

gDNA/cfDNA Isolation and Automation



❑ **Best-in-class extraction performance**

gDNA extraction: Isolate high-quality gDNA for NGS, PCR, and microarrays from a wide range of samples

cfDNA extraction: > 95% extraction rate, capture low-abundance cfDNA from biofluids for sensitive liquid biopsy and MRD detection

❑ **Proprietary bead-based extraction**

Superior magnetic power & Uniform bead size

❑ **Cost-efficient solution**

Low-cost without compromising on quality

❑ **MagTouch Compatibility:**

Automated extraction workflows: high consistency & reliability

Simple & fast: Extract 96 samples in < 45 mins

Empowering Research, Diverse Applications

- gDNA extraction from challenging samples
- Hepatocellular carcinoma detection
- Early lung cancer detection
- Rectal cancer treatment response prediction
- Lung cancer prognosis prediction using ChIP
- Clinical research on antibody delivery
- Colon cancer detection & monitoring
- SARS-CoV-2 wastewater surveillance
- Clinical research on metastatic solid tumors
- Non-invasive Prenatal Testing (NIPT)

Trusted by Leading Institutions



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Unlocking Deeper Insights: Superior Performance of Apostle MiniMax Cell-Free DNA Isolation Kit



Superior Performance

- ✓ **Significantly Higher Yield:** Apostle kit delivers an average of **34.3% higher total cfDNA yield** compared to the competitor kit (Fig 1A)
- ✓ **Enhanced Target Gene Recovery:** Apostle kit demonstrates a **14.8% increase** in the number of specific gene-positive droplets detected (Fig 1B)
- ✓ **Superior Mononucleosomal cfDNA Isolation:** Apostle kit achieves a **70.0% higher yield of mononucleosomal cfDNA fragments**, the most relevant size for ctDNA analysis (Fig 1C & 1D)
- ✓ **Consistent Performance:** Across various evaluation methods (Qubit assay, droplet digital PCR, Agilent bioanalyzer), Apostle kit consistently shows higher cfDNA yield compared to competitor
- ✓ **Improved ctDNA Detection Potential:** The significantly higher yield of cfDNA and specifically mononucleosomal fragments can translate to increased sensitivity in ctDNA detection assays

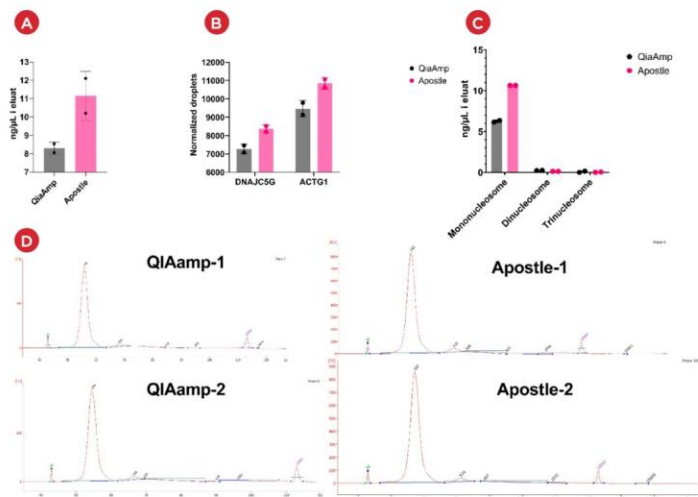
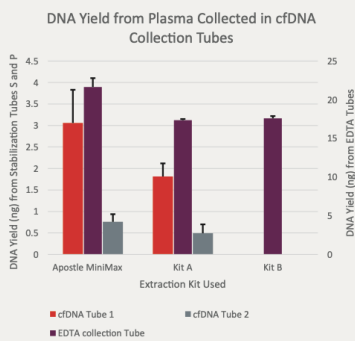
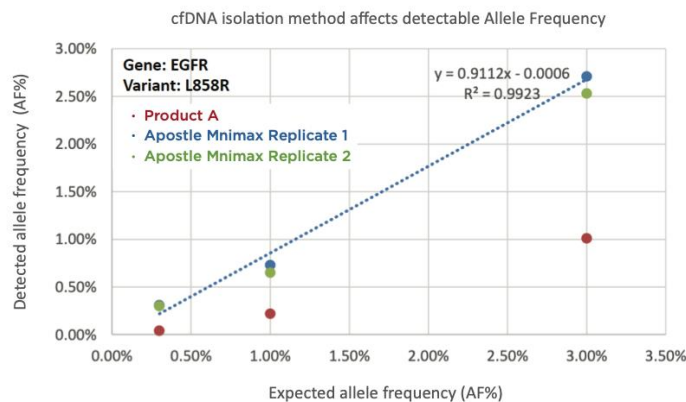
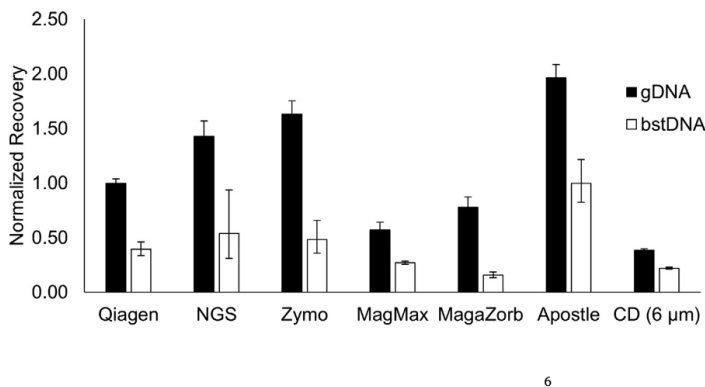


Figure 1. Evaluating Apostle MiniMax and QIAamp cfDNA purification efficiency. **A)** cfDNA concentration in final eluates. **B)** Normalized positive droplets for *DNACSG* and *ACTG1* in the purified cfDNA samples. **C)** Quantified contents of cfDNA corresponding to mono-, di-, and tri-nucleosomal DNA in the purified samples based on analysis with the Agilent Bioanalyzer system. **D)** Size distribution plots for purified cfDNA samples. N=2 in all plots.



- ✓ Apostle particles outperformed all others, achieving **almost 2-fold higher recovery yields** than the particles supplied in the X kit. (Top Left)
- ✓ cfDNA isolated by Apostle MiniMax cfDNA isolation kit shows **higher concordance** between detected AF% and expected AF%. (Top Right)
- ✓ For each tube the Apostle MiniMax extracted **higher total yield of DNA.**(Bottom)

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Trusted by Science: Apostle cfDNA Isolation Kit in Leading Research



2024	IF=50.3
Critical commercial assays	
SMARTer Seq V3	Takara #634487
RNA TruSeq RNA Exome	Illumina 20020189
Ovation RRBS Methyl-Seq	Tecan 0553-32
MagMAX™ FFPE DNA/RNA Ultra Kit	Applied Biosystems A31881
Apostle MiniMax High Efficiency Cell-Free DNA Isolation Kit	Apostle Bio A17622-250

Heeke, Simon, *et al.* "Tumor-and circulating-free DNA methylation identifies clinically relevant small cell lung cancer subtypes." *Cancer Cell* 42.2 (2024): 225-237.



2024 IF=82.9
Cell-free DNA collection and isolation
 shipped to Gritstone Bio and stored at -80 °C until extraction. cfDNA was extracted from the entire plasma volume of a single draw using the Apostle MiniMax cfDNA Isolation kit (ApostleBio) and quantified using the Qubit 1x dsDNA High Sensitivity Assay (Thermo Fisher)

Rappaport, Amy R., *et al.* "A shared neoantigen vaccine combined with immune checkpoint blockade for advanced metastatic solid tumors: phase 1 trial interim results." *Nature Medicine* (2024): 1-10.



2023 IF=16.6

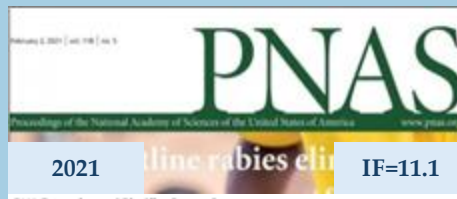
For sequencing on an Illumina platform, cfDNA was extracted from 0.4 mL plasma applied with an automated Kingfisher system (Thermo-Fisher Scientific, US) and eluted in a final volume of 22 µL, using an Apostle MiniMax High Efficiency cfDNA Isolation Kit (Apostle, US) according to the manufacturer's instructions. Extracted cfDNA was processed for library construction starting with a 0.3-7 ng input, using the Swift 2.5th Sonic DNA Library Kit (IDT, US) according to the manufacturer's instructions. The concentration of the library was quantified using the dsDNA HS Qubit Assay (Invitrogen, US). The size of the library was determined using a D10000 screentape assay with 2200 TapeStation (Agilent Technologies, US). The sequencing libraries were pooled, and up to 240 libraries per batch were multiplexed.

Bae, Mingyun, *et al.* "Integrative modeling of tumor genomes and epigenomes for enhanced cancer diagnosis by cell-free DNA." *Nature Communications* 14.1 (2023): 2017.



2022 IF=82.9
an-cancer
 cfDNA collection and isolation
 Whole blood was collected in two 10-ml cell-free DNA (cfDNA) BCT (Streck) starting at the time of the prime, and subsequent draws were collected at dosing visits. Due to COVID-19 restrictions, several blood draws were missed. Whole blood underwent a double-spin protocol to first separate plasma from WBCs and red blood cells before a second spin to remove any remaining cellular debris. The separated plasma was frozen and shipped to Gritstone Bio and stored at -80°C until extraction. cfDNA was extracted from the entire plasma volume of a single draw using the Apostle MiniMax cfDNA Isolation kit (ApostleBio) and quantified using the Qubit 1x dsDNA High Sensitivity Assay (Thermo Fisher Scientific).

Palmer, Christine D., *et al.* "Individualized, heterologous chimpanzee adenovirus and self-amplifying mRNA neoantigen vaccine for advanced metastatic solid tumors: phase 1 trial interim results." *Nature medicine* 28.8 (2022): 1619-1629.



2021 IF=11.1
line rabies elite
DNA Extraction and Bisulfite Conversion.
 For tissue and buffy coat samples, genomic DNA was extracted with the QIAamp DNA Mini Kit and the QIAamp DNA Blood Mini Kit (QIAGEN), respectively, according to the manufacturer's instructions. Plasma DNA extraction was performed using 2 to 5 mL of plasma with the Apostle MiniMax High-Efficiency cfDNA Isolation Kit, according to the product manual. DNA concentration was measured with a Qubit 3.0 fluorometer (Thermo Fisher Scientific). The extracted DNA was stored at -80 °C until use.

Jin, Shengnan, *et al.* "Efficient detection and post-surgical monitoring of colon cancer with a multi-marker DNA methylation liquid biopsy." *Proceedings of the National Academy of Sciences* 118.5 (2021): e2017421118.



2022 IF=17.1
DNA extraction
 cfDNA was extracted from the plasma samples using the Apostle MiniMax cfDNA Isolation kit (C43468, Apostle). WBC DNA was extracted using the QIAamp DNA mini kit (51306, Qiagen). DNA concentrations were determined using the Qubit dsDNA HS Assay Kit (Q32854, Thermo Fisher Scientific).

Wang, Pei, *et al.* "Simultaneous analysis of mutations and methylations in circulating cell-free DNA for hepatocellular carcinoma detection." *Science translational medicine* 14.672 (2022): eabp8704.



2022 IF=11.2
DNA extraction and library preparation
 Genomic DNA (gDNA) was extracted from fresh frozen tumour biopsies and WBCs with the QIAamp DNA Mini Kit (Qiagen; Germantown, MD, USA), and cfDNA was extracted from 1.5-4.5 mL of plasma with the Apostle MiniMax cfDNA Isolation kit (C40605, Apostle; San Jose, CA, USA). Targeted sequencing of a panel of 509 genes or exons was performed using genomic DNA obtained from tumour tissue and WBCs as previously described.¹⁸

Liu, Wenyang, *et al.* "Response prediction and risk stratification of patients with rectal cancer after neoadjuvant therapy through an analysis of circulating tumour DNA." *EBioMedicine* 78 (2022).



2022 IF=82.9
the Future of Cancer
AAV8-VRC07 vector DNA quantitation.
 Plasma AAV8-VRC07 plasmid DNA was measured by extracting DNA from plasma, concentrating and then using a real-time PCR assay to measure a 103 base sequence spanning the junction of the IgG heavy chain sequence and F2A insert. DNA was extracted from serum using an Apostle MiniMax High Efficiency cfDNA Isolation Kit, following the manufacturer's protocol with slight modification.

Casazza, Joseph P., *et al.* "Safety and tolerability of AAV8 delivery of a broadly neutralizing antibody in adults living with HIV: a phase 1, dose-escalation trial." *Nature medicine* 28.5 (2022): 1022-1030.



2024 IF=16.6

cfRNA extraction
 Frozen plasma samples were thawed on ice prior to cfRNA extraction. 200 µL of plasma samples were subjected to cfRNA extraction using the Apostle MiniMax™ High-Efficiency cfRNA Isolation Kit (Apostle), following the manufacturer's protocol with minor modifications. The experiments were conducted through manual operation on the bench up until the step involving the addition of 6.5 µL of Binding Enhancer to the 200 µL supernatant. The mixture was transferred to a 96-well plate with the prepared binding/nanoparticle solution, cfRNA Wash Solution, and 80% Ethanol (two columns) on different columns (eight samples in parallel). The subsequent steps, including binding and three rounds of magnetic

Wang, Jun, *et al.* "Terminal modifications independent cell-free RNA sequencing enables sensitive early cancer detection and classification." *Nature Communications* 15.1 (2024): 156.

80+ citations and counting
 check our website



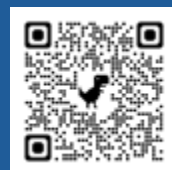
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Revolutionize Your Industrial R&D: Powerful cfDNA Isolation with Apostle



The kit achieves approximately **12 times higher** cfDNA yield compared to competitors, facilitating efficient processing of large sample sets. Furthermore, the kit is compatible with high-volume automated cfDNA extraction using the Biomek i7 system. The downstream targeted NGS analysis using Apostle-isolated cfDNA achieves **excellent repeatability and accuracy (90%) for variant detection** at low allele frequencies (down to 0.5%). This robust performance makes **Apostle MiniMax an ideal solution for industrial R&D applications** requiring reliable and efficient ctDNA analysis.

- Discovery Life Sciences, Huntsville, AL.

Apostle is proud to deliver a massive shipment of **12,000 innovative MiniMax cfDNA Blood Collection Tubes** to a valued client. These specially designed tubes optimize cfDNA preservation while minimizing gDNA contamination, ensuring the highest quality samples for NIPT. This industry-leading product reflects our commitment to continuous development and providing researchers and clinicians with the tools they need for accurate and reliable NIPT results. The MiniMax tubes contribute to improving the well-being of mothers and babies.



We're on a mission to accelerate breakthroughs in diagnostics! This shipment of our **best-selling Apostle MiniMax cfDNA Isolation Kits (4mL x 384 Preps)** is on its way to a valued client, ready to unlock the power of ctDNA analysis in an industrial setting. Apostle MiniMax kits deliver exceptional cfDNA yield, streamlining workflows for large-scale ctDNA studies. Every kit shipped contributes to advancements in diagnostic tools and therapies. We're proud to fuel your research journey and excited to see the groundbreaking discoveries you'll achieve in the field of diagnostics!

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