits, and benchtop instruments for reliable results.

Tools for success in your molecular biology research

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Methods of DNA isolation

For every application, sample, and DNA type

The methods used for the purification of DNA from biological samples are critical to the success of downstream applications. Our genomic and plasmid DNA purification products are optimized to provide maximum yield, purity, and integrity from virtually any sample type. We offer a range of manual and automated genomic DNA purification kits for sensitive, scalable purification to maximize process efficiency and performance in downstream applications. Choose from our wide range of high-performing, cost-effective DNA isolation technologies designed to help you overcome common DNA prep issues, such as low recovery and the presence of impurities. Let us help accelerate your journey toward discovery.

Which method of purification is best for your experiment?

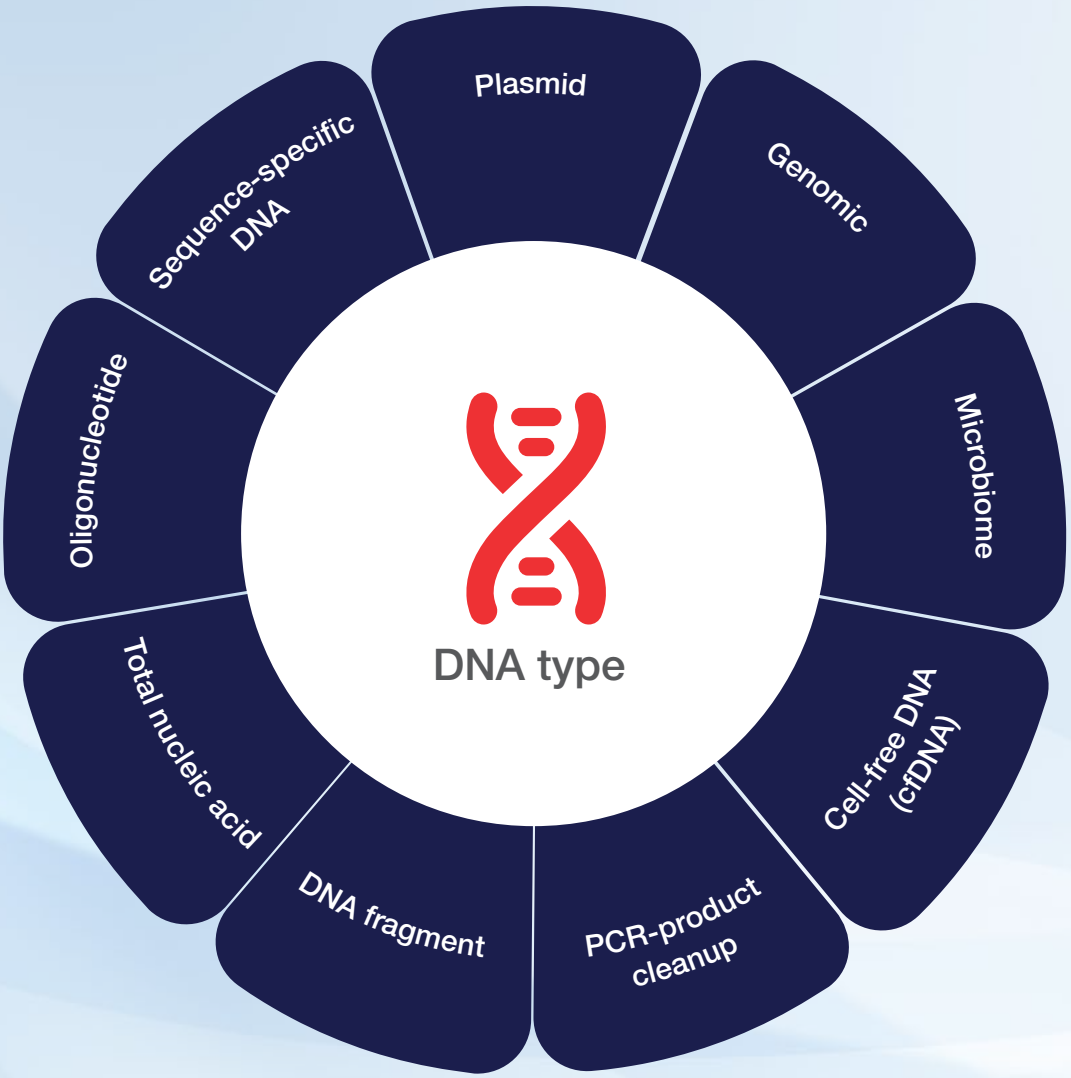
Organic reagents	Columns	Magnetic beads
		
High-purity organic extraction (requires alcohol precipitation)	Fast, convenient silica columns	Scalable, flexible format with magnetic beads
Product types		
• Invitrogen™ DNAzol™ reagents	• Invitrogen™ PureLink™ kits • Thermo Scientific™ GeneJET™ kits	• Applied Biosystems™ MagMAX™ kits
Manual		**Automated**

Learn more about how we can accelerate your journey to discovery at **thermofisher.com/dnaprep**

DNA types and sample types

We offer a broad range of kits for the isolation and purification of genomic and plasmid DNA from a wide variety of sample types, including tissue, cells, blood, serum, plants, and forensic samples.

DNA type



Sample type

- Tissue
- Cells
- Blood
- Viruses
- Plants
- FFPE
- Buccal cells
- Bacteria
- Saliva

DNA applications

DNA purification with excellent reproducibility

We provide tools for DNA purification with excellent reproducibility for many fundamental downstream molecular biology experiments.

Genomic DNA applications

DNA cloning	DNA sequencing	DNA electrophoresis	PCR

Plasmid DNA applications based on plasmid purity grade

Molecular	Transfection	Advanced transfection
PCR	Standard transfection	Primary and stem cell transfection
Cloning (digestion and ligation)	*In vitro* transcription	Gene therapy and vaccines (*in vivo*)
Sequencing	Nucleic acid labeling	Microinjection
Nucleic acid labeling		

Purification technology overview

A variety of technologies and chemistries to meet your purity needs

Choose the right purification kit from our comprehensive portfolio to suit your specific nucleic acid purification needs. We offer three highly developed purification technologies: silica membrane, anion-exchange resin, and switchable surface charge.

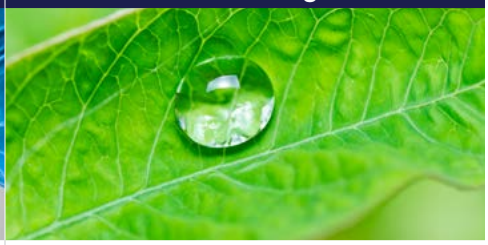
gDNA purification solution selection guide

Overview	Low throughput or manual (organic)	Medium throughput and spin-column technology	High throughput and 96-well filter plate	High throughput and magnetic-bead technology
Product name	**Invitrogen™ DNAzol™ reagents**	**Invitrogen™ PureLink™ kits**	**Invitrogen™ PureLink™ *Pro* gDNA kits**	**Applied Biosystems™ MagMAX™ DNA kits**
Sample type				
Tissue	DNAzol Reagent	PureLink gDNA mini kits	PureLink *Pro* 96 Genomic DNA Purification Kit	MagMAX DNA Multi-Sample Kit
Cells				
Blood	DNAzol BD Reagent			MagMAX DNA Multi-Sample Ultra 2.0 Kit
Plant	Plant DNAzol Reagent	PureLink gDNA plant kits		MagMAX Plant DNA Isolation Kit
Buccal swabs	Not recommended	PureLink gDNA mini kits		MagMAX DNA Multi-Sample Ultra 2.0 Kit
Bacteria	DNAzol Reagent			
Viral	Not recommended	PureLink viral RNA/DNA mini kits	PureLink *Pro* 96 Viral RNA/DNA Purification Kit	MagMAX Viral Nucleic Acid Kit
Scalable and automatable	No	No	Yes	Yes
Compatible with Thermo Scientific™ KingFisher™ systems	No	No	No	Yes
qPCR	Yes	Yes	Yes	Yes
NGS	Yes	Yes	Yes	Yes

Find out more at **thermofisher.com/gdnaprep**

Organic DNA extraction

DNAzol reagents are complete, ready-to-use reagents for the isolation of genomic DNA, which can then be used for restriction endonuclease digestion, southern blot analysis, molecular cloning, and PCR.

Invitrogen™ DNAzol™ Reagent	Invitrogen™ DNAzol™ BD Reagent	Invitrogen™ Plant DNAzol™ Reagent
		
• Designed for use with tissues, cells, or blood • Includes a guanidine-detergent lysing solution that selectively precipitates DNA from a cell lysate • Offers 30–60 minute protocol • Enables isolation of gDNA from 50 mg of tissue or 1 x 10^7 to 3 x 10^7 cells with 1 mL of reagent	• Specifically formulated for the isolation of gDNA from blood • Scalable for smaller or larger volumes of whole blood	• Specifically formulated for the isolation of gDNA from plants • Can isolate gDNA from 0.1 g of plant tissue with 0.3 mL of reagent

Column-based DNA extraction

PureLink gDNA extraction kits offer you a range of options for various sample types, volumes, and throughput

Invitrogen™ PureLink™ kits can meet your research needs with:

- **High gDNA yields and purity**—optimized column and plate membranes with new buffer formulations for enhanced DNA binding and release
- **Cost and time savings**—use with a large range of sample sizes (i.e., 100 µL–1 mL blood) and sample types; kit comes with everything you need
- **Flexibility**—96-well version needs no special equipment and can be processed with a centrifuge or with automated platforms/vacuum platforms

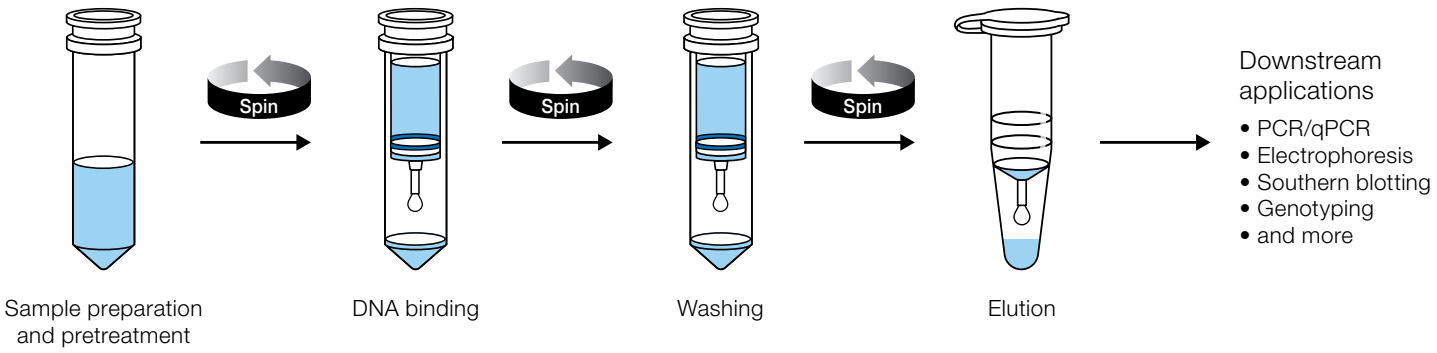


Figure 1. Common workflow for PureLink spin-column–based kits.

Magnetic beads for DNA purification

Discover MagMAX magnetic bead–based technology for automated DNA purification

Applied Biosystems™ MagMAX™ kits are compatible with Thermo Scientific™ KingFisher™ purification systems, allowing you to automate your sample purification while reducing hands-on time and maintaining the top performance you expect for downstream analysis.

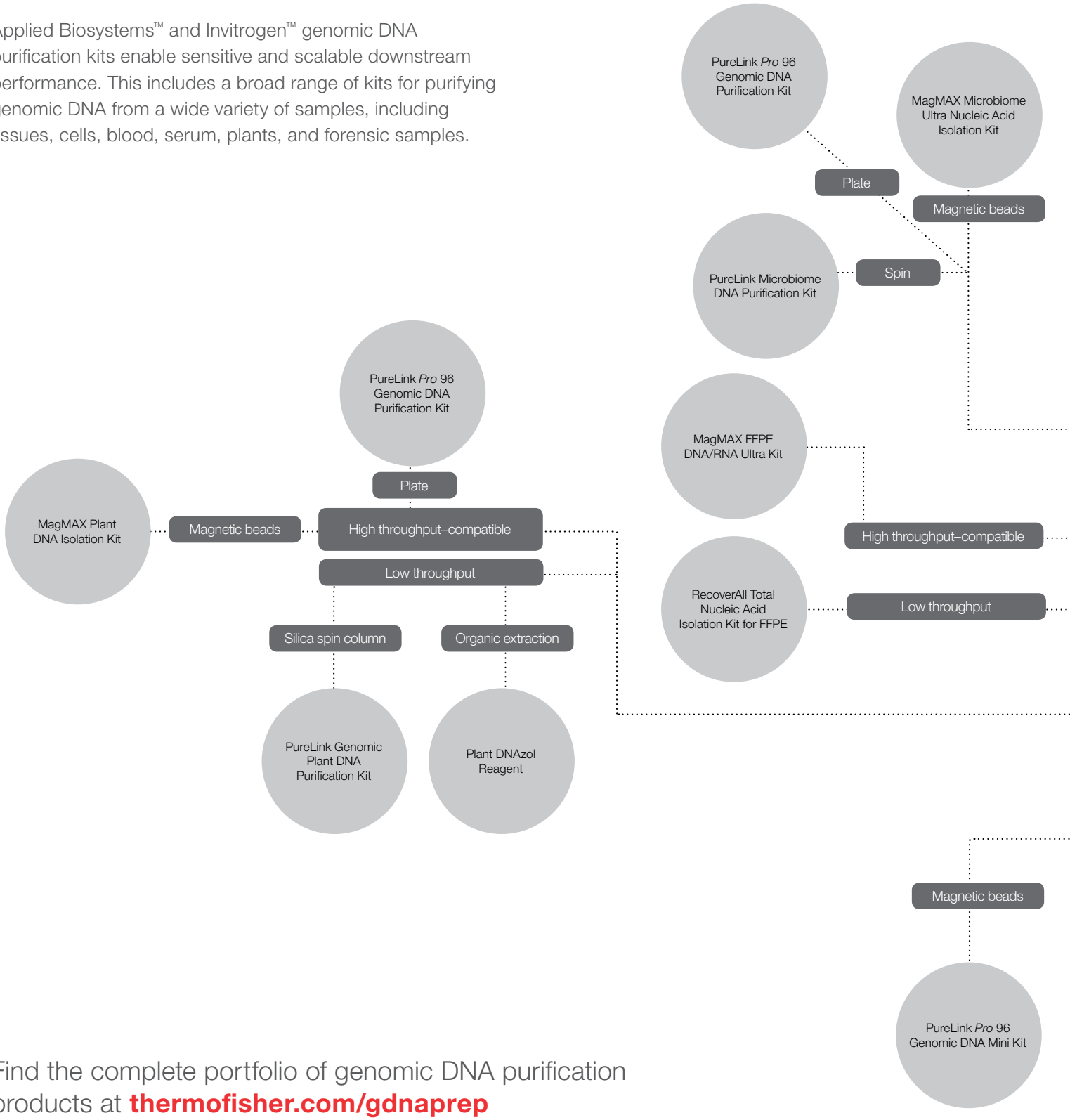
- **Save time**—reduce processing time, especially when combined with KingFisher purification systems
- **Enjoy greater convenience**—multiple protocols per kit to cover a wide variety of sample types
- **Get improved performance**—reproducible recovery of high-quality DNA that is suitable for a broad range of applications

Find out more at **thermofisher.com/magmax**

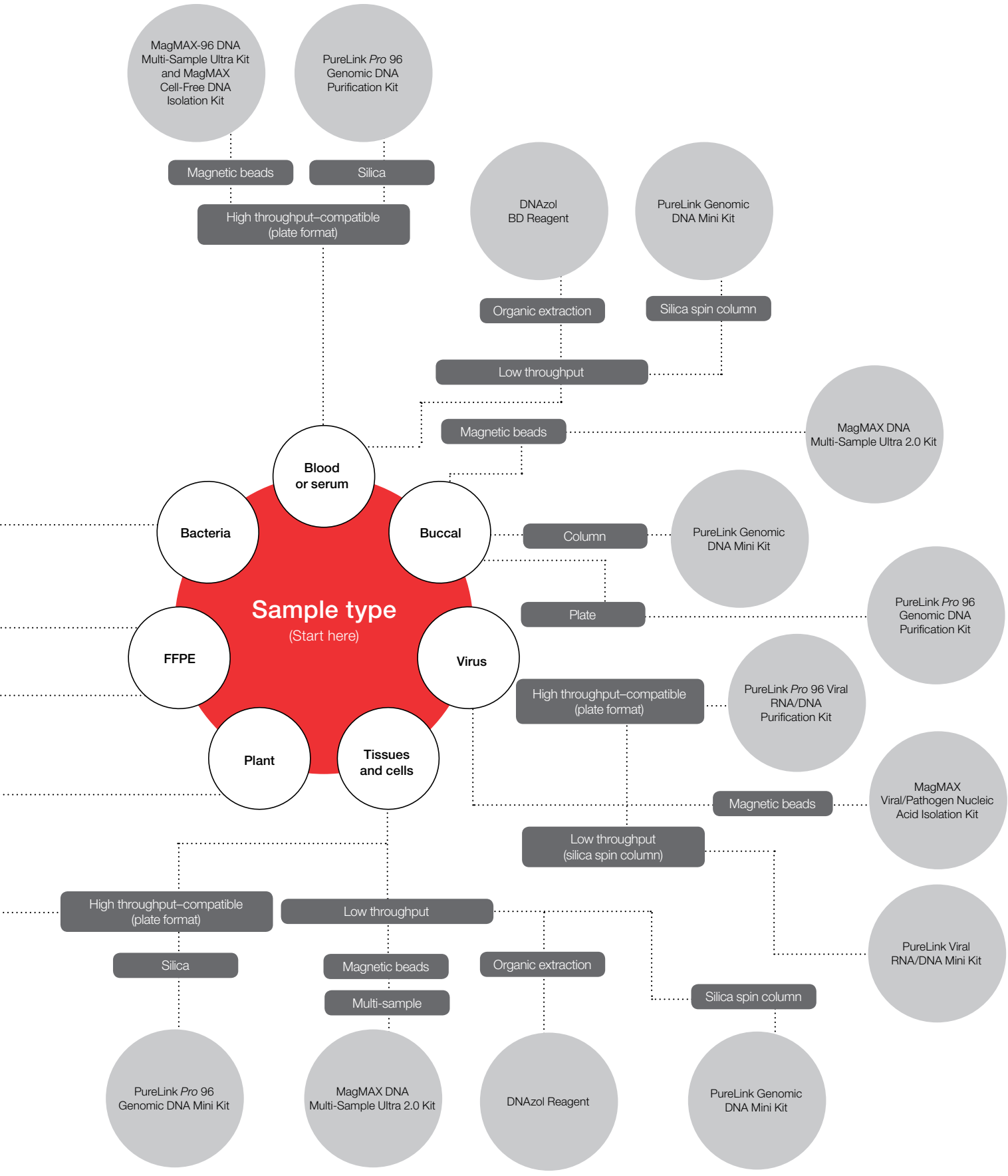
Genomic DNA purification kits

Maximize process efficiency and downstream performance

Applied Biosystems™ and Invitrogen™ genomic DNA purification kits enable sensitive and scalable downstream performance. This includes a broad range of kits for purifying genomic DNA from a wide variety of samples, including tissues, cells, blood, serum, plants, and forensic samples.



Find the complete portfolio of genomic DNA purification products at **thermofisher.com/gdnaprep**


Sample type
(Start here)
Blood or serum
Buccal
Bacteria
FFPE
Virus
Plant
Tissues and cells
Magnetic beads
Silica
High throughput–compatible (plate format)
MagMAX-96 DNA Multi-Sample Ultra Kit and MagMAX Cell-Free DNA Isolation Kit
PureLink Pro 96 Genomic DNA Purification Kit
DNAzol BD Reagent
PureLink Genomic DNA Mini Kit
Organic extraction
Silica spin column
Low throughput
Magnetic beads
MagMAX DNA Multi-Sample Ultra 2.0 Kit
Column
PureLink Genomic DNA Mini Kit
Plate
PureLink Pro 96 Genomic DNA Purification Kit
High throughput–compatible (plate format)
PureLink Pro 96 Viral RNA/DNA Purification Kit
Magnetic beads
MagMAX Viral/Pathogen Nucleic Acid Isolation Kit
Low throughput (silica spin column)
PureLink Viral RNA/DNA Mini Kit
High throughput–compatible (plate format)
Low throughput
Silica
Magnetic beads
Multi-sample
Organic extraction
Silica spin column
PureLink Pro 96 Genomic DNA Mini Kit
MagMAX DNA Multi-Sample Ultra 2.0 Kit
DNAzol Reagent
PureLink Genomic DNA Mini Kit

Genomic DNA purification kits—tissue and cell samples

High-yield genomic DNA from tissues and cells

We offer a broad range of kits for purifying genomic DNA from a variety of samples, including tissue and cells, to meet your everyday needs. The Invitrogen™ PureLink™ Genomic DNA Mini Kit enables high-yield, high-purity genomic DNA (gDNA) purification from a wide variety of sample types (Figure 2).

This kit enables genomic DNA purification from blood, tissues, cells, bacteria, swabs, and blood spots, with a familiar silica-based, microcentrifuge spin-column format.

The Applied Biosystems™ MagMAX™-96 DNA Multi-Sample Kit also provides high genomic DNA yields that are scalable in a flexible high-throughput magnetic bead format. This kit provides competitive yields as compared to other genomic DNA kit providers (Figure 3).

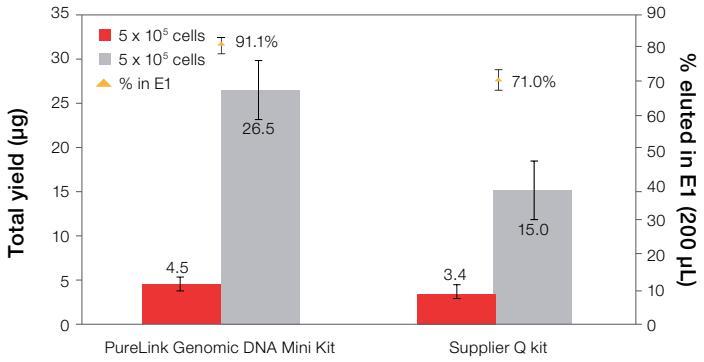


Figure 2. Higher yields achieved with the PureLink Genomic DNA Mini Kit compared to those obtained with another supplier's kit.

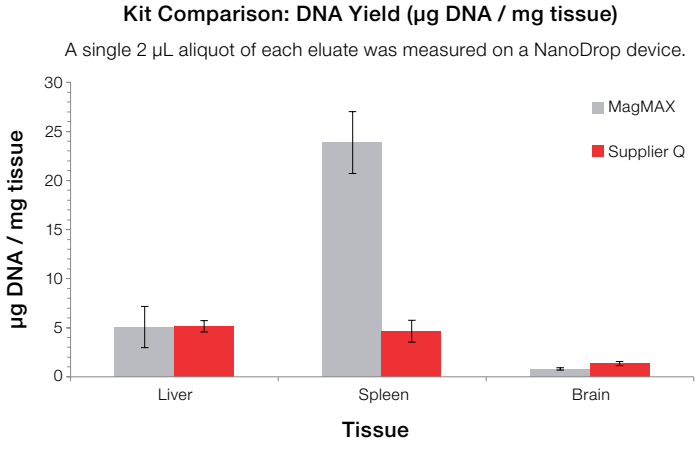


Figure 3. 5 mg tissue equivalents were processed with either kit and then yield per mg of tissue was measured using a Thermo Scientific™ NanoDrop™ spectrophotometer.

Which genomic DNA purification kit is right for your tissue or cell samples?

	DNAzol Reagent	PureLink Genomic DNA Mini Kit	PureLink *Pro* 96 Genomic DNA Kit	MagMAX DNA Multi-Sample Ultra 2.0 Kit
	Process the largest amount of blood	Low throughput or manual (organic)	High-yield, high-purity gDNA in a plate format	Rapid and automated extraction of DNA
Tissue starting material	Up to 50 mg	Up to 25 mg		Up to 25–50 mg, depending on tissue type
Yield	Up to 250 µg from tissue	5–10 µg from tissue		10–80 µg from tissue
Isolation method	Organic extraction	Silica spin column	Silica filter plate	Scalable, flexible format with magnetic beads
High-throughput compatible	No		Yes	
Compatible applications	Cloning, qPCR, sequencing			
Prep time	10–30 min	15 min	35 min	45 min
Quantity	100 mL	50 or 250 preps	4 x 96 preps	N/A

Genomic DNA purification kits—blood and saliva samples

Rapid and efficient purification of genomic DNA from human blood and saliva

The emergence of pharmacogenomic centers of excellence has resulted in increasing needs for purification of high-quality genomic DNA from a minimal amount of blood. Since samples are collected and shipped worldwide, every sample may differ with regard to storage and shipping conditions. Choosing the right genomic DNA purification kit is important based on your needs and expected end results. We offer a wide range of kits designed to isolate genomic DNA from your blood or saliva samples at the purity and scale you need.

Whole blood—MagMAX DNA Multi-Sample Ultra 2.0 Kit

The Applied Biosystems™ MagMAX™ DNA Multi-Sample Ultra 2.0 Kit was used to isolate DNA from whole blood (Figure 4).

- Linear recovery performed on the Thermo Scientific™ KingFisher™ Duo Prime Purification System
  - 50–400 µL samples processed with small-volume protocol in 96-well plate
  - >400 µL samples were processed using large-volume protocol in 24-well plate
  - No sample volume normalization—run 50 µL and 400 µL sample at the same time on one plate
- 45 minutes total time; 5 minutes hands-on
- Results
  - Linear recovery of DNA across small and large volume inputs
  - High-purity gDNA

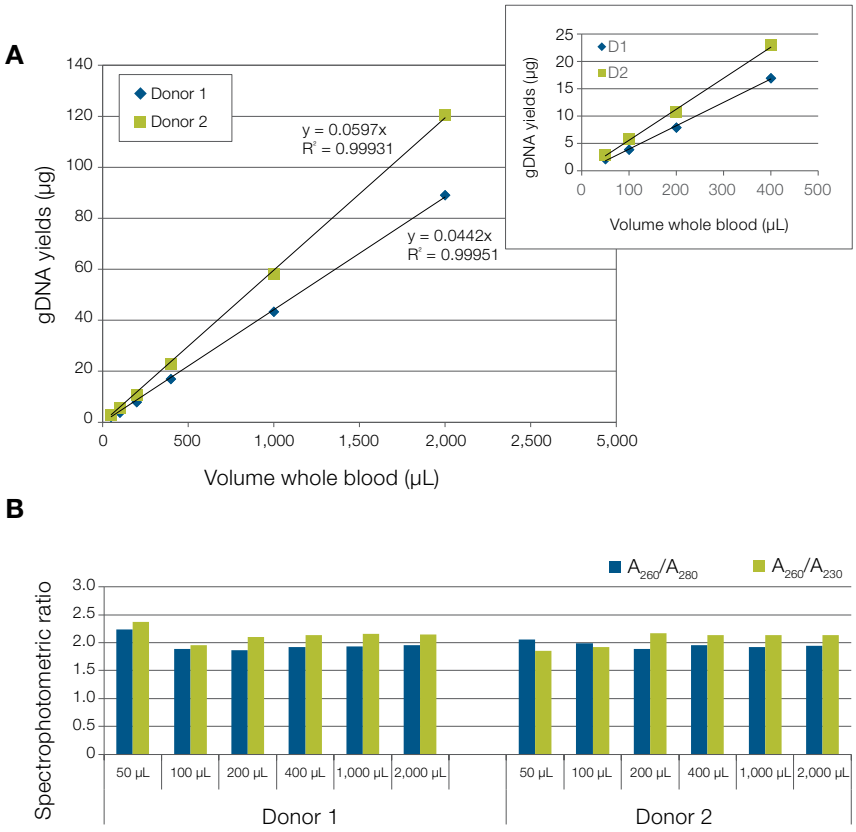


Figure 4. Recovery of genomic DNA (gDNA) from whole blood. Whole blood was obtained from two donors, and gDNA was isolated from 50 µL, 100 µL, 200 µL, 400 µL, 1 mL, and 2 mL of the blood, using the MagMAX DNA Multi-Sample Ultra 2.0 Kit and the KingFisher Duo Prime Purification System. A NanoDrop 8000 spectrophotometer was used to calculate the yield and purity of the DNA. **(A)** Recovery was linear across the range of volumes of blood used, including the smaller volumes shown in the expanded inset. **(B)** Assessment of DNA purity by A_{260}/A_{280} and A_{260}/A_{230}.

Which genomic DNA purification kit is right for your blood or serum samples?

	DNAzol BD Reagent	PureLink Genomic Viral RNA/DNA Mini Kit	PureLink *Pro* 96 Viral RNA/DNA Kit	MagMAX-96 DNA Multi-Sample Kit
	Process the largest amount of blood	Fast isolation of gDNA from blood	High-yield, high-purity gDNA in a plate format	Rapid and automated extraction of DNA
Blood input	500 µL	200 µL	200 µL	50 µL–1 mL
Yield	10–20 µg	3–10 µg	3–10 µg	1.5–66 µg
Isolation method	Organic extraction	Silica spin column	Silica filter plate	Scalable, flexible format with magnetic beads
High throughput–compatible	No	No	Yes	Yes
Compatible applications	Cloning, PCR, sequencing	Cloning, PCR, sequencing, genotyping	Cloning, PCR, sequencing, genotyping	Cloning, PCR, sequencing, genotyping
Prep time	10–30 min	15 min	35 min	45 min
Quantity	100 mL	50 or 250 preps	4 x 96 preps	100 or 1,000 preps

Genomic DNA extraction—accelerating cancer discovery

Liquid biopsy workflow

Collect blood	Extract DNA/RNA	Amplify and ligate adapters	Sequence	Develop report
Single blood tube	Cell-free total nucleic acid purification	Oncomine cfDNA library prep kits for lung and breast cancer	Templating, sequencing	Analyze data in Ion Reporter™ Software to generate test report
				
	• Isolate total nucleic acid from body fluids • Compatible with Ion Torrent™ Oncomine™ assays	• Invitrogen™ DNA polymerase • Applied Biosystems™ thermal cyclers	• Prepare template on the Ion Chef™ System, sequence on an Ion GeneStudio™ S5 series instrument	

Start your cancer research with these MagMAX extraction kits:



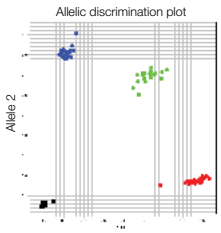
	cfDNA	Cell-free total nucleic acid	Formalin-fixed, paraffin-embedded (FFPE) samples
Summary	Isolated cfDNA in 60 minutes w/ mag bead kit	Isolate cfTNA in 90 minutes w/ mag bead kit	Sequential isolation of DNA and RNA from the FFPE tissue sample. DNA and RNA recovered in separate eluates.
Sample volumes	100 µL–10 mL	2–4 mL; lower or higher if needed	5–40 µm standard input of slides or curls
Elution volumes	15–50 µL	15–20 µL	20–50 µL
Time per run	45–60 min	90 min for 24 samples	20 min for DNA, 48 min for RNA
Automation/HT	Automated or manual	Automated or manual	Automated or manual
Purification	Free-circulating DNA (cfDNA)	Free-circulating DNA, RNA, and miRNA	DNA and RNA from FFPE tissue samples
Format	50 samples for 2 mL plasma input 25 samples for 4 mL plasma input	50 samples for 2 mL plasma input 25 samples for 4 mL plasma input	48 samples for sequential DNA and RNA; 96 samples for DNA or RNA only
For more information	**thermofisher.com/cfdnaisolation**	**thermofisher.com/cfdnaisolation**	**thermofisher.com/ffpeisolation**

Genotyping—pharmacogenomics studies

Pharmacogenomics (PGx) is an important research area for the development of psychotropic, cancer, pain, and cardiovascular medications. We offer a variety of solutions to assist you with your PGx research.

For scientists seeking preemptive PGx insight, the Applied Biosystems™ PharmacoScan™ Solution is an array-based tool to assess 4,627 ADME markers within 1,191 genes known to play roles in drug processing.

For fewer than 120 targets, quantitative PCR using well-established Applied Biosystems™ TaqMan® Assays combined with the Applied Biosystems™ ProFlex™ PCR System or QuantStudio™ 12K Flex Real-Time PCR System and the Applied Biosystems™ OpenArray™ platform is designed to deliver a flexible, cost-saving, and high-throughput solution.

Flexible, scalable, high-throughput, low-cost				
KingFisher purification systems	QuantStudio 12K Flex system	OpenArray technology	TaqMan DME Assays	TaqMan CNV Assays
				

ProFlex PCR System with dual flat block supports OpenArray plate technology.

Plant genomic DNA isolation kits

Successful plant DNA extraction that's easy on you

Plant tissue is difficult to work with due to the high levels of polysaccharides and polyphenols present. Compounding this complexity with tedious, inefficient methods only prolongs the process of isolation. Cetyl trimethyl ammonium bromide (CTAB) methods require excessive time and handling, limiting your throughput. Some silica membrane and magnetic bead–based protocols don't remove inhibitors inherent in plant samples that can carry over into the final product and interfere with downstream applications.

This leads to frequent sample processing failure, requiring you to repeat the purification.

Our innovative products are specifically designed for easy, high-yield, and high-purity DNA purification from plant samples. Inhibitors are removed for reliable downstream results. Make your DNA isolation from plant samples easier on you and on your samples, while achieving high-yield, high-purity results with Applied Biosystems™ and Invitrogen™ plant molecular biology reagents.

Which genomic DNA purification kit is right for your plant samples?

	Plant DNAzol Reagent	PureLink Genomic DNA Plant Mini Kit	PureLink *Pro* 96 Genomic DNA Kit	MagMAX Plant DNA Kit
	Most cost-effective	High-quality gDNA at a great value	Fast isolation of gDNA from a variety of plant samples	Rapid and automated extraction of DNA
Plant tissue input	100 mg	100 mg	Up to 25 mg	100 mg
Yield	Varies based on starting material	1–15 µg	5–10 µg from tissue	Varies based on starting material
Isolation method	Organic extraction	Silica spin column	Silica filter plate	Scalable, flexible format with magnetic beads
High throughput–compatible	No	No	Yes	Yes
Compatible applications	Cloning, qPCR, sequencing	Cloning, PCR, sequencing, genotyping	Cloning, PCR, sequencing, genotyping	Cloning, PCR, sequencing, genotyping
Prep time	60 min	40 min	35 min	40 min
Quantity	100 mL	50 preps	4 x 96 preps	96 or 384 preps

Empower your plant science research: go to **thermofisher.com/agbio** to learn more and to purchase our products and solutions.

Viral genomic DNA purification kits

High-yield genomic DNA from tissue and cells

Purification of viral nucleic acids poses unique challenges for getting good recovery and detection sensitivity. Capture and lysis of virus particles from very dilute solutions or cell-free samples is the first hurdle. We've developed DNA purification products that are optimized to provide maximum viral DNA yield, purity, and integrity from a broad range of sample types in several format options.

Which DNA purification kit is right for your viral samples?

	PureLink Viral RNA/DNA Mini Kit	PureLink *Pro* 96 Viral RNA/DNA Kit	MagMAX Viral/Pathogen Nucleic Acid Isolation Kit
	Fast isolation of viral nucleic acid	**Easy to use with high sensitivity**	**Rapid and automated extraction of viral nucleic acid**
Sample input	500 µL cell-free sample	200 µL cell-free sample	200–400 µL 96 deep-well plate, 500–2,000 µL 24 deep-well plate sample
Compatible samples	Plasma, serum, cerebrospinal fluid	Plasma, serum, cerebrospinal fluid	Saliva
Isolation method	Silica spin column	Filter plate	Scalable, flexible format with magnetic beads
High throughput–compatible	No	Yes	Yes
Compatible applications	Cloning, qPCR, sequencing, genotyping	Cloning, qPCR, sequencing, genotyping	qPCR and sequencing
Prep time	15 min	35 min	40 min
Quantity	50 preps	4 x 96 preps	100 preps

Get more information about our viral RNA/DNA purification and detection products at **thermofisher.com/viral**

Genomic DNA from saliva

The Applied Biosystems™ MagMAX™ Saliva gDNA Isolation Kit is the fastest, most user-friendly saliva purification kit on the market. With minimal steps, an affordable price, and comprehensive support, more saliva samples can be processed with consistent results.

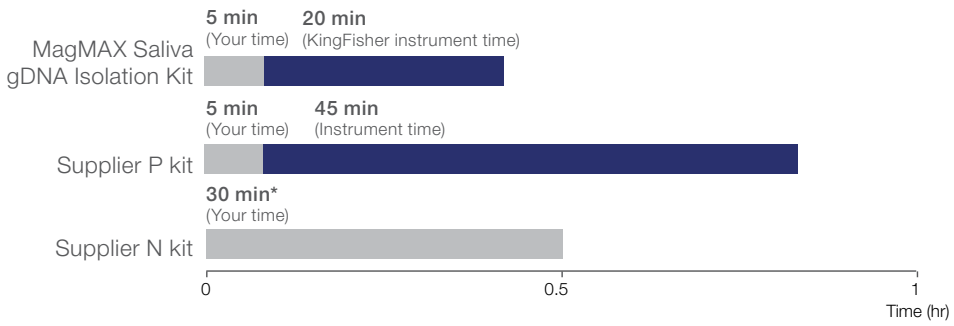
How it works for you

Fast	Adaptable	Compatible	Affordable	Automation ready
20 min instrument time and only 5 min for sample processing	Run 96 (200–500 µL) or 24 (0.5–2 mL) samples based on your input	High-quality purified gDNA compatible with microarray, PCR, and NGS downstream applications	Competitive low price per reaction	Designed for Thermo Scientific™ KingFisher™ instruments

Simple workflow

1. Add 96 saliva samples and binding beads/lysis reagent mixture to a 96-well plate.
2. Add reagents to working plates.
3. Load plates on the KingFisher instrument.
4. Run instrument for 20 minutes.

Fast processing time



Consistent gDNA yield

- Yield average = 3.5 µg of gDNA
- Total gDNA yield range = 0.15–13.54 µg
- 97% of donor saliva samples yielded greater than 300 ng of gDNA

Complete purification system for nucleic acids, proteins, and cells

Automated sample preparation

Successful downstream analysis depends on high-quality, reproducible purification of nucleic acids, proteins, and cells. KingFisher purification systems are designed to deliver high-quality results with minimal hands-on time, automating a significant part of your workflow.

- Choose from three distinct systems to meet your application and throughput needs
- Optimized kits streamline the purification workflow for a wide variety of sample types
- Thermo Scientific™ BindIt™ Software enables you to create customized protocols for additional flexibility
- Specially designed consumables allow efficient sample processing

Magnetic separation technology

KingFisher systems use permanent magnetic rods and disposable tip combs to collect, transfer, and mix magnetic particles:

1. When the magnetic rod—sheathed inside the tip comb—is lowered into the solution, magnetic beads collect at the bottom of the tip comb.

2. The tip comb is then positioned in a different row or plate, and the beads are released by moving the magnetic rods out of the tip comb.

3. The tip comb facilitates the mixing of reagents with the beads as the magnetic head moves up and down.

Thermo Scientific™ automated sample preparation technologies comparison chart

	KingFisher Duo Prime Purification System	KingFisher Flex Purification System	KingFisher Presto Purification System
			
Benefits	An economical option for automated nucleic acid purification and protein purification from up to 12 samples at a time and 24 samples per load using magnetic beads	A highly versatile and reproducible purification of 24 or 96 samples per run	Utilizes magnetic particle–based technology to provide high-quality yields of target nucleic acids and proteins; compatible with a liquid handler for plate filling in high-throughput laboratories
Applications	DNA and RNA isolation from various starting materials; proteomic applications; cell isolation	DNA and RNA isolation from various starting materials; proteomic applications; cell isolation	Nucleic acid purification, protein purification, immunoprecipitation, antibody purification, phosphopeptide enrichment, phage display
Reagents	Preloaded and user-editable MagMAX kits available to support tissue, cell, blood, FFPE, bacterial, buccal, plant, and viral samples, as well as liquid (e.g., serum)		
Protocol	Uses BindIt Software or USB memory device	Uses BindIt Software	Uses BindIt Software
Plastic consumables	96 deep-well plate 24 deep-well plate 1 x 12 elution strip	96 deep-well plate 24 deep-well plate 96-well plate	96 deep-well plate 24 deep-well plate 96-well plate
Sample input volume	30–1,000 µL (12-pin magnet head) 200–5,000 µL (6-pin magnet head)	50–1,000 µL, 96 deep-well plate 200–5,000 µL, 24 deep-well plate 20–200 µL, 96-well plate	50–5,000 µL 24- or 96-head magnets
Throughput	Up to 12 samples with 12-pin magnet head Up to 6 samples with 6-pin magnet head	1 to 24 samples (24-well plate) 1 to 96 samples (96-well plate)	1 to 24 samples (24-well plate) 1 to 96 samples (96-well plate)
Instrument dimensions (W x D x H)	40 x 46 x 34 cm (15.7 x 18.1 x 13.4 in.)	68 x 60 x 38 cm (26.8 x 23.6 x 15 in.)	36 x 46.5 x 40 cm (14.2 x 18.3 x 15.5 in.)
Weight	17 kg (37.5 lb)	28 kg (62 lb)	24 kg (53 lb)

Learn more at **thermofisher.com/kingfisher**

Plasmid DNA purification kits

Successfully isolate high-quality plasmid DNA

Choose from our wide range of high-performing, cost-effective plasmid purification technologies designed to help you overcome common plasmid prep issues, such as low recovery and the presence of impurities.

Thermo Scientific™ GeneJET™ plasmid purification products provide molecular-grade purity at competitive prices without any reduction in quality. Designed for the budget-conscious, GeneJET kits offer reliable performance with simple workflows.

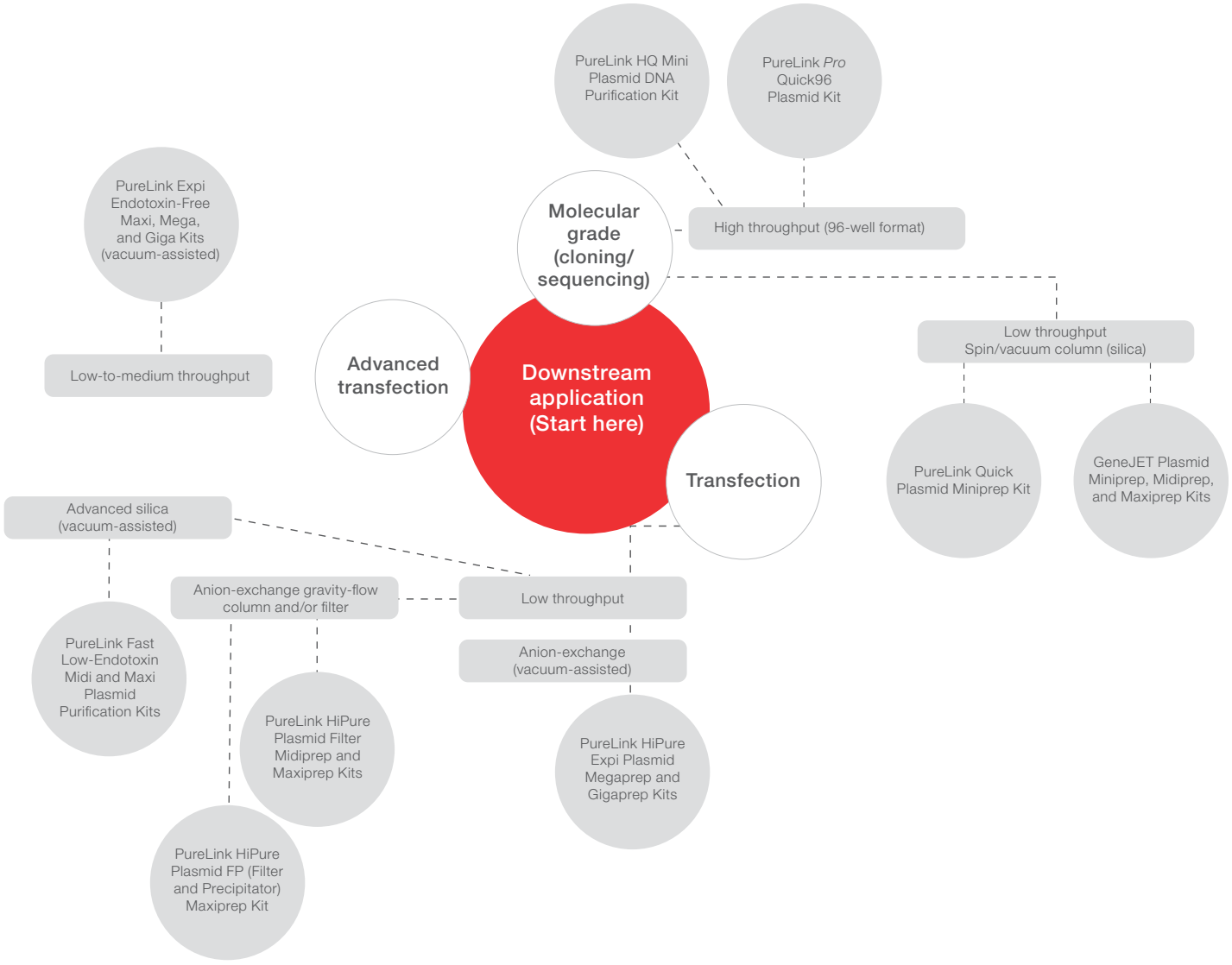
Invitrogen™ PureLink™ plasmid purification products were developed to provide the greatest value for your resources. With fair pricing and performance meeting or exceeding offerings from other suppliers, PureLink technology is the clear choice for plasmid purification for transfection applications in research laboratories.

Which plasmid DNA isolation technology is right for you?

Purity grade	**Molecular**	**Transfection**		**Advanced transfection**
Kits	**GeneJET kits**	**PureLink HiPure kits**	**PureLink Fast Low-Endotoxin kits (<1 EU/µg)**	**PureLink Expi Endotoxin-Free kits**
Endotoxin level	Standard (>10 EU/µg)	Low endotoxin (0.1–1 EU/µg)		Endotoxin-free (<0.1 EU/µg)
Yield up to	20 µg–1 mg	20 µg–15 mg	0.4–1.5 mg	1.5–15 mg
Technology	Silica membrane	Anion exchange (resin)	Advanced silica membrane	Anion exchange (membrane)
Total protocol time	15–60 min	30–120 min	15–30 min	90–120 min
Prep size	Mini–maxi	Mini–giga	Midi–maxi	Maxi, mega, and giga
Downstream application	Not sensitive • PCR • Nucleic acid labeling • Cloning (digestion, ligation) • Sequencing	Sensitive • Standard transfections • All molecular biology applications • *In vitro* transcription		Very sensitive • Primary and stem cell transfection • Gene therapy and vaccine (*in vivo*) research • Microinjection • All molecular biology applications

Find out more at **thermofisher.com/plasmidprep**

Which plasmid purification solution is right for your downstream application?



Plasmid DNA purification products, prep sizes, and approximate yields

Prep size	Overnight bacterial culture volume	Approximate plasmid yield
Miniprep	1–5 mL	Up to 40 µg
Midiprep	10–50 mL	Up to 300 µg
Maxiprep	100–200 mL	Up to 1 mg
Megaprep	500 mL–2.5 L	Up to 5 mg
Gigaprep	2.5–5 L	Up to 15 mg

Low-endotoxin plasmid DNA purification

Fast advanced silica technology

Invitrogen™ PureLink™ Fast low-endotoxin plasmid purification kits

Advanced silica membrane technology dramatically reduces protocol time to as little as 15–30 minutes. This next-generation methodology requires no alcohol precipitation step, resulting in a short and robust workflow. Used in combination with a vacuum manifold, the advanced silica membranes significantly shorten purification times. This technology helps provide high-quality, low-endotoxin plasmid DNA suitable for transfection of robust cell lines and applications such as PCR, cloning, and sequencing.

High yields

Isolate up to 0.4 mg (midi) or 1.5 mg (maxi) of high-quality plasmid DNA (Figure 5).

High-quality, low-endotoxin DNA

Obtain plasmid with less than 1 EU/µg of endotoxin, ideal for standard transfections and all molecular biology applications (PCR, cloning, sequencing, etc.) Achieve inherently low endotoxin levels.

Colored buffers

With their easy-to-follow plasmid purification protocol, colored buffers are offered as an added convenience that promote visualization and identification of complete bacterial cell lysis and neutralization.

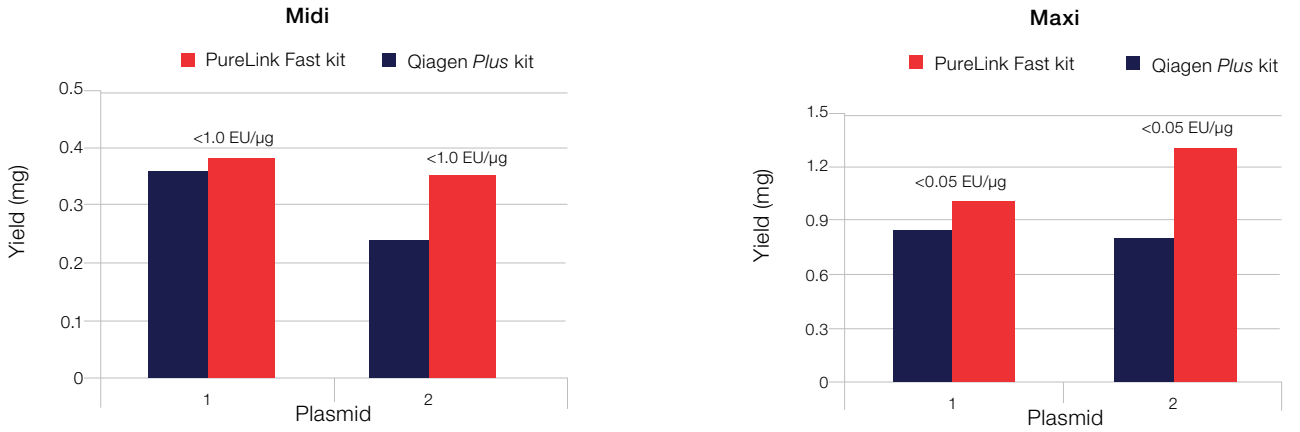


Figure 5. Achieve high yields of low-endotoxin, advanced transfection–quality plasmid DNA with PureLink Fast kits when compared to kits from another supplier. Two high-copy plasmids with different backbones were purified using PureLink Fast and Qiagen Plasmid *Plus* midiprep and maxiprep kits as described in the product manuals. Data for plasmid yields are shown in the graph. Endotoxin values (EU/µg) were measured using Endosafe-PTS instrument (Charles River); values are provided only for PureLink Fast preparations.

Find out more at **thermofisher.com/lowendoplasmid**

Endotoxin-free plasmid DNA purification

Fast, easy-to-use, and cost-effective kits for sensitive downstream applications

Invitrogen™ PureLink™ Expi Endotoxin-Free plasmid purification kits

These kits allow you to quickly achieve high yields of endotoxin-free plasmid DNA free of RNA and genomic DNA contamination (Figures 6 and 7). Our fast and simple protocol is designed to provide high yields of up to 1.5 mg (maxiprep), 5 mg (megaprep), or 15 mg (gigaprep) of high-quality, endotoxin-free plasmid DNA suitable for advanced transfection applications. Our portfolio of endotoxin-free plasmid DNA purification products enables high throughput, reliability, and scalability. Recommended applications include transfection of sensitive cells (primary cells, stem cells), research on gene therapy, genome engineering, and protein expression.

PureLink Expi Endotoxin-Free kits are fully compatible with the Gibco™ ExpiCHO™ and Expi293™ transient mammalian expression systems.

Substantial time savings

Purify endotoxin-free plasmid DNA in as little as 90 min (Figure 6).

High yield

Isolate up to 1.5 mg, 5 mg, and 15 mg with maxi, mega, and giga kits, respectively (Figure 7).

High quality

Advanced transfection–grade, endotoxin-free plasmids: obtain plasmid with less than 0.1 EU/µg, ideal for sensitive *in vitro/in vivo* applications.

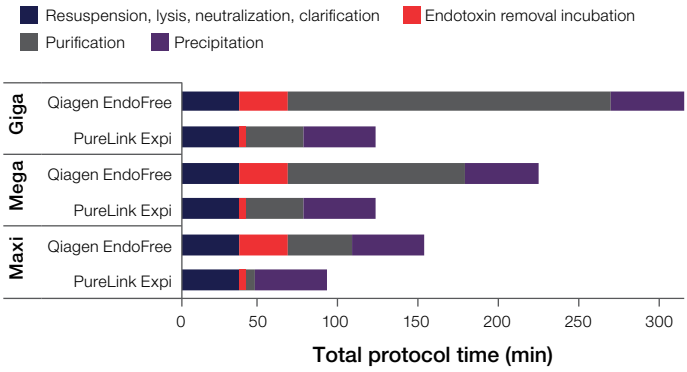


Figure 6. Rapidly purify high yields of endotoxin-free plasmid DNA. PureLink Expi Endotoxin-Free kits enable high yields of endotoxin-free, advanced transfection–grade plasmid DNA in less time than Qiagen™ EndoFree™ kits. The combination of advanced anion-exchange technology and vacuum assistance reduces overall protocol time compared to Qiagen EndoFree gravity-flow kits.

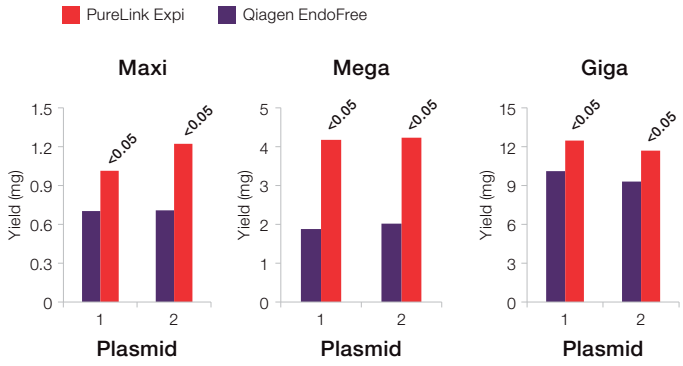
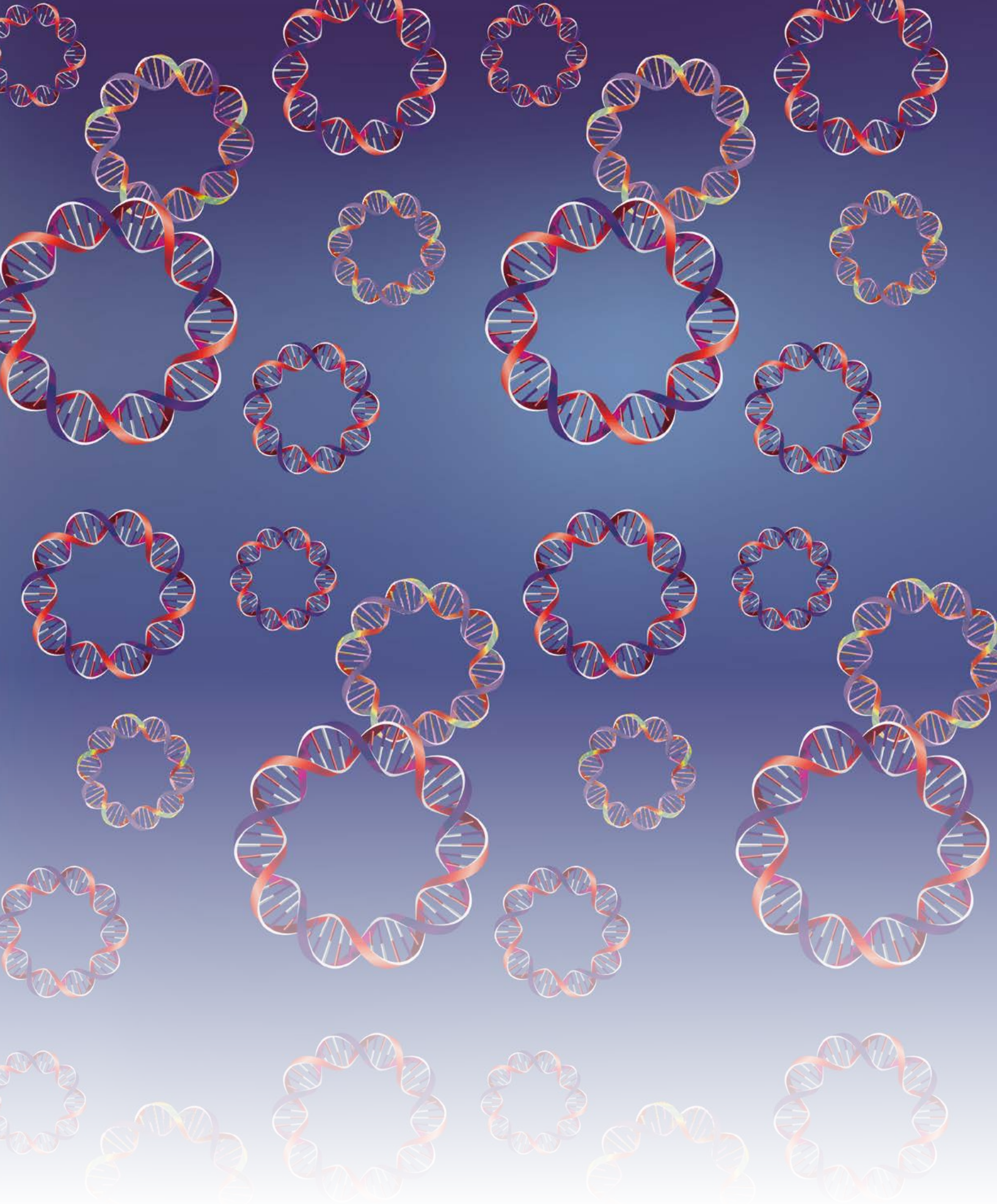


Figure 7. Achieve high yields of endotoxin-free, advanced transfection–quality plasmid DNA compared to other suppliers. A collection of two unique high-copy plasmids with different backbones were purified using PureLink Expi Endotoxin-Free and Qiagen EndoFree maxi, mega, and giga kits as described in the product manuals. Respective endotoxin values (EU/µg) are provided for PureLink Expi preps.

Find out more at **thermofisher.com/endofreeplasmid**



Protein expression workflow

End-to-end product portfolio and support for protein expression

We offer complete protein expression solutions ranging from Invitrogen™ GeneArt™ Gene Synthesis services, plasmid purification, transfection reagents, Gibco™ cell culture media, and Gibco™ ExpiCHO™ expression systems. In addition, we offer best-in-class support for protein expression research.

GeneArt Gene Synthesis	Plasmid purification technologies	Transfection reagents	Gibco cell culture media
• Chemical synthesis • Cloning • Sequence verification • Services • Custom services	• Endotoxin-free • Low-endotoxin • Maximum yields • High quality • Fast prep times	• Efficient delivery • Broad range of cell types • Difficult-to-transfect cells • Superior cell viability	• Support growth and maintenance of a variety of mammalian cells and cell lines • Effective formulations
thermofisher.com/geneart	**thermofisher.com/plasmidprep**	**thermofisher.com/transfection**	**thermofisher.com/gibco**

Prepare plasmid	Transform	Grow bacteria	Purify plasmid DNA	Analyze	Transfect into cells	Produce protein
GeneArt gene Synthesis	Invitrogen™ competent cells	Gibco™ LB broth	PureLink Expi Endotoxin-Free plasmid purification kits (advanced transfection–grade)	Invitrogen™ agarose gels	Invitrogen™ Lipofectamine™ transfection reagents, Neon™ Transfection System	ExpiCHO, Expi293, and ExpiSf expression systems
						
Invitrogen™ restriction enzymes		Gibco™ antibiotics	PureLink Fast and HiPure low-endotoxin kits, transfection-grade	Thermo Scientific™ NanoDrop™ spectrophotometers		
						
Invitrogen™ TOPO™ cloning kits				Invitrogen™ Qubit™ 4 Fluorometer		
						

Figure 8. Typical protein expression workflow and the key accompanying reagents, kits, and instruments.

Protein expression workflow (con't)

Transfection

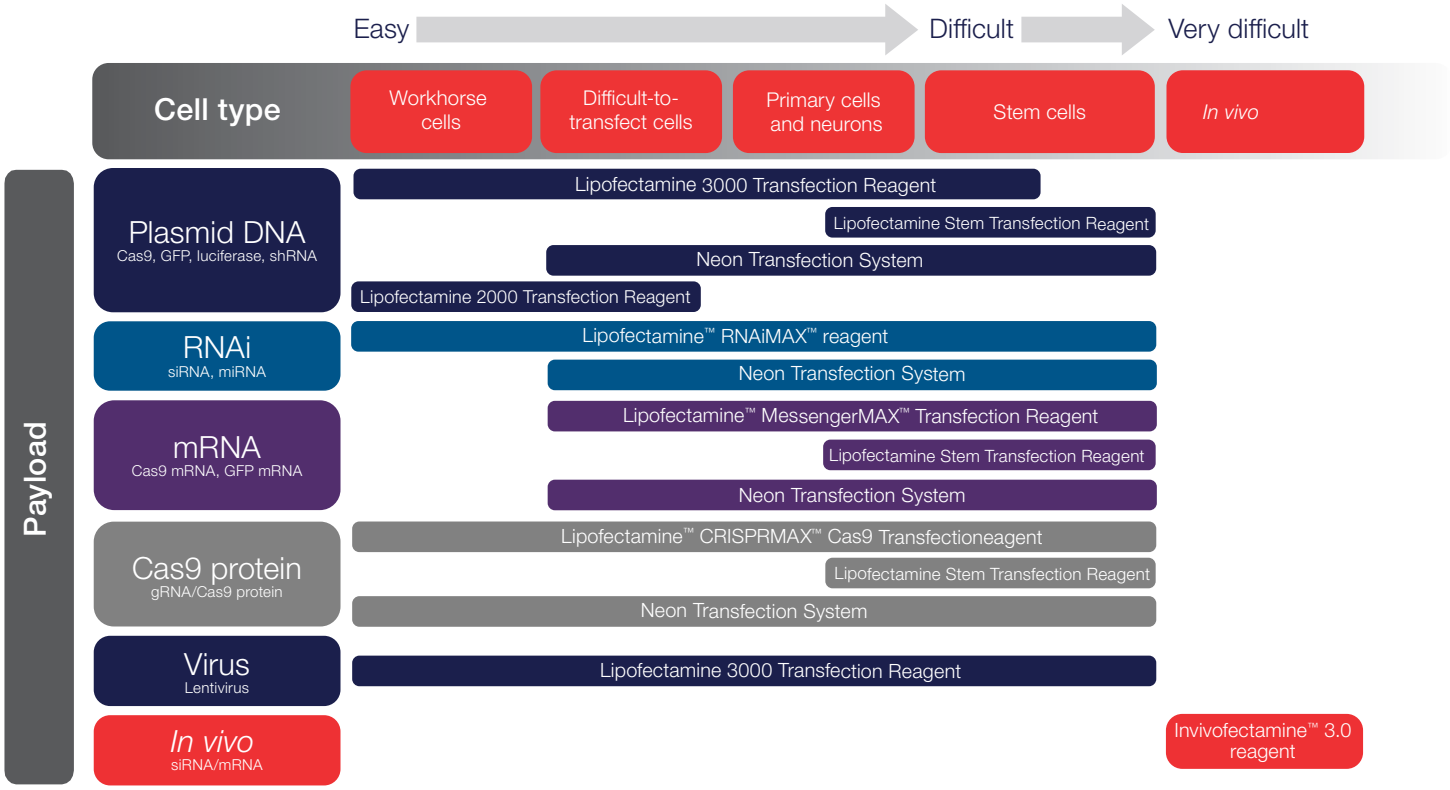
Transfection is the process of artificially introducing nucleic acids (DNA or RNA) into eukaryotic cells. Such introductions of foreign nucleic acid using various chemical, biological, or physical methods can result in a change of the properties of the cell, allowing the study of gene function and protein expression in the context of the cell. When selecting a transfection method, consider the payload you wish to deliver (DNA, RNA, or protein) and the type of cells you want to transfect.

With the most cited and trusted transfection systems available, Invitrogen products offer options for DNA, siRNA, oligonucleotide, and RNA delivery, for the utmost confidence in your results.

Features:

- **Superior delivery**—transfect a broad range of cell types, including those notoriously difficult to transfect, with high efficiency
- **Low toxicity**—for improved cell viability
- **Less optimization**—rapid, simple protocols provided for most cell lines

Select the transfection solution that best suits your needs



Products are listed in order of recommendation for each payload based on effectiveness, ease of use, and cost.

Find out more at **thermofisher.com/transfection**

Protein expression platforms

Recombinant protein expression technology enables analysis of gene regulation and protein structure and function. Utilization of recombinant protein expression varies widely—from investigation of function *in vivo* to large-scale production for structural studies and biotherapeutic drug discovery.

Gibco™ expression systems help accelerate that process by bringing together specialized high-density cells, Gibco™ media, and Invitrogen™ molecular biology and Invitrogen™ Lipofectamine™ transfection technologies. That combination of advanced solutions streamlines development of protein-based drugs and vaccines, so researchers like you can develop life-changing biologics faster.

More protein, less volume, **less time.**

ExpiCHO Expression System

Get 20x more protein in less volume

Switching from 293 to CHO cells during drug development may cost you precious time and create uncertainty. Now there's a better way. The ExpiCHO Expression System delivers superior protein yields compared to alternative transient systems, saving you precious time, incubator space, and plasticware costs. Express the same amount of protein in a single flask that other transient CHO systems express in 20 or more flasks (Figure 9).

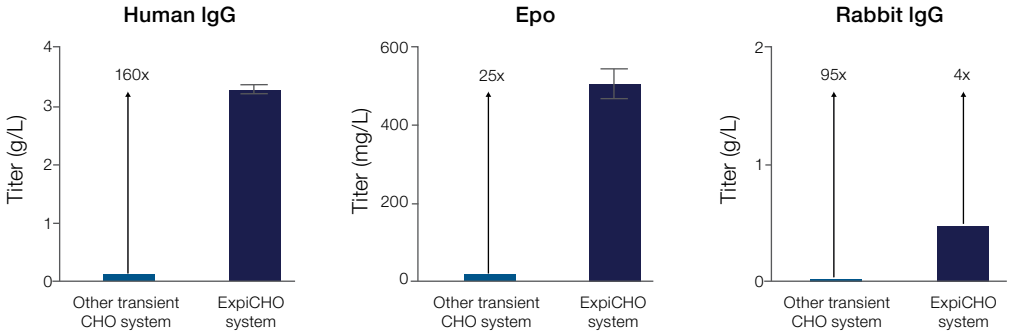


Figure 9. The ExpiCHO Expression System is designed to deliver superior protein yields compared to alternative transient systems.

Get more information at **thermofisher.com/expicho**

Expi293 Expression System

The industry standard for rapid, high-yield transient HEK 293 expression

Every minute counts when it comes to expressing drug candidates. The Gibco™ Expi293™ Expression System is the ultimate choice for transient expression in 293 cells. This rapid, high-yield system allows access to recombinant 293–derived proteins in just five to seven days, for faster results (Figure 10).

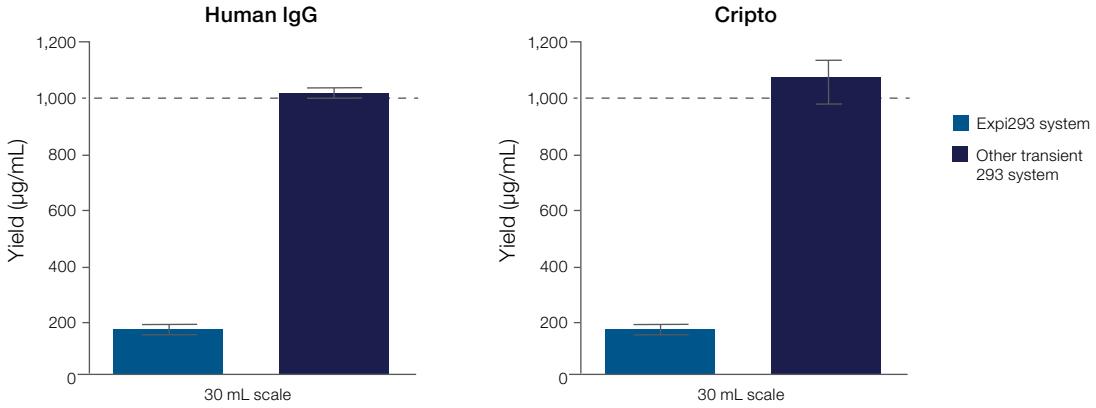


Figure 10. The Expi293 Expression System is designed to deliver up to 6x more protein production in just one week, compared with other transient 293 systems that can take two weeks or more.

Find out more at **thermofisher.com/expi293**

ExpiSf Expression System

The only optimized insect expression system with superior protein yields

The first-ever chemically defined baculovirus expression system that can generate three times more protein compared to existing insect expression platforms. The Gibco™ ExpiSf™ Expression System enables greater consistency across multiple expression runs, all in less time (Figure 11).

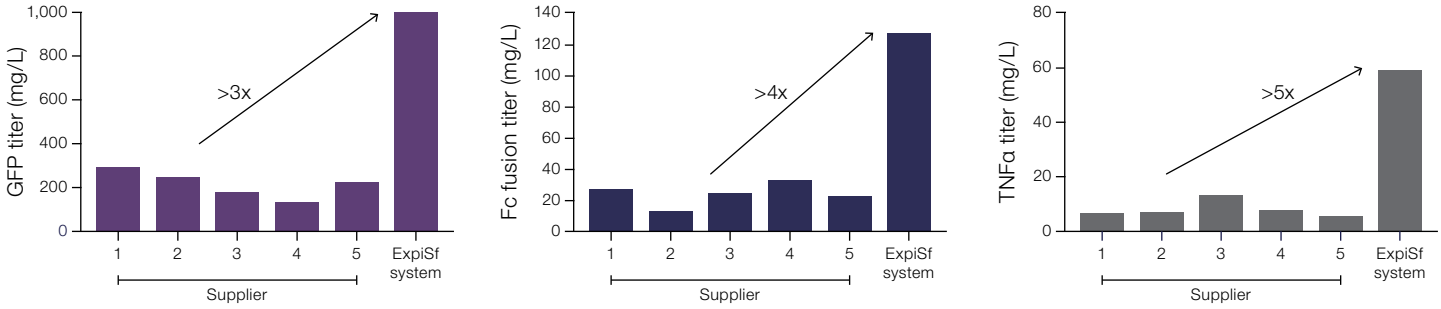


Figure 11. The ExpiSf system outperforms existing Sf9 expression platforms with at least 3x higher protein yield.

Get more information at **thermofisher.com/expisf**

Plasmid DNA isolation tips

Help ensure maximum yield and purity of DNA with our valuable information, tips and tricks, and other technical resources

Use bacterial cultures at OD_{600} of 2.0–4.0.

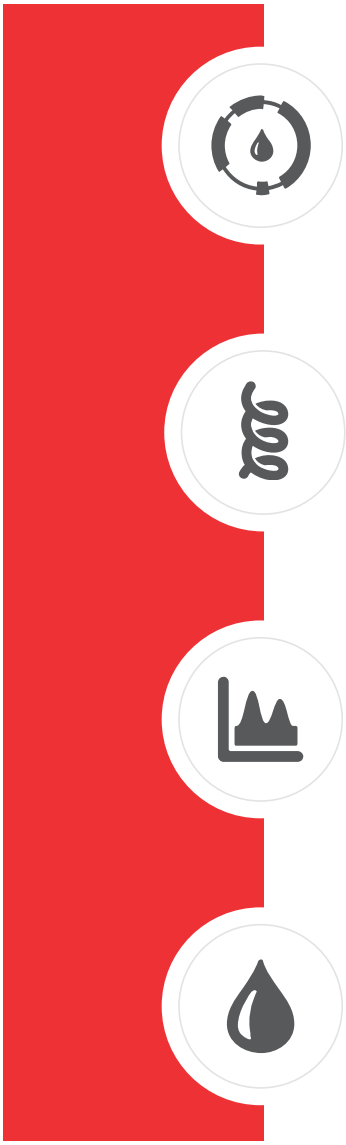
Avoid using rich media like Terrific Broth for bacterial cultures. If using a rich medium is necessary, ensure that the recommended cell mass is not exceeded by optimizing the growth time so that the OD_{600} stays at <4.0, or by processing a smaller culture volume (<100 mL for maxi prep).

Use a high–copy number plasmid cultured in LB medium to obtain maximal yield and purity of plasmid DNA.

Do not exceed the maximum recommended culture volumes specified in the kit manuals; using larger culture volumes means increased cell mass, which will result in reduced plasmid yield and purity.

Find out more at **thermofisher.com/napsupport**

Plasmid DNA isolation FAQs



What are the different formats or technologies you offer for plasmid purification?

We offer **three main** technologies for plasmid purification: anion exchange, silica, and advanced silica.

What is the best way to determine the quality/purity of my plasmid DNA?

The ratio of absorbance at 260 nm and 280 nm (A_{260}/A_{280}) is typically used to measure purity of the sample. For DNA, the ideal ratio is 1.8, but it can be in the range of 1.7–1.9. A_{260}/A_{230} is also sometimes used to determine if contaminants are present. Plasmid purity and integrity can be further analyzed by agarose gels to detect RNA and genomic DNA contamination, or nicked and degraded plasmid.

What are endotoxins, and why are their levels important for transfection?

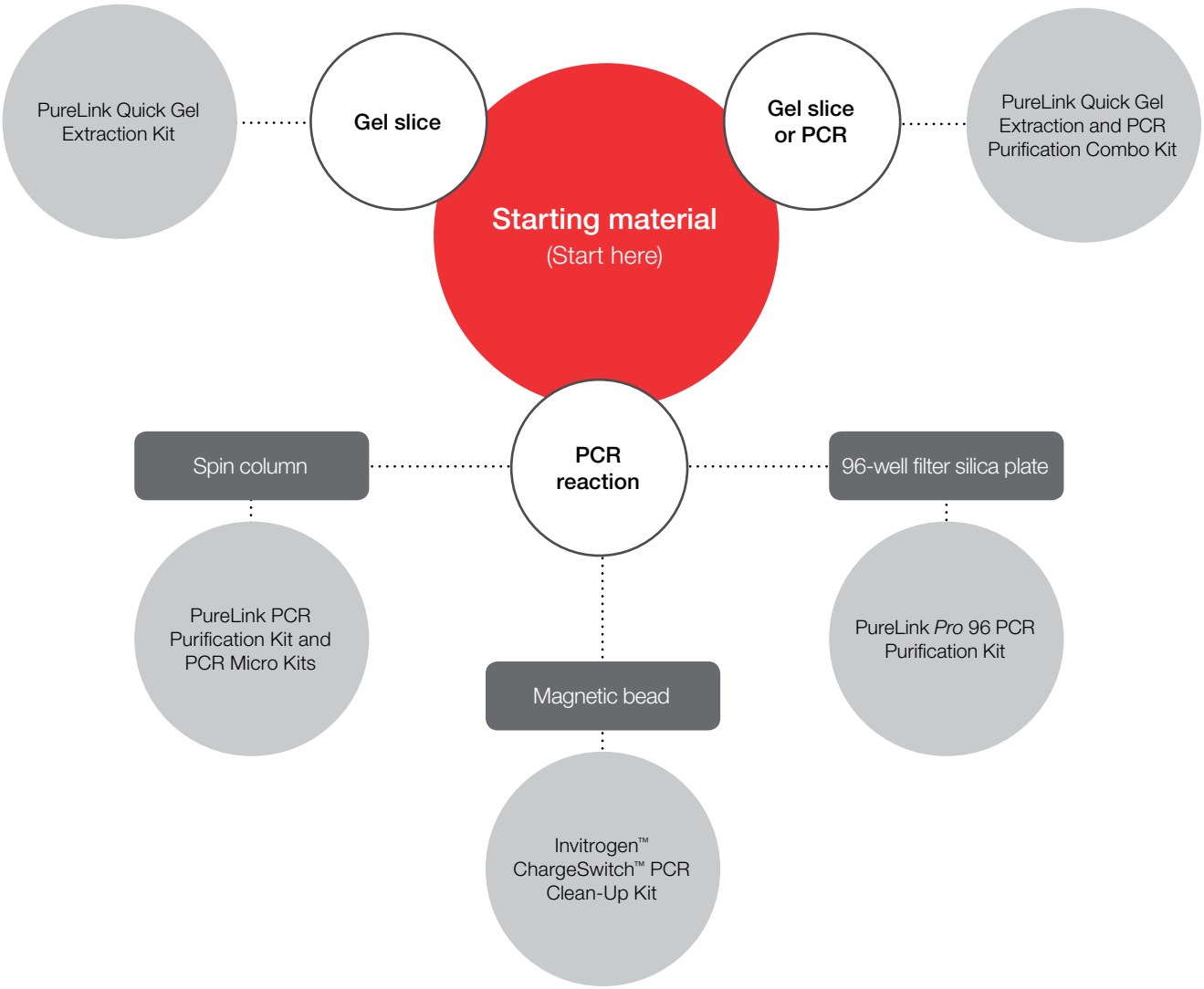
Endotoxins are bacterial toxins that are part of the outer surface of the cell wall of gram-negative bacteria. Endotoxins are released during bacterial lysis, and and tend to co-purify with plasmid. Endotoxins can influence cell growth, cell differentiation, contractility, and protein expression after plasmid transfection in mammalian cells.

Can I elute my plasmid from PureLink columns with water instead of TE?

For any silica column, elution with water is generally possible. However, a buffer is preferred to ensure DNA stability, as pure water can have a very low pH (4–5).

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, five-minute protocols. Isolated DNA is ready for sequencing, PCR, transcription, cloning, and labeling. For example, the Invitrogen™ PureLink™ Quick Gel Extraction Kit allows you to rapidly and efficiently purify DNA fragments that are high quality and show reliable performance in PCR, restriction enzyme digestion, cloning, and labeling.



PureLink PCR Purification Kit

Centri-Sep Spin Columns

Which Invitrogen™ DNA cleanup kit is right for you?

Product	Protocol time (min)	DNA cleanup application	Format	Elution volume (µL)	Quantity
PureLink™ PCR Purification Kit	<15	PCR cleanup	Silica spin/ vacuum column	50	50 preps 250 preps
PureLink™ *Pro* 96 PCR Purification Kit	20	PCR cleanup	96-well silica plate	50–150	4 plates (4 x 96 rxns)
PureLink™ PCR Micro Kit	≤10	PCR cleanup	Silica spin column	5–20	10 preps 50 preps 250 preps
PureLink™ Quick Gel Extraction Kit	<30	Gel extraction	Silica spin/ vacuum column	30–100	50 preps 250 preps
PureLink™ Quick Gel Extraction Kit and PCR Purification Combo Kit	10–30	PCR cleanup and gel extraction	Silica spin/ vacuum column	30–100	50 preps
ChargeSwitch™-Pro PCR Clean-Up Kit	<10	PCR cleanup	Derivatized spin/ vacuum column	50	10 preps 50 preps 250 preps
Centri-Sep™ Spin Columns	<5	Sequencing reaction cleanup	Spin column	20	100 columns 32 columns

Nucleic acid quantitation

Accurate, sensitive, and specific quantification of DNA and RNA

For nucleic acid quantitation, Invitrogen™ Qubit™ technology employs extreme selectivity not possible with absorbance measurements, resulting in accuracy high enough to quantitate even the most dilute or low-abundance samples, while still leaving enough sample for downstream applications (Figure 12, next page).

Benefits of using Qubit technology

- Better selectivity and accuracy than absorbance assays
- Effectively quantitates dilute and low-abundance samples
- Available for DNA and RNA samples

Upon binding to nucleic acid, the fluorescence of the dyes in the Qubit assays increases several hundred–fold, giving a very high signal-to-noise ratio for exceedingly high sensitivity—up to 1,000 times more sensitive than absorbance readings.

Key features of the Qubit 4 Fluorometer include:

- Quickly and accurately quantifies DNA, RNA, and protein, in <3 seconds per sample
- Uses as little as 1 µL of sample
- Fast, reliable detection of degraded RNA in <4 seconds per sample
- Stores up to 1,000 sample results
- New integrated reagent calculator reports amount of dye and buffer needed
- Ability to personalize your Qubit fluorometer with the assays you run most, add new assays, or even create your own with MyQubit firmware
- Language of your choice including English, French, Spanish, German, Italian, simplified Chinese, and Japanese

The Qubit 4 Fluorometer is the next generation of the popular benchtop fluorometer designed to accurately measure DNA, RNA, and protein quantity or quality using highly sensitive Invitrogen™ Qubit™ assays. The latest version of the Qubit fluorometer has been reengineered to run the Invitrogen™ Qubit™ RNA IQ (integrity and quality) assay. The Qubit 4 Fluorometer and the Qubit RNA IQ Assay Kit work together to accurately distinguish viable from degraded RNA in just two easy steps. The concentration or quality of the target molecule in the sample is reported by a fluorescent dye that emits a signal only when bound to the target, which minimizes the effects of contaminants on the result. The easy-to-use touchscreen menus make it easy to select and run the assays you need, with results displayed in just a few seconds.

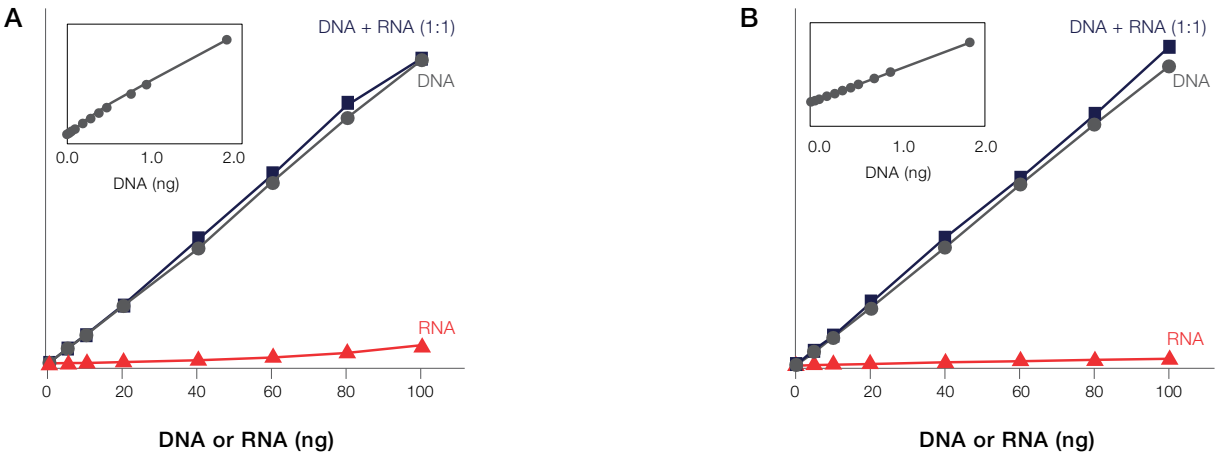


Figure 12. Invitrogen™ Qubit™ high-sensitivity and broad-range DNA assay kits. (A) The Qubit dsDNA HS (High Sensitivity) Assay Kit and **(B)** the Qubit dsDNA BR (Broad-Range) Assay Kit have linear detection ranges of 0.2–100 ng and 2–1,000 ng, respectively. Each kit is selective for double-stranded DNA (dsDNA), even in the presence of an equal mass of RNA. The x-axis gives the mass of nucleic acid at a given point when DNA or RNA is assayed alone. In the 1:1 mixture, the total mass of nucleic acid at a given point is double what is stated on the x-axis.

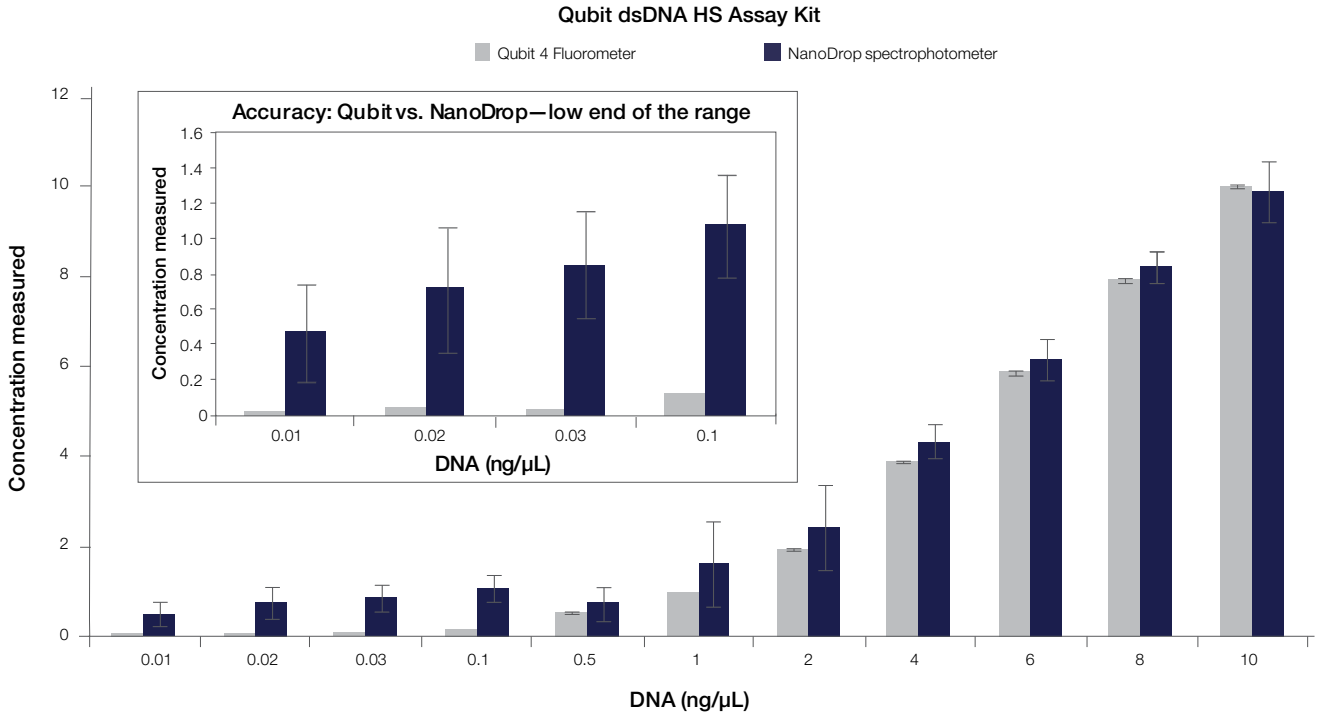


Figure 13. Accuracy and precision of the Qubit 4 Fluorometer. Ten replicates of lambda DNA at concentrations of 0.01–10 ng/µL were assayed using the Qubit dsDNA HS Assay Kit on the Qubit 4 Fluorometer according to the standard kit protocol. The same concentrations of DNA were measured in ten replicates using a Thermo Scientific™ NanoDrop™ ND-1000 Spectrophotometer, and results were compared for both accuracy and precision. Each bar represents the average of 10 replicates. Error bars represent the standard deviations of the 10 replicates. The concentrations indicated are those of DNA in the starting samples, before dilution in the Qubit assay tubes.

Essentials for DNA work

Avoiding contamination of DNA while performing PCR

Invitrogen™ DNA*Zap*™ solutions become a potent nucleic acid degrading reagent when mixed. This mixture is able to instantaneously degrade high levels of contaminating DNA and RNA from surfaces.

Features of DNA*Zap* reagent:

- Completely degrades contaminating DNA and RNA at the level of PCR sensitivity

Works on contact

- Degrades nucleic acid, unlike other products on the market that only act as detergents
- Ideal for cleaning PCR tubes, PCR machine surfaces, pipettors, lab benches, lab equipment, and microfuge tubes

Nuclease-free water

Preparing reagents and resuspending DNA with nuclease-free water is a crucial and often-ignored first step for consistent experimental results. Even purified water can have a non-neutral pH and minerals that can interfere with certain types of reactions. We offer several grades of nuclease-free—diethylpyrocarbonate (DEPC)-treated water, nuclease-free water (not DEPC-treated), and RT-PCR–grade water—all rigorously tested for contaminating nucleases.

Find out more at **thermofisher.com/nucleasefreewater**

Nuclease-free tips and tubes

Pipette tips and tubes are an easily overlooked source of nuclease contamination. We offer a range of nuclease-free plastic pipette tips, PCR tubes, microcentrifuge tubes, and conical tubes. Each lot of Invitrogen™ tips and tubes undergoes rigorous testing and is certified to be nuclease-free.

View products at **thermofisher.com/nucleasefreeplastics**

Ready to amplify your purified DNA sample?

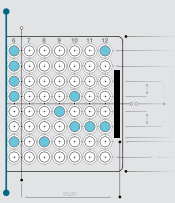
Applied Biosystems thermal cyclers

Our engineers have been designing and manufacturing high-quality thermal cyclers since 1987. In that time, Applied Biosystems™ thermal cyclers have built a reputation for reliability, accuracy, and user-friendly interfaces. Our instruments enable precise, consistent results for every challenge, application, and budget.

Key features:	Ultimate flexibility and throughput	Elegantly simple and precise	Proven reliability, precise PCR optimization	Routine PCR, elevated	Routine PCR	Designed for easy robotic integration
	ProFlex PCR System	SimpliAmp Thermal Cycler	Veriti Thermal Cycler*	MiniAmp Plus Thermal Cycler	MiniAmp Thermal Cycler	Automated Thermal Cycler
						
Max. sample throughput	480,000 reactions	96 reactions	384 reactions	96 reactions	96 reactions	384 reactions
Max. block ramp rate	6.0°C/sec	4.0°C/sec	5.0°C/sec	3.5°C/sec	3.0°C/sec	3.5°C/sec
Block formats (temperature optimization)	• 3 x 32-well 0.2 mL (2-zone VeriFlex Block) • 96-well 0.2 mL (6-zone VeriFlex Block) • 2 x 96-well 0.2 mL • 2 x flat block • 2 x 384-well 0.02 mL	• 96-well 0.2 mL (3-zone VeriFlex Block)	• 96-well 0.2 mL (6-zone VeriFlex Block) • Fast 96-well 0.1 mL • 384-well 0.02 mL • 60-well 0.5 mL	• 96-well 0.2 mL (3-zone VeriFlex Block)	• 96-well 0.2 mL	• 96-well 0.2 mL compatible with full- or semi-skirted plates • 384-well 0.02 mL

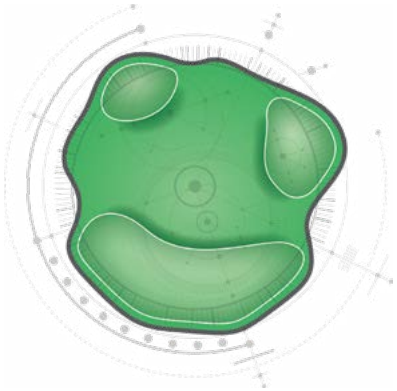
* Also available as an FDA Class 1/CE-IVD labeled device.

= cloud-enabled instrument



Don't forget PCR reagents and plastics—choose from the PCR enzymes you know and trust, such as Invitrogen™ SuperScript™ reverse transcriptases and Invitrogen™ Platinum™ SuperFi™ reagents.

Which PCR enzyme is right for amplifying your isolated DNA?



We offer a comprehensive portfolio of PCR enzymes and master mixes with the high performance and consistency you need. Start with the selection guide below to find the best enzyme for common PCR applications.

Visit our online selection guide at **thermofisher.com/pcrenzymes**

PCR type	High-fidelity PCR	Hot-start PCR	Hot-start PCR	Standard PCR
Do you need …	… accurate DNA sequences?	… cleaner bands or to detect low-abundance targets?	… a chemical hot start?	… to detect presence or absence of sequence?
Recommended DNA polymerase	Platinum SuperFi DNA Polymerase	Platinum II *Taq* Hot-Start DNA Polymerase	AmpliTaq Gold 360 DNA Polymerase	*Taq* DNA Polymerase
Applications				
Cloning and subcloning	•			
Site-directed mutagenesis	•			
GC-rich templates	•	•	•	
Template generation for sequencing	•	•	•	
High-throughput PCR	•	•		
Long PCR (up to 20 kb)	•			
Genotyping	•	•	•	•
Amplification of samples with suboptimal purity	•	•		
Colony PCR	•	•	•	•
Multiplex PCR	•	•	•	
Fast PCR	•	•		
Direct PCR	•	•		
Routine PCR		•	•	•
Technical specifications				
Fidelity versus *Taq* DNA Polymerase	>100x	1x	1x	1x
Target length	Up to 20 kb*	Up to 5 kb	Up to 5 kb	Up to 5 kb
Hot-start modification	Antibody-mediated	Antibody-mediated	Chemical modification	None
Speed	15–30 sec/kb	15 sec/kb	1 min/kb	1 min/kb
Universal primer annealing		•		
Inhibitor resistance	Yes	Yes	No	No
Blunt or 3′-A end	Blunt	3′-A	3′-A	3′-A
Compatible with Applied Biosystems™ TaqMan® probes		•	•	•
Formats				
Master mix	Colorless/green**	Colorless/green**	Colorless	Colorless
Stand-alone enzyme	Colorless/green**	Colorless/green†	Colorless	Colorless

* Amplification of >20 kb fragment sizes is possible (up to 40 kb), but may require additional optimization of reaction conditions and primer design.

** Direct gel loading with green buffer options.

† Green buffer available as separate item for use with stand-alone enzyme.

Did you know?

High-throughput PCR: Assembled PCR reactions with Platinum SuperFi and Platinum II *Taq* Hot-Start DNA Polymerases are stable for 24 hours at room temperature, enabling high-throughput applications.

Ultimate accuracy and robustness

Platinum SuperFi DNA Polymerase

Invitrogen™ Platinum™ SuperFi™ DNA Polymerase is an enzyme engineered with exceptional fidelity, trusted Platinum™ hot-start technology, and high processivity. Platinum SuperFi DNA Polymerase is ideally suited for cloning, mutagenesis, and other applications benefiting from superior sequence accuracy.

Highlights

- **Exceptional fidelity**—>100x more accurate than *Taq* DNA polymerase
- **Robust and versatile**—ideal for difficult targets (e.g., long amplicons, suboptimal purity, GC-rich amplicons)
- **Platinum™ hot-start technology**—enables superior specificity, sensitivity, and yields; allows for room temperature reaction setup

Find out more at **thermofisher.com/platinumsuperfi**

PCR simplified with universal annealing

Platinum II *Taq* Hot-Start DNA Polymerase

Invitrogen™ Platinum™ II *Taq* Hot-Start DNA Polymerase is an enzyme engineered to get you to your research destination, faster. A universal primer annealing feature reduces optimization and allows co-cycling of all assays together.

Highlights

- **Innovative universal primer annealing buffer**— reduces tedious optimization and saves time by enabling co-cycling
- **Engineered *Taq* DNA polymerase**—allows fast cycling and successful amplification even in the presence of inhibitors
- **Platinum hot-start technology**—enables superior specificity, sensitivity, and yields; allows for room temperature reaction setup

Find out more at **thermofisher.com/platinumiitaq**

Genotyping analysis

Technology to help untangle complex relationships

Genotyping microarrays
Applied Biosystems™ Axiom™ genotyping solutions:

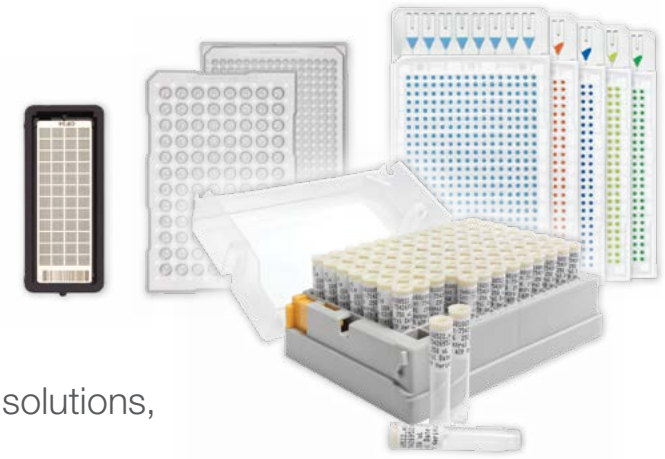
- Predesigned and custom microarrays for human and agrigenomics research
- Scalable, high-throughput formats for medium- to high-density genotyping applications
- 100% consistent manufacturing process, ensuring that every SNP is on every array, every time
- Powerful yet simple data analysis software included at no extra cost

Targeted genotyping by sequencing
Ion GeneStudio™ S5 Series instruments, using either Ion AmpliSeq™ or Applied Biosystems™ AgriSeq™ technologies:

- A single platform with five different sequencing chip types can achieve from 2 million to 260 million reads per day
- Lowest DNA input requirement for targeted NGS
- High-throughput analysis of plant and animal genotypes in a flexible, cost-effective manner

Real-time and digital PCR for genotyping
QuantStudio instruments, TaqMan® SNP genotyping assays, and TaqMan® copy number assays:

- Predesigned and custom assays for human and agrigenomics research
- Gold-standard TaqMan® chemistry with MGB probes and robust assay designs deliver accurate, reproducible, and reliable results
- Convenient single-tube format and simple workflow provide an easy path to trusted results—no optimization required



To find out more about our genotyping analysis solutions, go to **thermofisher.com/genotyping**

Connect with your instrument and achieve lab/life balance

Instrument Connect app

Thermo Fisher Scientific has pioneered a way to connect you to your instruments, giving you real-time updates on your run and access to data as they come up. We connect you to your cloud-enabled instruments and benchtop devices anytime, anywhere using the Instrument Connect mobile app.

The Instrument Connect remote monitoring app allows you to stay connected to any instrument enabled with Connect (formerly Thermo Fisher Cloud). This includes the QuantStudio 3 and 5 real-time PCR instruments, as well as endpoint PCR devices such as Applied Biosystems™ ProFlex™, SimpliAmp™, and MiniAmp™ thermal cyclers.

With the Instrument Connect app, you can:

- Check the availability of your cloud-enabled, network-connected device
- Monitor run progress
- View amplification plots in real time (available for QuantStudio 3 and 5 instruments)
- View plots and filter by sample or target in real time
- Schedule an instrument

It's easy to get started. Just download the Instrument Connect app from the Apple™ App Store and log in to your Connect account on thermofisher.com. You can view your connected QuantStudio 3 and 5 instruments, monitor remaining time in your run, and view your amplification plots in real time.

= cloud-enabled instrument

Learn more about the Instrument Connect app at
thermofisher.com/qpcrconnect

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

- **thermofisher.com/napsupport**
- **thermofisher.com/technicalresources**
- Email us at **techsupport@thermofisher.com**

Web resources

- **thermofisher.com/contactus**
- **thermofisher.com/prepforsuccess**
- **thermofisher.com/gdnaprep**
- **thermofisher.com/plasmidprep**
- **thermofisher.com/endofreeplasmid**
- **thermofisher.com/lowendoplasmid**

Services and support

Providing fast responses by experienced scientists

More than 1,300 service and support specialists worldwide 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

Ordering information

Product	Quantity	Cat. No.
Plasmid purification kits		
PureLink HiPure Plasmid Miniprep Kit	25 preps	K210002
	100 preps	K210003
PureLink HQ Mini Plasmid DNA Purification Kit	4 x 96 preps	K210096
PureLink HiPure Plasmid Midiprep Kit	25 preps	K210004
	50 preps	K210015
PureLink HiPure Plasmid Filter Midiprep Kit	25 preps	K210014
PureLink HiPure Plasmid Maxiprep Kit	10 preps	K210006
	25 preps	K210007
PureLink HiPure Plasmid Filter Maxiprep Kit	10 preps	K210016
	25 preps	K210017
PureLink HiPure Plasmid FP (Filter and Precipitator) Maxiprep Kit	10 preps	K210026
	25 preps	K210027
PureLink HiPure Expi Plasmid Megaprep Kit	4 preps	K210008XP
PureLink HiPure Expi Plasmid Gigaprep Kit	2 preps	K210009XP
PureLink Expi Endotoxin-Free Megaprep Kit	4 preps	A31232
	2 preps	A31233
PureLink Fast Low-Endotoxin Midi Plasmid Purification Kit	25 preps	A35892
	50 preps	A36227
PureLink Fast Low-Endotoxin Maxi Plasmid Purification Kit	10 preps	A35895
	20 preps	A36228
PureLink Expi Endotoxin-Free Maxi Plasmid Purification Kit	4 preps	A33073
	10 preps	A31217
	25 preps	A31231
PureLink Expi Endotoxin-Free Mega Plasmid Purification Kit	4 preps	A31232
PureLink Expi Endotoxin-Free Giga Plasmid Purification Kit	2 preps	A31233
Genomic DNA purification kits		
PureLink Genomic DNA Mini Kit	10 preps	K1820-00
	50 preps	K1820-01
	250 preps	K1820-02
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)	133800-96A
PureLink *Pro* 96 Viral RNA/DNA Mini Kit	50 preps	12280-050
PureLink Genomic Plant DNA Mini Kit	50 preps	K183001
DNAzol Reagent	100 mL	10503027
PureLink Microbiome DNA Purification Kit	50 preps	A29790

Ordering information (continued)

Product	Quantity	Cat. No.
Plasmid 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
Automated nucleic acid purification systems		
Instruments		
KingFisher Flex Purification System with 24 Deep-Well Head	1 system	5400640
KingFisher Flex Purification System with 96 Deep-Well Head	1 system	5400630
KingFisher Duo Prime Purification System	1 system	5400110
Nucleic acid purification products		
MagMAX-96 DNA Multi-Sample Kit	96 preps	4413021
MagMAX *mir*Vana Total RNA Isolation Kit	96 preps	A27828
MagMAX Cell-Free DNA Isolation Kit	50 preps	A29319
MagMAX Plant DNA Isolation Kit	96 preps	A32549
MagMAX DNA Multi-Sample Ultra 2.0 kit	1 kit	A36570
MagMAX FFPE DNA/RNA Ultra Kit	1 kit	A31881
MagMAX Total Nucleic Acid Isolation Kit	100 preps	AM1840
MagMAX Cell-Free Total Nucleic Acid Isolation Kit	50 preps	A36716
MagMAX Viral/Pathogen Nucleic Acid Isolation Kit	1 kit	A42352
MagMAX Viral/Pathogen Ultra Nucleic Acid Isolation Kit	1 kit	A42356
MagMAX Microbiome Ultra Nucleic Acid Isolation Kit	1 kit	A42357
		A42358
Nucleic acid quantitation		
Qubit 4 Fluorometer	1 fluorometer	Q33226
Qubit 4 Quantitation Starter Kit	1 kit	Q33227
Qubit 4 NGS Starter Kit	1 kit	Q33228
Qubit 4 RNA IQ Starter Kit	1 kit	Q33229
Qubit dsDNA BR Assay Kit	100 assays	Q32850
	500 assays	Q32853
Qubit dsDNA HS Assay Kit	100 assays	Q32851
	500 assays	Q32854
Qubit 1X dsDNA HS Assay Kit	100 assays	Q33230
Qubit ssDNA Assay Kit	1 kit	Q10212

Ordering information (continued)

Product	Quantity	Cat. No.
Nucleic acid quantitation (continued)		
Qubit Assay Tubes	500 tubes	Q32856
Qubit 1X dsDNA HS Assay Lambda Standard	5 mL	Q33233
Platinum SuperFi DNA Polymerase	100 units	12351010
Platinum SuperFi Green DNA Polymerase	100 units	12357010
Platinum SuperFi PCR Master Mix	100 reactions	12358010
Platinum SuperFi Green PCR Master Mix	100 reactions	12359010
Platinum II *Taq* Hot-Start DNA Polymerase	100 reactions	14966001
Platinum II Hot-Start PCR Master Mix (2X)	50 reactions	14000012
Platinum II Hot-Start Green PCR Master Mix (2X)	50 reactions	14001012

Notes

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Find out more at **thermofisher.com/dnaprep**

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