

SFD-HT (Short Fragment Depletor – High Throughput)

Tunable Reagent for Efficient Elimination of DNA Fragments <10 kb, <25 kb and <40 kb designed for Long-Read Sequencing

Performance Data



1. Elimination of Fragments <10 kb: SFD-HT
2. Elimination of Fragments <25 kb: SFD-HT vs. Company PB's SRE Kit
3. Elimination of Fragments <40 kb: SFD-HT vs. Company PB's SRE XL Kit

SFD-HT Performance Data

Elimination of Fragments <10 kb

Human Blood Sample: gDNA Treatment with SFD-HT (Elimination of Fragments <10 kb)

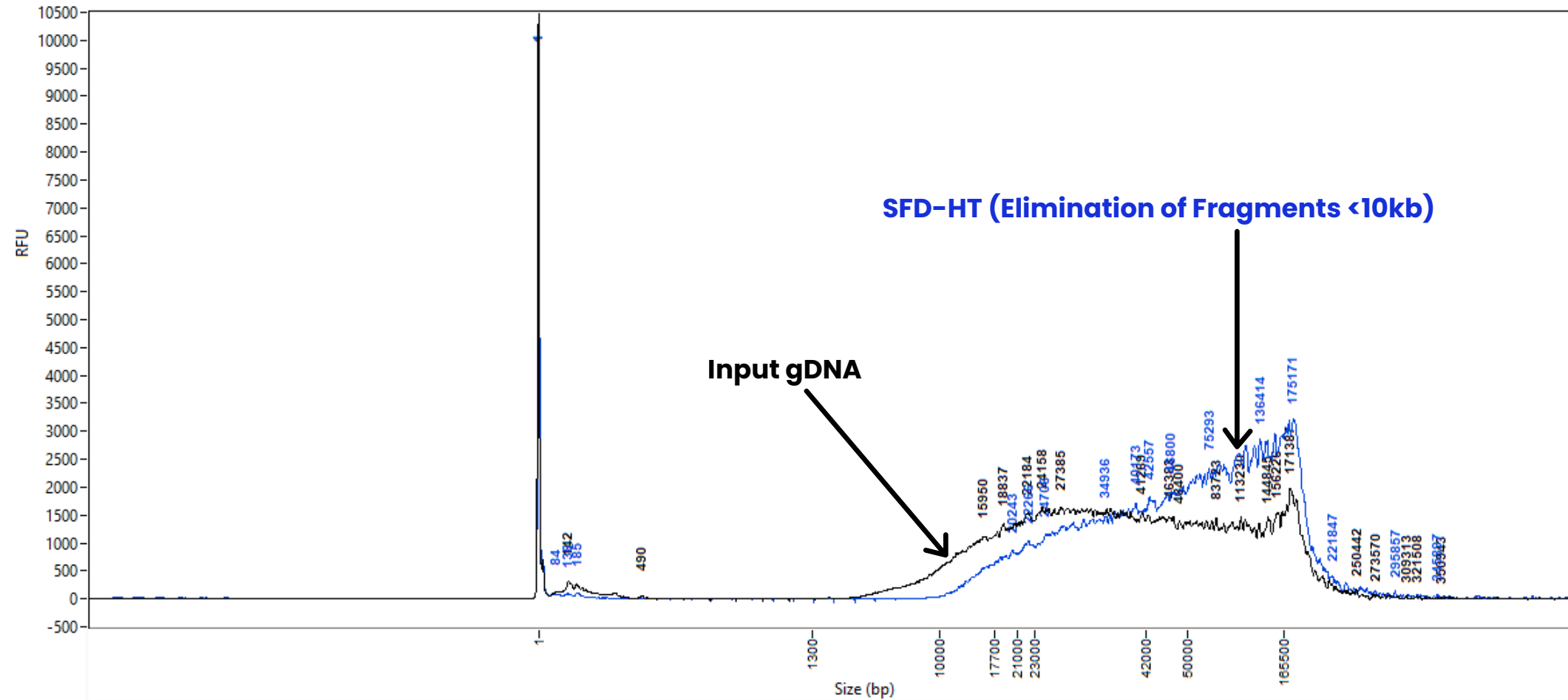
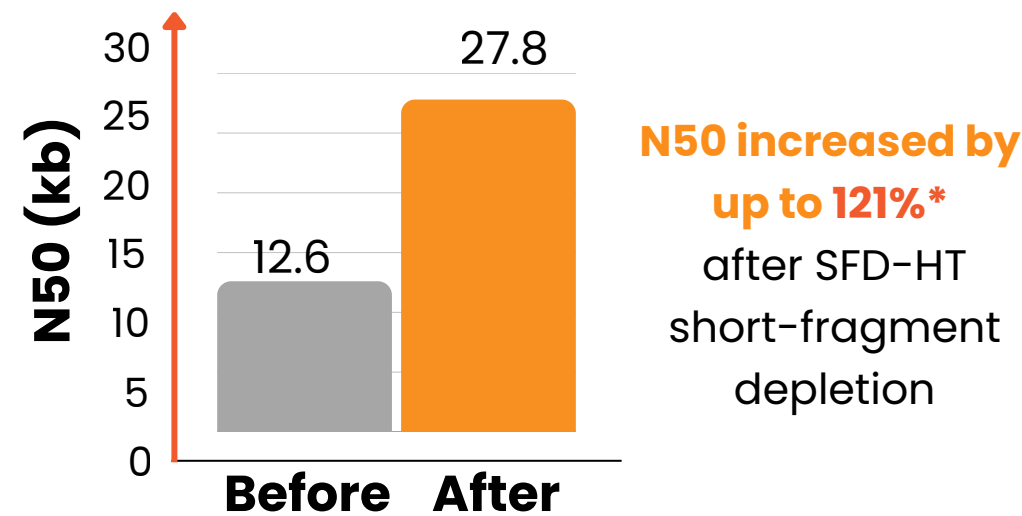


Figure 1: FemtoPulse analysis showing fragment length profiles of gDNA extracted from human blood using our HighPrep Blood & Tissue DNA Kit. Before and After treatment with SFD-HT (Elimination of Fragments <10 kb)

- SFD-10HT offers consistent efficiency in eliminating fragments <10 kb
- It provides a significant enhancement in input DNA quality
- Improves mean read length & N50 values
- Optimizes samples for long-read sequencing



**Results are dependent on Input DNA quality and concentration*

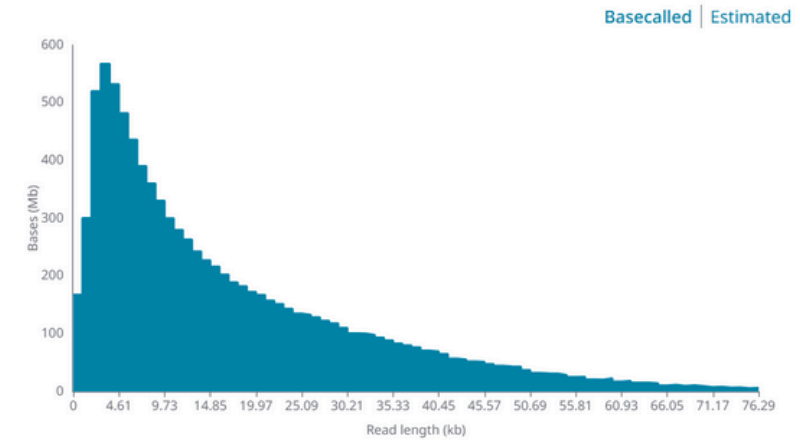
SFD-HT Increases Blood gDNA N50

BEFORE

READ LENGTHS · OUTLIERS REMOVED

The read length graph shows the total number of bases vs the read length. The longest 1% of strands are classified as outliers, and excluded to allow focus on the main body of data.

N50* **12.6 kb** % Basecalled **100 %**



*N50 calculated from basecalled read length histogram.

OUTLIERS

The longest 1% of strands are classified as outliers, and aggregated into groups to show their relative amounts.

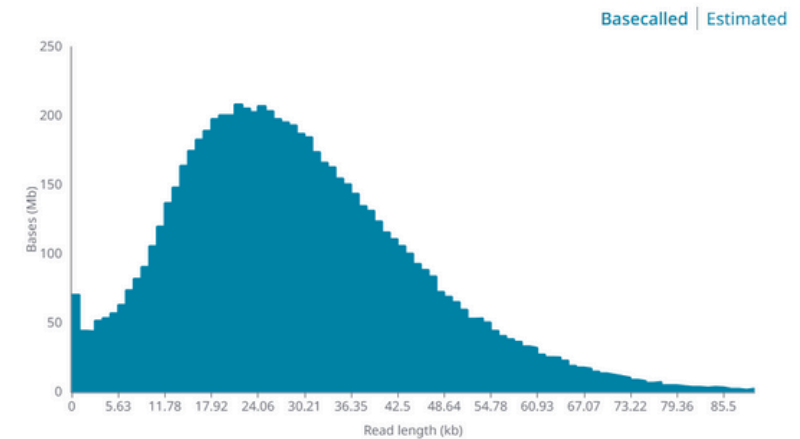
Read length (kb)	Bases (Mb)
73.728 - 335.872	72.43
335.872 - 598.016	0.86
598.016 - 794.624	1.56

AFTER

READ LENGTHS · OUTLIERS REMOVED

The read length graph shows the total number of bases vs the read length. The longest 1% of strands are classified as outliers, and excluded to allow focus on the main body of data.

N50* **27.8 kb** % Basecalled **100 %**



*N50 calculated from basecalled read length histogram.

OUTLIERS

The longest 1% of strands are classified as outliers, and aggregated into groups to show their relative amounts.

Read length (Mb)	Bases (Mb)
0.082 - 0.344	55.93
0.344 - 0.606	12.05
0.606 - 0.868	5.55
0.868 - 1.13	2.04

Figure 2. The plot shows the effect of SFD-HT's (<10 kb) size selection on gDNA extracted from human blood using MagBio's HighPrep Blood & Tissue DNA Kit.

- **Before:** Input gDNA's read length distribution is biased toward shorter reads, with N50 of **12.6 kb**.
- **After:** Post SFD-HT's (<10 kb) size selection, the N50 increases to **27.8 kb**, and the distribution shifts strongly toward longer reads.

SFD-HT Comparative Data Analysis

Elimination of Fragments <25 kb

Selection of Fragments >25 kb: SFD-HT vs. Company PB's SRE Kit

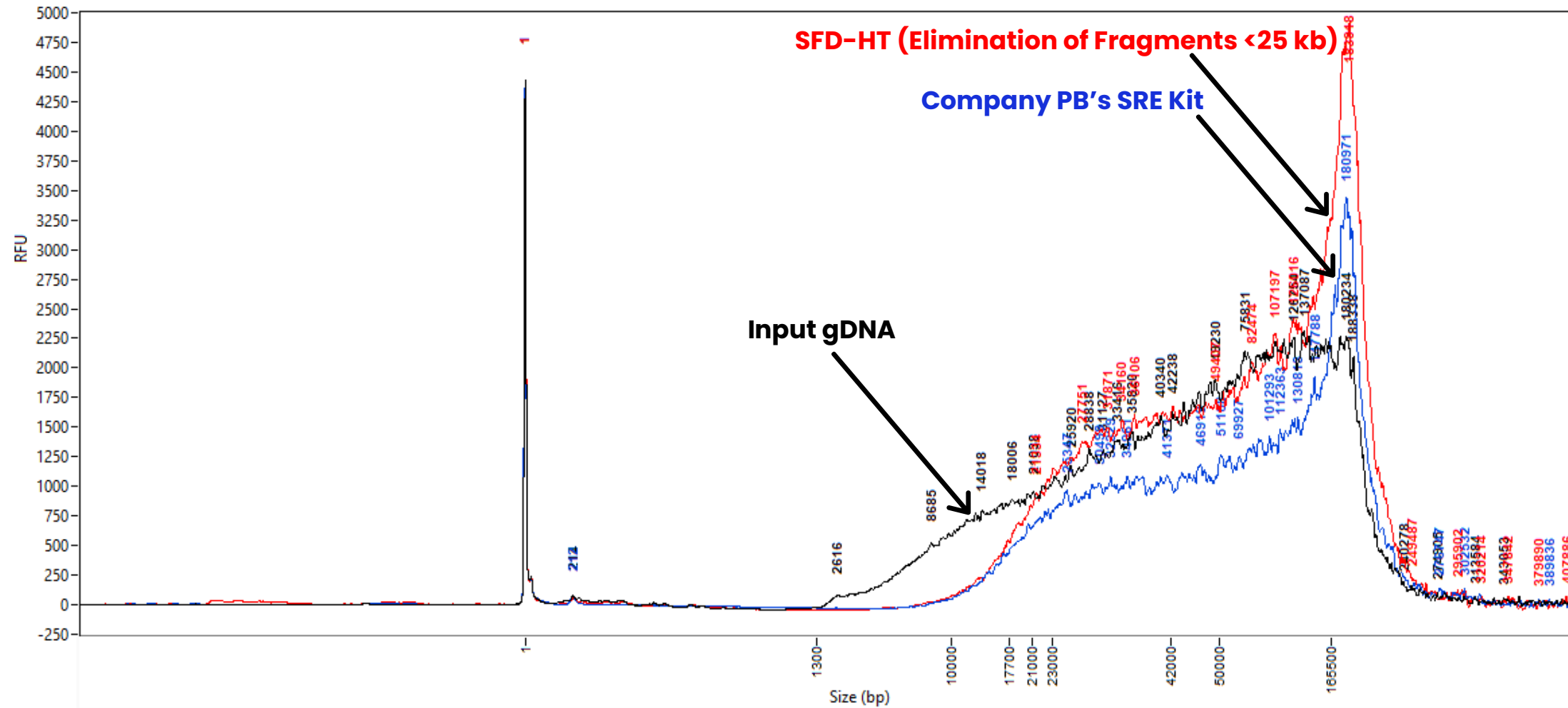


Figure 3: Femtopulse traces for post selection of >25 kb fragments.

Smear Analysis

Sample ID	Range	ng/uL	% Total	nmole/L	Avg. Size	Size Threshold (b.p.)	DQN
SFD-HT (Elimination of Fragments <25 kb)	25 -300 kb	0.6178	88.5	0.0099	102922	25000	8.9
Company PB's SRE Kit	25 -300 kb	0.4124	86.8	0.0066	103026	25000	8.7
Input gDNA	25 -300 kb	0.5317	76.1	0.0098	89339	25000	7.6

- Delivers higher long-fragment enrichment vs SRE Kit**
 Smear Analysis shows 88.5% for SFD-HT (<25 kb) vs 86.8% for SRE Kit of DNA in the 25–300 kb fraction, indicating stronger retention in the target long-DNA window.
- Improves DNA integrity beyond SRE Kit**
 DQN increases from 7.6 (Input) to 8.9 for SFD-HT (<25 kb) vs 8.7 for SRE Kit, supporting higher-integrity DNA for downstream long-read sequencing.
- Higher recovery in the target long-DNA fraction**
 SFD-HT (<25 kb) yields 0.6178 ng/μL in the 25–300 kb range vs 0.4124 ng/μL with SRE Kit (~50% higher), with Femto Pulse confirming a right-shifted profile vs Input gDNA consistent with long-fragment enrichment.
- Matched fragment sizing in the enriched fraction**
 Average fragment size is essentially identical, with SFD-HT (<25 kb) ~102.9 kb vs SRE Kit at ~103.0 kb; supporting equivalent size-selection behavior with higher overall recovery.
- Bead-based chemistry enables automation at scale**
 The magnetic-bead format of SFD-HT (<25kb) is inherently compatible with plate-based and automated liquid-handling systems, facilitating evaluation in medium- to high-throughput long-read workflows.
- Automation-ready replacement**
 Reduce hands-on time with SFD-HT (<25 kb) via streamlined automation, with performance comparable to Company PB's SRE Kit.

SFD-HT Comparative Data Analysis

Elimination of Fragments <40kb

Selection of Fragments >40kb: SFD-HT vs. Company PB's SRE XL Kit

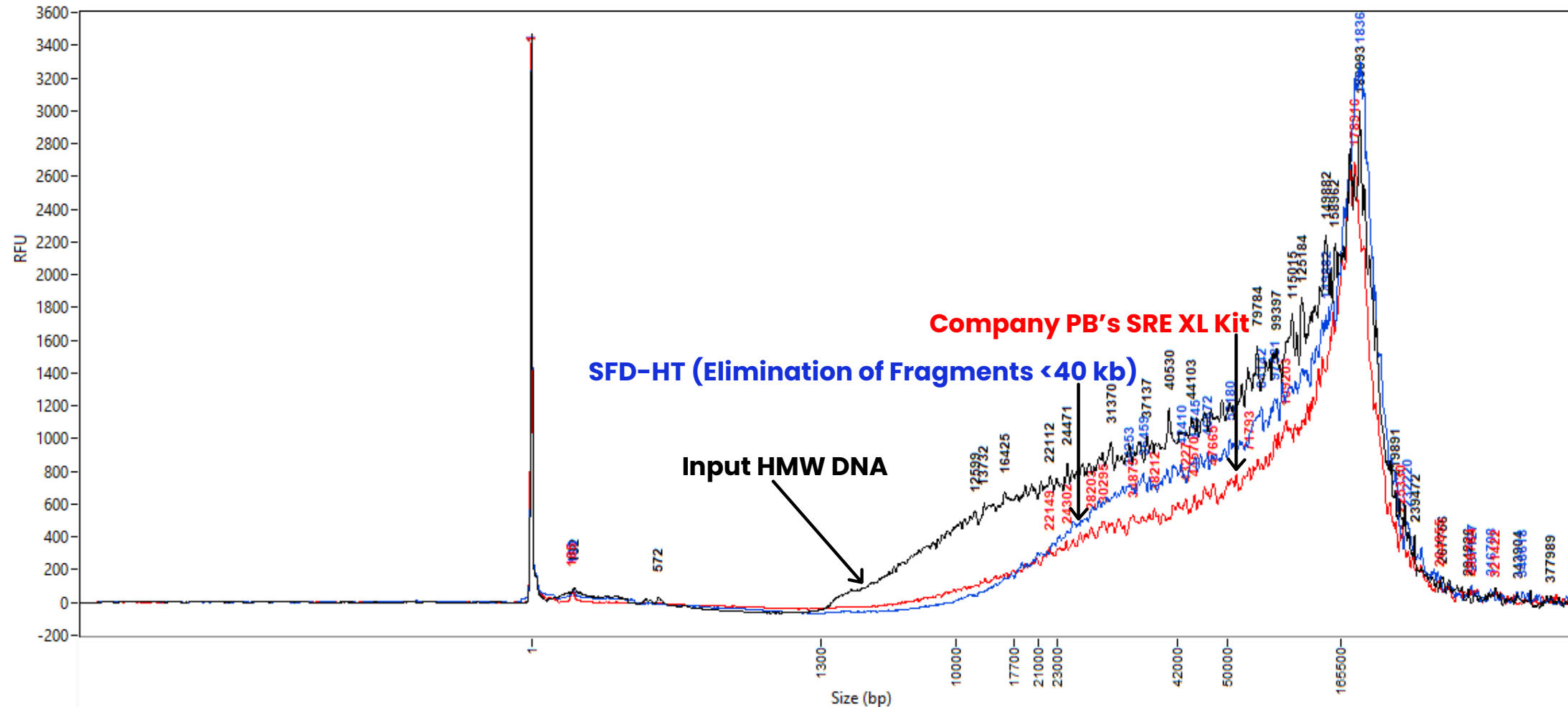


Figure 4: Femto-pulse traces for post selection of 40 kb fragments.

Smear Analysis

Sample ID	Range	ng/uL	% Total	nmole/L	Avg. Size	Size Threshold (b.p.)	DQN
SFD-HT (Elimination of Fragments <40kb)	40000 bp to 400000 bp	0.1281	76.1	0.0016	133050	40000	7.6
Company PB'S SRE XL Kit	40000 bp to 400000 bp	0.1074	75.5	0.0013	133365	40000	7.6
Input HMW DNA	40000 bp to 400000 bp	0.16	60.5	0.0021	124052	40000	6.1

- **Comparable >40 kb enrichment**

Both SFD-HT (<40 kb) and Company PB's SRE XL Kit produce a right-shifted Femto Pulse profile vs Input HMW DNA, confirming enrichment of fragments >40 kb.

- **Improves DNA integrity**

DQN increases from 6.1 (Input) to 7.6 after treatment with either kit, supporting high-integrity DNA for long-read sequencing.

- **Equivalent performance in the target window (40–400 kb)**

Smear Analysis shows 76.1% for SFD-HT (<40 kb) vs 75.5% for SRE XL Kit in the 40–400 kb range.

- **Higher recovered material in the target size range**

Smear Analysis concentration in the 40–400 kb window is 0.1281 ng/μL for SFD-HT (<40 kb) vs 0.1074 ng/μL for SRE XL Kit, which is ~19% higher, supporting more usable long-fragment input.

- **Preserves ultra-long DNA while enriching >40 kb**

SFD-HT (<40 kb) maintains strong retention into the ≥100 kb region while delivering robust >40 kb enrichment.

- **Matched fragment sizing**

Average fragment size is essentially identical, with SFD-HT (<40 kb) at 133.1 kb vs SRE XL at 133.4 kb.

- **Centrifugation-free and automation-ready**

Like Company PB's SRE XL, SFD-HT (<40 kb) requires no centrifugation and is automation-friendly; streamlining processing while preserving long-fragment performance.