

biotechrabbit

Product Catalog

2025 – 2026





biotechrabbit GmbH
Volmerstr. 9
12489 Berlin, Germany
info@biotechrabbit.com
www.biotechrabbit.com
Office: +49 30 555 78 21 0
Fax: +49 30 555 78 21 99

Managing Director:
Dr. Bernd Haase
Commercial Register:
Charlottenburg HRB 232169 B
VAT No./USt-Id: DE 279969868

Bank account
Deutsche Bank Berlin
BIC/SWIFT: DEUTDE33HAN
IBAN: DE22 1007 0024 0062 8891 02

About biotechrabbit

Scientists around the world are working to leap ahead of diseases and to improve our lives with innovation. Aside from brilliant minds and relentless passion, the success of science depends on the quality of the materials used.

biotechrabbit is determined to offer the best products and services to those who lead the way in research. The valued relationships with our partners and customers drive us to exceed current limitations with flexibility, innovation and customized solutions to match their specific requirements. Each member of our team of highly engaged scientists, experienced managers and talented business developers aims to facilitate our partners and customers to leap and lead progress in the life science.

Our way of doing business combines the passion and pure curiosity of excellent researchers with the agile spirit of true entrepreneurs.

biotechrabbit
leap and lead

Products made in Germany

- Diagnostic-grade quality
- PCR enzymes and mixes
- Nucleic acid purification
- Monoclonal Antibodies
- Cell-free protein synthesis

Services

- OEM, custom and bulk
- Lyophilization services

Contact Us

Phone

+49 30 555 78 21 10

General contact

info@biotechrabbit.com

Ordering

order@biotechrabbit.com

Technical Support

support@biotechrabbit.com

Sales

sales@biotechrabbit.com

Fax

+49 30 555 78 21 99

OEM and Services

oem@biotechrabbit.com

Collaboration and Partnership

partnership@biotechrabbit.com

Career Opportunities

hr@biotechrabbit.com



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Custom Solutions and Diagnostic Services

biotechrabbit innovates, develops and manufactures products with superior performance for diagnostics, life science research and applied markets. We specialize in the production of enzymes and kits for molecular biology and provide high-quality products with top-class availability.

biotechrabbit products are available in bulk or custom formulations, matching each customer's individual needs.

- Enzymes for molecular applications
- Contract manufacturing
- Lyophilization services
- OEM and Private Label

biotechrabbit's collaborative approach ensures reliability

Diagnostic-grade quality

Production according to diagnostic requirements

- ISO 13485 and ISO 9001 certifications
- Exceptionally pure enzymes and antibodies

OEM and private label

Products tailor-made to your needs

- Individual formulation, packaging and labeling
- Choice of high-quality molecular biology kits or enzymes

Lyophilization Service

Innovative lyophilization procedure

- Freeze-dried PCR enzymes and mixes
- Custom lyophilization and LYO-ready enzymes and mixes



Contract manufacturing

Large-scale enzyme and antibody production

- Production in *E. coli* and eukaryotic cells
- Manufacturing and Fermentation up to 100 liter
- Purification
- Characterization
- Formulation
- Quality Control
- Assay Development
- Stability Analysis
- Dispensing and packaging

Get in touch with biotechrabbit and start your project

www.biotechrabbit.com

About biotechrabbit

biotechrabbit GmbH, a German pioneering biotechnology manufacturer dedicated to producing high-quality enzymes and monoclonal antibodies tailored to meet the specific needs of diagnostic companies around the globe. As a leader in protein manufacturing, we offer private label and Original Equipment Manufacturer (OEM) solutions that empower our partners to deliver precise, reliable, and innovative diagnostic products.

Who We Are

At biotechrabbit, we harness the power of advanced biotechnology to develop and produce a wide range of proteins, with a specialization towards enzymes and antibodies for various molecular applications.

Our team of experts, equipped with the latest technology and extensive industry experience, is committed to advancing scientific progress and enhancing the accuracy and efficiency of diagnostic testing.



Our Mission

Our mission is to provide superior and high quality molecular reagents to enhance the capabilities of life science and diagnostic companies, enabling them to achieve breakthroughs in molecular applications such as medical diagnostics. We strive to support our partners in delivering consistent large-scale batches and novel developments, ultimately improving patient care and environmental research.



Innovation and Research

Innovation drives us forward. We invest heavily in research and development to stay at the forefront of enzyme technology. By fostering a culture of continuous improvement and scientific exploration, we can offer cutting-edge proteins, enzymes and formulations that keep pace with the evolving needs of the diagnostic industry.



About biotechrabbit



Quality and Compliance

Quality is the cornerstone of our operations. biotechrabbit adheres to stringent quality control measures and ISO 13485/9001 regulatory standards to ensure that our products meet the highest purity, activity, and stability levels. Our state-of-the-art manufacturing facilities are equipped with advanced technologies that enable us to maintain rigorous quality assurance protocols throughout production.

Customized Enzyme Solutions

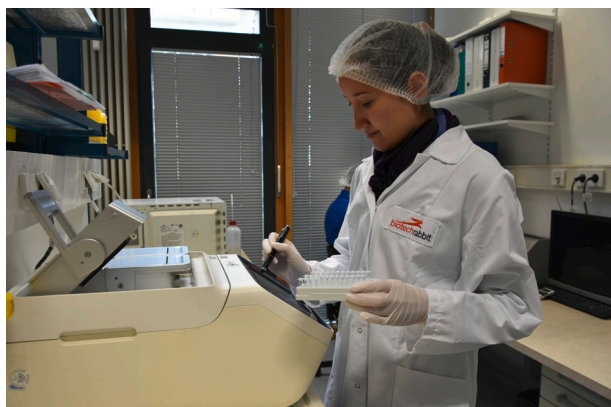
- Tailor-made enzymes and formulations are designed to meet your molecular assays' unique requirements.
- Extensive portfolio of enzymes and proteins, including a comprehensive list of polymerases, reverse transcriptases, proteases and ligases.

Private Label Manufacturing

- We offer a wide range of private label services that allow you to brand our high-quality enzymes as your own.
- Flexible production scales to accommodate your growing needs, ensuring consistent supply and reliability.

OEM Services

- Collaborative OEM partnerships focused on integrating our enzymes and formulations seamlessly into your molecular reagents.
- We provide end-to-end support from development to production, ensuring that our high-quality products enhance the performance of your molecular assays.



Partner with Us

Join the numerous diagnostic companies that trust biotechrabbit as their preferred supplier. Whether you require customized formulations, private label manufacturing, or OEM services, we are dedicated to delivering exceptional value and performance.

Contact us today to learn more about how biotechrabbit can support your diagnostic innovations and help you achieve your goals. Together, we can significantly impact global health through superior diagnostic solutions.

Contact us under info@biotechrabbit.com

Lyophilization

biotechrabbit is a premier biotechnology manufacturer dedicated to delivering innovative lyophilized products and services to diagnostic and life science sectors. Our expertise in lyophilization technology, developed over the last 13 years, allows us to offer state-of-the-art lyophilized molecular formulations that significantly enhance diagnostic assays' performance, reliability, and durability.

Our Innovative Freeze-Drying Technology

At biotechrabbit, we pride ourselves on our advanced lyophilization techniques that produce freeze-dried beads and cakes with exceptional characteristics designed to meet the rigorous demands of the diagnostic industry.

FAST DISSOLVING Our lyo beads and cakes are engineered to dissolve rapidly, ensuring swift reconstitution and enabling faster diagnostic results. This feature is crucial for time-sensitive diagnostic applications where speed and efficiency are paramount.

LOW HYGROSCOPICITY Our lyophilized beads have low moisture absorption properties, significantly reducing the risk of degradation and extending the product's shelf life. They can also be used in all kinds of cartridge production environments. This ensures your diagnostic reagents remain stable and effective over longer periods, even in challenging storage conditions.

TRIM SIZE Our production methods allow for precise and consistent dosing in the production process of beads to improve the accuracy of diagnostic tests. Their small size and various shapes also facilitate easier handling and integration into various diagnostic cartridge platforms, enhancing production convenience and overall workflow efficiency.

LOW ELECTROSTATIC CHARGE Our innovative manufacturing process ensures that our lyo beads exhibit no detectable electrostatic charge. This improves handling, simplifying the integration of the beads into automated systems and diagnostic platforms, streamlining the production process and improving overall workflow efficiency.



Lyophilization



Why Choose biotechrabbit?

Superior Performance, Quality and Compliance

biotechrabbit freeze-dries reagents using raw materials manufactured by biotechrabbit or provided by our customers. Our lyophilized products are manufactured in facilities that adhere to ISO:13485/9001 industry standards and regulatory requirements. We implement rigorous quality control measures at every stage of production to ensure that our lyophilized products meet the highest standards of purity, stability, and performance.

Customized Solutions

We understand that each partner has unique requirements. Our team of experts works closely with you to develop custom lyophilized products that precisely meet your specifications. Whether you need tailored formulations or specialized packaging, we provide solutions that align with your goals and enhance the effectiveness of your molecular assays.

Advanced Research and Innovation

Innovation drives our success. We invest heavily in research and development to continually advance our lyophilization technology and expand our product offerings. By staying at the forefront of scientific progress, we ensure that our customers benefit from the latest innovations and cutting-edge solutions in the field of lyophilization.

Partner with Us

Choosing biotechrabbit as your manufacturer for lyophilized products means partnering with a company committed to excellence, innovation, and customer satisfaction. Our dedicated team is here to support you at every step, from initial consultation and product development to production and delivery.

Our advanced freeze-drying technology not only enhances the quality and reliability of your diagnostic tests, leading to improved patient outcomes, but also supports global healthcare with a focus on sustainability. By reducing waste, minimizing energy consumption, and offering a longer shelf life, our environmentally friendly products contribute to a healthier planet while delivering superior diagnostic accuracy.

Contact us under OEM@biotechrabbit.com

Custom Protein Manufacturing

Our advanced facilities and experienced team enable us to produce recombinant proteins in both *E. coli* and eukaryotic cells, meeting the diverse needs of our clients in the diagnostic industry. At biotechrabbit, we leverage cutting-edge and robust biotechnological methods to produce a wide range of proteins for diagnostic applications. Our comprehensive production capabilities include:

E. coli EXPRESSION SYSTEMS

Efficient and cost-effective production of recombinant proteins with high yield and purity, ideal for various diagnostic assays. We also offer activity assay development and Quality Control.

EUKARYOTIC EXPRESSION SYSTEMS

Production of complex proteins in HEK, CHO and CapT cells with post-translational modifications, ensuring functionality and relevance for sophisticated applications.



Future Plans

We are committed to continuous improvement and expansion of our capabilities. As part of our dedication to supporting the biotech industry's evolving needs, we are in the process of establishing Good Manufacturing Practice (GMP) compliant manufacturing facilities. This will enable us to offer even higher levels of quality assurance and regulatory compliance, further solidifying our position as a leader in protein production for diagnostic and pharma applications.

Antibody Services

At biotechrabbit, we specialize in providing high-quality, customized antibody services to support your research needs. Our comprehensive offerings are designed to deliver precise and efficient results, ensuring the success of your scientific projects.

Custom Monoclonal Antibody Production

- **Choice of Species:** We offer the production of monoclonal antibodies in mouse or rat.
- **Starting Material:** Natural or synthesized proteins and peptides or small molecules.
- **Immunization and Hybridoma Development:** Our efficient immunization methods, coupled with hybridoma technology, ensure successful antibody generation. This process includes extensive screening and subcloning to identify and select the best hybridoma clones.
- **Proprietary Technology:** We specialize in generating antibodies against challenging targets, such as membrane proteins, using our proprietary immunization and screening techniques.
- **Timeline:** The fast immunization protocol allows screening for hybridomas 5 weeks after the start of immunization.

Large-Scale Production

- **High-Capacity Manufacturing:** Our facilities are capable of producing up to 1 kg of antibodies, suitable for extensive research and commercial applications.
- **Purification and Quality Control:** Hybridoma cells are cultivated in serum-free media and the antibodies are purified from supernatant via protein A/G affinity chromatography, ensuring the highest purity standards. We offer mycoplasma-free and endotoxin-free production compliant with ISO:13485.

Additional Services

- **Extensive Screening Assays:** We provide a wide range of additional screening assays to identify the best antibody for your application.
- **Flexible Manufacturing:** Our manufacturing services are adaptable to your project requirements, in case of development, scale, lead time and quality.

Process Overview

- **Initial Consultation:** Discuss your project requirements and goals with our experts
- **Immunization and Screening:** Efficient immunization methods and extensive screening to develop hybridomas
- **Production and Purification:** Large-scale antibody production and purification to meet high-capacity demands
- **Quality Control:** Stringent quality control focussing on purity, specificity and consistency

Selection Guide: Molecular Biology Enzymes & Proteins

| Page Number | Product Name | PCR | RPA | LAMP | Reverse Transcription | High-Fidelity PCR | Long Range PCR | Transcription | Genome Amplification | NGS | Ligation | Sample Preparation | Cloning |
|-------------|-------------------------------------|-----|-----|------|-----------------------|-------------------|----------------|---------------|----------------------|-----|----------|--------------------|---------|
| 11 | Taq DNA Polymerase | • | | | | | | | | | | | |
| 17 | YourTaq™ Hot-Start DNA Polymerase | • | | | | | | | | | | | |
| 17 | Hot-Start Taq DNA Polymerase | • | | | | | | | | | | | |
| 21 | ApStarTaq™ Hot-Start DNA Polymerase | • | | | | | | | | | | | |
| 24 | AnyScript™ Reverse Transcriptase | • | | • | • | | | | | | | | |
| 24 | AllScript™ Reverse Transcriptase | • | • | | • | | | | | | | | |
| 25 | RevertUp™ II Reverse Transcriptase | • | | • | • | | | | | | | | |
| 25 | MMuLV Reverse Transcriptase | • | | | • | | | | | | | | |
| 43 | Long Range DNA Polymerase | • | | | | | • | | | | | | |
| 44 | Pfu DNA Polymerase | • | | | | • | | | | • | | | |
| 45 | T4 DNA Ligase Rapid | • | | | | | | | | • | • | | • |
| 45 | ExactiFi™ Hot-Start DNA Polymerase | • | | | | • | | | | • | | | |
| 49 | LYO-ready T6 UvsX DNA Recombinase | | • | | | | | | | | | | |
| 49 | LYO-ready T4 UvsY Protein | | • | | | | | | | | | | |
| 50 | LYO-ready Exonuclease III | | • | | | | | | • | | | | |
| 50 | LYO-ready RB69 Gene 32 Protein | • | • | | | • | • | | • | | | | |
| 51 | LYO-ready T4 Gene 32 Protein | • | • | | | • | • | | • | | | | |
| 51 | RNase Inhibitor | • | | | • | • | • | • | | | | | |
| 52 | Heat-Labile Uracil-DNA Glycosylase | • | | | | | | | | | | | |
| 52 | Proteinase K | | | | | | | | | | | • | |
| 53 | T7 RNA Polymerase | | | | | | | • | | | | | |
| 53 | phi29 DNA Polymerase | | | | | | | | • | | | | |
| 58 | Exo SAP Kit | | | | | | | | | | | • | • |

Selection Guide: biotechrabbit PCR Reagents

| Page Number | Product Name | Standard PCR | Direct-Load | Hot-Start PCR | Multiplex PCR | Reverse Transcription | Quantitative PCR | All-in-One Mix | Lower Crosscontamination | Green Dye included | Lyophilized | Lyo-Ready | Long Range PCR | High-Fidelity PCR |
|-------------|---|--------------|-------------|---------------|---------------|-----------------------|------------------|----------------|--------------------------|--------------------|-------------|-----------|----------------|-------------------|
| 12 | YourTaq™ PCR Master Mix | • | | | | | | | | | | | | |
| 12 | YourTaq™ PCR Master Mix Direct-Load | | • | | | | | | | | | | | |
| 13 | AmPeliFy™ PCR Master Mix | • | | | | | | | | | | | | |
| 13 | Green PCR Master Mix Direct-Load | | • | | | | | | | • | | | | |
| | | | | • | | | | | | | | | | |
| 18 | YourTaq™ Hot-Start PCR Master Mix | | | • | | | | | | | | | | |
| 18 | Hot-Start PCR Master Mix | | | • | | | | | | | | | | |
| 19 | YourTaq™ Hot-Start PCR Master Mix Direct-Load | | • | • | | | | | | | | | | |
| 19 | Green Hot-Start PCR Master Mix Direct-Load | | • | • | | | | | | • | | | | |
| 21 | ApStarTaq™ Hot-Start PCR Master Mix | • | | • | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 22 | Multiplex Hot-Start PCR Master Mix | • | | • | • | | | | | | | | | |
| 26 | 1-Step RT-PCR Master Mix | • | | | | • | | | | | | | | |
| 29 | CAPITAL™ qPCR Probe Master Mix | | | | | | • | | | | | | | |
| 29 | CAPITAL™ 1-Step qRT-PCR Probe Master Mix | | | | | • | • | | • | | | | | |
| 30 | CAPITAL™ qPCR Probe Master Mix Plus | | | | | | • | | • | | | | | |
| 30 | CAPITAL™ 1-Step qRT-PCR Probe Master Mix Plus | | | | | • | • | | | | | | | |
| 31 | CAPITAL™ qPCR Green Master Mix | | | | | | • | | | • | | | | |
| 31 | CAPITAL™ 1-Step qRT-PCR Green Master Mix | | | | | • | • | | | • | | | | |
| 32 | 5Star™ qPCR Probe Master Mix | | | | | | • | | | | | | | |
| 32 | UniFi™ 1-Step qRT-PCR Probe Master Mix | | | | | • | • | • | | | | | | |
| | | | | | | | | | | | | • | | |
| 35 | LYO-ready CAPITAL™ qPCR Probe Mix | | | | | | | | | | | • | | |
| 35 | LYO-ready CAPITAL™ qRT-PCR Probe Master Mix | | | | | | | | | | | • | | |
| 36 | LYO-ready CAPITAL™ qPCR Probe Mix Plus | | | | | | | | • | | | • | | |
| 36 | LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Mix Plus | | | | | | | | • | | | • | | |
| | | | | | | | | | | | | | | |
| 39 | YourTaq™ Hot-Start PCR Master Mix, lyophilized | • | | | | | | | | | • | | | |
| 39 | Hot-Start PCR Master Mix, lyophilized | • | | | | | | | | | • | | | |
| 40 | CAPITAL™ qPCR Probe Master Mix, lyophilized | | | | | | | | | | • | | | |
| 40 | CAPITAL™ 1-Step qRT-PCR Probe Master Mix, lyophilized | | | | | | | | | | • | | | |
| | | | | | | | | | | | | | | |
| 41 | Long Range PCR Master Mix | | | | | | | | | | | | • | |
| 42 | Pfu PCR Master Mix | | | | | | | | | | | | | • |

Standard PCR

biotechrabbit Standard PCR products include highly purified YourTaq™ DNA Polymerase which is optimized for high yield of amplification of up to 3 kb DNA targets, even from low copy number. The enzyme shows excellent PCR specificity and sensitivity for a broad range of amplicons. YourTaq Polymerase is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors. PCR mixes combine YourTaq, optimized buffer and high-quality dNTPs for the most demanding PCR applications. In addition, the enzyme is suitable for amplification of GC-rich templates (up to 70 %) by using 5X PCR Enhancer.

- Diagnostic-grade quality — top performance for demanding application
- Convenient — master mixes make your job easier
- Efficient — abundant DNA ready for downstream applications
- Resistant — direct amplification from crude samples

| Product | Main feature | Main PCR application | Simplified setup | Flexibility | Direct gel loading |
|--|--|--|------------------|-------------|--------------------|
| Taq DNA Polymerase, 5 U/μl | MgCl ₂ supplied in a separate vial for maximum flexibility | Standard and demanding | | ✓ | |
| 2X YourTaq™ PCR Master Mix | Premixed PCR reagents; just add template, primers and water | Routine, high-throughput | ✓ | | |
| 2X YourTaq™ PCR Master Mix Direct-Load | Premixed PCR reagents including green-colored buffer for direct loading onto gel after the PCR | Routine, high-throughput with direct gel loading | ✓ | | ✓ |
| 2X AmPelify PCR Master Mix | Premixed PCR reagents; just add template, primers and water | Routine, high-throughput | ✓ | | |
| 2X Green PCR Master Mix Direct-Load | Optimized Green PCR Master Mix for fast setup and direct loading on the gel | Routine, high-throughput with direct gel loading | ✓ | | ✓ |

Taq DNA Polymerase, 5 U/μl

| Cat. no. | Size | Package content |
|-----------|---------|---|
| BR0100102 | 500 U | • Taq DNA Polymerase, 5 U/μl |
| BR0100103 | 2,500 U | • 5X Reaction Buffer • 50 mM MgCl ₂ |

FEATURES

- High product yields and robustness in a wide application range
- Highest quality utilized in molecular diagnostics and research
- Exceptionally pure Taq DNA Polymerase for routine and demanding PCR applications

APPLICATIONS

- Routine and applied PCR up to 3 kb
- RT-PCR
- TA cloning

DESCRIPTION

biotechrabbit™ Taq DNA Polymerase is a first-choice enzyme for all routine and molecular diagnostics PCR applications. The exceptional quality and purity of the enzyme ensures highest performance that is required by the diagnostics industry and research labs.

The polymerase is suitable for standard and fast PCR applications ensuring high product yields from various templates with targets of up to 3 kb in size.

biotechrabbit Taq DNA Polymerase is a thermostable, highly processive 5'→3' DNA polymerase that has 5'→3' exonuclease activity and lacks 3'→5' exonuclease (proofreading) activity. The latter allows incorporation of modified nucleotides.

The enzyme also exhibits deoxynucleotidyl transferase activity that results in the addition of extra A overhang at the 3' ends of PCR products, allowing easy cloning of PCR products into vectors with T overhangs.

QUALITY CONTROL — ensuring highest performance

Functional assay

Human genomic DNA is amplified using the Taq DNA Polymerase and specific primers to produce a distinct band of 750 bp.

Self-priming activity

Standard PCR is carried out without primers, using the DNA Polymerase and human genomic DNA. No products were amplified.

Exonuclease assay

Linearized lambda/HindIII fragments are incubated with the DNA Polymerase in a 50 μl reaction mixture for 4 h at 37 °C. No degradation of DNA was observed.

Endonuclease assay

lambda DNA is incubated with the DNA Polymerase in a 50 μl reaction mixture for 4 h at 37 °C. No degradation of DNA was observed.

Nick activity

Supercoiled plasmid DNA is incubated with the DNA Polymerase in a 50 μl reaction mixture for 4 h at 37 °C. No conversion of covalently closed circular DNA to nicked DNA was detected.

E. coli genomic DNA contamination assay

A sample of the denatured DNA Polymerase is analyzed with specific primers targeting the 16S rRNA gene in qPCR for the presence of contaminating E. coli DNA. No E. coli DNA was detectable.

Unit Definition

One unit is defined as the amount of Taq DNA Polymerase required to catalyze the incorporation of 10 nmol of dNTP into acid-insoluble form in 30 minutes at 72 °C in the presence of the reaction buffer.

2X YourTaq™ PCR Master Mix

| Cat.no. | Size | Package content |
|-----------|---------------------|-----------------------------|
| BR0102201 | 200 rxns of 50 µl | • 2X YourTaq PCR Master Mix |
| BR0102202 | 1,000 rxns of 50 µl | |
| BR0102203 | 4,000 rxns of 50 µl | |

FEATURES

- Exceptionally pure YourTaq DNA Polymerase
- Optimized Master Mix for increased yield of amplification
- Resistant to PCR inhibitor carry-over
- Excellent PCR specificity and sensitivity for a broad range of amplicons

APPLICATIONS

- Routine and demanding PCR amplification up to 3 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ YourTaq PCR Master Mix is optimized for high yield of amplification of up to 3 kb DNA targets, even from low copy number. The mix shows excellent PCR specificity and sensitivity for a broad range of amplicons. YourTaq PCR Master Mix is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors.

The 2X YourTaq PCR Master Mix contains pure biotechrabbit YourTaq DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added. In addition, the mix is suitable for amplification of GC-rich templates (up to 70 %).

2X YourTaq™ PCR Master Mix Direct-Load

| Cat.no. | Size | Package content |
|-----------|---------------------|---|
| BR0102301 | 200 rxns of 50 µl | • 2X YourTaq PCR Master Mix Direct-Load |
| BR0102302 | 1,000 rxns of 50 µl | |
| BR0102303 | 4,000 rxns of 50 µl | |

FEATURES

- Exceptionally pure YourTaq DNA Polymerase
- Optimized Master Mix for increased yield of amplification and direct loading on the gel
- Resistant to PCR inhibitor carry-over
- Excellent PCR specificity and sensitivity for a broad range of amplicons

APPLICATIONS

- Routine and demanding PCR amplification up to 3 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ YourTaq PCR Master Mix Direct-Load is optimized for high yield of amplification of up to 3 kb DNA targets, even from low copy number. YourTaq Hot-Start PCR Master Mix shows excellent PCR specificity and sensitivity for a broad range of amplicons. The mix is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors.

The 2X YourTaq PCR Master Mix Direct-Load contains pure biotechrabbit YourTaq DNA Polymerase, extremely high-quality dNTPs, two dyes (blue and yellow) that separate during electrophoresis, allowing migration progress to be monitored, and sufficient buffer density for direct loading onto agarose gels. In addition, the mix is suitable for amplification of GC-rich templates (up to 70 %).

2X AmPelify PCR Master Mix

| Cat.no. | Size | Package content |
|-----------|---------------------|------------------------------|
| BR0101001 | 100 rxns of 50 µl | • 2X AmPelify PCR Master Mix |
| BR0101002 | 500 rxns of 50 µl | |
| BR0101004 | 2,000 rxns of 50 µl | |

FEATURES

- Optimized PCR Master Mix for minimal hands-on and fast setup
- Exceptionally pure *Taq* DNA Polymerase and highest quality dNTPs
- High product yield and robustness in a wide application range

APPLICATIONS

- Routine and high-throughput PCR up to 3 kb
- TA cloning

DESCRIPTION

biotechrabbit™ 2X AmPelify PCR Master Mix is a perfect choice for a fast reaction setup that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. It is designed for routine, high-throughput PCR amplification of up to 3 kb DNA targets. The 2X AmPelify PCR Master Mix contains highly purified recombinant biotechrabbit *Taq* DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water need to be added.

biotechrabbit *Taq* DNA polymerase is a thermostable, highly processive 5'→3' DNA polymerase that has 5'→3' exonuclease activity and lacks 3'→5' exonuclease (proofreading) activity. The latter allows incorporation of modified nucleotides.

The enzyme also exhibits deoxynucleotidyltransferase activity that results in the addition of extra A overhang at the 3' ends of PCR products, allowing easy cloning of PCR products into vectors with T overhangs.

2X Green PCR Master Mix Direct-Load

| Cat.no. | Size | Package content |
|-----------|---------------------|---------------------------------------|
| BR0100402 | 500 rxns of 50 µl | • 2X Green PCR Master Mix Direct-Load |
| BR0100404 | 2,000 rxns of 50 µl | |

FEATURES

- Optimized Green PCR Master Mix for fast setup and direct loading on the gel
- Exceptionally pure *Taq* DNA Polymerase and highest quality dNTPs
- High product yields and robustness in a wide application range

APPLICATIONS

- High-throughput PCR and immediate gel analysis
- Routine PCR up to 3 kb
- TA cloning

DESCRIPTION

biotechrabbit™ Green PCR Master Mix is a perfect choice for a fast reaction setup that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. Additionally the special formulation allows reactions onto be loaded onto an agarose gel directly after amplification without a separate step for adding loading dye.

Green PCR Master Mix contains two dyes (blue and yellow) that separate during electrophoresis, allowing the migration progress to be monitored. Reactions with the Green PCR Master Mix have sufficient density for direct loading onto agarose gels. Green Reaction Buffer also allows mixtures containing the enzyme to be identified.

The Green PCR Master Mix contains highly purified recombinant biotechrabbit *Taq* DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template DNA, PCR primers and PCR-grade water need to be added.

Hot-Start PCR (Antibody-mediated)

biotechrabbit Hot-start PCR products include highly purified YourTaq™ Hot-Start DNA Polymerase which is optimized for high yield of amplification of up to 5 kb DNA targets, even from low copy number. The enzyme shows excellent PCR specificity and sensitivity for a broad range of amplicons. YourTaq Polymerase is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors. PCR mixes combine YourTaq, optimized buffer and high-quality dNTPs for the most demanding PCR applications. In addition, the enzyme is suitable for amplification of GC-rich templates (up to 70 %) by using 5X PCR Enhancer.

- Convenient — master mixes including a direct-load version make your job easier
- Specific and sensitive — excellent performance for a broad range of amplicons
- Efficient — abundant DNA even from low copy targets
- Resistant — direct amplification from crude samples

| Product | Main feature | Main PCR application | Simplified setup | Flexibility | Direct gel loading |
|--|---|---|------------------|-------------|--------------------|
| UPstart™ Taq Antibody, 1 mg/ml | Hot-start monoclonal antibody for Taq DNA polymerases | High sensitivity, high specificity | | ✓ | |
| UPstart™ Plus Taq Antibody, 1 mg/ml | Offers reliable inhibition of Taq DNA polymerases, ensuring precise thermal activation | High sensitivity, high specificity | | ✓ | |
| YourTaq™ Hot-Start DNA Polymerase, 5 U/μl | Hot-start polymerase for complex PCR with high-GC content and resistance to PCR inhibitors and carry-over | High sensitivity, high specificity, complex PCR, colony PCR | | ✓ | |
| Hot-Start Taq DNA Polymerase, 5 U/μl | Antibody-based hot-start polymerase for improved PCR specificity and yield | High sensitivity, high specificity | | ✓ | |
| 2X YourTaq™ Hot-Start PCR Master Mix | Antibody-based hot-start for complex PCR or high-GC content and resistance to PCR inhibitor carry-over | High sensitivity and specificity, complex PCR, colony PCR, direct gel loading | ✓ | | |
| 2X Hot-Start PCR Master Mix | Antibody-based hot-start, optimized premixed PCR reagents | High-throughput, high specificity & sensitivity | ✓ | | |
| 2X YourTaq™ Hot-Start PCR Master Mix Direct-Load | Optimized Master Mix for increased yield of amplification and direct loading on the gel | High-throughput, high specificity, direct gel loading | ✓ | | ✓ |
| 2X Green Hot-Start PCR Master Mix Direct-Load | Hot-Start PCR master mix with high product yield and robustness, enhanced with green buffer for direct loading onto gel after PCR | High-throughput, high specificity, direct gel loading | ✓ | | ✓ |

UPstart™ *Taq* Antibody, 1 mg/ml

| Cat.no. | Size | Package content |
|-----------|------|--|
| BR1200103 | 1 mg | • UPstart <i>Taq</i> Antibody, 1 mg/ml |

FEATURES

- Inhibition of > 99 % *Taq* activity at 60 °C
- 200 ng UPstart *Taq* Antibody are blocking 1 U *Taq* DNA polymerase
- Exceptionally pure – made in cell culture
- Animal-free

APPLICATIONS

- Thermolabile inhibition of *Taq* DNA polymerases
- Convenient hot-start PCR setup at room temperature
- Fast polymerase activation with the first PCR denaturation step

DESCRIPTION

biotechrabbit™ UPstart *Taq* Antibody is an ultra-pure monoclonal anti-*Taq* antibody against the active centre of *Taq* DNA polymerase. It is produced in cell culture to ensure highest quality.

The antibody can be used with highly efficient *Taq* DNA polymerases, provides an excellent method for “Hot-Start” PCR and enhances PCR specificity and sensitivity. PCR hot-start prevents the formation of primer dimers and nonspecific amplification and allows convenient PCR setup at room temperature.

In the first denaturation step of the thermal cycling, the UPstart *Taq* Antibody becomes nonfunctional and the active *Taq* DNA polymerase is released. This antibody-mediated hot-start method is significantly more convenient to use than other hot-start methods. Polymerase reactivation using this antibody is faster than with methods using chemically inhibited polymerases.

UPstart™ Plus *Taq* Antibody, 1 mg/ml

| Cat.no. | Size | Package content |
|-----------|------|---|
| BR1200203 | 1 mg | • UPstart Plus <i>Taq</i> Antibody, 1 mg/ml |

FEATURES

- Inhibition of > 99 % *Taq* activity at 60 °C
- 200 ng UPstart Plus *Taq* Antibody are blocking 1 U *Taq* DNA polymerase
- Exceptionally pure through recombinant production
- Animal-free

APPLICATIONS

- Offers reliable inhibition of *Taq* DNA polymerases, ensuring precise thermal activation.
- Allows for easy PCR setup at room temperature
- Facilitates rapid activation of the polymerase at the first PCR denaturation step.

DESCRIPTION

biotechrabbit™ UPstart™ Plus *Taq* Antibody, 1 mg/ml is a state-of-the-art recombinant monoclonal anti-*Taq* antibody designed specifically to target the active centre of *Taq* DNA polymerase. Produced through advanced recombinant techniques, this antibody guarantees unmatched consistency and purity.

The antibody can be employed with highly efficient *Taq* DNA polymerases for superior “Hot-Start” PCR performance, enhancing both specificity and sensitivity. It prevents primer dimers and nonspecific amplification and simplifies PCR setup at room temperature.

During the initial denaturation step of PCR, the UPstart™ Plus *Taq* Antibody becomes inactive, releasing the functional *Taq* DNA polymerase. This recombinant antibody-mediated hot-start method offers a more convenient and reliable alternative to other hot-start techniques, enabling quicker polymerase reactivation compared to methods using chemically modified polymerases.

YourTaq™ Hot-Start DNA Polymerase, 5 U/μl

| Cat.no. | Size | Package content |
|-----------|---------|--|
| BR0202101 | 250 U | <ul style="list-style-type: none"> YourTaq Hot-Start DNA Polymerase, 5 U/μl 5X PCR Reaction Buffer 50 mM MgCl₂ |
| BR0202102 | 1,250 U | |
| BR0202103 | 5,000 U | |

FEATURES

- Exceptionally pure YourTaq Hot-Start DNA Polymerase
- Optimized buffer composition for increased yield of amplification
- Resistant to PCR inhibitor carry-over
- Excellent PCR specificity and sensitivity for a broad range of amplicons

APPLICATIONS

- Routine and demanding PCR amplification up to 5 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ YourTaq Hot-Start DNA Polymerase is optimized for high yield of amplification of up to 5 kb DNA targets, even from low copy number. The enzyme shows excellent PCR specificity and sensitivity for a broad range of amplicons. YourTaq Hot-Start DNA Polymerase is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors.

YourTaq Hot-Start DNA Polymerase is a highly pure enzyme. Together with the optimized buffer and high-quality dNTPs (BR0600202) a mix is achieved for the most demanding PCR applications. In addition, the enzyme is suitable for amplification of GC-rich templates (up to 70 %) pairing with 5X PCR Enhancer.

Hot-Start Taq DNA Polymerase, 5 U/μl

| Cat.no. | Size | Package content |
|-----------|---------|--|
| BR0200102 | 500 U | <ul style="list-style-type: none"> Hot-Start Taq DNA Polymerase, 5 U/μl 5X Reaction Buffer 50 mM MgCl₂ |
| BR0200103 | 2,500 U | |

FEATURES

- High PCR specificity and sensitivity
- Exceptionally pure Hot-Start Taq DNA Polymerase for sensitive PCR applications and high yields
- Antibody-based Hot-Start for fast polymerase activation

APPLICATIONS

- Hot-start PCR up to 5 kb
- Amplification of low-copy-number targets
- RT-PCR and TA cloning

DESCRIPTION

biotechrabbit™ Hot-Start Taq DNA Polymerase is a first-choice hot-start PCR enzyme for all demanding PCR applications. The enzyme ensures high product yields with low background and without primer dimer formation and nonspecific priming.

The Hot-Start Taq DNA Polymerase is inactive during reaction setup due to the bound antibody which is quickly released at elevated temperatures, ensuring the enzyme is active only during PCR. There is no need for prolonged heating or denaturation steps.

The optional use of 5X PCR Enhancer improves PCR results in many cases, including impure template or low template abundance.

2X YourTaq™ Hot-Start PCR Master Mix

| Cat.no. | Size | Package content |
|-----------|---------------------|---------------------------------------|
| BR0202201 | 200 rxns of 50 µl | • 2X YourTaq Hot-Start PCR Master Mix |
| BR0202202 | 1,000 rxns of 50 µl | |
| BR0202203 | 4,000 rxns of 50 µl | |

FEATURES

- Exceptionally pure YourTaq Hot-Start DNA Polymerase
- Optimized Master Mix for increased yield of amplification
- Resistant to PCR inhibitor carry-over
- Excellent PCR specificity and sensitivity for a broad range of amplicons

APPLICATIONS

- Routine and demanding PCR amplification up to 5 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ YourTaq™ Hot-Start PCR Master Mix is optimized for high yield of amplification of up to 5 kb DNA targets, even from low copy number. The mix shows excellent PCR specificity and sensitivity for a broad range of amplicons. YourTaq Hot-Start PCR Master Mix is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors.

The 2X YourTaq Hot-Start PCR Master Mix contains pure biotechrabbit YourTaq Hot-Start DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added. In addition, the mix is suitable for amplification of GC-rich templates (up to 70 %) pairing with 5X PCR Enhancer.

2X Hot-Start PCR Master Mix

| Cat.no | Size | Package content |
|-----------|---------------------|-------------------------------|
| BR0200205 | 200 rxns of 50 µl | • 2X Hot-Start PCR Master Mix |
| BR0200206 | 1,000 rxns of 50 µl | |
| BR0200207 | 4,000 rxns of 50 µl | |

FEATURES

- Highest PCR sensitivity without prolonged reactivation
- Optimized PCR Master Mix for minimal hands-on and fast setup
- Exceptionally pure Hot-Start *Taq* DNA Polymerase and highest quality dNTPs

APPLICATIONS

- High-specificity and high-throughput hot-start PCR up to 5 kb
- Amplification of low-copy-number targets
- TA cloning

DESCRIPTION

biotechrabbit™ Hot-Start PCR Master Mix is a perfect choice for a fast reaction setup that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. It is designed for low-background, high-throughput PCR of up to 5 kb DNA targets.

The 2X Hot-Start PCR Master Mix contains pure biotechrabbit Hot-Start *Taq* DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added.

The Hot-Start *Taq* DNA Polymerase is inactive during reaction setup due to the bound antibody, which is quickly released at elevated temperatures, ensuring the enzyme is active only during PCR. There is no need for prolonged heating or denaturation steps. The Hot-Start minimizes primer dimers and mispriming.

The optional use of 5X PCR Enhancer improves PCR results in many cases, including impure template or low template abundance.

2X YourTaq™ Hot-Start PCR Master Mix Direct-Load

| Cat.no. | Size | Package content |
|-----------|---------------------|--|
| BR0202301 | 200 rxns of 50 µl | • 2X YourTaq Hot-Start PCR Master Mix Direct-Load |
| BR0202302 | 1,000 rxns of 50 µl | |
| BR0202303 | 4,000 rxns of 50 µl | |

FEATURES

- Exceptionally pure YourTaq Hot-Start DNA Polymerase
- Optimized Master Mix for increased yield of amplification and direct loading on the gel
- Resistant to PCR inhibitor carry-over
- Excellent PCR specificity and sensitivity for a broad range of amplicons

APPLICATIONS

- Routine and demanding PCR amplification up to 5 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ YourTaq™ Hot-Start PCR Master Mix Direct-Load is optimized for high yield of amplification of up to 5 kb DNA targets, even from low copy number. YourTaq Hot-Start PCR Master Mix shows excellent PCR specificity and sensitivity for a broad range of amplicons. The mix is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors.

The 2X YourTaq Hot-Start PCR Master Mix Direct-Load contains pure biotechrabbit YourTaq Hot-Start DNA Polymerase, extremely high-quality dNTPs, two dyes (blue and yellow) that separate during electrophoresis, allowing migration progress to be monitored, and sufficient buffer density for direct loading onto agarose gels. In addition, the mix is suitable for amplification of GC-rich templates (up to 70 %) pairing with 5X PCR Enhancer.

2X Green Hot-Start PCR Master Mix Direct-Load

| Cat.no. | Size | Package content |
|-----------|---------------------|--|
| BR0200502 | 500 rxns of 50 µl | • 2X Green Hot- Start PCR Master Mix Direct-Load |
| BR0200504 | 2,000 rxns of 50 µl | |

FEATURES

- Optimized Green Hot-Start PCR Master Mix for fast setup and direct loading on the gel
- Exceptionally pure Hot-Start Taq DNA Polymerase and highest quality dNTPs
- High product yields and robustness in a wide application range

APPLICATIONS

- High-throughput hot-start PCR and immediate gel analysis
- High-specificity hot-start PCR up to 5 kb
- Amplification of low-copy-number targets
- TA cloning

DESCRIPTION

biotechrabbit™ 2X Green Hot-Start PCR Master Mix Direct-Load is a perfect choice for a fast reaction setup that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. It is designed for low-background, high-throughput PCR amplification of up to 5 kb DNA targets. Additionally, the special formulation allows reactions to be loaded directly onto gels after amplification without adding additional loading dye.

2X Green Hot-Start PCR Master Mix Direct-Load contains two dyes (blue and yellow) that separate during electrophoresis, allowing migration progress to be monitored. Reactions with 2X Green Hot-Start PCR Master Mix Direct-Load have sufficient density for direct loading onto agarose gels.

Hot-Start PCR (Aptamer-mediated)

biotechrabbit's ApStarTaq™ Hot-Start DNA Polymerase is a highly purified enzyme, optimized for the high-yield amplification of up to 5 kb DNA targets, even from low copy numbers. ApStarTaq exhibits exceptional PCR specificity and sensitivity across a broad range of amplicons. Engineered to resist common PCR inhibitors such as blood (up to 20 %), ethanol, and humic acid, ApStarTaq ensures reliable PCR amplification from challenging DNA templates. Additionally, ApStarTaq is ideal for amplifying GC-rich templates (up to 70 %) when used with our 5X PCR Enhancer, ensuring robust and consistent performance.

Our ApStarTaq™ Hot-Start PCR Master Mix combines this superior enzyme with an optimized buffer and high-quality dNTPs, designed to meet the demands of the most rigorous PCR applications. This mix provides a convenient, all-in-one solution for achieving high-specificity and high-sensitivity amplifications, making it an excellent choice for a variety of PCR applications.

- Convenient — master mixes including a direct-load version make your job easier
- Specific and sensitive — excellent performance for a broad range of amplicons
- Efficient — abundant DNA even from low copy targets
- Resistant — direct amplification from crude samples

| Product | Main feature | Main PCR application | Simplified setup | Flexibility | Direct gel loading |
|---|--|---|------------------|-------------|--------------------|
| ApStarTaq™ Hot-Start DNA Polymerase, 5 U/μl | Aptamer-based hot-start for fast PCR, high specificity and yield | Fast PCR, high sensitivity and high specificity | | ✓ | |
| ApStarTaq™ Hot-Start PCR Master Mix | Aptamer-based hot-start PCR, optimized premixed PCR reagents | Fast PCR, high sensitivity and high specificity | ✓ | ✓ | |

ApStarTaq™ Hot-Start DNA Polymerase, 5 U/μl

| Cat.no. | Size | Package content |
|-----------|---------|--|
| BR0201501 | 250 U | <ul style="list-style-type: none"> • ApStarTaq Hot-Start DNA Polymerase, 5 U/μl • 5X Reaction Buffer • 50 mM MgCl₂ |
| BR0201502 | 1,250 U | |
| BR0201503 | 5,000 U | |

FEATURES

- Aptamer-based hot-start functionality
- No activation steps needed
- High PCR specificity and sensitivity
- Exceptionally pure *Taq* DNA Polymerase for sensitive PCR applications and high yields

APPLICATIONS

- Fast PCR reactions in endpoint and real-time analysis
- Hot-start PCR up to 5 kb
- Amplification of low-copy-number targets
- RT-PCR and TA cloning

DESCRIPTION

biotechrabbit™ ApStarTaq Hot-Start DNA Polymerase is an aptamer based hot-start enzyme and the first-choice for fast PCR reactions. The exceptional quality and purity of the enzyme ensures highest performance, suitable for standard and fast PCR cycling in both, endpoint and real-time assays. It ensures high product yields with low background and without primer dimer formation or non-specific priming.

The aptamer binds to *Taq* DNA Polymerase and inhibits the enzyme activity at temperatures below 45 °C. This ensures full hot-start functionality. The enzyme is released during standard PCR cycling conditions. There is no need for separate heating or denaturation steps, allowing fast PCR reactions.

2X ApStarTaq™ Hot-Start PCR Master Mix

| Cat.no. | Size | Package content |
|-----------|---------------------|---|
| BR0201601 | 200 rxns of 50 μl | <ul style="list-style-type: none"> • 2X ApStarTaq Hot-Start PCR Master Mix |
| BR0201602 | 1,000 rxns of 50 μl | |
| BR0201603 | 4,000 rxns of 50 μl | |

FEATURES

- Aptamer-based hot-start functionality
- No activation steps needed
- High PCR specificity and sensitivity
- Exceptionally pure Polymerase for sensitive PCR applications and high yields

APPLICATIONS

- Fast PCR reactions in endpoint and real-time analysis
- Hot-start PCR up to 5 kb
- Amplification of low-copy-number targets
- RT-PCR and TA cloning

DESCRIPTION

biotechrabbit™ ApStarTaq Hot-Start PCR Master Mix is a perfect choice for a fast PCR reactions. It reduces the time required for pipetting and eliminates the need for buffer optimization.

The mix is optimized for low-background, high-throughput PCR of up to 5 kb DNA targets. The 2X Master Mix contains pure biotechrabbit ApStarTaq Hot-Start DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR-grade water are added.

The aptamer binds to *Taq* DNA Polymerase and inhibits its activity at temperatures below 45 °C. This ensures full Hot-Start functionality. The enzyme is released during standard PCR cycling conditions. There is no need for separate heating or denaturation steps, allowing fast PCR reactions. The hot-start functionality minimizes primer dimers and mispriming.

Multiplex Standard PCR

Multiplex PCR enables the amplification of multiple targets in one single PCR experiment using multiple sets of primers. The ability to reduce the number of reactions needed to test a sample for different targets helps saving time and money and therefore makes multiplex systems especially useful when large sample numbers have to be processed.

Multiplex PCR is widely used in biological and medical applications such as genotyping or different DNA testing methods in research, forensic and diagnostic laboratories. Examples for Multiplex PCR applications are genotyping (deletions, mutations, SNPs), detection and typing of pathogens or GMOs, analysis of satellite DNA (microsatellites, STRs, VNTRs), forensic analysis, food analysis, quantitative and reverse transcription PCR assays for gene expression, and more.

Multiplex Mastermixes contain all components necessary for the reaction and minimize the need for optimization thus making the development and set-up of multiplex PCR assays easy and fast.

- Optimized formulation — for successful and robust performance
- Universal use — suited for many types of multiplex applications
- Hot-start technology — for highest specificity and sensitivity

2X Multiplex Hot-Start PCR Master Mix

| Cat. no. | Size | Package content |
|-----------|---------------------|---|
| BR0200801 | 50 rxns of 50 µl | • 2X Multiplex Hot-Start PCR Master Mix |
| BR0200802 | 250 rxns of 50 µl | |
| BR0200804 | 1,000 rxns of 50 µl | |

FEATURES

- Excellent performance and robustness in multiplex PCR
- Optimized Master Mix for minimal hands-on and fast setup
- Hot-start for highest sensitivity and specificity
- Exceptionally pure Hot-Start *Taq* DNA Polymerase and highest quality dNTPs

APPLICATIONS

- Fast and high-throughput multiplex PCR
- Parallel detection of multiple targets in a single assay
- Gene expression analysis, diagnostic and forensic genotyping
- Amplification of 50 bp to 2 kb targets

DESCRIPTION

biotechrabbit™ Multiplex Hot-Start PCR Master Mix is a perfect choice for endpoint multiplex PCR. The unique buffer composition is optimized for robust simultaneous amplification of 10 or more targets from 50 bp – 2 kb in a single reaction.

The Master Mix contains pure biotechrabbit Hot-Start *Taq* DNA Polymerase, extremely high-quality dNTPs and optimized Multiplex PCR buffer; thus, only template, PCR primers and PCR Grade Water are added. The enhancers included in the mix enable efficient amplification of low abundant or GC-rich templates.

Hot-Start *Taq* DNA Polymerase is inactive during reaction setup due to the bound antibody, which is quickly released at elevated temperatures, ensuring the enzyme is active only during PCR. The hot-start efficiently minimizes primer dimers and mispriming.

Reverse Transcription and RT-PCR

biotechrabbit provides a selection of proprietary Moloney-Murine Leukemia Virus (MMuLV) and non-MMuLV reverse transcriptases with and without RNase-H activity. These exceptionally high performing reverse transcriptases allow successful synthesis of cDNA with a length of up to 20 kb.

The cDNA kit shows excellent performance in first-strand cDNA synthesis for RT-PCR and qPCR, even with RNA templates having a high degree of secondary structures.

One-step RT-PCR kits provide optimized reagents, including Hot-Start *Taq* DNA Polymerase, for performing both reverse-transcription and amplification reactions in one tube.

A special RNase Inhibitor prevents RNA templates from degradation by pervasive RNases.

- High performance — exceptional purity for demanding applications
- Convenient — excellent efficiency at high temperatures
- Reliable — RNase Inhibitor for protecting your RNA

| Product | Main PCR application | Main feature |
|------------------------------------|--|---|
| AnyScript™ Reverse Transcriptase | cDNA synthesis, cDNA library construction, RT-PCR, qRT-PCR | Improved and genetically engineered MMuLV Reverse Transcriptase with reduced RNase H activity and increased thermostability, superb sensitivity and specificity for fast RT reaction from low template input |
| AllScript™ Reverse Transcriptase | cDNA synthesis, two-step RT-PCR, RACE, qRT-PCR | Proprietary non-MMuLV based reverse transcriptase engineered for increased RNA affinity and sensitive transcription of a wide range of RNA templates including such with a high degree of secondary structures, RNase H activity specific to RNA hybridized to cDNA for improved 1-Step PCR |
| RevertUP™ II Reverse Transcriptase | cDNA synthesis of ≥ 19 kb, two-step RT-PCR | A proprietary MMuLV reverse transcriptase engineered for increased temperature stability up to 60 °C, no RNase H activity, efficient cDNA synthesis of ≥ 19 kb cDNA |
| MMuLV Reverse Transcriptase | cDNA synthesis, two-step RT-PCR | Exceptionally pure classical reverse transcriptase supplied with reaction buffer for standard applications |
| 1-Step RT-PCR Master Mix | One-step RT-PCR | A blend of efficient thermostable reverse transcriptase and proprietary Ribonuclease Inhibitor ensures high cDNA yields; unique Hot-Start <i>Taq</i> DNA Polymerase in a mix with high-quality dNTPs and PCR enhancers allows sensitive, low-background amplification |
| cDNA Synthesis Kit | First-strand cDNA synthesis for RT-PCR and qPCR | Excellent yields at temperatures up to 55 °C and superior performance in demanding applications, including amplification of templates with a high degree of secondary structures |

AnyScript™ Reverse Transcriptase, 200 U/μl

| Cat. no | Size | Package content |
|-----------|-----------|---|
| BR0401001 | 20,000 U | <ul style="list-style-type: none">AnyScript Reverse Transcriptase, 200 U/μl5X Reverse Transcriptase Buffer |
| BR0401002 | 100,000 U | |

FEATURES

- Increased thermostability
- Exceptional performance for longer templates
- Excellent cDNA yield

APPLICATIONS

- First-strand cDNA synthesis
- cDNA library construction
- RT-PCR and qRT-PCR

DESCRIPTION

biotechrabbit™ AnyScript Reverse Transcriptase is an improved and genetically engineered MMuLV Reverse Transcriptase with reduced RNase H activity and increased thermostability. The enzyme is ultrapure and free of RNases and Nucleases known to spoil RT reactions; this makes AnyScript a perfect choice for first strand cDNA synthesis at higher temperature than MMuLV. AnyScript is active up to 55 °C with high yield and full-length cDNA product. The enzyme is tailored to be employed in both two step and one step RT-PCR and qRT-PCR with high sensitivity and specificity.

Superb sensitivity and specificity make AnyScript an ideal enzyme for fast RT reaction from low template input in diagnostics application.

AllScript™ Reverse Transcriptase, 4 U/μl

| Cat. no. | Size | Package content |
|-----------|---------|---|
| BR0400601 | 400 U | <ul style="list-style-type: none">AllScript Reverse Transcriptase, 4 U/μl5X Reverse Transcriptase Buffer |
| BR0400602 | 2,000 U | |

FEATURES

- Highly specific and sensitive RT-PCR
- Excellent performance in transcription of complex RNA secondary structures
- High yields of cDNA even with targets in low copy number
- RNase H activity specific to RNA hybridized to cDNA for improved One-step PCR

APPLICATIONS

- Standard reverse transcription
- Synthesis of cDNA for cloning
- RT-PCR and qRT-PCR
- Rapid amplification of cDNA ends (RACE)
- RNA analysis by primer extension

DESCRIPTION

biotechrabbit™ AllScript Reverse Transcriptase is a proprietary RT designed for highly specific and sensitive reverse transcription. It guarantees top performance in standard reverse transcription, synthesis of ds cDNA for cloning, RT-PCR and qRT-PCR, rapid amplification of cDNA ends (RACE) or RNA analysis by primer extension. Its high affinity to RNA allows transcription of complex RNA secondary structures and targets in low copy number, leading to high yields of cDNA.

AllScript Reverse Transcriptase is a multifunctional enzyme including RNA-dependent and ssDNA-dependent DNA polymerase, as well as RNase H activity. The RNase H activity is specific to RNA hybridized to cDNA, with no effect on pure RNA template, resulting in improved performance of subsequent PCR.

RevertUP™ II Reverse Transcriptase, 200 U/μl

| Cat. no. | Size | Package content |
|-----------|----------|---|
| BR0400501 | 10,000 U | • RevertUP II Reverse Transcriptase, 200 U/μl |
| BR0400502 | 50,000 U | • 5X Reverse Transcriptase Buffer |

FEATURES

- Improved performance for synthesis of long cDNAs (≥ 19 kb)
- Excellent efficiency at high temperatures up to 60 °C
- High sensitivity for cDNA synthesis from few copies of template

APPLICATIONS

- First-strand cDNA synthesis
- Generation of labeled cDNA
- RNA analysis by primer extension
- cDNA library construction
- RT-PCR

DESCRIPTION

biotechrabbit™ RevertUP II Reverse Transcriptase is a proprietary MMuLV reverse transcriptase engineered by point mutations resulting in increased temperature stability up to 60 °C. This guarantees top performance with templates showing a high degree of secondary structures. The enzyme has no RNase H activity and ensures efficient synthesis of ≥ 19 kb cDNA.

RevertUP II Reverse Transcriptase is a DNA polymerase which uses RNA as a substrate and exhibits no measurable proofreading 3'→5' exonuclease function. This enzyme performs cDNA synthesis by extending a DNA primer annealed to an RNA template; it can also make copies of single-stranded DNA templates.

MMuLV Reverse Transcriptase, 200 U/μl

| Cat. no. | Size | Package content |
|-----------|----------|---|
| BR0400201 | 10,000 U | • MMuLV Reverse Transcriptase, 200 U/μl |
| BR0400202 | 50,000 U | • 10X MMuLV RT Buffer |

FEATURES

- Pure reverse transcriptase for cDNA synthesis
- High yields of first-strand cDNA
- High value for a fair price

APPLICATIONS

- First-strand cDNA synthesis
- Generation of labeled cDNA
- RNA analysis by primer extension

DESCRIPTION

biotechrabbit™ MMuLV Reverse Transcriptase is an exceptionally pure DNA polymerase which uses RNA as a substrate and exhibits no measurable proofreading 3'→5' exonuclease function. This enzyme performs cDNA synthesis by extending a DNA primer annealed to an RNA template; it can also make copies from a single-stranded DNA templates.

The enzyme is purified from a recombinant *E. coli* strain carrying the MMuLV reverse transcriptase gene.

1-Step RT-PCR Master Mix

| Cat. no. | Size | Package content |
|-----------|-------------------|---|
| BR0400102 | 100 rxns of 50 µl | <ul style="list-style-type: none"> • 2X One Step Master Mix • 20X RT-RI Blend |
| BR0400103 | 500 rxns of 50 µl | |

FEATURES

- Efficient thermostable Reverse Transcriptase and RNase Inhibitor providing high cDNA yields
- Unique Hot-Start *Taq* DNA Polymerase in a mix with high-quality dNTPs
- PCR enhancers allowing sensitive low background amplification

APPLICATIONS

- One-step RT-PCR
- Virus detection
- Amplification of GC-rich and complex templates

DESCRIPTION

biotechrabbit™ 1-Step RT-PCR Master Mix provides an easy and efficient way to perform both reverse transcription of RNA and PCR amplification of cDNA in one step. Only RNA template, primers and PCR Grade Water are added.

The 20X RT-RI Blend, which contains a blend of an efficient thermostable reverse transcriptase and a proprietary Ribonuclease Inhibitor, ensures high yields of cDNA.

The 2X One Step Master Mix contains unique Hot-Start *Taq* DNA Polymerase, dNTPs, MgCl₂ and stabilizers in an optimized buffer and provides high PCR product yields with minimal background even when using low-abundance and difficult templates. PCR enhancers included in the mix allow efficient amplification of complex templates including GC- or AT-rich sequences.

cDNA Synthesis Kit

| Cat. no. | Size | Package content |
|-----------|-------------------|--|
| BR0400401 | 10 rxns of 20 µl | <ul style="list-style-type: none"> • Reverse Transcriptase, 200U/µl • 5X Reverse Transcriptase Buffer • dNTP Mix • RNase Inhibitor • Hexamer and Oligo(dT) Primers • PCR Grade Water |
| BR0400403 | 125 rxns of 20 µl | |
| BR0400404 | 250 rxns of 20 µl | |

FEATURES

- Highly efficient synthesis of long cDNAs (≥ 19 kb)
- Excellent yields at temperatures up to 55 °C
- High sensitivity reverse transcription from low abundance template
- Superior performance in demanding applications, including templates with a high degree of secondary structure

APPLICATIONS

- First-strand cDNA synthesis for RT-PCR and qPCR
- Gene expression profiling
- RNA labeling and primer extension
- cDNA library construction

DESCRIPTION

biotechrabbit™ cDNA Synthesis Kit provides superior components that ensure efficient first-strand cDNA synthesis from mRNA or total RNA templates. biotechrabbit Reverse Transcriptase enables highly efficient reverse transcription with increased thermostability.

biotechrabbit RNase Inhibitor is a potent non-competitive inhibitor of RNases. The combination of highly efficient cDNA synthesis, effective RNase inhibition and pure dNTPs allows high yields of cDNAs of more than 19 kb.

For greater application flexibility, hexamer primers, allowing all RNAs in the reaction to be used as templates, and an oligo(dT) primer, for the synthesis of cDNA from only poly(A) tailed mRNA, are included.

NOTES

[illegible]

Quantitative Multiplex Real-Time PCR

biotechrabbit™ CAPITAL™ qPCR Probe, Green and 1-Step qRT-PCR Master Mixes are first-choice products for high performance real-time PCR. The mixes are designed to achieve excellent results in reaction specificity, efficiency, correlation coefficient and slope.

Intercalating dye-based mixes, such as CAPITAL qPCR Green Master Mix, allow nonspecific detection of double-stranded DNA and are faster and more cost-effective than probe-based mixes. Probe-based mixes, such as CAPITAL qPCR Probe Master Mix, can be used specifically or universally.

biotechrabbit CAPITAL qPCR and qRT-PCR products can be used with the fast and standard modes as well as for multiplex PCR. The mixes are available with ROX™ passive reference.

- High performance — for early Ct values and excellent specificity
- Sensitive — increased limit of detection and amplification of low copy targets
- Multiplex — mono and multiplex applications in standard and fast cycling
- Compatible — use on any real-time PCR platform

Instrument compatibility for passive reference dyes

| Reference dye | Company | Instrument |
|------------------------|-----------------------|--|
| Low concentration ROX | Analytica Jena | qTOWERr, qTOWER 2.0, qTOWER ³ |
| | Applied Biosystems | 7500, 7500 FAST, Viia™ 7 |
| | Bio-Rad | iCycler®, MyiQ™, iQ™ 5, Opticon™, Opticon 2, Chromo4™, MiniOpticon™, CFX96™, CFX384™ |
| | BJS | Xpress® |
| | Cepheid | Smartcycler® |
| | Eppendorf | Mastercycler® ep REALPLEX®, Mastercycler REALPLEX 2S |
| | Illumina | Eco™ |
| | Fluidigm | BioMark™ |
| | QIAGEN | Rotor-Gene® 3000, 6000, Q |
| | Roche Applied Science | LightCycler® 96, Lightcycler® 480, Lightcycler Nano |
| | Agilent | Mx4000P®, Mx3000P®, Mx3005P® |
| | Takara | Cycler Dice™ |
| | Techne | Quantica®, PrimeQ |
| High concentration ROX | Analytica Jena | qTOWER, qTOWER 2.0, qTOWER ³ |
| | Applied Biosystems | 7000, 7300, 7700, 7900, 7900HT, 7900HT FAST, StepOne™, StepOnePlus™ |
| | Cepheid | Smartcycler |
| | Eppendorf | Mastercycler ep REALPLEX, Mastercycler REALPLEX 2S |
| | Illumina | Eco™ |
| | QIAGEN | Rotor-Gene 3000, 6000, Q |
| | Roche Applied Science | LightCycler® 96, Lightcycler® 480, Lightcycler Nano |
| | Takara | Cycler Dice™ |
| | Techne | Quantica®, PrimeQ |
| Fluorescein | Bio-Rad | iCycler, MyiQ, iQ 5 |

4X CAPITAL™ qPCR Probe Master Mix

| Cat. no. | Size | Package content |
|---------------------------------------|---------------------|---|
| 4X CAPITAL qPCR Probe Master Mix | | |
| BR0501401 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Probe Master Mix |
| BR0501402 | 1,000 rxns of 20 µl | |
| BR0501403 | 4,000 rxns of 20 µl | |
| 4X CAPITAL qPCR Probe Master Mix LROX | | |
| BR0501501 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Probe Master Mix LROX |
| BR0501502 | 1,000 rxns of 20 µl | |
| BR0501503 | 4,000 rxns of 20 µl | |
| 4X CAPITAL qPCR Probe Master Mix HROX | | |
| BR0501601 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Probe Master Mix HROX |
| BR0501602 | 1,000 rxns of 20 µl | |
| BR0501603 | 4,000 rxns of 20 µl | |

FEATURES

- Best in-class performance for both single and multiplex detection
- Convenient master mix with high specificity in pathogen detection
- Highly sensitive for low-abundance DNA targets

APPLICATIONS

- Standard and fast cycling qPCR with rapid extension rate for early Ct values
- For use on a wide range of probe technologies including Taqman®, Molecular Beacons® and Scorpion® probes

DESCRIPTION

biotechrabbit™ CAPITAL™ qPCR Probe Master Mix for quantifying genomic, cDNA and viral sequences provides outstanding performance in single and multiplex qPCR. The high sensitivity provided by the mix is ideal for detection of low-abundance DNA targets in various applications, such as pathogen detection.

CAPITAL qPCR Probe Master Mix uses proprietary combination of enzyme and buffer chemistry for efficient extension and early Ct in single and multiplex qPCR. To enable the use of the kit on qPCR platforms with different reference dye concentration requirements, three kit formats are available: a one-step kit containing no ROX, as well as LROX and HROX versions containing ROX in the corresponding concentrations.

4X CAPITAL™ 1-Step qRT-PCR Probe Master Mix

| Cat. no. | Size | Package content |
|---|---------------------|---|
| 4X CAPITAL 1-Step qRT-PCR Probe Master Mix | | |
| BR0502001 | 200 rxns of 20 µl | • 4X CAPITAL 1-Step qRT-PCR Probe Master Mix • 20X RTase with RNase Inhibitor |
| BR0502002 | 1,000 rxns of 20 µl | |
| BR0502003 | 4,000 rxns of 20 µl | |
| 4X CAPITAL 1-Step qRT-PCR Probe Master Mix LROX | | |
| BR0502101 | 200 rxns of 20 µl | • 4X CAPITAL 1-Step qRT-PCR Probe Master Mix LROX • 20X RTase with RNase Inhibitor |
| BR0502102 | 1,000 rxns of 20 µl | |
| BR0502103 | 4,000 rxns of 20 µl | |
| 4X CAPITAL 1-Step qRT-PCR Probe Master Mix HROX | | |
| BR0502201 | 200 rxns of 20 µl | • 4X CAPITAL 1-Step qRT-PCR Probe Master HROX • 20X RTase with RNase Inhibitor |
| BR0502202 | 1,000 rxns of 20 µl | |
| BR0502203 | 4,000 rxns of 20 µl | |

DESCRIPTION

biotechrabbit™ CAPITAL™ 1-Step qRT-PCR Probe Master Mix provides outstanding performance for real-time PCR quantification of RNA templates, including mRNA, total RNA and viral RNA from a wide range of targets. The master mix ensures high specificity and sensitivity in single and multiplex detection, making it the choice for extremely low-copy-number targets in pathogen detection.

CAPITAL 1-Step qRT-PCR Probe Master Mix uses proprietary reverse transcriptase technology and buffer chemistry for efficient cDNA synthesis and QPCR in a single tube. To enable the use of the kit on qPCR platforms with different reference dye concentration requirements, three kit formats are available: a one-step kit containing no ROX, as well as LROX and HROX versions containing ROX in the corresponding concentrations.

FEATURES

- Best in-class performance for both single and multiplex detection
- Convenient master mix for detection of low-copy pathogen targets
- High specificity and sensitivity across a wide range of sample sources

APPLICATIONS

- One step qRT-PCR from mRNA, total RNA and viral RNA targets
- For use with standard and fast qPCR platforms
- Single and multiplex qRT-PCR reactions

4X CAPITAL™ qPCR Probe Master Mix Plus

| Cat. no. | Size | Package content |
|---------------------------------------|---------------------|---|
| 4X CAPITAL qPCR Probe Master Mix Plus | | |
| BR0503101 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Probe Master Mix UDG |
| BR0503102 | 1,000 rxns of 20 µl | |
| BR0503103 | 4,000 rxns of 20 µl | |

FEATURES

- UDG activity helps prevent the amplification of carryover contamination from previous reactions.
- Optimized to detect low-abundance targets, ensuring accurate quantification even in samples with minimal genetic material.
- Pre-mixed, ready-to-use solution reduces setup time and minimizes the risk of errors.

APPLICATIONS

- Ideal for detecting and quantifying pathogen and disease-associated genes.
- Accurately measures changes in gene expression levels in response to various stimuli or treatments.
- Suitable for clinical diagnostics where reliability and precision are critical.

DESCRIPTION

biotechrabbit™ CAPITAL™ qPCR Probe Master Mix Plus is a high-performance solution designed for quantitative PCR (qPCR) applications that require utmost precision and reliability. This ready-to-use mix combines a robust *Taq* DNA polymerase, UDG (Uracil-DNA Glycosylase), and dUTP to provide enhanced protection against carryover contamination, ensuring the accuracy and reproducibility of your qPCR results.

The UDG enzyme is incorporated to degrade uracil-containing DNA, a common byproduct of PCR carryover, while the inclusion of dUTP ensures that any contaminating DNA from previous PCRs is not amplified. This system not only improves the reliability of qPCR assays but also simplifies the workflow by preventing false positives.

4X CAPITAL™ 1-Step qRT-PCR Probe Master Mix Plus

| Cat. no. | Size | Package content |
|---|---------------------|--|
| 4X CAPITAL 1-Step qRT-PCR Probe Master Mix Plus | | |
| BR0502801 | 200 rxns of 20 µl | • 4X CAPITAL qRT-PCR Probe Master Mix UDG |
| BR0502802 | 1,000 rxns of 20 µl | |
| BR0502803 | 4,000 rxns of 20 µl | • 20X RTase with RNase Inhibitor |

FEATURES

- Prevents carryover contamination with UDG and dUTP for reliable RNA quantification
- Integrates reverse transcription and PCR amplification in one tube, minimizing sample handling
- Maintains enzyme activity and stability throughout thermal cycling

APPLICATIONS

- Critical for comparing mRNA levels under various conditions
- Effectively identifies RNA viruses in health-related screenings
- Supports studies on RNA roles in disease and therapy

DESCRIPTION

biotechrabbit™ CAPITAL™ 1-Step qRT-PCR Probe Master Mix Plus is a state-of-the-art solution optimized for quantitative reverse transcription PCR (qRT-PCR). This advanced mix integrates reverse transcriptase, *Taq* DNA polymerase, Uracil-DNA Glycosylase (UDG), and dUTP in a single, ready-to-use formulation, making it ideal for accurate RNA target detection and gene expression analysis.

The inclusion of UDG and dUTP enhances the mix's capability to prevent carryover contamination from previous PCR reactions. UDG excises uracil residues incorporated into DNA during PCR, and dUTP ensures that uracil-containing DNA is used, marking any potential contaminant for degradation. This dual approach significantly reduces the likelihood of amplifying carryover, thus improving the reliability of your results.

4X CAPITAL™ qPCR Green Master Mix

| Cat. no. | Size | Package content |
|---------------------------------------|---------------------|--|
| 4X CAPITAL qPCR Green Master Mix | | |
| BR0501701 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Green Master Mix |
| BR0501702 | 1,000 rxns of 20 µl | |
| BR0501703 | 4,000 rxns of 20 µl | |
| 4X CAPITAL qPCR Green Master Mix LROX | | |
| BR0501801 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Green Master Mix LROX |
| BR0501802 | 1,000 rxns of 20 µl | |
| BR0501803 | 4,000 rxns of 20 µl | |
| 4X CAPITAL qPCR Green Master Mix HROX | | |
| BR0501901 | 200 rxns of 20 µl | • 4X CAPITAL qPCR Green Master Mix HROX |
| BR0501902 | 1,000 rxns of 20 µl | |
| BR0501903 | 4,000 rxns of 20 µl | |

FEATURES

- Best in-class performance in a wide range of applications
- Highly specific amplification and excellent signal to noise ratio
- High sensitivity in amplification of low-abundance DNA targets with a wide range of linearity

APPLICATIONS

- Standard and fast cycling qPCR with rapid extension rate for early Ct values
- Accurate and robust gene expression analysis
- Excellent performance in copy number variation analysis

DESCRIPTION

biotechrabbit™ CAPITAL™ qPCR Green Master Mix allows sensitive and specific amplification with an excellent signal to noise ratio and rapid extension rates. Extremely low-copy-number targets can be detected with high efficiency over several logs of template concentration, while primer dimer formation is efficiently minimized.

CAPITAL qPCR Green Master Mix shows accurate and robust performance in wide range of applications, including gene expression and copy number variation analysis.

To enable the use of the kit on qPCR platforms with different reference dye concentration requirements, three kit formats are available: a one-step kit containing no ROX, as well as LROX and HROX versions containing ROX in the corresponding concentrations.

4X CAPITAL™ 1-Step qRT-PCR Green Master Mix

| Cat. no. | Size | Package content |
|---|---------------------|---|
| 4X CAPITAL 1-Step qRT-PCR Green Master Mix | | |
| BR0502301 | 200 rxns of 20 µl | • 4X CAPITAL 1-Step qRT-PCR Green Master Mix • 20X RTase with RNase Inhibitor |
| BR0502302 | 1,000 rxns of 20 µl | |
| BR0502303 | 4,000 rxns of 20 µl | |
| 4X CAPITAL 1-Step qRT-PCR Green Master Mix LROX | | |
| BR0502401 | 200 rxns of 20 µl | • 4X CAPITAL 1-Step qRT-PCR Green Master Mix LROX • 20X RTase with RNase Inhibitor |
| BR0502402 | 1,000 rxns of 20 µl | |
| BR0502403 | 4,000 rxns of 20 µl | |
| 4X CAPITAL 1-Step qRT-PCR Green Master Mix HROx | | |
| BR0502501 | 200 rxns of 20 µl | • 4X CAPITAL 1-Step qRT-PCR Green Master Mix HROx • 20X RTase with RNase Inhibitor |
| BR0502502 | 1,000 rxns of 20 µl | |
| BR0502503 | 4,000 rxns of 20 µl | |

FEATURES

- Convenient mix for quantification of RNA templates
- Sensitive and specific amplification with rapid extension rate for early Ct values
- Excellent linearity across a wide range of RNA dilutions

APPLICATIONS

- One step qRT-PCR from mRNA, total RNA and viral RNA targets
- For use with standard and fast qPCR platforms

DESCRIPTION

biotechrabbit™ CAPITAL™ 1-Step qRT-PCR Green Master Mix allows sensitive and specific cDNA synthesis and qPCR in a single tube for quantifying mRNA, total RNA and viral RNA sequences. Extremely low-copy-number targets can be detected with high efficiency over several logs of template concentration.

CAPITAL 1-Step qRT-PCR Green Master Mix uses proprietary reverse transcriptase technology and buffer chemistry for efficient cDNA synthesis and qPCR in a single tube. To enable the use of the kit on qPCR platforms with different reference dye concentration requirements, three kit formats are available: a one-step kit containing no ROX, as well as LROX and HROX versions containing ROX in the corresponding concentrations.

2X 5Star™ qPCR Probe Master Mix

| Cat. no. | Size | Package content |
|-----------|-------------------|-----------------------------------|
| BC0502501 | 100 rxns of 20 µl | • 2X 5Star™ qPCR Probe Master Mix |

FEATURES

- Robust amplification in both single and multiplex quantitative PCR
- Suitable for amplification from crude lysates and detection of low-copy numbers
- High specificity and sensitivity across a wide range of sample sources
- Excellent performance in presence of PCR inhibitors
- Compatible with a wide range of quantitative PCR platforms

APPLICATIONS

- Standard and fast cycling for both single and multiplex qPCR
- Suitable for routine and high-throughput laboratories
- Compatible with a wide range of probe technologies including Taqman®, Molecular Beacons® and Scorpion® probes
- For gene expression analysis, genotyping, pathogen detection and quantification

DESCRIPTION

biotechrabbit™ 2X 5Star™ qPCR Probe Master Mix is an antibody-mediated hot-start real-time PCR mix optimized for amplification and quantification of viral DNA, cDNA and genomic DNA from a wide range of targets. The mix is tailored for high specificity and sensitivity in single and multiplex amplification; 5Star™ qPCR Mix is an excellent choice for the amplification of crude lysates, templates carrying PCR inhibitors and targets with low copy numbers.

5Star™ qPCR Probe Master Mix uses a proprietary enzyme and buffer formulation suitable for fast extension and multiplexing in challenging PCR reactions.

5X UniFi™ 1-Step qRT-PCR Probe Master Mix

| Cat. no. | Size | Package content |
|-----------|---------------------|---|
| BR0504601 | 250 rxns of 20 µl | • 5X UniFi™ 1-Step qRT-PCR Probe Master Mix |
| BR0504602 | 1,000 rxns of 20 µl | |

FEATURES

- Best in-class performance for both single and multiplex detection
- Convenient all-in-one master mix
- High specificity and sensitivity across a wide range of sample sources

APPLICATIONS

- One step qRT-PCR from mRNA, total RNA and viral RNA targets
- For use with standard and fast qPCR platforms
- Single and multiplex qRT-PCR reactions

DESCRIPTION

biotechrabbit™ UniFi™ 1-Step qRT-PCR Probe Master Mix provides outstanding performance for real-time PCR quantification of RNA templates, including mRNA, total RNA and viral RNA from a wide range of targets. The master mix ensures high specificity and sensitivity in single and multiplex detection, making it the choice for extremely low-copy-number targets in pathogen detection.

The mix is provided as a 5X concentrated master mix offering flexibility in pipetting schemes for template input in various PCR applications.

UniFi 1-Step qRT-PCR Probe Master Mix uses proprietary reverse transcriptase technology and buffer chemistry for efficient cDNA synthesis and qPCR in a single tube.

NOTES

LYO-ready Master Mixes

biotechrabbit™ LYO-ready products are optimized for air-drying and lyophilization, a technique that removes water from biological samples, enzymes, or reagents, resulting in a dry and stable product format that offers exceptional longevity and functionality.

With over a decade of experience in freeze-drying, biotechrabbit™ offers specialized LYO-ready formulations for enzymes and reagents that ensure stability is not compromised during the lyophilization process.

Utilizing biotechrabbit™ LYO-ready products for manufacturing of stable freeze-dried reagents with a highly extended shelf life, eliminates the need for a continuous cold chain during shipping and storage. This guarantees reduced-cost while increasing the sustainability.

biotechrabbit™ LYO-ready master mixes are available in various concentrations to provide flexibility for custom production of single and multiple reactions in formats of beads and cakes, suitable for high-throughput and point-of-care cartridges.

- Optimal Stability for Prolonged Storage
- Cost-Efficient Logistics
- Effortless Reaction Setup
- Versatility Tailored to Your Needs

| Product | Main feature | Main PCR application | IVD Development | UDG Treatment |
|---|--|----------------------|-----------------|---------------|
| 14X LYO-ready CAPITAL™ qPCR Probe Mix | LYO-ready master mix including high-quality excipients | qPCR | ✓ | |
| 10X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Mix | LYO-ready master mix including high-quality excipients | qRT-PCR | ✓ | |
| 4X LYO-ready CAPITAL™ qPCR Probe Mix Plus | LYO-ready master mix including high-quality excipients and UDG | qPCR | ✓ | ✓ |
| 4X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Mix Plus | LYO-ready master mix including high-quality excipients and UDG | qRT-PCR | ✓ | ✓ |

14X LYO-ready CAPITAL™ qPCR Probe Mix

| Cat. no. | Size | Package content |
|-----------|-------------------|--|
| BC0504305 | 500 rxns of 20 µl | <ul style="list-style-type: none"> 14X LYO-ready CAPITAL qPCR Probe Master Mix 4X qPCR Probe Reconstitution Buffer |

FEATURES

- Freeze-dryable formulation including excipients and stabilizers
- Best-in-class performance in both single and multiplex quantitative amplification
- Convenient master mix for low-copy number detection
- High specificity and sensitivity

APPLICATIONS

- For use with standard and fast qPCR platforms
- Single and multiplex qRT-PCR amplification
- Compatible with a wide range of probe technologies including Taqman®, Molecular Beacons® and Scorpion® probes

DESCRIPTION

biotechrabbit™ 14X LYO-ready CAPITAL™ qPCR Probe Master Mix is a ready-to-use and concentrated formulation of all enzymes, dNTPs, excipients, and stabilizers for producing home-made lyophilizates with the option to include primers and probes. The time-effective lyophilization is possible for high and low volumes of the master mix without the collapse of the lyophilizate. The resulting lyophilizate is highly resistant to humidity and is swiftly dissolved in the provided reconstitution buffer.

The master mix is optimized for real-time PCR quantification of viral DNA, cDNA and genomic DNA from a wide range of targets. The mix ensures high specificity and sensitivity in single and multiplex amplification, making it the best choice for extremely low-copy-number targets in pathogen detection.

CAPITAL qPCR Probe Master Mix uses a proprietary enzyme and buffer formulation suitable for fast extension and multiplexing in challenging PCR reactions.

10X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Mix

| Cat. no. | Size | Package content |
|--|---------------------|---|
| 10X LYO-ready CAPITAL 1-Step qRT-PCR Probe Mix | | |
| BR0502901 | 500 rxns of 20 µl | • 10X LYO-ready CAPITAL 1-Step qRT-PCR Probe Master Mix • 5X qRT-PCR Probe Reconstitution Buffer |
| BR0502903 | 5,000 rxns of 20 µl | |
| 10X LYO-ready CAPITAL 1-Step qRT-PCR Probe Mix | | |
| BR0503001 | 500 rxns of 20 µl | • 10X LYO-ready CAPITAL 1-Step qRT-PCR Probe Master Mix • 2X qRT-PCR Probe Reconstitution Buffer |
| BR0503003 | 5,000 rxns of 20 µl | |

FEATURES

- Freeze-dryable formulation including excipients and stabilizers
- Best-in-class performance in both single and multiplex quantitative amplification
- Convenient master mix for low-copy number detection
- High specificity and sensitivity

APPLICATIONS

- One-step amplification of mRNA, total RNA and viral RNA targets
- For use with standard and fast qPCR platforms
- Single and multiplex qRT-PCR amplification

DESCRIPTION

biotechrabbit™ 10X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Mix is a ready-to-use and concentrated formulation of all enzymes, dNTPs, excipients, and stabilizers for producing home-made lyophilizates with the option to include primers and probes. The time-effective lyophilization is possible for high and low volumes of the master mix without the collapse of the lyophilizate. The resulting lyophilizate is highly resistant to humidity and is swiftly dissolved in the provided reconstitution buffer. The reconstitution buffer is available in two different concentrations.

The master mix is optimized for real-time PCR quantification of RNA templates, including mRNA, total RNA, and viral RNA from a wide range of targets. The mix ensures high specificity and sensitivity in single and multiplex amplification, making it the best choice for extremely low-copy-number targets in pathogen detection.

CAPITAL qRT-PCR Probe Mix uses proprietary formulation for efficient RNA transcription and qPCR in a single tube.

4X LYO-ready CAPITAL™ qPCR Probe Mix Plus

| Cat. no. | Size | Package content |
|-----------|-------------------|--|
| BR0505201 | 100 rxns of 20 µl | <ul style="list-style-type: none"> 4X LYO-ready CAPITAL™ qPCR Probe Master Mix Plus |
| BR0505202 | 500 rxns of 20 µl | <ul style="list-style-type: none"> 4X qPCR Probe Reconstitution Buffer |

FEATURES

- Freeze-dryable formulation including excipients and stabilizers
- Convenient master mix
- Minimized risk of carryover contamination

APPLICATIONS

- PCR amplification of viral DNA, cDNA and genomic DNA targets
- For use with standard and fast qPCR platforms
- Single and multiplex qPCR amplification

DESCRIPTION

biotechrabbit™ 4X LYO-ready CAPITAL™ qPCR Probe Master Mix Plus, is a ready-to-use four times concentrated formulation including the adjusted concentration of heat-labile Uracil DNA Glycosylase (HL-UDG) minimizing the risk of carryover contamination. The mix includes all enzymes, dNTPs, excipients, and stabilizers for producing home-made lyophilizates with the option to include primers and probes. The time-effective lyophilization is possible for high and low volumes of the master mix without the collapse of the lyophilizate. The resulting lyophilizate is highly resistant to humidity and is swiftly dissolved in the provided reconstitution buffer.

The master mix is optimized for real-time PCR quantification of viral DNA, cDNA and genomic DNA from a wide range of targets. The mix ensures high specificity and sensitivity in single and multiplex amplification, making it the best choice for extremely low-copy-number targets in pathogen detection.

4X LYO-ready CAPITAL qPCR Probe Mix Plus uses proprietary enzyme and buffer formulation suitable for fast extension and multiplexing in challenging PCR reactions.

4X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Mix Plus

| Cat. no. | Size | Package content |
|-----------|-------------------|--|
| BR0505301 | 100 rxns of 20 µl | <ul style="list-style-type: none"> 4X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Master Mix Plus |
| BR0505302 | 500 rxns of 20 µl | <ul style="list-style-type: none"> 4X qRT-PCR Probe Reconstitution Buffer |

FEATURES

- Freeze-dryable formulation including excipients and stabilizers
- Convenient master mix
- Minimized risk of carryover contamination

APPLICATIONS

- One-step qRT-PCR amplification of mRNA, total RNA and viral RNA targets
- For use with standard and fast qPCR platforms
- Single and multiplex qPCR amplification

DESCRIPTION

biotechrabbit™ 4X LYO-ready CAPITAL™ 1-Step qRT-PCR Probe Master Mix Plus is a ready-to-use four times concentrated formulation including the adjusted concentration of heat-labile Uracil DNA Glycosylase (HL-UDG) minimizing the risk of carryover contamination. The mix includes all enzymes, dNTPs, excipients, and stabilizers for producing home-made lyophilizates with the option to include primers and probes.

The time-effective lyophilization is possible for high and low volumes of the master mix without the collapse of the lyophilizate. The resulting lyophilizate is highly resistant to humidity and is swiftly dissolved in the provided reconstitution buffer. The master mix is optimized for real-time PCR quantification of RNA templates, including mRNA, total RNA, and viral RNA from a wide range of targets. The mix ensures high specificity and sensitivity in single and multiplex amplification, making it the best choice for extremely low-copy-number targets in pathogen detection.

4X LYO-ready CAPITAL 1-Step qRT-PCR Probe Mix Plus uses proprietary formulation for efficient RNA transcription and qPCR in a single tube.

NOTES

Lyophilized Polymerases and Master Mixes

biotechrabbit™ Lyo products combine an innovative lyophilization process with high-quality enzymes and well established buffer or master mix compositions. Top performance in molecular biology or diagnostics applications is ensured. Lyo products are proven to show the same high activity as their liquid equivalents.

The freeze-dried enzymes avoid the need for a cool chain, leading to considerable cost savings during shipment and storage.

Covering the whole workflow from enzyme production, master mix development and lyophilization, biotechrabbit is the partner of choice for supplying molecular biology enzymes, reagents and mixes to diagnostics and life sciences.

- Diagnostic-grade quality — top performance for demanding applications
- Economic — no need for cooling during shipment and storage
- Robust — innovative formulation for highly stable lyophilizates

Hot-Start *Taq* DNA Polymerase, 5 U/μl, lyophilized

| Cat.no | Size | Package content |
|-----------|---------|---|
| BR0201202 | 500 U | • Lyo Hot-Start <i>Taq</i> DNA Polymerase, 5 U/μl |
| BR0201203 | 2,500 U | • <i>Taq</i> Reconstitution Buffer |

FEATURES

- High PCR specificity and sensitivity
- Exceptionally pure Hot-Start *Taq* DNA Polymerase for sensitive PCR applications and high yields
- Antibody-based Hot-Start for fast polymerase activation

APPLICATIONS

- Hot-Start PCR up to 5 kb
- Ambient shipment and room-temperature storage
- Amplification of low-copy-number targets
- RT-PCR and TA cloning

DESCRIPTION

biotechrabbit™ Hot-Start *Taq* DNA Polymerase, lyophilized is a freeze-dried version of its well-established liquid equivalent. The stabilized format allows shipment and storage without cooling. The provided reconstitution buffer ensures swift reconstitution and optimal reaction conditions for the enzyme.

Hot-Start *Taq* DNA Polymerase is a first-choice hot-start PCR enzyme for all demanding PCR applications. The enzyme ensures high product yields with low background and without primer dimer formation and nonspecific priming.

The Hot-Start *Taq* DNA Polymerase is inactive during reaction setup due to the bound antibody which is quickly released at elevated temperatures, ensuring the enzyme is active only during PCR. There is no need for prolonged heating or denaturation steps.

The optional use of 5X PCR Enhancer improves PCR results in many cases, including impure template or low template abundance.

2X YourTaq™ Hot-Start PCR Master Mix, lyophilized

| Cat. no. | Size | Package content |
|-----------|-------------------|---|
| BR0202401 | 50 rxns of 50 µl | • 2X Lyo YourTaq Hot-Start PCR Master Mix |
| BR0202403 | 200 rxns of 50 µl | • PCR Mix Reconstitution Buffer |

FEATURES

- Stable enzyme and mix for ambient shipment and room temperature storage
- Exceptionally pure YourTaq Hot-Start DNA Polymerase
- Optimized Master Mix for increased yield of amplification
- Resistant to PCR inhibitor carry-over
- Excellent PCR specificity and sensitivity for a broad range of amplicons

APPLICATIONS

- Routine and demanding PCR amplification up to 5 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ lyophilized YourTaq™ Hot-Start PCR Master Mix is a freeze-dried version of the well-established liquid equivalent. The stabilized format allows shipment and storage without cooling. The Master Mix is optimized for high yield of amplification of up to 5 kb DNA targets, even from low copy number. YourTaq Hot-Start PCR Master Mix shows excellent PCR specificity and sensitivity for a broad range of amplicons. The mix is resistant to PCR inhibitors, such as blood (up to 20 %), Ethanol or humic acid enabling PCR amplification from DNA templates with carry-over of PCR-inhibitors.

The 2X YourTaq Hot-Start PCR Master Mix contains pure biotechrabbit YourTaq Hot-Start DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added. In addition, the mix is suitable for amplification of GC-rich templates (up to 70 %) pairing with 5X PCR Enhancer.

2X Hot-Start PCR Master Mix, lyophilized

| Cat. no. | Size | Package content |
|-----------|-------------------|-----------------------------------|
| BR0201101 | 50 rxns of 50 µl | • 2X Lyo Hot-Start PCR Master Mix |
| BR0201103 | 200 rxns of 50 µl | • PCR Mix Reconstitution Buffer |

FEATURES

- Room temperature stable enzymes and mixes
- Exceptionally pure *Taq* DNA Polymerase
- Hot-Start for high PCR specificity and sensitivity
- Optimized Master Mix for fast setup

APPLICATIONS

- Ambient shipment and room temperature storage
- Routine and demanding PCR applications
- PCR amplification up to 5 kb
- TA cloning

DESCRIPTION

biotechrabbit™ lyophilized Hot-Start PCR Master Mix is a freeze dried version of the well-established liquid equivalent. The stabilized format allows shipment and storage without cooling. The Master Mix is a perfect choice for a fast reaction setup that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. It is designed for low-background, high-throughput PCR of up to 5 kb DNA targets.

The 2X Hot-Start PCR Master Mix contains pure biotechrabbit Hot-Start *Taq* DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added.

The Hot-Start *Taq* DNA Polymerase is inactive during reaction setup due to the bound antibody, which is quickly released at elevated temperatures, ensuring the enzyme is active only during PCR. There is no need for prolonged heating or denaturation steps. The Hot-Start minimizes primer dimers and mispriming.

4X CAPITAL™ qPCR Probe Master Mix, lyophilized

| Cat. no. | Size | Package content |
|-----------|-------------------|---|
| BR0502601 | 200 rxns of 20 µl | <ul style="list-style-type: none">• Lyo CAPITAL qPCR Probe Master Mix• 4X qPCR Probe Reconstitution Buffer |

FEATURES

- Stable enzyme and mix for ambient shipment and room temperature storage
- Best in-class performance for both single and multiplex detection
- Convenient master mix with high specificity in pathogen detection
- Highly sensitive for low-abundance DNA targets

APPLICATIONS

- Standard and fast cycling qPCR with rapid extension rate for early Ct values
- For use on a wide range of probe technologies including Taqman®, Molecular Beacons® and Scorpion® probes

DESCRIPTION

biotechrabbit™ lyophilized CAPITAL™ qPCR Probe Master Mix is a freeze-dried version of the well-established liquid equivalent. The stabilized format allows shipment and storage without cooling. The master mix is optimized for quantifying genomic, cDNA and viral sequences provides outstanding performance in single and multiplex qPCR. The high sensitivity provided by the mix is ideal for detection of low-abundance DNA targets in various applications, such as pathogen detection.

CAPITAL qPCR Probe Master Mix uses proprietary combination of enzyme and buffer chemistry for efficient extension and early Ct in single and multiplex qPCR.

5X CAPITAL™ 1-Step qRT-PCR Probe Master Mix, lyophilized

| Cat. no. | Size | Package content |
|-----------|-------------------|---|
| BC0503202 | 200 rxns of 20 µl | <ul style="list-style-type: none">• Lyo CAPITAL qRT-PCR Probe Master Mix• 5X qRT-PCR Probe Reconstitution Buffer |

FEATURES

- Stable enzyme and mix for ambient shipment and room temperature storage
- Best in-class performance for both single and multiplex detection
- Convenient master mix for detection of low-copy pathogen targets
- High specificity and sensitivity across a wide range of sample sources

APPLICATIONS

- One step qRT-PCR from mRNA, total RNA and viral RNA targets
- For use with standard and fast qPCR platforms
- Single and multiplex qRT-PCR reactions

DESCRIPTION

biotechrabbit™ lyophilized CAPITAL™ qRT-PCR Probe Master Mix is a freeze-dried version of the well-established liquid equivalent. The stabilized format allows shipment and storage without cooling. The master mix is optimized for real-time PCR quantification of RNA templates, including mRNA, total RNA and viral RNA from a wide range of targets. The mix ensures high specificity and sensitivity in single and multiplex detection, making it the choice for extremely low-copy-number targets in pathogen detection.

CAPITAL qRT-PCR Probe Master Mix uses proprietary reverse transcriptase technology and buffer chemistry for efficient cDNA synthesis and qPCR in a single tube.

NOTES

Long-Range PCR, High-Fidelity and NGS

Pfu DNA Polymerase provides PCR accuracy that is approximately 10 times higher than *Taq* DNA Polymerase, and is suitable for demanding cloning, sequencing and expression applications.

Long-range PCR kits provide an optimized combination of *Taq* DNA polymerase and a proofreading DNA polymerase for longer PCR products with higher accuracy than is possible with the *Taq* enzyme alone. Long-range enzymes amplify templates of up to 30–40 kb with high fidelity.

biotechrabbit's NGS product section offers a comprehensive suite of solutions meticulously designed to enhance every step of the Next-Generation Sequencing (NGS) workflow. From library preparation to amplification, our products are trusted for their reliability and performance. With our A-tailing and Blunting Kits, along with high-fidelity *Pfu* Polymerase and versatile *T4* DNA Polymerase, we ensure optimal results in genomics and beyond.

- Optimized — excellent enzyme performance for demanding applications
- Accurate — high-fidelity polymerases
- Reliable — polymerases for large amplicons

| Product | | Main PCR application | Fidelity* | Amplicon length up to | Simplified setup |
|-------------------------------------|---|--|-------------|-----------------------|------------------|
| Long Range DNA Polymerase, 2.5 U/μl | DNA polymerases for long-range and high-fidelity PCR | Long-range, GC-rich templates | ~4X higher | 40 kb | |
| 2X Long Range PCR Master Mix | Includes DNA polymerase and reagents for long-range PCR | High-throughput, long- and GC-rich templates | ~4X higher | 40 kb | ✓ |
| <i>Pfu</i> DNA Polymerase, 2.5 U/μl | Ten times more accurate than <i>Taq</i> DNA Polymerase | High-fidelity, demanding PCR | ~10X higher | 4 kb | |
| 2X <i>Pfu</i> PCR Master Mix | Includes <i>Pfu</i> DNA Polymerase and high-fidelity PCR reagents | High-throughput, high-fidelity | ~10X higher | 4 kb | ✓ |

* Fidelity vs. *Taq* DNA Polymerase

Long Range DNA Polymerase, 2.5 U/μl

| Cat. no. | Size | Package content |
|-----------|-------|---|
| BR0300301 | 100 U | • Long Range PCR Enzyme Mix, 2.5 U/μl |
| BR0300302 | 500 U | • 10X Long Range Reaction Buffer • 5X PCR Enhancer |

FEATURES

- High-productivity, long-range PCR
- Increased fidelity for accurate amplification of GC-rich templates
- Polymerase mix for high yield and short cycle times

APPLICATIONS

- Long-range PCR up to 40 kb
- Amplification of GC-rich templates

DESCRIPTION

biotechrabbit™ Long Range DNA Polymerase is a first-choice for amplification of targets up to 40 kb in size with higher accuracy than *Taq* DNA polymerase.

This specially designed blend of thermophilic polymerases is well suited for amplification of targets that are GC-rich and have complex structures.

For the most demanding applications, the supplied 5X PCR Enhancer can be optionally used to improve results when using templates with GC-rich sequences and complex structures.

Long Range DNA Polymerase produces a mixture of A-tailed and blunt-end PCR products. It is advisable to blunt products before cloning into blunt-end vectors.

2X Long Range PCR Master Mix

| Cat. no. | Size | Package content |
|-----------|-------------------|--------------------------------|
| BR0300401 | 100 rxns of 50 μl | • 2X Long Range PCR Master Mix |
| BR0300402 | 500 rxns of 50 μl | • 5X PCR Enhancer |

FEATURES

- Optimized Long Range PCR Master Mix for minimal hands-on and fast setup
- Mix of pure polymerases and highest quality dNTPs for high yield and short cycle times
- Increased fidelity for accurate amplification of GC-rich templates

APPLICATIONS

- High-throughput, long-range PCR up to 40 kb
- Amplification of GC-rich templates

DESCRIPTION

biotechrabbit™ Long Range PCR Master Mix is a perfect choice for fast reaction setup for long-range PCR that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. It is designed for amplification of targets up to 40 kb in size. The master mix works well with GC-rich templates and amplifies DNA with a higher fidelity than *Taq* DNA polymerase.

The Long Range PCR Master Mix contains a blend of thermophilic polymerases, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added.

For the most demanding applications, the supplied 5X PCR Enhancer can be optionally used to improve results when using templates with GC-rich sequences and complex structures.

Long Range PCR Master Mix produces a mixture of A-tailed and blunt-end PCR products. It is advisable to blunt products before cloning into the blunt-end vector.

Pfu DNA Polymerase, 2.5 U/μl

| Cat. no. | Size | Package content |
|-----------|-------|---|
| BR0300101 | 100 U | • <i>Pfu</i> DNA Polymerase, 2.5 U/μl |
| BR0300102 | 500 U | • 10X <i>Pfu</i> Reaction Buffer • 5X PCR Enhancer |

FEATURES

- Accurate PCR for demanding applications
- Approximately ten times higher accuracy than *Taq* DNA Polymerase
- Proof-reading for increased fidelity

APPLICATIONS

- High-fidelity PCR
- Generation of PCR products for blunt cloning
- Site directed mutagenesis

DESCRIPTION

biotechrabbit™ *Pfu* DNA Polymerase is a highly purified thermostable recombinant proofreading DNA polymerase. *Pfu* DNA Polymerase exhibits approximately 10 times higher accuracy than *Taq* DNA polymerase and amplifies targets up to 3–4 kb in size.

The enzyme catalyzes template-dependent nucleotide polymerization in the 5'→3' direction. Additionally the 3'→5' exonuclease (proofreading) activity corrects nucleotide incorporation errors, thereby increasing fidelity and accuracy of DNA polymerization. The enzyme has no 5'→3' exonuclease activity and no detectable reverse transcriptase activity and produces blunt-end PCR products.

For the most demanding applications, the supplied 5X PCR Enhancer can be optionally used for improving results when using templates with GC-rich sequences and complex structures.

2X Pfu PCR Master Mix

| Cat. no. | Size | Package content |
|-----------|-------------------|--------------------------------|
| BR0300201 | 100 rxns of 50 μl | • 2X <i>Pfu</i> PCR Master Mix |
| BR0300202 | 500 rxns of 50 μl | • 5X PCR Enhancer |

FEATURES

- Optimized *Pfu* PCR Master Mix for minimal hands-on and fast setup
- Pure *Pfu* DNA Polymerase and highest quality dNTPs
- Approximately ten times higher accuracy than *Taq* DNA Polymerase for accurate PCR in demanding applications

APPLICATIONS

- High-throughput, high-fidelity PCR
- Generation of PCR products for blunt cloning

DESCRIPTION

biotechrabbit™ *Pfu* PCR Master Mix is a perfect choice for fast, high-fidelity PCR setup that reduces the time required for calculation and pipetting and eliminates the need for buffer optimization. It is designed for routine high-throughput, high-fidelity amplification of targets up to 3–4 kb in size.

The 2X *Pfu* PCR Master Mix contains *Pfu* DNA Polymerase, extremely high-quality dNTPs and optimized PCR buffer; thus, only template, PCR primers and PCR Grade Water are added. For the most demanding applications, the supplied 5X PCR Enhancer can be optionally be used to improve results when using templates with GC-rich sequences and complex structures.

Pfu DNA Polymerase exhibits approximately 10 times higher accuracy compared to *Taq* DNA polymerase. *Pfu* DNA Polymerase produces blunt-end PCR products suitable for blunt cloning.

T4 DNA Ligase Rapid, 600 U/μl

| Cat. no. | Size | Package content |
|-----------|------------------------|------------------------------------|
| BR1100301 | 60,000 U (100 rxns) | • T4 DNA Ligase Rapid, 600 U/μl |
| BR1100302 | 180,000U (300 rxns) | • 5X Rapid Ligation Buffer |

FEATURES

- Exceptionally pure high-concentration T4 DNA Ligase
- Perfect for rapid ligation

APPLICATIONS

- Blunt and sticky end DNA ligation for cloning
- Joining of linkers or adaptors to double-stranded DNA
- Self-circularization of linear DNA

DESCRIPTION

biotechrabbit™ T4 DNA Ligase Rapid is an exceptionally pure, highly concentrated ligase for applications in which high enzyme concentrations are required. It is especially recommended for fast ligations.

T4 DNA Ligase Rapid is supplied with 5X Rapid Ligation Buffer containing PEG for fast 5–10 minutes ligation, ligation of low-concentration or blunt-end DNA.

T4 DNA Ligase catalyzes the formation of a phosphodiester bond between the terminal 5' phosphate and the 3' hydroxyl groups of duplex DNA or RNA. The enzyme efficiently joins blunt and cohesive ends and repairs single stranded nicks in duplex DNA, RNA or DNA–RNA hybrids.

ExactiFi™ Hot-Start DNA Polymerase, 1 U/μl

| Cat. no. | Size | Package content |
|-----------|-------|---|
| BR0300501 | 100 U | • HiFi Hot-Start DNA Polymerase, 1U/μl • 5X HiFi Reaction Buffer • dNTP Mix (10 mM each) • 50 mM MgCl ₂ |

FEATURES

- Exceptional fidelity, approximately 50 times higher than Taq polymerase
- Amplifies targets up to 5–10 kb in size
- Produces blunt-end PCR products
- Efficient amplification of both low- and high-complexity targets
- High resistance to inhibitors for robust performance across a variety of sample types

APPLICATIONS

- High-fidelity PCR
- Generation of PCR products for blunt cloning

DESCRIPTION

biotechrabbit™ ExactiFi™ Hot-Start DNA Polymerase is a highly purified thermostable recombinant proofreading DNA polymerase. ExactiFi exhibits approximately 50 times higher accuracy than Taq DNA polymerase and amplifies targets up to 5–10 kb in size.

The enzyme catalyzes template-dependent nucleotide polymerization in the 5'→3' direction. Additionally, the 3'→5' exonuclease (proofreading) activity corrects nucleotide incorporation errors, thereby increasing fidelity and accuracy of DNA polymerization. The enzyme has no 5'→3' exonuclease activity and no detectable reverse transcriptase activity, producing blunt-end PCR products.

A-Tailing Kit

| Cat. no. | Size | Package content |
|-----------|----------|---|
| BR1101701 | 100 rxns | <ul style="list-style-type: none">• 20X A-Tailing Mix• dATP (1 mM)• 10X Activation Buffer |

FEATURES

- Optimized for efficient and consistent A-tailing reactions
- Includes all necessary reagents for adding a single dA to the 3' ends of DNA fragments
- High specificity and minimal background activity
- Suitable for downstream applications like cloning, sequencing, and next-generation sequencing library preparation

APPLICATIONS

- Preparation of DNA for cloning into T/A cloning vectors
- Suitable for sequencing applications
- Ideal for next-generation sequencing (NGS) library preparation
- Compatible with a broad range of DNA templates

DESCRIPTION

biotechrabbit™ A-Tailing Kit contains the essential reagents required for the addition of an adenine nucleotide to the 3' ends of DNA fragments. This kit includes a 20X A-Tailing Mix, a 1 mM dATP solution, and a 10X Activation Buffer.

The reaction is designed to be performed in a single step and ensures a highly efficient A-tailing process, with minimal risk of overhang loss. The kit components are optimized to work together, providing consistent results with high specificity.

DNA Blunting Kit

| Cat. no. | Size | Package content |
|-----------|----------|---|
| BR1101101 | 100 rxns | <ul style="list-style-type: none">• 20X Blunting Enzyme Mix• 10X Blunting Buffer• dNTP Mix (10 mM each) |

FEATURES

- Rapid blunting reaction
- Excellent performance in blunt-ended ligation
- Ready-to-use blunted product in subsequent ligation

APPLICATIONS

- Blunting and phosphorylation of double-stranded DNA
- Preparation of restriction enzyme digested DNA or sheared DNA for blunt-ended ligation

DESCRIPTION

biotechrabbit™ DNA Blunting Kit shows excellent performance in blunting and phosphorylation of double-stranded DNA. The kit is compatible with a wide variety of dsDNA templates such as restriction enzyme digested DNA fragments, plasmid DNA, PCR products with dA-overhang, sheared or nebulized DNA. The kit is optimized for rapid blunting reaction.

NOTES

[illegible]

Enzymes and Proteins for Molecular Biology

biotechrabbit™ enzymes are suitable for the most demanding molecular biology applications. Selected for specific characteristics and excellent performance, biotechrabbit enzymes are provided in exceptionally pure preparations to ensure the integrity of your reactions.

- High performance — success in your molecular biology applications
- Exceptional purity — reliable results in demanding reactions

| Product | Applications | Features |
|-------------------------------------|---|---|
| LYO-ready T6 UvsX DNA Recombinase | DNA amplification in isothermal amplification techniques and clonal amplification in NGS | Exceptionally pure enzyme, provided in a buffer with low glycerol content for further use in lyophilization |
| LYO-ready T4 UvsY Protein | Promotes the UvsX-catalysed strand invasion and assists in the release of ssDNA binding protein complexes in isothermal amplification | Highly purified protein, stored in a low-glycerol buffer to facilitate easy lyophilization |
| LYO-ready Exonuclease III | Rapid and cooperative removal of nucleotides from DNA strands in isothermal amplification and DNA sequencing | Enzyme with exceptional purity for molecular diagnostics, stored in a buffer that was optimised for further use in lyophilization |
| LYO-ready RB69 Gene 32 Protein | Binds ssDNA effectively to boost efficiency and fidelity of PCR or isothermal amplification | Exceptionally pure protein, provided in a buffer with low glycerol content for further use in lyophilization |
| LYO-ready T4 Gene 32 Protein | ssDNA binding protein for increased efficiency and fidelity in PCR and isothermal amplification | Protein with exceptional purity, stored in a low-glycerol buffer to facilitate easy lyophilization |
| RNase Inhibitor | Helps prevent RNA degradation in cDNA synthesis, <i>in vitro</i> transcription/translation reactions or RNA purification | Potent inhibitor of a wide spectrum of ribonucleases under a variety of reaction conditions used for work with RNA, highly purified and stored in an optimized buffer |
| Heat Labile Uracil–DNA Glycosylase | Elimination of carry-over contamination in PCR and post-PCR analysis such as cloning and sequencing, analysis of ancient DNA | Completely and irreversibly heat inactivated without addition of agents or inhibitors, active in common PCR and RT-PCR buffers |
| Proteinase K liquid and lyophilized | Non-specific protein degradation, nucleic acid purification, deactivation of nucleases in enzymatic reactions | Exceptional purity suitable for the most sensitive applications |

LYO-ready T6 UvsX DNA Recombinase, 5 mg/ml

| Cat. no. | Size | Package content |
|-----------|--------|--|
| BR1500201 | 100 µg | <ul style="list-style-type: none"> • LYO-ready T6 UvsX DNA Recombinase • 10X Reaction Buffer I |
| BR1500202 | 500 µg | |

FEATURES

- Low glycerol content for further use in lyophilization
- Exceptional purity suitable for the most sensitive applications
- T6UvsX DNA Recombinase excels in promoting DNA strand exchange

APPLICATIONS

- Recombinase Polymerase Amplification (RPA)
- Clonal amplification in Next Generation Sequencing (NGS)
- Gene editing

DESCRIPTION

biotechrabbit™ LYO-ready T6 UvsX DNA Recombinase is an enzyme originating from the T6 bacteriophage. This 44 kDa enzyme is the RecA/Rad51 ortholog of bacteriophage T6 and thus plays a crucial role in facilitating DNA recombination, a process where genetic material is exchanged or integrated between DNA molecules. Highly involved in homologous recombination, UvsX binds to single-stranded DNA regions, aiding in the accurate pairing and exchange of genetic material. This enzyme can be applied in genetic engineering, gene editing, and biotechnology, serving as a tool for manipulating DNA sequences and studying the recombination machinery.

The unique properties of this enzyme make it the best choice for employment in Recombinase Polymerase Amplification (RPA), an isothermal DNA amplification method with broad applications such as diagnostics and clonal amplification in Next Generation Sequencing (NGS). This protein is provided in a storage buffer containing 5 % glycerol, making it suitable for further use in lyophilization.

LYO-ready T4 UvsY Protein, 2 mg/ml

| Cat. no. | Size | Package content |
|-----------|--------|--|
| BR1500301 | 100 µg | <ul style="list-style-type: none"> • LYO-ready T4 UvsY Protein • 10X Reaction Buffer I |
| BR1500302 | 500 µg | |

FEATURES

- Mediator Protein for T4/T6 UvsX Recombinase
- Low glycerol content for further use in lyophilization
- Exceptionally pure Protein

APPLICATIONS

- Recombinase Polymerase Amplification (RPA)
- Mediation and stimulation of DNA dependent ATPase activity of UvsX Recombinase
- Promotion of strand exchange
- Facilitating the release of single stranded DNA - gp32 complex

DESCRIPTION

biotechrabbit™ LYO-ready T4 UvsY Protein plays a crucial part within the DNA recombination and the repair apparatus of the T4 bacteriophage. Originating from the T4 bacteriophage, this 16 kDa protein plays a fundamental role in expediting homologous recombination processes and enhancing the effectiveness of the DNA repair, as well as promoting the loading of the T4 pre-synaptic filament onto single-stranded DNA (ssDNA). Through its interactions with pivotal recombination proteins, such as T4 and/or T6 UvsX Recombinase, T4 UvsY emerges as an indispensable element for upholding genome integrity and enabling genetic exchange.

This protein efficiently promotes the UvsX-catalyzed strand invasion by getting involved into ssDNA binding protein (SSB) complexes. The enzyme assists the release of the SSB and uplifts the binding of UvsX. This protein is provided in a storage buffer containing 0 % glycerol, making it suitable for further use in lyophilization.

LYO-ready Exonuclease III, 100 U/μl

| Cat. no. | Size | Package content |
|-----------|-----------|--|
| BR1500101 | 10,000 U | • LYO-ready Exonuclease III • 10X Exo-III Reaction Buffer |
| BR1500102 | 25,000 U | |
| BR1500103 | 100,000 U | |

FEATURES

- Low glycerol content for further use in lyophilization
- High exonuclease activity for efficient removal of nucleotides
- Exceptional purity suitable for the most sensitive applications

APPLICATIONS

- Recombinase Polymerase Amplification (RPA)
- Other isothermal amplification techniques (e.g., RCA)
- Cloning of PCR products
- Unidirectional nested deletions (3'→5' exonuclease activity)
- Generation of a single-stranded template for dideoxy
- Sequencing of DNA
- Production of intermediate products for site-directed mutagenesis
- Preparation of strand-specific probes

DESCRIPTION

biotechrabbit™ LYO-ready Exonuclease III is a highly processive exonuclease that can continuously remove multiple nucleotides without dissociating from the DNA strand. This 31 kDa enzyme removes nucleotides from the 3' end of double-stranded DNA in a stepwise manner and continues to move in the 3'→5' direction. In contrast to other exonucleases that operate sequentially at one site, Exonuclease III exhibits the ability to simultaneously target multiple DNA molecules or multiple sites within a single DNA molecule. This capability enables the enzyme to rapidly and cooperatively remove nucleotides from DNA strands.

In addition to its exonuclease activity, the enzyme also exhibits RNase H, 3' DNA phosphatase, and apurinic DNA endonuclease activities. This enzymatic activity finds practical applications in DNA sequencing, removal of unwanted DNA sequences, and the creation of precise DNA fragments for genetic engineering. biotechrabbit Exonuclease III is provided in a storage buffer containing 5% glycerol, making it suitable for further use in lyophilization.

LYO-ready RB69 Gene 32 Protein, 10 mg/ml

| Cat. no. | Size | Package content |
|-----------|----------|---|
| BR1500401 | 500 μg | • LYO-ready RB69 Gene 32 Protein • 10X Reaction Buffer I |
| BR1500402 | 1,000 μg | |

FEATURES

- Low glycerol content for further use in lyophilization
- Binds single-stranded DNA with high affinity
- Essential for enhancing molecular amplification
- Exceptionally pure protein

APPLICATIONS

- DNA isothermal amplifications (e.g., RPA, NASBA)
- DNA Repair and Recombination
- Primer Extension and Strand Displacement
- DNA Template Stabilization
- Single-Stranded DNA Protection

DESCRIPTION

biotechrabbit™ LYO-ready RB69 Gene 32 Protein (RB69 gp32) is a single-stranded DNA-binding protein derived from bacteriophage RB69, essential for DNA replication, repair, and recombination processes. In biotechnology, RB69 gp32 serves as a valuable tool for enhancing various applications, such as PCR and isothermal amplifications. Its ability to stabilize replication forks, facilitate DNA synthesis, and protect DNA during repair makes it useful for improving the efficiency and fidelity of DNA amplification techniques.

Additionally, RB69 gp32's involvement in recombination processes offers potential applications in genetic engineering, gene editing, and the creation of novel DNA constructs, enabling researchers to manipulate and modify genetic material with greater precision and control. This protein is provided in a storage buffer containing 5% glycerol, making it suitable for further use in lyophilization.

LYO-ready T4 Gene 32 Protein, 10 mg/ml

| Cat. no. | Size | Package content |
|-----------|----------|---|
| BR1500501 | 500 µg | <ul style="list-style-type: none"> • LYO-ready T4 Gene 32 Protein • 10X Reaction Buffer I |
| BR1500502 | 1,000 µg | |

FEATURES

- Binds single-stranded DNA with high affinity
- Low glycerol content for further use in lyophilization
- Essential for DNA replication, repair, and recombination processes, enhancing overall amplification techniques
- Exceptionally pure protein

APPLICATIONS

- Boosts the efficiency and yield of PCR through stabilization of replication forks
- Stabilizes DNA templates
- Facilitates isothermal amplifications by safeguarding DNA synthesis during the process
- Enables precise genetic engineering, gene editing, and construction of novel DNA constructs

DESCRIPTION

biotechrabbit™ LYO-ready T4 Gene 32 Protein is a vital single-stranded DNA-binding protein originating from bacteriophage T4, pivotal for DNA replication, repair, and recombination processes.

In biotechnology, T4 Gene 32 Protein stands out as a valuable asset, amplifying a range of applications, including PCR and isothermal amplifications. Its inherent capacity to stabilize replication forks, expedite DNA synthesis, and shield DNA during repair proves instrumental in elevating the efficiency and fidelity of DNA amplification techniques.

Moreover, T4 Gene 32 Protein's active participation in recombination processes opens avenues for applications in genetic engineering, gene editing, and the creation of innovative DNA constructs. This capability empowers researchers to wield greater precision and control over the manipulation and modification of genetic material.

Our T4 Gene 32 Protein is delivered in an optimized glycerol-free storage buffer, ensuring its suitability for further use in lyophilization, facilitating extended storage and enhancing convenience for laboratory applications.

RNase Inhibitor, 40 U/µl

| Cat. no. | Size | Package content |
|-----------|----------|--|
| BR0400901 | 2,500 U | <ul style="list-style-type: none"> • RNase Inhibitor, 40 U/µl |
| BR0400902 | 10,000 U | |

FEATURES

- Exceptionally pure proprietary Ribonuclease Inhibitor for demanding RNA applications
- Active under variety of reaction conditions used for work with RNA
- Prevention of RNA from degradation by a wide range of RNases

APPLICATIONS

- *In vitro* transcription/translation
- cDNA synthesis
- RNA purification and storage

DESCRIPTION

biotechrabbit™ RNase Inhibitor is a protein that is a potent inhibitor of a wide spectrum of ribonucleases. The RNase Inhibitor helps to prevent RNA degradation in applications like cDNA synthesis, RT-PCR, *in vitro* transcription/translation reactions or RNA purification.

The enzyme is purified from a recombinant *E. coli* strain carrying the RNase Inhibitor gene.

Heat-Labile Uracil-DNA Glycosylase, 1 U/μl

| Cat. no. | Size | Package content |
|-----------|-------|--|
| BR1100701 | 100 U | • Heat Labile Uracil-DNA Glycosylase, 1 U/μl |
| BR1100702 | 500 U | |

FEATURES

- The only Uracil–DNA glycosylase that is completely and irreversibly heat inactivated
- Heat-labile without any addition of agents or inhibitors
- Active in common PCR and RT-PCR buffers

APPLICATIONS

- Eliminates carry-over contamination in PCR, RT-PCR, qPCR and RT-qPCR
- Enables downstream post-PCR analysis such as cloning and sequencing
- Analysis of ancient DNA

DESCRIPTION

biotechrabbit™ Heat-Labile Uracil-DNA Glycosylase selectively degrades uracil-containing PCR products. After performing PCR or RT-PCR using dUTP instead of dTTP, PCR products remain intact after treatment with Heat-Labile Uracil-DNA Glycosylase, whereas contaminating DNA (i.e., not amplified) is degraded. Heat-Labile Uracil-DNA Glycosylase is completely and irreversibly inactivated by moderate heat treatment at 50 °C, allowing contamination control in RT-qPCR. The enzyme hydrolyses the N-glycosylic bond between the deoxyribose sugar and the base in uracil-containing DNA leaving an abasic (apyrimidinic) site in DNA but does not modify uracils in RNA.

Heat-Labile Uracil-DNA Glycosylase is highly active at 20–40 °C. No cofactors or divalent cations are required for activity, and the enzyme is active in most PCR and RT-PCR buffers.

Proteinase K

| Cat. no. | Size | Package content |
|---------------------------|---------|--------------------------------|
| Proteinase K | | |
| BR1101001 | 1.25 ml | • Proteinase K, 20 mg/ml |
| BR1101002 | 10 ml | |
| Proteinase K, lyophilized | | |
| BR1100901 | 30 mg | • Proteinase K, lyophilized |
| BR1100902 | 150 mg | |

FEATURES

- Exceptional purity suitable for the most sensitive applications
- PCR-grade for highest performance
- Stable lyophilizate

APPLICATIONS

- Nonspecific protein degradation
- Nucleic acid purification
- Deactivation of nucleases in enzymatic reactions

DESCRIPTION

biotechrabbit™ Proteinase K is an active endopeptidase that is effective with native proteins, allowing endogenous RNases and DNases to be inactivated rapidly. The robust enzyme is stable over a wide pH range (4–12.5) and remains fully active for several hours when incubated at pH 6.5–9.5. The exceptional purity of the enzyme ensures that it is ideally suited for preparing PCR templates, as it is free of RNases, DNases and DNA.

biotechrabbit Proteinase K is available as an aqueous solution or lyophilized powder.

T7 RNA Polymerase, 50 U/μl

| Cat. no. | Size | Package content |
|-----------|---------|-------------------------------------|
| BR1101201 | 1,000 U | • T7 RNA Polymerase |
| BR1101202 | 5,000 U | • T7 RNA Polymerase Reaction Buffer |

FEATURES

- Exceptionally pure enzyme
- Rigorously tested for DNA and RNase contamination to prevent unwanted background transcription
- Exceptional specificity for the T7 promoter

APPLICATIONS

- in vitro RNA synthesis from DNA template
- Radiolabeled RNA probes
- Non-isotopic RNA labeling
- Preparation of RNA vaccines
- Guide RNA for gene targeting
- mRNA for in vitro translation and micro injection
- RNA structure, processing and catalysis studies
- RNA amplification
- Anti-sense RNA for gene expression experiment

DESCRIPTION

biotechrabbit™ T7 RNA Polymerase is a highly specific, DNA-dependent RNA polymerase renowned for its ability to selectively transcribe RNA from DNA sequences that are under the control of T7 phage promoters.

With a molecular weight of approximately 99 kDa, this enzyme plays a crucial role in the in vitro synthesis of RNA, offering a reliable solution for researchers who require precise and efficient RNA production. The enzyme's exceptional specificity for the T7 promoter ensures that RNA transcription is not only highly regulated but also incredibly efficient, making it an indispensable tool in the generation of high-quality RNA.

The enzyme is ideally suited for a variety of applications, including the synthesis of RNA for in vitro translation, the production of labeled RNA probes, the generation of antisense RNA, and various RNA structural and functional studies. In addition to its use in basic research, T7 RNA Polymerase is also a valuable tool in synthetic biology, where it facilitates the production of RNA transcripts for advanced applications such as CRISPR guide RNA synthesis, ribozyme production, and RNA aptamer generation.

phi29 DNA Polymerase, 10 U/μl

| Cat. no. | Size | Package content |
|-----------|---------|----------------------------------|
| BR1100101 | 250 U | • phi 29 DNA Polymerase, 10 U/μl |
| BR1100102 | 1,000 U | • phi29 Reaction Buffer |

FEATURES

- Huge DNA yields, accurate amplification
- Highest processivity DNA polymerase with exceptionally strong strand displacement activity
- Exceptionally pure phi29 DNA Polymerase for demanding applications

APPLICATIONS

- Rolling circle amplification (RCA)
- Multiple displacement amplification
- Whole genome amplification
- Protein-primed and RNA-primed DNA amplification

DESCRIPTION

biotechrabbit™ phi29 DNA Polymerase is an exceptionally pure DNA polymerase for demanding applications. The enzyme is purified from a recombinant E. coli strain carrying the phi29 DNA Polymerase gene from bacteriophage phi29.

The enzyme is a highly processive DNA polymerase (up to 70,000 base insertions per binding event) with a powerful strand-displacement activity and a 3'→5' proofreading exonuclease function. phi29 DNA Polymerase proof-reading activity acts preferentially on single-stranded DNA or RNA.

Therefore, to avoid primer degradation during the DNA synthesis, 3' modified (protected) primers are highly recommended.

Nucleotides

biotechrabbit™ deoxynucleotide triphosphates are available as mixes containing all dNTPs or sets of individual dNTPs. Sets and mixes containing dUTP instead of dTTP are available for applications such as PCR carryover prevention. The outstanding purity of the nucleotides ensures excellent performance in the most demanding applications.

- Reproducible — exceptional purity for excellent results
- Reliable — outstanding stability for consistent PCR results

dNTP Sets and Mixes

| Cat. no. | Size | Package content |
|--|------------|--|
| dNTP Set, 4 × 100 mM solutions | | |
| BR0600601 | 4 × 250 µl | • dATP/dCTP/dGTP/dTTP (100 mM each) |
| BR0600602 | 4 × 1 ml | |
| dNTP Mix (25 mM each) | | |
| BR0600502 | 1 ml | • dNTP Mix (25 mM each) |
| BR0600503 | 5 ml | |
| dNTP Mix (10 mM each) | | |
| BR0600202 | 1 ml | • dNTP Mix (10 mM each) |
| BR0600204 | 5 ml | |
| dNTP/dUTP Mix (10 mM dATP/CTP/GTP, 30 mM dUTP) | | |
| BR0601101 | 1 ml | • dNTP/dUTP Mix |
| BR0601102 | 5 ml | |
| dUTP (100 mM solution) | | |
| BR0601201 | 0.75 ml | • dUTP (100 mM) |
| BR0601202 | 3 ml | |

FEATURES

- Exceptional quality dNTPs of > 99 % purity confirmed by HPLC
- Free from DNA and PCR inhibitors
- Consistent PCR results due to outstanding dNTPs stability

APPLICATIONS

- Standard or Hot-Start PCR
- Long-range and high-fidelity PCR
- cDNA synthesis and RT-PCR
- qPCR
- Sequencing
- DNA labeling

DESCRIPTION

biotechrabbit™ deoxynucleotide triphosphates are first-choice nucleotides for all PCR applications, including the most demanding, such as amplification of long targets (up to 40 kb), GC-rich templates, qPCR, cDNA synthesis, high-fidelity PCR, DNA labeling and sequencing.

Advanced production technology ensures that deoxy-ribonucleotide triphosphates have > 99 % purity and outstanding stability, ensuring excellent performance and consistent, reliable results.

For the maximum flexibility, nucleotides are available in sets and mixes of common concentrations.

Additives and Accessories

Discover a new standard of excellence in PCR applications with biotechrabbit's premium PCR additives and accessories. Our commitment to quality and purity sets the stage for unparalleled performance in your molecular biology experiments, ensuring reproducibility, reliability, and exceptional results.

- Highest-quality raw materials
- Flexibility — adjust your reaction

50 mM MgCl₂

| Cat.no. | Size | Package content |
|-----------|------|---------------------------|
| BR1900101 | 6 ml | • 50 mM MgCl ₂ |

FEATURES

- Flexibility in PCR optimization
- Improved PCR performance

APPLICATIONS

- Optimization of PCR buffer conditions

DESCRIPTION

biotechrabbit™ MgCl₂ is ideally suited for optimization of PCR conditions. For convenience and flexibility, it is provided as 50 mM solution.

5X PCR Enhancer

| Cat.no. | Size | Package content |
|-----------|------|-------------------|
| BR1900201 | 6 ml | • 5X PCR Enhancer |

FEATURES

- Increased specificity and efficiency
- Improved results with GC-rich templates

APPLICATIONS

- Optimize PCR performance in demanding applications
- Sensitive, low-background amplification

DESCRIPTION

biotechrabbit™ PCR Enhancer is a unique PCR additive that improves sensitivity, resulting in increased PCR efficiency and reduced background. PCR Enhancer is ideal for difficult templates (e.g., GC-rich) and complex reactions, such as low-abundance templates and multiplex PCR.

PCR Grade Water

| Cat.no. | Size | Package content |
|-----------|--------|-------------------|
| BR1900301 | 15 ml | • PCR Grade Water |
| BR1900302 | 300 ml | |

FEATURES

- Ultrapure sterile filtrated deionized water
- Prepared without the use of chemicals such as DEPC
- DNase-, RNase- and Protease-free
- Bioburden tested

APPLICATIONS

- Ready-to-use water for standard and enhanced PCR and qPCR
- Buffer preparation and enzyme dilutions
- All other molecular biology applications

DESCRIPTION

biotechrabbit™ PCR Grade Water is ultrapure and sterile filtered deionized water prepared by a proprietary process without the use of chemicals such as DEPC (diethylpyrocarbonate). The water is free from DNase, RNase, protease and bioburden contaminations, for use in PCR and all other molecular biology applications.

Nucleic Acid Purification

biotechrabbit™ nucleic acid purification kits are designed to be fast and convenient to use. Purified nucleic acids are suitable for standard and demanding applications.

Universal kits provide reagents and protocols for purification from a wide range of starting materials. Mini filter based procedures allow easy handling, and proprietary buffer compositions ensure most efficient lysis, nucleic acid binding, washing and elution.

- Convenient — fast and simple procedures to make your work easier
- Efficient — proprietary buffer compositions for high yields of pure nucleic acid

| Product | Applications | Starting material |
|---------------------------|--|---|
| DNA cleanup | | |
| GenUP PCR/Gel Cleanup Kit | PCR product cleanup and DNA extraction from agarose gels | Amplification reactions and TAE or TBE agarose gels |
| GenUP Exo SAP Kit | PCR cleanup for sequencing with 100 % product recovery | Amplification reactions |
| Plasmid isolation | | |
| GenUP Plasmid Kit | Universal kit for isolating high- and low-copy-number plasmids from bacterial cultures | Gram-positive and Gram-negative bacteria |
| Total DNA isolation | | |
| GenUP Bacteria gDNA Kit | Universal kit for genomic DNA isolation from bacterial cultures | Gram-positive and Gram-negative bacteria |
| GenUP gDNA Kit | Universal kit for genomic DNA isolation from various eukaryotic starting materials | Tissues, rodent tails, paraffin-embedded samples, swabs, eukaryotic cells suspensions |
| GenUP Blood DNA Kit | Optimized kit for DNA isolation from blood | Fresh or frozen whole blood stabilized with EDTA or citrate |
| GenUP Plant DNA Kit | Optimized kit for DNA isolation from plants | Fresh, frozen or dry plant materials |

Nucleic Acid Purification

- Flexible — purification for a range of sample types with one kit
- Reliable — best results in downstream applications
- Optimized — no toxic β -mercaptoethanol and no DNase for RNA preparations
- Fast — PCR cleanup in only 3 min

| Product | Applications | Starting material |
|--------------------------------------|--|--|
| Total RNA isolation | | |
| GenUP Total RNA Kit | Universal kit for total RNA isolation from various sources | Tissue, eukaryotic cell suspensions, bacteria |
| GenUP Micro RNA Kit | Isolation of snRNA, miRNA, siRNA, tRNA, rRNA and mRNA | Eukaryotic cells, tissue or biopsies, Gram-positive and Gram-negative bacteria |
| GenUP Blood RNA Kit | Optimized kit for total RNA isolation from blood | Fresh or frozen whole blood stabilized with EDTA or citrate |
| GenUP Plant RNA Kit | Optimized kit for total RNA isolation from plants | Fresh, frozen or dry plant materials |
| Virus DNA and RNA isolation | | |
| GenUP™ BS Virus RNA Kit | Virus RNA isolation from swabs | Swab samples |
| GenUP Virus DNA/RNA Kit | Optimized kit for simultaneous viral DNA and RNA isolation from eukaryotic samples | Serum, plasma and other cell-free body fluids, supernatants from cell cultures, tissues, biopsies, cell cultures, swabs, paraffin-embedded samples |
| Deparaffinization | | |
| GenUP FFPE Paraffin Removal Solution | Removal of paraffin from formalin-fixed, paraffin-embedded (FFPE) sample | FFPE slices |

GenUP™ PCR/Gel Cleanup Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0700501 | 10 preps | Solutions, Mini Filters and Vials |
| BR0700502 | 50 preps | |
| BR0700503 | 250 preps | |

Gel cleanup

| | |
|-------------------|---------------------------------------|
| Starting material | TAE or TBE agarose gel (up to 300 mg) |
| Extraction time | Approximately 20 min |
| Binding capacity | > 20 µg DNA |
| Typical yield | 100 bp – 30 kb |
| Average purity | 60–90 % |

PCR cleanup

| | |
|-------------------|----------------------------|
| Starting material | PCR mixtures (up to 50 µl) |
| Extraction time | Approximately 3 min |
| Binding capacity | > 20 µg DNA |
| Typical yield | 60 bp – 30 kb |
| Average purity | 60–95 % |

FEATURES

- Dual performance kit for both PCR product cleanup and DNA purification from agarose gels
- Fast and simple procedure
- High DNA recovery yields

APPLICATIONS

- Fast purification of DNA from agarose gels
- Fast purification of products from PCR amplification reactions

DESCRIPTION

biotechrabbit™ GenUP™ PCR/Gel Cleanup Kit has been specially developed for a quick and easy cleanup or concentration of PCR fragments from reaction mixtures as well as extraction of DNA from both TAE and TBE agarose gels. The DNA is bound to a Mini Filter using a novel buffer, washed and then eluted in a separate tube. The purified DNA is ready to be used in all demanding molecular biology applications, including restriction digestion, ligation, sequencing, transfection into mammalian cells and *in vitro* transcription.

GenUP™ Exo SAP Kit

| Cat. no. | Size | Package content |
|-----------|-----------------|-----------------|
| BR0701801 | 100 reactions | ExoI-SAP |
| BR0701802 | 500 reactions | |
| BR0701803 | 2,000 reactions | |

FEATURES

- Fast 5 min PCR cleanup without the need for spin columns
- 100 % recovery — no loss of PCR product
- Simple process — just add Exonuclease 1 and Shrimp Alkaline Phosphatase to PCR mix
- Easy scalability and automation

APPLICATIONS

- PCR cleanup prior to sequencing or genotyping
- Removal of nucleotides and primers from PCR reaction

DESCRIPTION

biotechrabbit™ GenUP™ Exo SAP Kit is designed for quickly and easily cleaning up PCR amplification reactions, enabling their direct use in sequencing or genotyping.

The kit provides a combination of Shrimp Alkaline Phosphatase (SAP) and Exonuclease 1 (ExoI) for removing nucleotides and primers. Double stranded DNA is not affected, ensuring 100 % recovery of PCR products.

Both enzymes are active in PCR buffers and completely inactivated by heating at 80 °C: no further processing is required. Shrimp Alkaline Phosphatase dephosphorylates nucleotides and primers, and the 3'→5' exonuclease activity of Exonuclease 1 degrades single-stranded primers.

GenUP™ Plasmid Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0700201 | 10 preps | Solutions, Mini Filters and Vials |
| BR0700202 | 50 preps | |
| BR0700203 | 250 preps | |

| | |
|-------------------|---|
| Starting material | Bacterial cultures: 0.5–15 ml for high-copy-number plasmids, low-copy-number plasmids or cosmids |
| Extraction time | Approximately 15 min |
| Binding capacity | Approximately 80 µg plasmid DNA |
| Typical yield | Variable: 45–60 µg high-copy plasmid DNA is typically purified from 15 ml culture, or 6–20 µg from 2 ml culture |
| Average purity | A_{260}/A_{280} 1.7–2.0 |

FEATURES

- Universal kit for both high- and low-copy-number plasmids isolation
- Fast and simple procedure
- High yields of pure plasmid DNA suitable for all applications

APPLICATIONS

- Plasmid DNA isolation from Gram-negative and Gram-positive bacteria

DESCRIPTION

biotechrabbit™ GenUP™ Plasmid Kit is designed for fast and efficient plasmid purification from 0.5–15 ml bacterial suspensions in a mini format. After performing an alkaline lysis step and precipitating chromosomal DNA and bacterial proteins, plasmid DNA is bound to a Mini Filter, washed and then eluted in a low-salt buffer. Typically, yields are up to 60 µg plasmid DNA from a 15 ml bacterial suspension, depending on a plasmid copy number.

The purified plasmid DNA is ready to be used in all demanding molecular biology applications, including enzymatic reactions and sequencing.

GenUP™ Bacteria gDNA Kit

| Cat. no. | Size | Package content |
|-----------|----------|-----------------------------------|
| BR0700701 | 10 preps | Solutions, Mini Filters and Vials |
| BR0700702 | 50 preps | |

| | |
|-------------------|--|
| Starting material | 1 × 10 ⁹ Gram-negative or Gram-positive bacterial cells |
| Extraction time | Approximately 45 min |
| Binding capacity | > 50 µg DNA |
| Typical yield | Variable; approximately 35 µg |

FEATURES

- Fast and simple procedure
- gDNA from up to 1 × 10⁹ bacteria
- High yields of pure DNA for demanding applications

APPLICATIONS

- Isolation of bacterial genomic DNA from Gram-positive and Gram-negative bacteria

DESCRIPTION

biotechrabbit™ GenUP™ Bacterial gDNA Kit has been specially developed for quick and easy purification of bacterial genomic DNA from both Gram-negative and difficult to process Gram-positive bacteria.

A combined lysozyme and proteolytic lysis steps allow efficient cell disruption. The DNA is bound to a high-capacity filter, washed and then eluted in a separate tube. The purified DNA is ready to be used in all demanding molecular biology applications, including PCR, enzymatic digestions, cloning and other.

GenUP™ gDNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0700601 | 10 preps | Solutions, Mini Filters and Vials |
| BR0700602 | 50 preps | |
| BR0700603 | 250 preps | |

| | |
|-------------------|--|
| Starting material | Tissue samples (up to 40 mg), rodent tail specimens of 0.5–1 cm in length, eukaryotic cells (up to 5 × 10 ⁶), formalin-fixed paraffin-embedded tissue samples (FFPE, 2–4 slices), buccal swabs |
| Extraction time | Approximately 8 min after lysis |
| Binding capacity | > 100 µg DNA |
| Typical yield | Variable; approximately 65 µg |
| Average purity | A ₂₆₀ /A ₂₈₀ 1.7–2.0 |

FEATURES

- Universal kit for DNA isolation from various starting materials
- Fast and simple procedure with > 100 µg gDNA filter-binding capacity
- High yields of pure DNA

APPLICATIONS

- Isolation of genomic DNA from tissues, cells, rodent tail, buccal swaps and paraffin samples

DESCRIPTION

biotechrabbit™ GenUP™ gDNA Kit is designed for a fast and efficient genomic DNA isolation from various sources and different amounts of starting material, such as mammalian tissues (including paraffin-embedded), buccal swabs and eukaryotic cell cultures. After a few initial procedures, the genomic DNA is bound to a Mini Filter, washed and then eluted in a low-salt buffer. High yields of pure, unshared genomic DNA are ready to be used in all demanding molecular biology applications, including enzymatic reactions and sequencing.

GenUP™ Blood DNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0701301 | 10 preps | Solutions, Mini Filters and Vials |
| BR0701302 | 50 preps | |
| BR0701303 | 250 preps | |

| | |
|-------------------|---|
| Starting material | Fresh or frozen whole blood; stabilized with EDTA or citrate (200 µl or 400 µl) |
| Extraction time | Approximately 24 min |
| Binding capacity | > 60 µg DNA |
| Typical yield | Variable depending on the starting material; approximately 30 µg DNA |
| Average purity | A ₂₆₀ /A ₂₈₀ 1.7–2.0 |

FEATURES

- Fast and simple procedure
- Genomic gDNA from fresh and frozen, EDTA- or citrate-treated blood
- Excellent genomic DNA quality in yields of up to 30 µg

APPLICATIONS

- Isolation of genomic DNA from up to 400 µl whole blood

DESCRIPTION

biotechrabbit™ GenUP™ Blood DNA Kit is designed for fast isolation of genomic DNA from up to 400 µl whole blood from fresh or frozen samples that have been stabilized with EDTA or citrate. After an efficient lysis step, genomic DNA is bound to a Mini Filter, washed and eluted. The isolation chemistry and extraction protocol are optimized for maximum yield. Including lysis, isolated DNA is available in approximately 24 min. The isolated DNA is suitable for a wide range of different molecular biology applications.

Protocols are available for isolating DNA from 200 µl or 400 µl whole blood samples.

The GenUP Blood DNA Kit is designed for the use with blood. For other starting material, such as cell-free body fluids (including cerebrospinal fluid, serum, plasma or urine), tissue, stool samples, buffy coat, cultured or isolated cells, swabs, dried blood spots, viruses, fungi, bacteria or parasites, please refer to the GenUP gDNA Kit (cat. no. BR0700601), GenUP Bacteria gDNA Kit (cat. no. BR0700701), GenUP Plant DNA Kit (cat. no. BR0700801) or GenUP Virus DNA/RNA Kit (cat. no. BR0701101).

GenUP™ Plant DNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0700801 | 10 preps | Solutions, Mini Filters and Vials |
| BR0700802 | 50 preps | |
| BR0700803 | 250 preps | |

| | |
|-------------------|--|
| Starting material | Fresh, frozen or dried plant tissue (maximum 100 mg dry weight or 180 mg wet weight) |
| Extraction time | Approximately 40 min |
| Binding capacity | > 50 µg DNA |
| Typical yield | Variable depending on the starting material; approximately 5–25 µg DNA |
| Average purity | A ₂₆₀ /A ₂₈₀ 1.7–2.0 |

FEATURES

- Simple and efficient procedure for plant DNA isolation
- Special lysis protocols for different plant materials
- High yields of inhibitor-free DNA

APPLICATIONS

- Universal kit for isolating genomic DNA from various plant materials

DESCRIPTION

biotechrabbit™ GenUP™ Plant DNA Kit has been specially developed for quick and easy purification of genomic DNA from a wide variety of plant materials, including fresh, frozen or dried samples from leaves, roots, stems and flowers.

The kit includes an advanced prefiltration step to remove unlysed tissue. Subsequently, DNA is bound to a Mini Filter and is subsequently washed and eluted in a separate tube. The purified DNA is ready for use in any demanding molecular biology application, including PCR, enzymatic digestions and cloning.

This kit provides three buffers for optimized processing with different plant materials. To determine optimal lysis conditions, side-by-side preparation using the three provided protocols are prepared.

GenUP™ Total RNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0700901 | 10 preps | Solutions, Mini Filters and Vials |
| BR0700902 | 50 preps | |
| BR0700903 | 250 preps | |

| | |
|--------------------------|--|
| Starting material | Eukaryotic cells (5×10^6), tissue samples (up to 20 mg), bacterial cells (Gram-positive or Gram-negative, 1×10^9) |
| Extraction time | Approximately 20–40 min |
| Binding capacity | 100 µg RNA |
| Typical yield | Yield is highly dependent on sample type |

FEATURES

- Fast and simple procedure
- High yields of pure RNA
- Physical removal of DNA, no DNase treatment, no toxic β -mercaptoethanol

APPLICATIONS

- Universal kit for total RNA isolation from various sources and different amounts of starting material

DESCRIPTION

biotechrabbit™ GenUP™ Total RNA Kit has been specially developed for a quick and easy purification of total RNA from eukaryotic cell suspensions, tissues and biopsies, Gram-negative (e.g., *E. coli*) and Gram-positive bacteria and other sources. After few initial procedures, the RNA is bound to a filter, washed and then eluted in a separate tube. DNA is removed physically by binding to a filter without any DNase treatment or the use of toxic β -mercaptoethanol.

The purified RNA is ready to be used in all demanding molecular biology applications, including cDNA synthesis, northern blot analysis and others.

GenUP™ Micro RNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0701901 | 10 preps | Solutions, Mini Filters and Vials |
| BR0701902 | 50 preps | |
| BR0701903 | 250 preps | |

| | |
|--------------------------|---|
| Starting material | Eukaryotic cells (5×10^6) Fresh or frozen tissue or biopsies (up to 20 mg) Gram-positive and Gram-negative bacteria (up to 1×10^9) |
| Extraction time | Typically 15–40 minutes |
| Binding capacity | 100 µg |
| Typical yield | Depends on the type and the amount of the starting material |
| Recovery rate | High rate of recovery for small RNA molecules |

FEATURES

- Fast and simple procedure
- Optimized binding conditions for high yields of small RNAs
- Physical removal of DNA, no DNase treatment, no toxic β -mercaptoethanol

APPLICATIONS

- Efficient isolation of snRNA, miRNA, siRNA, tRNA, rRNA and mRNA from various starting material

DESCRIPTION

biotechrabbit™ GenUP™ MicroRNA Kit is designed for high yields of small RNA molecules and total RNA, including snRNA, miRNA, siRNA, tRNA, rRNA and mRNA, without the use of highly toxic β -mercaptoethanol. After using well established filter-technology to selectively remove genomic DNA, the RNA is bound, washed and eluted from the filter membrane using RNase-free water.

GenUP™ Blood RNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0701401 | 10 preps | Solutions, Mini Filters and Vials |
| BR0701402 | 50 preps | |
| BR0701403 | 250 preps | |

| | |
|-------------------|---|
| Starting material | Fresh or frozen whole blood; stabilized with EDTA or citrate (0.5–1.0 ml) |
| Extraction time | Approximately 45 min |
| Binding capacity | > 20 µg RNA |
| Typical yield | Variable depending on the starting material; 1–8 µg RNA |

FEATURES

- Fast and simple procedure
- High-quality RNA isolated from fresh and frozen, EDTA- or citrate-treated blood
- Physical removal of DNA, no DNase treatment, no toxic β-mercaptoethanol

APPLICATIONS

- Isolation of up to 8 µg total RNA from 0.5–1.0 ml whole blood

DESCRIPTION

biotechrabbit™ GenUP™ Blood RNA Kit is designed for fast isolation of total RNA from up to 1 ml whole blood from fresh or frozen samples that have been stabilized with EDTA or citrate. Erythrocytes are removed in an initial lysis step. After an second lysis step, genomic DNA is bound to a Mini Filter DNA, which can be discarded. RNA is selectively bound to a Mini Filter RNA, washed with two different buffers and eluted. Including lysis, isolated RNA is available in approximately 45 min. The isolated RNA is suitable for a wide range of different molecular biology applications, including RT-PCR.

The GenUP Blood RNA Kit is designed for the use with blood. For other starting material, such as cell-free body fluids (including cerebrospinal fluid, serum, plasma or urine), tissue, stool samples, buffy coat, cultured or isolated cells, swabs, dried blood spots, viruses, fungi, bacteria or parasites, please refer to the GenUP Total RNA Kit (BR07009), GenUP Virus RNA Kit (BR07010) or GenUP Virus DNA/RNA Kit (BR07011).

GenUP™ Plant RNA Kit

| Cat. no. | Size | Package content |
|-----------|----------|-----------------------------------|
| BR0701501 | 10 preps | Solutions, Mini Filters and Vials |
| BR0701502 | 50 preps | |

| | |
|-------------------|--|
| Starting material | Plant material (up to 100 mg) |
| Extraction time | 30 min after homogenization |
| Binding capacity | Approximately 100 µg RNA |
| Typical yield | Variable depending on the starting material; approximately 70 µg RNA |
| Average purity | A ₂₆₀ /A ₂₈₀ 1.7–2.0 |

FEATURES

- Fast and simple procedure
- High-quality RNA isolated from a wide variety of plant samples
- Physical removal of DNA, no DNase treatment, no toxic β-mercaptoethanol

APPLICATIONS

- Isolation of total RNA from up to 100 mg plant material

DESCRIPTION

biotechrabbit™ GenUP™ Plant RNA Kit has been developed for quick and easy purification of total RNA from plant materials. After initial homogenization and lysis, genomic DNA is bound to a Mini Filter DNA, which can be discarded. RNA is selectively bound to a Mini Filter RNA, washed with two different buffers and eluted. The purified RNA is ready for use in any demanding molecular biology application, including RT-PCR.

Two lysis buffers, Buffer LYSIS LR and Buffer LYSIS LT, are provided to maximize yield. Most plant material can be processed with Buffer LYSIS LR. In the cases that yield using Buffer LYSIS LR is low, use Buffer LYSIS LT.

GenUP™ BS Virus RNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0702303 | 250 preps | Solutions, Mini Filters and Vials |

| | |
|-------------------|---|
| Starting material | Swab samples |
| Extraction time | Approximately 25 min |
| Typical yield | Yield is dependent on sample quality and viral load |

FEATURES

- Fast and simple procedure
- High yields of pure RNA
- No DNase treatment, no toxic β -mercaptoethanol

APPLICATIONS

- Virus RNA isolation from swabs

DESCRIPTION

biotechrabbit™ GenUP™ BS Virus RNA Kit has been specially developed for quick and easy isolation of viral RNA from swabs, including nasopharyngeal and oropharyngeal swabs. The unique binding membrane of our high-capacity Mini Filters guarantees high yields. A high concentration of purified RNA can be achieved with flexible elution volumes. The kit includes carrier RNA.

After few initial steps, the viral RNA is bound to a Mini Filter, washed, and then eluted in a separate tube. The purified RNA is ready to be used in all demanding molecular biology applications, including qRT-PCR.

GenUP™ Virus DNA/RNA Kit

| Cat. no. | Size | Package content |
|-----------|-----------|-----------------------------------|
| BR0701101 | 10 preps | Solutions, Mini Filters and Vials |
| BR0701102 | 50 preps | |
| BR0701103 | 250 preps | |

| | |
|-------------------|---|
| Starting material | Eukaryotic cells (up to 5×10^6), serum, plasma, cell-free body fluids, cell culture supernatants (150 μ l), tissue samples, biopsies (up to 20 mg), paraffin-embedded tissues, buccal swabs |
| Extraction time | Approximately 25 min |
| Typical yield | Yield is highly dependent on sample type |

FEATURES

- Universal kit for simultaneous RNA and DNA isolation from different starting materials
- Fast and simple procedure, sample specific protocols
- High yields of pure RNA and DNA
- No DNase treatment, no toxic β -mercaptoethanol

APPLICATIONS

- Simultaneous viral DNA and RNA isolation from various sources
- Excellent performance for unknown viruses

DESCRIPTION

biotechrabbit™ GenUP™ Virus DNA/RNA Kit has been specially developed for quick and easy isolation of viral RNA and DNA. The kit is especially useful when the origin of the virus is unknown. Viral double-stranded DNA and single-stranded RNA are simultaneously isolated from eukaryotic samples, including plasma, serum, and other body fluids as well as cell cultures, tissues, and buccal swabs.

The unique binding membrane of our high-capacity Mini Filters guarantees high yields. A high concentration of purified nucleic acid can be achieved with flexible elution volumes. The kit includes carrier RNA.

After a few initial procedures, the viral nucleic acids are bound to a Mini Filter, washed and then eluted in a separate tube. The purified nucleic acids are ready to be used in all demanding molecular biology applications, including cDNA synthesis, northern blot analysis, qPCR and RT-PCR.

GenUP™ FFPE Paraffin Removal Solution

| Cat. no. | Size | Package content |
|-----------|-------|--------------------------------------|
| BR0701601 | 10 ml | GenUP FFPE Paraffin Removal Solution |
| BR0701602 | 50 ml | |

| | |
|-------------------|--|
| Starting material | 2–4 fresh slices from a FFPE sample |
| Extraction time | Approximately 45–60 min |
| Composition | Single solution formulation for fast and easy DNA extraction |
| DNA isolation | Compatible with all common genomic DNA purification kits |

DESCRIPTION

biotechrabbit™ GenUP™ FFPE Paraffin Removal Solution is an odor-free, biofriendly and innovative solution to deparaffinize FFPE slices within minutes in a single step. This product replaces conventional procedures that involve toxic and/or flammable solvents. After removal of paraffin from FFPE slices with GenUP FFPE Paraffin Removal Solution, continue with the genomic DNA purification kit of your choice.

FEATURES

- One-step deparaffinization of FFPE slices
- No toxic or flammable chemicals

APPLICATIONS

- Removal of paraffin from formalin-fixed, paraffin-embedded (FFPE) sample slices

Electrophoresis

Stable and ready-to-use, biotechrabbit™ DNA and protein ladders provide dyes, allowing the progress of gel electrophoresis to be monitored. The location and intensity of ladder bands in gels can be used to estimate the size and, for DNA, quantity of other bands in the gel. Nuclease-free DNA Loading Dye is also available.

- Time saving — ready to use for convenience
- Reliable — high purity and stability

DNA Electrophoresis Ladders and Loading Dye

| Cat. no. | Size | Package content |
|--|-----------|---|
| 1 kb DNA Ladder with 6X Loading Dye | | |
| BR0800101 | 100 lanes | <ul style="list-style-type: none"> • 1 kb DNA Ladder RTU • 6X DNA Loading Dye |
| 100 bp DNA Ladder with 6X Loading Dye | | |
| BR0800201 | 100 lanes | <ul style="list-style-type: none"> • 100 bp DNA Ladder RTU • 6X DNA Loading Dye |
| 50 bp DNA Ladder with 6X Loading Dye | | |
| BR0800401 | 100 lanes | <ul style="list-style-type: none"> • 50 bp DNA Ladder RTU • 6X DNA Loading Dye |
| 6X DNA Loading Dye | | |
| BR0800301 | 5 ml | <ul style="list-style-type: none"> • 6X DNA Loading Dye |

FEATURES

- Ready to use DNA ladders ideal for DNA sizing and gel quantification
- Pure and stable — retain sharp bands after 6 months storage at room temperature
- Supplied with 6X Loading Dye for sample DNA

APPLICATIONS

- DNA sizing and approximate quantification on agarose gels

DESCRIPTION

biotechrabbit™ DNA electrophoresis ladders are mixtures of exceptionally purified DNA fragments created either by PCR or by digesting proprietary plasmids with restriction enzymes. Ladders are ready to use and suitable not only for DNA sizing but also for approximate DNA quantification in gels. For convenience, ladders have increased intensity reference bands and indicated DNA amount in nanograms for every band.

Every ready-to-use ladder is supplied with the nuclease-free Loading Dye Solution, which ensures optimal migration and quantification of your DNA probes. It includes three electrophoresis tracking dyes (xylene cyanol, bromophenol blue and orange G), allowing the process of the DNA through the gel to be visualized.

Ready-to-use ladder:

Range | bands:

Reference:

1 kb DNA Ladder

250–10,000 bp | 13

1,000 and 3,000 bp

100 bp DNA Ladder

100–3,000 bp | 12

500 and 1,500 bp

50 bp DNA Ladder

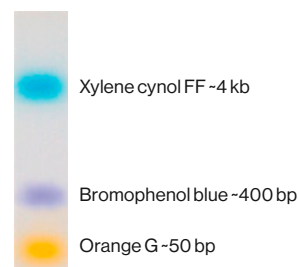
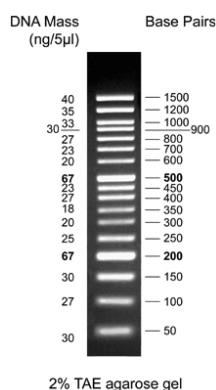
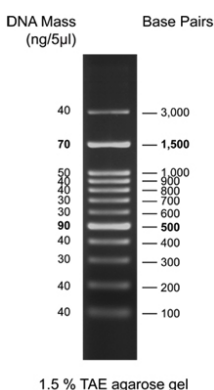
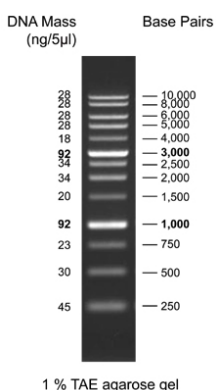
50–1,500 bp | 17

200 and 500 bp

6X DNA Loading Dye

Migration of dyes in

1% TAE agarose gel



Protein Electrophoresis Ladders

| Cat. no. | Size | Package content |
|--|-----------|---|
| TriColor Broad Protein Ladder (3.5–245 kDa) | | |
| BR0900101 | 100 lanes | • TriColor Broad Protein Ladder (3.5–245 kDa) |
| TriColor Protein Ladder (10–180 kDa) | | |
| BR0900201 | 100 lanes | • TriColor Protein Ladder (10–180 kDa) |

FEATURES

- Ready-to-use prestained protein ladders covering 3.5–245 kDa and 10–180 kDa ranges
- Pure and stable — retain sharp bands after 3 months storage at 4 °C
- Protein bands in three colors with easily recognizable colored reference bands

APPLICATIONS

- Approximate protein sizing on SDS-PAGE and western blots
- Monitoring protein gel electrophoresis and western transfers

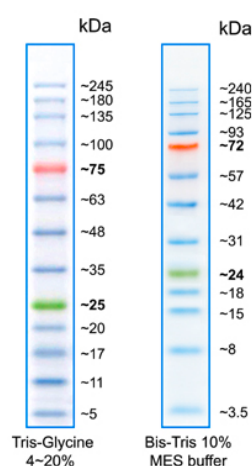
DESCRIPTION

biotechrabbit™ TriColor Broad Protein Ladder facilitates approximate molecular-weight estimation of proteins on denaturing polyacrylamide gels, monitoring protein separation during electrophoresis and verification of western transfer efficiency to membranes (polyvinylidene difluoride, nylon or nitrocellulose). The ladder provides three colored reference bands.

TriColor Broad Protein Ladder is ready for immediate use and is notably stable: sharp bands are produced after storage for 2 weeks at room temperature or 3 months at 4 °C, eliminating the need to thaw before loading.

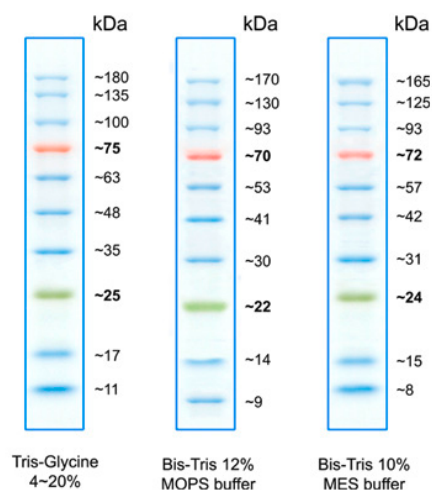
Ready-to-use ladder: TriColor Broad Protein Ladder (3.5–245 kDa)

Range | bands: 3.5–245 kDa | 13
Reference: 25 and 75 kDa



Ready-to-use ladder: TriColor Protein Ladder (10–180 kDa)

Range | bands: 10–180 kDa | 10
Reference: 25 and 75 kDa



Migration patterns in different electrophoresis conditions. The apparent molecular weight of each protein (kDa) was determined by calibrating against unstained proteins under same conditions.

[illegible]

Cell-Free Protein Synthesis

Cell-free protein synthesis overcomes the limitations of traditional cell-based methods. Advantages are ease of use, speed, throughput and the flexible character of the system. Expression conditions can be controlled and easily adapted by adding supplements. It is possible to express toxic proteins and to incorporate labeled amino acids into the protein of interest.

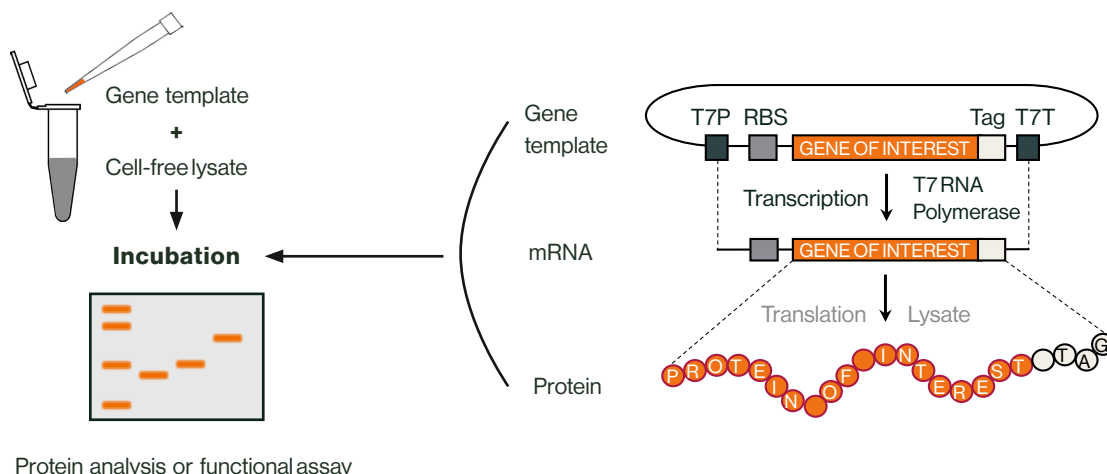
Laborious up- and downstream procedures of traditional *in vivo* methods are avoided as this technique does not require gene transfection or cell culture. By using linear PCR based templates to express the gene of interest, time-consuming cloning procedures are completely avoided.

biotechrabbit™ expression systems are based on extracts from *E. coli*, wheat germ and insect cells. All components are optimized for highest productivity.

- From gene to protein within one day
- No transfection, no cell culture
- Expression of toxic proteins
- Easy site-specific labeling of proteins
- Excellent reproducibility
- High-throughput screening approaches
- Dedicated His-tag protein purification kits

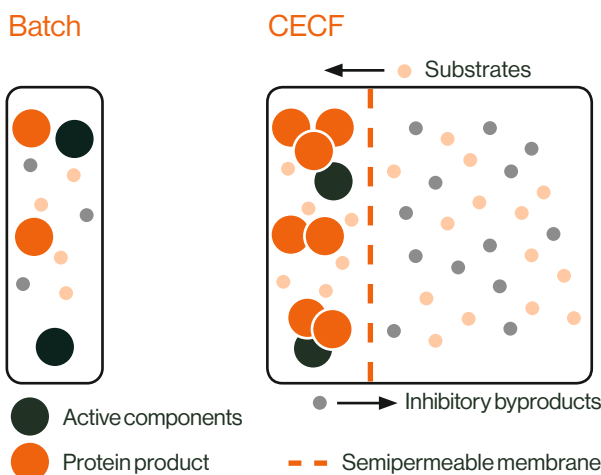
Cell-Free Expression Workflow

In vitro transcription and translation



Continuous Exchange Cell-Free (CECF) Technology

Cell-free protein expression in batch format is highly suitable for screening applications because of the fast and easy setup. However, due to inhibition from byproducts and depletion of substrates, yields using this process are limited. Highest yields are achieved with continuous exchange during cell-free expression (CECF), which allows protein expression to continue for 24 hours. CECF relies on diffusion through a semipermeable membrane between the reaction and the feeding chamber. The reaction chamber contains the machinery for protein expression, while the feeding chamber continuously supplies amino acids, NTPs and energy-regenerating compounds. During the reaction, inhibitory byproducts diffuse out of the reaction chamber. In combination with the optimized high-yield (HY) lysates, synthesis rates using CECF are much higher compared to conventional cell-free expression systems.



RTS™ 100 *E. coli* HY Kit

| Cat. no. | Size | Package content |
|-----------|------------------|--|
| BR1400106 | 6 rxns of 50 µl | Reagents for coupled transcription/translation reactions |
| BR1400101 | 24 rxns of 50 µl | |
| BR1400102 | 96 rxns of 50 µl | |

| | |
|-----------------------|--|
| Proteins expressed | Standard soluble proteins Membrane proteins |
| Reaction time / yield | 1–4 h / 20 µg |
| Reaction mode | Batch |
| Template | RTS Linear Template Kit Plus RTS Linear Template Fab Kit RTS 100 <i>E. coli</i> LinTempGen Set, His-tag RTS pIX3.0 Vector RTS pIVEX <i>E. coli</i> His-tag, 2nd Gen. |

FEATURES

- Compatible with linear templates for fast screening without cloning
- Convenient reaction setup
- Fast expression of proteins in parallel
- Improved high yield biochemistry for up to 20 µg protein per reaction

APPLICATIONS

- Fast parallel microgram-scale protein expression

DESCRIPTION

The biotechrabbit™ RTS™ 100 *E. coli* HY Kit contains a modified high-yield *E. coli* lysate to drive coupled *in vitro* transcription and translation reactions. The enhanced kit can express up to 20 µg protein (50 µl reaction) in 4 hours using a batch mode. The RTS 100 *E. coli* HY kit is compatible with both linear templates and plasmids, making it the product of choice for protein-expression screening and optimization.

Each kit contains everything you need to perform protein-expression in the delivered microplate or, alternatively, in microtubes.

RTS™ 500 ProteoMaster *E. coli* HY Kit

| Cat. no. | Size | Package content |
|-----------|----------------|--|
| BR1400201 | 5 rxns of 1 ml | Reagents for coupled transcription/translation reactions |

| | |
|-----------------------|---|
| Proteins expressed | Standard soluble proteins Membrane proteins |
| Reaction time / yield | 6–24 h / 6 mg |
| Reaction mode | CECF |
| Template | RTS pIX3.0 Vector RTS pIVEX <i>E. coli</i> His-tag, 2nd Gen. |

FEATURES

- Unique CECF technology to ensure high yields
- Enable expression of toxic proteins that cannot be produced *in vivo*
- Incorporation of labeled methionine into synthesized proteins

APPLICATIONS

- Optimized medium-scale, cell-free expression of up to 6 mg protein
- Protein synthesis for NMR spectroscopy or X-ray crystallography

DESCRIPTION

The biotechrabbit™ RTS™ 500 ProteoMaster *E. coli* HY Kit is designed and optimized for the expression of up to 6 mg of protein from plasmid templates in highly efficient coupled transcription/translation reactions. This is achieved by utilizing a biochemically enhanced high-yield (HY) *E. coli* lysate and the RTS 500 ProteoMaster reaction device.

Due to preparative expression yields, the RTS 500 ProteoMaster *E. coli* HY Kit is suited for the production of protein for NMR spectroscopy or X-ray crystallography. The kit design allows to use amino-acid mixtures of your choice. Methionine (included in the kit separately from other amino acids) can be easily substituted by selenomethionine (not included). Other amino acids can be exchanged by preparing tailored amino-acid mixtures using the RTS Amino Acid Sampler.

The RTS 500 ProteoMaster *E. coli* HY Kit is optimized use in a thermomixer. The continuous agitation of the device guarantees optimal support of the CECF process, which is required for efficient protein expression.

RTS™ 9000 *E. coli* HY Kit

| Cat. no. | Size | Package content |
|-----------|----------------|--|
| BR1400301 | 1 rxn of 10 ml | Reagents for coupled transcription/translation reactions |

| | |
|-----------------------|---|
| Proteins expressed | Standard soluble proteins Membrane proteins |
| Reaction time / yield | 6–24 h / 50 mg |
| Reaction mode | CECF |
| Template | RTS pIX3.0 Vector RTS pIVEX <i>E. coli</i> His-tag, 2nd Gen. |

FEATURES

- Unique CECF technology to ensure high yields
- Expression of toxic proteins that cannot be produced *in vivo*
- Incorporation of labeled methionine into proteins

APPLICATIONS

- Large-scale, cell-free expression of up to 50 mg protein

DESCRIPTION

One reaction of the biotechrabbit™ RTS™ 9000 *E. coli* HY Kit yields ten times more total protein (up to 50 mg) than an RTS 500 reaction. The kit provides a reaction volume ten times higher than the RTS 500 *E. coli* HY Kit, while maintaining a similar productivity per milliliter of lysate.

The RTS 9000 Reaction Device is composed of a reaction compartment and a feeding compartment. The 10 ml reaction compartment, where the coupled transcription/translation reactions take place, is separated from the 100 ml feeding compartment by a semipermeable membrane (cut-off 10 kDa).

RTS™ 100/500 *E. coli* Disulfide Kits

| Cat. no. | Size | Package content |
|---|------------------|--|
| RTS 100 <i>E. coli</i> Disulfide Kit | | |
| BR1400401 | 24 rxns of 50 µl | Reagents for coupled transcription/translation reactions |
| RTS 500 <i>E. coli</i> Disulfide Kit | | |
| BR1400501 | 5 rxns of 1 ml | Reagents for coupled transcription/translation reactions |

| | |
|-----------------------|---|
| Proteins expressed | Standard soluble proteins Disulfide-bonded proteins (e.g., Fab antibodies) |
| Reaction time / yield | 6–24 h / 80 µg (50 µl), 2.5 mg (1 ml) |
| Reaction mode | CECF |
| Template | RTS pIX3.0 Vector RTS pIVEX <i>E. coli</i> His-tag, 2nd Gen. |

FEATURES

- Optimized reaction conditions for the expression of functional disulfide-bonded proteins
- No need for refolding aggregated proteins
- CECF technology for yields of up to 2.5 mg

APPLICATIONS

- Expression of active proteins containing multiple disulfide bonds
- Expression of Fab antibodies for rapid functional testing

DESCRIPTION

The biotechrabbit™ RTS™ 100/500 *E. coli* Disulfide Kits provide an optimized combination of lysate, reagents, chaperones, and buffer systems to produce maximum yields of active proteins containing multiple disulfide-bonds in a CECF system.

The kit employs several innovative technologies:

- Optimized high-yield (HY) *E. coli* lysate
- Redox buffer to maintain the system under oxidizing conditions, which enhances disulfide-bond formation
- Disulfide isomerase for rearrangement of disulfide bonds, which enhances the yields of correctly folded proteins

The CECF technology prolongs the reaction time up to 24 hours and, therefore, enhances protein yield. Transcription, translation and disulfide-bond formation take place in the reaction compartment of the device. Substrates and energy components needed for a sustained reaction are continuously supplied via a semipermeable membrane. At the same time, potentially inhibitory interactions with byproducts are diluted by diffusion through the same membrane into the 1 ml feeding chamber. Depending on the particular protein, expression of up to several milligrams of protein per reaction can be obtained (e.g., > 2 mg/ml of active urokinase).

RTS™ 100 Wheat Germ Kit

| Cat. no. | Size | Package content |
|-----------|------------------|--|
| BR1402501 | 24 rxns of 50 µl | Reagents for coupled transcription/translation reactions |

| | |
|-----------------------|--|
| Proteins expressed | Standard soluble proteins Complex and large proteins Membrane proteins |
| Reaction time / yield | 3 h / 5 µg |
| Reaction mode | Batch |
| Template | RTS Wheat Germ LinTempGen Set RTS pIVEX Wheat Germ His ₆ -tag |

FEATURES

- Efficient expression of up to 5 µg protein per reaction
- Compatible with non-optimized, pro- and eukaryotic T7 promoter-based vectors as well as linear templates
- Excellent homogeneity of large proteins
- No endotoxins, allows direct use in cell-based assays
- Upscaling using high yield CECF wheat germ kits

APPLICATIONS

- Fast parallel synthesis for screening purposes
- Synthesis of mammalian or other proteins for functional testing without the disturbing endogenous protein background that is typical for *in vivo* expression
- Synthesis of proteins dependent on eukaryotic chaperones

DESCRIPTION

The biotechrabbit™ RTS™ 100 Wheat Germ Kit is a batch screening system allowing rapid protein expression within 2.5 hours. The kit allows use of a broad range of non-optimized T7 promoter-based expression vectors from prokaryotic and eukaryotic origin in addition to established cell-free wheat germ vectors or linear templates. Using this approach, multiple constructs — including vectors that have not been optimized for wheat germ — can be screened rapidly for expression and functionality in parallel. The procedure saves precious time otherwise required for template generation. The new batch system yields up to 100 µg protein per ml reaction, which is sufficient for many downstream applications.

RTS™ 100/500 Wheat Germ CECF Kits

| Cat. no. | Size | Package content |
|------------------------------------|------------------|--|
| RTS 100 Wheat Germ CECF Kit | | |
| BR1401001 | 24 rxns of 50 µl | Reagents for coupled transcription/translation reactions |
| RTS 500 Wheat Germ CECF Kit | | |
| BR1401101 | 5 rxns of 1 ml | Reagents for coupled transcription/translation reactions |

| | |
|-----------------------|--|
| Proteins expressed | Standard soluble proteins Complex and large proteins Membrane proteins |
| Reaction time / yield | 6–24 h / 50 µg (50 µl), 1 mg (1 ml) |
| Reaction mode | CECF |
| Template | RTS Wheat Germ LinTempGen Set RTS pIVEX Wheat Germ His ₆ -tag |

FEATURES

- Successful expression of eukaryotic proteins, generally without sequence optimization
- Synthesis of up to 1 mg functional eukaryotic protein
- Maximized production of active heat-sensitive proteins, due to an optimum reaction temperature of 24 °C

APPLICATIONS

- Up to milligram-scale protein expression of functional eukaryotic proteins
- Expression of multiple proteins in parallel

DESCRIPTION

The biotechrabbit™ RTS™ 100/500 Wheat Germ CECF Kits enable high success rates for expression and solubility, particularly for eukaryotic target proteins. The use of PCR-generated linear templates greatly improves convenience. The kits allow synthesis of proteins in a wide molecular weight range (up to 220 kDa, as tested), as well as synthesis of truncated protein variants (e.g., for epitope or functional domain mapping). While the RTS 100 Wheat Germ CECF Kit is designed for high-throughput protein expression, the RTS 500 version ensures higher yields.

The system can be used with linear templates as well as mRNA, vectors and plasmid DNA. Depending on the protein, expression yields of more than 1 mg protein per reaction can be obtained within 24 hours in a 1 ml reaction.

RTS™ 100 Insect Membrane Kit

| Cat. no. | Size | Package content |
|-----------|------------------|---|
| BR1401501 | 5 rxns of 50 µl | Reagents for linked transcription/translation reactions |
| BR1401502 | 20 rxns of 50 µl | |

| | |
|-----------------------|--|
| Proteins expressed | Standard soluble proteins Complex and large proteins Glycosylated proteins Membrane proteins |
| Reaction time / yield | 4 h / 2 µg |
| Reaction mode | Batch |
| Template | RTS Linear Template Kit Plus RTS Linear Template Fab Kit RTS pIX4.0 Insect Vector RTS pIX3.0 Vector RTS pIVEX Wheat Germ His ₆ -tag RTS pIVEX <i>E. coli</i> His-tag, 2nd Gen. RTS 100 <i>E. coli</i> LinTempGenSet |

APPLICATIONS

- Expression of membrane proteins without the need for additives
- Synthesis of post-translationally modified eukaryotic proteins

FEATURES

- Robust expression of a wide range of proteins (clotting factors, protein kinases, transcription factors)
- Yields of up to 50 µg/ml protein, sufficient for functional studies or screening procedures
- Compatibility with linear templates and plasmids
- Expression screening in small volumes (> 5 µl)

DESCRIPTION

The biotechrabbit™ RTS™ 100 Insect Membrane Kit was the first commercially available *in vitro* protein synthesis kit based on cell lysates derived exclusively from insect cell cultures. These homogeneous lysates from a *Spodoptera frugiperda* cell line enable efficient expression of a broad range of eukaryotic proteins with posttranslational modifications. Now, with an optimized lysate production procedure, this kit is even more efficient.

In addition, the lysates contain functional organelle membrane fractions, whose activity is required for posttranslational modification of eukaryotic proteins, including membrane proteins.

RTS 100 Insect Membrane Kit can be used with linear templates as well as expression vectors.

RTS™ Amino Acid Sampler

| Cat. no. | Size | Package content |
|-----------|----------------|--|
| BR1401801 | 5 rxns of 1 ml | 20 L-amino acids (1 vial each) 5 × DTT (1,4-Dithiothreitol) |

FEATURES

- Set of 20 individual amino acids, allowing amino-acid specific protein labeling for structure determination

APPLICATIONS

- For use with RTS 100, RTS 500 and RTS 9000 *E. coli* kits
- Ideal for labeling of proteins for NMR and X-ray analyses

DESCRIPTION

Using RTS™ 500 ProteoMaster or RTS 9000 *E. coli* HY Kits, protein yields are sufficient in many cases for subsequent use in NMR spectroscopy. The RTS Amino Acid Sampler provides ready-to-use stock solutions of amino acids which can be labeled and used to replace the amino acids provided in the RTS *E. coli* HY Kits.

RTS™ DnaK Supplement

| Cat. no. | Size | Package content |
|-----------|----------------|--|
| BR1401601 | 5 rxns of 1 ml | DnaK Mix (DnaK Supplement) Energy Mix (DnaK Supplement) |

FEATURES

- *E. coli* chaperones to enhance correct folding and increase solubility, even of large proteins
- Compatible with RTS 100/500/9000 *E. coli* HY Kits

APPLICATIONS

- Enhance the expression of soluble proteins
- Improved synthesis of functionally active proteins

DESCRIPTION

The Rapid Translation System (RTS) is an "open" cell-free protein expression system, in which reaction conditions can easily be adapted in a protein-specific manner by adding co-factors, ligands, detergents, or chaperones to the reaction mixture.

The biotechrabbit™ RTS™ DnaK Supplement includes DnaK (heat shock protein 70, hsp 70), one of the key chaperone systems in *E. coli*, in combination with DnaJ (hsp 40) and GrpE. The RTS DnaK Supplement can be used to increase the amount of correctly folded and/or soluble proteins expressed in the RTS.

DnaK can be used with proteins of any size and serves as an aggregation inhibitor that binds unfolded protein or transfers the protein to other chaperones, such as the GroE or the Hsp90 systems. The RTS DnaK Supplement can be used with the RTS *E. coli* HY platform.

RTS™ GroE Supplement

| Cat. no. | Size | Package content |
|-----------|----------------|--------------------------------------|
| BR1401701 | 5 rxns of 1 ml | GroEL and GroES (GroE Supplement) |

FEATURES

- *E. coli* chaperone mix to enhance correct folding and increase solubility of expressed proteins
- Compatible with RTS 100/500/9000 *E. coli* HY Kits

APPLICATIONS

- Improved synthesis of functionally active proteins

DESCRIPTION

The Rapid Translation System (RTS) is an "open" cell-free protein expression system, in which reaction conditions can easily be adapted in a protein-specific manner by adding co-factors, ligands, detergents, or chaperones to the reaction mixture.

The biotechrabbit™ RTS™ GroE Supplement provides the GroEL and GroES (together referred to as GroE), which are cytoplasmic chaperones of *E. coli* reported to be involved in the de novo folding of 10–30 % of all cytoplasmic proteins. It is not possible to predict that a particular protein is a substrate for GroE, GroEL or GroES.

However, the presence of GroE during cellular or cell-free protein synthesis has been reported to lead to higher amounts of correctly folded and active product in many cases. The RTS GroE Supplement can be used with the RTS *E. coli* HY platform.

Linear Templates and Vectors for Cell-Free Protein Synthesis

biotechrabbit™ cell-free expression kits can be used with linear templates and expression vectors to produce the proteins of interest. The ability to use linear templates is one of the major advantages of cell-free compared to cell-based expression systems. Linear expression templates can be rapidly generated by PCR, allowing multiple constructs to be screened quickly and easily.

Expression vectors enable protein production to be up-scaled. Either the genes of interest are directly inserted into an expression vector or linear templates are generated first by PCR and subsequently cloned. Protein yields achieved are sufficient for extended functional and structural analysis, or production of labeled proteins for NMR spectroscopic or X-ray crystallographic studies.

- Fast PCR-based generation of linear templates
- Rapid expression screening and optimization
- Optimized expression vectors for scaling production up to 6 mg per ml
- Flexible positioning of purification tags

| No. | Product | Protein tag | Expression kits (see page 61) |
|----------------------|---|------------------------------------|---|
| Linear template Kits | | | |
| 1 | RTS Linear Template Kit Plus | His-tag, Strep-tag, Signal peptide | RTS 100 <i>E. coli</i> HY Kit RTS 100 Insect Membrane Kit |
| 2 | RTS Wheat Germ LinTempGen Set, His ₆ -tag | His-tag | RTS 100/500 Wheat Germ Kits |
| 3 | RTS Linear Template Fab Kit | His-tag, Signal peptide | RTS 100 <i>E. coli</i> HY Kit RTS 100 Insect Membrane Kit |
| 4 | RTS 100 <i>E. coli</i> LinTempGen Set, His-tag | His-tag | RTS 100 <i>E. coli</i> HY Kit RTS 100 Insect Membrane Kit |
| T7 vectors | | | |
| 5 | RTS pIX4.0 Insect Vector | Tag from cloned gene | RTS 100 Insect Membrane Kit |
| 6 | RTS pIX3.0 Vector | Tag from linear template | RTS 100/500/9000 <i>E. coli</i> HY Kits RTS 100/500 <i>E. coli</i> Disulfide Kits RTS 100 Insect Membrane Kit |
| 7 | RTS pIVEX Wheat Germ His ₆ -tag Vector Set | His-tag | RTS 100/500 Wheat Germ Kits |
| 8 | RTS pIVEX <i>E. coli</i> His-tag, 2nd Gen. Vector Set | His-tag | RTS 100/500/9000 <i>E. coli</i> HY Kits RTS 100/500 <i>E. coli</i> Disulfide Kits RTS 100 Insect Membrane Kit |

RTS™ Linear Template Kit Plus

| Cat. no. | Size | Package content |
|-----------|------------------|---|
| BR1402401 | 20 PCRs of 25 µl | PCR reagents for linear template generation |

| | |
|-----------------|--|
| Protein tag | His-tag, Strep-tag, Signal peptide |
| Expression kits | RTS 100 <i>E. coli</i> HY Kit RTS 100 Insect Membrane Kit |

FEATURES

- Efficient *in vitro* expression (*E. coli* and insect kits)
- Primers for affinity tags (His₆-tag /Strep-tag II)
- Signal peptide sequence primers for expression translocation into microsomes (insect systems)

APPLICATIONS

- Fast generation of multiple template constructs
- Accelerated screening of protein expression templates and conditions

DESCRIPTION

The RTS™ Linear Template Kit Plus accelerates the generation of multiple templates for parallel protein expression. Constructs are suitable for expression in *E. coli* and insect cell-free lysates. Due to compatible restriction sites in the adapter primers, products can be easily cloned into pIX3.0 vectors for large-scale *in vitro* expression.

The kit contains primers providing regulatory elements required for optimal transcription and translation in cell-free expression systems. Specially designed 5' untranslated regions reduce the formation of secondary structure in the translation initiation region, one of the most common causes of low expression rates. A His-tag or Strep-tag II can be added to either terminus, greatly simplifying protein purification and detection.

A signal sequence enables expression of functional proteins containing disulfide-bonds or membrane proteins in the RTS 100 Insect Membrane kit. A signal peptide can be introduced using the N-terminal primer, which contains a melittin sequence. This enables protein translocation into microsomal vesicles derived from insect cell endoplasmic reticulum.™

RTS™ Wheat Germ LinTempGen Set, His₆-tag

| Cat. no. | Size | Package content |
|-----------|------------------|---|
| BR1401201 | 96 PCRs of 50 µl | PCR reagents for linear template generation |

| | |
|-----------------|--|
| Protein tag | His-tag |
| Expression kits | RTS 100 Wheat Germ Kit RTS 100 Wheat Germ CECF Kit RTS 500 Wheat Germ CECF Kit |

FEATURES

- Optimized spacing of eukaryotic regulatory elements
- Time saving, no laborious cloning
- Flexible positioning of His₆-tag at the C- or N-terminus
- Primary PCR product can be cloned into pIVEX vectors

APPLICATIONS

- Rapid generation of linear expression constructs for screening applications
- Linear template generation for optimized His₆-tagged protein expression

DESCRIPTION

The RTS™ Wheat Germ LinTempGen Set, His₆-tag can be used to rapidly generate linear expression constructs that are ready for use with RTS Wheat Germ kits. PCR generated linear templates allow fast protein expression from wild type or modified DNA sequences. Use PCR-based template generation to:

- Add epitope-tag sequences for antibody detection
- Introduce mutations
- Change codon usage
- Generate truncated proteins

Using linear templates for protein expression avoids the time-consuming step of cloning into expression plasmids and can be used for initial, rapid screening for expression. Gene-specific primers can be used for RTS Wheat Germ and *E. coli* LinTempGen sets enabling easy transfer of products from any expression system to both the RTS Wheat Germ and *E. coli* platforms. For expression scale-up, the linear templates can be cloned into the RTS pIVEX Wheat Germ vector and used with RTS 100/500 Wheat Germ CECF Kits.

RTS™ Linear Template Fab Kit

| Cat. no. | Size | Package content |
|-----------|------------------|---|
| BR1402201 | 96 PCRs of 25 µl | PCR reagents for linear template generation |

| | |
|-----------------|--|
| Protein tag | His-tag, Signal-peptide |
| Expression kits | RTS 100 <i>E. coli</i> HY Kit RTS 100 Insect Membrane Kit |

FEATURES

- Introduction of an affinity tag for protein purification
- Signal peptide sequence for translocation into microsomes
- Introduction of a signal peptide sequence for translocation into microsomes
- Compatibility with *E. coli* HY and Insect kits

APPLICATIONS

- PCR-based linear templates for protein expression in *E. coli* and insect kits
- Fast template generation for expression of Fab and scFv antibody fragments

DESCRIPTION

The RTS™ Linear Template Fab Kit is designed for rapid PCR-based generation of templates directly used in the *E. coli* Disulfide and Insect kits allowing functional screening of antibody fragments and disulfide proteins and to facilitate the assignment of biological functions to genes. The templates can be generated with optional affinity tag and/ or signal peptide sequences for protein purification and translocation into microsomes.

The RTS Linear Template Fab Kit generates templates with elements to drive efficient coupled *in vitro* transcription and translation reactions for the synthesis of proteins with intra- and intermolecular disulfide bonds. The kit is the product of choice for functional screening of disulfide proteins and optimization of constructs. One kit contains sufficient volumes of primer solutions to perform 96 standard protein expression reactions with reaction volumes of 25 µl.

RTS™ 100 *E. coli* LinTempGen Set, His-tag

| Cat. no. | Size | Package content |
|-----------|------------------|---|
| BR1400801 | 96 PCRs of 50 µl | PCR reagents for linear template generation |

| | |
|-----------------|--|
| Protein tag | His-tag |
| Expression kits | RTS 100 <i>E. coli</i> HY Kit RTS 100 Insect Membrane Kit |

FEATURES

- Contains all regulatory elements in optimal spacing
- Option for templates with N- or C-terminal His₆-tag
- Primary PCR product can be cloned into pIVEX vectors
- For use with RTS 100 *E. coli* HY and insect kits

APPLICATIONS

- Fast gene template generation without cloning
- Generate linear templates for rapid screening and optimization of His₆-tagged protein expression

DESCRIPTION

The RTS™ 100 *E. coli* LinTempGen Set is designed to rapidly generate linear expression constructs that are ready for use with RTS 100 *E. coli* HY and insect kits. PCR generated linear templates allow fast protein expression from wild type or modified DNA sequences. Use PCR-based template generation to:

- Add epitope-tag sequences for antibody detection
- Introduce mutations
- Change codon usage
- Generate truncated proteins

Using linear DNA templates for protein expression avoids the time-consuming step of cloning into expression plasmids and can be used for initial, rapid screening for expression. Gene-specific primers can be used for RTS Wheat Germ and *E. coli* LinTempGen sets enabling easy transfer of products from any expression system to both the RTS Wheat Germ and *E. coli* platforms. For expression scale-up, the linear templates can be cloned into RTS pIVEX *E. coli* vectors and used with RTS 100/500/9000 *E. coli* CECF kits.

RTS™ pIX4.0 Insect Vector

| Cat. no. | Size | Package content |
|-----------|----------|----------------------|
| BR1400901 | 1 vector | pIX4.0 Insect Vector |

| | |
|-----------------|-----------------------------|
| Protein tag | Tag from cloned gene |
| Expression kits | RTS 100 Insect Membrane Kit |

FEATURES

- Regulatory elements for efficient transcription and translation
- Multiple cloning site and translational stop codons in all reading frames
- Optimized untranslated regions stabilizing and protecting RNA from degradation by exonucleases
- RNA of defined length via optional plasmid linearization

APPLICATIONS

- Cloning genes for efficient synthesis of proteins using the RTS 100 Insect kits

DESCRIPTION

The RTS™ pIX4.0 Insect Vector is designed for cloning genes into its multiple cloning site. The vector contains efficient untranslated regions specific for the insect expression system, a T7 transcription promoter and additional elements allowing high-yield expression using the RTS 100 Insect Membrane Kit.

The RTS pIX4.0 Insect Vector offers efficient initiation of translation through a T7 promoter element combined with an optimized 3' untranslated region, a T7 terminator, and an optimally positioned linearization site. The expression template is added to the *in vitro* transcription or coupled transcription/translation reactions.

RTS™ pIX3.0 Vector

| Cat. no. | Size | Package content |
|-----------|----------|-----------------|
| BR1402701 | 1 vector | pIX3.0 Vector |

| | |
|-----------------|--|
| Protein tag | Tag from linear template |
| Expression kits | RTS 100 <i>E. coli</i> HY Kit RTS 500 ProteoMaster <i>E. coli</i> HY Kit RTS 9000 <i>E. coli</i> HY Kit RTS 100 <i>E. coli</i> Disulfide Kit RTS 500 <i>E. coli</i> Disulfide Kit RTS 100 Insect Membrane Kit |

FEATURES

- Multiple cloning site compatible with linear templates generated with RTS Linear Template Kit Plus and RTS Linear Template Fab Kit
- High copy origin of replication
- Cell-free protein synthesis scale-up to after expression screening using linear templates
- Free of any potentially interfering regulatory elements ensuring efficient transcription and translation
- Compatible with RTS *E. coli* and Insect kits

APPLICATIONS

- Cloning of RTS Linear Templates for expression in RTS *E. coli* and Insect kits

DESCRIPTION

The cloning vector RTS™ pIX3.0 is designed for cloning linear templates generated with RTS Linear Template Plus and Fab kits to subsequently up-scale protein synthesis in *E. coli* batch systems to the CECF format or to use with RTS insect kits. The vector contains a multiple cloning site compatible with that of the linear templates.

The RTS pIX3.0 Vector enables high-level protein expression using the RTS 100/500/9000 *E. coli* HY kits, *E. coli* Disulfide and RTS Insect kits. The kit exhibits the same performance as the RTS pIVEX His-tag, 2nd Gen. Vector Set, which is used for classic cloning.

RTS™ pIVEX Wheat Germ His₆-tag Vector Set

| Cat. no. | Size | Package content |
|-----------|----------|--|
| BR1401301 | 2 vector | pIVEX1.3 WG (His ₆ -tag Vector Set) pIVEX1.4 WG (His ₆ -tag Vector Set) |

| | |
|-----------------|--|
| Protein tag | His-tag |
| Expression kits | RTS 100 Wheat Germ Kit RTS 100 Wheat Germ CECF Kit RTS 500 Wheat Germ CECF Kit |

FEATURES

- Stable circular templates ensure high yields in preparative-scale expression reactions
- For construction of C- and N-terminal His₆-tag proteins

APPLICATIONS

- Expression vector for preparative-scale expression in eukaryotic wheat germ lysates

DESCRIPTION

The RTS™ pIVEX Wheat Germ vectors are designed for high yield cell-free expression of His₆-tagged eukaryotic proteins using the RTS Wheat Germ kits.

The two vectors contain all regulatory elements necessary for *in vitro* expression based on a combination of T7 RNA polymerase and wheat germ lysates. They enable the attachment of a His₆-tag in different orientations, at the C- and N-terminus of the protein. Cloning into RTS pIVEX Wheat Germ His₆-tag vectors allows optimal protein expression in RTS Wheat Germ CECF kits to produce more than 1 mg protein per 1 ml synthesis volume in a 24-hour reaction.

RTS™ pIVEX *E. coli* His-tag, 2nd Gen. Vector Set

| Cat. no. | Size | Package content |
|-----------|----------|--|
| BR1400701 | 2 vector | pIVEX2.3d Vector DNA 2nd Gen. Vector Set pIVEX2.4d Vector DNA 2nd Gen. Vector Set |

| | |
|-----------------|--|
| Protein tag | His-tag |
| Expression kits | RTS 100 <i>E. coli</i> HY Kit RTS 500 ProteoMaster <i>E. coli</i> HY RTS 9000 <i>E. coli</i> HY Kit RTS 100 <i>E. coli</i> Disulfide Kit RTS 500 <i>E. coli</i> Disulfide Kit RTS 100 Insect Membrane Kit |

FEATURES

- Stable circular templates to ensure high yields in preparative-scale expressions
- For construction of C- and N-terminal His₆-tagged proteins
- Optimal spacing of all regulatory elements
- For use with RTS *E. coli* and Insect kits

APPLICATIONS

- Preparative-scale expression of His₆-tagged proteins

DESCRIPTION

The RTS™ pIVEX *E. coli* vectors are designed for high-yield cell-free expression of His₆-tagged proteins using a broad range of RTS expression kits.

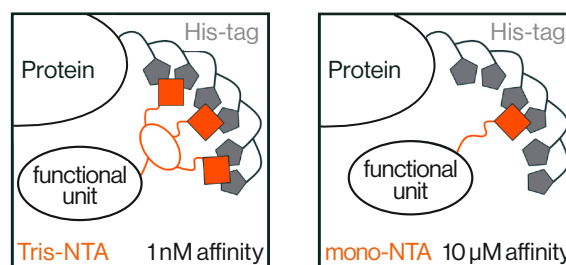
The two vectors contain all regulatory elements necessary for *in vitro* expression based on a combination of T7 RNA polymerase and RTS expression lysates. They enable the attachment of a His₆-tag in different orientations at the C- and N-terminus of the protein. Cloning into RTS pIVEX His₆-tag vectors allows optimal protein expression with high yields.

High Affinity His-tag Protein Binding

Modern proteomics relies on reliable and sensitive detection and labeling of tagged proteins, such as those bearing the 6xHis-tag. However, the low affinity of currently available chelators used for protein binding limits the sensitivity of many applications for selective, site-specific conjugation of proteins. To address this issue, biotechrabbit offers a superior His-tag protein ligand for the reversible binding of proteins and cell surfaces: Tris-NTA.

With a binding affinity that is approximately four orders of magnitude higher than monovalent metal ion chelators (such as nitrilotriacetic acid and iminodiacetic acid), Tris-NTA increases the sensitivity in western hybridization, biosensor analysis, functional protein analysis, protein purification and many other applications.

- 10,000 times higher binding affinity than conventional chelators
- Reversible binding of biomolecules
- Great flexibility in functional assays



Lata et al., J. Am. Chem. Soc., 2005, 127, 10205–10215

Tris-NTA Amine / Tris-NTA Biotin

| Cat. no. | Size | Package content |
|-----------------|--------|--------------------------|
| Tris-NTA Amine | | |
| BR1001101 | 100 µg | Tris-NTA Amine, 1 mg/ml |
| BR1001102 | 1 mg | |
| Tris-NTA Biotin | | |
| BR1001201 | 100 µg | Tris-NTA Biotin, 1 mg/ml |
| BR1001202 | 1 mg | |

FEATURES

- A complex of three Ni-NTA groups ensures high-affinity binding of His-tags
- Binding affinity is approximately four orders of magnitude higher than monovalent metal ion chelators
- Protein binding is stoichiometric

APPLICATIONS

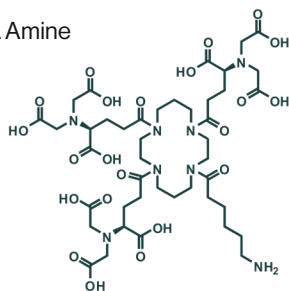
- Reversible labeling of proteins or cell surfaces
- Detection and analysis of target molecules
- Immobilization of proteins, lipids and cells on surfaces
- Purification and sample preparation of proteins
- Coupling with microscopic or spectroscopic probes

DESCRIPTION

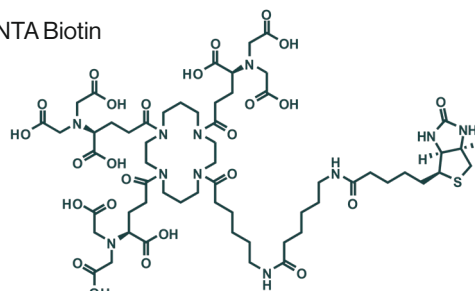
His-tags are one of the most commonly used tags for protein expression analysis. Conventional metal ion chelators, such as nitrilotriacetic acid (NTA) and iminodiacetic acid (IDA), bind His-tags with low affinities in the range of 10 µM. The biotechrabbit Tris-NTA complexes three NTA groups that together bind a 6xHis-tag with an affinity that is four orders of magnitude higher (1 nM) than is possible with conventional chelators (10 µM). The binding of His-tags is stoichiometric and single-molecule detection is possible. Binding is reversible: bound His-tags can be released with imidazole or ethylenediamine-tetraacetic acid (EDTA).

biotechrabbit™ Tris-NTA is available with a free amine group or conjugated to biotin. It can be used in a large range of applications, including protein detection and labeling, coupling proteins, lipids or cells to surfaces, protein purification and reversible protein modification.

Tris-NTA Amine



Tris-NTA Biotin



NOTES

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Tris-NTA Amine / Biotin

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biotechrabbit GmbH
Volmerstr. 9
12489 Berlin, Germany
phone: +49 30 555 78 21 0
info@biotechrabbit.com

Managing Director:
Dr. Bernd Haase
Commercial Register:
Charlottenburg HRB 232169 B
VAT No/UST-Id: DE 279969868

Bank account
Deutsche Bank Berlin
BIC/SWIFT: DEUTDEDBBER
IBAN: DE22 1007 0024 0062 8891 02