LeXPrep EZ RNA Library Preparation Kit

Background

RNA sequencing (RNA-Seq) enables comprehensive analysis of transcriptomes, providing insights into gene expression regulation, alternative splicing, mutation profiling, and RNA-based pathogen detection. It is widely applied in basic research, disease studies, and agricultural genomics. Since ribosomal RNA (rRNA) accounts for nearly 90% of total RNA, excessive rRNA content can reduce sequencing efficiency and increase cost. To improve data quality and transcript coverage, strategies such as rRNA depletion, poly(A) enrichment, or targeted RNA sequencing are commonly adopted. Compared with non-stranded library preparation, stranded library preparation preserves transcriptional directionality, allowing accurate differentiation of overlapping transcripts and precise quantification of sense and antisense expression. The **LeXPrep EZ RNA Library Preparation Kit** from LexigenBio provides a streamlined, high-performance solution for RNA-Seq library preparation. It features a simplified workflow, flexibly connected with upstream and downstream modules, and excellent data consistency—supporting efficient, accurate, and reproducible transcriptome profiling.

Introduction

LeXPrep EZ RNA Library Preparation Kit is a rapid RNA library preparation kit developed for mainstream NGS platforms. It converts 2.5-500ng RNA samples (cells, fresh tissues, blood, body fluids, microbes, FFPE tissues, etc.) into high-quality sequencing libraries. Applications include gene expression profiling analysis, single-nucleotide variant detection, alternative splicing and fusion gene analysis, allele-specific expression analysis, and RNA pathogen detection. This kit employs an optimized reaction system that integrates 2nd Strand cDNA Synthesis, End Repair & A-tailing into a single step, significantly shortening library preparation duration. This kit provides two types of 1st Strand Buffer and 2nd Strand & EA Buffer, allowing flexible preparation of non-stranded or stranded libraries. It is not only compatible with LeXPrep rRNA Blocking Reagent or mRNA enrichment modules fortranscriptomics sequencing, but also can be integrated with liquid hybrid capture systems for targeted RNA-Seq (RNACap), enhancing effective data output and reducing sequencing costs.

Feature

Broad Coverage

- Supports 2.5-500ng initial input
- Compatible with various sample types and qualities
- Flexible choice of non-stranded or stranded library preparation
- Adapters compatible with mainstream NGS platforms
- Seamless integration with upstream and downstream modules for diverse applications

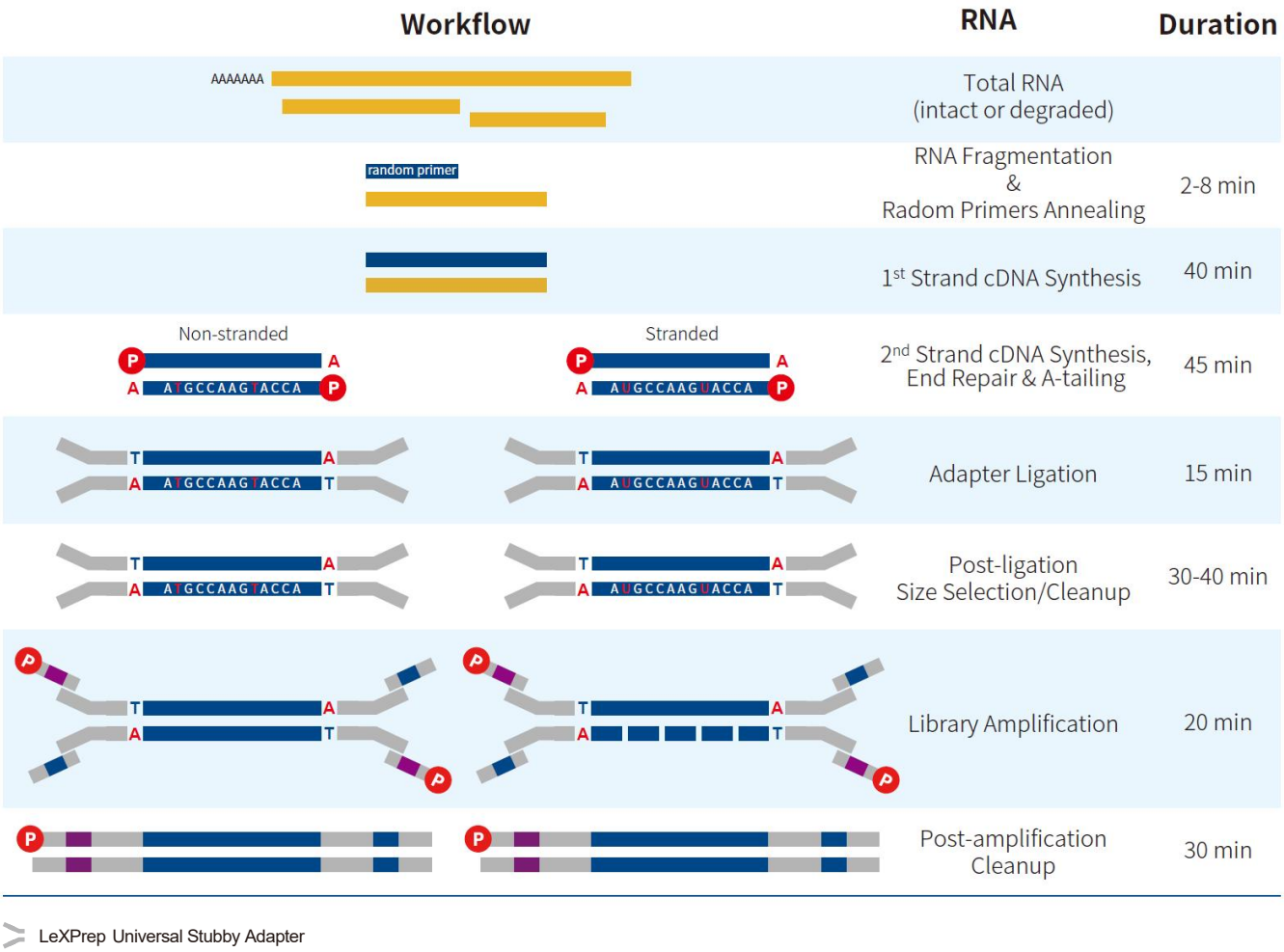
Superior Performance

- Higher library yield
- More uniform transcript coverage
- Higher detection sensitivity for low-abundance transcripts and fusion genes
- Higher strand specificity
- Excellent library complexity

Fast Workflow

- Combines 2nd Strand cDNA Synthesis, End Repair & A-tailing into a single step
- Greatly streamlines the workflow and user-friendly operation, significantly shortens library preparation duration

Workflow



Performance

Stable and Efficient Library Yield

Compatible with a Wide Range of Input Amounts

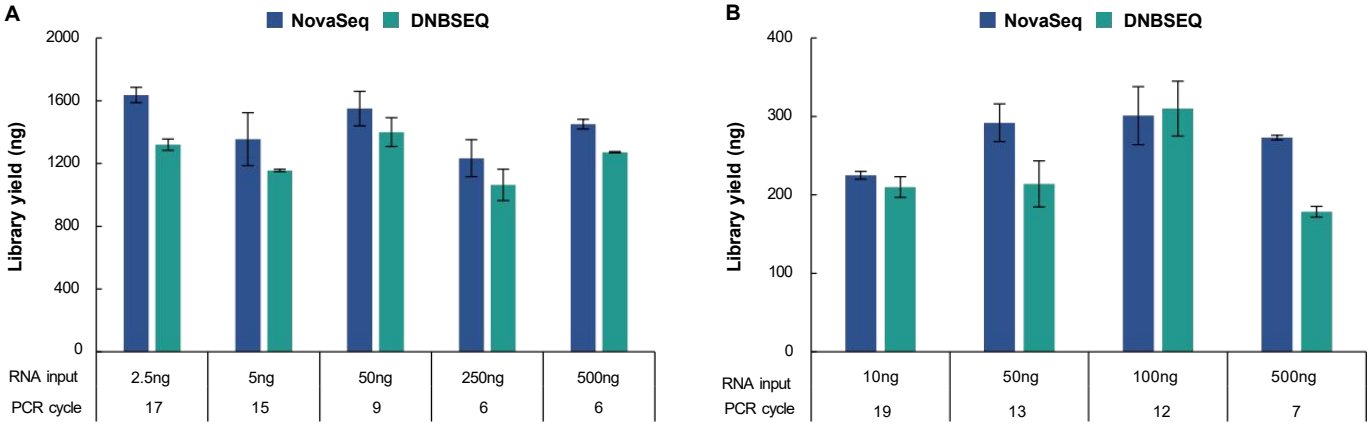


Figure 1. Library yield for cell line RNA samples with different input amounts. The non-stranded libraries were prepared with RNA samples across different input amounts using the LeXPrep EZ RNA Library Preparation Module coupled with the LeXPrep Universal Stubby Adapter (UDI) Module (NovaSeq) and LeXPrep Universal Adapter (MDI) Module (for MGI) (DNBSEQ) respectively, following the recommended PCR cycles as described in the user manuals. **A.** Total RNA [connected with the downstream workflow (RNACap)]; **B.** rRNA-depleted [connected with the upstream workflow (rRNA depletion): LeXPrep rRNA Blocking Reagent (Human)]. **Note:** All the initial samples are Human Brain Total RNA (Takara, 636530).

Compatible with Multiple Types Samples of Different Grades

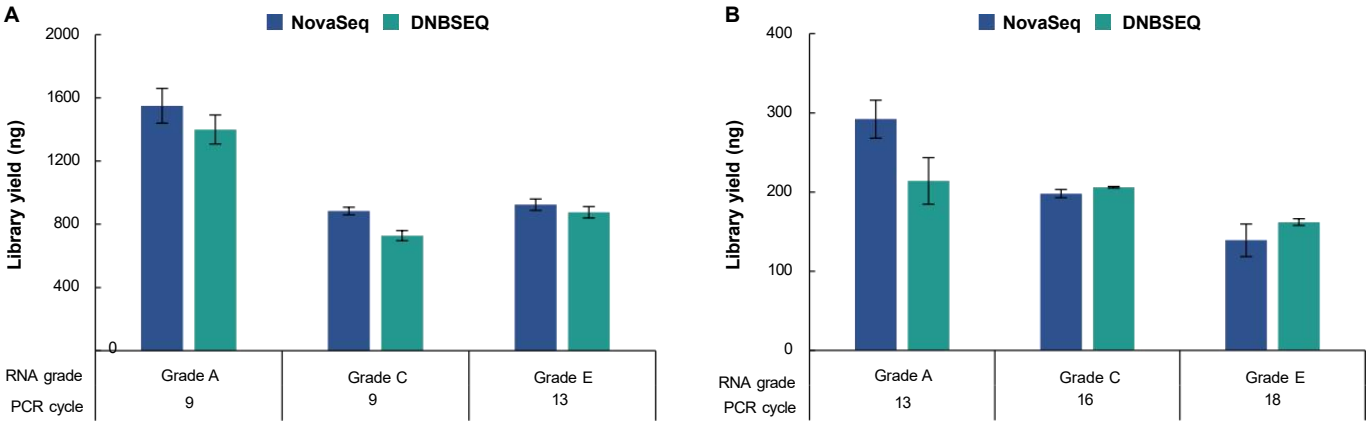


Figure 2. Library yield for RNA samples with different grades. The non-stranded libraries were prepared with RNA samples with different grades. A. Total RNA; **B.** rRNA-depleted.

Note: Sample grading standard: Grade A (cell line RNA): Human Brain Total RNA (Takara, 636530), RIN ≥ 7; Grade C (FFPE-derived RNA): DV_{200} ≥ 50; Grade E (FFPE-derived RNA): DV_{200} < 50. All the initial input amounts were 50 ng.

More Efficient Library Yield

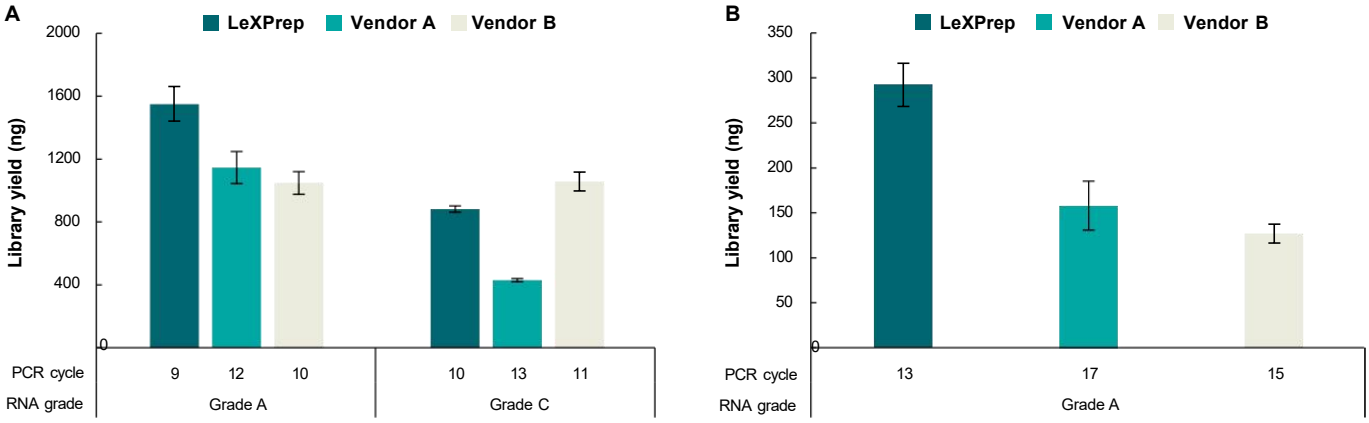
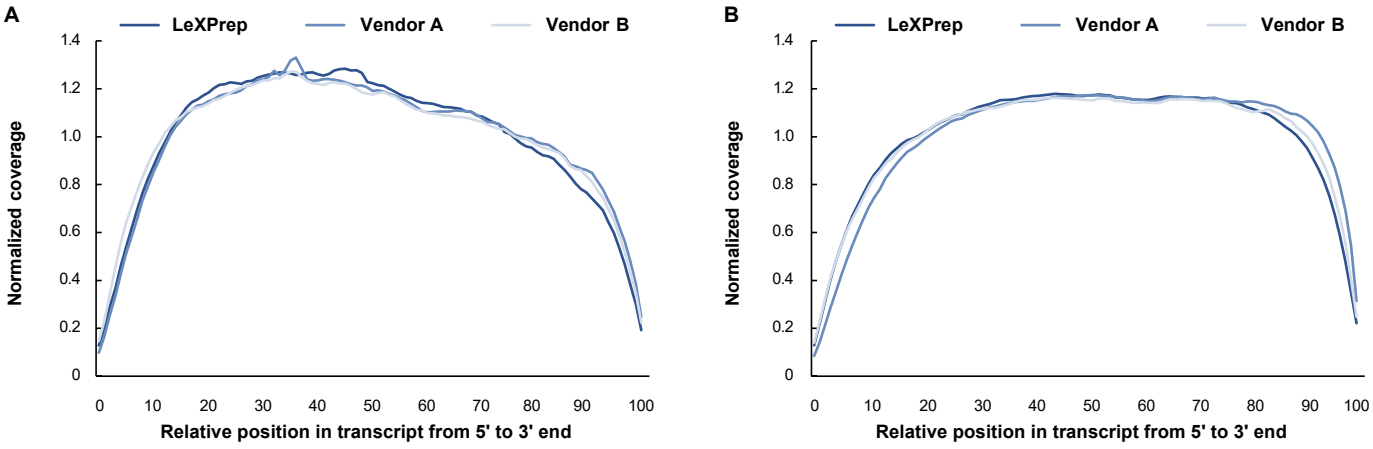


Figure 3. LeXPrep EZ RNA Library Preparation Kit has a more efficient library yield than VendorA & B. The non-stranded libraries were prepared with RNA samples across different grades using the LeXPrep EZ RNA Library Preparation Module (LeXPrep), Vendor A and Vendor B, coupled with the LeXPrep Universal Stubby Adapter (UDI) Module respectively. **A.** Total RNA; **B.** rRNA-depleted.

More Uniform Transcript Coverage



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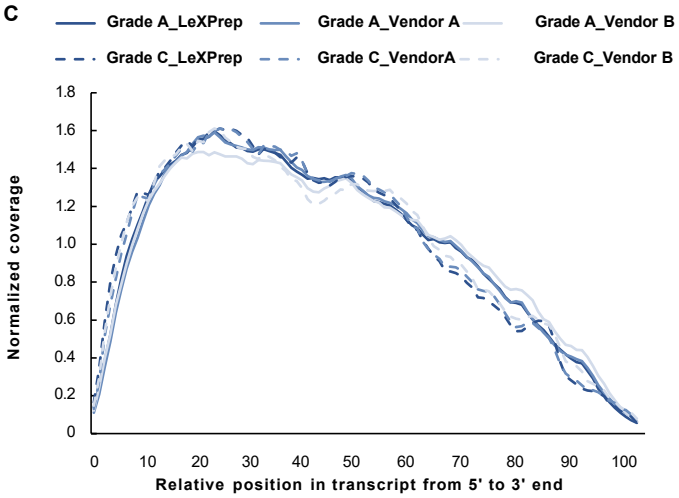

Figure 4. LeXPrep EZ RNA Library Preparation Kit performs more uniform transcript coverage compared to VendorA & B. The non-stranded libraries were prepared with RNA samples using LeXPrep, VendorA, and Vendor B coupled with the LeXPrep Universal Stubby Adapter (UDI) Module respectively, connected with the upstream workflows **A.** rRNA-depleted, **B.** enriched mRNA; and the downstream workflow **C.** RNACap, with 500 ng of pre-library input for hybridization capture using the LeXOnco Plus Panel v2.0 and LeXPrep Hybrid Capture Reagents; and the upstream workflows to asses transcript coverage. Sequencing was performed on NovaSeq 6000, PE150. For each sample, 0.3 Gb was randomly selected for data analysis.

Note: The samples in figure A are cell line RNA, with an initial input of 50 ng both in figure A & C. The samples in figure B are cell line mRNA, with an initial input of 10 ng.

Higher Detection Sensitivity

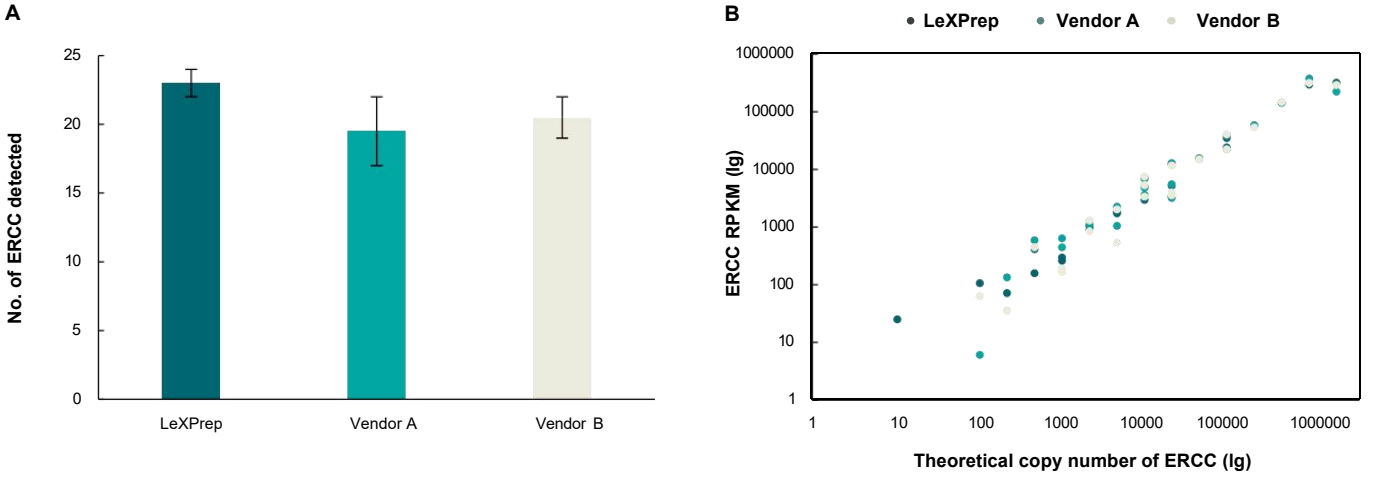

Figure 5. LeXPrep EZ RNA Library Preparation Kit performs higher sensitivity for low-abundance transcripts compared to VendorA & B. The non-stranded pre-libraries were prepared using LeXPrep, Vendor A, and Vendor B coupled with the LeXPrep Universal Stubby Adapter (UDI) Module respectively. 500 ng of each pre-library was performed for hybridization capture using the Ext-RNA Control Panel v1.0 and LeXPrep Hybrid Capture Reagents. **A.** No. of ERCC detected; **B.** ERCC RPKM.

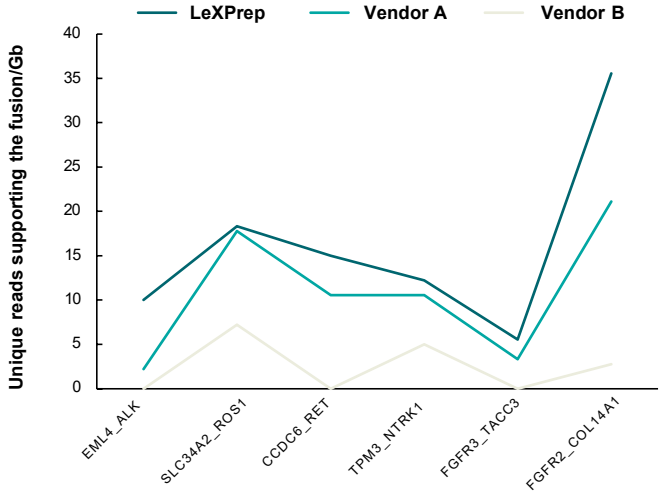

Figure 6. LeXPrep EZ RNA Library Preparation Kit performs higher detection sensitivity for fusion gene than VendorA & B in standards. The non-stranded libraries were prepared using LeXPrep, Vendor A, and Vendor B coupled with the LeXPrep Universal Stubby Adapter (UDI) Module respectively. 500 ng of each pre-library was performed for hybridization capture using the OncoFu Elite (for RNA) Panel v1.0 and LeXPrep Hybrid Capture Reagents.

Note: The samples are mixture of FFPE RNA (Grade C) mixed with 3.125% Onco Fusion Multiplex FFPE(DNA/RNA) Reference Standard (GeneWell, GW-RPSMLX06)], with an initial input of 100ng.

Higher Strand Specificity

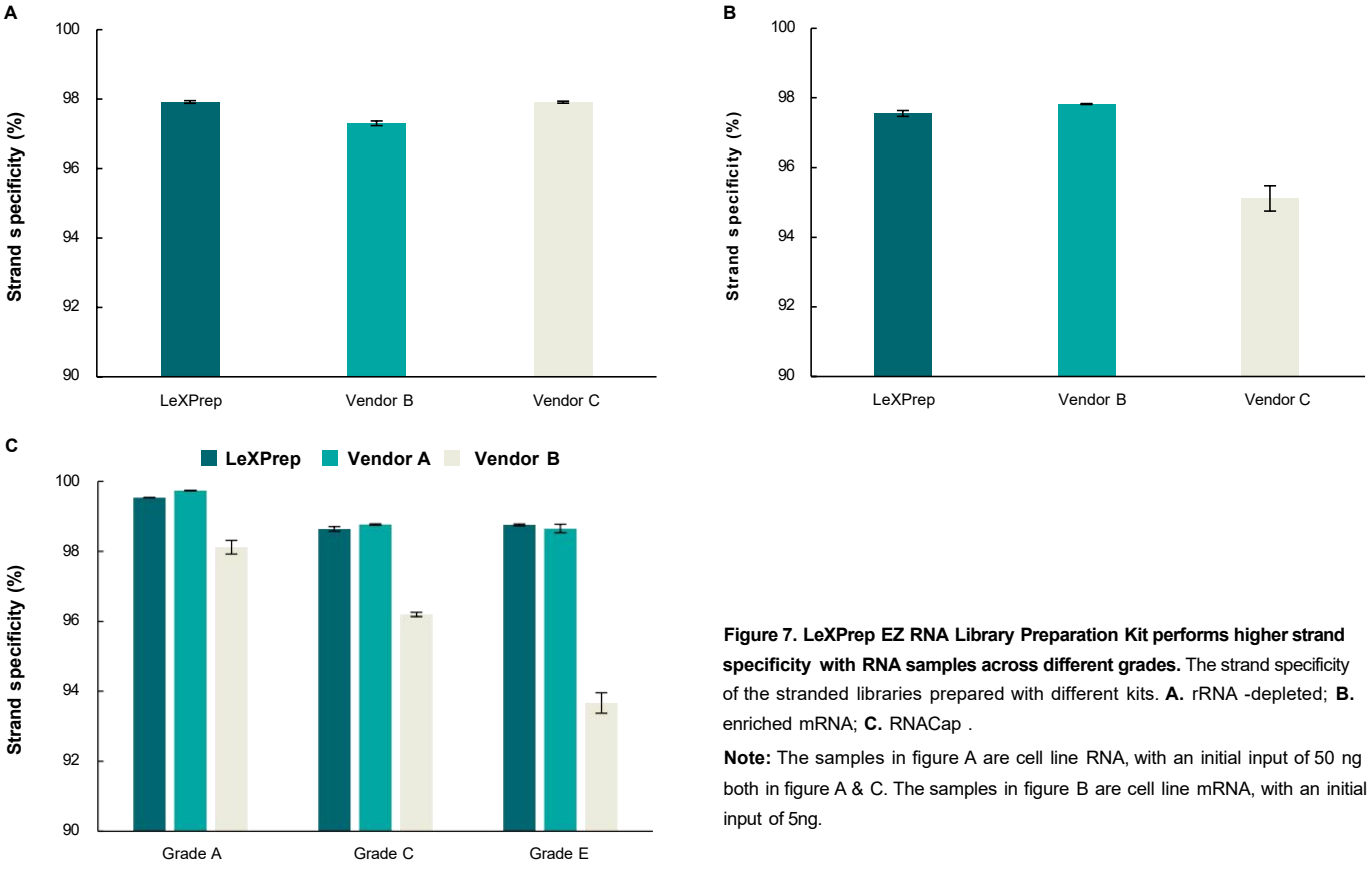

Figure 7. LeXPrep EZ RNA Library Preparation Kit performs higher strand specificity with RNA samples across different grades. The strand specificity of the stranded libraries prepared with different kits. **A.** rRNA -depleted; **B.** enriched mRNA; **C.** RNACap .

Note: The samples in figure A are cell line RNA, with an initial input of 50 ng both in figure A & C. The samples in figure B are cell line mRNA, with an initial input of 5ng.

Seamless Connection Upstream and Downstream Modules, Broad Application Compatibility

Connection with RNACap

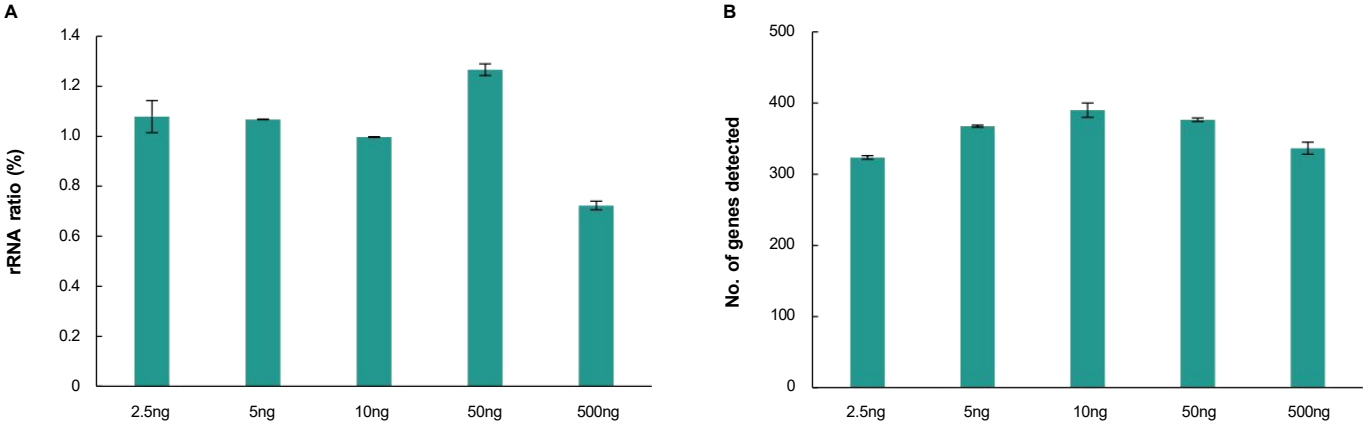

Figure 8. Performance of the stranded libraries prepared with the downstream workflow (RNACap). The stranded libraries were prepared with RNA samples across different input amounts using the LeXPrep EZ RNA Library Preparation Module coupled with the LeXPrep Universal Adapter (MDI) Module (for MGI) (DNBSEQ). 500ng of each pre-library was performed for hybridization capture using the LeXOnco Plus Panel v2.0 and LeXPrep Hybrid Capture Reagents. **A.** rRNA ratio; **B.** No. of genes detected. Sequencing was performed on DNBSEQ-T7, PE150. For each sample, 0.3 Gb of data was randomly selected for data analysis.

Connection with Upstream rRNA Rapid Blocking

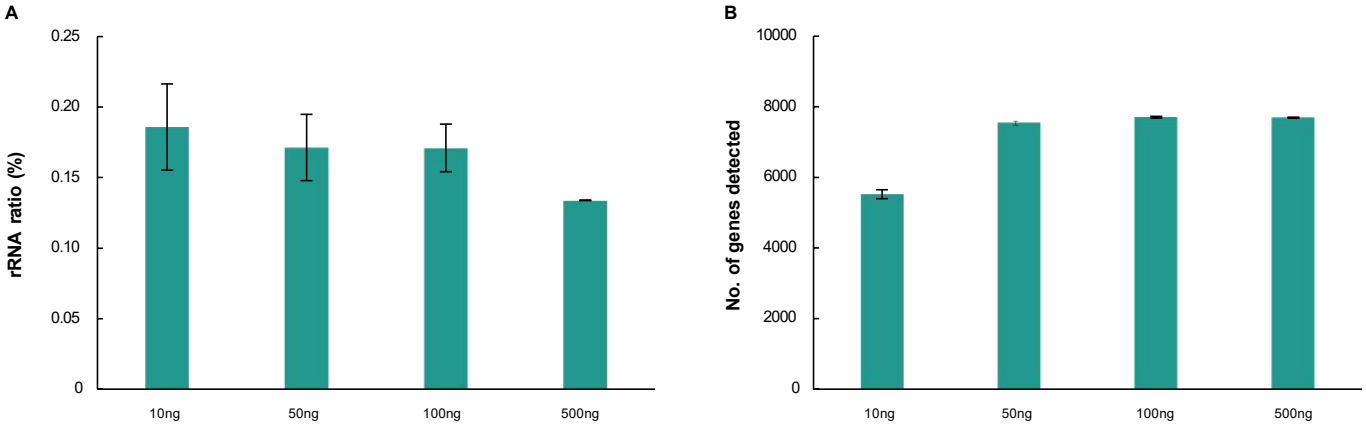

Figure 9. Performance of the stranded libraries prepared with the upstream workflow (rRNA rapid blocking). A. rRNA ratio; **B.** No. of genes detected.

Ordering Information

Type	Product	Details	Catalog
LibPrep Module	LeXPrep EZ RNA Library Preparation Module, 24 rxn	24 rxn	LX02441
	LeXPrep EZ RNA Library Preparation Module, 96 rxn	96 rxn	LX02442
Adapter Module	LeXPrep Universal Stubby Adapter (UDI) Module Set A1, 24 rxn	#1-12	LX03240
	LeXPrep Universal Stubby Adapter (UDI) Module Set B series, 96 rxn	#1-24 ~ #25-48	LX03241 ~ LX03242
	LeXPrep Universal Stubby Adapter (UDI) Module Set E series, 96 rxn	#1-96 ~ #673-768	LX03251 ~ LX03258
	LeXPrep Universal Stubby Adapter (UDI) Module Set F series, 1152 rxn	#1-96 ~ #289-384	LX03261 ~ LX03264
	LeXPrep Universal Adapter (MDI) Module Set A1 (for MGI), 24 rxn	#1-12	LX03711
	LeXPrep Universal Adapter (MDI) Module Set B (for MGI) series, 96 rxn	#1-24 ~ #73-96	LX03721 ~ LX03726
	LeXPrep Universal Adapter (MDI) Module Set E (for MGI) series, 96 rxn	#1-96 ~ #289-384	LX03751 ~ LX03754
	LeXPrep Universal Adapter (MDI) Module Set F (for MGI) series, 1152 rxn	#1-96 ~ #289-384	LX03761 ~ LX03764

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