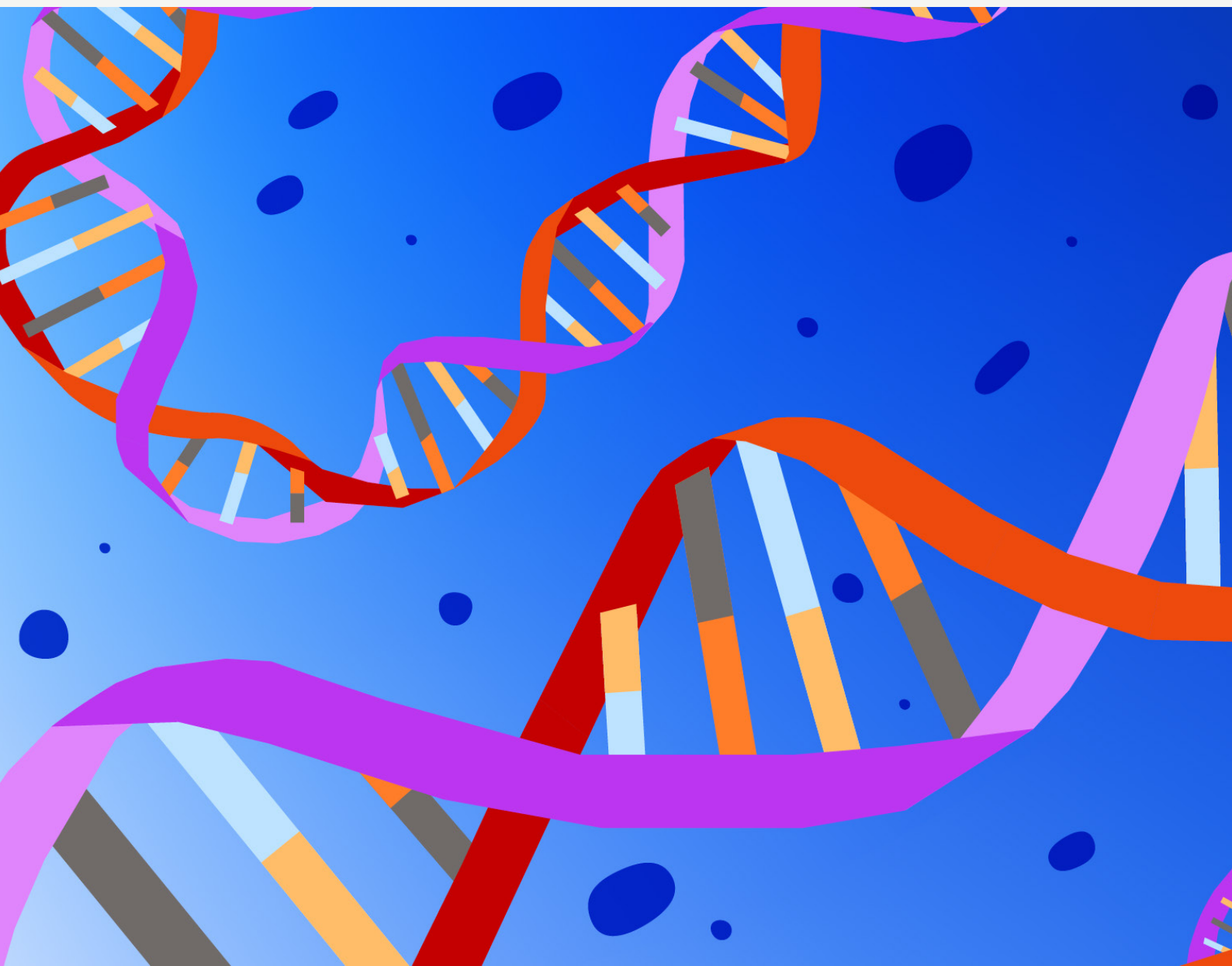


Evolved to excel

KAPA3G HotStart DNA Polymerase



Evolved to excel – KAPA3G HotStart DNA Polymerase

KAPA3G HotStart DNA Polymerase is a new-generation polymerase evolved for exceptionally high processivity and robustness to shorten assay reaction time and minimize sample preparation time without loss in performance. Produced in CustomBiotech's ISO 13485-certified manufacturing facilities, KAPA3G HotStart DNA Polymerase is your polymerase of choice for *in vitro* diagnostic products – extensively tested, produced and filled to the scale you need, and ready to be lyophilized for a long shelf-life and flexible assay designs.

Exceptional speed: achieve extension times of just 1 second for fast protocols

Broad-spectrum inhibitor tolerance: shorten and simplify workflows by processing crude samples

Lyophilization-ready: create flexible assay designs that retain performance over long time periods

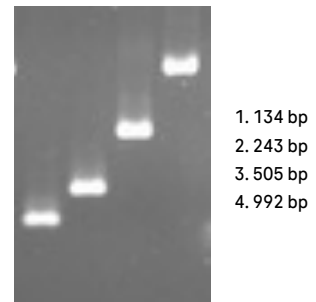
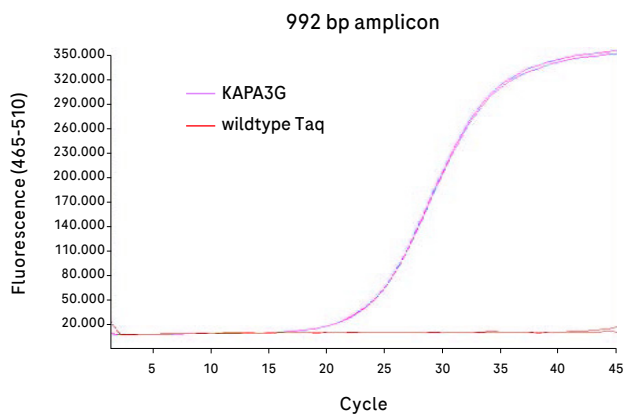
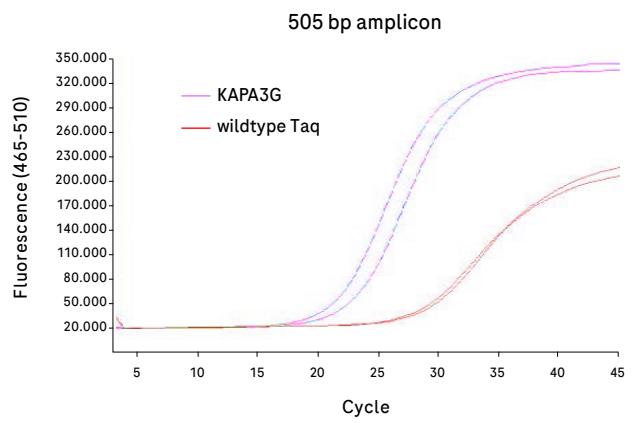
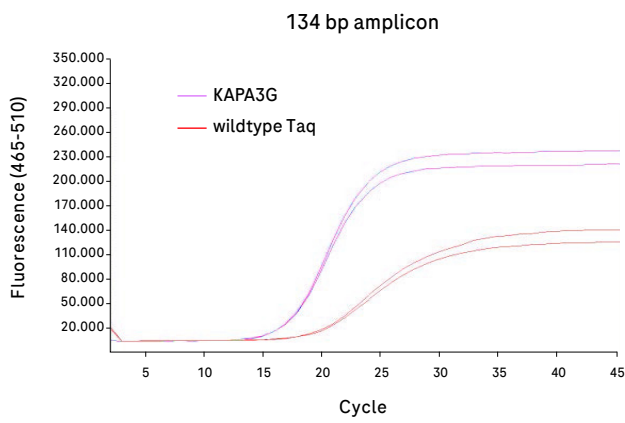


What exactly is KAPA3G HotStart DNA Polymerase?

It is a 3rd generation mutant of the classical Taq polymerase from *Thermus aquaticus* combined with a monoclonal antibody that confers HotStart functionality. Through directed evolution, this new generation of enzyme is faster and more tolerant of inhibitors.

Exceptional speed

Nearly 1000 bp in 1 second extension time without compromising fluorescence or yield

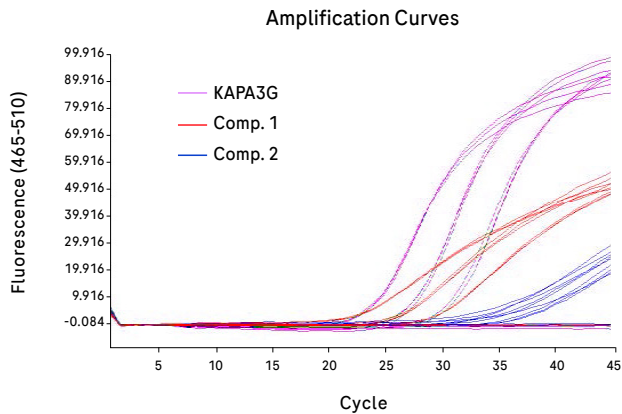


01

Enhanced amplification efficiency compared to wildtype Taq polymerase. KAPA3G DNA Polymerase consistently achieves higher fluorescence and yields for targets of various lengths with only one second extension time.

Exceptional speed

KAPA3G HotStart DNA Polymerase excels in a fast protocol

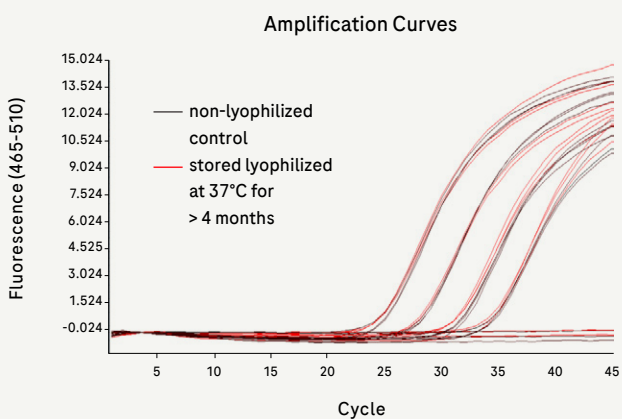


02

Of three tested polymerases, KAPA3G is the only one that performs well with a fast protocol. KAPA3G DNA Polymerase handles one-second extension and denaturation times with ease, producing consistently high amplification curves. All polymerases were used according to manufacturer's instructions (total assay run time: 23 minutes).

Lyophilization-ready

Lyophilized KAPA3G HotStart DNA Polymerase can be stored for several months at 37°C without loss in performance




03

Lyophilized KAPA3G DNA Polymerase retains enzymatic activity even at high storage temperatures. Stored at 37°C for over 4 months, the lyophilized format delivers the same high performance as non-lyophilized enzyme stored at -20°C.

Broad-spectrum inhibitor tolerance


KAPA3G DNA Polymerase exhibits robust performance in presence of a broad range of inhibitors

Sample or sample collection tubes



- Hematin 50 µM
- Ultra Serum 0.2 %
- Plasma EDTA 0.2 %
- Plasma Citrate 2 %
- Stool 0.05 %
- Sputum 0.5 %
- Nasal swab > 0.5 %
- Melanin > 3.5 ng/ µl

Sample preparation method



- TRIzol® 0.5 %
- Ethanol 8 %
- SDS 0.01 %
- Bisulfite 0.3 %

04
KAPA3G DNA Polymerase was tested with a broad range of inhibitors inherent to liquid biopsies, tissues or standard sample preparation methods. Tolerance is defined as a shift in Cp of ≤ 3 and in fluorescence of $\geq 50\%$ of the control total fluorescence.

Robust multiplexing even in presence of common PCR inhibitors

Inhibitor	FAM		HEX		Cy5	
	Cp-shift ≤ 3	fluorescence $\geq 50\%$	Cp-shift ≤ 3	fluorescence $\geq 50\%$	Cp-shift ≤ 3	fluorescence $\geq 50\%$
SDS 0.01 %	✓ X	✓ X	✓ X	✓ X	✓ X	✓ X
EtOH 3 %	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
EDTA 3 mM	✓ X	✓ X	X X	X X	✓ X	✓ X
Citrat 3 mM	✓ X	✓ X	✓ ✓	✓ ✓	✓ X	✓ X
Urea 180 mM	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
Hematin 30 µM	✓ X	✓ X	✓ X	✓ X	✓ X	✓ X
Heparin 0.1 IU/ml	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ X	✓ X
Gua SCN 0.25 %	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ X	✓ X
Bisulfite 0.1 %	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ X	X X
Bile Salt 0.075 %	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ X	X X

KAPA3G
 Competitor
 ✓ passed
 ✗ failed

05

High-quality outcomes from multiplex assays spiked with common inhibitors. KAPA3G shows superior performance with a triplex assay in the presence of inhibitors compared to a competitor polymerase (optimization steps were included that deviate from manufacturer's instructions). Tolerance is defined as a shift in Cp of ≤ 3 and in fluorescence of $\geq 50\%$ of the control total fluorescence. Total assay run times: KAPA3G: 43 minutes; competitor enzyme: 86 minutes.

Ordering information

Product	Pack size	Catalog number
KAPA3G HotStart DNA Polymerase, glycerol-free, 30 U/μl	custom fill	08918651103
KAPA3G HotStart Master	custom fill	09084711103
KAPA3G PCR Buffer	custom fill	09160914103

Cut time to result.
Extend product shelf life. Catalyze your assay to excel.

Regulatory disclaimers, warranty limitations and legal notes
are listed on the respective product page on custombiotech.roche.com

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