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Data sheet
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HS-StormTaq DNA POLYMERASE

RESEARCH USE ONLY

Recombinant HS-StormTaq DNA Polymerase

(Deoxynucleosidetriphosphate: DNA Deoxynucleosidyltransferase E.C. 2.7.7.7.)

Cat.No.	Pack	Conc.
DSST-100	**100 Units**	**2,5 U/μl**
DSST-1000	**1000 Units**	**2,5 U/μl**

Stability:
Shelf life 12 months if store at -20°C

UNIT DEFINITION
One unit defined as the amount of enzyme that incorporates 10 nmoles of dNTP's into acid-insoluble form in 30 minutes at 74°C under assay conditions.

STORAGE AND DILUTION BUFFER:
20mM Tris-HCL (pH 8.0);100mM KCL; 0.1mM EDTA; 1mM DTT; 50% glycerol,0.5% Tween-20

AMPLIFICATION BUFFERS:
HS-StormTaq polymerase supplied with the 2,5X complete buffer with the Mg2+ concentration of 3.75mM
Recommended Mg^{2+} concentration 1,5-2.5mM

SOURCE:
Thermus Auqaticus YT1 strain
Specific mouse monoclonal antibodies

DESCRIPTION
HS-StormTaq DNA Polymerase is chimerical enzyme, genetically constructed from point mutated version of **N-terminally truncated Thermus aquatiqus** DNA polymerase and blocked with the highly specific monoclonal antibodies.
The mutations, which added to truncated Taq DNA polymerase allow **HS-StormTaq** to works with the partly cleaned DNA samples contained PCR inhibitors (especially from the blood samples).
Unique properties of **HS-StormTaq** helps to overcome the problems with the amplification of complex DNA templates in the presence of inhibitors (amplification from the whole blood up to 10% of reaction volume)
The enzyme catalyses polymerization of nucleotides into duplex DNA in the 5'->3' direction in presence of Mg^{2+} ions as robust Taq Polymerase. The enzyme lacks a 5'->3' exonuclease activity in comparison to its precursor, and can't be used in TaqMan probe PCR
HS-StormTaq is more heat-stable and processive than regular Taq polymerase. This feature allows optimizing reaction conditions easier, than with other polymerases.

ASSOCIATED ACTIVITIES:
Endonuclease/nickase and exonuclease activities were not detectable in QC tests

APPLICATIONS:
- Routine PCR
- Primer extension
- "in blood" PCR (up to 10% of blood)
- SNP PCR

STORAGE CONDITIONS :
Store ***HS-StormTaq*** DNA Polymerase at -20°C for long term storage

SHIPPING CONDITIONS:
Should be shipped at ambient temperature
For long distance shipments preferably in
Blue Ice

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General amplification protocol with HS-StormTaq DNA Polymerase

PCR amplification conditions with HS-StormTaq polymerase very similar to the ones with the KlenTaq polymerase, HS-StormTaq polymerase is better working at the elevated temperatures of template DNA denaturation and primers annealing.

General recommendation – set up the PCR reaction at room temperature since HS-StormTaq has in strict "hot-start", to avoid possible miss-priming and non-specific amplification.

To set up your PCR it is better to prepare Mastermix first for the calculated+2 PCR reaction, according the following proportions:

Mix the following components:

Component	50μL reaction	25μL reaction	Final 1X concentrations
PCR grade water	to 50 μL	to 25 μL	
2.5x Uni Buffer-1500*	20 μL	10 μL	1X
2,5 mM MIX dNTPs	4 μL	2 μL	0.2 mM each
Primers			0.3-0.8 μM each
DNA template**	optional	optional	from 20 ng
HS-StormTaq polymerase (2,5 U/μl)	0.5-1 μL	0.25-0.5 μL	

***-** 2,5X Reaction buffer for HS-StormTaq initially contains 3.75mM $MgCL_2$ (1.5mM in 1X concentration).In some cases it's necessary to optimize the Mg concentration to find the best PCR conditions for the each primers pair and DNA template. Usually the most effective $MgCl_2$ concentration interval is 1, 5-2,5mM.

Recommended PCR reaction final volume – 25-50 μl.

** - DNA template should be substituted with whole blood, (fresh) or EDTA-stabilized (up to 10% of the final PCR reaction volume).

In case of usage of whole blood sample in PCR it' s recommended to increase the $MgCl_2$ concentration to 2.5-3.0mM in 1X concentration.

Cycling protocol

Cycle step	3-stage PCR (DNA template)		3-stage PCR (blood sample)		Cycles
	T°C	Time	T°C	Time	
Initial denaturation	**98°C**	**2 min**	**98°C**	**5 min**	**1**
Denaturation	**98°C**	**5-10 sec**	**98°C**	**5-10 sec**	
Annealing	**66-72***	**10-15 sec.**	**66-72***	**5 sec**	**35-40**
Elongation	**72°C**	**15-30 sec**	**72°C**	**15-30 sec****	
Final elongation	**72°C** **4°C**	**2-4 min hold**	**72°C** **4°C**	**2-4 min hold**	**1**

***-** Optimal Tm, is recommended as a lowest melting temperature of one of the primers, for the standard oligonucleotides <22 nt.

For HS-StormTaq polymerase correction of the annealing temperature in the range +3-10°C needed, in comparison to the optimal PCR condition with the regular Taq-based enzymes, because of containing of the additives in 2,5X Reaction Buffer lowering denaturation Temperature.

** - For non-complex DNA templates (plasmid DNA, phage DNA, BAC clones) elongation time should be reduced up to 10-15 seconds.

For genomic DNA (human) better results be archived with the elongation time not less than 30 sec per 1 Kb, depending on the amplified fragment length.

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