

# >>Next-generation PCR

## Expand your possibilities

Expand your PCR possibilities with Kapa Biosystems next-generation DNA polymerases. Despite the claims of other reagents suppliers, all commercially available Taq polymerase is the same wild-type enzyme – differences in performance are due to buffer formulation and/or enzyme concentration. Our molecular evolution platform is capable of engineering novel polymerases that are fundamentally different at the protein level; these engineered polymerases contain unique amino acid modifications that confer dramatic improvements to the function of the enzyme.



### KAPA2G™ Robust HotStart

**Improve PCR success rates with this highly versatile second-generation polymerase.**

KAPA2G Robust DNA Polymerase offers higher processivity and specific activity, which translates to robust performance across a wide range of GC- and AT-rich templates and amplicons, difficult samples, as well as improved tolerance to many common PCR inhibitors such as ethanol, salt, and SDS. KAPA2G Robust HotStart is the enzyme of choice for crude samples, including colony PCR.



### KAPA SYBR® FAST qPCR Kits

**The first DNA polymerase engineered for real-time PCR.**

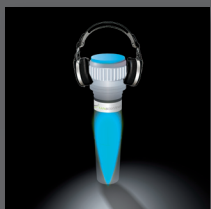
KAPA SYBR® FAST DNA Polymerase has been evolved to perform optimally in stringent qPCR reaction conditions, exhibiting significant improvements in signal-to-noise ratio, cycle threshold (Ct), linearity, speed, and sensitivity. KAPA SYBR® FAST Kits are supplied as a ready-to-use 2x MasterMix containing all reaction components, except primers and template. Kits are available for all qPCR instruments, including the Roche LightCycler® 480.



### KAPA Blood PCR Mix

**Eliminate the need for purification with the first polymerase engineered for PCR direct from blood.**

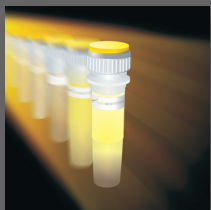
The enzyme is available in KAPA Blood PCR Mix A or B, two optimized, easy-to-use 2x formats containing all PCR components except primers and template (whole blood). KAPA Blood PCR Mix is ideal for end-point PCR using one or more primer sets (including fluorescently labeled primers), end-point PCR followed by direct restriction enzyme digestion specific for SNPs, and paternity testing using the Promega PowerPlex® 16 System.



### KAPAHiFi™ DNA Polymerase

**A second-generation polymerase engineered for extreme fidelity and robustness.**

KAPAHiFi DNA Polymerase is a novel, single-enzyme system that exhibits industry-leading performance when compared with other high fidelity polymerases and polymerase blends. The intrinsic high processivity of KAPAHiFi results in significant improvements in yield, speed, target length, and the ability to amplify difficult templates. KAPAHiFi exhibits over 30x increased fidelity as compared to wild-type Taq polymerase.



### KAPA2G™ Fast HotStart

**The ultimate hot start enzyme for extreme speed and performance.**

Evolved specifically for speed and high performance, KAPA2G Fast HotStart offers Fast PCR based on the intrinsic ability of the KAPA2G Fast DNA polymerase to synthesize DNA at a much faster rate than wild-type polymerases. 1 second per kilobase extension rate allows for increased productivity and faster time to results without sacrificing performance.



### KAPALongRange™ DNA Polymerase

**Engineered for long templates and extreme sensitivity.**

The KAPALongRange system is engineered for the amplification of long and complex targets up to 20kb. The system is optimized specifically for high yields from limiting starting DNA and exhibits extreme sensitivity. KAPALongRange also exhibits a 4x improvement in fidelity as compared to standard Taq DNA polymerase.

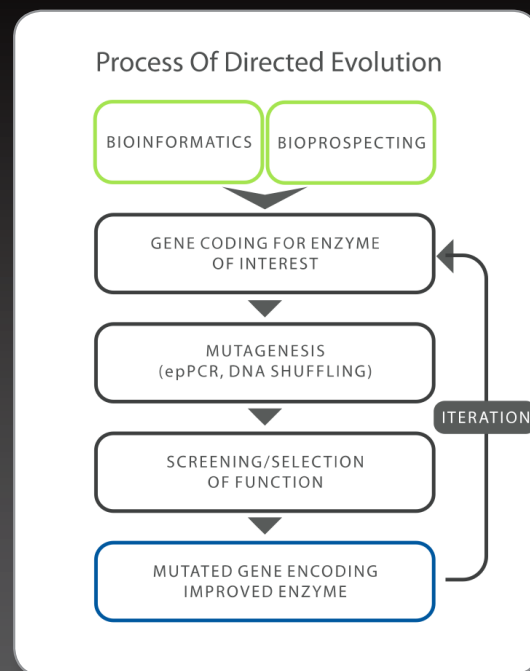
# >>Our technology Molecular evolution

**Wild-type enzymes are transformed into engineered enzymes through a process of high-throughput molecular evolution.**

The complex cumulative effects of small changes to protein structure significantly limit the rational design of enzyme function. A preferred strategy for protein engineering involves simulating evolution in the laboratory. Large libraries of protein variants are screened through a specific functional selection pressure, only the enzymes with improved function survive for the next round of selection.

Recent innovations in mutagenesis, *in vitro* genotype-phenotype linkage, and massively parallel screening assays have finally unlocked the potential of molecular evolution.

Kapa Biosystems is the only reagents supplier that offers a range of novel polymerases that have been evolved specifically for applications such as real-time PCR/qPCR, high fidelity PCR, fast PCR, robust PCR, crude sample PCR, long range PCR, next-generation DNA sequencing, and molecular diagnostics.



## Standard PCR

**High quality reagents for routine research.**

In addition to our next-generation PCR reagents, Kapa Biosystems also supplies a range of DNA polymerases, dNTPs, and ligases for standard PCR applications:

### >> KAPATaq HotStart

KAPATaq HotStart is based on the single-subunit wild-type Taq DNA polymerase of *Thermus aquaticus*. In the hot start formulation, the enzyme is combined with a proprietary antibody that inactivates the polymerase until the first denaturation step, eliminating spurious amplification resulting from non-specific priming events and increases overall reaction efficiency and sensitivity.

### >> KAPA T4 DNA Ligase

KAPA T4 Ligase catalyzes the formation of a phosphodiester bond between 5' phosphate and 3' hydroxyl termini in duplex DNA or RNA. This enzyme will join blunt and cohesive end termini as well as repair single stranded nicks. Also available with optimized reaction buffer for efficient ligation in 5 minutes.

### >> KAPATaq DNA Polymerase

KAPATaq DNA Polymerase is the single-subunit Taq DNA polymerase enzyme isolated from the thermophilic bacterium *Thermus aquaticus* and purified from recombinant *E. coli*. KAPATaq is also available in a 2x ReadyMix format that contains all the components required for PCR except template and primers allowing you to save time and effort without compromising performance.

### >> KAPA dNTPs

High quality, molecular grade dNTPs available as individual components and mixes. Never compromise your PCR performance with low quality dNTPs.

## Ordering information

For more information please contact your local Kapa Biosystems representative.

Visit our website at [www.kapabiosystems.com](http://www.kapabiosystems.com)