Technology from Kyoto University

High-Throughput, Cost-Effective Technology for Comprehensive Transcriptome Analysis

We are looking to out-license the technology for its commercialization.

Novel reverse transcription primer that streamlines RNA-seq library preparation for high sample throughput

◆Background

RNA sequencing (RNA-seq) is a powerful method for comprehensive RNA detection, but the complexity of library preparation limits high-throughput sample processing. To overcome this, sample-specific indexed primers have been introduced during random-primed reverse transcription, allowing multiple samples to be processed in parallel (Fig.1). However, Kyoto University researchers found that RNA detection profiles depend on the index sequence used, making this approach unsuitable for accurate RNA analysis (Fig. 2, left).

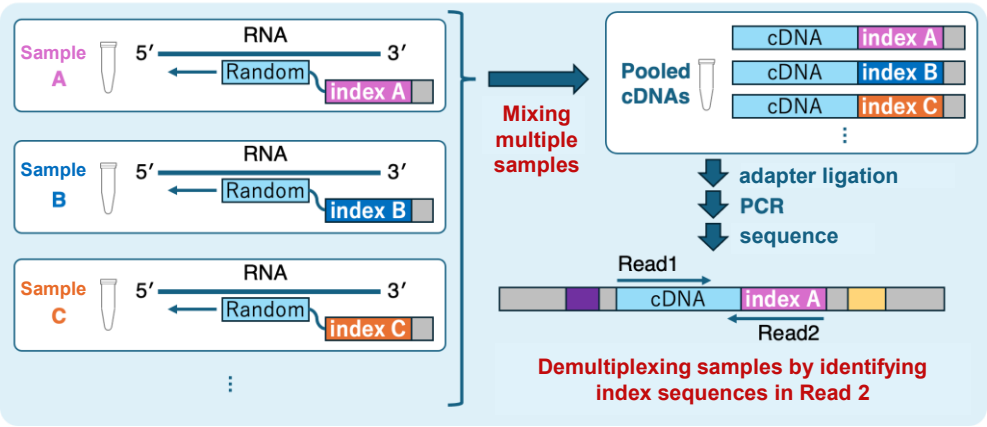

Fig.1. High-throughput RNA-seq library preparation
Random primers carrying index sequences enable simultaneous processing of multiple samples, reducing labor time and reagent costs.

◆Description

The research group found that reverse transcription **using random primers with specific structural features significantly reduces RNA detection bias caused by primer index sequences (Fig.2, right).** This enables **high-throughput analysis of multiple samples** without compromising RNA detection accuracy, while **substantially reducing library preparation time and reagent costs.**

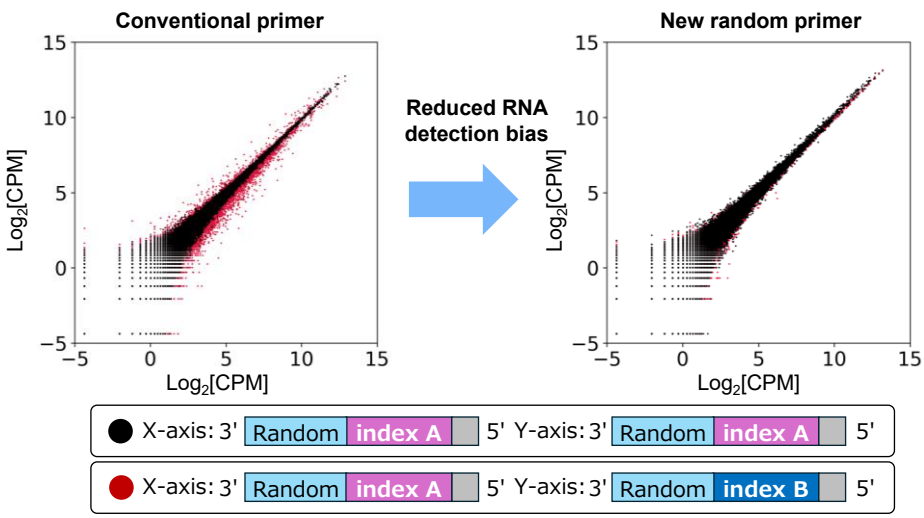

Fig.2. RNA detection profiles in libraries prepared using the new random primer
Duplicate libraries were prepared from the same total RNA using indexed random primers, and FANTOM5 promoter expression was compared between replicates (black) and indexes (red). Conventional primers showed strong index-dependent variability due to impaired annealing, whereas the new primers reduced this variability to replicate-level differences.

◆Development Status

When applied to RNA-seq (CAGE) of approx. 500 samples, the followings were confirmed;

- reduction in library preparation time (less than 1/10)
- reduction in reagent costs (less than 1/10)
- high RNA detection accuracy

◆Applications

- RNA-seq library preparation
- Contract-based analysis business
- Manufacturing and sales of reagents

◆Offer

- Patent License
- Options for Patent License

◆Contact

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