



GenCefe Biotech

DNA Synthesis

DNA Oligo Synthesis
Modified/Labeled DNA Oligo
qPCR Primer & Probes
NGS Primers/Probes
FISH Probes
Forensic Diagnosis Primers
PCR Assay Design

RNA Synthesis

siRNA/ASO
shRNA
miRNA Mimic/Inhibitor
Aptamer
Modified/Labeled RNA
circRNA
IVT mRNA

Gene & Plasmid

Gene Synthesis
Codon Optimization
PCR Cloning & Subcloning
Site-Directed Mutagenesis
Plasmid Preparation
Synthetic DNA Libraries

Protein

Cell-Free Protein Synthesis
Cell-Free System Development
Membrane Protein Solutions
Bacterial Expression
Yeast Expression
Insect Cell Expression
Mammalian Cell Expression

Peptide

Custom Peptide Synthesis
Peptide Modifications
Stable Isotope-Labeled Peptides
Cyclic Peptide Synthesis
Peptide Libraries
Catalog Peptide

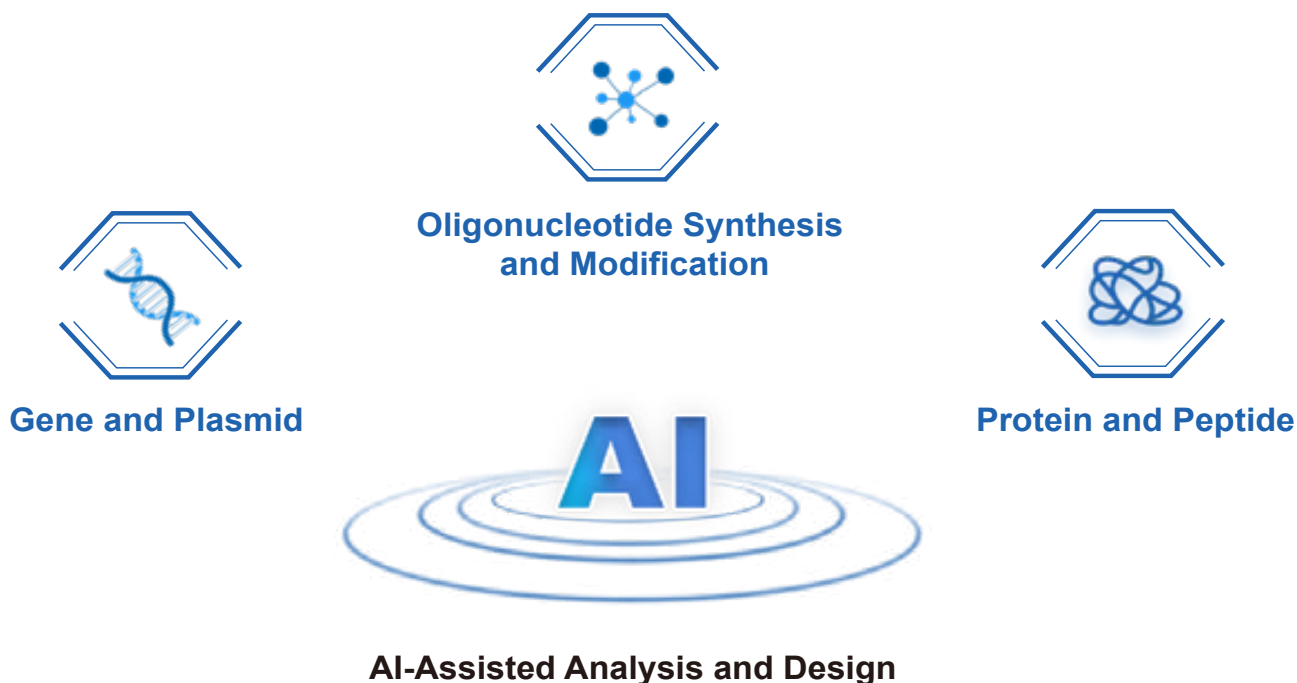
CRISPR Services

sgRNA Synthesis
IVT RNA Synthesis
ssDNA Synthesis
dsDNA Synthesis
sgRNA Libraries

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, gene, and protein 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



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. Our professional technical team has established a complete synthesis and purification process, providing oligonucleotide synthesis up to 100-gram scale, with more than 100 modifications to choose from.

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, Digoxigein, 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

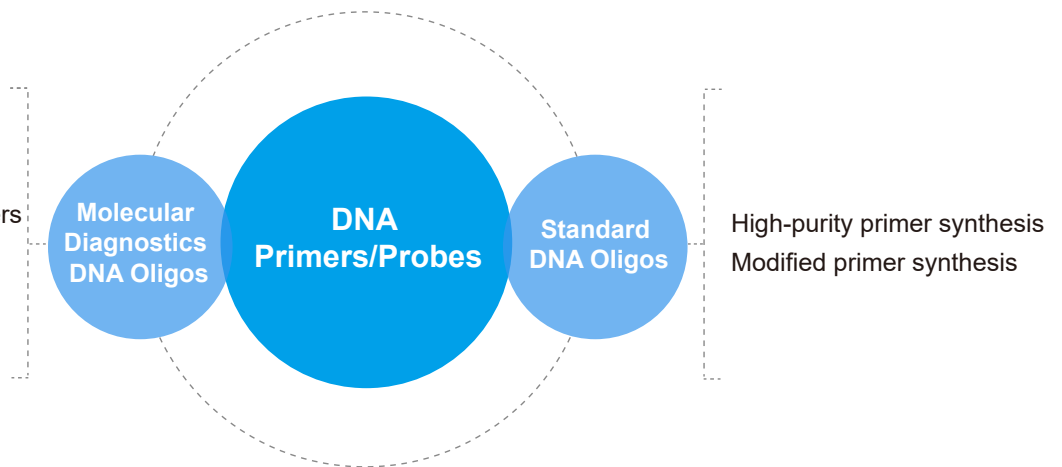
- IVD qPCR primers
- IVD qPCR probes

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
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	Sugar Modification: 2'-OMe, 2'-MOE, 2'-F etc. Base Modification: methylated cytosine (5-Me-dC), etc. Backbone Modification: PS, PO, phosphoramidate modification, etc. End Modification: Chol, Biotin, Thiol, NH₂, fluorescent dyes, etc. Delivery System: LNA, GalNAc, PMO, PNA, etc.

IVT mRNA Synthesis



DNA Modification

5' Modification	3' Modification	5' & 3' Dual Modification	Intermediate Modification	Code for Intermediate Modification	Intermediate Modified Base
5' 6-FAM	3' 6-FAM	5' 6-FAM, 3' BHQ1	1-Me-dA	/i1-MedA/	A
5' Acrydite	3' Alexa Fluor 488	5' 6-FAM, 3' BHQ2	N6-Me-dA	/i6-MedA/	A
5' Alexa Fluor 488	3' AMCA	5' 6-FAM, 3' Dabcyl	2-Aminopurine	/i2-Amp/	A
5' AMCA	3' Azide(N3)	5' 6-FAM, 3' Eclipse	deoxyinosine (dI)	/ideoxyI/	I
5' Azide(N3)	3' BHQ1	5' 6-FAM, 3' TAMRA-N	deoxyUridine (dU)	/ideoxyU/	U
5' BHQ1	3' BHQ2	5' CY3, 3' BHQ2	5-Aza-2'-deoxycytidine	/i5-AzadC/	C
5' BHQ2	3' BHQ-3	5' CY3, 3' Dabcyl-N	5-Bromo dU	/i5Br-dU/	U
5' Biotin	3' Biotin	5' CY5, 3' BHQ2	5-Hydroxymethyl dC	/i55HdMe-dC/	C
5' Biotin-TEG	3' Biotin-TEG	5' CY5, 3' BHQ-3	5-Methyl dC	/i5MedC/	C
5' C3 Spacer	3' C3 Spacer	5' CY5, 3' Dabcyl	8-Oxo-dG	/i8OxdG/	G
5' CHCH	3' C6 Spacer	5' CY5.5, 3' BHQ2	Int 6-FAM-dT	/i6FAMdT/	T
5' CHO	3' CHCH	5' HEX, 3' BHQ1	Int Azide-dT	/iAzidedT/	T
5' COOH	3' Cholesteryl	5' HEX, 3' BHQ2	Int BHQ1 dT	/iBHQ1dT/	T
5' Cy3	3' Cy3	5' HEX, 3' Dabcyl	Int BHQ2 dT	/iBHQ2dT/	T
5' Cy5	3' Cy5	5' HEX, 3' Eclipse	Int Biotin dT	/iBiodT/	T
5' CY5.5	3' CY5.5	5' HEX, 3' TAMRA	Int CHCH-dT	/iCHCHdT/	T
5' Dabcyl	3' Dabcyl	5' JOE, 3' BHQ1	Int Cy3-dT	/iCy3dT/	T
5' DBCO	3' DBCO	5' JOE, 3' BHQ2	Int Cy5-dT	/iCy5dT/	T
5' Desthio Biotin	3' ddC	5' JOE, 3' Dabcyl-N	Int Dabcyl-dT	/iDabcyldT/	T
5' Desthio Biotin-TEG	3' Desthio Biotin	5' JOE, 3' TAMRA-N	Int DBCO dT	/iDBCOdT/	T
5' Dig	3' Desthio Biotin-TEG	5' Quasar 670, 3' BHQ2	Int Desthio Biotin dT	/iDesBiodT/	T
5' Dithiol	3' Dig	5' ROX, 3' BHQ2	Int Dig dT	/iDigdT/	T
5' Dual Biotin	3' Dithiol	5' ROX, 3' Dabcyl	Int Ferrocene dT	/iFcTdT/	T
5' Ferrocene	3' Eclipse	5' ROX, 3' Eclipse	Int HEX-dT	/iHEXdT/	T
5' HEX	3' Ferrocene	5' TAMRA, 3' BHQ2	Int JOE-dT	/iJOEdT/	T
5' HS-SH C6	3' HEX	5' TAMRA, 3' Dabcyl	Int Methylene Blue dT	/iMeBluedT/	T
5' JOE	3' HS-SH C3	5' TAMRA, 3' Eclipse	Int NH2 C6 dT	/iNH2C6dT/	T
5' Methylene Blue	3' HS-SH C6	5' TET, 3' BHQ1	Int ROX-dT	/iROXdT/	T
5' NH2 C12	3' Inverted dT	5' TET, 3' BHQ2	Int TAMRA-dT	/iTAMdT/	T
5' NH2 C6	3' JOE	5' TET, 3' Dabcyl	Int TET-dT	/iTETdT/	T
5' P	3' Methylene Blue	5' TET, 3' TAMRA	Int Texas Red-dT	/iTexRdT/	T
5' Pyrene	3' NH2 C6	5' Texas Red, 3' BHQ2	RNA	/iR/	A
5' Quasar 670	3' NH2 C7	5' Texas Red, 3' Dabcyl	RNA	/iRG/	G
5' ROX	3' P	5' VIC, 3' BHQ1	RNA	/iRC/	C
5' SH C6	3' Quasar 670	5' VIC, 3' BHQ2	RNA	/iRU/	U
5' Spacer 18	3' ROX	5' 6-FAM, 3' BHQ-X	XNA	/iXNA_A/	A
5' TAMRA	3' SH C3	5' CY3, 3' BHQ-X	XNA	/iXNA_G/	G
5' TET	3' SH C6	5' CY5, 3' BHQ-X	XNA	/iXNA_C/	C
5' Texas Red	3' TAMRA-N	5' HEX, 3' BHQ-X	XNA	/iXNA_T/	T
5' triple Biotin	3' TET	5' JOE, 3' BHQ-X	2F-RNA	/i2FA/	A
5' triple SH	3' Texas Red	5' ROX, 3' BHQ-X	2F-RNA	/i2FC/	C
5' Triple TAMRA	3' -dG-Q	5' TET, 3' BHQ-X	2F-RNA	/i2FG/	G
5' VIC	3' -dT-Q	5' VIC, 3' BHQ-X	2F-RNA	/i2FU/	U
5' Maleimide	3' BHQ-X	5' 6-FAM, 3' MGB	2'-O-Methyl	/i2OMeA/	A
5' Ru	3' MGB	5' CY3, 3' MGB	2'-O-Methyl	/i2OMeC/	C
5' NED	3' Maleimide	5' CY5, 3' MGB	2'-O-Methyl	/i2OMeG/	G
5' Atto 425	3' Ru	5' HEX, 3' MGB	2'-O-Methyl	/i2OMeU/	U
5' Cy7	3' Atto 425	5' JOE, 3' MGB	2'-O-Methyl	/i2OMeN/	N
		5' ROX, 3' MGB	2'-O-Methyl	/i2OMeR/	R
		5' TET, 3' MGB	2'-O-Methyl	/i2OMeY/	Y
		5' VIC, 3' MGB	2'-O-Methyl	/i2OMeM/	M
		5' TAMRA, 3' MGB	2'-O-Methyl	/i2OMeK/	K
			2'-O-Methyl	/i2OMeS/	S
			2'-O-Methyl	/i2OMeH/	H
			2'-O-Methyl	/i2OMeB/	B
			2'-O-Methyl	/i2OMeD/	D
			2'-O-Methyl	/i2OMeV/	V
			2'-O-Methyl	/i2OMeW/	W
			5-Nitroindole	/i5NitInd/	
			Azobenzene	/iAbz/	
			C12 Spacer	/iSpC12/	
			C3 Spacer	/iSpC3/	
			C6 Spacer	/iSp6/	
			Spacer 18	/iSp18/	
			Spacer 9	/iSp9/	
			Int Cy3	/iCy3/	
			Int Dithiol	/iDTPA/	
			PC-Linker	/iPCLink/	
			Phosphorothioate	*	
			Pyrrolo-dC	/iPyrroldC/	
			Int Uni-Link Amino	/iUniAmW/	
			Int HS-SH C6	/iHS-SH/	
			dSpacer	/iSp/	
			Int Symmetric	/iSymmetric/	

RNA Modification

Modification Type	
Base Modification	2' OME
	dSpacer (THF)
	dI
	rI
	dU
	2' F
	2' MOE
	LNA
	m6A
	m5C
End Modification	S
	m5U
	Thiol (SH)
	Amino (NH2)
	biotin
	phos
Fluorescent Labeling	spacer C9
	spacer C18
	FAM
	HEX
	Cy3
	Cy5
	TET
	VIC
	TAMRA
	Cholesterol
Conjugation & Other Modifications	GalNAc
	DBCO
	Desthiobiotin
	Cy5.5
	Cy7
	Hexynyl
	BHQ1
	BHQ2
	BHQ3
	MGB
	ATTO series
Chimera	DNA\RNA
	RNA\2'F\2' OME\DNA
Dual-Labeling	FAM-BHQ1
	FAM-TAMRA
	FAM-Dab
	TAMRA-BHQ2
	CY3-BHQ2
	CY5.5-BHQ3
	CY7-BHQ3

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

Expression Vector List

Mammalian Cell

pcDNA3.0	pcDNA3.1(-)_myc-His A	pCDH-CMV-EF1A-EGFP-T2A-Puro
pcDNA3.1-EGFP	pEGFP-N1	pCDH-CMV-MCS-EF1-Puro
pcDNA3.1(+)	pEGFP-C1	pcDNA3.1/Hygro(+)
pcDNA3.1(-)	pEGFP-N3	pcDNA3.1/Hygro(-)
pcDNA3.1(+)_myc-His A	pEGFP-C3	pcDNA3.1/Zeo (+)
pcDNA3.1(+)_myc-His B	pIRES2-EGFP	pcDNA3.1/Zeo (-)
pcDNA3.1(+)_myc-His C	pLVX-Puro	

Yeast

pPIC3.5k	pPICZA	pGBKT7
pPIC9K	pPICZalphaA	pGADT7

Bacterial

pET-3a	pET-28b(+)	pMAL-C3X
pET-3d	pET-29a(+)	pMAL-C5X
pET-9a	pET-29b(+)	pQE-30
pET-11a	PET-30a(+)	pQE-60
pET-11b	PET-30b(+)	pCold I
pET-14b	PET-31b(+)	pCold II
pET-15b	pET-32a(+)	pCold TF
pET-16b	pET-32b(+)	pETDuet-1
pET-17b	pET-41a(+)	pCDFDuet-1
pET-19b	pET-41b(+)	pRSFDuet-1
pET-20b(+)	pET-42b(+)	pCOLADuet-1
pET-21a(+)	pET-43.1a(+)	pACYCDuet-1
pET-21b(+)	pET-44b(+)	pSmartI
pET-21d(+)	pET-45b(+)	pBluescript II KS(+)
pET-22b(+)	pET-47b(+)	pBluescript II SK(-)
pET-23a(+)	pET-48b(+)	pBluescript II SK(+)
pET-24a(+)	pET-49b(+)	pGL3-Basic
pET-24b(+)	pET-52b(+)	pGL3-Control
pET-24c(+)	pGEX-4T-1	pGL3-Promoter
pET-24d(+)	pGEX-4T-2	psiCHECK2.0
pET-26b(+)	pGEX-6P-1	pDONR221
pET-27b(+)	pGEX-6P-2	pDONR207
pET-28a(+)	pMAL-C2X	PGL4.10

Baculovirus/Insect

pFastBac1	pFastBac-Dual	
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Plant

pCAMBIA1300	pBI121	pBI121-EGFP
pCAMBIA1301		

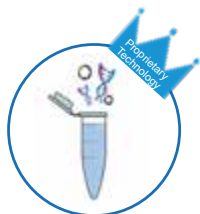
GenCefe는 위 표에 안내된 vector들에 target gene을 클로닝할 수 있습니다. 표기된 vector list는 클로닝 가능 범위를 안내하기 위한 것이며, 해당 vector의 재고 보유를 의미하지 않습니다.

고객 제공 Vector: 고객이 보유한 vector도 지정된 insertion site에 클로닝 진행이 가능합니다. 정확한 건적 및 기술 검토를 위해 full vector sequence 또는 vector map 제공이 필요하며, 주문 확정 후 실제 vector material을 GenCefe로 발송해야 합니다.

Protein Expression and Purification

GenCefe Biotech's protein production team is composed of technical experts with years of experience in protein expression and purification. With stable production capacity and in-house R&D capabilities, we can provide one-stop solutions from codon optimization, gene synthesis, to protein expression and purification.

Comprehensive Expression Systems



Cell-Free



Bacterial



Yeast

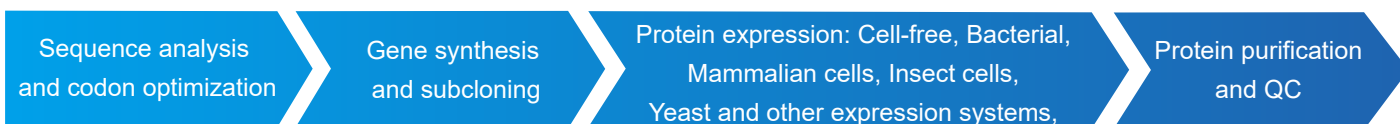


Insect Cell



Mammalian Cell

Gene-to-Protein Solutions



Cell-Free Protein Synthesis (CFPS)

- GenCefe CFPS platform is led by world-renowned CFPS expert Dr. Lei Kai, he holds 28 patents and has published more than 40 papers in related fields.
- Rich experience in production of GPCRs, ion channel proteins, aquaporins, transport proteins, etc.
- Customized solutions to meet customers individual needs.

Cell-Free System Development

Membrane Protein Preparation

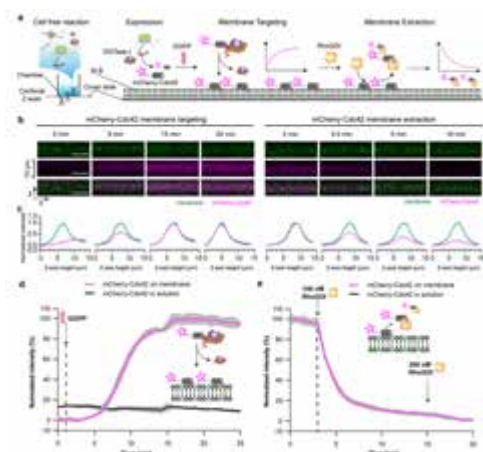
Optimization of Membrane Protein Expression System

Cell Extraction Preparation

Full-Length Membrane Protein

Membrane Protein Product Development

Case Study



Dr. Kai's team developed an innovative cell-free expression system, and successfully reconstituted 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.

Peptide Synthesis and Modification

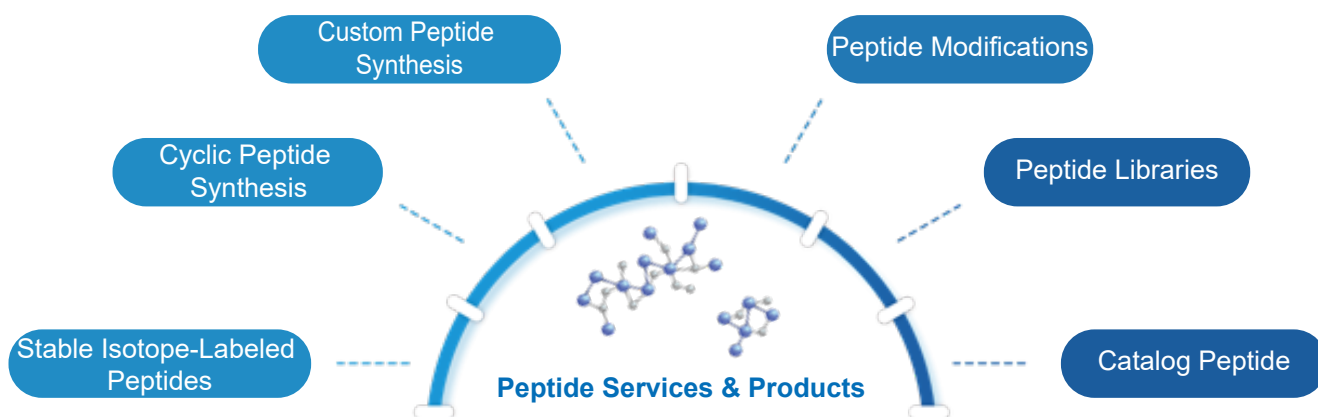
GenCefe Biotech's peptide synthesis technology platform has advanced purification systems and comprehensive testing equipment, providing milligram to kilogram-level peptide synthesis and modification services, and the product purity can reach 98% and above. Our experienced technical support team offers professional pre-sales, in-sales, and after-sales services, and timely feedback on project progress.

Accelerate your research with GenCefe high-quality peptides and efficient services!

Service Features

- **Customized synthesis:** milligram to kilogram level, purity up to >98%, and the synthesis length can reach 180 amino acids.
- **Comprehensive modifications:** more than 300 modifications, including phosphorylation modification, biotin labeling, fluorescent labeling, etc.
- **Aliquot service:** we provide aliquot service according to customer needs, and the minimum aliquot volume is 0.2mg/tube.
- **Strict quality control:** we guarantee that the delivered products are sufficient, and all peptides are tested by MS and HPLC.

Service Types



- **Custom Peptide Synthesis:** Milligram to kilogram level, purity up to >98%, and the synthesis length can reach 180 amino acids
- **Peptide Modifications:** 300+ different peptide modification groups
- **Stable Isotope-Labeled Peptides:** N15, C13, and dual-labeled isotope peptides
- **Cyclic Peptide Synthesis:** Provides various cyclization methods, such as head-to-tail cyclization, stapled peptide, etc.
- **Peptide Libraries:** A variety of custom peptide libraries provide you with powerful screening tools
- **Catalog Peptide:** More than 1,000 catalog peptides, covering popular research areas



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