CUSABIO®

MOLECULAR BIOLOGY PRODUCT MANUAL

Wuhan Huamei Biotech Co., Ltd.

COMPANY PROFILE

Wuhan Huamei Biotech Co.,LTD.,located in "Optics Valley of China" founded in 2007, is a high-tech enterprises of independently researching& producting and selling protein, antibody, diagnostic reagent raw materials, scientific research kits and other products. Relying on experts and technical teams from Wuhan University, Wuhan Institute of Virology, Chinese Academy of Sciences, Huazhong University of Science and Technology, Huazhong Agricultural University and other universities and research institutes, the company has provided related products and customized technical services for well-known domestic and foreign manufacturers of diagnostic reagents, pharmaceutical R&D companies, universities, enterprises and research institutes. Industrial Raw Materials Division is an independent production line of high-quality biological raw materials of Wuhan Huamai Biotech Co.,LTD., currently focusing on the research and development, production and sales of raw materials used in in vitro diagnostic reagents and other fields.

Industrial Raw Materials Division can provide the majority of in vitro diagnostic reagent manufacturers with high quality monoclonal antibodies, polyclonal antibodies, diagnostic proteins, biochemical enzymes, molecular biology and general raw materials, at the same time can provide customers with OEM reagents and professional customized services. The products are comprehensively cover inflammation markers, cardiac markers, tumor markers, liver and kidney function, thyrohormone, autoimmune diseases, respiratory pathogens, animal infectious diseases and other fields; Widely used in CLIA,TRF-LFIA,ELISA,LETIA and other platforms.




CORE COMPETENCE

Wuhan Huamei Biotech Co.,LTD.◎Industrial Raw Materials Division has profound technology accumulation and R&D innovation strength. Based on molecular biology, synthetic biology and immunology, we provide industrial customers with key biological raw materials and related services. We have formed a complete system of R&D、 production、 quality、 storage、sales and service.



Over the years, the company's R&D investment accounted for more than 12% of the operating income

More than 60% of the total number of professional research and development team

100+ core patented technology

Accumulated nearly 10 years of experience in project management

Perfect design development and product quality management process

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PRODUCTS CATALOG

01 /PRODUCT CATALOG

Molecular Diagnostics

Product Name	Catalogue #	Size	Application
Protease k	CSB-DP437A Liquid CSB-DP578A Lyophilized powder	Liquid：500mL;1L;10L; Lyophilized powder：100mg;1g;5g;10g;100g;1KG	Protein Degradation，DNA/RNA Extraction
DNA/RNA extraction and purification kit (Magnetic bead method)	CSB-DKT040	50 T;100 T;500 T;	DNA/RNA Extraction
M-MLV Reverse Transcriptase	CSB-DEM025	200 U/μL,20 KU;200 U/μL,100 KU; 200 U/μL,200 KU;	cDNA synthesis, RT-PCR
Taq DNA Polymerase	CSB-DEM023	5 U/μL,500 U;5 U/μL,2500 U; 5 U/μL,5 KU;	PCR, qPCR
HS-Taq DNA Polymeras	CSB-DEM024	5 U/μL,500 U;5 U/μL,2500 U; 5 U/μL,5 KU;	PCR, qPCR
One Step RT-qPCR Kit	CSB-DKT031	50 T;100 T;500 T;	RT-qPCR
TaqMan multiplex qPCR master mix	CSB-DKT037	50 T;100 T;500 T;	qPCR
Anti-Taq DNA Polymerase antibody	CSB-DA403AmN①	5 U/μL,500 U;5 U/μL,2500 U; 5 U/μL,5 KU;	PCR

DNA Polymerase and Amplification

Product Name	Catalogue #	Size	Application
Taq DNA Polymerase	CSB-DEM023	5 U/μL,500 U;5 U/μL,2500 U; 5 U/μL,5 KU;	PCR、qPCR
HS-Taq DNA Polymeras	CSB-DEM024	5 U/μL,500 U; 5 U/μL,2500 U; 5 U/μL,5 KU;	PCR、qPCR
HiFi DNA Polymerase	CSB-DEM042	1 U/μL,100 U; 1 U/μL,500 U; 1 U/μL,1000 U;	PCR、qPCR
Pfu DNA Polymerase	CSB-DEM035	1 U/μL,100 U;1 U/μL,500 U; 1 U/μL,1000 U;	PCR、qPCR
KOD DNA Polymerase	CSB-DEM034	1 U/μL,100 U;1 U/μL,500 U; 1 U/μL,1000 U;	PCR、qPCR
Pfu II high fidelity DNA polymerase	CSB-DEM043	1 U/μL,100 U; 1 U/μL,500 U; 1 U/μL,1000 U;	PCR、qPCR

DNA Polymerase and Amplification

Product Name	Catalogue #	Size	Application
Hemo Taq DNA Polymerase (Blood-resistant)	CSB-DEM044	5 U/μL,500 U; 5 U/μL,2500 U; 5 U/μL,5 KU	PCR、qPCR
Klen Taq DNA Polymerase	CSB-DEM045	5 U/μL,500 U;5 U/μL,2500 U; 5 U/μL,5 KU	PCR、qPCR
ARMS Taq DNA Polymerase	CSB-DEM073	5 U/μL,500 U; 5 U/μL,2500 U; 5 U/μL,5 KU	ARMS PCR, SNP TEST
Bst DNA Polymerase	CSB-DEM074	8 U/μL,800 U;8 U/μL,4000 U; 8 U/μL,8000 U;	LAMP, Sequence

Reverse Transcription

Product Name	Catalogue #	Size	Application
M-MLV Reverse Transcriptase	CSB-DEM025	200 U/μL,20 KU;200 U/μL,100 KU; 200 U/μL,200 KU;	cDNA synthesis, RT-PCR
RTX Reverse Transcriptase	CSB-DEM046	200 U/μL,20 KU;200 U/μL,100 KU; 200 U/μL,200 KU;	RT-PCR

Cloning

Product Name	Catalogue #	Size	Application
Seamless Cloning Kit	CSB-DKT036	50 Rxns; 100 Rxns; 200 Rxns;	Clone
T5 Exonuclease	CSB-DEM047	5 U/μL,500 U;5 U/μL,1000 U; 5 U/μL,5 KU;	Nuclease, DNA clone
T4 DNA ligase	CSB-DEM049	400 U/μL,40 KU;400 U/μL,80 KU; 400 U/μL,400 KU;	DNA ligases, T/A clone
Taq DNA ligase	CSB-DEM048	40 U/μL,2 KU; 40 U/μL,4 KU; 40 U/μL,20 KU;	DNA ligases, T/A clone

CRISPR–Cas

Product Name	Catalogue #	Size	Application
LbuCas13a	CSB-DEM038	100 pmol;2000 pmol;	Gene Editing
LbCas12a	CSB-DEM028	100 pmol;1000 pmol;	Gene Editing

Methylation and Demethylation Enzymes

Product Name	Catalogue #	Size	Application
AlkB RNA/DNA demethylase	CSB-DEM055	4 U/μL,200 U;4 U/μL,1000 U;	Demethylation
GpC Methyltransferase(M.CviPI)	CSB-DEM056	4 U/μL,200 U;4 U/μL,1000 U;	DNA Methyltransferase
CpG Methyltransferase(M.SssI)	CSB-DEM057	4 U/μL,200 U;4 U/μL,1000 U;	DNA Methyltransferase

Molecular Kit

Product Name	Catalogue #	Size	Application
One Step RT-qPCR Kit	CSB-DKT031	50 T; 100 T;500 T;	RT-qPCR
SYBR PCR Mix(2x SYBR Green qPCR MiX)	CSB-DKT030	50 T; 100 T;500 T;	qPCR
2×Taq PCR MIX（With Dye）	CSB-DKT032（A tube of） / CSB-DKT033	50 T; 100 T;500 T;	PCR, Electrophoresis
TaqMan multiplex qPCR master mix	CSB-DKT037	50 T; 100 T;500 T;	qPCR
HiFi PCR Kit	CSB-DKT039	50 T; 100 T;500 T;	qPCR
Seamless Cloning Kit	CSB-DKT036	50 Rxns;100 Rxns;200 Rxns;	clone
2×Blood Direct TaqMan qPCR Mix	CSB-DKT067	50 T; 100 T;500 T;	qPCR
Blood Direct PCR Kit	CSB-DKT068	50 T; 100 T;500 T;	PCR, Electrophoresis
2× Multiplex ARMS qPCR Mix	CSB-DKT075	50 T; 100 T;500 T;	qPCR

Nucleic Acid Extraction Kit

Product Name	Catalogue #	Size	Application
DNA/RNA extraction and purification kit (Magnetic bead method)	CSB-DKT040	50 T; 100 T;500 T;	DNA/RNA Extraction

Tn5 Products

Product Name	Catalogue #	Size	Application
Tn5 Transposase	CSB-DEM076	20 μL;100 μL;	NGS Library Construction, ATAC-seq, CUT&Tag
pG-Tn5 Transposome	CSB-DEM069	4 μM 12 μL;4 μM 48 μL;	NGS Library Construction, ATAC-seq, CUT&Tag
pAG-Tn5 Transposase for CUT&Tag	CSB-DEM070	10 μL,20 μg;	NGS Library Construction, ATAC-seq, CUT&Tag
pAG-Tn5 Transposome	CSB-DEM071	4μM 12μL;4μM 48μL;	NGS Library Construction, ATAC-seq, CUT&Tag
CUT&Tag Assay Kit (pAG-Tn5) for illumina	CSB-DKT072	4 Rxns;12 Rxns;	Illumina sequencing, Library Construction

mRNA Vaccine Related Enzymes

Product Name	Catalogue #	Size	Application
UltraNuclease /Benzonase（GMP-grade）	CSB-DEM077	250 U/μL,25 KU;250 U/μL,125 KU; 250 U/μL,250 KU;	Nucleic acid removal
T7 RNA Polymerase（GMP-grade）	CSB-DEM078	50 U/μL,5 KU;50 U/μL,25 KU; 50 U/μL,50 KU;	RNA Synthesis
Deoxyribonuclease I /DNase I（GMP-grade）	CSB-DEM079	2 U/μL,200 U;2 U/μL,1000 U; 2 U/μL ,2000 U;	DNA removal
RNase Inhibitor（GMP-grade）	CSB-DEM080	40 U/μL，20 KU;40 U/μL，40 KU; 40 U/μL，200 KU;	Inactivated RNase, PCR, qPCR
Pyrophosphatase, Inorganic（GMP-grade）	CSB-DEM081	0.1 U/μL, 100 U;0.1 U/μL, 500 U;	RT-PCR
Vaccinia Capping Enzyme （GMP-grade）	CSB-DEM082	10 U/μL,10 KU;10 U/μL, 50 KU;	RNA Capping
mRNA Cap 2´-O-Methyltransferase（GMP-grade）	CSB-DEM083	50 U/μL,50 KU;50 U/μL, 250 KU;	Capping methylation of RNA
Poly(A) Plymerase（GMP-grade）	CSB-DEM084	5 U/μL,5 KU;5 U/μL,25 KU;	Poly(A) Tailing

Others

Product Name	Catalogue #	Size	Application
Anti-Taq DNA Polymerase antibody	CSB-DA403AmN①	5 U/μL,500 U;5 U/μL,2500 U; 5 U/μL,5 KU;	PCR
RNase Inhibitor (40U/μl)	CSB-DEM029	40 U/μL,4 KU;40 U/μL,20 KU; 40 U/μL,40 KU;	PCR
Uracil-DNA Glycosylase（UDG）	CSB-DEM026	1 U/μL,100 U;1 U/μL,500 U ; 1 U/μL,1 KU;	PCR
PCR Enhancer	CSB-DKT053	1 mL;5 mL;	PCR
GC Enhancer	CSB-DKT054	1 mL;5 mL;	PCR
T5 Exonuclease	CSB-DEM047	5 U/μL,500 U;5 U/μL,1000 U; 5 U/μL,5 KU;	Nuclease, DNA clone
Taq DNA ligase	CSB-DEM048	40 U/μL,2 KU;40 U/μL,4 KU; 40 U/μL,20 KU;	DNA ligases, T/A clone
T4 DNA ligase	CSB-DEM049	400 U/μL,40 KU;400 U/μL,80 KU; 400 U/μL,400 KU;	DNA ligases, T/A clone
Taq SSB (Single-Stranded DNA Binding) protein/TaqSSB	CSB-DEM050	1 μg/μL,200 μg; 1 μg/μL,500 μg;	PCR, Seamless cloning, Sequence
ETSSB(Extremely Themostable Single-Stranded Binding Protein)	CSB-DEM051	1 μg/μL,200 μg; 1 μg/μL,500 μg;	PCR, Seamless cloning, Sequence
KODSSB	CSB-DEM052	1 μg/μL,200 μg; 1 μg/μL,500 μg;	PCR, Seamless cloning, Sequence

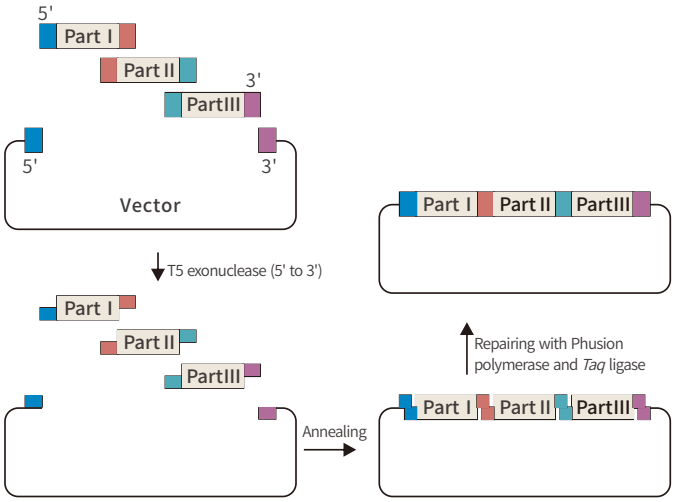
02/Product Recommendation

Seamless Cloning Kit

Seamless Cloning Kit is a simple, fast, and efficient DNA directional cloning product that can quickly, efficiently, and accurately insert one or more DNA fragments into a linearized vector in a predetermined direction through homologous recombination. This kit has no restriction on enzyme cutting sites when performing gene cloning. It only needs to linearize the vector at the predetermined cloning site by enzyme cutting or directly prepare the linearized vector by PCR method. The 5' end of the two PCR primers of the inserted fragment introduces a 15-25bp overlapping sequence that is completely consistent with both ends of the vector cloning site. Only one-step recombination is needed to obtain a high-efficiency cloned recombinant vector.

Product Name	Catalogue #	Size
Seamless Cloning Kit	CSB-DKT036	50 Rxns、100 Rxns、200 Rxns

◎ Principle of Action



◎ Product Feature

- Flexible site selection: gene cloning at any position of the vector;
- Fast and simple: vector construction can be completed within an hour;
- High cloning efficiency, positive cloning up to 90% or more;
- Recombination of multiple target genes at once;

◎ Product Application

- Rapid cloning;
- High-throughput cloning;
- Seamless cloning;
- DNA site-directed mutagenesis;

◎ Product Data

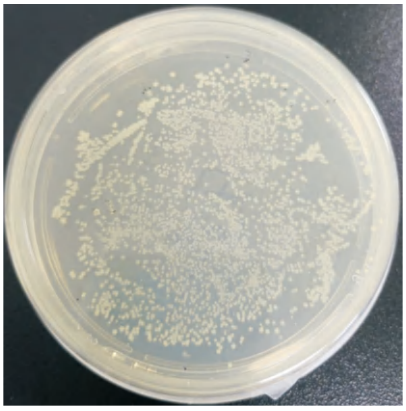


Figure 1. Recombinant transformation plate.

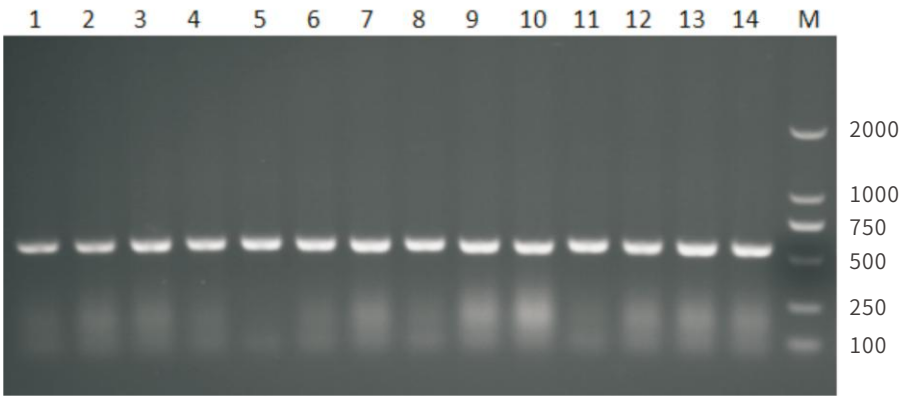


Figure 2. Colony PCR identification of the clones constructed.
M：Trans2K DNA Marker

Hemo Taq DNA Polymerase (Blood-resistant) and Kits

Anti-inhibitory DNA polymerase is a new generation of hot start Taq DNA polymerase modified by the antibody method and upgraded. The modified Taq DNA polymerase still performs well in the presence of most anticoagulants. It has high resistance to widely used potent PCR inhibitors.

In the application of ordinary PCR, Blood Direct PCR Kit was developed, which is also a kit that can directly perform PCR amplification on whole blood samples without DNA purification or sample pretreatment, and can amplify whole blood concentrations up to 30%. It has the characteristics of high fidelity and strong tolerance to PCR inhibitors, and can amplify genomic fragments of about 6kb from whole blood.

Product Name	Catalogue #	Size
Hemo Taq DNA Polymerase (Blood-resistant)	CSB-DEM044	(5U/μL)500U、2500U、5KU
2×Blood Direct TaqMan qPCR Mix	CSB-DKT067	50T、100T、500T
Blood Direct PCR Kit	CSB-DKT068	50T、100T、500T

◎ Product Feature

- Still performs well in the presence of most anticoagulants, including heparin, sodium citrate, and EDTA;
- Can cope with the amplification of blood extraction samples and blood lysis crude products;
- Good impurity tolerance, suitable for a variety of detection scenarios.

◎ Product Application

- PCR, qPCR, blood-resistant qPCR

◎ Product Data

- High sensitivity

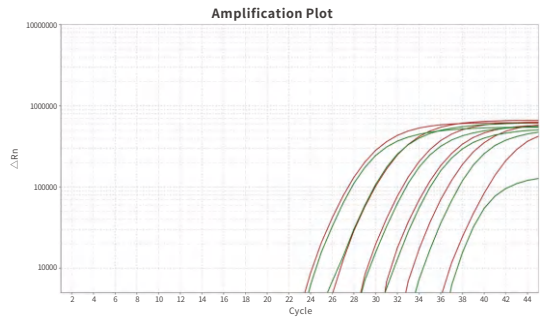


Figure 1. Amplification sensitivity of CSB-DEM044 HemoTaq DNA Polymerase.

- Hemo Taq DNA Polymerase
- Brand 1 Hemo Taq DNA Polymerase Polymerase
- Brand 2 Hemo Taq DNA

- Impurity tolerance

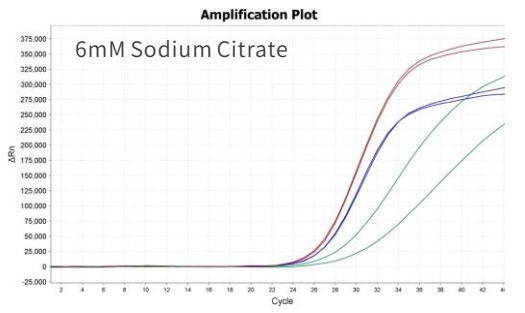


Figure 2. Impurity tolerance and direct blood expansion ability of CSB-DKT067 2×Blood Direct TaqMan qPCR Mix.

- Hemo Taq DNA Polymerase
- Brand Y Hemo Taq DNA Polymerase Polymerase
- Brand B Hemo Taq DNA

• Impurity tolerance

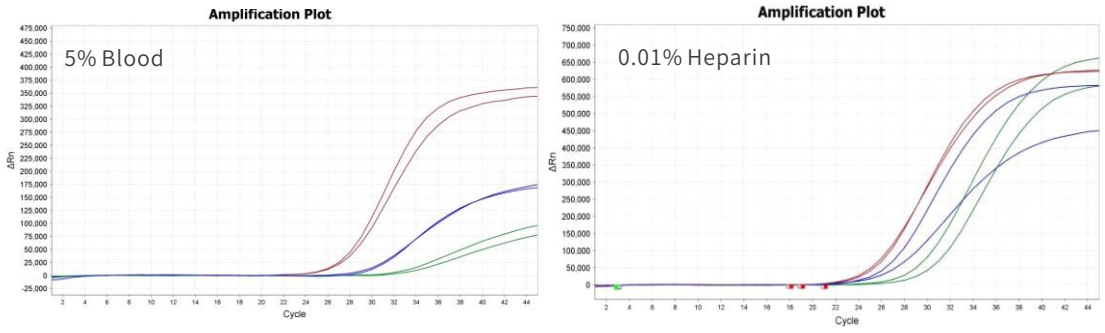
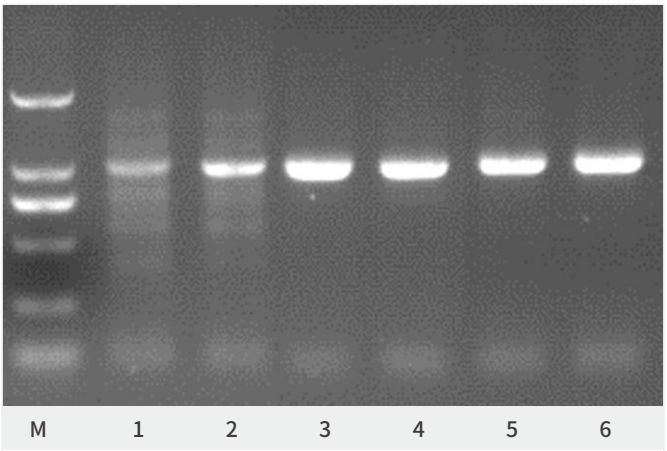


Figure 2.
Impurity tolerance and direct blood expansion ability of CSB-DKT067 2×Blood Direct TaqMan qPCR Mix.

- Hemo Taq DNA Polymerase
- Brand Y Hemo Taq DNA Polymerase Polymerase
- Brand B Hemo Taq DNA

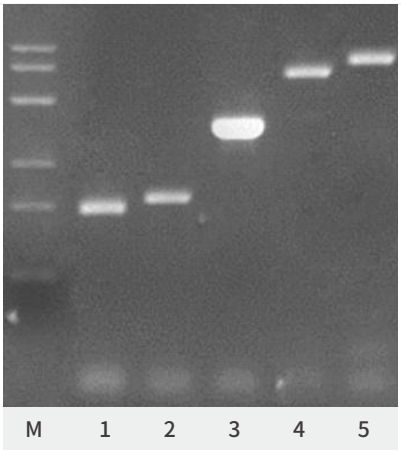
• Direct amplification of blood by ordinary PCR



Line 1, 2: Brand Y blood-resistant enzyme Line 3, 4: Brand S blood-resistant enzyme
Line 5、6：Hemo Taq DNA Polymerase

Figure 3. CSB-DKT068 Blood Direct PCR Kit.

• Blood direct amplification fragment length



Line 1-5: Corresponding to bands of 1kb, 1.2kb, 2kb, 4kb, and 6kb respectively;
M: Trans8K DNA Marker

Figure 4. CSB-DKT068 Blood Direct PCR Kit.

• Thermal stability

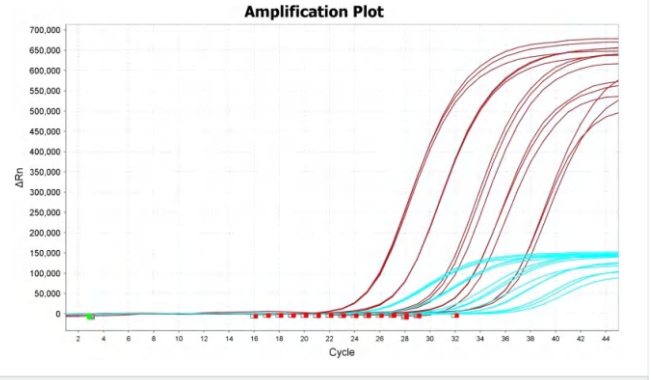
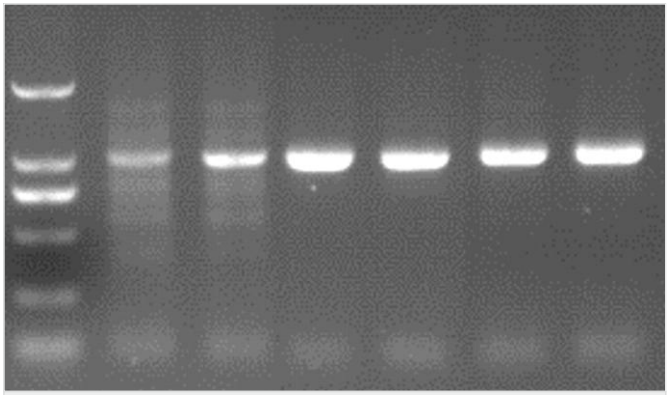


Figure 5. CSB-DEM044 Hemo Taq DNA Polymerase accelerated at 37°C for 0 days, 7 days, and 14 days, with good stability.

• Direct amplification of blood by ordinary PCR



Line 1, 2: Brand Y Blood-resistant Enzyme Line 3, 4: Brand B Blood-resistant Enzyme
Line 5, 6: Hemo Taq DNA Polymerase

Figure 6. CSB-DEM044 Hemo Taq DNA Polymerase direct blood expansion.

ARMS Taq DNA Polymerase and Mix

First generation ARMS

Mutation template (single base mismatch)

CGATCGA AACTGAT TC AT

GCTAGCT TTGACTA AGCTAGCTAGCTAGCTACT TAGCATGC

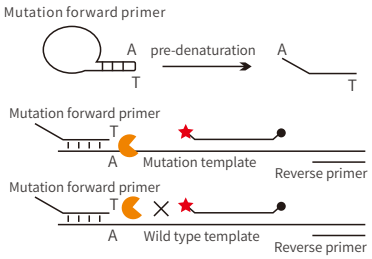
Wild-type template (two-base mismatch)

CGATCGA AACTGAT TC A

GCTAGCT TTGACTA AGCTAGCTAGCTAGCTACT TAGCATGC

The 3' end needs to introduce multiple base mismatches,Specificity is difficult to guarantee,Multiple optimizations are required.

Second generation ARMS



Requires a cyclic primer,At least two base mismatche

Third generation ARMS

Mutant template (match)

CGATCGA AACTGATTCGAT

GCTAGCT TTGACTA AGCTAGCTAGC TAGCTACT TAGCATGC

Wild-type template (mismatch)

CGATCGA AACTGATTCGA

GCTAGCT TTGACTA AGCTAGCTAGC TAGCTACT TAGCATGC

No need for circular primer, only one base difference

ARMS Taq DNA Polymerase is a new generation of antibody-mediated hot-start Taq enzyme, which has been genetically engineered to accurately recognize single-base mismatches at the 3' end of primers. By designing a recognition base at the 3' end of the primer, highly specific ARMS detection can be achieved. This enzyme is suitable for both fluorescent PCR platforms and the latest digital PCR platforms. Based on this enzyme, the 2× Multiplex ARMS qPCR Mix has been developed with strong blocking ability, capable of effectively performing ARMS-PCR-mediated genotyping. The buffer and Taq enzyme have been specially optimized and contain the ions and dNTPs required for amplification, without the need for additional addition.

Product Name	Catalogue #	Size
ARMS Taq DNA Polymerase	CSB-DEM073	5 U/μL,500 U; 5 U/μL,2500 U; 5 U/μL,5 KU
2× Multiplex ARMS qPCR Mix	CSB-DKT075	50 T; 100 T; 500 T;

◎ Product Feature

- High sensitivity and specificity
- Strong blocking ability, capable of effectively performing ARMS-PCR-mediated genotyping;
- Recognition base at the 3' end of the primer;
- Good impurity tolerance, suitable for various detection scenarios.

◎ Product Application

- qPCR, genotyping, SNP analysis

◎ Product Data

• Sensitivity and specificity

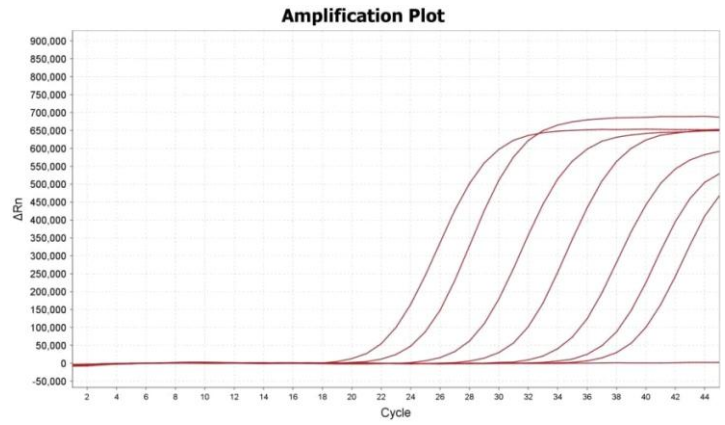


Figure 1.
CSB-DEM073 ARMS Taq DNA Polymerase high sensitivity and specificity.

• Single base mutation detection

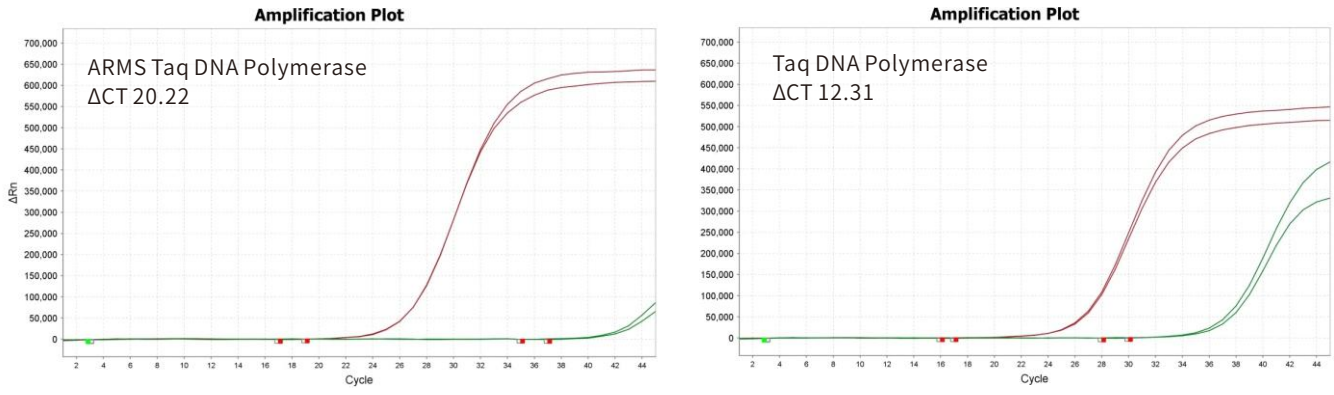


Figure 2. CSB-DKT075 2× Multiplex ARMS qPCR Mix 3' end single base mutation detection.

• Comparison of competitive reagent kits

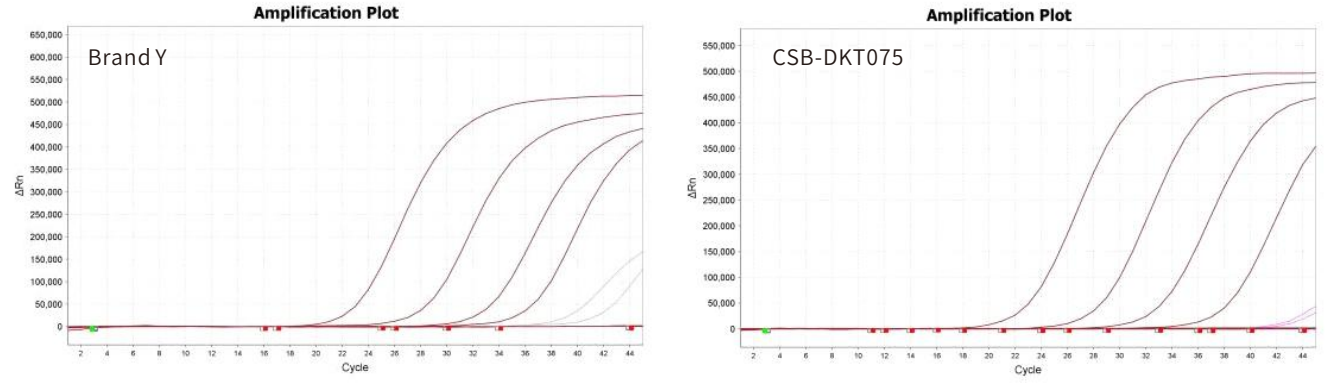


Figure 3. Comparison of CSB-DKT075 2× Multiplex ARMS qPCR Mix with competitor’s kit brand Y

Taq DNA Polymerase

Taq DNA polymerase is a recombinant, heat-resistant DNA polymerase. It was named Taq polymerase because it was discovered in the thermophilic aquatic bacterium Thermus aquaticus in hot springs. It has 5'-3' polymerase activity and 5'-3' exonuclease activity.

Product Name	Catalogue #	Size
Taq DNA Polymerase	CSB-DEM023	5 U/μL,500 U; 5 U/μL,2500 U;5 U/μL,5 KU;

◎ Product Feature

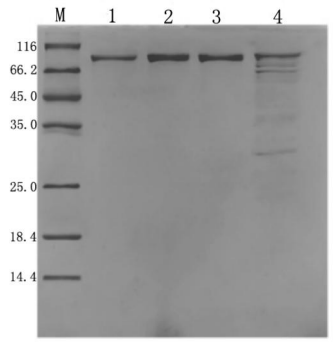
- High purity: purity >95%, no residual nuclease, low residual host gDNA;
- Good compatibility: compatible with multiple Buffers, active at pH 8.3-11.6;
- High sensitivity: improved template affinity through modification, increasing the detection sensitivity of low concentration templates;
- Good specificity: electrophoresis detection of target band is single, no tailing;

◎ Product Application

- Routine PCR amplification
- RT-qPCR
- Fluorescent quantitative PCR
- Product can be directly TA cloned

◎ Product Data

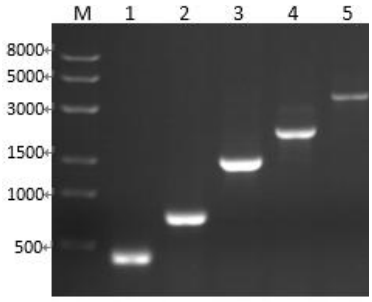
• SDS-PAGE electrophoresis purity



Line 1、2、3:
CSB-DEM023
Taq DNA Polymerase
Line 4:
A certain brand of
Taq DNA polymerase

Figure 1.
SDS-PAGE electrophoresis purity detection of CSB-DEM023 Taq DNA Polymerase and similar products.

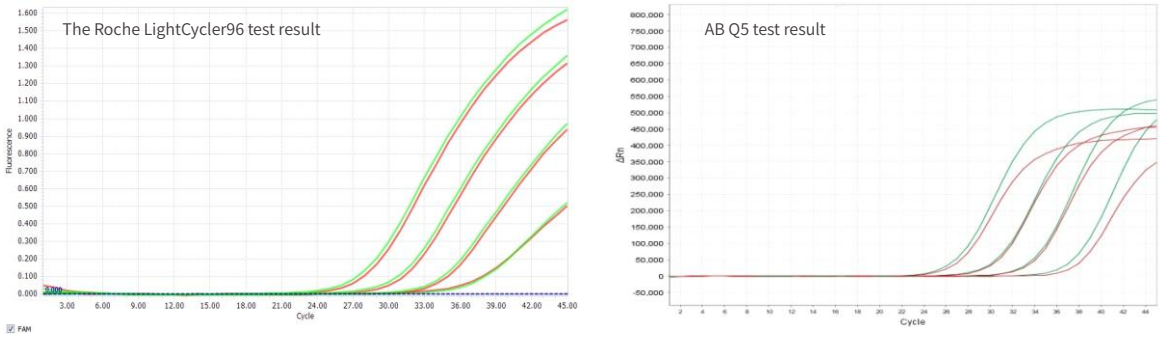
• Amplification of different fragment lengths.



Line1-5: Fragment size
460/750/1500/2100/
3900bp
M: Trans8K DNA Marker

Figure 2. Electrophoresis test results of CSB-DEM023 Taq DNA Polymerase.

• Comparative testing with competitive enzymes.



CSB-DEM023 Taq DNA Polymerase Brand X Taq DNA Polymerase

Figure 3. qPCR was performed on plasmid templates with different copy numbers of 5000, 500, 50, and 5 copies using CSB-DEM023 Taq DNA Polymerase and similar products. It can be seen that CSB-DEM023 Taq DNA Polymerase has excellent linearity and amplification efficiency in the lower template concentration range.

HS-Taq DNA Polymerase

HS-Taq DNA polymerase is an antibody-blocked thermostable polymerase. Its polymerase activity is completely inhibited at room temperature, thus avoiding non-specific amplification and primer dimerization during the preparation of the PCR reaction system and other operations. During the 95°C pre-denaturation process, the antibody will denature and inactivate, releasing the activity of Taq DNA polymerase. This step will not affect subsequent PCR reactions, but will increase the specificity of PCR.

Product Name	Catalogue #	Size
HS-Taq DNA Polymeras	CSB-DEM024	5 U/μL,500 U; 5 U/μL,2500 U;5 U/μL,5 KU;

◎ Product Feature

- High sensitivity: Excellent amplification sensitivity to meet low template requirements.
- Excellent multiplex amplification capability: Simultaneous detection of multiple target genes, suitable for the development of multiplex PCR kits.
- Good stability: Stable reagent performance after being placed at 37°C for 14 days or undergoing 40 freeze-thaw cycles.

◎ Product Application

- Suitable for conventional PCR reactions, amplification of complex templates, low copy templates, etc.
- Multiplex PCR experiments
- Quantitative PCR experiments, etc.

◎ Product Data

- **Amplification of different fragment lengths.**

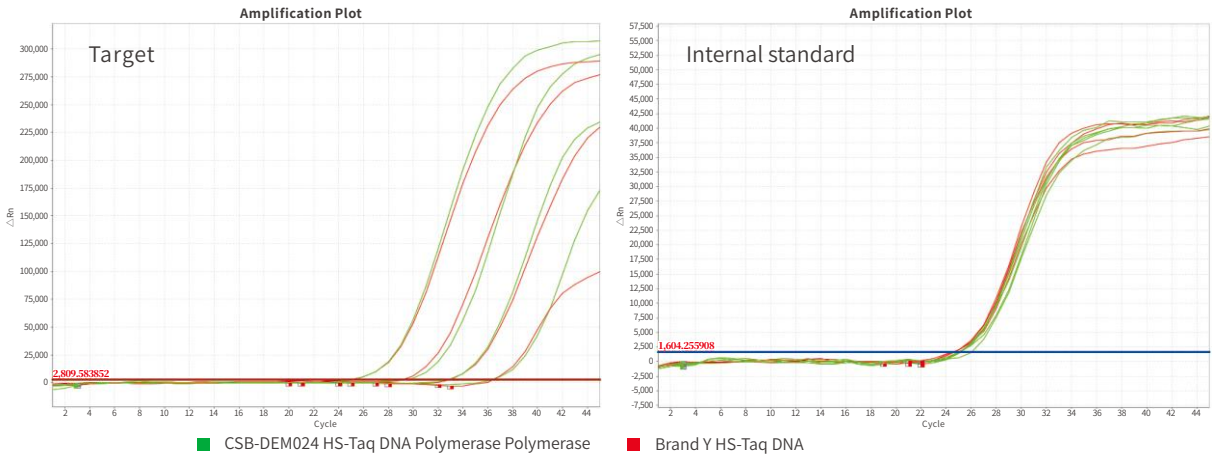


Figure 1. Using a certain brand of probe detection kit, replacing the components in the kit with CSB-DEM024 HS-Taq DNA Polymerase for qPCR, it can be seen that HS-Taq DNA Polymerase has a certain improvement in sensitivity and amplification efficiency.

- **Accelerated stability**

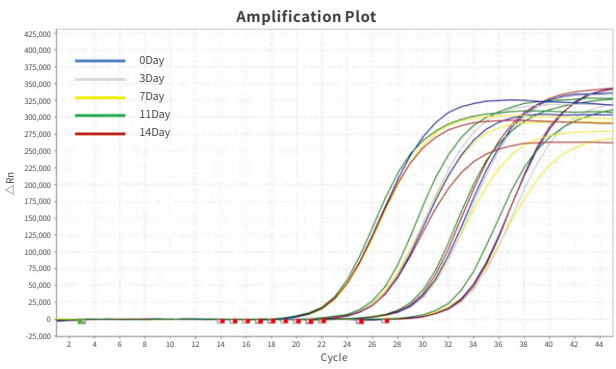
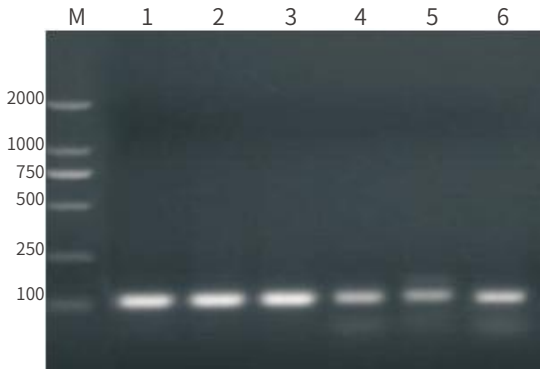


Figure 2. CSB-DEM024 HS-Taq Accelerated thermal stability of DNA Polymerase at 37°C.

- **Specific amplification capability**



Template: Human genomic DNA Line 1, 2, 3: Hot start Taq DNA polymerase
Line 4, 5, 6: Regular Taq enzyme M: Trans2K DNA Marker

Figure 3. Specific amplification ability of CSB-DEM024 HS-Taq DNA Polymerase.

M-MLV Reverse Transcriptase

MMLV reverse transcriptase is a reverse transcriptase obtained by mutation screening of the M-MLV gene derived from Moloney murine leukemia virus and expressed in Escherichia coli. This enzyme has higher temperature tolerance, is suitable for high temperature reverse transcription, and is conducive to eliminating the adverse effects of RNA high-level structure and non-specific factors on cDNA synthesis. It has higher stability and reverse transcription synthesis ability.

Product Name	Catalogue #	Size
M-MLV Reverse Transcriptase	CSB-DEM025	200 U/μL,20 KU;200 U/μL,100 KU;200 U/μL,200 KU;

◎ Product Feature

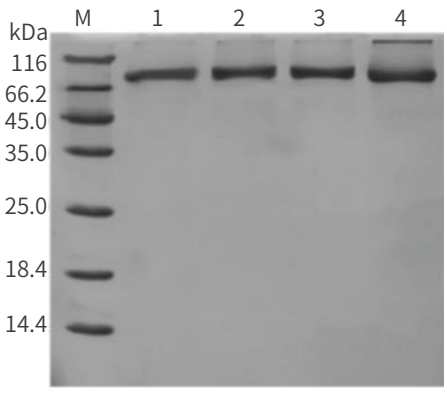
- High temperature resistance: can perform reverse transcription at high temperatures of 50-60°C, and the reaction remains stable;
- High reverse transcription efficiency: for low-concentration RNA templates, ensure synthesis efficiency and success rate;

◎ Product Application

- First-strand cDNA synthesis for RT-PCR and RT-qPCR
- Synthesis of cDNA for cloning and expression studies

◎ Product Data

- **Comparison with SDS-PAGE electrophoresis detection of similar products**



Line 1, 2, 3: CSB-DEM025 M-MLV Reverse Transcriptase
Line 4: M-MLV Reverse Transcriptase from a certain brand

Figure 1. SDS-PAGE analysis of CSB-DEM025 M-MLV Reverse Transcriptase and similar products

- **Accelerated thermal stability.**

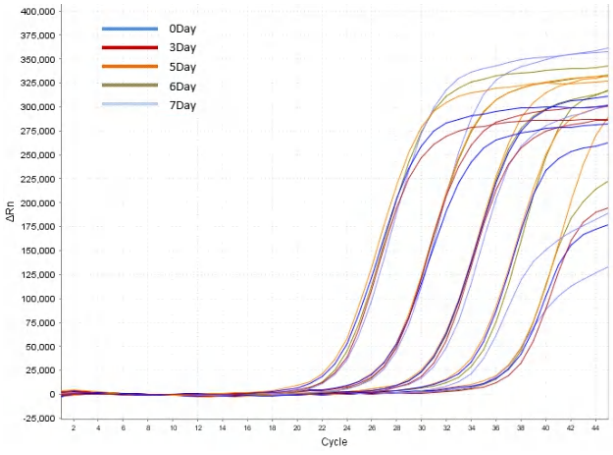


Figure 3. Accelerated thermal stability of CSB-DEM025 M-MLV Reverse Transcriptase at 37°C.

- **Comparative testing with competitive enzymes.**

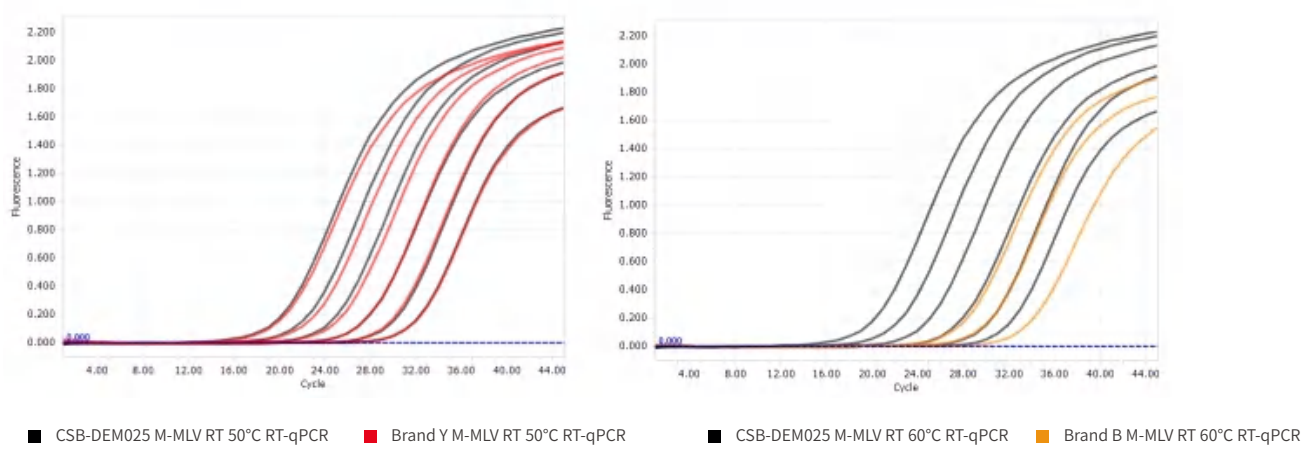


Figure 2. Reverse transcription temperature test of CSB-DEM025 M-MLV Reverse Transcriptase and similar products.

Pfu II DNA Polymerase

Pfu II DNA Polymerase is derived from Pfu II DNA Polymerase through genetic engineering. It is a highly thermostable DNA polymerase obtained by recombinant expression in E. coli, fused with a continuous capacity-enhancing structural domain, and has high amplification efficiency and fidelity, used for amplification of difficult templates. The amplification efficiency can reach a speed of 1kb/10s, and it also has strong long fragment amplification capability.

Product Name	Catalogue #	Size
Pfu II high fidelity DNA polymerase	CSB-DEM043	1 U/μL,100 U; 1 U/μL,500 U;1 U/μL,1000 U;

◎ Product Feature

- High purity: Purity >95%, no residual nuclease, low residual host gDNA.
- Good fidelity: Higher fidelity compared to Taq DNA Polymerase.
- High sensitivity: Improved template affinity through modification, increasing the detection sensitivity of low concentration templates.
- Long amplification fragment: Can amplify λ-DNA target fragments up to 10kb in length.

◎ Product Application

- Long fragment PCR amplification
- Cloning of DNA fragments

◎ Product Data

• SDS-PAGE electrophoresis image

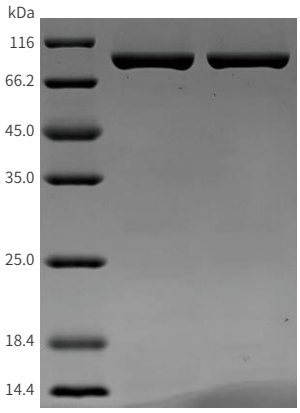
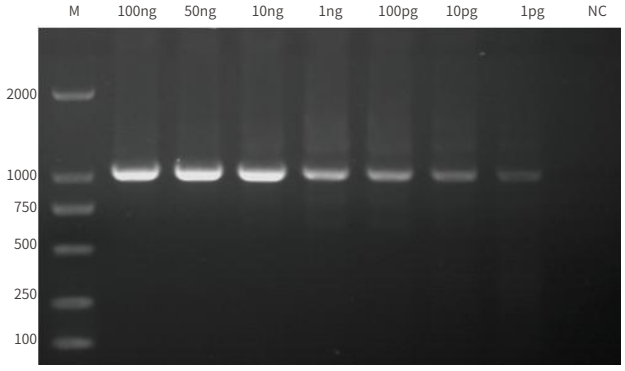


Figure 1.
SDS-PAGE analysis of
CSB-DEM043 Pfu II
DNA Polymerase.

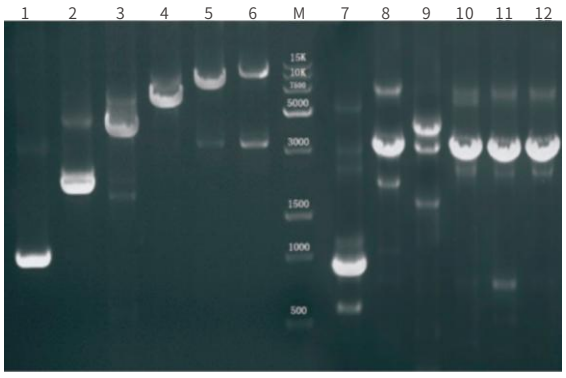
• Amplification effect at different template concentrations.



M: Trans2K DNA Marker, NC: Negative control.

Figure 2. CSB-DEM043 Pfu II DNA Polymerase amplifies 1kb fragment of λ-DNA, and the target fragment can be effectively amplified at different template amounts (100ng-1pg), with a sensitivity as low as 1pg.

• Comparison test with competitive enzymes.



Line 1-6: Pfu II DNA Polymerase, λ-DNA 1/2/4/6/8/10Kb.
Line 7-12: Brand N Pfu II DNA Polymerase, λ-DNA 1/2/4/6/8/10Kb.
M: Trans15K DNA Marker.

Figure 3. CSB-DEM043 Pfu II DNA Polymerase amplifies λ-DNA fragments of 1-10kb, compared to a certain brand of Pfu II DNA Polymerase.

RNase Inhibitor

RNA enzyme inhibitor products are a type of RNase binding protein gene, expressed and purified in prokaryotes, a proteinaceous RNA enzyme inhibitor with a molecular weight of about 50 kDa acidic protein, which efficiently binds non-covalently to RNase A, B, and C in a 1:1 ratio to inhibit the activity of these enzymes.

Product Name	Catalogue #	Size
RNase Inhibitor (40U/μl)	CSB-DEM029	40 U/μL,4 KU;40 U/μL,20 KU;40 U/μL,40 KU;

◎ Product Feature

•Strong antioxidant capacity: derived from mouse genes, compared to human RNase inhibitors, it does not contain two cysteines in human proteins that are very sensitive to oxidation, so it has higher antioxidant capacity;

• Good inhibition effect: compared with mainstream RNase inhibitors on the market, it has higher activity;

◎ Product Application

• cDNA first strand synthesis

• In vitro transcription

• In vitro cell-free translation system, etc.

◎ Product Data

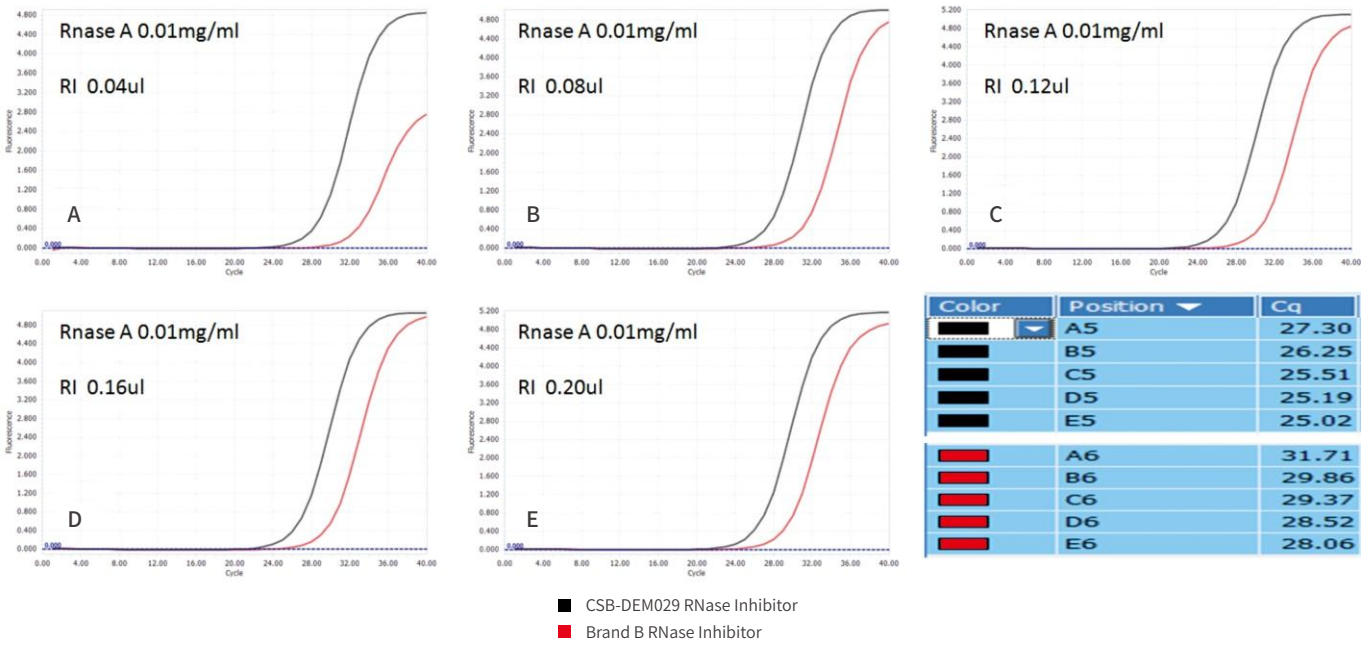


Figure 1. Comparison of the effects of CSB-DEM029 RNase Inhibitor with similar products.

Uracil - DNA Glycocasylase

UDG enzyme, uracil-DNA glycosylase, is a recombinant protein purified from cold-loving marine bacteria and expressed in E. coli strains. It can hydrolyze the N-glycosidic bond between the uracil base and the sugar-phosphate backbone of dU-containing single-stranded or double-stranded DNA, releasing free uracil and forming a DNA chain with missing bases that is easily hydrolyzed and broken. The enzyme can be inactivated at temperatures above 50°C, making it suitable for PCR, qPCR and other systems.

Product Name	Catalogue #	Size
Uracil-DNA Glycosylase（UDG）	CSB-DEM026	1 U/μL,100 U;1 U/μL,500 U ;1 U/μL,1 KU;

◎ Product Feature

- Heat-sensitive: Active at 25-37°C, irreversibly inactivated after 10 min at 50°C or 2 min at 95°C.
- Can be used in combination with hot-start Taq enzyme to ensure amplification specificity.
- Good purity and high activity: 10 U of this product, tested by E. coli 16S rDNA-specific TaqMan qPCR, has E. coli genomic residue less than 10 copies.

◎ Product Application

- PCR, RT-PCR
- qPCR, RT-qPCR, etc.

◎ Product Data

- SDS-PAGE electrophoresis

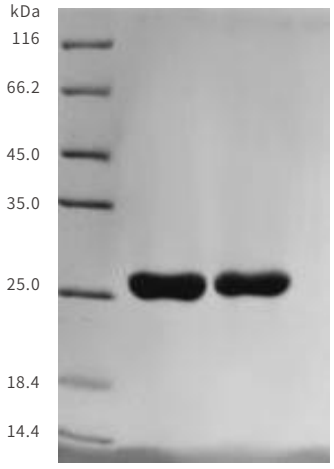


Figure 1. SDS-PAGE analysis of CSB-DEM026 UDG enzyme.

- Enzyme action effect.

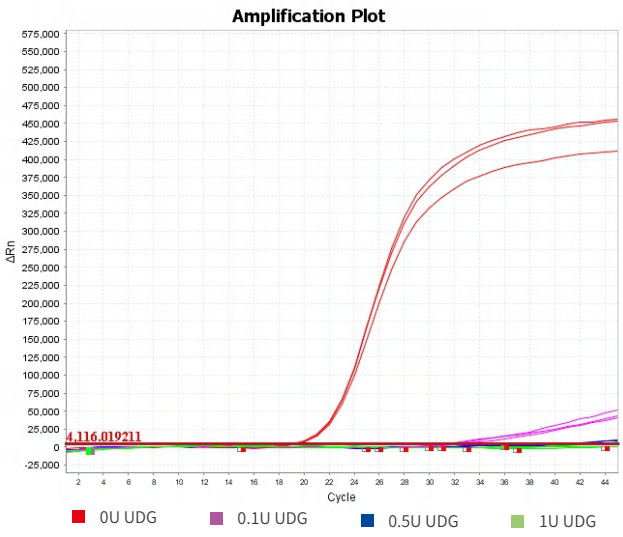


Figure 2. CSB-DEM026 UDG enzyme action result chart.

Note: Incubation at 25°C for 10 min activates UDG to degrade U-containing products and reduce the chance of false positive signals. The Ct values of three groups of reactions with and without heat-sensitive UDG were calculated, and the larger the Ct value, the higher the efficiency of removing residual products. This experiment shows that 0.5U/reaction of this heat-sensitive UDG can effectively degrade U-containing products and has good ability to remove residual templates.

Proteinase K

Proteinase K is derived from Tritirachium album Limber. It non-specifically cleaves the peptide bonds at the carboxyl end of aliphatic and aromatic amino acids and has a strong ability to degrade natural proteins. It has high activity in the buffer for extracting DNA and RNA and can be used for the separation of plasmid or genomic DNA and RNA. It is a key reagent for DNA extraction.

Product Name	Catalogue #	Size
Protease k	CSB-DP437A	500mL;1L;10L;
	CSB-DP578A	100mg;1g;5g;10g;100g;1KG

◎ Product Feature

- Good batch stability: Strict production process and quality inspection standards, small batch differences, inter-batch enzyme activity CV% <= 1.9%, far lower than the industry average (5%);
- Stable production capacity: Large-scale production system, monthly production capacity of lyophilized powder >70Kg, stock supply cycle of 3 days, long-term stable supply without pressure;
- Suitable for a variety of sample types: Not only suitable for processing COVID-19 nasopharyngeal swab samples, but also for extracting DNA and RNA from various complex samples, such as swine fever virus, influenza virus, HBV and HCV;
- Customized services: Customize product form, packaging and specifications according to customer production requirements, eliminating the trouble of dispensing and improving work efficiency.

◎ Product Application

- RNA and DNA extraction
- In situ hybridization and other molecular experiments

◎ Product Data

• Calibration curve

Prepare standard solutions of L-tyrosine at different concentrations and directly measure their absorbance (A) at 275nm with a UV spectrophotometer. Plot a calibration curve with absorbance A as the ordinate and tyrosine concentration as the abscissa. According to the calibration curve, the specific enzyme activity is calculated to be ⩾30 U/mg.

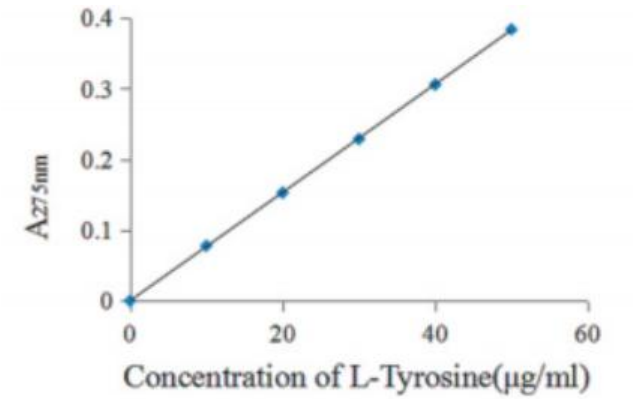


Figure 1. Calibration curve determined using L-tyrosine as the standard.

• Purity

The protein concentration is detected by SDS-PAGE electrophoresis. The purity of Proteinase K produced by our company is above 95%, with a size of 28.9kDa.

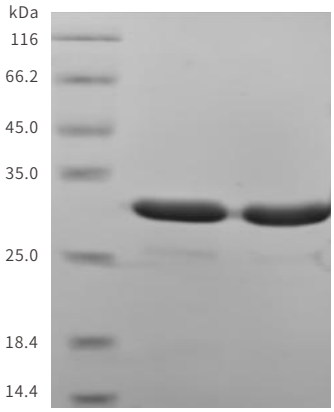


Figure 2. SDS-PAGE electrophoresis of Proteinase K.

• Stability

Proteinase K powder was stored at 4°C for one year, and enzyme activity was measured every month. The results are shown in the figure below, indicating that Proteinase K has good stability and enzyme activity is maintained above 95%.

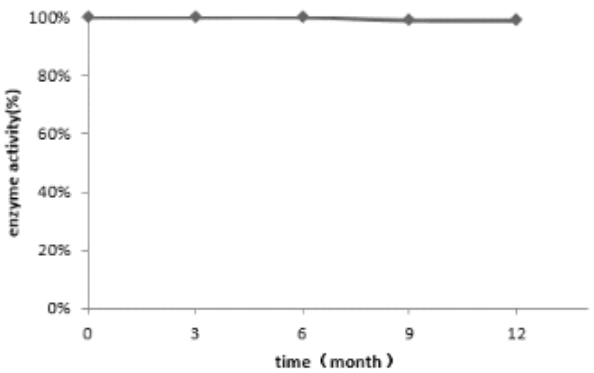


Figure 3. Stability test of Proteinase K at 4°C.

2×Taq PCR premix (With Dye)

2×Taq PCR premix is optimized for conventional PCR amplification reactions. When used, just add the template and primers and dilute to 1× concentration to perform PCR reactions, greatly simplifying the operation process and reducing contamination during PCR operations. There are two forms to choose from: regular and fast-loading. Tests have shown that the addition of dye does not affect the PCR reaction, and electrophoresis can be performed directly after the PCR reaction is completed, saving time.

Product Name	Catalogue #	Size
2×Taq PCR MIX（With Dye）	CSB-DKT032（One tube）/CSB-DKT033	50 T; 100 T;500 T;

◎ Product Feature

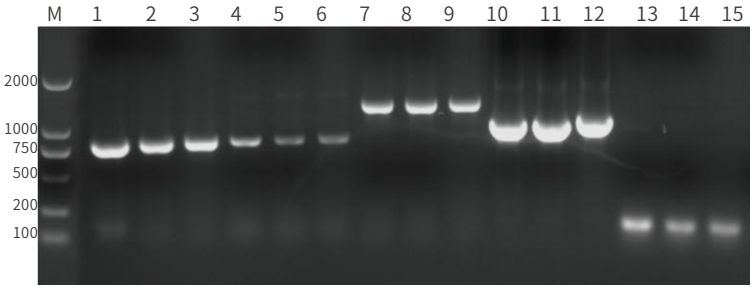
- Easy to use: Only need to add template and primers for PCR amplification.
- Repeatable: Reduces the number of sample addition steps, reducing contamination and experimental errors.
- Fast and efficient: Contains electrophoresis dye, allowing direct electrophoresis after PCR reaction, simplifying operation.
- Wide applicability: Components have been optimized for use in various conventional PCR reactions.

◎ Product Application

- Conventional PCR amplification/identification
- Genotyping
- TA cloning

◎ Product Data

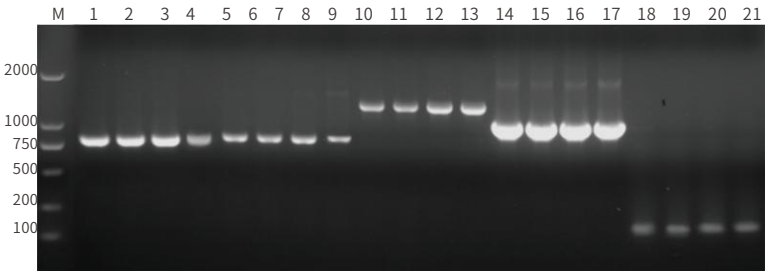
• Gel electrophoresis detection



Note: 1-3, 4-6, 7-9, 10-12, 13-15 are respectively: Primer 1, Primer 2, Primer 3, Primer 4, Primer 5. Line1, 4, 7, 10, 13: 2×Taq PCR Mix (with dye).
Line2, 5, 8, 11, 14: 2×Taq PCR Mix (without dye, add dye after PCR).
Line3, 6, 9, 12, 15: 2×Taq PCR Mix (without dye, add regular loading buffer after PCR).
M: Trans2K DNA Marker.

Figure 1. Gel electrophoresis detection of CSB-DKT032/033 2×Taq PCR premix.

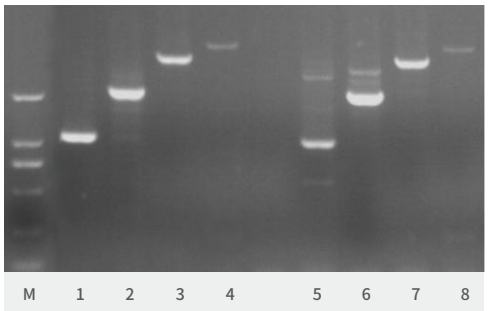
• Stability test



Note: 1-4, 5-8, 9-12, 13-16, 17-20: Primer 1, Primer 2, Primer 3, Primer 4, Primer 5
Line1, 5, 9, 13, 17: Placed at 37°C for 7 days
Line2, 6, 10, 14, 18: Placed at 37°C for 14 days
Line3, 7, 11, 15, 19: Frozen at -20°C
Line4, 8, 12, 16, 20: 2×Taq PCR Mix (no dye) + dye (after PCR completion)
M: Trans2K DNA Marker

Figure 2. CSB-DKT032/033 2×Taq PCR Mix (with dye)
Stability Test Comparison test with competitive kits.

• Comparison test with competitor’ s kit



Line1-4：CSB-DKT032 Line5-6：品牌B
M：Trans2K DNA Marker

Figure 3. CSB-DKT032 2×Taq PCR Mix (With Dye) amplifies gDNA fragments of 1-6kb,compared to brand B

2×SYBR Green qPCR Mix

SYBR PCR Mix is a special reagent for qPCR using SYBR Green I intercalation fluorescence method. The core component HS Taq DNA Polymerase is a heat-start DNA polymerase modified by the antibody method, combined with the optimal Buffer optimized for qPCR, which can effectively inhibit non-specific amplification, thereby significantly improving amplification efficiency and suitable for high-sensitivity qPCR reactions. This product is a 2× premix reagent containing SYBR Green I at the optimal concentration for qPCR reactions, which can obtain good standard curves within a wide quantification range, accurately quantify and detect target genes, with good repeatability and high reliability.

Product Name	Catalogue #	Size
SYBR PCR Mix(2x SYBR Green qPCR MiX)	CSB-DKT030	50 T; 100 T;500 T;

◎ Product Feature

- Easy to use: Only need to add template and primers for PCR amplification.
- Fast and efficient: Reduces the number of sample addition steps, saving time.
- Repeatable: Reduces the risk of contamination and sample addition errors.

◎ Product Application

- Rapid gene cloning
- Colony PCR
- Genotyping
- TA cloning, etc.

◎ Product Data

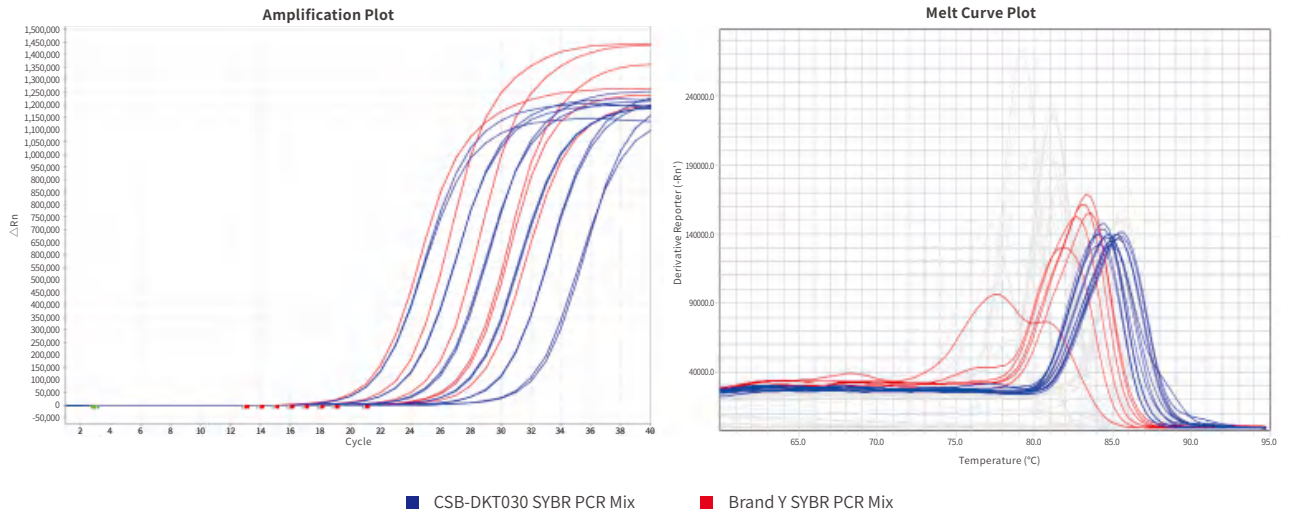


Figure 1. Amplification sensitivity and specificity of CSB-DKT030 SYBR PCR Mix.

TaqMan Real-Time PCR Mix

This product is a premixed reagent that can achieve single to quadruple fluorescent quantitative PCR reactions in a single reaction well. This product contains PCR Buffer, dNTPs, Mg2+ and hot start Taq enzyme, and the reaction buffer system has been optimized to improve the amplification efficiency of the reaction and promote the effective amplification of low-concentration templates. The operation is simple and fast, just add template, primers and probes. It has high amplification efficiency and high specificity.

Product Name	Catalogue #	Size
TaqMan multiplex qPCR master mix	CSB-DKT037	50 T; 100 T;500 T;

◎ Product Feature

- Easy to use: only need to add template and primers to perform PCR amplification;
- Repeatable: reduce the number of sample addition steps, which is conducive to reducing contamination and reducing experimental errors;
- Wide applicability: the components have been optimized and can be used in a variety of qPCR environments;

◎ Product Application

- qPCR, Multiple qPCR

◎ Product Data

• Multiple channel test results

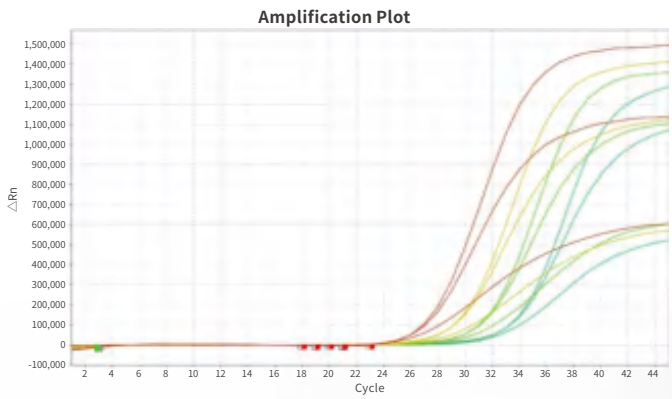


Figure 1. CSB-DKT037 TaqMan multiplex qPCR master mix Three-channel Test Results.

• Comparison with competitive kits

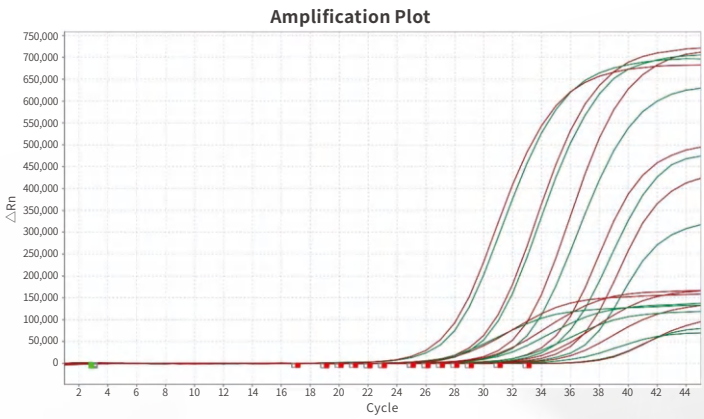


Figure 2. Comparison of the dual-channel test results of CSB-DKT037 TaqMan multiplex qPCR master mix with competitive kits.

One Step RT-qPCR Kit

One Step RT-qPCR Kit is a universal kit for performing RT-qPCR reactions using the probe method. This kit uses RNA as a template and gene-specific primers to complete the reverse transcription and qPCR reactions in one tube, without the need for additional opening and pipetting operations, greatly increasing the detection throughput and reducing the risk of contamination. Integrating the superior performance of reverse transcriptase and hot start Taq DNA polymerase, combined with an optimized buffer system, the detection sensitivity of One Step RT-qPCR Kit can reach 0.5 pg total RNA template, and can stably and efficiently perform one-step RT-qPCR reactions.

Product Name	Catalogue #	Size
One Step RT-qPCR Kit	CSB-DKT031	50 T; 100 T;500 T;

◎ Product Feature

- Excellent amplification efficiency and excellent detection sensitivity: compared with similar products, the Ct obtained by reverse transcription is smaller and the starting RNA amount is lower;
- Easy to use: only need to add template and primers to perform PCR amplification;
- Fast and efficient: reduce the number of sample addition steps and save time;
- Repeatable: reduce the risk of contamination and sample addition errors;

◎ Product Application

- Rapid gene cloning
- Colony PCR
- Genotyping
- TA cloning, etc.

◎ Product Data

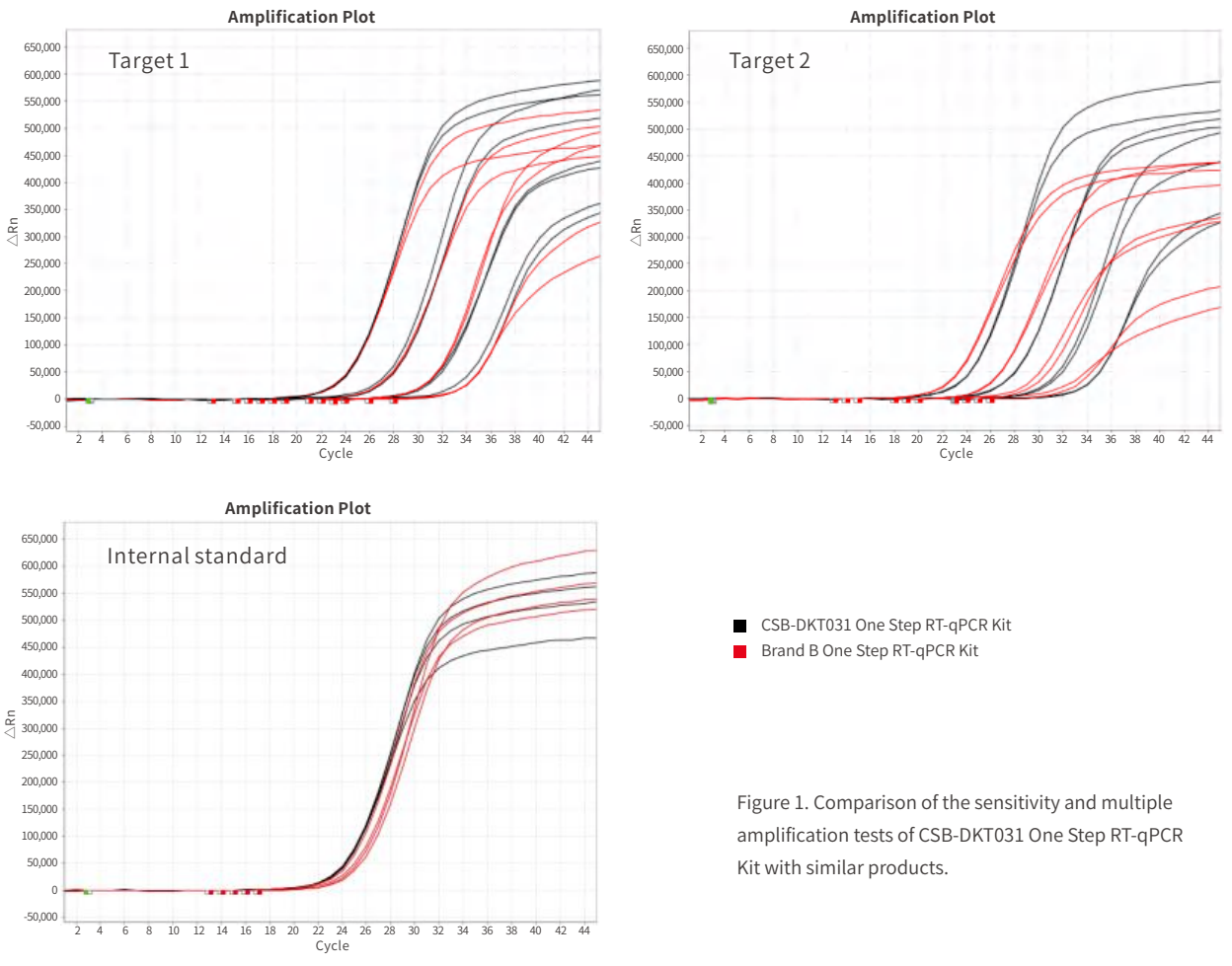


Figure 1. Comparison of the sensitivity and multiple amplification tests of CSB-DKT031 One Step RT-qPCR Kit with similar products.

LbCas12a

LbCas12a can recognize the PAM sequence TTTN site under RNA mediation; after cutting the target, it produces "collateral cleavage" activity, cutting any sequence single-stranded DNA. By designing probes with fluorescent or other small molecule markers at both ends, signal amplification for DNA detection can be achieved, thus enabling detection of the target. This system has high sensitivity and strong specificity.

Product Name	Catalogue #	Size
LbCas12a	CSB-DEM028	100 pmol;1000 pmol;

◎ Product Feature

- Compared to Cas9, Cas12a protein is smaller and easier to deliver to cells;
- Wide reaction temperature range of 20-48°C;
- After cutting the target, it produces "collateral cleavage" activity, cutting any sequence single-stranded DNA.

◎ Product Application

- Gene editing;
- Combined with isothermal amplification technology, rapid detection of nucleic acids can be achieved.

◎ Product Data

- **SDS-PAGE electrophoresis**

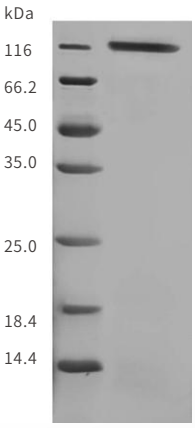


Figure 1. CSB-DEM028 LbCas12a SDS-PAGE Electrophoresis Image.

LbuCas13a

CRISPR-Cas13a protein has two HEPN domains and is a single-structure protein of the CRISPR-Cas system, with a size of 138.5KDa. Cas13a is an effector protein of the type VI CRISPR-Cas system, with RNA-mediated RNA endonuclease activity. It is a guide RNA-mediated RNA-targeting endonuclease system, which has great value for the development and research of RNA tools and the expansion of the application of CRISPR systems in gene editing.

Product Name	Catalogue #	Size
LbuCas13a	CSB-DEM038	100 pmol; 2000 pmol;

◎ Product Feature

• Cas13a is currently the only protein discovered in the second largest class of CRISPR-Cas systems that can degrade and edit RNA.

◎ Product Application

• In vitro RNA cleavage;
• In vitro RNA detection;
• Regulation of RNA in living cells, RNA gene editing;
• Optical probe biological labeling, etc.

◎ Product Data

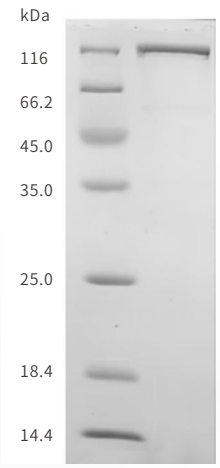


Figure 1. SDS-PAGE Electrophoresis Image of CSB-DEM038 Cas13a Protein.

Tn5 Transposase

Tn5 transposase is a highly active Tn5 transposase mutant derived from E. coli that can efficiently insert Tn5 transposons randomly into target sequences, with extremely high transposition insertion efficiency for both eukaryotic and prokaryotic DNA. Tn5 transposase specifically recognizes DNA fragments with chimeric end sequences at both ends, forming a Tn5 transposon that can randomly bind to target DNA and cleave and insert its carried DNA fragment. Tn5 transposase is widely used in fields such as in vitro transgenesis and second-generation sequencing library construction.

Product Name	Catalogue #	Size
Tn5 Transposase	CSB-DEM076	20 μL;100 μL;

◎ Product Feature

- Purified multiple times by column chromatography, SDS-PAGE gel detection shows only a clear single target band;
- PCR method detects no host DNA residue;
- No contamination by endonucleases or exonucleases.

◎ Product Application

- Transposon used in the fragmentation and adapter addition steps of constructing a second-generation sequencing library;
- In vitro or in vivo construction of a random insertion mutant library using transposons;
- Rapid sequencing of large DNA molecules (such as BAC clones);
- Introduction of resistance markers into target DNA.

◎ Product Data

• SDS-PAGE electrophoresis

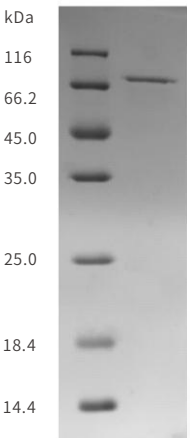
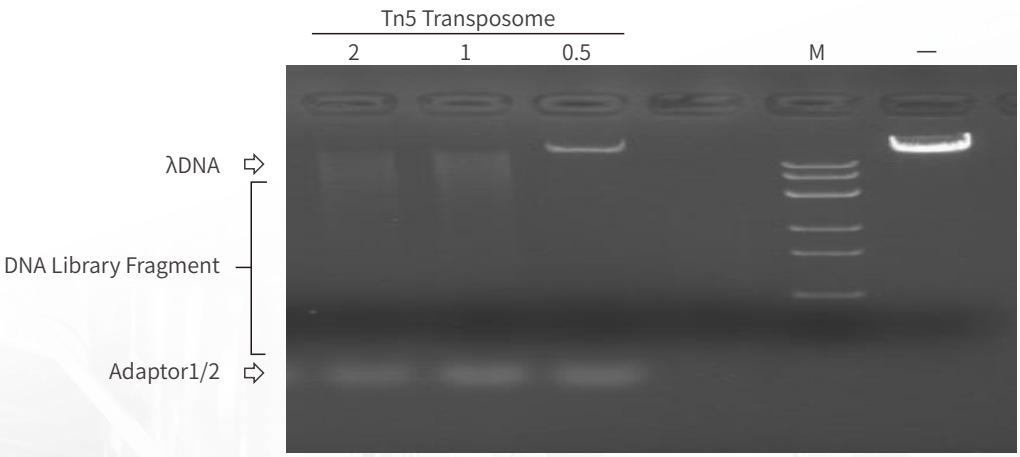


Figure 1. CSB-DEM076 Tn5 Transposase SDS-PAGE Electrophoresis Image.

• Product effect image



M: Trans8K DNA Marker

Figure 2. Effect test image of Tn5 transposon prepared by Tn5 Transposase for random DNA fragmentation.

pAG-Tn5 Transposase

pAG-Tn5 Transposase is a fusion of Protein A/Protein G with a highly active, mutant form of Tn5 transposase, possessing the functions of both Tn5 transposase and Protein A/Protein G. Based on its function, we have applied it to CUT&Tag for protein-DNA interaction research. CUT&Tag is a new method for studying protein-DNA interactions, with the following advantages over traditional ChIP-Seq: time-saving and efficient, requiring fewer cells, low background signal, good repeatability, etc.

Product Name	Catalogue #	Size
pAG-Tn5 Transposome	CSB-DEM071	4μM 12μL;4μM 48μL;

◎ Product Feature

- Purified multiple times by column chromatography, SDS-PAGE gel detection shows only a clear single target band;
- PCR method detects no host DNA residue;
- No contamination by endonucleases or exonucleases.

◎ Product Application

- Protein-DNA interaction research;
- Second-generation sequencing library construction;
- ATAC-seq.

◎ Product Data

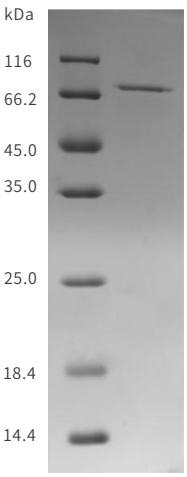


Figure 1. CSB-DEM071 pAG-Tn5 Transposase SDS-PAGE Electrophoresis Image.

mRNA Vaccine Related Enzymes

Enzymes used in mRNA vaccine preparation are the key raw materials in the production of mRNA vaccines and drugs. The production and development process of mRNA drugs includes: 1) sequencing and analysis to confirm key proteins; 2) Construct the plasmid and transform it into Escherichia coli and multiply it to achieve the purpose of plasmid expansion, extract the plasmid and purify it; 3) digestion linearization; 4) In vitro transcription, cap and tail; 5) Liposome encapsulation and purification. This process involves restriction endonucrenase, RNA polymerase, capping enzyme and Poly(A) polymerase, which are all essential raw materials in the production of mRNA vaccines and drugs. Gmp-grade mRNA raw material enzymes All products are produced with medicinal specifications of raw materials, strictly control host protein residues, nucleic acid residues, etc., in line with GMP standards of product production and quality management regulations.

Product Name	Catalogue #	Size
UltraNuclease /Benzonase（GMP-grade）	CSB-DEM077	250 U/μL,25 KU;250 U/μL,125 KU;250 U/μL,250 KU;
T7 RNA Polymerase（GMP-grade）	CSB-DEM078	50 U/μL,5 KU;50 U/μL,25 KU;50 U/μL,50 KU;
Deoxyribonuclease I /DNase I（GMP-grade）	CSB-DEM079	2 U/μL,200 U;2 U/μL,1000 U;2 U/μL ,2000 U;
RNase Inhibitor（GMP-grade）	CSB-DEM080	40 U/μL，20 KU;40 U/μL，40 KU;40 U/μL，200 KU;
Pyrophosphatase, Inorganic（GMP-grade）	CSB-DEM081	0.1 U/μL, 100 U;0.1 U/μL, 500 U;
Vaccinia Capping Enzyme （GMP-grade）	CSB-DEM082	10 U/μL,10 KU;10 U/μL, 50 KU;
mRNA Cap 2´-O-Methyltransferase（GMP-grade）	CSB-DEM083	50 U/μL,50 KU;50 U/μL, 250 KU;
Poly(A) Plymerase（GMP-grade）	CSB-DEM084	5 U/μL,5 KU;5 U/μL,25 KU;

03/Custom Development

◎Protein Fermentation and Purification

Project requirement (Plasmid, Bacterial suspension) → Customized protein fermentation and purification (Process optimization, Sample test) → Scale up production (Capacity Assurance, Quality Assurance)

◎Custom Development of Enzymes

Upstream design and optimization (Available resources, Quick screening) → Protein fermentation and purification (Mature platform, scheme optimization, sample test) → Ultra clean molecular enzyme production (Capacity assurance, Quality assurance)

◎Molecular Detection Kit Development

Primers and probes design and optimization → Raw material screening or customization (Existing platform, Quick screening) → Customization system debugging(Targeted additive scheme, performance verification scheme) → Kit formulation and production (Cost control, Quality assurance)

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