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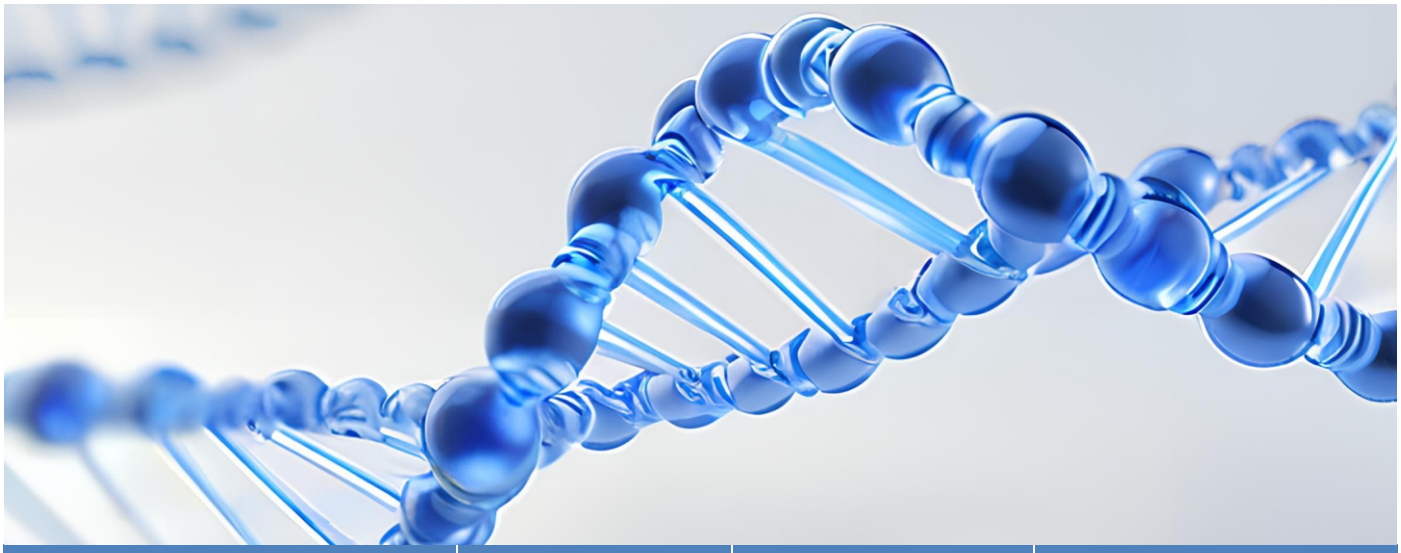
Custom Services



Oligo Synthesis		Gene Synthesis	Peptide Synthesis	Cell-Free Protein Expression
DNA	**RNA**			
• qPCR probes • Capture probes • Fluorescence in situ hybridization probes • NGS primers & probes • Modified oligos for Forensic	• siRNA • miRNA • sgRNA • ASO • Aptamer • Modified RNA • Labeled RNA • Delivery system • customization & coupling	• Custom Gene Synthesis • Codon Optimization • PCR Cloning & Subcloning • Site-Directed Mutagenesis • Plasmid Preparation • Synthetic DNA Libraries	• Custom Peptide synthesis • Peptide Modification • Peptide Library • Peptide Array • Stable Isotope Labeled Peptides	• 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

DNA Synthesis:

Purification Method	Modifications	
	Positions	Groups
RPC purified MOP purified PAGE / HPLC purified	3'-end / 5'-end Modifications Internal / Intermedia Modification Dual / Multiple Modifications	Fluorescence, Biotin, Digoxingein, Phosphorylation, Phosphorothioates, Amino Linkers, Thiol, Quenchers,etc.

• Available scale of synthesis: 10nmol to 250nmol

RNA Synthesis:

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, phosphoramide modification, etc. • **End Modification:** Chol, Biotin, Thiol, NH2, fluorescent dyes, etc. • **Delivery System:** LNA, GalNAc, PMO, PNA, etc.

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Gene Synthesis:

Custom 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
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

Peptide Synthesis: Simple to Complex & Linear to Cyclized

- **High Quality:** the peptides are purified and analyzed by HPLC (if requested) and checked by mass spectrometry analysis
- **High Success Rate:** more than 95%, far higher than industry's general success rate 75%
- **Microwave Technology:** this technology increases chemical coupling efficiency and contributes to our high success
- **Large Scale:** from small to large scale (mgs ~ kgs), proprietary ligation technology allows joining peptides of up to 200 mer
- **Purity Level:** desalted, >75%, >80%, >85%, >90%, >95%, >98% and even above 99%
- **Modifications:** from biotinylation to phosphorylation, to dye labeling, and much more…

Purity	Application
Crude/ Desalted	for high-throughput screening (e.g. preliminary screening)
>75%	ligands for affinity purification; in enzyme substrate studies; epitope mapping
>80%	peptide blocking studies (non-quantitative); protein electrophoresis applications
>85%	immunological applications; polyclonal antibody production and non sensitive screening; peptide arrays
>90%	Bioassays; SAR studies
>95%	In vitro bioassays such as ELISA; enzymology; biological activity
>98%	structural studies such as Crystallography; NMR or sensitive bioassays
>99%	drug studies; cosmetics

Cell Free Protein Expression:

Cell-Free System Development	Membrane Protein Preparation	Optimization of Membrane Protein Expression System
Cell Extraction Preparation	Full-Length Membrane Protein	Membrane Protein Product Development

Other Protein Expression Systems:

- **Bacterial Expression System** 1-20 mg protein; purity>90% by SDS
- **Mammalian Cell Expression System** 0.2-10 mg protein; purity>90% by SDS
- **Antibody (IgG) Production** 0.2-50 mg or 20mL-1L; purity>90% by SDS

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

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