LeXPrep Methyl Library Preparation Kit v2

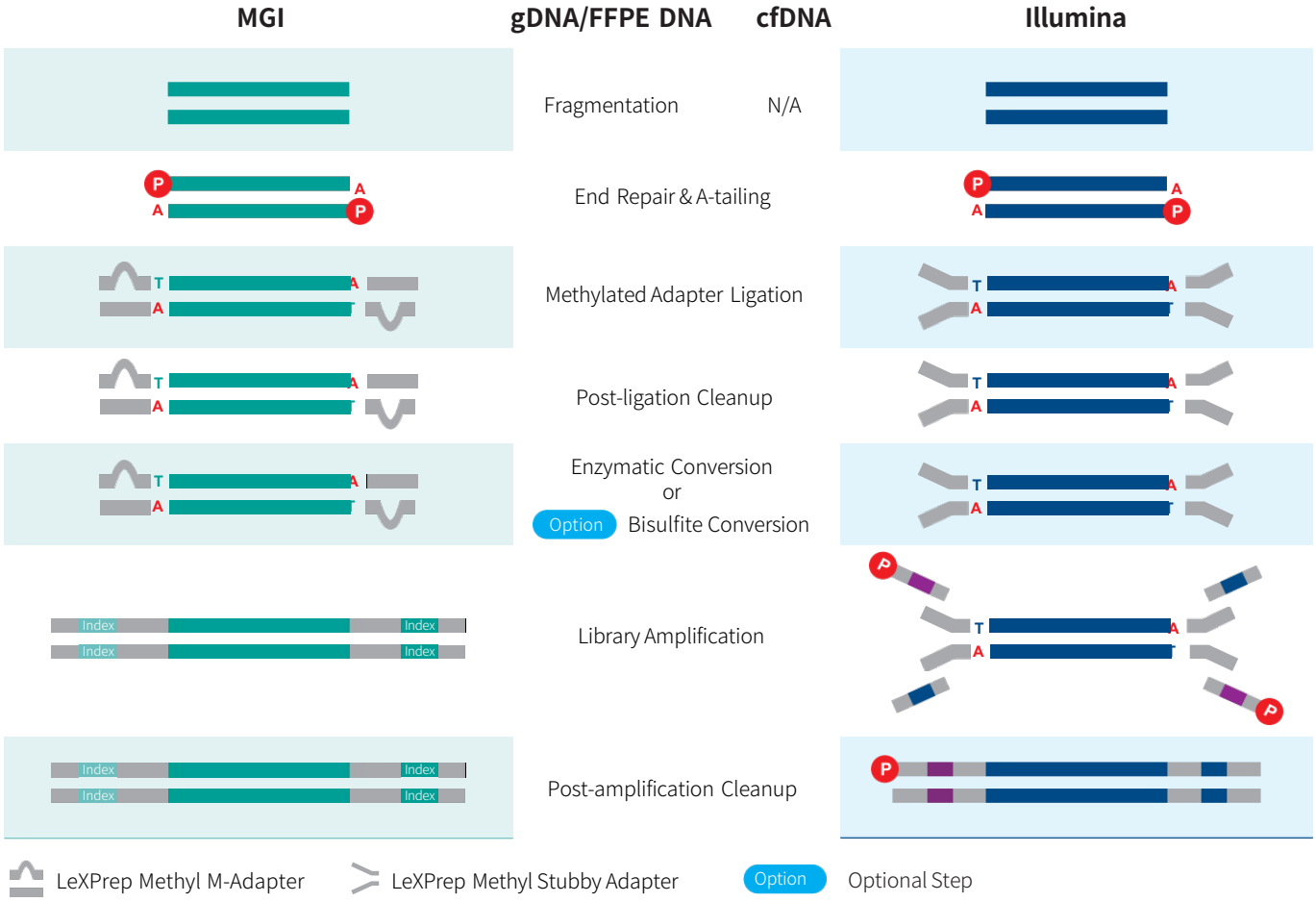
Introduction

LeXPrep Methyl Library Preparation Kit v2 is designed for preparation of high-quality methylation sequencing (Methyl-Seq) libraries from double-stranded DNA (dsDNA) on both Illumina and MGI platforms. This kit is suitable for preparing Methyl-Seq libraries from 1-500 ng DNA, supporting whole-genome bisulfite sequencing (WGBS) as well as hybrid capture-based targeted sequencing with effective enrichment of methylated libraries. It is compatible with various types of DNA samples, including gDNA, cfDNA, and FFPE DNA, as well as a wide range of commercially available conversion solutions. Compared to the v1 version, the upgraded kit shortens experimental time, supports lower sample input amounts, and significantly improves library yield and data utilization efficiency, offering users a more efficient, flexible, and reliable methylation sequencing solution.

Feature

- Supports input amounts ranging from 1-500 ng across different DNA sample types, enabling better sample utilization.
- Compatible with various conversion methods and sequencing platforms, offering flexibility for diverse applications.
- Enables WGBS library preparation in as fast as 4.5 hr with bisulfite conversion.
- Significantly improves effective sequencing depth and data utilization.

Workflow



*LeXPrep Methyl M-Adapter (DI) and LeXPrep Methyl Stubby Adapter (UDI) are shown in the schematic diagram as examples.

Performance

Efficient Library Yield

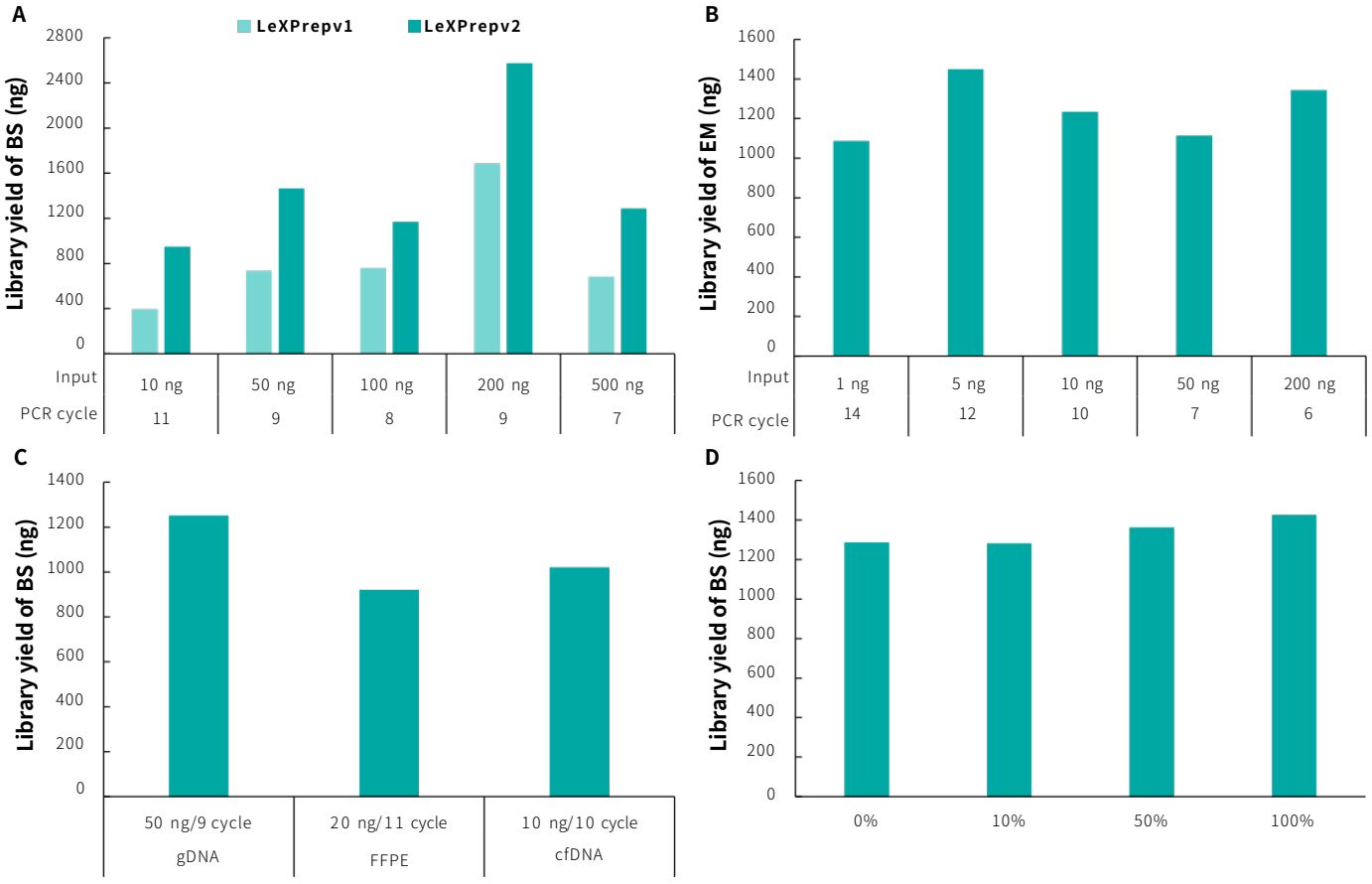


Figure 1. LeXPrep Methyl Library Preparation Kit v2 achieves stable and efficient library yield across various applications. A. gDNA samples of varying input amounts processed with LeXPrep Methyl Library Preparation Module v1 and v2 after BS conversion; **B.** gDNA samples of varying input amounts with EM; **C.** Library preparation for gDNA, FFPE DNA, and cfDNA with BS; **D.** Simulated samples with varying methylation levels with BS.

Note: The samples in figure 1. D were simulated DNA by using human 100% Methylated DNA standard (Zymo, D5014-2) positive control and 0% Methylated DNA standard (Zymo, D5014-1) negative control to mimic different methylation levels (0%, 10%, and 50%), with an initial input amount of 50 ng. BS: Bisulfite conversion; EM: Enzymatic conversion.

Stable Conversion Efficiency

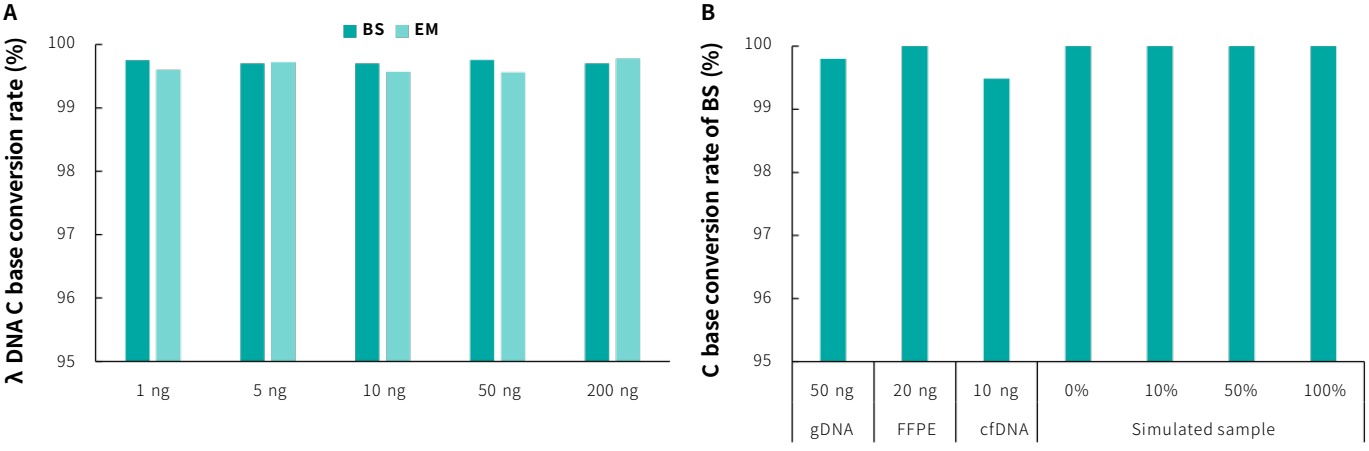


Figure 2. Conversion efficiency across multiple types of samples at varying input amounts using different methods. Library preparation was performed using LeXPrep Methyl Library Preparation Module v2 coupled with LeXPrep Methyl Stubby Adapter (UDI) Module (with 10 nt Index). **A.** Conversion efficiency of gDNA across varying input amounts processed with different conversion methods. **B.** Conversion efficiency of multiple sample types processed with BS. The sequencing mode was Illumina Novaseq 6000 platform, PE150.

Improved Data Utilization

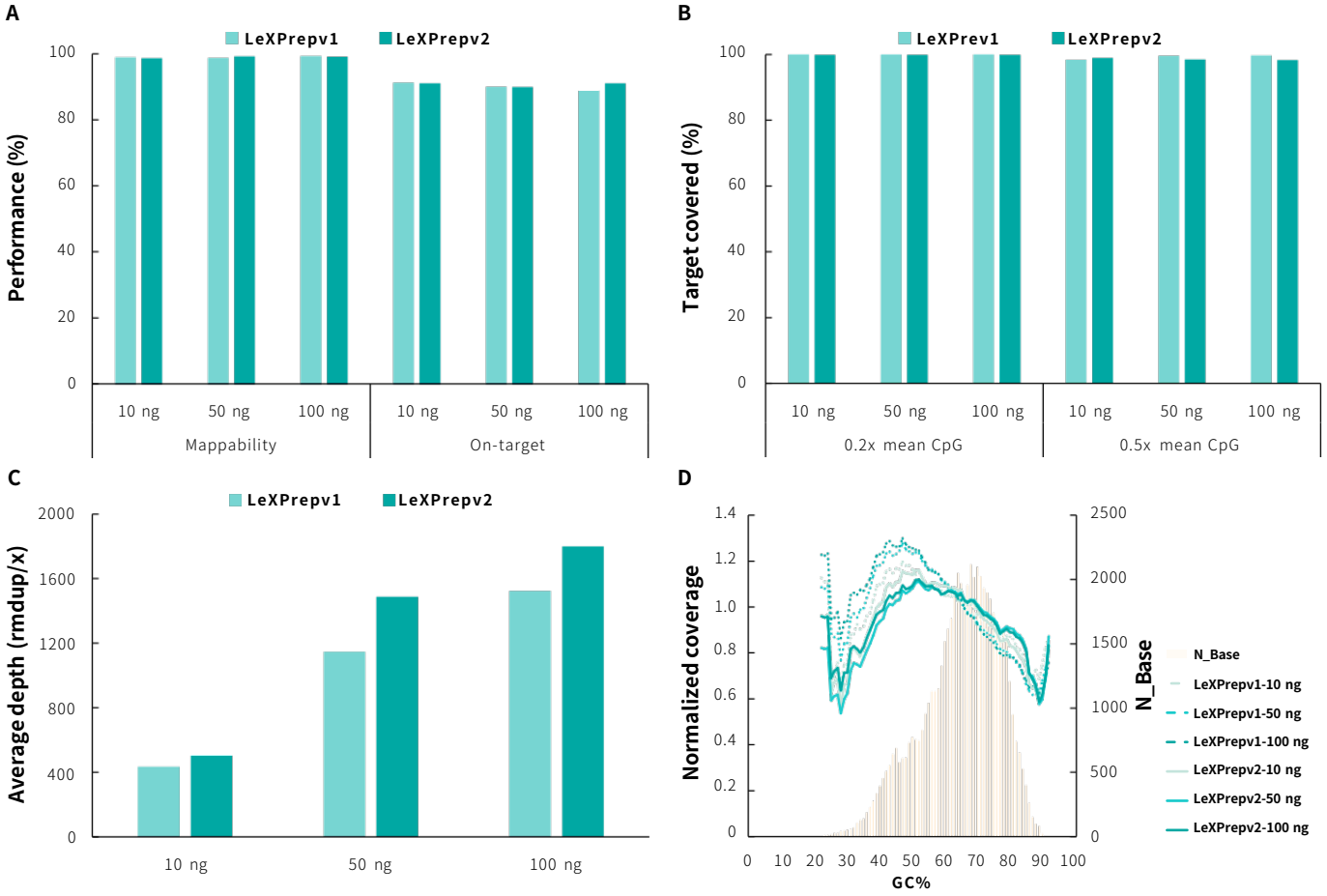


Figure 3. Capture performance of LeXPrep Methyl Library Preparation Kitsv1 and v2. A. Mappability & On-target rate; **B.** Target covered; **C.** Average sequencing depth after deduplication; **D.** GC bias. Pre-libraries were prepared from gDNA samples with various input amounts using LeXPrep Methyl Library Preparation Module v1 & v2 coupled with LeXPrep Methyl Stubby Adapter (UDI) Module (with 10 nt Index) and treated by BS. Hybrid capture was performed with LeXPrep Hybrid Capture Reagents and Methyl Demo Panel (60 Kb). 0.3 Gb were randomly selected for data analysis.

Accurate Quantification of Methylation Levels

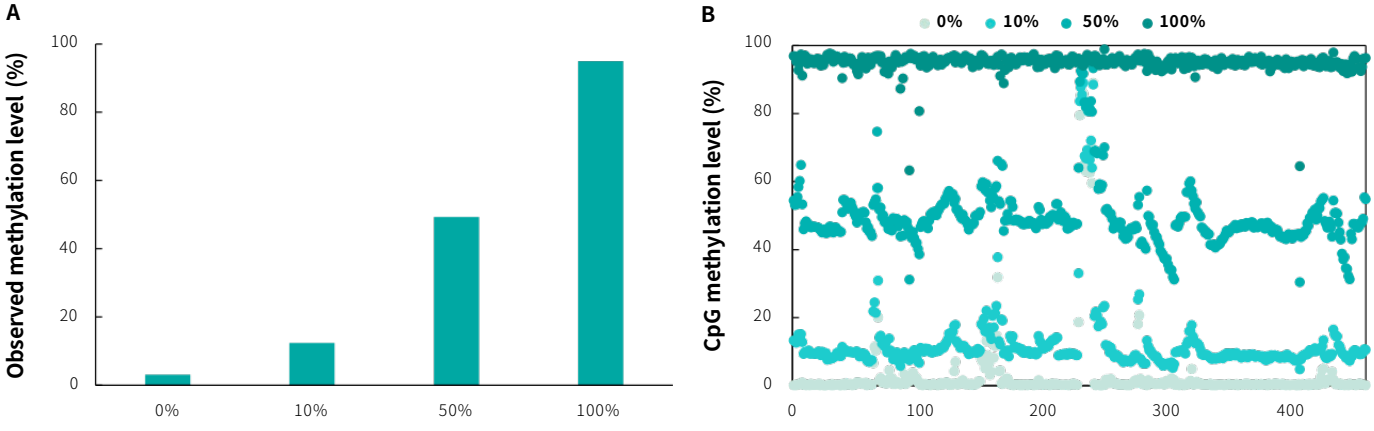


Figure 4. LeXPrep Methyl Library Preparation Kit v2 precisely quantifies methylation levels. A. Detected methylation levels across simulated samples with varying methylation levels; **B.** CpG methylation levels in target regions. Pre-libraries were prepared from 50 ng simulated samples with different methylation levels using LeXPrep Methyl Library Preparation Module v2 coupled with LeXPrep Methyl Stubby Adapter (UDI) Module (with 10 nt Index) and treated by BS. Hybrid capture was conducted with LeXso Hybrid Capture Reagents v2 and LeXso Methyl Demo Panel (5 Kb).

Flexible Compatibility with Ultra-Sensitive LeXso Hybrid Capture System

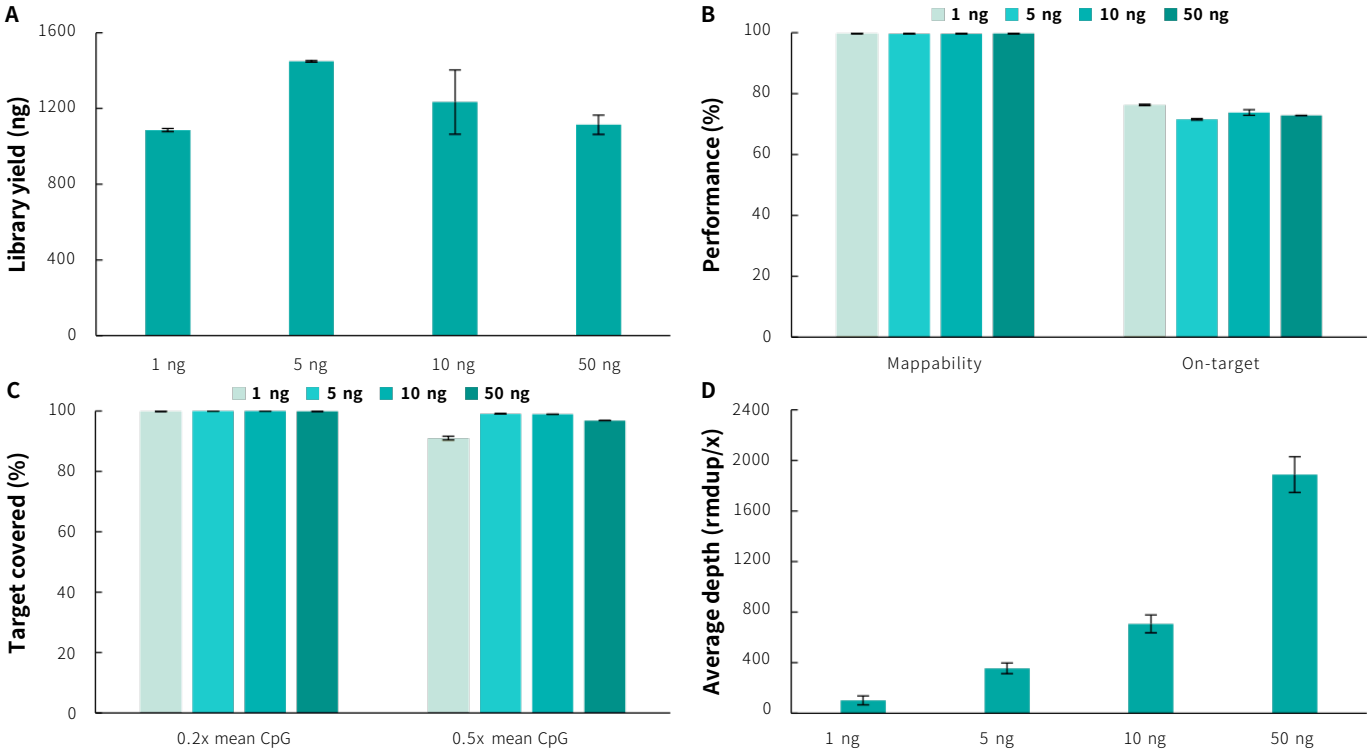


Figure 5. LeXPrep Methyl Library Preparation Kit v2 demonstrates excellent capture performance with low-input gDNA samples. A. Library yield; **B.** Mappability & On-target rate; **C.** Target covered; **D.** Average sequencing depth after deduplication. Pre-libraries were prepared using LeXPrep Methyl Library Preparation Module v2 coupled with LeXPrep Methyl Stubby Adapter (UDI) Module (with 10 nt Index) and treated by EM. Hybrid capture was performed with LeXso Hybrid Capture Reagents v2 and LeXso EMS Panel (20 Kb).

Ordering Information

Type	Product	Scale	Catalog#
Lib Prep Module	LeXPrep Methyl Library Preparation Module v2, 24 rxn	24 rxn	LX02511
	LeXPrep Methyl Library Preparation Module v2, 96 rxn	96 rxn	LX02512
Methylated Adapter Module	LeXPrep Methyl Stubby Adapter (UDI) Module (with 10 nt Index) series	24/96 rxn	LX03371 etc.
	LeXPrep Methyl Adapter (MDI) Module (for MGI) series	24/96 rxn	LX03740 etc.
	LeXPrep Methyl Adapter (SI) Module (for MGI) series	24/96 rxn	LX03631 etc.
BS Coversion Module	LeXPrep DNA Methyl Bisulfite Conversion Module, 24 rxn	24 rxn	LX02701
	LeXPrep DNA Methyl Bisulfite Conversion Module, 96 rxn	96 rxn	LX02702

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