MGIEasy Duplex UMI Universal Library Prep Set

Features

- Mitigates barcode swapping and contamination
- 10 ng DNA input for library construction
- Over 200+UMI supports ultra-low frequency variant detection

Product specification

With the development of the sequencing technique, High-throughput sequencing plays more important role in cancer screening and drug selection, which set higher demands in low-frequency-variant-detection. Duplex-UMI (unique-molecule-identifier) gets advantage in sensitive and precise sequencing becomes an indispensable tool. MGIEasy Duplex UMI Library Prep/Sequencing Product provide a fully workflow from sample to sequencing. Excellent sequencing quality and variant-detection performance are noticed no matter using FFPE or cfDNA.

Product specification

Product	MGIEasy Duplex UMI Universal DNA Library Prep Set
PN.	16RXN (1000008643) & 96RXN (1000018644)
Frag. Method	Ultrasound except cfDNA
shelf Life	12 Month
Library Size	200 –600 bp
Assay Time	~7 Hours (Hands on time 30 min)
Read Length	PE100/PE150
Suitable Probes	MGI, Agilent, Nimblegen, IDT or seminar Probes from other vendors
Technologies	Hybrids Capture+High throughput sequencing

Product Performance

Duplex barcode mitigates barcode swapping

Residuary adaptors or incomplete PCR amplification during the library construction may bring in false barcode information, lead to contamination between samples. These kinds of contamination occurs seriously in multiple sample pooling Hybridization (Fig.1A). Duplex barcode supported double-checked barcode split method to mitigates barcode swapping.

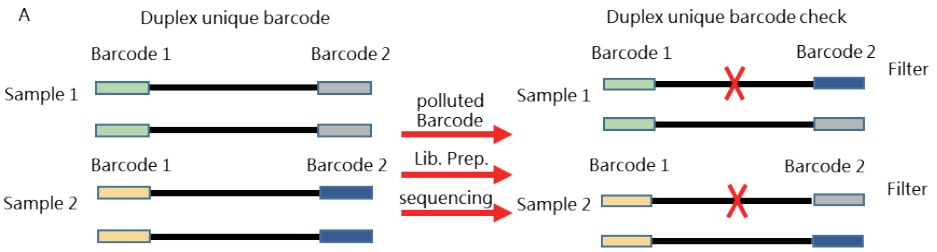

Fig.1A: barcode swapping was filtered by duplex barcode

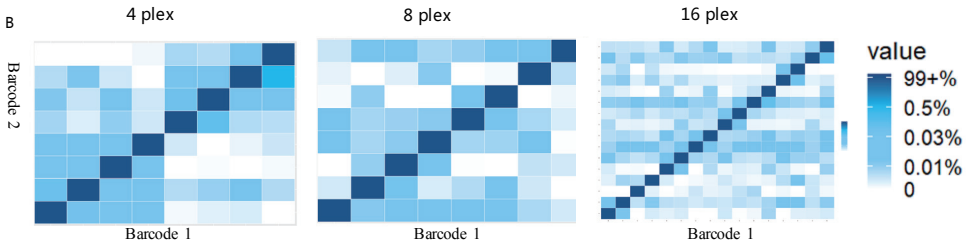

Fig.1B : Duplex barcode combine with MGI Exome Probe

Excellent conversion rate

MGI duplex barcode product combine with special designed bubble adapter and newly released library construc-tion module provides maximum conversion rate. DNA input requirement minimized to 10 ng cfDNA (Fig.2A). Over 3000 sequencing depth is reached when using as low as 20 ng cfDNA input (Fig2B).

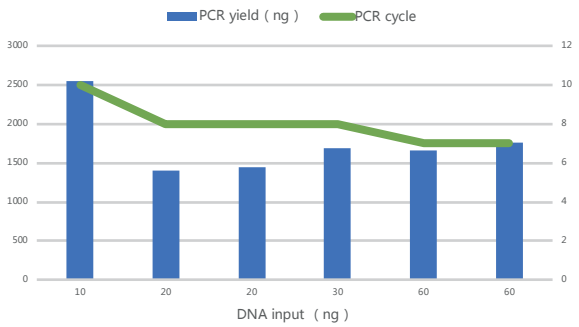

Fig 2A PCR Yield when different DNA input

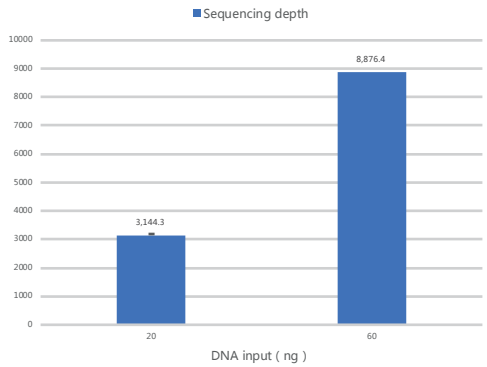

Fig. 2B maximum depth of different DNA input

Duplex UMI: Best tool for Low Frequency variant detection

UMI adapter identify each DNA fragment and correct false variant information using multiplex reads.

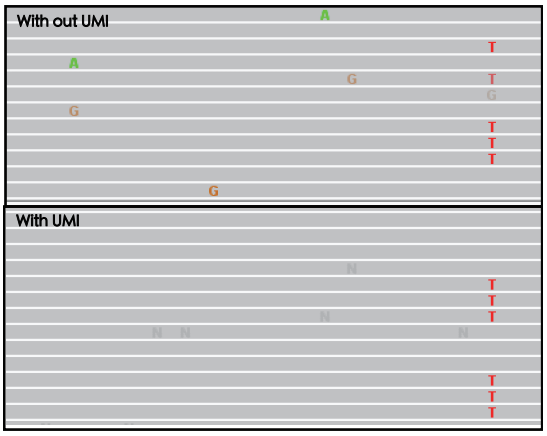

Fig. 3A duplex UMI correct the cfDNA sequencing data

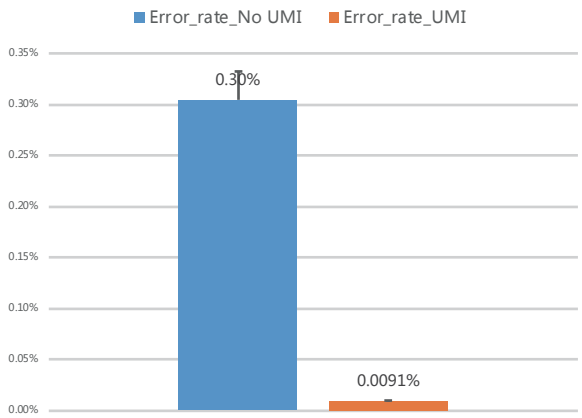

Fig. 3B Error rate was reduced after UMI correction

Standard cfDNA cancer mutation samples were used to test the detecting ability of the low frequency variants. The result shows that variant with 1% frequency can be detected under only 500X with no false variant background.

Table 4A. standard cfDNA information

Gene	Mutation	depth	Frequency (sequencing)	Frequency (ddPCR)
EGFR	L858R	467	4.50%	5.92%
	T790M	548	1.62%	1.13%
	G719S	528	0.38%	0.72%
KRAS	G12D	573	4.66%	6.37%
	G13D	469	1.05%	1.03%
	A146T	515	0.77%	0.92%
BRAF	V600E	518	0.77%	0.85%

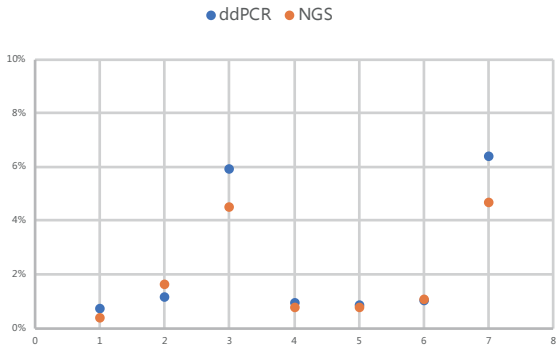

Fig 4B Compare variant frequency got by ddPCR and NGS

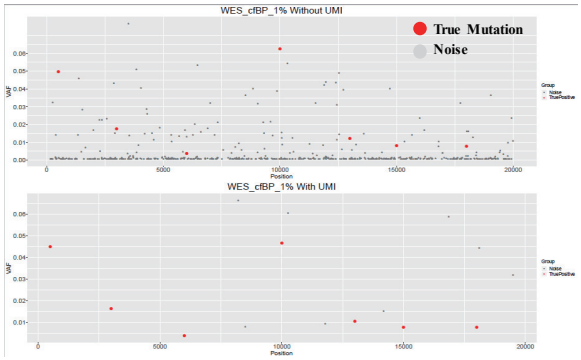

Fig. 4C duplex UMI helps distinguish Ture/False mutation

Summary

MGIEasy duplex UMI Universal Library Prep Set designed for cancer use. Total package is designed for low input cfDNA library construction with over 50% conversion rate. Duplex barcode mitigates barcode swapping, supports over 12plex pooling hybridization, improves sensitivity and precision of low frequency variant detection.

Product Information

Product	Configuration	Catalog No.
MGIEasy Duplex UMI Universal DNA Library Prep Set	16 RXN	1000008643
MGIEasy Duplex UMI Universal DNA Library Prep Set	96 RXN	1000008644
MGIEasy Dual Barcode Exome Capture Supplementary Kit	16 RXN	1000018647

* for research purposes only

Contact Us

MGI Tech Co., Ltd
Add.: Building11, Beishan Industrial Zone,
Yantian District, Shenzhen, CHINA 518083
Email: MGI-service@mgi-tech.com
Website: en.mgi-tech.com
Tel: 4000-688-114
Version: November 2022 | MGPD111810200-18

https://www.linkedin.com/company/mgi-bgi

https://twitter.com/MGI_BGI