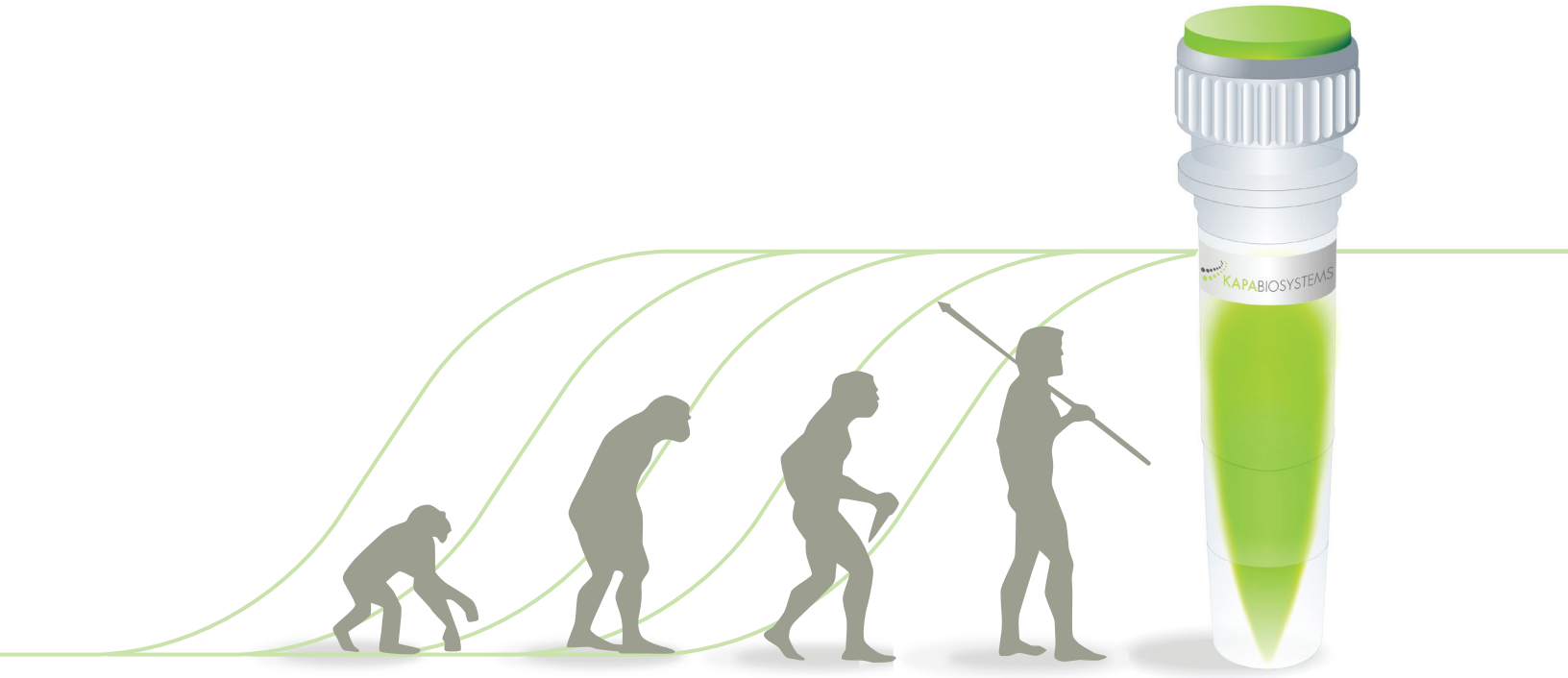
KAPABIOSYSTEMS



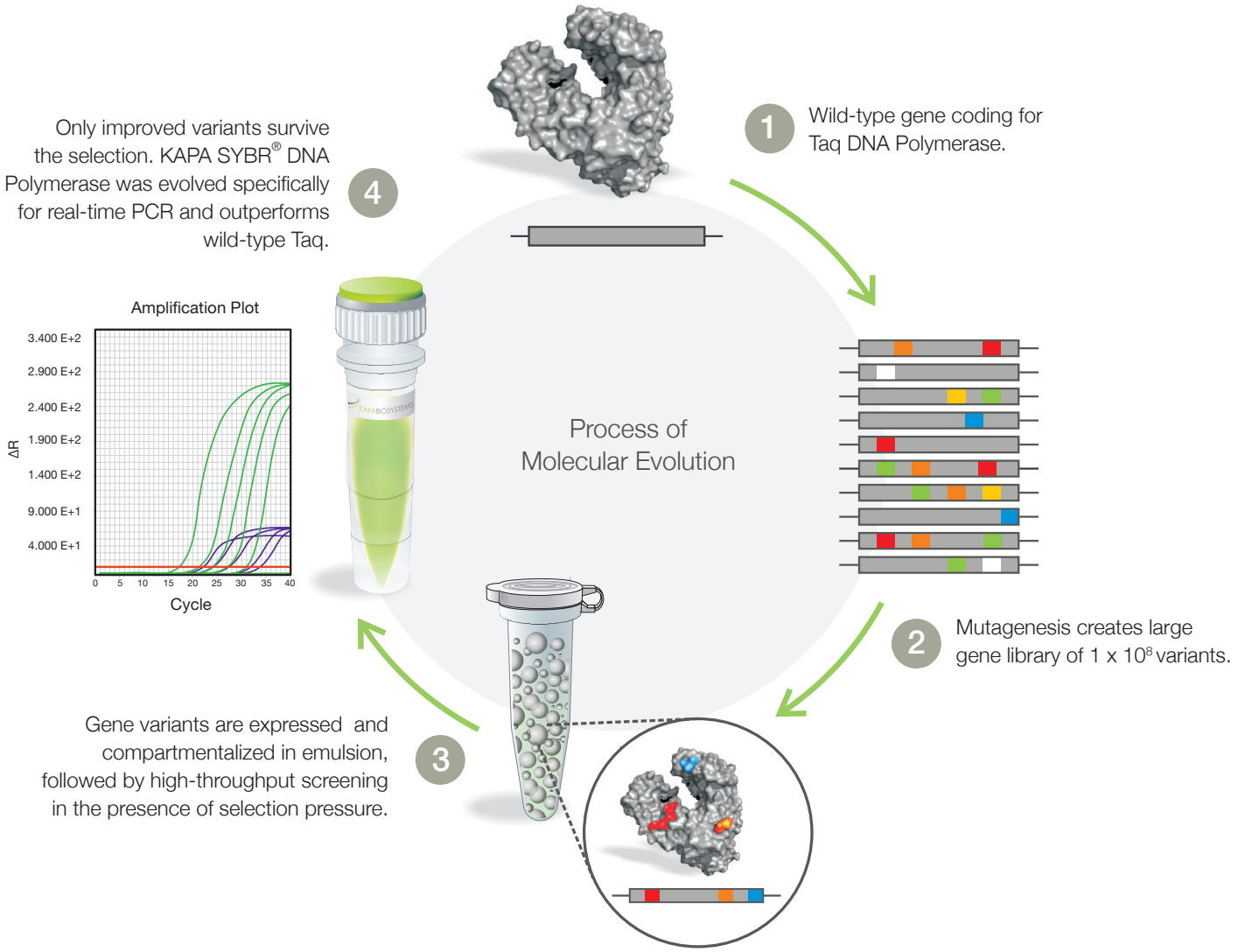
Have your qPCR reagents evolved?

Innovative solutions for real-time PCR, HRM, and next-generation sequencing.

NEXT GENERATION qPCR

Kapa Biosystems is using novel enzymes engineered via *in vitro* molecular evolution to develop a suite of innovative products for qPCR and high resolution melt analysis. Our portfolio of next-generation reagents contain high performance DNA polymerases engineered specifically for your qPCR application. These enzymes are fundamentally different than wild-type polymerases at the protein level, and contain unique amino acid modifications that confer dramatic improvements to the function and performance of the enzyme. The performance benefits of these products enable you to perform research and obtain results never possible before.

Kits include: KAPA SYBR® FAST qPCR Kits, KAPA SYBR® FAST One-Step qRT-PCR Kits, KAPA PROBE FAST qPCR Kits, KAPA HRM FAST PCR Kits, and KAPA Library Quantification Kits.



Real-Time PCR

- **KAPA SYBR® FAST qPCR Kits** are designed for high performance real-time PCR. Kits contain a novel DNA polymerase engineered via a process of molecular evolution. The KAPA SYBR® DNA Polymerase is a unique enzyme, specifically designed for qPCR using SYBR® Green I dye chemistry. Together with a proprietary buffer, this system enhances the amplification efficiency of difficult templates, including both GC-rich and AT-rich templates. KAPA SYBR® FAST qPCR Kits include a 2X Master Mix with integrated antibody-mediated hot start, SYBR® Green I fluorescent dye, $MgCl_2$, dNTPs, reference dye (if applicable), and stabilizers. Kits are available for all real-time PCR instruments.

- **KAPA SYBR® FAST One-Step qRT-PCR Kits** are a sensitive and convenient solution for real-time PCR using RNA as template. Kits contain KAPA SYBR® FAST qPCR Master Mix (2X), KAPA RT Mix (50X) and dUTP (10 mM). The KAPA RT Mix (50X) is comprised of wild-type M-MuLV Reverse Transcriptase and a RNase Inhibitor. Kits are optimized for rapid one-step, one-tube RNA quantification, and are available for all real-time PCR instruments.

- **KAPA PROBE FAST qPCR Kits** are designed for fast-cycling, real-time PCR using sequence-specific fluorogenic probes. Kits are compatible with all fluorogenic probe-based technologies, including hydrolysis probes (e.g. TaqMan®) and displacement probes (e.g. molecular beacons). KAPA PROBE FAST qPCR Kits include a 2X Master Mix with KAPA Taq DNA Polymerase with integrated antibody-mediated hot start, dNTPs, $MgCl_2$, reference dye (if applicable) and stabilizers. Kits are available for all real-time PCR instruments.

High Resolution Melt

- **KAPA HRM FAST PCR Kits** are designed for the high performance detection of DNA sequence variations by High Resolution Melt (HRM) analysis. The kit contains a novel DNA polymerase, engineered via a process of molecular evolution, for fast and efficient DNA amplification in the presence of high concentrations of intercalating fluorescent dyes. Kits also contain EvaGreen®, a next-generation, saturating fluorescent dye which selectively binds to double-stranded DNA. The combination of an engineered DNA polymerase and EvaGreen® dye enables amplification and discrimination of even the most challenging sequence polymorphisms (i.e. Type IV SNP) without sequence preference.

Next Generation Sequencing

- **KAPA Library Quantification Kit.** Accurate quantification of the number of amplifiable molecules in a library is critical to the outcome of sequencing results on next-generation sequencing (NGS) platforms. KAPA Library Quantification Kits contain a set of DNA Standards (six 10-fold dilutions), 10X Primer Premix and 2X KAPA SYBR® FAST qPCR Master Mix. Quantification is achieved by inference from a standard curve generated using the six DNA Standards. The engineered enzyme in the KAPA SYBR® FAST qPCR Master Mix is critical to ensure accurate quantification of complex populations of amplifiable molecules in NGS libraries. Kits are available for Illumina, Ion Torrent, Roche 454, and SOLiD sequencing platforms.

KAPA SYBR® FAST qPCR Kits

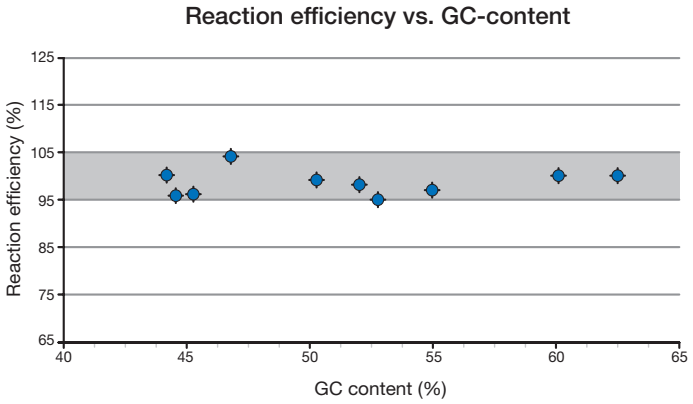
KAPA SYBR® FAST qPCR Kits contain a novel DNA polymerase engineered via a process of molecular evolution. The result is a unique enzyme, specifically evolved for qPCR using SYBR® Green I dye chemistry.

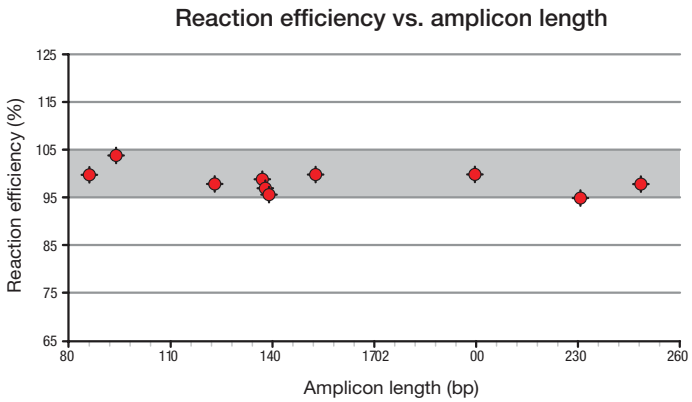
The KAPA SYBR® DNA Polymerase has been engineered to perform optimally in stringent qPCR reaction conditions, exhibiting dramatic improvements in fluorescence, C_q values, linearity, and sensitivity. Kits are ideally suited for:

- Gene expression analysis
- Microarray validation
- Low-copy detection
- Gene knockdown validation
- ChIP
- Absolute quantification of NGS libraries

High performance gene expression analysis

The improved speed, processivity and robustness of KAPA SYBR® FAST qPCR Kits results in consistently high amplification efficiencies required for accurate quantitative PCR. To demonstrate the high performance of KAPA SYBR® FAST for gene expression analysis, the reaction efficiencies obtained for ten commonly used housekeeping genes in the human breast cancer cell line, MCF-7, were compared*. The KAPA SYBR® FAST qPCR Kit achieved consistently high amplification efficiencies (95 – 104%) across all ten genes, despite differences in amplicon length and GC content.

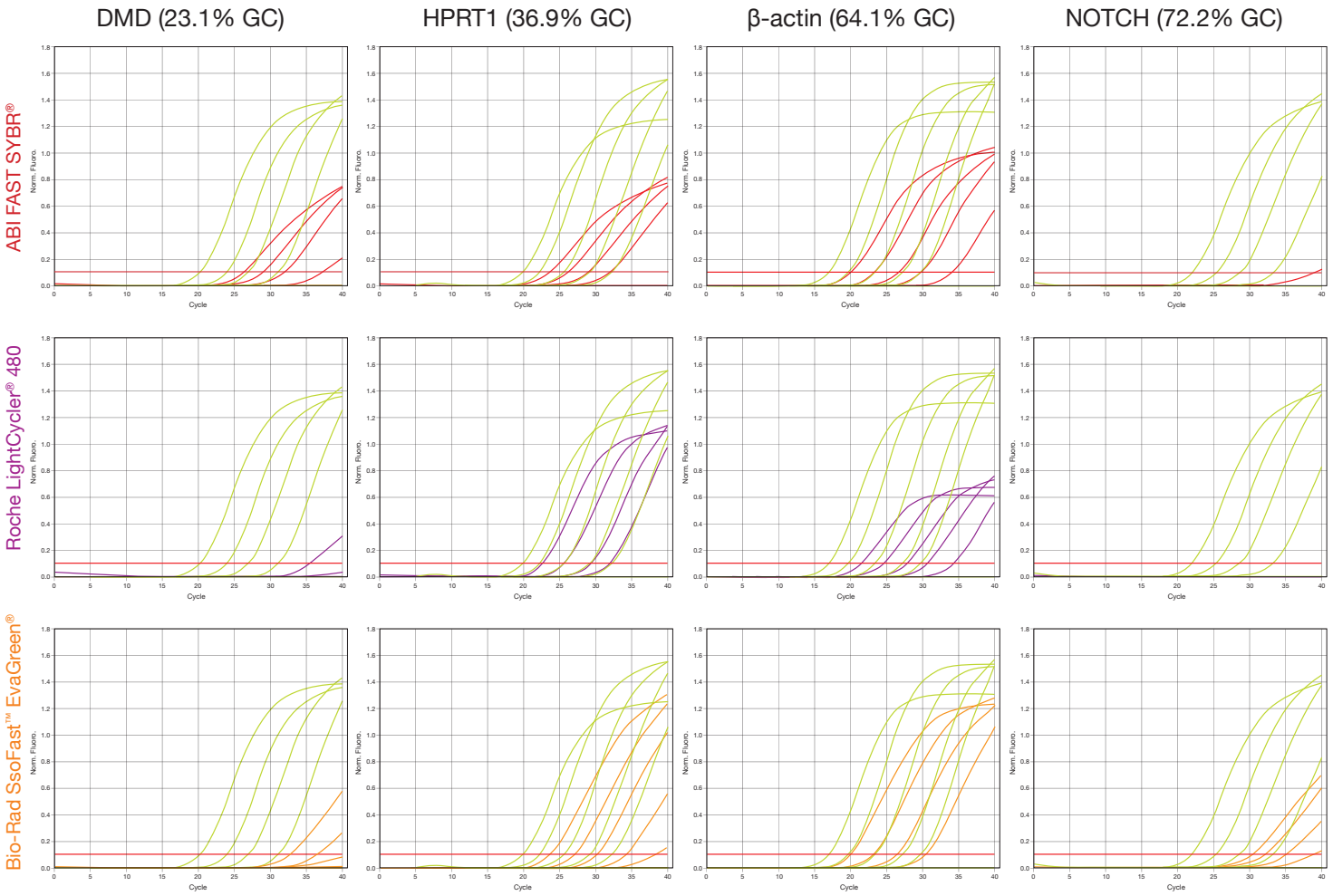




No bias in amplification efficiency across a wide range of GC contents (44.2 – 62.5%) or amplicon lengths (86 – 249 bp) was observed with KAPA SYBR® FAST. Amplification efficiencies achieved for ten housekeeping genes with the KAPA SYBR® FAST Universal qPCR Kit were plotted against GC content (left) or amplicon length (right). The reaction efficiency achieved for each of the ten genes fell within the optimal range of 95 – 105%, independent of the nature or length of the amplicon.

*For more information see KAPA SYBR® FAST Application Note: Gene Expression I

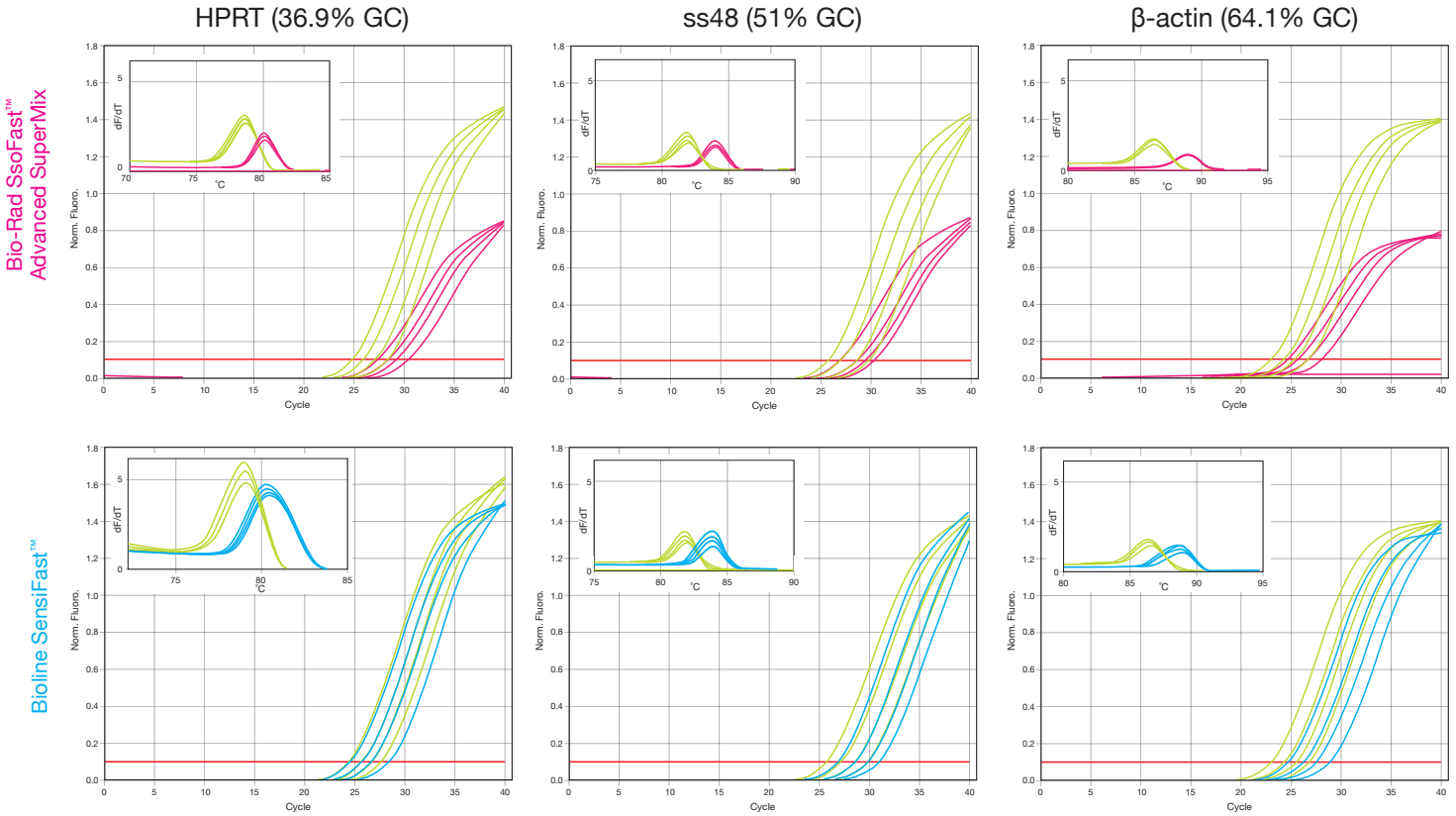
Superior performance across a broad range of AT- and GC-rich targets



			Amplification efficiency			
Target	%GC	Target length (bp)	KAPA SYBR® FAST	ABI FAST SYBR®	Roche LightCycler® 480	Bio-Rad SsoFast™ EvaGreen®
DMD	23.1	186	0.99	1.16	No amplification	0.90
HPRT	36.9	198	1.00	1.04	1.07	0.90
β-actin	64.1	290	1.02	1.05	1.07	0.95
NOTCH	72.2	144	1.00	No amplification	No amplification	1.25

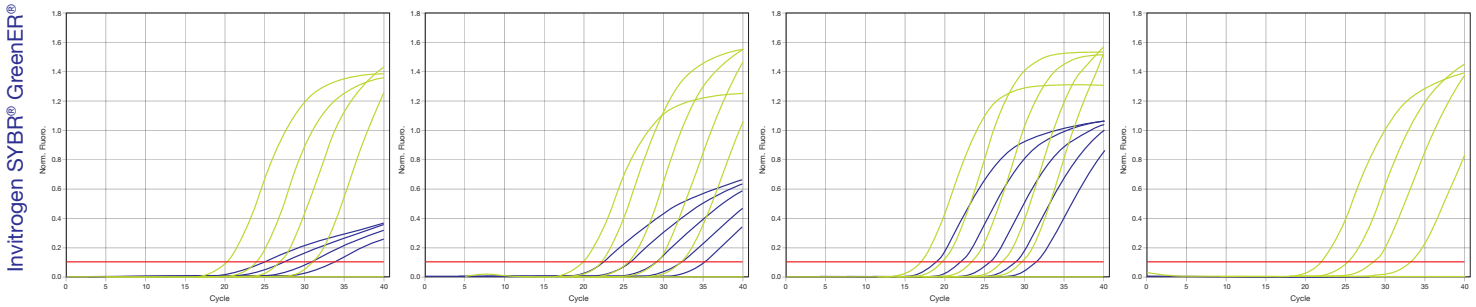
Four target genes were amplified from a 10-fold dilution series of human genomic DNA (16 ng to 1.6 pg per 20 µl reaction) using the KAPA SYBR® FAST Universal qPCR Kit (green), ABI FAST SYBR® (red), Roche LightCycler® 480 SYBR® (purple), and Bio-Rad SsoFast™ EvaGreen® SuperMix (orange). Linear amplification plots demonstrate earlier C_q scores and higher baseline subtracted fluorescence for all target genes with the KAPA SYBR® FAST qPCR Kit. Calculated reaction efficiencies confirm that the consistently high performance required for accurate expression quantitation across a broad range of GC content is achievable with the KAPA SYBR® FAST qPCR Kit (Table 1). Reactions were performed according to each manufacturers' recommended cycling protocol.

Improved sensitivity for low copy detection of AT- and GC-rich targets



Three target genes were amplified from a 2-fold dilution series of human genomic DNA (16 pg to 2 pg per 20 µl reaction) using the KAPA SYBR® FAST Universal qPCR Kit (green), Bio-Rad SsoFast™ Advanced SuperMix (pink), and Bioline SensiFast™ SYBR® (blue). Linear amplification plots demonstrate earlier C_q scores for all target genes with the KAPA SYBR® FAST qPCR Kit. KAPA SYBR® FAST qPCR Kits provide the consistently high performance required for accurate low copy quantification across a broad range of GC content. Reactions were performed according to each manufacturers' recommended cycling protocol.

Engineered polymerase outperforms novel SYBR® GreenER® dye



Four target genes were amplified from a 10-fold dilution series of human genomic DNA (16 ng to 1.6 pg per 20 µl reaction) using the KAPA SYBR® FAST Universal qPCR Kit (green) and Invitrogen EXPRESS SYBR® GreenER® qPCR Kit (blue), which contains a novel dye chemistry. Linear amplification plots demonstrate earlier C_q scores and higher baseline subtracted fluorescence for all target genes with the KAPA SYBR® FAST qPCR Kit. Reactions were performed according to each manufacturers' recommended cycling protocol.

KAPA SYBR® FAST
One-Step qRT-qPCR Kits

KAPA SYBR® FAST One-Step qRT-PCR Kits contain M-MuLV Reverse Transcriptase, RNase Inhibitor and a novel DNA polymerase engineered via molecular evolution. The kit is optimized for rapid one-step, one-tube RNA quantification.

KAPA SYBR® FAST One-Step qRT-PCR Kits are designed to perform optimally in stringent qRT-PCR reaction conditions, exhibiting dramatic improvements in sensitivity, specificity, reaction efficiency, and fluorescence.

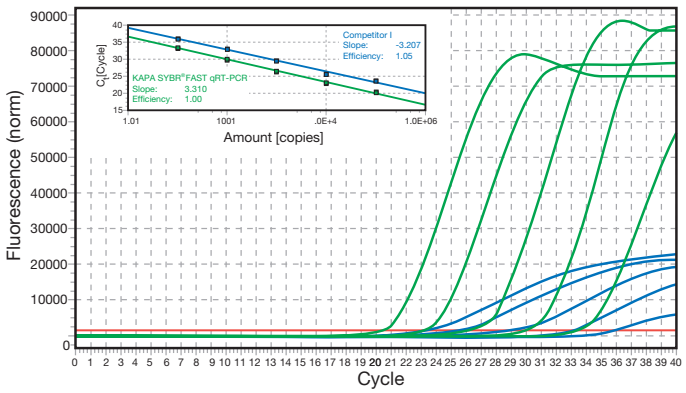
Kits are ideally suited for:

- Gene expression analysis
- Microarray validation
- Gene knockdown validation
- RNAi and miRNA research

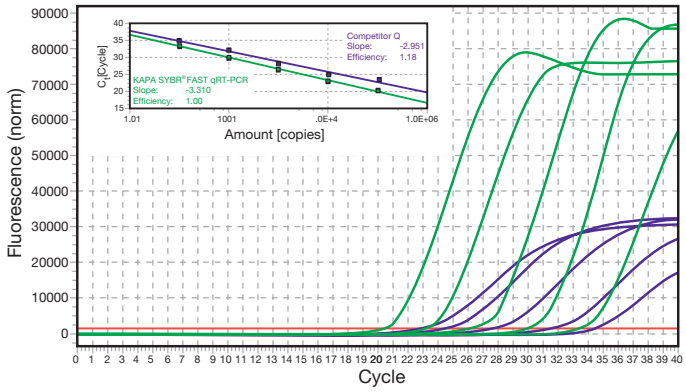
Superior signal and reaction efficiency

The improved speed, processivity and robustness of KAPA SYBR® FAST One-Step qRT-PCR kits results in consistently high amplification efficiencies required for accurate quantitative PCR. To demonstrate the high performance of KAPA SYBR® FAST One-Step qRT-PCR Kit for gene expression analysis, the kit was compared to leading competitor kits across a wide range of input RNA concentrations. The KAPA SYBR® FAST One-Step qRT-PCR Kit achieved higher fluorescence, earlier C_q values and improved amplification efficiency when compared to competitor one-step qRT-PCR kits.

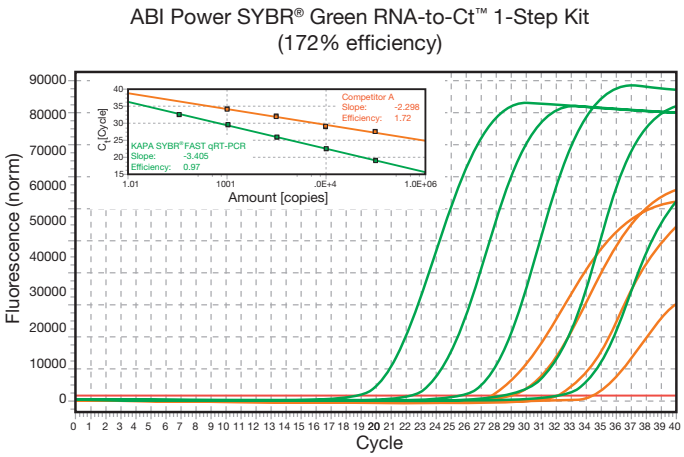
Invitrogen SuperScript® III Platinum® SYBR® Green One-Step qRT-PCR Kit (105% efficiency)



Qiagen QuantiFast SYBR® Green RT-PCR Kit (118% efficiency)

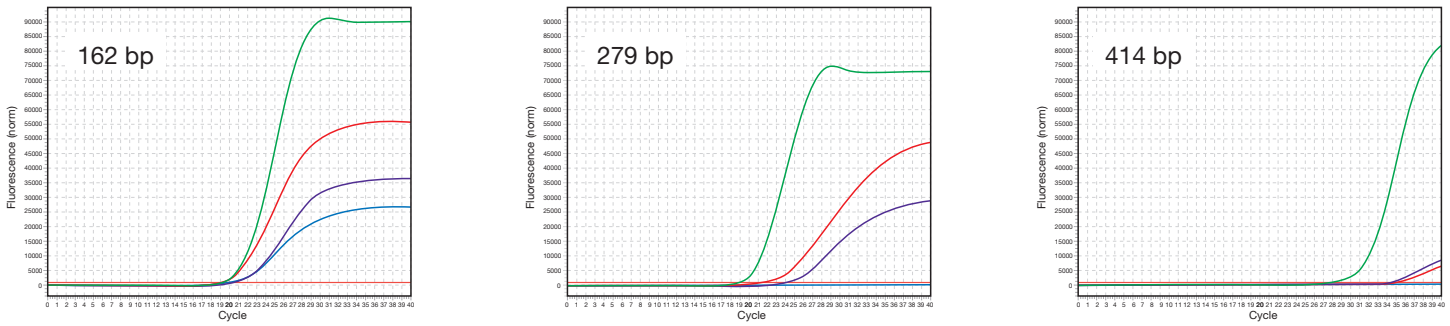


KAPA SYBR® FAST
One-Step qRT-qPCR Kits



Higher fluorescence, earlier C_q values and improved reaction efficiency. The RRMI gene (94 bp, 45.7% GC) was amplified from a 10-fold dilution series of RNA (100 ng to 10 pg per 20 µl reaction), isolated from human placenta, using the KAPA SYBR® FAST One-Step qRT-PCR Kit (green) or Invitrogen (blue, previous page), Qiagen (purple, previous page), and ABI (orange). Linear amplification plots demonstrate earlier C_q values and greater baseline subtracted fluorescence for the RRMI gene with the KAPA SYBR® FAST One-Step qRT-PCR Kit. Calculated reaction efficiencies confirmed that consistently high performance is achievable with the KAPA SYBR® FAST One-Step qRT-PCR Kit (RRMI = 100% and 97%). Efficiencies obtained with Invitrogen (105%), Qiagen (118%) and ABI (176%) were sub-optimal. Reactions were performed using each manufacturer's recommend protocols on the Eppendorf® MasterCycler™ ep realplex^4 S real-time PCR cycler.

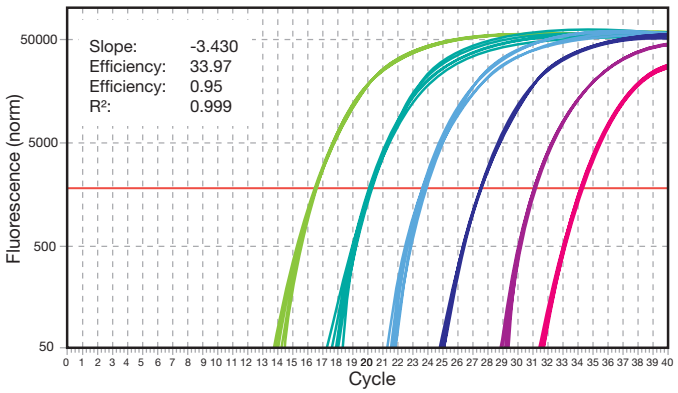
Robust amplification across a broad range of target lenghts



To demonstrate the robust performance of the KAPA SYBR® FAST One-Step qRT-PCR Kit, MS2 bacteriophage RNA targets of increasing length were amplified at a concentration of 0.8 pg per 20 µl reaction using the KAPA SYBR® FAST One-Step qRT-PCR Kit (green) or Takara (red), Invitrogen (blue), and Qiagen (purple). Increased amplicon length led to a significant decrease in competitor performance as indicated by delayed C_q values or complete reaction failure. cDNA synthesis and qPCR amplification were performed using each manufacturer's recommend protocols on the Eppendorf® MasterCycler™ ep realplex^4 S real-time PCR cycler.

High reproducibility and sensitivity across a broad range of concentrations

The high reproducibility and sensitivity of the KAPA SYBR® FAST One-Step qRT-PCR Kit enable accurate interrogation of a broad range of RNA template concentrations. A 279 bp fragment was amplified in replicates of six from a 10-fold dilution series of commercial MS2 bacteriophage RNA (80 pg to 0.8 fg per 20 µl reaction). cDNA synthesis was performed at 42 °C for 5 min followed by 95 °C for 5 min and 40 cycles of 3 sec denaturation at 95 °C and 30 sec combined annealing/extension at 60 °C. The calculated reaction efficiency of 95% was obtained using all six replicates per data point. Reactions were performed using the competitors recommend protocols on the Eppendorf® MasterCycler™ ep realplex^4 S real-time PCR cycler.



KAPA PROBE FAST
qPCR Kits

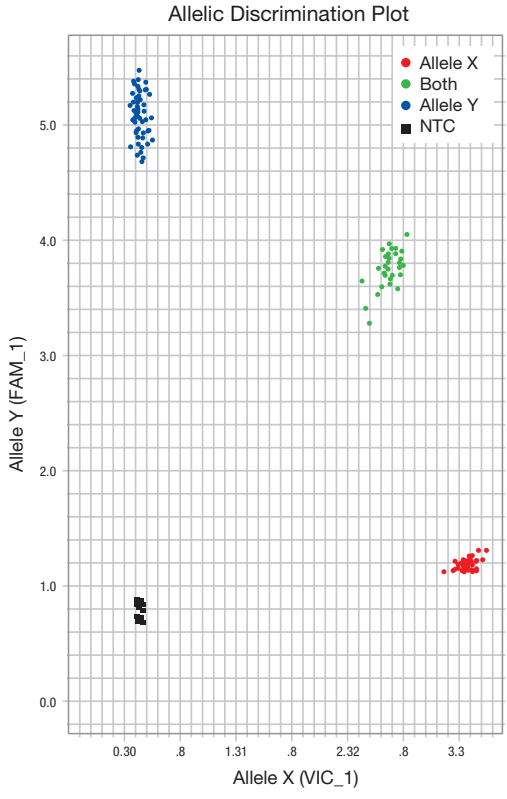
KAPA PROBE FAST qPCR Kits contain a ready-to-use master mix for highly sensitive and accurate real-time PCR using sequence-specific probe chemistries including TaqMan® probes, FRET probes, and molecular beacons.

Optimized for versatility and speed, KAPA PROBE FAST qPCR Kits provide fast and reproducible results for genotyping, gene expression analysis, and multiplexing. Kits offer:

- Compatibility with all probe-based qPCR applications
- Fast, reproducible, and precise quantification
- Discrete clusters in SNP genotyping assays
- Multiplex qPCR
- Broad dynamic range
- Highly stable master mix for high-throughput workflows

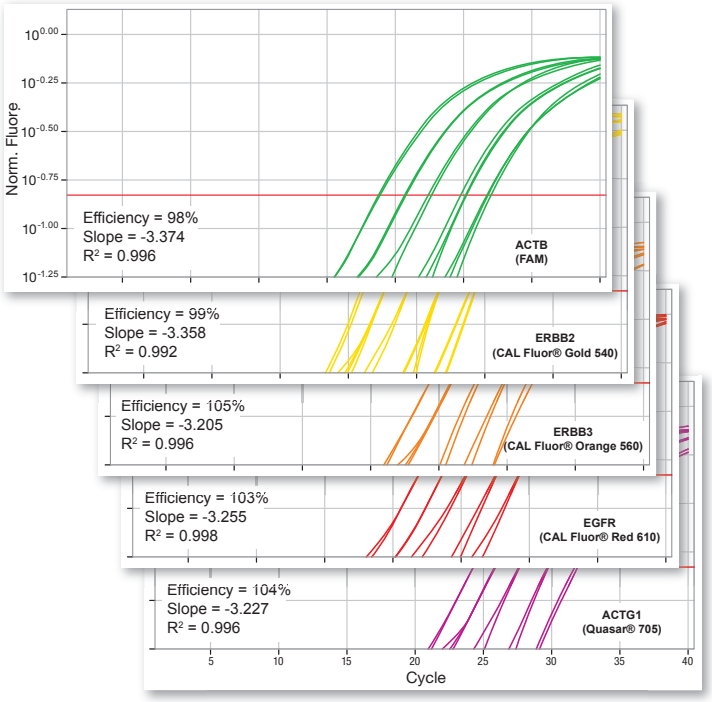
Discrete clusters and high call rates for accurate and reproducible allelic discrimination

All 168 human genomic DNA samples were accurately genotyped using the ABI sequence detection system (SDS) version 2.3 software (autocaller confidence level 95%). A total of 168 human genomic DNA samples were successfully genotyped along with 24 no-template controls using an ATP1B3 SNP genotyping assay on the ABI 7900HT real-time PCR system. Reactions were performed in 5 µl volumes with KAPA PROBE FAST qPCR Master Mix, human genomic DNA (10 ng per reaction), 200 nM of each primer and 200 nM of each hydrolysis probe (Allele X – FAM/BHQ®-1, Allele Y – VIC/BHQ®-1).



KAPA PROBE FAST
qPCR Kits

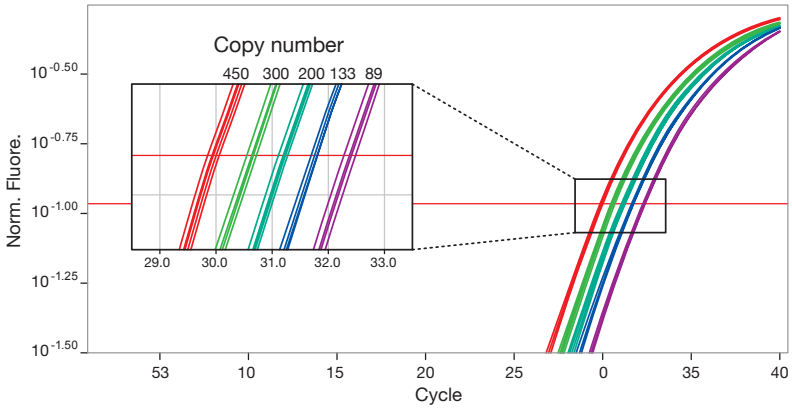
Fast, high performance five-color multiplexed qPCR



Highly reproducible and efficient results for all 5 amplicons across a 5 point dilution series of human genomic DNA were obtained when assayed in penta-plex using a fast cycling protocol. Standard curves were generated using 4-fold dilutions of human genomic DNA (0.39 to 100 ng per 20 µl reaction) tested in triplicate using the Corbett Rotor-Gene™ 6000 HRM real-time rotary analyzer. Reactions were performed in 20 µl volumes with KAPA PROBE FAST qPCR Master Mix, human genomic DNA, 200 nM of each primer and 200 nM of each hydrolysis probe (ACTB - FAM™/ BHQ®-1, ERBB2-CAL Fluor® Gold 540/BHQ®-1, ERBB3 - CAL Fluor® Orange 560/ BHQ®-2, EGFR - CAL Fluor® Red 610/ BHQ®-2, ACTG1 - Quasar® 705/ BHQ®-2).

Precise and highly reproducible low copy number discrimination

Reproducibility and discrimination across samples of low copy number with similar abundance levels was achieved. Reactions were performed in 20 µl volumes with KAPA PROBE FAST qPCR Master Mix, human genomic DNA (1.5-fold dilutions over a 89 - 450 copies per reaction range), 200 nM of each primer and 200 nM of hApoB100 (FAM/BHQ®-1) hydrolysis probe using a fast cycling protocol (95 °C for 3 min followed by 40 cycles of 95 °C, 3 sec; 60 °C, 20 sec).



KAPA HRM FAST PCR Kits

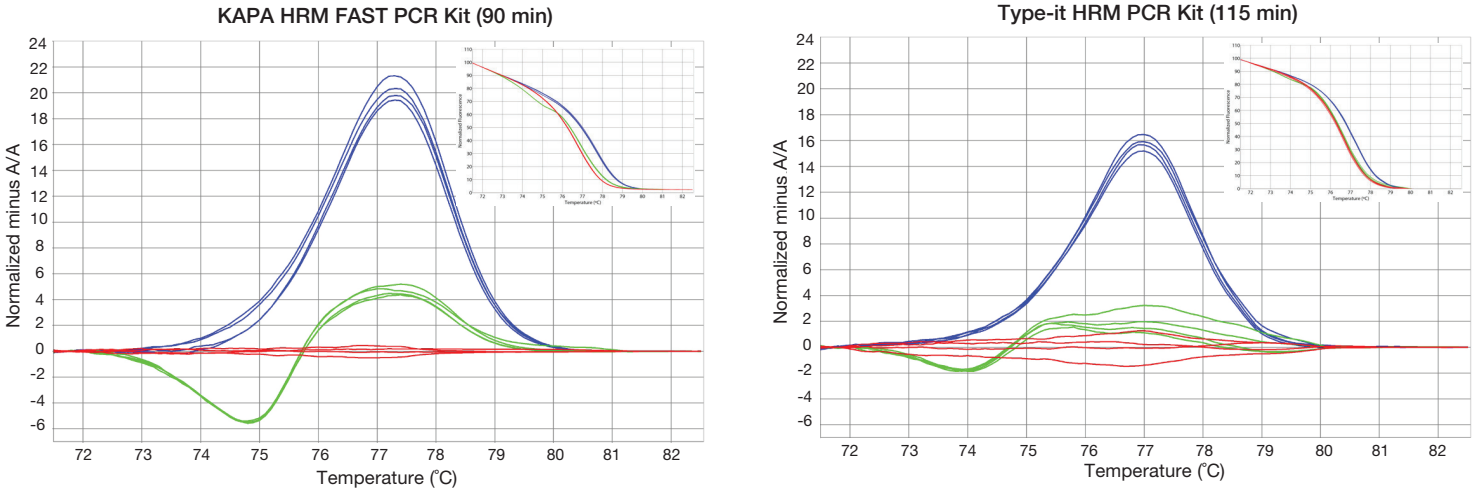
High Resolution Melt (HRM) analysis is a technique for fast, high throughput post-PCR analysis of genetic mutations or variance in nucleic acid sequences. The KAPA HRM FAST PCR Kit contains a convenient, ready-to-use master mix designed for the high performance detection of DNA sequence variations.

The KAPA HRM FAST Master Mix contains a novel DNA polymerase and buffer system, and EvaGreen® saturating dye optimized for maximum discrimination between sequence variants. Kits are ideally suited for:

- SNP genotyping
- Mutation discovery (gene scanning)
- Screening for heterozygosity
- DNA fingerprinting
- DNA methylation analysis

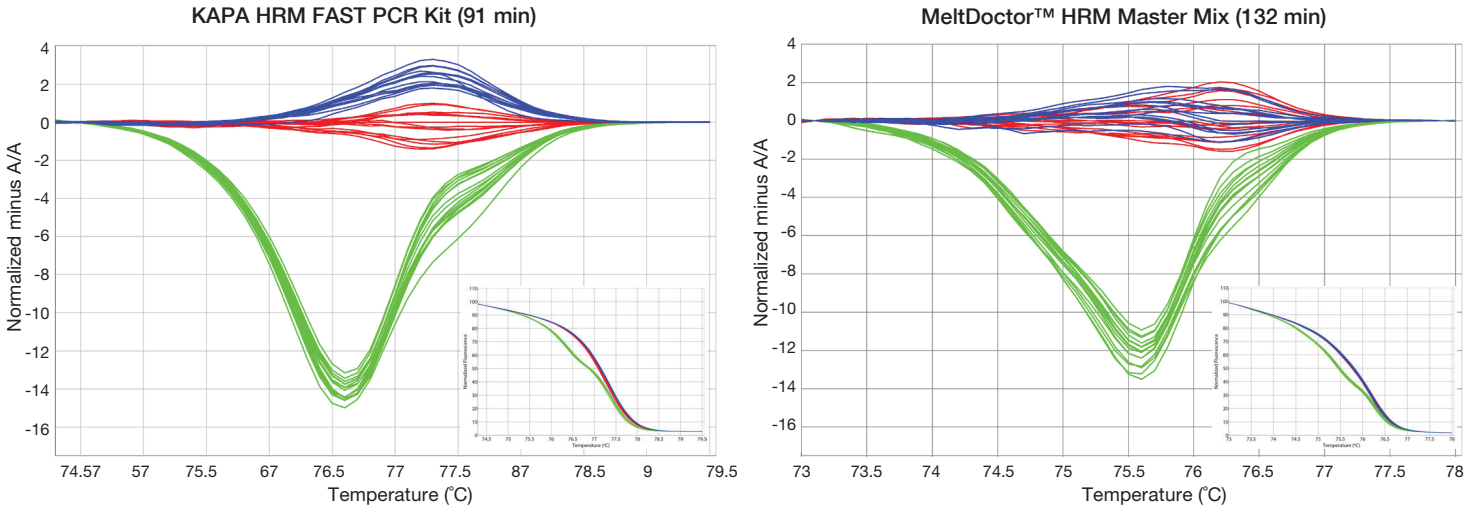
Accurate SNP genotyping with maximum sensitivity and speed

KAPA HRM FAST PCR Kits are engineered to maximize differences in melting behavior between sequence variants. Kits contain a novel DNA polymerase and buffer system that allows for fast PCR cycling and improved sensitivity. Single nucleotide polymorphism (SNP) genotpying is the most common application for HRM. In this example, KAPA HRM FAST is compared to other HRM kits when genotyping Type I SNP rs12913832 (G/A).



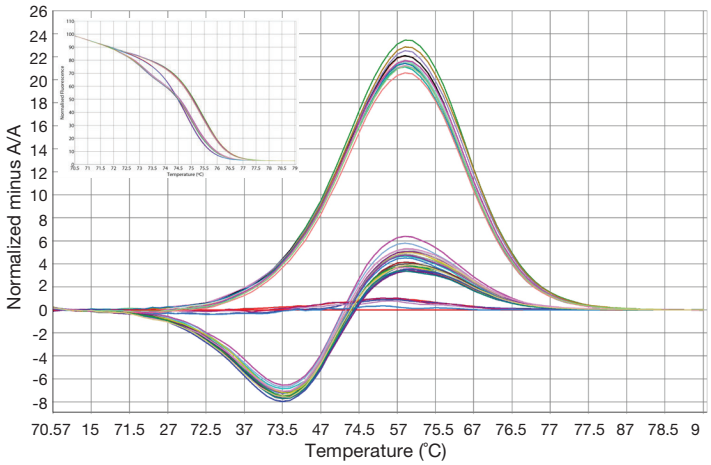
Genotyping of the Type I SNP rs12913832 (G/A) with the KAPA HRM FAST PCR Kit and Qiagen Type-It HRM PCR Kit. The Type I SNP rs12913832 is associated with expression of the OCA2 gene, and part of the eye color haplotype. Reactions (20 µl) contained 1X KAPA HRM FAST PCR Master Mix, 2.5 mM $MgCl_2$, 0.2 µM of each primer (targeting a 60 bp amplicon surrounding the SNP of interest) and 10 ng of human genomic DNA. PCR and HRM were performed with the Corbett Rotor-Gene™ 6000 instrument, using a fast, 2-step cycling protocol (40 cycles) with 5 sec denaturation (95 °C), 20 sec annealing/extension (60 °C) and melting in increments of 0.1 °C. The competitor kit was used according to manufacturers' instructions, with the same template DNA samples. Templates represented all three genotypes and were confirmed by DNA sequencing.

Fast and reproducible detection of Type IV SNPs



Genotyping of the Type IV SNP rs641805 (A/T) with the KAPA HRM FAST PCR Kit and ABI MeltDoctor™ HRM Master Mix. The Type IV SNP rs641805 is located on an intron of the dihydropyrimidine dehydrogenase (DPD) gene, which catalyzes the reduction of uracil and thymine and is associated with the degradation of certain chemotherapeutic drugs. Reactions (20 µl) contained 1X KAPA HRM FAST PCR Master Mix, 2.5 mM $MgCl_2$, 0.2 µM of each primer (targeting a 124 bp amplicon surrounding the SNP of interest) and 10 ng of human genomic DNA. PCR and HRM were performed with the Corbett Rotor-Gene™ 6000 instrument, using a fast, 2-step cycling protocol (40 cycles) with 5 sec denaturation (95 °C), 20 sec annealing/extension (60 °C) and melting in increments of 0.1 °C. The ABI MeltDoctor HRM Master Mix was used according to the manufacturer's instructions, with the same template DNA samples. ABI MeltDoctor™ is unable to differentiate the Type IV SNP, while KAPA HRM FAST detects the SNP in 95% of the samples assayed. Templates represented all three genotypes and were confirmed by DNA sequencing.

From cell to SNP: Rapid genotyping directly from buccal swabs



Genotyping of the Type II SNP rs12896399 (G/T), part of the eye color haplotype, with KAPA Express Extract and KAPA HRM FAST. The combination of the KAPA Express Extract DNA Extraction Kit (containing a novel thermostable protease) and the KAPA HRM FAST PCR Kit enables extraction, amplification and HRM in less than 2 hours. DNA extracts were prepared from buccal swabs obtained from 36 individuals using KAPA Express Extract DNA Extraction Kits (according to recommended protocols). DNA extracts (1 µl of each) were used directly in 20 µl KAPA HRM FAST reactions containing 1X KAPA HRM FAST Master Mix, 2.5 mM $MgCl_2$ and 0.2 µM of each primer (targeting a 75 bp amplicon surrounding the SNP of interest). PCR and HRM were performed with the Corbett Rotor-Gene™ 6000 instrument, using a fast, 2-step cycling protocol (45 cycles) with 5 sec denaturation (95 °C) and 30 sec annealing/extension (60 °C) and melting in increments of 0.1 °C.

KAPA Library Quantification Kits

Standard protocols for commercial next-generation sequencing (NGS) platforms employ laborious, costly, and unreliable methods for quantifying DNA libraries.

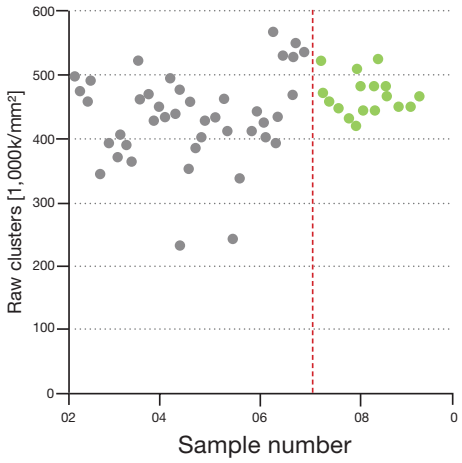
Accurate quantification of PCR-competent sequencing templates is crucial for reliable clonal amplification via either emulsion PCR or bridge PCR: underestimation results in non-clonality, while overestimation leads to inefficiency via poor yields of clonally amplified templates.

qPCR is inherently well-suited for next-generation sequencing library quantification:

- qPCR specifically quantifies only PCR-competent DNA molecules,
- is highly sensitive allowing accurate quantification of low concentration libraries,
- is amenable to automated liquid handling.

qPCR only quantifies PCR-amplifiable library molecules

Compared to spectrophotometric, fluorimetric, and electrophoretic methods, qPCR only quantifies adaptor-ligated and amplifiable library molecules. The ligation of adaptor sequences (orange and blue) to library DNA molecules (grey) results in a mixed population of molecules without the correct adaptor configuration. Electrophoresis and spectrophotometry measure total nucleic acid concentrations, whereas optimal cluster density or template-to-bead ratio depends on the appropriate concentration of PCR-amplifiable DNA molecules. Only qPCR-based library quantification methods count library molecules with the correct adaptor sequence configuration.



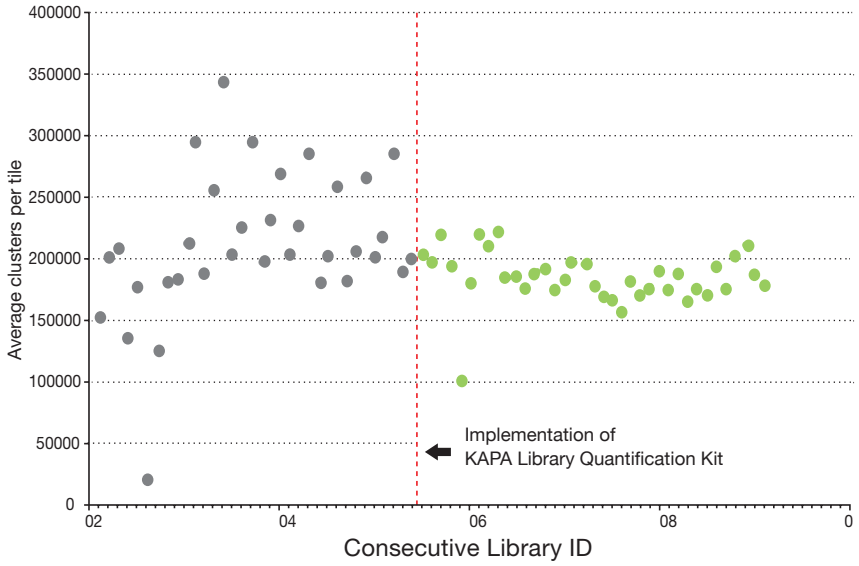
qPCR-based KAPA Library Quantification Kits reduce variability in cluster density compared to Agilent Bioanalyzer. Human exome samples were prepared using Nimblegen solution-based capture. All preparations were performed in a 96-well plate format on a liquid handling system. Average number of clusters per tile are shown for paired-end, 76-bp Illumina GAIIx runs. Data courtesy University of Washington.

KAPA Library Quantification Kits

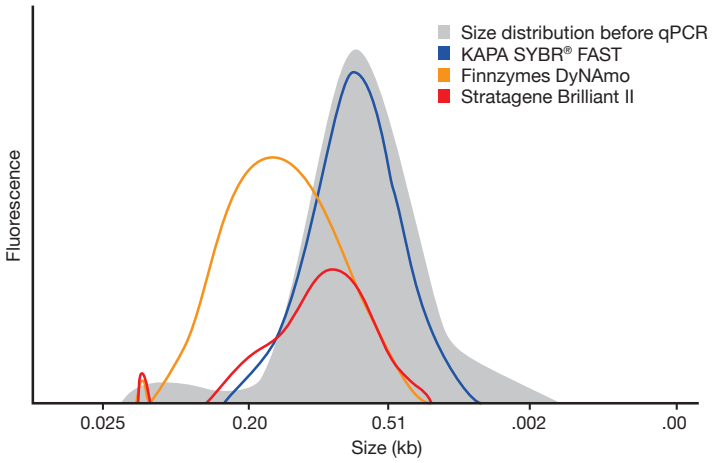
Reliable quantification leads to consistent cluster density

"Before qPCR was adopted for library quantification, cluster density was extremely variable. Implementation of the KAPA Library Quantification Kit in our sequencing workflows resulted in a significant reduction in variability across multiple libraries, negating the need for cluster amplification titration runs." - The Broad Institute, Cambridge, MA U.S.A.

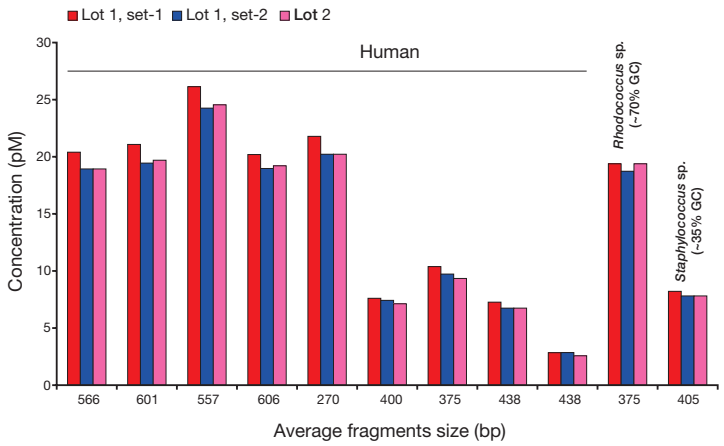
Cluster density before and after implementation of the KAPA Library Quantification Kit. The implementation of KAPA Library Quantification Kits into the Illumina GA sequencing workflow at the Broad Institute significantly reduced cluster density variability and eliminated the need for titrations. Average number of clusters per tile are shown for consecutive libraries.



Engineered DNA polymerase and reliable DNA quantification standards with minimal variability from lot-to-lot

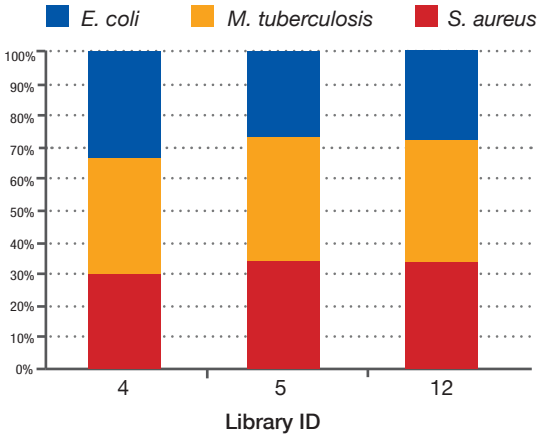


Fragment size distributions before and after qPCR. Fragment size distributions before (grey fill) and after qPCR amplification using three commercial qPCR master mixes: KAPA SYBR® FAST (blue), Stratagene (red), and Finnzymes (orange). Competitor kits contained wild-type Taq polymerase. Reactions were performed with the following cycling protocol: 95 ºC for 10 min, followed by 40 cycles of 95 ºC for 10 sec and 60 ºC for 45 sec.

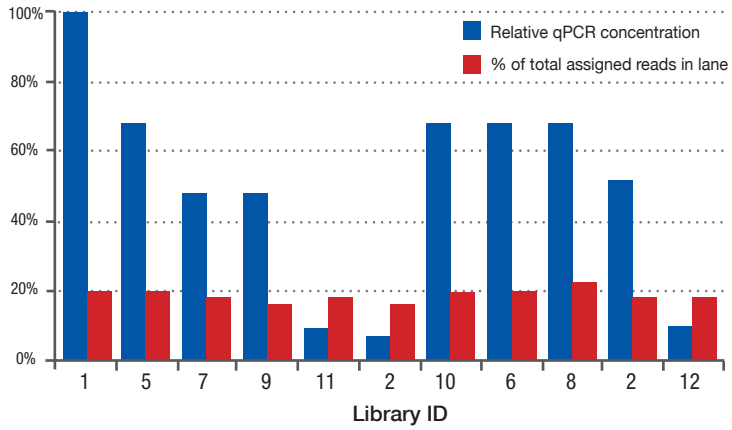


Minimal lot-to-lot and kit-to-kit variability. 9 human DNA libraries and two microbial DNA libraries (*Rhodococcus* sp. ~70% GC and *Staphylococcus* sp. ~35% GC) were used to compare quantification results obtained with distinct lots ("Lot 1" and "Lot 2"), and distinct sets of reagents from the same lot ("set 1" and "set 2") of KAPA Library Quantification Kits for the Illumina GA platform.

qPCR quantification enables equal representation of intra- and inter-indexed libraries for multiplex sequencing



Equal representation of different sample types within indexed libraries. Three separate libraries (*S. aureus*, 33% GC; *E. coli*, 51% GC; and *M. tuberculosis*, 65% GC were constructed for each index (TruSeq™ 4, 5, and 12). Individual libraries were quantified using the KAPA Library Quantification Kit and for each index the libraries were pooled to achieve equimolar representation for each genome. The results indicate that quantification is reliable for samples with a wide range of GC content.



Multiple libraries were pooled in equimolar concentrations for equal representation in sequence data. Eleven indexed Illumina TruSeq™ libraries were quantified by qPCR using the KAPA Library Quantification Kit, and then combined to achieve equal final concentrations in two separate pools for multiplexed sequencing on different flow-cell lanes. The eleven libraries ranged ~11-fold in concentration from 0.67 pM to 7.65 pM, while representation of each index varied between 90% and 127% of expected assigned reads per lane.

Instrument Compatibility Table

● Indicates preferred kit for the instrument

○ Indicates that the kit can be used but may require the addition of ROX reference dye

* Addition of ROX high is required

† Addition of ROX low is required

				ABI Prism® 7000	ABI Prism® 7700	ABI Prism® 7900HT	ABI 5700	ABI 7300	ABI 7500
Universal Includes separate tubes of ROX passive reference dye (high and low)	**KAPA SYBR® FAST qPCR Kit**	KK4600 KK4601 KK4602	1 x 1 ml 1 x 5 ml 2 x 5 ml	○*	○*	○*	○*	○*	●†
	KAPA SYBR® FAST One-Step qRT-PCR Kit	KK4650 KK4651 KK4652	1 x 1 ml 1 x 5 ml 2 x 5 ml	○*	○*	○*	○*	○*	●†
	KAPA PROBE FAST qPCR Kit	KK4701 KK4702 KK4703	1 x 1 ml 1 x 5 ml 2 x 5 ml	○*	○*	○*	○*	○*	●†
ABI Prism® ROX passive reference dye (high) is included in the master mix	**KAPA SYBR® FAST qPCR Kit**	KK4603 KK4604 KK4605	1 x 1 ml 1 x 5 ml 2 x 5 ml	●	●	●	●	●	
	KAPA SYBR® FAST One-Step qRT-PCR Kit	KK4660 KK4661 KK4662	1 x 1 ml 1 x 5 ml 2 x 5 ml	●	●	●	●	●	
	KAPA PROBE FAST qPCR Kit	KK4705 KK4706 KK4707	1 x 1 ml 1 x 5 ml 2 x 5 ml	●	●	●	●	●	
Bio-Rad iCycler™ Fluorescein reference dye is included in the master mix	**KAPA SYBR® FAST qPCR Kit**	KK4606 KK4607 KK4608	1 x 1 ml 1 x 5 ml 2 x 5 ml						
	KAPA SYBR® FAST One-Step qRT-PCR Kit	KK4670 KK4671 KK4672	1 x 1 ml 1 x 5 ml 2 x 5 ml						
	KAPA PROBE FAST qPCR Kit	KK4709 KK4710 KK4711	1 x 1 ml 1 x 5 ml 2 x 5 ml						
LightCycler® 480 Contains no reference dye	**KAPA SYBR® FAST qPCR Kit**	KK4609 KK4610 KK4611	1 x 1 ml 1 x 5 ml 2 x 5 ml						
	KAPA SYBR® FAST One-Step qRT-PCR Kit	KK4680 KK4681 KK4682	1 x 1 ml 1 x 5 ml 2 x 5 ml						


ABI StepOne™/StepOnePlus™
ABI ViiA™ 7
Bio-Rad iCycler iQ®/iQ® 5
Bio-Rad iCycler MyiQ™
Bio-Rad CFX96™/CFX384™
Bio-Rad Opticon™
Bio-Rad Chromo4™
Cepheid SmartCycler®
Corbett Rotor-Gene™
Qiagen Rotor-Gene™ Q
Eppendorf Mastercycler®
Illumina Eco™
Roche LightCycler® 480/1536
Stratagene Mx3000P™
Stratagene Mx3005P™
Stratagene Mx4000™

Ordering Information

KAPA SYBR® FAST qPCR Kits

Description	Code	Kit Contents
KAPA SYBR® FAST Universal	KK4600	1 x 1 ml
KAPA SYBR® FAST Universal	KK4601	1 x 5 ml
KAPA SYBR® FAST Universal	KK4602	2 x 5 ml
KAPA SYBR® FAST ABI Prism®	KK4603	1 x 1 ml
KAPA SYBR® FAST ABI Prism®	KK4604	1 x 5 ml
KAPA SYBR® FAST ABI Prism®	KK4605	2 x 5 ml
KAPA SYBR® FAST Bio-Rad iCycler™	KK4606	1 x 1 ml
KAPA SYBR® FAST Bio-Rad iCycler™	KK4607	1 x 5 ml
KAPA SYBR® FAST Bio-Rad iCycler™	KK4608	2 x 5 ml
KAPA SYBR® FAST for Roche LightCycler® 480	KK4609	1 x 1 ml
KAPA SYBR® FAST for Roche LightCycler® 480	KK4610	1 x 5 ml
KAPA SYBR® FAST for Roche LightCycler® 480	KK4611	2 x 5 ml

KAPA SYBR® FAST One-Step qRT-PCR Kits

Description	Code	Kit Contents
KAPA SYBR® FAST One-Step Universal	KK4650	1 x 1 ml
KAPA SYBR® FAST One-Step Universal	KK4651	1 x 5 ml
KAPA SYBR® FAST One-Step Universal	KK4652	2 x 5 ml
KAPA SYBR® FAST One-Step ABI Prism®	KK4660	1 x 1 ml
KAPA SYBR® FAST One-Step ABI Prism®	KK4661	1 x 5 ml
KAPA SYBR® FAST One-Step ABI Prism®	KK4662	2 x 5 ml
KAPA SYBR® FAST One-Step Bio-Rad iCycler™	KK4670	1 x 1 ml
KAPA SYBR® FAST One-Step Bio-Rad iCycler™	KK4671	1 x 5 ml
KAPA SYBR® FAST One-Step Bio-Rad iCycler™	KK4672	2 x 5 ml
KAPA SYBR® FAST One-Step for Roche LightCycler® 480	KK4680	1 x 1 ml
KAPA SYBR® FAST One-Step for Roche LightCycler® 480	KK4681	1 x 5 ml
KAPA SYBR® FAST One-Step for Roche LightCycler® 480	KK4682	2 x 5 ml

KAPA PROBE FAST qPCR Kits

Description	Code	Kit Contents
KAPA PROBE FAST Universal qPCR Kit	KK4701	1 x 1 ml
KAPA PROBE FAST Universal qPCR Kit	KK4702	1 x 5 ml
KAPA PROBE FAST Universal qPCR Kit	KK4703	2 x 5 ml
KAPA PROBE FAST ABI Prism® qPCR Kit	KK4705	1 x 1 ml
KAPA PROBE FAST ABI Prism® qPCR Kit	KK4706	1 x 5 ml
KAPA PROBE FAST ABI Prism® qPCR Kit	KK4707	2 x 5 ml
KAPA PROBE FAST Bio-Rad iCycler™ qPCR Kit	KK4709	1 x 1 ml
KAPA PROBE FAST Bio-Rad iCycler™ qPCR Kit	KK4710	1 x 5 ml
KAPA PROBE FAST Bio-Rad iCycler™ qPCR Kit	KK4711	2 x 5 ml

Ordering Information

KAPA HRM FAST PCR Kits

Description	Code	Kit Contents
KAPA HRM FAST PCR Kit	KK4201	100 rxn
KAPA HRM FAST PCR Kit	KK4202	500 rxn
KAPA HRM FAST PCR Kit	KK4203	1000 rxn

KAPA Library Quantification Kits

Description	Code	qPCR Instrument
KAPA Library Quantification Kit - Illumina	KK4824	Universal
KAPA Library Quantification Kit - Illumina	KK4835	ABI Prism®
KAPA Library Quantification Kit - Illumina	KK4844	Bio-Rad iCycler™
KAPA Library Quantification Kit - Illumina	KK4854	Roche LightCycler® 480
KAPA Library Quantification Kit - Roche 454 Titanium (Lib-L)	KK4821	Universal
KAPA Library Quantification Kit - Roche 454 Titanium (Lib-L)	KK4831	ABI Prism®
KAPA Library Quantification Kit - Roche 454 Titanium (Lib-L)	KK4841	Bio-Rad iCycler™
KAPA Library Quantification Kit - Roche 454 Titanium (Lib-L)	KK4851	Roche LightCycler® 480
KAPA Library Quantification Kit - Roche 454 FLX (Lib-A)	KK4820	Universal
KAPA Library Quantification Kit - Roche 454 FLX (Lib-A)	KK4830	ABI Prism®
KAPA Library Quantification Kit - Roche 454 FLX (Lib-A)	KK4840	Bio-Rad iCycler™
KAPA Library Quantification Kit - Roche 454 FLX (Lib-A)	KK4850	Roche LightCycler® 480
KAPA Library Quantification Kit - ABI SOLiD	KK4823	Universal
KAPA Library Quantification Kit - ABI SOLiD	KK4833	ABI Prism®
KAPA Library Quantification Kit - ABI SOLiD	KK4843	Bio-Rad iCycler™
KAPA Library Quantification Kit - ABI SOLiD	KK4853	Roche LightCycler® 480
KAPA Library Quantification Kit - Ion Torrent PGM	KK4827	Universal
KAPA Library Quantification Kit - Ion Torrent PGM	KK4838	ABI Prism®
KAPA Library Quantification Kit - Ion Torrent PGM	KK4847	Bio-Rad iCycler™
KAPA Library Quantification Kit - Ion Torrent PGM	KK4857	Roche LightCycler® 480

For more information please contact **sales@kapabiosystems.com** or your local representative.

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