



# Enzymes for Molecular Biology

Catalyze confidence in every reaction

Sample to Insight

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## Enzymes that catalyze research success

We are a leading provider of high-quality molecular biology reagents, dedicated to supporting your research and development needs. Our expertise spans the development and supply of premium enzymes and oligonucleotides for a wide range of applications, including:

- PCR
- DNA/RNA sequencing
- Gene editing
- Protein analysis
- Genomics
- Diagnostics
- Bioprocessing

Our diverse portfolio is designed to accelerate your scientific breakthroughs, whether you're amplifying genetic material, modifying DNA, or analyzing gene expression. Each product is engineered for precision, reliability, and superior performance, ensuring the accuracy and consistency your work demands.



**Bulk enzyme production**  
State-of-the-art facilities deliver enzymes of the highest quality for molecular biology, diagnostics and research. Strict quality control ensures reliable performance at any scale, from niche projects to large-scale applications.

**Lyophilization**  
A broad range of lyo-ready and lyophilized enzymes and master mixes are available, tailored for diverse application needs and optimized for ambient temperature storage and transport. Glycerol-free formulations enable robust molecular assay development, delivering consistency, stability and performance equivalent to standard enzymes.

**GMP**  
Production of GMP-grade enzymes meets the strict standards of the pharmaceutical, diagnostic and biotech industries, ensuring safety, consistency and full traceability. Advanced GMP-compliant facilities and rigorous controls provide high-purity enzymes for both clinical research and large-scale commercial applications.

**Customization**  
Custom reagent and assay development services deliver specialized enzyme formulations tailored to specific project needs. Dedicated project management, flexible production and expert scientific support ensure high-quality, regulatory-compliant solutions from concept through to delivery.

**Animal origin free**  
A broad range of animal-origin-free (AOF) products, including enzymes, extraction kits and PCR reagents, are formulated without animal-derived components. Designed for ethical and sustainable research, these AOF solutions support molecular biology with high-quality, recombinant alternatives.

## DNA polymerases

### Standard Taq DNA polymerases

Product	Taq-B DNA Polymerase	Taq DNA Polymerase	TaqNova DNA Polymerase
<b>Catalog number</b>	<b>P7250L</b>	<b>201203</b>	<b>RP702A</b>
<b>Description</b>	For PCR amplification of DNA fragments up to 5 kb with minimal optimization	For standard and specialized PCR applications with minimal optimization	A universal, DNA polymerase effective in various PCR conditions
<b>Features</b>	<ul style="list-style-type: none"> <li>Robust yields</li> <li>Excels at amplifying shorter (&lt;5 kb) sequences</li> </ul>	<ul style="list-style-type: none"> <li>Q-Solution for GC-rich templates</li> <li>Ready-to-load PCR buffer</li> <li>Amplifies &gt;5 kb sequences</li> </ul>	<ul style="list-style-type: none"> <li>High yields with minimal enzyme</li> <li>Amplifies up to 5 kb</li> <li>Half-life of 45 minutes at 95°C</li> <li>Available as ultra-clean product (UCP)</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Routine PCR</li> </ul>	<ul style="list-style-type: none"> <li>Routine PCR</li> </ul>	<ul style="list-style-type: none"> <li>PCR of short and medium size DNA sequences</li> <li>Routine diagnostic PCR</li> <li>Multiplex PCR</li> <li>TA-cloning</li> </ul>
<b>Reaction buffer</b>	10x PCR Buffer I	10x PCR Buffer, 5x Q-Solution, 10x CoraLoad PCR Buffer, 25 mM MgCl <sub>2</sub> Master mix format available	10x TaqNova KCl Reaction Buffer, 10x TaqNova (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> Reaction Buffer, 50 mM MgCl <sub>2</sub> Master mix format available
<b>Exonuclease activity</b>	5' → 3'	5' → 3'	5' → 3'
<b>Resulting ends</b>	3' dA overhang	3' dA overhang	3' dA overhang
<b>Hot-start</b>	X	X	X
<b>Thermostable</b>	✓	✓	✓
<b>Proofreading</b>	X	X	X
<b>Long range</b>	X	X	X
<b>Lyo-ready, glycerol-free</b>	✓	X	X
<b>Related products</b>	Reverse transcriptases, dNTPs, RNase Inhibitor, Uracil-DNA Glycosylase, Exonuclease I, T4 Gene 32 Protein, oligonucleotides		

## Stoffel/TaqIT DNA polymerases

Product	Stoffel DNA Polymerase	TaqIT DNA Polymerase
<b>Catalog number</b>	<b>RP810</b>	<b>P7620L</b>
<b>Description</b>	Exonuclease deficient DNA polymerase with increased thermostability for DNA synthesis in extremely high temperatures	Exonuclease deficient derivative of Taq DNA polymerase
<b>Features</b>	<ul style="list-style-type: none"> <li>Half-life of 20 minutes at 97.5°C</li> <li>Amplification of very high GC-rich templates</li> <li>Amplification of templates with secondary structures</li> <li>Amplifies up to 5 kb</li> </ul>	<ul style="list-style-type: none"> <li>Improved inhibitor resistance</li> <li>Greater thermostability</li> <li>Bypass DNA extraction and purification</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Diagnostic PCR</li> <li>Multiplex PCR</li> <li>Genotyping</li> <li>Allele-specific amplification (ASA) PCR</li> <li>TA-cloning</li> </ul>	<ul style="list-style-type: none"> <li>Longer PCR amplifications</li> <li>Genotyping</li> </ul>
<b>Reaction buffer</b>	10x Stoffel Buffer, 50 mM MgCl <sub>2</sub>	10x TaqIT Reaction Buffer
<b>Exonuclease activity</b>	X	X
<b>Resulting ends</b>	3' dA overhang	3' dA overhang
<b>Hot-start</b>	✓	X
<b>Thermostable</b>	Ultra-thermostable	High thermostability
<b>Proofreading</b>	X	X
<b>Long range</b>	X	✓
<b>Lyo-ready, glycerol-free</b>	X	✓
<b>Related products</b>	Reverse transcriptases, dNTPs, RNase Inhibitor, Uracil-DNA Glycosylase, Exonuclease I, T4 Gene 32 Protein, oligonucleotides	

# Hot-start Taq DNA polymerases

Product	Phoenix™ Hot-Start Taq DNA Polymerase	HotStarTaq® DNA Polymerase	TaqNova HS DNA Polymerase	AllTaq® PCR Core Kit
<b>Catalog number</b>	<b>P7590L</b>	<b>203207</b>	<b>RP902A</b>	<b>203123</b>
<b>Description</b>	Antibody-mediated hot-start for shorter activation time but slightly lower specificity	Chemically-mediated hot-start for highest specificity but longer activation time	Antibody-mediated hot-start for easy PCR setup at room temperature	Antibody-mediated hot-start for sensitive and specific PCR with one protocol for all targets and room temperature stability
<b>Features</b>	<ul style="list-style-type: none"> <li>Reduced nonspecific amplification</li> <li>Activation time 2 minutes</li> <li>Sensitive to 300 pg human gDNA</li> <li>Room temperature reaction set up</li> </ul>	<ul style="list-style-type: none"> <li>Highest specificity available</li> <li>Activation time 15 minutes</li> <li>Inactive until PCR heat activation</li> <li>Room temperature reaction set up</li> </ul>	<ul style="list-style-type: none"> <li>Reduced nonspecific amplification</li> <li>Amplifies up to 5 kb</li> <li>Leaves "A" overhangs</li> <li>Room temperature reaction set up</li> </ul>	<ul style="list-style-type: none"> <li>Amplifies up to 9 kb</li> <li>Gel tracking dyes</li> <li>Visual pipetting control</li> <li>Room temperature set up</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Routine PCR</li> <li>qPCR</li> <li>RT-qPCR</li> <li>Multiplex PCR</li> </ul>	<ul style="list-style-type: none"> <li>Routine PCR</li> <li>Multiplex PCR</li> <li>Challenging PCR</li> <li>- Complex genomic templates</li> <li>- Complex cDNA templates</li> <li>- Very low-copy targets</li> </ul>	<ul style="list-style-type: none"> <li>Routine PCR</li> <li>qPCR</li> <li>Multiplex PCR</li> <li>PCR with various types of DNA</li> <li>Difficult templates (GC-rich)</li> <li>TA-cloning</li> </ul>	<ul style="list-style-type: none"> <li>Routine PCR</li> <li>Duplex PCR</li> <li>Difficult templates (GC-rich)</li> <li>Genotyping</li> <li>Analysis with multiple primer pairs</li> <li>Analysis with wide range of amplicon sizes</li> </ul>
<b>Reaction buffer</b>	5x Phoenix Hot Start Taq Reaction Buffer, 5x Phoenix Hot Start Taq GC Reaction Buffer	HotStarTaq Buffer Set (PCR Buffer, Q-Solution, MgCl <sub>2</sub> ) Master mix format available	10x TaqNova HS Reaction Buffer, 50 mM MgCl <sub>2</sub>	5x AllTaq PCR Buffer, 25x Template Tracer, 125x Master Mix Tracer, 5x Q-Solution, 25mM MgCl <sub>2</sub> Master mix format available
<b>Exonuclease activity</b>	5' → 3'	5' → 3'	5' → 3'	5' → 3'
<b>Resulting ends</b>	3' dA overhang	3' dA overhang	3' dA overhang	3' dA overhang
<b>Hot-start</b>	Antibody mediated	Chemically mediated	Antibody mediated	Antibody mediated
<b>Thermostable</b>	✓	✓	✓	✓
<b>Proofreading</b>	✗	✗	✗	✗
<b>Long range</b>	✗	✗	✗	✓
<b>Lyo-ready, glycerol-free</b>	✓	✗	✗	✗
<b>Related products</b>	Reverse transcriptases, dNTPs, RNase Inhibitor, Uracil-DNA Glycosylase, Exonuclease I, T4 Gene 32 Protein, oligonucleotides		Reverse transcriptases, dNTPs, RNase Inhibitor, Uracil-DNA Glycosylase, Exonuclease I, T4 Gene 32 Protein, oligonucleotides	

## High-fidelity DNA polymerases

Product	VeraSeq® 2.0 High Fidelity DNA Polymerase	VeraSeq Ultra DNA Polymerase
Catalog number	P7511L	P7520L
<b>Description</b>	Ultra-thermostable polymerase with strong proofreading activity for high-fidelity PCR	Uracil-literate ultra-thermostable polymerase with strong proofreading activity for high-fidelity PCR
<b>Features</b>	<ul style="list-style-type: none"> <li>• 50x greater fidelity than Taq DNA Polymerase</li> <li>• Extends 1 kb in 15 seconds</li> <li>• Blunt end products</li> <li>• Functions in 1.5–3.0 mM Mg<sup>2+</sup></li> </ul>	<ul style="list-style-type: none"> <li>• 25x greater fidelity than Taq DNA Polymerase</li> <li>• Extends 1 kb in 15 seconds</li> <li>• Blunt end products</li> <li>• Functions in 1.5–3.0 mM Mg<sup>2+</sup></li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• HiFi amplification</li> <li>• NGS library amplification</li> <li>• Synthetic biology</li> <li>• Cloning</li> <li>• Long-range amplification</li> </ul>	<ul style="list-style-type: none"> <li>• HiFi amplification</li> <li>• Bisulfite-seq</li> <li>• Prevention of carryover contamination</li> <li>• Synthetic biology</li> <li>• Cloning</li> <li>• Long-range amplification</li> </ul>
<b>Reaction buffer</b>	5x VeraSeq Buffer II, 5x VeraSeq GC Buffer	5x VeraSeq Buffer II, 5x VeraSeq GC Buffer
<b>Exonuclease activity</b>	3' → 5'	3' → 5'
<b>Resulting ends</b>	Blunt	Blunt
<b>Hot-start</b>	Upon request only	X
<b>Thermostable</b>	Ultra-thermostable	Ultra-thermostable
<b>Proofreading</b>	✓	✓
<b>High fidelity</b>	✓	✓
<b>Long range</b>	✓	✓
<b>Lyo-ready, glycerol-free</b>	Upon request only	✓
<b>Related products</b>	Reverse transcriptases, dNTPs, RNase Inhibitor, Uracil-DNA Glycosylase, Exonuclease I, WGS Fragmentation Mix, T4 DNA Ligase, T4 Gene 32 Protein, oligonucleotides	

## Strand displacement DNA polymerases

Product	Phi29 DNA Polymerase	Bst X DNA Polymerase	Manta 1.0 DNA Polymerase
Catalog number	P7020-HC-L	P7390L	P7140-HC-L
<b>Description</b>	High-fidelity, fast, highly processive DNA polymerase with strong strand displacement activity	Thermostable DNA polymerase with strong strand displacement activity	Thermostable Bacillus (Bst) DNA polymerase with strong strand displacement activity
<b>Features</b>	<ul style="list-style-type: none"> <li>• Processivity up to 70,000 base insertions per binding event</li> </ul>	<ul style="list-style-type: none"> <li>• High salt and detergent tolerance</li> <li>• Isothermal amplification</li> <li>• Improved speed and sensitivity</li> </ul>	<ul style="list-style-type: none"> <li>• Isothermal amplification</li> <li>• Optimal reaction temperature 60-65°C</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Whole Genome Amplification (WGA)</li> <li>• Rolling Circle Amplification (RCA)</li> <li>• Multiple Displacement Amplification (MDA)</li> </ul>	<ul style="list-style-type: none"> <li>• Strand-displacement synthesis</li> <li>• Isothermal amplification</li> <li>• LAMP</li> </ul>	<ul style="list-style-type: none"> <li>• Isothermal amplification</li> <li>• LAMP</li> <li>• Whole Genome Amplification (WGA)</li> <li>• Multiple Displacement Amplification (MDA)</li> </ul>
<b>Reaction buffer</b>	10x Phi29 DNA Polymerase Reaction Buffer	10x Xcelerator Reaction Buffer, 100 mM Magnesium Sulfate Solution	10x PCR Buffer II
<b>Exonuclease activity</b>	3' → 5'	X	X
<b>Resulting ends</b>	Blunt	3' dA overhang	3' dA overhang
<b>Hot-start</b>	X	X	X
<b>Thermostable</b>	✓	✓	✓
<b>Proofreading</b>	✓	X	X
<b>High fidelity</b>	✓	X	X
<b>Long range</b>	✓	✓	✓
<b>Lyo-ready, glycerol-free</b>	X	✓	✓
<b>Related products</b>	Reverse transcriptases, dNTPs, RNase Inhibitor, Uracil-DNA Glycosylase, Exonuclease I, oligonucleotides		

## Pol I DNA polymerases

Product	DNA Polymerase I	Klenow Fragment	Klenow (3'-5'exo-) Fragment
Catalog number	P7050L	P7060L	P7010-LC-L
<b>Description</b>	Mesophilic <i>E. coli</i> DNA polymerase with both 5'→3' and 3'→5' exonuclease activities	Derivative of DNA polymerase I without 5'→3' exonuclease activity	Derivative of DNA polymerase I without 5'→3' and 3'→5' exonuclease activities
<b>Features</b>	<ul style="list-style-type: none"> <li>Synthesizes DNA in 5'→3' direction</li> <li>Enables nick-translation</li> </ul>	<ul style="list-style-type: none"> <li>Synthesizes DNA in 5'→3' direction</li> <li>Strand displacement activity</li> </ul>	<ul style="list-style-type: none"> <li>Synthesizes DNA in 5'→3' direction</li> <li>Strand displacement activity</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>DNA labeling by nick translation</li> <li>Second-strand cDNA synthesis</li> </ul>	<ul style="list-style-type: none"> <li>A-tailing for NGS</li> <li>Blunting of 3' and 5' overhangs</li> <li>Strand displacement amplification</li> <li>DNA labeling</li> </ul>	<ul style="list-style-type: none"> <li>A-tailing for NGS</li> <li>Strand displacement amplification</li> <li>DNA labeling</li> <li>Second-strand cDNA synthesis</li> </ul>
<b>Reaction buffer</b>	10x Blue Buffer	10x Blue Buffer	10x Blue Buffer
<b>Exonuclease activity</b>	3'→5' 5'→3'	3'→5'	No proofreading 3'→5' No nick-translation 5'→3'
<b>Resulting ends</b>	Blunt	Blunt	3' dA overhang
<b>Lyo-ready, glycerol-free</b>	✓	✗	Upon request only
<b>Related products</b>	Ligases, RNase H, exonucleases and endonucleases, dNTPs, oligonucleotides		

## Other DNA polymerases

Product	T4 DNA Polymerase	T7 DNA Polymerase	Terminal Deoxynucleotidyl Transferase (TdT)
Catalog number	P7080L	P7260L	P7070L
<b>Description</b>	For cloning and DNA labeling by primer extension	Highly processive DNA polymerase with high replication fidelity	For extension of blunt 5' overhanging single-stranded DNA
<b>Features</b>	<ul style="list-style-type: none"> <li>Synthesizes DNA in 5'→3' direction</li> <li>No strand displacement activity</li> <li>Powerful exonuclease activity</li> </ul>	<ul style="list-style-type: none"> <li>Exceptionally high synthesis rate</li> <li>Strand displacement activity</li> </ul>	<ul style="list-style-type: none"> <li>Adds dNTPs to the 3'-OH terminus of ssDNA or dsDNA</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Blunting 5' or 3' overhangs</li> <li>dsDNA labeling</li> </ul>	<ul style="list-style-type: none"> <li>Site-specific mutagenesis</li> <li>Second strand cDNA synthesis</li> <li>In Situ End Labeling (ISEL)</li> </ul>	<ul style="list-style-type: none"> <li>Homopolymeric tailing to 3'-OH</li> <li>TUNEL assay</li> <li>5'-RACE</li> <li>DNA labeling of 3'-ends</li> </ul>
<b>Reaction buffer</b>	10x Blue Buffer	10x Green Buffer, 2.5 mM CaCl <sub>2</sub>	10x T7 DNA Polymerase Buffer
<b>Exonuclease activity</b>	Powerful 3'→5'	3'→5'	✗
<b>Resulting ends</b>	Blunt	Blunt	3' dA overhang
<b>Lyo-ready, glycerol-free</b>	✓	✗	✗
<b>Related products</b>	Ligases, RNase H, exonucleases and endonucleases, dNTPs, oligonucleotides		



Learn more about our DNA polymerases for applications from routine PCR to advanced genetic manipulation at: [www.qiagen.com/DNAPolymerases](http://www.qiagen.com/DNAPolymerases)

## RNA polymerases

Product	Poly(A) Polymerase	T7 RNA Polymerase
<b>Catalog number</b>	<b>P7460L</b>	<b>P7180L</b>
<b>Description</b>	For making poly(A) tailed RNA and 3' end-labeling of RNA	For in vitro transcription and synthesis of RNA from a DNA template
<b>Features</b>	<ul style="list-style-type: none"> <li>• Template independent catalysis of the addition of AMP from ATP to the 3'-OH of RNA</li> </ul>	<ul style="list-style-type: none"> <li>• Synthesizes RNA in 5' → 3' direction of DNA template</li> <li>• High specificity to T7 promoter</li> <li>• Catalyzes Mg<sup>2+</sup>-dependent synthesis of RNA from rNTPs</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• 3' end-labeling of RNA</li> <li>• Applications in mRNA therapeutics</li> </ul>	<ul style="list-style-type: none"> <li>• RNA probe preparation</li> <li>• Applications in mRNA therapeutics</li> </ul>
<b>Reaction buffer</b>	10x Poly(A) Polymerase Reaction Buffer	10x T7 RNA Polymerase Buffer
<b>Lyo-ready, glycerol-free</b>	X	X
<b>Related products</b>	Reverse transcriptases, RNase H, RNase A, endonucleases and exonucleases, ligases, oligonucleotides	

## Reverse transcriptases and other reagents for DNA synthesis

Product	EnzScript™ Reverse Transcriptase	StableScript® Reverse Transcriptase	RNase Inhibitor
<b>Catalog number</b>	<b>P7600L</b>	<b>P7720L</b>	<b>Y9240L</b>
<b>Description</b>	For reverse transcription from RNA for first strand cDNA synthesis and RT-PCR	For reverse transcription of long transcripts, inhibited samples and difficult templates with secondary structures	For use where the presence of RNases may pose a risk to RNA quality
<b>Features</b>	<ul style="list-style-type: none"> <li>• No RNase H activity</li> <li>• cDNA transcripts &gt;5 kb</li> <li>• Reaction temperature up to 50°C</li> <li>• Template switching</li> </ul>	<ul style="list-style-type: none"> <li>• No RNase H activity</li> <li>• cDNA transcripts up to 12.3 kb</li> <li>• Superior thermostability (up to 65°C)</li> <li>• Increased inhibitor tolerance</li> </ul>	<ul style="list-style-type: none"> <li>• Non-competitive inhibitor of pancreatic-type ribonucleases</li> <li>• No influence on polymerase or reverse transcriptase activity</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• cDNA synthesis</li> <li>• One-step RT-PCR</li> <li>• Template switching-based adapter addition for RNA sequencing</li> </ul>	<ul style="list-style-type: none"> <li>• cDNA synthesis</li> <li>• One-step RT-qPCR</li> <li>• Long range RT-PCR</li> <li>• Ligation-based adapter addition for RNA sequencing</li> </ul>	<ul style="list-style-type: none"> <li>• cDNA synthesis</li> <li>• One-step RT-PCR</li> </ul>
<b>Reaction buffer</b>	5x EnzScript Reaction Buffer and 100mM DTT	4x StableScript Reaction Buffer	—
<b>Long range</b>	✓	✓	—
<b>Lyo-ready, glycerol-free</b>	✓	✓	✓
<b>Related products</b>	RNase Inhibitor, Taq DNA polymerases, dNTPs, RNase H		Reverse transcriptases, Taq DNA polymerases, dNTPs



Learn more about RNA transcription and RNA modification with our reliable RNA polymerases at: [www.qiagen.com/RNAPolymerases](http://www.qiagen.com/RNAPolymerases)

## Other reagents for DNA synthesis

Product	RNase Inhibitor Hu	RNase H	Thermostable RNase H
<b>Catalog number</b>	RT35-40KU	Y9220L	Y2590
<b>Description</b>	Maximum RNA protection where intact RNA is required	Cleaves the RNA strand of DNA:RNA hybrids	Thermostable RNase H for cleaving the RNA strand of DNA:RNA hybrids
<b>Features</b>	<ul style="list-style-type: none"> <li>High thermostability and resistance to oxidative agents</li> <li>Stable at 37°C for 4 weeks</li> <li>Completely inhibits pancreatic-type ribonucleases</li> <li>No influence on polymerase or reverse transcriptase activity</li> <li>DNase and RNase free</li> </ul>	<ul style="list-style-type: none"> <li>Does not degrade ssRNA or dsRNA</li> </ul>	<ul style="list-style-type: none"> <li>Optimal activity above 65°C</li> <li>Does not degrade ssRNA or dsRNA</li> <li>Improves assay selectivity and consistency</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>In cDNA synthesis</li> <li>In RT-PCR and RT-qPCR</li> <li>In in vitro transcription and translation</li> </ul>	<ul style="list-style-type: none"> <li>Removal of mRNA during second-strand cDNA synthesis</li> </ul>	<ul style="list-style-type: none"> <li>rRNA depletion</li> <li>Removal of poly(A) tails from mRNA hybridized to oligo(dT)</li> <li>Removal of mRNA during second-strand cDNA synthesis</li> <li>NASBA amplification</li> </ul>
<b>Reaction buffer</b>	—	10x RNase H Buffer	10x RNase H Buffer
<b>Lyo-ready, glycerol-free</b>	Upon request only	✓	✗
<b>Related products</b>	Reverse transcriptases, Taq DNA polymerases, dNTPs		

## PCR and RT-PCR kits and mixes

### Kits for hot-start one-step RT-qPCR

Product	QuantiTect® Probe RT-PCR Kit	QuantiTect Multiplex RT-PCR Kit	ZipScript™ One-Step RT-qPCR Kit	StableScript One-Step RT-qPCR Kit
<b>Catalog number</b>	202445	204645	P7640L	P7730L
<b>Description</b>	For one-step RT-qPCR using sequence-specific probes for gene expression analysis	For one-step RT-qPCR using SYBR® Green detection for gene expression analysis	For highly sensitive and reproducible RT-qPCR optimized for real-time PCR	One-step RT-qPCR kit with higher cDNA synthesis temperatures
<b>Features</b>	<ul style="list-style-type: none"> <li>Sensitive detection of low-copy targets</li> <li>Omniscrypt®/Sensiscrypt® reverse transcriptases mix</li> <li>dUTP for pretreatment with UNG</li> </ul>	<ul style="list-style-type: none"> <li>Omniscrypt/Sensiscrypt mix</li> <li>dUTP for pretreatment with UNG</li> <li>Multiplex five targets</li> </ul>	<ul style="list-style-type: none"> <li>25x enzyme mix and 2x reaction buffer</li> <li>Multiplex five targets</li> </ul>	<ul style="list-style-type: none"> <li>10x enzyme mix and 4x reaction buffer</li> <li>Detects 0.1 pg of human total RNA in multiplex assay</li> <li>Resistant to inhibitors</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Real-time quantification of RNA targets</li> <li>Gene expression analysis</li> <li>Any real-time cyclers</li> </ul>	<ul style="list-style-type: none"> <li>One-step RT-qPCR</li> <li>Gene expression analysis</li> <li>Any real-time cyclers</li> </ul>	<ul style="list-style-type: none"> <li>Gene expression analysis</li> <li>One-step RT-qPCR</li> </ul>	<ul style="list-style-type: none"> <li>Real time quantification of RNA targets</li> <li>One-step RT-qPCR</li> </ul>
<b>Real-time PCR</b>	✓	✓	✓	✓
<b>Multiplex PCR</b>	✓	✓	✓	✓
<b>Hot-start</b>	Chemical modification	Chemical modification	Antibody mediated	Antibody mediated



Learn more about optimal cDNA synthesis and sensitive detection of RNA transcripts with our reverse transcriptases and related reagents at: [www.qiagen.com/ReverseTranscriptases](http://www.qiagen.com/ReverseTranscriptases)



## Kits for hot-start RT-qPCR with inactivated RT

Product	ZipScript WarmX One-Step RT-qPCR Kit	QuantiNova® Pathogen + IC Kit	QuantiNova Probe RT-PCR Kit	QuantiNova Multiplex RT-PCR Kit
<b>Catalog number</b>	Y9460L	208654	208352	208552
<b>Description</b>	For reproducible RT-qPCR optimized for real-time PCR with WarmX	Real-time multiplex RT-PCR kit for probe-based simultaneous detection of pathogen DNA and RNA	For one-step RT-qPCR using sequence-specific probes for gene expression analysis	Real-time multiplex RT-PCR kit for quantification of up to five RNA targets in a single tube
<b>Features</b>	<ul style="list-style-type: none"> <li>WarmX warm start reduces non-specific RT at setup</li> <li>Extended pre-incubation at room temperature</li> <li>Detects 0.1 pg of RNA</li> </ul>	<ul style="list-style-type: none"> <li>Ultrafast</li> <li>Room temperature setup</li> <li>Visual pipetting control</li> </ul>	<ul style="list-style-type: none"> <li>Internal control for verification</li> <li>Room temperature setup</li> <li>Duplex capability</li> <li>Visual pipetting control</li> </ul>	<ul style="list-style-type: none"> <li>Amplification from single cell to 800 ng</li> <li>Internal control for verification</li> <li>Room temperature setup</li> <li>Visual pipetting control</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>High-throughput automated RT-qPCR</li> </ul>	<ul style="list-style-type: none"> <li>4-plex RT-PCR for detection of pathogen targets and IC</li> </ul>	<ul style="list-style-type: none"> <li>Gene expression analysis</li> <li>Any real-time cyclers</li> </ul>	<ul style="list-style-type: none"> <li>Gene expression analysis</li> <li>Any real-time cyclers</li> </ul>
<b>Real-time PCR</b>	✓	✓	✓	✓
<b>End-point PCR</b>	✗	✗	✗	✗
<b>Multiplex PCR</b>	✓	✓	✗	✓
<b>Room temperature reaction setup</b>	✓	✓	✓	✓
<b>Hot-start</b>	Antibody mediated hot-start Taq; inactivated RT	Antibody mediated hot-start Taq; inactivated RT	Antibody mediated hot-start Taq; inactivated RT	Antibody mediated hot-start Taq; inactivated RT

## Kits for end-point RT-PCR

Product	QIAGEN One Step Ahead RT-PCR Kit	QIAGEN One Step RT-PCR Kit
<b>Catalog number</b>	220213	210212
<b>Description</b>	Sensitive and specific one-step RT-PCR using any RNA template	Efficient one-step RT-PCR of any RNA template without optimization
<b>Features</b>	<ul style="list-style-type: none"> <li>One-step RT-PCR</li> <li>Room temperature setup</li> <li>Duplex capability</li> <li>No off-target RT</li> </ul>	<ul style="list-style-type: none"> <li>One-step RT-PCR</li> <li>Easy one-tube setup</li> <li>Unique enzyme mix</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>RT-PCR for virus detection</li> <li>Gene expression analysis</li> </ul>	<ul style="list-style-type: none"> <li>RT-PCR for virus detection</li> <li>Gene expression analysis</li> <li>Single-cell RT-PCR</li> </ul>
<b>Real-time PCR</b>	✗	✗
<b>End-point PCR</b>	✓	✓
<b>Multiplex PCR</b>	✓	✓
<b>Room temperature reaction setup</b>	✓	✗
<b>Hot-start</b>	Antibody mediated hot-start Taq; inactivated RT	Chemical modification

## Kits for hot-start real-time PCR

Product	QuantiNova Probe PCR Kit	QuantiNova Multiplex PCR Kit	QuantiTect Probe PCR Kit	QuantiTect Multiplex PCR Kit
<b>Catalog number</b>	208252	208452	204345	204545
<b>Description</b>	For sensitive, specific and ultra-fast probe-based real-time PCR	Fast multiplex real-time PCR and two-step RT-qPCR using sequence-specific probes	For real-time PCR using probe-based detection with hot-start	For real-time multiplex PCR using probe-based detection with hot-start
<b>Features</b>	<ul style="list-style-type: none"> <li>Detection of rare targets</li> <li>Room temperature setup</li> <li>Visual pipetting control</li> </ul>	<ul style="list-style-type: none"> <li>Detection of five targets in one tube</li> <li>Room temperature setup</li> <li>Visual pipetting control</li> </ul>	<ul style="list-style-type: none"> <li>Very high PCR specificity</li> <li>dUTP for pretreatment with UNG</li> <li>Duplex capability</li> </ul>	<ul style="list-style-type: none"> <li>Very high PCR specificity</li> <li>Multiplex capability</li> <li>dUTP for pretreatment with UNG</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Probe-based gene expression analysis of cDNA targets</li> <li>Quantitative gDNA analysis</li> <li>Any real-time cycler</li> </ul>	<ul style="list-style-type: none"> <li>Multiplex gene expression analysis of cDNA or gDNA</li> <li>Any real-time cycler</li> </ul>	<ul style="list-style-type: none"> <li>Real-time PCR of cDNA or gDNA targets</li> </ul>	<ul style="list-style-type: none"> <li>Multiplex real-time PCR</li> </ul>
<b>Real-time PCR</b>	✓	✓	✓	✓
<b>Multiplex PCR</b>	✓	✓	✓	✓
<b>Hot-start</b>	Antibody mediated	Antibody mediated	Chemical modification	Chemical modification

## Long range and high-fidelity PCR mixes

Product	UltraRun® LongRange PCR Kit	VeraSeq PCR Mix	2x HiFi PCR Master Mix
<b>Catalog number</b>	206442	P7610L	P7670L
<b>Description</b>	For accurate ultra-long-range PCR	Ultra-thermostable master mix for high-fidelity PCR based on VeraSeq 2.0	High fidelity PCR master mix for NGS libraries
<b>Features</b>	<ul style="list-style-type: none"> <li>Amplification up to 40 kb</li> <li>Low error rates</li> </ul>	<ul style="list-style-type: none"> <li>50x greater fidelity than Taq</li> <li>Extends 1 kb in 15 seconds</li> <li>Strong proofreading activity</li> </ul>	<ul style="list-style-type: none"> <li>High efficiency, low bias</li> <li>Uniform coverage across AT- and GC-rich regions</li> <li>Input DNA ≥250 pg</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Routine PCR</li> <li>Cloning</li> <li>Sequencing</li> </ul>	<ul style="list-style-type: none"> <li>High-fidelity DNA amplification</li> <li>Cloning</li> <li>Synthetic biology</li> </ul>	<ul style="list-style-type: none"> <li>Amplification in sequencing workflows</li> <li>RNA-seq</li> </ul>
<b>End-point PCR</b>	✓	✓	✓
<b>Multiplex PCR</b>	✓	✓	✓
<b>Hot-start</b>	Antibody mediated	✗	Antibody mediated
<b>Long range</b>	✓	✓	✗
<b>Includes HiFi enzyme</b>	✓	✓	✓

## UltraClean® Production (UCP) PCR master mixes

Product	UCP Probe PCR Kit	UCP Multiplex PCR Kit
<b>Catalog number</b>	208214	206742
<b>Description</b>	For probe-based UCP PCR	For nucleic acid depleted UCP PCR
<b>Features</b>	<ul style="list-style-type: none"> <li>No background from residual DNA</li> <li>Inhibitor robustness</li> <li>Visual pipetting control</li> <li>Room-temperature setup</li> <li>Amplification up to 40 kb</li> </ul>	<ul style="list-style-type: none"> <li>No background from residual DNA</li> <li>Inhibitor robustness</li> <li>Wide GC range</li> <li>Visual pipetting control</li> <li>Gel tracking dyes</li> <li>Room temperature setup</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Microbial testing</li> <li>Microbiome/metagenome workflows</li> <li>NGS library preparation</li> </ul>	<ul style="list-style-type: none"> <li>Microbial testing</li> <li>Quality control</li> <li>Genotyping and genetic testing</li> <li>Microbiome/metagenome analysis and sequencing</li> <li>16S/18S amplifications</li> </ul>
<b>Hot-start</b>	Antibody mediated	Antibody mediated
<b>Real-time PCR</b>	✓	✗
<b>End-point PCR</b>	✗	✓
<b>Multiplex PCR</b>	✓	✓
<b>Ultra Clean Production (UCP)</b>	✓	✓
<b>Room temperature setup</b>	✓	✓
<b>Inhibitor robustness</b>	✓	✓

Learn more about our PCR and RT-PCR mixes to streamline your workflow from long-range PCR and multiplexing to one-step RT-PCR. Visit [www.qiagen.com/PCRandRTPCRMixes](http://www.qiagen.com/PCRandRTPCRMixes)

## Modifying enzymes

Product	T4 Polynucleotide Kinase	Thermostable Pyrophosphatase	E. coli Pyrophosphatase
<b>Catalog number</b>	Y9040L	Y9370L	Y9380L
<b>Description</b>	For 5' phosphorylation of DNA or RNA and removal of 3' phosphoryl groups	Catalyzes the hydrolysis of inorganic pyrophosphate (PPi) to form orthophosphate	Catalyzes the hydrolysis of inorganic pyrophosphate (PPi) to form orthophosphate
<b>Features</b>	<ul style="list-style-type: none"> <li>Catalyzes transfer and exchange of phosphate to the 5'-OH of ssDNA, dsDNA and RNA</li> <li>Exhibits 3'-phosphatase and 2', 3' cyclic phosphodiesterase activities</li> <li>Incorporates labeled phosphates at the 5' end of nucleic acids</li> </ul>	<ul style="list-style-type: none"> <li>Eliminates pyrophosphate during amplification to minimize inhibition</li> <li>Enhances RNA and DNA synthesis reactions</li> <li>Functional under PCR conditions</li> <li>Optimal temperature 75°C</li> </ul>	<ul style="list-style-type: none"> <li>Eliminates pyrophosphate during amplification to minimize inhibition</li> <li>Enhances RNA and DNA synthesis reactions</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Phosphorylation of 5' ends of DNA prior to ligation</li> <li>End-labeling oligodeoxynucleotide primers for sequencing</li> <li>Dephosphorylating the 3'-ends of RNA in the absence of ATP</li> </ul>	<ul style="list-style-type: none"> <li>In-vitro synthesis</li> <li>Production of orthophosphate</li> <li>Avoiding inhibition in RNA synthesis and PCR reactions</li> </ul>	<ul style="list-style-type: none"> <li>Enhancing DNA and RNA synthesis and modification</li> </ul>
<b>Reaction buffer</b>	10x PNK Buffer	—	—
<b>Thermostable</b>	✗	✓	✗
<b>Lyo-ready, glycerol-free</b>	✓	✗	✗
<b>Related products</b>	T4 DNA Ligase, T4 RNA Ligase, Taq DNA polymerase, Exonuclease I	Reverse transcriptases, DNA ligases, Taq DNA polymerase, T7 RNA Polymerase	

Learn more about our modifying enzymes to optimize PCR analysis, enhance nucleic acid synthesis or prepare recombinant proteins at: [www.qiagen.com/Modify](http://www.qiagen.com/Modify)

# Ligases

## DNA ligases

Product	WGS Ligase	T4 DNA Ligase	T7 DNA Ligase	T3 DNA Ligase	<i>E. coli</i> DNA Ligase	Taq DNA Ligase	LoopLigase®	Tth DNA Ligase
Catalog number	L6030-W-L	L6030-HC-L/L6030-1C-L	L6020L	L6010L	L6090L	L6060L	L6130L	EN13-250
<b>Description</b>	Optimized for ligation following WGS Fragmentation in NGS library construction	Industry standard ligase	For ligating cohesive ends of duplex DNA	ATP-dependent dsDNA ligase with increased salt tolerance	For ligation of DNA at nicks and cohesive termini	Thermostable ligase for joining or ligation of DNA fragments	A ssDNA and ssRNA ligase for circularization of ssDNA and ssRNA	Thermostable NAD <sup>+</sup> -dependent dsDNA ligase
<b>Features</b>	<ul style="list-style-type: none"> <li>Joins blunt and cohesive ends</li> <li>Repairs single-stranded nicks in duplex DNA, RNA, or DNA-RNA hybrid</li> </ul>	<ul style="list-style-type: none"> <li>Joins blunt and cohesive ends</li> <li>Seals nicks in duplex DNA, RNA or DNA-RNA hybrid</li> </ul>	<ul style="list-style-type: none"> <li>Only efficiently joins cohesive-end termini</li> <li>Low efficiency joining blunt ends</li> <li>Repairs single-stranded nicks in duplex DNA</li> </ul>	<ul style="list-style-type: none"> <li>Joins blunt and cohesive ends</li> <li>Repairs single stranded nicks in duplex DNA</li> <li>ATP dependent</li> <li>Increased salt tolerance</li> </ul>	<ul style="list-style-type: none"> <li>Does not ligate blunt ends</li> <li>NAD<sup>+</sup> dependent</li> </ul>	<ul style="list-style-type: none"> <li>Thermostable</li> <li>Seals nicks</li> <li>Discriminates against mismatch ligation</li> <li>NAD<sup>+</sup> dependent</li> </ul>	<ul style="list-style-type: none"> <li>Fast reaction rate</li> <li>Minimal template bias</li> <li>Circularizes longer substrates</li> <li>Does not require splint oligonucleotides</li> <li>Does not generate concatemers</li> </ul>	<ul style="list-style-type: none"> <li>High thermostability</li> <li>High specificity for SNP detection</li> <li>Not active against ssDNA or RNA and blunt-ended DNA</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>NGS library construction</li> </ul>	<ul style="list-style-type: none"> <li>Restriction cloning</li> <li>TA-cloning</li> <li>Adapter ligation</li> </ul>	<ul style="list-style-type: none"> <li>Highly efficient for cohesive end ligation</li> </ul>	<ul style="list-style-type: none"> <li>Ligating dsDNA in high ionic strength NaCl (1.0 M)</li> </ul>	<ul style="list-style-type: none"> <li>cDNA cloning by replacement synthesis</li> </ul>	<ul style="list-style-type: none"> <li>Ligase Chain Reaction (LCR)</li> <li>Ligase Detection Reaction (LDR)</li> <li>High temperature ligation</li> </ul>	<ul style="list-style-type: none"> <li>Preparation of circular libraries for NGS</li> <li>Rolling circle amplification (RCA)</li> </ul>	<ul style="list-style-type: none"> <li>Ligase Chain Reaction (LCR)</li> <li>Ligase Detection Reaction (LDR)</li> <li>NGS sequencing</li> <li>Repeat expansion detection</li> <li>Rolling circle amplification (RCA)</li> <li>Proximity ligation assay (PLA)</li> </ul>
<b>Reaction buffer</b>	5x Rapid Ligation Buffer	10x T4 DNA Ligase Buffer and 2x Rapid Ligation Buffer	2x Rapid Ligation Buffer	2x Rapid Ligation Buffer	10x <i>E.coli</i> DNA Ligase Reaction Buffer	10x Taq DNA Ligase Buffer	5x LoopLigase Reaction Buffer	10x Tth Ligation Buffer
<b>Lyo-ready, glycerol-free</b>	Upon request only	✓	✗	✗	✗	Upon request only	✗	✗
<b>Related products</b>	High-fidelity DNA polymerases, T4 DNA Polymerase, T4 Polynucleotide Kinase, Klenow Fragment, exonucleases and endonucleases, oligonucleotides				High-fidelity DNA polymerases, T4 DNA Polymerase, T4 Polynucleotide Kinase, Klenow Fragment, exonucleases and endonucleases, oligonucleotides			

➔ Our high-efficiency DNA ligase enzymes are engineered to improve DNA end-joining reactions and ligation of cohesive or blunt-ended DNA fragments. Learn more at [www.qiagen.com/DNALigases](http://www.qiagen.com/DNALigases)

## RNA ligases

Product	T4 RNA Ligase 1	T4 RNA Ligase 2	T4 RNA Ligase 2, Truncated
<b>Catalog number</b>	L6050L	L6080L	L6070L
<b>Description</b>	For ligation of single-stranded RNA and single stranded DNA	For ligation of nicks in double stranded RNA	For specific ligation of pre-adenylated 5'-P DNA or RNA to the 3'-OH of RNA
<b>Features</b>	<ul style="list-style-type: none"> <li>Ligates ssDNA and ssRNA</li> <li>ATP dependent</li> </ul>	<ul style="list-style-type: none"> <li>Ligates nicks in double stranded RNA</li> <li>Ligates from 3' OH of RNA to 5'-P of DNA in double stranded structures</li> </ul>	<ul style="list-style-type: none"> <li>Unable to join the phosphorylated 5' end of RNA or DNA to the 3' end of RNA</li> <li>Does not require ATP</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Single-stranded nucleic acid (RNA or DNA) ligation</li> <li>Labeling of 3'-termini of RNA</li> </ul>	<ul style="list-style-type: none"> <li>Nick ligation in dsRNA</li> <li>Ligation of the 3'-OH of RNA to the 5'-P of DNA in a double stranded format</li> </ul>	<ul style="list-style-type: none"> <li>NGS RNA library construction (miRNA-Seq or directional mRNA-Seq)</li> </ul>
<b>Reaction buffer</b>	10x T4 RNA Ligase Buffer	10x T4 RNA Ligase Buffer	10x T4 RNA Ligase 2 Truncated Buffer
<b>Lyo-ready, glycerol-free</b>	X	X	X

Our high-efficiency RNA ligases facilitate the joining of RNA molecules for applications like RNA sequencing, RNA labeling and constructing chimeric RNA molecules. Learn more at [www.qiagen.com/RNALigases](http://www.qiagen.com/RNALigases)

## Next-generation sequencing components

Product	5x WGS Fragmentation Mix	5x ER/A-Tailing Enzyme Mix	End-Repair Mix
<b>Catalog number</b>	Y9410L	Y9420L	Y9140-HC-L/Y9140-LC-L
<b>Description</b>	For fragmentation, end-repair and dA-tailing in a single reaction step	For end-repair and dA-tailing in a single reaction step	Enzyme mix to convert DNA with 5'- and/or 3'-protruding ends to 5'-phosphorylated, blunt-ended DNA
<b>Features</b>	<ul style="list-style-type: none"> <li>High library yields and sensitivity</li> <li>Tunable range of fragment sizes</li> <li>Input DNA from 1 ng to 1 µg</li> <li>Low duplication rates and base distribution bias</li> <li>Uniformity across broad range of GC content</li> <li>Ligation optional in the same tube</li> <li>Total time under 2.5 hours with 30 minutes hands-on time</li> </ul>	<ul style="list-style-type: none"> <li>High library efficiency and yields</li> <li>Input DNA from 250 pg to 1 µg</li> <li>Low duplication rates</li> <li>Uniformity across broad range of GC content</li> <li>Compatible with EDTA</li> <li>PCR-free library prep</li> <li>Total time under 3 hours with 1 hour hands-on time</li> </ul>	<ul style="list-style-type: none"> <li>Utilizes the activities of T4 DNA Polymerase</li> <li>Includes T4 Polynucleotide Kinase</li> <li>Low-concentration formulation: ≤1 µg of DNA for blunt-end ligation</li> <li>High-concentration formulation: &gt;1 µg of DNA for blunt-end ligation</li> </ul>
<b>NGS library input material</b>	Intact DNA	Fragmented DNA	Fragmented DNA
<b>Reaction buffer</b>	10x Fragmentation Buffer and Enhancer	10x ERA Tailing Buffer	10x End-Repair Buffer and 1 mM dNTPs solution
<b>Lyo-ready, glycerol-free</b>	X	X	X
<b>Related products</b>	High-fidelity DNA polymerases, WGS Ligase, HiFi PCR Master Mix, oligonucleotides		

Learn more about our NGS workflow components for every step of library prep: DNA fragmentation, end-repair, A-tailing, adapter ligation and amplification. Visit [www.qiagen.com/NGScomponents](http://www.qiagen.com/NGScomponents)

## Proteinase K

Product	Proteinase K Liquid	Proteinase K Lyophilized	Proteinase K Ultrapure
<b>Catalog number</b>	RP107B-1, -5, -100, -500	RP100B, RP102B, RP103B-10, -50, -100	RP100N, RP102N
<b>Description</b>	Efficient protein digestion in biological samples and for eliminating DNases and RNases during nucleic acid isolation		Protein digestion in the most demanding applications
<b>Specification</b>	<ul style="list-style-type: none"> <li>High activity and exceptional purity</li> <li>Free of exonucleases, endonucleases and ribonucleases</li> <li>Active at elevated temperatures and wide pH range</li> <li>Active under denaturing conditions</li> </ul>		
<b>Features</b>	<ul style="list-style-type: none"> <li>Activity ≥800 U/mL liquid</li> <li>DNA content ≤200 pg/mL by qPCR</li> <li>Stable at room temperature for 24 months</li> </ul>	<ul style="list-style-type: none"> <li>Activity ≥30 U/mg lyophilizate</li> <li>Activity ≥40 U/mg protein</li> <li>DNA content ≤10 pg/mg by qPCR</li> <li>Solubility in water ≥20 mg/mL</li> </ul>	<ul style="list-style-type: none"> <li>Activity ≥35 U/mg lyophilizate</li> <li>Activity ≥45 U/mg protein</li> <li>DNA content ≤0.1 pg/mg by qPCR</li> <li>Solubility in water ≥50 mg/mL</li> <li>Powder form</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Extraction of DNA and RNA from different starting materials</li> <li>Automated nucleic acid isolation</li> </ul>		<ul style="list-style-type: none"> <li>Combined nucleic acid isolation and amplification</li> <li>NGS sample preparation workflows</li> </ul>
<b>Storage</b>	Room temperature or 4°C or -20°C	-20°C	-20°C
<b>Related products</b>	Reverse transcriptase, dsDNase and dsDNase HL, RNase Inhibitor, Taq polymerases		

## Nucleases Endonucleases

Product	Saltonase® MBG	Saltonase GMP-grade	Saltonase ELISA Kit (5 x 96)	Endonuclease VIII
<b>Catalog number</b>	EN32-050, -250	EN32-B10, EN32-B50	EN32-001	Y9080L
<b>Description</b>	Recombinant Molecular Biology Grade endonuclease for digesting all types of DNA and RNA substrates in different conditions	Same functional properties as Saltonase MBG, GMP-compliant, AOF processing and formulation, no beta-lactams, low endotoxin and bioburden levels	Sensitive and specific ELISA kit for quantitative detection of Saltonase endonuclease in bio-pharmaceutical samples	DNA repair protein for removal of modified pyrimidines
<b>Features</b>	<ul style="list-style-type: none"> <li>Highly active (&gt;20%) from 15–55°C</li> <li>Active in a broad spectrum of pH (6.8–9.3)</li> <li>Optimal activity in high salt environments (~ 500 mM)</li> <li>Enhanced safety with efficient cleavage at 3–5 nt</li> <li>Highly active in the typical buffers and growth media</li> <li>Requires ≥ 1 mM Mg<sup>2+</sup> to activate</li> </ul>		<ul style="list-style-type: none"> <li>High sensitivity and specificity using monoclonal antibodies</li> <li>LOQ: 30 pg/mL</li> <li>Detection method: Colorimetric</li> <li>Practical format: 8-well strips</li> </ul>	<ul style="list-style-type: none"> <li>Functions as an N-glycosylase</li> <li>Functions as an AP-lyase</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Protein/enzyme purification</li> <li>Removal of contaminants</li> <li>Viscosity reduction</li> </ul>	<ul style="list-style-type: none"> <li>Protein/enzyme purification</li> <li>Removal of contaminants</li> <li>Viscosity reduction</li> <li>Viral vector and biologic purification in biopharma</li> </ul>	<ul style="list-style-type: none"> <li>Quality control monitoring of successful depletion of Saltonase after DNA digestion during biotherapeutics manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>Excises damaged pyrimidines from duplex DNA</li> <li>Cleaves AP sites leaving 3' and 5' phosphates</li> </ul>

→ Our high-purity Proteinase K is ideal for use in nucleic acid extraction, sample cleanup or tissue digestion and protein degradation in complex samples. Learn more at [www.qiagen.com/ProteinaseK](http://www.qiagen.com/ProteinaseK)

## Double-stranded DNase and RNase A

Product	dsDNase	dsDNase HL	RNase-free DNase Set	RNase A
<b>Catalog number</b>	<b>EN33-250</b>	<b>EN31-025</b>	<b>79254</b>	<b>19101</b>
<b>Description</b>	For the rapid and RNA-safe degradation of genomic DNA	A heat-labile recombinant DNase with highly specific activity towards dsDNA	Optimized for use with RNeasy® procedures and QIAamp® RNA Blood Mini procedures	For RNase digestion during DNA preparation
<b>Features</b>	<ul style="list-style-type: none"> <li>Active from 10–80°C and optimum at pH 6.0–9.0</li> <li>Active in elevated salt concentrations and other typical buffer additives</li> <li>Requires bivalent cations (Mg<sup>2+</sup> and Ca<sup>2+</sup>) for maximum activity</li> <li>Degrades dsDNA to &lt;10 nt</li> <li>Activity towards dsDNA is 1000 times higher than towards ssDNA</li> </ul>	<ul style="list-style-type: none"> <li>Highly active from 10–47°C and optimum at pH 7.0–8.0</li> <li>Active at low-temperature to protect RNA or proteins</li> <li>Highly active in typical buffer formulations</li> <li>Requires at least 2 mM Mg<sup>2+</sup> ions for optimal activity</li> <li>Irreversible inactivation at 15 minutes at 52°C in 1 mM DTT</li> </ul>	<ul style="list-style-type: none"> <li>Efficient on-column digestion of DNA during RNA purification</li> </ul>	<ul style="list-style-type: none"> <li>DNase-free and quality-controlled for use in plasmid purification procedures for the digestion of RNA</li> <li>Ready-to-use solution</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Extraction and purification of RNA</li> <li>Removal of genomic DNA from RNA samples</li> <li>Degradation of DNA template in transcription reactions</li> <li>Reduction of viscosity in biological samples</li> </ul>	<ul style="list-style-type: none"> <li>Degradation of DNA template in transcription reactions</li> <li>Digestion of dsDNA for plasmid and genomic DNA</li> <li>Rapid purification of RNA and protein samples</li> <li>Decontamination of PCR and qPCR master mixes and other reagents</li> </ul>	<ul style="list-style-type: none"> <li>More complete DNA removal may be necessary for certain RNA applications</li> </ul>	<ul style="list-style-type: none"> <li>RNA-free DNA purification</li> <li>Plasmid and genomic DNA isolation</li> </ul>
<b>Related products</b>	RNase Inhibitor, EnzScript Reverse Transcriptase, StableScript Reverse Transcriptase, RNase H			

# Exonucleases

Product	Lambda Exonuclease	T5 Exonuclease	T7 Exonuclease	Exonuclease I	Exonuclease III
<b>Catalog number</b>	<b>X8030L</b>	<b>X8040L</b>	<b>X8050L</b>	<b>X8010L</b>	<b>X8020L</b>
<b>Description</b>	A highly processive 5' → 3' double-stranded exonuclease that degrades one strand of the duplex	An exonuclease that cleaves linear or nicked dsDNA from the 5' end in the 5' to 3' direction	An exonuclease that removes nucleotides in the 5' to 3' direction, starting at the 5' ends of linear or nicked dsDNA	Cleaves single-stranded DNA in the 3' → 5' direction, releasing 5' mono/di-nucleotides and leaving dsDNA and the 5' terminus intact	A 3' → 5' exonuclease that digests one strand of a dsDNA duplex at a time or digests the RNA strand of an RNA-DNA heteroduplex
<b>Features</b>	<ul style="list-style-type: none"> <li>Active on blunt DNA or DNA containing 3' single-stranded overhangs</li> <li>Acts in 3' → 5' direction on ds DNA substrate</li> <li>Greatly reduced activity on non-phosphorylated DNA, ssDNA and DNA with protruding 5' single-stranded termini</li> <li>Does not initiate at a nick or gap</li> </ul>	<ul style="list-style-type: none"> <li>Acts as a dsDNA-specific exonuclease</li> <li>Acts as a single-stranded DNA endonuclease</li> </ul>	<ul style="list-style-type: none"> <li>Acts as a dsDNA-specific exonuclease</li> </ul>	<ul style="list-style-type: none"> <li>Excises bases on single-stranded DNA in 3' → 5' direction</li> <li>Removes linear ssDNA, leaving behind dsDNA</li> </ul>	<ul style="list-style-type: none"> <li>Removes a limited number of nucleotides per binding event</li> <li>Removes 3' terminal groups on dsDNA</li> <li>Degrades 3' recessed but not 3' protruding DNA ends (creating 5' overhangs)</li> <li>Breaks phosphodiester bonds on the 5' side of AP sites in both dsDNA and ssDNA</li> <li>Increases turnover of DNA glycosylase MutY</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Removal of chromosomal DNA to clean up plasmid preps</li> <li>Generation of ssDNA from linear dsDNA</li> <li>Removal of oligonucleotide primers post-PCR</li> </ul>	<ul style="list-style-type: none"> <li>Removal of incomplete ligation products from circular double-stranded DNA after ligation</li> <li>Removal of contaminating linear and nicked DNA in plasmid preparations</li> </ul>	<ul style="list-style-type: none"> <li>Site-directed mutagenesis</li> <li>Nick-site extension</li> </ul>	<ul style="list-style-type: none"> <li>Plasmid prep cleanup</li> <li>Removal of ssDNA from a mixture of linear ssDNA and dsDNA</li> <li>Removal of oligonucleotide primers after PCR</li> </ul>	<ul style="list-style-type: none"> <li>Multifunctional: phosphatase, exonuclease, AP endonuclease and RNase H activities</li> <li>Production of nested deletions in dsDNA</li> <li>Cloning of PCR products</li> <li>Site-directed mutagenesis</li> <li>Preparation of strand-specific probes</li> </ul>


 Our endonucleases and exonucleases are targeted for ssDNA cleanup and dsDNA processing to streamline PCR and facilitate cloning. Learn more at [www.qiagen.com/Nucleases](http://www.qiagen.com/Nucleases)



## Binding proteins

Product	<b>E. coli Single-stranded DNA binding protein (SSB)</b>	<b>T4 Gene 32 Protein</b>	<b>RecA</b>	<b>PCR Anti-Inhibitor</b>	<b>Recombinant Albumin, AOF</b>
<b>Catalog number</b>	<b>Y9030L</b>	<b>Y9130L</b>	<b>Y9260L</b>	<b>RP50</b>	<b>531001, 531010</b>
<b>Description</b>	For binding and stabilizing ssDNA during DNA polymerase-mediated reactions	A ssDNA-binding protein for increasing PCR amplification and DNA sequencing efficiency	Functions in DNA recombination and DNA repair and binds to ssDNA	A mixture of alkaline proteins that counteract substances inhibiting PCR reactions	Thermostable recombinant human serum albumin for enhancing PCR and qPCR performance
<b>Features</b>	<ul style="list-style-type: none"> <li>Relaxes secondary DNA structure</li> <li>Enhances processivity</li> </ul>	<ul style="list-style-type: none"> <li>Enhances DNA sequencing procedures in regions rich in secondary structure</li> <li>Increases efficiency of PCR amplification</li> <li>Stimulates synthesis rate of T4 DNA Polymerase</li> </ul>	<ul style="list-style-type: none"> <li>Promotes strand exchange of ssDNA with homologous duplex DNA</li> <li>A RecA-ATP ssDNA complex can function as a co-protease</li> <li>Complexed with site-specific oligonucleotides can be used to target and specifically cleave large DNA fragments</li> </ul>	<ul style="list-style-type: none"> <li>Eliminates inhibitors found in DNA template isolation</li> <li>Mixture of alkaline proteins</li> </ul>	<ul style="list-style-type: none"> <li>Animal-Origin Free (AOF)</li> <li>Increased thermal stability with reduced aggregation</li> <li>Improves PCR and qPCR efficiency and accuracy</li> <li>Resistant to multiple freeze-thaw cycles</li> <li>Binds PCR inhibitors to improve amplification performance</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Enhancement of DNA polymerase fidelity and processivity</li> <li>Primer sequestration</li> <li>Longer read lengths in pyrosequencing for SNP analysis</li> </ul>	<ul style="list-style-type: none"> <li>DNA sequencing in secondary-structure rich regions</li> <li>PCR amplification in secondary-structure rich regions</li> <li>Enhancing site-specific mutagenesis</li> <li>Eliminating extra bands during sequencing</li> <li>Marking ssDNA for electron microscopy</li> </ul>	<ul style="list-style-type: none"> <li>Mutagenesis</li> <li>Affinity capture of DNA</li> </ul>	<ul style="list-style-type: none"> <li>In PCR reactions with difficult DNA templates               <ul style="list-style-type: none"> <li>- Urine</li> <li>- Sputum and saliva</li> <li>- Blood</li> <li>- Cell swabs and biopsies</li> <li>- Cerebrospinal fluid, etc.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>PCR, qPCR</li> <li>BSA alternative for AOF workflows</li> <li>Lyoprotectant</li> <li>Protein stabilizer</li> </ul>
<b>Reaction buffer</b>	—	—	10x RecA Reaction Buffer	—	—
<b>Lyo-ready, glycerol-free</b>	X	✓	X	X	✓
<b>Related products</b>	VeraSeq 2.0 High Fidelity DNA Polymerase, Taq DNA polymerase,	T4 DNA Polymerase, T7 DNA Polymerase, E.coli DNA Ligase, T4 DNA Ligase, oligonucleotides	E.coli DNA Ligase, Exonuclease I, DNA polymerase I	PCR enzymes, kits and master mixes, oligonucleotides	



Learn about our versatile binding protein products to stabilize ssDNA, drive homologous recombination and enhance PCR efficiency at: [www.qiagen.com/BindingProteins](http://www.qiagen.com/BindingProteins)

## Uracil-DNA glycosylases

Product	Uracil DNA Glycosylase	Thermolabile UNG	10x Uracil Cleavage System
Catalog number	G5010L	G5030L	Y9180L
<b>Description</b>	Catalyzes the hydrolysis of the N-glycosylic bond between uracil and the sugar in uracil-containing ssDNA or dsDNA	Uracil-N-glycosylase for removal of uracil from DNA and prevention of carryover in PCR	UDG catalyzes the excision of the uracil base from DNA; Endonuclease VIII breaks the phosphodiester backbone
<b>Features</b>	<ul style="list-style-type: none"> <li>Removes uracil from DNA</li> <li>Exhibits no measurable activity on short oligonucleotides (&lt;6 bases) and RNA substrates</li> </ul>	<ul style="list-style-type: none"> <li>Removes uracil from DNA, leaving an AP site</li> <li>No activity on RNA substrates</li> <li>Heat inactivated by 10 minutes at &gt;50°C</li> <li>High specific activity and strong activity at ambient temperature</li> </ul>	<ul style="list-style-type: none"> <li>Removes uracil from DNA</li> <li>Cleavage of the DNA backbone</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Carryover prevention in PCR</li> <li>Creating abasic sites in uracil-containing ssDNA or dsDNA</li> </ul>	<ul style="list-style-type: none"> <li>Carryover prevention in PCR</li> <li>Creating abasic sites in uracil-containing ssDNA or dsDNA</li> </ul>	<ul style="list-style-type: none"> <li>Cloning</li> <li>Removing contaminating PCR products</li> </ul>
<b>Lyo-ready, glycerol-free</b>	X	Upon request only	✓
<b>Related products</b>	Reverse transcriptases, Taq DNA polymerases, Endonuclease VIII, oligonucleotides		

## Nucleotides and oligonucleotides

Product	dNTP Set, PCR Grade	dNTP Mix, PCR Grade	Oligonucleotides
Catalog number	201912	201900	Custom product
<b>Description</b>	A complete set of highly pure dNTPs for sensitive and reproducible PCR and RT-PCR	Premixed dNTPs in water, essential for successful and reliable PCR	High-purity, custom oligonucleotides for demanding amplification and detection workflows
<b>Specification</b>	<ul style="list-style-type: none"> <li>Individual dNTPs</li> <li>Supplied in water</li> <li>Can be diluted and mixed with any other dNTP to a desired concentration</li> </ul>	<ul style="list-style-type: none"> <li>Mix contains premixed dATP, dCTP, dGTP and dTTP</li> <li>Supplied in water (pH 7.5)</li> <li>Each at a concentration of 10 mM</li> </ul>	<ul style="list-style-type: none"> <li>Custom oligonucleotides</li> <li>Large selection of modifications: fluorophores, quenchers, modifiers, spacers, dual-labeled probes, SCORPIONS, and more</li> </ul>
<b>Features</b>	<ul style="list-style-type: none"> <li>Highly pure</li> <li>Suitable for all standard and highly sensitive PCR applications</li> </ul>	<ul style="list-style-type: none"> <li>Premixed dNTPs in ready-to-use solution</li> <li>Highly pure</li> <li>Suitable for all standard and highly sensitive PCR applications</li> </ul>	<ul style="list-style-type: none"> <li>Produced using AIE-HPLC and RP-HPLC methods, resulting in purities &gt;90%</li> <li>cGMP/QSR-compliant manufacturing; ISO 13485 certified</li> <li>No cross-contamination</li> <li>High lot-to-lot consistency</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Standard, single-cell, long-range, multiplex, and high-fidelity PCR</li> <li>Genotyping</li> <li>Methylation-specific PCR (MSP)</li> <li>Two-step RT-PCR</li> </ul>	<ul style="list-style-type: none"> <li>PCR, qPCR, RT-PCR</li> <li>Isothermal amplification</li> <li>Genomics</li> <li>NGS library preparation</li> </ul>	
<b>Related products</b>	Taq DNA polymerase, Hot-start Taq DNA polymerase, reverse transcriptases		



Learn about using UDGases to prevent carryover in PCR and ensure the integrity of genetic material at: [www.qiagen.com/UDGases](http://www.qiagen.com/UDGases)



Learn more about our nucleotides and custom oligonucleotides formulated to meet the highest standards of purity and performance at: [www.qiagen.com/Nucleotides](http://www.qiagen.com/Nucleotides)

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