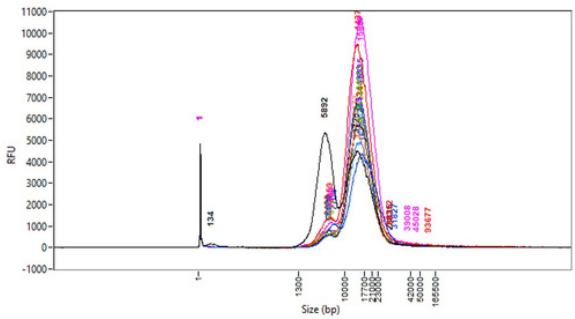
SFD-10HT
Performance Data Analysis

SFD-10HT allows for the progressive depletion of short DNA fragments less than 10 kb. Removing these fragments decreases the number of reads below 10 kb, resulting in an improved mean read length. This enhancement leads to better sequence assembly and alignment outcomes, as longer reads provide more context and overlap, facilitating more accurate genomic sequence reconstruction. Additionally, SFD-10HT exhibits a high tolerance to a wide range of concentrations (0.5–150 ng/µL) and demonstrates an improved DNA Quality Number (DQN).

A. Progressive Depletion of <10 kb DNA fragments:

SFD-10HT's Tolerance to a wide range of DNA concentrations

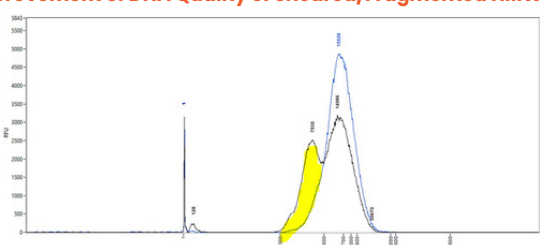


C11 : sheared DNA-Input DNA (control, no selection)
C1: selection of 150 ng/µL DNA- replica 1
C3: selection of 80 ng/µL DNA replica 1
C4: selection of 80 ng/µL DNA replica 2
C5: selection of 50 ng/µL DNA replica 1
C6: selection of 50 ng/µL DNA replica 2
C7: selection of 27.5 ng/µL DNA replica 1
C8: selection of 27.5 ng/µL DNA replica 2
C9: selection of 9.50 ng/µL DNA replica 1
C10: selection of 9.50 ng/µL DNA replica 2

Figure 1: Femtopulse traces - Sheared DNA was diluted to different concentrations and 0.4x bead ratio of SFD-10HT was used to remove DNA fragments less than 10 kb.

SFD-10HT offers consistent efficiency in removing fragments less than 10 kb across a wide range of DNA concentrations

B. Improvement of DNA Quality of Sheared/Fragmented HMW DNA (15-20 kb)



C10: QC Sheared DNA SFD-10HT
C11: Control

Figure 2: Sheared DNA with fragments >10 kb (55.8%)-see smear analysis Table 1. After removal of fragments <10 kb with SFD-10HT, the sample quality was improved **from 55.8% to 84.4%**. The DQN was also improved from **5.6 to 8.4**.

Table 1: Smear Analysis-Sheared HMW DNA (10-15 kb)

Sample ID	Range	% Total	Avg. Size	%CV	Size Threshold (b.p.)	DQN
Sheared HMW DNA -post short fragments removal	10000 bp to 300000 bp	84.4	17180	25.19	10000	**8.4**
Control input-Sheared HMW DNA	10000 bp to 300000 bp	55.8	16837	25.64	10000	**5.6**

SFD-10HT provides a significant enhancement in input DNA quality, optimizing samples for long-read sequencing