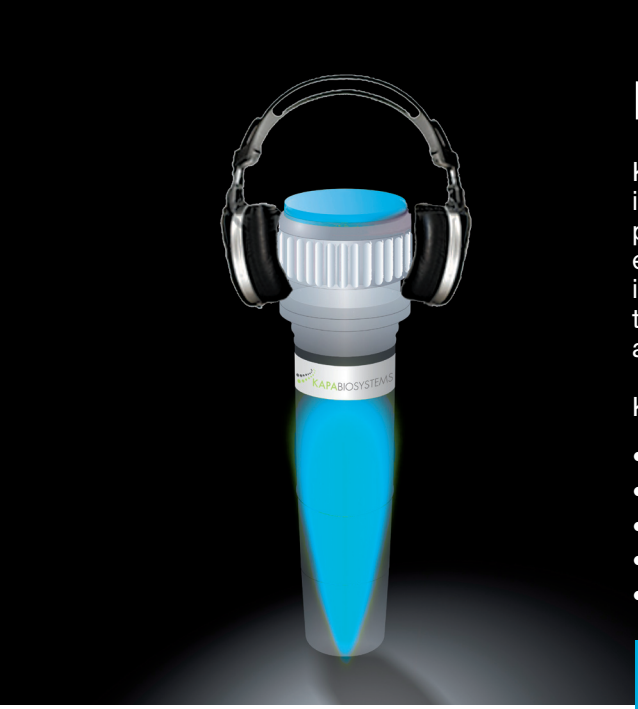


KAPA HiFi DNA Polymerase

KAPA HiFi DNA Polymerase is a novel, single-enzyme system that exhibits industry-leading fidelity and performance when compared with other proofreading polymerases and polymerase blends. KAPA HiFi has been engineered to have an increased affinity for DNA resulting in significant improvements to yield, sensitivity, speed, and the ability to amplify difficult templates. Strong proofreading activity results in an error rate 100X more accurate than *Taq* Polymerase.

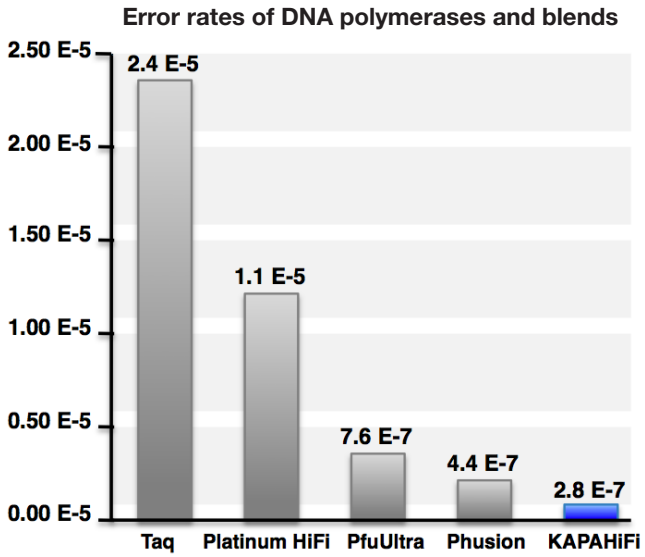
KAPA HiFi DNA Polymerase offers:

- Extreme fidelity - 100X improvement over *Taq* polymerase
- Broad coverage of both AT- and GC-rich targets
- Long range amplification from complex targets, up to 15 kb
- High speed - reduce reaction time by up to 75%
- Availability in HotStart and ReadyMix formulations

World's highest fidelity polymerase for PCR.

Extreme fidelity

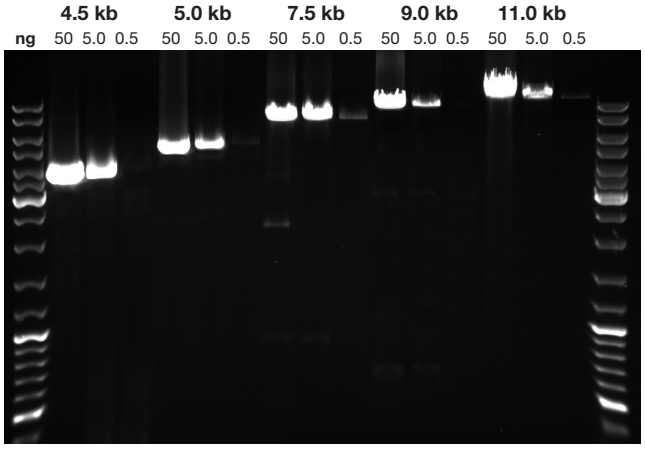
The improved processivity, strong proofreading activity, and optimized buffer system of the engineered KAPA HiFi DNA Polymerase results in superior accuracy for high fidelity PCR applications – 100X more accurate than *Taq* polymerase.



The error rates of KAPA HiFi and Invitrogen Platinum® Taq High Fidelity were determined by direct sequencing of PCR amplicons using a Roche 454 GS FLX next-generation DNA sequencer. 90 PCR amplicons, covering 5 candidate cancer genes from 24 tumors, were generated using each enzyme. The resultant PCR products were concentration normalized and pooled for sequencing. The error rate of KAPA HiFi was calculated at 1 error in 3.54 x 10^6 bases covered (2.82 x 10^{-7}). The error rate of Platinum® Taq High Fidelity was calculated at 1 error in 8.9 x 10^4 bases covered (1.11 x 10^{-5}). The error rate of KAPA HiFi is 100X lower than that of *Taq* Polymerase, 40X lower than that of polymerase blends such as Platinum® Taq High Fidelity, 3X lower than that of PfuUltra™, and 2X lower than that of Phusion™. Fidelity data for *Taq*, PfuUltra™ and Phusion™ are based on published error rates.

High yield and sensitivity from long genomic targets

Two-enzyme polymerase blend systems commonly used for long-range applications are not suitable for high-fidelity PCR because the error rates of these blends are only 3X better than that of *Taq* polymerase. The extreme processivity and robustness of KAPA HiFi DNA Polymerase offers the ability to perform high-fidelity PCR on long and complex templates with high speed and sensitivity.

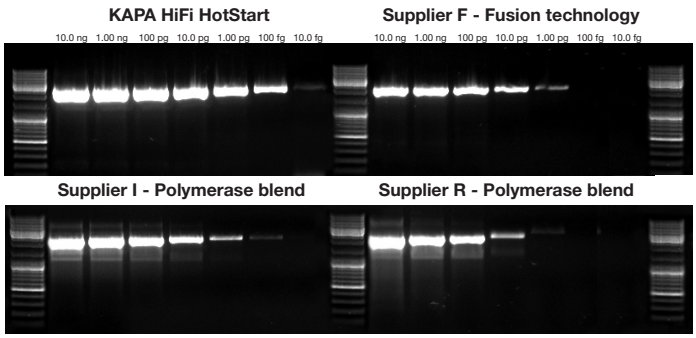


Amplification of fragments up to 11 kb from human genomic DNA. Each fragment was amplified from a template dilution series (50 ng to 0.5 ng DNA per reaction). Reactions (25 µl) were performed using standard 3-step cycling profiles (35 cycles): 20 sec (98 °C) denaturation, 15 sec (65 °C) annealing, and 30 sec/kb (72 °C) extension time. The total reaction time for the 11 kb amplicon was only 3 h 50 min.

KAPA HiFi DNA Polymerase

Extreme sensitivity and fidelity

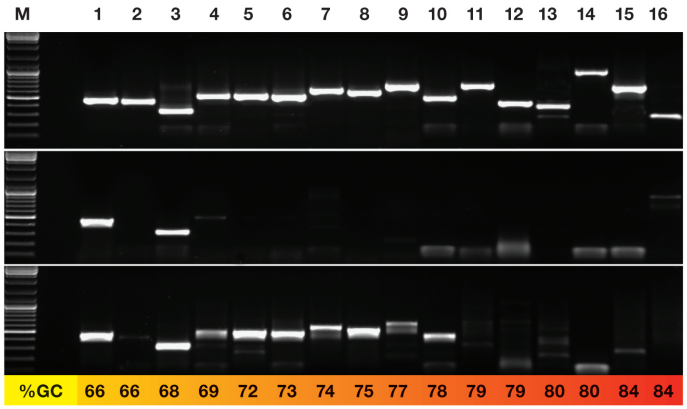
A major limitation of single-enzyme proofreading polymerases is poor sensitivity attributable to damaged nucleotides and primer degradation. The engineered KAPA HiFi DNA Polymerase exhibits dramatic improvements in sensitivity, outperforming fusion polymerases and polymerase blends.



A 2 kb fragment was amplified from a 10-fold dilution series of lambda DNA (10 ng to 10 fg DNA per 25 µl reaction) using KAPA HiFi HotStart in Fidelity Buffer, fusion technology polymerase or polymerase blend systems. All reactions were performed using manufacturers' protocols and buffers, with standard 3-step cycling profiles (35 cycles).

Unrivalled success with difficult templates

KAPA HiFi exhibits robust performance on targets with high GC-content. A panel of human amplicons with GC contents ranging from 66 – 84% was used to compare the performance of KAPA HiFi with that of an engineered polymerase with fusion technology and wild-type Pfu. KAPA HiFi achieved a 100% success rate with higher yields up to 84% GC content.



Amplification of GC-rich DNA fragments from human genomic DNA using KAPA HiFi HotStart (top panel), a competitor engineered proofreading polymerase containing a dsDNA-binding domain (middle panel) and wild-type Pfu (bottom panel). Amplicon GC content increases from left (yellow) to right (red). All reactions were performed according manufacturers' instructions. GC Buffer was used for the engineered competitor and 5% DMSO was added to Pfu reactions. All reactions contained 25 ng human genomic DNA as template.

KAPABIOSYSTEMS

ORDERING INFORMATION

Description	Code	Kit contents
KAPA HiFi + KAPA dNTP Mix	KK2101	100 units
KAPA HiFi + KAPA dNTP Mix	KK2102	250 units
KAPA HiFi HotStart + KAPA dNTP Mix	KK2501	100 units
KAPA HiFi HotStart + KAPA dNTP Mix	KK2502	250 units
KAPA HiFi HotStart ReadyMix	KK2601	100 rxns
KAPA HiFi HotStart ReadyMix	KK2602	500 rxns

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

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