Vazyme

2020

# 2020 Product Catalogue


## Reagents for Molecular Biology Research

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lubio science

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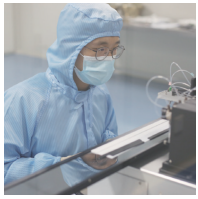
# Overview of Vazyme

## Vazyme: InoVation in Enzyme Technology

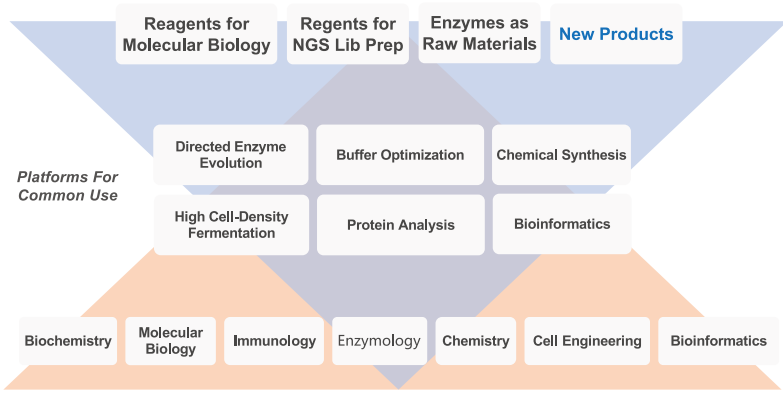
With the faith of "InnoVation in Enzyme Technology", Vazyme Biotech Co., Ltd. has passionately focused on developing enzyme and antibody technologies and products for years. The Vazyme Biotech is now staffed by more than 1,000 employees. The headquarter is located in Nanjing of China with a R&D / manufacturing base that covers 25,000 m² and a GMP workshop of 4,000 m². Vazyme has developed a powerful sales network in China and is expanding into international markets.



## Vazyme Technologies and Products

With years of experience, Vazyme has developed six technology platforms that can be commonly used for R&D and manufacturing, including (1) directed enzyme evolution, (2) buffer optimization, (3) chemical synthesis, (4) high cell-density fermentation, (5) protein analysis, and (6) bioinformatics.

Based on the above platforms, Vazyme now provides a variety of products, solutions, and services, which fall into three major product lines, including (1) solutions for molecular biology research, (2) solutions for Next-Generation Sequencing (NGS) library preparation, and (3) enzymes as raw materials for industrial use.




## Developing Technologies to Improve Human Health

Fascinated by the enzyme and antibody technologies, we regard enzymes and antibodies as the key factor of the biotechnology industry. Vazyme's vision is to develop technology to improve human health.

*Experts for Experts*

# 2020 Vazyme Product Catalogue

## Reagents for Molecular Biology Research

## Contents

Contents

# PCR

## High-Fidelity PCR

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| HOT | Phanta Max Super-Fidelity DNA Polymerase | 100 U / 500 U / 1,000 U | P505-d1/d2/d3 |
| HOT | 2 × Phanta Max Master Mix | 1 ml / 5 ml / 15 ml | P515-01/02/03 |
| New | 2 ×Phanta Max Master Mix (Dye Plus) | 1 ml / 5 ml / 15 ml | P525-01/02/03 |

## Conventional PCR

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| | Taq DNA Polymerase ($Mg^{2+}$ plus Buffer) | 1,000 U / 5,000 U / 10,000 U | P101-01/02/03 |
| | Taq DNA Polymerase ($Mg^{2+}$ free Buffer) | 1,000 U / 5,000 U / 10,000 U | P102-01/02/03 |
| | Taq DNA Polymerase ($Mg^{2+}$ plus Buffer, with dNTP) | 1,000 U / 5,000 U / 10,000 U | P101-d1/d2/d3 |
| | Taq DNA Polymerase ($Mg^{2+}$ free Buffer, with dNTP) | 1,000 U / 5,000 U / 10,000 U | P102-d1/d2/d3 |
| | 2 × Taq Master Mix | 5 ml / 15 ml / 50 ml | P111-01/02/03 |
| HOT | 2 × Taq Master Mix (Dye Plus) | 5 ml / 15 ml / 50 ml | P112-01/02/03 |
| | Green Taq Mix | 5 ml / 15 ml / 50 ml | P131-01/02/03 |

## High-Yield PCR

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| | Taq Plus DNA Polymerase | 250 U / 1,000 U / 3,000 U | P201-01/02/03 |
| | Taq Plus DNA Polymerase (with dNTP) | 250 U / 1,000 U / 3,000 U | P201-d1/d2/d3 |
| | 2 × Taq Plus Master Mix | 5 ml / 15 ml / 50 ml | P211-01/02/03 |
| HOT | 2 × Taq Plus Master Mix II (Dye Plus) | 5 ml / 15 ml / 50 ml | P213-01/02/03 |

## Long-Fragment PCR

| Product Name | Size | Cat. No.# |
|---|---|---|
| Vazyme LAmp DNA Polymerase ($Mg^{2+}$ plus buffer) | 125 U / 500 U | P301-01/02 |
| Vazyme LAmp DNA Polymerase ($Mg^{2+}$ plus buffer, with dNTP) | 125 U / 500 U | P301-d1/d2 |
| Vazyme LAmp DNA Polymerase ($Mg^{2+}$ free buffer, with dNTP) | 125 U / 500 U | P302-d1/d2 |
| 2 × Vazyme LAmp Master Mix | 1 ml / 5 ml / 15 ml | P311-01/02/03 |
| 2 × Vazyme LAmp Master Mix (Dye Plus) | 1 ml / 5 ml / 15 ml | P312-01/02/03 |

## Direct PCR

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| HOT | One Step Mouse Genotyping Kit | 200 rxn | PD101-01 |
| | One Step U$^{+}$ Probe Mouse Genotyping Kit | 200 rxn | PD104-01 |
| | Blood Direct PCR Kit V2 | 50 rxn / 200 rxn | PD103-01/02 |
| | Plant Direct PCR Kit | 50 rxn / 200 rxn | PD105-01/02 |

## Rapid PCR

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| | | 5 ml / 15 ml | P222-01/02 |
| HOT | 2 × Rapid Taq Master Mix | 50 ml (50 x 1 ml) | P222-03 |
| | | 50 ml (10 x 5 ml) | P222-04 |

## Hot-Start PCR

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| HOT | AceTaq DNA Polymerase | 250 U / 1,000 U / 3,000 U | P401-d1/d2/d3 |
| | 2 × AceTaq Master Mix | 1 ml / 5 ml /15 ml | P411-01/02/03 |
| | 2 × AceTaq Master Mix (Dye Plus) | 1 ml / 5 ml / 15 ml | P412-01/02/03 |
| | Champagne Taq antibody | 500 U | P121-01 |
| HOT | Champagne Taq DNA Polymerase | 500 U (2.5 / 5 / 10 U/μl) | P122-d1/d2/d3 |

## Multiplex PCR

| Product Name | Size | Cat. No.# |
|---|---|---|
| Multiplex PCR Kit | 50 rxn / 200 rxn / 1,000 rxn | PM101-01/02/03 |

## Isothermal Amplification

| Product Name | Size | Cat. No.# |
|---|---|---|
| Bst DNA Polymerase Large Fragment | 800 U / 8,000 U | P701-01/02 |

## PCR-Related

| Product Name | Size | Cat. No.# |
|---|---|---|
| PCR Enhancer | 500 μl | P021-01 |
| dNTP Mix (10 mM each) | 1 ml / 5 ml | P031-01/02 |
| dNTP Mix (2.5 mM each) | 1 ml / 5 ml | P032-01/02 |
| Heat-labile UDG | 100 U / 500 U | P051-01/02 |
| *E.coli* UDG | 500 U / 5,000 U | P061-01/02 |

# Cloning / Mutagenesis

## Fast Cloning

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| | ClonExpress II One Step Cloning Kit | 25 rxn / 50 rxn | C112-01/02 |
| | ClonExpress MultiS One Step Cloning Kit | 10 rxn / 25 rxn | C113-01/02 |
| HOT | ClonExpress Ultra One Step Cloning Kit | 25 rxn / 50 rxn | C115-01/02 |

## Fast Mutagenesis

| Product Name | Size | Cat. No.# |
|---|---|---|
| Mut Express II Fast Mutagenesis Kit V2 | 10 rxn / 25 rxn | C214-01/02 |
| Mut Express MultiS Fast Mutagenesis Kit V2 | 10 rxn / 25 rxn | C215-01/02 |

## TA Cloning

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| | T4 DNA Ligase | 40,000 U | C301-01 |
| New | 5min Universal Ligation Mix | 50 rxn / 100 rxn | C311-01/02 |

## TOPO Cloning

| | Product Name | Size | Cat. No.# |
|---|---|---|---|
| HOT | 5min TA/Blunt-Zero Cloning Kit | 25 rxn / 50 rxn | C601-01/02 |

# Nucleic Acid Electrophoresis

## GelRed Nucleic Acid Stain

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT Ultra GelRed Nucleic Acid Stain (10000 ×) | 0.5 ml / 5 ml / 50 ml | GR501-01/02/03 |

## DNA Marker

| Product Name | Size | Cat. No.# |
|---|---|---|
| DL2000 Plus DNA Marker | 250 μl / 500 μl | MD101-01/02 |
| DL5000 DNA Marker | 250 μl / 500 μl | MD102-01/02 |
| DL15000 DNA Marker | 250 μl / 500 μl | MD103-01/02 |
| 100 bp DNA Ladder | 250 μl / 500 μl | MD104-01/02 |

# Reverse Transcription

## Conventional RT-PCR

| Product Name | Size | Cat. No.# |
|---|---|---|
| HiScript III Reverse Transcriptase | 10,000 U | R302-01 |
| HiScript II 1st Strand cDNA Synthesis Kit | 50 rxn / 100 rxn (20 μl / rxn) | R211-01/02 |
| HOT HiScript III 1st Strand cDNA Synthesis Kit (+gDNA wiper) | 50 rxn / 100 rxn (20 μl / rxn) | R312-01/02 |
| M-MLV(H-) Reverse Transcriptase | 10,000 U | R021-01 |
| Murine RNase inhibitor | 2,000 U / 10,000 U / 20,000 U | R301-01/02/03 |

## RT-qPCR SuperMix

| Product Name | Size | Cat. No.# |
|---|---|---|
| HiScript II Q RT SuperMix for qPCR | 100 rxn (20 μl / rxn) | R222-01 |
| HOT HiScript III RT SuperMix for qPCR (+gDNA wiper) | 100 rxn (20 μl / rxn) | R323-01 |
| HiScript II Q Select RT SuperMix for qPCR | 100 rxn (20 μl / rxn) | R232-01 |
| HiScript II Q Select RT SuperMix for qPCR (+gDNA wiper) | 100 rxn (20 μl / rxn) | R233-01 |

## One-Step RT-PCR

| Product Name | Size | Cat. No.# |
|---|---|---|
| HiScript II One Step RT-PCR Kit | 50 rxn (50 μl / rxn) | P611-01 |
| HiScript II One Step RT-PCR Kit (Dye Plus) | 50 rxn (50 μl / rxn) | P612-01 |

## Single Cell Sequence Amplification

| Product Name | Size | Cat. No.# |
|---|---|---|
| Single Cell Sequence Specific Amplification Kit | 200 rxn | P621-01 |

# miRNA

## miRNA Reverse Transcription

| Product Name | Size | Cat. No.# |
|---|---|---|
| miRNA 1st Strand cDNA Synthesis Kit (by stem-loop) | 50 rxn / 100 rxn (20 μl / rxn) | MR101-01/02 |

## miRNA qPCR

| Product Name | Size | Cat. No.# |
|---|---|---|
| miRNA Universal SYBR® qPCR Master Mix | 125 rxn / 500 rxn (20 μl / rxn) | MQ101-01/02 |

# qPCR

## qPCR Master Mix (SYBR)

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT ChamQ Universal SYBR® qPCR Master Mix | 500 rxn / 2,500 rxn (20 μl / rxn) | Q711-02/03 |
| AceQ Universal SYBR® qPCR Master Mix | 500 rxn / 2,500 rxn (20 μl / rxn) | Q511-02/03 |
| AceQ qPCR SYBR® Green Master Mix | 500 rxn / 2,500 rxn (20 μl / rxn) | Q111-02/03 |

## qPCR Master Mix (Probe)

| Product Name | Size | Cat. No.# |
|---|---|---|
| AceQ qPCR Probe Master Mix | 500 rxn / 2,500 rxn (20 μl / rxn) | Q112-02/03 |
| HOT AceQ Universal U+ Probe Master Mix V2 | 500 rxn / 2,500 rxn (20 μl / rxn) | Q513-02/03 |
| HOT ChamQ Geno-SNP Probe Master Mix | 500 rxn / 2,500 rxn (20 μl / rxn) | Q811-02/03 |

## One-Step qRT-PCR Mix

| Product Name | Size | Cat. No.# |
|---|---|---|
| HiScript II One Step qRT-PCR SYBR® Green Kit | 250 rxn (20 μl / rxn) | Q221-01 |
| HiScript II One Step qRT-PCR Probe Kit | 250 rxn (20 μl / rxn) | Q222-01 |
| HiScript II U+ One Step qRT-PCR Probe Kit | 250 rxn (20 μl / rxn) | Q223-01 |

# Genome Editing

| Product Name | Size | Cat. No.# |
|---|---|---|
| Cas9 Nuclease | 50 pmol / 250 pmol | EN301-01/02 |
| T7 Endonuclease I | 50 pmol / 250 pmol | EN303-01/02 |

## *In Vitro* Transcription

| Product Name | Size | Cat. No.# |
|---|---|---|
| T7 High Yield RNA Transcription Kit | 50 rxn / 100 rxn | TR101-01/02 |
| HOT T7 RNAi Transcription Kit | 25 rxn / 50 rxn | TR102-01/02 |

# Nucleic Acid Isolation

## Room Temperature RNA Isolation

| Product Name | Size | Cat. No.# |
|---|---|---|
| New RNA-easy Isolation Reagent | 100 ml / 200 ml | R701-01/02 |

## Total RNA Isolation (Traditional)

| Product Name | Size | Cat. No.# |
|---|---|---|
| RNA isolater Total RNA Extraction Reagent | 100 ml | R401-01 |
| Bacteria RNA Plus Reagent | 20 ml | R402-01 |
| Bacterial RNA Extraction Kit | 100 rxn | R403-01 |

## Rapid Sample Treatment

| Product Name | Size | Cat. No.# |
|---|---|---|
| New RoomTemp Sample Lysis Kit | 250 rxn (5 ml) / 1000 rxn (20 ml) / 5000 rxn (100 ml) | P073-01/02/03 |

## RNA Isolation (Column)

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT FastPure Cell / Tissue Total RNA Isolation Mini Kit | 50 rxn | RC101 |
| MiPure Cell / Tissue miRNA Kit | 50 rxn | RC201 |
| HOT FastPure Plant Total RNA Isolation Kit (Polysaccharides / Polyphenolics-Rich) | 50 rxn | RC401 |

## DNA Isolation (Column)

| Product Name | Size | Cat. No.# |
|---|---|---|
| FastPure Blood DNA Isolation Mini Kit V2 | 50 rxn / 200 rxn | DC111-01/02 |
| FastPure Cell/Tissue DNA Isolation Mini Kit | 100 rxn | DC102 |
| FastPure Bacteria DNA Isolation Mini Kit | 100 rxn | DC103 |
| HOT FastPure Plant DNA Isolation Mini Kit | 50 rxn | DC104 |
| FastPure FFPE DNA Isolation Kit | 50 rxn | DC105 |
| Lysozyme | 200 mg | DE103 |

## Plasmid DNA Isolation

| Product Name | Size | Cat. No.# |
|---|---|---|
| FastPure Plasmid Mini Kit | 100 rxn | DC201 |
| HOT FastPure EndoFree Plasmid Maxi Kit | 10 rxn | DC202 |

## Gel DNA Isolation

| Product Name | Size | Cat. No.# |
|---|---|---|
| FastPure Gel DNA Extraction Mini Kit | 100 rxn | DC301 |

## Tissue Stabilizer

| Product Name | Size | Cat. No.# |
|---|---|---|
| RNA Keeper Tissue Stabilizer | 100 ml | R501-01 |
| RNA Keeper -ICE Tissue Transition Buffer | 100 ml | R502-01 |

## Exosome Isolation

| Product Name | Size | Cat. No.# |
|---|---|---|
| VEX Exosome Isolation Reagent (from cell culture media) | 50 ml | R601 |
| VEX Exosome Isolation Reagent (from serum) | 10 ml | R602 |
| VEX Exosome Isolation Reagent (from plasma) | 10 ml | R603 |

# Cell Biology / Protein Research

## Apoptosis

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT TUNEL FITC Apoptosis Detection Kit | 20 rxn / 50 rxn / 100 rxn | A111-01/02/03 |
| TUNEL BrightGreen Apoptosis Detection Kit | 20 rxn / 50 rxn / 100 rxn | A112-01/02/03 |
| TUNEL BrightRed Apoptosis Detection Kit | 20 rxn / 50 rxn / 100 rxn | A113-01/02/03 |
| Annexin V-FITC/PI Apoptosis Detection Kit | 50 rxn / 100 rxn | A211-01/02 |
| New Annexin V-PE/7-AAD Apoptosis Detection Kit | 50 rxn / 100 rxn | A213-01/02 |

## Cell Counting

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT CCK-8 Cell Counting Kit | 500 rxn / 1,000 rxn | A311-01/02 |

## Cell Transfection

| Product Name | Size | Cat. No.# |
|---|---|---|
| ExFect 2000 Transfection Reagent | 0.5 ml / 1 ml / 5 ml | T202-01/02/03 |

## Dual Luciferase Reporter Assay

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT Dual Luciferase Reporter Assay Kit | 100 rxn | DL101-01 |

## Mycoplasma

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT MycoBlue Mycoplasma Detector | 20 rxn / 50 rxn | D101-01/02 |
| Myco-Off Mycoplasma Cleaner | 100 µl / 500 µl / 1,000 µl | D103-01/02/03 |

## ECL for Western Blotting

| Product Name | Size | Cat. No.# |
|---|---|---|
| HOT High-Sensitive ECL Chemiluminescence Detection Kit (Ready-to-Use) | 2 × 50 ml / 250 ml (A / B) | E412-01/02 |

## Protein Quantification

| Product Name | Size | Cat. No.# |
|---|---|---|
| Bradford Protein Quantification Kit | 500 rxn / 1,000 rxn | E111-01/02 |
| Detergent Compatible Bradford Protein Quantification Kit | 500 rxn | E211-01 |
| BCA Protein Quantification Kit | 250 rxn / 500 rxn | E112-01/02 |

# PCR

## Selection Guide

| Applications | Products (Cat.#) | Features | Applicable for |
|---|---|---|---|
| Conventional PCR | 2× Taq Master Mix (#P111)<br>2× Taq Master Mix (Dye Plus) (#P112)<br>Green Taq Mix (#P131) | No 3' –> 5' exonuclease activity.<br>Excellent compatibility.<br>Products contain A at 3'-end. | Colony PCR;<br>Large-scale gene identification;<br>TA Cloning for small fragments. |
| High-Yield PCR | 2× Taq Plus Master Mix (#P211)<br>2× Taq Plus Master Mix II (Dye Plus) (#P213) | With fidelity 6-fold higher than Taq.<br>Mixed products with 3'-end blunt or containing A. | PCR that requires some fidelity. |
| Rapid PCR | 2× Rapid Taq Master Mix (#P222) | Amplification speed: up to 15 sec / kb. | Colony PCR. |
| Long-Fragment PCR | 2× Vazyme LAmp Master Mix (#P311)<br>2× Vazyme LAmp Master Mix (Dye Plus) (#P312) | Efficiently amplify fragments > 20 kb. | Long-fragment amplification. |
| Hot-Start PCR | 2× AceTaq Master Mix (#P411)<br>2× AceTaq Master Mix (Dye Plus) (#P412)<br>Champagne Taq Antibody (#P121)<br>Champagne Taq DNA Polymerase (#P122) | Excellent specificity.<br>Excellent sensitivity. | Amplification that requires higher sensitivity and specificity;<br>Amplification of genes with low copy or qPCR assay from complex templates (genomic DNA, cDNA). |
| Multiplex PCR | Multiplex PCR Kit (#PM101) | 19-plex PCR in one single reaction. | Detection or typing of pathogens. |
| Direct PCR | One Step Mouse Genotyping Kit (#PD101)<br>Blood Direct PCR Kit V2 (#PD103)<br>Plant Direct PCR Kit (#PD105) | Easy and fast, without DNA purification. | One step mouse genotyping;<br>Direct PCR from plant tissues;<br>Direct PCR from blood. |
| High-Fidelity PCR | Phanta Max Super-Fidelity DNA Polymerase (#P505)<br>2× Phanta Max Master Mix (#P515)<br>2× Phanta Max Master Mix (Dye Plus) (#P525) | With super fidelity 53-fold higher than Taq;<br>High resistance to PCR inhibitors. | High-fidelity PCR.<br>Amplification of templates with high GC-content;<br>Long-fragment (up to 40 kb) amplification. |

# High-Fidelity PCR

→ 2× Phanta Max Master Mix (#P515)

→ 2× Phanta Max Master Mix (Dye Plus) (#P525)

♡ Super-Fidelity

♡ High Resistance to PCR Inhibitors

Super Fidelity: 53-fold higher than Taq DNA Polymerase.

Long Fragment: amplify fragments up to 40 kb.

Suitable for templates with high GC-content.

Suitable for Direct-PCR using crude materials as templates*.

* Validated crude materials: bacteria, fungi, whole blood, cultured cells, plant or animal tissue lysate, food lysates, etc.

## Selected Product Citations

Zhao Q, et al. Metabolic coupling of two small-molecule thiols programs the biosynthesis of lincomycin A. ***Nature***, 2015, 518(7537):115-9.

Tian Z, et al. An enzymatic [4+2] cyclization cascade creates the pentacyclic core of pyrroindomycins. ***Nature Chemical Biology***, 2015, 11(4):259-65.

Han X, et al. Mapping the Mouse Cell Atlas by Microwell-Seq. ***Cell***, 2018, 172(5):1091-107.

Cheng X, et al. Pacer Mediates the Function of Class III PI3K and HOPS Complexes in Autophagosome Maturation by Engaging Stx17. ***Molecular Cell***, 2017, 65(6):1029-43.

Lv M, et al. Characterization of a C3 Deoxygenation Pathway Reveals a Key Branch Point in Aminoglycoside Biosynthesis. ***Journal of the American Chemical Society***, 2016, 138(20):6427-35.

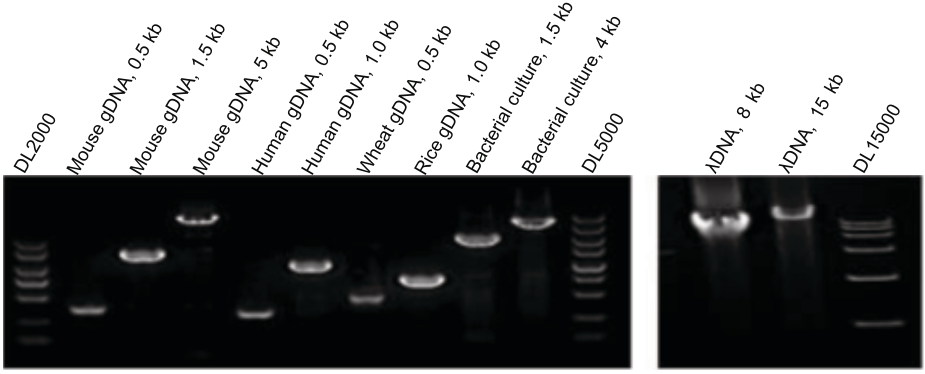
# High-Yield PCR

## → 2× Taq Plus Master Mix II (Dye Plus) (#P213)

## Features

* **Robust** performance for high-yield PCR in most primer-template systems.
* **Ready-to-use master mix** with no need for operations on ice.
* PCR products can be directly loaded for electrophoresis with no need for loading buffer.

## Validation Data




*2× Taq Plus Master Mix II (Vazyme, #P213) demonstrated excellent template compatibility. Fragments (0.5 kb to 15 kb) were amplified from genomic DNA (mouse, human, wheat, rice), bacterial culture, and λDNA, respectively. A specific corresponding band was observed in each PCR.*

## Selected Product Citations

Zhang X, et al. (2014) Complementary sequence-mediated exon circularization. ***Cell***, 159(1):134-47.

Yuan H, et al. Gyrl-like proteins catalyze cyclopropanoid hydrolysis to confer cellular protection. ***Nature Communications***, 2017, 8(1).1485.

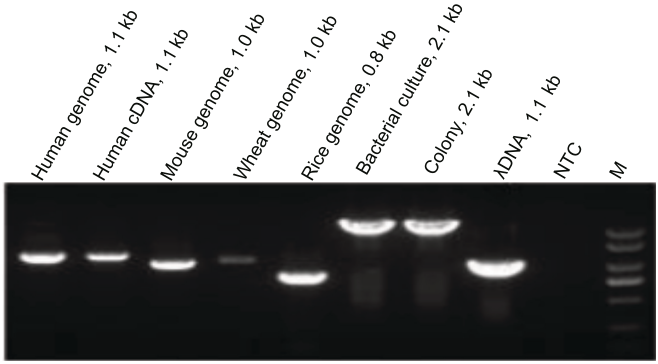
# Rapid PCR

→ 2× Rapid Taq Master Mix (#P222)

## Features

* **Rapid**: amplification speed is **15 sec / kb**, with an extreme speed of 1 sec / kb for fragments within 1 kb.
* **Ready-to-use master mix** with no need for operations on ice.
* PCR products can be directly loaded for electrophoresis with no need for loading buffer.
* **Excellent stability:** remains stable after 50 freeze-thaw cycles.

## Validation Data




*Fragments (1 kb - 2 kb) was amplified from genomic DNA (human, mouse, wheat, rice), cDNA (human), bacterial culture, colony, and λ DNA, respectively. The extension time was set as 1 sec / kb. Ten μl of PCR product was loaded for agarose gel electrophoresis. Specific bands were observed.*

## Selected Product Citations

Zhang B, et al. Enzyme-catalysed [6+4] cycloadditions in the biosynthesis of natural products. ***Nature***, 2019, 568(7750):122-6.

Wang YS, et al. Molecular Basis for the Final Oxidative RearrangementSteps in Chartreusin Biosynthesis. ***J Am Chem Soc***, 2018, 140(34):10909-14.

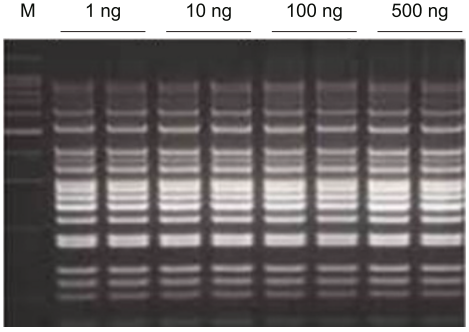
# Multiplex PCR

→ **Multiplex PCR Kit (#PM101)**

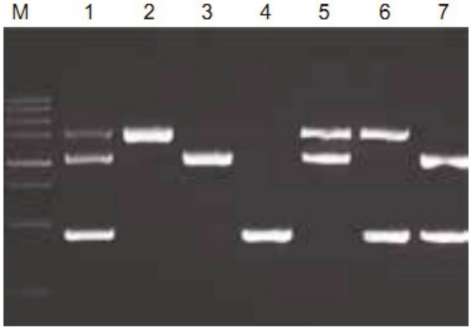
## Features

* Multiplex: **19-plex** PCR or even higher.
* Excellent target-to-target amplification uniformity and extremely low target preference.
* **Highly sensitive** amplification from trace amount of genomic DNA (>= 1 ng).

## Validation Data




*Uniform amplification coverage of different regions. Human genomic DNA was used as template for 19-plex PCR. The size of the amplicons ranged from 70 bp to 916 bp. The result indicated that Multiplex PCR Kit (Vazyme, #PM101) has a uniform amplification coverage of different regions for 1 ng-500 ng of template.*




*The Multiplex PCR Kit showed excellent compatibility with fragment length. Mouse genomic DNA was used as template for amplification of 1.55 kb, 1.07 kb, and 0.45 kb fragments, respectively. The result indicated that Multiplex PCR Kit (Vazyme, #PM101) is compatible with amplicons of various lengths in one single reaction system.*

*1: 3-plex PCR*
*2-4: 1-plex PCR*
*5-7: 2-plex PCR*
*M: DL5000 DNA Marker*

# Cloning / Mutagenesis

## Selection Guide

| Applications | Products (Cat.#) | Features | Applicable for |
|---|---|---|---|
| Fast Cloning | ClonExpress Ultra One Step Cloning Kit (#C115)<br>ClonExpress II One Step Cloning Kit (#C112)<br>ClonExpress MultiS One Step Cloning Kit (#C113) | Easy, fast, and efficient.<br>No need to consider the restriction enzyme cutting sites on the inserts.<br>Ligase-independent.<br>Positive Clone Rate > 95%.<br>Efficient cloning of fragments of 50 bp - 10 kb. | Cloning or assembly of 1-5 fragments. |
| Fast Mutagenesis | Mut Express II Fast Mutagenesis Kit V2 (#C214)<br>Mut Express MultiS Fast Mutagenesis Kit V2 (#C215) | Efficient amplification of any plasmids within 20 kb.<br>Site-directed mutations of 1-5 discontinuous sites in one reaction. | 1-5 separate site-directed mutagenesis on one plasmid. |
| TOPO Cloning | 5min TA/Blunt-Zero Cloning Kit (#C601) | Cloning within 5 min.<br>Positive Clone Rate > 95% | TA cloning.<br>cloning with blunt ends. |

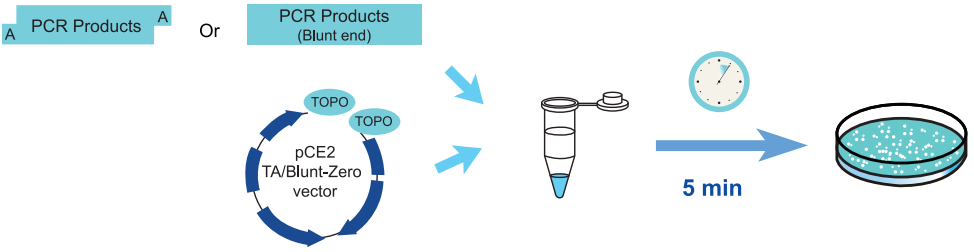
## TOPO Cloning

→ **5min TA/Blunt-Zero Cloning Kit (#C601)**

### Features

* Ready-to-use master mix.
* Suitable for both **TA cloning** and **blunt-end cloning**.
* Rapid cloning within **5 min**.
* High cloning efficiency with Positive Clone Rate > 95%.
* Ampicillin and Kana dual resistance vector.

### Workflow



# Fast Cloning

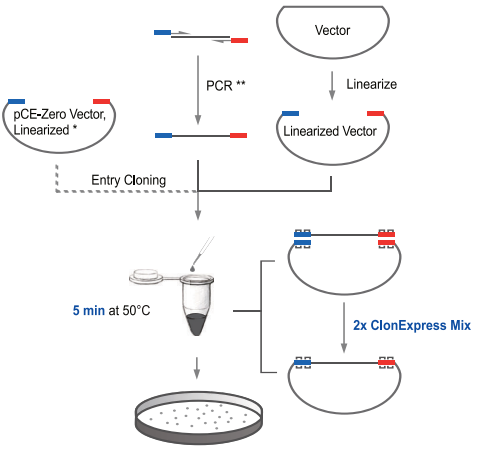
## → ClonExpress Ultra One Step Cloning Kit (#C115)

### Features

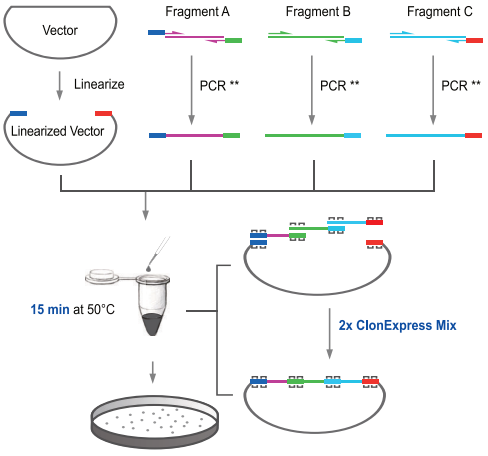
* Cloning within **5 min**.
* Ready-to-use super mix in one tube.
* Efficient cloning of fragments of 50 bp - 10 kb with Positive Clone Rate > 95%.
* Suitable for cloning of 1 fragment, assembly of 2 - 5 fragments, and entry cloning.
* Independent of DNA ligase, significantly reducing the self-ligated colonies.

### Mechanism

**Cloning of 1 Fragment**




**Assembly of 2 - 5 fragments.**




** pCE-Zero Vector, Linearized, is supplied with ClonExpress Ultra One Step Cloning Kit (Vazyme, #C115).*
*** It is highly recommended to use Vazyme's APP - "CE Design" - for easy primer design.*

## Selected Product Citations of ClonExpress

Wu N, et al. TBX6 null variants and a common hypomorphic allele in congenital scoliosis. ***New England Journal of Medicine***, 2015, 372(4):341-50.

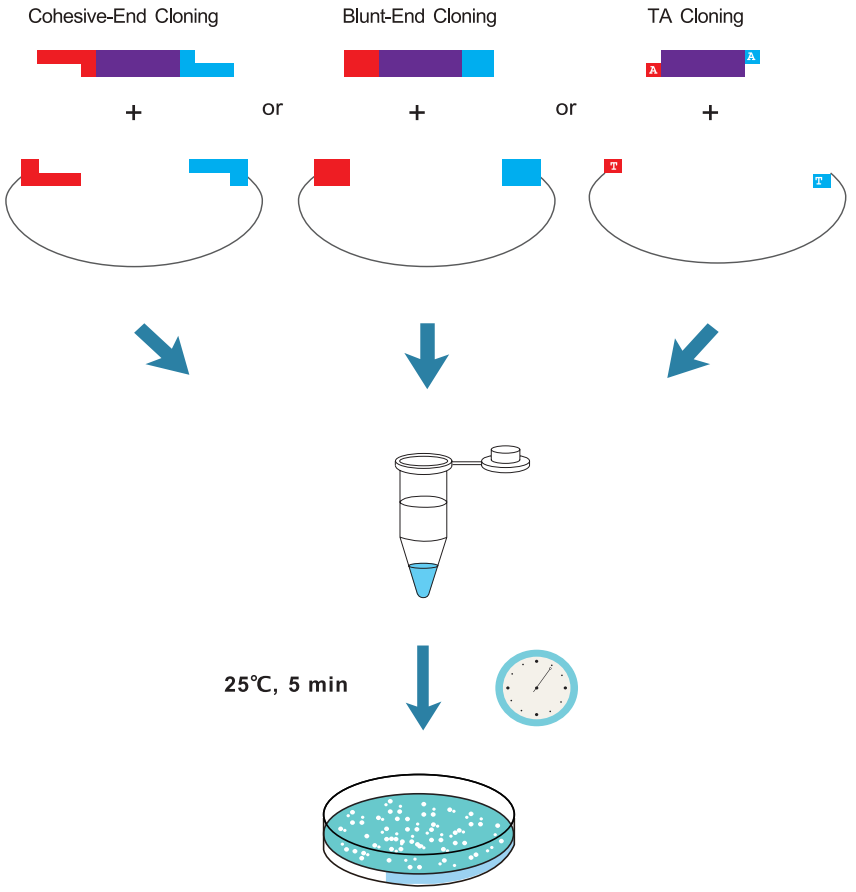
Ge J, et al. Architecture of the mammalian mechanosensitive Piezo1 channel. ***Nature***, 2015, 527(7576):64-9.

## → 5min Universal Ligation Mix (#C311)

### Features

* **Versatile**: Suitable for TA cloning, blunt-end cloning, cohesive-end cloning, and ligation of linkers or adapters.
* **Fast**: Cloning within 5 min at 25℃.
* **Efficient**: Positive Clone Rate > 95%.

### Mechanism

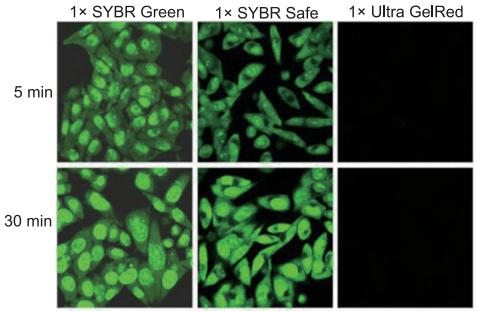


## GelRed

**→ Ultra GelRed Nucleic Acid Stain (10000×) (#GR501)**

Perfect substitute for ethidium bromide (EB)

No toxicity



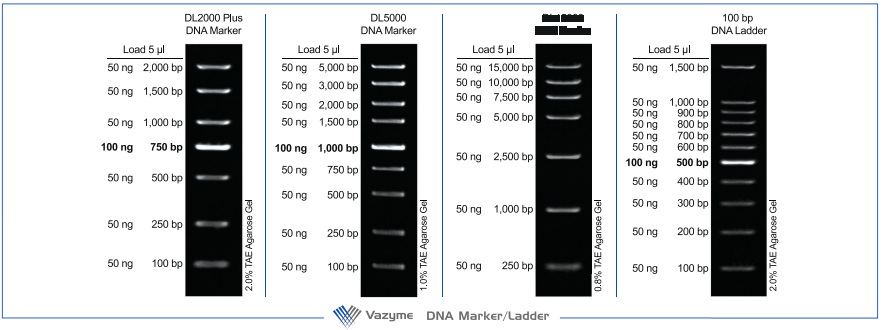

Ultra GelRed is unable to cross cell membranes.

## DNA Marker/ Ladder

**→ DNA Markers / Ladders**

Stable

Clear Bands



# Reverse Transcription

## Selection Guide

| | HiScript® II 1st Strand cDNA Synthesis Kit (R211) | HiScript® II 1st Strand cDNA Synthesis Kit (+gDNA wiper) (R212) | HiScript® II Q RT SuperMix for qPCR (R222) | HiScript® II Q RT SuperMix for qPCR (+gDNA wiper) (R223) | HiScript® II Q Select RT SuperMix for qPCR (R232) | HiScript® II Q Select RT SuperMix for qPCR (+gDNA wiper) (R233) | HiScript® III 1st Strand cDNA Synthesis Kit (+gDNA wiper) (R312) | HiScript® III RT SuperMix for qPCR (+gDNA wiper) (R323) |
|---|---|---|---|---|---|---|---|---|
| **Applications** | | | | | | | | |
| RT-qPCR | | | ■ | ■ | ■ | ■ | | ■ |
| RT-PCR | ■ | ■ | | | | | ■ | |
| **Features** | | | | | | | | |
| SuperMix | | | ■ | ■ | ■ | ■ | | ■ |
| Long-fragment cDNA | ■ | ■ | | | | | ■ | |
| Rapid removal of Genomic DNA | | ■ | | ■ | | ■ | ■ | ■ |
| **Primers** | | | | | | | | |
| Oligo $dT_{23}$ VN / N6 Mix | | | ■ | ■ | | | | ■ |
| Optional | ■ | ■ | | | ■ | ■ | ■ | |

| | M-MLV (H-) (#R021) | HiScript II Reverse Transcriptase (#R201) | HiScript III Reverse Transcriptase (#R302) |
|---|---|---|---|
| Reaction temperature | 37℃ - 42℃ | 42℃ - 55℃ | 37℃ - 50℃ |
| Thermal stability | ☆☆☆ | ☆☆☆☆☆ | ☆☆☆☆ |
| RNase H activity | No | No | No |
| cDNA length | 2 kb-3 kb | Up to 20 kb | Up to 20 kb |
| Template adaptability | ☆☆☆ | ☆☆☆☆☆ | ☆☆☆☆☆ |

# RT-qPCR SuperMix

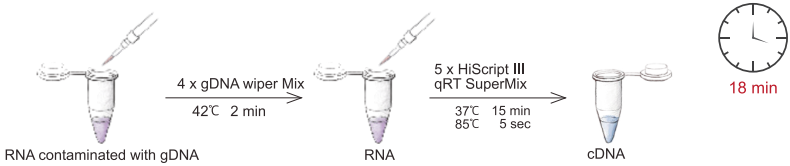
## → HiScript III RT SuperMix for qPCR (+gDNA wiper) (#R323)

## Features

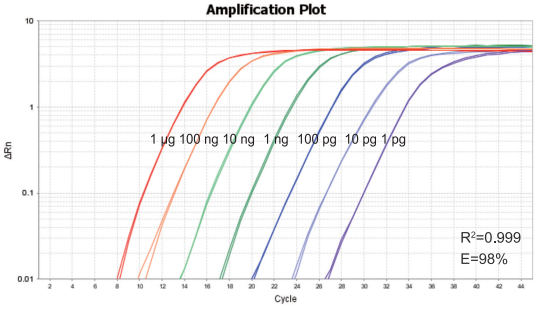
* **Ready-to-use SuperMix**: reverse transcription within 20 min by only adding template RNA.
* Excellent efficiency for low-input RNA or degraded RNA.
* Excellent tolerance for impurities (i.e. ethanol, isopropanol, phenol water, guanidine thiocyanate, humic acid).
* Lower $C_T$ value and higher efficiency than most other commercially available reverse transcription reagents.

## Validation Data

### 1. Easy & Fast




### 2. Excellent Sensitivity




*RNA of HeLa cells was serially diluted and reverse transcribed using HiScript III RT SuperMix for qPCR (+gDNA wiper) (Vazyme, #R323), followed by qPCR detection of gene ACTB. The results show an excellent linear relationship across a wide range of RNA concentrations. The target gene (ACTB) was detected in 1 pg of RNA.*

# qPCR

## Selection Guide

| Applications | Products (Cat.#) |
|---|---|
| SYBR | ChamQ Universal SYBR QPCR Master Mix (#Q711) |
| Probe | AceQ Universal U+ Probe Master Mix V2 (#Q513) |
| SNP (TaqMan MGB Probe) | ChamQ Geno-SNP Probe Master Mix (#Q811) |

## qPCR Master Mix (SYBR)

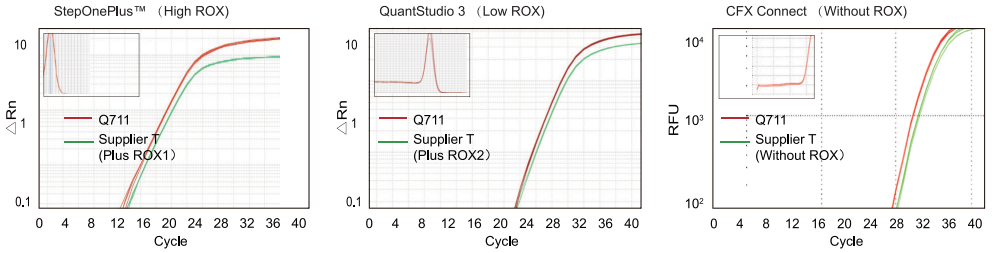
### → ChamQ Universal SYBR® qPCR Master Mix (#Q711)

Best Combination of **Specificity + Sensitivity**

- Unique Hot-Start Taq
- Optimal Concentrations of $Mg^{2+}$ and Dye
- Unique specificity-promoting Factors
- Universal

### Validation Data

**Applicable for almost all qPCR instruments.**




### Selected Product Citations

Xu L, et al. The transcription factor TCF-1 initiates the differentiation of TFH cells during acute viral infection. ***Nature Immunology***, 2015, 47(3):538-51.

Guo C, et al. Cholesterol Homeostatic Regulator SCAP-SREBP2 Integrates NLRP3 Inflammasome Activation and Cholesterol Biosynthetic Signaling in Macrophages. ***Immunity***, 2018, 49(5): 842-56.

# qPCR Master Mix (Probe)

## → AceQ Universal U+ Probe Master Mix V2 (#Q513)

## Features

* **Excellent sensitivity:** Hot-start AceTaq and optimal buffer ensure high sensitivity and effectively inhibit non-specific amplification.

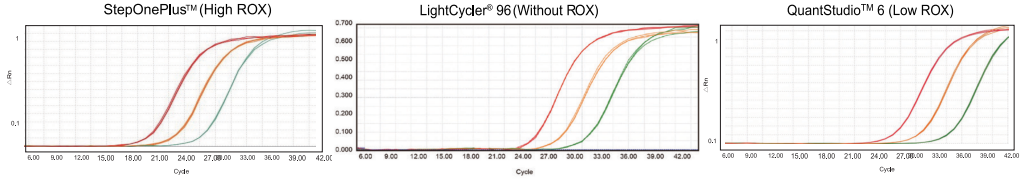
* Excellent linear relationship over a large range of input amount of template. Suitable for the detection of single-copy templates.

* **Anti-contamination:** the dUTP/UDG system eliminates possible contaminations and ensures reliable results.

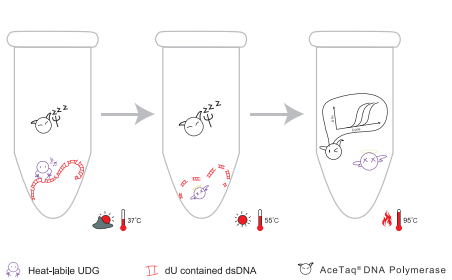
* **Universal:** applicable for almost all qPCR instruments.

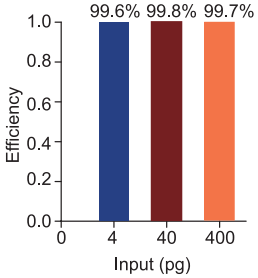
## Validation Data

### 1. Applicable for almost all qPCR instruments.




### 2. dUTP/UDG system.




*For Vazyme #Q513, the removal rate of the contaminated template is as high as 99.6%, effectively ensuring the accuracy of experimental results. U-containing templates (4 pg, 40 pg, 400 pg) were added respectively to the reaction system to evaluate the removal efficiency of the contaminated template by Vazyme #Q513.*

# qPCR Master Mix (Probe)

## → ChamQ Geno-SNP Probe Master Mix (#Q811)

## Advantages

* Compatible with 1 ng - 10 ng of input genomic DNA.

* Accurate genotyping of SNP sites with GC-content of 25% - 73%.

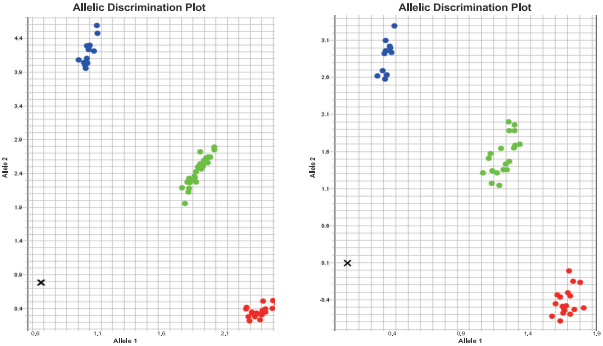
* Excellent stability: stable signal and accurate genotyping results can be obtained both 72 hr pre-PCR and 72 hr post-PCR.

  * **72 hr pre-PCR**: PCR reaction solutions were prepared and left in darkness (at room temperature) for 72 hr before PCR;
  * **72 hr post-PCR**: after PCR, the samples were left in darkness (at room temperature) for 72 hr.

* Blood lysate can be directly used as a template for SNP genotyping, with no need for blood genomic DNA extraction.

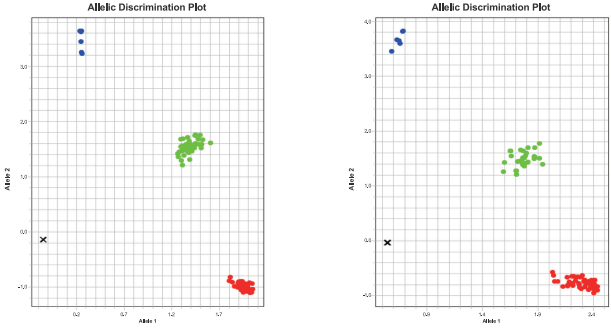
## Validation Data

**1. Flexible input amounts.**




10 ng gDNA　　1 ng gDNA

**2. Direct genotyping with blood lysate.**




Blood genomic DNA　　Blood lysate

# Nucleic Acid Isolation

## Selection Guide

| | | | | |
|---|---|---|---|---|
| DNA Isolation & Purification | Rapid Sample Treatment | Blood | RoomTemp Sample Lysis Kit | P073 |
| | DNA Extraction (Column) | Blood | FastPure Blood DNA Isolation Mini Kit V2 | DC111 |
| | | Cell/tissue | FastPure Cell/Tissue DNA Isolation Mini Kit | DC102 |
| | | Bacterial | FastPure Bacteria DNA Isolation Mini Kit | DC103 |
| | | Plant | FastPure Plant DNA Isolation Mini Kit | DC104 |
| | | FFPE | FastPure FFPE DNA Isolation Kit | DC105 |
| | | Lysozyme | Lysozyme | DE103 |
| | Plasmid DNA extraction | Plasmid | FastPure Plasmid Mini Kit | DC201 |
| | | Endotoxin-free plasmid | FastPure EndoFree Plasmid Maxi Kit | DC202 |
| | DNA Products recycle | Gel DNA Recycle / DNA purification | FastPure Gel DNA Extraction Mini Kit | DC301 |
| RNA Isolation & Purification | RNA tissue Keeper | RNA Keeper for fresh tissue | RNA Keeper Tissue Stabilizer | R501 |
| | | RNA Keeper for thawing /frozen tissue | RNA Keeper-ICE Tissue Transition Buffer | R502 |
| | RoomTemp RNA extraction | Total RNA | RNA-easy Isolation Reagent | R701 |
| | Traditional total RNA extraction | Total RNA | RNA isolater Total RNA Extraction Reagent | R401 |
| | | Bacterial lysate | Bacteria RNA Plus Reagent | R402 |
| | | Bacterial total RNA | Bacteria RNA Extraction Kit | R403 |
| | Column RNA Extraction | Cell/tissue total RNA | FastPure Cell/Tissue Total RNA Isolation Mini Kit | RC101 |
| | | Cell/tissue miRNA | MiPure Cell/Tissue miRNA Kit | RC201 |
| | | Polysaccharide & Polyphenol-rich Plant total RNA | FastPure Plant Total RNA Isolation Kit (Polysaccharides & Polyphenolics-rich) | RC401 |
| Exosome Isolation | Cell supernatant | | VEX Exosome Isolation Reagent (from cell culture media) | R601 |
| | Serum | | VEX Exosome Isolation Reagent (from serum) | R602 |
| | Plasma | | VEX Exosome Isolation Reagent (from plasma) | R603 |

# Room Temperature RNA Isolation

## → RNA-easy Isolation Reagent (#R701)

## Features

* Single-phase extraction with no need of multi-phase partitioning; all operations are at room temperature:

* Widely applicable to easy RNA isolation from all kinds of animal, plant, and microbial samples, as well as various cultured cells.

* Products with high purity and integrity, and with yield comparable to that of traditional Trizol extraction.

* No need to use toxic and harmful reagents such as chloroform.

## Validated Samples

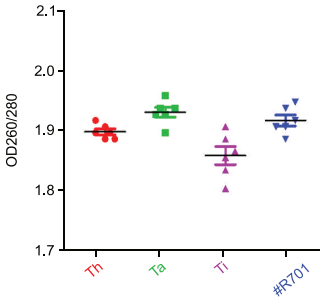
**Animal tissue**: liver, heart, muscle, brain tissue, kidney, zebrafish embryo, etc.

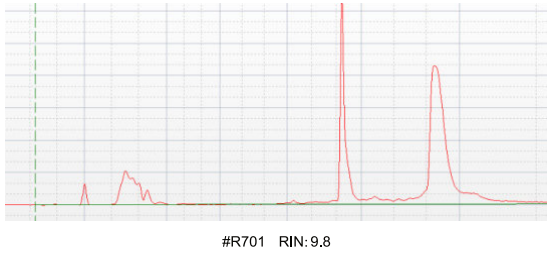
**Plant tissue**: rice, corn, Arabidopsis, wheat, buckwheat, tobacco, soybeans, potatoes, etc.

**Cells**: HEK293, Hela, hybridoma, B16-F10 melanoma cells, HepG2, H9c2 cardiomyocytes, MEF, etc.

**Microorganisms**: E. coli, mold, yeast, etc.

## Validation Data




*Total RNA from HEK293 cells (2 × $10^6$) was purified using RNA-easy Isolation Reagent (Vazyme, #R701) and Trizol reagents from supplier Th, Ta, and Ti, respectively. The OD260/280 ratio of the yield RNA was determined using Onedrop, and RNA integrity was analysis using Agilent 2100 Bioanalyzer. The figure shows that the RNA extracted by Vazyme #R701 was excellent, and the purity was the same as that of Th and Ta, which was significantly higher than that of Ti (P = 0.0077).*

# Plant RNA and DNA Isolation

## FastPure Plant Total RNA Isolation Kit (Polysaccharides & Polyphenolics-rich) (#RC401)

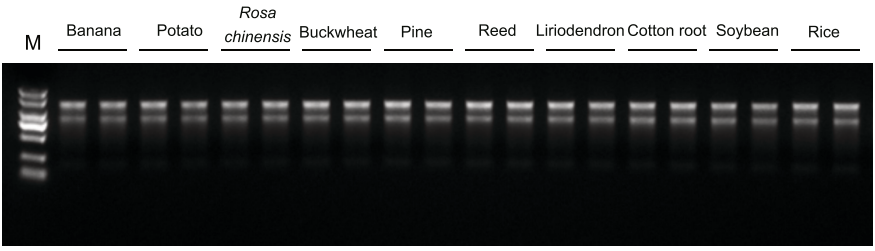
### Features

* **High purity.**
* Rapid extraction of total RNA from plant tissues, especially from those rich in polysaccharide & polyphenol.
* **Low genomic DNA residue.**

### Validated Samples

Pine needles, *Eriobotrya japonica* leaves, potato tubers, grape fruits, apples, pears, tobacco leaves, mature leaves and roots of wheat, peach fruit, lotus, chrysanthemum rhizome, bananas, *Rosa chinensis*, buckwheat leaves and seeds, poplar, *Catharanthus roseus* leaves, liriodendron, reed, rice plant, roots and leaves of cotton, strawberry leaf, *Phoebe neurantha* leaves, ginkgo (root, leaf, flower and fruits), Arabidopsis seeds, corn seeds, fungal hyphae, etc.

### Validation Data




*Total RNA was extracted using Vazyme #RC401 from 50 mg of banana fruit, potato tubers, rose petals, pine needles, reed leaves, Liriodendron leaves, cotton roots, soybean leaves, rice leaves, or 20 mg of buckwheat seed, respectively. The RNA products were loaded for agarose gel electrophoresis. Vazyme #RC401 showed great compatibility to above plants, especially to those that were rich in polysaccharide & polyphenol, and the RNA extracted using Vazyme #RC401 was with good integrity and high yield.*

***M:*** *DL2000 Plus DNA Marker (Vazyme, #MD101). The elution volume was 100 μl and the loading amount was 4 μl-10 μl for agarose gel electrophoresis.*

# Rapid Sample Treatment

## → RoomTemp Sample Lysis Kit (#P073)

## Features

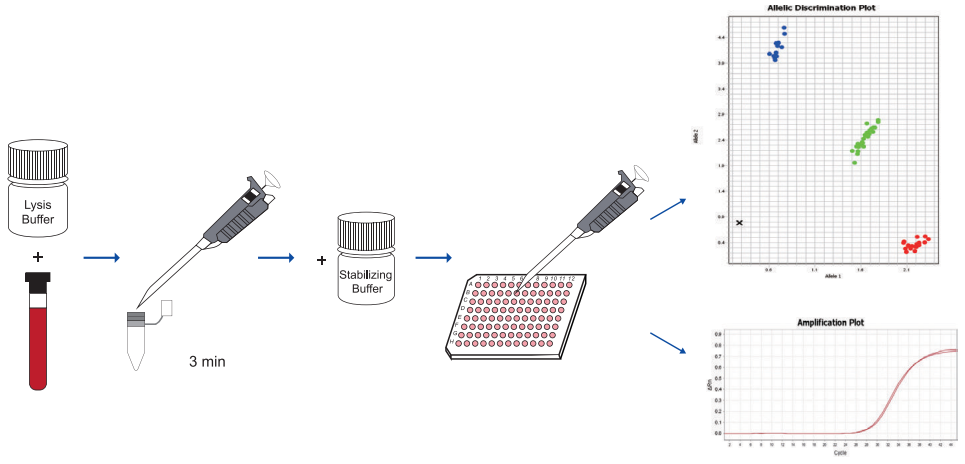
* Replace cumbersome template extraction protocols with a simple one-step cell lysis procedure.

* Lyse samples in just **3 min** at room temperature. qPCR reagent is compatible with the fast program, total operation time is less than 1 hr.

* Lyse different anticoagulant blood, FTA card, buccal swab and other samples.

* The lysis reagent is consistent with the traditional kit for extracting the genome.

## Workflow




Workflow of RoomTemp Sample Lysis Kit

# Endotoxin-Free Plasmid

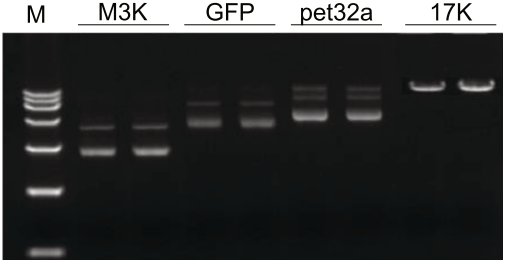
→ **FastPure EndoFree Plasmid Maxi Kit (#DC202)**

## Features

* Endotoxin residue < 0.1 EU / μg.
* Yield 0.2 mg-1.5 mg of high-copy plasmid DNA after rapid extraction.

## Validation Data

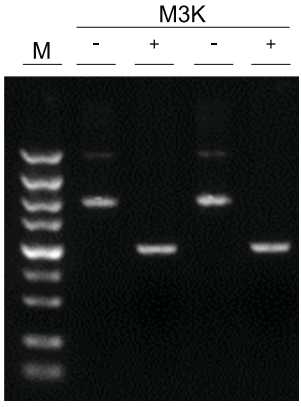
**1. High yield.**




*High extraction efficiency for plasmids with different sizes. Plasmids with different sizes (3.0 kb, 5.0 kb, 5.9 kb, and 17 kb) were extracted using FastPure EndoFree Plasmid Maxi Kit (Vazyme, #DC202), and detected by 1% agarose gel electrophoresis, respectively.*

***M**: DL15000 DNA Marker (Vazyme, #MD103).*

**2. High purity.**




*Extracted plasmid with FastPure EndoFree Plasmid Maxi Kit (Vazyme, #DC202) showed high purity and was suitable for restriction enzyme digestion. The extracted M3K plasmid was digested by restriction enzyme and detected by 1% agarose gel electrophoresis.*

***M**: DL5000 DNA Marker (Vazyme, #MD102).*

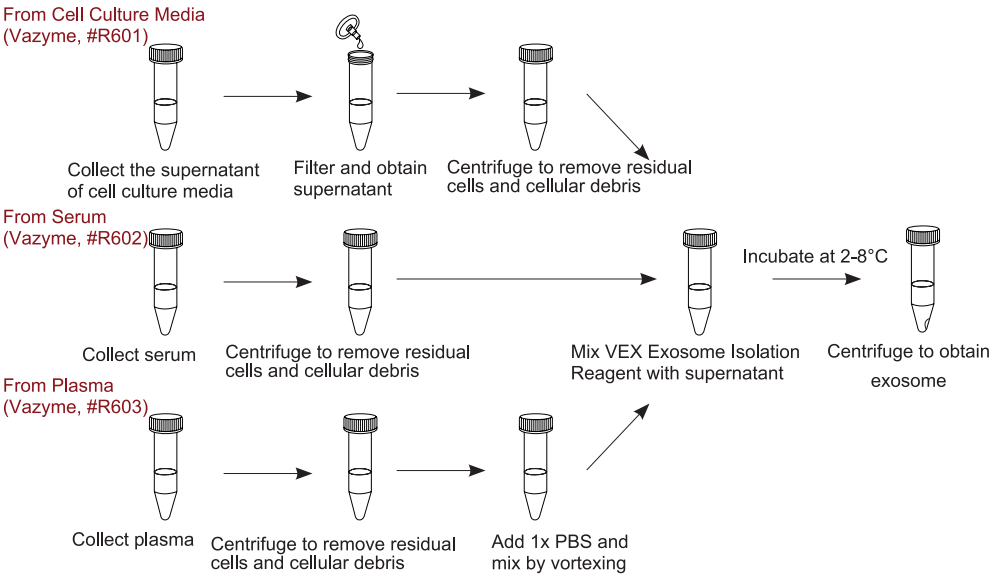
# Exosome Isolation

→ VEX Exosome Isolation Reagents

## Features

* Easy isolation of exosomes by one-step precipitation, avoiding time-consuming ultra-centrifugation.
* Intact exosomes with high yield obtained by low-speed centrifugation.

## Workflow



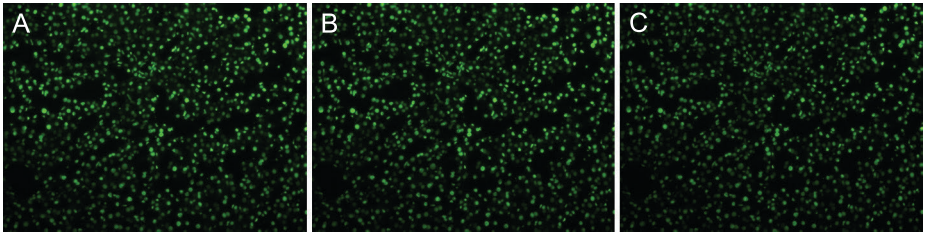
# Apoptosis Detection

→ **TUNEL BrightGreen Apoptosis Detection Kit (#A112)**

## Features

* Patented Bright factor makes the fluorescence brighter and more resistant to quenching.
* Robust activity of recombinant TdT enzyme ensures the high efficiency of fluorescence incorporation.
* Applicable for cells and FFPE or frozen tissue sections.

## Validation Data




Mouse liver tissue sections were treated with DNase I and then stained with Vazyme #A112. Fluorescence signals were read after exposure to ultraviolet light (460 nm) for 1 min (A), 3 min (B), and 6 min (C), respectively.

## Selected Product Citations

Wang Y, et al. Genome-wide screening of NEAT1 regulators reveals cross-regulation between paraspeckles and mitochondria. ***Nature Cell Biology***, 2018, 20(10):1145-58.

Hsu P, et al. Ythdc2 is an N(6)-methyladenosine binding protein that regulates mammalian spermatogenesis. ***Cell Research***, 2017, 27(9):1115.

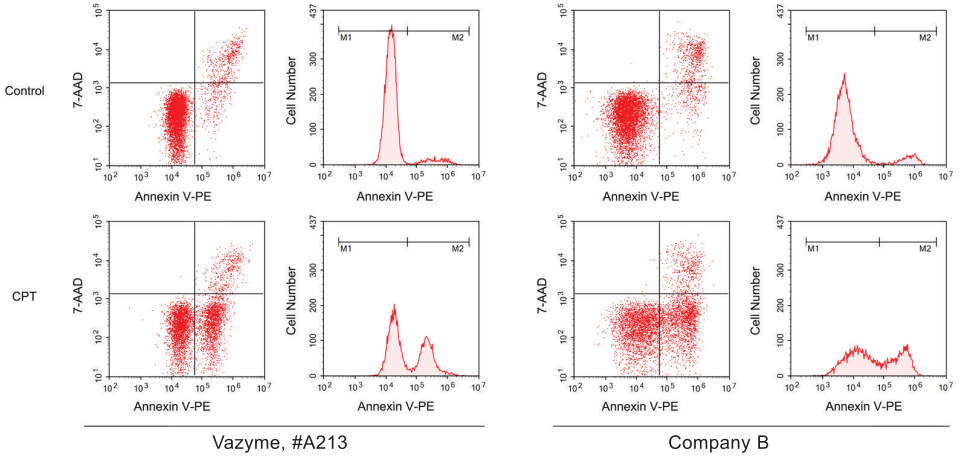
# Apoptosis Detection

## → Annexin V-PE/7-AAD Apoptosis Detection Kit (#A213)

## Features

| | |
|---|---|
| Red Fluorescent Label | Can be used to dual-label cells with green fluorescence. |
| High Specificity | The apoptotic cells can be clearly clustered, and the population apoptosis trend is accurately determined. |
| Wide Range of Applications | Applicable for suspension cells, adherent cells |

## Validation Data




**Apoptosis Detection Using Annexin V-PE/7-AAD (Vazyme, #A213)**

***Control**: Jurkat cells (human T lymphoma cells) untreated with Camptothecin (CPT) were double stained with both Annexin V-PE and 7-AAD, and then detected by Flow Cytometer.*

***CPT**: Jurkat cells untreated with Camptothecin (4 μM) for 4 hr were double stained with both Annexin V-PE and 7-AAD, and then detected by Flow Cytometer.*

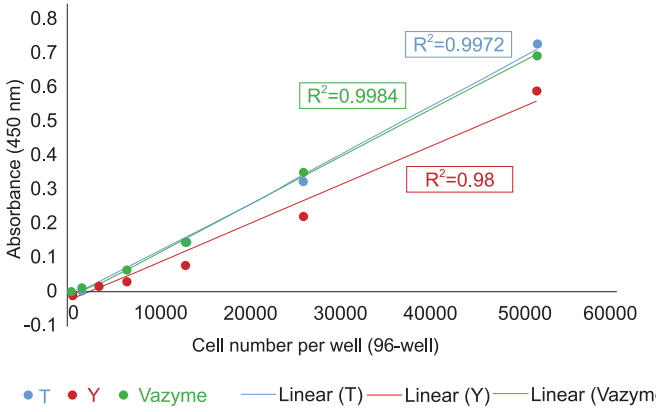
# Cell Counting

## → CCK-8 Cell Counting Kit (#A311)

### Features

* Ready-to-use solution.
* High sensitivity, with excellent linear correlation and repeatability.
* Low cytotoxicity.

### Validation Data




*HEK293 suspension cells were serially diluted and inoculated to a 96-well plate. The cell density in each group (n = 3) is: 0, 400, 800, 1600, 3200, 6400, 12800, 25600, 51200 cells per well. CCK-8 reagents from Vazyme (#A311, green), Supplier T (blue), and Supplier Y (red) were used for cell counting, respectively. The R² value of Vazyme #A311 is > 0.99.*

### Selected Product Citations

Zheng Q, et al. Thiopeptide antibiotics exhibit a dual mode of action against intracellular pathogens by affecting both host and microbe. ***Chemistry & Biology***, 2015, 22(8):1002-7.

Liu Z, et al. Adiponectin reduces ER stress-induced apoptosis through PPARα transcriptional regulation of ATF2 in mouse adipose. ***Cell Death & Disease***, 2016, 7(11):e2487.

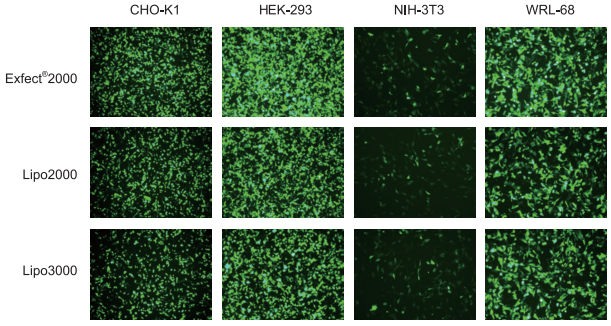
# Cell Transfection

## ExFect 2000 Transfection Reagent (#T202)

### Features

* **High transfection efficiency** in a variety of cell lines.
* **Low cytotoxicity** to avoid damaging the normal physiological state of cells.
* Add directly to cells in culture medium, in the presence or absence of serum.
* Applicable for **co-transfection** with multiple plasmids.

### Validation Data




*ExFect 2000 exhibits higher transfection efficiency than that of Lipo2000 and Lipo3000. CHOK1, HEK293, NIH3T3 and WRL68 cells were transfected using various reagents in a 24-well plate, respectively. The expression of GFP was analyzed after transfection for 24 h.*

### Selected Product Citations

Sun X, et al. Usp7 regulates Hippo pathway through deubiquitinating the transcriptional coactivator Yorkie. ***Nature Communications***, 2019, 10(1):411.

Liu X, et al. 1-L-MT, an IDO inhibitor, prevented colitis-associated cancer by inducing CDC20 inhibition-mediated mitotic death of colon cancer cells. ***International Journal of Cancer***, 2018, 143(6):1516-29.

# Luciferase Assay

→ **Dual Luciferase Reporter Assay Kit (#DL101)**

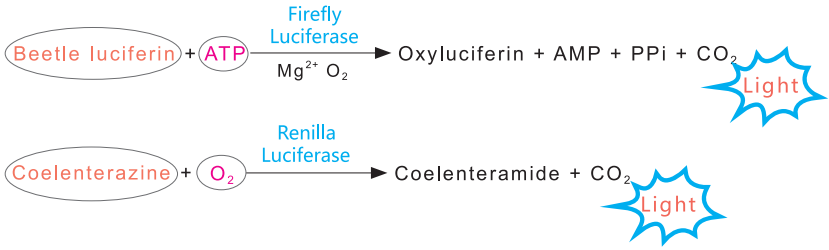
## Features

* Robust luminescent signals: applicable for analysis of weak promoters and other genetic regulatory elements.

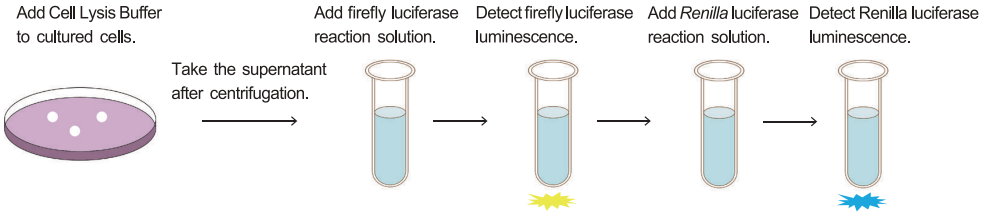
* Detection linear range covers up to 8 orders of magnitude ($R^2$ > 0.99).

* Detection sensitivity of $10^{-18}$ mole.

## Mechanism




## Workflow




## Selected Product Citations

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# Mycoplasma Detection

## → Myco-Blue Mycoplasma Detector (#D101)

### Features

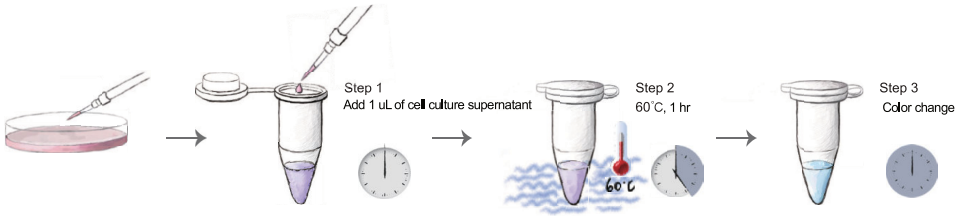
* Cell culture supernatant can be used directly for detection.
* Results are obtained after incubation at **60℃ for 1 hr** and can be determined by visual observation.
* Accuracy is higher than PCR method, and comparable to qPCR method.
* Suitable for detection of all kinds of mycoplasma that are commonly found in cell culture.

### Validated Cell Lines

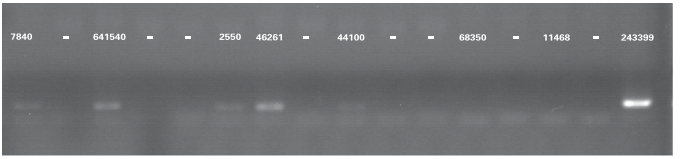
Validated cells and media serum include (but are not limited to):

* **Suspension cells**: CHO, NS0, 293F, mouse hybridoma, Sf9, BHK21, etc.;
* **Adherent cells**: Vero, MDCK, SP2/0, 293T, HepG2, HeLa, A549, MB-MDA231, L929, MEF, etc.;
* **Medium**: CD FortiCHO, CDM4, Expi 293 Medium, CD Hybridoma, Grace, DMEM, 1640, F12, etc.;
* **Serum**: fetal calf / calf serum; horse serum; Gibco KSR serum replacement, etc.

### Workflow




### Validated Data




***qPCR results.*** *Positive is indicated by copy number (copies / μl supernatant); negative is indicated by "-".*

***PCR results.***

***Myco-Blue results.***

*Randomly selected 16 cell cultures, and mycoplasma were detected by three methods.*

# *In Vitro* Transcription

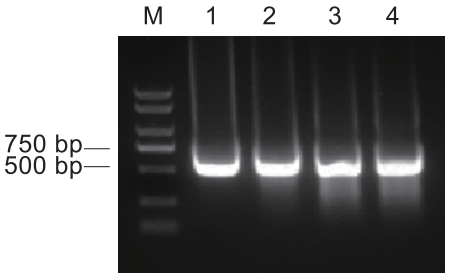
## → T7 RNAi Transcription Kit (#TR102)

## Features

* **High yield**: yields up to **80 μg** of dsRNA in a single reaction.
* **Magnetic bead purification:** recovery efficiency up to 80%.
* Able to transcribe both **siRNA** (21 bp) and **dsRNA** (long fragment).

## Validation Data

**1. Excellent transcription efficiency.**



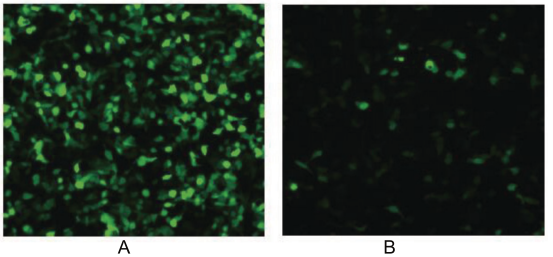

*Agarose gel electrophoresis (2%) of 500 bp dsRNA.*

***M**: DL2000 Plus DNA Maker.*

***1** and **3**: products before and after enzymatic hydrolysis of dsRNA, respectively;*

***2** and **4**: products before and after enzymatic hydrolysis of dsRNA, respectively.*

**2. Knock-down of GFP expression by transcribed siRNA.**




*293T cells were co-transfected for 24 hrs with both GFP plasmid and negative control GFP siRNA (A) or positive GFP siRNA (B).*

## High-Fidelity PCR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