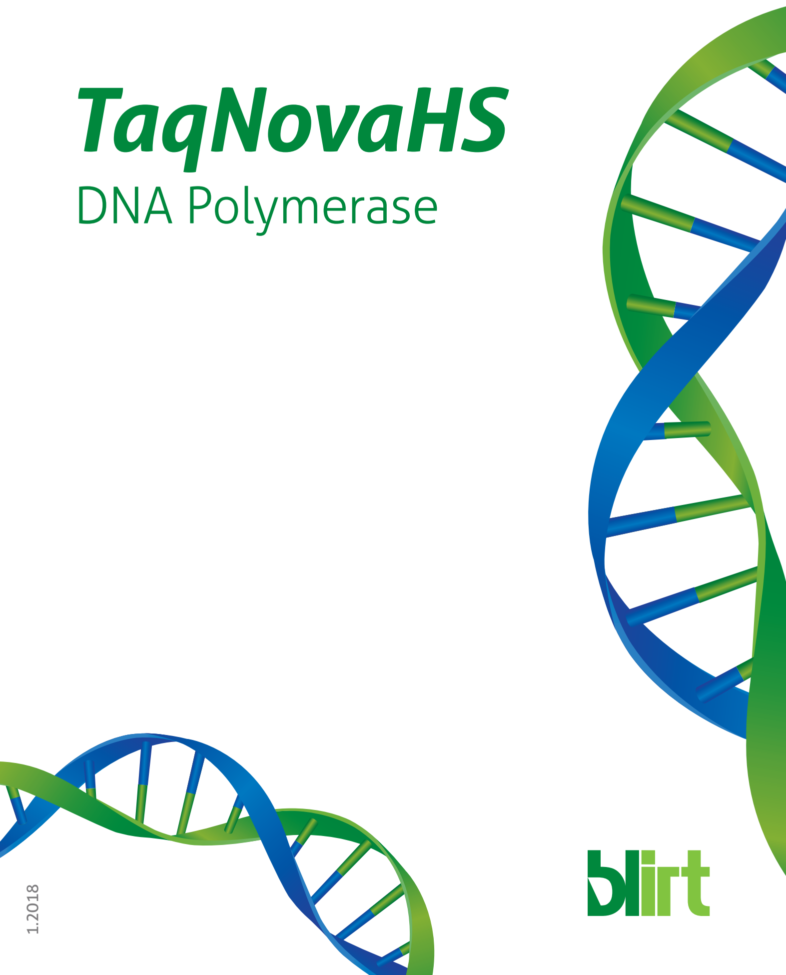
RP902A, RP905A, RP910A, RP925A
RP902, RP905, RP910, RP925

TaqNovaHS

DNA Polymerase

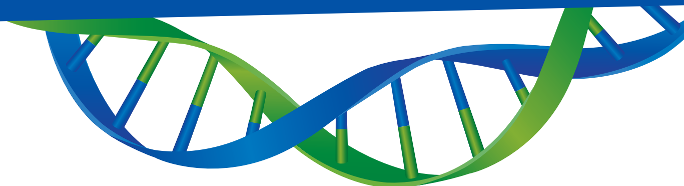


1.2018

TaqNovaHS
DNA Polymerase

TaqNovaHS Polymerase is a mixture of thermostable *Taq* DNA polymerase isolated from *Thermus aquaticus* and a highly specific monoclonal antibody, which acts as an inhibitor of the polymerization activity. The ***TaqNovaHS*** enables easy set-up of a hot-start PCR reaction at room temperature. The antibody binds reversibly to the enzyme, inhibiting polymerase activity at ambient temperatures, which prevents extension of non-specifically annealed primers and primer-dimers formed at low temperatures during PCR setup. The antibody is released from the polymerase during normal cycling conditions. The use of the ***TaqNovaHS*** Polymerase does not require any additional incubation step to activate the enzyme.

It is recommended for a wide range of demanding applications, which require highly specific amplification. The ***TaqNovaHS*** polymerase is a universal and easy-to-use DNA polymerase which works rapidly and effectively in various PCR conditions. The enzyme catalyses DNA synthesis in a 5′→3′ direction, shows no 3→5′ exonuclease activity, but has a 5′→3′ exonuclease activity.



Features and advantages

- High PCR specificity with minimal optimization
- Minimizes amplification of non-specific products and primer-dimers
- Fast 3-minute enzyme activation time
- Suitable for a wide range of applications
- Increased yield of PCR products
- Amplifies fragments of up to 5 kb
- Leaves ´A´ overhangs

Applications

- Hot-start PCR
- Singleplex and multiplex PCR
- Real-Time PCR
- Diagnostic PCR with DNA from various kinds of specimen
- Specific amplification of difficult templates (GC-rich)

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TaqNovaHS

DNA Polymerase

Protocol

1. Prior to use, thaw the reagents completely, mix thoroughly and spin briefly.
2. Add the following reaction reagents to a sterile nuclease–free PCR Eppendorf tube:

Reagent	Suggested amount per reaction	Acceptable final concentrations in reaction mixture
10x *TaqNovaHS* buffer	5 µl	1x
8 mM dNTPs Mix	5 µl	0.2–0.25 mM of each dNTP
50 mM $MgCl_2$	2 µl	2–5 mM
10 µM Forward primer	1 µl	0.1–1.0 µM
10 µM Reverse primer	1 µl	0.1–1.0 µM
DNA template	1 ng	10 pg–0.5 µg
***TaqNovaHS* DNA Polymerase**	**1.5 U**	**1–3 U**
PCR–grade water	fill up to 50 µl	fill up to required volume

This composition is intended for use as a guide only; conditions may vary from reaction to reaction and may require optimization.

3. Mix the prepared reaction mixture thoroughly by pipetting or vortexing, then spin briefly.

4. Place the prepared PCR mixture in a thermal cycler and start the PCR reaction. The table below shows a sample PCR cycling conditions.

Step	Temperature	Time	
Activation and denaturation	95°C	2–5 min [1]	
Denaturation	95°C	30 s	
Annealing	45–65°C [2]	30 s	25–40 cycles [4]
Extension	72°C	15 s–2 min [3]	
Final extension	72°C	1–5 min	
Cooling	4°C	∞	

1) The initial denaturation time depends on the GC content within the amplified region and the template DNA type. The minimum time is limited by the enzyme activation time and is 2 min. Therefore, for non-complex templates, such as plasmid DNA or cDNA, the initial denaturation step should be 2 min. For more complex templates, such as eukaryotic genomic DNA, a longer initial denaturation step (2–5 min) is required.
2) The annealing temperature depends on the primer sequences and their melting temperature (Tm). The optimal annealing temperature is usually 2–5°C below the Tm of primers.
3) The elongation time depends on the length of an amplified product. Setting 20–30 s per 1000 bp of the amplified product is recommended.
4) The number of cycles depends on the number of copies of the amplified gene fragment. Thirty cycles is sufficient for low complexity templates. In the case of high complexity templates or less concentrated DNA, the number of cycles should be increased to forty.

5. After reaction has finished, apply the reaction mixtures onto a gel.

Storage buffer

20 mM Tris-HCl (pH 8.0, 25°C), 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, 0.5% (v/v) Nonidet P40, 0.5% (v/v) Tween 20, 50% (v/v) glycerol.

Troubleshooting

For problems which may be encountered during PCR reaction set up and analysis, possible causes and solutions see: www.blirt.eu.

Quality control

Free of nonspecific nucleases (DNases) contamination. Extensively tested in PCR reactions.

Unit definition

One unit is defined as an amount of enzyme required to incorporate 10 nmol of dNTPs to an insoluble DNA fraction in 30 minutes at 72°C in a 50 µl reaction.

TaqNovaHS DNA Polymerase

Components	RP902A 200 U	RP905A 500 U	RP910A 1000 U	RP925A 2500 U	RP902A-S 20 U
***TaqNovaHS* DNA Polymerase 5 U/µl**					
***TaqNovaHS* 5 U/µl** DNA Polymerase	40 µl	100 µl	200 µl	500 µl	4 µl
10x *TaqNovaHS* Reaction Buffer	1.25 ml	2 x 1.25 ml	4 x 1.25 ml	10 x 1.25 ml	100 µl
50 mM $MgCl_2$	1 ml	2 x 1 ml	4 x 1 ml	10 x 1 ml	80 µl

Components	RP902 200 U	RP905 500 U	RP910 1000 U	RP925 2500 U	RP902-S 20 U
***TaqNovaHS* DNA Polymerase 2 U/µl**					
***TaqNovaHS* 2 U/µl** DNA Polymerase	100 µl	250 µl	500 µl	1250 µl	10 µl
10x *TaqNovaHS* Reaction Buffer	1.25 ml	2 x 1.25 ml	4 x 1.25 ml	10 x 1.25 ml	100 µl
50 mM $MgCl_2$	1 ml	2 x 1 ml	4 x 1 ml	10 x 1 ml	80 µl

Storage & shipping

Storage conditions
Store all components at -20°C.

Shipping conditions
Shipping on dry or blue ice.

Expiry

The information on the label

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