APOSTLE®

we deliver the message of health

Apostle MiniMax™ Technology

1. **MiniMax™ High Efficiency cfDNA Isolation Kit (Standard Edition)**
2. **MiniMax™ High Efficiency cfDNA Isolation Kit (Type S)**
3. **MiniMax™ cfDNA Blood Collection Tube**
4. **MiniMax™ High Efficiency cfRNA Isolation Kit**

At Apostle, we aim to develop technologies to fundamentally improve the efficiency and accuracy of liquid biopsy and NIPT.

Apostle MiniMax™ Technology

The ability to isolate and analyze circulating cell free DNA (cfDNA) at very low concentrations is becoming increasingly important, particularly in non-invasive prenatal test, early cancer detection, and infectious disease diagnosis. Highly efficient isolation of cfDNA from complexed biological medium is a crucial step for subsequent cfDNA analysis.

Apostle MiniMax™ technology ensures precise capture and separation of circulating genetic materials for liquid biopsy analysis. This is achieved through Apostle's novel proprietary MiniMax™ magnetic nanoparticles (Exhibit 1 and 2) with novel material composition and surface chemistry, large surface area and minimized variation.

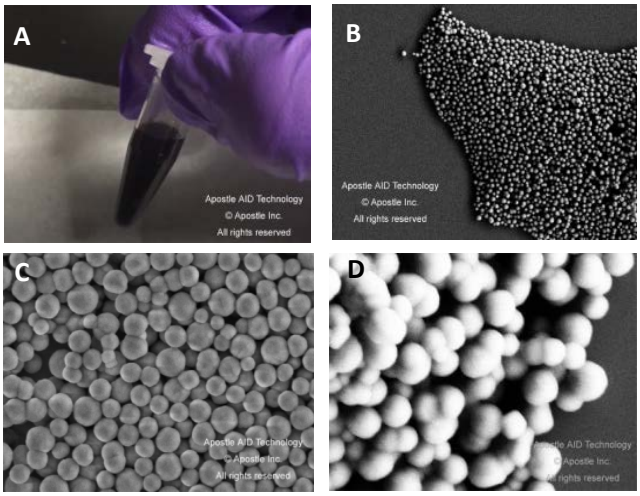

Exhibit 1. Apostle's proprietary MiniMax™ magnetic nanoparticles. The Apostle MiniMax™ nanoparticles have an increased magnetic strength and a decreased particle size compared to other leading technologies in the market, which ensures excellent suspension in solution and rapid mobility. The optimized surface chemistry allows efficient enrichment of genetic materials from complex biological materials.

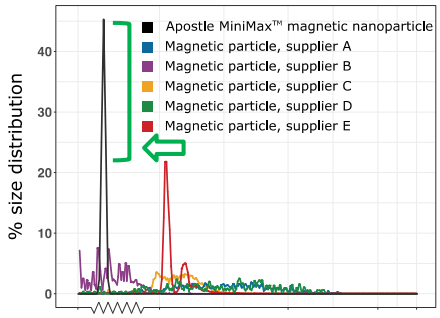

Exhibit 2. Apostle's proprietary MiniMax™ nanoparticles have uniform sizes. Apostle's MiniMax™ magnetic nanoparticles generated from our proprietary technology have uniform size distribution with minimized doublets, distinct from the particles from five current technological providers showing random sizes. Highly consistent size distribution of Apostle's nanoparticles ensure reproducible results.

Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Standard Edition)

– powered by Apostle MiniMax™ technology

Powered by Apostle MiniMax™ technology, Apostle MiniMax™ High Efficiency cfDNA Isolation Kit is an excellent tool for the isolation of ultra-low concentration cell free DNA (cfDNA). Compared to major alternative suppliers, Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers superior DNA isolation efficiency for DNA ladders spiked in biological medium (Exhibit 3).

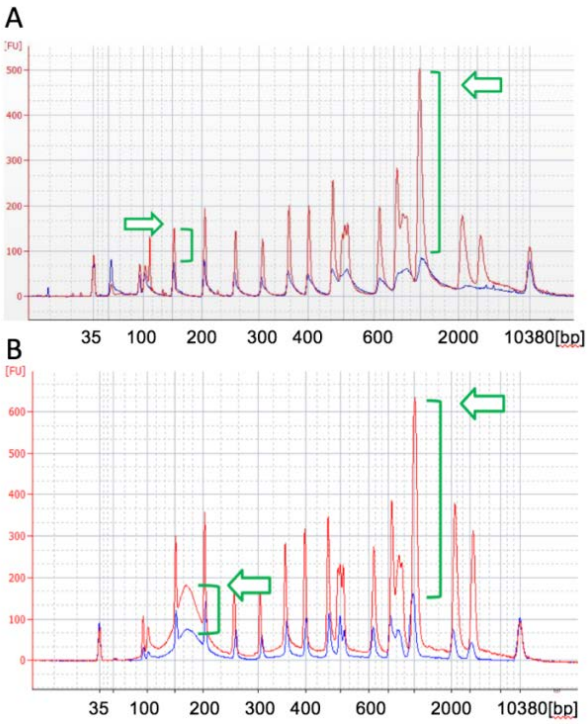

Exhibit 3. Superior DNA isolation efficiency.

A) DNA ladder (50-3000bp) was spiked in TE buffer, followed by isolation with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (red curve) and major alternative product (blue curve). The isolated DNA was characterized by Bioanalyzer 2100. **B)** DNA ladder was spiked in serum, followed by isolation with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (red curve) and major alternative product (blue curve). The isolated DNA was characterized by Bioanalyzer 2100. Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers superior DNA enrichment efficiency of 2x – 10x.

Over 95% DNA recovery in range between 80 – 3000bp was achieved using Apostle MiniMax™ High Efficiency cfDNA Isolation Kit, as demonstrated through recovery of DNA ladder spiked in serum (Exhibit 4). This is due to the optimal interaction between DNA and the nanoparticles enabled by the MiniMax™ technology, resulting in efficient binding with cfDNA in complexed biological medium and total elution of cfDNA at later stage.

The Apostle MiniMax™ High Efficiency cfDNA Isolation Kits are manufactured under highly controlled and validated production processes. This will ensure optimal performance with high efficiency and reproducibility in cfDNA isolation (Exhibit 5).

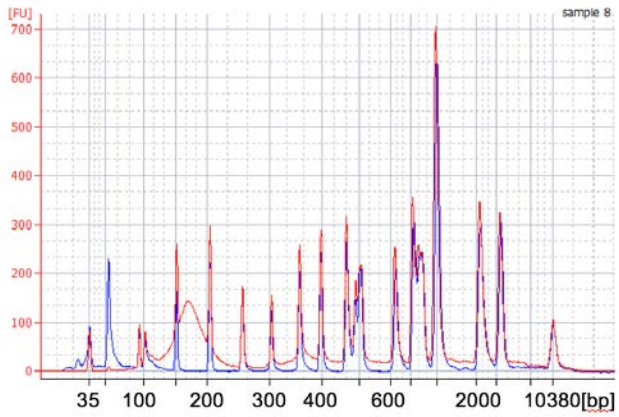

Exhibit 4. Over 95% DNA recovery in range between 80 – 3000bp. DNA ladder was spiked in serum, followed by isolation with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit. The Isolated DNA was characterized by Bioanalyzer 2100 (red curve), and compared with original DNA ladder (blue curve). Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers superior DNA recovery efficiency of > 95%.

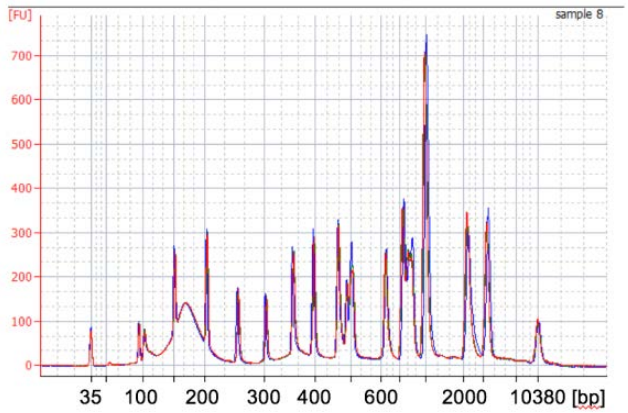

Exhibit 5. Highly reproducible DNA isolation process. DNA ladder was spiked in serum, followed by isolation with three batches of Apostle MiniMax™ High Efficiency cfDNA Isolation Kit. The Isolated DNA was characterized by Bioanalyzer 2100, and compared between batches. Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers highly consistent DNA isolation result.

cfDNA is a group of highly fragmented DNA molecules, with major peak at ~170bp, doublet peak at ~340bp, triplet peak at ~510bp, and so on. Therefore, cfDNA isolation kit capable of highly efficient cfDNA isolation spanning wide cfDNA size distribution is desired. Apostle MiniMax™ High Efficiency cfDNA Isolation Kit meets such need as demonstrated from its > 95% recovery of DNA ladder. This is further validated through isolation of natural cfDNA from human plasma (Exhibit 6A) and urine samples (Exhibit 6B), where Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers superior cfDNA isolation efficiency over wide range, specifically covering the 170bp, 340bp, and 510bp cfDNA peaks, when compared with major alternative product.

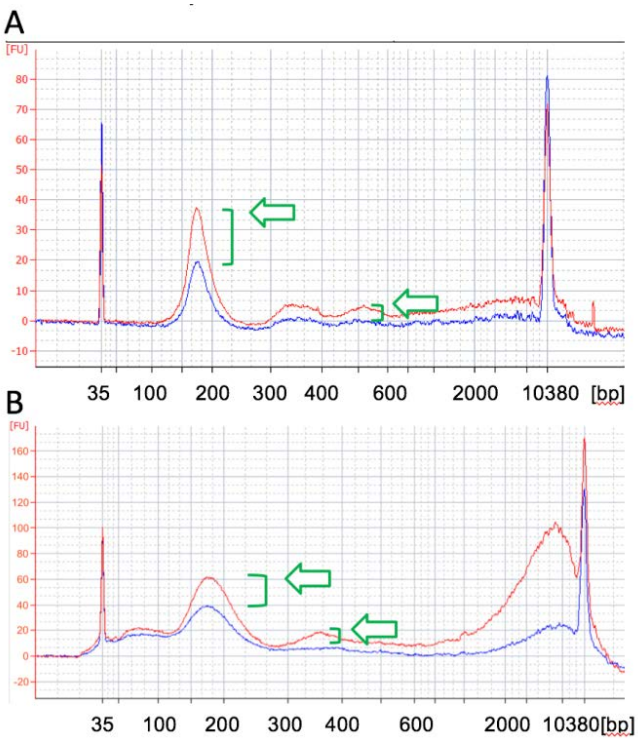

Exhibit 6. Superior natural cfDNA isolation efficiency in human plasma and urine. **A)** Cell-free plasma was separated from blood samples by centrifugation for 10 minutes at 2000g at 4°C, then centrifuged for 10 minutes at 16000g at 4°C. cfDNA was isolated from 4mL plasma with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (red curve) and major alternative product (blue curve). The isolated cfDNA was characterized by Bioanalyzer 2100. **B)** Cell-free urine was prepared by centrifugation for 10 minutes at 16000g at 4°C. cfDNA was isolated from 20mL urine with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (red curve) and major alternative product (blue curve). The isolated cfDNA was characterized by Bioanalyzer 2100. Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers superior cfDNA isolation efficiency for both plasma and urine samples.

The quality of DNA isolated with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit was validated through qPCR test (Exhibit 7). Different concentrations of DNA fragment containing the EGFR c.2573T>G L858R mutation (synthetic, ~170 bp) were spiked in biological medium, then isolated with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit. Consistent qPCR result was observed between isolated DNA and original DNA fragment before spike in, demonstrating high quality of DNA isolated with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit for down stream applications.

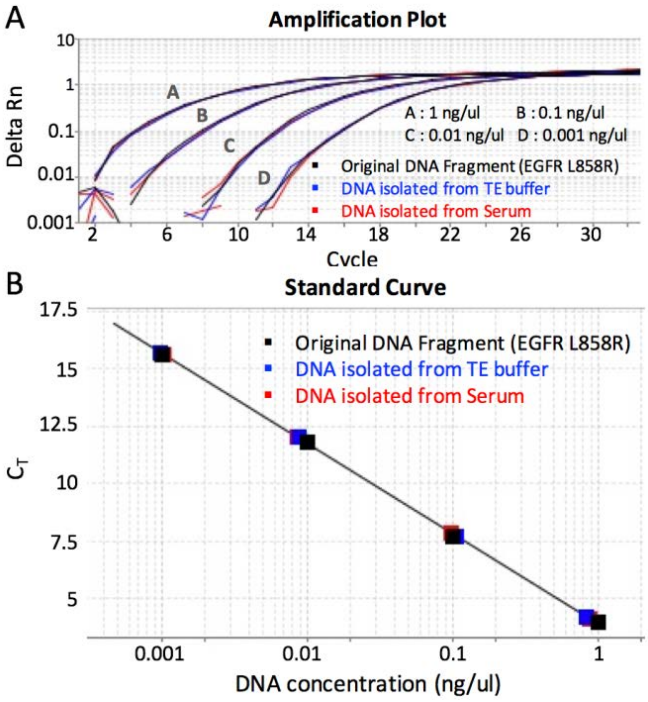

Exhibit 7. Superior performance of DNA mutation detection isolated with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit. 20 uL of DNA fragment containing the EGFR c.2573T>G L858R mutation (synthetic, ~170 bp), with concentration of 1ng/uL, 0.1ng/uL, 0.01ng/uL, 0.001ng/uL, was spiked into 1mL TE buffer (blue) or Serum (red) respectively. The mutated DNA fragment was isolated with Apostle MiniMax™ High Efficiency Cell-Free DNA Isolation Kit (Standard Edition), with a final elution volume of 20uL. qPCR was performed using 1 uL of the isolated DNA, and compared with 1uL of the corresponding original mutated DNA solution at 1ng/uL, 0.1ng/uL, 0.01ng/uL, 0.001ng/uL. **A)** Amplification plot showing highly overlapping curves for mutated DNA fragment isolated with Apostle MiniMax™ High Efficiency Cell-Free DNA Isolation Kit and original DNA solution at different concentrations. **B)** qPCR standard curve generated using original mutated DNA solution, in order to quantify the recovery of DNA isolated with Apostle MiniMax™ High Efficiency Cell-Free DNA Isolation Kit. DNA isolation recovery rate was calculated to be >90%.

Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S)

– designed for small DNA fragments (<100bp)

Powered by Apostle MiniMax™ technology, Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S) is an excellent tool for the isolation of ultra-low concentration cell free DNA (cfDNA). Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S) is featured for its efficient recovery of small DNA fragments (<100 bp) from biological samples (Exhibit 8 & 9). This feature is quite useful when small DNA molecules have significant presence in the biological sample and need to be isolated (Exhibit 8).

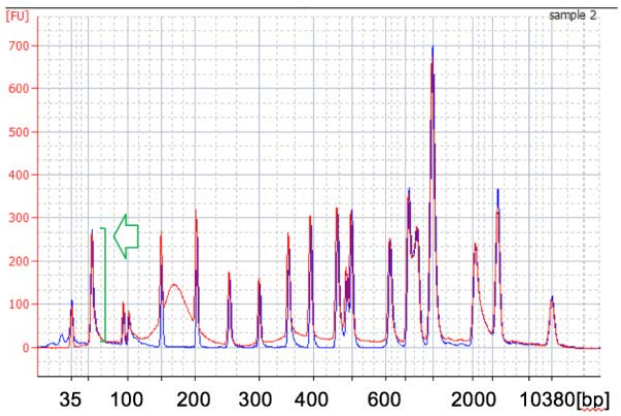

Exhibit 8. Over 95% DNA recovery in range between 50 – 3000bp. DNA ladder was spiked in serum, followed by isolation with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S). The Isolated DNA was characterized by Bioanalyzer 2100 (red curve), and compared with original DNA ladder (blue curve). Apostle MiniMax™ High Efficiency cfDNA Isolation Kit offers superior DNA recovery efficiency of >95%, including small DNA fragments at ~ 50bp as highlighted.

Compared to major alternative suppliers with magnetic bead technology, Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S) offers superior DNA isolation efficiency for cfDNA reference spiked in biological medium, especially for cfDNA with size < 80bp (Exhibit 9).

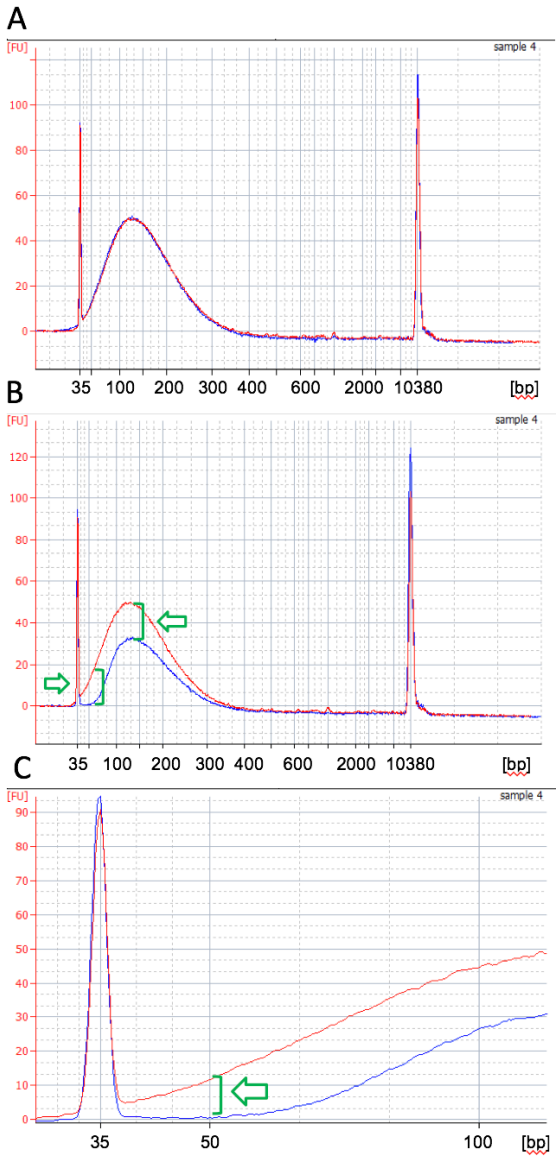

Exhibit 9. Superior small DNA isolation efficiency. **A)** cfDNA reference standard (Horizon Discovery Ltd, Cat# HD780) was spiked in TE buffer, followed by isolation with Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S). The isolated DNA was characterized by Bioanalyzer 2100 (red curve), and compared with original cfDNA reference standard (blue curve). Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S) offers >95% recovery of the cfDNA reference standard, which has significant portion of DNA fragments with size < 100bp. **B)** cfDNA reference standard was spiked in TE buffer, followed by isolation with MiniMax™ Type S and a major alternative product. Bioanalyzer 2100 analysis demonstrated significantly higher cfDNA recovery rate of MiniMax™ Type S (red curve) compared to a major alternative product (blue curve). **C)** Zoom in of B in the region between 35bp – 100 bp. MiniMax™ Type S (red curve) is compared to a major alternative product (blue curve). Bioanalyzer 2100 analysis demonstrated the efficient recovery at ~ 50bp of MiniMax™ Type S (red curve), while a major alternative product (blue curve) failed.

Single-strand DNA plays important role in various bioprocesses, and its isolation and analysis has attracted more attention. Compare to double-strand DNA, single strand DNA is more difficult to be isolated from biomedium, due to its much smaller size. Powered by Apostle MiniMax™ technology, Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S) offers excellent recovery (>95%) of single-strand DNA from biomedium (Exhibit 10), while competitor product is only able to achieve 10% recovery. This significant improvement in single-strand DNA recovery could lead to more accurate single-strand DNA analysis.

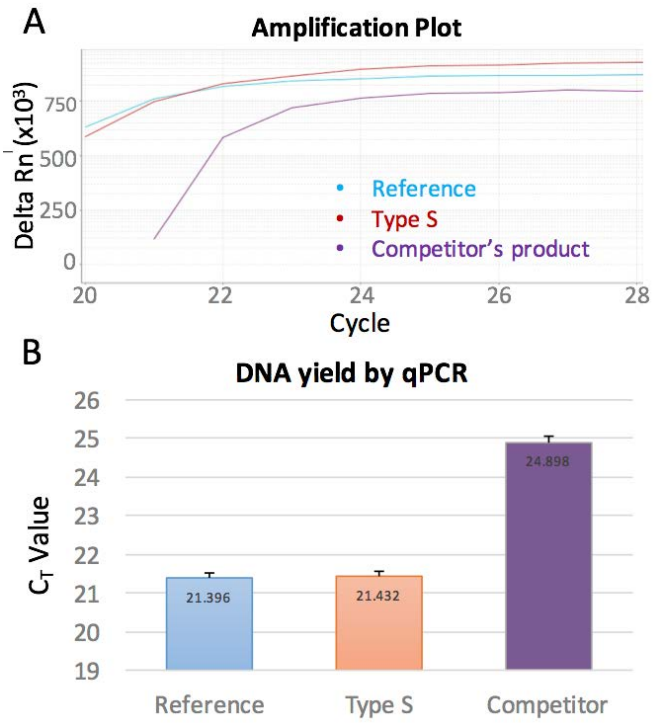

Exhibit 10. Superior efficiency in recovering single-strand DNA. 30 uL of single-strand DNA fragment containing the EGFR c.2573T>G L858R mutation (synthetic, ~170 bp) with concentration of 0.001 ng/uL, was spiked into 2 ml serum, resulting in final single-strand DNA concentration of 0.015 pg/ul. Apostle MiniMax™ High Efficiency cfDNA Isolation kit (Type S) was used to isolate DNA from the serum sample. A competitor's product was also applied for comparison. Elution volume for both products were 30 ul, same as single-strand DNA input volume. The isolated DNA was then amplified for EGFR c.2573T>G L858R mutation expression by qPCR reaction, and compared with input single-strand DNA sample. Amplification plot (**A**) and C_T value (**B**) were consistent between the original input sample (blue) and DNA isolated using Type S (red) with >95% recovery rate; while the competitor's product only achieve 10% recovery rate (purple).

Apostle MiniMax™ cfDNA Blood Collection Tube

– powered by Apostle MiniMax™ technology

Powered by Apostle MiniMax™ technology, Apostle MiniMax™ cfDNA Blood Collection Tube (Apostle MiniMax™ cfDNA BCT) offers excellent tool for blood cfDNA preservation during blood collection, storage and transport. This is achieved through Apostle MiniMax™ cfDNA BCT's ability to: 1. Prevent the release of genomic DNA from cells in blood during storage and transportation. 2. Preserve existing cfDNA in blood from degradation. 3. Prevent existing cfDNA in blood from cross-linking with other biomolecules (i.e. protein).

Storage of blood in regular EDTA tubes results in the release of significant amount of genomic DNA (Exhibit 11). The genomic DNA contamination will significantly reduce the sensitivity and accuracy of cfDNA analysis. Therefore, prevent genomic DNA contamination is one key issue in blood cfDNA preservation.

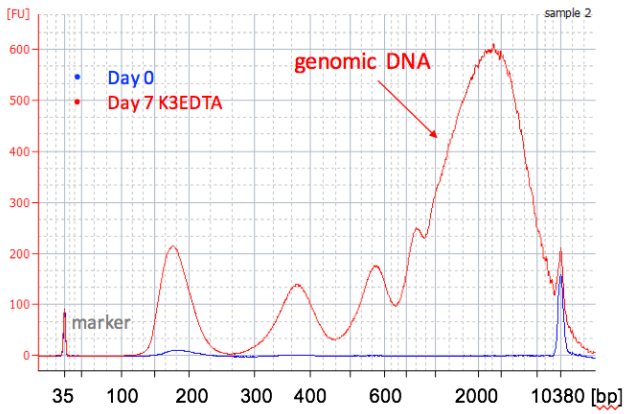

Exhibit 11. Storage of blood in EDTA tubes results in significant genomic DNA release.

Compared to samples processed immediately after collection (blue curve), significant amount of genomic DNA contamination from cells was observed in K_3EDTA tube after 7 days (red curve). K_3EDTA BCTs are not suitable for blood storage and transportation in cfDNA based applications.

Apostle MiniMax™ cfDNA BCT minimizes genomic DNA release during blood storage (Exhibit 12A) and transportation (Exhibit 12B) for at least 7 days. Minimum genomic DNA contamination leads to accurate and sensitive cfDNA analysis. Though competitor product also has the ability to prevent genomic DNA release, its chemistry causes crosslinking of DNA to other biomolecules, leading to size increase and a peak shift from 170bp to 200bp (Exhibit 12).

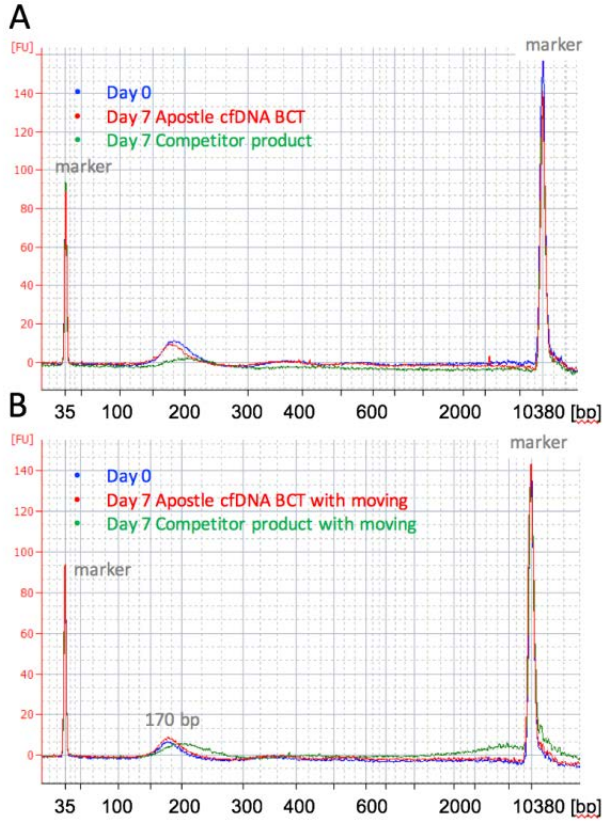

Exhibit 12. Apostle MiniMax™ cfDNA BCT minimizes genomic DNA contamination during blood storage. Blood was drawn into regular EDTA tube, Apostle MiniMax™ cfDNA BCT, and a competitor's cfDNA blood collection tube. Blood drawn in EDTA tube was processed immediately with cfDNA isolation (Day 0 reference). Blood drawn into Apostle MiniMax™ cfDNA BCT and competitor's tube were stored (A) or subject to transportation (B) for 7 days. After 7days, blood from these tubes were processed with cfDNA isolation. **A)** > 90% cfDNA were recovered from samples collected in Apostle MiniMax™ cfDNA BCT (red curve), as compared with day 0 reference (blue curve). On the other hand, blood collected in competitor's product resulted in a peak shift of isolated cfDNA from 170 bp to 200 bp (green). Minimal genomic DNA contamination was observed for blood stored in Apostle MiniMax™ cfDNA BCT for 7 days. **B)** Same conclusion was drawn as in (A), Subject the samples collected in Apostle MiniMax™ cfDNA BCT to moving conditions for 7 days doesn't result in any release of genomic DNA (red curve), comparing with day 0 reference (blue curve).

This crosslinking caused by competitor's product will affect subsequent application of isolated cfDNA. On the other hand, cfDNA preserved with Apostle MiniMax™ cfDNA BCT for 7 days shows no peak shift compared with cfDNA isolated immediately after blood collection (Exhibit 12), demonstrating high cfDNA quality preserved by Apostle MiniMax™ cfDNA BCT.

During cfDNA isolation process, according to various cfDNA isolation protocols, the proteinase K treatment of plasma can always be skipped for blood collected in EDTA tubes. However, proteinase K treatment is required for blood collected in competitor's cfDNA blood collection tube, or no cfDNA can be isolated (Exhibit 13A).

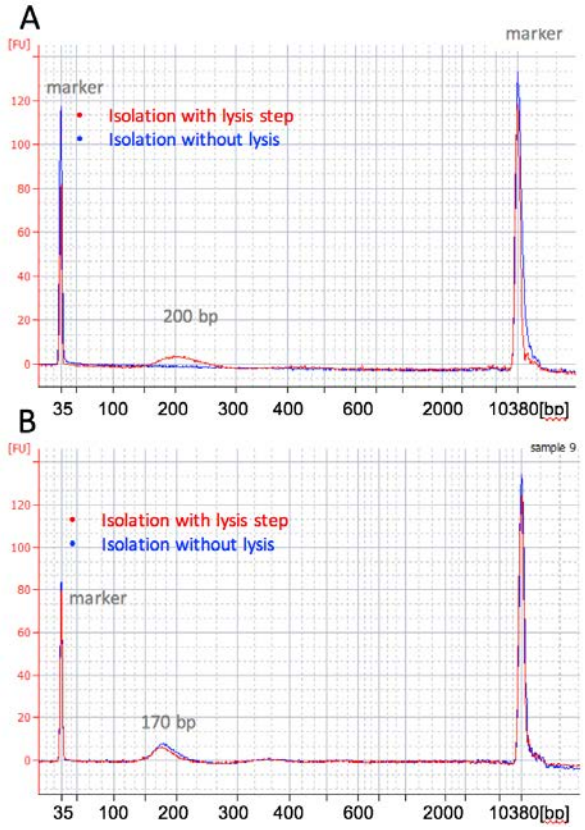

Exhibit 13. Apostle MiniMax™ cfDNA BCT minimizes cfDNA crosslinking with other biomolecules during blood storage. **A)** cfDNA was isolated from blood stored in competitor cfDNA blood collection tubes for 7 days, with or without the proteinase K lysis step. Proteinase K lysis step is required to isolate cfDNA from blood samples collected in a competitor's cfDNA blood collection tube (red curve), or no cfDNA could be isolated (blue curve). The peak of cfDNA isolated from competitor's cfDNA BCT also shifted from 170bp to 200bp after 7 days storage. **B)** cfDNA was isolated from blood stored in Apostle MiniMax™ cfDNA BCT for 7 days, with or without the proteinase K lysis step. Minimal difference was observed for cfDNA samples isolated from Apostle cfDNA BCT with (red curve) or without (blue curve) proteinase K lysis step.

This is another evidence showing the crosslinking of cfDNA with other biomolecules during blood storage in competitor's blood collection tube. On the other hands, cfDNA isolated from blood collected in Apostle MiniMax™ cfDNA BCT does not require proteinase K treatment, and has the right peak at ~170 bp (Exhibit 13B), demonstrating minimal crosslinking for cfDNA preserved with Apostle MiniMax™ cfDNA BCT.

qPCR measurement for beta-globin expression of isolated cfDNA were also performed as a mean to reflect cfDNA preservation in Apostle MiniMax™ cfDNA BCT. After 7 days storage or transportation, beta-globin expression of isolated cfDNA share the same C_T value with cfDNA isolated immediately after blood drawn in EDTA tubes (Exhibit 14), demonstrating high endogenous cfDNA recovery and quality of blood collected in Apostle MiniMax™ cfDNA BCT.

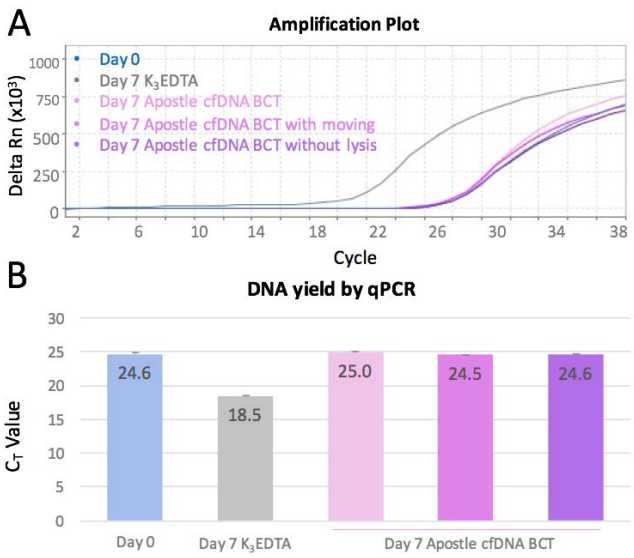

Exhibit 14. High endogenous cfDNA recovery and quality of blood collected in Apostle MiniMax™ cfDNA BCT. Fresh blood samples were collected in EDTA tubes, Apostle MiniMax™ cfDNA BCTs at the same time, and stored at room temperature for 7 days before cfDNA isolation. A reference cfDNA sample was prepared through cfDNA isolation from plasma prepared immediately after blood drawn in EDTA tube on day 0. The isolated cfDNA was amplified for beta-globin expression by qPCR. Amplification plot and C_T value were consistent among Day 0 reference and Apostle MiniMax™ cfDNA BCT, stored standstill or subject to transportation, with or without proteinase K lysis step. Due to genomic DNA contamination, Beta-globin expression of isolated cfDNA from blood stored in EDTA tubes for 7 days showed much lower C_T value.

Spike in and recover experiment was performed to further validate cfDNA recovery rate of blood stored in Apostle MiniMax™ cfDNA BCT. DNA fragment containing the EGFR c.2573T>G L858R mutation (synthetic, ~170 bp) was spiked into blood in Apostle MiniMax™ cfDNA BCTs, and recovered after 7 days storage. qPCR measurement for EGFR c.2573T>G L858R mutation expression showed no obvious difference after 7 days storage. According to C_t value, 99% of spiked in DNA was recovered, demonstrating high stability of DNA preserved with Apostle MiniMax™ cfDNA BCT (Exhibit 15).

The blood storage period using Apostle MiniMax™ cfDNA BCT can be further extended to at least 15 days. Studies showed superior endogenous and exogenous cfDNA recovery, with no genomic DNA contamination or biomolecule cross-link after 15 days blood storage (Exhibit 16 -18).

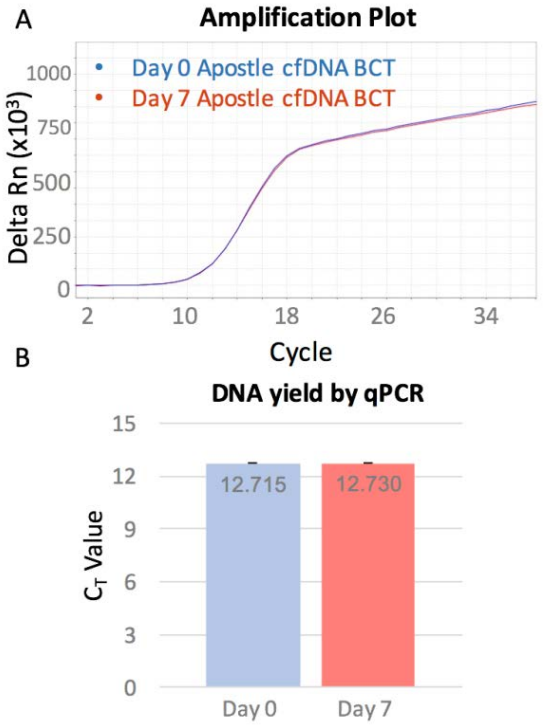

Exhibit 15. High exogenous cfDNA recovery and quality of blood collected in Apostle MiniMax™ cfDNA BCT. Fresh blood sample from the same individual was collected in multiple Apostle MiniMax™ cfDNA BCTs and 100 uL of DNA fragment containing the EGFR c.2573T>G L858R mutation (synthetic, ~170 bp) with concentration of 0.01 ng/uL, was spiked into the BCTs. Blood in one Apostle MiniMax™ cfDNA BCT was processed immediately (Day 0 reference), and the other Apostle MiniMax™ cfDNA BCTs was stored at room temperature for 7 days, until cfDNA was isolated (Day 7). The isolated cfDNA was then amplified for EGFR c.2573T>G L858R mutation expression by qPCR. Amplification plot and C_T value were consistent between Day 0 reference and cfDNA isolated from Apostle cfDNA BCT on day 7.

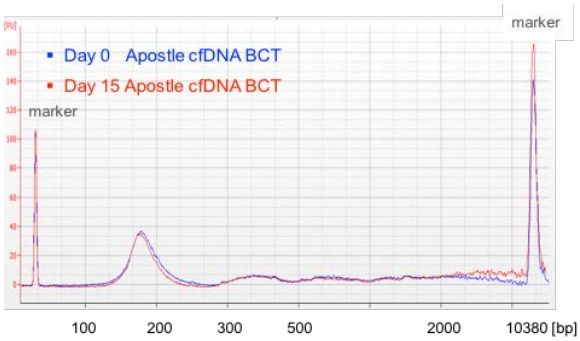

Exhibit 16. Apostle MiniMax™ cfDNA BCT minimizes genomic DNA contamination after 15 days of blood storage. Blood was drawn into multiple Apostle MiniMax™ cfDNA BCTs, were processed immediately with cfDNA isolation (Day 0 reference), or processed after 15 days (Day 15). > 90% cfDNA were recovered from samples collected in Apostle MiniMax™ cfDNA BCT with no peak shift or gnomic DNA contamination (red curve), as compared with day 0 reference (blue curve).

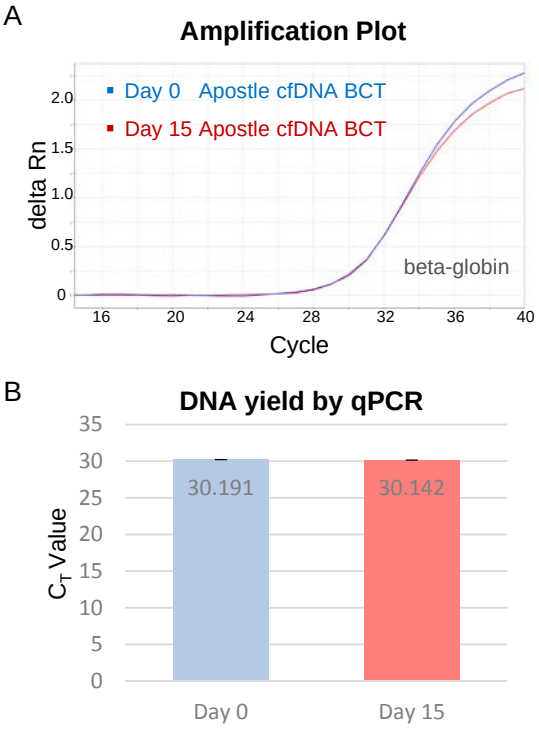

Exhibit 17. High endogenous cfDNA recovery and quality of blood collected in Apostle MiniMax™ cfDNA BCT after 15 days. Fresh blood samples were collected in multiple Apostle MiniMax™ cfDNA BCTs at the same time, and stored at room temperature for 15 days before cfDNA isolation. A reference cfDNA sample was prepared through cfDNA isolation from plasma prepared immediately after blood drawn on day 0. The isolated cfDNA was amplified for beta-globin expression by qPCR. Amplification plot and C_T value were consistent among Day 0 reference and sample stored at room temperature for 15 days.

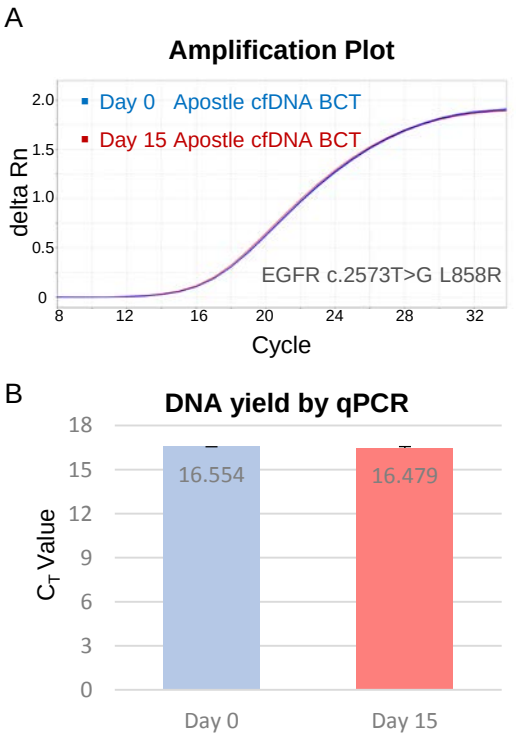

Exhibit 18. High exogenous cfDNA recovery and quality of blood collected in Apostle MiniMax™ cfDNA BCT for 15 days. Fresh blood sample from the same individual was collected in multiple Apostle MiniMax™ cfDNA BCTs and 100 uL of DNA fragment containing the EGFR c.2573T>G L858R mutation (synthetic, ~170 bp) with concentration of 0.001 ng/uL, was spiked into the BCTs. Blood in one Apostle MiniMax™ cfDNA BCT was processed immediately (Day 0 reference), and the other Apostle MiniMax™ cfDNA BCTs was stored at room temperature for 15 days, until cfDNA was isolated (Day 15). The isolated cfDNA was then amplified for EGFR c.2573T>G L858R mutation expression by qPCR. Amplification plot and C_T value were consistent between Day 0 reference and cfDNA isolated from Apostle cfDNA BCT on day 15.

In summary, high cfDNA quality can be preserved with Apostle MiniMax™ cfDNA Blood Collection Tube for downstream applications, through the prevention of cfDNA degradation, crosslinking and contamination.

Apostle MiniMax™ High Efficiency cfRNA Isolation Kit

– designed for high efficiency cfRNA isolation

cfRNAs in biofluids like serum or plasma usually presents as short fragments < 1000 nt, and even smaller cell-free miRNA ~ 20 nt. Although the concentration of cfRNAs is extremely low, cfRNAs are crucial biomarkers for cancer and other diseases. Powered by Apostle MiniMax™ technology, this cfRNA isolation kit is featured for its efficient recovery of all RNAs in the range between 17-1000 nt, without using phenol or chloroform. Superior RNA isolation efficiency for RNA ladders spiked in biological medium can be achieved (Exhibit 19), and ready for a broad range of subsequent applications, including sequencing, PCR, etc.

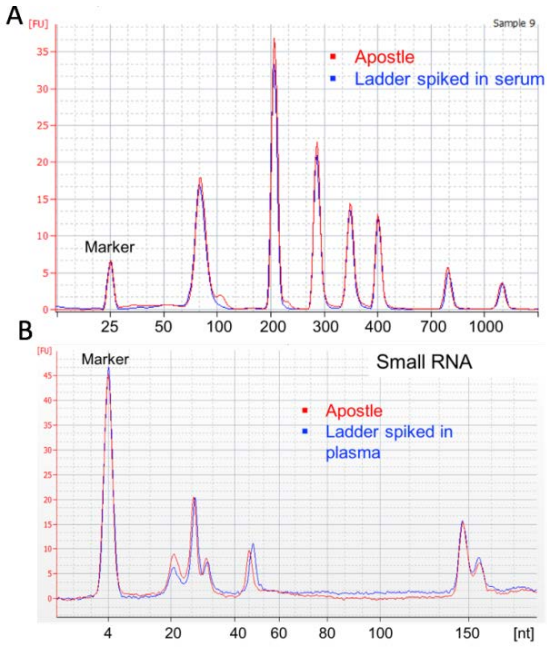

Exhibit 19. Over 90% RNA recovery in range between 17 – 1000 nt. RNA (100-1000 nt) and small RNA ladder (17-150 nt) was spiked in serum or plasma, followed by isolation with Apostle MiniMax™ High Efficiency cfRNA Isolation Kit (red curve), and compared with original RNA ladder (blue curve) using Bioanalyzer 2100 (A) RNA pico kit for 100-1000 nt and (B) small RNA kit for 17-150 nt fragments. Apostle MiniMax™ High Efficiency cfRNA Isolation Kit offers superior RNA and small RNA recovery efficiency of > 90%.

Apostle MiniMax™ High Efficiency cfRNA Isolation Kit is suitable for processing plasma collected in various major blood collection tubes (BCTs). Compared to other competitors (a major column-based product), Apostle MiniMax™ High Efficiency cfRNA Isolation Kit provides consistently better performance (1.1-2000 times higher, Exhibit 20).

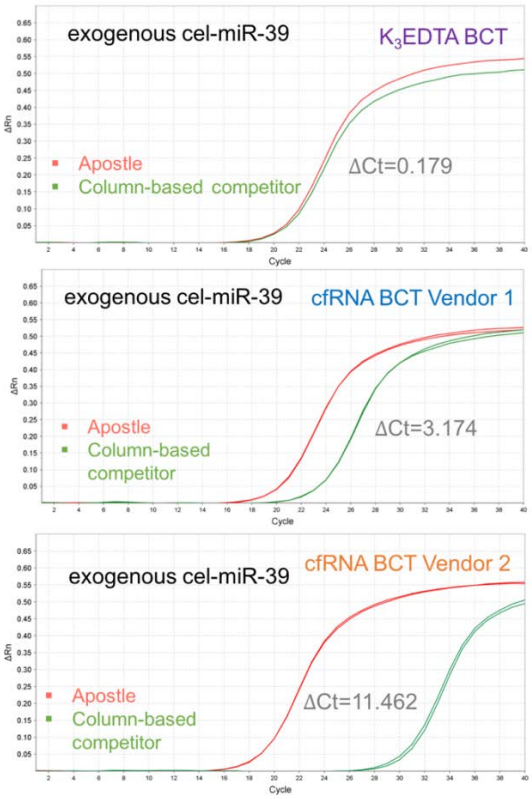

Exhibit 20. 1.1 to 2000 times higher exogenous RNA recovery rate than a column-based major alternative product. cfRNA was isolated from plasma using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit (red) or a column-based major competitor (green). A synthetic RNA mimic cel-miR-39 was spiked in during the extraction procedure as the reference to evaluate recovery rate. The qPCR amplification plot and C_T value show 1.1, 9, and 2000 times higher RNA recovery rate when compared to column-based major alternative product for plasma collected in K_3EDTA tube, cfRNA BCT vendor 1, or cfRNA BCT vendor 2, respectively.

The conclusion is further confirmed by endogenous mRNA and miRNAs isolation and qPCR measurements. cfRNA was isolated from 200 uL plasma, using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit, and a major column based competitor. Blood were collected in K_3EDTA BCTs or major specialized cfRNA BCTs and processed to obtain cell-free plasma. Beta-globin, miR-21, miR-U6, and miR-15a were measured by qPCR using the isolated cfRNA, where Apostle MiniMax™ High Efficiency cfRNA Isolation Kit provides 1.1-480 times higher isolation efficiency compared to major competitor (Exhibit 21-23).

In summary, Apostle MiniMax™ High Efficiency cfRNA Isolation Kit offers superior isolation efficiency of cell-free RNAs between 17 nt to 1000 nt, without phenol or chloroform. It is suitable for processing samples collected in various major blood collection tubes, especially specialized cfRNA BCTs which will prevent RNA degradation during storage.

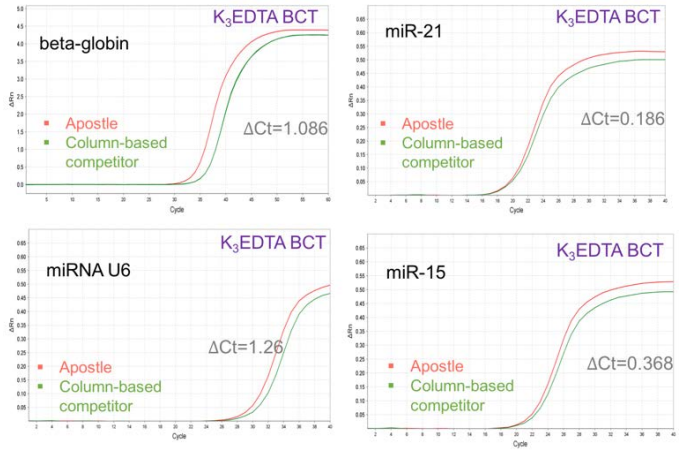

Exhibit 21. 1.1 to 2.4 times higher RNA recovery rate than a column-based major alternative product. cfRNA was isolated from plasma (collected in K_3EDTA BCT) using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit (red) or a major alternative product (green). RNA and small RNA targets including beta-globin, miR-21, U6, and miR-15 were quantified by qPCR amplification plots and C_T values. The cfRNA amount isolated using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit are 1.1 to 2.4 times higher than the column-based alternative product.

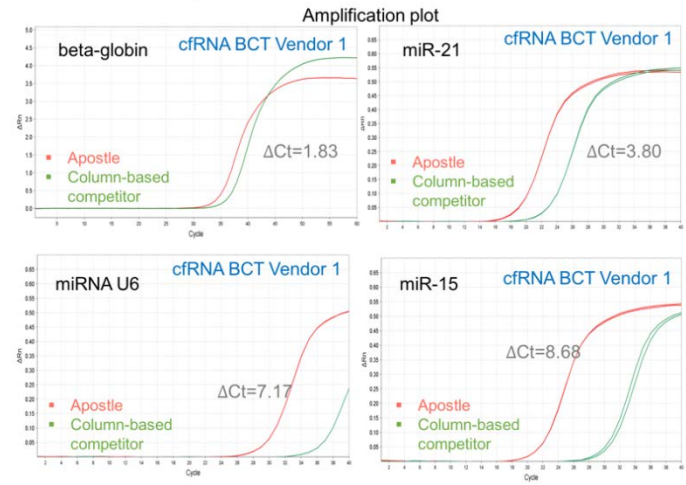

Exhibit 22. 3.5 to 480 times higher RNA recovery rate than a column-based major alternative product. cfRNA was isolated from plasma (collected in cfRNA BCT vendor 1) using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit (red) or a major alternative product (green). RNA and small RNA targets including beta-globin, miR-21, U6, and miR-15 were quantified by qPCR amplification plots and C_T values. The amount of cfRNA isolated using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit are 3.5 to 480 times higher than the column-based alternative product.

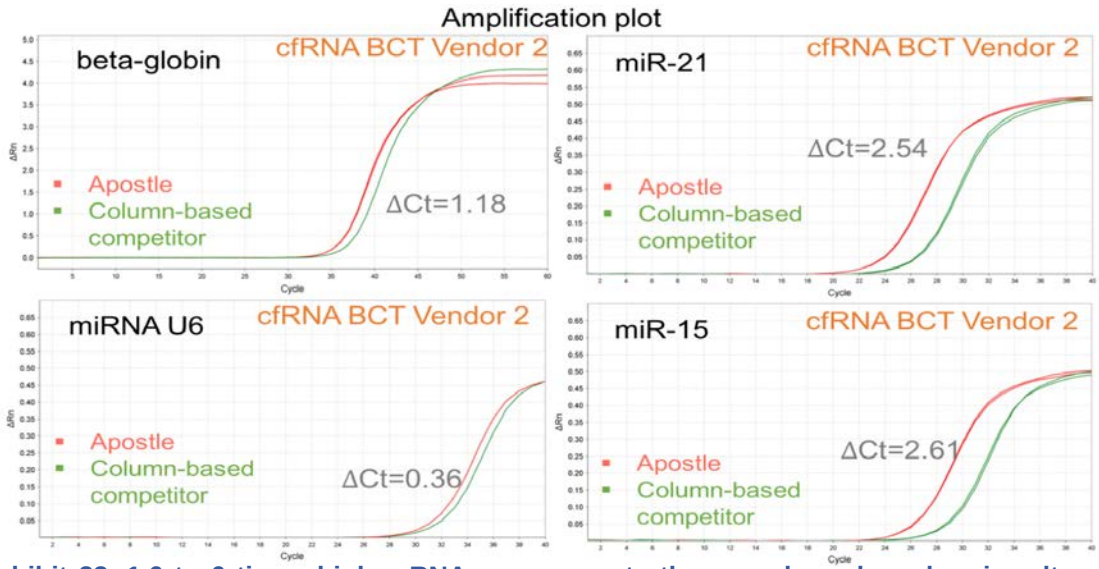

Exhibit 23. 1.6 to 6 times higher RNA recovery rate than a column-based major alternative product. cfRNA was isolated from plasma (collected in cfRNA BCT vendor 2) using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit (red) or a major alternative product (green). RNA and small RNA targets including beta-globin, miR-21, U6, and miR-15 were quantified by qPCR amplification plots and C_T values. The amount of cfRNA isolated using Apostle MiniMax™ High Efficiency cfRNA Isolation Kit are 1.6 to 6 times higher than the column-based alternative product.

Order Information

contact: order@apostlebio.com

For research use only, not for diagnostic procedures.

Product	Cat #
Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Standard Edition)	A17622
Apostle MiniMax™ High Efficiency cfDNA Isolation Kit (Type S)	A17830
Apostle MiniMax™ High Efficiency cfRNA Isolation Kit	A18312
Apostle MiniMax™ Magnetic Nanoparticles	A320
Apostle MiniMax™ cfDNA Blood Collection Tube	A17930