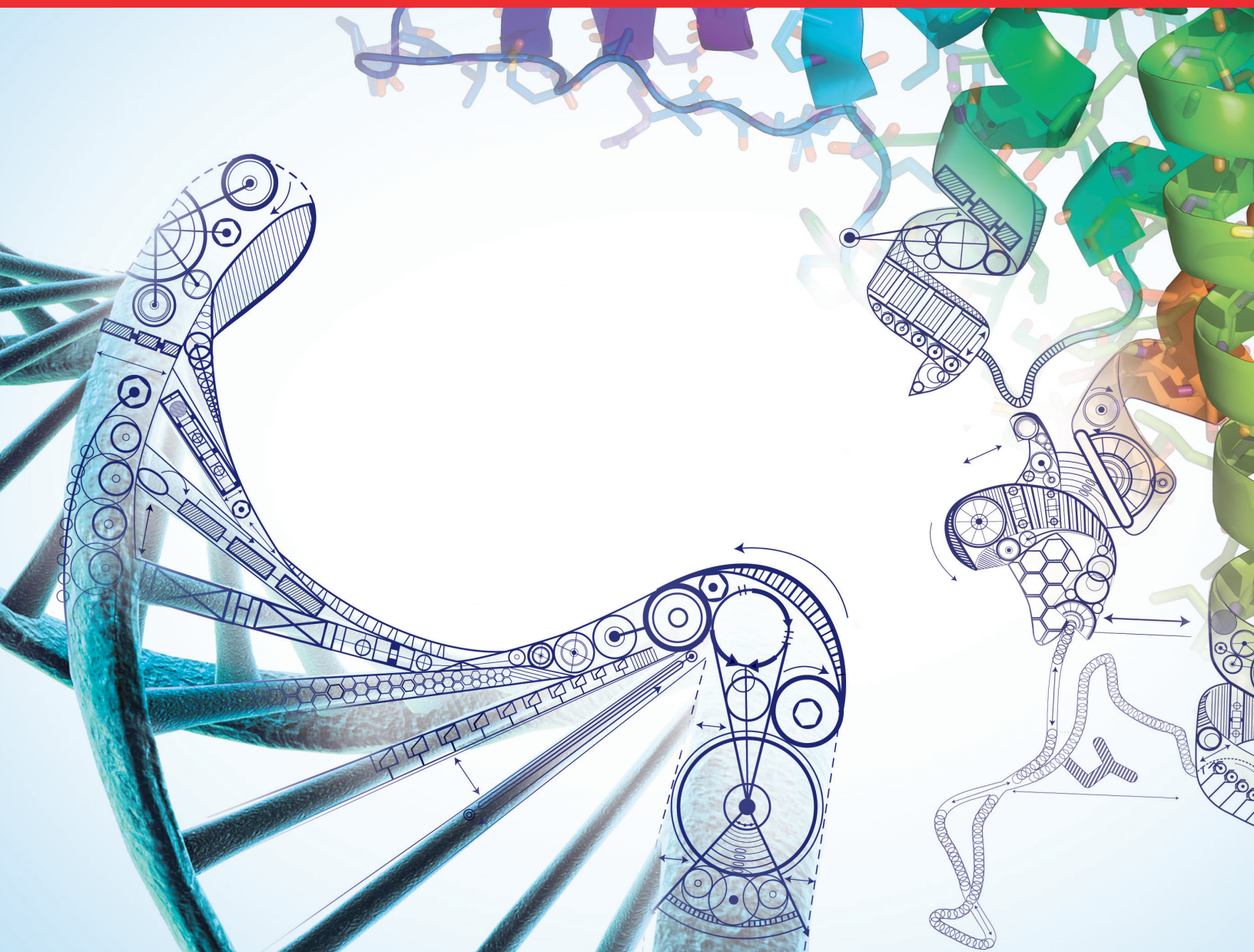


invitrogen



GeneArt Gene Synthesis products and services

Your gene, your way—complete experimental workflow solutions
from gene synthesis to protein expression and purification

ThermoFisher
SCIENTIFIC

We are your trusted partner—from reliable gene synthesis

Invitrogen™ GeneArt™ Gene Synthesis

Advance your research with this fast and simple alternative to do-it-yourself cloning



- Obtain customized DNA constructs with 100% sequence accuracy
- Sequence optimization with Invitrogen™ GeneOptimizer™ software may result in up to a 14-fold increase in expression
- Monitor the manufacturing status of your order with the Invitrogen™ GeneObserver™ function—updated daily so you can effectively plan your research

Easy online ordering

Invitrogen™ GeneArt™ Subcloning Services

Get your gene ready to use in your downstream applications



- Express cloning option provides expression-ready genes in all major expression systems (mammalian, insect, yeast, and bacteria)
- Standard subcloning option includes Invitrogen™ vectors or your own custom plasmid
- Sole provider of Invitrogen™ Gateway™ recombination cloning technology

Easy online ordering

1. Gene synthesis

2. Subcloning

GeneArt Gene Synthesis

You get 100% sequence-match assurance, and your sequence delivered as cloned plasmid DNA. Use the Invitrogen™ GeneArt™ online portal for easy editing, optimization, and ordering to save time and labor.

Deliverables:

- Your gene of interest cloned into a pMX cloning vector
- ~5 µg lyophilized plasmid DNA
- A detailed synthesis report including a plasmid map, sequence alignment, and restriction map

Production time*: starting at 5 business days

Sequence length	Production time		
	Standard**	Express**	SuperSPEED***
≤1,200 bp	9	7	5
1,201–1,800 bp	12	10	7
1,801–3,000 bp	12	10	NA

** Valid for standard gene synthesis (non-complex, GC content 10–80%). For complex sequences, production times will be longer and these will be communicated prior to production.

*** Subject to sequence assessment. Order must be placed by 3:00 p.m. CET.

Invitrogen™ GeneArt™ Strings™ DNA Fragments

We offer custom-made, uncloned, linear DNA fragments from 150 to 3,000 bp in length—ready for cloning and screening with any vector of your choice. They're also available as GeneArt Strings DNA Libraries, up to 2 kb with randomized IUPAC nucleotides.

Deliverables:

- Double-stranded DNA fragments, pool sequenced to guarantee you get your gene of choice
- ≥200 ng lyophilized DNA

Production time*: starting at 5 business days (for up to 1 kb) to 8 business days (for 1–3 kb). Libraries take 10-15 business days.

GeneArt Express Cloning Service (up to 5 kb)

We make your gene expression-ready, and we directly clone your gene into one of the following vectors in just 1–2 extra business days.

pcDNA3.1(+)	pcDNA3.3-TOPO	pcDNA3.4-TOPO
pFastBac1	pET100/D-TOPO	pET151/D-TOPO
pRSET A	pYes2.1V5-His TOPO	pDONR221

Deliverables:

- Your synthesized gene in the selected expression vector
- ~5 µg lyophilized plasmid DNA
- A detailed synthesis report including a plasmid map, sequence alignment, and restriction map

Production time*: 1–2 business days

GeneArt Subcloning Service

Get individual subcloning into your favorite commercial or personal vector.

Deliverables:

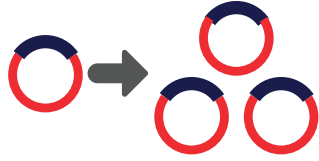
- Your synthesized gene in the selected expression vector and in the pMX cloning vector
- ~5 µg lyophilized plasmid DNA
- A detailed synthesis report including a plasmid map, sequence alignment, and restriction map
- **Production time*:** starting at 6 business days

* Production time does not equate to delivery time.

through protein production

Invitrogen™ GeneArt™ Plasmid Preparation Services

Obtain consistent high-quality plasmid preparations for research applications



- Microgram to milligram scale production
- Extremely low levels of endotoxin: <math><0.1\text{ EU}/\mu\text{g pDNA}</math>
- Fill and finish service available—get your plasmid DNA aliquoted and labeled for immediate use, per your specifications
- Also available: assemble a new plasmid with known Invitrogen™ GeneArt™ Elements DNA parts

Easy online ordering

Invitrogen™ GeneArt™ Protein Purification Services

Let us do your protein expression and purification for you



- We have the entire workflow solution, with complete in-house production from gene to protein
- Reliable and advanced expression system: e.g., with Gibco™ Expi293™ Expression System, greater than 1 g/L can be achieved
- 30 mL to 25 L: shaker and WAVE cell culture, plus experience with large projects

Contact us

3. Plasmid and vector services

GeneArt Plasmid Preparation Service

Get highly pure, homogeneous plasmid DNA: transfection/transformation-ready; 100 μg –100 mg scale production.

Deliverables:

- Plasmid DNA solution (1 mg/mL); select a buffer from: TE, H₂O, and PBS
- A detailed synthesis report, including data showing agarose gel electrophoresis and digestion pattern of plasmid by restriction enzyme

Production time*: starting at 6 business days

GeneArt Elements Vector Construction and Combinatorial Parts Assembly (CPA)

We offer a DNA parts collection, comprising a growing subset of biologically well-characterized parts like promoters, terminators, enhancers, operators, open reading frames, etc., with predefined sequences and functionalities. These can be combined with custom parts to design individualized vectors. CPA is a way to combine DNA parts differently in order to build a diverse set of larger constructs.

Deliverables:

- **Flexible**—GeneArt Elements parts can be seamlessly assembled with minimal design restrictions
- **Reliable**—all DNA parts are 100% sequence-verified
- **Cost-effective**—parts of the final constructs have the potential to be used multiple times
- **Comprehensive**—all permutations of the available genetic elements are possible

4. Protein expression

GeneArt Protein Purification Services

We provide fast and reliable transient protein production from mammalian or insect cells.

1. Gene-to-protein pilot

Feasibility study for determination of production yield

Deliverables

- All resulting protein from pilot study
- Quality control documentation, including data from SDS-PAGE and western blot
- Price quote for production of a customer-specified protein amount
- Expression plasmid

2. Gene-to-protein specified culture volume

Protein expression and purification from customer-specified culture volume

Deliverables:

- All protein purified from specified culture volume (alternatively, culture supernatant or cells)
- Quality control documentation, including data from SDS-PAGE and western blot
- Expression plasmid

3. Gene-to-protein specified protein amount

Protein expression and purification of customer-specified protein amount—preceding expression service with the respective protein or pilot service is mandatory

Deliverables:

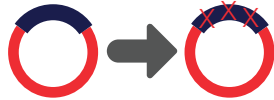
- Purified protein amount as specified by customer
- Quality control documentation, including data from SDS-PAGE and western blot
- Expression plasmid

We use the following protein expression systems:

- Gibco Expi293 Expression System
- Gibco™ ExpiCHO™ Expression System
- Invitrogen™ FreeStyle™ 293 Expression System
- Invitrogen™ FreeStyle™ MAX CHO Expression System
- Invitrogen™ Bac-to-Bac™ Baculovirus Expression System

Invitrogen™ GeneArt™ Directed Evolution Services

Directed evolution strategies are the most efficient method for creating proteins with improved or novel properties. GeneArt Directed Evolution technologies help to evolve proteins in a goal-oriented, systematic process.



- GeneArt Mutagenesis Service
- GeneArt Site-Saturation Mutagenesis
- GeneArt Combinatorial Libraries
- GeneArt Controlled Randomization Service
- GeneArt Truncation Libraries

Contact us

The GeneArt online portal

Ordering made easy

This portal offers intuitive and simple sequence design and ordering of your gene synthesis projects. Nearly all of our other GeneArt services can also be ordered using this tool. You can even perform *in silico* cloning and store your gene sequences, projects, and personal vectors for future orders. Save time and have full control and flexibility with these features.



Easy online ordering

Directed evolution

Site-directed mutagenesis

Introduce single or multiple mutations (substitutions, insertions, or deletions) into existing DNA sequences—up to 5 regions covering 40 bp each can be modified within the template sequence.

Deliverables:

- Receive separate constructs made from a template sequence as 5 µg of plasmid preparation
- All variants are 100% insert-verified

Combinatorial libraries

DNA sequences will be diversified using preassembled trinucleotides as building blocks (trinucleotide mutagenesis, or TRIM, technology) for the chemical synthesis process. This allows for the complete customization of the amino acid composition at randomized sites and thus avoids the occurrence of unwanted stop codons or amino acids.

Deliverables:

- Receive the library as linear dsDNA (>2 µg), or have the library cloned and transformed into the *E. coli* strain of your choice with transformation rates of $> 1 \times 10^9$
- With the cloned library, at least 30 µg of plasmid DNA and 12 x 0.5 mL glycerol stocks will be provided
- Also available with optional next-generation sequencing quality control

GeneArt portal

Order your genes online at any time, from anywhere

Features:

- Just copy and paste your sequence if no further editing is needed
- Quick procedure for sequence editing and gene expression optimization in several organisms (optional, if wild type is not desired)
- Choice of standard pMX vector or subcloning options
- Additional services, such as gene variants, can be requested
- Add to cart and obtain price quote for easy ordering
- Check the status of your order(s) in the manufacturing process—simply use the GeneObserver module within the portal, available 24 hours a day

For more information on how to use the GeneArt portal, please go to thermofisher.com/genearttutorials

For more general information, please contact geneartsupport@thermofisher.com or your local sales support.

For more information, please go to thermofisher.com/geneartgenesandservices
For Ordering, visit: fishersci.com/geneartgenesynthesis



In the United States:

For customer service, call 1-800-766-7000
To fax an order, use 1-800-926-1166
To order online: fishersci.com

In Canada:

For customer service, call 1-800-234-7437
To fax an order, use 1-800-463-2996
To order online: fishersci.ca

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