

Product & Application Guide

Amplification

Quanta**bio**

First-Strand cDNA Synthesis

Quantabio reverse transcription reagents leverage proprietary, performance-engineered qScript® reverse transcriptase in a variety of stabilized, user-friendly reagent formulations that maximize cDNA yield and provide linear cDNA synthesis across a broad dynamic range of input RNA. qScript cDNA synthesis kits redefine what is possible in speed, convenience, reproducibility, specificity and limit of detection (LOD) sensitivity in qPCR and RT-PCR applications.

	qScript cDNA SuperMix	qScript XLT cDNA SuperMix	qScript cDNA Synthesis Kit	qScript Ultra Flex Kit	qScript Flex cDNA Synthesis Kit
Kit Format	Single Tube	Single Tube	Two Tubes	Five Tubes (water included)	Five Tubes
RT Enzyme	MMLV, RNase H+	MMLV, reduced RNase H activity	MMLV, RNase H+	qScript Ultra RT	MMLV, RNase H+
Priming Method	Oligo(dT) & random primers	Oligo(dT) & random primers	Oligo(dT) & random primers	Oligo(dT), random primers or gene specific primer	Oligo(dT), random primers or gene specific primer
RNA Input Range	10 pg – 1 µg	1 pg – 2 µg	10 pg – 1 µg	1 pg – 2.5 µg	10 pg – 1 µg
Amplicon Length	1 kb or less	1 kb or less	1 kb or less	20 kb or less	12 kb or less
Optimal Reaction Time	40 min	30 – 70 min	40 min	10 min	60 – 90 min

RT-qPCR

Quantabio's innovative 1-Step reverse transcription reagents minimize pipetting, provide highly consistent results, enhance speed and improve overall performance by enabling low limits of detection.

To help address and fight the global pandemic caused by SARS-COV-2 since late 2019, Quantabio provides three essential RT-qPCR Tough master mixes, highlighted in the table below, to help research labs and testing providers overcoming common PCR inhibitors to accurately detect COVID-19 at low limits of detection (LOD).

	Quantitative RT-qPCR				
	qScript 1-Step SYBR Green RT-qPCR	Qscript Iyo 1-step	Script XLT 1-Step RT-qPCR ToughMix	UltraPlex 1-Step ToughMix	qScript 1-Step Virus ToughMix
Kit Format	2 Tubes	1 Tube	1 Tube	1 Tube	1 Tube
RT Enzyme	MMLV, RNase H+	MMLV, reduced RNase activity	MMLV, reduced RNase activity	MMLV, reduced RNase activity	MMLV, reduced RNase activity
Concentration	2x	N/A	2x	4x	2x
Yield	+++	++++	++++	++++	++++
Total RNA Input Range	1 pg – 100 ng	0.5 pg – 500 pg	1 pg – 100 ng	1 pg – 100 ng	1 pg – 100 ng
Amplicon Length	0 – 200 bp	70 – 300 bp	70 – 300 bp	70 – 300 bp	70 – 300 bp
Multiplex PCR	–	•	•	•	•

PCR

Quantabio PCR reagents are formulated with ultrapure AccuStart DNA polymerase, which contains a stringent antibody hotstart to ensure specific and efficient primer extension only after activation at 94°C. This helps reduce non-specific extension of primers at low temperatures which is a common cause of PCR artifacts and poor assay sensitivity and specificity.

Quantabio enzymes are rigorously purified to remove host *E. coli* genomic DNA and are ideally suited for applied testing applications such as bacterial pathogen detection where residual host DNA in typical recombinant enzyme preparations can limit assay sensitivity and obscure detection of low copy targets.

Available in a variety of optimized formulations designed to support specific PCR applications and starting materials.

	Standard PCR		High Fidelity PCR	Tough PCR	HiFi & Tough PCR	Long PCR
	AccuStart II PCR SuperMix	AccuStart II GelTrack PCR SuperMix	sparQ HiFi PCR Master Mix	AccuStart II PCR ToughMix	repliQa HiFi ToughMix	AccuStart Long Range SuperMix
Concentration	2x	2x	2x	2x	2x	4x
Amplicon size	Up to 4 kb	Up to 4 kb	Up to 4 kb	Up to 4 kb	Up to 24 kb	Up to 24 kb
Extension time	60 sec/kb	60 sec/kb	30 sec/kb	60 sec/kb	1–10 sec/kb	30–60 sec/kb
Multiplex PCR	–	–	–	–	–	Up to 6 Targets
Fidelity vs. Taq	1x	1x	80x Taq	1x	90x Taq	10–12x Taq
dU Tolerant	No	No	No	No	Yes	Yes
Resulting ends	3' dA overhang	3' dA overhang	Blunt	3' dA overhang	Blunt	Blunt/T overhangs

RT-PCR

The qScript XLT One-Step RT-PCR Kit is a convenient and highly sensitive 2-reagent system for amplification of complex RNA templates exceeding 4 kb in length. Both enzyme incubation sequences are carried out in the same reaction mixture without opening between procedures. Advanced qScript XLT reverse transcriptase mutant possesses elevated temperature stability and improved template binding affinity for large complex RNA templates.

	qScript XLT 1-Step RT-PCR Kit
Concentration	2x
Amplicon size	Exceeding 4kb RNA
Extension time	60 sec/kb
Multiplex PCR	–
Fidelity vs. Taq	1x
dU Tolerant	No
Resulting ends	3' dA overhang

Real-Time qPCR

PerfeCta® qPCR reagents combine a stringent, ultrapure antibody hotstart with performance engineered DNA polymerase in stabilized 1-tube formulations optimized for the specific performance needs of real-time quantitative PCR. Proprietary additives help eliminate persistent bubbles to enable efficient vortex mixing and fewer technical replicates thereby conserving precious sample.

ToughMix reagents enable successful amplification of nucleic acid in the presence of common PCR inhibitors.

	SYBR Detection		Probe Based Detection	
	PerfeCta SYBR Green SuperMix	PerfeCta SYBR Green FastMix	Accustart Genotyping ToughMix	PerfeCta FastMix II
Concentration	2x	2x	2x	2x
Performance	++	++	++++	+++
Inhibitor Tolerance	–	–	✓	–
Chemistry	SYBR Green	SYBR Green	Probe	Probe
Sample Type	gDNA, cDNA	gDNA, cDNA	gDNA, cDNA	gDNA, cDNA
Cycling Mode	Standard only	Standard or Fast	Standard or Fast	Standard or Fast
Multiplex Compatibility	–	–	Up to 2 targets	Up to 2 targets

	Probe Based Detection			
	PerfeCta qPCR ToughMix	PerfeCta qPCR ToughMix, UNG	PerfeCta Multiplex qPCR ToughMix	PerfeCta Multiplex qPCR SuperMix
Concentration	2x	2x	5x	2x
Performance	++++	++++	++++	+++
Inhibitor Tolerance	✓	✓	✓	✓
Chemistry	Probe	Probe	Probe	Probe
Sample Type	gDNA, cDNA	gDNA, cDNA	gDNA, cDNA	gDNA, cDNA
Cycling Mode	Standard or Fast	Standard or Fast	Standard or Fast	Standard or Fast
Multiplex Compatibility	Up to 2 targets	Up to 2 targets	Up to 5 targets	Up to 5 targets

Sample Preparation

Quantabio extraction reagents provide a simplified and cost-effective alternative to traditional nucleic acid (NA) purification methods and are optimized to work in series with Quantabio ToughMix reagents.

Our products cover a wide range of sample types and downstream applications.






The table below provides a brief summary to help you decide which solution is best suited for your experiments.

	Extracta DNA Prep for PCR	Extracta DBS	Extracta Plus DNA	Extracta Plus RNA
Sample type	Cells, tissues, buccal swabs, saliva, tail snips, ear punches, hair	Dried blood spots	Fresh or frozen tissue, cells, blood, bacteria	Fresh or frozen tissue, cells, blood
Analysis	PCR, qPCR	PCR, qPCR, Sanger Sequencing, NGS	PCR, qPCR, Sanger Sequencing, NGS	RT-PCR, RT-qPCR, Sanger Sequencing, NGS
Ideal for	Rapid isolation	Samples spotted on collection cards	Sensitive downstream applications	Sensitive downstream applications

Table 1 Extracta product selection chart.

Q qPCR Instrumentation

A faster, smaller, better way to qPCR

- 
Ultra-Fast Data Acquisition
 35 cycles in 25 minutes
- 
Unrivaled Performance
 Detect 2-fold expression level differences
- 
Portable & Compact
 4.5 lbs - transport without ever calibrating
- 
Scalable & Wireless
 Connect up to 10 instruments (48 samples/instrument)
- 
Magnetic Induction
 Eliminate variability vs block-based cyclers





Experience the Amplification Difference. ToughMix.

Quantabio ToughMix® chemistry is the trade secret difference to our mastermix formulations. It has helped scientists for more than 20 years to amplify and analyze difficult/challenging samples by overcoming common PCR inhibitors. Widely used across a multitude of molecular biology applications, ToughMix formulations can be used directly from crude lysates as well as following an extraction protocol.

What can ToughMix do for you

- Work directly with crude lysates
- Avoid expensive and time-consuming purification steps
- Compatible with a wide range of probe designs and detection chemistries
- High quality Taq polymerase-free of residual host *E.coli*
- Neutralize problem causing inhibitors present in crude samples

Inhibitors	Common Source
Polysaccharides	Plants, seeds, stool
Heme, hemoglobin	Blood
Humic acid	Soil, plant material
Melanin	Skin, hair



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