



NucleoMag[®] Tissue

Automated DNA purification from cells or tissue samples using the NucleoMag[®] X32

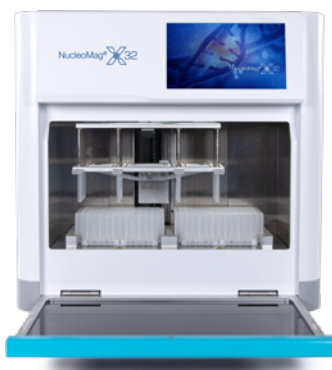
Application benefits

The combination of the proven NucleoMag[®] Tissue technology and the NucleoMag[®] X32 has several advantages that streamline your genomic DNA purification workflows:

- Automated DNA isolation from cells and tissue samples
- Purification of DNA with reliable yield and purity
- Processing of up to 32 samples in parallel
- No programming required: Verified and pre-installed methods available

Keywords

Genomic DNA, cells, animal and human tissue, NucleoMag[®], magnetic beads, magnetic rod system, NucleoMag[®] X32



Introduction

The efficient isolation of genomic DNA from cells or tissue samples is essential for subsequent molecular biological applications in life science and applied testing laboratories. For their demanding downstream analyses in genotyping, sequencing, parental and husbandry testing, or clinical research, molecular biology laboratories require reliable, pure, and high quality DNA.

MACHEREY-NAGEL designed the magnetic bead-based NucleoMag[®] Tissue kit for the rapid and automated purification of genomic DNA from animal/ human cells and tissue specimens in an automation-friendly and magnetic bead-based format. The obtained DNA is of high purity and quality and can be used for any standard downstream application such as PCR, NGS, blotting, or any other kind of enzymatic reaction.

In this application note we demonstrate the automated genomic DNA purification from cells and tissue using the NucleoMag[®] Tissue kit on the NucleoMag[®] X32. The NucleoMag[®] X32 is a minimal footprint nucleic acid extraction system adopting magnetic bead technology. Capable of processing up to 32 samples at one time, the stand-alone instrument is easy to set up, program, and operate. Mixing, magnetic bead transfer, washing, and elution steps are performed automatically, saving valuable hands-on time.

The NucleoMag[®] X32 comes with verified scripts pre-installed on the device. For all scripts we also provide detailed protocol information with description of procedure steps, loading schemes, and required consumables. More information about the NucleoMag[®] X32 and further application notes can be found at www.mn-net.com/de/NucleoMag-X32.

NucleoMag[®] Tissue

Technology	Magnetic beads
Sample material	< 20 mg human / animal tissue, < 10 ⁶ cells
Lysate clarification	Centrifugation
Elution volume	50 – 200 µL
Fragment size	300 bp – approx- 50 kbp
Max. sample number on the NucleoMag [®] X32	32 samples

NucleoMag[®] X32

Technology	Automated magnetic rod system
Display	7 inch-color touch screen
Capacity / volume per well	1 – 32 samples / 50 µL to 1000 µL
Dimensions	417 x 410 x 426 mm
Weight	30 kg
Contamination control	UV lamp, internal filter system
Website	www.mn-net.com/de/NucleoMag-X32

Material and Methods

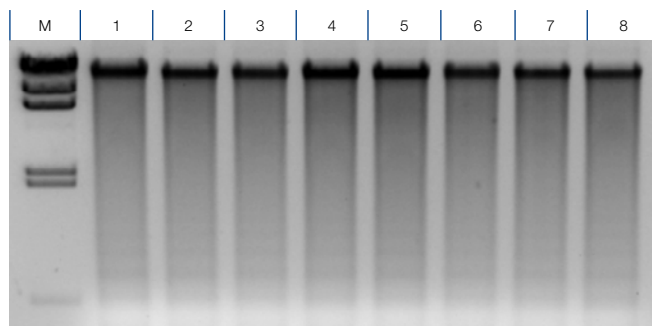
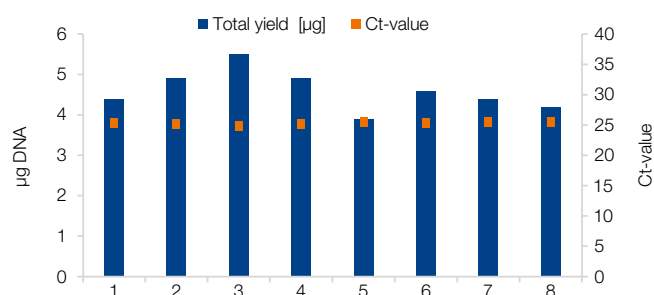
The isolation procedure of the NucleoMag[®] Tissue kit is based on reversible adsorption of nucleic acids to paramagnetic NucleoMag[®] B-beads under appropriate binding conditions. 10 mg pork liver tissue were mixed and incubated with Proteinase K and Lysis Buffer T1. After lysate clarification via centrifugation, reversible binding of nucleic acids to paramagnetic beads was enabled by adjustment with Binding Buffer MB2. Subsequent

to the magnetic separation, the NucleoMag[®] B-Beads were washed to remove contaminants and salts using Wash Buffer MB3 and MB4. After a short MB5 washing step, highly pure nucleic acids are eluted in elution buffer MB6.

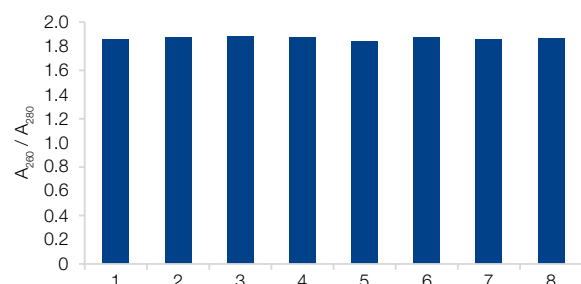
All binding, washing, and magnetic bead separation steps were carried out by the NucleoMag[®] X32 magnetic rod device.

Application data

A

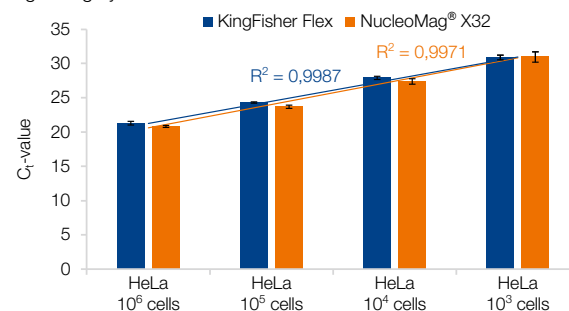


B



Integrity of isolated nucleic acids from pork liver tissue samples

The integrity of the isolated nucleic acids was analyzed by gel electrophoresis (10 µl per eluate; 1.0 % TAE gel; M: Lambda DNA/*Hind* III – Thermo Scientific). The gel electrophoresis analysis shows intact genomic DNA of high integrity.



Isolation of genomic DNA from pork liver tissue samples

The figure shows total yields after genomic DNA extraction from eight individual 10 mg pork liver tissue samples using the NucleoMag Tissue kit automated on the NucleoMag[®] X32. (A) Total DNA yields were determined by UV spectrometry averaging at 4.6 ± 0.5 µg. A subsequent qPCR analysis (orange squares) was performed with a Taqman[®] Probe for a 250 bp β-actin amplicon using the SensiFast[™] Probe Lo-ROX kit from Meridian Bioscience[®] on an Applied Biosystems[®] 7500 Real-Time PCR System. (B) The purity of the isolated nucleic acids was determined by UV spectrometry resulting into an average A₂₆₀/280 value of 1.86 ± 0.01 . The results demonstrate a reliable and reproducible purification of gDNA with high yield and quality.

Isolation of genomic DNA from HeLa cells

DNA was isolated from different amounts of HeLa cells (10³ to 10⁶ cells) using the NucleoMag[®] Tissue kit on the NucleoMag[®] X32 and the KingFisher Flex system. A subsequent qPCR analysis was performed using a β-Actin amplicon. The qPCR results demonstrate a reliable detection of gDNA, even for low amounts of cells. The two automatic extraction systems show equivalent performance with no significant differences.

Ordering information

Product	Specifications	Pack of	REF
NucleoMag [®] Tissue	Magnetic bead-based kit for the isolation of DNA from tissues, cells, and bacterial pellets; including NucleoMag [®] B-Beads, buffers, and Proteinase K	1 × 96 preps	744300.1
		4 × 96 preps	744300.4
		24 × 96 preps	744300.24
NucleoMag [®] X32	Magnetic rod system for automated nucleic extraction using MACHEREY-NAGEL NucleoMag [®] kits, parallel processing of up to 32 samples	1	747020
96 Deep-well plates	96 deep-well plates for NucleoMag [®] X32	25	744955
Tip Combs	8-place magnetic tip comb for NucleoMag [®] X32	50	744960

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