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USB

USB® FideliTaq™ PCR Master Mix (2X)

- Increases fidelity 3-6 times over Taq DNA Polymerase
- Optimized for long PCR products
- Convenient, ready-to-use mix which significantly reduces experimental variability
- Enhanced buffer formulation which reduces time-consuming optimization
- Generates products whose ends are compatible with either blunt-end or TA cloning procedures

USB FideliTaq PCR Master Mix (2X) combines high quality USB recombinant Taq DNA Polymerase, a high-fidelity proofreading polymerase and USB Ultrapure nucleotides in a proprietary buffer formulation. This ready-to-use mix increases amplification fidelity approximately 3-6 times over Taq DNA Polymerase alone and allows for amplification of longer product sizes[1-4]. The mix generates products whose ends are compatible with either blunt-end or TA cloning procedures[5]. FideliTaq PCR Master Mix provides robust and reliable performance for PCR applications in which high-fidelity or longer product sizes are required. Since the mix is pre-formulated, experimental variability is significantly reduced.

Convenience

The pre-mixed formulation saves time and reduces potential contamination errors by eliminating several pipetting steps. For a 50 µl reaction, simply add 25 µl of FideliTaq PCR Master Mix to primers, DNA template, and PCR-qualified H_2O. Reactions can be easily performed in 10 µl, 25 µl, 50 µl, or 100 µl volumes.

High fidelity

FideliTaq DNA Polymerase gives 3-6 fold higher fidelity than Taq DNA Polymerase, ideal for cloning and microarray applications.

Increase product size and yield

Amplify short and long PCR products from complex DNA templates with little or no optimization (Fig. 1). For PCR products greater than 2 kb, yields are greatly increased with FideliTaq DNA Polymerase and an enhanced buffer system.

Improve specificity and sensitivity

Amplify PCR products with low background and from low-copy targets, essential for demanding genomic and cDNA applications with limited sample material (Fig. 2).

Stable performance

The mix withstands repeated freeze-thaw cycles with no observed decrease in performance (Fig. 3).

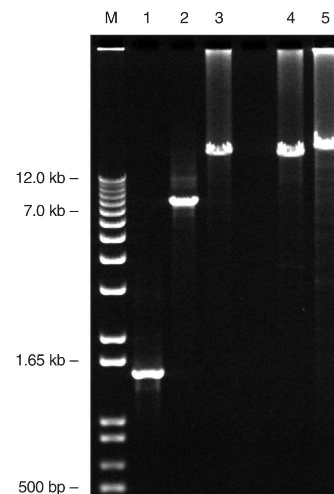
Functional test:

Tested by amplifying a 20.7 kb PCR product from lambda DNA.

FideliTaq PCR Master Mix formulation (2X)

FideliTaq PCR Master Mix [PN 71182] combines USB Taq DNA Polymerase with a proofreading polymerase in a unique buffer formulation. Magnesium and nucleotide concentrations are 3 mM and 0.4 mM each, respectively. Supplied as 4 x 625 µl tubes, sufficient for 100 reactions in a 50 µl reaction volume. Complete protocol booklet and a brief protocol card are also provided.

Fig. 1. Range of targets amplified



Single-copy NRAGE, 1.55 kb (Lane 1) and Numb, 7.7 kb (Lane 2) were amplified from 1 ng human genomic DNA. Single-copy β-globin, 23.0 kb (Lane 3) was amplified from 100 ng human genomic DNA. Both the 20.7 kb (Lane 4) and 35.0 kb (Lane 5) lambda targets were amplified from 1 ng lambda DNA. No magnesium optimization was required, as 1.5 mM final magnesium concentration was used in all reactions.

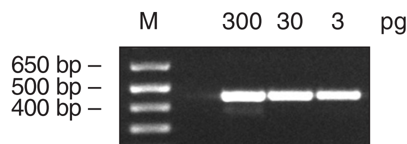
FideliTaq PCR Master Mix (2X)

Product code	Pack size
71182	100 reactions

References:

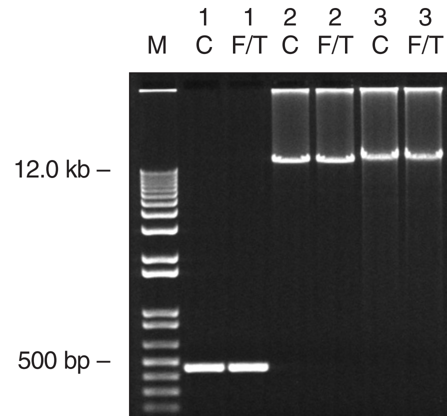
1. Barnes, W. M. (1994) *Proc. Natl. Acad. Sci.* USA **91**, 2216-2220.
2. Cheng, S., Fockler, C., Barnes, W. M., and Higuchi, R. (1994) *Proc. Natl. Acad. Sci.* USA **91**, 5695-5699.
3. Barnes, W. M. (1992) *Gene* **112**, 29-35.
4. Cline, J., Braman, J. C., and Hogrefe, H. H. (1996) *Nucleic Acids Res.* **24**, 3546-3551.
5. Magnuson, V. L., Ally, D. S., Nylund, S. J., Karanjawala, Z. E., Rayman, J. B., Knapp, J. I., Lowe, A. L., Ghosh, S., and Collins, F. S. (1996) *BioTechniques* **4**, 700-709.

Fig. 2. Sensitivity of FideliTaq PCR Master Mix (2X)



The single-copy Numb gene was amplified from the indicated amounts of human genomic DNA. Approximately one mammalian cell is represented by 3 pg of genomic DNA.

Fig. 3. Freeze-thaw stability of FideliTaq PCR Master Mix



The master mix was subjected to 15 freeze-thaw cycles alternating between dry ice and room temperature. Following freeze-thaw cycles (F/T), the mix was compared to control mix (C) before treatment. Both short and long targets are shown to demonstrate the robust nature of the mix. Single-copy Numb, 455 bp (Lane 1) was amplified from 30 pg human genomic DNA. β-globin 23 kb target (Lane 2) was amplified from 100 ng human genomic DNA. Lambda 35 kb target (Lane 3) was amplified from 1 ng lambda DNA.

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Affymetrix, Inc.
USB® Products
26111 Miles Road
Cleveland, Ohio 44128
Tel: 800-321-9322 | 216-765-5000
Fax: 800-535-0898 | 216-464-5075
USBcustomerserv@affymetrix.com
usb.affymetrix.com

Affymetrix UK Ltd.
USB® Products
Voyager, Mercury Park,
Wycombe Lane, Wooburn Green,
High Wycombe HP10 0HH, UK
Tel: +44 (0)1628 55 2600
Fax: +44 (0)1628 55 2675
USBcustomerserveurope@affymetrix.com

Affymetrix Pte Ltd.
USB® Products
7 Gul Circle, #2M-01
Keppel Logistics Building
Singapore 629563
Tel: +65 63957310
Fax: +65 63957300
USBcustomerserv@affymetrix.com

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