Superior Performance and Flexibility

VELOCITY DNA Polymerase

- **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 10kb)**
- **50 fold Higher Fidelity than *Taq* Polymerase**

Versatile

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

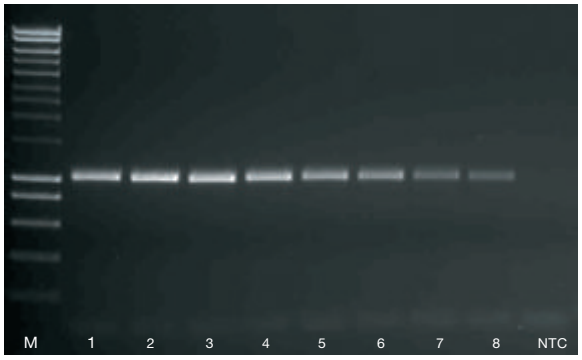

Fig. 1 High yield even from low template concentrations
A 1kb fragment from the rn18s mouse genomic DNA gene was amplified from 6.25ng of mouse genomic DNA template using 15s/kb extension step (lane 1), followed by a 2-fold serial dilution series of template (lanes 2-8). PCR was performed in 50µl reaction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

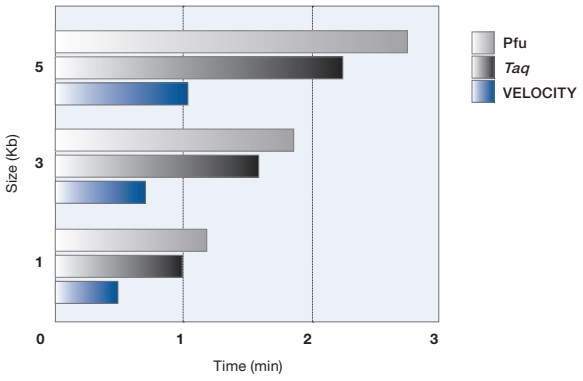

Fig. 2 Estimated PCR extension times for different DNA polymerases
These extension times are based around standard protocols and 25x cycles. Reduced denaturation and extension steps for VELOCITY DNA Polymerase result in shorter PCR runs and improved turnaround times.

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VELOCITY DNA Polymerase

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).

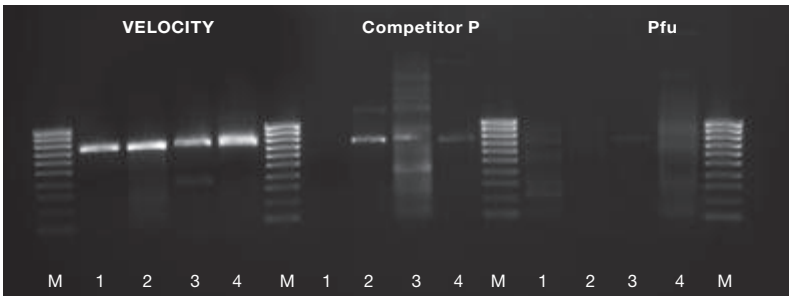

Fig. 3. Amplification of GC-rich DNA fragments from human genomic DNA
VELOCITY, a competitor polymerase (P) and wild-type Pfu were compared. Lanes 1–4 are a 728bp fragment of the GP150 gene (76.9% GC), a 724bp fragment of the MRGRE gene (68% GC), a 723bp fragment of the NM_022372.3 gene (66.9% GC) and a 788bp fragment of the NM_033178.2 gene (70.9% GC) respectively. PCR was performed in 50µl reaction mixes and 5µl was run on a 1.5% TAE agarose gel. HyperLadder™ 100bp (M).

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 5kb and 30s/kb for templates longer than 5kb (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.

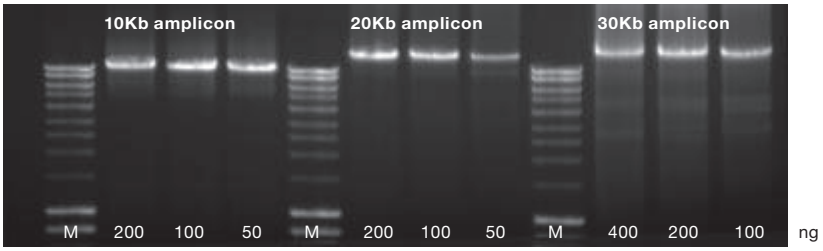

Fig. 4 Fast high-yield amplification with VELOCITY DNA Polymerase
Fragments of 10, 20 and 30Kb from Lambda DNA were amplified using 2 Units of VELOCITY DNA Polymerase. The fragments were amplified from 50-400ng of template DNA using a 2-fold serial dilution with 30s/Kb extension time in 50µl reaction volumes, containing 2mM $MgCl_2$ with 20 PCR cycles. 5µl was run on a TAE agarose gel. HyperLadder™ 1kb (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

PRODUCT	PACK SIZE	CAT NO.
VELOCITY DNA Polymerase	250 Units	BIO-21098
	500 Units	BIO-21099

Note: HyperLadder is a trademark of Bioline Reagents Ltd.

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