- qPCR Mixes
- PCR Enzymes & Mixes
- RNA Analysis
- Nucleotides
- Molecular Weight Markers
- Next Generation Sequencing
- Essential Reagents

Product Catalog 2020

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Website

The website offers a wide selection of products and services, together with highly informative product information and services to suit the specific needs of your laboratory.

The Life Science division of Meridian Bioscience is committed at all levels of our organization to providing the highest quality immunological and molecular biology reagent solutions that deliver value to our stakeholders. Each of our facilities are certified to ISO 13485 and we operate with a high commitment to Quality with an ongoing customer focus.

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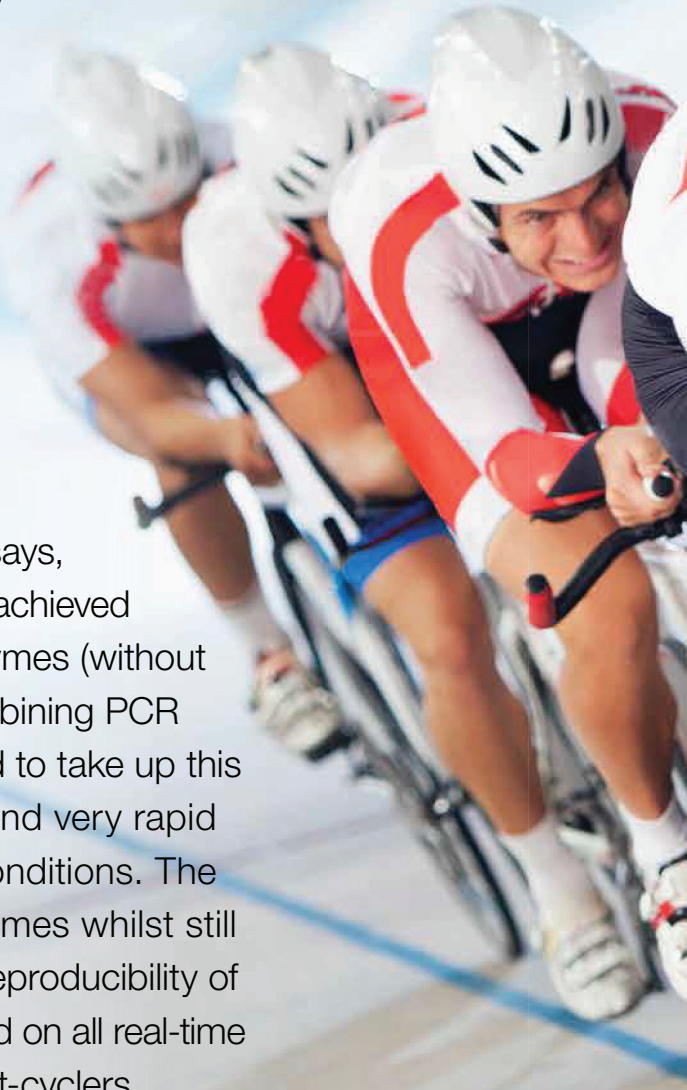
Simple, Sensitive qPCR Solutions

qPCR is one of the most powerful and sensitive gene analysis techniques available and has become the standard in most laboratories. Its effectiveness, particularly at amplification and quantification of low levels of nucleic acids, has driven the emergence of numerous applications, including cellular mRNA and miRNA quantification, biomarker discovery and validation, microarraying, microbial quantification, cancer risk assessment, gene dosage determination and detection of extremely low-copy targets for forensic investigations.



The increase in the use of qPCR has increased the demand for a higher throughput and faster assays, to reduce the overall protocol time. This has been achieved by improvements in instruments, using faster enzymes (without sacrificing accuracy), and shortening or even combining PCR steps. The **SensiFAST**™ Kits have been designed to take up this challenge, with an antibody mediated hot-start and very rapid enzyme-extension rates, enabling fast cycling conditions. The SensiFAST formulations provide fastest cycling times whilst still maintaining the performance, reliability and high reproducibility of Meridian's classic SensiMix. SensiFAST can be used on all real-time instruments, particularly the new generation of fast-cyclers.

SensiMix™ is a comprehensive range of highly optimized products designed to deliver outstanding results for qPCR experiments on both DNA and RNA templates, giving reliable and highly reproducible data on all commonly used qPCR instruments.

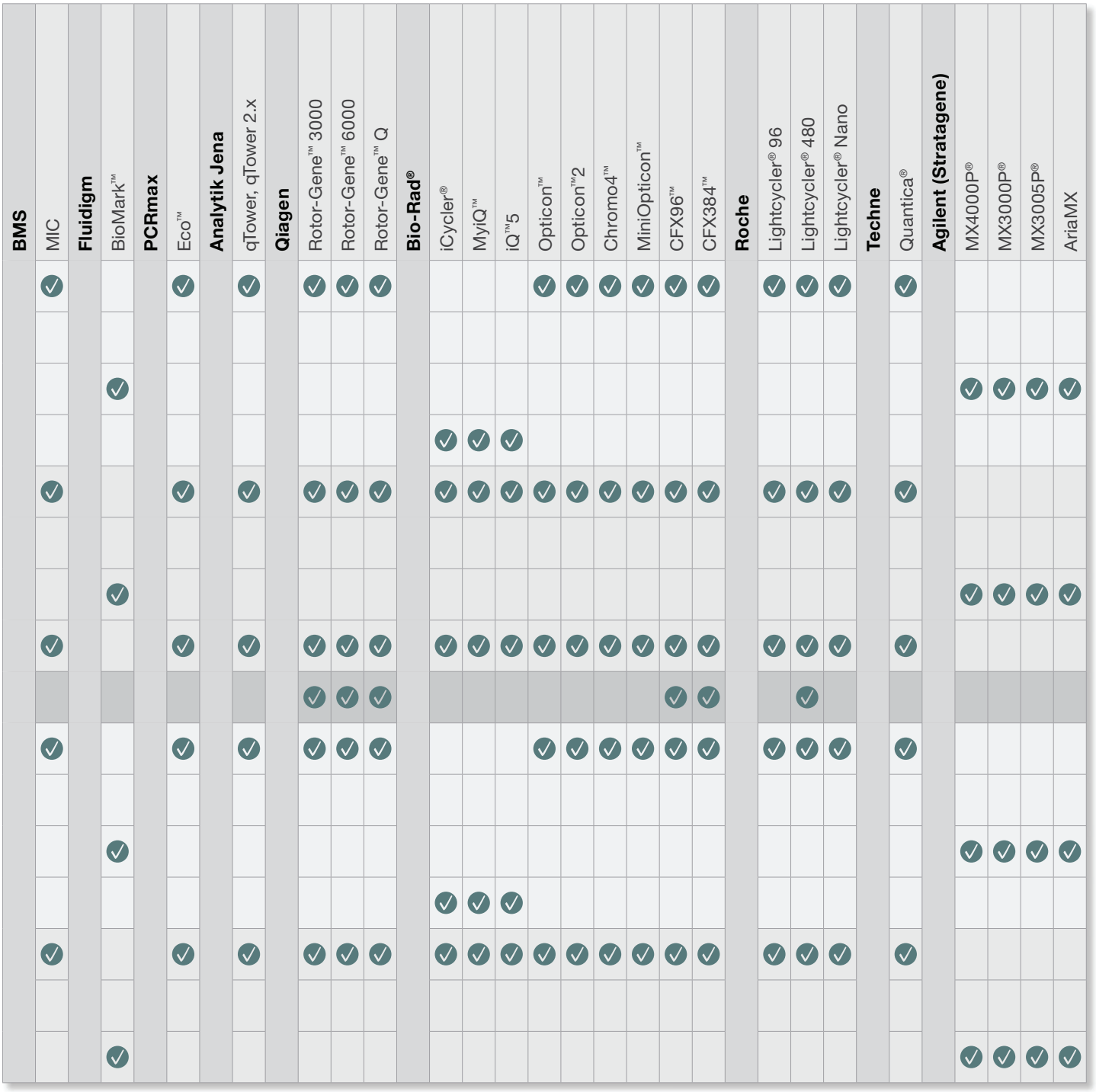
qPCR Mixes

Fast qPCR Mix Selection Table

Meridian has a comprehensive range of highly optimized products designed to deliver outstanding results for real-time experiments on both DNA and RNA templates.

			Applied Biosystems™													Cepheid®		Illumina®		Takara		BJS		Eppendorf		
			7000	7300	7500	7500 FAST	7700	7900	7900HT	7900HT FAST	QuantStudio™ 3,5,6,7,12k Flex	StepOne™	StepOne™ plus	ViiA7™		SmartCycler®		Eco™		Thermal Cycler Dice® (TP800)		Xxpress®		Mastercycler® ep realplex	Mastercycler® ep realplex 2S
DNA/cDNA Templates	SYBR® Green Assays	**SensiFAST™** SYBR® No-ROX Kit														✓		✓		✓		✓		✓	✓
		SensiFAST™ SYBR® Hi-ROX Kit	✓	✓			✓	✓	✓	✓		✓	✓												
		SensiFAST™ SYBR® Lo-ROX Kit			✓	✓					✓			✓											
		SensiFAST™ SYBR® & Fluorescein Kit																							
	Probe Assays	**SensiFAST™** Probe No-ROX Kit*														✓		✓		✓		✓		✓	✓
		SensiFAST™ Probe Hi-ROX Kit	✓	✓			✓	✓	✓	✓		✓	✓												
		SensiFAST™ Probe Lo-ROX Kit			✓						✓			✓											
		SensiFAST™ Probe Direct SuperMix														✓		✓		✓		✓		✓	✓
	HRM	**SensiFAST™** HRM Kit				✓								✓				✓							
RNA Templates	SYBR® Green Assays	**SensiFAST™** SYBR® No-ROX One-Step Kit														✓		✓		✓		✓		✓	✓
		SensiFAST™ SYBR® Hi-ROX One-Step Kit	✓	✓			✓	✓	✓	✓		✓	✓												
		SensiFAST™ SYBR® Lo-ROX One-Step Kit			✓	✓					✓			✓											
		SensiFAST™ SYBR® & Fluorescein One-Step Kit																							
	Probe Assays	**SensiFAST™** Probe No-ROX One-Step Kit*														✓		✓		✓		✓		✓	✓
		SensiFAST™ Probe Hi-ROX One-Step Kit	✓	✓			✓	✓	✓	✓		✓	✓												
		SensiFAST™ Probe Lo-ROX One-Step Kit			✓	✓					✓			✓											

SensiFAST has been specially developed to deliver optimal qPCR results in a fraction of the time using standard as well as the new faster qPCR instruments. The Selection Table below will enable you to choose the most appropriate reagent for your real-time instrument and application.



* Used for all instruments when multiplexing ✓ Recommended

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SensiFAST™ SYBR® Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
SensiFAST SYBR® Hi-ROX Kit		
500 Reactions	20 µL	BIO-92005
2000 Reactions	20 µL	BIO-92020
SensiFAST SYBR® Lo-ROX Kit		
500 Reactions	20 µL	BIO-94005
2000 Reactions	20 µL	BIO-94020
5000 Reactions	20 µL	BIO-94050
SensiFAST SYBR® No-ROX Kit		
500 Reactions	20 µL	BIO-98005
2000 Reactions	20 µL	BIO-98020
5000 Reactions	20 µL	BIO-98050

Components	500 Reactions	2000 Reactions	5000 Reactions
2x SensiFAST SYBR® master mix	5 x 1 mL	4 x 5 mL	10 x 5 mL

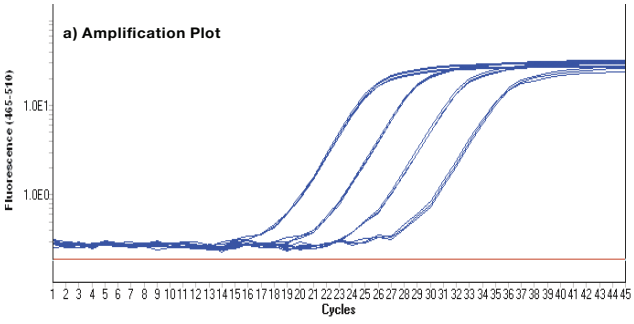
Features and Benefits:

- **Accurate quantification - hot-start capability saves time and reduces primer-dimer formation**
- **Sensitive - from low copy targets**
- **Rapid – unique buffer chemistry for highest specificity and sensitivity**
- **Flexible - compatible with all standard and fast cycling instruments**

Instrument Compatibility: See product selection table, page 3. Each of these instruments having the capacity to analyze the qPCR data with the passive reference signal either on or off, as well as instruments that do not require the use of ROX.

Description: The SensiFAST SYBR® Kits have been developed for fast, highly reproducible qPCR and have been validated on commonly used real-time instruments. A combination of the latest advances in buffer chemistry and enhancers, together with an antibody-mediated hot-start DNA polymerase system, ensures that the SensiFAST SYBR® Kits produces fast, highly-specific, reproducible (fig. 1) and ultra-sensitive qPCR (fig. 2). The kits are suitable for DNA templates and also for RNA templates following reverse transcription with the SensiFAST cDNA Synthesis Kit (BIO-65053).

The SensiFAST SYBR® Hi-ROX and Lo-ROX Kit contain premixed ROX for optional use.



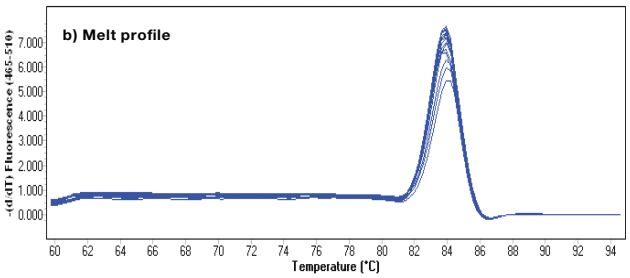
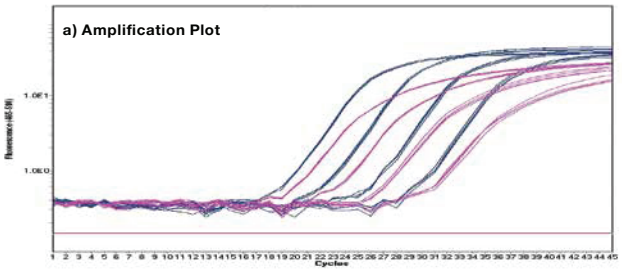


Fig. 1 SensiFAST SYBR® No-ROX using fast cycling conditions.
A fragment of rps18 gene was amplified using SensiFAST SYBR® No-ROX from a 10 fold serial dilution of human cDNA (in triplicate) over 4 orders of magnitude. The conditions were 95°C for 2 min and 45 cycles of 95°C 10s, 60°C 15s.
a) The results illustrate that SensiFAST SYBR® No-ROX is fast, highly reproducible and sensitive.
b) There was no detectable primer-dimer formation.



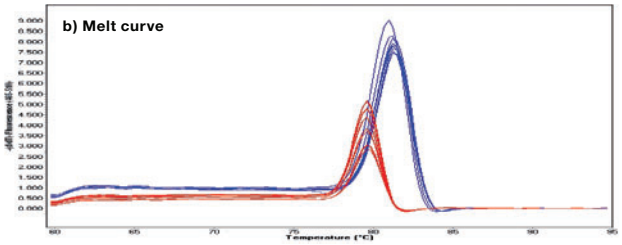


Fig. 2 Comparison of SensiFAST SYBR® Hi-ROX (blue line) against another leading supplier (red line) using fast cycling conditions.
A fragment of ubiquitin gene was amplified using SensiFAST SYBR® Hi-ROX (blue) and the results were compared with amplifications using a Kit from supplier Q (red). The process used a 10 fold serial dilution of human cDNA (in quadruplicate) over 4 orders of magnitude. The conditions were 95°C for 2 min and 45 cycles of 95°C 10s, 60°C 15s.
The results illustrate SensiFAST SYBR® Hi-ROX was faster (earlier Ct). At low temperature concentration supplier Q has a lower yield of product.

SensiFAST™ SYBR® & Fluorescein Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
500 Reactions	20 µL	BIO-96005
2000 Reactions	20 µL	BIO-96020

Components	500 Reactions	2000 Reactions
2x SensiFAST SYBR® & Fluorescein master mix	5 x 1 mL	4 x 5 mL

Features and Benefits:

- **Accurate quantification - hot-start capability saves time and reduces primer-dimer formation**
- **Sensitive - from low copy targets**
- **Rapid – unique buffer chemistry for highest specificity and sensitivity**
- **Compatible with Bio-Rad Instruments - where fluorescein is required to calculate dynamic well factors**

Description: The SensiFAST™ SYBR & Fluorescein Kit has been developed for fast, highly accurate qPCR and has been validated on qPCR platforms that require the passive reference dye fluorescein for collection of dynamic well factors.

A combination of the latest advances in buffer chemistry and PCR enhancers ensures that the SensiFAST SYBR & Fluorescein Kit produces reliable assay results under fast thermal cycling conditions. An antibody-mediated hot-start DNA polymerase system promotes highly-specific amplification, in turn improving assay sensitivity and dynamic range.

The SensiFAST SYBR & Fluorescein Kit has been optimized to deliver optimal performance in tandem with the SensiFAST cDNA Synthesis Kit, which offers fast, unbiased cDNA synthesis, without compromising cDNA yield or coverage.

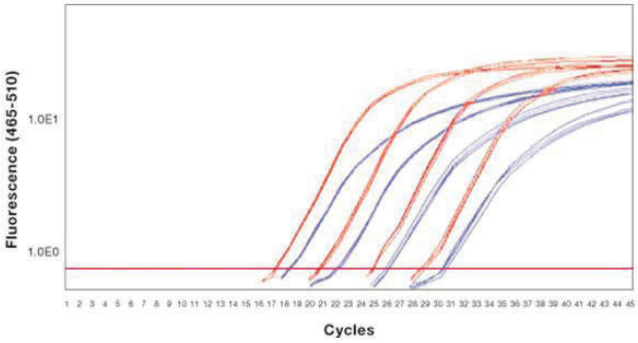


Fig. 1 SensiFAST SYBR using fast cycling conditions.
A fragment of γ-actin was amplified using SensiFAST SYBR & Fluorscien (red) and the results were compared with amplification using a kit from Supplier I (blue). The process used a 10 fold serial dilution of human genomic DNA over four orders of magnitude. The results illustrate that SensiFAST SYBR & Fluorescien is faster (earlier C_t) and more efficient than Supplier I.

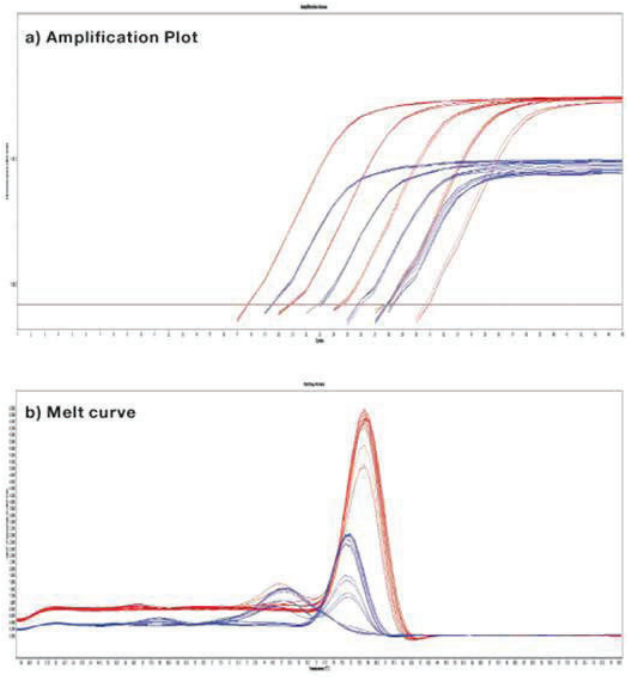


Fig. 2 Sensitivity of SensiFAST SYBR & Fluorescein.
A fragment of ubiquitin gene was amplified using SensiFAST SYBR & Fluorescein (red) and the results were compared with amplification using a Kit from Supplier Q (blue). The process used a 10 fold serial dilution of human RNA (in triplicate) over five orders of magnitude. The results illustrate that a) SensiFAST SYBR & Fluorescein was faster (earlier C_t) and more sensitive than Supplier Q and b) there was far less primer-dimer formation.

SensiFAST™ Probe Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
SensiFAST Probe No-ROX Kit		
500 Reactions	20 µL	BIO-86005
2000 Reactions	20 µL	BIO-86020
5000 Reactions	20 µL	BIO-86050
SensiFAST Probe Hi-ROX Kit		
500 Reactions	20 µL	BIO-82005
2000 Reactions	20 µL	BIO-82020
SensiFAST Probe Lo-ROX Kit		
500 Reactions	20 µL	BIO-84005
2000 Reactions	20 µL	BIO-84020
5000 Reactions	20 µL	BIO-84050

Components	500 Reactions	2000 Reactions	5000 Reactions
2x SensiFAST Probe master mix	5 x 1 mL	4 x 5 mL	10 x 5 mL

Features and Benefits:

- **Specificity – minimal non-specific activity**
- **Sensitivity – perfect for low copy number samples**
- **Speed – earlier Ct with fast protocols**
- **Efficient multiplexing – no loss in efficiency using multiple probes**

Instrument Compatibility: See product selection table, page 3. Each of these instruments having the capacity to analyze the qPCR data with the passive reference signal either on or off, as well as instruments that do not require the use of ROX.

Description: The SensiFAST Probe has been developed for fast, highly reproducible qPCR and has been validated on all commonly used real-time instruments. The kit has been formulated for use with probe-detection technology, including TaqMan®, Scorpions® and molecular beacon probes. A combination of the latest advances in buffer chemistry and PCR enhancers, together with a hot-start DNA polymerase, ensures that the SensiFAST Probe Kit delivers fast, highly-specific and ultra-sensitive qPCR(fig. 1). Making SensiFAST Probe ideal for multiplexing (fig. 2).

The SensiFAST Probe Hi-ROX and Lo-ROX Kit contain premixed ROX for optional use.

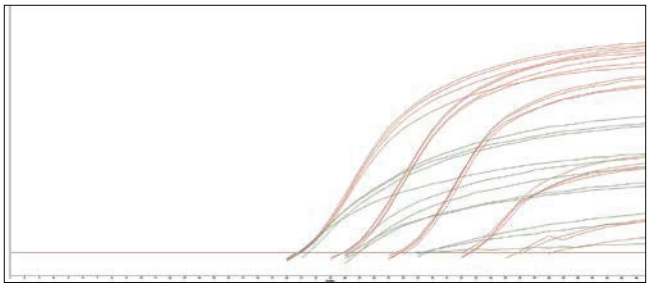


Fig. 1 Comparison of SensiFAST Probe and Supplier I in a quadruplex reaction. A fragment of GAPDH gene was amplified using SensiFAST Probe (Red) and the results were compared with amplifications using a Kit from supplier I (Green). The process used a 10 fold serial dilution of human DNA (in quadruplicate) over several orders of magnitude. The conditions were 95°C for 2 min and 45 cycles of 95°C 10s, 60°C 15s. The results illustrate that SensiFAST Probe is far more sensitive than supplier I.

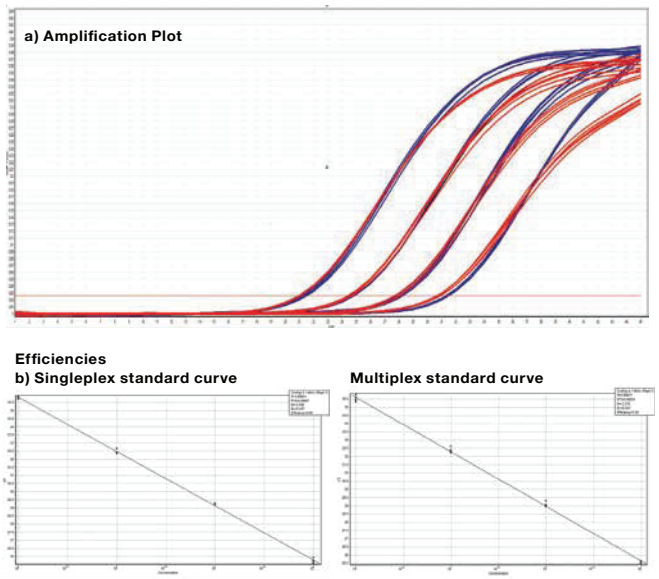


Fig. 2 Comparison of SensiFAST Probe No-ROX in a singleplex and quadruplex reaction A 10 fold serial dilution of human cDNA was amplified with four different probes, both in singleplex reactions (blue line) and a quadruplex reaction (red line) (the results displayed are for the γ-actin and JOE dye). Five replicates were run using a conventional TaqMan primer/probe set under fast cycling conditions (3 min 95°C followed by 45 cycles 95°C 10s, 60°C 10s), on a Qiagen Rotor-Gene 6000. SensiFAST Probe No-ROX illustrates exactly the same high sensitivity, excellent reproducibility and Ct values for both the singleplex and multiplex reactions (A) and no reduction of efficiency (B) that is commonly associated with multiplexing.

SensiFAST™ Lyo-Ready No-ROX Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
10,000 Reactions	20 µL	BIO-11060

Components	10,000 Reactions
SensiFAST Lyo-Ready No-ROX mix (2x)	10 x 10 mL

Features and Benefits:

- **Glycerol-free - ideal for preparation of custom lyophilized qPCR master mixes for improved convenience and extended room-temperature stability**
- **Reproducible - consistent results between technical replicates for increased confidence in results**
- **Robust - reliable, accurate detection of DNA and cDNA targets from a broad range of sample types**
- **Sensitive - reliable quantification of low abundance targets and scarce samples**
- **Fast - delivers reproducible, accurate assay results in as little as 30 minutes**
- **Efficient - excellent performance in multiplex assays**
- **Specific - antibody-mediated hot-start DNA polymerase minimizes non-specific amplification for improved assay sensitivity and reliability**

Description: The SensiFAST™ Lyo-ready No-ROX Mix is a glycerol-free qPCR mix that has been developed for fast, highly reproducible qPCR and has been validated on all commonly-used real-time instruments that do not require the passive reference dye ROX.

A combination of the latest advances in buffer chemistry, PCR enhancers and lyo-excipients, together with an antibody-mediated hot-start DNA polymerase, ensures that the SensiFAST Lyo-ready No-ROX Mix produces reliable assay results under fast thermal cycling conditions and when multiplexing of high- and low-copy targets.

SensiFAST Lyo-Ready No-ROX Mix together with assay-specific primers and probes can be lyophilized to produce ambient temperature stable qPCR master mixes. Millisecond rehydration times make SensiFAST Lyo-Ready No-ROX Mix ideal for automated, high throughput systems.

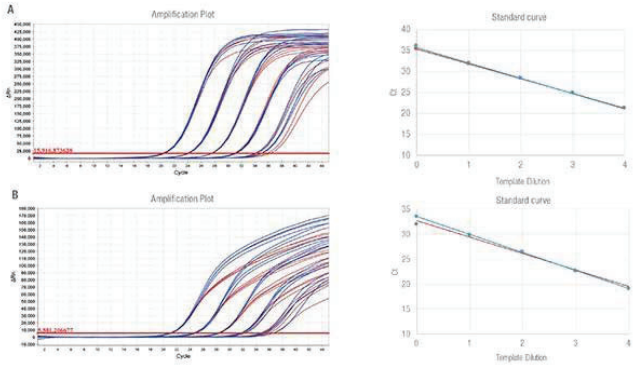


Fig. 1 Comparison of the efficiency and sensitivity of wet and lyophilized mixes.
The lyophilized (blue) and wet (red) mix amplification profiles for *Actg* (A) and *Gapdh* (B) amplicons are shown. The efficiencies for *Actg* and *Gapdh* were 95% and 95% respectively, for the wet mix 93% and 94% respectively for the lyophilized mix.

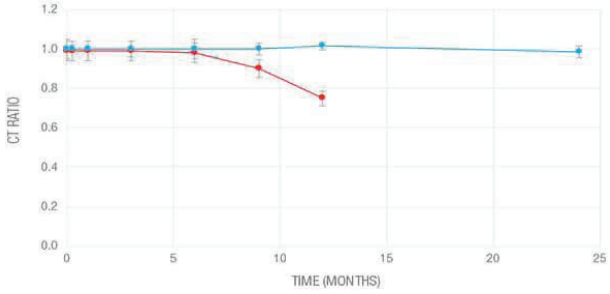


Fig. 2 Storage and stability.
Lyophilized SensiFAST Lyo-Ready No-ROX Mix demonstrates stability at room temperature (blue) and 37.5°C (red) up to 24 months and 12 months, respectively. Ct values were calculated as a ratio of the lyophilized to the wet mix.

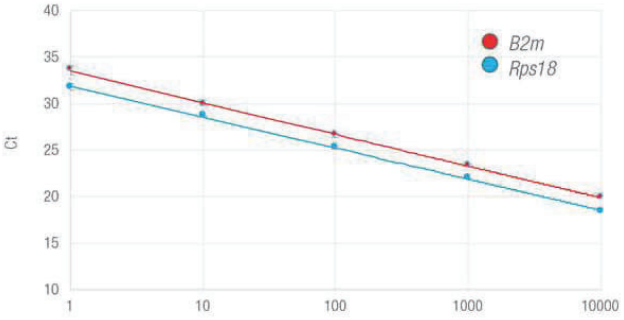


Fig. 3 Compatibility of SensiFAST Lyo Ready No ROX Mix with RT qPCR.
The mix delivered high PCR efficiencies for *Rps18* (99%) and *B2m* (97%) amplicons in multiplex reactions.

SensiFAST™ Probe Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
SensiFAST Probe Direct SuperMix		
500 Reactions	20 µL	BIO-86105
2000 Reactions	20 µL	BIO-86120

Components	500 Reactions	2000 Reactions
2x SensiFAST Probe Direct SuperMix	5 x 1 mL	4 x 5 mL

Features and Benefits:

- **Robust - optimized for crude lysate or unprocessed blood, tissue and plant samples**
- **Specific - minimizes non-specific amplification for improved assay sensitivity and reliability**
- **Sensitive - reliable quantification of low abundance targets and scarce samples**
- **Reproducible - consistent results between technical replicates for increased confidence in results**
- **Fast - delivers reproducible, multiplex accurate assay results in as little as 30 minutes**

Instrument Compatibility: See product selection table, page 3. Developed for fast, highly reproducible qPCR and has been validated on all commonly used real-time instruments that do not require the passive reference dye ROX.

Description: The SensiFAST Probe Direct SuperMix has been designed for highly reproducible, accurate assay results in the presence of inhibitors, making it ideal for direct amplification directly from the most challenging samples (fig. 1). The advanced buffer chemistry and enhancers has been developed for fast qPCR and is designed for superior sensitivity and specificity with probe-detection technology, including TaqMan®, Scorpions® and molecular beacon probes, making SensiFAST Probe Direct SuperMix perfect for multiplexing, allowing more samples to be run in a day with the highest confidence, ideal for high-throughput assays.

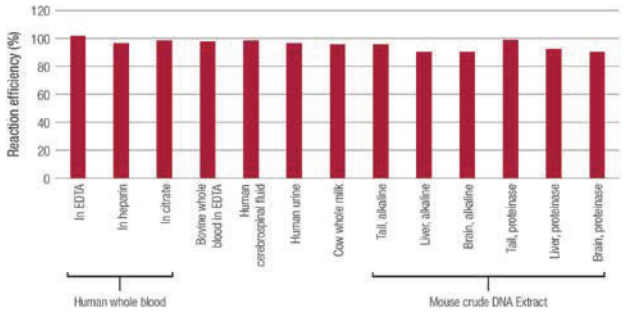


Fig. 1 Efficient amplification from different sample types
20% (final volume in reaction) samples of human whole blood containing anticoagulants (EDTA, Heparin and Citrate) and bovine whole blood (EDTA), human cerebrospinal fluid, human urine and cow whole milk were analyses using the SensiFAST Probe Direct SuperMix along with 2% alkaline or proteinase K mouse tail, liver and brain crude DNA extracts. The results illustrate that the reaction efficiency of the SensiFAST Probe Direct SuperMix remained within tolerances (90-110%) in the presence of a wide range of common PCR inhibitors

SensiFAST™ HRM Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
500 Reactions	20 µL	BIO-32005
2000 Reactions	20 µL	BIO-32020

Components	500 Reactions	2000 Reactions
2x SensiFAST HRM master mix	5 x 1 mL	20 x 1 mL

Features and Benefits:

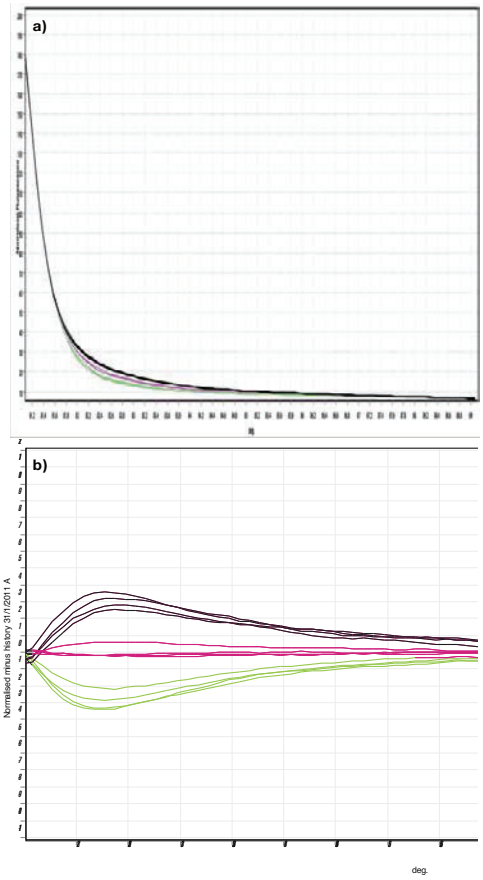
- **Cost effective: Ideal for large scale genotyping projects**
- **Simple and reproducible: Powerful genotyping can be performed by non-geneticists**
- **Sensitive: Detects class 4 (A/T) SNP mutations**
- **Optimized protocols: Reliable assays can quickly and reliably be established, even with genomic loci that are difficult to amplify**

Description: High Resolution Melt curve (HRM) analysis characterizes nucleic acid samples based on their dissociation behavior. It combines the principle of intercalating dyes, melt curve analyses and the application of specific statistical analyses.

HRM uses the fundamental property of the separation of the two strands of DNA with heat (melting), and the monitoring of this melting with a fluorescent dye. The SensiFAST HRM Kit has been developed for fast, highly reproducible High Resolution Melt (HRM) analysis and has been validated on commonly used real-time instruments. A combination of the latest advances in buffer chemistry and enhancers, together with an antibody-mediated hot-start DNA polymerase system, ensures that the SensiFAST HRM Kit delivers fast, highly-specific and ultra-sensitive HRM analysis.

Main applications of HRM include Single Nucleotide Polymorphisms (SNPs) genotyping (fig. 1), epigenetics (DNA methylation analysis), zygosity testing (DNA mapping and DNA fingerprinting) and gene scanning (search for the presence of unknown variations in PCR amplicons).

For ease-of-use and added convenience, SensiFAST HRM is provided as a 2x master mix containing all the components necessary for qPCR, including the EvaGreen® dye, dNTPs, stabilisers and enhancers. As a ready-to-use premix, only primers and template need to be added.



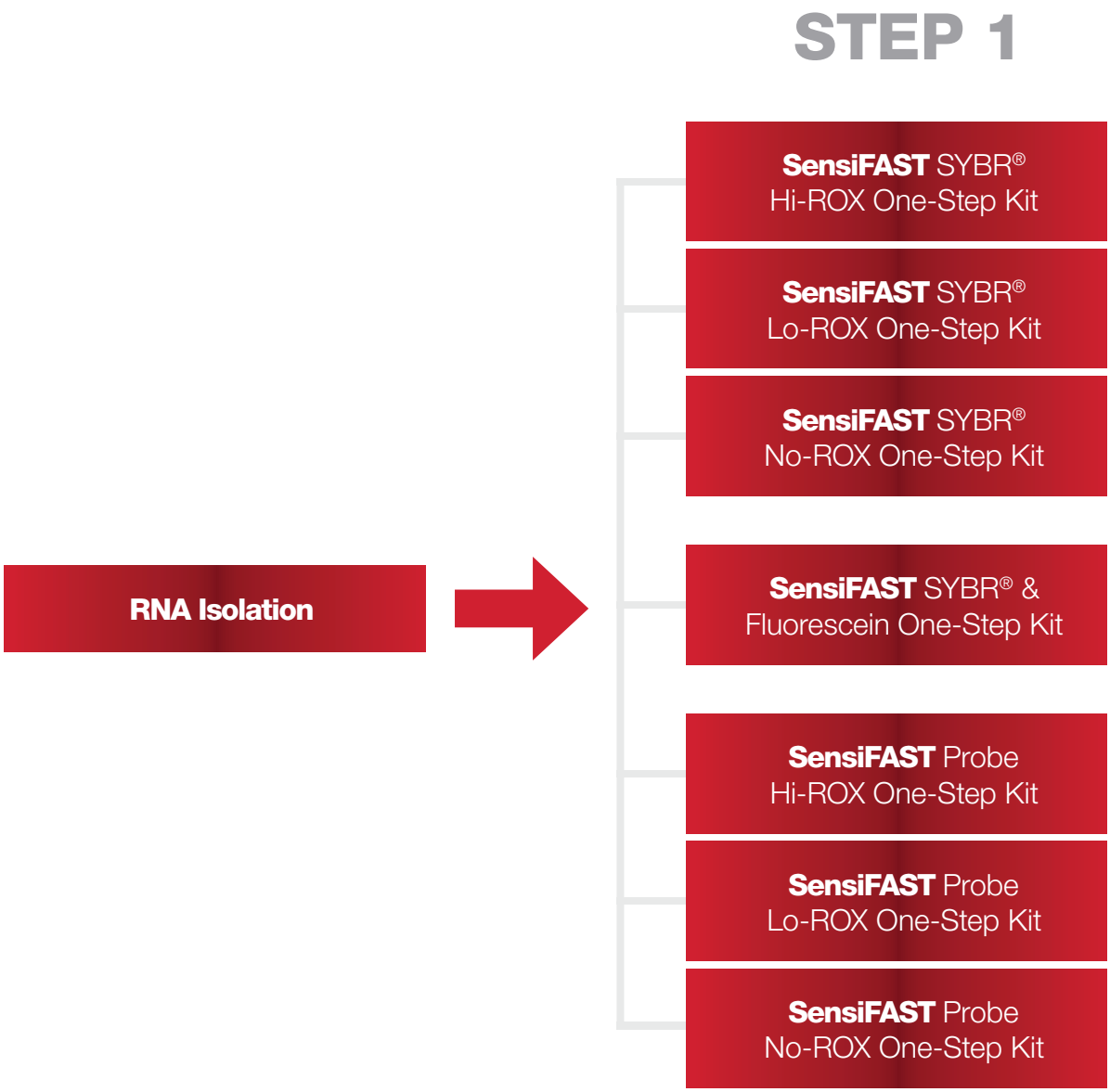
c)

No.	Hue	Name	Genotype	Confidence %
25		SF HRM Monoduplex A	A	99.71
26		SF HRM Monoduplex A	A	99.77
27		SF HRM Monoduplex A	A	99.81
28		SF HRM Monoduplex A	A	99.08
29		SF HRM Monoduplex T	T	99.61
30		SF HRM Monoduplex T	T	99.53
31		SF HRM Monoduplex T	T	99.87
32		SF HRM Monoduplex T	T	98.97
33		SF HRM Hetroduplex AT	AT	99.24
34		SF HRM Hetroduplex AT	AT	99.73
35		SF HRM Hetroduplex AT	AT	99.66
36		SF HRM Hetroduplex AT	AT	99.06

Fig. 1 Detection of an A/T (Class 4) SNP in a 84 bp amplicon
a) High Resolution Melt Curve showing a sharp decrease in fluorescence when the double-stranded DNA melts into its single-stranded form. Green = homozygous with thymidine, Pink = homozygous with adenine, Black = heterozygous. b) Using SensiFAST™ HRM, the melt curves for the three alleles are clearly resolved, even with smaller amplicons, resulting in unambiguous discrimination between genotypes. c) Each sample was genotyped with over 98% confidence. The experiment was performed on a Qiagen Rotor-Gene 6000 instrument.

One-Step qPCR

One-Step qPCR is an extremely sensitive and highly reproducible method to generate first-strand cDNA synthesis and subsequent qPCR in a single tube from either total RNA or poly(A) using gene-specific, see diagram below.



SensiFAST™ SYBR® One-Step Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
SensiFAST SYBR® No-ROX One –Step Kit		
100 Reactions	20 µL	BIO-72001
500 Reactions	20 µL	BIO-72005
SensiFAST SYBR® Hi-ROX One –Step Kit		
100 Reactions	20 µL	BIO-73001
500 Reactions	20 µL	BIO-73005
SensiFAST SYBR® Lo-ROX One –Step Kit		
100 Reactions	20 µL	BIO-74001
500 Reactions	20 µL	BIO-74005

Components	100 Reactions	500 Reactions
2x SensiFAST SYBR® One-Step master mix	1 x 1 mL	5 x 1 mL
RNase Inhibitor (10 u/µL)	1 x 40 µL	1 x 200 µL
Reverse Transcriptase	1 x 20 µL	1 x 100 µL
DEPC-treated Water	1 x 1.8 mL	2 x 1.8 mL

Features and Benefits:

- **Accurate quantification - hot-start capability saves time and reduces primer-dimer formation**
- **Sensitive - from low copy targets**
- **Rapid – unique buffer chemistry for highest specificity and sensitivity**
- **Flexible - compatible with all standard and fast cycling instruments**

Instrument Compatibility: See product selection table, page 3. Each of these instruments having the capacity to analyze the qPCR data with the passive reference signal either on or off, as well as several instruments that do not require the use of ROX.

Description: The SensiFAST SYBR® One-Step Kits have been developed for fast RT-qPCR and has been validated on all commonly used real-time instruments. The SensiFAST SYBR® One-Step Kits have been formulated for highly reproducible first-strand cDNA synthesis and subsequent qPCR in a single tube (fig. 1). The SensiFAST SYBR® One-Step Kits uses a combination of the latest advances in buffer chemistry and enhancers, together with an antibody-mediated hot-start DNA polymerase system, to ensure fast, highly-specific and ultra-sensitive one-step RT-qPCR (fig. 2).

The SensiFAST One-Step Kits consist of a 2x SensiFAST SYBR® One-Step mix, plus separate reverse transcriptase and RiboSafe RNase Inhibitor. SensiFAST SYBR® Hi-ROX and Lo-ROX One-Step Kits also contain premixed ROX for optional use.

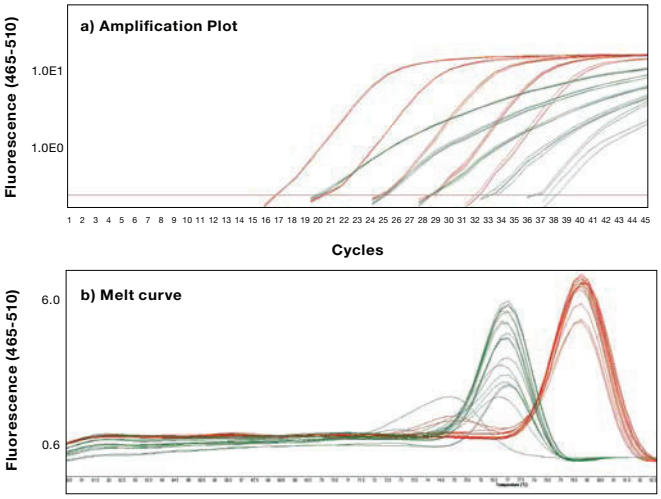


Fig. 1 Comparison of SensiFAST SYBR® Lo-ROX One-Step (red line) against a leading supplier (green line) using fast cycling conditions.
A fragment of the human ß-actin gene was amplified using SensiFAST SYBR® Lo-ROX One-Step (red) and the results were compared with amplifications using One-Step Kits from supplier A (green). The process used a 10 fold serial dilution of human RNA (in triplicate) over 5 orders of magnitude. The conditions were 45°C 10 min followed by 95°C for 5 min (15 min for supplier A) and 45 cycles of 95°C 10s, 60°C 10s and 72°C 5s.

a) The results illustrate that the SensiFAST SYBR® Lo-ROX One-Step Kit was faster (earlier Ct) and much more sensitive than supplier A.
b) With less primer dimers, hence more sensitive.

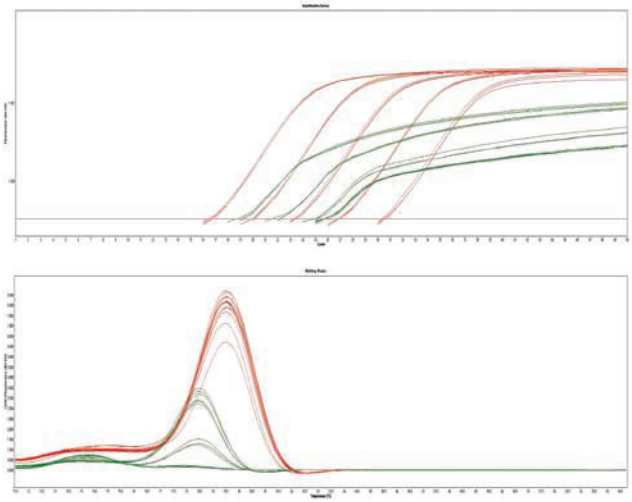


Fig. 2 Comparison of SensiFAST SYBR® Hi-ROX One-Step (red line) against another leading supplier (green line) using fast cycling conditions.
A fragment of ubiquitin gene was amplified using SensiFAST SYBR® Hi-ROX One-Step (red) and the results were compared with amplifications using a Kit from supplier I (green). The process used a 10 fold serial dilution of human RNA (in triplicate) over 5 orders of magnitude. The conditions were 45°C 10 min followed by 95°C for 5 min and 35 cycles of 95°C 10s, 60°C 10s and 72°C 5s. The results illustrates that SensiFAST SYBR® Hi-ROX One-Step was faster (earlier Ct) and more sensitive than supplier I

a) The results illustrates that SensiFAST SYBR® Hi-ROX One-Step was faster (earlier Ct) and more sensitive than supplier I.
b) Primer-dimer is seen in the supplier I data, but not in SensiFAST data.

SensiFAST™ Probe One-Step Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
SensiFAST Probe No-ROX One-Step Kit		
100 Reactions	20 µL	BIO-76001
500 Reactions	20 µL	BIO-76005
SensiFAST Probe Hi-ROX One-Step Kit		
100 Reactions	20 µL	BIO-77001
500 Reactions	20 µL	BIO-77005
SensiFAST Probe Lo-ROX One-Step Kit		
100 Reactions	20 µL	BIO-78001
500 Reactions	20 µL	BIO-78005

Components	100 Reactions	500 Reactions
2x SensiFAST Probe One-Step master mix	1 x 1 mL	5 x 1 mL
RNase Inhibitor (10 u/µL)	1 x 40 µL	1 x 200 µL
Reverse Transcriptase	1 x 20 µL	1 x 100 µL
DEPC-treated Water	1 x 1.8 mL	5 x 1.8 mL

Features and Benefits:

- **Rapid - optimized for fast reverse transcription qPCR**
- **Accurate quantification - for RNA from low copy targets**
- **Sensitive – unique buffer chemistry for earlier Ct detection**
- **Flexible - compatible with all fast cycling instruments**

Instrument Compatibility: See product selection table, page 3. Each of these instruments having the capacity to analyze the qPCR data with the passive reference signal either on or off, as well as instruments that do not require the use of ROX.

Description: The SensiFAST Probe One-Step Kits have been developed for fast RT-qPCR and has been validated on all commonly used real-time instruments. The kit is designed for superior sensitivity and specificity with probe-detection technology, including TaqMan®, Scorpions® and molecular beacon probes (fig. 1).

The SensiFAST Probe One-Step Kits have been formulated for highly reproducible first-strand cDNA synthesis and subsequent qPCR in a single tube and uses a combination of the latest advances in buffer chemistry and enhancers, together with an antibody-mediated hot-start DNA polymerase system, to ensure fast, highly-specific and ultra-sensitive one-step RT-qPCR (fig. 2). This also gives SensiFAST Probe One-Step unbeatable efficiency in multiplexing.

The SensiFAST Probe One-Step Kits consists of a 2x SensiFAST Probe One-Step mix, separate reverse transcriptase and RiboSafe RNase Inhibitor. SensiFAST Probe Hi-ROX and Lo-ROX One-Step Kits also contain premixed ROX for optional use.

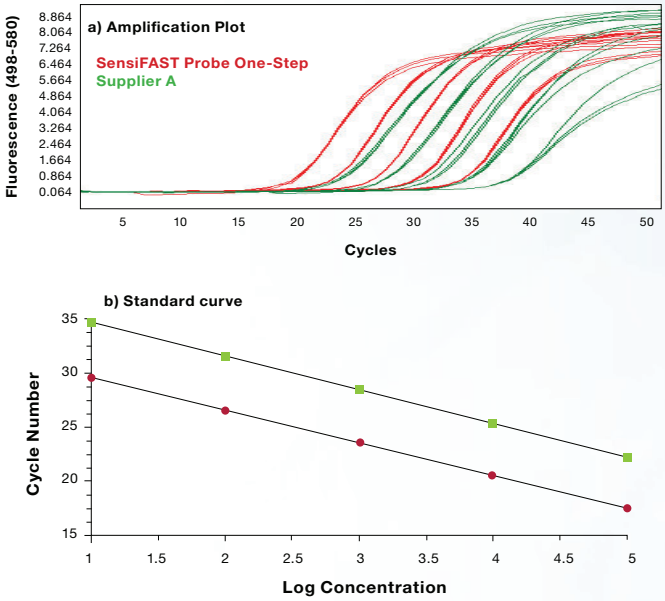


Fig. 1. Comparison of SensiFAST Probe One-Step (red line) against a leading supplier using fast cycling conditions.
A fragment of Mouse ß-actin amplified in triplicate using gene specific primers and TaqMan probe according to each manufacturer's protocol, from 10-fold serial dilution of RNA with either SensiFAST Probe One-Step (red) and supplier mix A (green).

a) The results illustrate that SensiFAST Probe One-Step Kit is faster by four Cts and more sensitive than supplier A. (more than 10 fold)
b) The standard curve shows an efficiency of 98% together with excellent specificity.

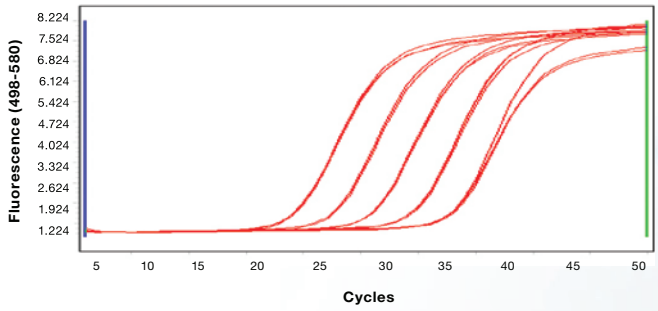


Fig. 2. Sensitivity and reproducibility of SensiFAST Probe One-Step.
A fragment of the mouse β-actin gene was amplified from a 10-fold serial dilution of total RNA from mouse 3T3 cells in triplicate using SensiFAST Probe One-Step Kit, primers and a TaqMan probe, using fast cycling conditions (40 cycles 95°C 10s, 60°C 30s). The results illustrate that that the SensiFAST Probe One-Step Kit works reproducibly and efficiently with fast protocols.

Standard qPCR Mix Selection Table

Meridian has a comprehensive range of highly optimized products designed to deliver outstanding results for real-time experiments on both DNA and RNA templates. SensiMix provides reliable and highly reproducible data on all commonly used qPCR instruments.

The Selection Table below will enable you to choose the most appropriate reagent for your application and real-time instrument.

			Applied Biosystems™	7000	7300	7500	7500 FAST	7700	7900	7900HT	7900HT FAST	StepOne™	StepOne™ plus	ViiA7™	Cepheid®	SmartCycler®	Illumina®	Eco™	Takara	Thermal Cycler Dice® (TP800)	Analytik Jena	qTower
DNA/cDNA Templates	SYBR® Green Assays	**SensiMix**™ SYBR® No-ROX Kit														✓		✓		✓		✓
		SensiMix™ SYBR® Hi-ROX Kit		✓	✓			✓	✓	✓	✓	✓	✓									
		SensiMix™ SYBR® Low-ROX Kit				✓	✓							✓								
	Probe Assays	**SensiMix**™ II Probe Kit		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓		✓

Qiagen					
Rotor-Gene™ 3000	✓				✓
Rotor-Gene™ 6000	✓				✓
Rotor-Gene™ Q	✓				✓
Bio-Rad®					
iCycler®					✓
MyiQ™					✓
iQ™5					✓
Opticon™	✓				✓
Opticon™2	✓				✓
Chromo4™	✓				✓
MiniOpticon™	✓				✓
CFX96™	✓				✓
CFX384™	✓				✓
Roche					
Lightcycler® 1					✓
Lightcycler® 2					✓
Lightcycler® 480	✓				✓
Lightcycler® Nano	✓				✓
Eppendorf					
Mastercycler® ep realplex	✓				✓
Mastercycler® ep realplex 2S	✓				✓
Techne					
Quantica®	✓				✓
Agilent (Stratagene)					
MX4000P®			✓		✓
MX3000P®			✓		✓
MX3005P®			✓		✓

* Used for all instruments when multiplexing ✓ Recommended

SensiMix™ SYBR® Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
SensiMix SYBR® Hi-ROX Kit		
500 Reactions	50 µL	QT605-05
SensiMix SYBR® Low-ROX Kit		
500 Reactions	50 µL	QT625-05
SensiMix SYBR® No-ROX Kit		
500 Reactions	50 µL	QT650-05

Components	500 Reactions
2x SensiMix SYBR® master mix	10 x 1.25 mL

Features and Benefits:

- **Simple and reproducible - Just add primers and template, to reduce possible errors in set-up**
- **Specific and sensitive - For detection of a wide range of template concentration, even from difficult-to-obtain and low copy number samples**
- **Broad dynamic range - Over ten orders of magnitude**
- **Sensitive - Reproducible detection of low copy number templates**

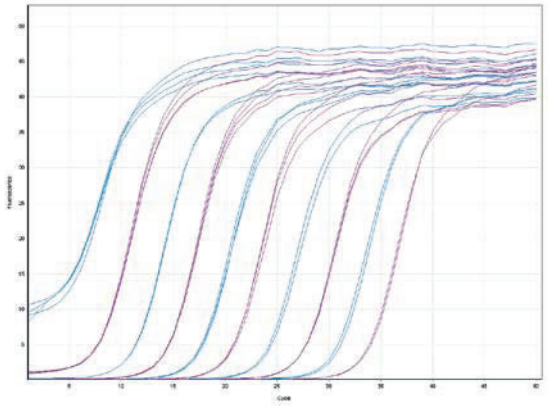
Instrument Compatibility: See product selection table, page 15. Each of these instruments having the capacity to analyze the qPCR data with the passive reference signal either on or off, as well as instruments that do not require the use of ROX.

Description: SensiMix SYBR® Kits contain all the components necessary to perform consistent and reproducible qPCR assays with your template. The kits deliver highly specific and sensitive results across a wide dynamic range of template concentrations (over 10 orders of magnitude, (fig. 1), producing reliable real-time data quickly and easily. The kits are suitable for DNA templates or RNA templates following reverse transcription with the SensiFAST cDNA Synthesis Kit (BIO-65053).

Product Citations:

1. Hippe, B., *et al. FEMS Microbiol Lett,* **316 (2)**, 130–135 (2011).
2. Huebbe, P., *et al. FASEB* **25(9)**, 3262-3270 (2011)
3. Hu, W., *et al. Cancer Res* **71(18)** 6030-6039 (2011)
4. Schaerli, Y., *et al. NAR* **38 (22)**, e201 (2010).
5. Lappas, M., *et al. Placenta* **30(3)**, 256-262 (2009).
6. Rosker, C., *et al. J. Biol. Chem.* **284(8)**, 5186-94 (2009).

a) Amplification plot



b) Melt profile

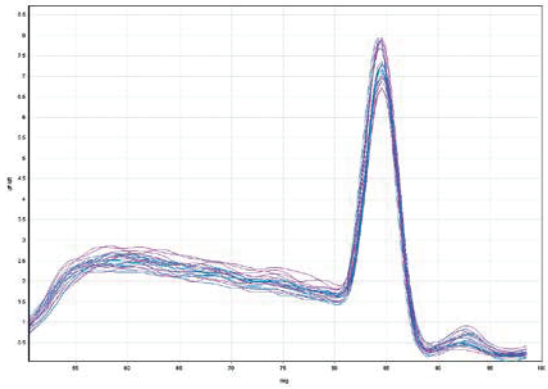


Fig. 1 Broad dynamic range using the SensiMix SYBR® Kit.
a) Highly reproducible and efficient qPCR of a fragment of the human GAPDH gene was achieved across the 10-fold dilution series of template. Amplification plots were generated using 10-fold dilutions of a recombinant plasmid tested in quadruplicate and illustrates minimal variability and exceptional specificity over a broad range of template concentrations.
b) The presence of one peak in the melt profile indicates that the fluorescence is not attributable to primer-dimer formation, even at very low-template copy number.

SensiMix™ II Probe Kit

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
500 Reactions	50 µL	BIO-83005

Components	500 Reactions
SensiMix II Probe No-ROX (2x)	10 x 1.25 mL (12.5 mL)
25 µM ROX Dye	500 µL

Features and Benefits:

- **Sensitive – reproducible detection of low copy number templates**
- **Specific – proprietary hot-start modification minimizes non-specific amplification for improved assay reliability in high-throughput assays**
- **Reproducible – consistent results between technical replicates ideal for multiplexing and gene expression analysis**
- **Robust – reliable, accurate detection of DNA and cDNA targets from a broad range of sample types**

Description: The SensiMix II Probe Kit has been developed for highly accurate qPCR and has been validated on all qPCR platforms and includes a separate vial of the passive reference dye ROX for normalization of well-to-well differences, if required.

A combination of the latest advances in buffer chemistry and PCR enhancers with a chemical hot-start PCR enzyme promotes highly-specific amplification, in turn improving assay sensitivity and dynamic range, ensuring that SensiMix II Probe Kit provide the sensitivity and specificity required for demanding assays under standard thermal cycling conditions. The kit has been formulated for use with probe-detection technology, including hydrolysis probes (e.g. TaqMan®), displacement probes (e.g. Molecular Beacons, Scorpion®) and hybridization probes (e.g. FRET), delivering superior performance in gene expression analysis and multiplexing.

The SensiMix II Probe Kit has been optimized to deliver optimal performance in tandem with the SensiFAST cDNA Synthesis Kit, which offers fast, unbiased cDNA synthesis, without compromising cDNA yield or coverage.

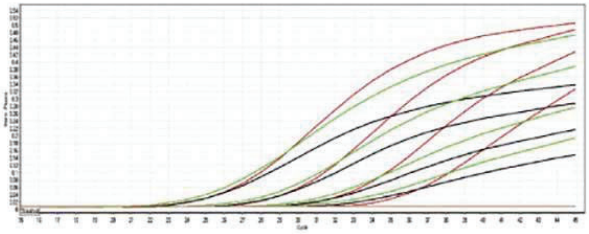


Fig. 1 Broad dynamic range SensiMix Probe Kit.
Amplification curves were obtained for the B2MG gene over 10 log dilution series. Reactions were in triplicate (average shown), using standard manufacturers' reaction conditions. The results demonstrate that SensiMix II Probe (red) was more consistent with greater sensitivity than supplier B (green) and supplier T.

qPCR Extraction Control

Storage -20°C I Shipped on Dry or Blue Ice

	PACK SIZE	CAT NO.
qPCR Extraction Control Red	2000 Reactions	MDX026
qPCR Extraction Control Orange	2000 Reactions	MDX027

Components	2000 Reactions
Internal Control DNA*	20 x 500 µL
Control Mix (containing fluorescently labeled probe)	20 x 100 µL

Features and Benefits:

- **Easy monitoring and validation of DNA extraction protocols**
- **Detection of qPCR inhibition**
- **Minimal interference with sample detection**
- **Ideal for blood, urine and sputum samples**
- **Specially designed for qPCR assays**

Instrument Compatibility: DNA Extraction Control is suitable for use with commercially available silica-membrane DNA extraction kits and CHELEX matrices and has been tested on a wide range of qPCR platforms. CAL Fluor and Quasar dyes are performance-optimized fluorophores for multiplex qPCR.

Description: A common practice in qPCR is to add a known amount of spiked control DNA after DNA extraction, this monitors PCR inhibition but has no value as an extraction control. The ideal situation is to have the test sample and internal control undergo the same processing prior to qPCR. Meridian has developed the qPCR Extraction Control, which more closely mimics the test sample, as compared to spike controls. Genetic material from the test sample and the qPCR Extraction Control is simultaneously extracted by common extraction methods, with the extraction control being as sensitive to inhibition and extraction failure as the test sample.

The qPCR Extraction Control cells are of a known concentration, containing the Internal Control DNA sequence. This sequence contains no known homology to any organism and, importantly, has minimal interference with detection of sample DNA. The qPCR Extraction Control cells are spiked into the lysis buffer with the target sample, prior to DNA extraction. Control Mix, which includes primers and probe, is then added to the reaction mix before amplification. Signal derived from the Internal Control DNA confirms the success of the extraction step. qPCR Extraction Control also monitors co-purification of PCR inhibitors that may cause biased or false amplification patterns.

* The Internal Control DNA is in viable *E. coli* cells (genotype: F- *deo*R *end*A1 *rec*A1 *rel*A1 *gyr*A96 *hsd*R17(rk -, mk+) *sup*E44 *thi*-1 *pho*A (*lac*ZYA-*arg*F)U169 ι80lacZΔM15 ι- pBR322 (ranseqb1 AmpR)).

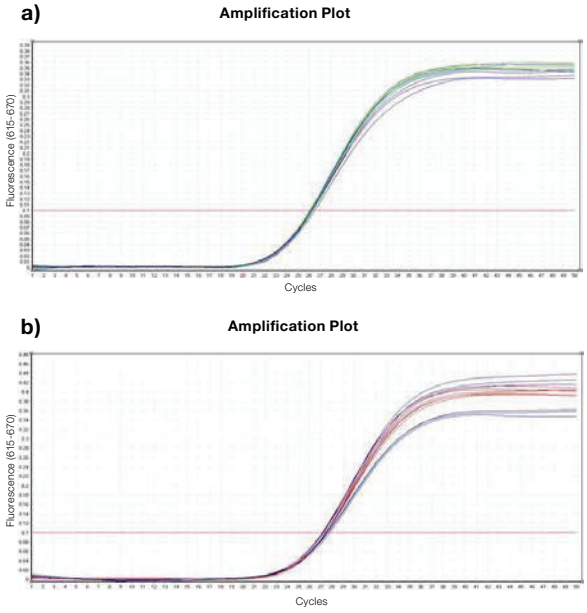


Fig. 1 qPCR demonstrating minimal interference of DEC in sample detection
A) A fragment of the Beta 2 Microglobulin (ß2MG) gene was amplified in triplicate from human genomic DNA in singleplex (green) and in duplex with Internal Control (blue).
B) The Internal Control was amplified in singleplex (red) and in duplex with ß2MG (blue). The Cts show no difference between singleplex (ß2MG - green, Internal Control - red) and duplex (blue) reaction assays in both target gene and Internal Control.

RT-qPCR Extraction Control

Storage -20°C | Shipped on Dry or Blue Ice

	PACK SIZE	CAT NO.
RT-qPCR Extraction Control Red	500 Reactions	MDX028
RT-qPCR Extraction Control Orange	500 Reactions	MDX029

Components	500 Reactions
Internal Control RNA	5 x 200 µL
Control Mix (containing fluorescently labeled probe)	5 x 100 µL

Features and Benefits:

- **Easy monitoring and validation of RNA extraction protocols**
- **Detection of qPCR inhibition**
- **Minimal interference with sample detection**
- **Ideal for blood, urine and sputum samples**
- **Specially designed for qPCR assays**

Instrument Compatibility: RNA Extraction Control is suitable for use with commercially available silica-membrane DNA extraction kits and CHELEX matrices and has been tested on a wide range of qPCR platforms. To fit in with existing protocols, RNA Extraction Control uses CAL Fluor and Quasar dyes for multiplex qPCR.

Description: A common practice in qPCR is to add a known amount of spiked control RNA after RNA extraction, this monitors PCR inhibition but has no value as an extraction control. The ideal situation is to have the test sample and internal control undergo the same processing prior to qPCR. Meridian has developed a RT-qPCR Extraction Control, which more closely mimics the test sample, as compared to spike controls. Genetic material from the test sample and the RT-qPCR Extraction Control is simultaneously extracted by common extraction methods, with the extraction control being as sensitive to inhibition and extraction failure as the test sample.

Artificial RT-qPCR Extraction Control cells are of a known concentration, containing the Internal Control RNA sequence. This sequence contains no known homology to any organism and, importantly, has minimal interference with detection of sample RNA. The RT-qPCR Extraction Control cells are spiked into the lysis buffer with the target sample, prior to RNA extraction. Control Mix, which includes primers and probe, is then added to the reaction mix before amplification. Signal derived from the Internal Control RNA confirms the success of the extraction step. RT-qPCR Extraction Control also monitors co-purification of PCR inhibitors that may cause biased or false amplification patterns.

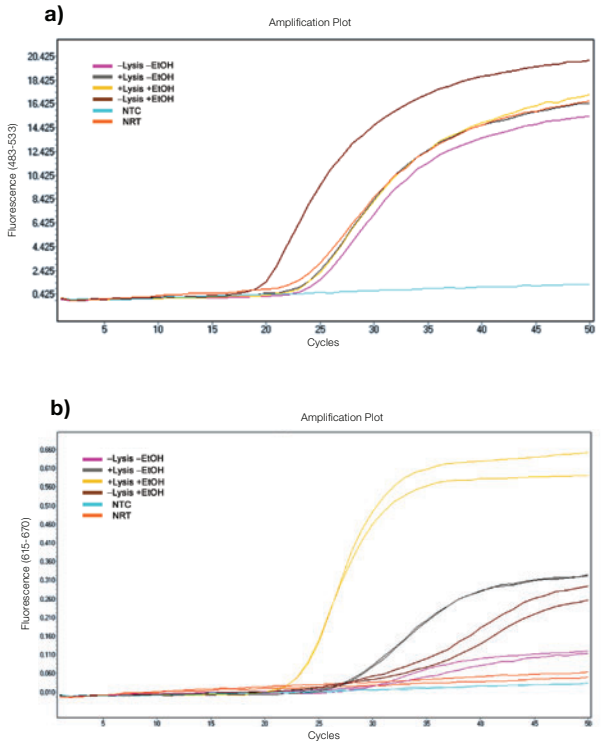
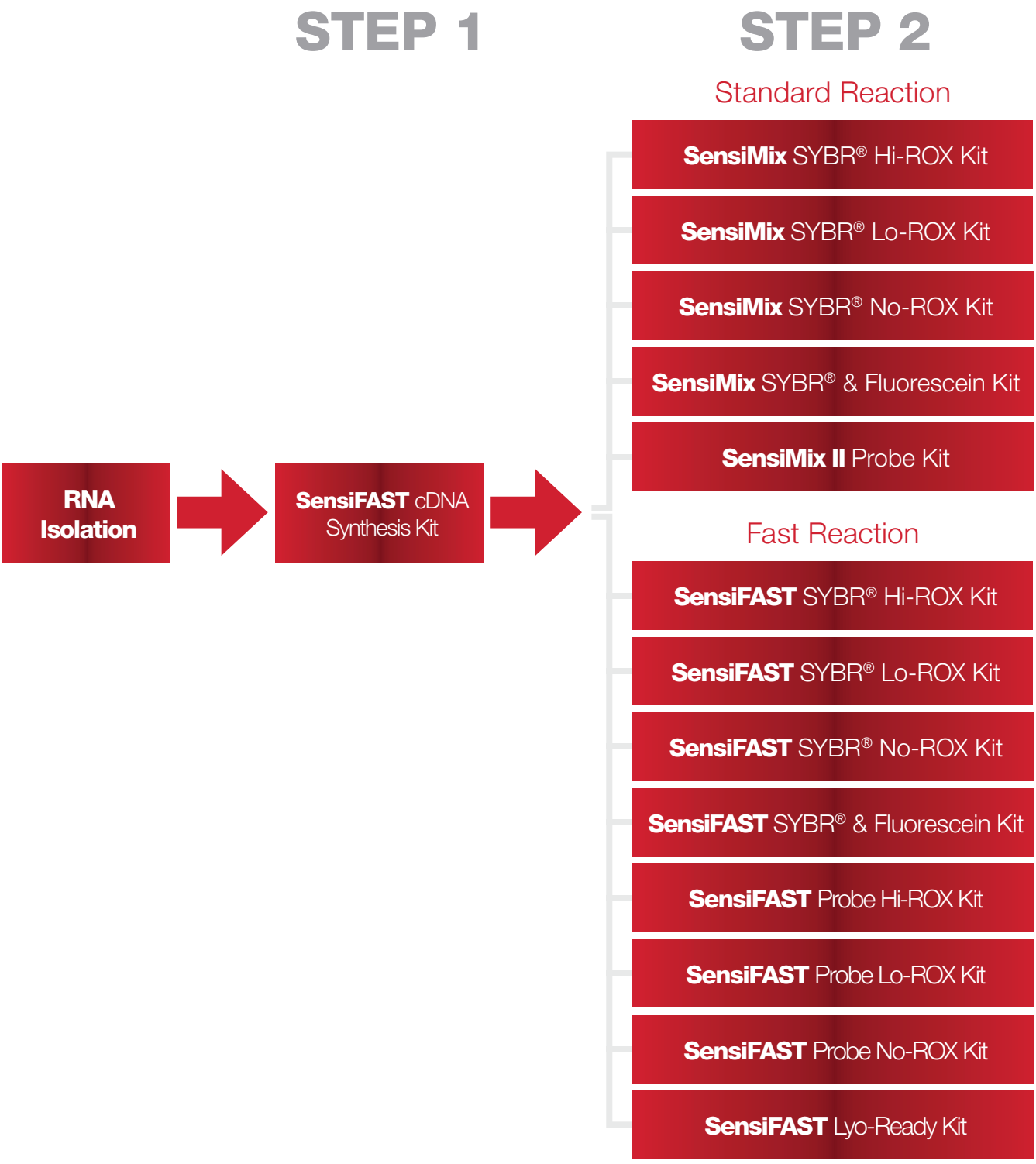


Fig. 1 Inefficient RNA extraction.
Control sequences were amplified from a) an internal control DNA and b) REC. ISOLATE II RNA Mini kit was used (without a DNase step), with the lysis buffer and/or binding buffer being substituted with PBS to simulate inefficient extraction. The extraction conditions were as follows: Complete lysis step (yellow line) and the pattern of inhibition for no lysis (brown), no binding buffer (grey), no lysis and no binding buffer (pink). The results illustrate that the internal control DNA is insensitive to extraction failure, whereas REC is sensitive and so can be used as a control to show the efficiency of the extraction method on the test RNA.

Two-Step qPCR

Two-Step qPCR is achieved by generating cDNA from total RNA or poly(A) RNA with the SensiFAST cDNA Synthesis Kit and subsequently performing qPCR reactions with the appropriate SensiFAST or SensiMix kit, see diagram below.



SensiFAST™ cDNA Synthesis Kit

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	REACTION SIZE	CAT NO.
50 Reactions	50 µL	BIO-65053
250 Reactions	50 µL	BIO-65054

Components	50 Reactions	250 Reactions
5x TransAmp Buffer	200 µL	1 mL
Reverse Transcriptase	50 µL	250 µL

Features and Benefits:

- **Efficient – high-target affinity, coupled with a novel TransAmp buffer system for improved yield of full-length cDNA**
- **Unbiased – optimized mix of random hexamers and anchored oligo dT primers for complete 5' to 3' RNA sequence representation**
- **Sensitive – lower Ct values from a broad range of input cDNA concentrations, enabling accurate detection of very low copy targets**
- **Robust – reliable reverse transcription under challenging conditions, including complex templates and in the presence of inhibitors**
- **Fast – high-yield reverse transcription from a very broad range of targets in as little as 5 minutes**

Description: The SensiFAST™ cDNA Synthesis Kit provides a rapid and sensitive method for first-strand cDNA synthesis, which displays excellent linearity across a wide range of starting material. This gives the same relative representation in cDNA templates, regardless of gene abundance, making it excellent for use in qPCR studies.

SensiFAST cDNA Synthesis Kit contains a highly-pure reverse transcriptase and optimized TransAmp™ buffer system, which includes a unique blend of random hexamers and anchored oligo (dT) primers to deliver the highest quality qPCR ready cDNA. This makes the SensiFAST cDNA Synthesis Kit ideal for working with limited sample volumes, such as laser-micro dissected samples and tissue biopsies (down to 1 pg of input RNA), to reverse transcribe precious RNA into stable cDNA ready for accurate real-time quantification. The unique blend of random hexamer primers and anchored oligo dT in the TransAmp Buffer also ensure unbiased 3' and 5' coverage and reverse transcription of all regions.

SensiFAST cDNA Synthesis Kit can be used with SensiFAST Probe and SensiFAST SYBR® Kits for fast real-time RT-qPCR without compromising on quality, giving real-time results in less than an hour.

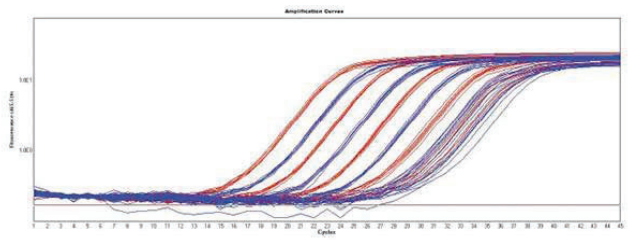


Fig. 1 Speed and Sensitivity.
SensiFAST cDNA Synthesis Kit and a kit from supplier B were used for reverse transcription of a specific target from total RNA under fast conditions. The results illustrate that the SensiFAST cDNA Synthesis Kit (red) is more sensitive than the kit from supplier B (blue), as judged by the lower Ct values.

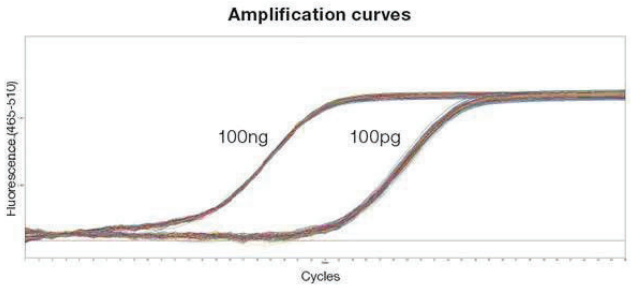


Fig. 2 Reproducibility of SensiFAST cDNA Synthesis Kit.
SensiFAST cDNA Synthesis Kit was employed in 48 independent first-strand reactions, containing 100 ng total RNA and another 48 reactions containing 100 pg. The resultant first-strand product from each RT reaction was used in triplicate qPCR assays. The results demonstrate the excellent reproducibility of SensiFAST cDNA Synthesis Kit at high and low input RNA, as judged by the same Ct values.

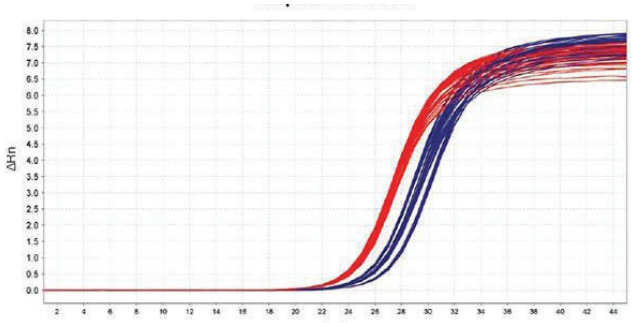


Fig. 3 Unbiased representation across target genes
SensiFAST cDNA Synthesis Kit and a kit from supplier B were for reverse transcription of a specific target from total RNA. Primer pairs were then designed against the transcript at 1 kb intervals and used in qPCR reaction with SensiFAST SYBR® No-ROX. The consistent Ct values show that unlike the results from supplier B (blue), the SensiFAST cDNA Synthesis Kit (red) did not show any bias acros the target.

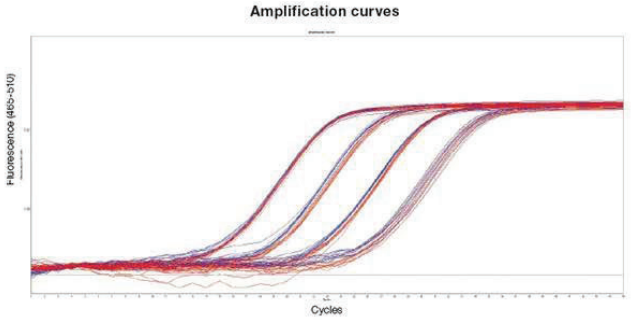
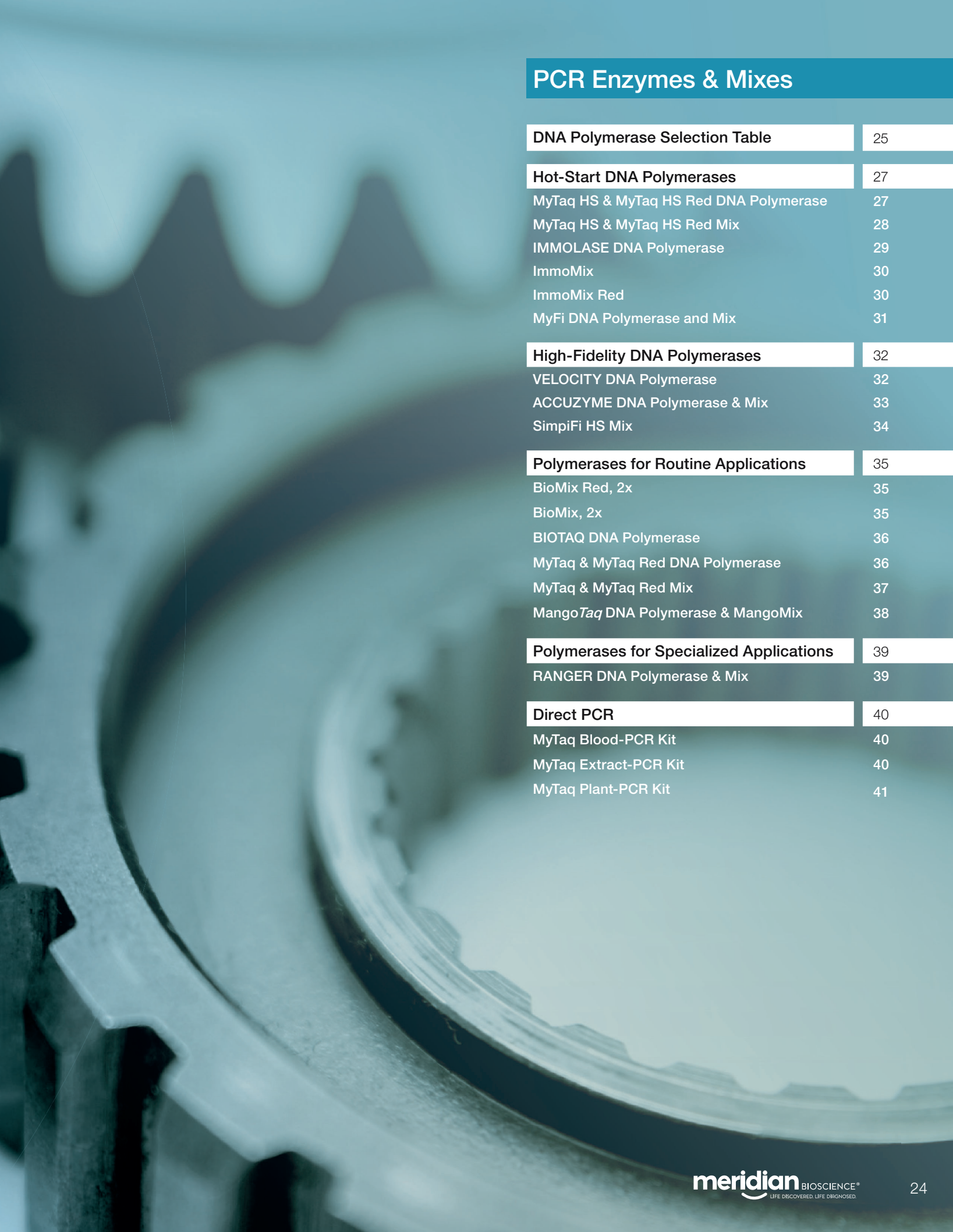


Fig. 4 Speed of SensiFAST cDNA Kit
SensiFAST cDNA Synthesis Kit was used for reverse transcription of a specific target from a 10-fold serial dilution of total RNA, for either 5 min (blue) or 60 min (red) at 42° C. The results illustrate the high efficiency of reverse transcription over a broad linear dynamic range under both standard and fast conditions.

Tune into Perfect PCR

Meridian produces a broad portfolio of premium quality PCR enzymes.

Each DNA polymerase has different characteristics to achieve optimal results. It is important for the user to choose the polymerase most suited to their application. For your convenience and to achieve optimal PCR, many of our most popular PCR enzymes are also available in practical, ready-to-use 2x master mixes which contain polymerase, dNTPs, $MgCl_2$, and additional additives. A polymerase selection guide is provided to facilitate your choice.



PCR Enzymes & Mixes

DNA Polymerase Selection Table

With over 20 years of experience, Meridian now produces one of the broadest portfolios of premium quality PCR Enzymes. This includes the new MyTaq, MyFi and RANGER DNA Polymerase products, a new generation of very high performance PCR products, designed for significant improvements to yield, sensitivity and speed.

	Properties	Template Length	Hot-Start	Proofreading	High Processivity	**Available Mixes**	Mixes
MyTaq™ HS		Up to 5 kb	✓				✓
IMMOLASE™		Up to 5 kb	✓				
MyFi™		Up to 10 kb	✓		✓		✓
VELOCITY		Up to 10 kb		✓	✓		
ACCUZYME™		Up to 5 kb		✓			✓
SimpiFi HS		Up to 5 kb	✓	✓			✓
RANGER		Up to 25 kb	✓	○	✓		✓
MyTaq™		Up to 5 kb					✓
Mango*Taq*™		Up to 5 kb					✓
Taq		Up to 5 kb					

Each DNA Polymerase has different characteristics and for optimal results, it is crucial to choose the enzyme that suits your individual application. For your convenience and to achieve optimal PCR, many of our most popular PCR enzymes are also available in practical, ready-to-use 2x master mixes which contain polymerase, dNTPs, $MgCl_2$ and additional additives.

Applications	Long Range PCR (over 10 kb)	High Specificity Assays	Blunt End Cloning	TA Cloning	GC-Rich Templates	Low Copy Templates	Site-Directed Mutagenesis	High-Fidelity PCR	Crude Sample PCR	Fast PCR	Direct Gel Loading	Colony PCR
		✓		✓	✓	✓			○	✓	✓	✓
		✓		✓		○						
		✓		✓	○	✓		○	○	✓		
			✓		○	○	✓	✓	○	○		
			✓				✓	✓				
		✓	✓		✓			✓	✓			
	✓	✓		✓	○	✓		○				
				✓	✓				○	✓	✓	✓
				✓						○	✓	
				✓								

○ Suitable ✓ Recommended

MyTaq™ HS & **MyTaq**™ HS Red DNA Polymerase

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
MyTaq HS DNA Polymerase		
250 Units	5 u/µL	BIO-21111
1000 Units	5 u/µL	BIO-21112
2500 Units	5 u/µL	BIO-21113
MyTaq HS Red DNA Polymerase		
1000 Units	5 u/µL	BIO-21115
2500 Units	5 u/µL	BIO-21116

Components	250 Units	1000 Units	2500 Units
MyTaq HS DNA Polymerase	1 x 50 µL	1 x 200 µL	2 x 250 µL
5x MyTaq Reaction Buffer	2 x 1 mL	8 x 1 mL	14 x 1.5 mL

Features:

- **New generation of antibody-based hot-start polymerase**
- **Highest specificity and superior performance**
- **Novel buffer system, including dNTPs and $MgCl_2$**
- **Fast PCR reactions**
- **Red dye for direct gel loading**

Applications:

- **High-throughput PCR**
- **Assays with prolonged reaction setup on the bench or liquid handling**
- **Amplification of challenging targets susceptible to mispriming**
- **Colony PCR**
- **Multiplexing**
- **Specific amplification of difficult templates (GC rich)**
- **Genotyping**
- **TA cloning**

Description: MyTaq™ HS DNA Polymerase consists of a high performance PCR product that is powered by antibody-mediated hot-start, specifically designed for fast, highly-specific, hot-start PCR. MyTaq HS does not possess polymerase activity during the reaction set-up, thus reducing non-specific amplification including primer-dimer formation. The advanced formulation of MyTaq HS allows fast cycling conditions, considerably reducing the reaction time without compromising PCR specificity or yield (fig. 1).

MyTaq HS DNA Polymerase is supplied with 5x MyTaq buffer system, a proprietary formulation that saves time and delivers superior results, as it contains dNTPs, $MgCl_2$ and enhancers at optimal concentrations which removes the need for optimization.

The specially designed MyTaq HS Red formulation does not interfere with the PCR reaction and enables users to load samples directly onto a gel after the PCR without the need to add loading buffer.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

Product Citations:

1. Murray, S.A., *et al. Appl. Envir. Microbiol.* **77**, 7050-7057(2011).
2. Wilson, R. *Nucleic Acid Therapeutics* doi:10.1089/nat.2011.0322 (2011).

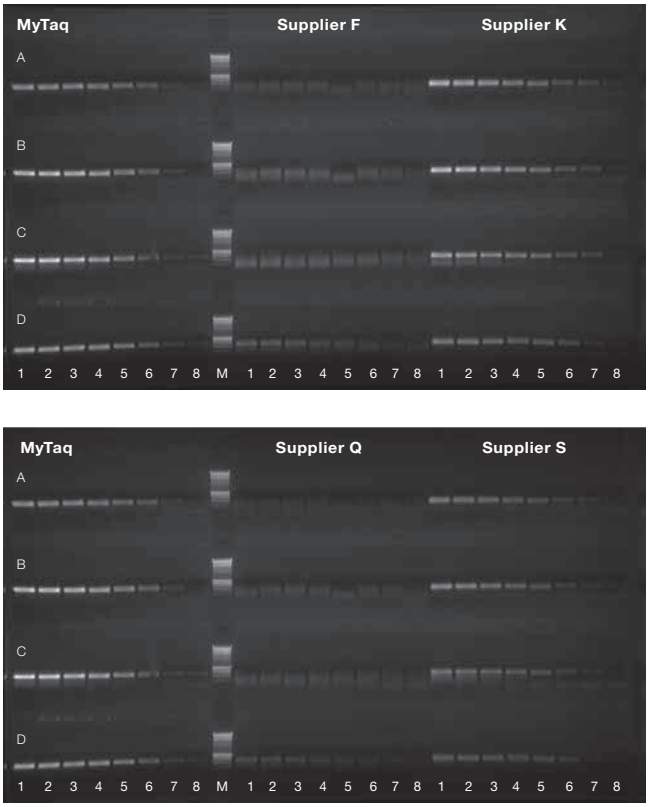


Fig. 1 Fast amplification (26.3 minutes) was carried out on a range of human genomic genes
A) A 340 bp
B) A 450 bp fragment of the myc gene.
C) A 525 bp fragment of the EGFR gene.
D) A 530 bp fragment of the AGRI1 gene.
The three genes amplified using MyTaq HS and the results were compared with amplifications using hot-start DNA polymerases from other suppliers. The process used a serial dilution of human genomic DNA (100 ng, 33 ng, 10 ng, 4 ng, 1 ng, 33 pg, 10 pg and 3 pg genomic DNA, lanes 1-8 respectively), incubated for 3 min at 95ºC followed by 35 cycles of 15s at 95ºC, 55ºC and 72ºC. Marker is HyperLadder 1 kb (M). MyTaq HS performed well across all four human genes.

MyTaq™ HS & MyTaq™ HS Red Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
MyTaq HS Mix		
200 Reactions	2x	BIO-25045
1000 Reactions	2x	BIO-25046
MyTaq HS Red Mix		
200 Reactions	2x	BIO-25047
1000 Reactions	2x	BIO-25048

Components	200 Reactions	1000 Reactions
MyTaq HS Mix	4 x 1.25 mL	20 x 1.25 mL

Features:

- **Convenient all-in-one tube master mix**
- **New generation of antibody-based hot-start polymerase**
- **Highest specificity and superior performance**
- **Fast PCR reactions**
- **Red dye for direct gel loading**

Applications:

- **High-throughput PCR**
- **Assays with prolonged reaction setup on the bench or liquid handling**
- **Amplification of challenging targets susceptible to mispriming**
- **Colony PCR**
- **Multiplexing**
- **Specific amplification of difficult templates (GC rich)**
- **Genotyping**
- **TA cloning**

Description: MyTaq™ HS Mix is a ready-to-use 2x mix for fast, highly-specific hot-start PCR. MyTaq HS Mix is powered by antibody mediated hot-start and does not possess polymerase activity during the reaction set-up, thus reducing non-specific amplification. The advanced formulation of MyTaq HS Mix allows very fast cycling conditions to be used (fig. 1), greatly reducing the reaction time without compromising PCR specificity and yield (fig. 2).

MyTaq HS Mix contains all the reagents including MyTaq buffer, dNTPs, $MgCl_2$, enhancers and stabilizers necessary for trouble-free PCR reaction set up. The product is supplied conveniently all-in-one tube to reduce the number of pipetting steps and to facilitate increased efficiency, throughput and reproducibility.

The specially designed MyTaq Red formulation does not interfere with the PCR reaction and allows users to load samples directly onto a gel after the PCR without the need to add loading buffer.

Product Citations:

1. Nützmann, H-W.,*et al. PNAS* **108**, 14282-14287 (2011).
2. Šlapeta, J., *et al. Vet Parasitol.* DOI:10.1016/j.vetpar.2011.03.035 (2011).

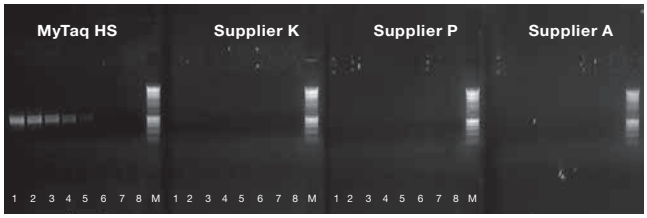


Fig. 1 Ultra-fast (12.3 minutes) amplification of the human AGFR1 gene
A 900 bp fragment of the AGTR1 gene was amplified with MyTaq HS Mix and hot-start *Taq* from other suppliers. A serial dilution of human genomic DNA (100 ng, 33 ng, 10 ng, 4 ng, 1 ng, 33 pg, 10 pg and 3 pg, lanes 1-8 respectively) was used and incubated at 95°C for 3 min, followed by 35 cycles of 95°C for 5s, 55°C for 1s and 72°C for 15s. Marker is HyperLadder 1 kb (M) (Cat No. BIO-33025). Only MyTaq HS was capable of amplifying a 900 bp fragment of human genomic DNA under such fast conditions.

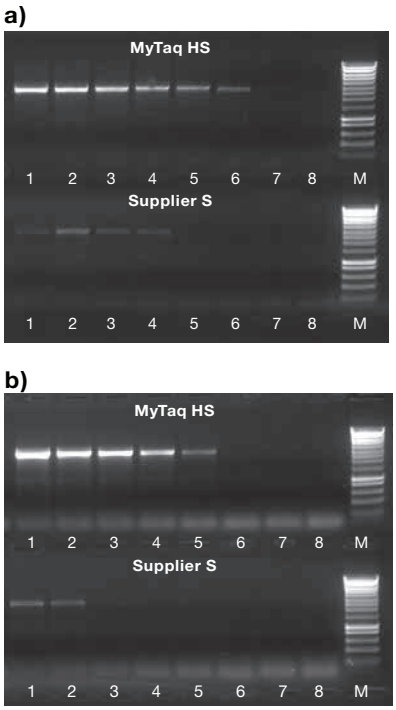


Fig. 2 Robustness of MyTaq HS in Colony PCR.
A 2.6 kb fragment of human genomic DNA was cloned into M13 vectors and transformed into *E. coli* cells. 1 µL of a 1:16 dilution of an overnight culture of these cells was used directly in a 50 µL PCR reaction.
A) 2 µL increments of agar were added (Lanes 1-8 respectively).
B) 2 µL increments of LB were added (Lanes 1-8 respectively).
Reaction conditions were 95°C for 3 min, followed by 35 cycles of 95°C for 15s, 60°C for 15s and 72°C for 2 mins. Marker is HyperLadder 1 kb (M). MyTaq HS DNA polymerase was more resistant to inhibition than that of supplier S, making it ideal for Colony PCR, even from liquid overnight cultures, offering improved workflows particularly for high-throughput assays.

IMMOLASE™ DNA Polymerase

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
250 Units	5 u/µL	BIO-21046
500 Units	5 u/µL	BIO-21047
5000 Units	5 u/µL	BIO-21048

Components	250 Units	500 Units	5000 Units
IMMOLASE DNA Polymerase	1 x 50 µL	1 x 100 µL	10 x 100 µL
10x ImmoBuffer	1 x 1.2 mL	2 x 1.2 mL	20 x 1.2 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL	1 x 1.2 mL	10 x 1.2 mL

Features:

- **Heat-activated thermostable DNA polymerase**
- **Outstanding and robust performance**
- **Excellent yield in quantitative assays**
- **Convenient setup at room temperature**
- **Leaves 'A' overhang**

Applications:

- **Ultra-high specificity for multiplex reactions**
- **Products suitable for TA cloning**

Description: IMMOLASE™ is a heat-activated thermostable DNA polymerase. IMMOLASE provides high yield (fig. 1) and improved specificity as compared to standard polymerases and can eliminate the presence of non-specifics, such as primer-dimers and mis-primed products. IMMOLASE is inactive at room temperature and therefore prior to PCR cycling, requires activation by heat treatment for 10 minutes (fig. 2). This facilitates flexibility in reaction setup, including premixing of PCR reagents at room temperature. Subsequently, the reaction can be handled according to the user's existing protocols for thermostable DNA Polymerases.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

Product Citations:

1. Murray, S.A., *et al. Appl. Envir. Microbiol.* **77**, 7050 - 7057 (2011).
2. Kemp, M.W. *et al. Reprod. Sci.* **18**, 1128 - 1137 (2011).
3. Kaczmarek, K. *et al. Mol. Biol. Cell* **22**, 1766 - 1779 (2011).
4. Kim, S.K. *et al. J. Clin. Endocrin. Metab.* **96(3)**, 658 - 664 (2011).
5. Ji, X., *et al. Plant Physiol.* **156**, 647 - 662 (2011).

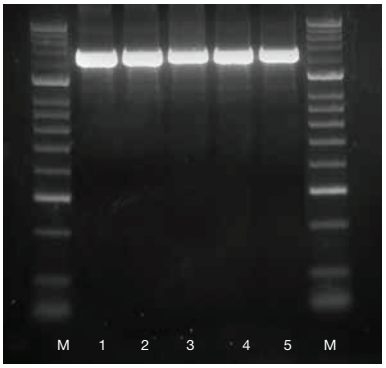


Fig. 1 Extremely high yield amplification
A 1.4 kb mouse rn18s gene fragment was amplified with 2.5 Units of IMMOLASE DNA Polymerase (lanes 1-5). The rn18s fragment was amplified from 100 ng of mouse genomic DNA. The PCR was performed in 50 µL reaction mixtures containing 1.5 mM $MgCl_2$. HyperLadder 50 bp (M). Extremely high yield is achieved with every replicate.

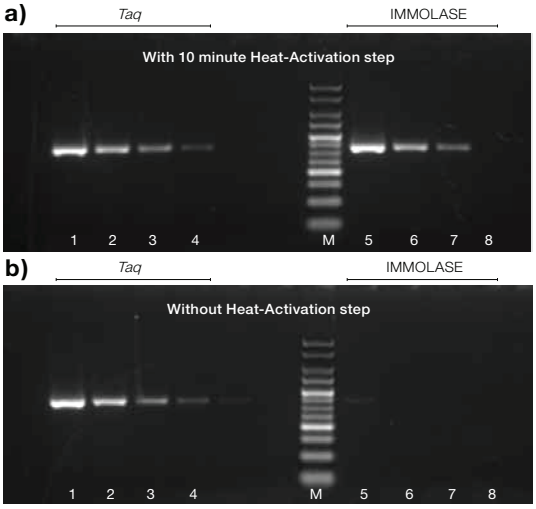


Fig. 2 Illustration of IMMOLASE Heat-activation.
Two tests were conducted, a) with hot-start and b) without hot-start activation step. A 125 bp DNA fragment from plasmid pGEM was amplified with 1.0 Unit of *Taq* (lanes 1-4) and 1.0 Unit of IMMOLASE (lanes 5-8). The pGEM fragment was amplified from 0.25 ng plasmid DNA (pGEM) followed by 2-fold serial dilutions in 50 µL reactions containing 1.5 mM $MgCl_2$. HyperLadder 25 bp (M). *Taq* exhibited activity in both tests, whereas IMMOLASE only exhibited activity following a hot-start step.

ImmoMix™

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
500 Units	50 u/µL	BIO-25020

Components	500 Units
Reagent	500 Reactions
ImmoMix	10 x 1.25 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL

Features and Benefits:

- **Convenient - pre-mixed, pre-optimized 2x solution**
- **Ready to use format - reduces risk of contamination**
- **Fast set up - decreased time compared to traditional methods**
- **Reproducible results - time after time**

Description: ImmoMix™ is a complete ready-to-use high yield, heat-activated 2x reaction-mix, which simply requires the user to add water, template and primers, and then pre-heat to 95°C for 10 minutes to successfully carry out PCR assays. The 10 minute activation step eliminates the presence of non-specifics such as primer-dimers and mis-primed products, since the enzyme is inactive at initial low temperatures.

ImmoMix is based on IMMOLASE™ DNA Polymerase, which leaves an ´A´ overhang, and has been optimized for a wide variety of templates. Additional $MgCl_2$ solution is included should any fine adjustments be required.

ImmoMix reduces the time needed to set up reactions, thereby reducing the risk of contamination. Greater reproducibility is ensured by reducing the number of pipetting steps that can lead to pipetting errors.

Fig. 1 Higher yields from ImmoMix
To illustrate the higher yield of ImmoMix, an 800 bp fragment of the β-actin gene was amplified from human genomic DNA, using 100 ng (lane 1) followed by 5-fold serial dilutions (lanes 2-6). This was compared to three other suppliers of chemical hot-start polymerases, using the manufacturers' recommended protocol. The results illustrate the higher yield using ImmoMix than the other suppliers of hot-start polymerases. HyperLadder 50 bp (M).

ImmoMix™ Red

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
500 Units	50 u/µL	BIO-25022

Components	500 Units
Reagent	500 Reactions
ImmoMix	10 x 1.25 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL

Features and Benefits:

- **Convenient - pre-mixed, pre-optimized 2x solution**
- **Ready to use format - reduces risk of contamination**
- **Fast set up - decreased time compared to traditional methods**
- **Red color - indicates the mix has been added**
- **Direct gel loading - no further processing necessary**

Description: ImmoMix™ Red is a complete ready-to-use heat-activated 2x reaction-mix, which simply requires the user to add only water, template and primers, and then pre-heat to 95°C for 10 minutes to successfully carry out PCR assays. The 10 minute activation step eliminates the presence of non-specifics such as primer-dimers and mis-primed products, since the enzyme is inactive at initial low temperatures.

ImmoMix Red combines all of the features and advantages of ImmoMix and contains an additional inert red dye. This non-toxic, non-hazardous red dye allows users to load samples directly onto a gel, without the need to add loading buffer since the mix is of sufficiently high density to sink to the bottom of the gel.

Adequate mixing is also ensured when reactions are set up. The red dye migrates like a 350 bp fragment on a 2% agarose TAE gel (or 600 bp on a 1% agarose).

ImmoMix Red is based on IMMOLASE™ DNA Polymerase, which leaves an ´A´ overhang and can be used for a wide variety of templates. An additional 50 mM $MgCl_2$ solution is included should any fine adjustments be required.

ImmoMix Red reduce the time needed to set up reactions, thereby reducing the risk of contamination. Greater reproducibility is ensured, by reducing the number of pipetting steps that can lead to pipetting errors.

MyFi™ DNA Polymerase and Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
MyFi DNA Polymerase		
250 Units	2 u/µL	BIO-21117
500 Units	2 u/µL	BIO-21118
2500 Units	2 u/µL	BIO-21119
MyFi Mix		
100 Reactions	2x	BIO-25049
500 Reactions	2x	BIO-25050

MyFi DNA Polymerase Components	250 Units	500 Units	2500 Units
MyFi DNA Polymerase	1 x 125 µL	1 x 250 µL	2 x 250 µL
5x MyFi Reaction Buffer	1 x 625 µL	1 x 1.25 mL	5 x 1.25 mL

MyFi Mix Components	100 Reactions	500 Reactions
MyFi Mix, 2x	2 x 1.25 mL	10 x 1.25 mL

Features:

- **Higher-fidelity, specifically developed for TA cloning**
- **Novel antibody-based hot-start polymerase**
- **Amplifies fragments up to 10 kb**
- **Industry-leading novel buffer system**
- **Available as an all-in-one master mix**

Applications:

- **Perfect for TA cloning**
- **PCR requiring high specificity combined with high-fidelity**
- **Ideal for low copy PCR assays**

Description: MyFi™ is a novel, antibody-mediated, hot-start enzyme with unique properties that offers 3.5x higher fidelity than native *Taq* and enhanced sensitivity and specificity, making MyFi a superior choice for cloning. The polymerase is supplied with MyFi Buffer, a highly optimized proprietary formulation, containing ultra-pure dNTPs, $MgCl_2$ and enhancers, specifically formulated and validated to enhance your results.

MyFi is ideally suited for difficult PCR amplification of targets with variable lengths up to 10 kb, for example, amplification of cDNA libraries, complex genomic fragments (fig. 1), targets with high GC-content and low-copy assays which require both high processivity and higher fidelity. MyFi has the added convenience of room temperature reaction assembly, to avoid non-specific amplification and primer-dimer formation. MyFi generates PCR products with 3'-A overhangs, perfect for TA cloning.

MyFi Mix is a ready-to-use 2x mix, containing all the reagents (including enhancers and stabilizers) necessary for trouble-free PCR reaction set-up. The unique MyFi Mix, supplied in a convenient single tube, reduces the number of pipetting steps and improves efficiency, throughput and reproducibility (fig. 2).

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

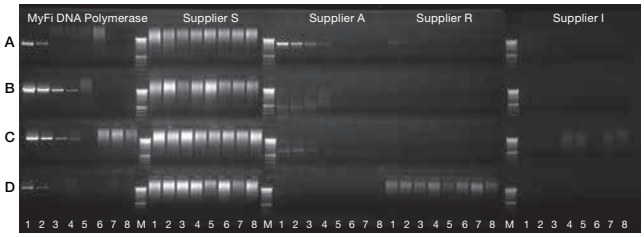


Fig. 1 Amplification of complex DNA up to 10 kb
A) A 3.9 kb fragment of α-1-antitrypsin (*AT-R3*) gene, B) a 7.0 kb fragment, C) a 9.0 kb fragment and D) a 10.0 kb fragment (respectively) of human (β-globin) *HbG* gene, were amplified using MyFi DNA Polymerase and the results were compared with amplifications using high-fidelity hot-start DNA polymerases from other suppliers. The process used a serial dilution of human genomic DNA (5 ng, 1 ng, 200 pg, 40 pg, 8 pg, 1.6 pg, 0.32 pg and 0 pg, lanes 1-8 respectively), incubated for 3 min at 95°C (or according to the manufacturer's protocol) followed by 35 cycles of 30s at 95°C, 30s at 60°C and 5 min at 72°C respectively. Marker is HyperLadder 1 kb (M). The results illustrate that MyFi can be used to amplify products up to 10 kb, unlike many of the competing high-fidelity hot-start DNA polymerases tested.

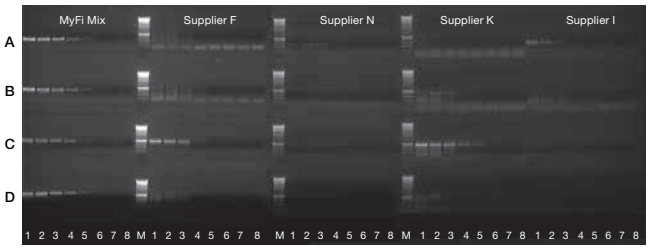


Fig. 2 Efficiency and sensitivity of high-fidelity polymerase mixes
A) A 525 bp fragment of human epidermal growth factor receptor (*EGFR*) gene, B) a 750 bp fragment of translation factor p64 (*myc*) gene, C) a 900 bp fragment of angiotensin II receptor type I (*AGTR1*) gene, D) a 1.2 kb fragment of *EGFR* gene, were amplified using MyFi Mix and the results were compared with amplifications using high-fidelity hot-start DNA polymerases from other suppliers. The process used a serial dilution of human genomic DNA (5 ng, 1 ng, 200 pg, 40 pg, 8 pg, 1.6 pg, 0.32 pg and 0 pg human genomic DNA, lanes 1-8 respectively), incubated for 3 min at 95°C (or according to the manufacturer's protocol) followed by 35 cycles of 15s at 95°C, 15s at 57°C and 15s at 72°C. Marker is HyperLadder 1 kb (M). The results illustrate that MyFi Mix out-performed alternative suppliers of high-fidelity mixes on account of higher efficiency and sensitivity over a wide range of sizes.

VELOCITY DNA Polymerase

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
250 Units	2 u/µL	BIO-21098
500 Units	2 u/µL	BIO-21099

Components	250 Units	500 Units
VELOCITY DNA Polymerase	1 x 125 µL	1 x 250 µL
5x Hi-Fi Reaction Buffer	2 x 1.5 mL	4 x 1.5 mL
DMSO	1 x 1.25 mL	1 x 1.25 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL	1 x 1.2 mL

Features:

- **High-speed, high-fidelity DNA polymerase**
- **Intrinsic high processivity**
- **Fast amplification**
- **Shorter PCR runs for longer templates**
- **Robust, requires minimal optimization of the reaction**

Applications:

- **GC-rich templates**
- **Cloning techniques where high fidelity is desirable**
- **Blunt-end cloning**
- **Amplification of difficult templates**
- **Site directed mutagenesis**

Description: VELOCITY DNA Polymerase is fast thermostable enzyme possessing 3'-5' proofreading exonuclease activity. VELOCITY delivers outstanding PCR yield with exceptional fidelity, even from low template concentrations (fig. 1). It also has high processivity, resulting in shorter extension times, higher yield and the ability to amplify long templates in a fraction of the time. Furthermore, the polymerase offers robust and reliable yields, even in assays in which PCR conditions are compromised with impurities or in complex assays, allowing it to be used with minimal optimization (fig. 2)

VELOCITY provides high fidelity (error-rate of 4.4 x 10^{-7}) and high processivity. This results in extension rates as fast as 15 s/kb for templates of up to 5 kb and 30 s/kb for templates longer than 5 kb. Reduction in PCR turnaround time makes VELOCITY the ideal choice for users who wish to generate long PCR products with high yield and no mutations.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

Product Citations:

1. Killelea, T. & Connolly, B.A. *Chem. BioChem.* **12**, 1330–1336 (2011).
2. Thornton, J.K., *et al. PLoS ONE* **6(8)**, e23878 (2011).
3. Paxton, C.W., *et al. Am. J. Physiol.* **300**, C1345-C1355 (2011).
4. Renaud, C., *et al. J. Clin. Virol.* **49(1)**, 21-25 (2010).
5. Huang, X.X., *et al. Am. J. Pathol.* **174(4)**, 1534–1543 (2009).
6. Norgate, M., *et al. PLoS One.* **4(11)**, e7950 (2009).

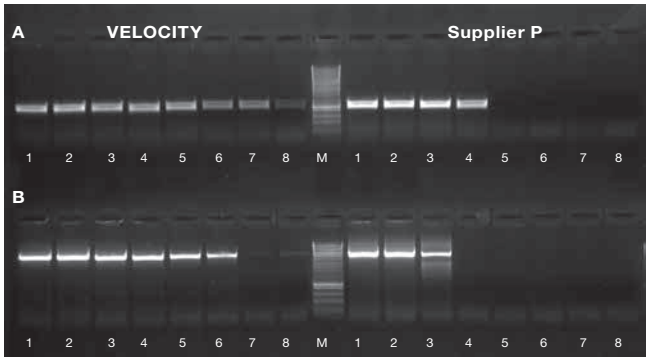


Fig. 1. Amplification of human genomic DNA
A) a 1 kb and B) a 10 kb fragment were amplified from 10 ng, 2 ng, 400 ng, 80 pg, 16 pg, 3.2 pg, 0.6 pg and 0.1 pg (lanes 1-8 respectively) of human genomic DNA using VELOCITY and Supplier P. Reactions were incubated at 98°C for 2 min followed by 30 cycles at 98°C for 30s, 55°C, for 30s, and 72°C for 1 or 10 min. HyperLadder 1 kb (M). VELOCITY exhibits yield even at low template concentrations.

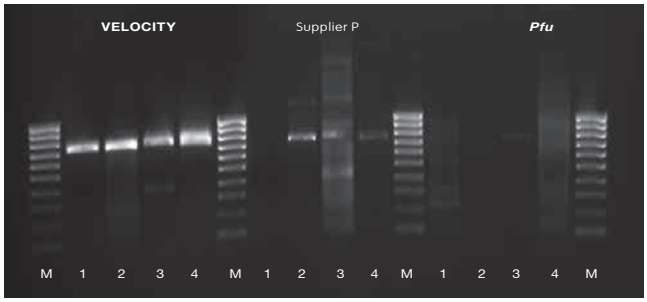


Fig. 2. VELOCITY, Supplier P and *Pfu*
VELOCITY, a supplier polymerase (P) and wild-type Pfu were compared with high GC content template amplification. Lanes 1–4 are a 728 bp fragment of the GP150 gene (76.9% GC), a 724 bp fragment of the MRGRE gene (68% GC), a 723 bp fragment of the NM_022372.3 gene (66.9% GC) and a 788 bp fragment of the NM_033178.2 gene (70.9% GC) respectively. PCR was performed in 50 µL reaction mixes and 5 µL was run on a 1.5% TAE agarose gel. HyperLadder 100 bp (M). VELOCITY exhibits high yield in all GC contents as compared with other suppliers.

ACCUZYME™ DNA Polymerase & Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
ACCUZYME DNA Polymerase		
500 Units	2.5 u/µL	BIO-21052
ACCUZYME Mix		
500 Reactions	2x	BIO-25028

ACCUZYME Components	500 Units
ACCUZYME DNA Polymerase	1 x 200 µL
10x AccuBuffer	2 x 1.2 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL
ACCUZYME Mix Components	**500 Reactions**
ACCUZYME Mix	10 x 1.25 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL

Features:

- **Very high yield**
- **High-fidelity**
- **Amplifies fragments up to 5 kb**
- **Available as a convenient pre-mixed, pre-optimized solution (ACCUZYME Mix)**

Applications:

- **Ideal for ultra-high-fidelity for subsequent cloning**
- **Blunt-end cloning**
- **Site-directed mutagenesis**

Description: ACCUZYME™ is a thermostable enzyme possessing 5'-3' DNA polymerase and 3'-5' proofreading exonuclease activities, offering high-fidelity, even with demanding applications (fig. 1). ACCUZYME produces blunt-ended amplicons up to 5 kb in length.

ACCUZYME is supplied with 10x Reaction Buffer containing Mg, which provides optimal final reaction conditions for most experiments. In order to allow further optimization if necessary, additional $MgCl_2$ is provided.

ACCUZYME Mix dramatically reduces the time needed to set up reactions, thereby minimizing the risk of contamination. Greater reproducibility is ensured by the reduction in the number of pipetting steps that can lead to pipetting errors.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

Product Citations:

ACCUZYME DNA Polymerase

1. Kitazono, A.A., *Gene* doi:10.1016/j.gene.2011.06.006 (2011).
2. Batchelor, D.J., *et al. Am. J. Physiol.* **300**, R67-R75 (2011).
3. Chiang, C., *et al. J. Bacteriol.* **193, 52-62** (2011).
4. Lim, C.G., *et al. Appl. Envir. Microbiol.* **77**, 3451-3460 (2011).
5. Cheng, C., *et al. Mol. Cell. Biol.* **31**, 983-997 (2011).

ACCUZYME Mix

1. Ji, X., *et al. Plant Physiol.* **156**, 647 - 662 (2011).
2. Padmashali R.M. & Andreadis. S.T., *Biomaterials* **32(12)**, 3330-3339 (2011).
3. Potula, S. K., *et al. Transgen. Res.* **17(1)**, 19-32 (2008).

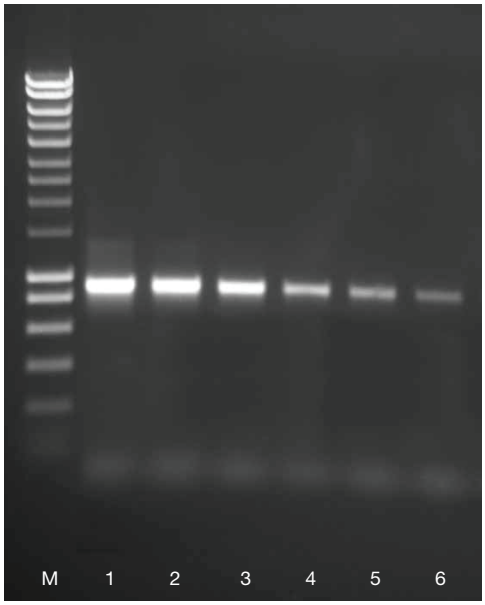


Fig 1. High performance even at low template concentrations.
An 800 bp fragment from human genomic DNA was amplified using 25 µL of 2x ACCUZYME Mix. The fragment was amplified from 0.5 ng human genomic DNA (lane 1) followed by a 10-fold serial dilution series of template (lanes 2-6). PCR was performed in 50 µL reaction mixtures. HyperLadder 1 kb (M).

SimpliFi HS Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
100 Reactions	2x	BIO-25060
500 Reactions	2x	BIO-25061

Components	100 Reactions	500 Reactions
2x SimpliFi HS Mix	5 x 1 mL	4 x 5 mL

Features:

- **Robust – optimized of a broad range of targets including complex DNA extracted from human, animal and plant samples**
- **Specific – an aptamer-based hot-start to prevent non-specific products**
- **Optimized – high yields with minimal optimization, regardless of a template's GC content**
- **Accurate – reduces errors for next generation sequencing (NGS) library amplification**

Applications:

- **Gene expression**
- **Viral and bacterial detection**
- **Robust PCR**
- **High-specificity PCR**
- **High-fidelity PCR**
- **GC/AT-rich PCR**

Description: SimpliFi HS Mix is a high-fidelity polymerase mix (fig. 1) combining the latest advances in buffer chemistry and PCR enhancers and stabilizers, together with an aptamer-mediated hot-start polymerase, dNTPs and $MgCl_2$. It has been designed for highly reproducible, accurate assay results in the presence of inhibitors.

PCR amplification can be susceptible to bias resulting from genomes that contain unusually high or low GC content, SimpliFi HS Mix has been developed to address this through careful selection of high-quality polymerase and optimized of the buffer, making it ideal for NGS library preparation (fig. 2).

Reproducibility is ensured by reducing the number of pipetting steps that can lead to errors.

BioMix Red is supplied with additional $MgCl_2$ solution should any fine adjustments be required.

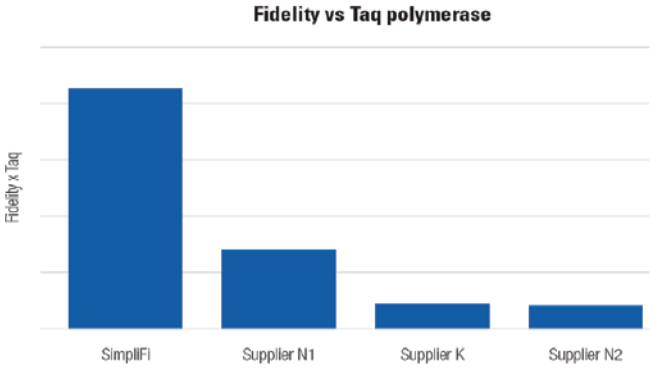


Fig. 1 Fidelity comparison across commercially available high-fidelity polymerases. Purified plasmid DNA was extended using SimpliFi, the complementary strands were synthesized using a standard high-fidelity polymerase using primers containing a partial Illumina adapter, a random product barcode and a condition barcode, forming the sequencing library. After next-generation sequencing, reads are grouped according to condition barcode and product barcode. Sequences are aligned to the correct sequence and errors are called. Exactly the same method was used to determine the error rate for supplier N1, Supplier K and Supplier N2 and the fidelity values were normalized to Taq polymerase fidelity.

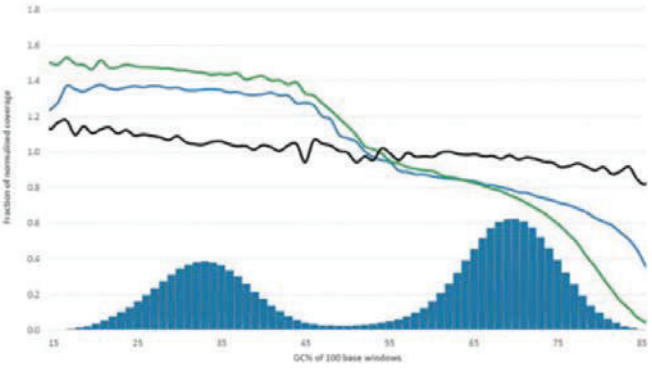


Fig. 2 GC bias with both high and low GC content
Libraries were prepared from 100 ng (amplified libraries) or 1 µg (PCR-free library) of genomic DNA from *S. aureus* (32% GC) and *R. spheroides* (69% GC), mixed equimolarly. End-repair and ligation steps were carried out using JetSeq™ ER and Ligation Kit (BIO-68026). Library amplification consisted of 10 PCR cycles using SimpliFi HS Mix and a mix from supplier K. GC bias plots were generated, with %GC content of 100 bp windows on the X axis. Normalized coverage is indicated for the SimpliFi HS Mix (blue line) and supplier K (green line) and can be compared to a PCR-free reference library (black line). The results illustrate SimpliFi HS Mix has a lower bias across the entire range of GC content, compared to the PCR-amplified library from supplier K, especially for GC percentages higher than 65%.

BioMix™ Red

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
500 x 50 µL Reactions	2x	BIO-25006

Components	100 Units	500 Units
BioMix™ Red	2 x 1.25 mL	10 x 1.25 mL
50 mM $MgCl_2$ Solution	1.2 mL	1.2 mL

Features:

- **Convenient format - pre-mixed, pre-optimized 2x solutions**
- **Versatile - suitable for routine PCR applications**
- **Ready-to-use - reduces contamination risks**
- **Suitable for TA cloning - leaves 'A' overhang**
- **Direct gel loading - eliminates the need for further processing following reaction completion**

Applications:

- **Routine PCR applications**
- **TA cloning**
- **High throughput**

Description: BioMix™ Red is a complete ready-to-use 2x reaction mix containing a stable Taq DNA polymerase. It contains an additional inert red dye that permits easy visualization and direct loading onto a gel. There is no need to add loading buffer as the mix is of sufficiently high density to sink to the bottom of the gel. The red dye migrates like a 350 bp fragment on a 2% agarose TAE gel (or 600 bp on a 1% agarose).

BioMix Red has been developed to perform PCR assays of many common genomic and cDNA templates; the user has simply to add water, template and primers. It reduces the time required to set-up reactions, thereby minimizing the risk of contamination. Reproducibility is ensured by reducing the number of pipetting steps that can lead to errors.

BioMix Red is supplied with additional $MgCl_2$ solution should any fine adjustments be required.

BioMix™

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
500 x 50 µL Reactions	2x	BIO-25012

Components	500 Units
BioMix™	10 x 1.25 mL
50 mM $MgCl_2$ Solution	1.2 mL

Features:

- **Convenient format - pre-mixed, pre-optimized 2x solutions**
- **Versatile - suitable for routine PCR applications**
- **Ready-to-use - reduces contamination risks**
- **Suitable for TA cloning - leaves 'A' overhang**

Applications:

- **Routine PCR applications**
- **Products suitable for TA cloning**

Description: BioMix™ is a complete ready-to-use 2x reaction mix containing a stable Taq DNA polymerase. Developed to perform PCR assays of many common genomic and cDNA templates, simply add water, template and primers.

BioMix reduces the time required to set up reactions, thereby minimizing the contamination risks. Greater reproducibility is ensured by reducing the number of pipetting steps that can lead to errors.

BioMix is supplied with additional $MgCl_2$ solution that allows fine-tuning of reactions, if required.

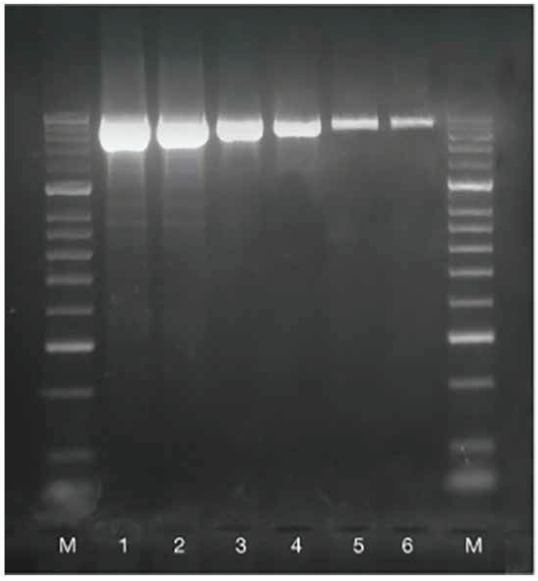


Fig 1. Sensitivity of BioMix.
A two-fold serial dilution of mouse genomic DNA from 50 ng (lane 1) to 1.5 ng (lane 6) of a 1.8 kb fragment of the rn18s gene was amplified, to show the sensitivity of BioMix.

BIOTAQ™ DNA Polymerase

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
500 Reactions	5 u/µL	BIO-21040
2500 Reactions	5 u/µL	BIO-21060

Components	500 Reactions	2500 Reactions
BIOTAQ DNA Polymerase	1 x 100 µL	5 x 100 µL
10x NH_4 Reaction Buffer	2 x 1.2 mL	10 x 1.2 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL	5 x 1.2 mL

Features:

- **Good standard Taq polymerase - ideal for setting up new procedures**
- **Easy to use - designed for easy optimization of PCR applications**
- **Suitable for TA cloning - leaves 'A' overhang**

Applications:

- **Routine PCR applications**
- **TA cloning**

Description: BIOTAQ™ is a purified thermostable DNA polymerase offering high yield over a wide range of PCR templates, and is a good choice for routine assays. BIOTAQ is a robust preparation and delivers high yields with minimal background. BIOTAQ possesses 5´-3´ exonuclease activity and leaves an ´A´ overhang such that the PCR product is suitable for effective integration into TA cloning vectors.

BIOTAQ is supplied with 10x NH_4-based Reaction Buffer, which provides optimal conditions for most experiments. Additional $MgCl_2$ is provided to allow reaction conditions to be adjusted to suit the template.

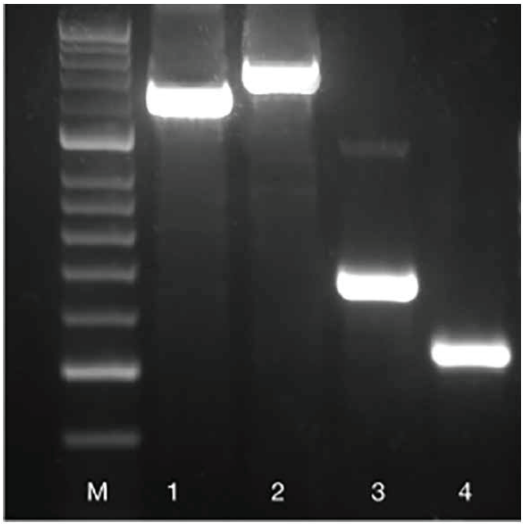


Fig. 1 Amplification of a variety of fragments.
Four different genes were amplified from mouse genomic DNA using BIOTAQ DNA Polymerase: 1.4 kb and 1.6 kb fragment of rn18s gene (lanes 1 and 2), 500 bp fragment of Fabpi gene (lane 3), 350 bp fragment of IL-2 gene (lane 4). HyperLadder 50 bp (M).

MyTaq™ & MyTaq™ Red DNA Polymerase

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
MyTaq DNA Polymerase		
500 Units	5 u/µL	BIO-21105
2500 Units	5 u/µL	BIO-21106
5000 Units	5 u/µL	BIO-21107
MyTaq Red DNA Polymerase		
500 Units	5 u/µL	BIO-21108
2500 Units	5 u/µL	BIO-21109
5000 Units	5 u/µL	BIO-21110

Components	500 Units	2500 Units	5000 Units
MyTaq DNA Polymerase	1 x 100 µL	2 x 250 µL	4 x 250 µL
5x MyTaq Reaction Buffer	4 x 1 mL	14 x 1.5 mL	9 x 5 mL

Features:

- **New generation of polymerase with superior performance**
- **Increased sensitivity and speed**
- **Novel buffer system, including dNTPs and $MgCl_2$**
- **Robust and high yield across a wide range of templates**
- **Red dye for direct gel loading**
- **Easy optimization**

Applications:

- **Specific amplification of complex templates**
- **Robust amplification of GC-rich sequences**
- **Routine PCR applications**
- **TA cloning fast PCR**

Description: MyTaq™ DNA Polymerase is a high performance PCR reagent that exhibits more robust amplification than other commonly used polymerases. MyTaq DNA Polymerase delivers very high yield over a wide range of PCR templates and making it the ideal choice for most routine assays. This new enzyme preparation from Meridian is supplied with a 5x MyTaq red reaction buffer system, a proprietary formulation that saves time (fig. 1) and delivers superior results. MyTaq buffer contains dNTPs, $MgCl_2$ and enhancers at optimal concentrations which eliminates the need for optimization.

The specially designed MyTaq Red formulation does not interfere with the PCR reaction and enables users to load samples directly onto a gel after the PCR without the need to add loading buffer.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

MyTaq™ & MyTaq™ Red Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
MyTaq Mix		
200 Reactions	2x	BIO-25041
1000 Reactions	2x	BIO-25042
MyTaq Red Mix		
200 Reactions	2x	BIO-25043
1000 Reactions	2x	BIO-25044

Components	200 Reactions	1000 Reactions
MyTaq Mix	4 x 1.25 mL	20 x 1.25 mL

Features:

- **Convenient all-in-one tube master mix**
- **New generation *Taq* with superior performance**
- **Highest specificity and superior performance**
- **Robust and high yield across a wide range of templates**
- **Red dye for direct gel loading**

Applications:

- **High-throughput PCR**
- **Specific amplification of complex templates**
- **Robust amplification of GC-rich sequences**
- **Routine PCR applications**
- **TA cloning fast PCR**

Description: MyTaq™ Mix is a ready-to-use 2x mix for fast, highly-specific PCR. The advanced formulation of MyTaq Mix exhibits more robust amplification than other commonly used polymerases, delivering very high yield over a wide range of PCR templates (fig. 1) and making it the ideal choice for most routine assays. MyTaq Mix contains all the reagents including MyTaq buffer, dNTPs, $MgCl_2$, enhancers and stabilizers necessary for trouble-free PCR reaction set up.

The product is supplied conveniently all-in-one-tube only requires the addition of template, primers and water, reducing the number of pipetting steps and facilitating increased efficiency, throughput and reproducibility.

The specially designed MyTaq Red formulation does not interfere with the PCR reaction and allows users to load samples directly onto a gel after the PCR without the need to add loading buffer.

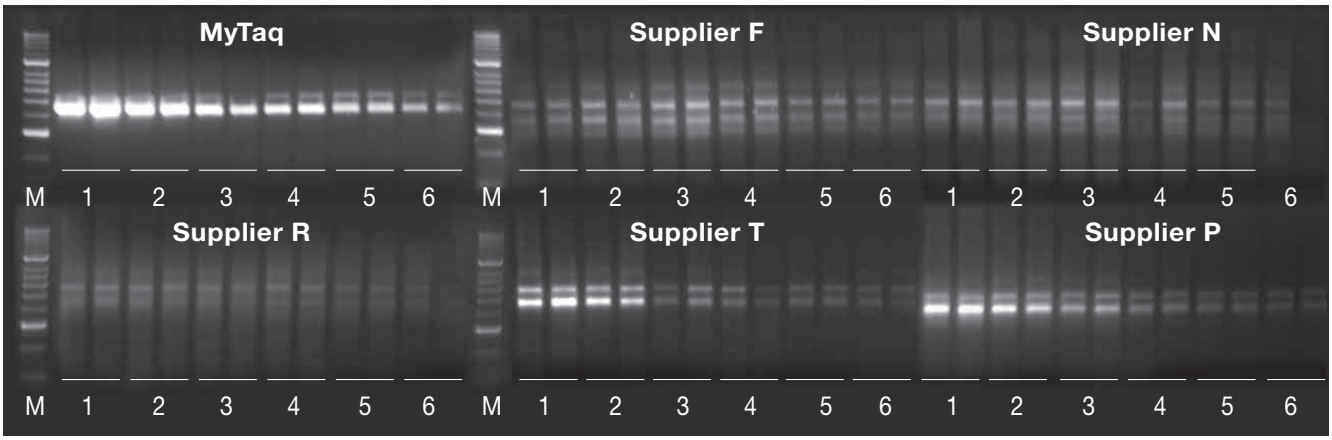


Fig. 1 Robust amplification of GC-rich human genomic DNA (61% GC content)
MyTaq was compared with DNA polymerases from other suppliers for the amplification of a 450 bp fragment of the human myc gene. Decreasing amounts of human genomic DNA were used as a template (1 µg, 200 ng, 100 ng, 50 ng, 25 ng and 12.5 ng; lanes 1-6 respectively) in the PCR. The cycling was performed under the following conditions: 95°C for 5 min, followed by 30 cycles at 95°C for 30s, 60°C for 30s and 72°C for 50s. Marker is HyperLadder 1 kb (M). MyTaq delivers higher yield and sensitivity as compared with all five competing products.

Mango*Taq*™ DNA Polymerase & MangoMix™

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
Mango*Taq* DNA Polymerase		
1000 Units	5 u/µL	BIO-21083
MangoMix		
250 Reactions	2x	BIO-25033
1000 Reactions	2x	BIO-25034

Mango*Taq* Components	1000 Units	2000 Units	5000 Units
Mango*Taq* DNA Polymerase	1 x 200 µL	2 x 200 µL	5 x 200 µL
50 mM $MgCl_2$ Solution	2 x 1.2 mL	4 x 1.2 mL	10 x 1.2 mL
5x Mango*Taq* Reaction Buffer Colored	4 x 1.5 mL	8 x 1.5 mL	20 x 1.5 mL
5x Mango*Taq* Reaction Buffer Colorless	4 x 1.5 mL	8 x 1.5 mL	20 x 1.5 mL

MangoMix Components	250 Reactions	1000 Reactions
MangoMix	5 x 1.25 mL	20 x 1.25 mL
50 mM $MgCl_2$ Solution	1 x 1.2 mL	1 x 1.2 mL

Features:

- **Robust performance**
- **Easy visual recognition**
- **Direct loading onto agarose gels**
- **Available as a ready-to-use 2x reaction mix (MangoMix™)**

Applications:

- **Suited to a wide range of PCR assays**
- **Products suitable for TA cloning**

Description: Mango*Taq*™ DNA Polymerase is a formulation of Taq DNA Polymerase which offers consistent results across a wide range of DNA templates (fig. 1). Mango*Taq* DNA Polymerase possesses 5'-3' exonuclease activity and leaves an 'A' overhang such that the PCR product is suitable for effective integration into TA cloning vectors. For high-throughput applications, Mango*Taq* and the colored reaction buffer make an ideal choice, since this combination enables the user to load directly on a gel, and facilitates easy recognition (fig. 2).

The two reaction buffers supplied are: 5x Colored reaction buffer and 5x Colorless reaction buffer. The colored reaction buffer contains red and orange dyes (fig. 2), which separate during electrophoresis and provide quick reference points for monitoring the mobility of the DNA samples in the gel. The colored reaction buffer can be loaded directly onto an agarose gel for analysis, without the need for separate gel-loading buffer. The presence of the dyes has no effect on most routine enzymatic manipulations.

MangoMix™ is a complete ready-to-use 2x pre-optimized reaction mix containing Mango*Taq* DNA Polymerase, Mg^{2+}, dNTPs, red and orange reference dyes. MangoMix enables users to perform PCR assays of most common genomic and cDNA templates, simply requiring the addition of water, template and primers to perform the assays. MangoMix dramatically reduces the time required to set up reactions, thereby minimizing the risk of contamination.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

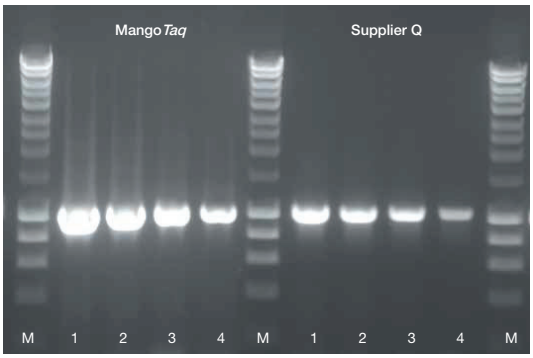


Fig. 1 Amplification of different human genes using Mango*Taq* DNA Polymerase and Supplier Q *Taq* DNA Polymerase
The amplification products are as follows: 119 bp (43% GC) from human glucocerebrosidase gene (1), 321 bp (37% GC) from angiotensin receptor II gene (2), 635 bp (56% GC) from rhodopsin gene (3), 762 bp (33% GC) from β-*globin* gene (4), 1200 bp (54% GC) from *α-1-antitrypsin* gene (5). PCR was performed in 50 µL reaction mixtures containing 50 ng human genomic DNA and 1.5 mM $MgCl_2$. HyperLadder 50 bp (M). Mango*Taq* therefore works constantly well over many different templates.

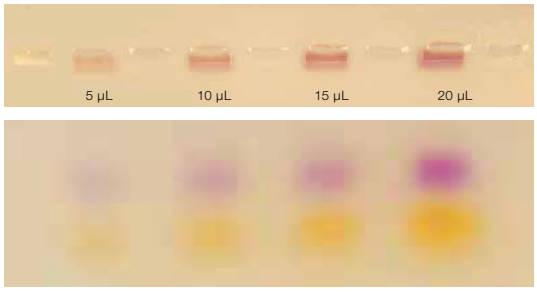


Fig. 2 Mango*Taq* reactions before and after electrophoresis.
Volumes below wells indicate loaded volumes of PCR reaction onto a 1% agarose gel using TAE buffer.

Product Citations:

Mango*Taq* DNA Polymerase
1. Tracy, L. N. & Jamieson, I. G. *Conserv. Genet.* **12(2)**, 517-526 (2011).
2. Shi, A., *et al. Am. J. Biotechnol. Mol. Sci.* DOI:10.5251/ajbms.2011.1.1.8.16 (2011).
3. Cheng, K. *et al. J. Neurosci.* **31**, 11905-11913 (2011).
4. Lau, A., *et al. J. Clin. Microbiol.* **48(3)**, 811–816 (2010).
5. Thines, M., *et al. Eur. J. Plant Path.* **128(1)**, 81-9 (2010).

MangoMix
1. Chowdhury, P. R., *et al. Antimicrob. Agents Chemother.* **55**, 3140-3149 (2011).
2. Russell, A.B. *et al. Nature* **475**, 343-347 (2011)
3. Baranets, V. *et al. Conserv. Gene. Resourc.* **3(3)**, 519-521 (2011).
4. O'Kelly, C. J., *et al. J. Phycol.* **46**, 728–35 (2010).
5. Hedtke, B. and Grimm, B. *NAR.* **37(11)**, 3739–3746 (2009).

RANGER DNA Polymerase & Mix

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
RANGER DNA Polymerase		
250 Units	4 u/µL	BIO-21121
500 Units	4 u/µL	BIO-21122
RANGER Mix		
500 Reactions	2x	BIO-25052

RANGER DNA Polymerase Components	250 Units	500 Units
RANGER DNA Polymerase	1 x 62.5 µL	1 x 125 µL
5x RANGER Reaction Buffer	1 x 1.2 mL	1 x 1.2 mL
RANGER Mix Components	**500 Reactions**	
RANGER Mix, 2x	10 x 1.25 mL	

Features:

- **Fast antibody-based hot-start**
- **Higher fidelity, for use on complex human genomic DNA**
- **Novel buffer system, including ultra-pure dNTPs and $MgCl_2$**
- **Higher fidelity than *Taq***
- **Available as a convenient all-in-one master mix**

Applications:

- **Validated for human genomic from 10 kb-25 kb**
- **Suitable for TA cloning**

Description: RANGER DNA Polymerase is a hot-start enzyme, possessing 5´-3´ DNA polymerase and 3´-5´ proofreading exonuclease activities, thus offering both high-fidelity and enhanced specificity. The polymerase is supplied with an industry-leading novel buffer system, specifically formulated and validated for the unique properties of RANGER.

RANGER is an easy-to-use high-performance enzyme specifically designed to amplify templates from 10 kb or greater with extreme sensitivity (fig. 1). Due to its antibody-based hot-start property, RANGER has the added convenience of room temperature reaction assembly, reducing unwanted non-specific amplification such as primer-dimer formation. This new hot-start enzyme from Meridian is supplied with 5x RANGER Reaction Buffer, a proprietary formulation containing dNTPs, $MgCl_2$ and enhancers at optimal concentrations, providing superior amplification.

RANGER is highly suitable for all PCR applications of long templates, including sequencing, mapping of chromosomal translocation breakpoints and other structural variations, as well as TA cloning.

RANGER Mix is a ready-to-use 2x mix, lacking polymerase activity during the reaction set-up, thus reducing non-specific amplification. The advanced formulation of RANGER Mix enables extreme sensitivity (fig. 2) and increased fidelity. RANGER Mix contains all the reagents necessary for trouble-free PCR reaction set-up. For your convenience, all of the components are supplied in one tube, to reduce the number of pipetting steps and to improve efficiency and reproducibility.

Unit Definition: One unit will incorporate 10 nmoles of dNTPs in 30 min at 72°C.

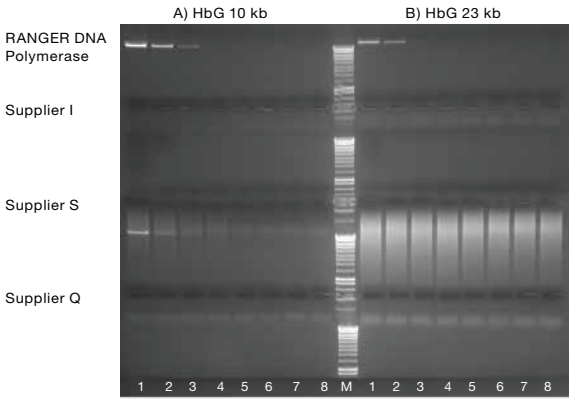


Fig. 1 Amplification of complex DNA greater than 10 kb
A) A 10 kb fragment and B) a 23 kb fragment of human β-globin (*HbG*) gene, were amplified using RANGER Polymerase and the results were compared with amplifications using high-fidelity hot-start DNA polymerases from other suppliers. The process used a serial dilution of human genomic DNA (5 ng, 1.6 ng, 550 pg, 180 pg, 60 pg, 20 pg, 6 pg and 0 pg human genomic DNA, lanes 1-8 respectively), incubated for 1 min at 95°C (or according to the manufacturer's protocol) followed by either 30 cycles of [10s at 98°C, 8 min at 66°C] for the 10 kb fragment, or [1 min at 95°C, 18 min at 66°C] for the 23 kb fragment and a final extension for 10 min at 72°C. Marker is HyperLadder 1 kb (M). The results illustrate that RANGER can be used to amplify products up to 23 kb from human genomic DNA, unlike many other competing long-fragment DNA polymerases tested.

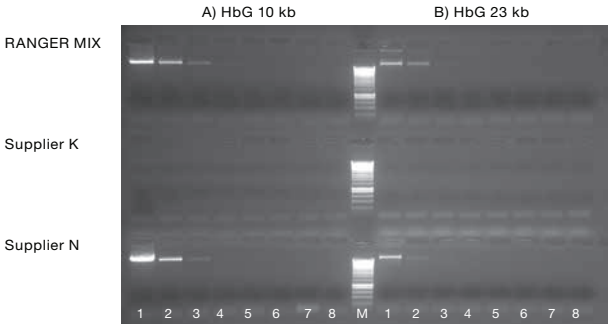


Fig. 2 Efficiency and sensitivity of high-fidelity polymerase mixes
A) A 10 kb fragment and B) a 23 kb fragment of human β-globin (*HbG*) gene, were amplified using RANGER Mix and the results were compared with amplifications using high-fidelity hot-start DNA mixes from supplier K and supplier N. The process used a serial dilution of human genomic DNA (5 ng, 1.6 ng, 550 pg, 180 pg, 60 pg, 20 pg, 6 pg and 0 pg human genomic DNA, lanes 1-8 respectively), incubated for 1 min at 95°C (or according to the manufacturer's protocol) followed by either 30 cycles of [10s at 98°C, 8 min at 66°C] for the 10 kb fragment, or [1 min at 95°C, 18 min at 66°C] for the 23 kb fragment and a final extension for 10 min at 72°C. Marker is HyperLadder 1 kb (M). The results illustrate that RANGER Mix is more sensitive than other suppliers mixes, particularly with larger fragments.

MyTaq™ Blood-PCR Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
250 Reactions	2x	BIO-25054

Components	250 Reactions
MyTaq Blood-PCR Mix, 2x	5 x 625 µL

Features:

- **Extraction-free, eliminates complex DNA extraction protocols**
- **Novel buffer system designed to overcome blood inhibition**
- **MyTaq™ HS Mix for fast and highly-specific amplification**
- **Ideal for multiplexing, GC-righ templates and longer amplicons**

Applications:

- **SNP genotyping**
- **Human and animal blood extraction and amplification**
- **Blood preserved with heparin, citrate or EDTA**

Description: MyTaq™ Blood-PCR Kit is highly optimized for use with whole blood collected with various anticoagulants (EDTA, citrate, heparin) from both human and non-human origins.

MyTaq Blood-PCR Kit has been specifically developed to overcome PCR inhibitors typically present in blood samples to give significantly increased sensitivity and PCR success rates (fig. 1).

The advanced formulation of MyTaq Blood-PCR Kit allows the use of fast cycling conditions without compromising PCR specificity and yield. The speed and high specificity of MyTaq Blood-PCR Kit also makes it highly suitable for multiplex PCR applications.

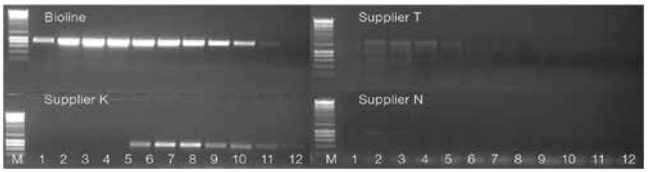


Fig. 1 MyTaq Blood-PCR Kit amplification from whole blood
An 844 bp fragment was amplified from whole human blood preserved with the anticoagulant lithium heparin. Two-fold serial dilutions from 20% human whole blood were used in reations using MyTaq Blood-PCR Kit and Kits from suppliers K, T and N (lanes 1-12). The results illustrate the significantly improved yield at both higher and lower whole blood concerntrations, with MyTaq Blood-PCR Kit outperforming other kits. Hyperladder™ 1 kb (M).

MyTaq™ Extract-PCR Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
100 Reactions	2x	BIO-21126
500 Reactions	2x	BIO-21127

Components	100 Reactions	500 Reactions
Buffer A	2 x 1 mL	10 x 1 mL
Buffer B	1 x 1 mL	5 x 1 mL
MyTaq HS Red Mix, 2x	1 x 1.25 mL	5 x 1.25 mL

Features:

- **Rapid extraction protocol: High yield PCR - ready DNA in about 15 minutes**
- **Replaces complicated DNA extraction procedures**
- **Perfect for high-throughput genotyping from mammalian tissues**
- **Convenient single-tube reaction minimizes contamination**
- **MyTaq HS Red Mix for fast and highly-specific amplification and direct gel loading**

Applications:

- **Ideal for high-throughput genotyping from mammalian tissues**
- **Detection of transgenes**
- **Knockout analysis**

Description: Many DNA extraction methods can be labourious and time consuming, involving the use of hazardous chemicals. MyTaq Extract-PCR Kit offers a rapid easy and safe alternative for the extraction and amplification of DNA from a variety of tissue types. MyTaq Extract-PCR Kit is particularly suited to solid tissues such as mouse tail and ear.

The extracted DNA is amplified in a proprietary buffer systemusing MyTaq HS Red Mix, to give high sensitivity and veryhigh yields, as well as allowing fast cycling times for direct gel-loading for high throughput assays.

When used with the same starting material, MyTaq Extract - PCR Kit gives a better yield and is more sensitive, compared to other suppliers of similar kits. The kit offers a convenient alternative for the extraction of DNA for applications such as mouse genotyping and sequencing (fig. 1)

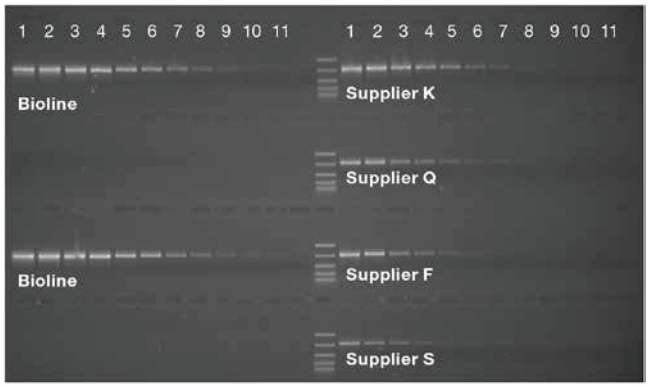


Fig 1. MyTaq Extract- PCR was used to extract and amplify genomic DNA from 3mg pieces of mouse tail
Genomic DNA was extracted in a 100 µL reaction and 1 µL of the supernatant used for the PCR reactions. After an inital 1 in 30 dilution, serial two fold dilutions of the supernatant were used with MyTaq HS Mix for amplification of a 1 kb fragment from mouse ɣ-actin (Lanes 1-11). EasyLadder I (M).

MyTaq™ Plant-PCR Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
250 Reactions	2x	BIO-25055
500 Reactions	2x	BIO-25056

Components	250 Reactions	500 Reactions
MyTaq Blood-PCR Mix, 2x	5 x 1250 µL	10 x 1250 µL

Features:

- **Fast - eliminate complex, slow and costly DNA extraction steps, thereby reducing time to results**
- **Sensitive – incorporates MyTaq HS DNA Polymerase that exhibits increased affinity for DNA, thereby improving yield of even the most challenging targets**
- **Robust- specially developed to overcome common plant-derived PCR inhibitors such as polyphenolics and polysaccharides for highest PCR success rates and improved sensitivity**
- **Versatile - perfect for a wide range of plant species, avoiding the need for further optimization, thereby minimizing setup time and reducing cost**
- **Simple - ideal for fast genotyping in plant genetic studies, mutation detection, confirming transgenic plant and knockout analysis**

Applications:

- **Genotyping for plant genetic study**
- **Mutation detection**
- **Transgenic detection**
- **Knockout analysis**

Description: MyTaq™ Plant PCR Kit is recommended for fast, specific and direct PCR from a wide range of plant leaf samples. MyTaq Plant-PCR Kit incorporates MyTaq HS DNA Polymerase, a next-generation hot-start polymerase that delivers highly-specific PCR amplification. Furthermore, MyTaq HS has an increased affinity for template DNA, giving a high PCR product yield for most challenging templates. MyTaq HS DNA Polymerase has been developed to give more robust amplification than other commonly-used polymerases meaning it performs reliably even in the presence of PCR inhibitors.

MyTaq Plant-PCR Kit includes novel buffer system that replaces the need for complicated extraction or purification steps, including freezing of plant tissues with liquid nitrogen, mechanical disruption, organic extraction or column DNA purification. The advanced formulation of MyTaq Plant-PCR Kit also allows fast cycling conditions to be used, without compromising PCR specificity and yield.

MyTaq Plant-PCR Kit has been developed to tolerate the PCR inhibitors typically present in plant samples, including polyphenolics and polysaccharides, thereby delivering significantly improved assay sensitivity and reproducibility. MyTaq Plant-PCR Kit increases amplification success rates from different plant types and its speed and high specificity makes it ideal for high-throughput genotyping assays.

Meridian R&D has obtained successful results when using the MyTaq Plant-PCR Kit to conduct direct PCR from a very broad range of species. These include tomato, rice, sugarcane, maize, potato, soya, wheat, barley, cashew, oak, dwarf umbrella tree, Australian laurel, red-fruit saw-sedge, blueberry lily, she-oaks, coastal rosemary, burrawang, eucalyptus/gum tree, seaweed/crayweed, coastal banksia, bottle brush and honey gem. For more information, please inquire.

As part of our test and review campaign, many of our customers have shared their positive experiences of the MyTaq Plant-PCR Kit. Our customers have also reported success for direct PCR from wheat, rosemary, cotton, tobacco, citrus, kangkong, mousear cress (Arabidopsis), cranberry, primrose, blueberry, American bellflower and several grass and fungus species.

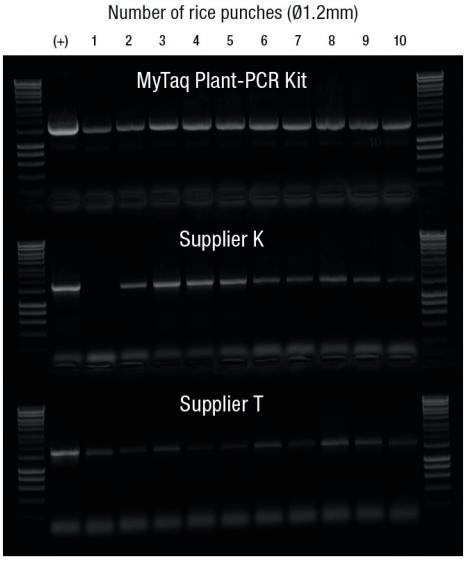


Fig 1. Increasing concentration of inhibitors in a reaction
Amplification of increasing numbers of rice leaf punches. Increasing the number of leaf punches also increases the concentration of PCR inhibitors in the reaction. The thermal cycling conditions were set according to the manufacturers recommendations. The results show that MyTaq Plant-PCR exhibits improved tolerance to inhibitors, without compromising the PCR efficiency.

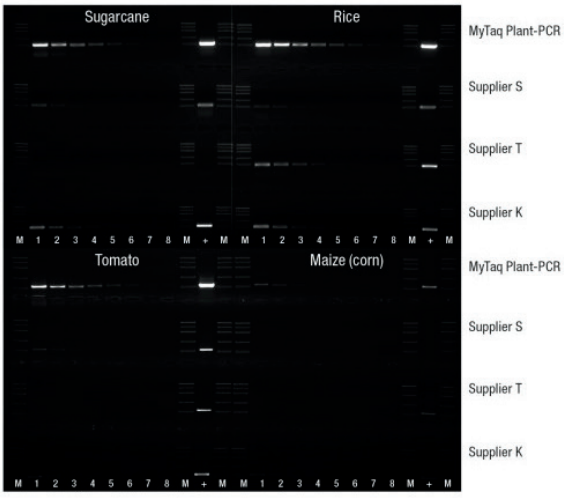


Fig 2. Sensitivity of amplification from different plant samples
Amplification of 0.5 kb fragments directly from leaf punches (1.2 mM diameter) from sugarcane, rice, tomato and maize. 50 µL PCR reactions were set up and run according to the manufacturers recommendations. A two-fold serial dilution of the PCR product was run on an agarose gel to illustrate the higher yield and therefore higher sensitivity of the MyTaq Plant-PCR over other suppliers.

Carrying The Message

Meridian's range of RNA Analysis products are manufactured and packaged under the most stringent conditions and are guaranteed to be RNase/DNase free. The range includes TRIsure and RNA ISOLATE kits, for column-free and spin-column isolation of total RNA from cells and tissues, generating pure, intact, high-quality RNA suited to any downstream application.

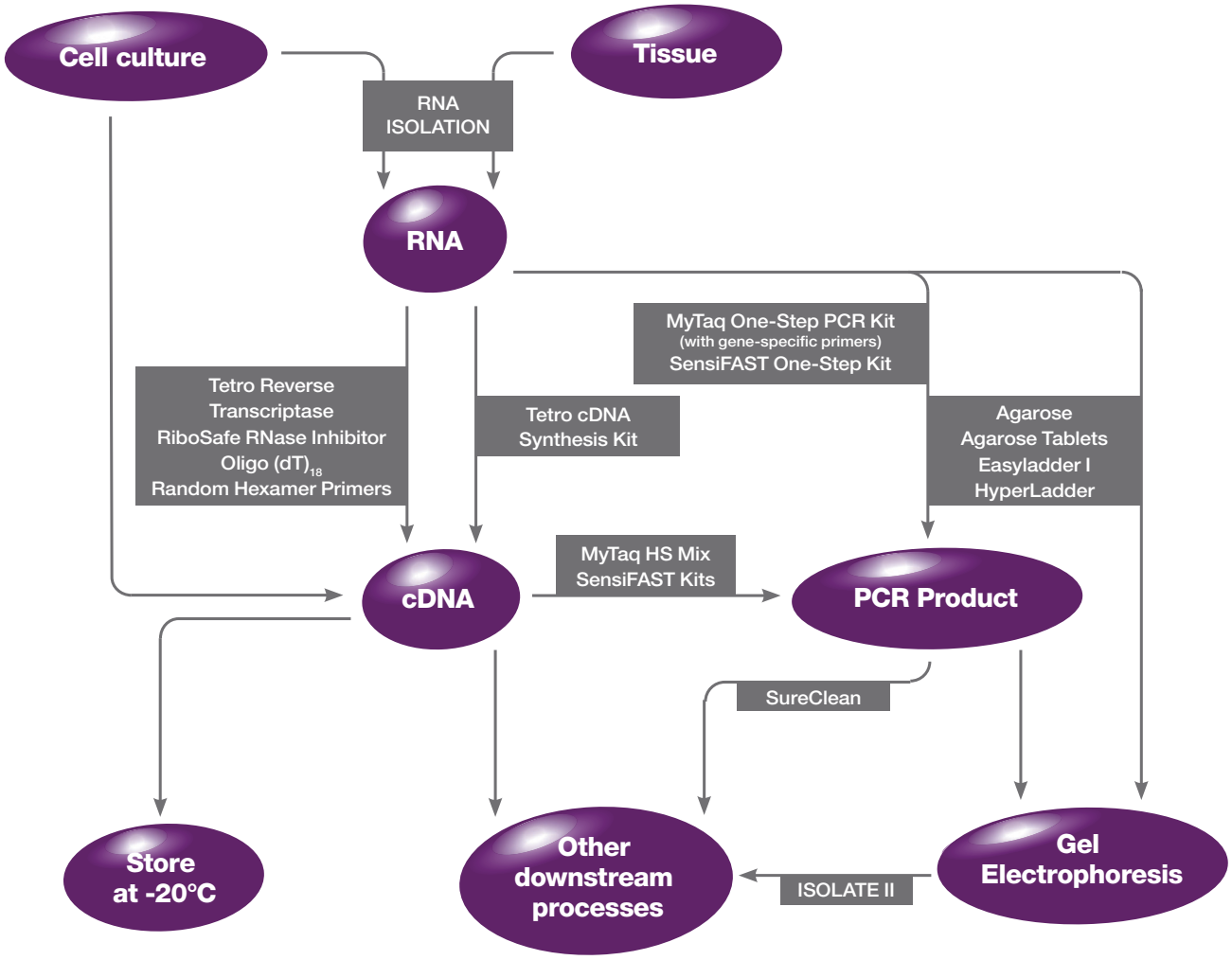
Meridian products for first-strand cDNA synthesis include Tetro Reverse Transcriptase, MyTaq One-Step RT-PCR Kit, Tetro cDNA Synthesis Kit, Oligo $(dT)_{18}$ and Random Hexamer Primers, and ultra-pure dNTPs.

For an RNase free environment, our RiboSafe RNase Inhibitor provides complete inhibition of RNases A, B and C, and our agaroses, in powder or the convenient ready-to-use pre-weighed tablets are also RNase free.

RNA Analysis

RNA Analysis

In the laboratory, obtaining full length, high quality RNA often proves to be a daunting task. There are two main reasons for RNA degradation during RNA analysis. Firstly, RNA, by its very structure, is inherently weaker than DNA. RNA is made up of ribose units, which have a highly reactive hydroxyl group on C2 that takes part in RNA-mediated enzymatic events. This makes RNA more chemically labile than DNA. RNA is also more prone to heat degradation than DNA. Secondly, enzymes that degrade RNA, ribonucleases (RNases) are so ubiquitous and hardy, that eliminating them often proves to be virtually impossible. For example, autoclaving a solution containing bacteria will destroy the bacterial cells, but not necessarily the RNases released from the cells.



Schematic diagram of RNA Analysis

How to maintain an RNase-free environment

For correct storage of RNA it is very important to avoid RNA degradation. In the short term, RNA may be stored in RNase-free H_2O or TE buffer at -80˚C for 1 year without degradation. For long term storage RNA samples may be stored as ethanol precipitates at -20˚C. However, when dissolved in ethanol, RNA is not dispersed evenly in the solution and cannot be used directly in quantitative experiments. Instead, precipitates should be pelleted and redissolved in an aqueous buffer before pipetting.

Gloves: Always wear sterile gloves before handling anything that is going to be used for RNA analysis. It is however important to remember that once the gloves have touched equipment in the lab such as centrifuges, pipettes and door handles, they are no longer RNase-free.

Decontamination techniques: Heat-proof glassware can be baked at 180˚C for several hours to inactivate RNases. Polycarbonate or polystyrene materials can be decontaminated by soaking in 3% hydrogen peroxide for 15 minutes, followed by thorough rinsing with RNase-free water.

RNase inhibitors: The use of RNase inhibitors is highly recommended with samples containing endogenous RNase. Most RNase inhibitors are suitable for use in any application where RNases are a potential problem.

Good quality reagents: Always ensure that all reagents and chemicals purchased commercially are guaranteed to be RNase free. Testing each batch before use may be a prudent step.

Disposable plasticware: Disposable plasticware greatly reduce the possibility of contaminating your samples. In the event of a contamination, they also minimize the spread of the contamination. The use of disposable tips, tubes, etc. is therefore highly recommended.

MyTaq™ One-Step RT-PCR Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
25 Reactions	BIO-65048
100 Reactions	BIO-65049

Components	25 Reactions	100 Reactions
MyTaq One-Step Mix (2x)	1 x 625 µL	2 x 1.25 mL
RiboSafe Inhibitor (10 u/µL)	1 x 25 µL	1 x 100 µL
Reverse transcriptase	1 x 12.5 µL	1 x 50 µL
DEPC-treated Water	1 x 1.8 mL	1 x 1.8 mL

Features:

- **Extremely sensitive blend of RT and novel hot-start MyTaq**
- **Highly optimized for detection of low-copy genes**
- **Overcomes secondary structure in difficult and GC-rich targets**
- **High-quality, full-length cDNA from as little as 3 pg of total RNA**

Application:

- **Gene-expression analysis**
- **Transcription analysis**
- **cDNA cloning**
- **Multiplex RT-PCR**

Description: MyTaq™ One-Step RT-PCR Kit has been designed for extremely sensitive and highly reproducible first-stand cDNA synthesis and subsequent PCR in a single tube (fig. 1). The kit contains the latest advances in buffer chemistry, including Meridian´s ultra-pure dNTPs, together with reverse transcriptase (RT) and our new generation of very high performance, antibody-mediated hot-start DNA polymerase (MyTaq HS). This ensures that MyTaq One-Step RT-PCR Kit produces fast, highly-specific and ultrasensitive products for downstream applications.

MyTaq One-Step Kit consists of reverse transcriptase, 2x MyTaq HS Mix and a potent RNase Inhibitor, RiboSafe, that are added together to create a simple to use all-in-one mix.

The kit is ideal for determining the presence or absence of RNA templates and quantifying expression through qualitative, semi-quantitative or quantitative analysis of RNA transcription levels, and the one-step format is also perfect for the synthesis of double-stranded cDNA products for subsequent gene-expression analysis.

The cDNA can be synthesized with starting amounts of RNA template from 3 pg to 1 µg, over a broad temperature range (up to 50°C (fig. 1) to overcome secondary structure and GC-rich sequences), prior to heating to 95°C to inactivate reverse transcriptase and simultaneously to activate the MyTaq™ HS.

Product Citations:

1. Buttermore, E.D., *et al. J. Neurosci.* **31(22)**, 8013-24 (2011).

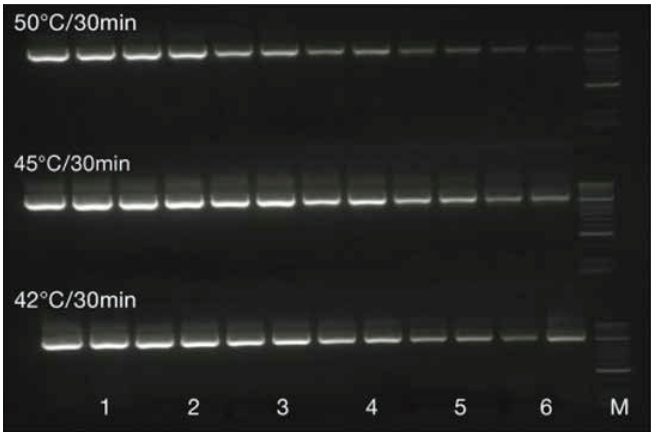


Fig. 1.
A 1 kb fragment was amplified in duplicate from a serial dilution of a mouse total RNA (10 ng, 2 ng, 400 pg, 80 pg, 16 pg and 3 pg; lanes 1-6 respectively) using RN18S-1000 primers and the MyTaq One-Step RT-PCR Kit. HyperLadder 50 bp (M). The reverse transcriptase in the MyTaq One-Step RT-PCR Kit was able to deliver high quality cDNA even at 50°C, over a broad dynamic range.

Tetro Reverse Transcriptase

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
10,000 Units	BIO-65050
4 x 10,000 Units	BIO-65051

Components	10,000 Units	4 x 10,000 Units
Tetro Reverse Transcriptase	1 x 50 µL	4 x 50 µL
5x Reaction Buffer	1 x 1.2 mL	4 x 1.2 mL

Features:

- **Unrivalled stability**
- **Working temperature range 37-42°C**
- **Highly sensitive for enhanced cDNA yield**
- **Produces high quality cDNA**
- **Reverse transcribes RNA templates up to 9 kb**

Applications:

- **First strand cDNA synthesis**
- **cDNA library construction**
- **mRNA 5' end mapping by primer extension**
- **Dideoxynucleotide sequencing**
- **End-labelling of DNA**

Description: Tetro Reverse Transcriptase is a Moloney Murine Leukaemia Virus (MMLV) Reverse Transcriptase, which exhibits high stability, with no loss of activity following 1 week at room temperature. Tetro Reverse Transcriptase is highly sensitive even when the amount of template is a limiting factor (fig. 1), with highly efficient and sensitive transcription, from as little as 10 pg, up to 2 µg of RNA (fig. 2).

Many RNA transcripts form stable secondary structures at lower temperatures, making them less suitable as templates for RT-PCR at those temperatures.

Tetro Reverse Transcriptase is suitable for first-strand cDNA synthesis, with total RNA, mRNA and *in vitro* transcribed RNA and shows excellent performance with gene-specific primers, Oligo (dT) as well as random hexamers, making it perfect for cDNA library construction and the production of templates for RT-PCR analysis of gene expression.

Product Citations:

1. To, K.W., *et al. Mol. Can. Res.* **9**, 516-527 (2011).
2. Comerford, I., *et al. Blood* **116(20),** 4130-4140 (2010).
3. Corripio-Miyar, Y., *et al. Mol. Immunol.***46(10)**, 2098-2106 (2009).
4. Chen, Y., *et al. Blood* **114(1)**, 40-48 (2009).
5. Le, H. K., *et al. Can. Immunol. Immunother.* **58(10)**, 1565-1576 (2009).

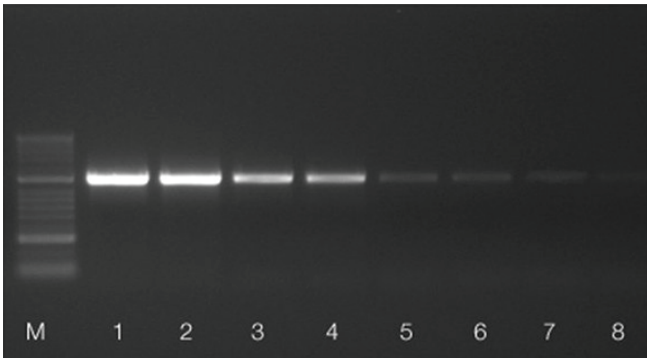


Fig. 1 High sensitivity of Tetro Reverse transcriptase on mouse total RNA.
A five-fold serial dilution of total RNA from mouse brain (1 µg to 10 pg) was reverse transcribed using 50 Units of Tetro Reverse Transcriptase, oligo $(dT)_{18}$ abd random hexamers. The resultant cDNA was then used as template in a PCR using primers for amplification of a 700 bp fragment from mouse β-actin. Lanes 1-5 correspond to PCR product from the serial dilution above, reactions were carried out in duplicate. Hyperladder 50 bp (M).

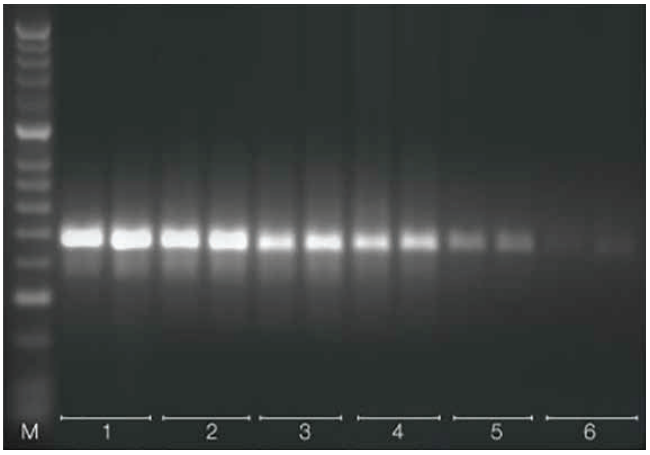


Fig. 2 High sensitivity on human DNA.
A ten-fold serial dilution of human total RNA (1 µg to 10 pg) was reverse transcribed using Tetro Reverse Transcriptase and oligo $dT_{(18)}$. The resultant cDNA was then used as a template in a PCR using primers for amplification of a 470 bp fragment from human GAPDH. Lanes 1-5 correspond to PCR product from the serial dilution above, reactions were carried out in duplicate. Hyperladder 50 bp (M).

Tetro cDNA Synthesis Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
30 Reactions	BIO-65042
100 Reactions	BIO-65043

Components	30 Reactions	100 Reactions
5x RT Buffer	1 x 120 µL	1 x 400 µL
Reverse Transcriptase (200 u/µL)	1 x 30 µL	1 x 100 µL
RiboSafe RNase Inhibitor (10 u/µL)	1 x 30 µL	1 x 100 µL
dNTP Mix, 10 mM Total	1 x 30 µL	1 x 100 µL
Oligo $(dT)_{18}$ Primer Mix	1 x 30 µL	1 x 100 µL
Random Hexamer Primer Mix	1 x 30 µL	1 x 100 µL
DEPC-treated Water	1 x 1.8 mL	1 x 1.2 mL

Features:

- **Generate high quality cDNA for any downstream application**
- **Highly suited to low concentrations of total RNA down to 10 pg**
- **Convenient, reliable, cost-effective**
- **Reverse transcribes RNA templates up to 9 kb**

Applications:

- **First-strand cDNA synthesis**
- **Construction of cDNA libraries**
- **2-step RT-PCR assays**
- **Generation of probes for hybridization**
- **Gene cloning**

Description: The Tetro cDNA Synthesis Kit contains all necessary components to generate cDNA from any RNA template. The generated cDNA is suitable for PCR with gene-specific primers or for other downstream applications. The kit contains reverse transcriptase and is suitable for first-strand cDNA synthesis, cDNA library construction, and the production of templates for PCR amplification (fig. 1).

The Tetro cDNA Synthesis Kit is optimized for reverse transcriptase reactions over a wide range of total RNA concentrations (10 pg - 2 µg), such that long and low-abundance transcripts can be detected by amplification after cDNA synthesis. The kit contains oligo $(dT)_{18}$ and random hexamer primers together with control RNA template. The kit components are fully optimized to generate maximum yields of full-length cDNA. The dNTPs included in the kit are manufactured by Meridian and are 99% pure.

Product Citations:

1. Bałkowiec-Iskra, E., *et al. Neurosci.* **180**, 322-333 (2011).
2. Szczepanek, K. *et al. J. Biol. Chem* doi: **286**, 29610 - 29620 (2011).
3. Shukle, R.H., *et al. J. Insect Physiol.* doi:10.1016/j.jinsphys.2011.09.012 (2011).
4. Pellicelli, M. J. *et al. Cell. Physiol.* doi: 10.1002/jcp.22973 (2011).
5. Yaklichkin, S.Y. *et al. BMC Evol. Biol.* **11**, 302 (2011).

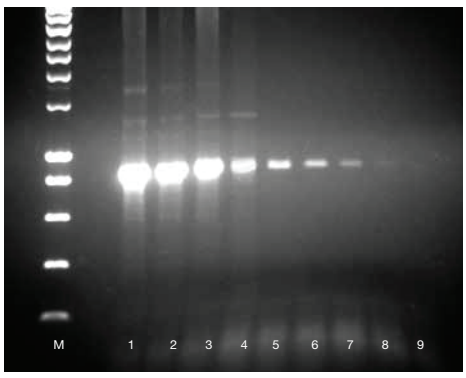


Fig. 1 High Sensitivity.
Total HeLa RNA was reverse-transcribed using Reverse Transcriptase and Oligo $(dT)_{18}$ primer in a 20 µL reaction. Lanes: 50 ng (1), 25 ng (2), 10 ng (3), 1 ng (4), 500 pg (5), 250 pg (6), 100 pg (7), 50 pg (8) and 0 pg (9). Subsequently, 5 µL of each reaction was used in conjunction with β-actin specific primers to amplify an 860 bp band from human mRNA. HyperLadder 1 kb (M). High sensitivity was observed with this serial dilution experiment.

Oligo $(dT)_{18}$

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	FINAL CONC.	PRESENTATION	CAT NO.
27 µg	270 ng/µL	100 µL	BIO-38029

Application:

- **cDNA synthesis with a reverse transcriptase**

Description: Oligo $(dT)_{18}$ primer is suitable for use as a primer for first strand cDNA synthesis with a reverse transcriptase. The primer hybridizes to the poly-adenylated tail found on the 3' end of most eukaryotic mRNAs. Oligo $(dT)_{18}$ ensures that the 3' end of mRNAs are represented. The primer is supplied as 100 µL at 270 ng/µL. Use 1 µL in a 20 µL reverse transcription reaction.

Primer sequence: 5'-d (TTT TTT TTT TTT TTT TTT)-3'

Product Citations:

1. Singh, N., *et al. Development. Biol.* **350**, doi:10.1016/j.ydbio.2011.01.017 (2011).
2. Kisiswa, L., *et al. Experimental Eye Res.* **91(5)**, 739-747 (2010).
3. Min, D., *et al. Am. J. Physiol. Renal. Physiol.* **299**, C1212-C1219 (2009).
4. Domin, N., *et al. Microbiol.* **155**, 3903-3912 (2009).

Random Hexamer Primers

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	FINAL CONC.	PRESENTATION	CAT NO.
25 µg	50 ng/µL	500 µL	BIO-38028

Application:

- **cDNA synthesis using a reverse transcriptase**
- **DNA synthesis using Klenow Fragment**
- **DNA probe synthesis for use in Northern and Southern blots, and *in situ* hybridization applications**

Description: Random Hexamer Primers consist of a mixture of oligonucleotides representing all possible hexamer sequences. Random Hexamer Primers are commonly used for priming single-stranded DNA or RNA for extension by DNA polymerases or reverse transcriptases. During cDNA generation, random priming gives random coverage to all regions of the RNA to generate a cDNA pool containing various lengths of cDNA. Random priming is incapable of distinguishing between mRNA and other RNA species present in the reaction. Supplied in 500 µL at a concentration of 50 ng/µL.

Primer sequence: 5' - d (NNNNNN) -3' N = G, A, T or C

Product Citations:

1. Belteki, G., *et al. J, Clin. Endo. Met.* **95(8)**, 3798-3805 (2010).
2. Glanville, E. J. & Seebacher, F. *Comp. Biochem. Physiol.* **155(3)**, 383-391 (2010).
3. Walter, I & Seebacher, *F. J. Expt. Biolo.* **212**, 2328-2336 (2009).
4. Konrad, A., *et al. J. Virol.* **83(6)**, 2563-2574 (2009).

dNTP Sets & Mixes

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	FINAL CONC.	PRESENTATION	CAT NO.
dNTP Sets			
4 x 25 µmol	100 mM total	4 x 250 µL	BIO-39025
4 x 100µmol	100 mM total	4 x 4 x 250 µL	BIO-39026
4 x 100 µmol	100 mM total	4 x 1 mL	BIO-39049
dNTP Mixes			
10 µmol	10 mM total	1 x 1 mL	BIO-39044
20 µmol	40 mM total	1 x 500 µL	BIO-39043
50 µmol	100 mM total	1 x 500 µL	BIO-39028
100 µmol	10 mM total	10 x 1 mL	BIO-39053
200 µmol	100 mM total	4 x 500 µL	BIO-39029
dUTP Mix			
25 µmol	50 mM total	1 x 500 µL	BIO-39041

Features:

- **Ultra-pure: >99% trisphosphate determined by HPLC**
- **Free from PCR inhibitors**
- **DNase, RNase and Nickase free**
- **Presented in lithium salts**
- **Choice of sets or mix packs**

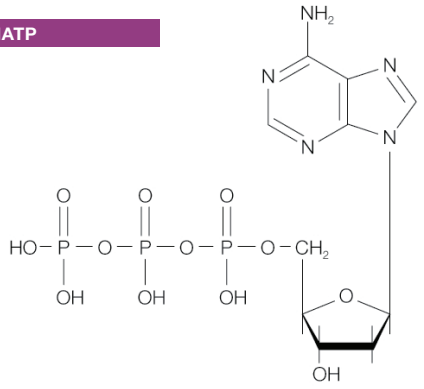
Description: Manufactured by Meridian in a purpose-built facility, a set of ready-to-use molecular grade ultra-pure dNTP solutions consisting of 4 separate 100 mM solutions of dATP, dGTP, dCTP, and dTTP, at pH 7.5 and supplied as lithium salts in purified water.

The ultra-pure dNTP Mix contains the dATP, dGTP, dCTP, and dTTP solutions in one tube and is designed to save hands-on time for researchers and minimize the possibility of contamination and pipetting errors.

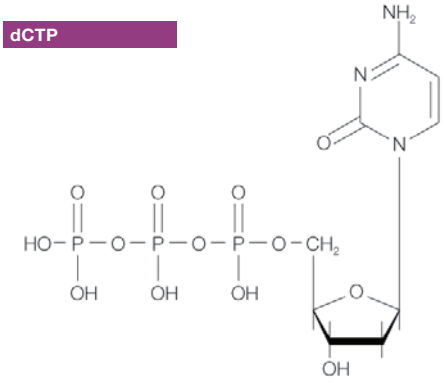
Product Citations:

dNTP Sets
1. Roschanski, N. *et al. J. Bacteriol.* **193**, 1745 - 1756 (2011).
2. Yanagihara, K. *et al., Polar Science* **5(3)**, 375-382 (2011).
3. Hensen, I. *et al., Am. J. Botany* **98**, 1825 - 1833 (2011).
dNTP Mixes
1. Ferraz-de-Souza, B., *et al., FASEB J.* **25**, 1166-1175 (2011).
2. Sato, S. *et al., DNA Res.* **18(1)**, 65-76 (2011).
3. Yeap, H.L. *et al. Genetics* **187**, 583 - 595 (2011).
4. Shirasawa, K. *et al., DNA Res* **18(4)**, 221-232 (2011).
5. Novy, A. & Jones K.C. *et al., Am. J. Botany* **98**, e280 - e281 (2011).

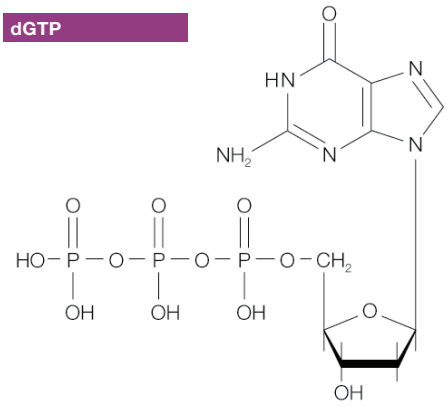
dATP



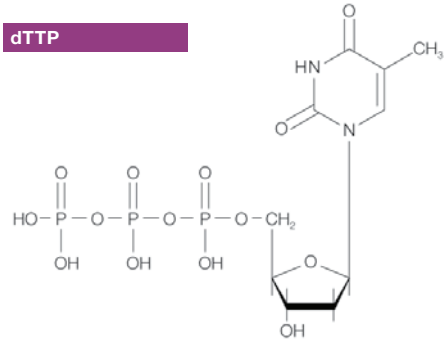
dCTP



dGTP



dTTP



Agarose, Molecular Grade

Store at Room Temperature | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
100 g	BIO-41026
500 g	BIO-41025

Features:

- **Excellent value and clarity**
- **Strong gels at low concentration**
- **DNase/RNase-free**

Applications:

- **DNA/RNA electrophoresis**
- **Ideal for separating nucleic acids of a wide range of sizes, especially large fragments ≥1000 bp**

Description: Meridian's Agarose, Molecular Grade is ideally suited for routine analysis of nucleic acids by gel electrophoresis (fig. 1a) and blotting. Meridian's extremely pure, high molecular biology grade agarose has no detectable DNase or RNase activity and forms strong gels with low background (fig. 1b). Due to its low EEO, DNA will have a high electrophoretic mobility.

Product Citations:

1. Ansari, S. B., *et al. African J. Biotechnol.* **9(43)**, 7230-7235 (2010).
2. Arpanahi, A., *et al. Gen. Res.* **19**, 1338-1349 (2009).
3. Passante, E., *et al. Inflamm. Res.* **58(9)**, 611-618 (2009).
4. Benest, A. V., *et al. Meth. Mol. Biol.* **467**, 251-270 (2009).
5. Kaszimierczak, K. A., *et al. Antimicrob. Agents Chemo.* **52(11)**, 4001-4009 (2008).
6. Fernandes, J. M. O., *et al. J. Exp. Biol.* **210**, 3461-3472 (2007).

Agarose Tablets

Store at Room Temperature | Shipped at Ambient Temperature

PACK SIZE	PRESENTATION	CAT NO.
300 g	600 x 0.5 g	BIO-41027

Features:

- **Exactly preweighed tablets**
- **DNase/RNase free**
- **Convenient and time saving**
- **Greater gel-to-gel consistency**
- **Gels as low as 0.5%**

Applications:

- **DNA/RNA electrophoresis**
- **Ideal for separating nucleic acids of a wide range of sizes**

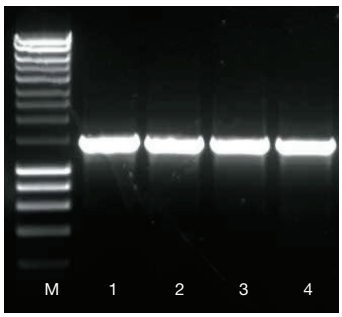
Description: Meridian's Agarose Tablets (DNase/RNase free) are designed to provide a cleaner, safer, no-mess environment and more convenience than powdered agarose. Each tablet contains a pre-determined amount of agarose (0.5 g), eliminating the need to weigh out loose agarose powder. Simply add the appropriate number of tablets to your buffer, incubate at room temperature for five minutes, heat the solution and then prepare your gel as normal.

Product Citations:

1. Ansari, A. and Emery, V. C. *J. Virol.* **73(4)**, 3284-3291 (1999).

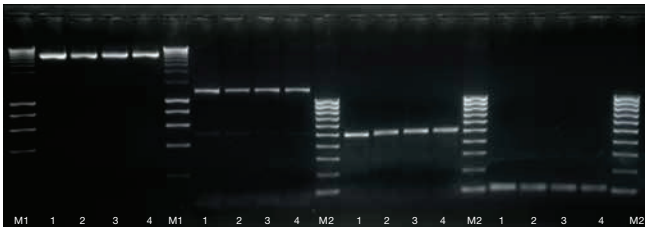
Fig. 1 Meridian agarose provides high resolution of DNA and RNA fragments separated by gel electrophoresis.

a)



20 mg freeze-dried budding leaves of *Arabidopsis thaliana* were homogenized using liquid nitrogen and with a rotor stator homogenizer. Genomic DNA was isolated using ISOLATE II Plant DNA Mini Kit. A 1.4 kb fragment of allene oxide synthase gene was amplified from the isolated DNA using MangoMix, and run on a 1% agarose gel (BIO-41026). Lanes: HyperLadder 1 kb (M), liquid nitrogen ground material (1, 3), rotor stator homogenized material (2, 4).

b)



Various sized DNA fragments were run on 1% TAE agarose gel and extracted using ISOLATE II PCR and Gel Kit. The isolated fragments were again run on 1% TAE agarose gel along with the original fragments. Lanes: HyperLadder 1 kb (M1), HyperLadder 100 bp (M2), Not extracted (1), ISOLATE II PCR and Gel Kit (2), Supplier A (3), Supplier B (4). The results illustrate a low background and clean sharp bands over a wide range of sizes.

RiboSafe RNase Inhibitor

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
2500 Units	40 u/µL	BIO-65027
10,000 Units	40 u/µL	BIO-65028

Features:

- **Complete inhibition of RNase A, B and C**
- **Significantly increases RT-PCR sensitivity**
- **DNase/RNase and Nickase free**
- **No inhibition of polymerase/transcriptase activity**
- **Stable over a wide range of pH, temperatures and DTT concentrations**

Applications:

- **RNA purification**
- **cDNA synthesis**
- **RNA sequencing**
- ***in vitro* RNA transcription**

Description: Meridian Ribonuclease Inhibitor (RiboSafe RNase Inhibitor) is a recombinant protein which completely inhibits a broad spectrum of eukaryotic RNases, including RNases A, B and C by binding non-covalently in a 1:1 ratio (fig. 1 & 2). RiboSafe shows no inhibition of polymerase (fig. 3) or transcriptase activity (fig. 4) and it is not effective against RNase H, T1, S1-nuclease or RNase from *Aspergilus*. With an association constant of 10^{14}M, RiboSafe is useful in any applications where the presence of RNases is a potential problem. RiboSafe RNase Inhibitor is tested for activity, SDS-PAGE purity, and the absence of endonucleases, nickases and exonucleases. The enzyme is supplied at a concentration of 40 u/µL.

Product Citations:

1. Gollan, P. J. & Bhave, M. *Plant Physiol. Biochem.* **48(8)**, 655-662 (2010).
2. Wu, Y-C., *et al. Blood* **116(7)**, 1070-1078 (2010).
3. Chatterjee, A. & Chatterji, U. *Reprod. Biol. Endocrinol.* **8**, 80 (2010).
4. Lamprecht, R.L., *et al. Eur. J. Plant Pathol.* **123**, 105–110 (2009).
5. Castro, R., *et al. Mol. Immunol.* **45(2)**, 428-437 (2008).
6. Das, B.K., *et al. Fish & Shellfish Immunol.* **23(4)**, 825-830 (2007).

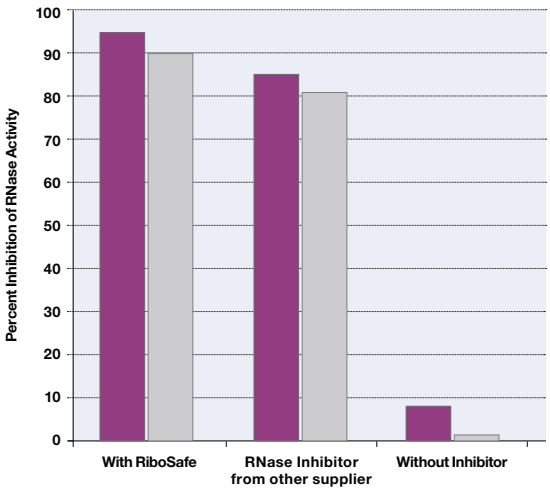


Fig. 1 RiboSafe RNase Inhibitor provides superior RNA protection.
Inhibition of RNase A by RiboSafe RNase Inhibitor and RNase Inhibitor from another supplier was assessed with the total Yeast RNA assay for the measurement of RNase activity (purple columns) and the pre-incubation-assay (grey columns). RiboSafe RNase Inhibitor blocks RNase A with higher efficiency than other commercially available RNase inhibitors.

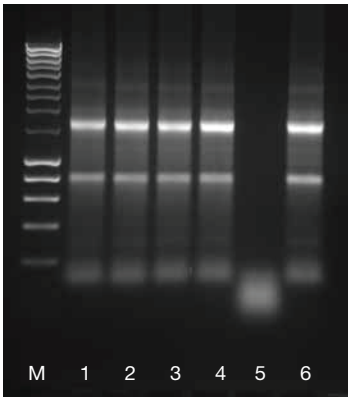


Fig. 2 RiboSafe inhibits increasing amounts of RNase A with high efficiency.
2 µg of total human HeLa cell RNA was incubated with 20 Units of RiboSafe RNase Inhibitor and 2 ng, 750 pg, 250 pg and 125 pg of RNase A (lanes 1-4) at 37°C for 30 min. Controls were no RiboSafe RNase Inhibitor (lane 5) and total HeLa cell RNA (lane 6) and 2 µg of total human HeLa cell RNA incubated with 125 pg RNase A. HyperLadder 1 kb (M).

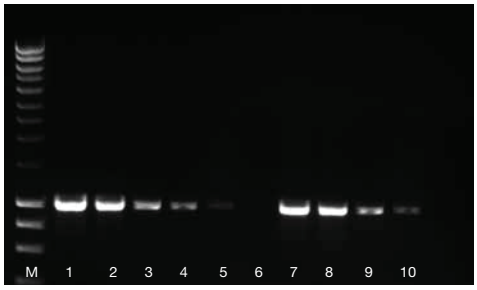


Fig. 3 RiboSafe shows no inhibition of polymerase.
A two-fold serial dilution of Total HeLa cell RNA (1 µg - 0.075 µg) was reverse transcribed in the presence and in the absence of RiboSafe RNase Inhibitor, followed by the amplification of a 1 kb fragment of the Angiotensin receptor II gene using (lanes 1-10). HyperLadder 1 kb (M).

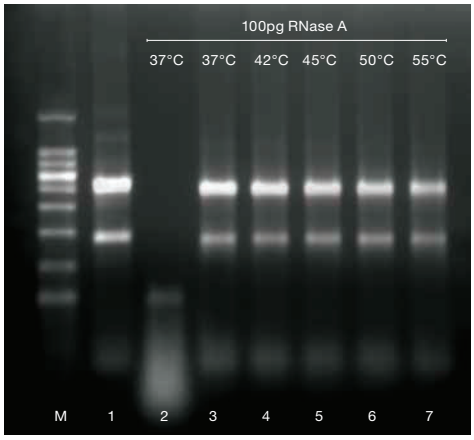


Fig. 4 RiboSafe RNase Inhibitor is active up to temperatures of 55°C.
2 µg aliquots of total mouse RNA were incubated with 40 Units of RiboSafe RNase Inhibitor and 100 pg of RNase A at various temperatures for 30 minutes. Lanes: RNA ladder (M), Total mouse RNA (1), Total mouse RNA with RNase A only (2), Total mouse RNA with RiboSafe RNase Inhibitor and RNase A (3-7).

Clearly the Best

Meridian ultra-pure dNTPs are enzymatically synthesized from premium-quality dNMPs by phosphorylation, using high-throuput, highly specific production systems in our purpose-built facilities.

This manufacturing process eliminates impurities and PCR-specific inhibitors, such as modified nucleotides, tetraphosphates and inorganic pyrophosphates, which are commonly observed in other commercially available dNTP products.

Meridian dNTPs undergo stringent purification steps as determined by quantitative HPLC and possess at least 99% purity.

Nucleotides

Specifications of Ultra-pure dNTPs

The purity of dNTPs is one of the most important parameters for their use in clinical, diagnostic and by molecular biology laboratories. Even trace amounts of impurities present in dNTP preparations may interfere with sensitive technologies, such as low-copy qPCR and long range PCR assays. These impurities include deaminated/methylated dNTPs and other deoxynucleoside phosphates, such as dNMP, dNDP or their tetra- and polyphosphates that can compete with or completely inhibit a PCR reaction; chemicals used during production that may interfer with fluorescence detection in qPCR, as well as traces of enzymatic activities (DNase, RNase and Nickase activity) that will compromise cDNA synthesis. Meridian's ultra-pure dNTPs are enzymatically synthesized from premium quality dNMPs and purified as determined by HPLC and possesses at least 99% purity.

	dATP	dCTP	dGTP
Product	dATP lithium 100 mM solution	dCTP lithium 100 mM solution	dGTP lithium 100 mM solution
Nomenclature	2'-deoxyadenosine-5'-triphosphate	2'-deoxycytidine-5'-triphosphate	2'-deoxyguanosine-5'-triphosphate
Formula	$C_{10}H_{12}N_5O_{12}P_3Li_4$	$C_9H_{12}N_3O_{13}P_3Li_4$	$C_{10}H_{12}N_5O_{13}P_3Li_4$
Molecular Weight	514.9 g/mol	490.9 g/mol	530.9 g/mol
λmax pH 7.0	259 nm	272 nm	252 nm
ε at λmax @ pH7.0	15.4 E x $mmol^{-1}$ x cm^{-1}	9.1 E x $mmol^{-1}$ x cm^{-1}	13.7 E x $mmol^{-1}$ x cm^{-1}
A_{250}/A_{260}	0.78 ± 0.03	0.82 ± 0.03	1.16 ± 0.05
A_{280}/A_{260}	0.15 ± 0.02	0.98 ± 0.03	0.66 ± 0.03
Concentration	100 mM ± 5%	100 mM ± 5%	100 mM ± 5%
Appearance	Clear Colorless Solution	Clear Colorless Solution	Clear Colorless Solution
pH of Solution	7.5	7.5	7.5
dNTP (HPLC Area)	≥99%	≥99%	≥99%
dNDP (HPLC Area)	<1%	<1%	<1%
DNase, RNase, Nicking Activity	Negative	Negative	Negative
Storage	at -20°C	at -20°C	at -20°C
Stability	≤24 months	≤24 months	≤24 months

Validated Applications:

- Standard PCR assays
- Long range PCR assays
- cDNA synthesis/RT-PCR
- qPCR
- Microarrays
- DNA sequencing
- Site-directed mutagenesis

Features:

- 99% purity determined by HPLC
- Extended shelf-life of 24 months at -20°C
- Free from PCR inhibitors
- DNase, RNase and Nickase free
- Supplied as individual dNTPs, in sets and mixes
- Genotyping
- Labeling

dTTP	dUTP
dTTP lithium 100 mM solution	dUTP lithium 100 mM solution
2'-deoxythymidine-5'-triphosphate	2'-deoxyuridine-5'-triphosphate
$C_{10}H_{13}N_2O_{14}P_3Li_4$	$C_9H_{12}N_2O_{14}P_3Li_4$
505.9 g/mol	492.884 g/mol
267 nm	262 nm
9.6 E x $mmol^{-1}$ x cm^{-1}	10.0 E x $mmol^{-1}$ x cm^{-1}
0.65 ± 0.03	0.75 ± 0.03
0.73 ± 0.02	0.38 ± 0.02
100 mM ± 5%	100 mM ± 5%
Clear Colorless Solution	Clear Colorless Solution
7.5	7.5
≥99%	≥99%
<1%	<1%
Negative	Negative
at -20°C	at -20°C
≤24 months	≤24 months

dNTPs Directly from the Manufacturer

Since its foundation in 1992, Meridian has been actively involved in the development and manufacture of ultrapure deoxynucleotides (dNTPs). Our state-of-the-art enzymatic manufacturing processes and facilities, combined with stringent quality assurance and control systems, enable us to manufacture dNTPs with the highest level of quality and performance, crucial for sensitive techniques and critical applications in molecular biology. Meridian is constantly developing and enhancing its production capacity and expertize in the nucleotide area.

Quality Control

Meridian's ultra-pure dNTPs undergo functional tests with a wide range of assays (fig. 1) to guarantee outstanding results.

Performance and Sensitivity

Ultra-pure dNTPs have been validated for use in a variety of molecular biology applications including highly sensitive techniques such as qPCR (fig. 2), long range PCR (fig. 3), RT-PCR (fig. 4) and low-copy or rare-message assays (fig. 5).

High Efficiency PCR Reactions

qPCR is perhaps the most sensitive technique for gene expression analysis and is reliant upon the quality of reagents to yield reliable data. Meridian's ultra-pure dNTPs used in combination with a highly efficient hot-start DNA polymerase are ideal for PCR methods over a large variety of cDNA/DNA template preparations and are used in all of Meridian's real-time mixes.

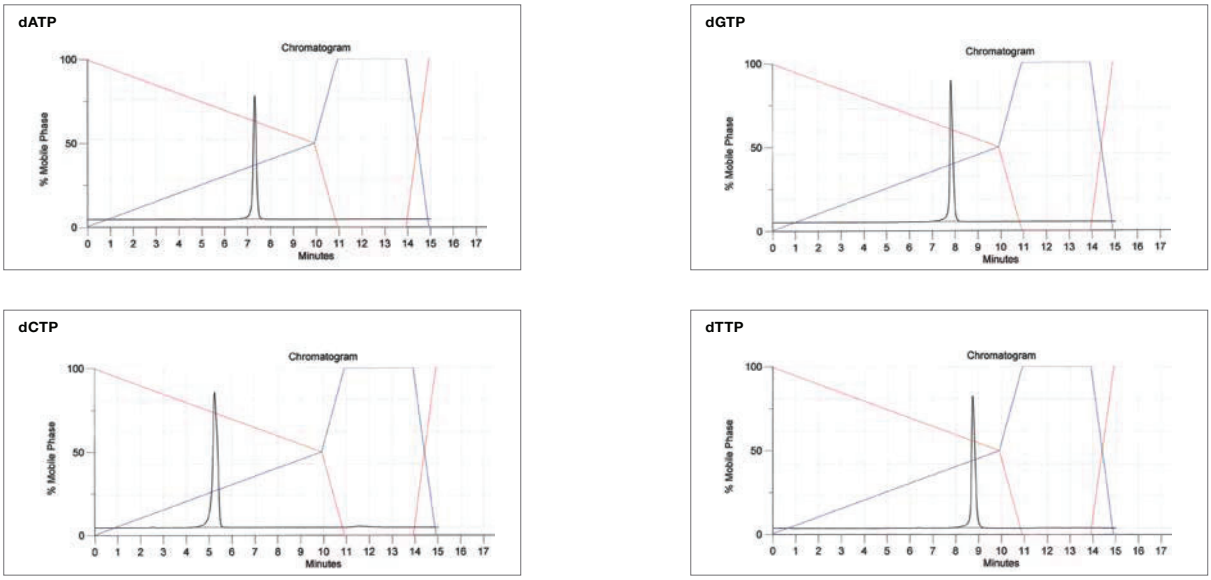


Fig. 1 HPLC Chromatograms of Meridian dNTPs show extremely high level of purity.

Extended Storage Life

Meridian's dNTPs have the distinct advantage of being presented as lithium salts. dNTPs presented in lithium salts are more resistant to repeated freeze/thaw cycles and remain sterile during storage (lithium ions exhibit bacteriostatic activity towards most microorganisms). dNTPs are more soluble as lithium salts than sodium salts. This is particularly important for dGTP, which has a tendency to precipitate during freezing, thereby causing an imbalance in the final dNTP concentration. Lithium salts are also more soluble in ethanol than sodium salts, so their removal by ethanol precipitation is more efficient, as it reduces salt artifacts and increases the efficiency of sequencing and labeling applications.

Meridian's dNTPs are stable for 24 months when stored in a -20°C constant-temperature freezer.

Configurations

Meridian's dNTPs are available as both convenient 100 mM sets (in four pack sizes) and as ready-to-use dNTP mixes. The dNTP mixes can be added directly to amplification reactions to save time, reduce the risk of contamination and ensure the reproducibility of results. The dNTP solutions are ready-to-use at pH 7.5 in lithium salts, which offer improved stability of the dNTPs in reactions, and a longer shelf life as compared with sodium salts.

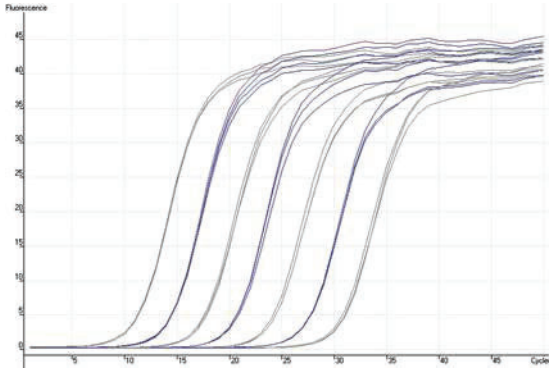


Fig. 2 qPCR over a Broad Dynamic Range.
Meridian's dNTPs are validated for use in qPCR experiments. A fragment of the GAPDH gene was amplified and the results show exact replicates over a dynamic range of 1 x 10^7.

Fig. 3 Exceptional PCR Amplification.
To demonstrate the high level of purity of Meridian's dNTPs, a long-range 20 kb PCR reaction was performed using ultra-pure dNTPs and RANGER DNA polymerase (1). HyperLadder 1 kb (M)

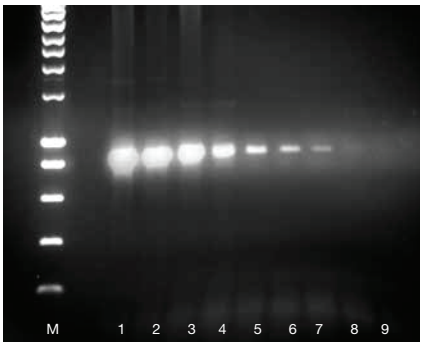


Fig. 4 Reverse Transcription PCR.
Various quantities of Total HeLa cell RNA were reverse-transcribed using Meridian's dNTPs, Reverse Transcriptase and Oligo$(dT)_{18}$ primer in a 20 µL reaction, 50 ng (1), 25 ng (2), 10 ng (3), 1 ng (4), 500 pg (5), 250 pg (6), 100 pg (7), 50 pg (8), 0 pg (9). HyperLadder 1kb (M). Subsequently, 5 µL of each reaction was used in conjunction with a β-actin specific primer to amplify an 860 bp band.

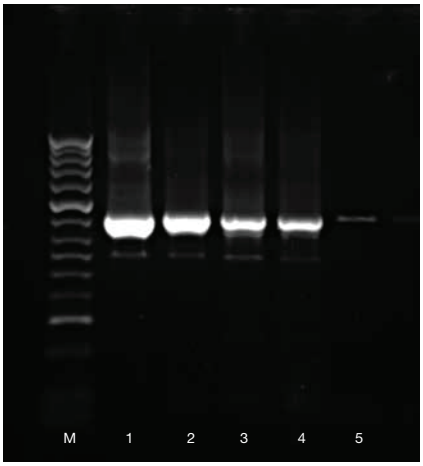


Fig. 5 Low template concentration assay.
Successful amplification of a fragment of a human gene from 50 ng - 0.1 ng (lanes 1-5) of human genomic DNA template using Meridian's dNTPs. HyperLadder 50 bp (M).

dNTP Sets & Mixes

Storage -20°C I Shipped on Dry or Blue Ice

PACK SIZE	FINAL CONC.	PRESENTATION	CAT NO.
dNTP Sets			
4 x 25 µmol	100 mM total	4 x 250 µL	BIO-39025
4 x 100µmol	100 mM total	4 x 4 x 250 µL	BIO-39026
4 x 100 µmol	100 mM total	4 x 1 mL	BIO-39049
dNTP Mixes			
10 µmol	10 mM total	1 x 1 mL	BIO-39044
20 µmol	40 mM total	1 x 500 µL	BIO-39043
50 µmol	100 mM total	1 x 500 µL	BIO-39028
100 µmol	10 mM total	10 x 1 mL	BIO-39053
200 µmol	100 mM total	4 x 500 µL	BIO-39029
dUTP Mix			
25 µmol	50 mM total	1 x 500 µL	BIO-39041

Features:

- **Ultra-pure: >99% trisphosphate determined by HPLC**
- **Free from PCR inhibitors**
- **DNase, RNase and Nickase free**
- **Presented in lithium salts**
- **Choice of sets or mix packs**

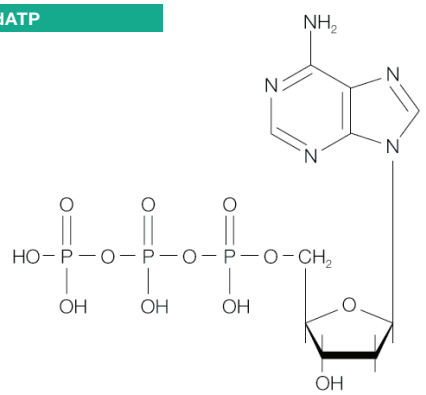
Description: Manufactured by Meridian in a purpose-built facility, a set of ready-to-use molecular grade ultra-pure dNTP solutions consisting of 4 separate 100 mM solutions of dATP, dGTP, dCTP, and dTTP, at pH 7.5 and supplied as lithium salts in purified water.

The ultra-pure dNTP Mix contains the dATP, dGTP, dCTP, and dTTP solutions in one tube and is designed to save hands-on time for researchers and minimize the possibility of contamination and pipetting errors.

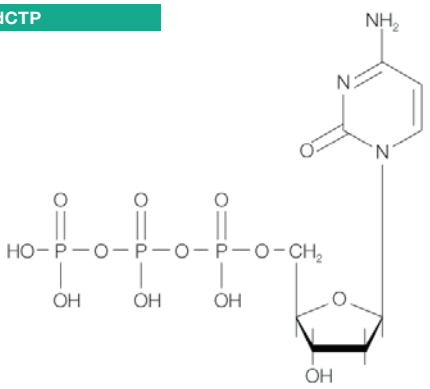
Product Citations:

dNTP Sets
1. Roschanski, N. *et al. J. Bacteriol.* **193**, 1745 - 1756 (2011).
2. Yanagihara, K. *et al., Polar Science* **5(3)**, 375-382 (2011).
3. Hensen, I. *et al., Am. J. Botany* **98**, 1825 - 1833 (2011).
dNTP Mixes
1. Ferraz-de-Souza, B., *et al., FASEB J.* **25**, 1166-1175 (2011).
2. Sato, S. *et al., DNA Res.* **18(1)**, 65-76 (2011).
3. Yeap, H.L. *et al. Genetics* **187**, 583 - 595 (2011).
4. Shirasawa, K. *et al., DNA Res* **18(4)**, 221-232 (2011).
5. Novy, A. & Jones K.C. *et al., Am. J. Botany* **98**, e280 - e281 (2011).

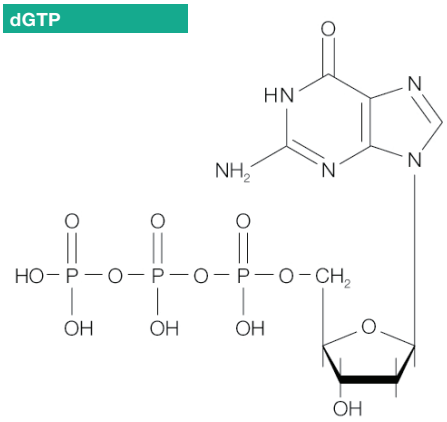
dATP



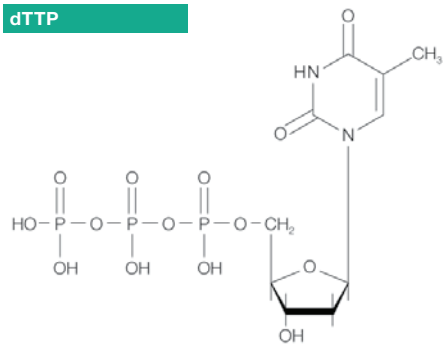
dCTP



dGTP



dTTP



Individual **dNTPs**

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	FINAL CONC.	PRESENTATION	CAT NO.
dATP			
25 µmol	100 mM	1 x 250 µL	BIO-39036
dCTP			
25 µmol	100 mM	1 x 250 µL	BIO-39038
dGTP			
25 µmol	100 mM	1 x 250 µL	BIO-39037
dTTP			
25 µmol	100 mM	1 x 250 µL	BIO-39039
dUTP			
25 µmol	100 mM	1 x 250 µL	BIO-39035

Features:

- **Ultra-pure: >99% trisphosphate determined by HPLC**
- **Free from PCR inhibitors**
- **DNase, RNase and Nickase free**
- **Bulk sizes available**

Description: Manufactured by Meridian in a purpose-built facility, ready-to-use molecular grade individual ultra-pure dNTP solutions at pH 7.5 supplied as lithium salts in purified water. For use in a wide range of applications including DNA polymerization reactions, DNA Labeling, and sequencing processes.

The ultra-pure dUTP Mix is a solution containing 10 mM of each dATP, dGTP, dCTP and 20 mM dUTP at pH 7.5 supplied as lithium salts in purified water. The mix is designed to save hands-on time for researchers and minimize the possibility of contamination.

Product Citations:

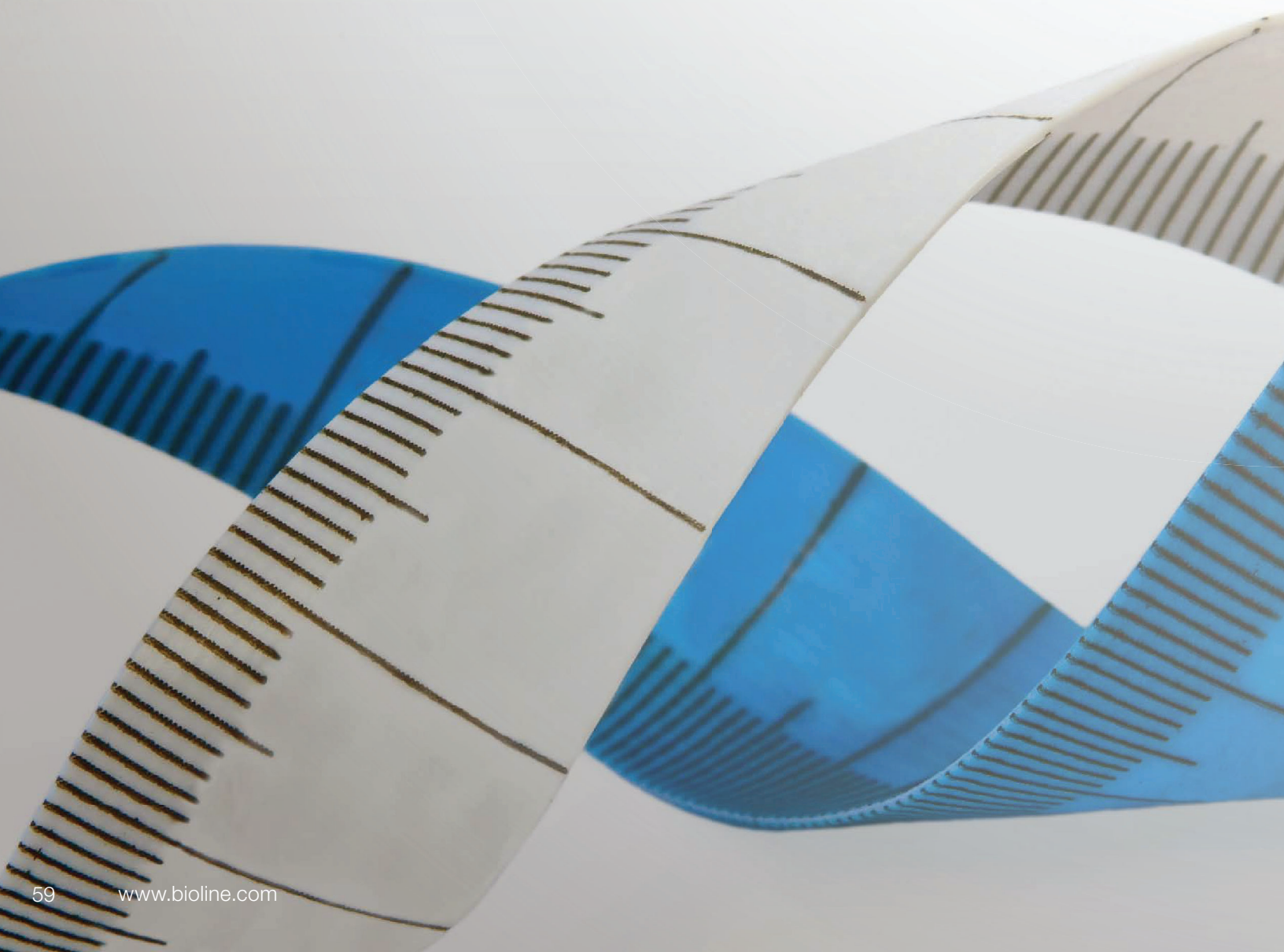
dNTPs
1. Meijer, P-J., *et al. Meth. Mol. Biol.* **525(3)**, 1-17 (2009).
2. Dellinger, M., *et al. Develop. Biol.* **319(2)**, 309-320 (2008).
3. Hampson, L., *et al. FEBS Lett.* **581(21)**, 3955-3960 (2007).
4. Lloyd, R. E., *et al. Gene.* **172**, 2515-2527 (2006).
5. Tabone, T., *et al. NAR* **34(6)**, e45 (2006).

dUTP
1. Konstantou, J. K., *et al. Eur. J. Human Gene.* **17**, 105-111 (2009).
2. Liontos, M., *et al. Am. J. Pathol.* **175**, 376-391 (2009).
3. Brown, J. T., *et al. BMC Med. Gen.* **7(69)**, (2006).
4. Pass, M. A., *et al. J. Clin. Microbiol.* **38(5)**, 2001-2004 (2000).

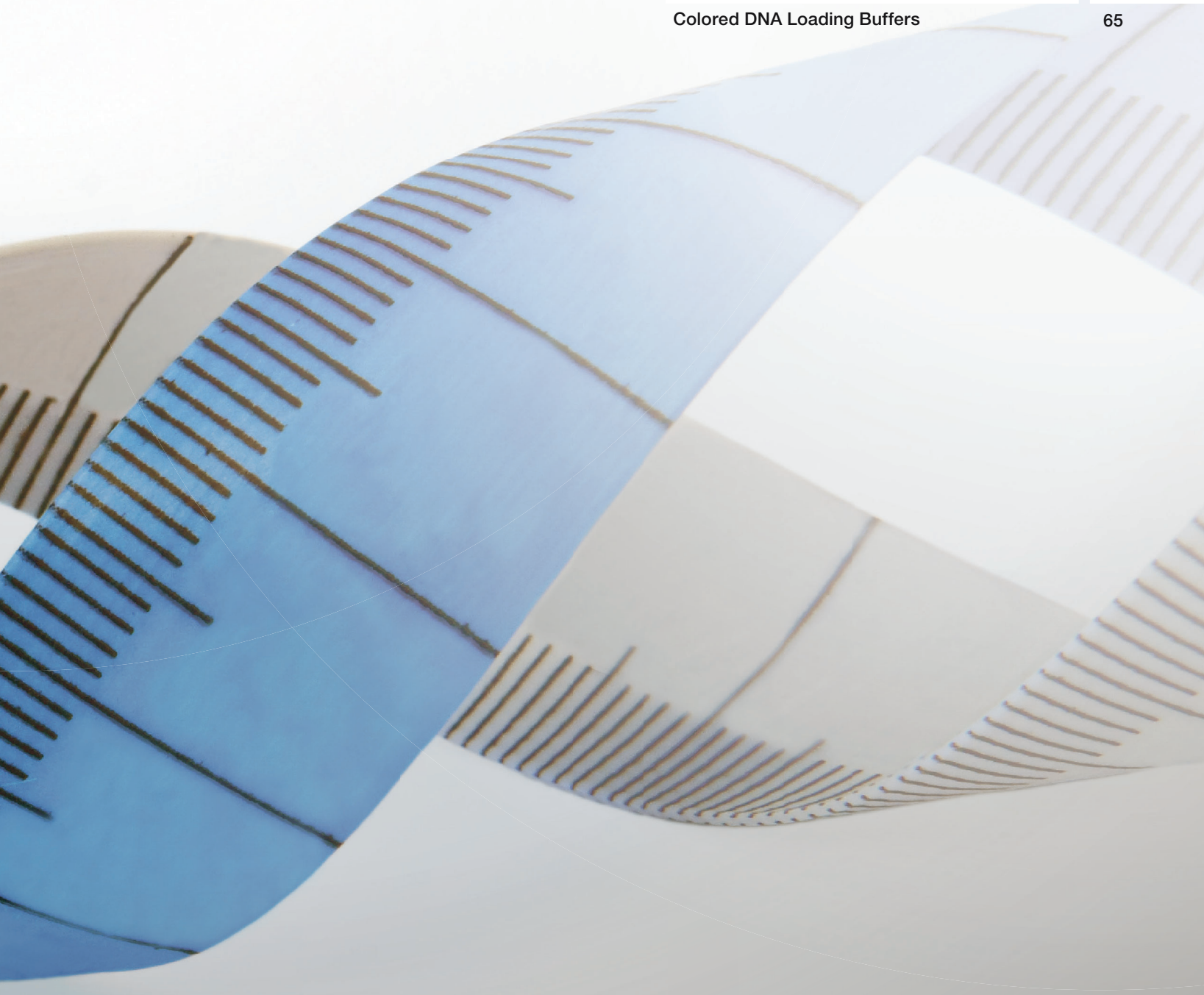
Standards You Can Rely On

DNA Ladders are nucleic acid fragments of specific base pair length, designed for sizing linear double-stranded DNA fragments. Meridian ready-to-use DNA HyperLadders includes one, two or three higher intensity reference bands for easy identification and orientation. HyperLadders are supplied premixed with loading buffer and are stable at room temperature. There is no need to heat or dilute HyperLadders prior to loading them onto a gel.

EasyLadders contain all the features of our HyperLadder range, but are designed for short runs (1 to 3 cm) in standard or high-throughput agarose gels, providing a fast way to determine size and quality of DNA fragments.



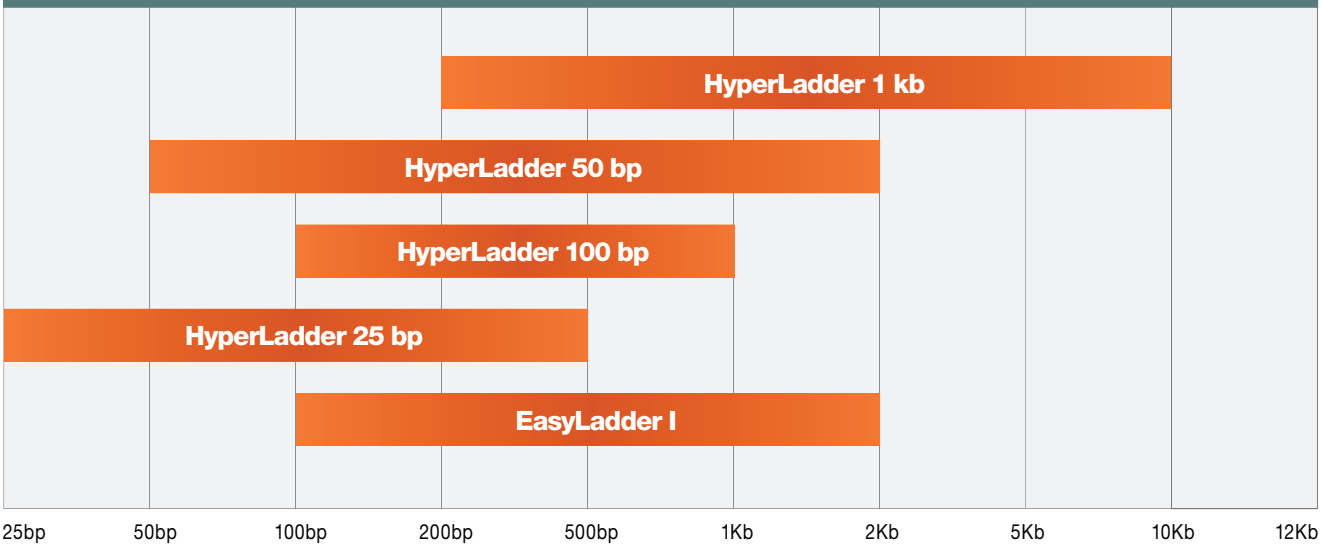
Molecular Weight Markers



HyperLadders & EasyLadders

Meridian offers a wide range of DNA Ladders premixed with Loading Buffer, enabling accurate sizing of DNA ranging between 25 bp and 10,000 bp and optional mass determination. The ready-to-use format minimizes the time spent diluting and adding tracking dye to the DNA Ladder. Simply transfer the Ladder from the vial to the gel. An additional 5x Sample Loading Buffer is supplied for your convenience.

DNA Ladder Selection Guide



Separation of DNA Ladders

Ladder	Separation Range (bp)	Leading Dye Color	High Intensity Bands (bp)	Page No.
HyperLadder 1 kb	200 - 10,037	Blue	1000 & 10,000	61
HyperLadder 50 bp	50 - 2000	Blue	300, 1000 & 2000	61
HyperLadder 100 bp	100 - 1013	Blue	300 & 1000	62
HyperLadder 25 bp	25 - 500	Blue	100 & 200	62
EasyLadder I	100 - 2000	Red	Even Bands	63

To minimize preparation time, DNA ladders are available with loading buffer in a ready-to-use format. Meridian's wide range of DNA Ladders are available in a ready-to-use format with loading buffer.

HyperLadders are created for accurate sizing of DNA fragments on agarose gels. EasyLadders are for shorter runs and can be run on standard or high-throughput agarose gels.

DNA Loading Buffer Blue, 5x, BIO-37045, 2 x 1 mL

5x DNA Loading Buffer Blue is a ready-to-use solution pre-mixed with blue dye to facilitate sample loading and to monitor the migration rate of DNA fragments during agarose electrophoresis. The presence of glycerol in the buffer ensures that the sample is deposited at the bottom of the sample well.

HyperLadder™ 1 kb

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
200 Lanes	BIO-33025
500 Lanes	BIO-33026

Components	200 Lanes	500 Lanes
HyperLadder 1 kb	2 x 500 µL	5 x 500 µL
5x Sample Loading Buffer	1 x 1 mL	1 x 1 mL

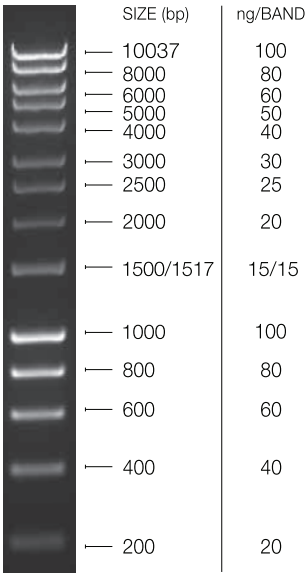
Features:

- **14 bands from 200 bp - 10,000 bp**
- **Accurate size determination**
- **Optional mass determination**
- **Easy identification and orientation**
- **Ready-to-use format**

Description: HyperLadder™ 1 kb is a popular ready-to-use molecular weight marker, especially designed for easy size determination. This ready-to-use format reduces handling steps and saves time; simply transfer HyperLadder 1 kb from the vial to the gel.

HyperLadder 1 kb produces a pattern of 14 regularly spaced bands, ranging from 200 to 10,000 bp. To allow easy identification and orientation, the 1000 and 10,000 bp bands have the highest intensity.

A 5x sample loading buffer is supplied for your convenience.



1% agarose gel
5 µL per lane

Product Citations:

1. Lu, Y-H., *et al. J.Biol. chem.* **286**, 5506-18 (2011)
2. Lynch, A. G., *et al. BMC Biotechnol.* **10**, 30 (2010).
3. Puspitaningrum, R., *et al. HAYATI J. Biosci.* **17(3)**, 110-114 (2010).
4. Freilas, S. S., *et al. Sep. Purifi. Technol.* **65**, 95-104 (2009).
5. Hobman, J. L., *et al. J. Bacteriol.* **189**, 8786-8792 (2007).
6. Candolfi, M., *et al. Mol. Therapy* **14**, 371–381 (2006).

HyperLadder™ 50 bp

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
200 Lanes	BIO-33039
500 Lanes	BIO-33040

Components	200 Lanes	500 Lanes
HyperLadder 50 bp	2 x 500 µL	5 x 500 µL
5x Sample Loading Buffer	1 x 1 mL	1 x 1 mL

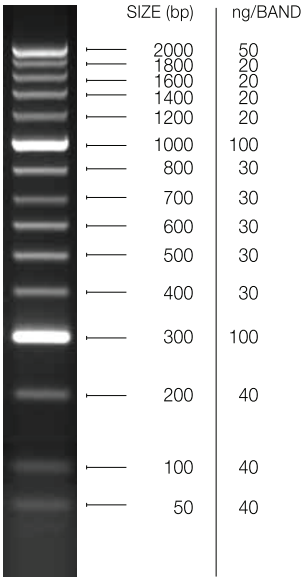
Features:

- **15 bands from 50 bp - 2000 bp**
- **Accurate size determination**
- **Optional mass determination**
- **Easy identification and orientation**
- **Ready-to-use format**

Description: HyperLadder™ 50 bp is a ready-to-use molecular weight marker, especially designed for easy size determination. This ready-to-use format reduces handling steps and saves time; simply transfer HyperLadder 50 bp from the vial to the gel.

HyperLadder 50 bp produces a pattern of 15 regularly spaced bands, ranging from 50 to 2000 bp. To allow easy identification and orientation, the 300, 1000 and 2000 bp bands have the highest intensity.

A 5x sample loading buffer is supplied for your convenience.



1.5% agarose gel
5 µL per lane

Storage Conditions:

HyperLadder 50 bp can be stored for up to 6 months at room temperature, 12 months at +4°C, or up to 24 months at -20°C. Avoid multiple freeze/thaw cycles. Gentle vortexing is recommended prior to use.

Product Citations:

1. Griffin, P.C., *et al BMC Biol.* **9(19)** (2011).
2. Baston-Buest, D. M., *et al. Reproduction* **139**, 741-748 (2010).
3. Quilaguy-Ayure D. M., *et al. Universitas Scientiarum*, **15(1)**, 17-26 (2010).
4. Silva, E., *et al. Vet. Microbiol.* **132**, 111-118 (2008).
5. Phillips, N. E., *et al. J. Exp. Marine Biol. Ecol.* **362 (2)**, 90-94 (2008).
6. Weiss, A., *et al. J. Chromatog.* **853**, 190-197 (2007).

HyperLadder™ 100 bp

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
200 Lanes	BIO-33029
500 Lanes	BIO-33030

Components	200 Lanes	500 Lanes
HyperLadder 100 bp	2 x 500 µL	5 x 500 µL
5x Sample Loading Buffer	1 x 1 mL	1 x 1 mL

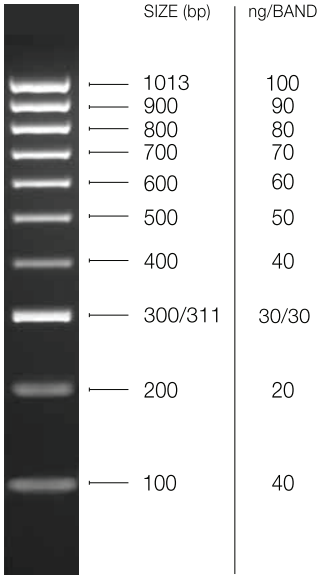
Features:

- **10 bands from 100 bp - 1000 bp**
- **Accurate size determination**
- **Optional mass determination**
- **Easy identification and orientation**
- **Ready-to-use format**

Description: HyperLadder™ 100 bp is a ready-to-use molecular weight marker, especially designed for easy size determination. This ready-to-use format reduces handling steps and saves time; simply transfer HyperLadder 100 bp from the vial to the gel.

HyperLadder 100 bp produces a pattern of 10 regularly spaced bands, ranging from 100 to 1000 bp. To allow easy identification and orientation, the 300 pb and 1000 bp bands have the highest intensity. Each band is an exact multiple of 100 bp.

A 5x sample-loading buffer is supplied for your convenience.



2% agarose gel
5 µL per lane

Product Citations:

1. Meredith, J.M. *et al. Plos ONE* **6(1)**, doi:10.1371/Journal. pone.0014587 (2011).
2. Dzahini-Obiatey, H. & Fox, R. *African J. Biotechnol.* **9(5)**, 593-603 (2010).
3. Van den Broeke, A., *et al. BMC Genomics.* **11**, 179 (2010).
4. Tivendale, K. A., *et al. Microbiol.* **155**, 450-460 (2009).
5. Garshasbi, M., *et al. Amer. J. Human Gen.* **82(5)**, 3783-3792 (2008).
6. Buonocore, F., *et al. Mol. Immunol.* **45(11)**, 3168-3177 (2008).

HyperLadder™ 25 bp

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
200 Lanes	BIO-33031
500 Lanes	BIO-33032

Components	200 Lanes	500 Lanes
HyperLadder 25 bp	2 x 500 µL	5 x 500 µL
5x Sample Loading Buffer	1 x 1 mL	1 x 1 mL

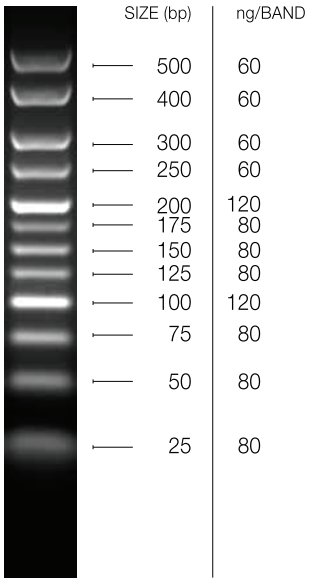
Features:

- **12 bands from 25 bp - 500 bp**
- **Accurate size determination**
- **Optional mass determination**
- **Easy identification and orientation**
- **Ready-to-use format**

Description: HyperLadder™ 25 bp is a ready-to-use molecular weight marker for size determination of DNA fragments. It is especially designed for short fragments such as apoptotic DNA oligonucleotides. This ready-to-use format reduces handling steps and saves time; simply transfer HyperLadder 25 bp from the vial to the gel.

HyperLadder 25 bp produces a pattern of 12 regularly spaced bands, ranging from 25 to 500 bp. To allow easy identification and orientation, the 100 and 200 bp bands have the highest intensity.

A 5x sample-loading buffer is supplied for your convenience.



3.5% agarose gel
5 µL per lane

Product Citations:

1. Davies, J.S., *et al. J. Biol. Chem.* **286(17)**, 15227-15239 (2011)
2. Flórez, O., *et al. Parasitol. Res.* **107(2)**, 439-442 (2010).
3. Vreulink, J.-M., *et al. J. App. Microbiol.* **109(4)**, 1411–1421 (2010).
4. Robinson, T., *et al. Anal. Chem.* **81(1)**, 302-306 (2009).
5. Thomson, S., *et al. Meth. Mol. Biol.* **512**, 233-248 (2009).
6. Williamson, M. R., *et al. J. Cell Sci.* **121**, 2696-2704 (2008).

EasyLadder I

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
200 Lanes	BIO-33045
500 Lanes	BIO-33046

Components	200 Lanes	500 Lanes
EasyLadder I	2 x 500 µL	5 x 500 µL
5x Sample Loading Buffer	1 x 1 mL	1 x 1 mL

Features:

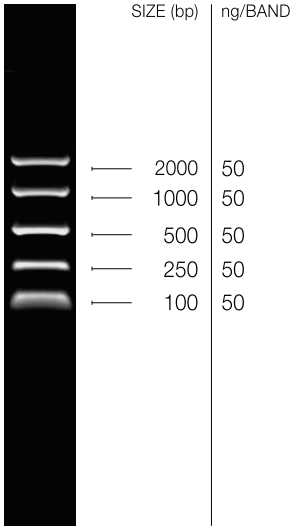
- **5 bands from 100 bp - 2000 bp**
- **Optional mass determination**
- **Ready-to-use format**

Applications:

- **Ideal for short runs**
- **Ideal for high-throughput applications**

Description: EasyLadder I is a ready-to-use DNA molecular weight marker, especially designed for DNA analysis in standard and high-throughput agarose gels. The ladder is premixed with red loading buffer.

EasyLadder I contains 5 even-intensity bands ranging from 100 to 2000 bp for easy identification of the DNA samples analyzed. EasyLadder I is ideal for short runs (1 to 3 cm) on agarose gels.



2% agarose gel
5 µL per lane

Product Citations:

1. Cavill, L., *et al. Food Microbiol* doi:10.1016/j.fm.2011.01.003 (2011).
2. Tasker, S., *et al. J. Med. Microbiol.* **59**, 1285-1292 (2010).
3. Bonilla-Findji, O., *et al. Appl. Enviro. Microbiol.* **75(14)**, 4801-4812 (2009).
4. Yu, J., *et al. Infection and Immunity* **77(2)**, 585-597 (2009).
5. Mutch, L. A., *et al. Advanced Materials. Res.* **20/21**, 485-488 (2007).

Colored DNA Loading Buffer

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CONC.	CAT NO.
5x Loading Buffer Blue		
2 x 1 mL	5x	BIO-37045

Features:

- **Colored loading for easy recognition**
- **No need to add dye**
- **Glycerol ensures sample is deposited at the bottom of the well**
- **Guaranteed reproducible results**

Applications:

- **Monitor migration rate during agarose electrophoresis**
- **Load samples on DNA agarose gels**

Description: The Meridian Colored DNA Loading Buffer is a ready-to-use solution premixed with bromophenol blue (Blue). The dye in the buffer migrates towards the anode at different rates depending on the dye and the concentration of the agarose gel (see Dye Mobility Table). The presence of glycerol in the buffer ensures that the sample is deposited at the bottom of the sample well.

When the buffer is mixed with the sample, the presence of the dye provides easy visualization of the wells in the agarose gel to which the sample has been added. Additionally, the dye migrates towards the anode at predictable rates during electrophoresis, thus providing an approximate reference band.

Dye Mobility Table

The table above gives the approximate migration rates of dyes in different agarose concentrations in TAE buffer. The values indicate the size of DNA fragments with which the dye will co-migrate at that particular gel concentration.

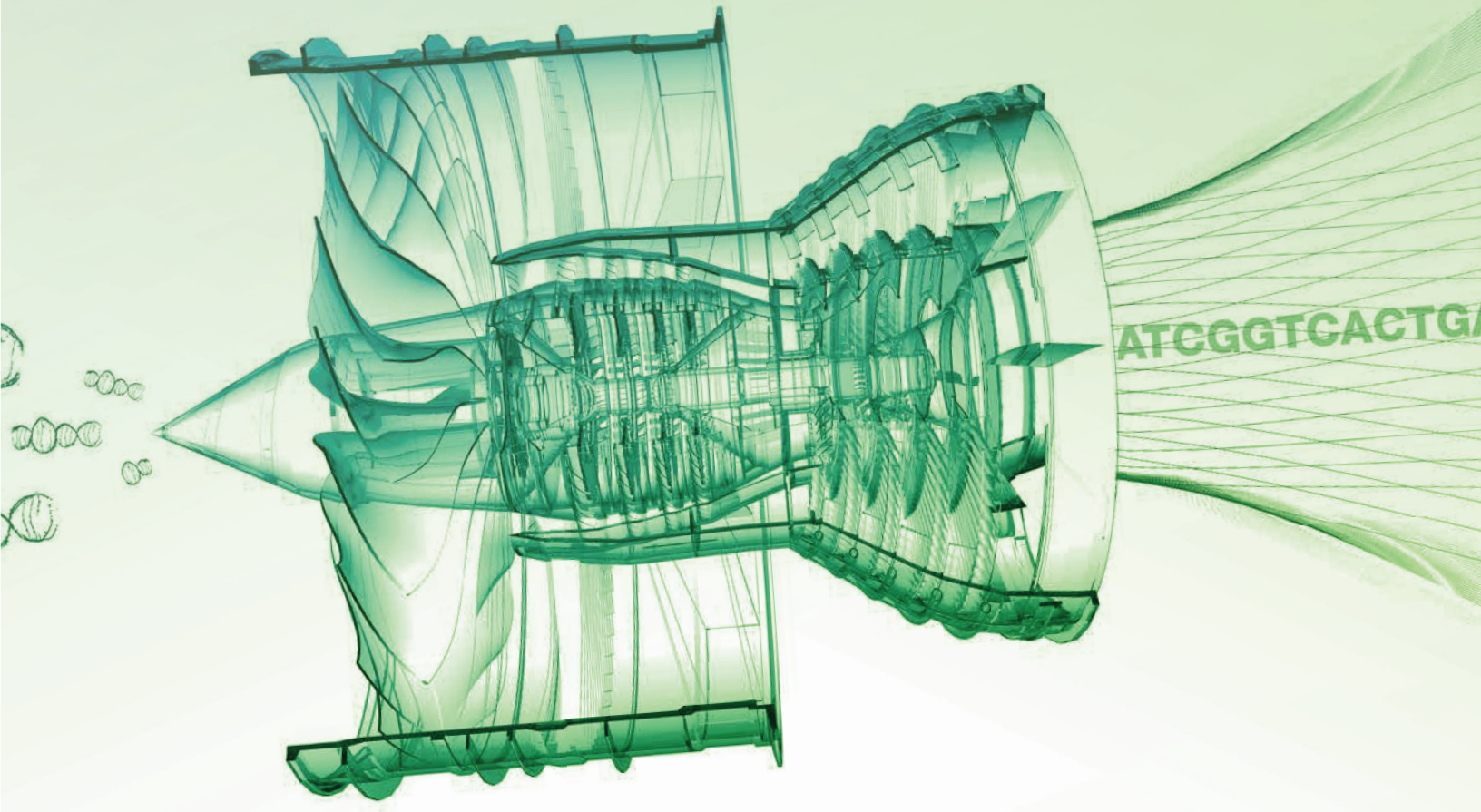
Product Citations:

1. Neary, J. M., *et al. Vet. Parasitol.* doi:10.1016/j.vetpar.2010.08.031 (2010).
2. Gomes, G. A., *et al. Sep. & Purifi. Tech.* **65(1)**, 22-30 (2009).
3. Singh, R., *et al. Meth. Mol. Biol.* **483**, 163-192 (2009).
4. Yu, Z., *et al. NAR.* **36(1)**, 9-13 (2008).
5. Böhm, M., *et al. J. Biol. Chem.* **280**, 5795-5802 (2005).
6. Nunan, N., *et al. Appl. Environ. Microbiol.* **71(11)**, 6784-6792 (2005).

Next Generation Sequencing

Massively parallel sequencing technology, termed Next Generation Sequencing (NGS), has transformed biological research, offering an unparalleled level of data collection, invigorating the field of genomics and revolutionizing the potential for understanding our genetic basis. As access to technology increases and costs become more affordable, NGS-based research and applications will continue to grow. The Meridian range of sample preparation and DNA pre-processing reagents is designed to maximize yield and subsequent NGS data quality using Illumina NGS platforms, supporting research and applied efforts in this exciting and growing field.

NGS DNA Library Preparation



JetSeq™ ER & Ligation Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
96 Reactions	BIO-68026

Components	96 Reactions
End-Repair Buffer, 5x	960 µL
ER Enzyme Mix	576 µL
Ligation Buffer, 5x	288 µL
Ligase	192 µL
Nuclease-Free Water	2 x 1.8 mL

Features:

- **Low input - end-repair, A-tailing and ligation combined in the same tube, thereby eliminating cleanup steps and improving sample yield**
- **Improved confidence - simpler protocol with fewer steps for reduced risk of sample loss and offering greater peace-of-mind**
- **Increased speed - fast library preparation for reduced time to results and increased sample throughput**
- **Highly efficient - reaction buffer pre-optimized to provide maximum reaction efficiency and highest conversion rates**
- **Improved quality - optimized, high quality reagents result in reliable library preparation from even very challenging samples, providing maximum coverage**
- **Flexibility – available as a PCR and a PCR-free kit, for use with Illumina adapters and indexes**

Description: The success of next-generation sequencing is dependent upon the precise and accurate processing of the input DNA. This requires high-quality library preparation using a coordinated series of standard molecular biology reactions whilst maintaining high yields during the intermediate purification steps.

The JetSeq™ ER and Ligation Kit is designed to generate high-quality PCR-free, next generation sequencing (NGS) libraries making it ideal for whole-genome sequencing applications on Illumina MiniSeq™, MiSeq™, NextSeq™ or HiSeq™ instruments. The kit contains all of the enzymes and buffers necessary for end-repair, A-tailing and ligation in convenient master mix formulations. It offers a fast, streamlined workflow and flexibility where users are free to use adapters of their choice.

By combining end-repair and A-tailing in one unique step, the JetSeq ER and Ligation Kit is able to reduce total NGS library preparation time and minimize the variability caused by additional handling, as well as the risk of contamination and material loss.

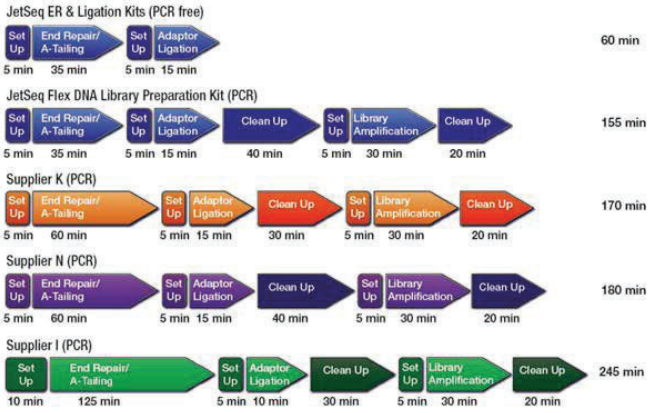


Fig 1. DNA Library Preparation workflow
The JetSeq NGS Library Preparation Kit incorporates fewer steps. The simpler, shorter protocols reduce both hands-on time and the total time required for preparation of library DNA.

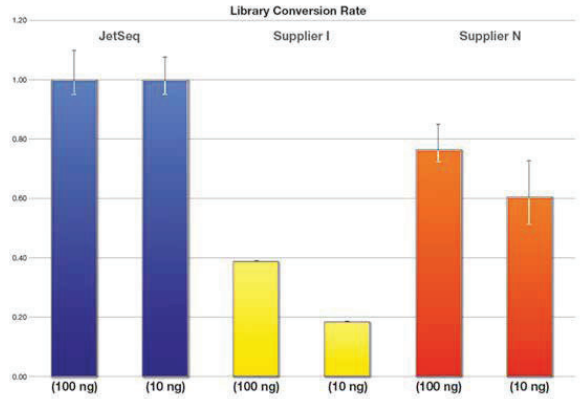


Fig 2. Library conversion rates
The libraries were prepared from 10 ng or 100 ng of human genomic DNA using manufacturers' recommendations. The library conversion rates were normalized to JetSeq Kit, demonstrating that JetSeq has a higher library conversion rate than Suppliers I and N.

JetSeq™ Flex DNA Library Preparation Kit

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
96 Reactions	BIO-68027

Components	96 Reactions
End-Repair Buffer, 5x	960 µL
ER Enzyme Mix	576 µL
Ligation Buffer, 5x	288 µL
Ligase	192 µL
PCR Buffer, 10x	480 µL
DNA Polymerase	192 µL
Nuclease-Free Water	4 x 1.8 mL

Features:

- **Low input - end-repair, A-tailing and ligation combined in the same tube, thereby eliminating cleanup steps and improving sample yield**
- **Improved confidence - simpler protocol with fewer steps for reduced risk of sample loss and offering greater peace-of-mind**
- **Increased speed - fast library preparation for reduced time to results and increased sample throughput**
- **Highly efficient - reaction buffer pre-optimized to provide maximum reaction efficiency and highest conversion rates**
- **High-yield - PCR polymerase and buffer, developed specifically for library preparation, giving maximum yield of sequence-ready library DNA**
- **Improved quality - optimized, high quality reagents result in reliable library preparation from even very challenging samples, providing maximum coverage**
- **Flexibility – available as a PCR and a PCR-free kit, for use with Illumina adapters and indexes**

Description: The success of next-generation sequencing is dependent upon the precise and accurate processing of the input DNA. This requires high-quality library preparation using a coordinated series of standard molecular biology reactions whilst maintaining high yields during the intermediate purification steps.

The JetSeq™ Flex DNA Library Preparation Kit is designed to generate high-quality next generation sequencing (NGS) libraries, even with more limited amounts of starting material and is suitable for sequencing on Illumina MiniSeq™, MiSeq™, NextSeq™ or HiSeq™ instruments. The kit contains all of the enzymes and buffers necessary for end-repair, A-tailing, ligation and PCR amplification in convenient master mix formulations. It offers a fast, streamlined workflow and flexibility where users are free to adapters of their choice.

By combining end-repair and A-tailing in one unique step, the JetSeq Flex DNA Library Preparation Kit is able to reduce total NGS library preparation time and minimize the variability caused by additional handling, as well as the risk of contamination and material lose. A high quality DNA polymerase is also supplied to selectively enrich library fragments carrying the adapter sequences and to amplify the amount of DNA prior to sequencing.

JetSeq™ Library Quantification Kits

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
Library Quantification Hi-ROX Kit	
500 Reactions	BIO-68028
Library Quantification Lo-ROX Kit	
500 Reactions	BIO-68029

Hi-ROX Kit Components	500 x 20 µL
JetSeq Primer Mix	2 x 1.25 mL
JetSeq FAST Hi-ROX Mix	5 x 1 mL
JetSeq Dilution Buffer	5 x 5 mL
Lo-ROX Kit Components	**500 x 20 µL**
JetSeq Primer Mix	2 x 1.25 mL
JetSeq FAST Lo-ROX Mix	5 x 1 mL
JetSeq Dilution Buffer	5 x 5 mL

Features:

- **Accurate - qPCR-based assay for quantification of only adapter-ligated library molecules, thereby enabling optimal flow cell loading for maximum data yield and quality.**
- **Sensitive - reliable quantification of even low-yield libraries, ideal for both PCR and PCR-free library preparation methods**
- **Fast - delivers accurate assay results in as little as 90 minutes, thereby reducing time to results.**
- **Convenient - contains a series of six pre-diluted DNA standards for rapid, simple standard curve development.**
- **Economical - contains sufficient reagents and standards to quantify eighteen individual libraries on separate plates**

Description: Accurate quantification of the number of amplifiable library molecules loading onto the flow cell is a critical step in the NGS workflow in obtaining high-quality read data. The JetSeq Library Quantification Kit provides all of the components, including JetSeq FAST SYBR® mix, primers and DNA standards of known concentration to allow quantification of library DNA.

JetSeq™ Clean

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
50 mL	BIO-68031
500 mL	BIO-68032

Features:

- **Precise - consistent bead size for highly-reproducible selection of the user-defined fragment range**
- **Efficient - excellent recovery of fragments greater than 100 bp and efficient removal of all contaminants**
- **Flexible - highly effective clean-up from all types of fragmentation, ligation and PCR reactions**
- **Fast - eliminates centrifugation or filtration steps for fast manual processing and straightforward integration with automated liquid handling platforms**
- **Robust - bead composition specifically developed to withstand the rigours of the NGS workflow**

Description: JetSeq™ Clean is a NGS library preparation clean-up system based on paramagnetic bead technology, designed for efficient purification of nucleic acid fragments in next generation sequencing workflow. JetSeq Clean provides maximum flexibility allowing for left-, right- or double-sided size selection.

JetSeq Clean removes, salts, primers, primer-dimers and dNTPs, while library fragments are selectively bound to the magnetic particles based on their size. Purified library fragments are eluted from the magnetic particles using water or a low salt buffer and can be used directly for all downstream NGS applications. The protocol can be performed manually, or adapted to liquid handling workstations (e.g. Agilent, Beckman, Caliper, Eppendorf, Hamilton, PerkinElmer and Tecan) using 96- or 384-well formats.

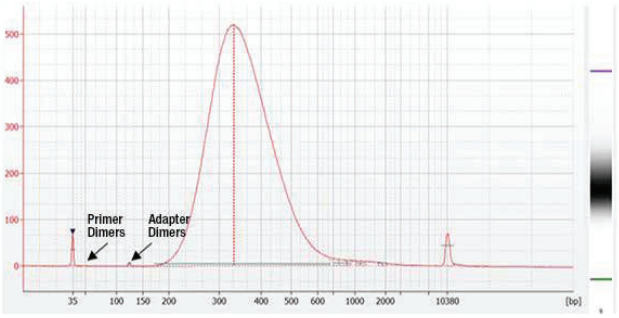


Fig 1. Removal of PCR contaminants by JetSeq Clean bead purification.
Electropherogram and virtual gel view showing removal of unincorporated adapters and PCR primers (arrows) after using the JetSeq Clean.

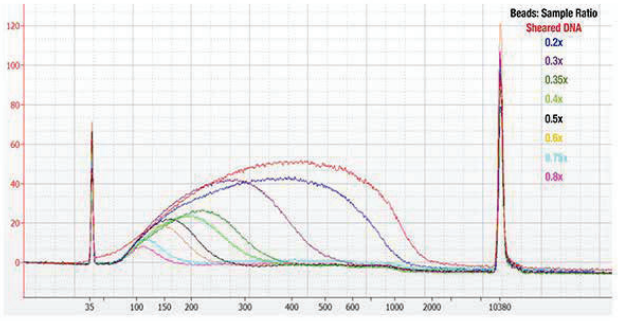


Fig 2. Size distribution after right-side size selection.
For right-side size selection, the fragmented sample is mixed with JetSeq Clean to a range of sample to bead ratios to recover fragments below an upper size limit. The peak electropherogram view results illustrate the precision of JetSeq Clean in selection of a specific, user-defined range of smaller fragments for sequencing.

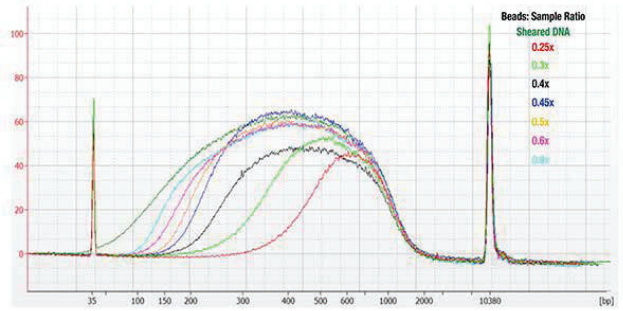


Fig 3. Size distribution after left-side size selection.
For left-side size selection, the fragmented sample is mixed with JetSeq Clean to a range of sample to bead ratios to recover fragments above a lower size limit. The peak electropherogram view results illustrate the precision of JetSeq Clean in selection of a specific, user-defined range of larger fragments for sequencing.

Essential Reagents for Successful Results

Trusted by scientists all over the world, the Meridian Essentials range provides ultra-pure, high quality reagents for molecular biology. This includes core products that deliver outstanding results at competitive prices and compliment our real-time qPCR SensiFAST™ kits, PCR enzymes, RNA analysis reagents and Markers, offering the convenience of ordering all reagents from one source.

Meridian's range of Essentials includes a comprehensive array of core products for everyday work. This includes Agarose, available both as powder and convenient pre-weighed tablets and buffers ready-to-use for loading and running electrophoresis gels. In addition there is a selection of optimized PCR reaction buffers, additives and enhancers, and other general molecular biology reagents.

Essential Reagents

Agarose, Molecular Grade

Store at Room Temperature | Shipped at Ambient Temperature

PACK SIZE	CAT NO.
100 g	BIO-41026
500 g	BIO-41025

Features:

- **Excellent value and clarity**
- **Strong gels at low concentration**
- **DNase/RNase-free**

Applications:

- **DNA/RNA electrophoresis**
- **Ideal for separating nucleic acids of a wide range of sizes, especially large fragments ≥1000 bp**

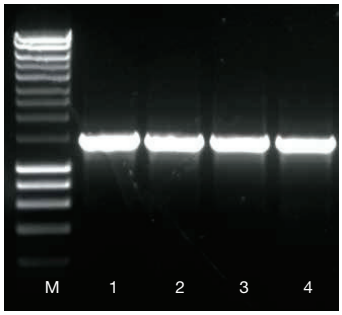
Description: Meridian's Agarose, Molecular Grade is ideally suited for routine analysis of nucleic acids by gel electrophoresis (fig. 1a) and blotting. Meridian's extremely pure, high molecular biology grade agarose has no detectable DNase or RNase activity and forms strong gels with low background (fig. 1b). Due to its low EEO, DNA will have a high electrophoretic mobility.

Product Citations:

1. Ansari, S. B., *et al. African J. Biotechnol.* **9(43)**, 7230-7235 (2010).
2. Arpanahi, A., *et al. Gen. Res.* **19**, 1338-1349 (2009).
3. Passante, E., *et al. Inflamm. Res.* **58(9)**, 611-618 (2009).
4. Benest, A. V., *et al. Meth. Mol. Biol.* **467**, 251-270 (2009).
5. Kaszimierczak, K. A., *et al. Antimicrob. Agents Chemo.* **52(11)**, 4001-4009 (2008).
6. Fernandes, J. M. O., *et al. J. Exp. Biol.* **210**, 3461-3472 (2007).

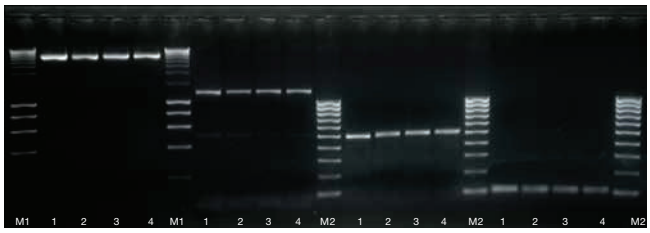
Fig. 1 Meridian agarose provides high resolution of DNA and RNA fragments separated by gel electrophoresis.

a)



20 mg freeze-dried budding leaves of *Arabidopsis thaliana* were homogenized using liquid nitrogen and with a rotor stator homogenizer. Genomic DNA was isolated using ISOLATE II Plant DNA Mini Kit. A 1.4 kb fragment of allene oxide synthase gene was amplified from the isolated DNA using MangoMix, and run on a 1% agarose gel (BIO-41026). Lanes: HyperLadder 1 kb(M), liquid nitrogen ground material (1, 3), rotor stator homogenized material (2, 4).

b)



Various sized DNA fragments were run on 1% TAE agarose gel and extracted using ISOLATE II PCR and Gel Kit. The isolated fragments were again run on 1% TAE agarose gel along with the original fragments. Lanes: HyperLadder 1 kb (M1), HyperLadder 100 bp (M2), Not extracted (1), ISOLATE II PCR and Gel Kit (2), Supplier A (3), Supplier B (4). The results illustrate a low background and clean sharp bands over a wide range of sizes.

Agarose Tablets

Store at Room Temperature | Shipped at Ambient Temperature

PACK SIZE	PRESENTATION	CAT NO.
300 g	600 x 0.5 g	BIO-41027

Features:

- **Exactly preweighed tablets**
- **DNase/RNase free**
- **Convenient and time saving**
- **Greater gel-to-gel consistency**
- **Gels as low as 0.5%**

Applications:

- **DNA/RNA electrophoresis**
- **Ideal for separating nucleic acids of a wide range of sizes**

Description: Meridian's Agarose Tablets (DNase/RNase free) are designed to provide a cleaner, safer, no-mess environment and more convenience than powdered agarose. Each tablet contains a pre-determined amount of agarose (0.5 g), eliminating the need to weigh out loose agarose powder. Simply add the appropriate number of tablets to your buffer, incubate at room temperature for five minutes, heat the solution and then prepare your gel as normal.

Product Citations:

1. Ansari, A. and Emery, V. C. *J. Virol.* **73(4)**, 3284-3291 (1999).

Proteinase K Powder & Solution

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
Proteinase K Powder		
100 mg	-	BIO-37037
1000 mg	-	BIO-37039
Proteinase K Solution		
5 mL	20 mg/mL	BIO-37084
5 x 5 mL	20 mg/mL	BIO-37085

Features:

- **Broad-spectrum serine protease**
- **Active under denaturing conditions**
- **Stable at high temperatures**
- **Molecular biology grade**
- **Available as powder and stabilized stock solution**

Applications:

- **Inactivation of RNases/DNases during nucleic acid extraction**
- **Protein modification**
- **General protein digestion**
- **Determination of enzyme localization**

Description: Proteinase K is a highly active serine protease (MW 28,500 Da) isolated from the fungus *Tritirachium album*. The enzyme exhibits broad cleavage specificity on native and denatured proteins and is widely used in the purification of native RNA and DNA from tissues or cell lines. Because the solution is tested for the absence of RNases and DNases, it is especially suitable for isolating PCR and RT-PCR templates.

The activity of Proteinase K is increased in the presence of denaturants such as SDS (1%) and elevated temperature (50 - 60 °C). The recommended working concentration is 50-100 µg/mL for protein removal and enzyme inactivation, and up to 2 mg/mL for tissue treatment.

Product Citations:

1. Teague, B., *et al. PNAS* **107(24)**, 10848-53 (2010).
2. Rolfsmeier, M. L., *et al. J. Bacteriol.* **192(19)**, 4954-4962 (2010).
3. Arpanahi, A., *et al. Genome Res.* **19**, 1338-1349 (2009).
4. Schwenkenbecher, J. M., *et al. J. Medical Entomol.* **46(3)**, 610-614 (2009).
5. Jo, K., *et al. Meth. Mol. Biol.* **544**, 29-42 (2009).
6. Tiwari, J., *et al. Vet. Parasitol.* **138(3-4)**, 301-307 (2006).

X-GAL

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CAT NO.
1 g	BIO-37035

Features:

- **Extremely pure**
- **Intense blue precipitate upon hydrolysis**

Applications:

- **Blue/white cloning systems**
- **Immunoblotting**
- **Immunocytochemical assays**
- **Microbiology and cell culture media**

Description: 5-bromo-4-chloro-3-indolyl ß-D-galactopyranoside (X-GAL) is a chromogenic substrate for ß-Galactosidase that forms an intense blue precipitate. It can be used in molecular biology to detect the *gal* gene product, and also in microbiology where it is used to detect micro-organisms which have ß-Galactosidase activity (usually coliforms). It can be combined with the R-substrates to differentiate between two species of organisms on the same plate. X-GAL is soluble in N, N-dimethylformamide.

Product Citations:

1. Valleley, E. M. A. *et al. Gen., Chrom. & Can.* **49(5)**, 480-6 (2010).
2. Wilson, A. C., *et al. J. Bacteriol.* **190(15)**, 5522-5525 (2008).
3. Liapis, E., *et al. NAR* **36(18)**, 5933-5945 (2008).
4. Corbett, D., *et al. J. Biol. Chem.* **282**, 33326-33335 (2007).
5. Toledo-Arana, A., *et al. J. Bacteriol.* **187(15)**, 5318-5329 (2005).
6. Staddon, J. H., *et al. Plasmid* **56(2)**, 102-111 (2006).

IPTG Powder

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
5 g	-	BIO-37036

Features:

- **Induces *E. coli lac* operon activity**
- **>99.6% by HPLC**
- **Available as powder**

Applications:

- **Blue/white color screening**
- **Induction of *lac* operon for protein expression**
- **Genes controlled by the *lac* or *tac* promoter/operator sequences are expressed to high levels in the presence of IPTG**

Description: Isopropyl-ß-D-thiogalactopyranoside (IPTG) is a chemical analogue of galactose, which cannot be hydrolysed by the enzyme ß-Galactosidase. Hence, it induces the *E. coli lac* operon activity by binding and inhibiting the *lac* repressor without being degraded. Genes controlled by the *lac* or *tac* promoter/operator sequences are expressed to high levels in the presence of IPTG.

Product Citations:

1. Valleley, E. M. A. *et al. Gen., Chrom. & Can.* **49(5)**, 480-6 (2010).
2. Prabhakar, V., *et al. FEBS Lett.* **583(6)**, 983-991 (2009).
3. Chan, C-H., *et al. Conserv. Gen.* **9(4)**, 1067-1070 (2008).
4. Hamblin, K., *et al. Mol. Microbiol.* **68(6)**, 1395–1405 (2008).
5. Maruta, F., *et al. J. Drug Targeting* **15(4)**, 311-319 (2007).
6. Ross, P. J., *et al. Infect. Immun.* **72(3)**, 1568-1579 (2004).

Co-Precipitant Pink

Storage -20°C | Shipped on Dry or Blue Ice

PACK SIZE	CONC.	CAT NO.
1.5 mL	5 mg/mL	BIO-37075

Features:

- **Up to 100% nucleic acid recovery**
- **Effective for fragments ≥25 bp**
- **Suitable for sequencing**
- **Free from DNA, RNA and protein**
- **Increases pellet mass and visibility**
- **Minimizes pellet loss**

Applications:

- **DNA and RNA recovery**

Description: Meridian's Co-Precipitant Pink (Linear Polyacrylamide), aids salt/alcohol precipitation of DNA and RNA and is suitable for most applications, including the precipitation of DNA for sequencing, DNA after enzymatic manipulations and RNA from different sources.

Meridian Co-Precipitant Pink is free of nucleic acids. Therefore, all resulting precipitates are suitable for standard PCR, RT-PCR and other enzymatic reactions. Meridian Co-Precipitant provides almost complete recovery of DNA/RNA fragments as small as 25 bp.

Colored DNA Loading Buffer

Storage -20°C | Shipped at Ambient Temperature

PACK SIZE	CONC.	CAT NO.
5x Loading Buffer Blue		
2 x 1 mL	5x	BIO-37045

Features:

- **Colored loading for easy recognition**
- **No need to add dye**
- **Glycerol ensures sample is deposited at the bottom of the well**
- **Guaranteed reproducible results**

Applications:

- **Monitor migration rate during agarose electrophoresis**
- **Load samples on DNA agarose gels**

Description: The Meridian Colored DNA Loading Buffer is a ready-to-use solution premixed with bromophenol blue (Blue). The dye in the buffer migrates towards the anode at different rates depending on the dye and the concentration of the agarose gel (see Dye Mobility Table). The presence of glycerol in the buffer ensures that the sample is deposited at the bottom of the sample well.

When the buffer is mixed with the sample, the presence of the dye provides easy visualization of the wells in the agarose gel to which the sample has been added. Additionally, the dye migrates towards the anode at predictable rates during electrophoresis, thus providing an approximate reference band.

Dye Mobility Table

The table above gives the approximate migration rates of dyes in different agarose concentrations in TAE buffer. The values indicate the size of DNA fragments with which the dye will co-migrate at that particular gel concentration.

Product Citations:

1. Neary, J. M., *et al. Vet. Parasitol.* doi:10.1016/j.vetpar.2010.08.031 (2010).
2. Gomes, G. A., *et al. Sep. & Purifi. Tech.* **65(1)**, 22-30 (2009).
3. Singh, R., *et al. Meth. Mol. Biol.* **483**, 163-192 (2009).
4. Yu, Z., *et al. NAR.* **36(1)**, 9-13 (2008).
5. Böhm, M., *et al. J. Biol. Chem.* **280**, 5795-5802 (2005).
6. Nunan, N., *et al. Appl. Environ. Microbiol.* **71(11)**, 6784-6792 (2005).

10x NH_4 Buffer

Stored at -20°C | Shipped on Blue or Dry Ice

PACK SIZE	CAT NO.
3 x 1.2 mL	BIO-37025

Composition: 160 mM $(NH_4)_2SO_4$, 670 mM Tris-HCl (pH8.8 at 25°C) and stabilizers.

Product Citations:

1. Short, A. D., *et al. Vet. Record* **167**, 455-7 (2010).
2. Gubili, C., *et al. Marine Biol.* **156(10)**, 2199-2207 (2009).
3. Petry, C. J., *et al. Hum. Gene.* **126(3)**, 375-384 (2009).
4. Caldwell, G. M., *et al. Brit. J. Can.* **98(8)**, 1437–1442 (2008).
5. Munafo, M. R., *et al. Am. J. Med. Gen.* **135(B)**, 10–14 (2005).
6. Caldwell, G. M., *et al. Can. Res.* **64**, 883-888 (2004).

MyTaq Reaction Buffers

Stored at -20°C | Shipped on Blue or Dry Ice

PACK SIZE	CONC.	CAT NO.
5x MyTaq Reaction Buffer Colorless		
4 x 1 mL	5x	BIO-37111
5x MyTaq Reaction Buffer Red		
4 x 1 mL	5x	BIO-37112

Applications:

- **For use in reactions containing MyTaq DNA Polymerase**
- **Use at 1 x concentration in reaction mix**

Description: Meridian's 5x MyTaq™ Reaction Buffer is an advanced formulation buffer that saves time and delivers superior results, containing dNTPs, $MgCl_2$ and enhancers at optimal concentrations which eliminates the need for optimization.

Composition: 5 mM dNTPs, 15 mM $MgCl_2$, stabilizers and enhancers.

50 mM $MgCl_2$ Solution

Stored at -20°C | Shipped on Blue or Dry Ice

PACK SIZE	CAT NO.
3 x 1.2 mL	BIO-37026

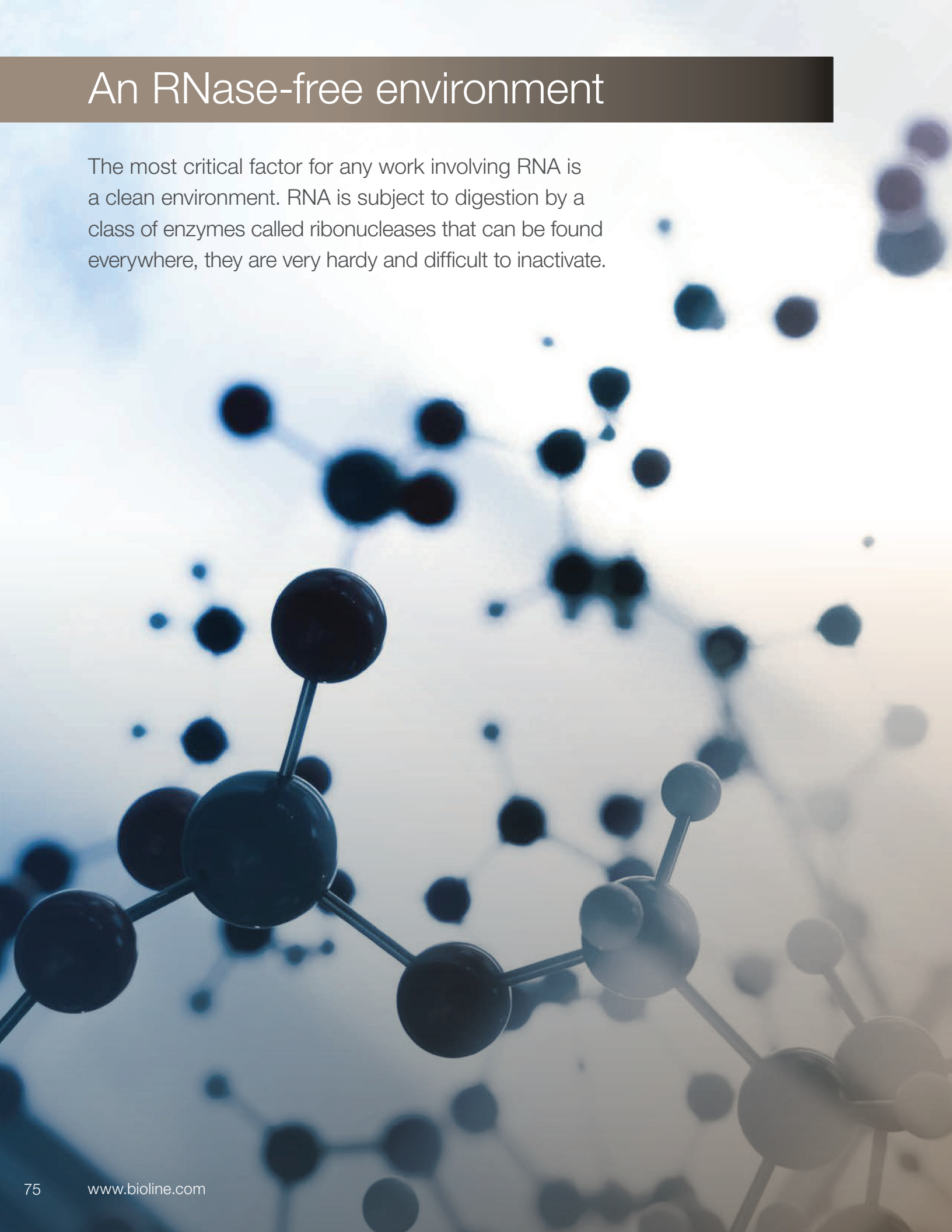
Composition: 50 mM $MgCl_2$ in nuclease free water.

Product Citations:

1. Anastasi, E. M., *et al. Appl. Environ. Microbiol.* **doi:10.1128/AEM.00141-10** (2010).
2. Boldorini, R., *et al. J. Med. Virol.* **82(12)**, 2127-32 (2010).
3. Svachova, M. & Tichy, M. *Neoplasma* **55(1)**, 36-41 (2008).
4. Mulder, I. E., *et al. Fish Sellfish Immunol.* **23(4)**, 747-759 (2007).
5. O'Shea, D. J., *et al. Anal Chim. Acta* **537(1-2)**, 111-117 (2005).
6. Meir, R., *et al. Avian Dis.* **45(1)**, 223-228 (2001).

An RNase-free environment

The most critical factor for any work involving RNA is a clean environment. RNA is subject to digestion by a class of enzymes called ribonucleases that can be found everywhere, they are very hardy and difficult to inactivate.



When planning to do any work with RNA we would recommend considering the following points:

All equipment used should either be sterile disposable plasticware which is DNase and RNase-free or pretreated before use, either using one of the many commercially available RNase removal products or soaking in 3% H_2O_2 and rinsing with ethanol before air drying. This step is often overlooked and it is often assumed that simply autoclaving tips and tubes is sufficient to remove RNase.

Although many sources of deionised water are RNase-free, we generally recommend using DEPC-treated water for all applications involving RNA. If normal water is to be used, it should be tested by incubating with an RNA sample and run on a gel to check for signs of degradation.

Gloves are essential for any RNA work as the skin is a massive source of RNase contamination.

Sterile technique is a must when handling any reagents for RNA work; some labs may find it useful to set up an isolated RNA area with separate pipettes and equipment only used for RNA work.

A common source of contamination will come directly from your sample. The use of an RNase inhibitor in your reaction can help to overcome this problem. This protein binds to RNases, inhibiting their activity and therefore protecting your valuable RNA.

Lengths/Molecular Weights of Common Nucleic Acids

Nucleic Acid	Number of Nucleotides	Molecular Weight * (Da)
Lambda DNA	48502 (dsDNA)	3.2×10^7
pBR322 DNA	4361 (dsDNA)	2.8×10^6
28S rRNA (Eurkaryote)	4800	1.6×10^6
23S rRNA (*E. coli*)	2900	1.0×10^6
18S rRNA (Eurkaryote)	1900	6.5×10^5
16S rRNA (*E. coli*)	1500	5.1×10^5
5S rRNA (*E. coli*)	120	4.1×10^4
tRNA (*E. coli*)	75	2.5×10^4

*Molecular weights based on actual sequence

Standards:
1) Average MW of a dsDNA base pair = 660
2) Average MW of a ssDNA base = 330
3) Average MW of an RNA base = 340

References:
1. Daniels, D.L *et al.* (1983) *Appendix II: Complete annotated Lambda sequence.* In: *Lambda II*, ed., R.W. Hendrix *et al.*, Cold SpringHarborLaboratory, Cold Spring Harbor, NY, 519
2. Sutcliffe, J.G. (1978) *PNAS USA* **75**, 3737.
3. Sutcliffe, J.G. (1979) *Cold Spring Harbor Symp. Quant. Biol.* **43**, 77.

Ribosomal RNA Sizes from various Species

SPECIES	16S rRNA	18S rRNA	23S rRNA	25S rRNA	26S rRNA	28S rRNA
Human	-	1.9	-	-	-	5.0
Mouse	-	1.9	-	-	-	4.7
Drosophila	1.5	2.0	-	-	-	4.1
Tobacco Leaf	-	1.9	2.9	3.7	-	-
Yeast	-	2.0	-	-	3.8	-
E. coli	1.5	-	2.9	-	-	-
Xenopus	-	1.8	-	-	-	4.0

**Drosphila* 28S rRNA is processed into 2 fragments that migrate in a similar fashion to the 18S rRNA

Indices

Meridian offers a wide selection of products and services, together with highly informative product information and services to suit the specific needs of your laboratory. Additional up-to-date information can be found on our website along with seasonal sale promotions, local and international events as well as our Social Networks: Facebook, Twitter and Blog.

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SensiFAST SYBR® Hi-ROX Kit	**BIO-92005**	5
SensiFAST SYBR® Hi-ROX One –Step Kit	**BIO-73001**	12
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SensiFAST SYBR® Lo-ROX Kit	**BIO-94005**	5
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SensiFAST SYBR® Lo-ROX Kit	**BIO-94050**	5
SensiFAST SYBR® Lo-ROX One –Step Kit	**BIO-74001**	12
SensiFAST SYBR® Lo-ROX One –Step Kit	**BIO-74005**	12
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SensiFAST SYBR® No-ROX Kit	**BIO-98050**	5
SensiFAST SYBR® No-ROX One –Step Kit	**BIO-72001**	12
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