百 时 美
BestEnzymes

PRODUCT CATALOG

BEST ENZYMES FOR BETTER LIFE

GMP

ISO 13485

Company Profile

Jiangsu Yugong Biotech Co., Ltd. targets upstream bottleneck in synthetic-biology and biopharma enzymes. We deliver better, cheaper, user-friendly products that are fully IP-protected. Headquartered in the Lianyungang Free-Trade Zone (Jiangsu), our plant is built and managed to GMP standards; R&D and research-grade reagents are handled by our wholly-owned subsidiary, Jiangsu BestEnzymes Biotech. R&D-driven, we own China's premier platforms for cell-free protein synthesis and toxic-protein expression, and are certified as a National High-Tech Enterprise and ISO 13485 compliant.

We offer 100+ products across 11 lines—restriction endonucleases, PCR, isothermal amplification, reverse transcription, qPCR, in-vitro transcription, modified cloning, Instant Granules—supporting gene synthesis, molecular diagnostics and life-science research.


高新技术企业
证书
企业名称：江苏百时美生物科技有限公司
证书编号：GR202332005899
发证时间：2023 年 11 月 6 日
有 效 期：三 年
批准机关：


高新技术企业
证书
企业名称：江苏愚公生物科技有限公司
证书编号：GR202432011921
发证时间：2024 年 12 月 16 日
有 效 期：三 年
批准机关：


Suzhou LQA Standard Certification Co., Ltd.
QUALITY MANAGEMENT SYSTEM CERTIFICATE
This certifies that the the Quality Management System of
Research and Production of Protease

GMP-grade Production

The GMP production base is built in accordance with the QbD (Quality by Design) concept, adh ering to GMP regulations and other relevant regulatory requirements in terms of plant layout, uti lity systems, selection of instruments and equipment, and personnel qualification. The clean roo ms are equipped with two independent fermentation-separation-purification production lines. All materials are transported through closed pipelines to minimize the risk of exposure and cross-contamination. Supporting utility systems such as purified water, compressed air, and air condition ing are all put into use after installation, commissioning, and performance qualification in accorda nce with GMP regulations.

Manufacturing Process

- The production process and the final products contain no animal-derived components.
- Antibiotics are not used during the production process.
- A well-defined and quality-assured cell bank is the source.
- Carefully selected and dedicated chromatography matrices are utilized.
- A rigorous system for confirmation, validation, and deviation/change man agement ensures the continuous stability of the production process.

Product Property

- Strict management of raw material suppliers and a quality traceability system.
- Based on stability studies of products with different specifications and packaging, ensure the ongoing efficacy of the products.
- Strict control over the production process to ensure product quality aligns with pharmacopeial and relevant regulatory requirements.

Quality Assurance and Supervision

- Certified under the **ISO13485** Quality Management System.
- Utilizing validated and verified methods and equipment to ensure and document the production process.
- A comprehensive process for managing changes, deviations, and CAPAs (Corrective and Preventive Actions) to ensure continuous production improvement.
- Some products have already been filed with the US **DMF**.

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Automatic Fermentation

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Remote Monitoring

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Cell Harvest and Lysis

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Protein Purification

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1 /Restriction Endonucleases

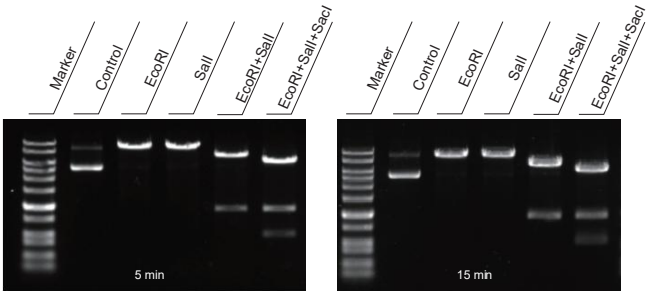
Restriction endonucleases (Restriction enzymes) are a class of endonucleases that can recognize specific nucleotide sequences (4~8 base pairs) within double-stranded DNA and cleave DNA at specific sites. The key characteristic of restriction enzymes is their ability to accurately cut DNA and generate defined ends. The LightNing® restriction endonucleases provided by BestEnzymes use only one universal reaction buffer, which provide a better experience for both single and double enzyme digestions. Moreover, LightNing® restriction endonucleases are compatible with the buffers used in downstream experiments, achieving true one-tube convenience. The LightNing® restriction enzymes can complete digestion within 5~15 minutes, which not only saves user's time but also significantly reduces star activity.

Product Features

- Universal buffer makes multi-enzyme digestions more convenient. Additionally, it is compatible with downstream experiments, reducing the need for additional purification steps and saving time and effort.
- Fast digestion, completed within 5~15 minutes.
- The CutOne® Color Buffer allows for direct gel electrophoresis after digestion.
- Low star activity ensures prolonged reaction without generating non-specific cleavage.

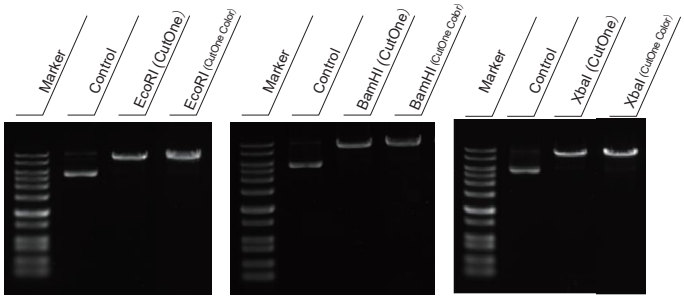
Technical Features

Digestion can be completed accurately within 5~15 minutes



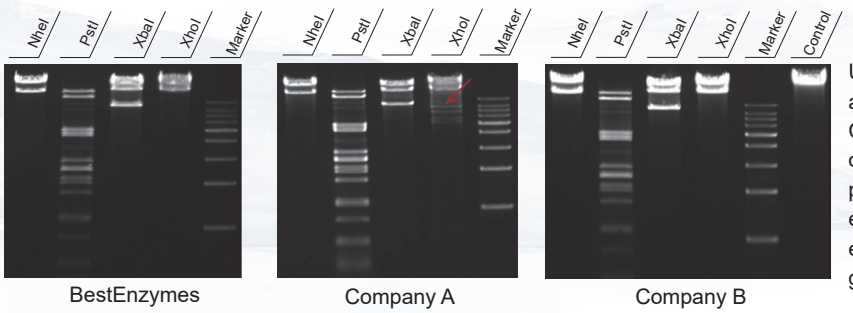
Perform single, double and triple enzyme digestions using LightNing® EcoRI, LightNing® SalI, and LightNing® SacI in CutOne® Buffer. Use 1 μg of plasmid as the substrate and carry out the digestion for 5 and 15 minutes, respectively. Under all reaction conditions, the substrate is completely cleaved accurately.

Consistent digestion results in CutOne® Buffer and CutOne® Color Buffer



Perform digestion using LightNing® EcoRI, LightNing® BamHI, and LightNing® XbaI in CutOne® Buffer and CutOne® Color Buffer with 1 μg of plasmid substrate for 5 minutes. The same enzyme exhibits no significant difference in the digestion results between two buffers.

Ultra-low star activity



Using the fast restriction enzymes NheI, PstI, XbaI, and XhoI from BestEnzymes, Company A, and Company B respectively, perform a 16-hour digestion on λDNA substrate following the recommended protocols by each brand. The results show that enzymes from BestEnzymes and Company A did not exhibit star activity. The arrows present the bands generated by star activity.

LightNing® Restriction Endonucleases

REF No.	Product Name	Specs
EG25511S	LightNing® AatII	30 rxns
EG15502S	LightNing® AccI	50 rxns
EG25501V/S	LightNing® AciI	10 rxns/25 rxns
EG26501V/S	LightNing® AfeI	10 rxns/20 rxns
EG24520S	LightNing® AflII	100 rxns
EG23501S	LightNing® AgeI	25 rxns
EG25502S	LightNing® ApaI	200 rxns
EG15601S	LightNing® ApaLI	200 rxns
EG24509S	LightNing® AluI	50 rxns
EG15508S	LightNing® AscI	50 rxns
EG25503S	LightNing® AseI	100 rxns
EG26503S	LightNing® AvaI	100 rxns
EG25509S	LightNing® AvaII	100 rxns
EG15509S	LightNing® AvrII	25 rxns
EG15510S	LightNing® BamHI	500 rxns
EG24512S	LightNing® BbsI	25 rxns
EG15513S	LightNing® BclI	125 rxns
EG24507S	LightNing® BglI	200 rxns
EG15591S	LightNing® BglII	100 rxns
EG15518S	LightNing® BsaI	50 rxns
EG25515S	LightNing® Bsh1236I (BstUI)	50 rxns
EG26504V/S	LightNing® BsmBI v2	20 rxns/100 rxns
EG25507S	LightNing® BsmI	50 rxns
EG25512S	LightNing® BspHI	30 rxns
EG23505S	LightNing® BsrGI	30 rxns
EG15607S	LightNing® BstBI	100 rxns
EG15528S	LightNing® BstEII	100 rxns
EG26502S	LightNing® Bsu36I	50 rxns
EG25508S	LightNing® Cfr42I (SacII)	60 rxns
EG15532S	LightNing® ClaI	50 rxns
EG24501S	LightNing® DdeI	50 rxns
EG15585S	LightNing® DpnI	50 rxns
EG15533S	LightNing® DpnII	50 rxns
EG23502S	LightNing® DraI	100 rxns
EG24508S	LightNing® DraIII	30 rxns
EG15535S	LightNing® EagI	25 rxns
EG23511S	LightNing® EarI	30 rxns
EG15536S	LightNing® EcoRI	600 rxns
EG15537S	LightNing® EcoRV	200 rxns
EG21503S	LightNing® Esp3I (BsmBI)	30 rxns
EG24523S	LightNing® FokI	100 rxns
EG15586S	LightNing® FspI	50 rxns
EG23509S	LightNing® HaeIII	300 rxns
EG24510S	LightNing® HhaI	100 rxns
EG15539S	LightNing® HindIII	500 rxns
EG15593S	LightNing® HinfI	500 rxns
EG24511S	LightNing® HinP1I	100 rxns
EG15541S	LightNing® HpaI	50 rxns
EG23507S	LightNing® HpaII	200 rxns
EG15543S	LightNing® KasI	30 rxns
EG15544S	LightNing® KpnI	200 rxns
EG24522S	LightNing® MboI	50 rxns
EG15547S	LightNing® MluI	100 rxns
EG15548S	LightNing® MnlI	50 rxns
EG25505S	LightNing® MscI	30 rxns
EG24518S	LightNing® MseI	50 rxns
EG23508S	LightNing® MspI	250 rxns
EG23510S	LightNing® MunI (MfeI)	25 rxns
EG15550S	LightNing® NcoI	30 rxns
EG15551S	LightNing® NdeI	200 rxns
EG15552S	LightNing® NheI	30 rxns
EG15553S	LightNing® NotI	50 rxns
EG15602S	LightNing® NruI	50 rxns
EG15606S	LightNing® NsiI	25 rxns
EG15603S	LightNing® PacI	25 rxns
EG23506S	LightNing® PmeI	50 rxns
EG26506S	LightNing® PpuMI	30 rxns
EG15560S	LightNing® PspGI (EcoRII)	200 rxns
EG15561S	LightNing® PstI	500 rxns
EG23513S	LightNing® PvuI	30 rxns
EG15604S	LightNing® PvuII	200 rxns
EG24503S	LightNing® RsaI	100 rxns
EG15565S	LightNing® SacI	100 rxns
EG15605S	LightNing® SacII	50 rxns
EG15566S	LightNing® SalI	200 rxns
EG25524S	LightNing® SapI	50 rxns
EG15568S	LightNing® SbfI	25 rxns
EG24502S	LightNing® ScaI	100 rxns
EG24515S	LightNing® SdaI (SbfI)	25 rxns
EG15570S	LightNing® SfiI	100 rxns
EG15572S	LightNing® SmaI	100 rxns
EG24521S	LightNing® SnaBI	60 rxns
EG15574S	LightNing® SpeI	50 rxns
EG15575S	LightNing® SphI	50 rxns
EG15576S	LightNing® SspI	60 rxns
EG15577S	LightNing® StuI	100 rxns
EG15580S	LightNing® TaqI	200 rxns
EG26505S	LightNing® TseI (ApeKI)	25 rxns
EG24517S	LightNing® Tsp45I	25 rxns
EG15581S	LightNing® XbaI	500 rxns
EG15582S	LightNing® XcmI	60 rxns
EG15583S	LightNing® XhoI	500 rxns

Restriction Endonucleases

REF No.	Product Name	Specs
EG25526S	AarI	100 U
EG25519S	ApeKI	500 U
EG25516S	BbvCI	50 U
EG25525S	BpiI (BbsI)	250 U
EG24506S	BsiWI	300 U
EG22507V/S	BsmBI	200 U/1000 U
EG25528S	BspEI	500 U
EG23503S	BspQI	500 U
EG25506S	BsrDI	250 U
EG24516S	BstXI	500 U
EG25514S	PciI	200 U
EG21501S	SgeI	250 U
EG25513S	SgrAI	500 U
EG24514S	SspDI (KasI)	250 U
EG25527S	SwaI	1000 U
EG25517S	XmnI	500 U

GMP Grade Restriction Endonucleases

Note: Manufactured and managed in compliance with GMP specifications, fully traceable, and free from animal derived components.

REF No.	Product Name	Specs
GMP501S	BsaI, GMP Grade	20000 U
GMP503S	BspQI, GMP Grade	20000 U
GMP505S	NheI, GMP Grade	20000 U
GMP502S	XbaI, GMP Grade	20000 U
GMP504S	XhoI, GMP Grade	20000 U

Nicking Endonucleases

REF No.	Product Name	Specs
EG25518S	Nb.BbvCI	300 U
EG23514S	Nb.BsrDI	2000 U
EG25520S	Nt.BbvCI	150 U
EG23512S	Nt.BspQI	2000 U
EG24504S	Nt.BstNBI	2000 U

RNA Endonucleases

REF No.	Product Name	Specs
EG24505S	MazF	1000 U
EG25521S/M	RNase GG	2500 U/12500 U

Homing Endonucleases

REF No.	Product Name	Specs
EG25529S	I-CeuI	250 U
EG25504S	I-SceI	250 U

2 /Seamless Cloning Kit

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Seamless cloning technology based on recombination principles relies on the recombination of 15-25 nt homologous sequences between the insert fragments and the ends of linearized vector, This method eliminates the relatively complex steps of restriction enzyme digestion and ligation. Theoretically, it can clone inserted fragments into any site of any vector without introducing additional sequences, featuring high recombination efficiency, extremely low background of vector self-ligation, and it is a simple, rapid, and efficient technique of DNA cloning.

Compared to the previous generation product, the upgraded DNA Assembly Mix Ultra retains its high efficiency and thermal stability while offering improvements in the following aspects:

1.Utilized HiFi Taq DNA Ligase to enhance fidelity.

2.Optimized formula enhances product stability, resistanting the effects of repeated cap opening oxidation and dry ice transportation.

3.Added a transformation enhancer to increase the number of transformants.

Products Features

- **Simple and Convenient**

  Compatible with PCR and restriction endonucleases digestion product, eliminating the need for tedious purification steps

- **Fast Reaction**

  Significantly shortened reaction time, with the fastest completion in 1 minute

- **Stable performance**

  Strong tolerance to high temperature, oxidation, repeated freezing and thawing, dry ice, and other adverse conditions including carbon dioxide

- **High Positive Rate**

  Directed cloning of a single DNA fragment into a vector with a positive rate higher than 95%
  Directed cloning of multiple DNA fragments into the vector with a mutation rate lower than 5%.

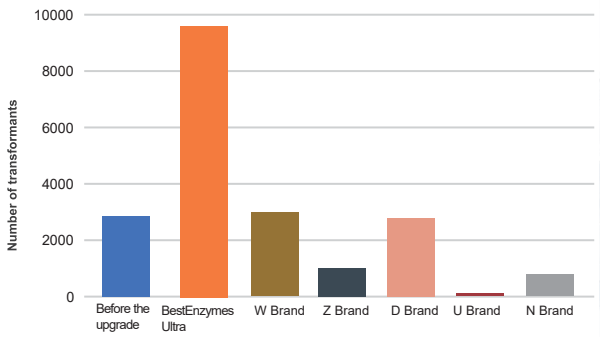
- **Compatible with Single and Multi-Fragment Insertion**

  Allows simultaneous insertion of single or multiple fragments, eliminating the need for repetitive purification and digestion steps

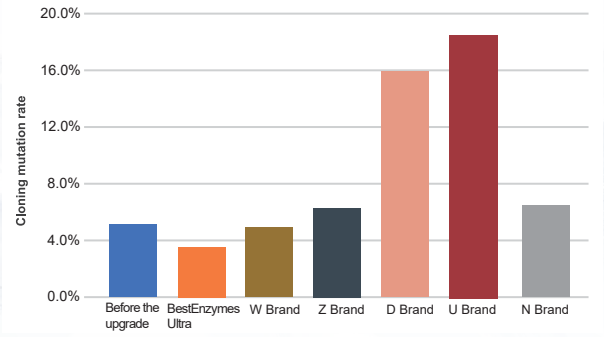
Technical Features

High Transformation Efficiency and Low Mutation Rate

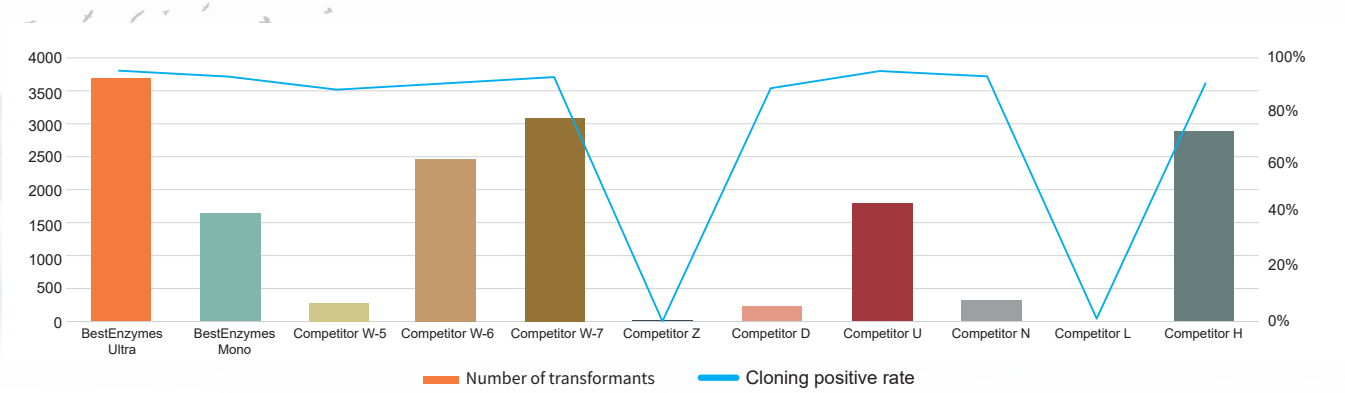
DNA Assembly Mix Ultra retains excellent single-fragment cloning performance while offering more significant advantages in terms of transformant yield and mutation rate for multi-fragment cloning. Even under 10-fragment ligation conditions, it can still achieve sufficient transformant counts and a high positive rate.



Number of transformants for 4-fragment cloning



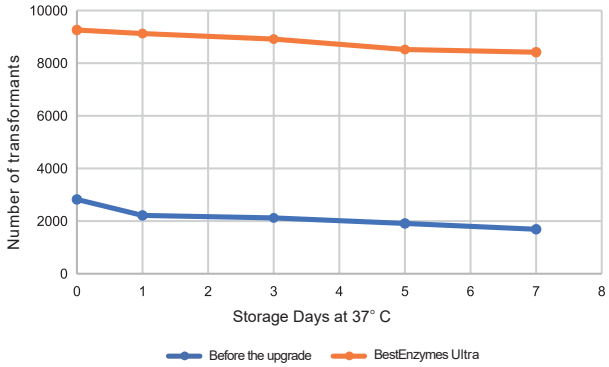
Mutation rate of 4-fragment cloning

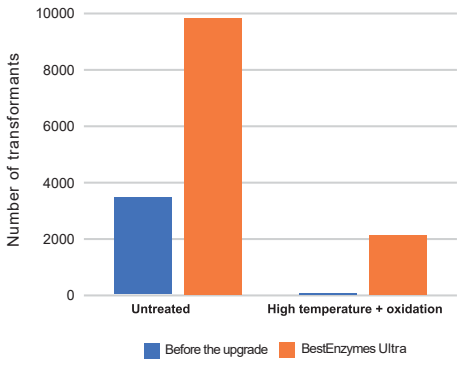


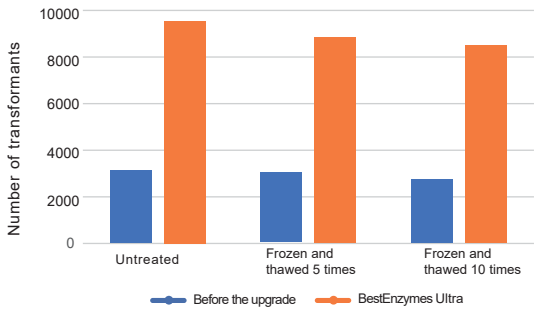
Transformant Count and Positive Rate for 10-Fragment Assembly

Stable performance, resilient to extreme conditions.

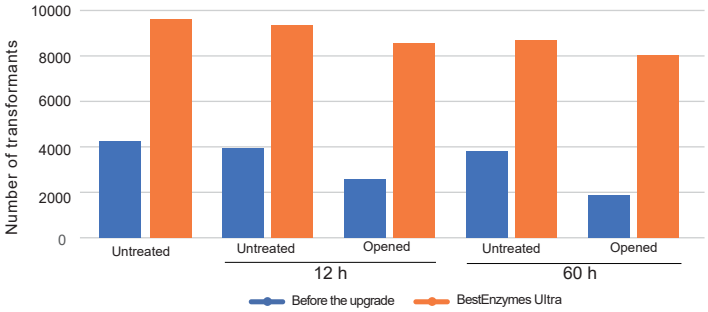
DNA Assembly Mix Ultra offers improved stability compared to the previous version. It ensures sufficient numbers of positive transformants even under adverse conditions such as high temperatures, oxidation, repeated freeze-thaw cycles, or exposure to dry ice or carbon dioxide.







Number of transformants after freeze-thaw



Number of transformants after exposure to dry ice / carbon dioxide

Moreover, we introduce our DNA Assembly Mix mono—a specialzed solution for single-fragment assembly. With a rapid reaction time of just 1~15 minutes, it delivers exceptional cost-effectiveness without compromising performance.

Ordering Information

REF No.	Product Name	Specs
EG24204S	DNA Assembly Mix Ultra	50 rxns
EG25202S	DNA Assembly Mix mono	50 rxns
EG25202M	DNA Assembly Mix mono	250 rxns

3 /PCR Master Mix

3.1 /HiFi PCR Master Mix

S705 High-Fidelity DNA Polymerase is a high-fidelity DNA polymerase obtained through directed evolution, with a fidelity 70-fold higher than that of Taq polymerase and its amplification speed is 5 times faster than Pfu polymerase. The 2× S705 HiFi Master Mix is a ready-to-use premix, which is formulated with unique extension factors and specificity enhancers, which significantly improves the capacity for long fragment amplification, specificity, and product yield. Furthermore, the 2× S705 HiFi Master Mix demonstrates good tolerance to PCR inhibitors, enabling excellent amplification for crude templates.

The 2× S705 HiFi Master Mix is available in two versions: dye-included (Cat No. EG25103) and dye-free (Cat No. EG24110). The dye-included version contains red and yellow tracking dyes, allowing PCR products to be directly used for gel electrophoresis.

Product Features

- **High fidelity**

  The fidelity is 70-fold higher than that of Taq DNA Polymerase.

- **Wide adaptability**

  It is compatible with different lengths, different species, crude extraction templates and different GC content (30%~80%) templates.

- **Rapid amplification**

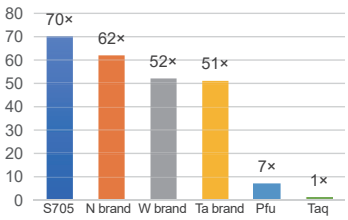
  The amplification speed is five times faster than that of Pfu polymerase, with a maximum speed up to 5 seconds per kilobase.

- **Strong stability**

  The amplification performance remains stable after 37℃ for 3 days.

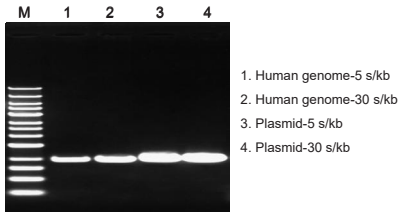
Performance Demonstration

High fidelity



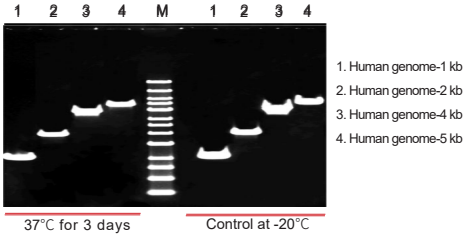
The fidelity of S705 High-Fidelity DNA Polymerase is 70-fold higher than that of Taq polymerase, and 10-fold higher than that of wild-type Pfu.

Rapid amplification



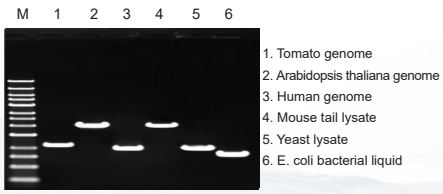
S705 HiFi Master Mix was used to amplify 1 kb fragments of different templates, and there was no significant difference in amplification results when the extension rate was set to 30 s/kb and 5 s/kb.

Strong stability

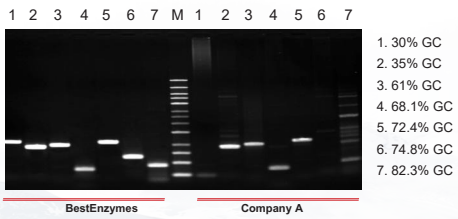


There was no significant difference in the amplification results of human genomic DNA fragments ranging from 1 to 5 kb between the S705 HiFi Master Mix left at 37°C for 3 days and the control stored at -20°C.

Wide adaptability

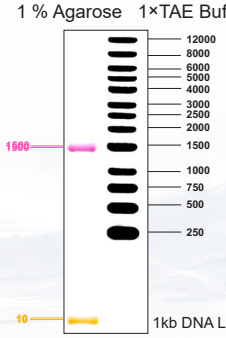


Using 2× S705 HiFi Master Mix to amplify templates from different sources, including rough samples, good amplification results can be obtained.



S705 HiFi Master Mix combined with GC Enhancer and Company A's HiFi PCR Mix were used to amplify templates with varying GC content, following their respective recommended experimental systems. The results indicate that the 2× S705 HiFi Master Mix can effectively amplify templates with GC content ranging from 30%-80%.

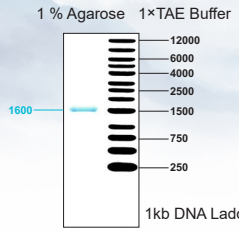
Note: The amount of PCR Enhancer required for the 2× S705 HiFi Master Mix (+Dye) version differs from that of the dye-free version. Compared to the 2× S705 HiFi Master Mix(EG24110), less PCR Enhancer is needed for 2× S705 HiFi Master Mix (+Dye) (EG25103). Avoid adding excessive PCR Enhancer to prevent amplification failure. For specific quantities, refer to the instructions.



2× S705 HiFi Master Mix (+Dye)
Illustration of Dye Molecular Weight in Electrophoresis

3.2 /Standard PCR Master Mix

Taq PCR Aurora Mix is an optimized Taq DNA polymerase premix with high amplification yield, enabling efficient amplification of templates with different GC contents (30%~70%).



2× Taq PCR Aurora Mix
Illustration of Dye Molecular Weight in Electrophoresis

Product Features

- **High amplification yield**

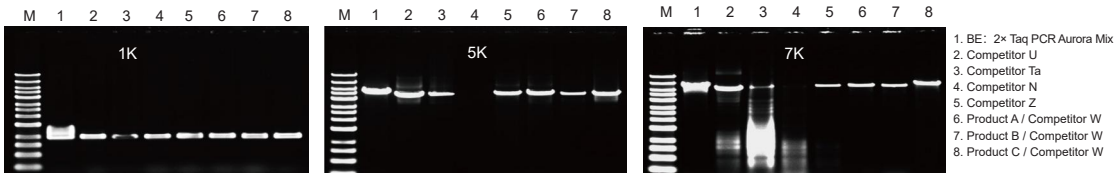
  Enables efficient amplification of DNA fragments ≤7kb.

- **Wide adaptability**

  Compatible with plant and animal lysates, bacterial crude products, and templates with different GC contents (30%~70%).

Performance Demonstration

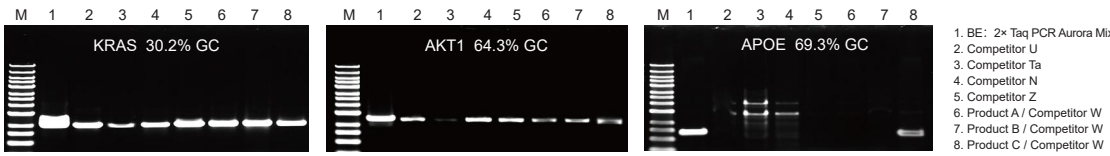
High amplification yield



1. BE: 2× Taq PCR Aurora Mix
2. Competitor U
3. Competitor Ta
4. Competitor N
5. Competitor Z
6. Product A / Competitor W
7. Product B / Competitor W
8. Product C / Competitor W

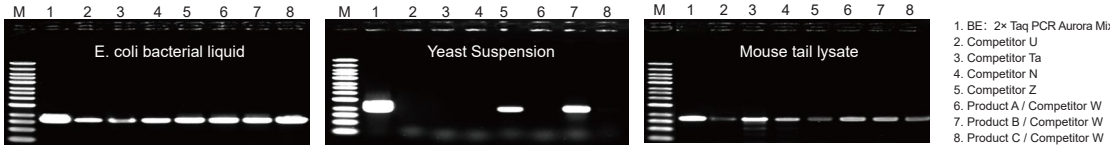
Using human genome as the template, 2× Taq PCR Aurora Mix can achieve good amplification results for fragments of different lengths.

Wide adaptability



1. BE: 2× Taq PCR Aurora Mix
2. Competitor U
3. Competitor Ta
4. Competitor N
5. Competitor Z
6. Product A / Competitor W
7. Product B / Competitor W
8. Product C / Competitor W

2× Taq PCR Aurora Mix can efficiently amplify fragments with 30~70% GC content.



1. BE: 2× Taq PCR Aurora Mix
2. Competitor U
3. Competitor Ta
4. Competitor N
5. Competitor Z
6. Product A / Competitor W
7. Product B / Competitor W
8. Product C / Competitor W

For different crude templates, 2×Taq PCR Aurora Mix enables efficient amplification.

Ordering Information

REF No.	Product Name	Specs
EG25103S/M/L	2× S705 HiFi Master Mix (+Dye)	1 ml/5×1 ml/20×1 ml
EG24110S/M/L	2× S705 HiFi Master Mix	1 ml/5×1 ml/20×1 ml
EG26104S/M/L	2× S705 HotPrime Mix	1 ml/5×1 ml/20×1 ml
EG25104M /L	2× Taq PCR Aurora Mix	5×1 ml/100×1 ml

4 / High-Performance Reverse Transcriptase Premix

BestEnzymes' s reverse transcriptase master mix series is developed for first-strand cDNA synthesis. These master mixes contain all components required for first-strand cDNA synthesis reactions — only RNA templates and ddH_2O need to be added during operation, enabling a streamlined workflow. The product portfolio covers 2nd to 4th generation reverse transcriptases, with solutions including single enzymes and premixed formulations to meet diverse experimental needs.

4.1 Fourth Generation Reverse Transcriptase Master Mix

Its core component is a newly developed 4th generation reverse transcriptase. Compared with 3rd generation reverse transcriptase, it delivers faster reaction speed, higher product yield, longer obtainable cDNA fragments, and compatibility with a broader range of templates.

Product Features

- **Fast reaction speed**

  Reverse transcription completed in only 5 minutes

- **High thermostability**

  Optimal reaction temperature: 55 ° C (max 70 ° C). Efficiently unwinds RNA secondary structures for comprehensive gene representation.

- **Strong inhibitor tolerance**

  It tolerates common inhibitors including Trizol, SDS, ethanol, isopropanol, humic acid, lithium chloride and guanidine hydrochloride.

- **Long cDNA products**

  Up to 20 kb

- **All-in-one Mix**

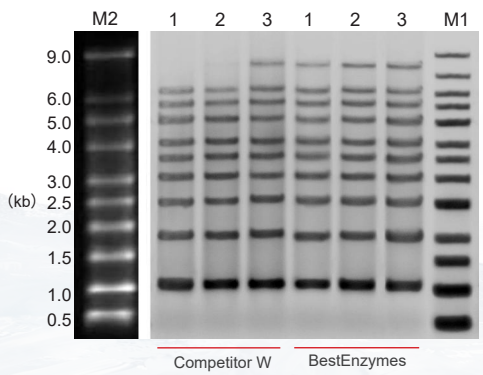
  All-in-One Mix saves over 50% of operation time and reduces contamination risk

- **Efficient genomic DNA removal**

  It uses dsDNase to specifically digest double-stranded DNA and eliminate gDNA contamination without interfering with downstream reactions, and the enzyme can be easily inactivated.

Performance Demonstration

Fast Reaction Speed



1. 5 min
2. 10 min
3. 20 min

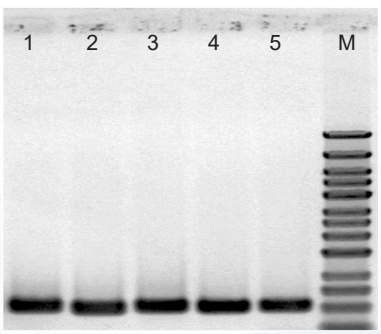
M1. 1 kb DNA Ladder

M2. RNA Ladder

Using RNA Ladder as template and Oligo dT as primer, reverse transcription was performed with BestEnzymes Biotech's EG25110 and other commercial products: Competitor W.

BestEnzymes Biotech's EG25110 reverse transcribes 9 kb RNA in 5–20 min; Competitor W needs 20 min for 9 kb.

Long cDNA Products



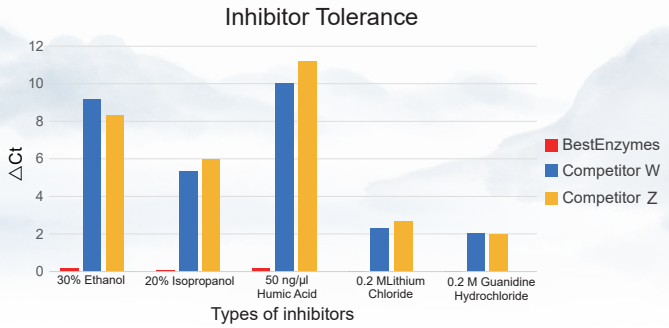
1. Band at 12 kb
2. Band at 14 kb
3. Band at 16 kb
4. Band at 18 kb
5. Band at 19.9 kb

M. 1 kb DNA Ladder

Using 500 ng total RNA from 293T cells as template and Oligo dT as primer, cDNA was synthesized. Different 5'-end 500 bp regions of the DY1C1N1 gene (19940 bp) were amplified from the cDNA.

BestEnzymes Biotech's EG25110 can synthesizes cDNA up to 19.9 kb.

Strong Inhibitor Tolerance

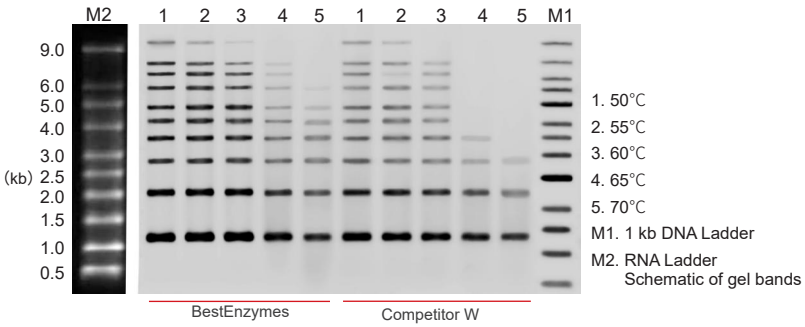


Common RNA extraction impurities were added to the reverse transcription system to test inhibitor tolerance.

BestEnzymes Biotech's EG25110 shows a significantly smaller △ Ct than competitors under high inhibitor concentrations, with the best inhibitor tolerance.

Note: △ Ct = Ct value of cDNA with inhibitor − Ct value of cDNA without inhibitor

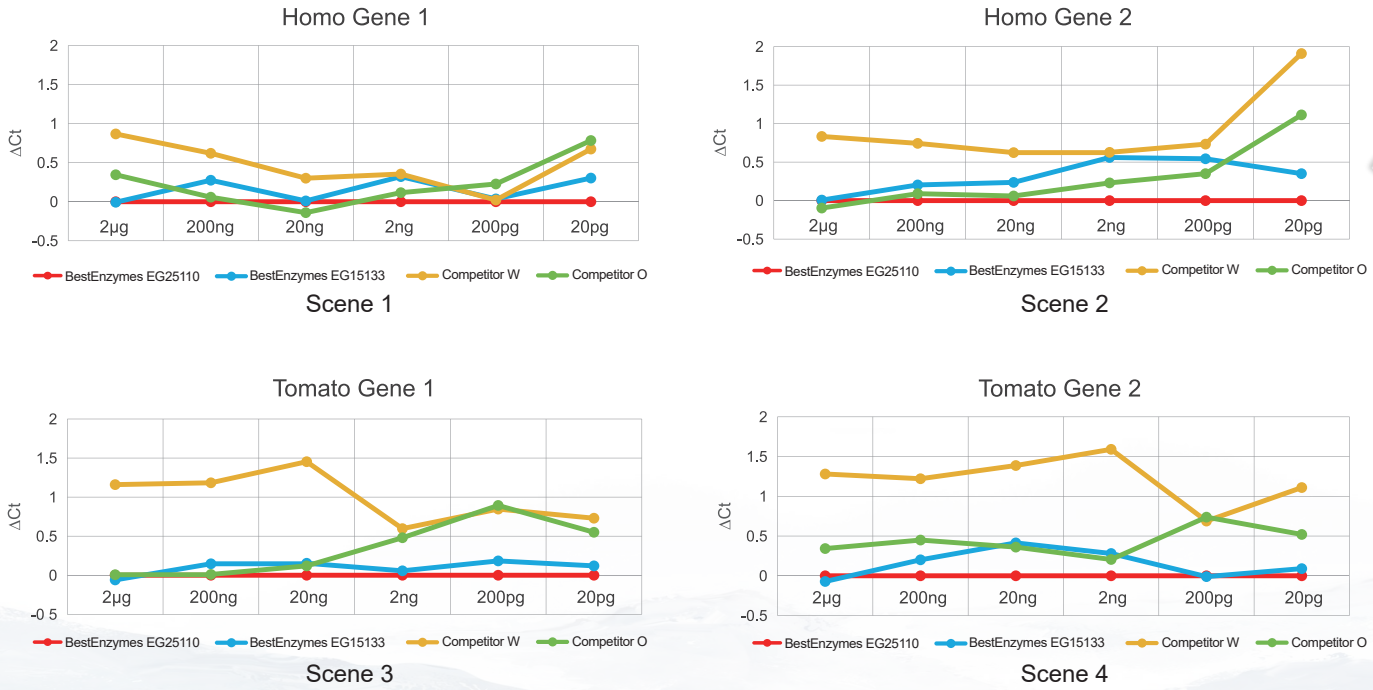
High Thermostability



Using RNA Ladder as template and Oligo dT as primer, reverse transcription was tested at different temperatures. BestEnzymes Biotech's EG25110 reverse transcribes 9 kb RNA at 50–60℃ ; Competitor W fails above 55℃ .

BestEnzymes Biotech's EG25110 still reverse transcribes 4 kb RNA at 70℃ , while Competitor W only reaches 1.5 kb.

High Reverse Transcription Efficiency



Note: △ Ct = Ct value of cDNA from other products − Ct value of cDNA from BestEnzymes Biotech's EG25110

Total RNA from human 293T cells and tomato was used as template, with reverse transcription by BestEnzymes Biotech's EG25110, EG15133 and other commercial products. qPCR quantification of multiple genes was conducted.

BestEnzymes Biotech's EG25110 performs best across 4 test scenes.

4.2 Third Generation Reverse Transcriptase Master Mix

The core component of All-in-One First-Strand Synthesis MasterMix (with dsDNase) is 3rd generation reverse transcriptase, suitable for routine reverse transcription experiments.

RTase III Primer Flexible All-in-One Mix (with dsDNase) supplies primers separately from other components, allowing flexible selection of reverse transcription primers for customized experimental designs — ideal for full-length cDNA cloning.

GIII Visual All-in-One MasterMix (with dsDNase) is also available for convenient visual sample loading.

Product Features

- **High reaction temperature**

Optimal reaction temperature is 50° C, with a maximum of 55° C.

- **Strong inhibitor tolerance**

Enhanced resistance to common contaminants from RNA extraction, such as Trizol and SDS.

- **cDNA product**

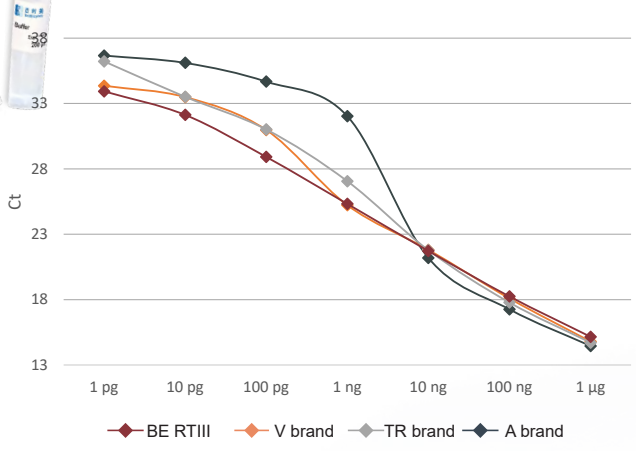
Supports cDNA synthesis up to 12 kb.

- **Effective genomic DNA removal**

- **All-in-one Mix**

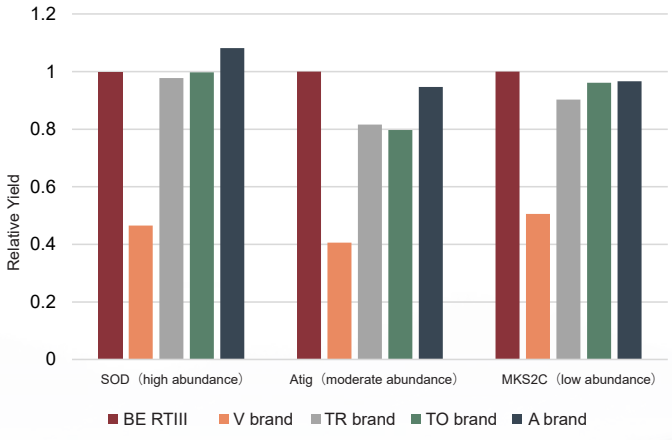
Performance Demonstration

Wide linear range of template concentration



Using 1 pg to 1 μg of tomato RNA as templates, reverse transcription was performed according to the recommended reaction conditions of different brands of reverse transcription kits. The cDNA products were then quantified using qPCR.

Efficient reverse transcription of genes at different abundances



Using 1 μg of tomato RNA as a template, reverse transcription was performed according to the recommended reaction conditions of different brands of reverse transcription kits. Using cDNA products as templates, qPCR detection was performed on genes with different expression abundances.

Product Selection Guide

Core Categories	Application Scenarios	Recommended Products
For Maximum Performance	• 5-minute rapid reverse transcription • cDNA synthesis >15 kb • High-temperature reaction (55–70°C) • Stringent inhibitor tolerance requirements	EG25110S GIV All-in-One MasterMix (with dsDNase)
For Routine qPCR	• Standard fluorescence quantitative PCR • Target fragments ≤12 kb	EG15133S All-in-One First-Strand Synthesis MasterMix (with dsDNase) EG24102S RTase III Primer Flexible All-in-One Mix (with dsDNase) EG26102S GIII Visual All-in-One MasterMix (with dsDNase)
For Flexible Primer Design	• Full-length cDNA cloning • Gene-specific primer applications • Non-poly(A) templates	EG24102S RTase III Primer Flexible All-in-One Mix (with dsDNase)
For Budget / Basic Use	• Teaching labs or exploratory experiments • Existing gDNA removal workflow • Acceptable gDNA carryover • High cost-effectiveness priority	EG20131S All-in-One First-Strand Synthesis MasterMix EG15124S M-MLV GIII Reverse Transcriptase EG15123S M-MLV RNase H- Reverse Transcriptase

Ordering Information

REF No.	Product Name	Specs	Note
EG25110S	GIV All-in-One MasterMix (with dsDNase)	100 rxns	4th Generation Flagship
EG24101S	M-MLV GIV Reverse Transcriptase	10000 U	4th Generation Reverse Transcriptase
EG15133S	All-in-One First-Strand Synthesis MasterMix (with dsDNase)	100 rxns	3rd Generation Reverse Transcriptase Remove the genome—dsDNase
EG24102S	RTase III Primer Flexible All-in-One Mix (with dsDNase)	100 rxns	Flexible Primer Selection
EG26102S	GIII Visual All-in-One MasterMix (with dsDNase)	100 rxns	Visual Operation
EG15124S	M-MLV GIII Reverse Transcriptase	10000 U	3rd generation reverse transcriptase
EG20131S	All-in-One First-Strand Synthesis MasterMix	100 rxns	without dsDNase
EG21104S	High-Accuracy Reverse Transcriptase	10000 U	Classic Hot-Start
EG15123S	M-MLV RNase H$^-$ Reverse Transcriptase	10000 U	Classic Entry-Level
EG20002S	RNase Inhibitor, Murine	10000 U	Auxiliary Reagents

5 /Real-time Fluorescence Quantitative PCR

Real-time fluorescence quantitative PCR (qPCR) technology utilizes fluorescent dyes or fluorescently labeled specific probes to track and monitor the PCR products in real-time. We have developed multiple qPCR products, among which the most representative one is Taq SYBR® Green qPCR Premix, with its core component being antibody-modified hot-start Taq DNA polymerase. Along with optimized buffer, it ensures high efficiency and specificity of amplification, enabling accurate quantification of a wide range of template concentrations and obtaining stable and reliable qPCR results. Additionally, the Universal version contain a special reference dye compatible with almost all qPCR instruments, eliminating the need to add ROX reference dye on different qPCR instruments.

Additionally, the Taq Visual SYBR qPCR Premix (Universal) contains a built-in reference dye, making the loading process more convenient.

Product Features

- **High specificity**

  Antibody-modified hot-start Taq DNA polymerase, along with optimized buffer, effectively inhibits non-specific amplification and primer dimer formation.

- **Compatible with various samples**

  Show high efficiency for samples from different sources.

- **Wide detection range**

  Enable accurate quantification of a wide range of template concentrations or genes with different abundances.

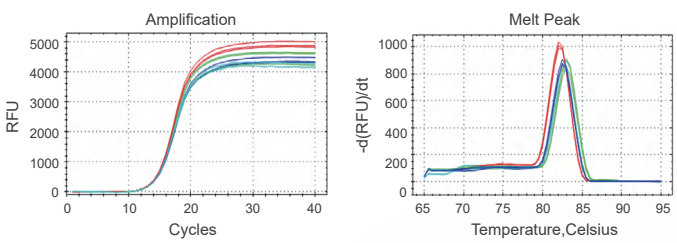
- **Perfect instrument compatibility**

  The universal version performs well when used in different types of qPCR instruments without the addition of the ROX reference dye.

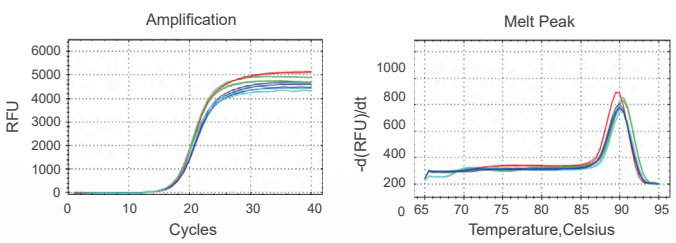
Performance Demonstration

Compatible with Templates from Different Sources

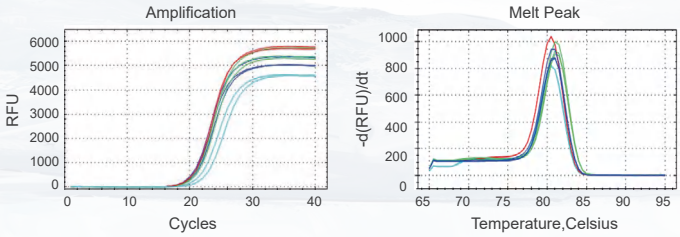
Tomato cDNA (PSBR-2 gene)



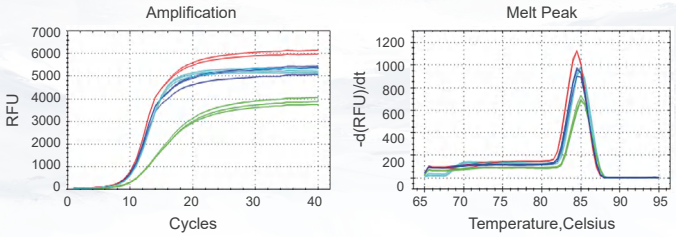
Human cDNA (Actin gene)



Human genomic DNA (DYS14 gene)

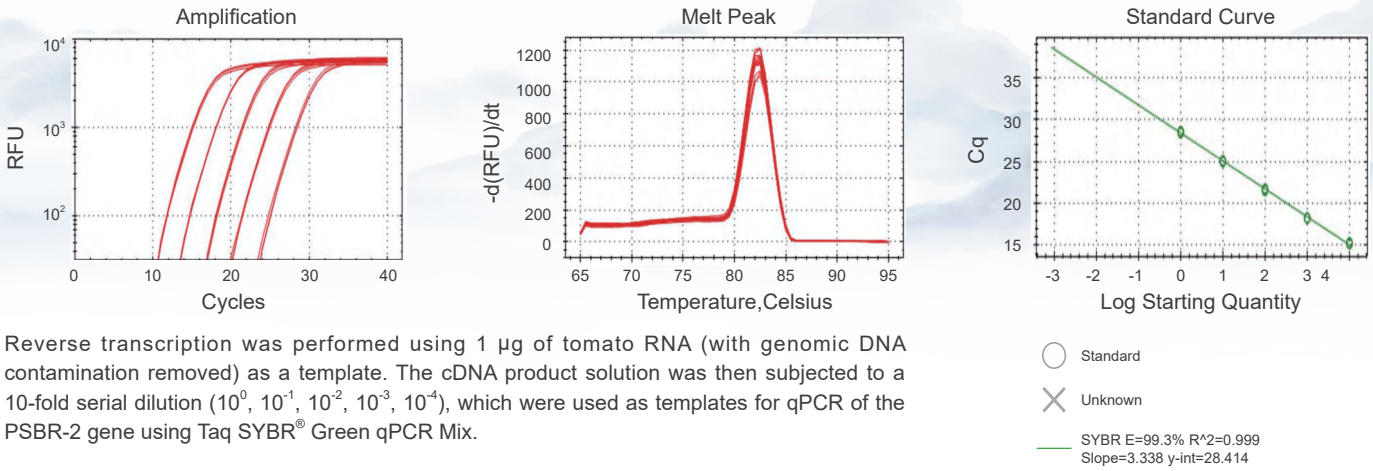


pUC19 plasmid DNA



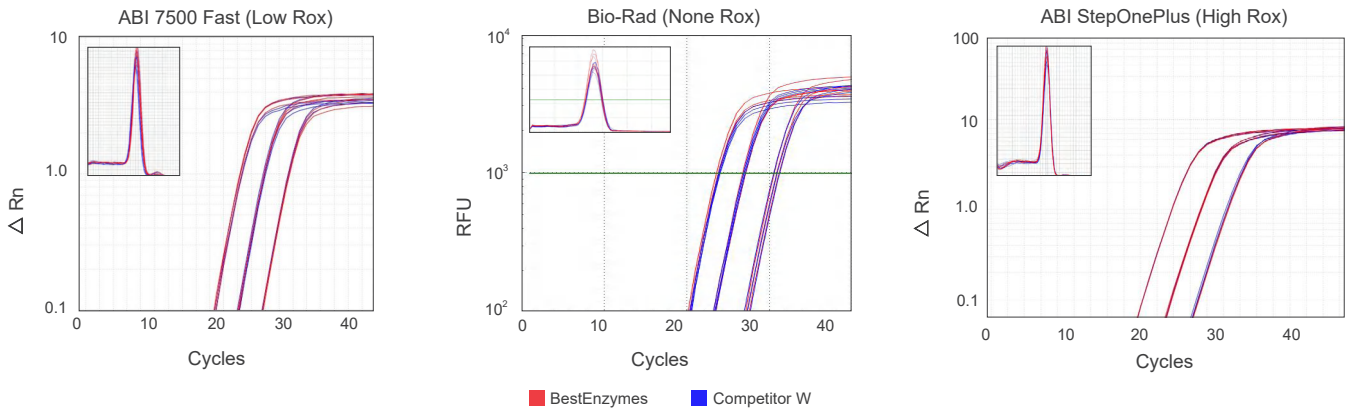
BestEnzymes Competitor W Competitor Ta Competitor A

Good Linear Range



Reverse transcription was performed using 1 μg of tomato RNA (with genomic DNA contamination removed) as a template. The cDNA product solution was then subjected to a 10-fold serial dilution (10^0, 10^{-1}, 10^{-2}, 10^{-3}, 10^{-4}), which were used as templates for qPCR of the PSBR-2 gene using Taq SYBR® Green qPCR Mix.

Broad Platform Compatibility



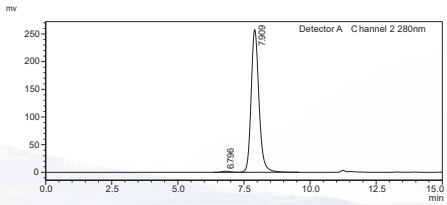
Using the Tag SYBR® Green qPCR Premix (Universal) to amplify genes on different types of qPCR instruments (ABI 7500 Fast, Bio-Rad CFX96, ABI StepOnePlus) yields excellent quantitative results. This demonstrates that the Taq SYBR® Green qPCR Premix (Universal) has broad instrument compatibility and does not require ROX reference dye on different instruments.

Fluorescence quantitative PCR (qPCR) is a classic technology in molecular diagnostics. To serve qPCR users, BestEnzymes offers single-batch supply of related raw materials exceeding 100 million reaction units, implementing rigorous quality control measures throughout the entire production process.

Taq antibody

Taq antibody effectively inhibits over 95% of Taq DNA polymerase activity even at 50° C, thereby suppressing various non-specific amplifications. The product can be completely and irreversibly inactivated by heating at 95°C for only 30 seconds to release polymerase activity, making it suitable for various hot-start quantitative PCR (qPCR) reactions.

Tested by HPLC, with a purity of 99% and excellent batch consistency.



Detector A Channel 2 280 nm

Peak#	Ret. Time	Area	Height	Conc.
1	6.796	44840	1915	0.835
2	7.909	5327644	257687	99.165
Total		5372484	259602	

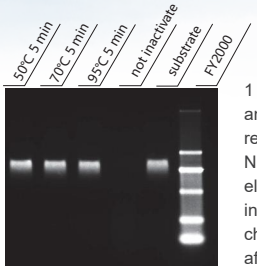
The newly developed Taq Antibody (B8) binds to Taq DNA polymerase, effectively blocking its exonuclease activity. This product exhibits extremely high affinity for Taq DNA polymerase, maintaining >95% blockade of the enzyme's exonuclease function even at 55° C, thus effectively inhibiting the degradation of mismatched probes or other materials at low temperatures and reducing non-specific signals. It only requires heating at 95 °C for 30 seconds to irreversibly dissociate from Taq DNA polymerase, releasing the exonuclease activity. This property makes Taq Antibody (B8) particularly well-suited for probe-based quantitative PCR applications.

Exonuclease activity-blocking antibodies and polymerase activity-blocking antibodies can be used in combination to obtain dual-blocking antibodies. After binding to Taq DNA polymerase, these antibodies can simultaneously block both polymerase and exonuclease activities, significantly enhancing reaction specificity.

HL-Uracil DNA Glycosylase (UDG,UNG)

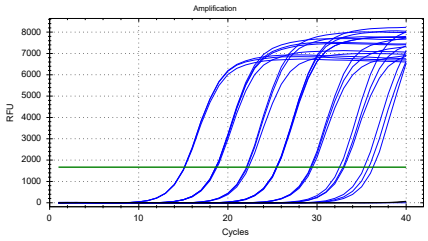
This product is a thermolabile uracil-DNA glycosylase (HL-UDG) identified from cold-water fish (patent pending). It can effectively hydrolyze uracil glycosidic bonds in DNA strands, and can be completely inactivated at 50 ℃ for 5 minutes without affecting the amplification reaction. Adding dUTP and HL-UDG to the DNA amplification system and incubating at 25℃ for 5~10 minutes prior to amplification can effectively control cross-contamination from residual amplification products.

Thermolabile



1 unit of HL-UDG was incubated at 50℃ , 70℃ , and 95℃ for 5 minutes respectively, followed by reaction with dU-containing substrates at 25℃ . No significant changes were observed in the electrophoretic bands of the digested substrates, indicating that HL-UDG possesses thermolabile characteristics and can be completely inactivated after incubation at 50℃ for 5 minutes.

Efficient Elimination of dU-Containing Templates



Addition of dU-containing templates at different concentrations to qPCR systems containing HL-UDG resulted in no amplification peaks, indicating that the dU-containing templates were completely digested by HL-UDG.

Ordering Information

REF No.	Name	Specs
EG20110M	Taq-HS SYBR® Green qPCR Premix (None Rox)	5×1 ml
EG20113M	Taq-HS SYBR® Green qPCR Premix (Universal)	5×1 ml
EG20410M	Taq-HS SYBR® Green qPCR Premix (Rox Separated)	5×1 ml
EG20114M	Taq SYBR® Green qPCR Premix (None Rox)	5×1 ml
EG20117M	Taq SYBR® Green qPCR Premix (Universal)	5×1 ml
EG22104M	Taq SYBR® Green qPCR Premix (Rox Separated)	5×1 ml
EG23111L	F488 SYBR qPCR Mix (Universal)	25×1 ml
EG20118M	Taq-HS Probe qPCR Premix (None Rox)	5×1 ml
EG20121M	Taq-HS Probe qPCR Premix (Universal)	5×1 ml
EG22109S	One Step RT-qPCR Probe Kit v2	250 rxns
EG23115M	Taq Visual SYBR qPCR Premix (Universal)	4×1.25 ml
EG23115L	Taq Visual SYBR qPCR Premix (Universal)	20×1.25 ml
EG15109S	Taq DNA Polymerase	1000 U
EG20101S	AbTaq DNA Polymerase	500 U
EG20105S	Taq antibody	200 U
EG24105S	Taq-antibody (B8)	100 µl
EG15124S	M-MLV GIII Reverse Transcriptase	10000 U
EG20002S	RNase Inhibitor, Murine	10000 U
EG20206S	dsDNase	50 rxns
EG21204S	dsDNase (with RNase Inhibitor)	50 rxns
EG22906S	HL-Uracil DNA Glycosylase (UNG, UDG)	500 U
EG20907S	dNTPs (10 mM each)	1 ml
CP18103S	ROX Reference Dye (25 µM)	1 ml
CP22203S	PCR DNA Degradation Solutions	2×400 ml

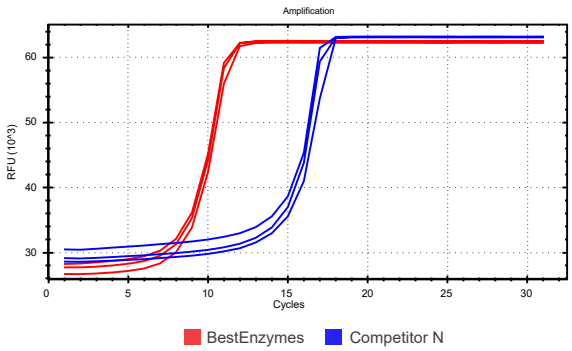
6 /Isothermal Amplification

Isothermal amplification enables rapid testing and self-diagnosis and has advanced swiftly in recent years. BestEnzymes supply a full panel of recombinant proteins for loop-mediated isothermal amplification (LAMP) and recombinase polymerase amplification (RPA), pre-formulated as lyophilized microspheres that need no cold chain and allow users to test instantly. For LAMP, a single-tube mix incorporates HL-UDG to erase carry-over amplicons and Cas12b nuclease to boost specificity and sensitivity.

Bsu DNA Polymerase (Large Fragment)

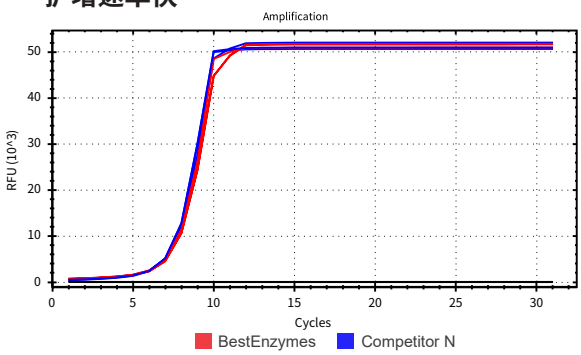
Bst II DNA Polymerase (Large Fragment) is an engineered variant derived from wild-type Bst DNA polymerase, exhibiting faster reaction rates, enhanced inhibitor tolerance, and improved stability.

Supports fluorescent dyes



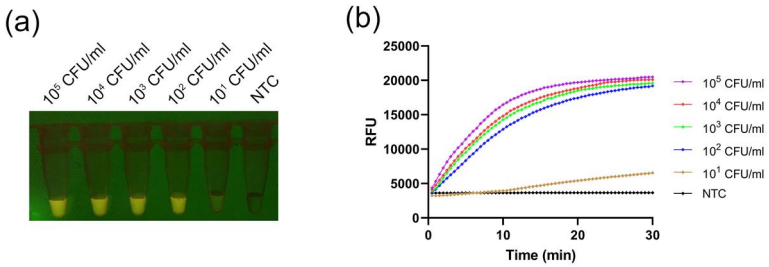
Bst II DNA Polymerase (Large Fragment) of BestEnzymes demonstrates good tolerance to SYBR Green I, whereas competitor N shows significantly inhibited activity.

扩增速率快



Bst II DNA Polymerase (Large Fragment) of BestEnzymes initiates exponential amplification 5 minutes after the start of the reaction, with the reaction completing in as fast as 10 minutes.

HL-UDG, Bst II, and Cas12b single-tube reaction



UDG-LAMP-CRISPR/Cas12b for Detection of Vibrio parahaemolyticus in Seafood, with a Sensitivity of up to 100 CFU/ml

a. Naked-eye Observation under Blue Light

b. Fluorometer Detection

Ordering Information

REF No.	Name	Specs
EG23101S	Bst II DNA Polymerase (Large Fragment)	1600 U
EG23101M	Bst II DNA Polymerase (Large Fragment)	8000 U
EG20130S	T4 UvsX Recombinase	500 μg
EG20403S	T4 UvsY Recombinase	200 μg
EG20401S	Bsu DNA Polymerase (Large Fragment)	500 μg
EG20129S	T4 gene 32 protein	1 mg
EG20128S	Rb69 gene 32 protein	1 mg
EG21101S	ET SSB	100 μg
EG23202S/M	AapCas 12b	100 pmol/1000 pmol

7 /Product For Biohprma

In every critical stage of developing and manufacturing innovative therapeutics—such as antibody drugs, mRNA vaccines, and cell-gene therapies (CGT)—precise, efficient, and reliable molecular biology tools are indispensable.

At BestEnzymes Biotech, we are dedicated to creating advanced molecular biology tools to support the discovery of these technologies. Our extensive range of high-quality reagents are designed to meet the rigorous demands of the biotherapeutic industry.

Why Choose Us?

- **Superior Performance:** Performance comparable to competing products, high cost-effectiveness, and stable supply.
- **Strict Quality Control:** Full process quality management system, offering GMP-grade products and supporting DMF filing.
- **Comprehensive Product Range:** Nearly 200 types of full-range enzyme preparations,covering DNA/RNA/protein operations. One-stop product portfolio from R&D to production.
- **Customization Support:** Providing customization for large packaging and GMP-grade products.

PRODUCT FOR BIOPHARMA ——Product Selection Guide

RNA Therapeutics

❶ Template Generation

- Restriction Endonucleases
- T4 DNA Ligase
- Ultra T4 DNA Ligase
- M-MLV Reverse Transcriptase
- High Fidelity Polymerase PCR Mix
- Seamless Assembly Mix
- phi29 II DNA Polymerase
- TelN Protelomerase
- BsaI, GMP Grade
- BspQI, GMP Grade
- XbaI, GMP Grade
- XhoI, GMP Grade
- NheI, GMP Grade

❷ *In Vitro* Transcription (IVT)

- T7 High Yield RNA Synthesis Kit
- T7 RNA Polymerase, GMP Grade
- High T7 RNA Polymerase
- Murine RNase Inhibitor, GMP Grade
- DNase I, RNase-free
- DNase I-ST, GMP Grade
- Pyrophosphatase, Inorganic (Yeast, GMP Grade)
- Thermostable Inorganic Pyrophosphatase
- NTP, Modified NTP
- Cap1 analogue AG
- Poly(A) RNA Polymerase
- Proteinase K

❸ Small RNA

- T4 RNA Ligase 2, GMP Grade
- T4 Polynucleotide Kinase

❹ Circular RNA

- T4 RNA Ligase 1

❺ Analysis & Quality Inspection

- RNase GG
- RNase T1
- Thermostable RNase T1
- RNase H
- Thermostable RNase H
- MazF
- RNase A
- BsaI ELISA ELISA Kit
- XhoI ELISA ELISA Kit
- XbaI ELISA ELISA Kit
- BsmBI ELISA ELISA Kit

❻ Auxiliary Reagents

- Ready To Use Instant Granules
- Nucleic Acid Stain
- RNA Marker
- DNA Marker

Antibody Drugs

❶ Molecular Cloning Construction

- Restriction Endonucleases
- High Fidelity Polymerase PCR Mix
- T4 DNA Ligase
- Seamless Assembly Mix
- phi29 II DNA Polymerase

❷ Screening & Development

- Cell-Free Protein Synthesis Kit

❸ protein purification

- DNase I, RNase-free
- DNase I-ST, GMP Grade
- RNase A
- Omni-nuclease (Benzonase)
- TEV Protease (with His-tag)

❹ Quality Control

- Benzonase ELISA Kit
- PNGase F

7.1 /mRNA *In vitro* Synthesis Solutions

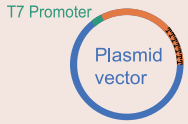
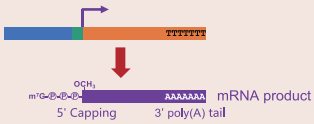
Products manufactured in compliance with GMP regulations can meet diverse customer requirements.

GMP Raw Material Quality Standards

Quality Control	Quality Standard	Detection Method
Appearance	Colorless clear liquid	Visual Check
Protein Purity	≥ 95%	SDS-PAGE
Non-specific Endonuclease Activity	Supercoiled plasmid conformational change < 20%	20 U enzyme was incubated with supercoiled plasmid at 37℃ for 4 hours
DNase Activity	No dsDNA degradation observed	20 U enzyme was incubated with dsDNA fragments at 37℃ for 16 hours
RNase Activity	RNA degradation ≤ 10%	20 U enzyme was incubated with RNA at 37℃ for 1 hour
Host Cell DNA	< 10 copies/20 U	ChP(2025) Volume IV, Detection of Exogenous DNA Residues, Method 3 (General Chapter 3407)
Host Cell Protein	< 50 ppm	ChP(2025) Volume IV, Measurement of E. coli Host Cell Proteins (General Chapter 3412)
Bacterial Endotoxin	< 10 EU/mg	ChP(2025) Volume IV, Bacterial Endotoxins Test, Method 1 (General Chapter 1143)
Mycoplasma	Negative	Mycoplasma test kit
Heavy Metals	< 10 ppm	ChP(2025) Volume IV, Limit Test for Heavy Metals, Method I (General Chapter 0821)
Microbial Limit	The total aerobic microbial count is below 5 cfu/ml, and the total combined yeasts/molds count is below 5 cfu/ml.	ChP(2025) Volume IV, Microbial Limit Tests for Non-Sterile Products: Microbial Enumeration Method (General Chapter 1105)

Note: The above information is given as examples of BsaI, GMP Grade .

mRNA Vaccine Manufacturing Process

Stage	Schematic Diagram
1. Acquisition of antigen genes	
2. Construction and amplification of Recombinant plasmid	
3. Linearization of circular plasmid template	
4. *In vitro* transcription (co-transcription with cap analogue)	
5. Lipid nanoparticle encapsulation	

BestEnzymes Biotech offer a wide range of GMP and non-GMP grade raw materials, assisting in the research and production of mRNA vaccines.

mRNA Synthesis Workflow Example & Available Products

1 Template Generation	2 Template Linearization	3 *In vitro* Transcription	4 RNA Capping and Tailing*	5 RNA Analysis
Restriction Endonucleases	BsaI, GMP Grade (GMP)	T7 High Yield RNA Synthesis Kit	Cap1 analogue AG	RNase A
2× S705 HiFi Master Mix	XbaI, GMP Grade (GMP)	T7 RNA Polymerase (GMP)	Poly(A) RNA Polymerase	RNase T1
Ultra / T4 DNA Ligase	XhoI, GMP Grade (GMP)	High T7 RNA Polymerase		Thermostable RNase T1
DNA Assembly Mix Ultra/ Mono	NheI, GMP Grade (GMP)	RNase Inhibitor, Murine (GMP)		RNase H
Golden Gate Assembly Kit (BsmBI)	BspQI, GMP Grade (GMP)	DNase I，RNase-free		Thermostable RNase H
Golden Gate Assembly Kit (BpiI)	Esp3I(BsmBI), ADCF	DNase I-ST, RNase-free (GMP)		MazF
Golden Gate Assembly Kit (BspQI)	EcoRI, ADCF	Pyrophosphatase, Inorganic (Yeast) (GMP)		RNase GG
2× Taq PCR Aurora Mix	BsaI ELISA Kit	Pseudo-UTP		
phi29 II DNA polymerase	XhoI ELISA Kit	N^1-Methyl-Pseudo-UTP		
TelN Protelomerase	XbaI ELISA Kit	NTPs		
dNTPS	BsmBI ELISA Kit			

*If precise control of poly(A) length is required, the poly(A) sequence is generally designed directly into the plasmid template.

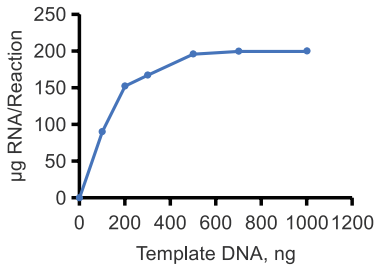
In vitro Transcription

The T7 High Yield RNA Synthesis Kit is capable of synthesizing long or short RNA transcripts in large quantities from DNA templates containing a T7 promoter. The kit's T7 Enzyme Mix is optimized with RNase inhibitor and inorganic pyrophosphatase, ensuring highly efficient and robust RNA synthesis.The synthesized RNA is applicable for a wide range of downstream applications, including *in vitro* translation, RNA structure and function studies, RNase protection assays, probe hybridization, RNA interference, and more.

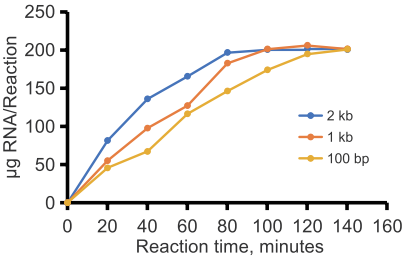
Product Feature

- High yield,1 μg of linearized double-stranded DNA template can yield at least 150 μg of RNA.
- Fast rate，80 minutes will be sufficient to obtain the required amount of the product.
- Wide adaptability to template lengths (100 bp to 9 kb), suitable for preparing mRNA, CRISPR-required sgRNA, and other applications.
- Optimized reaction system, compatible with modified NTPs and cap analogs.

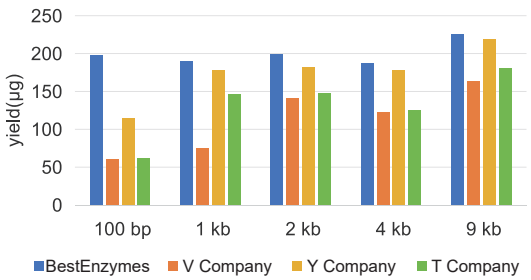
Performance Demonstration



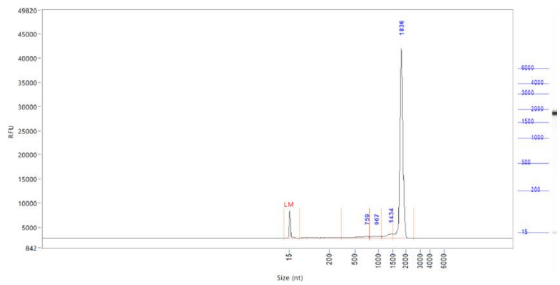
The relationship between amount of template and product.



The relationship between reaction time of different templates length and product output.



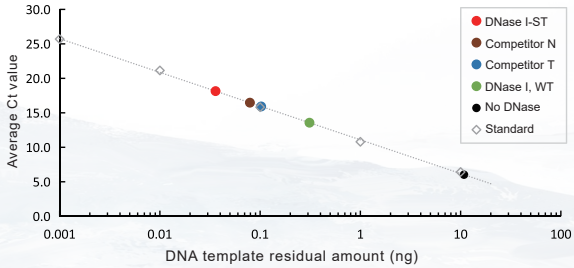
The relationship between different template lengths and the products output.



As tested by customers，when using cap analogues for co-transcription, the integrity of the capped mRNA exceeds 85%.

DNase I-ST, GMP Grade——Through protein design and modification, BestEnzymes Biotech has developed a new salt-tolerant DNase I based on the wild-type DNase I. This product features:

- Significantly enhanced DNA affinity, enabling higher digestion efficiency for low-concentration DNA.
- High salt tolerance, which can efficiently degrade DNA even in solutions containing 300 mM salt.
- Recombinant expression, with no RNase contamination.
- Especially suitable for removing DNA templates after IVT reactions.



	Average Ct value	Residual DNA (ng)	Residual DNA ratio	DNA removal fold
DNase I-ST	18.1	0.036	0.332%	~300
Competitor N	16.5	0.079	0.732%	~130
Competitor T	15.9	0.102	0.948%	~100
DNase I, WT	13.6	0.311	2.875%	~30
No DNase	6.0	10.805	100%	-

As shown in the image, *in vitro* transcription (IVT) reactions using different competitor systems—all with high salt concentrations—were performed using linearized plasmid DNA as template. After transcription, 2 U of DNase I were added. The RNA products were purified and recovered, and residual DNA was quantified by qPCR. The results demonstrate that BestEnzymes Biotech DNase I-ST achieved significantly higher DNA removal efficiency than the wild-type DNase I and competing products.

Template Generation

When amplifying the target fragment, it is essential to select a high-fidelity DNA polymerase to ensure the accuracy of the template. BestEnzymes Biotech has launched the 2×S705 HiFi Master Mix, a high-fidelity PCR premix containing S705 High-Fidelity DNA Polymerase. This polymerase offers 70-fold higher fidelity than Taq polymerase and 5-fold faster amplification than Pfu polymerase, meeting the requirements for accurate template amplification.

BestEnzymes Biotech offers a comprehensive catalog including over a hundred restriction endonucleases, thermostable reverse transcriptase, T4 DNA Ligase (Fast), and Gibson assembly cloning kits, effectively addressing the needs for plasmid template construction.

Template Linearization

When utilizing plasmid DNA as an *in vitro* transcription template, it's crucial to select appropriate restriction endonucleases to ensure complete digestion and linearization of the circular plasmid. BestEnzymes Biotech offers a diverse range of GMP-grade enzymes. We guarantee full traceability throughout our entire production process, including all raw materials and excipients. Our enzymes are completely free of antibiotics and any animal-derived components. Furthermore, we rigorously control process-related impurities such as host proteins, exogenous DNA, non-specific endonucleases, DNase, and RNase, as well as microbial limits and bacterial endotoxins. This stringent quality control meets the demanding raw material and excipient requirements for critical applications like vaccine and drug production and cell therapy.

Meanwhile, BestEnzymes Biotech provides GMP-grade restriction endonucleases customization to meet users' personalized needs for plasmid templates.

To address the issue of restriction endonuclease residue after plasmid template linearization, BestEnzymes Biotech pioneered the industry's first series of detection kits for restriction endonuclease residues. Currently, ELISA kits for individual enzymes including BsaI, XhoI, XbaI, and BsmBI are available, with new products to be gradually launched according to customer demands.

RNA Analysis

When performing *in vitro* transcription with both capping and tailing to generate complete mRNA, it's crucial to analyze the quality of the RNA product. To address this need, BestEnzymes Biotech offers a diverse array of RNase. These enzymes provide versatile options for RNA secondary structure analysis, capping rate evaluation, and comprehensive integrity assessment.

Product Name	Reaction Substrate	Recognition Sequence	Application
RNase A	Primarily single-stranded RNA	C/U	Preparation of plasmids and genomic DNA Remove RNA from recombinant protein preparations RNA In combination with RNase T1 Identify single-base mutations in DNA or RNA
RNase T1/ Thermostable RNase T1	Single-stranded RNA	G	RNA sequencing Analysis of RNA secondary structure Combined with RNase A to remove RNA mRNA quality analysis
RNase H/ Thermostable RNase H	The RNA chain in the RNA-DNA hybrid molecule	Positional preference	Analysis of mRNA cap addition efficiency Remove mRNA before synthesizing the second strand of cDNA Removal of the poly(A) sequence from mRNA after oligo(dT) hybridization
MazF	Single-stranded RNA	Unmodified ACA	mRNA analysis
RNase GG	single-stranded or multi-stranded RNA	GG	mRNA analysis

Ordering Information

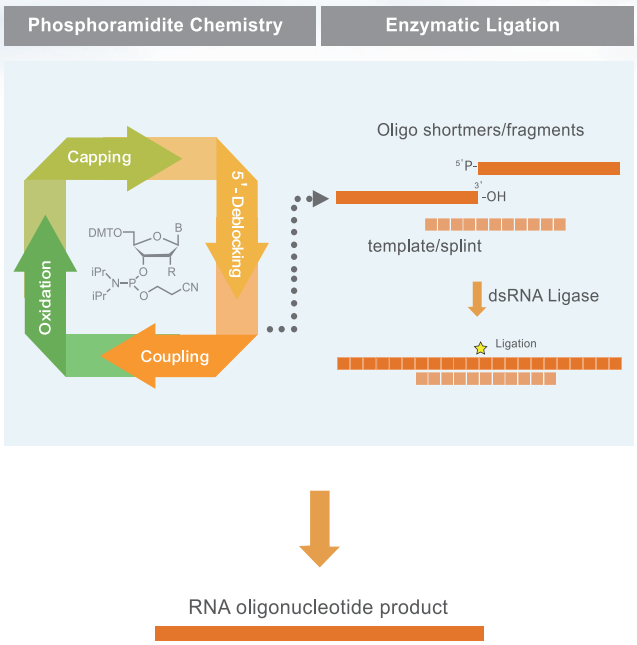
Classification	REF No.	Name	Specs
Template Generation	EG15124S	M-MLV GIII Reverse Transcriptase	10000 U
	EG24110S/M/L	2× S705 HiFi Master Mix	1 ml/5×1 ml/20×1 ml
	EG15205S	T4 DNA Ligase (Fast)	1000 U
	EG25208S	Ultra T4 DNA Ligase	1000 U
	EG24204S	DNA Assembly Mix Ultra	50 rxns
	EG25202S/M	DNA Assembly Mix Mono	50 rxns/250 rxns
	EG25207S	Golden Gate Assembly Kit (BsmBI)	50 rxns

Ordering Information

Classification	REF No.	Name	Specs
Template Construction	EG25209S	Golden Gate Assembly Kit (BpiI)	50 rxns
	EG25104M/L	2× Taq PCR Aurora Mix	5×1 ml/100×1 ml
	EG25109S/M	phi29 II DNA Polymerase	500 U/2500 U
	EG25203S/M	TelN Protelomerase	250 U/1000 U
	EG20907S	dNTPs (10 mM each)	1 ml
	EG20901S	dATP (100 mM)	1 ml
	EG20902S	dTTP (100 mM)	1 ml
	EG20903S	dCTP (100 mM)	1 ml
	EG20904S	dGTP (100 mM)	1 ml
	EG20905S	dUTP (100 mM)	1 ml
Template Linearization	GMP501S	BsaI, GMP Grade	20000 U
	GMP502S	XbaI, GMP Grade	20000 U
	GMP503S	BspQI, GMP Grade	10000 U
	GMP504S	XhoI, GMP Grade	20000 U
	GMP505S	NheI, GMP Grade	20000 U
	EG21504S	Esp3I(BsmBI), ADCF	2000 U
	EG21504H	Esp3I(BsmBI), ADCF	2000 U
	EG22504S	EcoRI, ADCF	5000 U
	EG24601S	BsaI ELISA Kit	96 T
	EG24602S	XhoI ELISA Kit	96 T
	EG24603S	XbaI ELISA Kit	96 T
	EG24604S	BsmBI ELISA Kit	96 T
In vitro Transcription	EG24104S	T7 High Yield RNA Synthesis Kit	50 rxns
	GMP101S/M	T7 RNA Polymerase, GMP Grade	20000 U/200000 U
	EG20124S/M	T7 RNA Polymerase	5000 U/25000 U
	EG20125S/M	High T7 RNA Polymerase	5000 U/25000 U
	EG21916S	ATP (100 mM)	1 ml
	EG21917S	CTP (100 mM)	1 ml
	EG21918S	GTP (100 mM)	1 ml
	EG21919S	UTP (100 mM)	1 ml
	EG21920S	NTP Bundle (25 mM each)	1 ml
	EG21921S	N1-Methyl-Pseudo-UTP (100 mM)	100 µl
	EG21922S	Pseudo-UTP (100 mM)	200 µl
	GMP102S	Murine RNase Inhibitor, GMP Grade	40000 U
	EG20002S	RNase Inhibitor, Murine	10000 U
	GMP105S	DNase I-ST, GMP Grade	2000 U
	EG24202S	DNase I-ST, RNase-free	1000 U
	EG24206S	DNase I-ST, RNase-free (Lyophilized)	1000 U
	GMP103S	Pyrophosphatase, Inorganic (Yeast, GMP Grade)	100 U
	EG23109S/M	Pyrophosphatase, Inorganic (Yeast)	10 U/100 U
RNA Capping and Tailing	EG22909S	Cap1 analogue AG	100 µl
	EG25108S/M	Poly(A) RNA Polymerase	100 U/500 U
RNA Analysis	EG20003S/M	RNase A	100 mg/1 g
	EG24210S/M	RNase T1	100 KU/5×100 KU
	EG24211S/M	Thermostable RNase T1	100 KU/5×100 KU
	EG20208S	RNase H	1000 U
	EG24201S	Thermostable RNase H	200 U
	EG24505S	MazF	1000 U
	EG25521S/M	RNase GG	2500 U/12500 U

7.2 /Small RNA Drug Enzymatic Synthesis Solutions

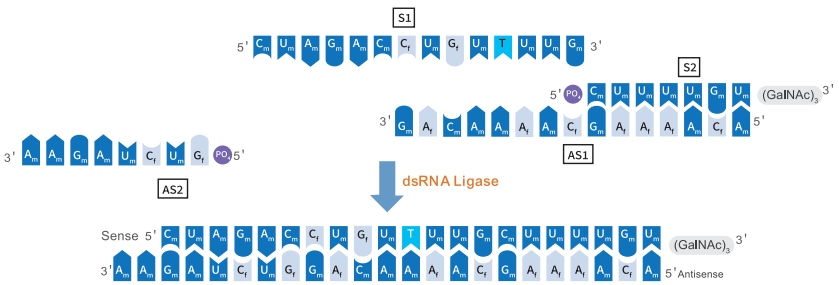
Comparison of siRNA Synthesis Technology Routes

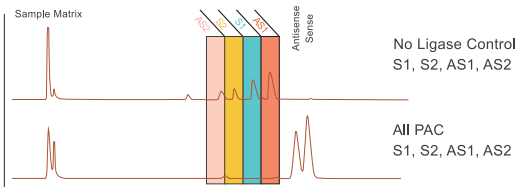


	Chemical Synthesis (SPOS)	Enzymatic Ligation
Process Principle	Sequentially add nucleotides on solid phase, form chemical bonds to extend the chain	Short fragments synthesis + enzymatic ligation
Core Steps	Circulation Deprotection → Coupling → Oxidation → Capping	Fragment synthesis → Annealing → Enzymatic ligation → Purification
Yield	36-mer 69% (decreases with length)	> 95% (avoids cumulative loss)
Impurity Control	Difficult (prone to N-1/N-2 deletion impurities)	Easy
Cost	High	Medium
Environmental Friendliness	Poor (large organic waste discharge)	Excellent (aqueous reaction, reduce 50% waste)
Application Scenarios	< 20 - mer	> 30 - mer
Strategic Significance	Transitional technology	Future industry standard

T4 RNA Ligase 2 Performance Demonstration

Using a double-strand RNA ligase such as T4 RNA Ligase 2, four single-stranded RNA fragments are ligated into a complete double-stranded small RNA drug, achieving a ligation efficiency of over 95%.





Fragment Composition	% Ligation	
	Sense	Antisense
4 PAC	**98.4**	**98.2**

Ordering Information

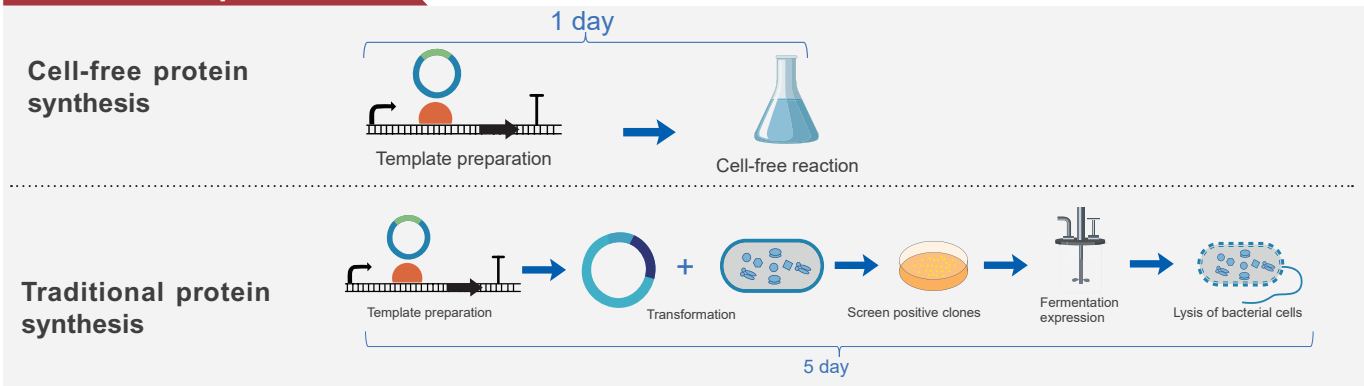
REF No.	Name	Specs
GMP109S	T4 RNA Ligase 2, GMP Grade	1000 U
GMP109M	T4 RNA Ligase 2, GMP Grade	5000 U
GMP105S	DNase I-ST, GMP Grade	2000 U
GMP101S	T7 RNA Polymerase, GMP Grade	20000 U
GMP101M	T7 RNA Polymerase, GMP Grade	200000 U
GMP102S	Murine RNase Inhibitor, GMP Grade	40000 U
GMP701S	Recombinant Proteinase K, GMP Grade	20 mg
GMP103S	Pyrophosphatase, Inorganic (Yeast, GMP Grade)	100 U

7.3 /Cell-Free Protein Synthesis Kit

Cell-Free Protein Synthesis Kit is an extract-based transcription/translation system derived from E. coli cells. The precisely prepared cell extracts fully retain the activity of ribosomes, transcription and translation factors, and other core protein synthesis enzymes.This enables rapid, one-pot conversion of DNA/RNA templates to functional proteins in vitro.

- **Rapid Expression:** Target protein obtained in 1–2 hours, with peak yield reached within 8–16 hours.
- **Broad Compatibility:** Support multiple templates including circular plasmids, linear DNA and mRNA, compatible with the T7 promoter system.
- **Specialized for Challenging Proteins:** Enables efficient expression of cytotoxic, disulfide bond-rich and insoluble proteins.
- **Flexible & High-Efficiency:** Dual reaction systems (microplate / centrifuge tube) support high-throughput screening.
- **Open System:** Accommodates special requirements such as isotopic labeling and non-canonical amino acids incorporation.

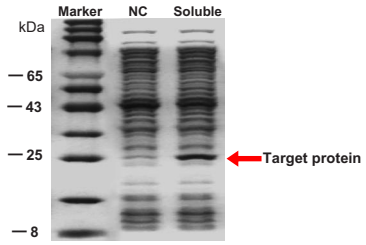
Process Comparison



Performance Demonstration

• Cytotoxic protein

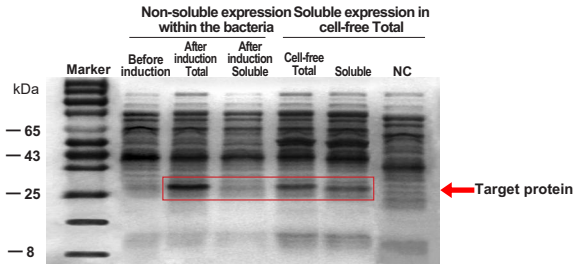
A restriction endonuclease



The soluble expression of a particular restriction endonuclease in the cell-free expression system.

• Misfolded or aggregated proteins

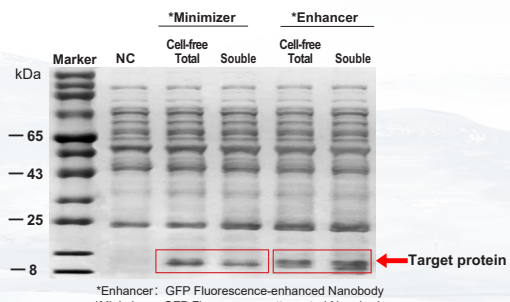
A protein prone to forming inclusion bodies



Proteins that tend to form inclusion bodies in *E. coli* cells are expressed solubly in the cell-free expression system.

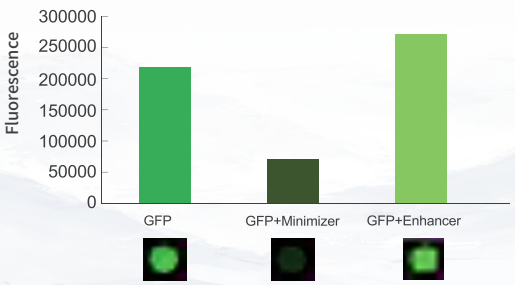
• Disulfide-rich proteins

GFP Nanobody



*Enhancer: GFP Fluorescence-enhanced Nanobody
*Minimizer: GFP Fluorescence-attenuated Nanobody

Functional assay



Two GFP-specific nanobodies were successfully expressed in a soluble form using a cell-free expression system. Upon binding to green fluorescent protein (GFP), both nanobodies retained their functional activity, demonstrating either fluorescence enhancement or suppression.

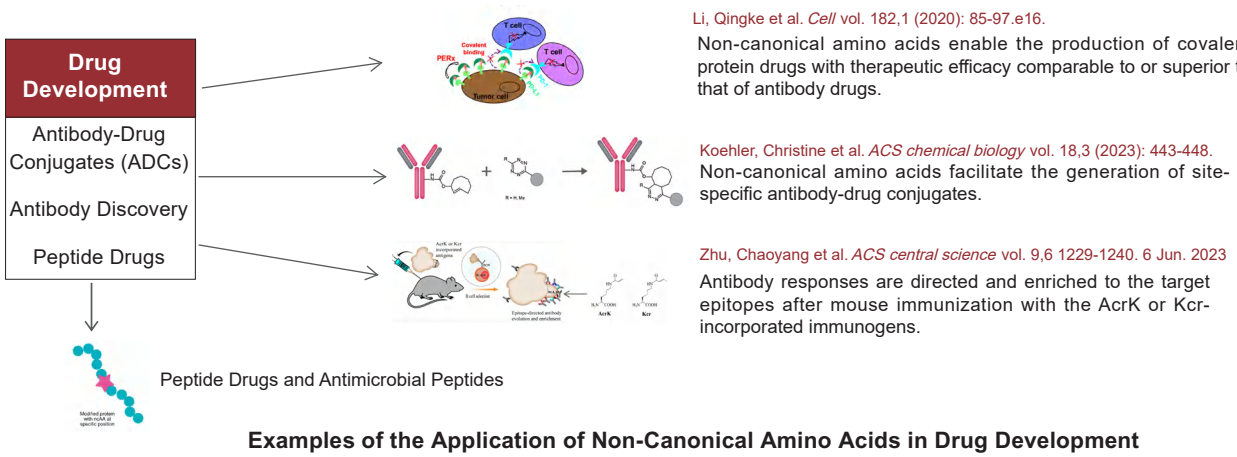
Expand Your Protein Universe: Incorporation of Non-Canonical Amino Acids

Non-Canonical Amino Acids, ncAA

In a broad sense, it refers to non-naturally occurring, synthetic amino acids. It generally denotes ncAA—those beyond the 20 standard amino acids—that are introduced into proteins via chemical synthesis or bioengineering methods.

Functional Applications of Non-Canonical Amino Acids

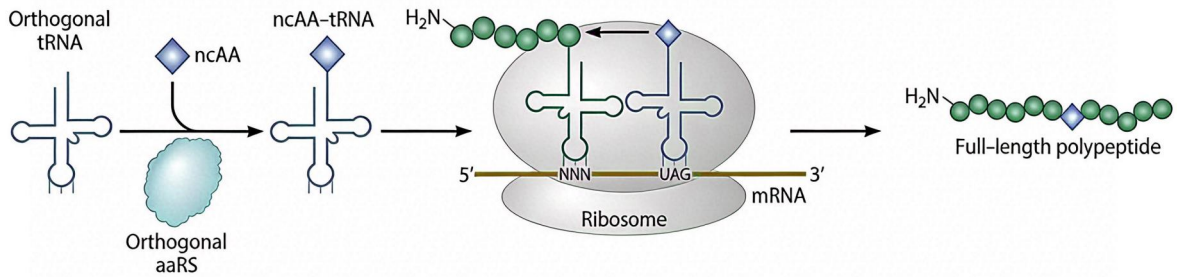
Introduce ncAA into specific sites of target protein, endowing the protein with new biological characteristics including covalently binding with proximal proteins, carrying fluorescence, and mimicking specific protein post-translational modifications.



Examples of the Application of Non-Canonical Amino Acids in Drug Development

Incorporation Pathway of Non-Canonical Amino Acids

The codon at the intended insertion site for the ncAA within the coding gene is mutated to a termination codon (such as TAG). Subsequently, an orthogonal translation system for the ncAA is introduced into the cell-free protein synthesis system. This system comprises the $tRNA^{TAG}$, the specific ncAA, and the corresponding aminoacyl-tRNA synthetase (aaRS), thereby enabling the site-specific insertion of the ncAA during protein translation.



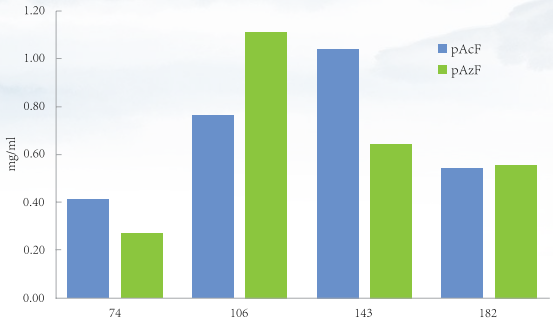
Schematic Diagram of ncAA Insertion Using an Orthogonal Translation System

Why is the Cell-Free Protein Synthesis System More Suitable for ncAA Incorporation?

- The cell-free environment avoids the degradation of ncAA by intracellular metabolism.
- Enables precise control over the concentration and time of ncAA.
- Free from cytotoxicity constraints, it enables the expression of proteins that are toxic to cells.
- Facilitates the optimization of reaction conditions to improve the incorporation efficiency of ncAA.

Solution

BestEnzymes Biotech has launched a specialized cell-free protein synthesis kit compatible with p-acetyl-L-phenylalanine (pAcF),p-azido-L-phenylalanine (pAzF), and Nε-crotonyl-L-lysine (Kcr), enabling highly efficient incorporation of ncAA and providing dedicated solutions for protein modification and engineering research.



BestEnzymes Biotech has developed three cell-free protein synthesis kits for non-canonical amino acids (ncAA), enabling site-specific incorporation of p-acetyl-L-phenylalanine (pAcF), p-azido-L-phenylalanine (pAzF), or Nε-crotonyl-L-lysine (Kcr) into target proteins using the amber codon

Product Selection Guide

Product name	Cell-Free Protein Synthesis Kit	Cell-Free Protein Synthesis Kit Pro	Cell-Free Protein Synthesis Kit Max
Plasmid / Linear template	√	√	√
Insoluble protein	/	√	√
Disulfide bond	/	/	√
Yield	Up to 3 mg/ml	Up to 2 mg/ml	Up to 2 mg/ml
Application	Suitable for standard protein expression. It enables high-efficiency production of proteins with diverse molecular weights (such as Green Fluorescent Protein, β-galactosidase, polymerases)	Suitable for expressing insoluble protein. Based on standard systems, we added chaperone proteins to enhance folding, improve solubility, and reduce the formation of inclusion bodies.	Suitable for expressing diverse proteins, particularly disulfide-rich proteins, including full-length antibodies, nanobodies, antibody fragments, cytokines, and membrane proteins.

Ordering Information

REF No.	Product Name	Specs
EG24302S	Cell-Free Protein Synthesis Kit (Lyophilized)	20 rxns
EG24302M	Cell-Free Protein Synthesis Kit (Lyophilized)	100 rxns
EG25303S	Cell-Free Protein Synthesis Kit Pro (Lyophilized)	20 rxns
EG25303M	Cell-Free Protein Synthesis Kit Pro (Lyophilized)	100 rxns
EG25304S	Cell-Free Protein Synthesis Kit Max (Lyophilized)	20 rxns
EG25304M	Cell-Free Protein Synthesis Kit Max (Lyophilized)	100 rxns
EG25330S	Cell-Free Protein Synthesis Kit (pAcF)	20 rxns
EG25331S	Cell-Free Protein Synthesis Kit (pAzF)	20 rxns
EG25332S	Cell-Free Protein Synthesis Kit (Kcr)	20 rxns

7.4 /Glycosidase PNGase F

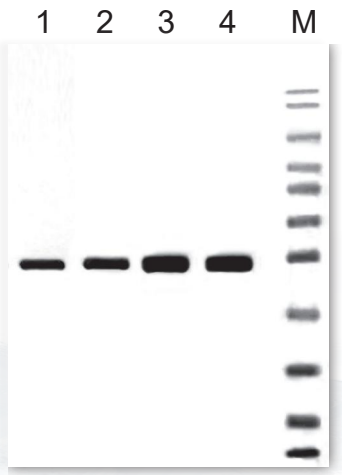
PNGase F (peptide N-glycosidase F) can efficiently cleave N-linked glycans from glycoproteins produced by animal cells, targeting glycoforms such as high-mannose, hybrid, and complex oligosaccharides. It is the most commonly used endoglycosidase for antibody glycosylation analysis. PNGase F, introduced by BestEnzymes Biotech, is recombinantly expressed in E. coli, offering high purity and no contamination from proteases or other glycosidases. It is used for in vitro deglycosylation of antibodies, antibody-fusion proteins, or other glycoproteins to determine whether the protein carries N-linked glycosylation modifications.

In addition, to avoid interference with HPLC or mass spectrometry analysis after deglycosylation, a glycerol-free version of PNGase F (EG23304) is also provided. All PNGase F products from our company carry a His-tag, facilitating easy removal after the deglycosylation reaction.

Product features

- **High purity**
  High purity, with a purity of over 95%.
- **Easy to remove**
  Equipped with a His tag, facilitating separation via affinity chromatography.
- **Rapid deglycosylation**
  It can be used either at 37 ° C using a standard reaction or at 50 ° C for a quick 10-minute reaction.

Performance

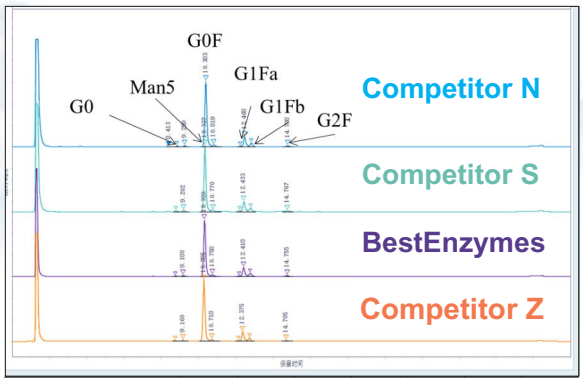


1. PNGase F (with His-tag) 2 μg
2. PNGase F (with His-tag) 5 μg
3. PNGase F (with His-tag) 10 μg
4. PNGase F (with His-tag, Glycerol Free) 10 μg

M: Protein Marker

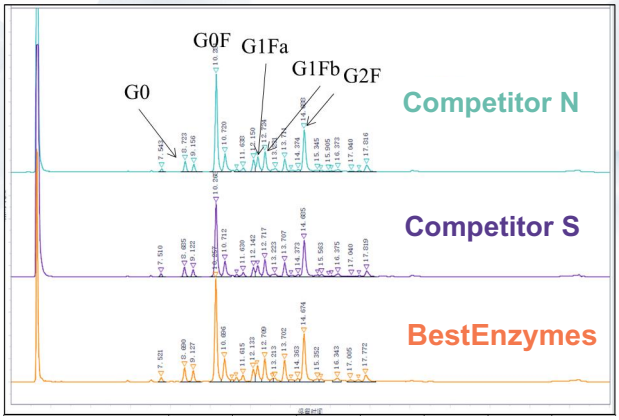
SDS-PAGE Analysis of PNGase F (with His-tag) and PNGase F (with His-tag, Glycerol Free)
10 μg protein, single band observed with a purity of > 95%.

The glycan types and ratios of the product show no significant difference compared to competitive products globally.



Name	G0%	G0F%	Man5%	G1Fa%	G1Fb%	G2%	G2F%
Competitor N	1.41	72.58	3.26	12.80	5.01	N/A	1.93
Competitor S	1.27	73.24	3.11	12.97	5.01	N/A	1.92
BestEnzymes	1.18	72.89	3.24	13.06	5.09	N/A	2.06
Competitor Z	1.2	73.04	3.29	12.98	5.00	N/A	1.90

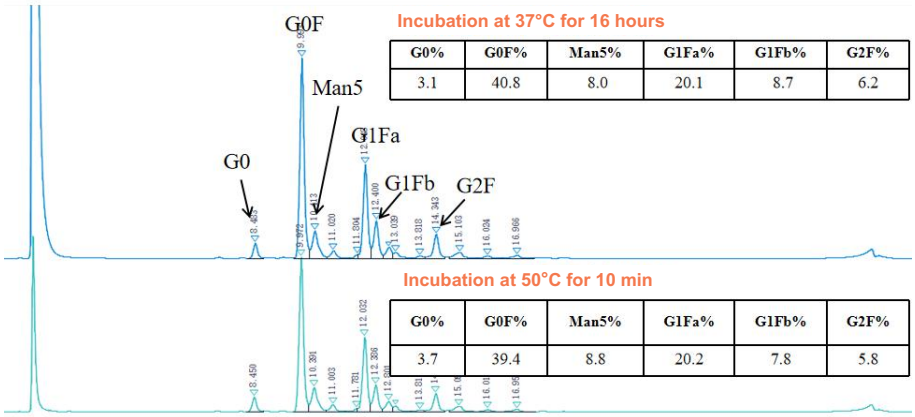
Incubation at 37° C for 16 hours, glycosylation analysis of the monoclonal antibody showed no significant differences in glycan types or relative abundance compared to competing products.



Name	G0%	G0F%	Man5%	G1Fa%	G1Fb%	G2%	G2F%
Competitor N	3.25	30.23	7.36	5.5	7.33	4.52	16.59
Competitor S	3.49	27.16	7.4	5.07	7.13	5.68	16.82
BestEnzymes	3.71	27.89	7.92	5.14	7.21	6.54	16.34

Incubation at 37° C for 16 hours, glycosylation analysis of the bispecific antibody showed no significant differences in glycan types or relative abundance compared to competing products.

Rapid deglycosylation



G0%	G0F%	Man5%	G1Fa%	G1Fb%	G2F%
3.1	40.8	8.0	20.1	8.7	6.2

G0%	G0F%	Man5%	G1Fa%	G1Fb%	G2F%
3.7	39.4	8.8	20.2	7.8	5.8

Glycosylation analysis of a monoclonal antibody treated under two reaction conditions showed no significant differences in glycan types or relative abundance.

Ordering Information

REF No.	Product Name	Specs
EG23303S	PNGase F(with His-tag)	15000 U
EG23303M	PNGase F(with His-tag)	75000 U
EG23304S	PNGase F(with His-tag, Glycerol Free)	15000 U
EG23304M	PNGase F(with His-tag, Glycerol Free)	75000 U

8 /Collagenase

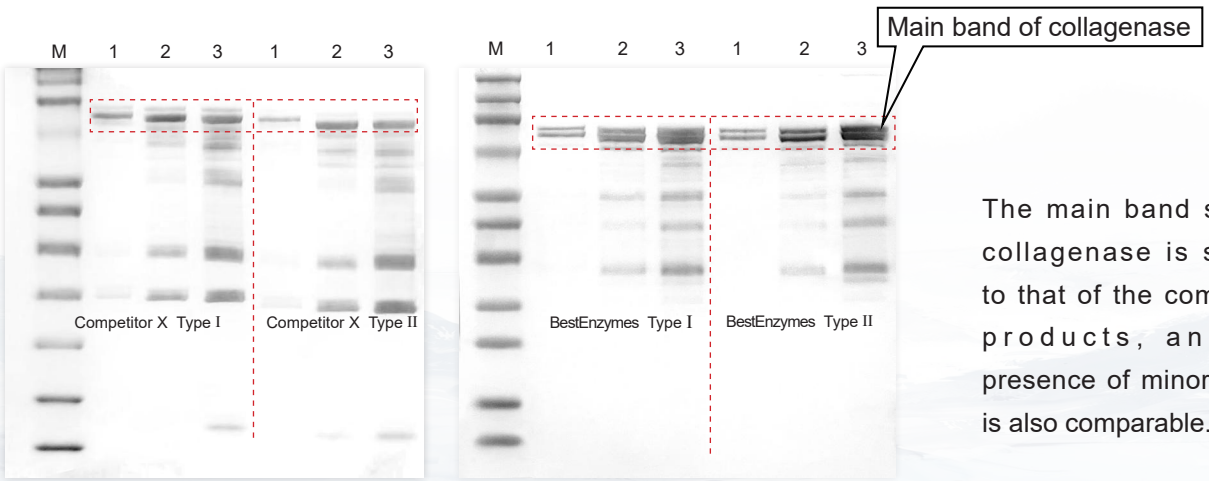
Collagenase are purified from Clostridium histolyticum, which is a protease with specificity for the bond between a neutral amino acid (X) and glycine in the sequence Pro-X-Gly-Pro. This sequence is found in high frequency in collagen. Collagenase is unique among proteases in its ability to degrade the triplehelical native collagen fibrils commonly found in connective tissue. Collagenase has extensive applications of life sciences, with the following main uses:

- ▶ Cell isolation and primary cell culture, including stem cell research, tumor cell isolation, and organ-specific cell culture.
- ▶ Tissue engineering and regenerative medicine, including decellularized scaffold preparation and extracellular matrix research.
- ▶ Disease models and drug development, including organoid culture, drug screening; and other applications.

Products Features

- **High enzyme activity**
- **Collagenase I is suitable for dissociation of tissues and cells in epithelium, liver, lung, adipose tissue, adrenal gland, etc.**
- **Collagenase IV Low trypsin activity, suitable for islet cell dissociation.**
- **Pharmaceutical-grade raw materials with good batch stability.**
- **Collagenase II is suitable for dissociation of tissues and cells in heart, thyroid, salivary gland, liver, bone, cartilage, etc.**

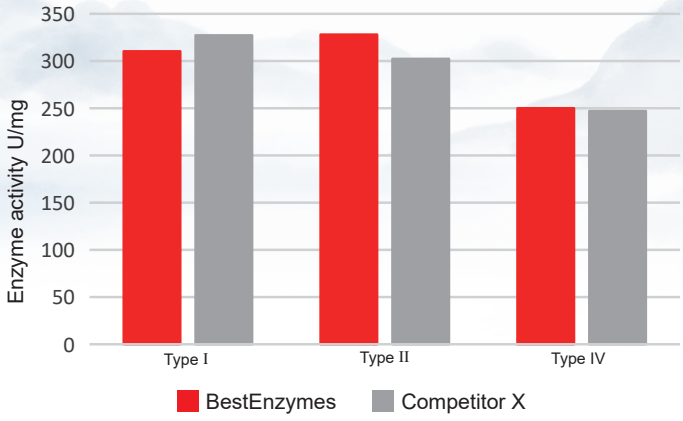
Technical Features



M: Color Prestained Protein Marker (10~180 kDa) 1: 20 μg 2: 50 μg 3: 100 μg

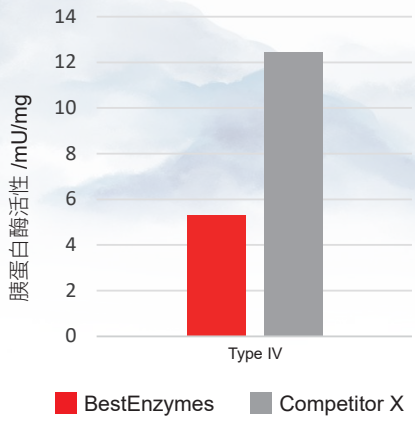
Comparison of collagenase by SDS-PAGE.

The main band size of collagenase is similar to that of the competing products, and the presence of minor bands is also comparable.



Comparison of enzyme activities.

BestEnzyme's collagenase products have similar enzyme activity compared to competitors.



Activity Comparison of BestEnzymes and Competitor X Collagenase IV Trypsin

BestEnzyme's Collagenase Type IV features lower trypsin activity than that of its competitors.

Ordering Information

REF No.	Product Name	Specs
EG25305S	Collagenase I	100 mg
EG25305M	Collagenase I	1 g
EG25306S	Collagenase II	100 mg
EG25306M	Collagenase II	1 g
EG25308S	Collagenase IV	100 mg
EG25308M	Collagenase IV	1 g

9 /Ready To Use Instant Granules

Instant Granules Introduction

Concept of Instant Granules

Standard Pre-made Products **AR/GR Grade Materials** **Streamlined Workflow**

Ensuring Data Accuracy **Enhanced Experimental Experience**

Instant Granules

Buffer solution is typically composed of a weak acid and its conjugate base, or a weak base and its conjugate acid, forming a solution that can resist changes in pH when certain substances are added. BestEnzymes' RTU (Ready-to-Use) Instant Granules, which present commonly used buffer solutions in the form of instant dissolving granules. Eliminate the tedious process of preparing buffer solutions and obtain high-quality and stable buffer solutions through simple operations!

Reliable quality

Quality by Design multi-level quality control，Industrial production，Ensuring Product Stability and Batch-to-Batch Consistency

Convenient to use

The commonly used buffer solutions in daily experimental work are available in the form of instant dissolvable granules, eliminating the cumbersome process of liquid preparation.

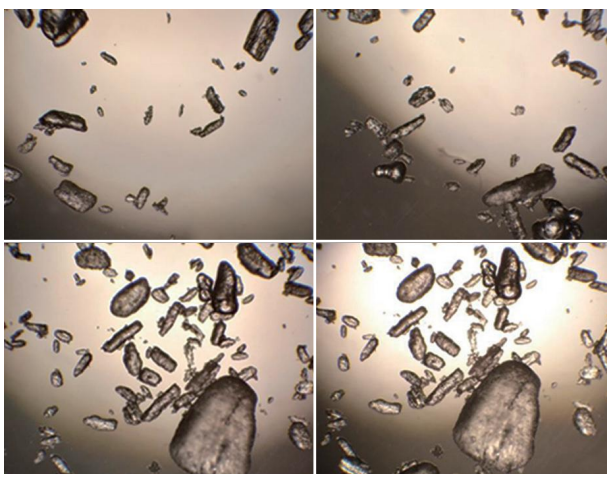
Complete variety

Multiple Varieties，Covers common electrophoresis and washing solution conditions for molecular and protein experiments

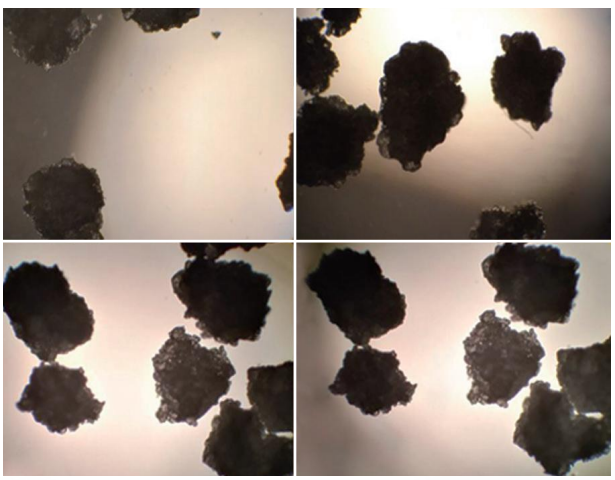
High cost-effectiveness

The price of instant dissolvable granules is not higher than the pharmaceutical cost of customers preparing the buffer solution themselves.

Why choose instant granules?



Powdered formulation after routine mixing.



Agglomerated instant granules

Stronger homogeneity:

Through the process of granulation, the powder is thoroughly mixed and formed into small instant granules that have consistent composition. In contrast, conventional powders may have variations in component composition due to differences in particle size and density. Therefore, instant granules have stronger homogeneity.

Faster Dissolution Rate:

When powdered substances are dissolved, they tend to clump together, forming a high-concentration liquid layer that encapsulates the powder granules, impeding their dissolution. However, after being processed into instant granules, each granule contains numerous pores or channels, leading to an increased surface area and significantly enhancing the dissolution rate. This improved surface area-to-volume ratio allows for faster and more efficient dissolution of the instant dissolve granules.

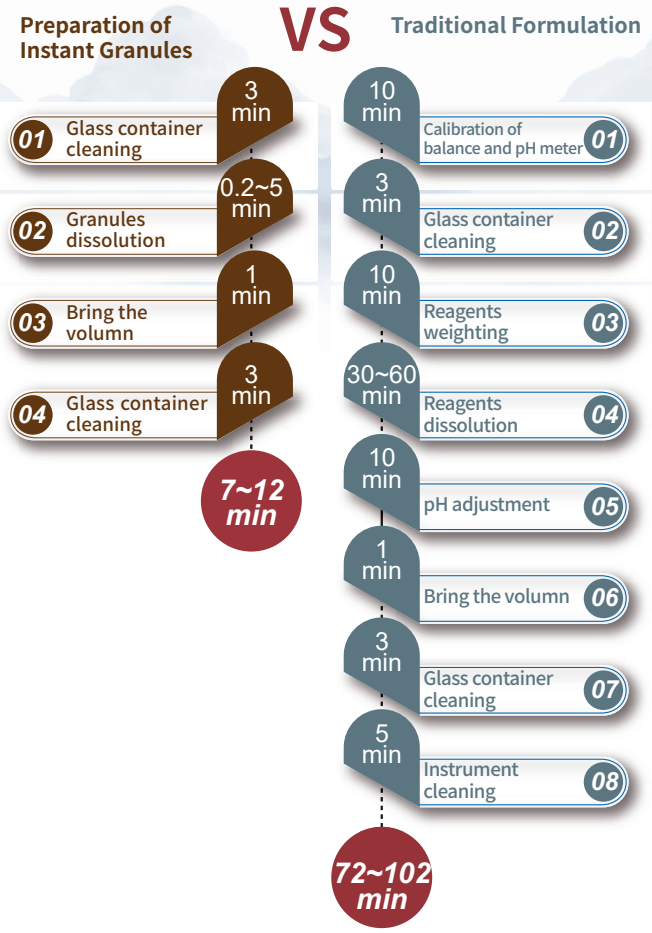
Advantages

• Stronger homogeneity

Through the process of granulation, the powder is thoroughly mixed and formed into small instant granules that have consistent composition. In contrast, conventional powders may have variations in component composition due to differences in particle size and density. Therefore, instant granules have stronger homogeneity.

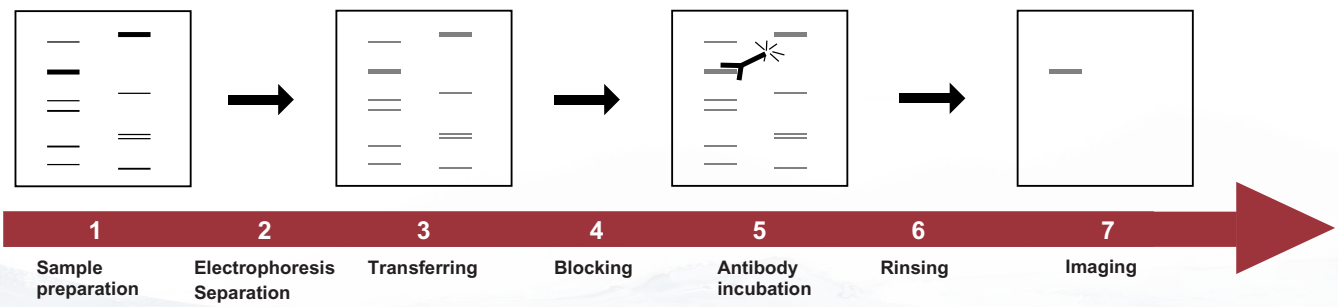
• Faster dissolution rate

When powdered substances are dissolved, they tend to clump together, forming a high-concentration liquid layer that encapsulates the powder granules, impeding their dissolution. However, after being processed into instant granules, each granule contains numerous pores or channels, leading to an increased surface area and significantly enhancing the dissolution rate. This improved surface area-to-volume ratio allows for faster and more efficient dissolution of the instant dissolve granules.



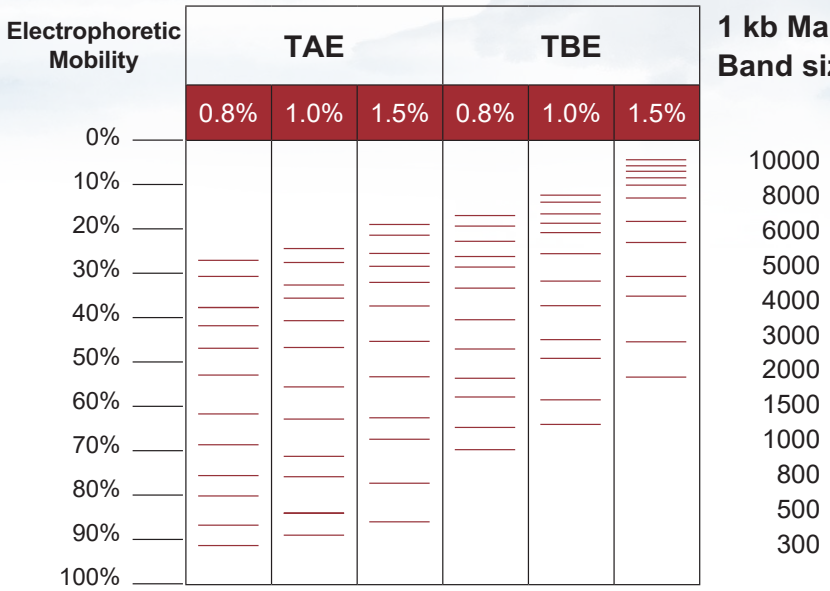
Buffer Solution Instant Granules

Instant granules for all processes of Western Blot



PBS	Tris-Glycine-SDS	Transfer Buffer (Semi Dry)	Rapid Blocking Buffer	TBS-T	TBS-T
TBS	Tris-HEPES-SDS	Tris-Glycine		PBS-T	PBS-T
	Tris-Glycine				
	Tris-MOPS-SDS				
	Tris-MES-SDS				

Selection in different scenarios of nucleic acid electrophoresis.



Electrophoresis conditions: TAE/TBE—6 V/cm, 40 min; Rapid Running Buffer—15 V/cm, 15 min

·It is considered that TAE buffer provides better separation for large DNA fragments, while TBE buffer is more effective in separating small DNA fragments.

· Using Rapid Running Buffer can save over 50% of electrophoresis time.

Protein Electrophoresis Buffer Selection Guide

① Bis-Tris Gel System

· The MES buffer is suitable for low to medium molecular weight proteins (6~260 kDa).

· The MOPS buffer is suitable for medium to high molecular weight proteins (14~260 kDa).

· The HEPES buffer exhibits more uniform migration and has a wide range of molecular weights.

·The HEPES buffer without SDS is also provided for native gels.

② Tris-Glycine Gel System

· The Tris-Glycine-SDS (TGS) buffer is suitable for proteins with a wide range of molecular weights (6~400 kDa).

· The TG buffer, which is a version of the TGS buffer without SDS, is suitable for native gels.

References

● Bai L, Hao X, Xu W, et al. FMRP silencing via siRNA lipid nanoparticles to reprogram the tumor microenvironment and enhance anti-PD-1 efficacy in triple-negative breast cancer. Mater Today Bio. 2025;33:102075. Published 2025 Jul 12. doi:10.1016/j.mtbio.2025.102075 (**IF: 10.2**)

Ordering Information

Classification	REF No.	Name	Specs
Nucleic Acid Electrophoresis	CP17201M	TAE	100 pouches
	CP17201-50 L	TAE	1 bottle
	CP17202M	TBE	50 pouches
	CP23201M	Tris-EDTA (pH 8.0)	100 pouches
Protein Electrophoresis	CP17204M	Tris-MES-SDS	50 pouches
	CP17205M	Tris-MOPS-SDS	50 pouches
	CP17206M	Tris-Glycine-SDS	50 pouches
	CP17206-50 L	Tris-Glycine-SDS	1 bottle
	CP21204M	Tris-HEPES-SDS	100×0.5 L
Western Blot	CP17207M	PBS-T	100 pouches
	CP17207-50 L	PBS-T	1 bottle
	CP17208M	PBS	100×1 L
	CP17208-50 L	PBS	1 bottle
	CP21211M	PBS	100 pouches
	CP17209M	TBS-T	1 bottle
	CP17209-50 L	TBS-T	100 pouches
	CP17210M	TBS	1 bottle
	CP17210-50 L	TBS	20 pouches
	CP20203L	Rapid Blocking Buffer (TBS-T)	100 pouches
	CP20204M	Transfer Buffer(Semi Dry)	50 pouches
	CP21202M	Tris-Glycine	50×2 L
Dust-free Granules	CP21209S	SDS dust-free Granules	250 g
	CP21209M	SDS dust-free Granules	1000 g

Welcome to negotiate custom specifications or formulations.

BestEnzymes Biotech
Restriction Endonucleases Feature List

Product name	REF No.	Recognition Sequences	Buffer Supplied	Activity in different buffers				Optimal reaction temperature(°C)	Thermal inactivation (°C)	Methylation sensitivity
				BestEnzymes CutOne® Buffer	Thermo FastDigest Buffer	NEB rCutSmart™ Buffer	Takara QuickCut™ Buffer			
LightNing® AatII	EG25511S	GACGT/C	CutOne®	100	< 25	100	< 25	37	80	CpG
LightNing® AccI	EG15502S	GT/MKAC	CutOne®	100	< 10	100	< 10	37	80	CpG
LightNing® AciI	EG25501V/S	C/CGC	CutOne®	100	100	100	100	37	80	CpG EPI
LightNing® AfeI	EG26501V/S	AGC/GCT	CutOne®	100	75	100	100	37	80	CpG
LightNing® AflII	EG24520S	C/TTAAG	CutOne®	100	75	100	100	37	80	
LightNing® AgeI	EG23501S	A/CCGGT	CutOne®	100	50	100	50	37	80	CpG
LightNing® ApaI	EG25502S	GGGCC/C	CutOne®	100	<12.5	100	<12.5	37	80	Dcm CpG
LightNing® ApaLI	EG15601S	G/TGCAC	CutOne®	100	75	100	100	37	80	CpG EK
LightNing® AluI	EG24509S	AG/CT	CutOne®	100	100	100	100	37	80	EB
LightNing® AscI	EG15508S	GG/CGCGCC	CutOne®	100	100	100	100	37	80	CpG
LightNing® AseI	EG25503S	AT/TAAT	CutOne®	100	100	100	100	37	80	EB
LightNing® AvaI	EG26503S	C/YCGRG	CutOne®	100	100	100	100	37	80	CpG
LightNing® AvaII	EG25509S	G/GWCC	CutOne®	100	100	100	100	37	80	Dcm CpG
LightNing® AvrII	EG15509S	C/CTAGG	CutOne®	100	100	100	100	37	No	
LightNing® BamHI	EG15510S	G/GATCC	CutOne®	100	100	100	100	37	No	
LightNing® BbsI	EG24512S	GAAGAC(2/6)	CutOne®	100	≤10	100	25	37	80	
LightNing® BclI	EG15513S	T/GATCA	CutOne®	100	100	100	100	37	80	Dam EB
LightNing® BglI	EG24507S	GCCNNNN/NGGC	CutOne®	100	100	100	100	37	80	CpG
LightNing® BglII	EG15591S	A/GATCT	CutOne®	100	100	100	50	37	No	EB
LightNing® BsaI	EG15518S	GGTCTC(1/5)	CutOne®	100	100	100	100	37	80	CpG Dcm
LightNing® Bsh1236I (BstUI)	EG25515S	CG/CG	CutOne®	100	100	100	100	37	80	CpG EPI
LightNing® BsmBI v2	EG26504V/S	CGTCTC(1/5)	CutOne®	100	75	100	100	37	80	CpG EB
LightNing® BsmI	EG25507S	GAATGC(1/-1)	CutOne®	100	100	100	100	37	80	EB
LightNing® BspHI	EG25512S	T/CATGA	CutOne®	100	100	100	100	37	80	Dam EB
LightNing® BsrGI	EG23505S	T/GTACA	CutOne®	100	100	100	100	37	80	
LightNing® BstBI	EG15607S	TT/CGAA	CutOne®	100	100	100	100	37	80	CpG EK
LightNing® BstEII	EG15528S	G/GTNACC	CutOne®	100	75	100	75	37	80	EB EK
LightNing® Bsu36I	EG26502S	CC/TNAGG	CutOne®	100	100	100	100	37	80	
LightNing® Cfr42I (SacII)	EG25508S	CCGC/GG	CutOne®	100	<12.5	100	<12.5	37	80	CpG
LightNing® ClaI	EG15532S	AT/CGAT	CutOne®	100	100	100	100	37	80	Dam CpG EB
LightNing® DdeI	EG24501S	C/TNAG	CutOne®	100	50	100	50	37	80	EB
LightNing® DpnI	EG15585S	GA^{m6}/TC	CutOne®	100	100	100	100	37	80	CpG EB EPI
LightNing® DpnII	EG15533S	/GATC	CutOne®	100	75	100	75	37	80	Dam EB EPI
LightNing® DraI	EG23502S	TTT/AAA	CutOne®	100	100	100	100	37	80	EK
LightNing® DraIII	EG24508S	CACNNN/GTG	CutOne®	100	100	100	100	37	No	CpG EB EK
LightNing® EagI	EG15535S	C/GGCCG	CutOne®	100	100	100	100	37	80	CpG
LightNing® EarI	EG23511S	CTCTTC(1/4)	CutOne®	100	12.5	100	25	37	80	CpG
LightNing® EcoRI	EG15536S	G/AATTC	CutOne®	100	100	100	100	37	80	CpG EB
LightNing® EcoRV	EG15537S	GAT/ATC	CutOne®	100	100	100	100	37	80	CpG EB
LightNing® Esp3I (BsmBI)	EG21503S	CGTCTC(1/5)	CutOne®	100	100	100	100	37	80	CpG
LightNing® FokI	EG24523S	GGATG(9/13)	CutOne®	100	50	100	50	37	80	Dcm CpG EB
LightNing® FspI	EG15586S	TGC/GCA	CutOne®	100	100	100	100	37	No	CpG
LightNing® HaeIII	EG23509S	GG/CC	CutOne®	100	100	100	100	37	80	

BestEnzymes Biotech
Restriction Endonucleases Feature List

Product name	REF No.	Recognition Sequences	Buffer Supplied	Activity in different buffers				Optimal reaction temperature(ºC)	Thermal inactivation (ºC)	Methylation sensitivity
				BestEnzymes CutOne® Buffer	Thermo FastDigest Buffer	NEB rCutSmart™ Buffer	Takara QuickCut™ Buffer			
LightNing® HhaI	EG24510S	GCG/C	CutOne®	100	100	100	100	37	80	CpG EPI
LightNing® HindIII	EG15539S	A/AGCTT	CutOne®	100	75	100	100	37	80	EB
LightNing® HinfI	EG15593S	G/ANTC	CutOne®	100	100	100	100	37	80	CpG EB
LightNing® HinP1I	EG24511S	G/CGC	CutOne®	100	75	100	75	37	80	CpG EPI
LightNing® HpaI	EG15541S	GTT/AAC	CutOne®	100	100	100	50	37	80	CpG EK
LightNing® HpaII	EG23507S	C/CGG	CutOne®	100	< 25	100	< 25	37	80	CpG EPI
LightNing® KasI	EG15543S	G/GCGCC	CutOne®	100	100	100	100	37	80	CpG
LightNing® KpnI	EG15544S	GGTAC/C	CutOne®	100	100	100	100	37	No	
LightNing® MboI	EG24522S	/GATC	CutOne®	100	100	100	100	37	80	Dam CpG EB
LightNing® MluI	EG15547S	A/CGCGT	CutOne®	100	75	100	100	37	80	CpG EK EB
LightNing® MnlI	EG15548S	CCTC(7/6)	CutOne®	100	100	100	100	37	80	EB
LightNing® MseI	EG24518S	T/TAA	CutOne®	100	25	100	25	37	80	EK
LightNing® MspI	EG23508S	C/CGG	CutOne®	100	25	100	25	37	No	EPI
LightNing® MunI (MfeI)	EG23510S	C/AATTG	CutOne®	100	12.5	100	12.5	37	No	
LightNing® NcoI	EG15550S	C/CATGG	CutOne®	100	100	100	100	37	80	
LightNing® NdeI	EG15551S	CA/TATG	CutOne®	100	100	100	100	37	80	
LightNing® NheI	EG15552S	G/CTAGC	CutOne®	100	100	100	100	37	80	CpG
LightNing® NotI	EG15553S	GC/GGCCGC	CutOne®	100	100	100	100	37	80	CpG
LightNing® NruI	EG15602S	TCG/CGA	CutOne®	100	100	100	100	37	No	CpG Dam
LightNing® NsiI	EG15606S	ATGCA/T	CutOne®	100	100	100	100	37	80	EB
LightNing® PacI	EG15603S	TTAAT/TAA	CutOne®	100	100	100	100	37	80	
LightNing® PmeI	EG23506S	GTTT/AAAC	CutOne®	100	50	100	50	37	80	CpG
LightNing® PmlI	EG25510S	CAC/GTG	CutOne®	100	<12.5	100	<12.5	37	80	CpG EK EB
LightNing® PpuMI	EG26506S	RG/GWCCY	CutOne®	100	75	100	100	37	80	Dcm
LightNing® PspGI (EcoRII)	EG15560S	/CCWGG	CutOne®	100	100	100	50	75	No	Dcm
LightNing® PstI	EG15561S	CTGCA/G	CutOne®	100	100	100	100	37	No	
LightNing® PvuI	EG23513S	CGAT/CG	CutOne®	100	100	100	100	37	80	CpG
LightNing® PvuII	EG15604S	CAG/CTG	CutOne®	100	100	100	100	37	No	EB
LightNing® RsaI	EG24503S	GT/AC	CutOne®	100	25	100	25	37	No	CpG
LightNing® SacI	EG15565S	GAGCT/C	CutOne®	100	100	100	100	37	80	
LightNing® SacII	EG15605S	CCGC/GG	CutOne®	100	100	100	100	37	80	CpG
LightNing® SalI	EG15566S	G/TCGAC	CutOne®	100	100	100	100	37	80	CpG
LightNing® SapI	EG25524S	GCTCTTC(1/4)	CutOne®	100	25	100	25	37	80	EB
LightNing® SbfI	EG15568S	CCTGCA/GG	CutOne®	100	100	100	100	37	80	
LightNing® ScaI	EG24502S	AGT/ACT	CutOne®	100	100	100	100	37	80	EB
LightNing® SdaI (SbfI)	EG24515S	CCTGCA/GG	CutOne®	100	< 12.5	100	12.5	37	80	

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				BestEnzymes CutOne® Buffer	Thermo FastDigest Buffer	NEB rCutSmart™ Buffer	Takara QuickCut™ Buffer			
LightNing® SfiI	EG15570S	GGCCNNNN/NGGCC	CutOne®	100	100	100	100	50	No	CpG Dcm
LightNing® SmaI	EG15572S	CCC/GGG	CutOne®	100	100	100	100	25	80	CpG
LightNing® SnaBI	EG24521S	TAC/GTA	CutOne®	100	50	100	50	37	80	CpG
LightNing® SpeI	EG15574S	A/CTAGT	CutOne®	100	100	100	100	37	80	EB EK
LightNing® SphI	EG15575S	GCATG/C	CutOne®	100	100	100	100	37	80	EB
LightNing® SspI	EG15576S	AAT/ATT	CutOne®	100	50	100	100	37	80	
LightNing® StuI	EG15577S	AGG/CCT	CutOne®	100	100	100	100	37	80	Dcm
LightNing® TaqI	EG15580S	T/CGA	CutOne®	100	100	100	100	65	No	Dam
LightNing® TseI (ApeKI)	EG26505S	G/CWGC	CutOne®	100	100	100	100	37	80	CpG
LightNing® Tsp45I	EG24517S	/GTSAC	CutOne®	100	12.5	100	25	65	No	EB
LightNing® XbaI	EG15581S	T/CTAGA	CutOne®	100	50	100	100	37	80	Dam
LightNing® XcmI	EG15582S	CCANNNNN/NNNNTGG	CutOne®	100	50	100	25~50	37	80	
LightNing® XhoI	EG15583S	C/TCGAG	CutOne®	100	100	100	100	37	80	CpG
AarI	EG25526S	CACCTGC(4/8)	CutOne®	100	<12.5	100	<12.5	37	80	CpG
ApeKI	EG25519S	G/CWGC	Cut Buffer C	12.5	50	12.5	25	75	No	CpG
BbvCI	EG25516S	CC/TCAGC	CutOne®	100	100	100	100	37	80	CpG
BpiI (BbsI)	EG25525S	GAAGAC(2/6)	CutOne®	100	25	100	50	37	80	
BsiWI	EG24506S	C/GTACG	Cut Buffer C	Special buffer solution, incompatible with others				55	80	CpG
BsmBI	EG22507S	CGTCTC(1/5)	Cut Buffer C	Special buffer solution, incompatible with others				55	80	CpG EB
BspEI	EG25528S	T/CCGGA	Cut Buffer C	< 10	50	< 10	50	37	80	Dam CpG
BspQI	EG23503S	GCTCTTC(1/4)	Cut Buffer C	Special buffer solution, incompatible with others				50	80	
BsrDI	EG25506S	GCAATG (2/0)	Cut Buffer B	50	100	50	100	37	80	EB
PciI	EG25514S	A/CATGT	Cut Buffer C	50	< 12.5	50	< 12.5	37	80	EK EB
SgeI	EG21501S	^{m5}CNNG(9/13)	SgeI Buffer	Special buffer solution, incompatible with others				37	80	
BstXI	EG24516S	CCANNNNN/NTGG	Cut Buffer C	25	100	25	100	37	80	Dcm
SgrAI	EG25513S	CR/CCGGYG	Cut Buffer B	50	< 12.5	50	< 12.5	37	80	CpG EK EB
SspDI (KasI)	EG24514S	G/GCGCC	CutOne®	100	< 12.5	100	< 25	37	80	CpG
SwaI	EG25527S	ATTT/AAAT	Cut Buffer C	< 12.5	< 12.5	< 12.5	< 12.5	37	80	
XmnI	EG25517S	GAANN/NNTTC	Cut Buffer C	100	100	100	100	37	80	CpG EB
EcoRI, ADCF	EG22504S	G/AATTC	CutOne® Buffer, ADCF	100	100	100	100	37	80	CpG
Esp3I(BsmBI), ADCF	EG21504H	CGTCTC(1/5)	Esp3I Buffer, ADCF	Special buffer solution, incompatible with others				37	80	CpG
BsaI, GMP Grade	GMP501S	GGTCTC(1/5)	Cut Buffer F, GMP Grade	Special buffer solution, incompatible with others				37	80	Dcm CpG
BspQI, GMP Grade	GMP503S	GCTCTTC(1/4)	Cut Buffer C, GMP Grade	Special buffer solution, incompatible with others				50	80	
NheI, GMP Grade	GMP505S	G/CTAGC	CutOne® Buffer,GMP Grade	100	100	100	100	37	80	CpG
XbaI, GMP Grade	GMP502S	T/CTAGA	CutOne® Buffer,GMP Grade	100	100	100	100	37	80	Dam
XhoI, GMP Grade	GMP504S	C/TCGAG	Cut Buffer F, GMP Grade	Special buffer solution, incompatible with others				37	80	CpG
Nb.BbvCI	EG25518S	CCTCAGC(none/-2)	CutOne®	100	Special buffer solution, incompatible with others			37	80	EB
Nb.BsrDI	EG23514S	GCAATG(none/0)	CutOne®	100	Special buffer solution, incompatible with others			65	80	EB
Nt.BbvCI	EG25520S	CCTCAGC(-5/none)	CutOne®	100	100	100	100	37	80	CpG EB
Nt.BspQI	EG23512S	GCTCTTC(1/none)	Cut Buffer C	Special buffer solution, incompatible with others				50	80	EB
Nt.BstNBI	EG24504S	GAGTC(4/none)	Cut Buffer C	Special buffer solution, incompatible with others				65	80	
I-CeuI	EG25529S	TAACTATAACGGTCCTAA/GGTAGCGAA	CutOne® Buffer	100	100	100	100	37	80	
I-SceI	EG25504S	TAGGGATAA/CAGGGTAAT	CutOne®	100	/			37	80	

Note: The product is subject to continuous updates. For the latest information, please refer to the technical documents on the company official website.

Icon Descriptions

This enzyme will digest unit substrate in 5~15 minutes under recommended reaction conditions.

25 The enzyme's optimum reaction temperature is 25℃ .

37 The enzyme's optimum reaction temperature is 37℃ .

50 The enzyme's optimum reaction temperature is 50℃ .

55 The enzyme's optimum reaction temperature is 55℃ .

65 The enzyme's optimum reaction temperature is 65℃ .

75 The enzyme's optimum reaction temperature is 75℃ .

CpG Cleavage with this restriction enzyme may be blocked or impaired when the substrate DNA is methylated by the CpG methylase.

Dcm Cleavage with this restriction enzyme may be blocked or impaired when the substrate DNA is methylated by the Dcm methylase.

Dam Cleavage with this restriction enzyme may be blocked or impaired when the substrate DNA is methylated by the Dam methylase.

EK Cleavage with this restriction enzyme may be blocked or impaired when the substrate DNA is methylated by the EcoKI methylase.

EB Cleavage with this restriction enzyme may be blocked or impaired when the substrate DNA is methylated by the EcoBI methylase.

EPI Epimark-validated enzyme for epigenetic studies.

The enzyme can be heat inactivated at by incubation 80℃ for 20 minutes.

The enzyme can not be thermal inactivated.

3 hours incubation do not show star activity, but longer incubation may result in star activity.

Animal derived component free

GMP Manufactured in compliance with GMP specifications

Degenerate Base Table

R = A or G	Y = C or T	M = A or C	K = G or T
S = C or G	W = A or T	H = A or C or T	B = C or G or T
V = A or C or G	D = A or G or T	N = A or C or G or T	

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