

# sparQ DNA Library Prep Kit

Streamlined, versatile single-tube solution for high quality library prep

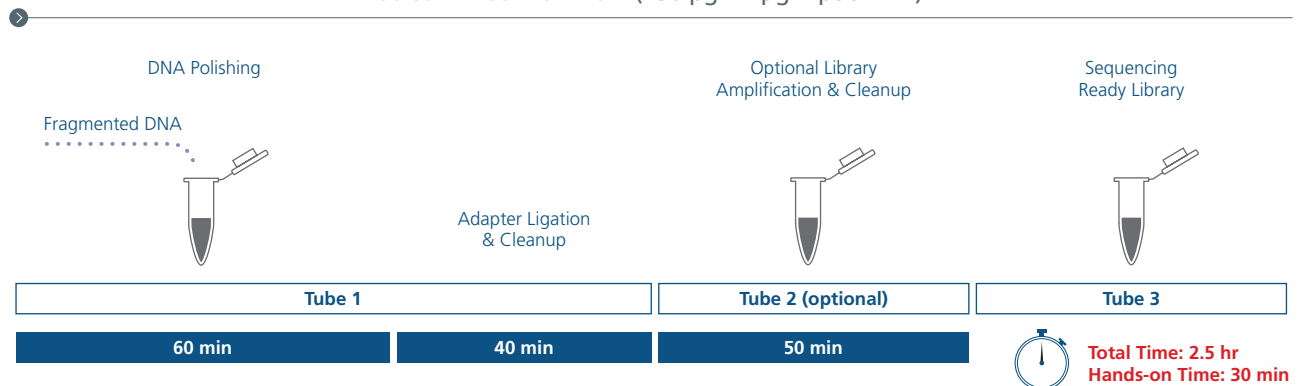
## FEATURES & BENEFITS:

- Fast, easy single-tube solution completes library prep in 2.5 hours
- Suitable for a wide range of input amounts from as low as 250 pg
- Optimized chemistry ensuring superior library prep sensitivity and efficiency
- Higher library yields compared to other library prep kits
- High efficiency enables PCR-free workflow from 100 ng input

## DESCRIPTION:

The sparQ DNA Library Prep Kit is optimized for the rapid construction of DNA libraries from fragmented double-stranded DNA for sequencing on Illumina® NGS platforms. The simplified protocol speeds up library prep to 2.5 hours with minimal hands-on time and accommodates DNA input amounts from 250 pg to 1 µg. DNA polishing reactions are streamlined into a single step to convert fragmented DNA into 5'-phosphorylated and 3'-dA-tailed DNA fragments. This is followed by high efficiency adapter ligation in the same tube. PCR-free workflows are enabled from 100 ng of starting material. If library amplification is required, the HiFi PCR Master Mix and Primer Mix ensure even amplification with minimal bias.

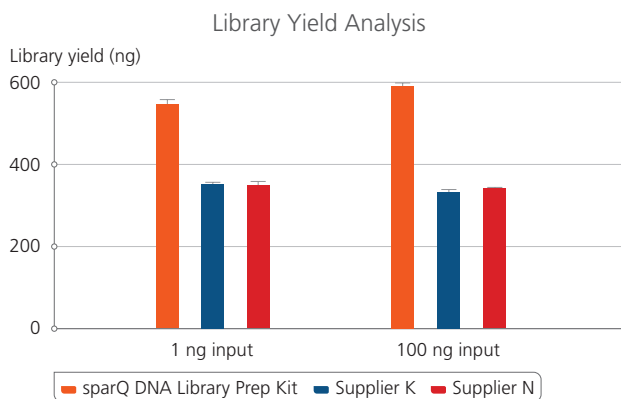
### Streamlined workflow (250 pg – 1 µg input DNA)



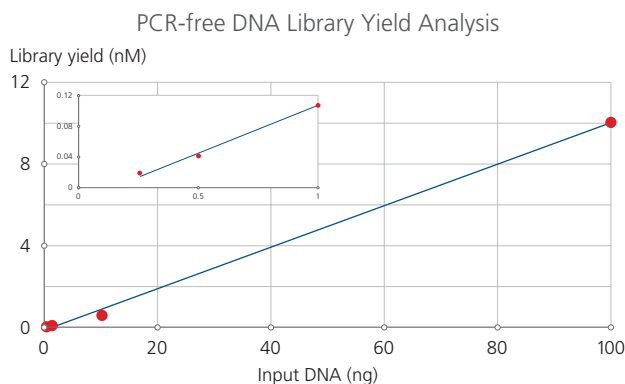
The streamlined workflow combines DNA polishing and adapter ligation in a single tube for rapid construction of libraries from fragmented DNA. An optional step using the HiFi PCR Master Mix and Primer Mix ensures even library amplification with minimal bias.

## Higher library yields and consistent library prep efficiency

The quality of a library prep depends heavily on the efficiency and sensitivity of the enzymes involved in DNA polishing and adapter ligation steps. The sparQ enzymes have been engineered for optimal sensitivity and efficiency, supporting the construction of adapter-ligated libraries from a broad range of input DNA from as little as 250 pg. The unique proprietary cocktail of enzymes ensures exceptional library yields – 50% more than other commercial library prep kits.



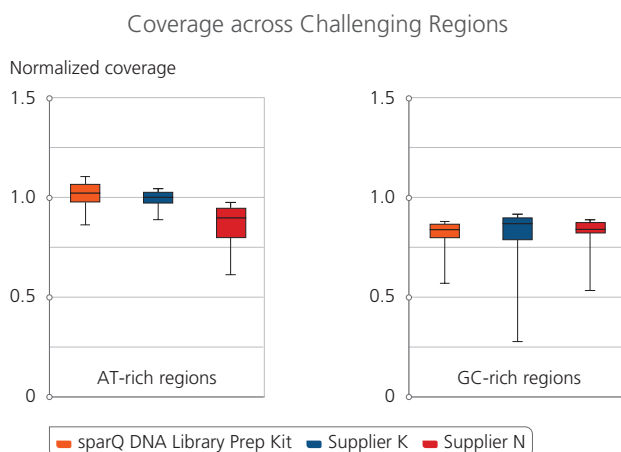
**Figure 1** sparQ DNA Library Prep Kit produces high quality libraries from a broad range of DNA inputs with significantly higher yields. Libraries were prepared with Covaris-sheared human genomic DNA (250 bp average size) using kit manufacturers' instructions. Amplified libraries (6 PCR cycles for 100 ng input DNA and 13 PCR cycles for 1 ng input DNA) were quantified with Qubit fluorometric method.



**Figure 2** sparQ DNA Library prep Kit resulted in consistent library prep efficiency across a broad range of sample inputs. Libraries were prepared from Covaris-sheared human genomic DNA with sparQ DNA Library Prep Kit without library amplification. Preamplified libraries were quantified with qPCR-based method.

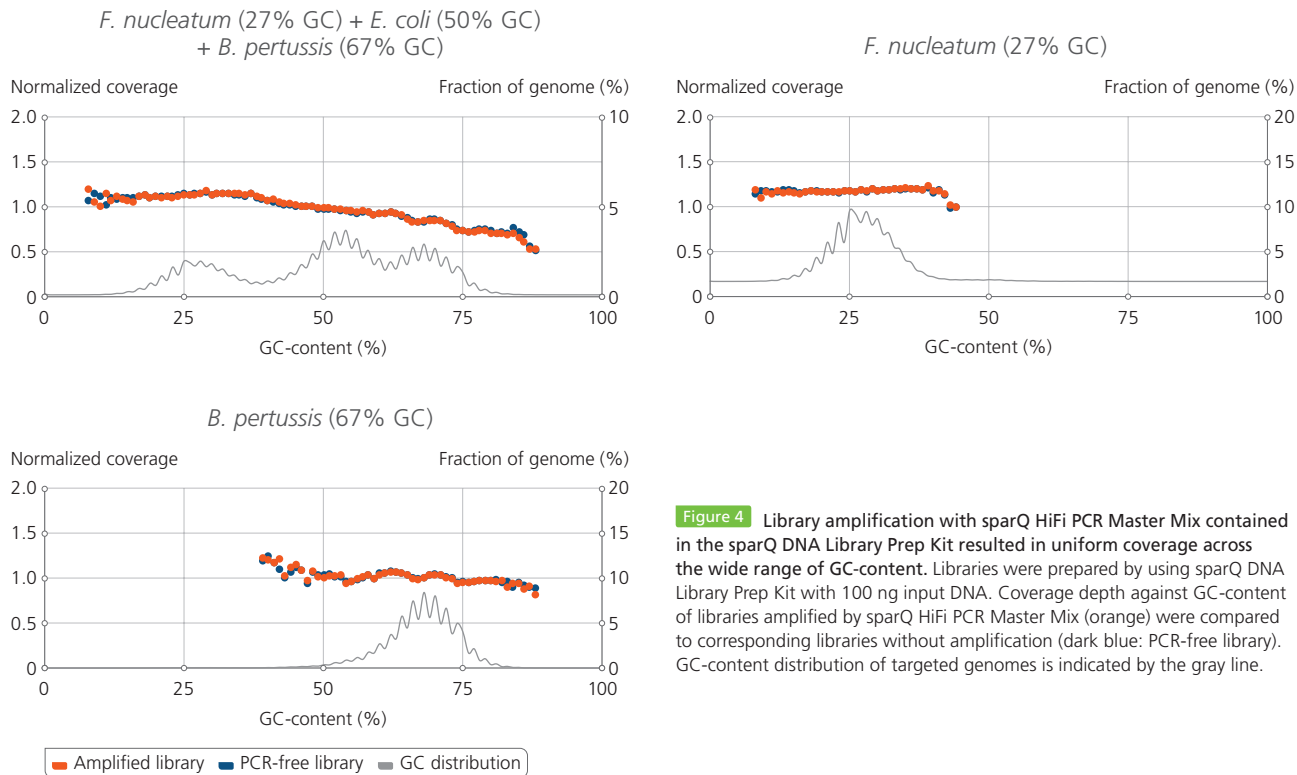
## Even coverage across a broad range of GC-content

The sparQ DNA Library Prep Kit enables the construction of high quality libraries with uniform coverage across a wide range of GC-content. For applications requiring amplification, the HiFi PCR Master mix is formulated to increase library yields while reducing the number of cycles required to create a sequencing-ready library, thereby minimizing PCR-derived artifacts.



**Figure 3** Amplified libraries were prepared from 100 ng of microbial genomic DNA and subsequently sequenced on Illumina MiSeq. 2 million reads from each tested library were down-sampled and analyzed. Coverage uniformity for different library preparation kits were compared by plotting normalized coverage for both extreme AT-rich regions (8%–20% GC-content) and GC-rich regions (75%–88% GC-content).

Coverage of amplified library prepared with sparQ DNA Library Prep Kit closely resembles coverage of PCR-free workflows, both indicating good representation of GC- and AT-rich regions in the final library. Even coverage ensures greater sequencing depth or multiplexing capabilities.



**Figure 4** Library amplification with sparQ HiFi PCR Master Mix contained in the sparQ DNA Library Prep Kit resulted in uniform coverage across the wide range of GC-content. Libraries were prepared by using sparQ DNA Library Prep Kit with 100 ng input DNA. Coverage depth against GC-content of libraries amplified by sparQ HiFi PCR Master Mix (orange) were compared to corresponding libraries without amplification (dark blue: PCR-free library). GC-content distribution of targeted genomes is indicated by the gray line.

## Improved sequencing results

Whether using an amplified or a PCR-free workflow, sparQ DNA Library Prep Kit produces industry leading sequencing results as determined by the high number of reads mapping back to the reference genome and minimal duplication rates.

	Library amplification	1 ng input DNA		100 ng input DNA	
		Mapped reads	Duplication	Mapped reads	Duplication
sparQ	With amplification	94.3%	0.07%	95.5%	0.04%
Supplier K		95.0%	0.09%	95.6%	0.04%
Supplier N		94.9%	0.07%	95.4%	0.03%
sparQ	PCR-free			95.6%	0.03%
Supplier K				95.3%	0.02%
Supplier N				95.1%	0.02%

sparQ DNA Library Prep Kit generates high quality DNA libraries with minimal duplication rates. Libraries were prepared with 1 ng and 100 ng of microbial genomic DNA and subsequently sequenced on Illumina MiSeq. Each library was down-sampled to 2 million reads (150 bp paired-end reads) and aligned to a reference genome with only unique alignments reported.

## ORDER INFO

Product Name	Quantabio Catalog Number	Size
sparQ DNA Library Prep Kit - 24	95191-024	24 rxns
sparQ DNA Library Prep Kit - 96	95191-096	96 rxns

## Related Products

sparQ HiFi PCR Master Mix	95192-050	50 rxns (1 x 1.25 ml)
sparQ HiFi PCR Master Mix	95192-250	250 rxns (5 x 1.25 ml)
sparQ PureMag Beads - 5 ml	95196-005	5 ml
sparQ PureMag Beads - 60 ml	95196-060	60 ml
sparQ PureMag Beads - 450 ml	95196-450	450 ml
sparQ Fast Library Quant Kit (for Q) - 50 R	95197-050	50 rxns
sparQ Fast Library Quant Kit (for Q) - 500 R	95197-500	500 rxns
PerfeCta® NGS Quantification Kit - Illumina - 500 R	95154-500	500 x 20 µl rxns
PerfeCta NGS Quantification Kit - Illumina, ROX - 500 R	95155-500	500 x 20 µl rxns
PerfeCta NGS Quantification Kit - Illumina, Low ROX - 500 R	95156-500	500 x 20 µl rxns

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