Bioanalysis

MACHEREY-NAGEL

Magnetic bead-based DNA and RNA Clean-up

NucleoMag® NGS Clean-up and Size Select

Flexible solution for DNA and RNA Clean-up

- Efficient Clean-up of NGS library preparation reactions
- Tunable and consistent size selection
- Suitable for PCR, RNA and cDNA Clean-up

MACHEREY-NAGEL
www.mn-net.com

Magnetic bead-based purification of both DNA and RNA

NucleoMag® NGS Clean-up and Size Select

Clean-up and size selection of NGS library preparation reactions

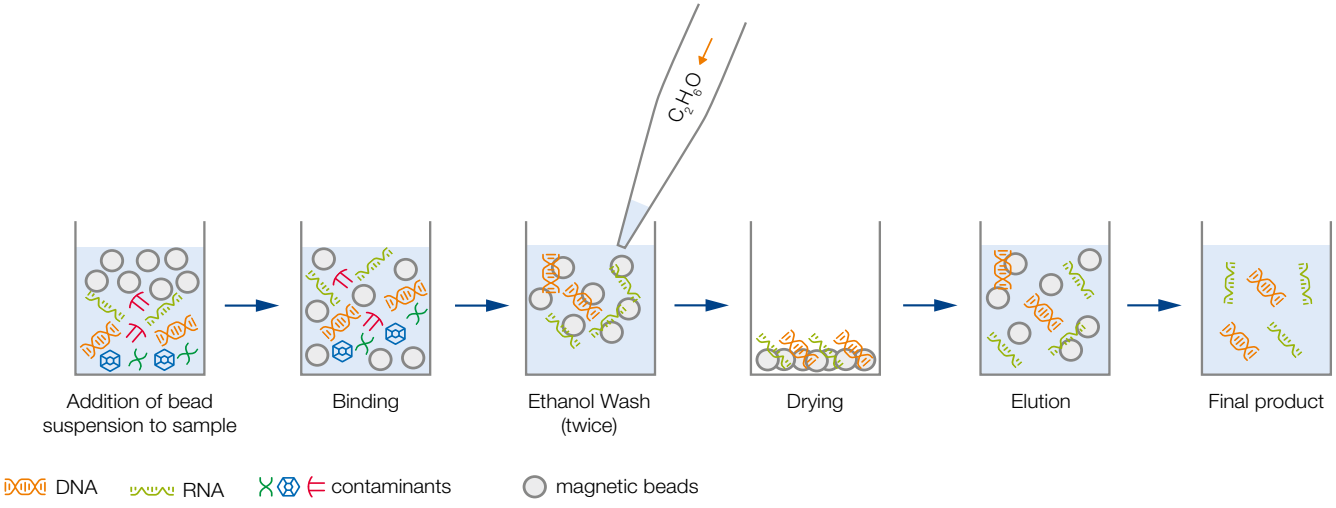
Most sequencing platforms for library preparations require enzymatic reaction Clean-up and fragment size selection. NucleoMag® NGS Clean-up and Size Select enables Clean-up reactions, as well as single or double sided size selection, to recover the fragment lengths which are needed in your specific application. Simply dilute the magnetic beads to utilize the tunable size selection feature. Dilution ratios are similar to most other comparable magnetic bead products in the market, allowing for the NucleoMag® NGS Clean-up and Size Select kit to be used with your current protocols.

RNase-free!

Product at a glance

Technology	Magnetic beads
Applications	Size selection for next-generation-sequencing workflows PCR Clean-up RNA or cDNA Clean-up after purifications or enzymatic reactions (i. e. IVT or DNA digestion)
Recovery	70 – 100 %
Elution volume	10 – 100 µL
Shelf-life (from production)	24 months
Product sizes	5 mL, 50 mL, 500 mL

Schematic Workflow Overview



1. Add bead suspension to your DNA or RNA solution
2. Incubation of magnetic beads with sample for binding
3. Removal of contaminants with ethanol washes
4. Dry magnetic beads to eliminate traces of ethanol
5. Elution of DNA or RNA
6. Transfer of the final product to a new plate/tube

One Clean-up kit for all samples!

Use your current protocol. No changes needed.

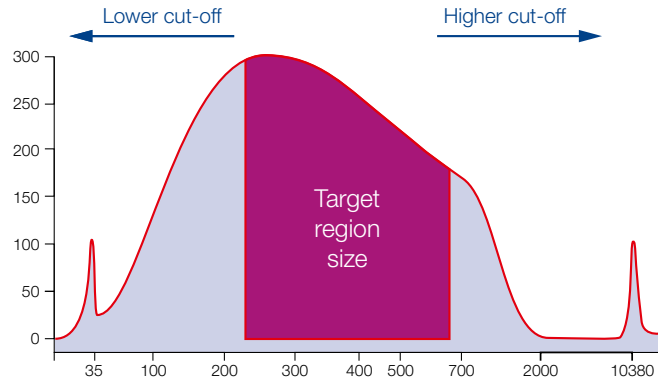
Cited in more than 50 publications

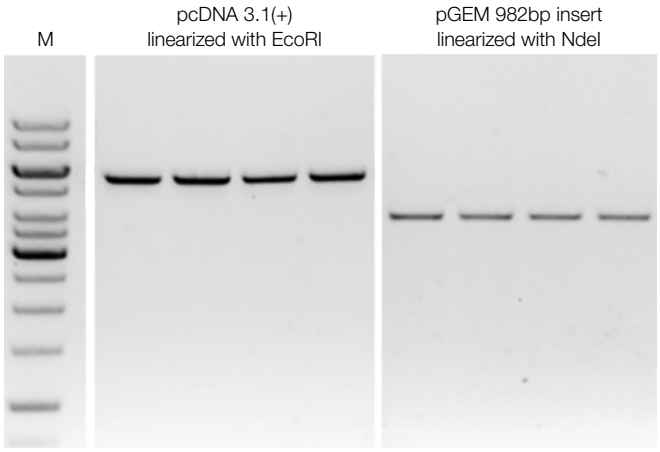
The NucleoMag® NGS Clean-up and Size Select has been cited in more than 50 peer-reviewed publications. The kit has been used for PCR Clean-ups as well as in next-generation sequencing workflows. Scan QR-Code to see the reference list.

www.mn-net.com/media/pdf/Reference-List-NGS_Clean_up.pdf

Magnetic bead-based purification of both DNA and RNA

Application data – DNA Clean-Up and Size Selection





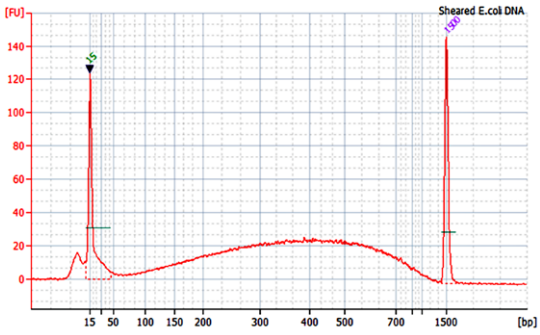
Size selection of fragment mix

For single sided size selection (left or right), the sample is mixed with the beads in predetermined ratios for the desired exclusion of smaller or larger sized fragments. For the double sided size selection, two binding steps are performed to exclude larger fragments above the cut-off and smaller fragments below the lower cut-off.

Reliable reproducibility in DNA clean-up procedures

To assess reproducibility of DNA clean-up, EcoRI-linearized pcDNA 3.1(+) and NdeI-linearized pGEM inserts were purified with four replicates each. For DNA purification, a sample to NGS clean-up suspension-ratio of 1.0 was used. The parallel Clean-up experiments show high reproducibility and recovery of the target DNA.

A



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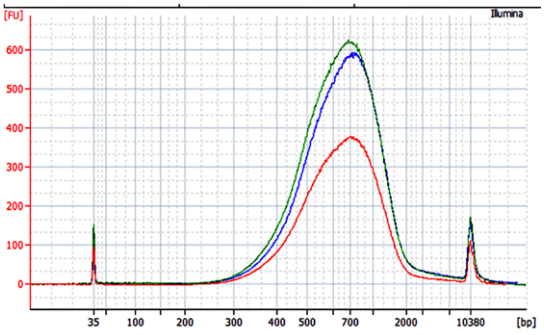
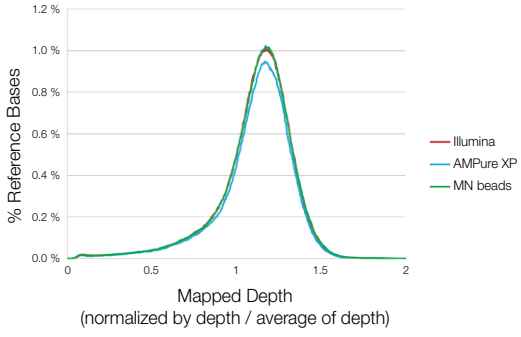


Fragment size analysis of prepared NGS libraries

NGS libraries were prepared using Truseq™ DNA PCR Free kit from Illumina (red), AMPure® XP (blue) and NucleoMag® NGS Clean-up and Size Select (green) for Clean-up and size selection steps. (A) Input DNA, 1 µg sheared *E. coli* DNA. (B) Size distribution of DNA Fragments after library preparation as input for sequencing with expected fragment size of 650 bp (insert + adapters).

Data kindly provided by TAKARA BIO INC.

A



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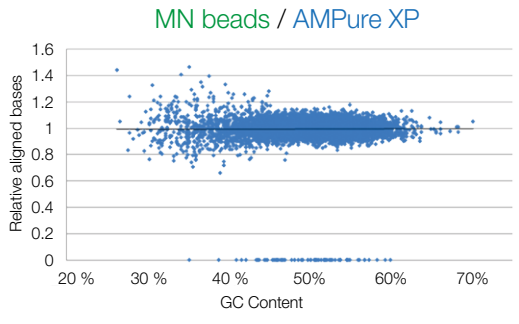


Sequencing analysis

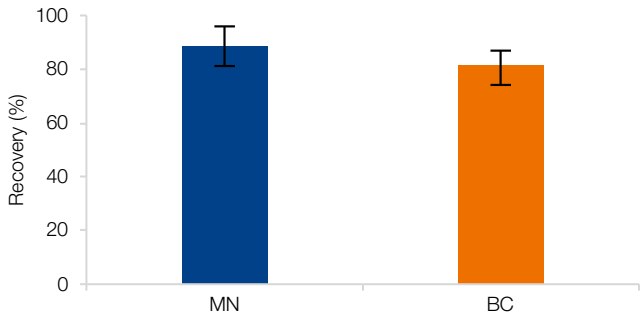
In order to compare the sequencing performance after library preparation, different clean-up and size selection products were tested. Performed tests included the distribution of genome sequence coverage (depth of genome base coverage) and effect on GC content on sequence coverage. (A) No significant difference in mapped depth of genome base coverage. The constant depth indicates low bias. (B) Horizontal plot pattern of MN beads compared to AMPure® XP beads. After the summary of aligned read bases within a 0.5 kb genome region, the two samples have been normalized / matched resulting in a horizontal pattern showing the similarity of the two samples.

Data kindly provided by TAKARA BIO INC.

Magnetic bead-based purification of both DNA and RNA

Application data – RNA Clean-Up

A



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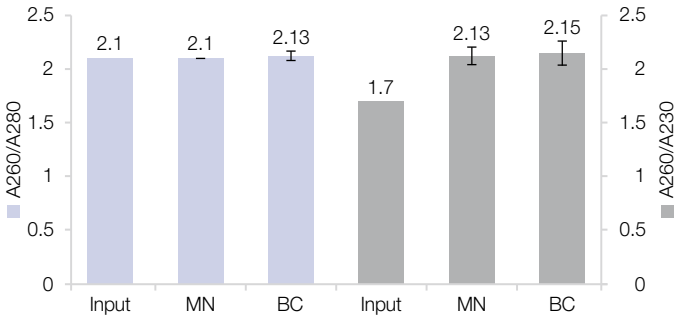
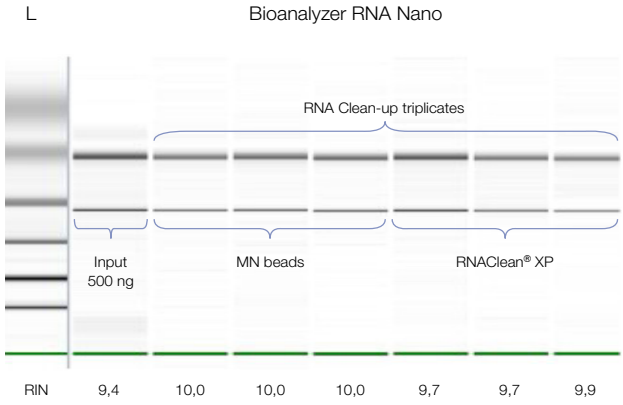


RNA Clean-Up with reliable recovery rates as well as high purities

A) MACHEREY-NAGEL's (MN) NucleoMag® NGS Clean-up and Size Select beads as well as RNAClean® XP beads from Beckman Coulter (BC) were used for Clean-up of RiboRuler High Range Ladder, resulting in recovery rates of 88.6 ± 7.4 % (MN) and 81.5 ± 5.4 % (BC). B) RNA isolated from HeLa cells were used as input for Clean-up reactions which generated improved purities.



High-integrity RNA after Clean-up with NucleoMag® NGS Clean-Up and Size Select kit

RNA samples were cleaned-up using the NucleoMag® NGS Clean-up and Size Select kit (MACHEREY-NAGEL) as well as RNAClean® XP beads (Beckman Coulter). 500 ng RNA was used as starting material. The RNA was eluted in 25 µL and analyzed on Agilent's Bioanalyzer 2100. No significant difference in RNA integrity has been observed for used products, as integrity values after clean-up are comparable to the input sample (RIN ≥ 9,4).

Product	ng/µL	A_{260} / A_{280}	A_{260} / A_{230}
MN Beads	14.4 ± 2.1	2.3 ± 0.1	2.5 ± 0.7
RNAClean® XP	14.4 ± 1.6	2.3 ± 0.1	2.2 ± 0.8

NucleoMag® NGS Clean-Up and Size Select kit is suitable for Clean-ups of RNA transcripts after in vitro transcription reactions

Riboprobe® System – T7 has been used for in vitro transcription of single-stranded RNA using a pGEM® vector. NucleoMag® NGS Clean-up and Size Select and RNAClean® XP were used for Clean-up of IVT reactions.

Ordering information

Product	Volume	REF
NucleoMag® NGS Clean-up and Size Select	5 mL	744970.5
	50 mL	744970.50
	500 mL	744970.500

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AMPure® (Beckman Coulter, Inc.), RNAClean® (Beckman Coulter, Inc.), pGEM® (Promega Corp.), Truseq™ (Illumina, Inc.), Riboprobe® (Promega Corp.)

Questions?

Contact the experts from MACHEREY-NAGEL technical support!

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KATEN300151 Flyer NucleoMag® NGS Clean-Up and Size Select en1 Rev01a

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MACHEREY-NAGEL

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