Rapid and Complete Removal of gDNA

gDNA Removal Kit (ENZ-KIT136)

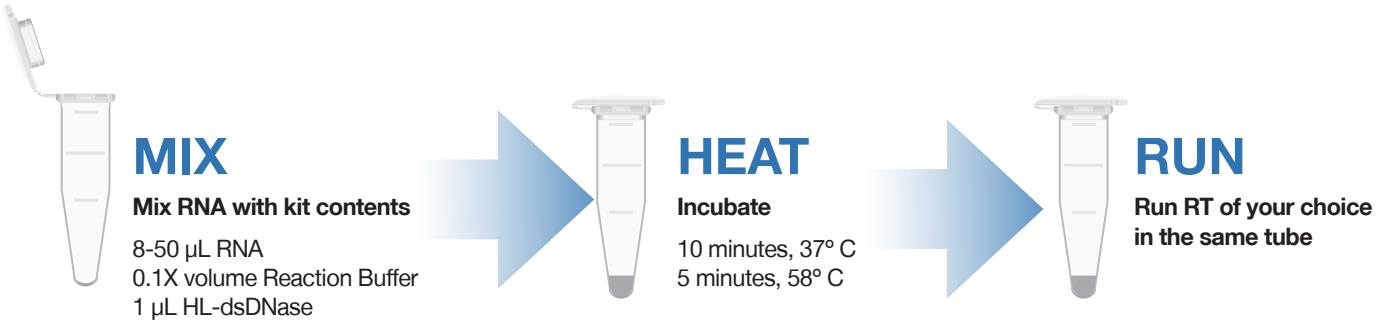
Contaminating genomic DNA (gDNA) in RNA preparations can lead to incorrect quantification of RNA in RT-PCR or high DNA background in RNA sequencing. This is particularly an issue during the quantification of low-copy transcripts or the sequencing of small RNA samples. Removal of gDNA is often a necessity to prevent high DNA background in RNA sequencing. This protocol can be applied to RNA preparations before next-generation sequencing (NGS).

The gDNA removal kit is based on a recombinant heat-labile dsDNase (HL-dsDNase) to remove gDNA from RNA preparations. Through HL-dsDNase technology, contaminating genomic DNA is cleaved at ambient temperature and the enzyme is irreversibly inactivated upon increasing the temperature over 50° C.

Mix, Heat, and Run

The gDNA Removal Kit offers a fast and easy method to eliminate gDNA contamination in RNA samples within 20 minutes.

- Removes gDNA from RNA prior to reverse transcription
- dsDNase inactivated without reducing RNA quality or quantity
- Minimizes pipetting steps and reduces hands-on time
- Suitable for high-throughput experiments



Complete Removal of gDNA from RNA Preps

The gDNA is removed from RNA preparations to levels below the detection limit of RT-qPCR and the inactivation is gentle enough to preserve both quality and quantity of all present RNA **(Fig. 1A and B)**.

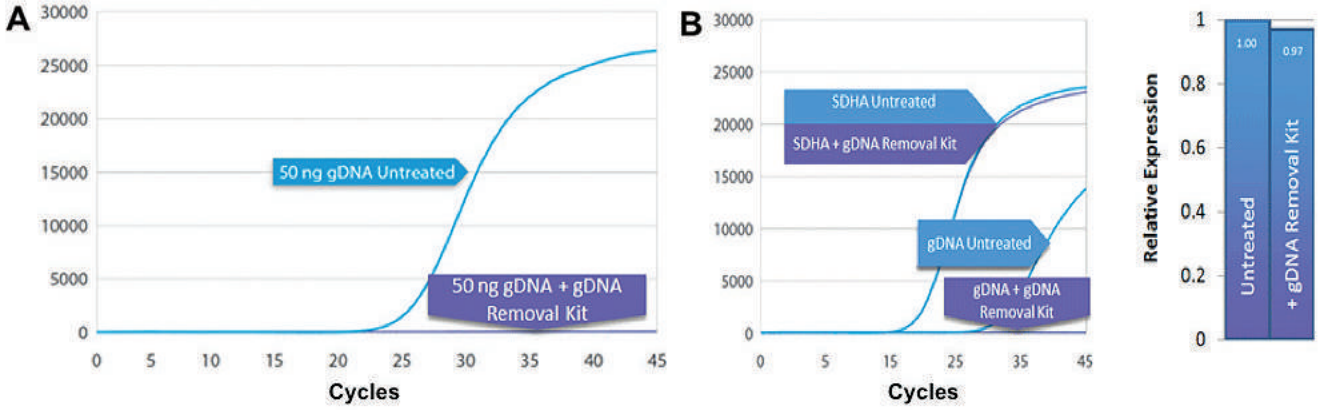


Figure 1: Removal of gDNA in RNA preparations. The gDNA removal kit removes at least 50 ng of gDNA in a 10 µL reaction volume (A). All contaminating gDNA was removed while RNA was left unharmed. Compared to the untreated control, no reduction in quantified cDNA (SDHA) was detected (B).

The protocol can be applied to RNA preparations before RNA sequencing by NGS. In seven RNA preparations, hardly any DNA was found after gDNA removal **(Fig. 2)** and very little RNA was lost **(Fig. 3)**, making these samples suitable for RNA sequencing.

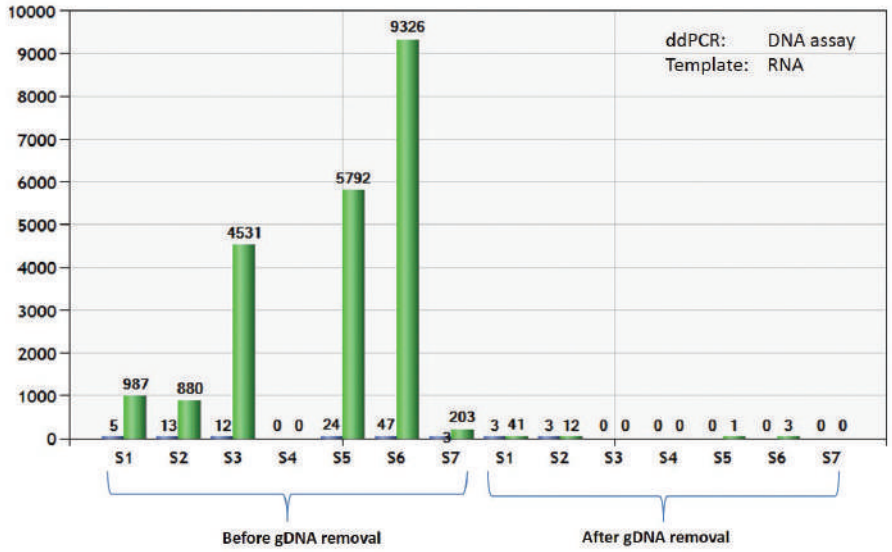


Figure 2: Droplet digital PCR (ddPCR)-based DNA assay performed with 7 RNA preparations prior to RNA sequencing. Results courtesy of a clinical laboratory based in the UK obtained during the R&D of their RNA NGS workflow.

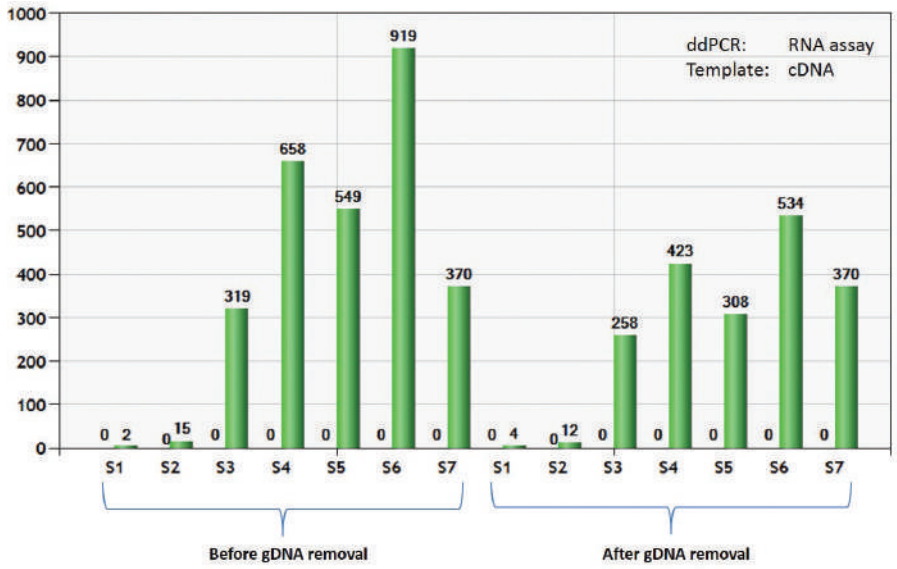


Figure 3: Droplet digital PCR (ddPCR)-based RNA assay performed with 7 cDNA preparations prior to RNA sequencing. Results courtesy of a clinical laboratory based in the UK obtained during the R&D of their RNA NGS workflow.

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