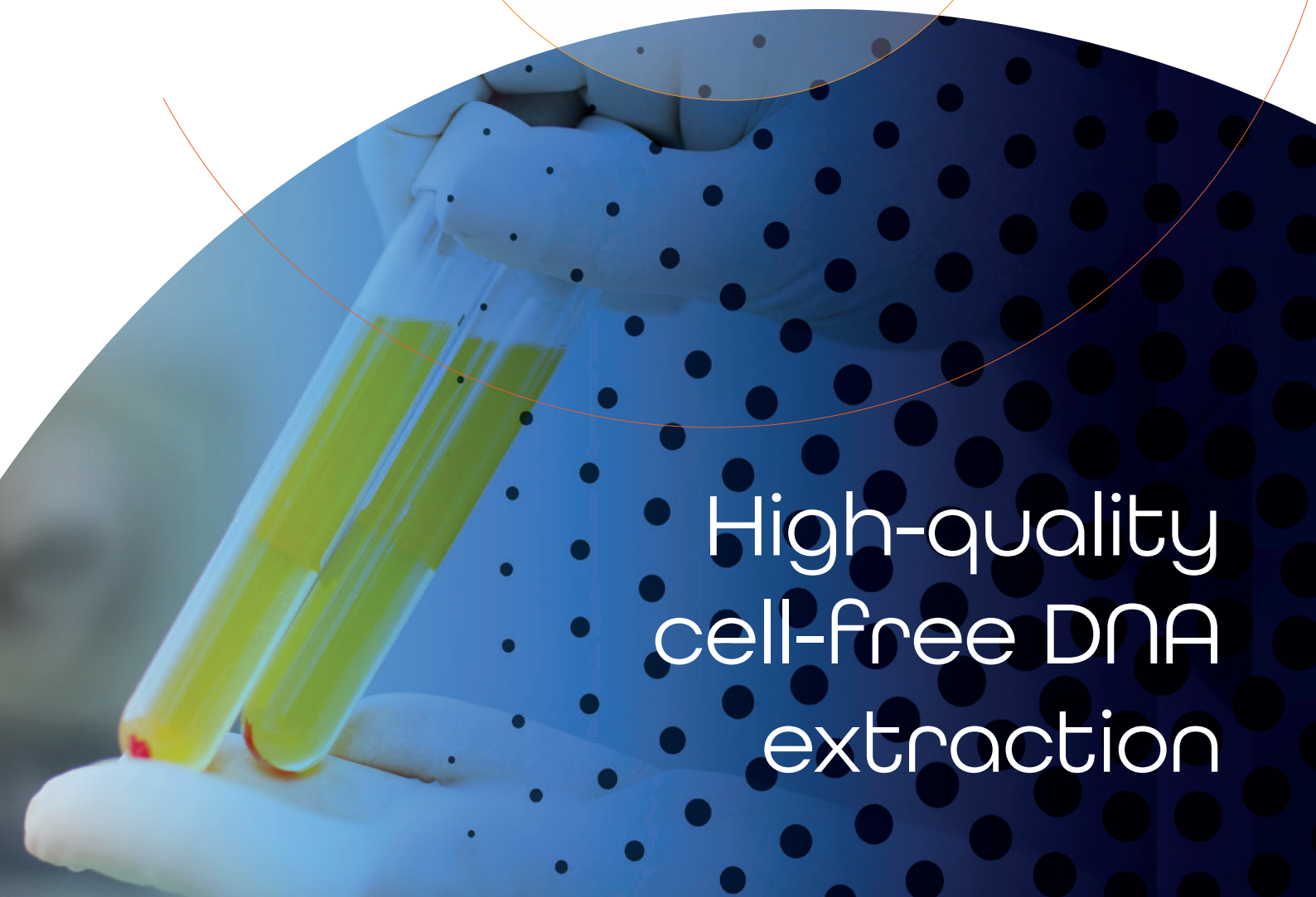
Clean NA

Clean Plasma cfDNA Kit

Dx CE-IVD version also available



High-quality cell-free DNA extraction

Unlock the potential of your cfDNA workflow

Cell-free DNA (cfDNA) has emerged as a powerful tool in both diagnostics and research. Over the last years, cfDNA had a major impact on prenatal screening by enabling non-invasive prenatal testing (NIPT). The biomarker is now being explored in the fields of oncology, transplant medicine, and cardiovascular diseases as well. Our Clean Plasma cfDNA Kit supports laboratories with the critical first step of the process: extracting the cfDNA from human plasma.

Our kit extracts cfDNA fragments from up to 2 mL human plasma or cerebrospinal fluid using a simple three-step procedure. A unique lysis buffer releases the DNA from proteins and vesicles, while an optimised buffer combination enriches DNA fragments ranging from 120 to 400 base pairs.

The protocol is compatible with both manual and automated workflows, including integration with our CleanXtract LV and CleanXtract 96. The resulting cfDNA is ready for downstream applications, making the Clean Plasma cfDNA Kit the ideal starting point for your cell-free DNA workflow.

Both diagnostic and research workflows can benefit from utilizing our Clean Plasma cfDNA Kit, since we offer a CE-IVD certified (Dx) as well as a Research Use Only version.

Benefits:

- **Easy automation**
- **Fit for downstream (q)PCR/NGS**
- **Flexible sample volume**
- **CE-IVD and RUO available**

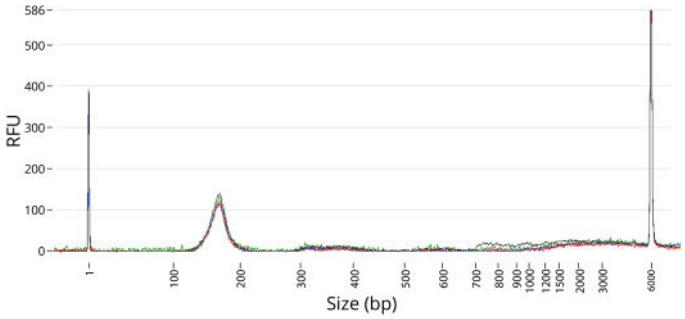
Application

The cfDNA extracted by the Clean Plasma cfDNA Kit can directly be used for (q)PCR and NGS. Cancer diagnostics, prenatal screening, organ transplantation, and post trauma monitoring are some of the main fields where cfDNA is applied. Our CE-IVD certified version of the kit can be applied with high confidence in molecular diagnostic workflows.

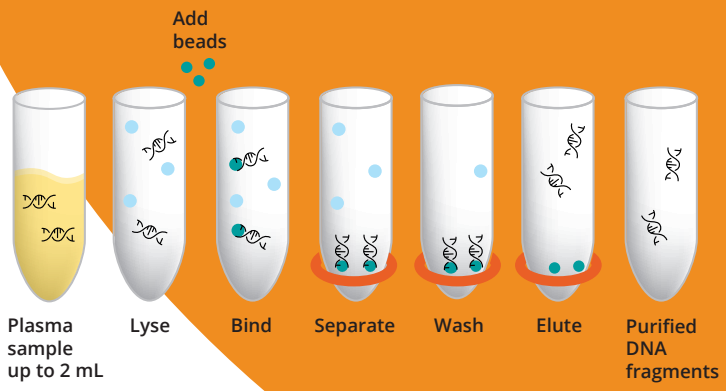
Proof of Principle

We extracted cfDNA from 5 replicates of a 1 mL human plasma sample using the Clean Plasma cfDNA Kit. The extraction was performed on the Dynamic Devices' Lynx liquid handling instrument and the samples were analysed on the 5300 Fragment Analyzer System. Figure 1 shows a high peak around the length of 170 base pairs, indicating that our Clean Plasma cfDNA Kit captures small DNA fragments of the size of cfDNA (Faas et al., 2012). The height of the peaks (showing DNA quantity) is similar, which means high reproducibility.

FIGURE 1.
Electropherogram of DNA from 5 replicates of a human plasma sample after extraction with the Clean Plasma cfDNA Kit.



Workflow

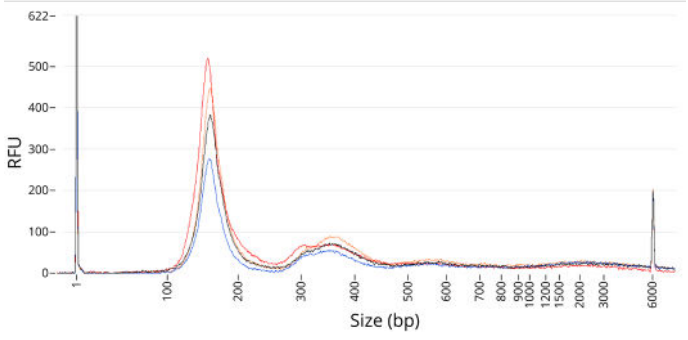


Initially, the uniquely formulated lysis buffer is added to the plasma sample to release the cfDNA from proteins and vesicles, while DNases are inactivated. After binding of the cfDNA to the added magnetic beads, the cfDNA-magnetic bead complex can be separated from the lysate by using a magnetic separation device. A series of quick wash steps remove trace contaminants and the purified cfDNA can be eluted from the magnetic beads using the elution buffer.

Next to extraction from replicate samples, cfDNA was extracted from 4 clinical human samples of 2 mL. Because the plasma samples were from different patients, the quantity of cfDNA varies. A high peak is visible around 160 base pairs, which shows that the kit extracts cfDNA from clinical plasma samples.

FIGURE 2.

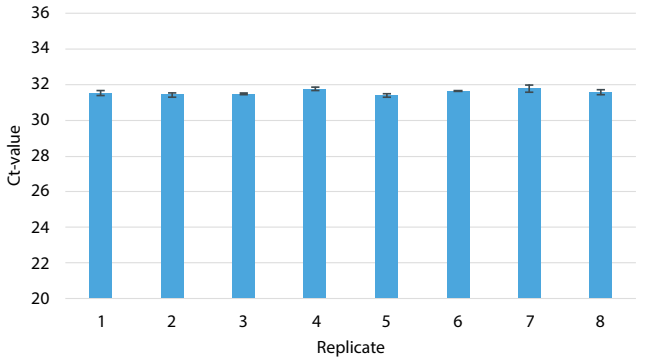
Electropherogram of DNA from 4 clinical human plasma samples after extraction with the Clean Plasma cfDNA Kit.



In another experiment, DNA extraction from 8 replicates of a 1 mL human plasma sample was performed by using the Clean Plasma cfDNA Kit. The extraction was performed on Dynamic Devices' Lynx liquid handling instrument. We performed a qPCR on the human albumin gene. Figure 3 shows minimal differences in Ct-values for the different samples, which indicates high reproducibility.

FIGURE 3.

Albumin directed TaqMan® qPCR performed after extracting DNA from 8 replicates of a human plasma sample with the Clean Plasma cfDNA Kit.



Faas BH, de Ligt J, Janssen I, Eggink AJ, Wijnberger LD, van Vugt JM, Vissers L, Geurts van Kessel A. Non-invasive prenatal diagnosis of fetal aneuploidies using massively parallel sequencing-by-ligation and evidence that cell-free fetal DNA in the maternal plasma originates from cytotrophoblastic cells. Expert Opin Biol Ther. 2012 Jun;12 Suppl 1:S19-26. doi: 10.1517/14712598.2012.670632. Epub 2012 Apr 16. PMID: 22500971.

About CleanNA

CleanNA advances human health with reliable nucleic acid isolation solutions for life science and healthcare labs. Our portfolio includes research and CE-IVD diagnostic products. Our magnetic bead-based reagents are specifically designed to be used in automated laboratory workflows.

CERTIFIED ISO 13485

CERTIFIED ISO 9001

Our quality management system is certified to EN ISO 13485 and EN ISO 9001 by Bureau Veritas

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Ready to order?

Order via your local distributor or contact us via our details below.

Order info

Product	Preps	Part Number
Clean Plasma cfDNA Kit Trial	4	CPCFT-D0004
Clean Plasma cfDNA Kit	96	CPCF2-D0096
Clean Plasma cfDNA Kit Dx	96	CPCF2Dx-D0096

Product	Pack size	Part Number
CleanXtract LV	1 system	CXT-LV
CleanXtract LV Cartridges, Bores, Elution Tubes	100 of each (300 total)	CXT-LV-CRTR

Clean Plasma cfDNA Kit is distributed by: