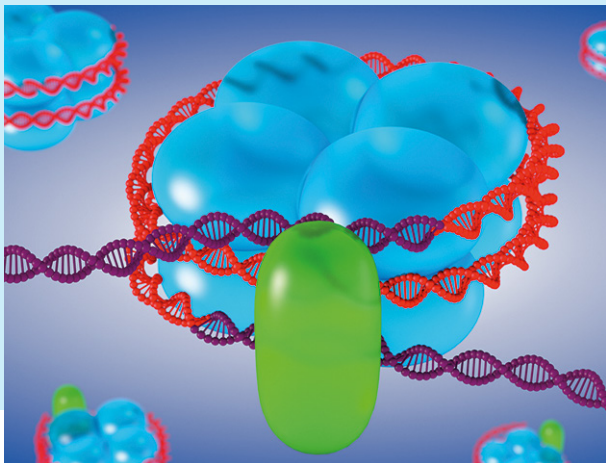
TECHNICAL NOTE

Automated cfDNA Isolation

Automated Cell Free DNA Isolation from 2 - 5 ml of Plasma Samples



Schema of nucleosome organization. Stryer, Lubert (1995). Biochemistry (fourth ed.). New York - Basingstoke: W. H. Freeman and Company. ISBN 978-0716720096.

Tests related to cfDNA usually result in wide-ranging decision processes, therefore the use of cfDNA in molecular biology-research requires a reliable isolation of cfDNA as one of the initial steps.

Cell free DNA containing sample material (plasma) is precious and cannot be easily obtained a second time without huge efforts. The challenges related to cfDNA isolation: Small fragments (difficult to isolate), a low and variable concentration in the plasma (requiring an almost total isolation of the fraction) in combination with demanding downstream applications, make it absolutely necessary to use as much starting material (plasma) as possible for the isolation. A high starting volume in combination with an optimal isolation method is the best approach to ensure reliable results and to minimize recall rates.

PerkinElmer offers the perfect solutions for this challenge by providing

- High cfDNA yields and concentration through processing of high initial plasma sample volume of 2 - 5 ml per reaction
- Max. cfDNA concentration achieved by low elution volume (60 - 150 µl)
- Efficient recovery of high quality cfDNA – up to 5 ng cfDNA/ml plasma
- Fast processing times – 24 samples of 2 - 5 ml sample vol. in 120 min
- cfDNA suitable for quality-demanding downstream applications: real time/digital PCR, methylation analysis, array technologies, NGS workflows

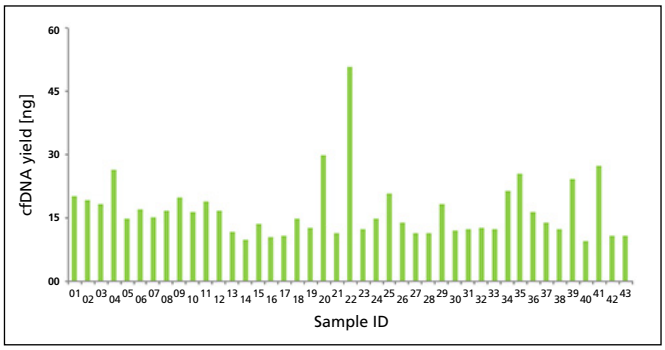


Fig. 1: cfDNA yield of 43 individual donors from 5 ml of plasma showing high yields. Mean yield: per ml of plasma 4.17 ng, samples were stored in cfDNA stabilizing blood collection tubes and plasma separation took place 3 days after the blood draw.

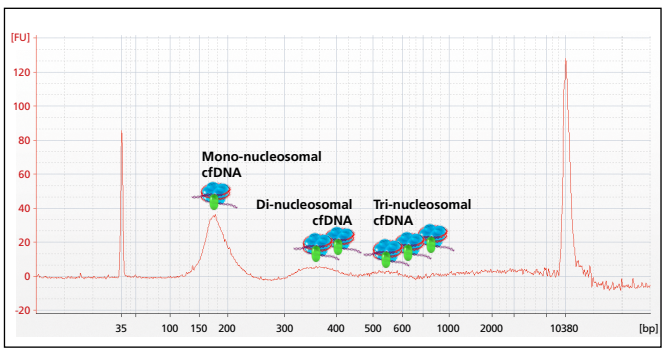


Fig. 2: Typical fragment analyzer results for cfDNA isolation.

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For the Better

Order Information and Kit Performance

Product Number	Product Name	Sample Size	Processing Time	Typical Yield	Standard Elution Vol.	Typical Conc. (100 µl Elution Vol.)
CMG-1104	chemagic cfNA 5k Kit special H24	2 - 5 ml	120 min	0.5 - 5 ng/ml plasma	60 - 150 µl	5 - 50 pg/µl
CMG-1108	chemagic cfNA 5k Kit special H12	5 ml	100 min	0.5 - 5 ng/ml plasma	60 - 150 µl	5 - 50 pg/µl

Other solutions available for

- Different sample volumes up to 10 ml cfDNA
- Blood, saliva, feces, FFPE, fresh tissue
- Total RNA isolation

Your Tool for Automated cfDNA Isolation

Based on PerkinElmer patented magnetic bead technology the chemagic™ 360 research instrument represents the ideal solution for cfDNA isolation from 2 - 5 ml plasma samples, in research market segments including but not limited to genetic testing and molecular biology workflows.

chemagic™ 360 instrument

Key features

- Sample volumes from 200 µl - 5 ml
- High throughput, 1 - 24 samples/run
- Bar code reading/sample tracking
- LIMS compatible log files
- Integrates with liquid handling platforms

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Order Information

Product Number	Product Name
2024-0020	chemagic 360 instrument
CMG-371	chemagic 360, 12 Rod Head Set
CMG-376	chemagic 360, 24 Rod Head Set

Magnetic Separation

The magnetic separation is based on the use of metal rods that are lowered into a process solution (A). To collect beads from the solution, the rods are magnetized. Pellets form at the tips of the rods, and the rods are withdrawn from the solution with the pelleted beads attached. Resuspension into the next process solution, for example, wash or elution buffer, is achieved by switching off the magnetism while rotating the rods (B). This normally difficult step is thus performed quickly and thoroughly, resulting in isolation products with high yields and purities.

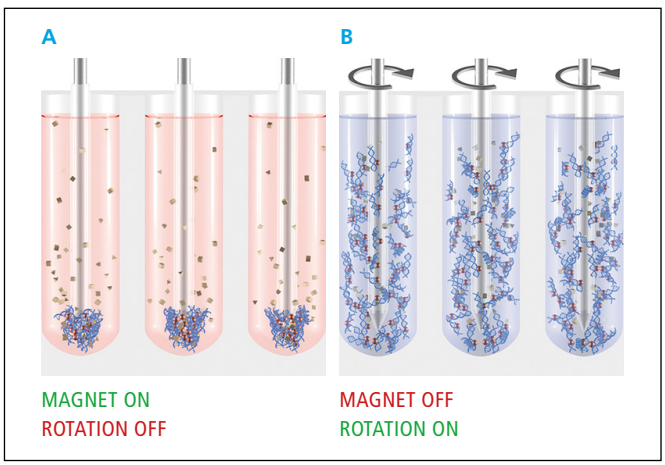

Fig. 3: Magnetic separation technology.

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