

# ENFINIA™ DNA

Cell-Free Gene Synthesis



ELEGEN

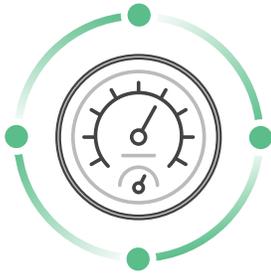


## NEXT-GEN GENE SYNTHESIS

# Cell-free Synthesis and Cloning to Speed Genetic Medicine

## WHAT IS NEXT-GEN GENE SYNTHESIS?

Traditional gene synthesis providers rely on slow, variable, and contamination-prone cell-based cloning, hindering downstream applications. Elegen's cell-free gene synthesis technology offers rapid, scalable, and high-fidelity DNA solutions, advancing genetic medicine development.



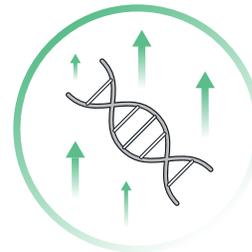
**Faster design-build-test-learn cycles for quicker insights**



**Streamline DNA supply with US-based manufacturing**



**Reduced time, budget, and resource demands**



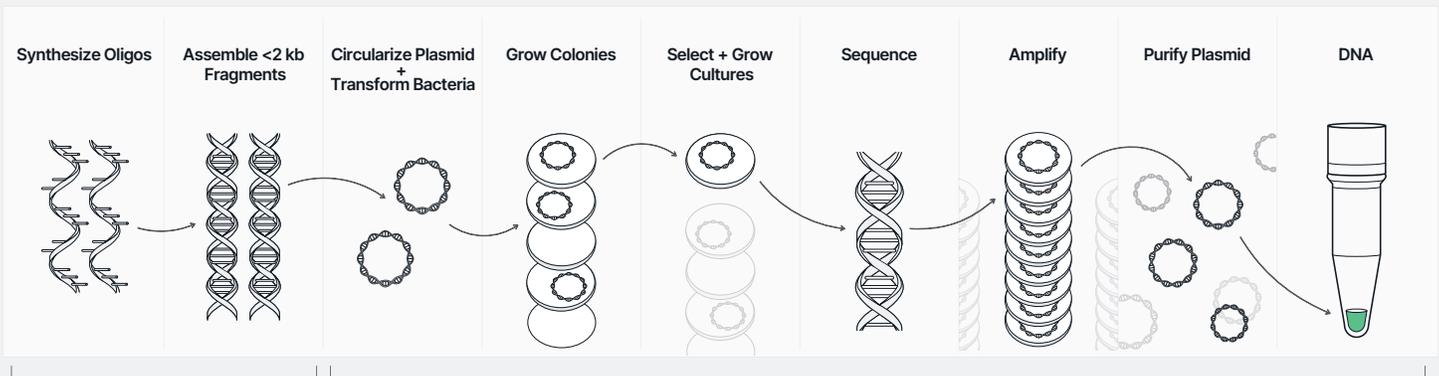
**Simplified DNA scale-up without fermentation, endotoxins, or high overhead costs**

# CELL-FREE CLONING TECHNOLOGY

The lengthy, time-consuming process of assembling and cloning short fragments of DNA is costly, error-prone, and difficult to automate. This approach can take several weeks and even months for multi-kilobase constructs. Our patented cloning technology bypasses cell-based cloning to deliver long DNA faster and more reliably.

## Conventional Gene Synthesis:

~80% of the time to build DNA is spent cloning in cells

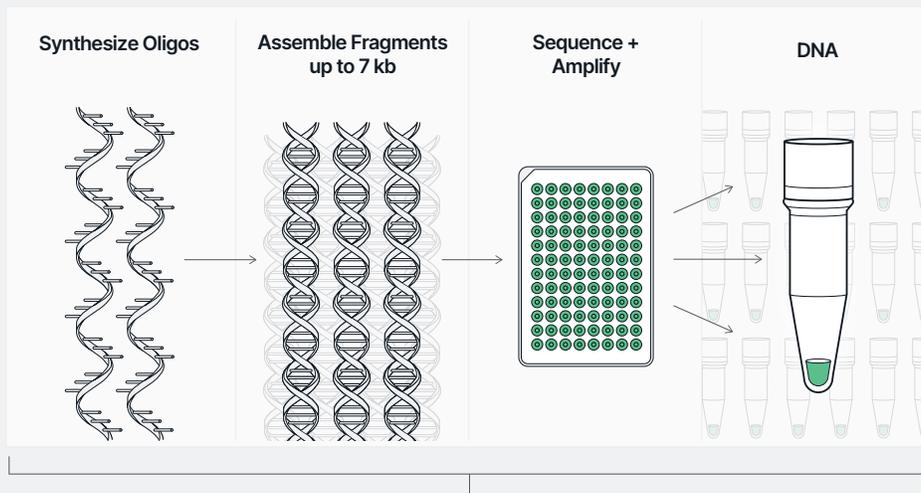


Receive low-quality fragments in 1 - 2 weeks

In house: Spend 1 - 2 weeks cloning fragments  
Outsource: Wait 2+ weeks in a queue of orders

## Cell-Free Gene Synthesis:

Full-length, complex, NGS-verified DNA shipped as fast as 6 business days



Next-generation cell-free gene synthesis delivers long, clonal-quality DNA fast, streamlining the process to save weeks

# ENFINIA LINEAR DNA

Powered by Elegen's cell-free gene synthesis technology, ENFINIA Linear DNA offers high-accuracy, double-stranded DNA up to 7 kb with 99.999% accuracy and a 1:70,000 bp error rate—twice the length and 20x the accuracy of leading competitors.

## Explore a More Diverse Sequence Space with High-Complexity Synthesis



High complexity



Shipped in 6 - 8 business days

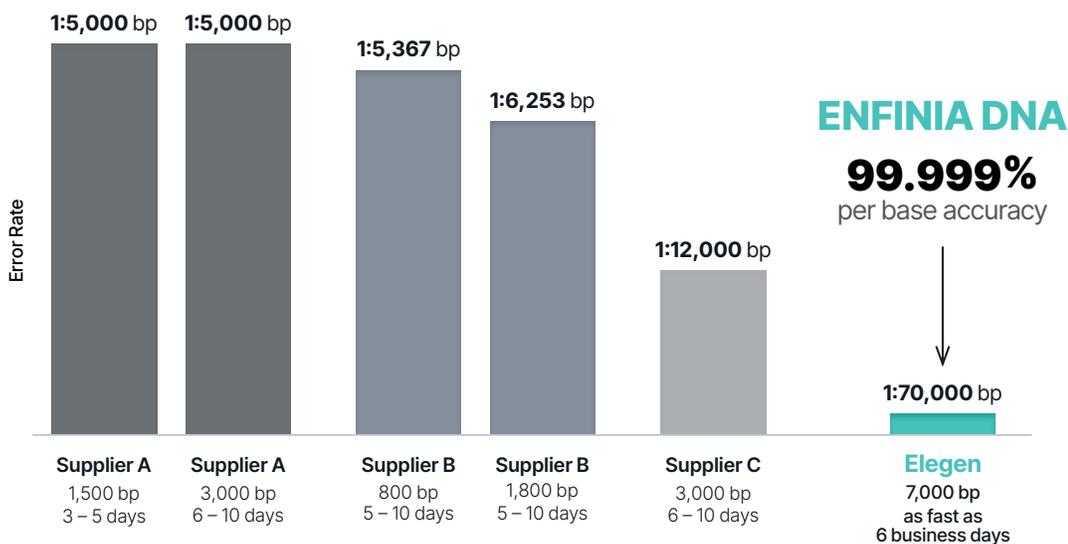


NGS verified, 99.999% per base accuracy



Length up to 7 kb

## Save Time with NGS-Verified DNA that is 2x Longer and 20x More Accurate

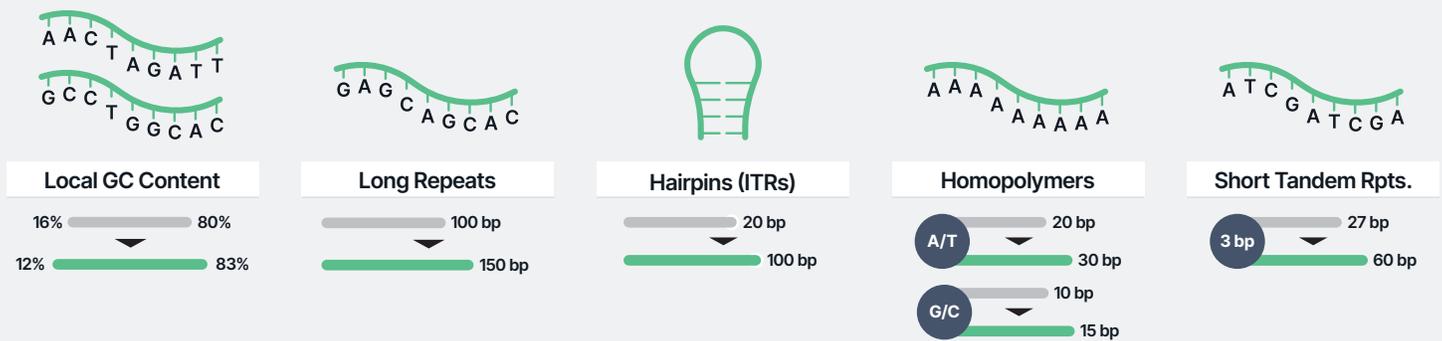


- 2 - 7x longer sequences eliminate assembly workflows
- 20x higher accuracy eliminates cloning & sequencing
- Shipped fast to speed discovery

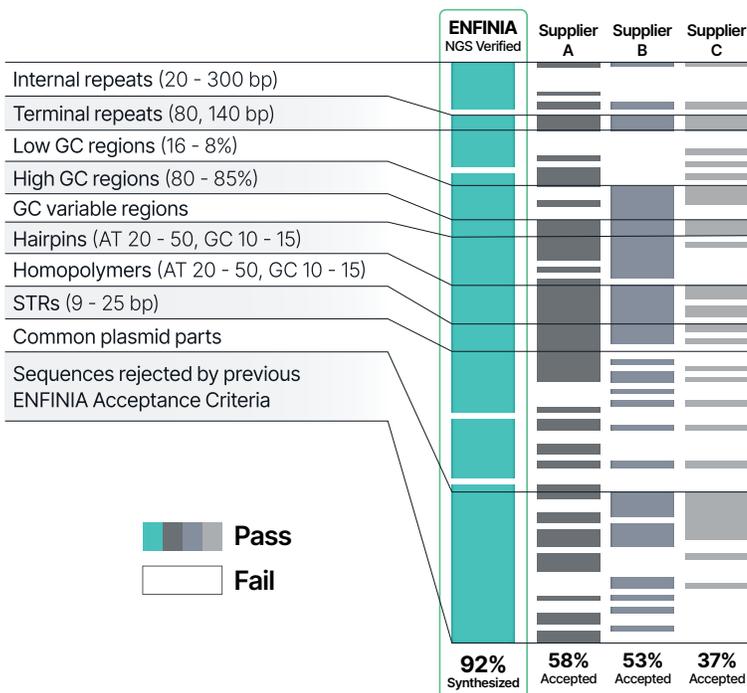
# DESIGN WITHOUT COMPROMISE

Traditional gene synthesis forces researchers to compromise on DNA length, complexity, or accuracy. Elegen's cell-free technology delivers custom DNA with unmatched length, complexity, accuracy, and speed, accelerating mRNA vaccines, cell therapies, and personalized medicine development by months.

## Explore a More Diverse Sequence Space with High-Complexity Synthesis



## Access to DNA that Most Suppliers Reject



### ENFINIA DNA - High Complexity

Highly complex DNA as fast as 10 business days

Successful synthesis of sequence designs rejected by other suppliers, including:

- ITRs
- LTRs
- GC-rich promoters
- enhancers
- hairpins
- long repeats

\* High-complexity sequence designs tested across three leading gene synthesis suppliers and ENFINIA DNA. Other gene synthesis suppliers rejected 90 out of 98 sequence designs.

# ENFINIA PLASMID DNA

Rapid clonal gene synthesis powered by high-accuracy inserts and standardized vectors to deliver unmatched speed, length, and complexity at an affordable price.

## Up to 15 kb Genes Delivered Fast at an Affordable Price

### ENFINIA Plasmid DNA

#### Standard complexity

- Genes >3 kb typically ship in **10 - 15 business days** for as low as \$0.16/bp

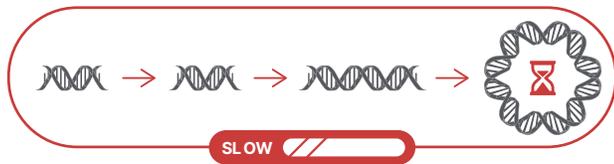
#### High complexity

- Genes >3 kb typically ship in **12 - 17 business days** for as low as \$0.20/bp

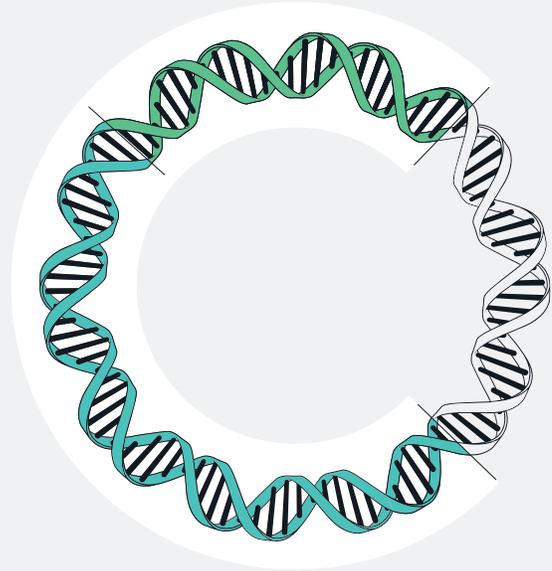


### Other Gene Synthesis Providers >5 kb

- Genes >5 kb can take **over 20 business days**
- Costs range from **\$0.40 to \$0.50/bp**



## Clonal Genes Up to 15 kb as fast as 10 Business Days



NGS-verification included



Complex genes/inserts up to 15 kb  
(max plasmid length of 18 kb)



Standard backbones including:

- pAAV2  
(with CMV, CAG, hSyn promoters or ITRs only)
- pUC19
- pBR322
- psaRNA



### Natural Products

Save weeks with fast synthesis of full-length biosynthetic gene clusters (BGCs).



### Cell & Gene Therapy

Optimize AAV constructs and accelerate CAR and TCR development.



### RNA Therapeutics

Screen replicase and transgene variations faster with full-length saRNA templates.

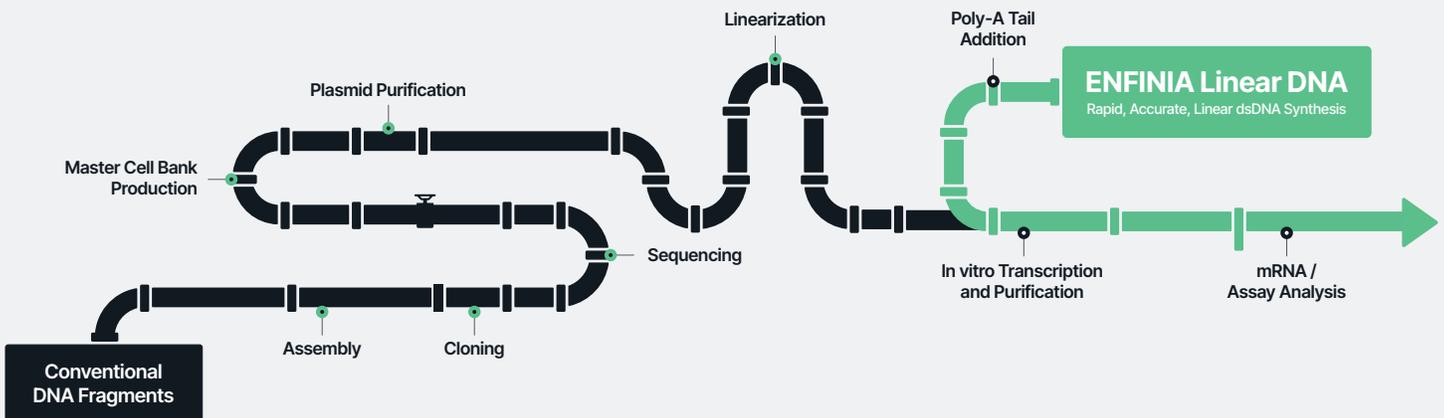
## APPLICATIONS

# mRNA Vaccines and Therapeutics

As RNA therapeutics evolve post-COVID-19, innovative technologies have improved mRNA efficacy and manufacturing. Cell-free DNA template production accelerates scale-up, reduces costs, and eliminates contamination risks to enable emerging platforms including saRNA and multi-antigen vaccines.

## Cut mRNA Development Time in Half!

Personalized Medicines - Population-Based Vaccines - mRNA Protein Therapies



### Rapid Vaccine Development

Cell-free DNA manufacturing cuts scaling costs, enabling economical production and rapid deployment.



### More Complex Designs

ENFINIA Linear DNA delivers high-complexity, NGS-verified sequences up to 7 kb for mRNA vaccines and therapies, shipped as fast as 6 business days.



### Streamlined Global Supply

Elegen's cell-free DNA technology is compact and cost-efficient, streamlining global deployment and enabling rapid localized production.



APPLICATIONS

# Cell and Gene Therapy

Using ENFINIA Linear or Plasmid DNA can reduce or eliminate the time spent assembling and cloning constructs to evaluate and optimize new designs.

VIDEO  
2024 DDW Cell & Gene  
Therapy Showcase



## Conventional Gene Synthesis



Variable regions supplied in 1 - 2 weeks.



Conserved regions ordered in bulk.



Final constructs assembled and cloned in 2 to 3 weeks.

Total Build Time = **3 to 5 weeks**

## ENFINIA Next-Gen Gene Synthesis



**ENFINIA Linear DNA**

Up to 7 kb shipped as fast as 6 business days, NGS-verified.

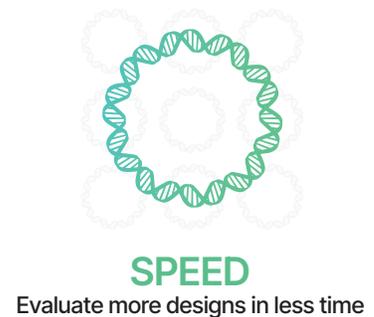
OR



**ENFINIA Plasmid DNA**

Up to 15 kb shipped as fast as 10 business days.

Total Build Time = **1 to 2 weeks**

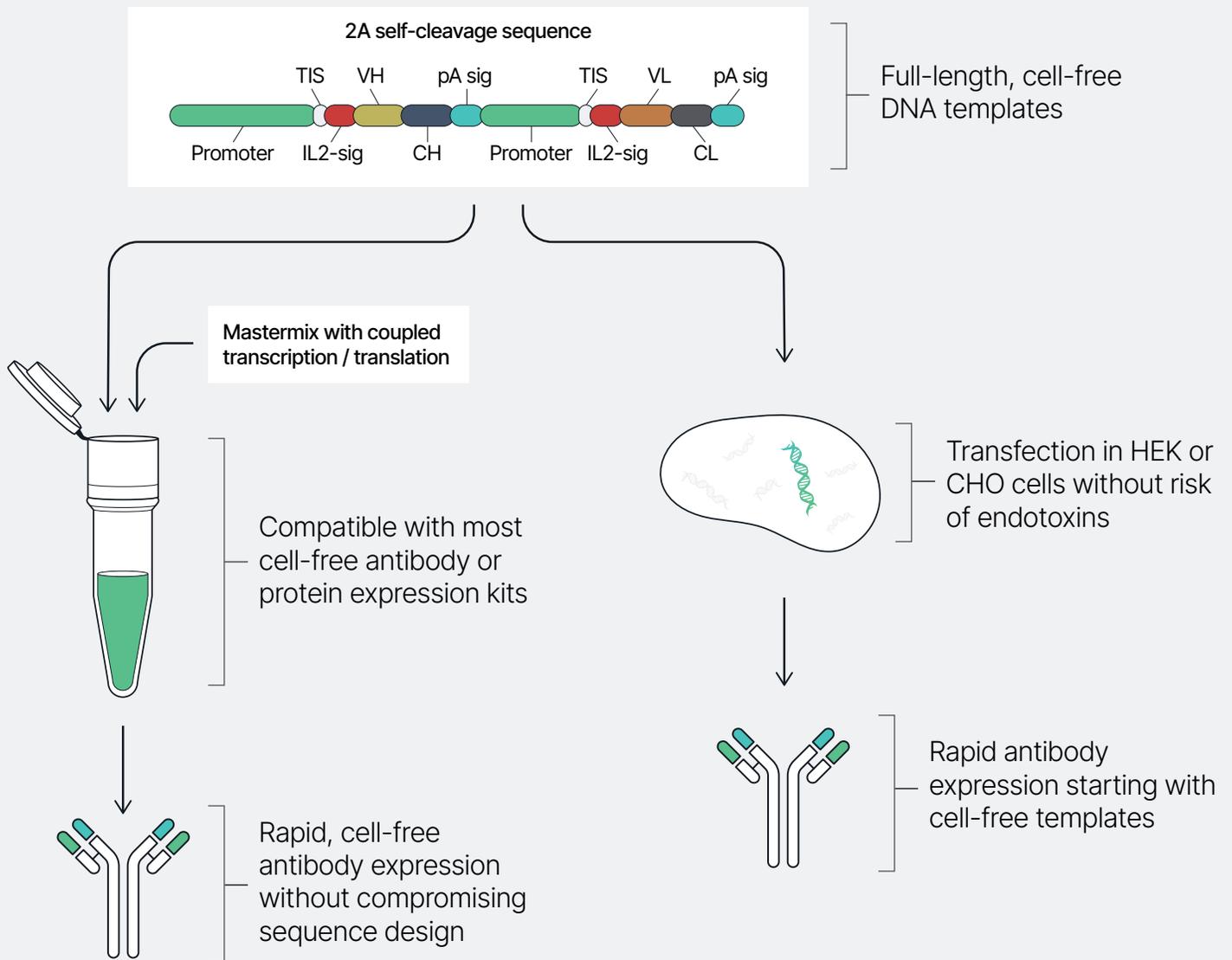


APPLICATIONS

# Antibody Engineering

ENFINIA Linear DNA templates for full-length antibody sequences encoding both heavy and light chains enable rapid production of diverse variants through direct or cell-free transcription and translation, including variable and constant region mutations.

## Cell-free DNA Templates for Rapid Antibody Expression



## APPLICATIONS

## AI-Driven Approaches

High-quality synthetic DNA powers generative models with precise and scalable experimentation, fueling faster, more accurate predictions when optimizing therapeutic and vaccine design.

Here's why it's crucial:



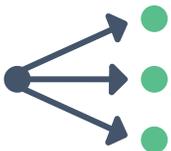
**Training Data for Generative Models:** Generative models require vast, high-quality datasets. Synthetic DNA provides diverse sequences mirroring real-world variation, improving training accuracy and predictive power.



**Testing Hypotheses:** Generative models predict genetic variation effects and aid the design of novel therapeutic sequences. High-quality synthetic DNA enables faster testing of predicted sequences, closing the loop and improving model accuracy over time.



**Exploration of Genetic Space:** High-quality synthetic DNA enables the exploration of previously inaccessible genetic designs enabling generative models to propose novel sequences, revealing new therapeutic pathways and mechanisms.



**Improving Model Reliability:** High-quality synthetic DNA minimizes errors, leading to cleaner, more reliable datasets that improve the accuracy and reliability of generative model predictions.

WEBINAR  
Enhancing Protein Engineering with Active  
Learning-Assisted Directed Evolution



# ORDER NOW FROM OUR ONLINE PORTAL

Easily build, submit, and track all of your ENFINIA DNA orders

Visit [ecommerce.elegen.com](https://ecommerce.elegen.com) and click "Sign up" to get started.

The screenshot shows the Elegen online portal homepage. At the top, there is a navigation bar with the Elegen logo, a hamburger menu, a US flag, and a user profile icon with the text "Welcome Elegen". On the left side, there is a vertical navigation menu with the following items: Home (highlighted), Organizations, My Account, My Orders, My Promotions, Customer Care, and Administration. The main content area features three product cards: 1. ENFINIA™ Linear DNA: High and low complexity NGS-verified Double-Stranded Linear DNA fragments of 300 to 7000 bp. Delivered as fast as 6 to 8 business days. Includes an "ORDER NOW" button. 2. ENFINIA™ Plasmid DNA: High and low complexity cloned DNA constructs from 300 to 15,000 bp. Delivered as fast as 10 business days. Includes a "NEW" banner and an "ORDER NOW" button. 3. Early Access Projects: If our current products do not fit your needs, we may have an early access program that does. Includes a "LEARN MORE" button. Below these cards is a "Learn More" section with four sub-sections: Recent News (READ), Recent Videos (WATCH), Customer CaseStudies (READ), and Literature (READ). At the bottom left, there is a link to "Visit elegenbio.com". At the bottom right, there are links for "Terms and Conditions", "Submission Guidelines", and "FAQ". The footer contains the copyright notice: "© Elegen Corporation 2025. All Rights Reserved."





# E L E G E N

Elegen employs innovative technologies to all steps of DNA synthesis to deliver custom synthetic DNA with unprecedented speed, quality, and length to help the builders of our growing bioeconomy unlock programmable biology.

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