molecular biology

thermo scientific invitrogen

ROCK THE CLONE

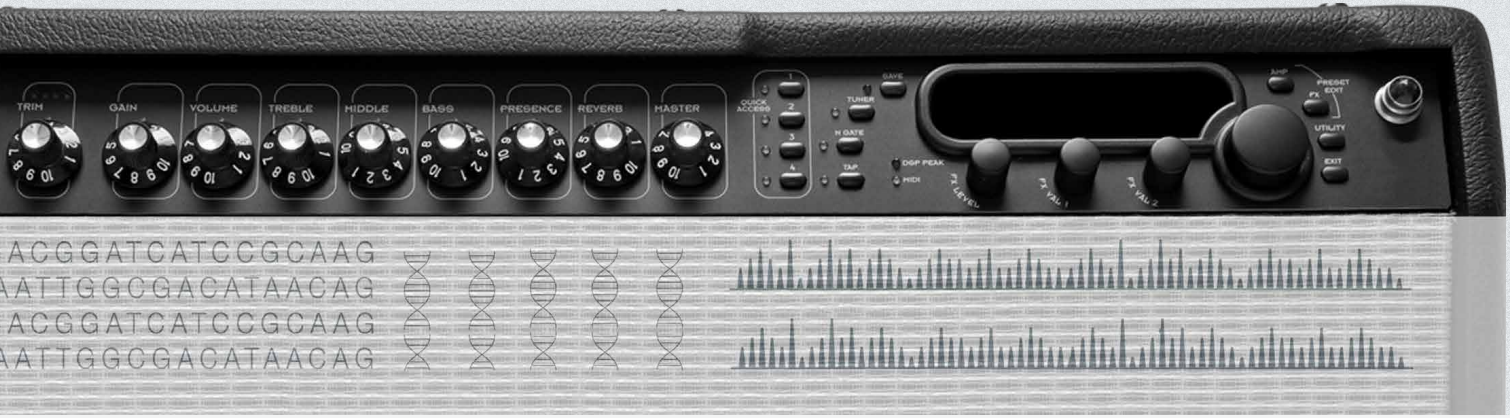
Molecular cloning workflow solutions

CLONE

TRANSFORM

PURIFY

ANALYZE



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part of **Thermo Fisher Scientific**

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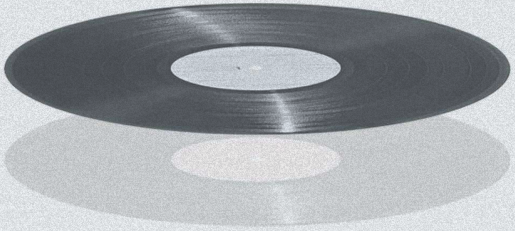

Tune up your cloning workflow

The molecular cloning workflow requires many steps to obtain the perfect clone for downstream applications. Striking the right note at every step in the cloning workflow—clone, transform, purify, and analyze—is key to successfully producing a recombinant clone quickly.

This handbook is intended to guide you by providing technical information and clear choices across the cloning workflow with solutions designed for speed and simplicity.

With all of our cloning solutions, it is time to rock your workflow and rock your clone.

Hit the right cloning notes with all the resources available at **thermofisher.com/rocktheclone**

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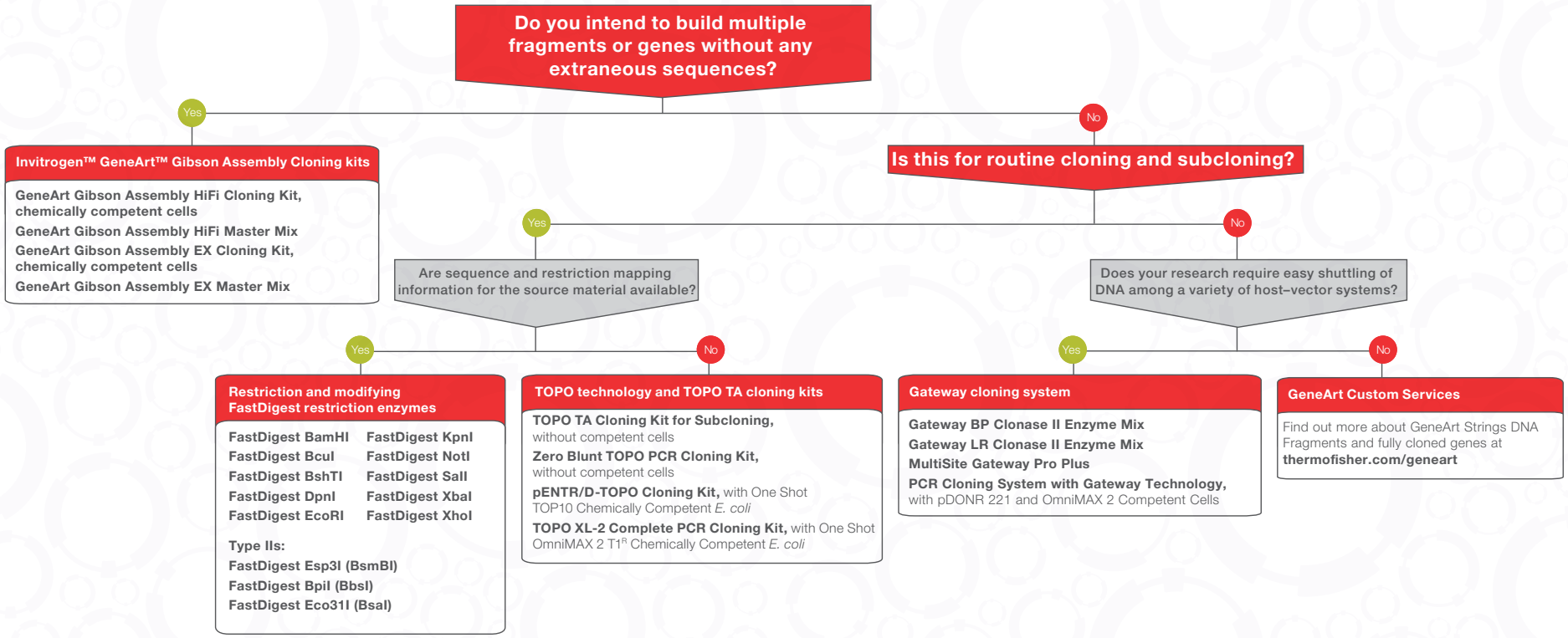
Molecular cloning relies on recombinant DNA technologies to insert a DNA sequence of interest into a vector to generate a large number of copies of the recombinant vector.

Cloning has traditionally required restriction enzymes and a DNA ligase to form a new recombinant vector; however, recent cloning advancements such as TOPO cloning, ligation-independent cloning, and gene synthesis provide more efficient workflow solutions.

Find more tips and troubleshooting advice on cloning at
thermofisher.com/cloningeducation and **thermofisher.com/cloningsupport**

Cloning solutions overview

For over 25 years we have provided superior tools for DNA cloning, continually improving upon traditional technologies and developing new ones. From restriction enzymes to complete cloning kits, we offer a comprehensive portfolio of tools and reagents that will help you save resources while obtaining high-quality cloned DNA to accelerate your next discovery.

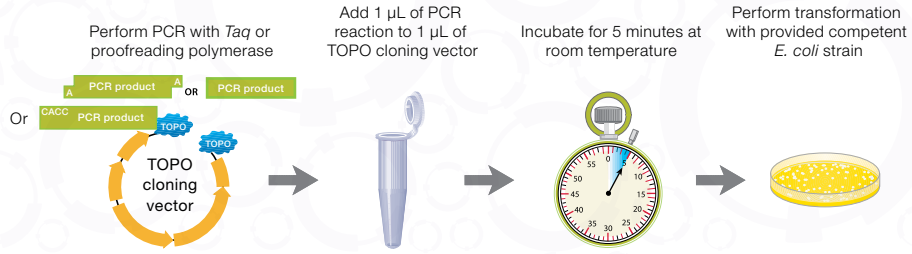


Cloning solutions

TOPO cloning

Invitrogen™ TOPO™ PCR cloning technology was developed to help improve cloning efficiency, simplify protocol setup, and accommodate a wide range of PCR insert sizes. TOPO technology enables inserts with compatible ends to be readily joined to the vector in 5 minutes, without the need for additional ligation steps.

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



The three steps of TOPO PCR cloning technology.

TOPO XL-2 PCR Cloning Kit

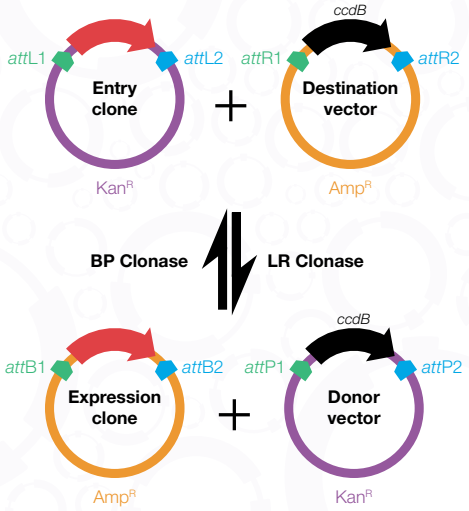
The Invitrogen™ TOPO™ XL-2 PCR Cloning Kit provides all the necessary elements to enable precise, efficient, and simple cloning of PCR products up to 13 kb.

Find out more at **thermofisher.com/topoxl2**

Gateway cloning system

To shuttle genes of interest between vectors, the Invitrogen™ Gateway™ cloning system offers site-specific recombination-based cloning. With this easy-to-use choice for cloning in multiple expression systems, the insert's proper orientation and reading frame are maintained during shuttling using the Gateway vectors.

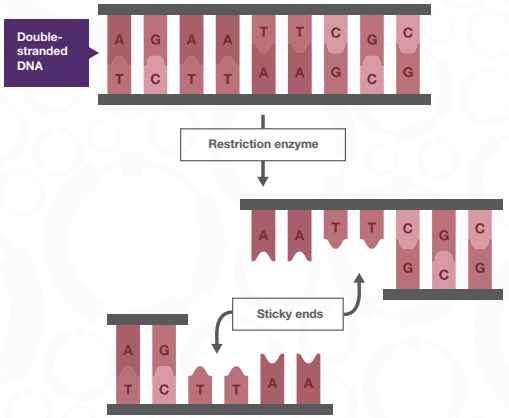
Find out more at **thermofisher.com/gateway**



The Gateway cloning reactions. The scheme shows the four types of plasmids and enzyme mixes involved in Gateway cloning reactions. Red arrows represent the fragment of interest. Adapted from Katzen F (2007) *Expert Opin Drug Discov* 2(4):571–589.

Cloning solutions (cont.)

Found naturally in bacteria, restriction enzymes recognize and cleave specific DNA sequences, resulting in sticky ends (5′ or 3′ protruding ends) or blunt ends, enabling DNA inserts to be cloned into vectors with compatible ends. Star activity, buffer compatibility, and incomplete digestion are some common hurdles in restriction digestion.

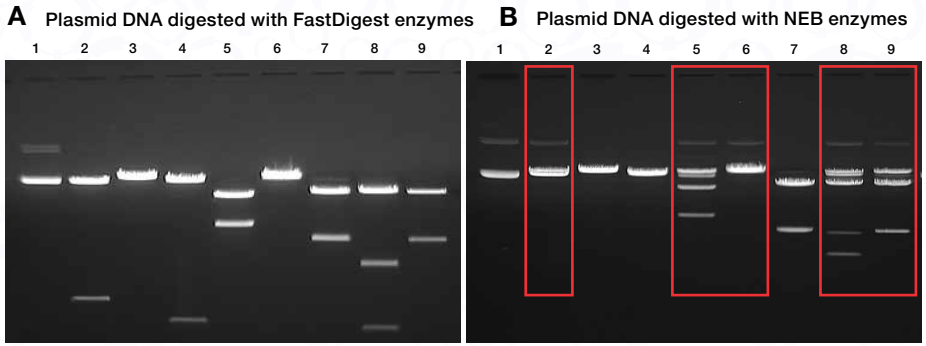


FastDigest restriction enzymes

To simplify cloning, we offer FastDigest enzymes, an advanced line of restriction enzymes that share buffer compatibility with downstream modifying enzymes. Its benefits include:

- Complete digestion in 5–15 minutes
- Double and multiple digestions in a universal buffer for any combination of enzymes
- No sequential digestions and buffer changes
- 176 unique specificities
- Direct loading of reaction mixture on gels

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



1: undigested plasmid DNA
2: FastDigest BcuI
3: FastDigest XbaI
4: FastDigest NdeI
5: FastDigest SalI
6: FastDigest XmaJI
7: FastDigest Eco31I
8: FastDigest Eco52I
9: FastDigest BglII

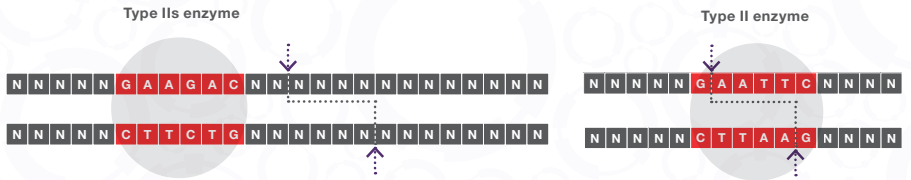
1: undigested plasmid DNA
2: SpeI-HF
3: XbaI
4: NdeI
5: SalI-HF
6: AvrII
7: BsaI
8: EagI-HF
9: BglI

Figure 1. Comparison of digestion efficiencies of restriction enzymes. (A) FastDigest restriction enzymes digest plasmid DNA much more efficiently compared to the **(B)** NEB enzymes. In this experiment, using the NEB protocol, 1 µg of plasmid DNA was digested for ~15 minutes.

Type IIs restriction enzymes

A specific group of restriction enzymes called type IIs endonucleases cleave DNA outside of their recognition sequences. In combination with DNA ligase, type IIs restriction enzymes are utilized to drive the insertion of one or several DNA fragments into a recipient vector without the inclusion of residual restriction enzyme sites and other unwanted DNA sequences at fragment junctions (scarless cloning).

Find FastDigest type IIs enzymes at **thermofisher.com/fastdigesttypeiis**



Recognition site and cleavage site of type IIs vs. type II restriction enzymes.

Cloning solutions (cont.)

GeneArt Gibson Assembly cloning kits

Invitrogen™ GeneArt™ Gibson Assembly® cloning kits allow for simultaneous assembly of up to 15 large DNA fragments to precisely create very large constructs with no additional sequences in highly efficient reactions. This cloning method circumvents the need for multiple rounds of restriction enzyme analysis and digestion, DNA end repair, dephosphorylation, ligation, enzyme inactivation, and cleanup, and is a powerful tool in synthetic biology.

Benefits of GeneArt Gibson Assembly kits:

- Assembly of up to 15 fragments to build seamless clones
- Cloning efficiencies up to >95%
- Choice of complete kits with competent cells or master mixes

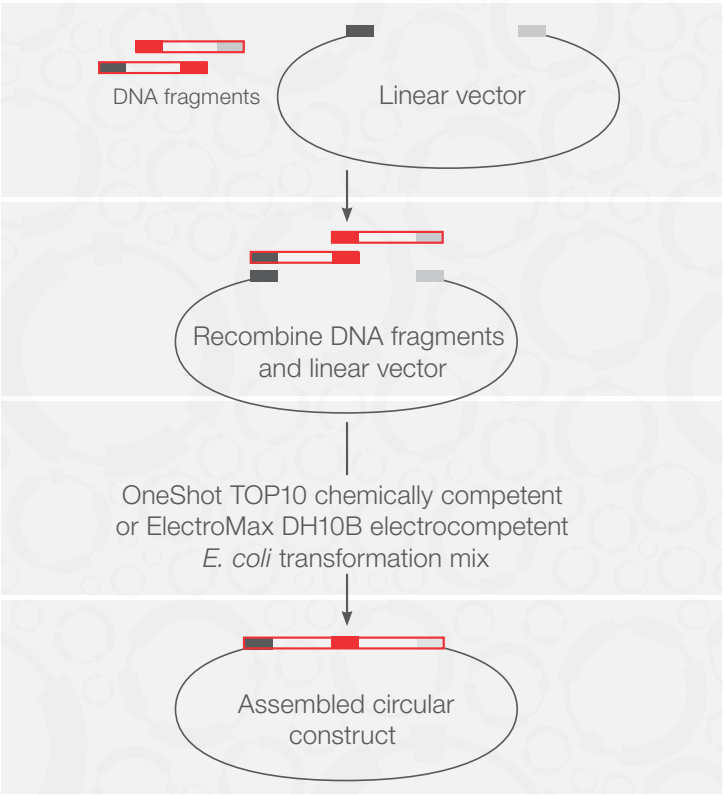
Find out more at **thermofisher.com/gibsonassembly**

GeneArt Gene Synthesis

A reliable and cost-effective method for obtaining customized DNA constructs with 100% sequence accuracy, Invitrogen™ GeneArt™ Gene Synthesis offers:

- Synthetic, ready-to-transfect genes
- The ability to clone into many popular Invitrogen vectors or your own custom vector
- Fully cloned, 100% sequence-verified genes ready for downstream applications
- Free optimization of gene with Invitrogen™ GeneArt™ GeneOptimizer™ software for maximum protein expression

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



ATGACGGATC
CGAATTGGCC
ATGACGGATC

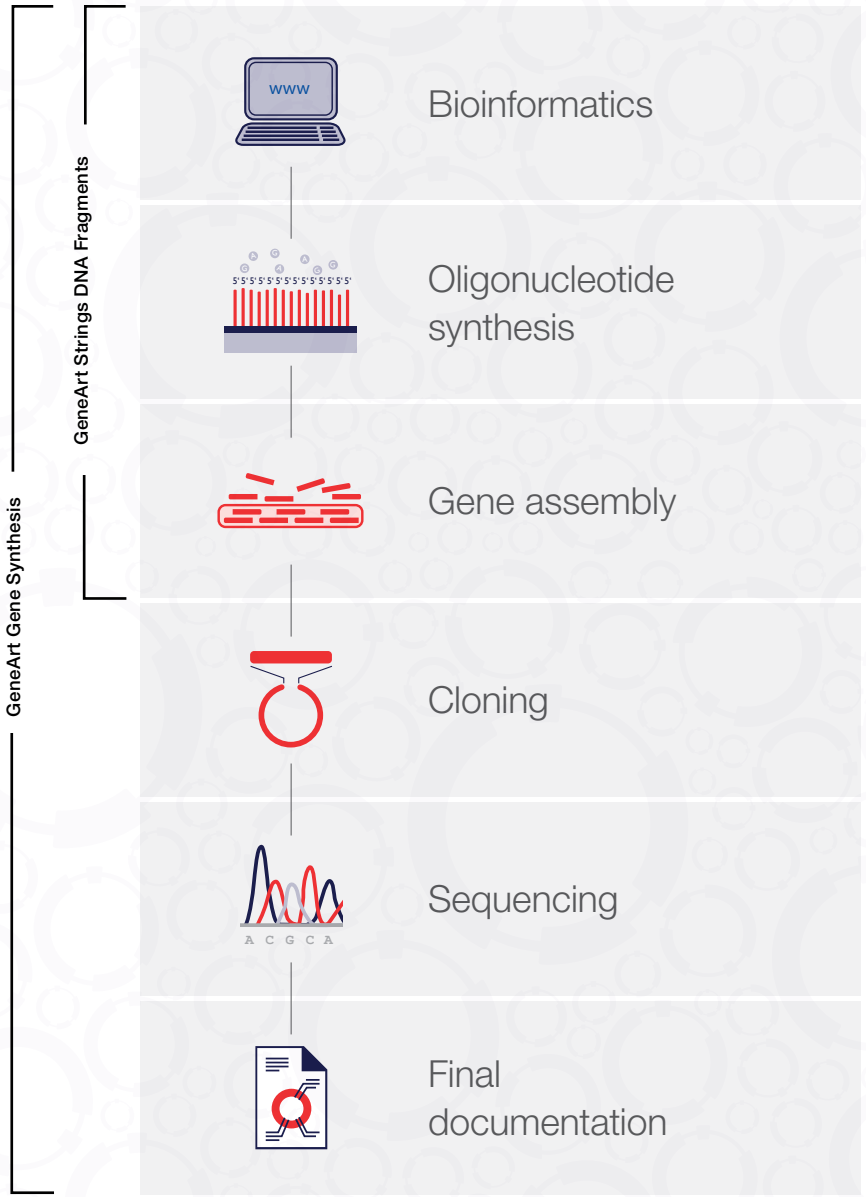
Cloning solutions (cont.)

GeneArt Strings DNA Fragments

A time-saving alternative to PCR, Invitrogen™ GeneArt™ Strings™ DNA Fragments are available in lengths up to 3 kb and are compatible with any downstream cloning method of choice, providing:

- Synthetic, ready-to-use DNA fragments
- DNA with your specified ends to facilitate the cloning method of choice
- No starting DNA required
- Free optimization of gene with GeneArt GeneOptimizer software for maximum protein expression
- Option of Invitrogen™ GeneArt™ Strings™ DNA Libraries with mixed, randomized nucleotides using full IUPAC codes

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



CATCCGCAAG
GACATAACAG
CATCCGCAAG

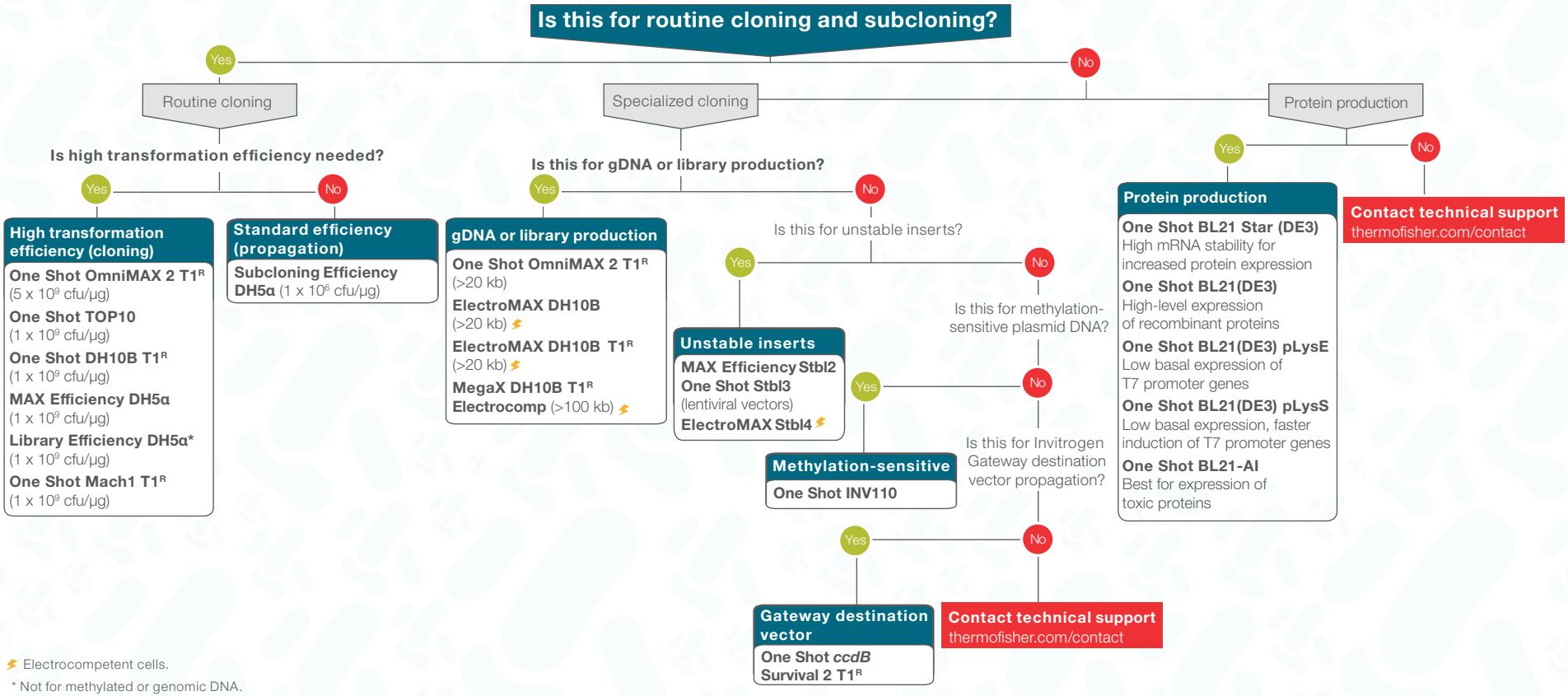
After the DNA fragment is cloned into a vector, competent bacteria are transformed with it to propagate sufficient quantities of the cloned DNA for downstream experiments. The choice of competent cells for transformation depends upon the transformation methods, strain genotypes, plasmid characteristics, and desired applications.

Find more tips and troubleshooting advice on transformation at **thermofisher.com/compcells** and **thermofisher.com/compcells-education**

Competent cells

Choosing competent cells based on the application

We offer a broad portfolio of chemically competent and electrocompetent cells in a wide range of transformation efficiencies, formats, and strains. Use the decision tree below to select the best cells for your specific application area.



⚡ Electrocompetent cells.

* Not for methylated or genomic DNA.

Competent cells (cont.)

Chemically competent cells

Chemically competent cells are treated with calcium chloride to facilitate attachment of the plasmid DNA to the cell membrane. The competent cells are heated in a water bath; this opens the pores of the cell membrane, allowing entry of the plasmid. Chemically competent cells are the best solution for general cloning and subcloning applications.

One Shot TOP10 cells

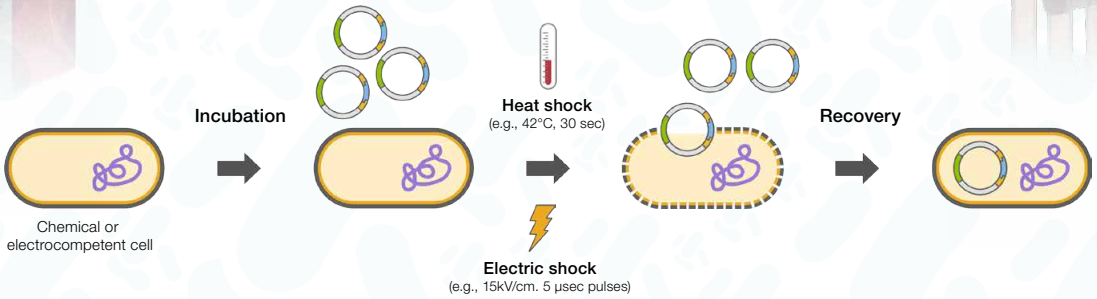
Chemically competent Invitrogen™ One Shot™ TOP10 *E. coli* are ideal for high-efficiency cloning and plasmid propagation and are provided at a transformation efficiency of 1 x 10^9 cfu/µg plasmid DNA. They allow stable replication of high copy number plasmids and are the same competent cells that come with many of our cloning kits.

Electrocompetent cells

Electrocompetent cells are used in the electroporation process. Electrical pulses create pores that allow genetic material to permeate the bacterial membrane. The Invitrogen™ portfolio offers a variety of electrocompetent *E. coli* cells to reliably clone your DNA with high efficiency.

ElectroMAX DH10B cells

These electrocompetent *E. coli* cells offer the highest transformation efficiencies of >1 x 10^{10} cfu/µg plasmid DNA. Invitrogen™ ElectroMAX™ DH10B™ cells are ideal for applications requiring high transformation efficiencies, such as with cDNA or gDNA library construction.



Chemical and electrocompetent transformation.

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

Medium- and high-throughput transformation

Performing bacterial transformations one by one can be very time-consuming and create a bottleneck in your experimental workflow. There are times when medium- and high-throughput transformation options are desired. Invitrogen™ MultiShot™ chemically competent cells provide three flexible product formats to meet your throughput needs.

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

StripWell format

- Medium-throughput option
- Twelve 8-tube strips
- Suitable for 1–96 transformations
- Five *E. coli* strains available

FlexPlate format

- High-throughput option
- 96-well plate separates into 12 x 8-well segments
- Manual and automated platform transformations
- Six *E. coli* strains available

96-well plate

- Highest-throughput option
- Five 96-well plates
- Available with the TOP10 strain
- Stable replication of high copy number plasmids

Did you know?

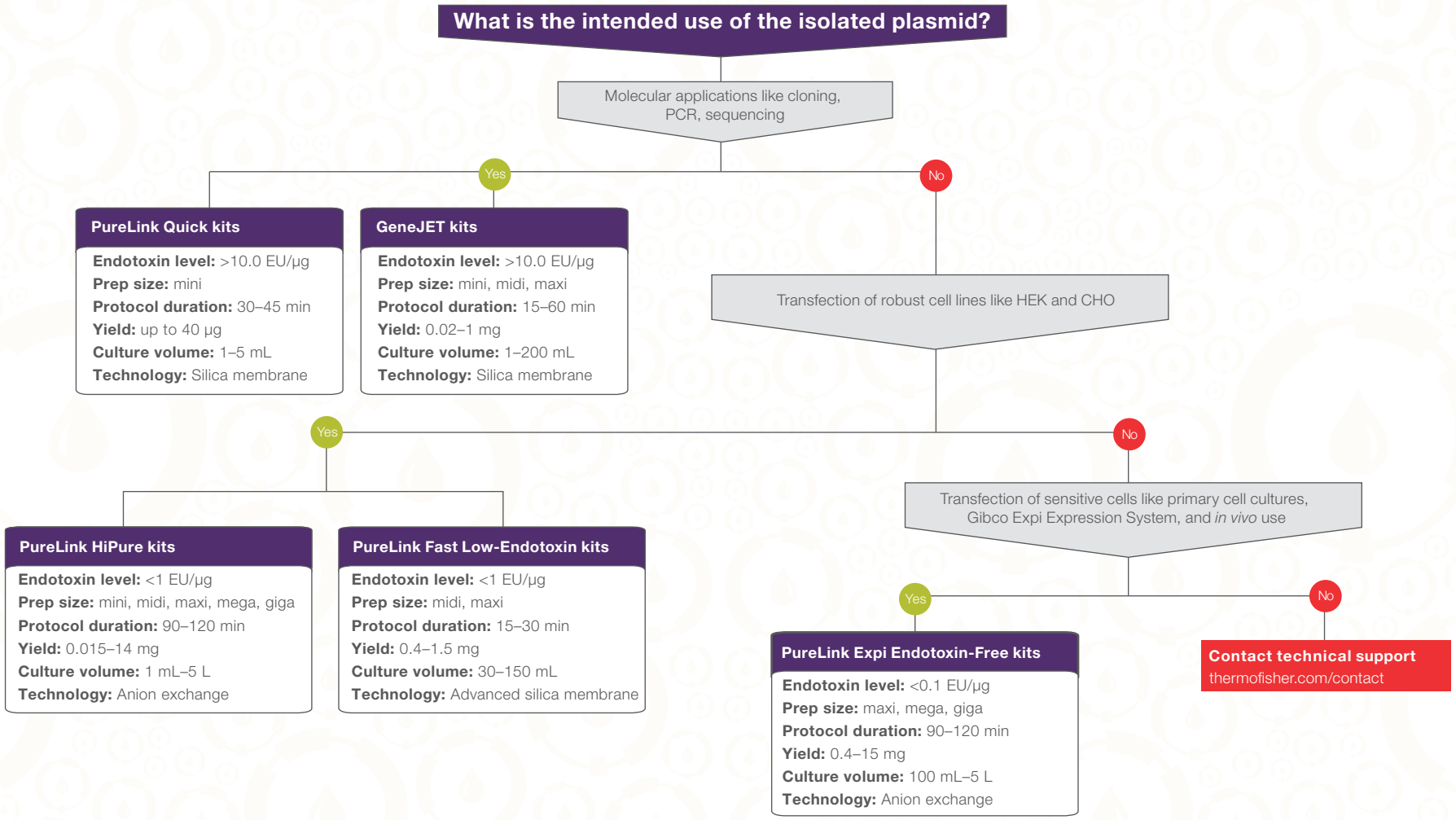
Invitrogen competent cells can be provided in custom configurations per your request. Large and custom volumes as well as multiple formats are at your fingertips. Simply email us at **customorders@thermofisher.com**

Once the bacterial cells are transformed with the vector, it is critical to recover plasmid DNA using plasmid purification products that are optimized to provide maximum yield, purity, and integrity.

Find more tips and troubleshooting resources on plasmid purification at **thermofisher.com/plasmid** and **thermofisher.com/plasmidsupport**

Plasmid purification solutions

Plasmid purification is a basic technique necessary for generating recombinant clones. Thermo Scientific™ GeneJET™ and Invitrogen™ PureLink™ plasmid purification kits have been designed and developed with your experimental specifications, plasmid purity, and throughput demands in mind. Use the decision tree below to select the right plasmid purification kit based on the intended application.



Solutions for molecular applications

GeneJET and PureLink kits

Robust purification of plasmid DNA, in the amount and purity required for the downstream application of interest, is a key step of the cloning workflow. During the construction of plasmid DNA and subsequent verification (sequencing, enzymatic digestion), small-scale plasmid DNA preparations are generally used (see the table below). Basic molecular biology applications do not require high purity of plasmid, making silica membrane–based columns such as GeneJET and PureLink products ideal due to their fast and simple purification workflows.

These kits offer the following benefits:

- High yields of low-throughput molecular-grade plasmid DNA
- Ideal for basic molecular biology applications, including PCR, sequencing, cloning, and transcription
- Thermo Scientific™ GeneJET™ Plasmid Miniprep, Midiprep, and Maxiprep Kits offer the best overall value and ease of use, and fastest processing (for conventional pellet method)
- The Invitrogen™ PureLink™ Plasmid Miniprep Kit offers slightly higher yield and comes more complete (elution tubes plus optional buffers included) in mini-scale column format

Find out more at **thermofisher.com/genejet** and **thermofisher.com/purelink**

Scale considerations for plasmid purification

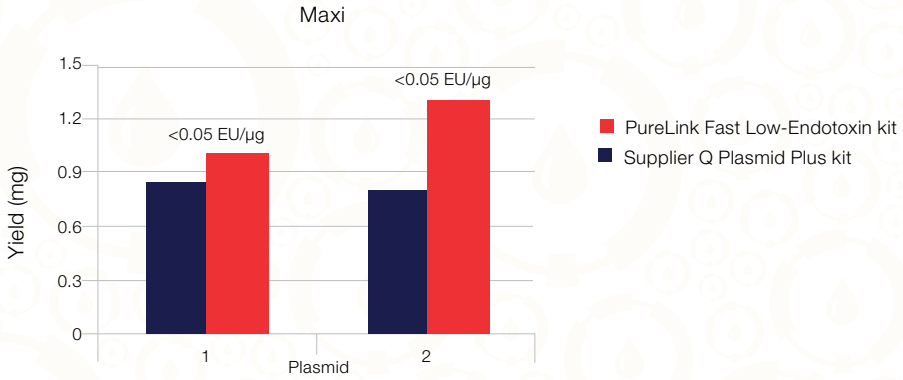
Prep size	Miniprep	Midiprep	Maxiprep	Megaprep	Gigaprep
Bacterial culture volume	1–5 mL	10–50 mL	100–500 mL	500 mL–2.5 L	2.5–5 L
Plasmid yield	Up to 40 µg	Up to 300 µg	Up to 1 mg	Up to 4 mg	Up to 15 mg

Solutions for transfection applications

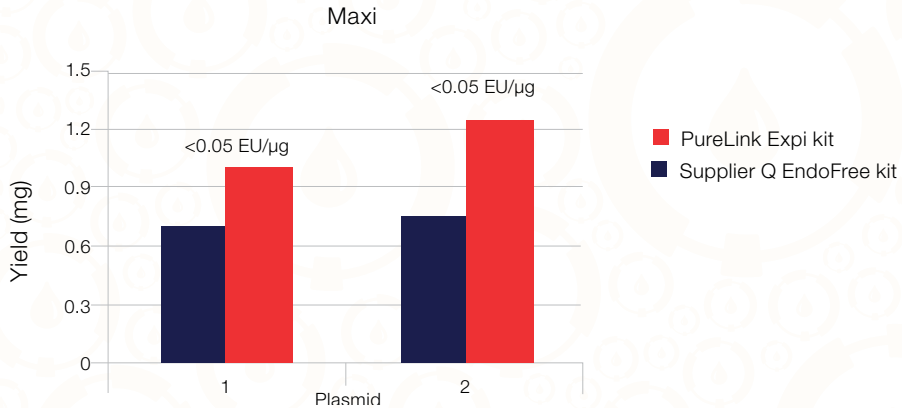
PureLink kits

For experiments involving cells and animal models, endotoxin levels are one of a scientist's primary concerns. Endotoxins can induce immune responses, resulting in suboptimal transfection and toxicity in many cell lines, and negatively influence protein expression in sensitive cells. To ensure successful *in vitro* and *in vivo* studies, Invitrogen™ PureLink™ HiPure, Fast Low-Endotoxin, and Expi Endotoxin-Free kits are ideal for applications that require high purity of plasmids and low to "zero" levels of endotoxins.

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

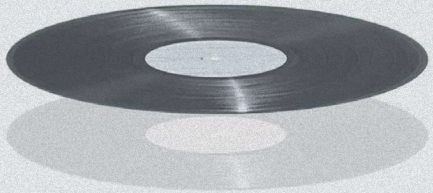


Achieve high yields of low-endotoxin, advanced transfection–quality plasmid DNA with the PureLink Fast Low-Endotoxin kit, compared to the comparable kit from another supplier. Two high-copy plasmids with different backbones were purified using the PureLink Fast Low-Endotoxin and Supplier Q maxiprep kits as described in the product manuals. Plasmid yields are shown. Endotoxin values (EU/µg) were measured using an Endosafe™-PTS instrument (Charles River) and are provided only for the PureLink Fast Low-Endotoxin preparations.



Higher yields of endotoxin-free, advanced transfection–quality plasmid DNA obtained with a PureLink Expi purification kit than with a comparable kit from another supplier. Two high-copy plasmids with different backbones were purified using the PureLink Expi Endotoxin-Free and Supplier Q maxiprep kits as described in the product manuals. Endotoxin values (EU/µg) were measured using the EndoSafe-PTS test (Charles River) and are provided only for the PureLink Expi preparations.

ANALYZE

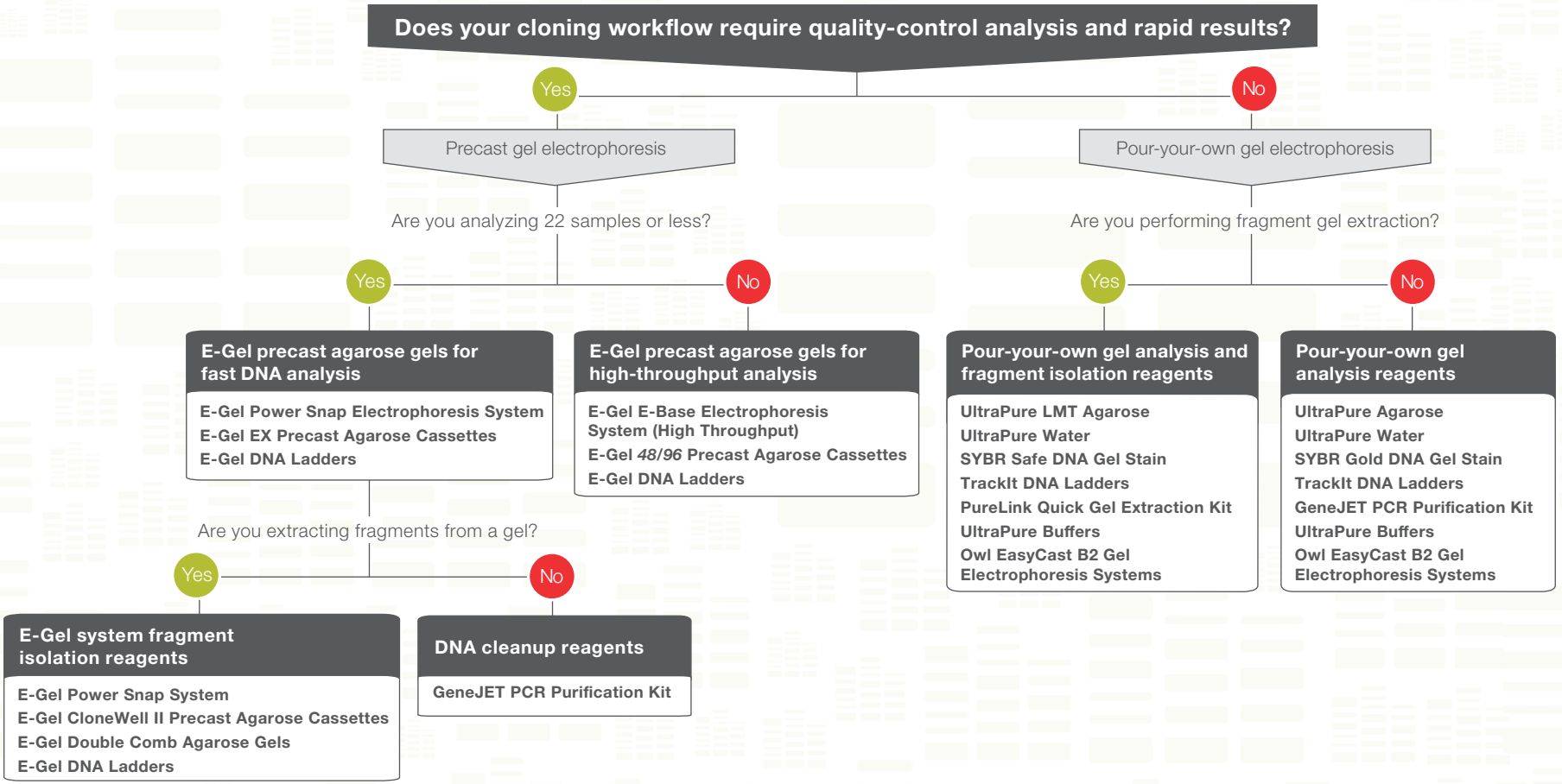


Choosing the right tools for your cloning analysis can significantly improve and accelerate results, enabling you to address downstream applications sooner. Explore our do-it-yourself reagents, isolation kits, and precast analysis options to find the right workflow solution for your cloning analysis needs.

Find more tips and troubleshooting resources on nucleic acid analysis at **thermofisher.com/na-electrophoresis-education**

Sample analysis solutions

Identifying the appropriate gel type and gel concentration for your analysis is an essential step that will streamline the separation of nucleic acids. Find out more about our convenient reagents for sample analysis using agarose gel electrophoresis, including pour-your-own Invitrogen™ UltraPure™ agarose reagents and hassle-free precast Invitrogen™ E-Gel™ agarose gels, in this section.



Sample analysis solutions (cont.)

E-Gel precast gels

Using precast agarose gels can simplify the nucleic acid electrophoresis workflow. E-Gel precast gels are self-contained and ready for use, with the agarose and the DNA stain packaged in a disposable cassette. The use of in-gel Invitrogen™ SYBR™ Safe stain and a blue-light transilluminator minimizes DNA damage and improves cloning efficiency compared to conventional methods. There are no gels to pour, buffers to make, staining or destaining steps to perform, or gel boxes to assemble. Just load your samples and start the run.

Sample analysis in three simple steps—load, run, and analyze.

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

E-Gel Power Snap Electrophoresis System

To help reduce workflow time, the Invitrogen™ E-Gel™ Power Snap Electrophoresis System integrates rapid, real-time nucleic acid analysis with high-resolution image capture.

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

Electrophoresis reagents

For pour-your-own agarose gels, choosing high-quality agarose, optimized DNA ladders, and improved DNA stains can help you achieve optimal electrophoresis results.

UltraPure reagents for electrophoresis

Invitrogen™ UltraPure™ reagents are specifically formulated to meet your nucleic acid analysis and purification needs. UltraPure agarose and reagents are made from highly pure biochemicals for maximum reliability and superior performance.

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

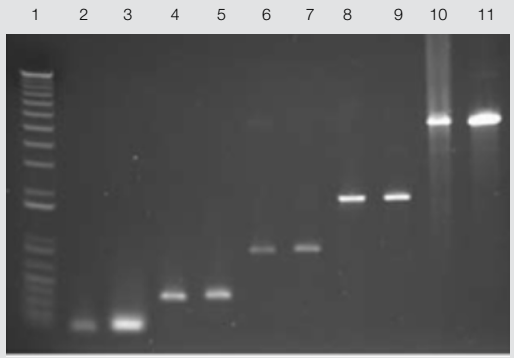
DNA stains

Detection of nucleic acid samples in gels can be improved using fluorescent dyes that are safer and/or more sensitive than ethidium bromide. SYBR Safe and SYBR Gold stains provide greater safety and/or sensitivity with lower background fluorescence than the conventional ethidium bromide stain.

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

Sample isolation solutions

Whether isolating a specific DNA fragment from complex PCR mixtures or recovering bands from agarose gels, we have solutions that will meet your needs. Isolate DNA fragments that are ready for a variety of downstream applications like sequencing, PCR, transcription, cloning, and labeling.



DNA load = 25 ng/lane
Lane 1: 1 Kb Plus DNA Ladder
Lane 2: 100 bp amplicon, unpurified
Lane 3: 100 bp amplicon, purified
Lane 4: 400 bp amplicon, unpurified
Lane 5: 400 bp amplicon, purified
Lane 6: 965 bp amplicon, unpurified
Lane 7: 965 bp amplicon, purified
Lane 8: 2 kb amplicon, unpurified
Lane 9: 2 kb amplicon, purified
Lane 10: 5.4 kb amplicon, unpurified
Lane 11: 5.4 kb amplicon, purified

Amplification of DNA isolated using the Invitrogen™ PureLink™ Quick Gel Extraction Kit. PCR amplicons varying in size from 100 bp to 5.4 kb were prepared using recombinant Invitrogen™ *Taq* DNA Polymerase. A portion of each PCR reaction was run on a 1% Invitrogen™ UltraPure™ Agarose gel (data not shown), and amplicon bands were excised and extracted using the PureLink Quick Gel Extraction Kit. Unpurified and extracted portions were loaded onto a 1% agarose gel and visualized using SYBR Safe DNA Gel Stain.

Invitrogen kits for DNA cleanup

Product	Protocol time (min)	DNA cleanup application	Format	Elution volume (µL)	Quantity
GeneJET PCR Purification Kit	5	PCR cleanup	Silica spin or vacuum column	50	50 preps 250 preps
PureLink Quick Gel Extraction Kit	<30	Gel extraction	Silica spin or vacuum column	30–100	50 preps 250 preps

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

Resources

A comprehensive portfolio of educational resources, frequently asked questions, and mobile apps is now available to help you reach new heights in your research.

Find more tips and troubleshooting advice on cloning at
thermofisher.com/cloningeducation and **thermofisher.com/cloningsupport**

Frequently asked questions

Below are some common questions and answers to help you start or troubleshoot your molecular biology experiments.

Clone

What are some of the prerequisites for TOPO cloning?
Please consider the following before you do TOPO cloning:

- TOPO cloning cannot ligate DNA with a 5′ phosphate group.
- TOPO cloning will decrease in efficiency inversely with the size of the insert (>3 kb) unless you use the TOPO XL cloning kit.
- TOPO vectors contain different antibiotic resistance markers, which should be considered before purchase.

Are GeneArt Gibson Assembly kits available with electrocompent cells?
Yes, both the HiFi and EX configurations are available with electrocompetent cells. Go to **thermofisher.com/gibsonassembly** to see the full list of available products.

What is the main difference between GeneArt Strings DNA Fragments and GeneArt Gene Synthesis?
GeneArt Strings DNA Fragments are custom-made, uncloned, double-stranded linear DNA fragments. GeneArt Gene Synthesis is a service offered for chemical synthesis, cloning, and sequence verification of genetic sequences.

Transform

Can you explain the significant differences between the TOP10, DH5α, and Mach1 strains that you have for the cloning reactions?
DH5α cells are commonly used for routine cloning, but are *mcr/mrr*$^{+}$ and therefore not recommended for genomic cloning. The TOP10 competent cells, on the other hand, are *mcr/mrr*$^{-}$, and therefore are a good choice for routine cloning and can be used for cloning of methylated DNA, such as eukaryotic genomic DNA. Our Mach1 strain is the fastest-growing cloning strain that is T1 phage–resistant.

Mobile apps

Instrument Connect—remote monitoring
With Instrument Connect—the remote monitoring app powered by Connect, our cloud-based platform—you can stay connected to any cloud-enabled instrument, including the Applied Biosystems™ ProFlex™, SimpliAmp™, and MiniAmp™ PCR instruments.

Purify

What growth conditions do you recommend for *E. coli* for isolating plasmid DNA using your plasmid isolation kits?
We typically recommend growing *E. coli* up to A_{600} = 1–1.5 (~1 x 10^9 cells/mL) in LB broth.

Can I elute my plasmid from PureLink columns with water instead of TE?
For any silica columns, elution with water is generally possible. However, a buffer is preferred for stability and accuracy of absorbance readings, as pure water can have a very low pH (4–5).

Analyze

I want to pour my own gels. Which agarose should I use?
Our Invitrogen™ UltraPure™ Agarose is standard melting-point agarose designed for routine separation and analysis of DNA and RNA fragments in the 500–23,000 nt range. UltraPure Agarose 1000 is a specialized agarose that provides higher resolution of PCR fragments and other short DNA fragments. We also offer an Invitrogen™ UltraPure™ Low Melting Point Agarose, which is ideal for resolving and isolating DNA fragments from 10 to 1,000 bp, with a low melting temperature of 65°C or less.

Ordering information

Product	Quantity	Cat. No.
Clone		
FastDigest BamHI	800 reactions	FD0054
FastDigest BcuI	50 reactions	FD1254
FastDigest BshTI	20 reactions	FD1464
FastDigest DpnI	100 reactions	FD1704
FastDigest EcoRI	800 reactions	FD0274
FastDigest KpnI	300 reactions	FD0524
FastDigest NotI	50 reactions	FD0594
FastDigest SalI	200 reactions	FD0644
FastDigest XbaI	300 reactions	FD0684
FastDigest XhoI	400 reactions	FD0694
FastDigest Esp3I (BsmBI) (type IIs)	20 reactions	FD0454
FastDigest BpiI (BbsI) (type IIs)	20 reactions	FD1014
FastDigest Eco31I (BsaI) (type IIs)	100 reactions	FD0294
TOPO TA Cloning Kit for Subcloning, without competent cells	10 reactions	451641
Zero Blunt TOPO PCR Cloning Kit, without competent cells	10 reactions	451245
Zero Blunt TOPO PCR Cloning Kit for Sequencing, with One Shot TOP10 Chemically Competent *E. coli*	25 reactions	K287520
pENTR/D-TOPO Cloning Kit, with One Shot TOP10 Chemically Competent *E. coli*	20 reactions	K240020
TOPO XL-2 Complete PCR Cloning Kit, with One Shot OmniMAX 2 T1^{R} Chemically Competent *E. coli*	20 reactions	K8050-20
TOPO TA Cloning Kit for Subcloning, without competent cells	10 reactions	451641
Gateway LR Clonase II Enzyme Mix	20 reactions	11791020
MultiSite Gateway Pro Plus	20 reactions	12537100
MultiShot FlexPlate Stbl3 Chemically Competent *E. coli*	1 plate	C7381201
PCR Cloning System with Gateway Technology with pDONR 221 and OmniMAX 2 Competent Cells	20 reactions	12535029
GeneArt Gibson Assembly HiFi Cloning Kit, chemically competent cells	10 reactions	A46624
GeneArt Gibson Assembly HiFi Master Mix	10 reactions	A46627
GeneArt Gibson Assembly EX Cloning Kit, chemically competent cells	10 reactions	A46633
GeneArt Gibson Assembly EX Master Mix	10 reactions	A46635
GeneArt Gene Synthesis	**thermofisher.com/genesynthesis**	

Product	Quantity	Cat. No.
Transform		
One Shot TOP10 Chemically Competent *E. coli*	20 reactions	C404003
MultiShot FlexPlate TOP10 Chemically Competent *E. coli*	1 plate	C4081201
MAX Efficiency DH5α Competent Cells	200 µL	18258012
MultiShot FlexPlate DH5α T1^{R} Chemically Competent *E. coli*	1 plate	C4481201
ElectroMAX DH10B Cells	100 µL	18290015
MAX Efficiency Stbl2 Competent Cells	5 x 200 µL	10268019
One Shot Stbl3 Chemically Competent *E. coli*	20 x 50 µL	C737303
MultiShot FlexPlate Stbl3 Chemically Competent *E. coli*	1 plate	C7381201
Purify		
PureLink Expi Endotoxin-Free Maxi Plasmid Purification Kit	10 preps	A31217
	25 preps	A31231
	4 preps	A33073
PureLink Expi Endotoxin-Free Mega Plasmid Purification Kit	4 preps	A31232
PureLink Expi Endotoxin-Free Giga Plasmid Purification Kit	2 preps	A31233
PureLink Expi Endotoxin-Free Buffer Set	1 set	A33074
PureLink Fast Low-Endotoxin Midi Plasmid Purification Kit	25 preps	A35892
	50 preps	A36227
PureLink Fast Low-Endotoxin Maxi Plasmid Purification Kit	25 preps	A35895
	50 preps	A36228
PureLink HiPure Plasmid Miniprep Kit	25 preps	K210002
	100 preps	K210003
PureLink HiPure Plasmid Midiprep Kit	25 preps	K210004
	100 preps	K210005
PureLink HiPure Plasmid Maxiprep Kit	10 preps	K210006
	25 preps	K210007
PureLink HiPure Expi Plasmid Megaprep Kit	4 preps	K210008XP
PureLink HiPure Expi Plasmid Gigaprep Kit	2 preps	K210009XP
PureLink Quick Plasmid Miniprep Kit (molecular grade)	50 preps	K210010
	250 preps	K210011
GeneJET Plasmid Midiprep Kit	25 preps	K0481
	100 preps	K0482
GeneJET Plasmid Maxiprep Kit	10 preps	K0491
	25 preps	K0492
	50 preps	K0502
GeneJET Plasmid Miniprep Kit	250 preps	K0503

Ordering information (cont.)

Product	Quantity	Cat. No.
Analyze		
UltraPure Ethidium Bromide	10 mL	15585011
UltraPure Agarose	100 g	16500100
UltraPure DNase/RNase-Free Distilled Water	10 x 500 mL	10977023
UltraPure TAE Buffer 10 X	4 L	15558026
TrackIt 1 Kb Plus DNA Ladder	50 µg	10488085
SYBR Safe DNA Gel Stain	400 µL	S33102
E-Gel Agarose Gels EX, 1%	10 gels	G401001
E-Gel Agarose Gels EX, 2%	10 gels	G401002
E-Gel Agarose Gels EX, 4%	10 gels	G401004
E-Gel Agarose Gels with SYBR Safe DNA Gel Stain, 1%	10 gels	A42100
E-Gel Agarose Gels with SYBR Safe DNA Gel Stain, 2%	10 gels	A42135
E-Gel Agarose Gels with SYBR Safe DNA Gel Stain, 4%	10 gels	A42136
E-Gel EX Double Comb Agarose Gels, 1%	10 gels	A42345
E-Gel EX Double Comb Agarose Gels, 2%	10 gels	A42346
E-Gel Double Comb Agarose Gels with SYBR Safe DNA Gel Stain, 1%	10 gels	A42347
E-Gel Double Comb Agarose Gels with SYBR Safe DNA Gel Stain, 2%	10 gels	A42348
E-Gel CloneWell II Agarose Gels with SYBR Safe, 0.8%	10 gels	G661818
E-Gel SizeSelect II Agarose Gels, 2%	10 gels	G661012
E-Gel NGS 0.8% Agarose Gels	10 gels	A25798
E-Gel Go! Agarose Gels, 1%	10 gels	G441001
E-Gel Go! Agarose Gels, 2%	10 gels	G441002
E-Gel *48* Agarose Gels with SYBR Safe DNA Gel Stain, 1%	8 gels	G820801
E-Gel *48* Agarose Gels with SYBR Safe DNA Gel Stain, 2%	8 gels	G820802
E-Gel *48* Agarose Gels with SYBR Safe DNA Gel Stain, 4%	8 gels	G820804
E-Gel *96* Agarose Gels with SYBR Safe DNA Gel Stain, 1%	8 gels	G720801
E-Gel *96* Agarose Gels with SYBR Safe DNA Gel Stain, 2%	8 gels	G720802
PureLink Quick Gel Extraction Kit	50 preps	K210012
GeneJET PCR Purification Kit	50 preps	K0701

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