

GenCefe Biotech

Oligonucleotide Synthesis and Modification Platform		Gene Synthesis Platform	Cell-Free Protein Expression Platform
DNA	RNA		
Research Grade: qPCR probes Capture probes Fluorescence in situ hybridization probes Industrial Grade: qPCR probes NGS primers/probes Modified oligos for forensic diagnostic	siRNA miRNA sgRNA ASO Aptamer Modified/Labeled RNA Delivery system customization and coupling	Gene Synthesis Codon Optimization PCR Cloning & Subcloning Site-Directed Mutagenesis Plasmid Preparation Synthetic DNA Libraries	Cell-Free System Development Membrane Protein Expression & Purification Difficulty Protein Solutions Custom Cell-Free Products Other Expression Systems: · Bacterial System · Mammalian Cell System · Antibody (IgG) Production

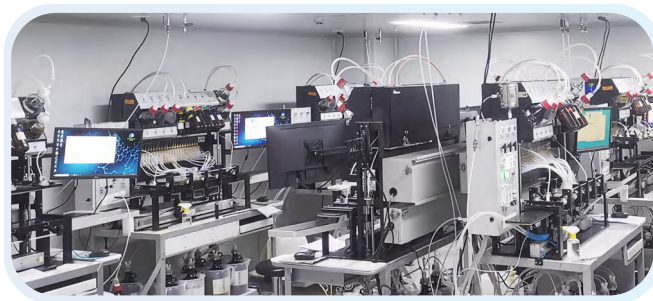
Detection Platform: Biological Evaluation of Oligonucleotide

About GenCefe

GenCefe Biotech was established in Wuxi, China in 2020, and started its US branch in California in 2021. The company focuses on advanced technology development, large-scale production, and applications of DNA, RNA, and gene synthesis. We are committed to breaking through industry bottlenecks with advanced automation synthesis and artificial intelligence platforms and promoting the development of industries of synthetic biology, drug discovery and development, molecular diagnostics, etc.

Technology Platforms

Platforms	Capacity & Capability	Advantages
Oligonucleotide Synthesis and Modification	Provide customized synthesis and modification services for various types of DNA and RNA primers/probes, from OD, mg, gram, to hundreds of grams level	Good batch-to-batch stability and high product purity; strict quality standards, and customized QC items can be provided for various applications such as molecular diagnosis and drug research and development.
Gene & Plasmid	Complete gene synthesis and plasmid preparation platform	With rich experience, we can synthesize ultra-long sequences, difficult sequences, etc., and clone genes into any designated vector. 100% sequence accuracy is guaranteed.
Cell-Free Protein Expression	Integrated technology platform for R&D and production, providing CFPS development and customized protein expression and purification services	Led by world-renowned CFPS expert, we have accumulated a large number of successful cases and can provide overall solutions for difficult proteins.
AI-Assisted Design	Design of siRNA, primers, probes, codon optimization, library design, etc.	An experienced technical team, combined with self-developed AI-assisted design tools, designed/optimized sequences can significantly improve the efficiency of downstream applications.



Service Advantages

- Experienced production and R&D team, providing customized synthesis and flexible synthesis specifications, we can provide DNA and RNA synthesis up to gram level and have track records of successfully delivering difficult genes;
- Advanced technology platforms: we have developed the key modules for gene synthesis automation, and continuous improvement of the overall automated production process, combined with our proprietary AI platform, to facilitate the development of downstream applications;
- Professional technical support team, providing comprehensive pre-sales guidance and after-sales service;
- Our facilities include a 3,000-square-meter R&D center and a 1,100-square-meter GMP-like laboratory. We have established strict quality control standards, in line with the ISO9001 quality management system.

Oligonucleotide Synthesis and Modification

GenCefe provides high-quality oligonucleotide synthesis and modification services, including standard primers, RNA, qPCR primers and probes, NGS primers, etc. We have established corresponding production processes and quality control standards for different applications, such as scientific research, small nucleic acid drug development, and in vitro diagnostics.

- Experienced R&D and production teams, providing up to 100-gram scale oligonucleotide synthesis with batch-to-batch consistency;
- Professional technical support, standardized project management, and comprehensive pre-sales and after-sales services;
- Customized services: over 100 chemical modifications with different functions, multiple purification methods, and various QC items for different applications;
- Strict quality control standards, ISO9001 quality management system.

Purification Method	Modifications		QC Items
	Positions	Groups	
RPC, MOP, PAGE, HPLC, etc,	5'-end Modifications 3'-end Modifications Intermedia Modifications Dual/Multiple Modifications	Rare bases, Biotin, Digoxigenin, Phosphorylation, Phosphorothioates, Amino Likers, Thiol, Quenchers, Internal Modification, Fluorescence, etc.	Standard detection items Custom detection items: purity, fluorescent value, Ct value, human genomic DNA contamination, NTC amplification, cross contamination rate, batch-to-batch consistency, etc.

DNA Primers/Probes

■ qPCR Primers/Probes

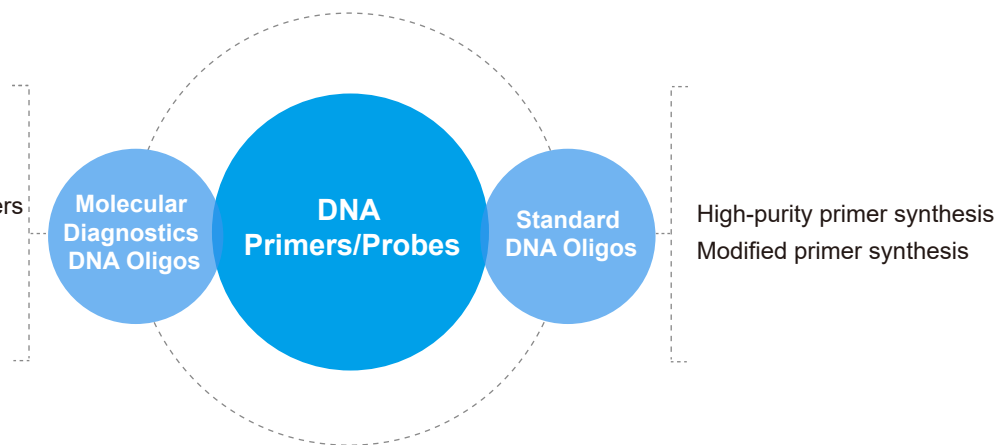
- IVD qPCR primers
- IVD qPCR probes

■ Forensic Diagnosis

- STR fluorescent-labeled primers

■ NGS Primers

- NGS adapter primers
- NGS capture probe
- NGS multiplex PCR primers
- NGS blocking primers



Custom DNA Primer/Probe Synthesis, Large-scale DNA Primer/Probe Synthesis

RNA Synthesis and Modification

Synthesis	Modification
<ul style="list-style-type: none"> ■ siRNA: siRNA Synthesis, Guaranteed siRNA Package, siRNA Library ■ miRNA: miRNA mimic, miRNA inhibitor, miRNA agomir, miRNA antagomir, miRNA Library ■ sgRNA: sgRNA Synthesis, sgRNA Library ■ ASO, Aptamer 	<ul style="list-style-type: none"> ■ Sugar Modification: 2'-OMe, 2'-MOE, 2'-F etc. ■ Base Modification: methylated cytosine (5-Me-dC), etc. ■ Backbone Modification: PS, PO, phosphoramidite modification, etc. ■ End Modification: Chol, Biotin, Thiol, NH₂, fluorescent dyes, etc. ■ Delivery System: LNA, GalNAc, PMO, PNA, etc.

Gene Synthesis and Related Services

GenCefe's experienced R&D and production team has established an advanced gene synthesis technology platform, standardized operating procedures, and a strict quality control system. We provide high-quality customized services including gene synthesis, codon optimization, PCR cloning, subcloning, plasmid preparation, site-directed mutagenesis, and mutation library construction.

Just submit the gene sequence you need, and GenCefe will deliver the desired plasmid on time!

Service Features

- **Advanced technology platform:** our team has successfully synthesized various types of difficult sequences, such as repetitive sequences, GC/AT-rich sequences, etc., and delivered the plasmids according to customer-specific requirements
- **Professional technical support:** considerate pre-sales and after-sales services, free codon optimization and project design, timely project updates, and free technical consulting
- **On-time delivery:** experienced production and R&D teams ensure the on-time delivery rate of over 95%
- **Intellectual property protection:** the nucleic acid/amino acid sequence provided by the customer is kept strictly confidential and will not be distributed to third-party in any form

Service Types



Gene Synthesis	On-time delivery rate >95%, successfully synthesized and delivered various difficult gene sequences
Codon Optimization	Free codon optimization, proven to significantly improve protein expression
PCR Cloning and Subcloning	Clone the gene of interest into any position of the designated vector; free vector storage for 3 years
Plasmid Preparation	Microgram to gram level, good stability between batches; the endotoxin level of transfection grade plasmid can reach 0.005 EU/μg and below upon request
Synthetic DNA Libraries	Design and construction of point mutation libraries, random mutation libraries, degenerate libraries, controlled libraries, sgRNA and other libraries

Cell-Free Expression Services

GenCefe CFPS (Cell-Free Protein Synthesis) Platform is led by Lei Kai, co-founder of GenCefe. Prof. Kai is a world-renowned CFPS expert and he holds 28 patents in related fields and published more than 20 SCI papers.

Service Features

- Our cell-free scientific team has rich experience in the production of GPCRs, ion channel proteins, aquaporins, transport proteins, etc.
- We provide customized solutions to meet customers individual needs.

Service Types

Cell-Free System Development

Membrane Protein Preparation

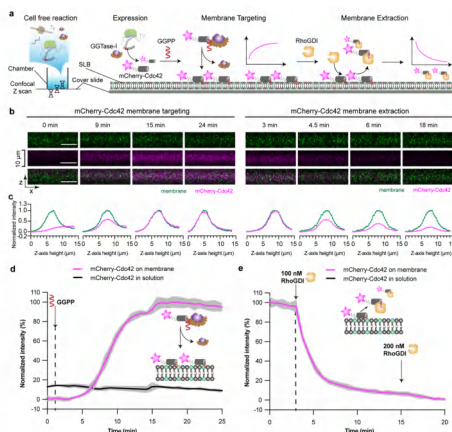
Optimization of Membrane Protein Expression System

Cell Extraction Preparation

Full-Length Membrane Protein

Membrane Protein Product Development

Case Study



Prof. Kai recently published a research result, using an innovative cell-free expression system, successfully reconstituting the prenylated polarity hub Cdc42 and its regulatory protein in vitro, implementing a key membrane switch.

Kai L, Sonal, Heermann T, et al. Reconstitution of a reversible membrane switch via prenylation by one-pot cell-free expression[J]. ACS Synthetic Biology, 2022, 12(1): 108-119.

Other Protein Expression Systems

Bacterial Expression System

1-20 mg protein, purity>90% by SDS, delivery in 3-4 weeks

Mammalian Cell Expression System

0.2-10 mg protein, purity>90% by SDS, delivery in 3-4 weeks

Antibody (IgG) Production

0.2-50 mg or 20 ml-1 L, purity>90% by SDS, delivery in ~17 days

Gene-to-Protein Solutions

Sequence analysis
and codon optimization

Gene synthesis
and subcloning

Protein expression: Cell-free, Bacterial,
Mammalian cells, Insect cells,
Yeast and other expression systems,

Protein purification
and QC

Biological Evaluation of Oligonucleotide

GenCefe has established a professional oligonucleotide biological evaluation platform, providing a variety of customized services such as cell culture, screening, cell-based assay, protein detection, animal experiments, etc., providing one-stop services for nucleic acid drug researchers.



Cell Assay Platform: early-stage drug development, in vitro mRNA & Protein efficacy, cytotoxicity, early-stage off-target testing, primary cell testing, etc.



HT Molecular Detection Platform: subcloning, off-target mimic construction, high-throughput mRNA regulation detection, stability, and PK testing.



Protein Detection Platform: protein level verification after oligonucleotide regulation of mRNA, detection of nucleic acid & protein interaction, and detection of oligonucleotide stability.



Primary Cell Platform: the rapid test of delivery efficiency & activity of the delivery system and oligonucleotide conjugate, early-stage off-target testing, PK testing.



Animal Platform: early-stage PD, PK, TOX testing, rapid HDI modeling and evaluation of oligonucleotides, and multiple drug delivery methods for target organs, such as liver, lung, and CNS.

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