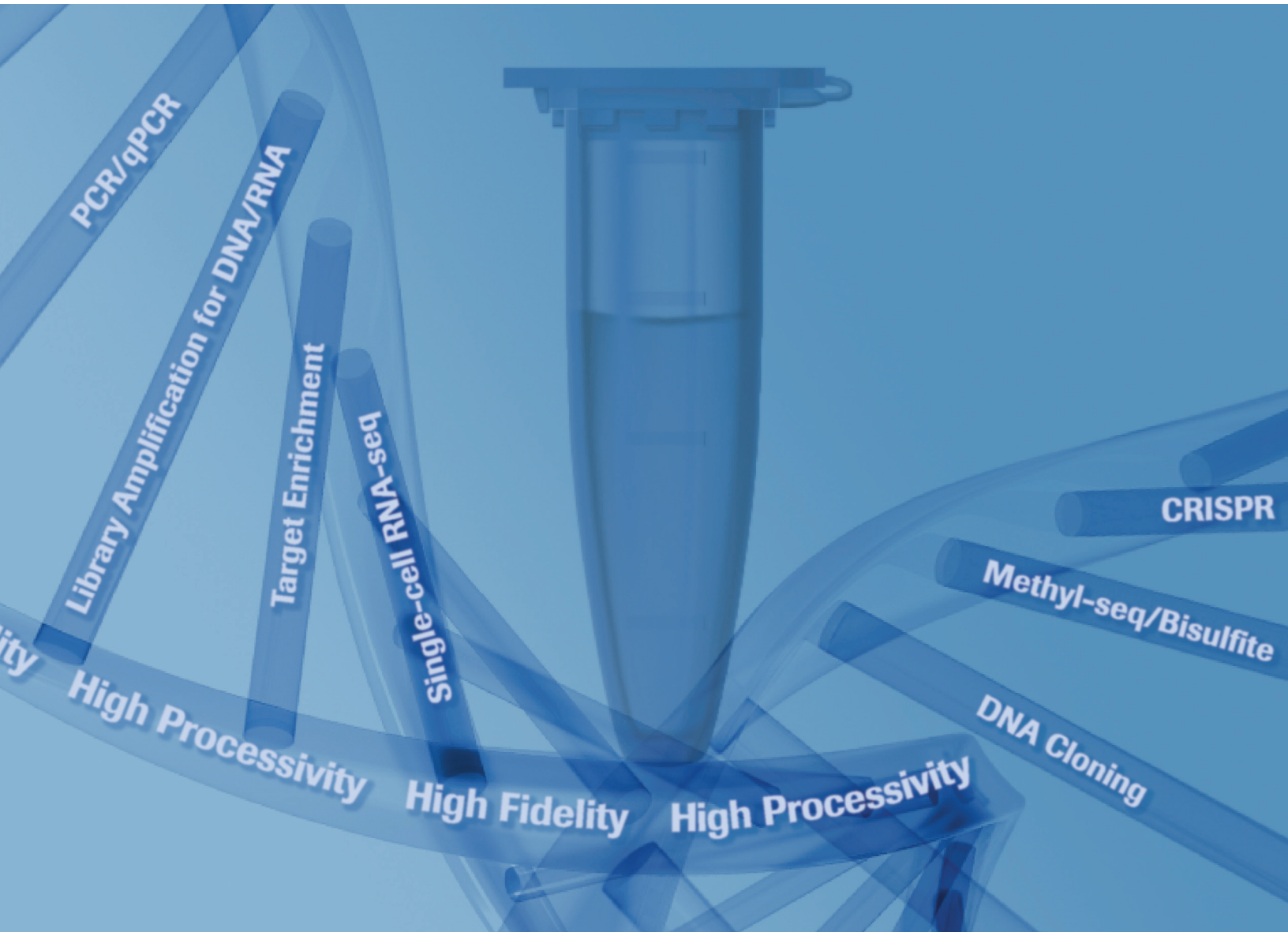
KAPA HiFi

Amplify the possibilities



All polymerases are not created equal

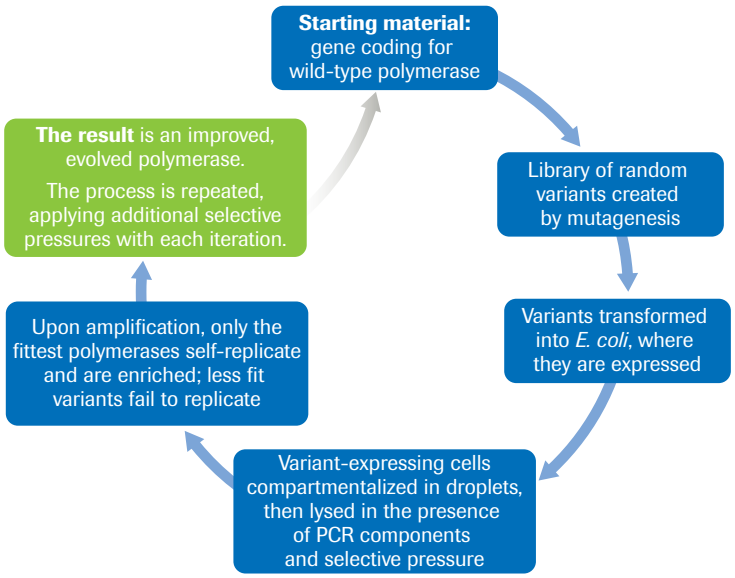
Reliable DNA amplification is critical to the success of many molecular biology methods, from simple cloning and screening to gene editing and next-generation sequencing (NGS).

Typically, DNA polymerases offer EITHER low error rates OR greater speed, range, and inhibitor tolerance. Avoid making trade-offs when performing high-fidelity amplification of long or difficult targets. Insist on the combined fidelity and processivity of

KAPA HiFi DNA Polymerase: Amplify Your Possibilities.

Using Directed Evolution technology (below), we selected for polymerase qualities that increase success rates for a broad range of applications.

Overview of directed evolution



This resulted in a single, versatile enzyme that combines robust proofreading capabilities with low error rates, high speed, greater sensitivity, and more robust amplification through challenging templates.

Whatever your application may be, KAPA HiFi can amplify your success

HIGH PROCESSIVITY

- ✓ Amplify regions up to 11 kb
- ✓ Reduce amplification bias and sequencing bias in AT- or GC-rich regions

LOW ERROR RATES

- ✓ Ensure accuracy in expression vectors and gene-editing templates
- ✓ Reduce falsely identified SNPs and mutations

HIGH SENSITIVITY

- ✓ Detect rare but important molecules in heterogeneous samples
- ✓ Capture sequencing data from rare transcripts and low-copy variants

HIGH SPEED

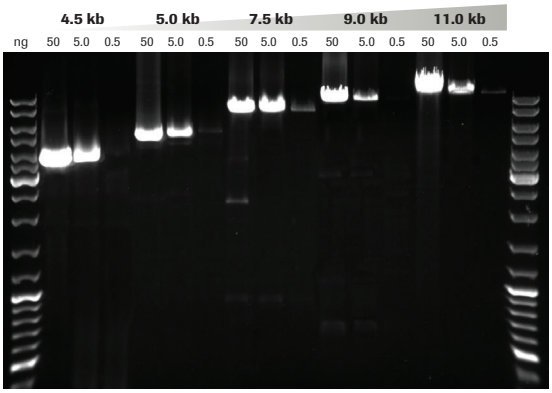
- ✓ Save time on workflows that use PCR

Simplify cloning projects with amplification of templates up to 11 kb

Many high-fidelity DNA polymerases lack the processivity to reliably amplify long templates. KAPA HiFi is not one of them.

KAPA HiFi readily amplifies templates as long as 11 kb from a broad range of template input amounts.

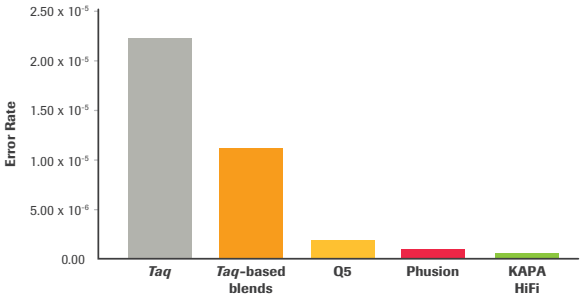
Accurately amplify longer templates to **reduce the number of PCR reactions** in DNA cloning workflows, ultimately reducing the number of steps and conserving resources.



Amplification of targets from 4.5 kb to 11 kb, starting with 50 ng, 5 ng, and 0.5 ng of hgDNA. Each reaction was performed with 35 cycles of denaturation, annealing, and extension.

Minimize introduction of PCR artifacts when amplifying DNA for sequencing, cloning, and other applications

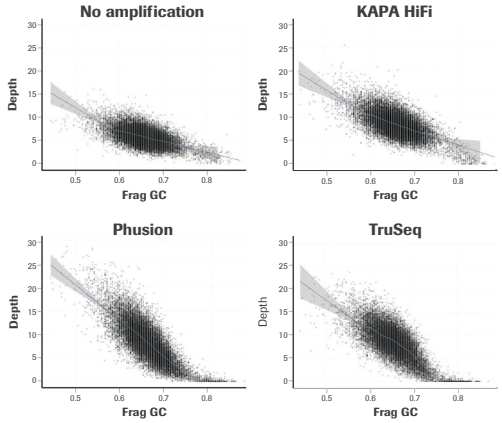
The accuracy of KAPA HiFi—fewer than 1 error per 3.6 x 10^6 nucleotides—ensures that PCR products accurately represent the original targets, **increasing confidence in downstream results**.



KAPA HiFi error rates are lower than for other DNA polymerases. The proofreading activity of KAPA HiFi DNA Polymerase outperforms other polymerases, including *Taq*, Q5 (New England Biolabs), and Phusion (Thermo Scientific).

Ensure uniform representation throughout the genome with robust performance across challenging regions

KAPA HiFi is the enzyme of choice for NGS library amplification. Its ability to amplify GC- and AT-rich regions with nearly the same efficiency as neutral content leads to uniform sequence coverage that is virtually identical to that obtained with a PCR-free workflow. This **ensures reliable results** and **reduces sequencing costs**.



Sequence coverage in libraries amplified using KAPA HiFi DNA Polymerase is nearly indistinguishable from that of unamplified libraries. In contrast, GC-rich sequences are under-represented in libraries amplified using Phusion DNA Polymerase (Thermo Scientific) or the TruSeq PCR Master Mix (Illumina).

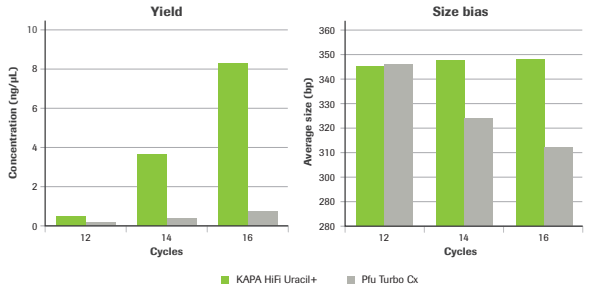
Overcome the challenges of amplifying bisulfite-treated DNA—with KAPA HiFi Uracil+

Bisulfite treatment of methylated DNA creates specific hurdles for DNA polymerases:

- The DNA templates contain uracils, which inhibit the activity of traditional proofreading polymerases
- Long stretches of DNA are highly AT-enriched

KAPA HiFi Uracil+ is engineered to amplify bisulfite-treated DNA templates with greater efficiency and fidelity than other polymerases.

Whether the converted DNA is used in NGS methods or traditional cloning, **KAPA HiFi Uracil+ will provide high yields, low bias, improved quality of sequencing data, and lower sequencing costs**.



KAPA HiFi Uracil+ produces higher library yields and minimal size bias compared to Agilent Pfu Turbo Cx. Human whole genome bisulfite-treated libraries were amplified with 12, 14, or 16 cycles using standard protocols and the amplified libraries were analyzed using a Bioanalyzer 2100 High Sensitivity DNA assay.

KAPA HiFi DNA Polymerase drives the success of KAPA library preparation kits

The high fidelity and processivity of KAPA HiFi DNA polymerase make it the polymerase of choice for producing NGS libraries that accurately reflect the complexity of the original samples, whether the input is:

RNA For total RNA-seq, with mRNA enrichment, rRNA depletion, and options for custom depletion

DNA For genomic samples, cDNAs, amplicons, degraded samples, targeted sequencing, mechanically or enzymatically sheared inputs, and bisulfite-treated DNA

Amplify the success of your project

Consult with our Support & Applications Scientists to:

- Discuss project-specific workflow considerations
- Develop and install automation scripts and workflows
- Troubleshoot challenges
- Receive wet-lab training
- Consult and collaborate to integrate new applications into your lab

Contact us: **support.seqls@roche.com**

From PCR to NGS, HiFi has you covered

DNA amplification and qPCR

- Real-time monitoring of library amplification
- PCR
- Cloning
- Site-directed mutagenesis

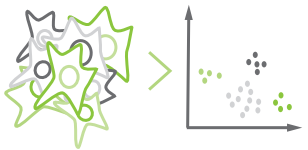
Standard NGS library preparation for RNA and DNA

- RNA-seq libraries (total RNA, mRNA, ribodepleted RNA)
- NGS target enrichment: amplification of enriched libraries for DNA- or RNA-seq
- Whole-genome sequencing (WGS) libraries, when PCR is required
- Whole-exome sequencing (WES) libraries
- Amplicon sequencing (e.g., 16S and 18S sequencing for microbial metagenomics

Epigenomics and chromatin structure

- Bisulfite sequencing
- TAB-seq
- ATAC-seq
- MeDIP-seq
- MIRA
- Target enrichment for Epi workflows
- Hi-C
- WGBS-seq

Additional specialized applications



- SMART-seq2
- CRISPR/Cas9 gene editing
- CRISPR/Cas9 validation screening
- CIRCLE-seq

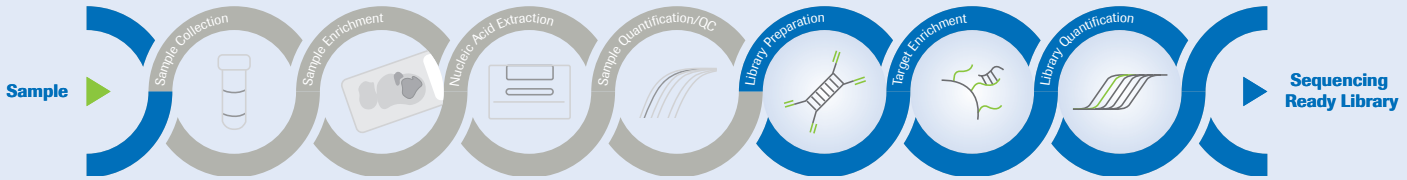
The list is always growing!

If your application isn't listed here, please reach out to us:

go.roche.com/hifi

Ordering information

Code	Description	Pack Size
KK2101	KAPA HiFi PCR Kit	100 U
KK2102	KAPA HiFi PCR Kit	250 U
KK2501	KAPA HiFi HotStart PCR Kit	100 U
KK2502	KAPA HiFi HotStart PCR Kit	250 U
KK2601	KAPA HiFi HotStart ReadyMix	1.25 mL
KK2602	KAPA HiFi HotStart ReadyMix	6.25 mL
KK2800	KAPA HiFi HotStart Uracil+ Kit	10 rxn
KK2801	KAPA HiFi HotStart Uracil+ Kit	50 rxn
KK2802	KAPA HiFi HotStart Uracil+ Kit	250 rxn
KK2610	KAPA HiFi HotStart Library Amp Kit	10 rxn
KK2611	KAPA HiFi HotStart Library Amp Kit	50 rxn
KK2612	KAPA HiFi HotStart Library Amp Kit	250 rxn
KK2620	KAPA HiFi HotStart Library Amp Kit with Primer Mix	50 rxn
KK2621	KAPA HiFi HotStart Library Amp Kit with Primer Mix	250 rxn
KK2623	KAPA Library Amp Primer Mix	250 rxn
KK2702	KAPA HiFi HotStart Real-Time Library Amp Kit	250 rxn
KK2709	KAPA HiFi HotStart Real-Time Library Amp Standards	1.5 mL



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