August 2023

Quick-Start Protocol

TaqNova Polymerase UCP

TaqNova Polymerase UCP (cat. nos. RP1002, RP1010) is a 94 kDa recombinant, thermostable Taq DNA polymerase isolated from *Thermus aquaticus*. It is recommended for a wide range of applications which require DNA synthesis at extremely high temperatures. TaqNova Polymerase UCP is a universal and easy-to-use DNA polymerase which works rapidly and effectively in various PCR conditions. The enzyme catalyzes DNA synthesis in a 5′→ 3′ direction, shows no 3′→ 5′ exonuclease activity, but has a 5′ → 3′ exonuclease activity. This product must be shipped in dry ice and must be stored at –20°C.

Further information

- Safety Data Sheets: **www.qiagen.com/safety**
- Technical assistance: **support.qiagen.com**

Note before starting

- 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.

Things to do before starting

1. Thaw the reagents completely, mix thoroughly, and spin briefly.
2. Add the following reagents to a sterile nuclease-free PCR tube.

Table 1. Reagents, suggested amounts, and acceptable final concentrations in a mixture

Reagent	Suggested amount per reaction	Acceptable final concentrations in reaction mixture
10x TaqNova KCl UCP	5 µL	1x
8 mM dNTPs Mix	5 µL	0.2–0.25 mM of each dNTP
$MgCl_2$ 50 mM UCP	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	1–100 ng	10 pg – 0.5 µg
Taq DNA Polymerase UCP	1 U	1–2 U
PCR-grade water	Fill up to 50 µL	

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

Procedure

1. Mix the prepared reaction mixture thoroughly by pipetting or vortexing, then spin briefly.
2. Place the prepared PCR mixture in a thermal cycler and start the PCR reaction. The table on the next page shows the suggested PCR cycling conditions.

Table 2. Suggested PCR cycling conditions

Step	Temperature (°C)	Time	
Initial denaturation	94–95	1–5 min*	
Denaturation	94–95	30 s	
Annealing	45–65**	30 s	25–40 cycles‡
Extension	72	15 s to 2 min†	
Final extension	72	1–5 min	
Cooling	4	∞	

* The initial denaturation time depends on the GC content within the amplified region and template DNA type. For non-complex templates, such as plasmid DNA or cDNA, the initial denaturation step of 1–2 min is recommended. For more complex templates, such as eukaryotic genomic DNA, a longer initial denaturation step (3–5 min) is required.

** The annealing temperature depends on the primer sequences and their melting temperature (*T*m). The optimal annealing temperature is usually 2–5°C below the *T*m of primers.

† The elongation time depends on the length of an amplified DNA fragment. Setting 30 s per 1 kbp of the PCR product is recommended.

‡ The number of cycles depends on the number of copies of the amplified gene fragment. Thirty cycles are sufficient for low complexity templates. In case of high complexity templates or less concentrated DNA, the number of cycles should be increased to 40.

Document Revision History

Date	Changes
08/2023	Initial release

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