VELOCITY DNA Polymerase

Superior Performance and Flexibility

- Exceptional speed, reducing reaction times by >50%
- Robust performance with problematic GC and AT rich targets
- Long range PCR of complex genomic DNA (up to 10 kb)
- 50 fold higher fidelity than Taq polymerase

VELOCITY DNA Polymerase is an ultra-fast thermostable enzyme possessing 3'-5' proofreading exonuclease activity.

VERSATILE

VELOCITY delivers outstanding PCR yield with exceptional fidelity, even from low template concentrations (Fig. 1) and has high processivity, resulting in shorter extension times, higher yield and the ability to do long templates in a fraction of the time (Fig. 2). Furthermore, the polymerase offers robust and reliable yields, even in assays in which PCR conditions are compromised with impurities or in complex assays. VELOCITY encompassing the best of all polymerase functionality in one enzyme, making it the only choice for your PCR applications.

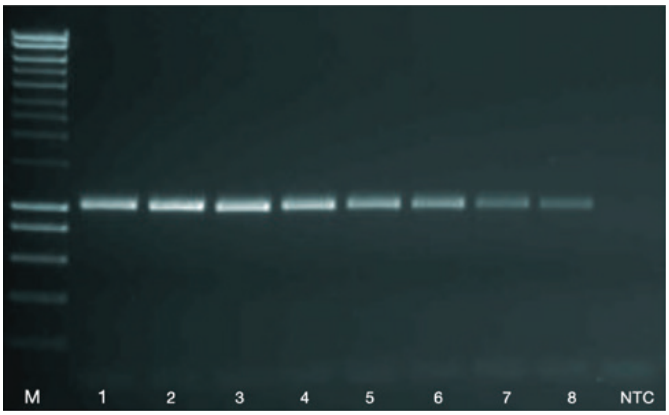

Fig. 1 High yield even from low template concentrations
A 1 kb fragment from the rn18s mouse genomic DNA gene was amplified from 6.25 ng of mouse genomic DNA template using 15s/kb extension step (lane 1), followed by a 2-fold serial dilution series of template (lanes 2-8). PCR was performed in 50 µL reaction mixtures and 5 µL was run on a 1% agarose gel. HyperLadder™ 1 kb (M). No template control (NTC).

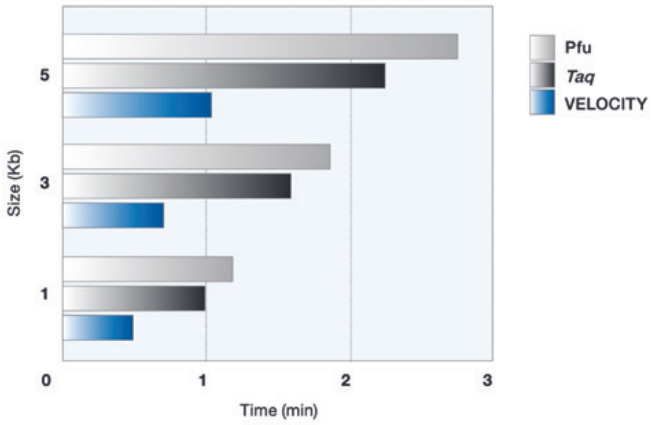

Fig. 2 Estimated PCR extension times for different DNA polymerases
These extension times are based around standard protocols and 25x cycles. Reduced denaturation and extension steps for VELOCITY DNA Polymerase result in shorter PCR runs and improved turnaround times.

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GC-RICH TEMPLATES

PCR-amplification of GC-rich templates is often hampered by the formation of secondary structures like hairpins and higher melting temperatures, causing DNA polymerases to stall. This can result in low yields of the target fragment, ladders of non-specific fragments, amplicons of the incorrect length, primer-dimers and/or complete reaction failure. Routine amplification of GC-rich templates with commonly used high-fidelity DNA polymerases therefore, still remains unreliable. The unique properties of VELOCITY, combined with an optimized buffer system, allows superior results, even when using problematic templates (Fig 3).

LONG TEMPLATES

VELOCITY provides both high-fidelity coupled with an extremely low error-rate of 4.4 x 10^{-7} and inherently high processivity. This results in extension rates as fast as 15s/kb for templates of up to 5 kb and 30s/kb for templates longer than 5 kb (Fig. 4). Reduction in PCR turnaround time make VELOCITY the ideal choice for users who wish to generate PCR products with high yield and no mutations.

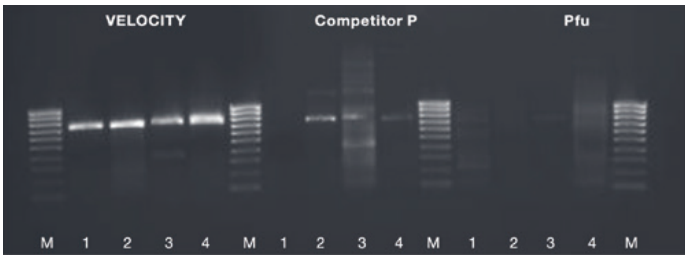

Fig. 3 High yield and sensitivity
A 5-fold serial dilution of human total RNA in duplicate (10 ng to 3 pg; lanes 1-6 respectively, including HyperLadder 50 bp (M)) was reverse transcribed and then amplified using ß-actin primers to produce a 1 kb fragment, according to the manufacturers' recommended protocol. The results illustrate the higher yields and greater sensitivity obtained from MyTaq One-Step RT-PCR Kit in comparison to supplier B, R and Q.

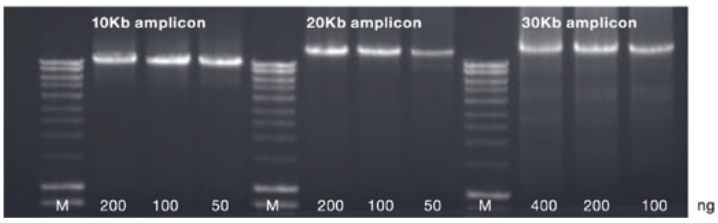

Fig. 4 Fast high-yield amplification with VELOCITY DNA Polymerase
Fragments of 10, 20 and 30 kb from Lambda DNA were amplified using 2 Units of VELOCITY DNA Polymerase. The fragments were amplified from 50-400 ng of template DNA using a 2-fold serial dilution with 30s/Kb extension time in 50 µL reaction volumes, containing 2 mM $MgCl_2$ with 20 PCR cycles. 5 µL was run on a TAE agarose gel. HyperLadder™ 1 kb (M). The data illustrates that VELOCITY DNA Polymerase is able to amplify fragments of varying length with a reduced number of cycles, which leads to shorter PCR run times.

Ordering Information

VELOCITY DNA Polymerase	Pack size	Cat. #
VELOCITY DNA Polymerase	250 Units	BIO-21098
	500 Units	BIO-21099

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