CleanNA

CleanNGS

DNA and RNA cleanup

Dx CE-IVD version also available

Purification and size selection of next-generation sequencing libraries

A new standard for DNA & RNA library purification

Since its introduction in 2005, Next-Generation Sequencing (NGS) has revolutionized translational genomics and molecular diagnostics by enabling the high-throughput decoding of DNA and RNA. A critical step in generating high-quality NGS data is the preparation of pure nucleic acids of specific lengths. Our flagship product CleanNGS is already well-established in NGS purification and library size selection workflows across the globe.

Our special buffer formulation ensures optimal size selection for NGS libraries and together with our high-quality magnetic beads allow for faster separations and improved DNA & RNA recovery. CleanNGS is also manufactured RNase-free as standard, which makes it an ideal solution for all RNA and DNA workflows.

We also offer CleanNGS Dx, a CE-IVD marked version, which enables our high-precision chemistry to be applied in diagnostic NGS library preparation with utmost confidence.

Application

CleanNGS is suitable for NGS library purification and double-size selection. CleanNGS Dx (CE-IVD) can be used for these applications as part of a diagnostic workflow.

Benefits

- **Suitable for NGS**
- **DNA and RNA**
- **Easy automation**
- **Fast and efficient**
- **For use in diagnostic procedures (CE-IVD)**

Proof of principle

Figure 1 shows an overview of CleanNGS double-size selection capabilities by alteration of the CleanNGS versus sample volume ratio. In Figure 2, two different double-size selections (1,00/0,70 and 0,85/0,56) were performed on sheared human genomic gDNA to compare CleanNGS, Competitor A and Competitor S. The results show CleanNGS performs identical to Competitor A as well as Competitor S. This demonstrates that CleanNGS provides consistent size selection results and efficiently excludes fragments above and below the target cutoff regions.

FIGURE 1.

Average DNA fragment size after double-size selection using various CleanNGS Dx ratios.

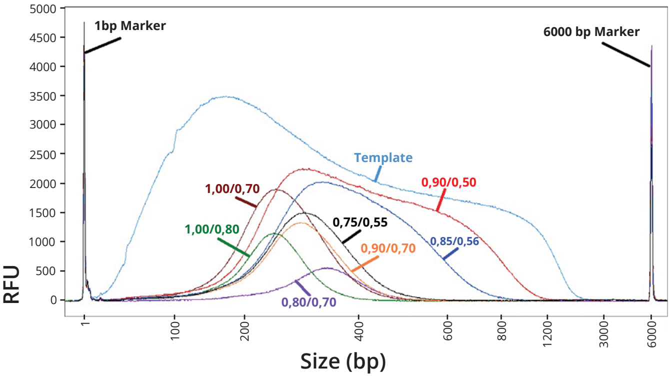
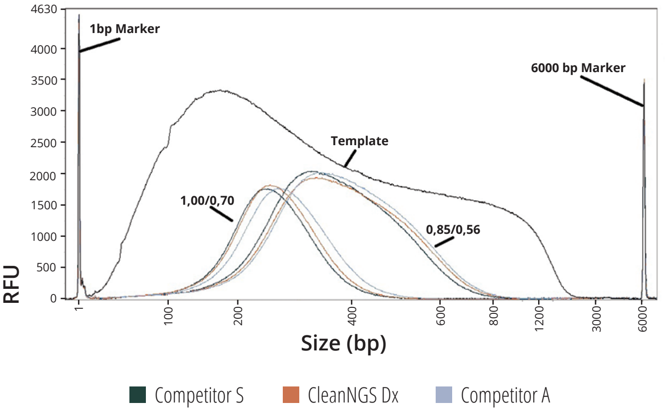


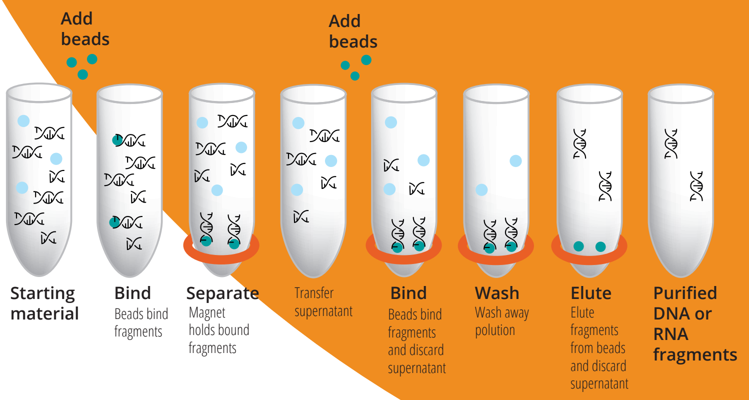
FIGURE 2.

Average DNA fragment size after double-size selection.



Analysis for Figure's 1 and 2 were conducted on the Agilent Fragment Analyzer 5200, using the HS NGS Fragment Kit.

Workflow



For double-size selection, we first add CleanNGS reagent with magnetic beads in a defined volume ratio to the NGS library solution. Large DNA fragments bind to the beads and are cleared from the solution using a magnet. Next, CleanNGS is added to the cleared solution in a defined volume ratio to bind the smaller fragments to the magnetic beads, The beads are attracted to the magnet, and washed to clean up the small DNA fragments from unwanted inhibitors, after which the purified DNA or RNA is eluted and ready for downstream NGS sequencing.

In Figure 3 CleanNGS and two other commercially available kits (I and A) were used for purification and double-size selection in a Nextera DNA Flex Library Prep. The generated DNA libraries were sequenced using an Illumina MiSeq and the quality scores of the Read 1 and Read 2 traces were determined. CleanNGS demonstrated equal performance versus the competitor products.

Figure 4 compares percentage recovery of CleanNGS compared to competitor A. 50µL of sheared genomic DNA was purified using a 1.8x ratio and the recovery was then determined versus the unpurified sample material. CleanNGS exhibits an outstanding recovery above 90%.

In Figure 5, 10uL of total RNA control was purified using CleanNGS using a 1.8x sample volume ratio with the recovered RNA compared to the unpurified total RNA control. The RIN values of the purified versus the unpurified samples indicate no degradation of the RNA during purification, clearly demonstrating that CleanNGS delivers superior RNA quality for downstream applications.

FIGURE 3.

Average Sequencing Quality score determined of both Read 1 and Read 2 on an Illumina MiSeq instrument.

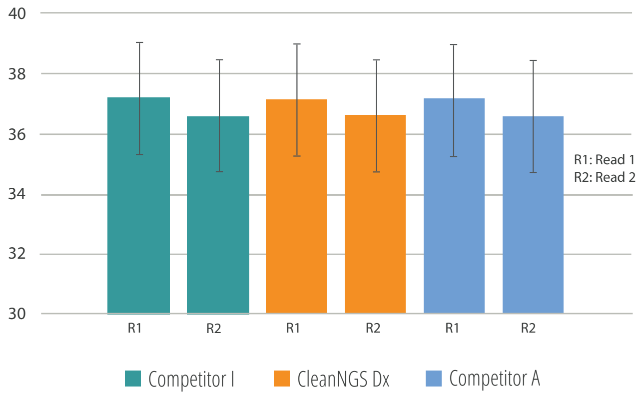


FIGURE 4.

Recovery percentage after single-size selection purification determined by dsDNA fluorescence assay. (N=48)

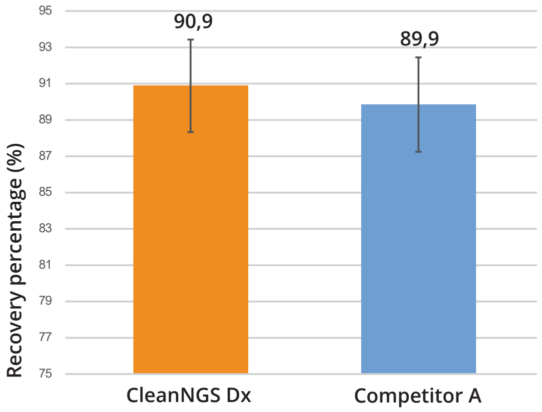
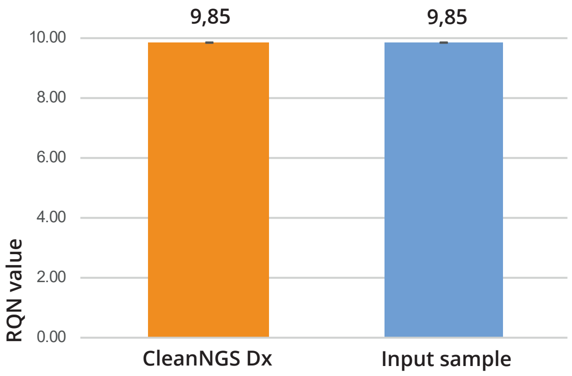


FIGURE 5.

RNA Quality Number determined after purification of total RNA, using the Agilent fragment analyzer.



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Order info

Product	Preps	Part number
CleanNGS 1mL	55	CNGS-0001
CleanNGS 50 mL	2,777	CNGS-0050
CleanNGS 500 mL	27,777	CNGS-0500

Product	Preps	Part number
CleanNGS Dx (CE-IVD) 50 mL	2,777	CNGSDx-0050
CleanNGS Dx (CE-IVD) 500 mL	27,777	CNGSDx-0500

Product	Pack size	Part number
Clean Magnet Plate 96-Well	1 Plate	CMAG-96-RN50

About CleanNA

CleanNA advances human health with reliable nucleic acid isolation solutions for life science and healthcare labs. Our portfolio includes research and CE-IVD diagnostic products. Our magnetic bead-based reagents are specifically designed to be used in automated laboratory workflows.

ISO 13485
BUREAU VERITAS
Certification

Our quality management system is certified to EN-ISO 13485 by Bureau Veritas

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