SOLIS BIODYNE OÜ
E: info@solisbiodyne.com
T: +372 7409 960
F: +372 7402 079

SOLIS BIODYNE

INNOVATION POWERED **BY NATURE**

# Salini UNG™ Uracil-N-Glycosylase

## Unique enzyme with Stability TAG technology for increased temperature tolerance

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**Salini UNG™ Uracil-N-Glycosylase is a unique heat-labile enzyme.** The protein sequence originates from the bacteria genus *Salinivibrio* which is frequently found in hypersaline environments. Uracil-N-Glycosylase (UNG) efficiently eliminates uracil from single- or doublestranded DNA by catalyzing the hydrolysis of the N-glycosylic bond and leaving an abasic site. This property is widely used as a part of PCR carryover contamination prevention strategy. Salini UNG™ (Figure 1) is a genetically modified enzyme including a **Stability TAG** - Solis BioDyne's proprietary and patented polypeptide stabilization technology that makes all our proteins extremely stable at room temperature [1,2,3].

**[1]** Kahre, O. et al., Compositions for increasing polypeptide stability and activity, and related methods, EP2501716B1 (2015) and US9321999B2 (2016).
**[2]** Jumper, J. et al. Highly accurate protein structure prediction with AlphaFold. Nature (2021).
**[3]** Varadi, M. et al. AlphaFold Protein Structure Database: massively expanding the structural coverage of protein-sequence space with high-accuracy models. Nucleic Acids Research (2021).

### Features

- **Stable** at 25°C for at least 2 months and at 37°C 2 weeks
- **Heat-labile** (compatible with Sanger sequencing). No reactivation is detected after heat inactivation
- **Fast** 30 sec reaction time
- **Tolerant** to common inhibitors
- Reaction set-up and shipment without ice
- Glycerol-free formulation is available

### Applications

- Widely used to eliminate carryover contamination in PCR and LAMP
- Enhancer of cloning efficiency of PCR products
- Site-directed mutagenesis
- As a probe for protein-DNA interaction studies
- Glycosylase-mediated single nucleotide polymorphism detection (GMPD)
- Study of DNA repair and mutation detection
- SNP genotyping

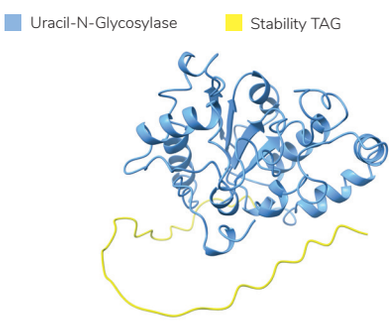


**Figure 1.** 3D model of Salini UNG™ Uracil-N-Glycosylase protein structure with the Stability TAG. Protein structure was predicted with AlphaFold 2.

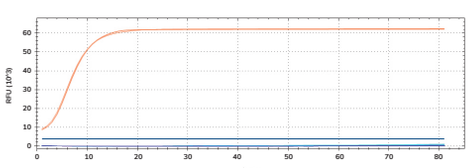


**Figure 2.** Heat inactivation of Salini UNG™ Uracil-N-Glycosylase. UNG activity is measured at 37°C for 40 minutes using Bio-Rad CFX96 platform by the release of fluorescence from a uracil containing probe labeled with a FAM fluorophore and a quencher. In a resting state the probe forms a duplex and FAM fluorescence is quenched. An active UNG cleaves uracil, the duplex dissociates and FAM fluorescence is emitted. To test the inactivation of the enzyme, Salini UNG™ was heat-treated at 70°C for 5 minutes. No reactivation was detected after storing the heat-treated samples at 4°C (Figure 2) or 25°C (data not shown) for 48h.

# Prevention of carryover contamination

- Substitute dTTP with dUTP in your PCR or LAMP reaction. Preferably choose polymerases that can tolerate 100% substitution such as **Solis BioDyne SolisFAST® DNA Polymerase** (included in SolisFAST® (q)PCR mixes).
- Add **Salini UNG™** to master mix.
- If you set up the reaction on ice add 30 sec at 25°C treatment step before amplification. No additional step is required if you set up reaction at room temperature.
- **Salini UNG™** removes uracil (U) incorporated into single- or double-stranded DNA. Degraded dU-DNA cannot be used as a template for further amplification.
- Enjoy peace of mind not worrying about possible carryover contamination from repeated amplification of the same target sequence.

**Request for glycerol-free Salini UNG™ Uracil-N-Glycosylase**

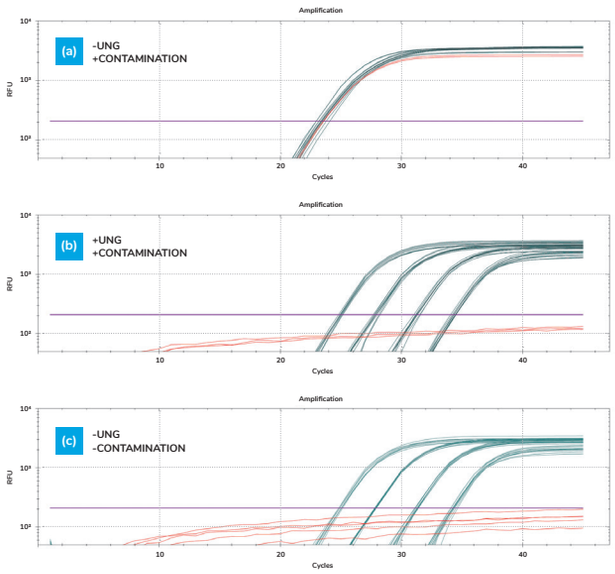


**Figure 3.** qPCR reactions were performed using SolisFAST® Probe qPCR Mix (no ROX) without UNG on the Bio-Rad CFX96 platform, and four 10-fold serial dilutions of human gDNA (from 2 ng/µl to 0.002 ng/µl) in green and NTC in red. For contamination simulation, approximately 4500 cp/ rxn of previously amplified and purified dU-DNA was used. Salini UNG™ Uracil-N-Glycosylase was added to the reaction (b) at a final concentration of 0.027 U/µl. Contaminated samples can result in false positives that compromise the data (a). Salini UNG™ Uracil-N-Glycosylase degrades 100% of contaminant dUTP-DNA (b) and does not compromise performance compared to the reaction with no contamination simulation and no UNG present in the mix (c).

# Ordering information

**Bulk solutions available**

| Application | Product | Size[1] | CAT. NO. |
|---|---|---|---|
| Variable | Salini UNG™ Uracil-N-Glycosylase, 1 U/µl | 25 µl<br>100 µl<br>5 x 100 µl | 31-01-00000-S (free sample)<br>31-01-00100<br>31-01-00100-5 |
| PCR | SolisFAST® Master Mix with UNG | 250 rxn<br>5 x 250 rxn<br>5000 rxn | 24-21-00001<br>24-21-00001-5<br>24-21-00020 |
| | SolisFAST® Master Mix with UNG, Ready To Load | 250 rxn<br>5 x 250 rxn<br>5000 rxn | 24-22-00001<br>24-22-00001-5<br>24-22-00020 |
| qPCR | SolisFAST® Probe qPCR Mix with UNG (ROX) | 250 rxn<br>5 x 250 rxn<br>5000 rxn | 28-21-00001<br>28-21-00001-5<br>28-21-00020 |
| | SolisFAST® Probe qPCR Mix with UNG (no ROX) | 250 rxn<br>5 x 250 rxn<br>5000 rxn | 28-22-00001<br>28-22-00001-5<br>28-22-00020 |
| | SolisFAST® Probe qPCR Mix with UNG (Purple) | 250 rxn<br>5 x 250 rxn<br>5000 rxn | 28-23-00001<br>28-23-00001-5<br>28-23-00020 |
| RT-PCR | One-step RT-PCR Kit with UNG | | Available upon request |
| RT-qPCR | SOLIScript® Fast 1-step RT-qPCR Mix with UNG | | Launch in January 2023 |

[1] Volume in µl or count of 20 µl reactions. All PCR and qPCR Master Mixes are 5x-concentrated solutions supplied in 1 ml or 20 ml vials or bottles (a' 250 rxn and 5000 rxn, respectively).

FL-31-01-V1

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For further details and ordering please contact
**info@solisbiodyne.com**
or call **+372 740 9960**

**Request a FREE SAMPLE!**