

## KAPA2G FAST Multiplex Kits

*High-speed, high-performance multiplex PCR*

**KAPA2G Fast Multiplex PCR Kits** contain a second-generation (2G) enzyme derived through a process of molecular evolution. KAPA2G FAST HotStart DNA Polymerase is an antibody-mediated hot start formulation engineered for higher processivity and speed, offering significantly faster extension rates than wild-type *Taq* DNA polymerase. In addition to speed, KAPA2G Fast provides higher yields and sensitivity than competitor enzymes for highly multiplexed PCR.\*

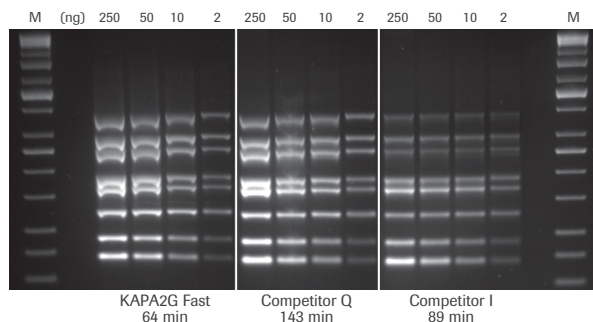
Benefits include:

- higher yields and sensitivity
- uniform representation of all amplicons
- reduction in PCR cycling time up to 60%
- high speed without compromising performance
- minimal optimization with master mix formulation

## Improve sensitivity, specificity, and yields

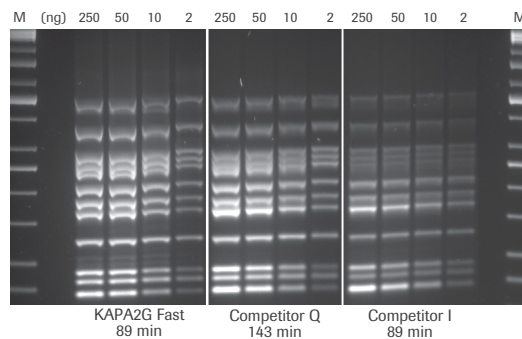
- Uniform representation of all amplicons
- Successful multiplex PCR with difficult, GC-rich targets

### High speed and performance



**\*Multiplex PCR (8-plex) performed with the KAPA2G Fast Multiplex PCR Kit, Competitor Q, and Competitor I.** Reactions (25  $\mu$ L) contained 1X PCR Master Mix (KAPA and Competitor Q) or 1X PCR Buffer, 3 mM MgCl<sub>2</sub>, 0.2 mM of each dNTP and 1 U of hot start *Taq* DNA Polymerase (home-brew multiplex reagents, with Competitor I). Human genomic DNA was used as template (250 – 2 ng per reaction), and primers were supplied at 0.2  $\mu$ M each. Cycling was performed according to manufacturers' recommendations (30 cycles).

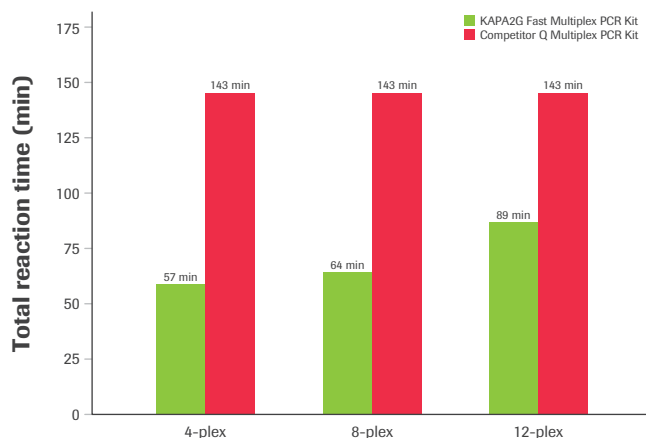
### Uniform representation of all amplicons in 12-plex PCR



**\*Multiplex PCR (12-plex) performed with the KAPA2G Fast Multiplex PCR Kit, Competitor Q, and Competitor I.** Achieving uniform representation of all amplicons in a complex multiplex assay is a challenge due to amplification bias—a result of differences in amplicon length, secondary structure, and priming efficiency. Reactions (25  $\mu$ L) contained 1X PCR Master Mix (KAPA and Competitor Q) or 1X PCR Buffer, 3 mM MgCl<sub>2</sub>, 0.2 mM of each dNTP and 1 U of hot-start *Taq* DNA Polymerase (home brew multiplex reagents, with Competitor I). Human genomic DNA was used as template (250 – 2 ng per reaction), and primers were supplied at 0.2  $\mu$ M each. Cycling was performed according to manufacturers' recommendations (30 cycles).

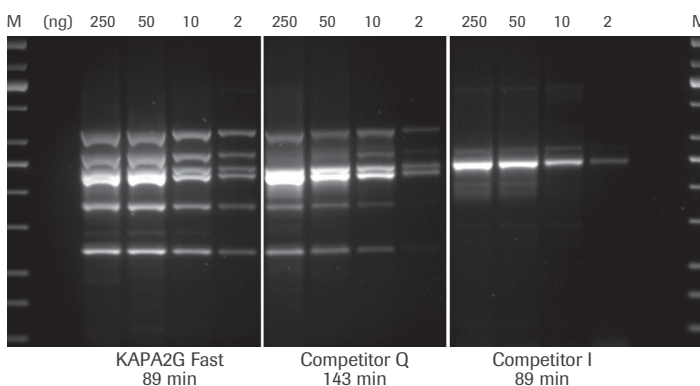
## Increase speed without compromising performance

- 60% reduction in cycling time
- Extension times as low as 15 seconds



**Fast Multiplex PCR with KAPA2G Fast Multiplex PCR Kits.** Multiplex PCR with wild-type *Taq* typically requires very long annealing and extension times to allow primer annealing and extension of all primers in the multiplex. Total PCR cycling times required for 4-plex, 8-plex, and 12-plex multiplex PCRs (30 cycles, set up according to the manufacturers' recommendations) with KAPA2G Fast Multiplex PCR Kits and Competitor Q Multiplex PCR Kit (which contains wildtype *Taq* DNA polymerase) are shown. Time savings of 40 – 60% are possible with the KAPA2G Fast Multiplex PCR Kit.

### Successful multiplex PCR with difficult, GC-rich targets



**GC-rich Multiplex PCR (6-plex) performed with the KAPA2G Fast Multiplex PCR Kit, Competitor Q and Competitor I.** Successful Multiplex PCR with wild-type *Taq* is limited to easy, simple targets that can be amplified with equal efficiency. The improved processivity of the engineered KAPA2G Fast DNA Polymerase allows uniform multiplex PCR of a broad range of difficult targets. Reactions (25  $\mu$ L) contained 1X PCR Master Mix (KAPA and Competitor Q) or 1X PCR Buffer, 3 mM MgCl<sub>2</sub>, 0.2 mM of each dNTP and 1 U of hot start *Taq* DNA Polymerase (home brew multiplex reagents, with Competitor I). Human genomic DNA was used as template (250 – 2 ng per reaction), and primers were supplied at 0.2  $\mu$ M each. DMSO (5%) and KAPA Enhancer 1 (1X) was added to all reactions. Cycling was performed according to manufacturers' recommendations (30 cycles). Amplicons range in size from 241 – 642 bp, and in GC content from 72.7 – 83.8%.

## Ordering information

Roche cat. no.	KAPA code	Description	Kit size
07961421001	KK5801	KAPA2G Fast Multiplex PCR Kit	1.25 mL
07961430001	KK5802	KAPA2G Fast Multiplex PCR Kit	6.25 mL

Published by:

### Roche Sequencing and Life Science

9115 Hague Road  
Indianapolis, IN 46256

[sequencing.roche.com](http://sequencing.roche.com)

For Research Use Only. Not for use in diagnostic procedures.

KAPA is a trademark of Roche. All other product names and trademarks are the property of their respective owners.

© 2020 Roche Sequencing and Life Science. All rights reserved.

MC-US-06993

SS302001

A520

6/20