

biotechrabbit

Product Catalog

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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
- Cell-free protein synthesis

Services

- OEM, custom and bulk
- Lyophilization services

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Diagnostic Services and Custom Solutions

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 diagnostics
- Contract manufacturing
- Lyophilized products
- OEM and Private Label

biotechrabbit's collaborative approach ensures reliability

Diagnostic-grade quality

Production according to diagnostic requirements

- ISO 9001 and ISO 13485 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

Innovative lyophilization procedure

- Freeze-dried PCR enzymes and mixes
- Custom lyophilization and glycerol-free enzymes

Contract manufacturing

Large-scale enzyme and antibody production

- Production in *E. coli* and eukaryotic cells
- Different manufacturing sites, up to 100 liter fermenters



Get in touch with biotechrabbit and start your project

Standard PCR

biotechrabbit Standard PCR products include highly purified YourTaq™ DNA Polymerase which is optimized for high yield of amplification of 0.1–3 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™ Direct-Load PCR Master Mix	Premixed PCR reagents including green-colored buffer for direct loading onto gel after the PCR	Routine, high-throughput with direct gel loading	✓		✓
50 mM MgCl ₂	Flexible optimization of Mg ²⁺ concentration	Standard and demanding		✓	
5X PCR Enhancer	Improved PCR specificity and efficiency	Standard and demanding		✓	
PCR Grade Water	Ultrapure, sterile filtrated, contamination-free	Standard and demanding		✓	

Taq DNA Polymerase, 5 U/μl

Cat. no.	Size	Package content
BR0100102	500 U	Taq DNA Polymerase, 5 U/μl
BR0100103	2500 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 low 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 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/HindII 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 rxn of 50 µl	2X YourTaq PCR Master Mix
BR0102202	1000 rxn of 50 µl	
BR0102203	4000 rxn 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 0.1–3 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™ Direct-Load PCR Master Mix

Cat. no.	Size	Package content
BR0102301	200 rxn of 50 µl	2X YourTaq Direct-Load
BR0102302	1000 rxn of 50 µl	PCR Master Mix
BR0102303	4000 rxn 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 Direct-Load PCR Master Mix is optimized for high yield of amplification of 0.1–3 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 Direct-Load PCR Master Mix 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%).

50 mM MgCl₂

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

DESCRIPTION

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

FEATURES

- Flexibility in PCR optimization
- Improved PCR performance

APPLICATIONS

- Optimization of PCR buffer conditions

5X PCR Enhancer

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

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.

FEATURES

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

APPLICATIONS

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

PCR Grade Water

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

APPLICATIONS

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

FEATURES

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

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.

Hot-Start PCR

biotechrabbit Hot-start PCR products include highly purified YourTaq™ Hot-Start DNA Polymerase which is optimized for high yield of amplification of 0.1–3 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.

- 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
YourTaq™ Hot-Start DNA Polymerase, 5 U/μl	Antibody-based hot-start, polymerase for complex PCR with high-GC content and resistance to PCR inhibitor carry-over	High sensitivity and 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		✓	
UPstart™ Taq Antibody, 1 mg/ml	Hot-start monoclonal antibody for Taq DNA polymerases	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	✓		
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	Antibody-based hot-start with green-colored buffer for direct loading onto gels after PCR and resistance to PCR inhibitor carry-over	High sensitivity and specificity, complex PCR, colony PCR, direct gel loading	✓		✓
ApStarTaq™ DNA Polymerase, 5 U/μl	Aptamer-based hot-start for fast PCR, high specificity and yield	Fast PCR, high sensitivity and high specificity		✓	

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

Cat. no.	Size	Package content
BR0202101	250 U	YourTaq Hot-Start DNA Polymerase , 5 U/μl
BR0202102	1250 U	5X PCR Reaction Buffer
BR0202103	5000 U	50 mM MgCl ₂

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 3 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 0.1–3 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	Hot-Start <i>Taq</i> DNA Polymerase, 5 U/μl
BR0200103	2500 U	5X Reaction Buffer 50 mM MgCl ₂

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 3 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.

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 > 95% *Taq* activity at 60 °C
- 200 ng UPstart *Taq* Antibody are blocking 1 U *Taq* DNA polymerase
- Exceptionally pure – made in cell culture

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 antibody against the *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.

2X YourTaq™ Hot-Start PCR Master Mix

Cat. no.	Size	Package content
BR0202201	200 rxn of 50 µl	2X YourTaq Hot-Start
BR0202202	1000 rxn of 50 µl	PCR Master Mix
BR0202203	4000 rxn 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 3 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 0.1–3 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 rxn of 50 µl	2X Hot-Start PCR Master Mix
BR0200206	1000 rxn of 50 µl	
BR0200207	4000 rxn 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 3 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 0.2–3 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™ Direct-Load Hot-Start PCR Master Mix

Cat. no.	Size	Package content
BR0202301	200 rxn of 50 µl	2X YourTaq Direct-Load
BR0202302	1000 rxn of 50 µl	Hot-Start PCR Master Mix
BR0202303	4000 rxn 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 3 kb
- Suitable for amplification of low target copy number
- TA cloning

DESCRIPTION

biotechrabbit™ YourTaq Direct-Load Hot-Start PCR Master Mix is optimized for high yield of amplification of 0.1–3 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 Direct-Load Hot-Start PCR Master Mix 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.

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

Cat. no.	Size	Package content
BR0201501	250 U	ApStarTaq Hot-Start DNA Polymerase,
BR0201502	1250 U	5 U/μl
BR0201503	5000 U	5X Reaction Buffer 50 mM MgCl ₂

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 3 kb
- Amplification of low-copy-number targets
- RT-PCR and TA cloning

DESCRIPTION

biotechrabbit™ ApStarTaq 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.

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**

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

Cat. no.	Size	Package content
BR0202403	200 rxn of 50 µl	2X Lyo YourTaq Hot-Start PCR Master Mix 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 3 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 0.1–3 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 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
BR0201103	200 rxn of 50 µl	2X Lyo Hot-Start PCR Master Mix PCR 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 3 kb
- TA cloning

DESCRIPTION

biotechrabbit™ Lyo 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 0.2–3 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 rxn of 20 µl	CAPITAL qPCR Probe Master Mix, lyophilized 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 rxn of 20 µl	Lyo CAPITAL qRT-PCR Probe Master Mix 5X qRT-PCR Probe Reconstitution Buffer

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.

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

Multiplex 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 rxn of 50 µl	2X Multiplex Hot-Start PCR
BR0200802	250 rxn of 50 µl	Master Mix
BR0200804	1000 rxn 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.

High-Fidelity and Long-Range PCR

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.

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

Product	Main feature	Main PCR application	Fidelity*	Amplicon length up to	Simplified setup
<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	✓
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	✓

* Fidelity vs. *Taq* DNA Polymerase

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 rxn of 50 μl	2X <i>Pfu</i> PCR Master Mix
BR0300202	500 rxn 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.

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 rxn of 50 μl	2X Long Range PCR Master Mix
BR0300402	500 rxn 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.

Reverse Transcription and RT-PCR

RevertUP Reverse Transcriptase, which is a proprietary modification of the MMuLV reverse transcriptase, provides most efficient cDNA synthesis without RNase H activity, allowing successful synthesis of cDNAs of greater than 19 kb in length.

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. The Moloney-Murine Leukemia Virus (MMuLV) reverse transcriptase is a highly purified classic RNA-dependent DNA polymerase.

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 1step 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
RNase Inhibitor	Prevention of RNA degradation by RNases	A recombinant RNase inhibitor inactivating a wide spectrum of ribonucleases

AnyScript™ Reverse Transcriptase, 200 U/μl

Cat. no.	Size	Package content
BR0401001	20000 U	AnyScript Reverse Transcriptase, 200 U/μl
BR0401002	100000 U	5X Reverse Transcriptase Buffer

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	AllScript Reverse Transcriptase, 4 U/μl
BR0400602	2000 U	5X Reverse Transcriptase Buffer

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	10000 U	RevertUP II Reverse Transcriptase, 200 U/μl
BR0400502	50000 U	5X Reverse Transcriptase Buffer

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.

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

MMuLV Reverse Transcriptase, 200 U/μl

Cat. no.	Size	Package content
BR0400201	10000 U	MMuLV Reverse Transcriptase, 200 U/μl
BR0400202	50000 U	10X MMuLV RT Buffer

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.

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

1-Step RT-PCR Master Mix

Cat. no.	Size	Package content
BR0400102	100 rxn of 50 µl	2X One Step Master Mix
BR0400103	500 rxn of 50 µl	20X RT-RI Blend

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 rxn of 20 µl	Reverse Transcriptase, 200 U/µl
BR0400403	125 rxn of 20 µl	5X Reverse Transcriptase Buffer
BR0400404	250 rxn of 20 µl	dNTP Mix RNase Inhibitor Hexamer and oligo(dT) Primers PCR Grade Water

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.

RNase Inhibitor, 40 U/ μ l

Cat. no.	Size	Package content
BR0400901	2500 U	RNase Inhibitor, 40 U/ μ l
BR0400902	10000U	

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 an acidic 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.

Quantitative 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	qTower
	Applied Biosystems	7500, 7500 FAST, ViiA™ 7
	Bio-Rad	iCycler®, MyiQ™, iQ™ 5, Opticon™, Opticon 2, Chromo4™, MiniOpticon™, CFX96™, CFX384™
	Cepheid	Smartcycler®
	Eppendorf	Mastercycler® ep REALPLEX®, Mastercycler REALPLEX 2S
	Illumina	Eco™
	QIAGEN	Rotor-Gene® 3000, 6000, Q
	Roche Applied Science	Lightcycler® 480, Lightcycler Nano
	Agilent	Mx4000P®, Mx3000P®, Mx3005P®
	Takara	Cycler Dice™
Techne	Quanta®	
High concentration ROX	Analytica Jena	qTower
	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® 480, Lightcycler Nano
	Takara	Cycler Dice™
	Techne	Quanta®
	Fluorescein	Bio-Rad

4X CAPITAL™ qPCR Green Master Mix

Cat. no.	Size	Package content
4X CAPITAL qPCR Green Master Mix		
BR0501701	200 rxn of 20 µl	4X CAPITAL qPCR Green
BR0501702	1000 rxn of 20 µl	Master Mix
BR0501703	4000 rxn of 20 µl	
4X CAPITAL qPCR Green Master Mix LROX		
BR0501801	200 rxn of 20 µl	4X CAPITAL qPCR Green
BR0501802	1000 rxn of 20 µl	Master Mix LROX
BR0501803	4000 rxn of 20 µl	
4X CAPITAL qPCR Green Master Mix HROX		
BR0501901	200 rxn of 20 µl	4X CAPITAL qPCR Green
BR0501902	1000 rxn of 20 µl	Master Mix HROX
BR0501903	4000 rxn 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™ qPCR Probe Master Mix

Cat. no.	Size	Package content
4X CAPITAL qPCR Probe Master Mix		
BR0501401	200 rxn of 20 µl	4X CAPITAL qPCR Probe Master Mix
BR0501402	1000 rxn of 20 µl	
BR0501403	4000 rxn of 20 µl	
4X CAPITAL qPCR Probe Master Mix LROX		
BR0501501	200 rxn of 20 µl	4X CAPITAL qPCR Probe Master Mix
BR0501502	1000 rxn of 20 µl	LROX
BR0501503	4000 rxn of 20 µl	
4X CAPITAL qPCR Probe Master Mix HROX		
BR0501601	200 rxn of 20 µl	4X CAPITAL qPCR Probe Master Mix
BR0501602	1000 rxn of 20 µl	HROX
BR0501603	4000 rxn 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 Green Master Mix

Cat. no.	Size	Package content	DESCRIPTION
4X CAPITAL 1-Step qRT-PCR Green Master Mix			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.
BR0502301	200 rxn of 20 µl	4X CAPITAL 1-Step qRT-PCR Green Master Mix	
BR0502302	1000 rxn of 20 µl	Master Mix	
4X CAPITAL 1-Step qRT-PCR Green Master Mix LROX			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.
BR0502401	200 rxn of 20 µl	4X CAPITAL 1-Step qRT-PCR Green Master Mix LROX	
BR0502402	1000 rxn of 20 µl	Master Mix LROX	
4X CAPITAL 1-Step qRT-PCR Green Master Mix HROX			
BR0502403	4000 rxn of 20 µl	20X RTase with RNase Inhibitor	
BR0502501	200 rxn of 20 µl	4X CAPITAL 1-Step qRT-PCR Green Master Mix HROX	
BR0502502	1000 rxn of 20 µl	Master Mix HROX	
BR0502503	4000 rxn of 20 µl	20X RTase with RNase Inhibitor	

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

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

Cat. no.	Size	Package content	DESCRIPTION
4X CAPITAL 1-Step qRT-PCR Probe Master Mix			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.
BR0502001	200 rxn of 20 µl	4X CAPITAL 1-Step qRT-PCR Probe Master Mix	
BR0502002	1000 rxn of 20 µl	Master Mix	
4X CAPITAL 1-Step qRT-PCR Probe Master Mix LROX			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.
BR0502101	200 rxn of 20 µl	4X CAPITAL 1-Step qRT-PCR Probe Master Mix LROX	
BR0502102	1000 rxn of 20 µl	Master Mix LROX	
4X CAPITAL 1-Step qRT-PCR Probe Master Mix HROX			
BR0502103	4000 rxn of 20 µl	20X RTase with RNase Inhibitor	
BR0502201	200 rxn of 20 µl	4X CAPITAL 1-Step qRT-PCR Probe Master HROX	
BR0502202	1000 rxn of 20 µl	Master HROX	
BR0502203	4000 rxn of 20 µl	20X RTase with RNase Inhibitor	

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

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
BR0600602	4 × 1 ml	(100 mM each)
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	

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.

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
GenUP PCR Cleanup Kit	Mini Filter based PCR product cleanup	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 Mycobacteria gDNA Kit	Isolation of genomic DNA from mycobacteria	Sputum sample, bronchoalveolar lavage or tissue biopsies
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 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
GenUP Virus RNA Kit	Optimized kit for viral RNA isolation from various eukaryotic samples	Serum, plasma, cell-free body fluids, cell culture supernatant, tissues, biopsies, cell cultures, swabs, paraffin-embedded samples
GenUP™ BS Virus RNA Kit	Virus RNA isolation from swabs	Swab 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 rxn	Exo1-SAP
BR0701802	500 rxn	
BR0701803	2000 rxn	

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 Heat Labile Exonuclease 1 (HL-Exo1) 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™ PCR Cleanup Kit

Cat. no.	Size	Package content
BR0700301	10 preps	Solutions, Mini Filters and Vials
BR0700302	50 preps	
BR0700303	250 preps	

Starting material	Amplification reaction 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%, depending on length of the PCR fragment

DESCRIPTION

biotechrabbit™ GenUP PCR Cleanup Kit has been developed for quick and easy cleanup or concentration of PCR fragments from reaction mixtures. High-yield PCR product with excellent quality is purified from the PCR mixtures in a simple two-step procedure. DNA is bound to a Mini Filter using a novel buffer and eluted. The need for a washing step has been eliminated, reducing hands-on-time. The procedure takes approximately 3 min, compared to 8 min required to other kits. The purified DNA is ready for use in all demanding molecular biology applications, including restriction digestion, ligation and sequencing.

FEATURES

- Fast and convenient PCR cleanup procedure in only 3 min
- Just bind and elute, no need for washing steps
- High-purity DNA recovery for all demanding applications

APPLICATIONS

- Fast purification of products from PCR amplification reactions

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

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.

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

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 swabs 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™ Mycobacteria gDNA Kit

Cat. no.	Size	Package content
BR0702201	10 preps	Solutions, Mini Filters and Vials
BR0702202	50 preps	
BR0702203	250 preps	
Starting material	0.2–5 ml sputum sample, up to 1 ml bronchoalveolar lavage or 1–10 mg tissue biopsies (e.g. lymph nodes)	
Extraction time	Approximately 15 min after the lysis step	
Binding capacity	> 50 µg DNA	
Typical yield	Variable; yield depends on type of mycobacteria and amount of starting material	

DESCRIPTION

biotechrabbit™ GenUP Mycobacteria gDNA Kit has been specially developed for quick and easy purification of mycobacterial genomic DNA from various sources including sputum samples, bronchoalveolar lavage and tissue biopsies.

In a first purification step the sample is pre-treated for enrichment of mycobacteria. A following 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.

FEATURES

- Fast and simple procedure
- gDNA from sputum samples, bronchoalveolar lavage and tissue biopsies
- High yields of pure DNA for demanding applications

APPLICATIONS

- Isolation of genomic DNA from mycobacteria

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 400µl)	
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	

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.

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

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 μ g	
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 Micro RNA 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 μ g RNA	
Typical yield	Variable depending on the starting material; 1–8 μ g 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 μ g 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™ 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 µl), 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™ Virus RNA Kit

Cat. no.	Size	Package content
BR0701001	10 preps	Solutions, Mini Filters and Vials
BR0701002	50 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 isolating viral RNA from various starting materials
- Fast and simple procedure, flexible elution volumes
- High yields of pure RNA
- No DNase treatment, no toxic β -mercaptoethanol

APPLICATIONS

- Virus RNA isolation from plasma, serum, urine and other body fluids, cell cultures, tissues, and buccal swabs

DESCRIPTION

biotechrabbit™ GenUP Virus RNA Kit has been specially developed for quick and easy isolation of viral RNA. Viral single-stranded RNA can be isolated from eukaryotic samples including plasma, serum, urine, 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 RNA can be achieved with flexible elution volumes. The kit includes carrier RNA.

After few initial procedures, 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 cDNA synthesis, northern blot analysis, qPCR and RT-PCR.

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™ FFPE Paraffin Removal Solution

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

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	1 kb DNA Ladder RTU 6X DNA Loading Dye
100 bp DNA Ladder with 6X Loading Dye		
BR0800201	100 lanes	100 bp DNA Ladder RTU 6X DNA Loading Dye
50 bp DNA Ladder with 6X Loading Dye		
BR0800401	100 lanes	50 bp DNA Ladder RTU 6X DNA Loading Dye
6X DNA Loading Dye		
BR0800301	5 ml	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

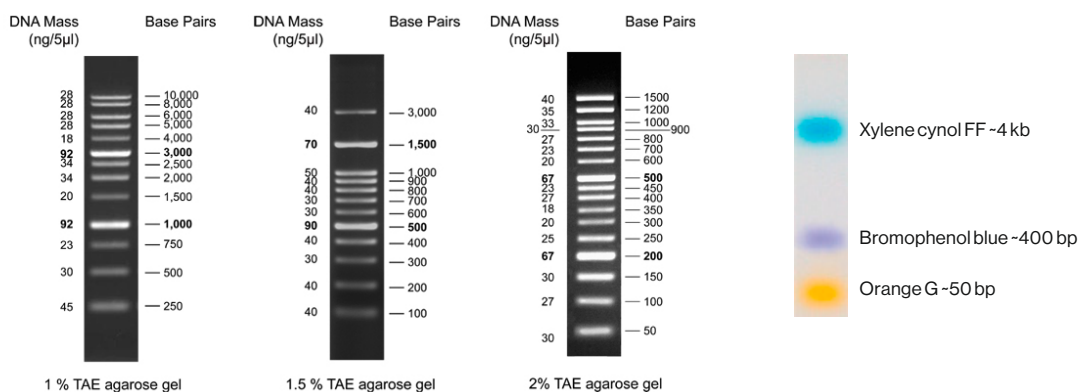
- DNA sizing and approximate quantification on agarose gels

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:	1 kb DNA Ladder	100 bp DNA Ladder	50 bp DNA Ladder	DNA Loading Dye, 6X
Range bands:	250–10,000 bp 13	100–3,000 bp 12	50–1,500 bp 17	Migration of dyes in
Reference:	1,000 and 3,000 bp	500 and 1,500 bp	200 and 500 bp	1% TAE agarose gel



Protein Electrophoresis Ladders

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

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.

FEATURES

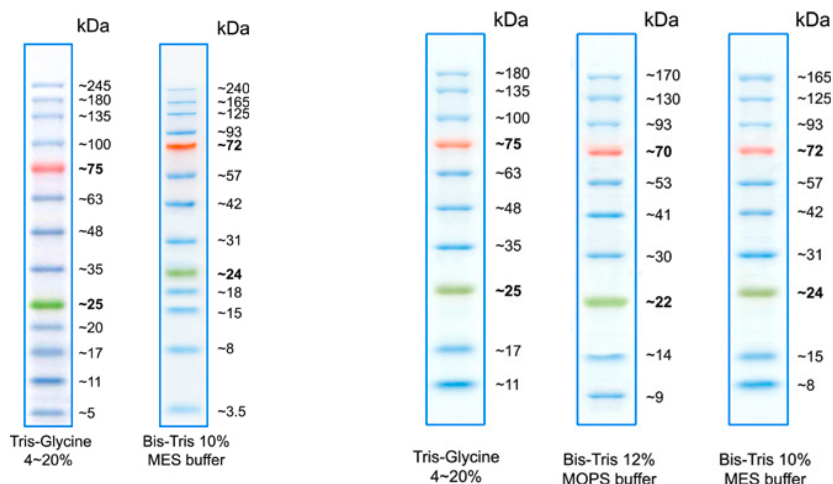
- Ready-to-use prestained protein ladders covering 3.5–245 kDa and 10–180 kDa ranges
- Pure and stable — retain sharp bands after 3 months storage at 4 °C
- Protein bands in three colors with easily recognizable colored reference bands

APPLICATIONS

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

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.

Enzymes 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
T4 DNA Ligase	Blunt and sticky end DNA ligation for cloning, joining linkers or adaptors to double-stranded DNA, self-circularization of linear DNA	Exceptional purity and high concentration for demanding applications, rapid ligation, supplied with two buffers for standard and fast ligation protocols
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
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
DNA Blunting Kit	Blunting and phosphorylation of double-stranded DNA, preparation of restriction enzyme digested DNA or sheared DNA for blunt-ended ligation	Rapid blunting reaction, excellent performance in blunt-ended ligation, ready-to-use blunted product in subsequent ligation

T4 DNA Ligase Rapid, 600 U/μl

Cat. no.	Size	Package content
BR1100301	60000 U (100 rxn)	T4 DNA Ligase Rapid, 600 U/μl 5X Rapid Ligation Buffer
BR1100302	180000U (300 rxn)	

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.

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.

Heat Labile Uracil-DNA Glycosylase, 1 U/ μ l

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

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. Although the enzyme is active a pH 6.5–9.0, the optimal pH 7.5 is in 50 mM NaCl.

DNA Blunting Kit

Cat. no.	Size	Package content
BR1101101	100 rxn	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.

Cell-Free Protein Synthesis

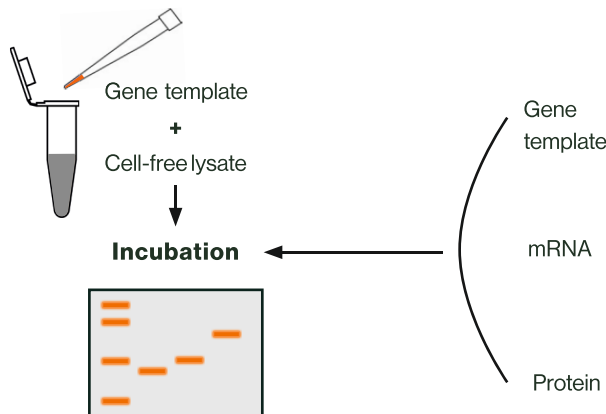
Cell-free protein synthesis overcomes the limitations of traditional cell-based methods. Advantages are ease of use, speed, throughput and the flexible character of the system. Expression conditions can be controlled and easily adapted by adding supplements. It is possible to express toxic proteins and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

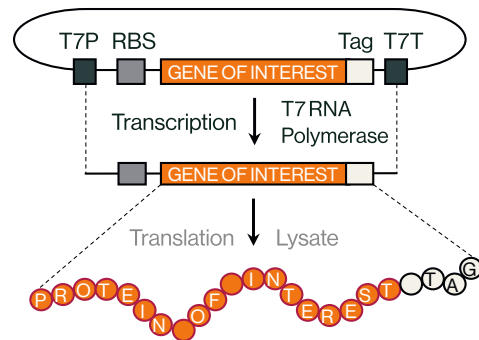
- From gene to protein within one day
- No transfection, no cell culture
- Expression of toxic proteins
- Easy site-specific labeling of proteins
- Excellent reproducibility
- High-throughput screening approaches
- Dedicated His-tag protein purification kits

Cell-Free Expression Workflow



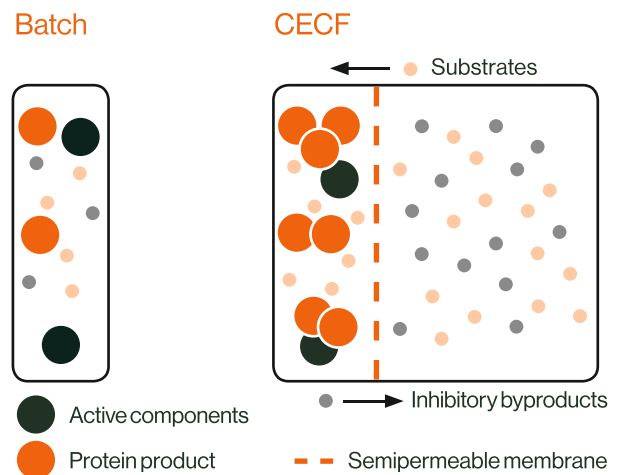
Protein analysis or functional assay

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.



Cell-Free Synthesis Kits

biotechrabbit provides cell-free expression kits for the synthesis of a broad range of proteins for screening, characterization studies, functional assays or structural analysis. The platform uses cell lysates of different origin and it enables scalable *in vitro* protein expression with unique patented features to generate exceptional high protein yields of up to 6 mg/ml.

Dedicated kits for the expression of functional proteins containing disulfide bonds or post translational modifications are available as well as various supplementary kits for gene template generation, solubility enhancement, additional amino acids or chaperones. Starting from a DNA template, the system enables protein expression with yields ranging from micrograms to tens of milligrams. Start expression from linear or circular template according to your needs.

- Convenient workflow, all components included
- Expression of different protein classes
- Continuous exchange during cell-free expression (CECF) for yields of up to 6 mg/ml
- Incorporation of labeled amino acids
- Enhanced high-yield (HY) buffer compositions
- Compatible with T7 expression vectors

Cell-free synthesis kit	Reaction		Time (hrs)	Template (No. see p. 70)	Mode	Proteins expressed						
	yield	size				Standard soluble	Complex and large	Disulfide-bonded	Fab antibodies	Glycosylated	Membrane	
RTS 100 <i>E. coli</i> HY Kit	20 µg	50 µl	1–4	Linear: 1, 4, 5 Vector: 7, 9	Batch	✓						✓ *
RTS 500 ProteoMaster <i>E. coli</i> HY Kit	6 mg	1 ml	6–24	Vector: 7, 9	CECF	✓						✓ *
RTS 9000 <i>E. coli</i> HY Kit	50 mg	10 ml	6–24	Vector: 7, 9	CECF	✓						✓ *
RTS 100/500 <i>E. coli</i> Disulfide Kits	80 µg 2.5 mg	50 µl 1 ml	6–24	Vector: 7, 9	CECF	✓		✓	✓			
RTS 100 Wheat Germ Kit	5 µg	50 µl	3	Linear: 2 Vector: 8	Batch	✓	✓					✓ *
RTS 100/500 Wheat Germ CECF Kit	50 µg 1 mg	50 µl 1 ml	6–24	Linear: 2 Vector: 8	CECF	✓	✓					✓ *
RTS 100 Insect Membrane Kit	2 µg	50 µl	4	Linear: 1, 3, 4, 5 Vector: 6, 7, 9	Batch	✓	✓			✓	✓	

RTS: Rapid translation system Linear: PCR-generated linear expression templates Vector: expression plasmid * using detergents

RTS™ 100 *E. coli* HY Kit

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

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.

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

RTS™ 500 ProteoMaster *E. coli* HY Kit

Cat. no.	Size	Package content
BR1400201	5 rxn 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.

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 CECF reaction device.

Due to preparative expression yields, the RTS 500 Proteo-Master *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 for use in a thermomixer. The continuous agitation of the device guarantees optimal support of the CECF process, which is required for efficient protein expression.

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

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 rxn of 50 µl	Reagents for coupled transcription/ translation reactions

RTS 500 <i>E. coli</i> Disulfide Kit		
BR1400501	5 rxn 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 by-products 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 rxn 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 (264 kDa expressed)
- 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 rxn of 50 µl	Reagents for coupled transcription/translation reactions

RTS 500 Wheat Germ CECF Kit		
BR1401101	5 rxn 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 rxn of 50 µl	Reagents for linked transcription/translation reactions
BR1401502	20 rxn 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 rxn 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 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 rxn 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* kits

APPLICATIONS

- Enhance the expression of soluble proteins
- Improved synthesis of functionally activity 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 rxn of 1 ml	125 µl 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* platforms

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)
PCR generated linear templates			
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 for cloning genes or linear templates			
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	RTS pIX4.0 vector DNA
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 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 vectors	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 vectors	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.

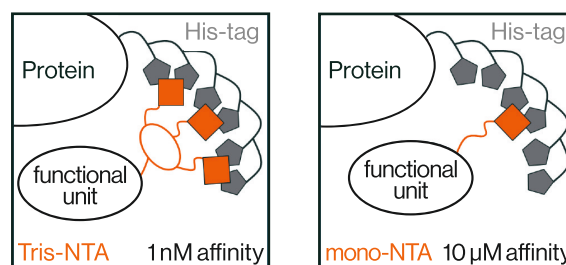
The two vectors contain all regulatory elements necessary for *in vitro* expression based on a combination of T7 RNA polymerase and RTS expression lysates. They enable the attachment of a His₆-tag in different orientations at the C- and N-terminus of the protein. Cloning into RTS pIVEX His₆-tag vectors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

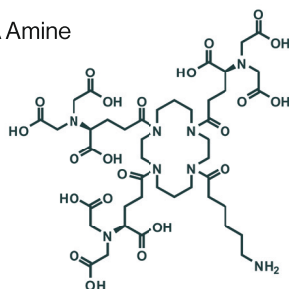
- Reversible labeling of proteins or cell surfaces
- Detection and analysis of target molecules
- Immobilization of proteins, lipids and cells on surfaces
- Purification and sample preparation of proteins
- Coupling with microscopic or spectroscopic probes

DESCRIPTION

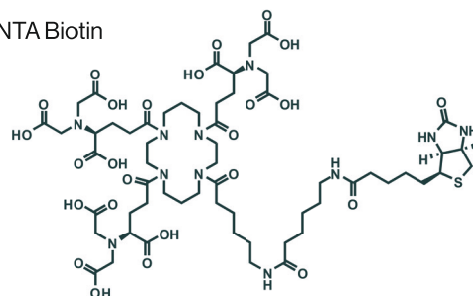
His-tags are one of the most commonly used tags for protein expression analysis. Conventional metal ion chelators, such as nitrilotriacetic acid (NTA) and iminodiacetic acid (IDA), bind His-tags with low affinities in the range of 10 µM. The biotechrabbit Tris-NTA complexes three NTA groups that together 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 ethylenediaminetetraacetic 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



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Tris-NTA Amine / Biotin

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