

NucleoMag[®] Tissue

Automated DNA purification from tissue and cells using the Hamilton[®] NIMBUS[®] Presto workstation



Introduction

The efficient and reliable isolation of genomic DNA from tissue and cell samples is the basis for multiple applications in life science and applied testing laboratories. In the past years the need for automated, high throughput nucleic acid purifications has constantly increased due to its high precision, reproducibility and performance.

The Hamilton NIMBUS Presto workstation combines the advantages of automated liquid handling and magnetic rod processing instruments. It eliminates time consuming manual pre-filling of plates and thereby remarkably reduces hands-on time for nucleic acid purifications. At the same time, by using the KingFisher[™] technology, this system is able to conduct nucleic acid purifications from lysate to eluate in less than 70 minutes.

Together with Hamilton, MACHEREY-NAGEL has established its NucleoMag[®] technology on the NIMBUS Presto system. Here, we demonstrate the utility and advantages of combining these technologies to fully automate your high throughput DNA sample preparation.

Your advantages at a glance:

- Proven NucleoMag[®] DNA purification with powerful lysis of cell and tissue samples
- Automated plate pre-filling and plate handling by the Hamilton NIMBUS liquid handling system
- High speed DNA purification by the integrated KingFisher[™] Presto instrument
- Continue with downstream application without manual intervention



The NIMBUS Presto workstation combines liquid handling and magnetic rod processing for fully automated, high throughput nucleic acid extractions.

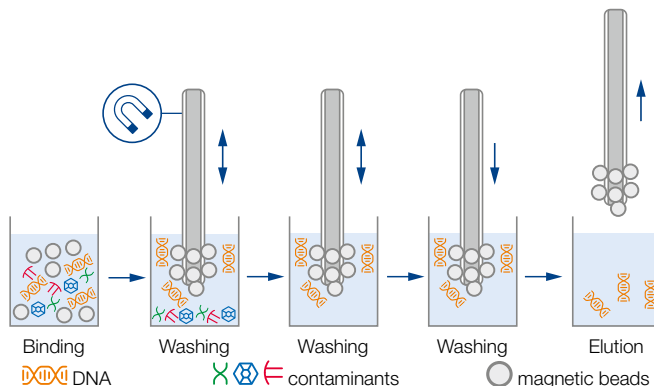
Product at a glance

NucleoMag [®] Tissue	
Technology	Magnetic beads
Sample material	< 20 mg tissue; < 10 ⁶ cells; bacterial pellets
Elution volume	50–200 µL
Typical yield	10–20 µg DNA (20 mg tissue)
Preparation time	Approx. 70 min (excl. lysis) per 96 standard size samples

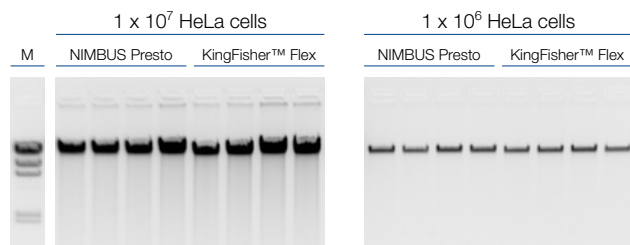
NIMBUS Presto Workstation	
Technology	Automated liquid handling platform (Hamilton NIMBUS) with integrated magnetic rod processing unit (KingFisher [™] Presto)
Capacity	96 standard size samples, 24 large samples
Processable sample volume	50–5000 µL
Footprint	L 1359 mm W 709 mm H 889 mm

Material and methods

Samples (porcine liver, bovine spleen, HeLa cells) were assorted into 96-well lysis blocks. To achieve lysis, samples were incubated with the powerful Lysis Buffer T1 and Proteinase K on a heater shaker. During the lysis incubation the NIMBUS Presto platform is able to pre-fill the plates required for washing and elution. After adjusting the DNA binding conditions, the samples were transferred to the KingFisher[™] Presto unit, which carried out the subsequent washing and elution steps. Elution of DNA from the magnetic beads was performed in a 96-well microtiter plate. The highly pure DNA eluates are ready to use in the application of your choice.

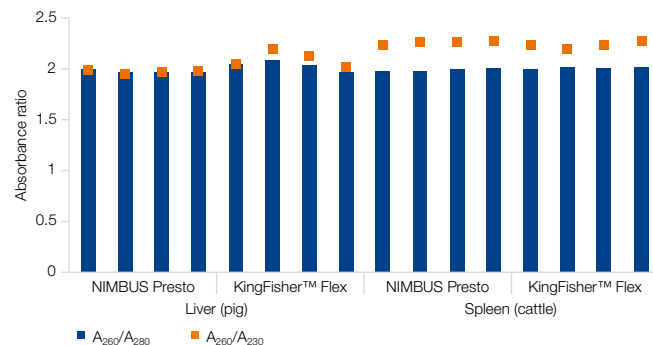


Application data



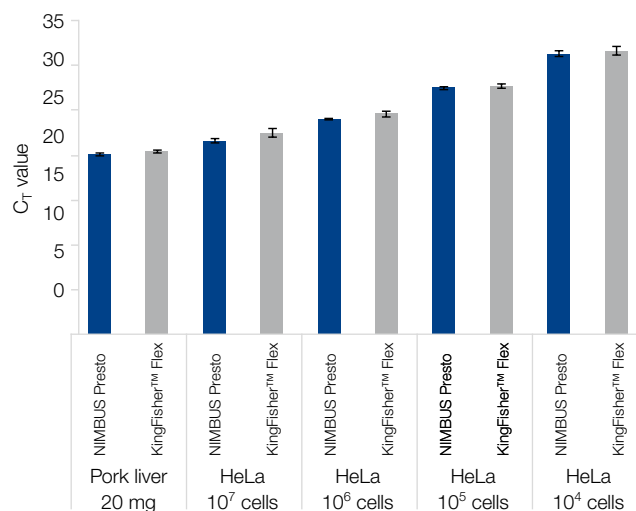
High integrity DNA with competitive yields

DNA was purified from animal tissue and cells by using NucleoMag[®] Tissue kit on the NIMBUS Presto or the KingFisher™ Flex. Both systems purify genomic DNA of high integrity and purity with comparable yields



High purity of isolated DNA from challenging animal tissues

DNA was isolated from different animal tissue samples (pork liver, bovine spleen) using the NucleoMag[®] Tissue kit on either the NIMBUS Presto workstation or the KingFisher™ Flex system. The purity of the DNA eluates was determined by UV spectrometry. Both systems purify DNA of high purity. The A₂₆₀/A₂₈₀ and A₂₆₀/A₂₃₀ ratios of clean DNA are typically > 1.8, which is true for eluates obtained with both the NIMBUS Presto and the KingFisher™ Flex system.



Excellent qPCR performance of isolated DNA

A qPCR assay for GAPDH demonstrates the suitability of the DNA purified from tissues and cells for common downstream applications. DNA purified with either the NIMBUS Presto or the KingFisher™ Flex system is amplified and detected with the same sensitivity.

A true walk-away solution for high throughput DNA extraction from tissues and cells

MACHERY-NAGEL and Hamilton implemented the NucleoMag[®] procedure on the NIMBUS Presto workstation.

Here, we demonstrate the successful use of MN's NucleoMag[®] Tissue kit for isolation of genomic DNA from tissue and cells on the NIMBUS Presto workstation. We evaluated the purification procedure by assessing DNA yield, purity, and performance in a downstream qPCR assay.

The powerful combination of the NucleoMag[®] technology and the NIMBUS Presto workstation has several advantages over standard nucleic acid purification procedures:

- Save hands-on time by using automated plate-prefilling and plate handling performed by the NIMBUS workstation
- Benefit from the high-speed extraction procedure of the integrated KingFisher™ Presto unit
- Reliable yield, purity and performance in downstream assays

Ordering information

Product	Specifications	Pack of	REF
NucleoMag [®] Tissue	Magnetic bead-based kit for the isolation of DNA from tissues, cells, and bacterial pellets; includes NucleoMag [®] B-Beads, buffers, and Proteinase K	1 x 96 preps	744300.1
		4 x 96 preps	744300.4
		24 x 96 preps	744300.24
NIMBUS Presto	Automated liquid handling platform with 4 pipetting channels, a CO-RE gripper, barcode scanner, and many additional features		Hamilton

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