LeXPrep EZ DNA Library Preparation Module v2

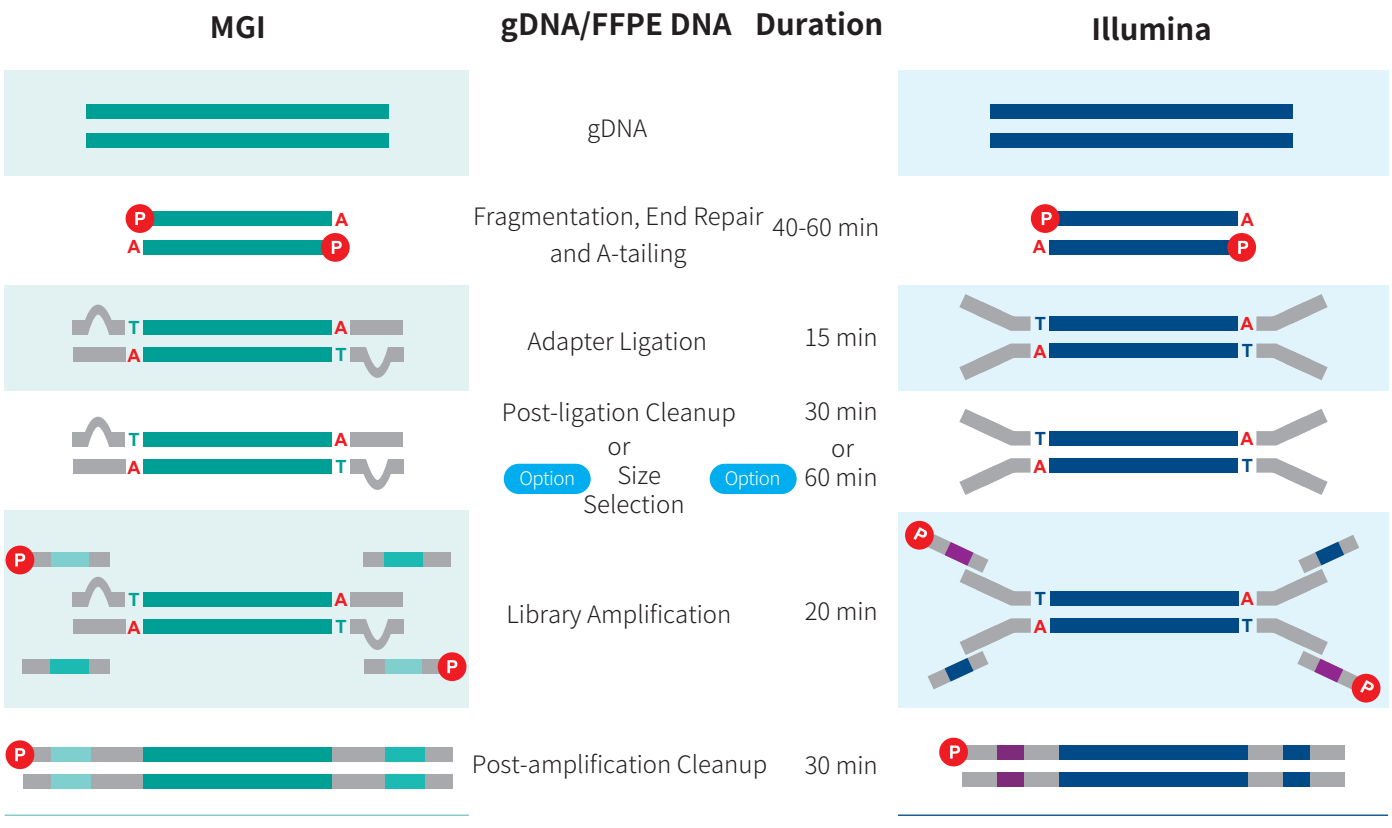
Introduction

LeXPrep EZ DNA Library Preparation Kit v2 is designed for preparation of high-quality sequencing libraries from double-stranded DNA (dsDNA) on Illumina and MGI platforms. To simplify the experimental process, multiple processes were applied in one single step, including the fragmentation, end repair and adapter ligation. This A-T ligation-based kit applies to the whole genome sequencing with DNA input ranging from 5 to 500 ng, and is compatible with hybridization capture based targeted sequencing.

Product Feature

- Suitable for various types of samples including gDNA, FFPE B+/B/C/D DNA samples
- The length of DNA fragment is flexible and controllable
- Flexible system and simple operation, with Fragmentation, End Repair and A-tailing being completed in one step
- Generate high quality libraries with uniform and unbiased coverage as well as low GC bias
- Low background noise (abnormal sequence introduced by enzymatic digestion by-products)
- Compatible with automatic workstations

Workflow



Option Optional step

Product Performance

High Efficiency and Stability

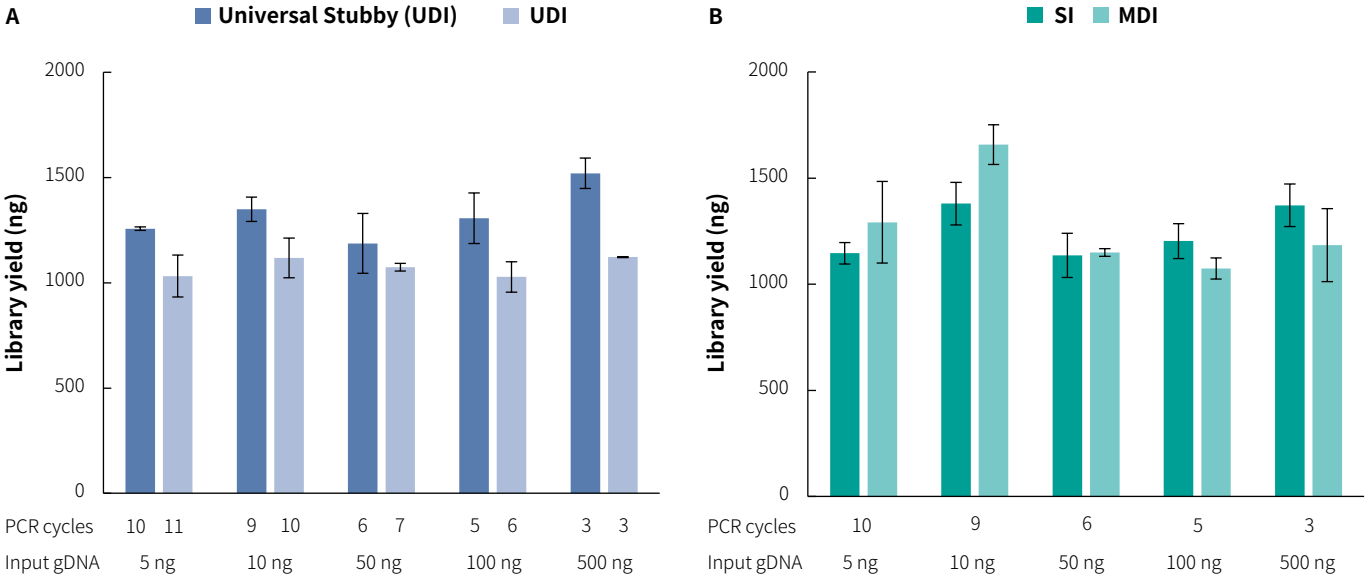


Fig 1. Library yield of LeXPrep EZ DNA Library Preparation Kit v2 for gDNA samples with different input amounts. The libraries were prepared by using LeXPrep EZ DNA Library Preparation Module v2 (LeXPrep Enfrag v2) coupled with **A.** LeXPrep Universal Stubby Adapter (UDI) Module and LeXPrep UDI Adapter Module (for Illumina®), and **B.** LeXPrep Universal Adapter (SI) Module (for MGI) and LeXPrep Universal Adapter (MDI) Module (for MGI) respectively, with 25 min of enzymatic digestion and recommended PCR cycles.

Compatible with Different Types of Samples

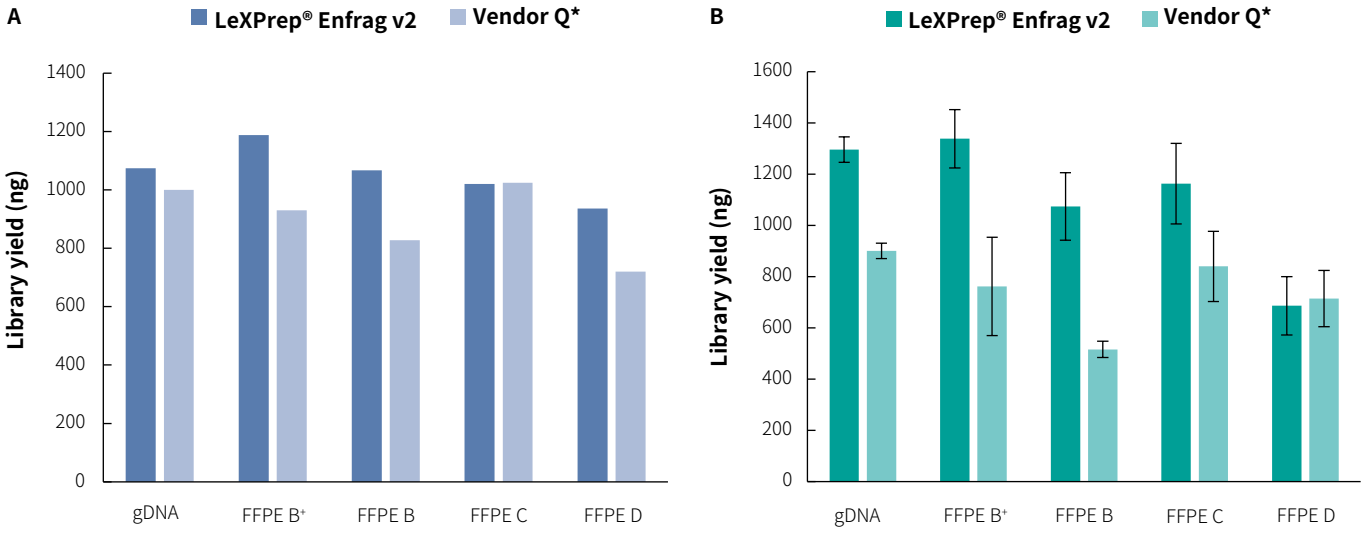


Fig 2. Library yield of LeXPrep EZ DNA Library Preparation Kit v2 for different types of samples. The libraries were prepared by using LeXPrep EZ DNA Library Preparation Module v2 coupled with **A.** LeXPrep UDI Adapter Module (for Illumina®) and **B.** LeXPrep Universal Adapter (MDI) Module (for MGI) respectively, with enzymatic digestion duration and PCR cycles as protocol.

Note: The grading standards by electrophoresis are as follows: gDNA: one bright and non-trailing stripe with about 15 kb in size. FFPE B+: one clear stripe with slight diffusion and with about 15 kb in size. FFPE B: one indistinct stripe with about 15 kb in size, with medium diffusion. FFPE C: multiple stripes ranging from 200 bp to 2,500 bp, with severe diffusion. FFPE D: multiple stripes ranging from 250 bp to 1,000 bp, with severe diffusion.

Flexible and Controllable Fragmentation

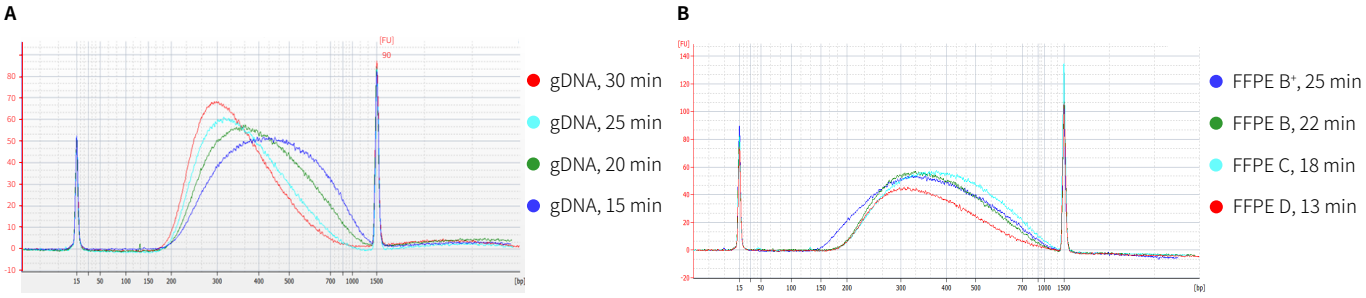
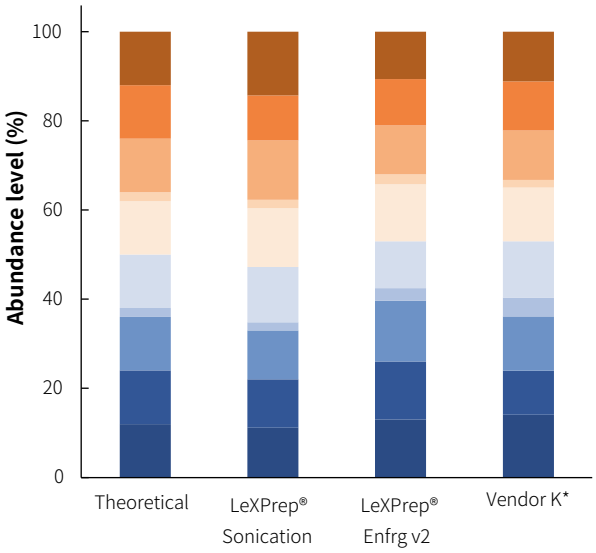


Fig 3. Size distribution of libraries prepared with different types of samples under different enzymatic digestion conditions. A. The libraries were prepared from 250 ng of gDNA sample with different grades by using LeXPrep EZ DNA Library Preparation Module v2 coupled with LeXPrep UDI Adapter Module (for Illumina®), with enzymatic digestion at different times as protocol, so as to obtain DNA fragments of different lengths. **B.** The libraries were prepared from 50 ng of FFPE DNA samples of different grades, with enzymatic digestion at different times as protocol, so as to obtain DNA fragments of 250 bp.

Low GC Bias



Type	Theoretical	LeXPrep® sonication	LeXPrep® Enfrg v2	Vendor K*
Staphylococcus aureus	12	14.3	10.6	11.17
Enterococcus faecalis	12	10.1	10.4	11.02
Listeria monocytogenes	12	13.3	11	11.04
Saccharomyces cerevisiae	2	1.9	2.2	1.75
Bacillus subtilis	12	13.2	12.8	12.04
Escherichia coli	12	12.4	10.5	12.61
Cryptococcus neoformans	2	1.8	2.8	4.24
Salmonella enterica	12	11	13.7	12.20
Lactobacillus fermentum	12	10.8	13	9.85
Pseudomonas aeruginosa	12	11.2	13	14.10

Fig 4. Low GC bias in metagenomic library preparation using LeXPrep EZ DNA Library Preparation Kit v2. After comparison of different library preparation schemes by using microbial community DNA standard (Zymo Research, D6306), the libraries prepared by using LeXPrep EZ DNA Library Preparation Kit v2 show no significant difference in GC bias with those prepared by using sonication-based library preparation kits.

Note: Both LeXPrep Sonication: LeXPrep DNA Universal Library Preparation Module (for Illumina®) and LeXPrep Enfrag v2: LeXPrep EZ DNA Library Preparation Kit V2 can be used along with LeXPrep UDI Adapter Module (for Illumina®) for library preparation.

Low Background Noise

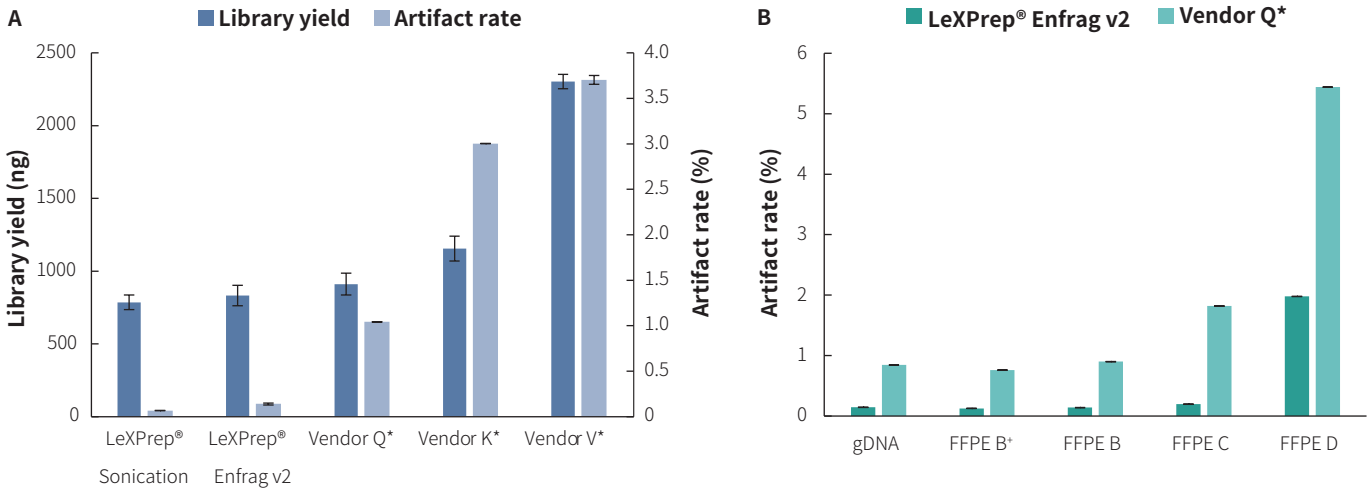


Fig 5. The abnormal reads ratio of libraries prepared with different types of samples by using different library preparation kits. The libraries were prepared with gDNA and different grades of FFPE DNA samples (50 ng each) with library preparation strategies, including LeXPrep Sonication, LeXPrep Enfrag v2, Vendor Q *, Vendor K* and Vendor V* enzymatic fragmentation library preparation kits. The multi-hybridization reaction was initiated with 500 ng of each library with the same library preparation scheme. The capture was performed by using LeXOnco Plus Panel v2.0, with calculation of total reads. **A.** Library yield and the abnormal reads ratio of libraries prepared with gDNA samples (Illumina platform) with different library preparation schemes; **B.** Abnormal reads ratio of libraries prepared with different grades of FFPE DNA samples by using enzymatic fragmentation library preparation kit (MGI platform).

Note: Artifact rate: the ratio of abnormal sequence introduced by enzymatic digestion by-products.

Excellent Capture Performance

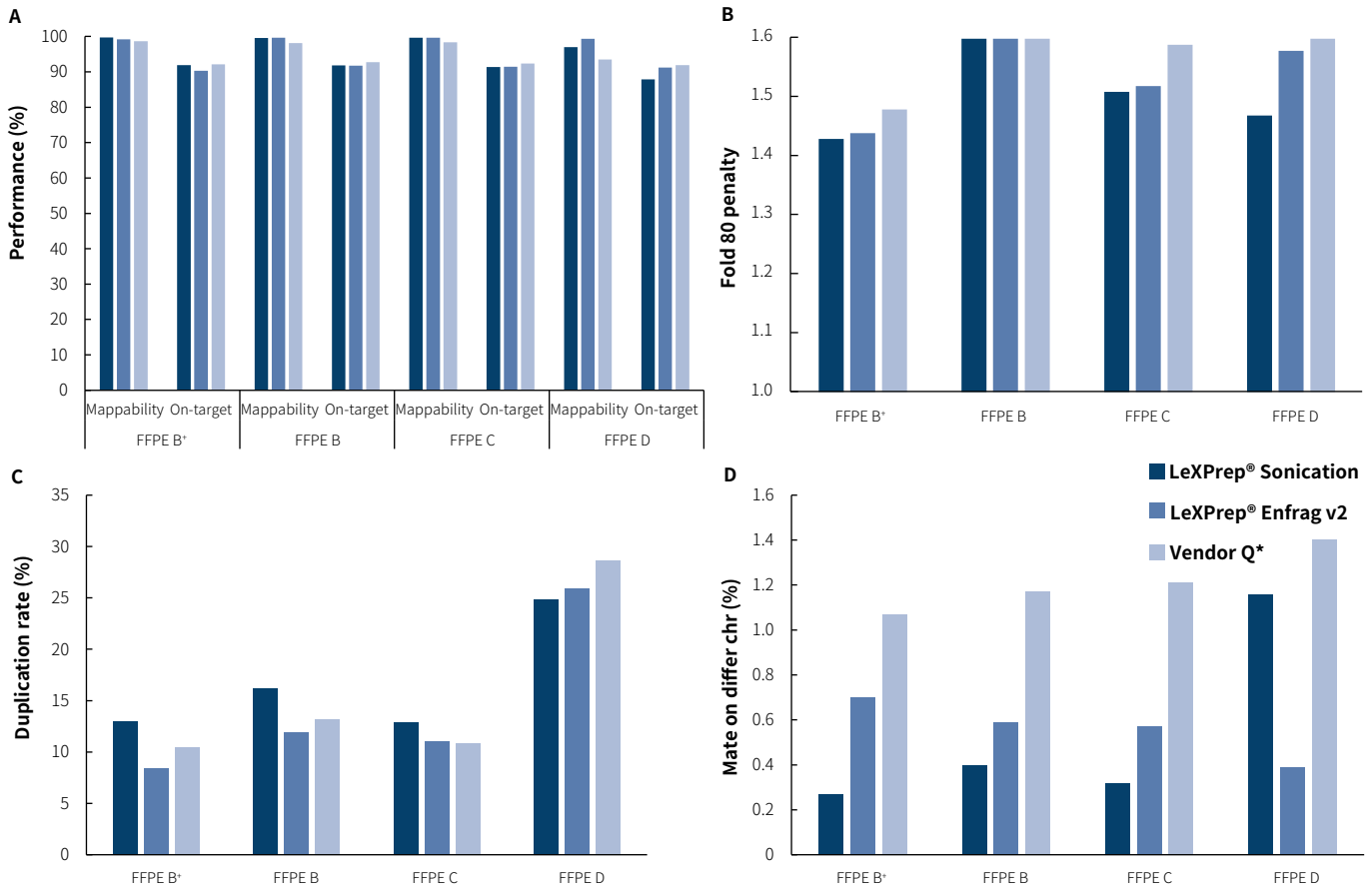


Fig 6. The capture performance of libraries prepared by the enzyme-based kit and the sonication-based kit. The libraries were prepared from 50 ng of FFPE DNA samples with different grades, using either LeXPrep Sonication strategy or LeXPrep Enfrag strategy, and the multi-hybridization reaction was initiated with 500 ng of each library with the same library preparation scheme by using NanOnco Plus Panel v2.0 (2.6 M) coupled with LeXPrep Hybrid Capture Reagents and LeXPrep Blockers (for Illumina®), and the sequencing data is analyzed by selecting 2 M reads pair randomly. The performance of capture data of different library preparation schemes was basically consistent in **A.** Mappability and On-target rate, but the performance in **B.** Fold 80 penalty, **C.** Duplication rate and **D.** Mate on differ chr was superior to that of competitive products.

Ordering Information

Type	Product	Scale	Catalog#
Library Prep Module	LeXPrep EZ DNA Library Preparation Module v2, 24 rxn	24 rxn	LX02601
	LeXPrep EZ DNA Library Preparation Module v2, 96 rxn	96 rxn	LX02602
Universal Adapter (SI) Module (for MGI)	LeXPrep Universal Adapter (SI) Module Set A1 (for MGI), 24 rxn	SI 1-12	LX03611
	LeXPrep Universal Adapter (SI) Module Set D1 (for MGI), 480 rxn	SI 1-96	LX03620
	LeXPrep Universal Adapter (SI) Module Set B1 (for MGI), 96 rxn	SI 1-24	LX03621
	LeXPrep Universal Adapter (SI) Module Set B2 (for MGI), 96 rxn	SI 25-48	LX03622
Universal Adapter (MDI) Module (for MGI)	LeXPrep Universal Adapter (MDI) Module Set A1 (for MGI), 24 rxn	MDI 1-12	LX03711
	LeXPrep Universal Adapter (MDI) Module Set B1 (for MGI), 96 rxn	MDI 1-24	LX03721
	LeXPrep Universal Adapter (MDI) Module Set B2 (for MGI), 96 rxn	MDI 25-48	LX03722
	LeXPrep Universal Adapter (MDI) Module Set B3 (for MGI), 96 rxn	MDI 49-72	LX03725
	LeXPrep Universal Adapter (MDI) Module Set B4 (for MGI), 96 rxn	MDI 73-96	LX03726
	LeXPrep Universal Adapter (MDI) Module Set D1 (for MGI), 480 rxn	MDI 1-96	LX03731
	LeXPrep Universal Adapter (MDI) Module Set D2 (for MGI), 480 rxn	MDI 97-192	LX03732
	LeXPrep Universal Adapter (MDI) Module Set D3 (for MGI), 480 rxn	MDI 193-288	LX03733
	LeXPrep Universal Adapter (MDI) Module Set D4 (for MGI), 480 rxn	MDI 289-384	LX03734
Universal Stubby Adapter (UDI) Module	LeXPrep Universal Stubby Adapter (UDI) Module Set A1, 24 rxn	1-12	LX03240
	LeXPrep Universal Stubby Adapter (UDI) Module Set B1, 96 rxn	1-24	LX03241
	LeXPrep Universal Stubby Adapter (UDI) Module Set B2, 96 rxn	25-48	LX03242
	LeXPrep Universal Stubby Adapter (UDI) Module Set D1, 480 rxn	1-96	LX03245
Full UDI Adapter Module (for Illumina)	LeXPrep UDI Adapter Kit Set C1 (for Illumina®), 24 rxn	1-12	LX03221
	LeXPrep UDI Adapter Kit Set C2 (for Illumina®), 24 rxn	13-24	LX03222
	LeXPrep UDI Adapter Kit Set A (for Illumina®), 96 rxn	1-12	LX03211
	LeXPrep UDI Adapter Kit Set B (for Illumina®), 96 rxn	13-24	LX03212
	LeXPrep UDI Adapter Kit Set A&B (for Illumina®), 192 rxn	1-24	LX03213
	LeXPrep UDI Adapter Kit Set D1 (for Illumina®), 480 rxn		LX03224