

Product Data Sheet

Product Summary

Product ID/Name

ND-HMEC1-01

Natural wt-cfDNA, in Buffer

Research Use Only (RUO)!

Product Description

Highly characterized wildtype mono-nucleosomal (~166 bp) cfDNA for improved QC, preanalytical validation, and analytical validation in dPCR, NGS, and liquid biopsy applications.

Manufacturer

CEBIO GmbH

Laplace Straße 23

81679 München

Product Specifications

Allelic frequency:

This product is 100% wildtype

Product size:

500 ng in total (10 ng/μL in 50 μL buffer), 2000 ng in total (10 ng/μL in 200 μL buffer), 5000 ng in total (10 ng/μL in 500 μL buffer)

Formulation

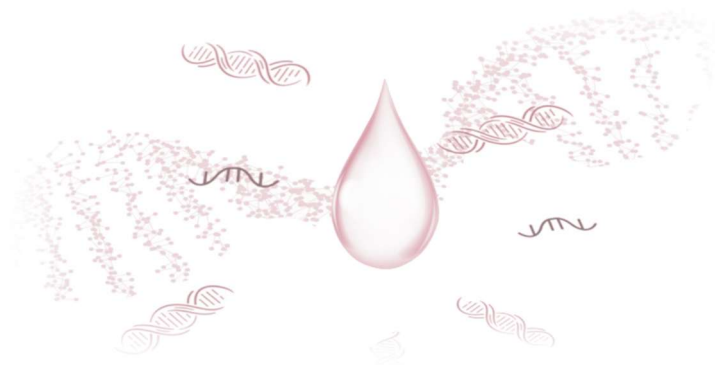
In buffer - Tris-EDTA (10 mM Tris, 1 mM EDTA), pH 8.0

Transport and storage

2 - 8 °C

Derived from

HMEC-1 cells

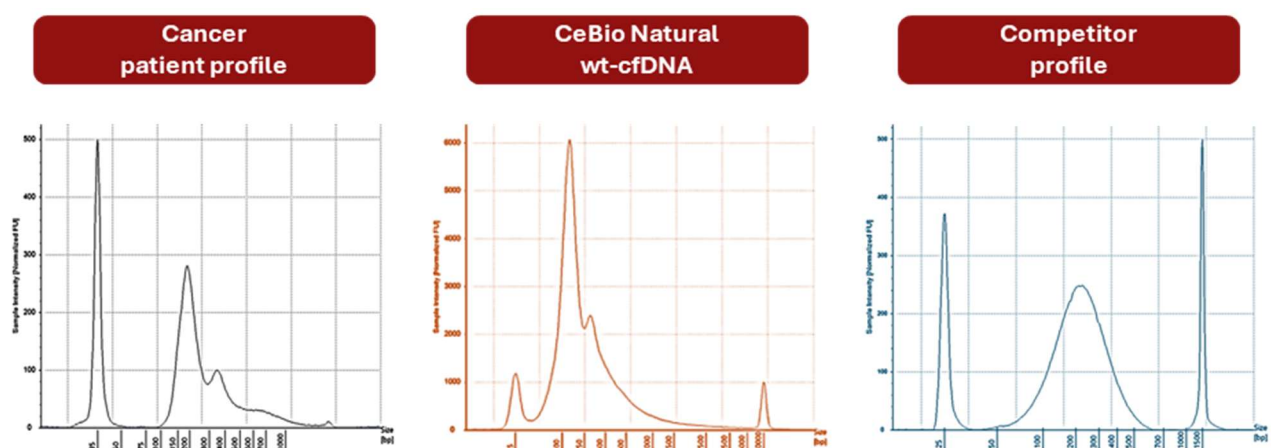


Improved biospecimen analogue

Set a new benchmark for wild-type cell-free DNA (cfDNA) with our mono-nucleosomal cfDNA, derived directly from the supernatant of HMEC-1 cells to preserve natural fragmentation and degradation profiles. Unlike enzymatically or mechanically sheared genomic DNA, this true cfDNA authentically reflects the biological processes found in patient samples, making it the superior choice for assay development, validation, and quality control. Featuring a native mono-nucleosomal peak around ~166 bp and physiologically relevant degradation patterns, our cfDNA provides the most realistic background for liquid biopsy workflows, dPCR, and NGS-based assays. Because it undergoes genuine cellular shedding and nuclease-driven fragmentation, it accurately reproduces key analytical behaviors such as adsorption characteristics, PCR amplification efficiency, and VAF variability. Artificially digested DNA cannot reproduce these effects. Designed for precision and reproducibility, our wild-type cfDNA serves as an ideal reference material for optimizing sensitivity and performance in cfDNA-based diagnostics and liquid biopsy applications. Elevate your assay validation with a biospecimen analogue that truly mirrors the real-world clinical sample experience.

Key advantages

- Mirrors method-dependent size-profile variability seen in cancer patient cfDNA
- Displays sharp mono-nucleosome peaks that indicate uniform fragment sizes rather than broad distributions
- Exhibits a strong di-nucleosome peak that matches the patterns observed in most cancer patient samples



Enhanced Characterization & Quality Control

Comprehensive characterization and rigorous quality control of our cfDNA reference materials using multiple state-of-the-art methods for size determination, quantification, and confounder analysis. Specific data is available upon request!

Size Determination Using Multiple Platforms

- Bioanalyzer High Sensitivity DNA Kit – High-resolution sizing of cfDNA fragments.
- Agilent TapeStation – cfDNA ScreenTape, High Sensitivity D1000 ScreenTape, and High Sensitivity D5000 bp ScreenTape for comprehensive profiling.
- Shallow Whole Genome Sequencing (sWGS) on Illumina – In-depth analysis of fragment size distribution.

Quantification & Copy Number Calculation

- Qubit dsDNA HS Assay Kit – Reliable low-concentration DNA measurement.
- NanoDrop One – Broad-range nucleic acid quantification.
- QIAcuity One dPCR – Absolute DNA quantification with copy number precision. Exact copy numbers for several hotspot mutation assays are available through the expanded Natural wt-cfDNA product (**Natural wt-cfDNA, in Buffer with molecule counts, ND-HMEC1-02**)

Ideal Use Cases

This Research Use Only (RUO) product is designed to enhance quality control, accuracy, and precision in both preanalytical and analytical validation of cfDNA-based assays. Its naturally fragmented structure makes it the ideal reference material for a variety of applications, including:

- Internal Control for DNA Size Assessment – Ensures accurate evaluation of cfDNA fragmentation, closely mimicking native cfDNA.
- Internal Control for DNA Quantification – Provides a reliable reference for precise and reproducible DNA concentration measurements.
- Spike-In Control for cfDNA Extraction Efficiency – When added to DNA-depleted plasma, it helps assess extraction efficiency under real-world conditions.

By replicating endogenous cfDNA properties, this product ensures more realistic assay performance in liquid biopsy, dPCR, and NGS applications.