

# Cod Uracil-DNA Glycosylase (Cod UNG)

- The only UNG that is completely and irreversibly heat inactivated
- Heat-labile without any addition of agents or inhibitors
- Eliminates carry-over contamination in both PCR and RT-PCR
- Enables downstream post-PCR analysis such as cloning and sequencing.

**“The only  
UNG useful  
in RT-PCR”**

## Properties

Cod UNG hydrolyses the N-glycosylic bond between the deoxyribose sugar and the base in uracil-containing DNA leaving an abasic (apyrimidinic) site in DNA. Cod UNG is not active on uracil in RNA.

The high activity combined with a fast irreversibly heat-inactivation step makes the enzyme ideal for contamination control in PCR- and RT-PCR reactions.

Unlike all other available UNG enzymes, Cod UNG does not reactivate after heat-inactivation. This enables contamination control in amplification reactions also where subsequent post-PCR analysis is required.

**Source:** Arctic cod origin, recombinantly produced in *E. coli*.

**Activity:** Cod UNG is highly active in the temperature range from 20-40°C. No cofactors or divalent cations are required for activity. The enzyme is active in most PCR- and RT-PCR buffers. The pH working range is between 6.5-9.0. Optimal activity is at pH 7.5 and 50 mM NaCl.

**Heat inactivation:** Cod UNG is completely and irreversibly inactivated by incubating the enzyme at 55°C for 20 min.

**Storage:** Minimum shelf life is 2 years at -20°C. Storage at 4°C is possible for at least 6 months. The enzyme also tolerates multiple freeze-thaw cycles.

**Purity:** Cod UNG highly pure and is tested free of contaminating nucleases.

**Specific activity:** > 500 000 Units/mg.

**Unit definition:** One unit of UNG is defined as the amount of enzyme required to release 1 nmol uracil from uracil-containing DNA per hour at 37°C.

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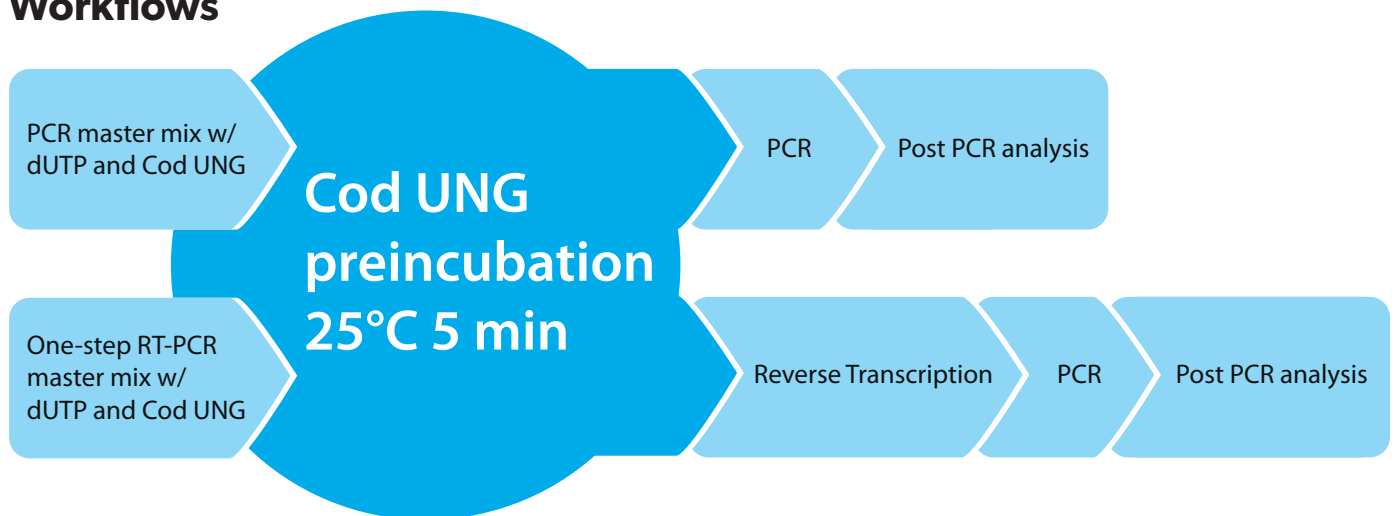
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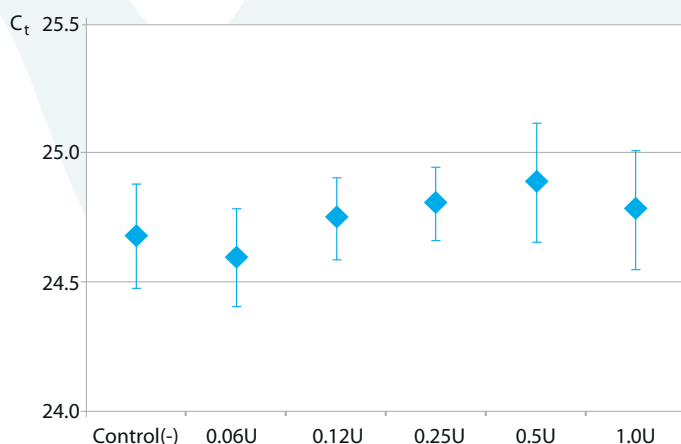
## Workflows



## Use of Cod UNG in RT-PCR

A prerequisite for using UNG in RT-PCR contamination control, is that the enzyme is sufficiently heat-labile to quickly inactivate at the temperatures used for reverse transcription. The easily heat-inactivated Cod UNG makes it possible to use contamination control also in RT-PCR, being able to remove more than  $10^8$  copies of contaminating DNA without affecting the sensitivity ( $C_q$ ) of the assay. Applying Cod UNG in a RT-PCR is done by a 5 min Cod UNG preincubation step at room temperature prior to the amplification reaction.

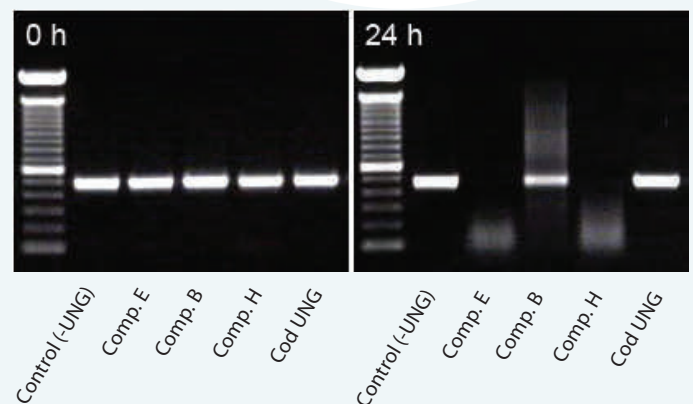
### Cod UNG does not affect sensitivity of RT-qPCR



**Figure 1:** qRT-PCR using 1 ng total RNA as a template. Cod UNG preincubation step was 5 minutes at 25°C. RT-step was performed at 50°C.

## PCR product stability after Cod UNG treatment

The complete and irreversible heat-inactivation of Cod UNG enables the combination of contamination control and an array of post-PCR applications such as cloning, sequencing or genotyping. As Cod UNG is the only commercially available UNG that does not reactivate post-amplification, PCR-products remain intact and can be stored for prolonged period of time before further analysis.



**Figure 2:** Integrity analysis of dU-containing PCR-products. PCR reactions were added 0.5 U Cod UNG and PCR products were stored at room temperature (RT) for 0 hour and 24 hours post-PCR and analyzed by agarose gel electrophoresis. Cod UNG is the only enzyme that leaves the PCR product intact post-PCR.

**For more information visit:** [www.arcticzymes.com/codung](http://www.arcticzymes.com/codung)

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