

Rapid and Accurate Sample QC with the
FEMTO *Pulse*[™] Automated CE Instrument

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2017

FEMTO *Pulse*™ Automated CE Instrument

LAUNCHED THIS YEAR AT AGBT 2017

Femtogram Level Sensitivity Down to 5 fg/μL,
in well concentration

Separation of DNA Through 200,000bp
in 1 hour



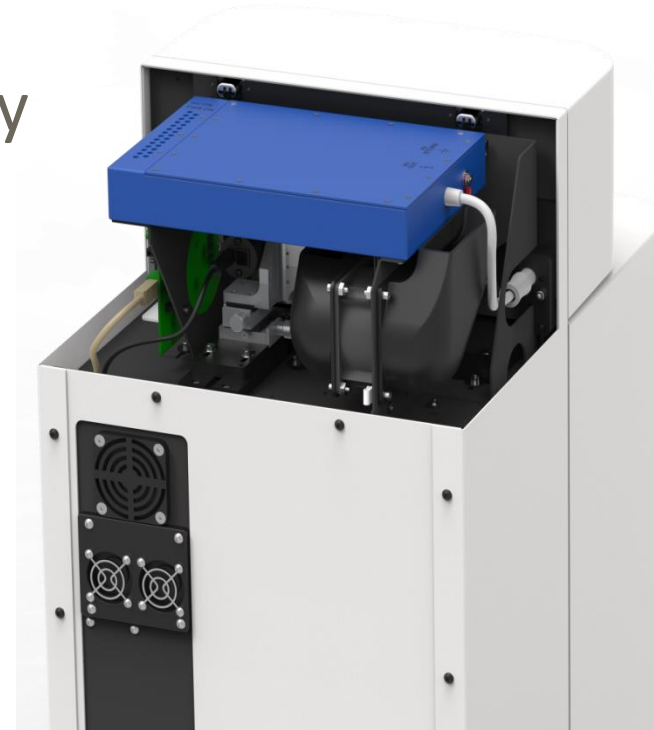
FEMTO Pulse™

- Built on the Fragment Analyzer frame
- Holds a 12 capillary array
- 3 x 96 well plates
- Two gel bottles
- Three Reagent Kits



FEMTO *Pulse*[™]

- Compact Pulsed-Field Power Supply
- High-Power LED
- Advanced Optical Engineering



<http://www.pacb.com/wp-content/uploads/Baybayan-PAG-2017-Best-Practices-for-Whole-Genome-Sequencing-Using-the-Sequel-System.pdf>



Best Practices for Whole Genome Sequencing Using the Sequel System

Nick Sisneros, Shreyasee Chakraborty, Sarah Kingan, Richard Hall, Joan Wilson, Christine Lambert, Kevin Eng, Emily Hatas and Primo Baybayan
PacBio, 1380 Willow Road, Menlo Park, CA 94025



D. Advanced Analytical FEMTO Pulse™ Automated Pulsed-Field CE Instrument

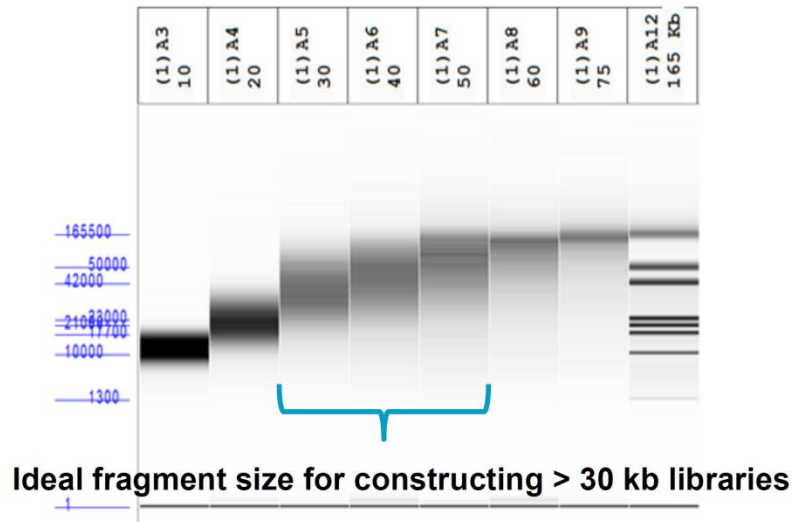
Sample QC Highly Recommended

While both CHEF Mapper and Pippin Pulse are reliable systems for characterizing genomic DNA, electrophoresis run times are intensive (>16 hrs) and require significant amount of DNA as input. Advanced Analytical's FEMTO Pulse instrument (**D**) is a fast high-resolution capillary based electrophoresis system able to resolve fragments up to 165 kb in one hour, ideal when constructing large-insert libraries. More importantly, the system requires picogram (pg) quantities of DNA.



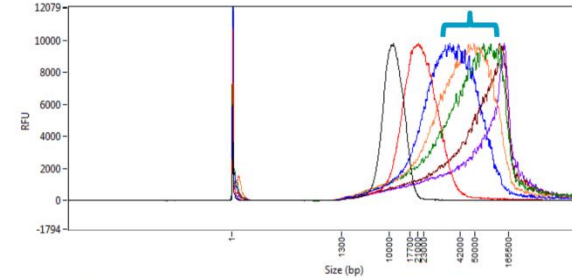
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diagenode

A. Megaruptor shears loaded on FEMTO Pulse



B. FEMTO Pulse Electropherograms of shears

Label	Peak Max	Average
10 kb	11304	12245
20 kb	21245	24123
30 kb	36399	46143
40 kb	49495	60600
50 kb	78351	75416
60 kb	134525	92133
75 kb	149225	104512

C. Sizing report of shears

To demonstrate shearing performance of the Megaruptor, a high molecular weight human genomic DNA was sheared to 10, 20, 30, 40, 50, 60, and 75 kb fragments. In this example, 30, 40, and 50 kb shears are best conditions for constructing >30 kb libraries.

FEMTO Pulse™

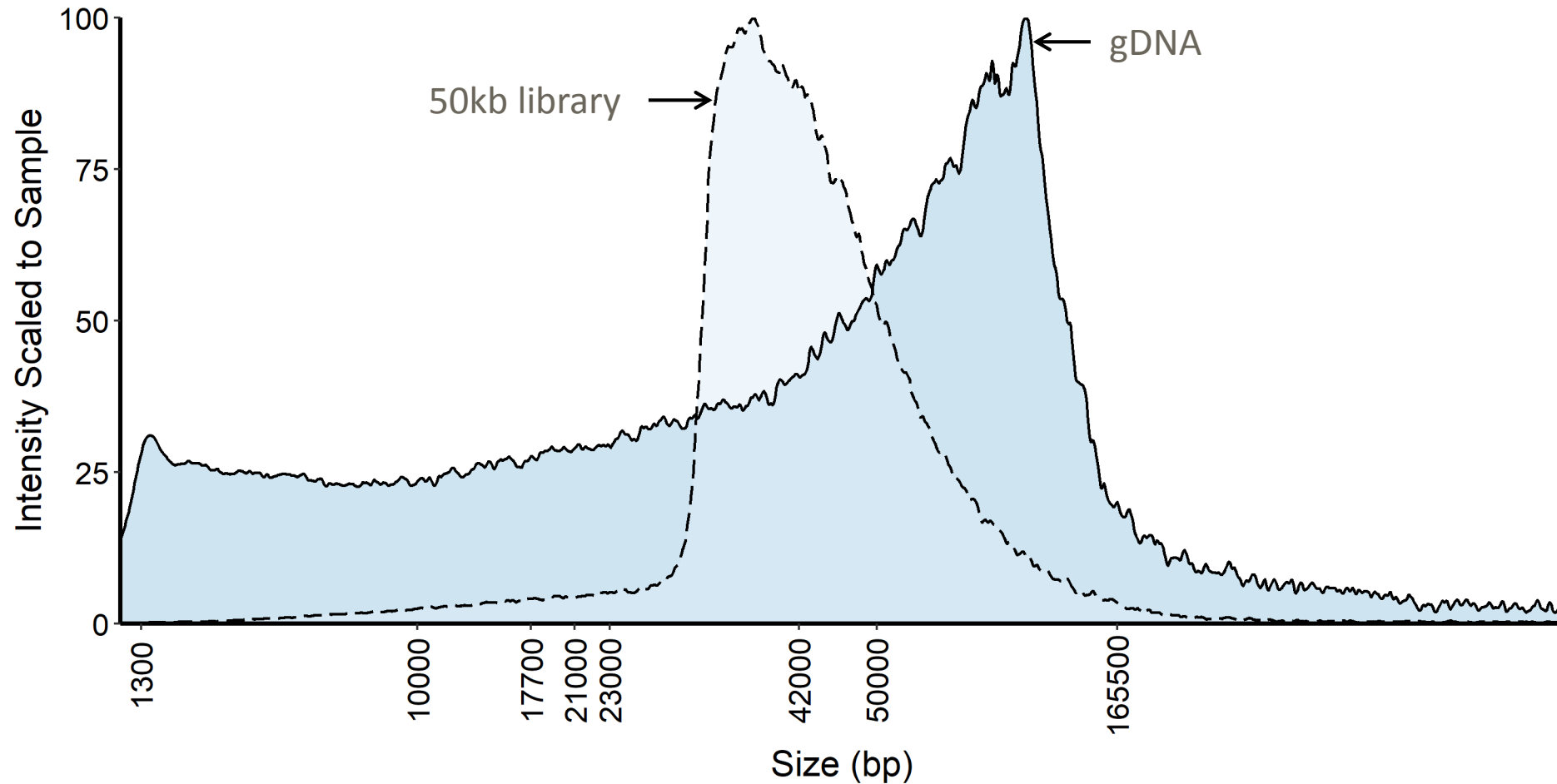


Eliminate **ALL**
Overnight PFGE



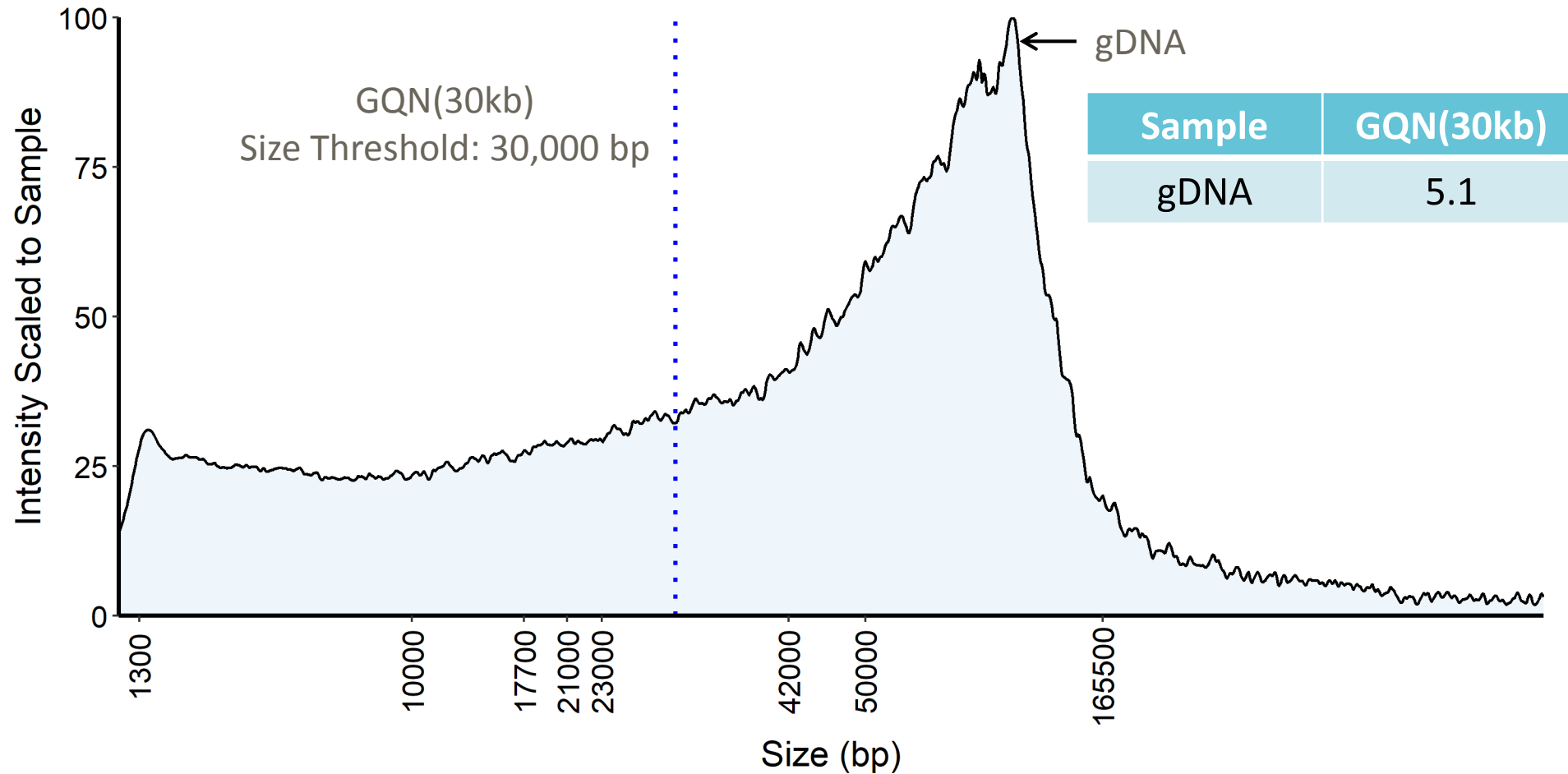
Case Study: Construction of a 50kb insert library

QB3 - UC Berkeley Genomic Sequencing Lab



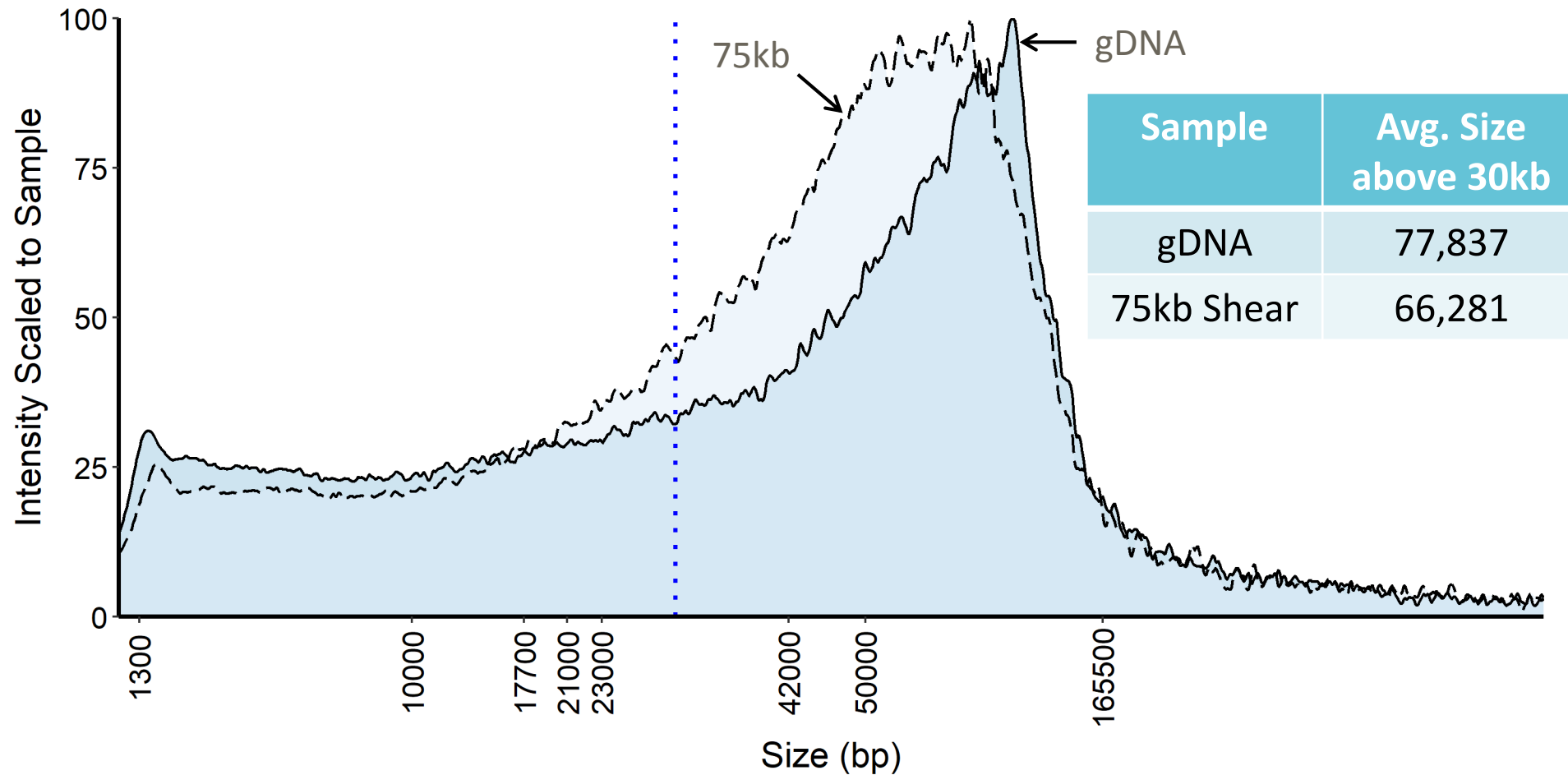
Data courtesy of Shana McDevitt, QB3 - UC Berkeley Genomic Sequencing Lab

Case Study: Assess Genomic Quality with GQN



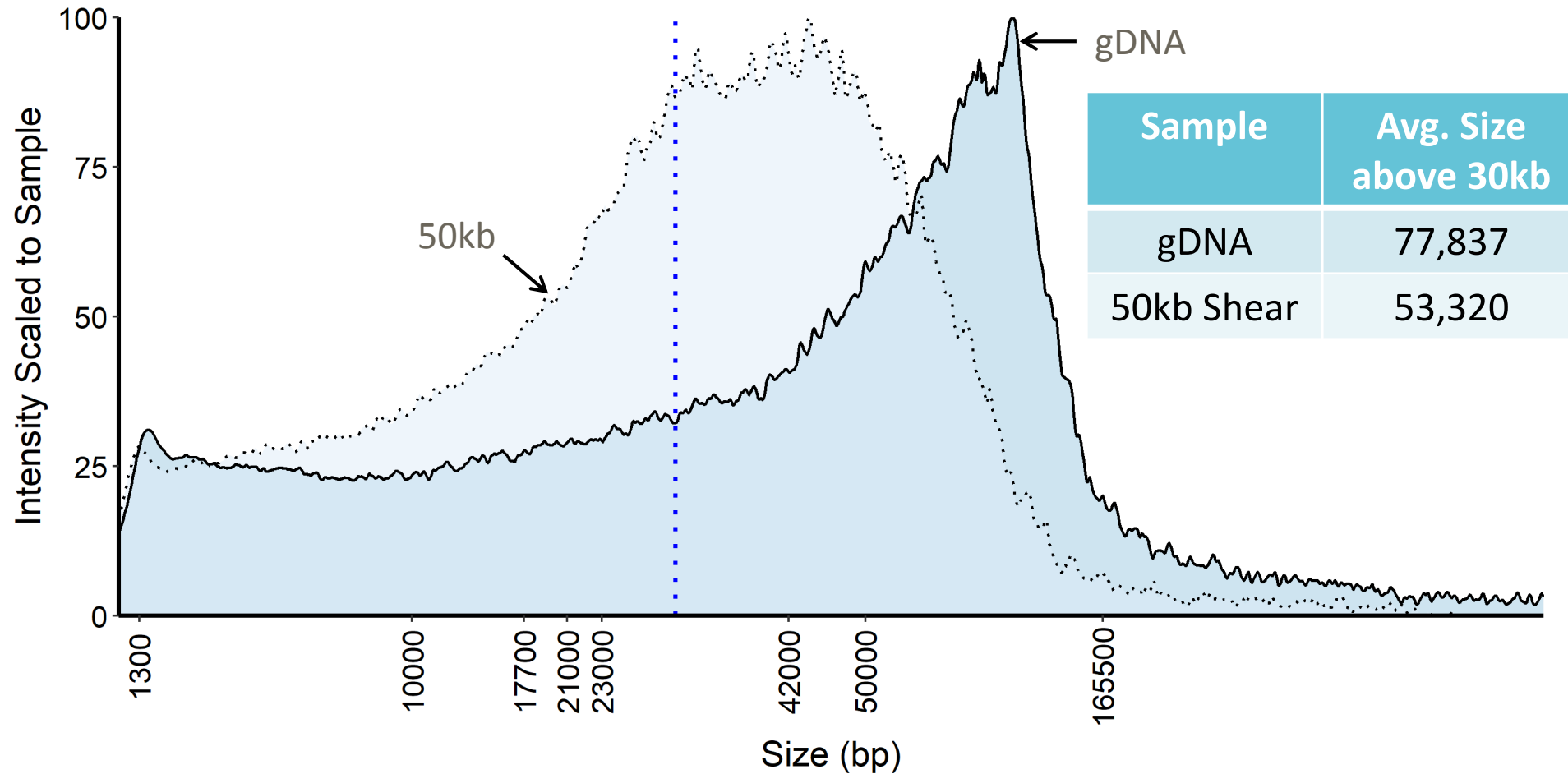
Data courtesy of Shana McDevitt, QB3 - UC Berkeley Genomic Sequencing Lab

Case Study: Perform Megaruptor Fragmentation : 75kB



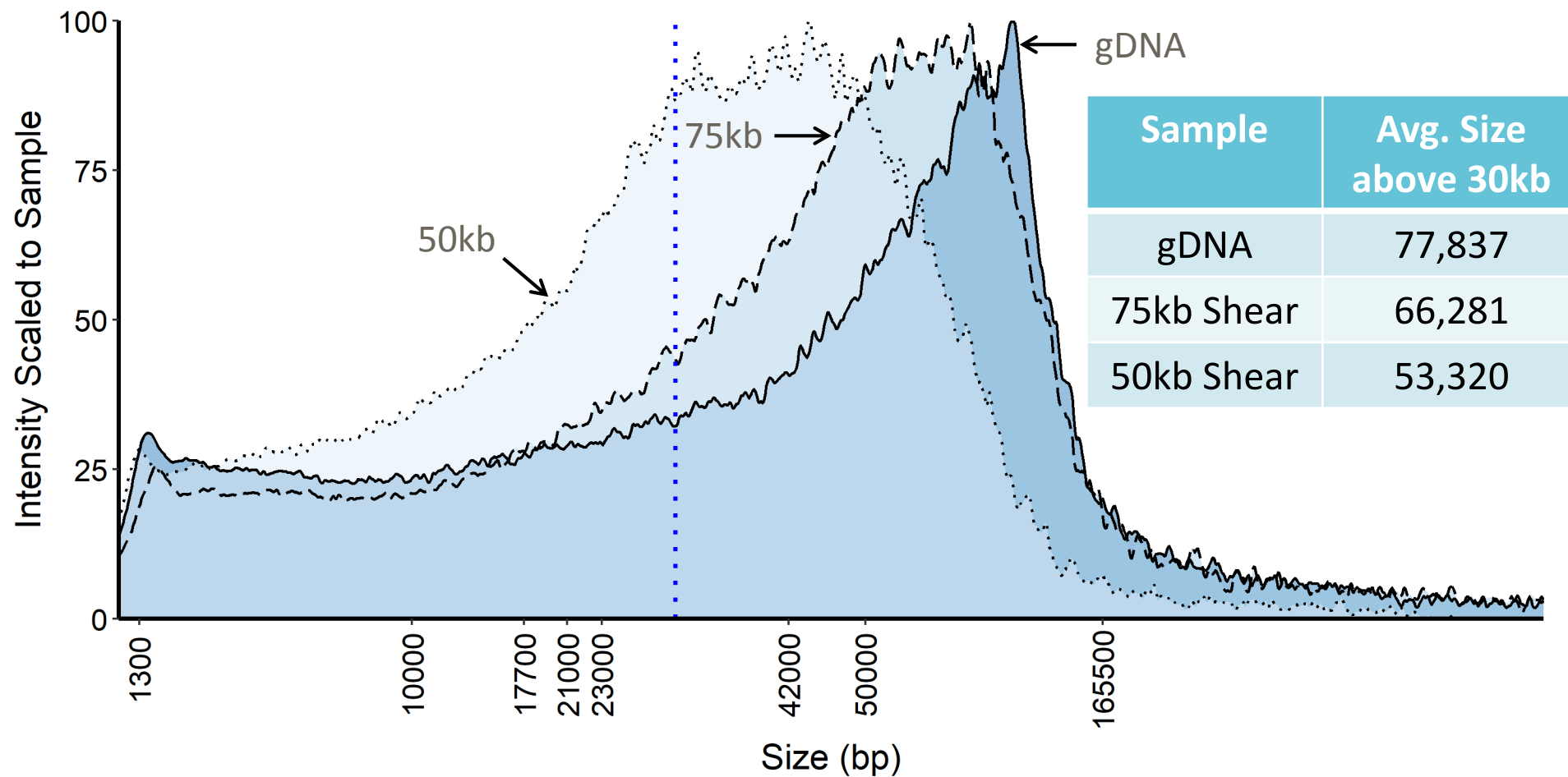
Data courtesy of Shana McDevitt, QB3 - UC Berkeley Genomic Sequencing Lab

Case Study: Perform Megaruptor Fragmentation: 50kB

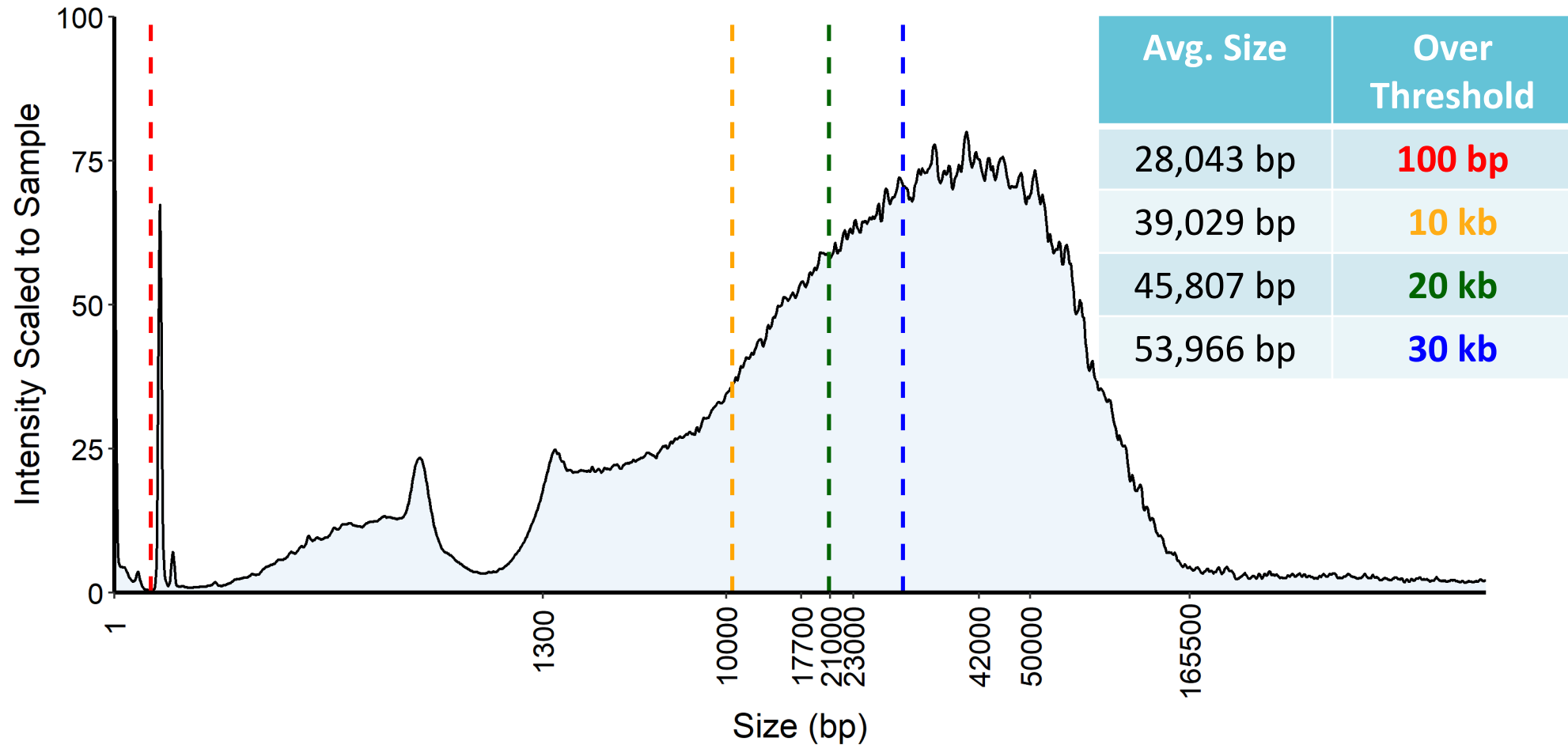


Data courtesy of Shana McDevitt, QB3 - UC Berkeley Genomic Sequencing Lab

Case Study: Compare Shears: Average Size over 30kb



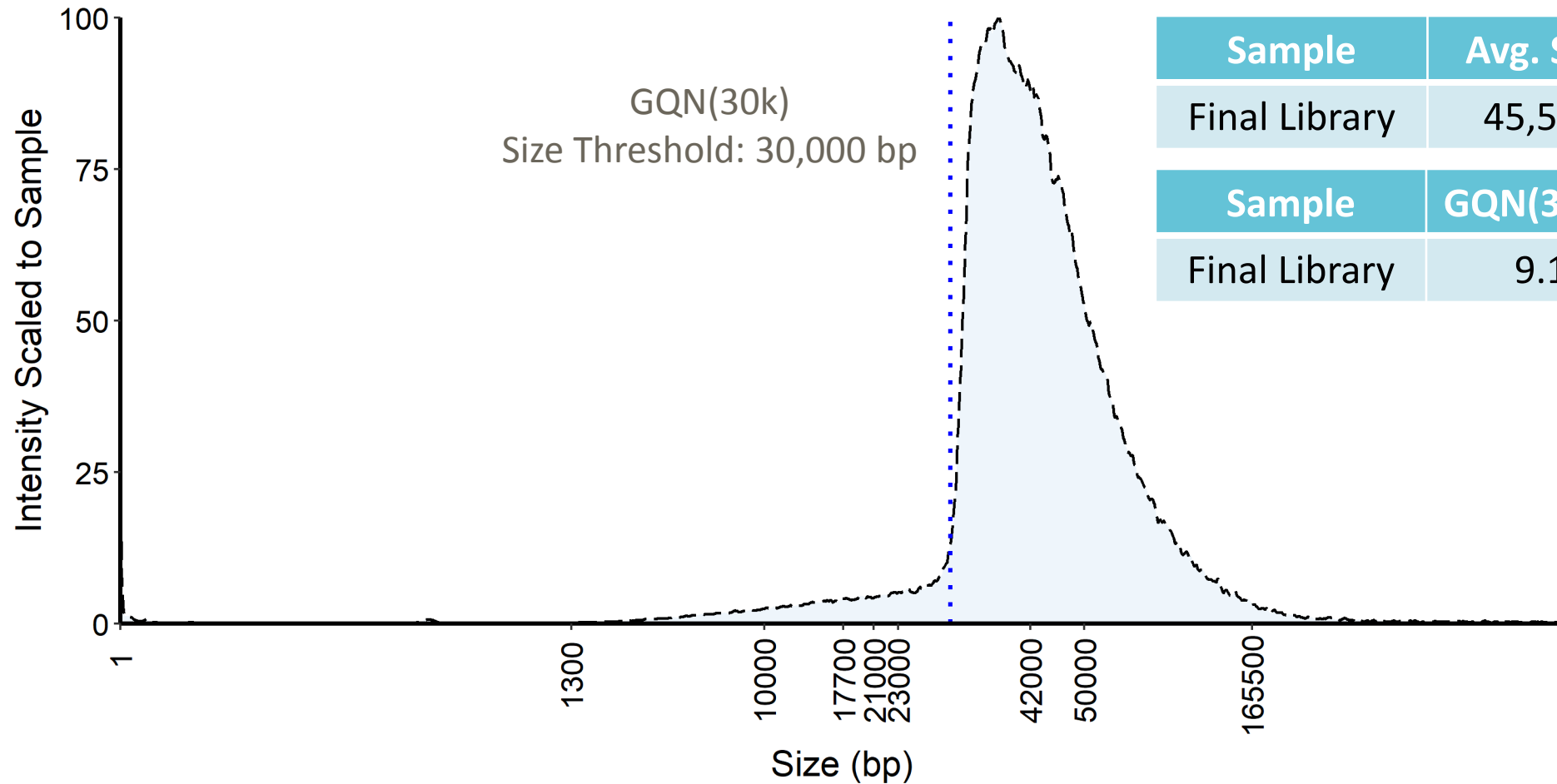
Case Study: Assess Quality After Adapter Ligation



Data courtesy of Shana McDevitt, QB3 - UC Berkeley Genomic Sequencing Lab

Case Study:

Measure Library Size after BluePippin Selection at 30kb



Data courtesy of Shana McDevitt, QB3 - UC Berkeley Genomic Sequencing Lab

THANK YOU

FEMTO Pulse™



Eliminate **ALL**
Overnight PFGE



Need more information?

<http://www.aati-us.com/>