

- Greater Accuracy
- High Amplification & Priming Efficiency
- High Specificity with Antibody-mediated Hot Start

PrimeSTARTM HS DNA Polymerase



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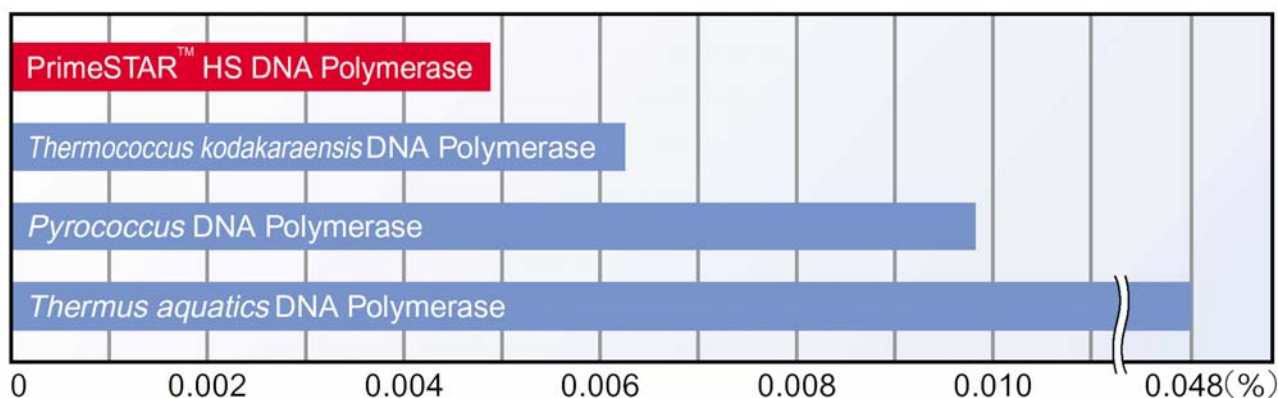
Also available with GC buffer and 2X Premix version

A unique **high fidelity** DNA polymerase with **high amplification efficiency** by PCR.

PrimeSTAR[®] HS's unmatched performance is achieved by a **superior proofreading ability** due to a robust 3' → 5' exonuclease activity. Furthermore an **antibody-mediated hot start formulation** prevents false initiation events during the reaction assembly due to mispriming and primer dimer, thus improving reaction specificity and efficiency. When used with Takara's optimized reaction buffer, PrimeSTAR[®] HS achieves the **high fidelity, high sensitivity, and high specificity** required for applications such as DNA amplification from cDNA library.

Comparison of PrimeSTAR[®] HS with other polymerases

a) Fidelity comparison with competitors



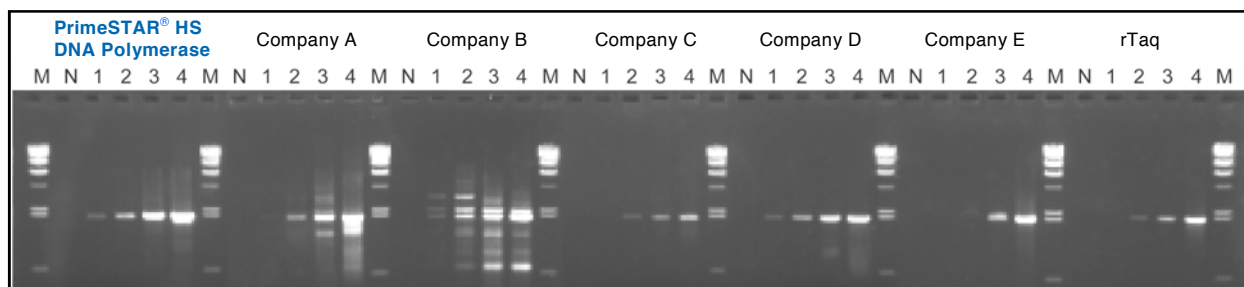
Eight arbitrarily selected GC-rich regions were amplified with PrimeSTAR[®] HS and other enzymes, using the *Thermus thermophilus* HB8 genomic DNA as a template. Each PCR product (approx. 500 bp each) was cloned into a suitable plasmid. Multiple clones were picked up per region respectively, and were subjected to sequence analysis.

Sequencing results showed only 12/249,941 mismatched bases in DNA fragments amplified by PrimeSTAR[®] HS, demonstrating incredible accuracy!

This is **higher fidelity than alternative high fidelity enzymes, and 10x higher fidelity than Taq DNA polymerase.**

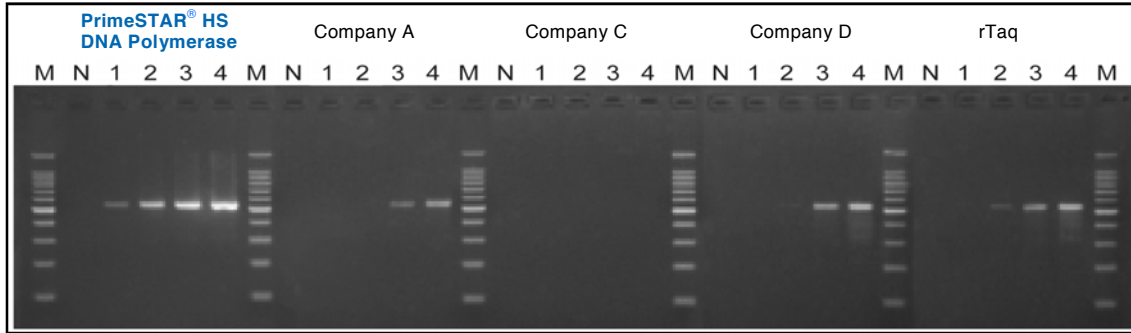
The above method is the most realistic method to investigate the mutation frequency and based on the results, it is strongly recommended to **use PrimeSTAR[®] HS DNA Polymerase for the PCR amplification requiring extreme accuracy, even with difficult GC-rich templates.**

b) Amplification efficiency and sensitivity comparison with competitors high fidelity enzymes and rTaq on genomic DNA



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c) Amplification efficiency and sensitivity comparison with competitors high fidelity enzymes and rTaq, on GC-rich DNA

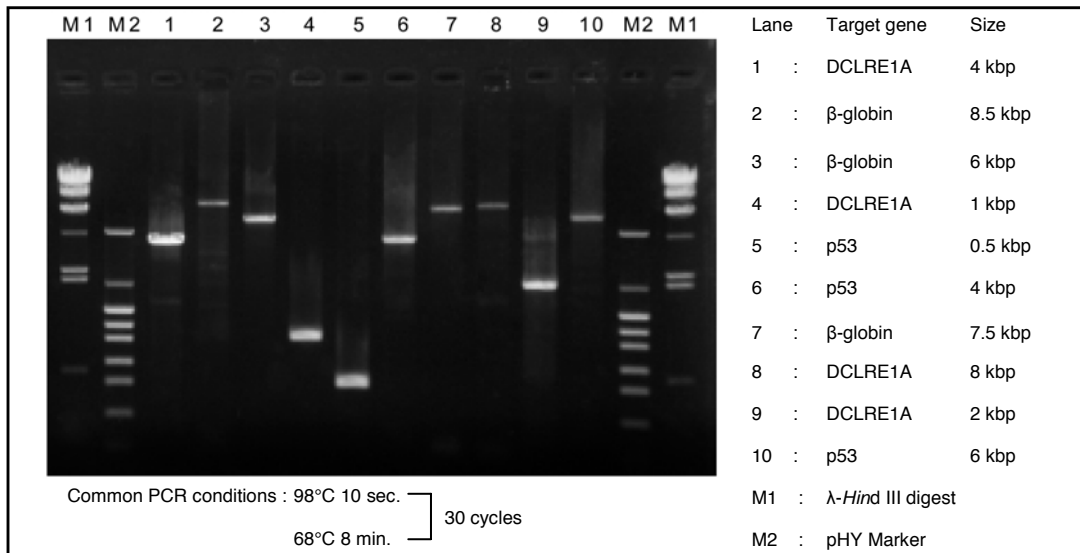


M: λ -Hind III digest, N: negative control (H₂O), 1: 10 pg, 2: 100 pg, 3: 1 ng, 4: 10 ng of *Thermus thermophilus* genomic DNA (Target: 537 bp fragment with 70% GC content). PCR reactions were performed according to manufacturer's instructions in 50 μ l.

PrimeSTAR[®] is very efficient in amplifying GC rich DNA. **Detection sensitivity is also improved by approx. two orders of magnitude.**

Various size amplification under single PCR cycling condition

Single PCR cycling condition was tested for amplifications of various DNA sizes (0.5 to 8.5 kbp) from Human genomic DNA template (100 ng / 50 μ l). PCR conditions, results and target genes are shown below :



PrimeSTAR[®] demonstrates efficient amplification of various target length with single reaction condition. Accordingly, **this enzyme is the most appropriate for cDNA cloning** from cDNA library.

Other features

a) Amplification length

Robust single DNA fragment PCR amplification was realized with PrimeSTAR[®] using both λ DNA (amplified fragments: 8, 10, 12, 15 kb) and Human genomic DNA (amplified fragment: 0.5, 1, 2, 4, 6, 8 kb) as templates.

b) Blunt end cloning

A significant percentage of PCR product obtained using PrimeSTAR[®] HS DNA polymerase will possess blunt-ends. Thus, obtained PCR products can be directly cloned into blunt-end vectors (if necessary, phosphorylate PCR products before cloning).

c) High Priming efficiency - Short Annealing Time

PrimeSTAR[®] HS DNA Polymerase possesses extremely high priming efficiency. Thus by using a short annealing time, only 5 or 15 seconds, highly specific amplification can be achieved, as shown below.

