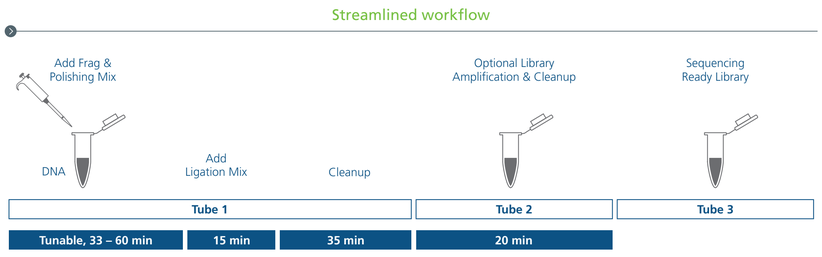
Streamlined single-tube solutions for high quality DNA library preparation

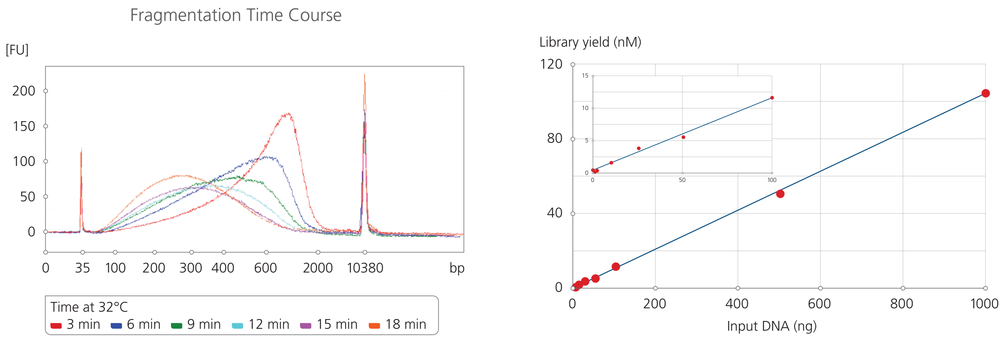
Yi Jin, Marissa Bolduc, David Bays, Shuhong Li, Eleanor Kolossovski, Brian Komorous, Hongbo Liu and David Schuster
Quantabio, 100 Cummings Center Suite 407J, Beverly, MA 01915

sparQ DNA Frag & Library Prep Workflow



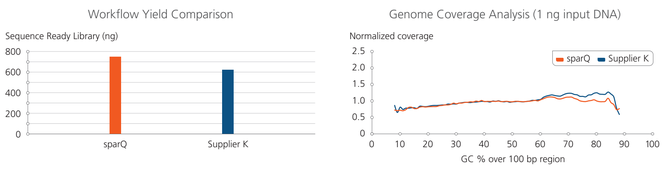
sparQ DNA Frag & Library Prep Kit combines enzymatic DNA fragmentation and DNA polishing (traditional end repair and dA-tailing) into a single tunable step.

Tunable Fragmentation Size Ranges for Varying DNA Inputs (1 ng–1 µg)



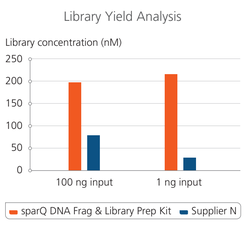
sparQ DNA Frag & Library Prep Kit is designed to produce DNA fragments which are tunable to specific sizes with superior DNA library preparation efficiency.

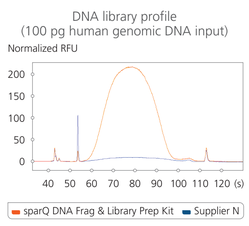
sparQ Compared to Other Fragmentation Technologies

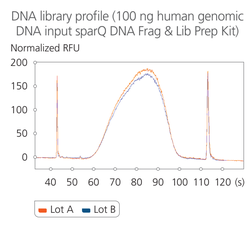


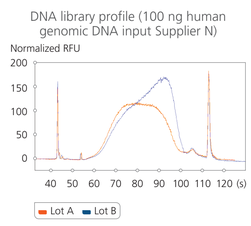
	Mapped reads	
	1 ng DNA	100 ng DNA
sparQ DNA Frag & Lib Prep Kit	91.92%	94.45%
Supplier K	92.40%	93.49%

Compared to Fragmentation Library Prep Kit from Supplier K. sparQ DNA Frag & Lib Prep Kit offers better library yield with even coverage across challenge genomic regions.

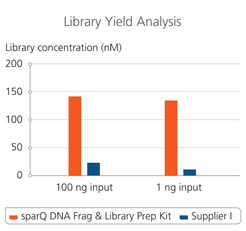


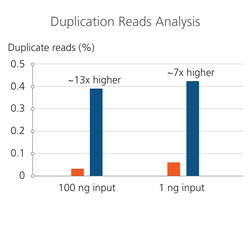


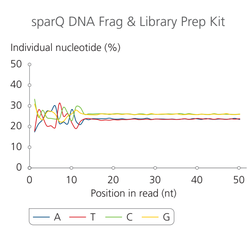


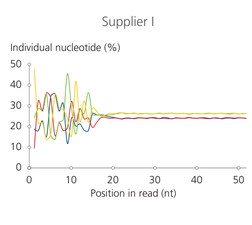


Compared to Fragmentation Library Prep Kit from Supplier N. sparQ DNA Frag & Lib Prep Kit offers superb library preparation sensitivity and efficiency, and more consistent fragmentation performance.



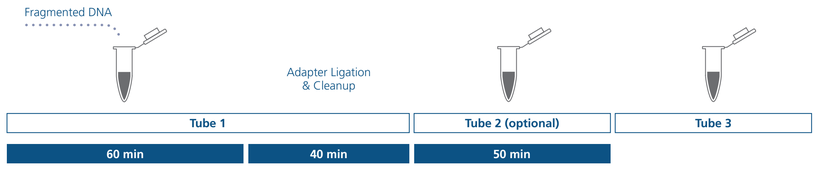






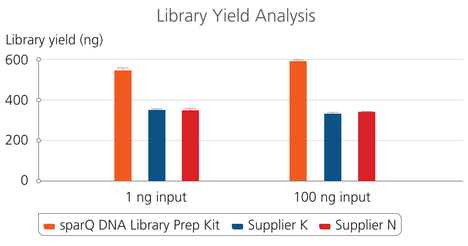
Compared to Fragmentation Library Prep Kit from Supplier I. sparQ DNA Frag & Lib Prep Kit offers higher library yield and better library quality (lower duplication rate and less fragmentation bias).

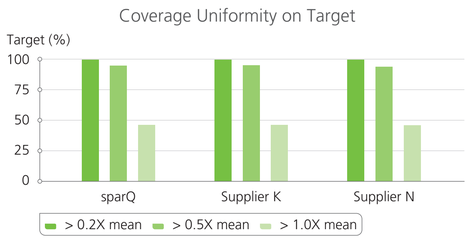
sparQ DNA Library Prep Workflow



sparQ DNA Library Prep Kit uses optimized chemistry that combines end-repair and dA-tailing into a single step, followed by direct ligation of adapters.

Library Yield & Quality Comparisons





sparQ DNA Library Prep Kit offers significantly higher NGS library preparation efficiency and produces high quality DNA libraries.

Quantabio's NGS Reagent Portfolio

sparQ DNA Frag & Library Prep Kit

- Streamlined workflow employs a unique enzyme mix to enable high quality DNA library preparation with tunable and reproducible DNA fragmentation profiles

sparQ DNA Library Prep Kit

- Simplified 2-step protocol in a single tube speeds up DNA library prep to 2.5 hours and minimizes sample loss

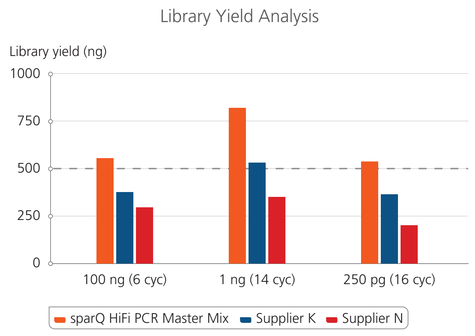
sparQ HiFi PCR Master Mix

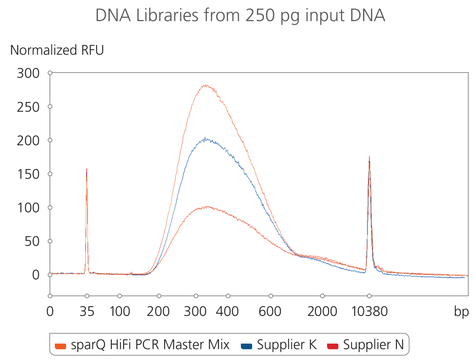
- A high-efficiency, high-fidelity and low bias PCR master mix for NGS workflows requiring DNA library amplification prior to sequencing

sparQ PureMag Beads

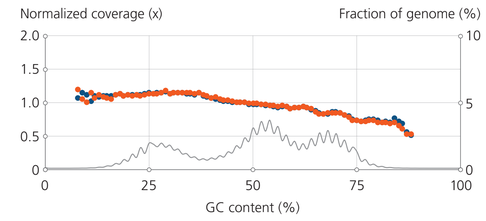
- A simple and reliable nucleic acid purification system for reaction cleanup and size selection in NGS workflows

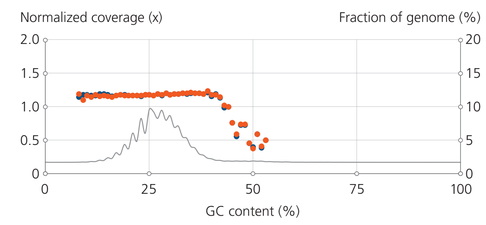
Superior HiFi Amplification Efficiency & Uniform Coverage

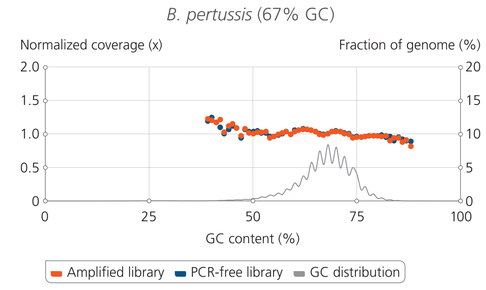




	Duplication reads %		
	Mixed genomes	AT-rich genome	GC-rich genome
PCR-free Library	0.03%	0.19%	0.05%
Amplified Library	0.04%	0.18%	0.05%

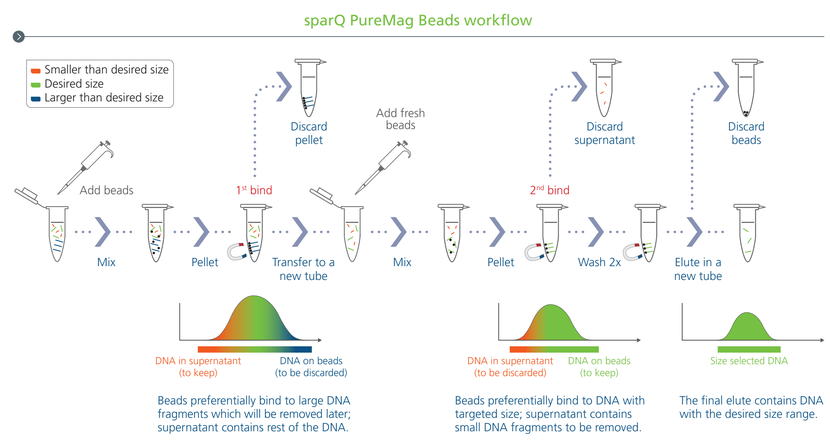






Library amplification with sparQ HiFi PCR Master Mix resultes in higher library yield and produces uniform coverage across a wide range of GC-content.

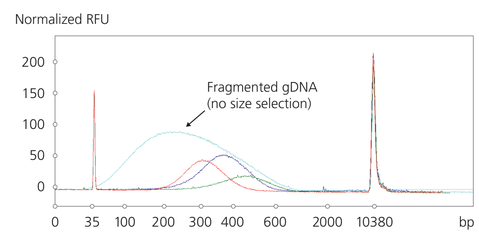
Consistent & Adjustable Size Selection



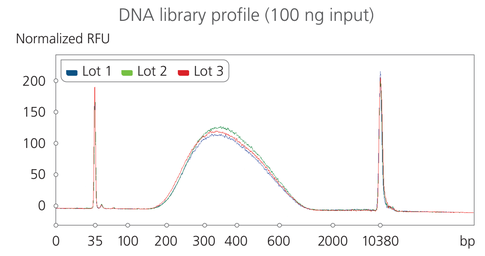
Beads preferentially bind to large DNA fragments which will be removed later; supernatant contains rest of the DNA.

Beads preferentially bind to DNA with targeted size; supernatant contains small DNA fragments to be removed.

The final elute contains DNA with the desired size range.



sparQ PureMag Beads DNA ratio	Targeted size range (bp)	Peak average (bp)
0.7x, 0.9x	200–400	301
0.6x, 0.8x	250–500	377
0.5x, 0.7x	300–700	464



	Peak average (bp)
Lot 1	386
Lot 2	391
Lot 3	385

sparQ PureMag Beads takes advantage of the reversible nucleic acid-binding properties of magnetic beads for efficient nucleic acid purification. It offers a reliable and cost effective solution for reaction cleanup and size selection, and can be seamlessly integrated into existing NGS workflows with little or no protocol changes.

MK-TN-0010 REV 01 Streamlined single-tube solutions 0119

For more information and ordering instructions, visit: www.quantabio.com