

MACHEREY-NAGEL

Isolation of cell-free DNA from plasma samples

Bioanalysis

NucleoMag[®] cfDNA

- Consistent cfDNA recovery from 1–10 mL plasma samples
- Efficient purification of fragmented DNA as small as 50 bp
- No PCR inhibition regardless of your preferred sample volume

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NucleoMag® cfDNA

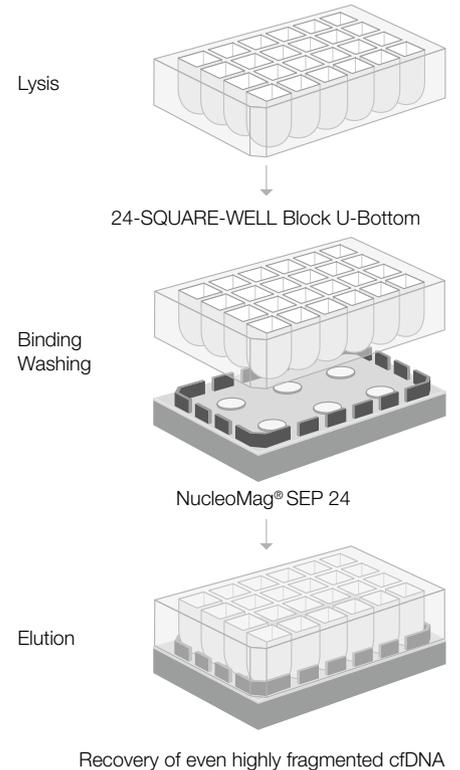
Automate your cfDNA isolation workflow

The NucleoMag® cfDNA kit is designed for the rapid manual and automated isolation of circulating cell-free DNA from human plasma, derived from e.g., EDTA blood draw tubes or Cell-Free DNA BCT®. The NucleoMag® cfDNA kit enables the recovery of fragmented DNA ≥ 50 bp with high efficiency due to a reversible adsorption of nucleic acids to paramagnetic beads under appropriate buffer conditions. Elution can be performed with as little as 50–200 μ L elution buffer and the eluted DNA is ready to use for subsequent downstream applications like real-time PCR, digital droplet PCR, next generation sequencing, etc. The NucleoMag® cfDNA kit content is composed for cfDNA extractions of 2 mL plasma samples, but it can be scaled individually from 1 mL sample volume up to 10 mL.

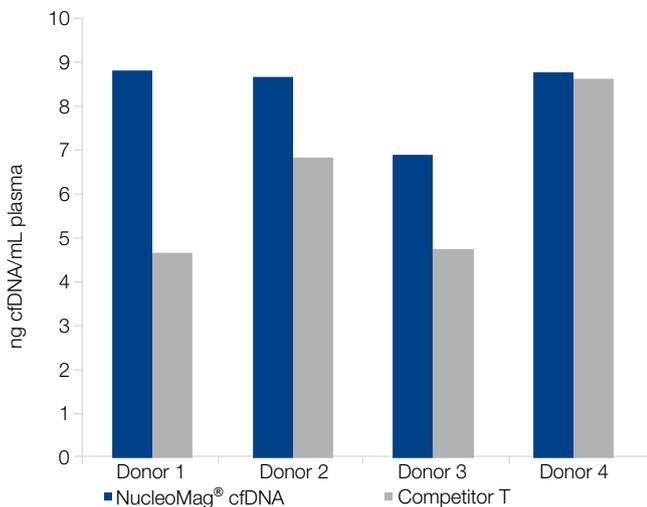
Product at a glance

Technology	Magnetic bead technology
Format	Highly reactive superparamagnetic beads
Processing	Manual or automated
Sample material	Human EDTA/Cell-Free DNA BCT® plasma
Sample amount	1–10 mL per preparation
Fragment size	≥ 50 bp
Typical Yield	Depending on sample source, storage, and quality
Elution volume	50–200 μ L
Preparation time	55 min/24 preps (2 mL; excl. lysis) on a KingFisher® Flex platform
Binding capacity	0.3 μ g/ μ L beads

NucleoMag® cfDNA procedure



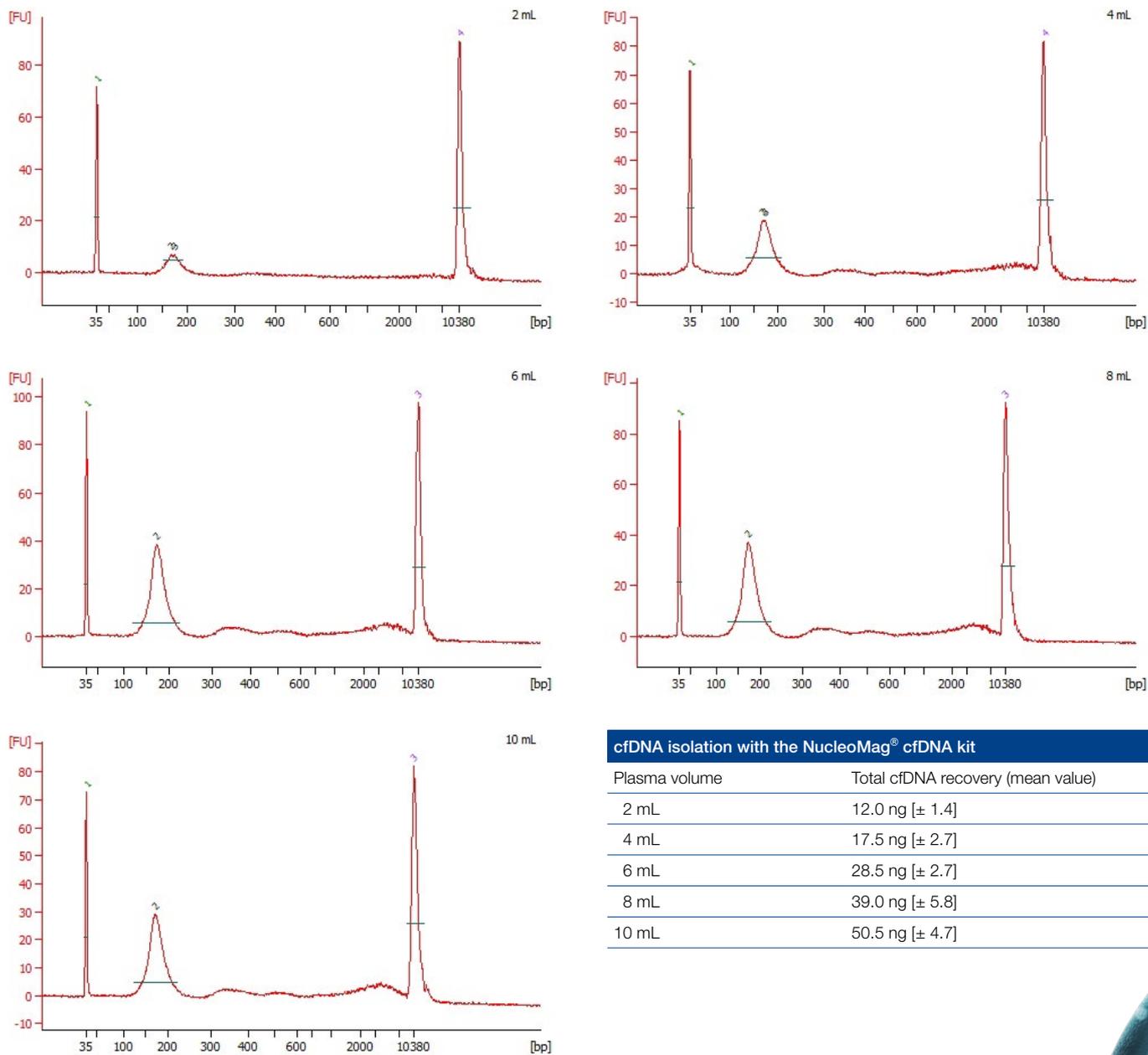
Application data



Competitive detection of low abundance cfDNA samples

Total cfDNA from 2 mL human EDTA plasma derived from 4 challenging donor samples with low abundance cfDNA (< 10 ng cfDNA/mL Plasma) was purified. Isolation with the NucleoMag® cfDNA kit results in higher and more consistent total cfDNA yields with less fluctuations in comparison to the competitor T. The final total DNA recovery was quantified using the Qubit™ dsDNA High Sensitivity kit (ThermoFisher Scientific) on a Qubit™ fluorometer (ThermoFisher Scientific).

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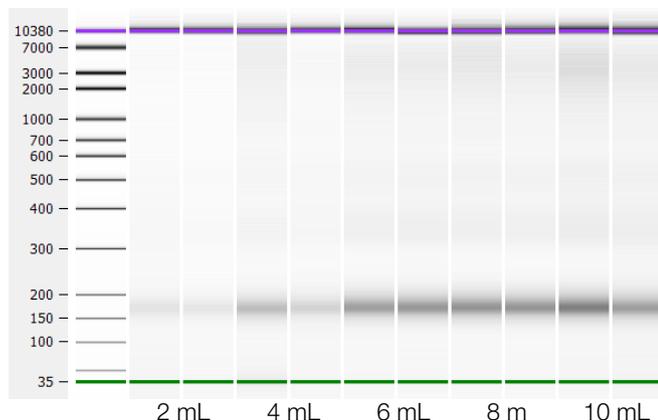


Reliable purification of cfDNA from different plasma volumes

The NucleoMag® cfDNA kit was used to isolate cfDNA from human EDTA plasma samples, ranging from 2–10 mL. Efficient purification of cfDNA is shown by the characteristic peak at approx. 170 bp using the Bioanalyzer™ 2100 system and the High Sensitivity DNA Kit from Agilent. The total yield was determined by PicoGreen™ quantification assay using the Quant-iT™ PicoGreen™ kit (ThermoFisher Scientific) on a Synergy HT Multi-detection microplate reader (Biotek). The consistent correlation of cfDNA amount and sample volume demonstrates reliable performance independent on sample volume.



Isolation of cell-free DNA from plasma samples



Consistent cfDNA recovery regardless of plasma volumes

The isolation of cfDNA from human EDTA plasma using the NucleoMag® cfDNA kit shows clear bands after measurement by capillary gel electrophoresis using the Agilent Bioanalyzer™ 2100 system with the High Sensitivity DNA kit. Even for low volumes such as 2 mL the detection of cfDNA is clearly visible.

Ordering information

Product	Specifications	Preps	REF
NucleoMag® cfDNA*	Magnetic bead based kit for the purification of cell-free DNA from plasma - NucleoMag® P-Beads and buffers included	1 x 48 / 4 x 48	744550.1 / .4
Related Products	Specifications	Pack of	REF
NucleoMag® SEP 24	Magnetic separator recommend for separation in a 24-Square-well Block U-bottom	1	744903
NucleoMag® SEP Maxi	Magnetic separator recommend for separation in 50 mL tubes	1	744902
24-Square-well Block with silicone lid	24-well block with 10 mL flat bottom wells	4	740679.4
Elution Plate, U-bottom	96-well microplates with 300 µL U-bottom wells for the storage of eluates, including Self-adhering Foil	24	740486.24
Self-adhering PE Foil	adhesive tape foils for sealing 96-well elution plates for air-tight storage of e.g. DNA / RNA	50 sheets	740676
Snap Tubes (50 mL)	50 mL conical centrifuge tubes with snap lid	10 / 50	740822.10 / .50
Liquid Proteinase K	14–22 mg / mL, > 50 U / mL	5 mL	740396

* Kits to be used for research purposes only

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