

創世紀生技 | 2025 Q2

Watchmaker NGS Kit 季刊



PRECISION ENZYMES AND PROTEINS

DNA sample NGS library prep kit



Sonication



DNA fragmentation Enzyme

Product	Cat. No.	Product	Cat. No.
Watchmaker DNA Library Prep Kit (PCR-free)	7K0101-024 (24 rxn) 7K0101-096(96 rxn)	Watchmaker DNA Library Prep Kit with Fragmentation (PCR-free)	7K0013-024 (24 rxn) 7K0013-096(96 rxn)
Watchmaker DNA Library Prep Kit (w/o primers)	7K0103-024 (24 rxn) 7K0103-096(96 rxn)	Watchmaker DNA Library Prep Kit with Fragmentation (w/o primers)	7K0022-024 (24 rxn) 7K0022-096(96 rxn)
Watchmaker DNA Library Prep Kit	7K0102-024 (24 rxn) 7K0102-096(96 rxn)	Watchmaker DNA Library Prep Kit with Fragmentation	7K0102-024 (24 rxn) 7K0102-096(96 rxn)

RNA / mRNA sample NGS library prep kit



Polaris rRNA depletion



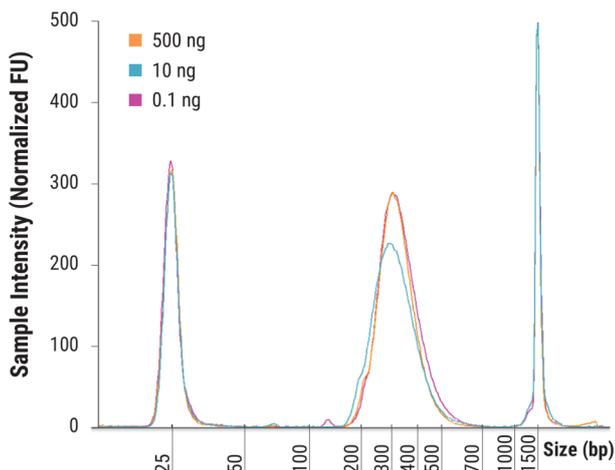
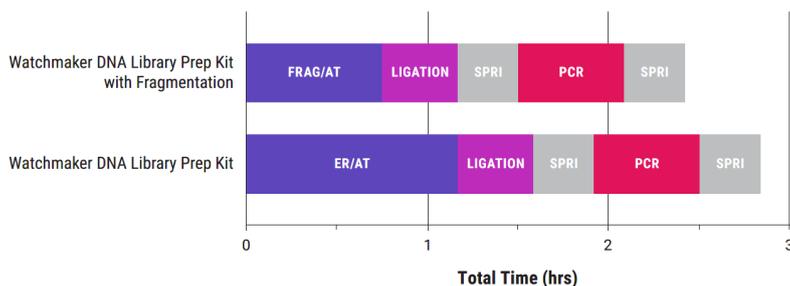
mRNA capture

Product	Cat. No.	Product	Cat. No.
Watchmaker RNA Library Prep Kit with Polaris Depletion	7BK0002-024 (24 rxn) 7BK0002-096(96 rxn)	Watchmaker mRNA Library Prep Kit	7BK0001-024 (24 rxn) 7BK0001-096(96 rxn)
Watchmaker RNA library Prep kit	7K0078-024 (24 rxn) 7K0078-096(96 rxn)	Watchmaker RNA library Prep kit	7K0078-024 (24 rxn) 7K0078-096(96 rxn)
Polaris Depletion Kit-rRNA /Globin (HMR)	7K0077-024 (24 rxn) 7K0077-096(96 rxn)	Watchmaker mRNA Capture kit	7K0105-024 (24 rxn) 7K0105-096(96 rxn)

DNA

	Watchmaker DNA Library Prep Kit with Fragmentation	Watchmaker DNA Library Prep Kit
Input	dsDNA that requires fragmentation	dsDNA that is already sheared or does not require fragmentation
Input range	<1 ng to 500 ng	500 pg – 1 µg
Library prep time (excluding PCR)	90 – 140 min (including enzymatic fragmentation)	115 – 170 min (from fragmented input)
Adapter compatibility	Full-length UDI or CDI adapters “Stubby” adapters Adapters with/without UMIs	Full-length UDI or CDI adapters “Stubby” adapters Adapters with/without UMIs
Supports PCR-free workflows	Yes	Yes
Single tube library prep	Yes	Yes
Tunable size selection	Optional	Optional
Automation-friendly workflow	Yes	Yes
Whole genome sequencing (human, microbial)	✓	✓
Targeted sequencing (hyb. capture)	✓	✓
Somatic and germline variant detection	✓	✓
Copy number variation (CNV) analysis	✓	✓
Detection of translocations and other structural variants	✓	✓
Metagenomic analysis	✓	✓
Bulk RNA-seq (from full-length or fragmented cDNA)	✓	✓
Viral sequencing	✓	✓
cfDNA/ctDNA/liquid biopsy analysis		✓
Fragmentomics		✓
ChIP-seq		✓
Methyl-seq*		✓

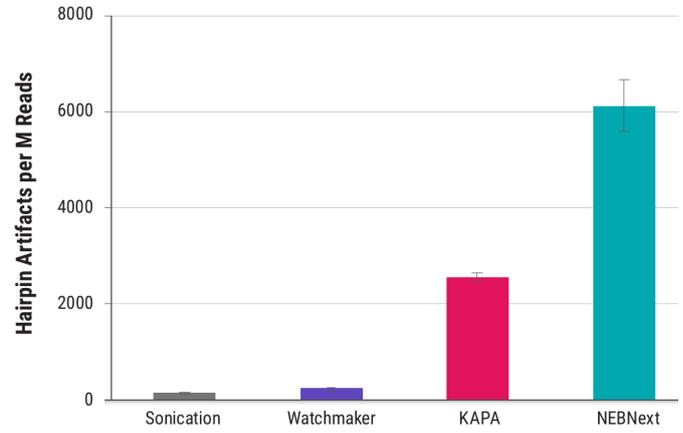
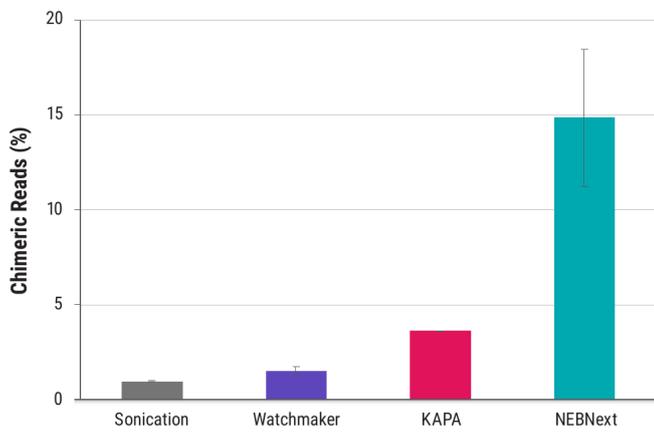
*In combination with Equinox Uracil Tolerant Library Amplification Kits.



Watchmaker 的 DNA library kit 提供高度簡化的工作流程來處理所有 DNA 樣本類型。需要 fragmentation 的樣本使用酵素和 A-tailing 步驟 (Frag/AT)，而預先碎片化的樣本 (例如，cfDNA 或機械剪切的 DNA) 則使用 kit 內的和 A-tailing 步驟 (ER/AT)。Library 的製備時間分別約 1.25 至 2 小時以內。對於 Library 需要 amplification 的部分，Equinox 聚合酶可提供良好的序列正確性和產量，只增加約 1 小時。

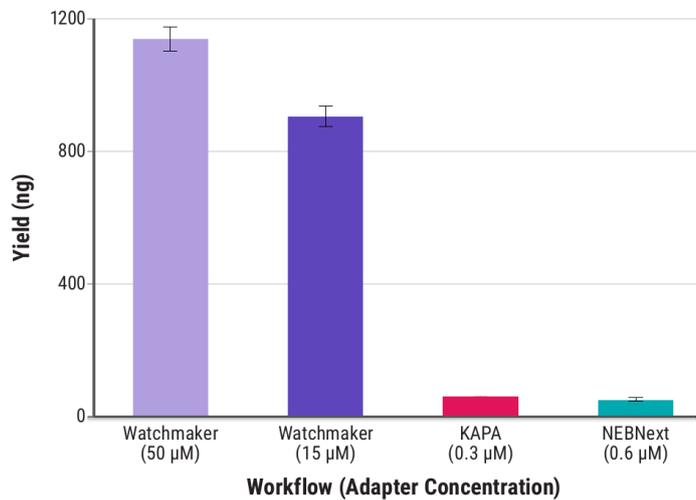
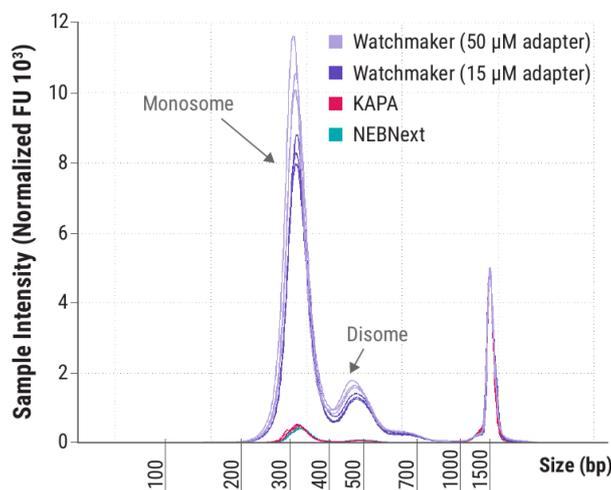
酵素法進行 DNA fragmentation，具有廣泛的用途。

以 500、10 和 0.1 ng 人類基因組 DNA (hgDNA) 為原料，在 30°C 下 fragmentation 20 分鐘，library 製備。在這個 5,000-fold input 下，library 的 size 具有高度一致性。



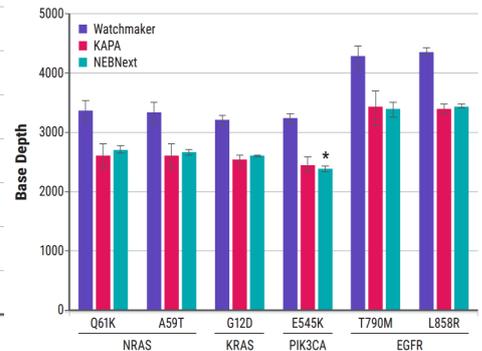
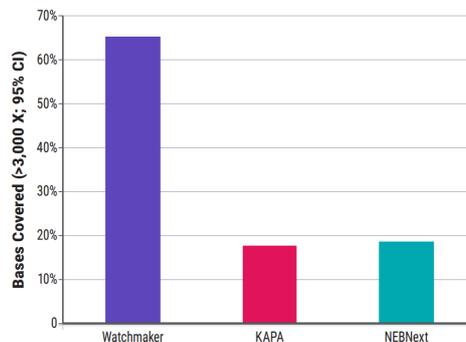
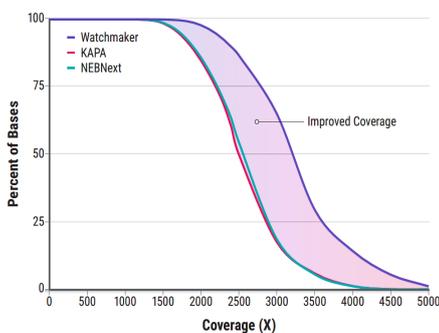
Watchmaker kit 降低 Fals Chimeric reads 和 Hairpin artifacts

使用 Watchmaker DNA Library Prep Kit(含 Fragmentation), KAPA HyperPlus Kit, NEBNext®Ultra II FS DNA library preparation kit 和 sonication 的 control library。(左) Library 使用了 1 ng hg DNA 製備。(右) Enzyme fragmentation library 使用 10、50 和 100 ng 的 hgDNA, 而 sonication library control 則使用了 1 和 200 ng。每個 Bar 代表了 DNA 在 input 量和 library preparation 的 workflow 的平均評估數據。



Watchmaker DNA library prep kit 提高 cfDNA 的產量 (左) TapeStation 分析 cfDNA library 結果。

(右) 以 TapeStation 分析評估的最終 library preparation 產量。以 1 ng Isopure cfDNA, 使用 Watchmaker DNA Library Prep Kit、KAPA HyperPrep Kit 或 NEBNext® Ultra™ II 進行 DNA Library Prep。與其它廠牌 kit 相比, Watchmaker kit 的產量高出 9 倍。透過增加 adaptor 的濃度進行額外優化, 進一步提高了產量 20 – 25%。並且沒有 adaptor-dimer 的情況發生。



Watchmaer DNA library prep kit 可增加 liquid Biopsy 的 coverage

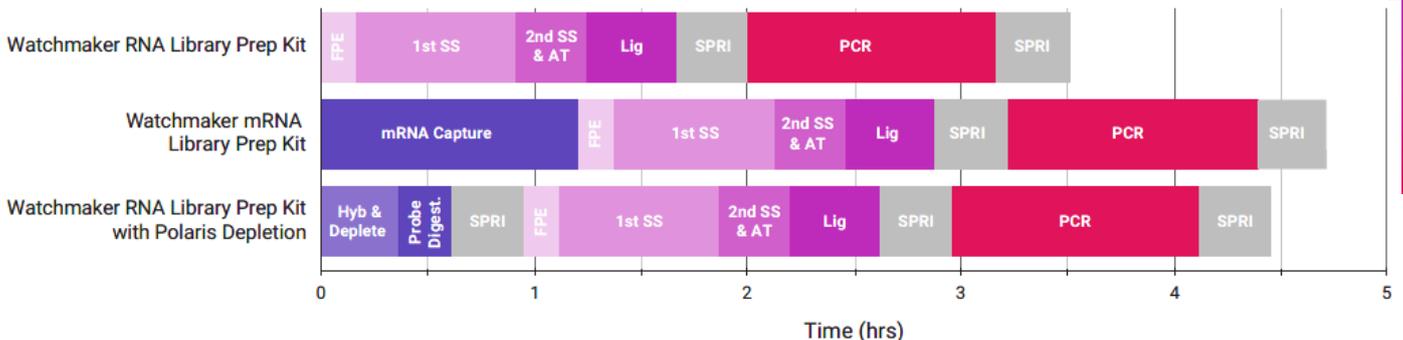
(左) 25 ng library 對整個目標區域的累積覆蓋率。(中) 在 Base covered >3,000x 情況下, Watchmaker 比它牌提高了 3.5 倍的 coverage。(右) Base coverage depth 分析結果。

RNA

	Watchmaker RNA Library Prep Kit with Polaris Depletion	Watchmaker mRNA Library Prep Kit	Watchmaker RNA Library Prep Kit
RNA enrichment method	Ribosomal and globin depletion	Bead-based poly(A) capture	None
RNA input	1 to 1000 ng	2.5 to 1000 ng	0.25 to 100 ng
Library prep time	<4.5 hours	<5 hours	<3.5 hours
Species compatibility	Human, mouse, and rat	Any eukaryote	Any
Adapter compatibility	"Stubby" adapters Full-length UDI or CDI adapters Adapters with/without UMIs	"Stubby" adapters Full-length UDI or CDI adapters Adapters with/without UMIs	"Stubby" adapters Full-length UDI or CDI adapters Adapters with/without UMIs
Automation-friendly workflow	Yes	Yes	Yes
Types of RNA detected	Protein-coding (exonic; mRNA) Long non-coding (lncRNA)	Protein-coding (exonic; mRNA)	Protein-coding (exonic; mRNA) Long non-coding (lncRNA)
Includes reagents for:	rRNA/globin depletion FFPE treatment RNA library prep Library amplification	mRNA Capture RNA library prep Library amplification	FFPE treatment RNA library prep Library amplification

Sample type	Watchmaker RNA Library Prep Kit with Polaris Depletion	Watchmaker mRNA Library Prep Kit	Watchmaker RNA Library Prep Kit
Intact (RIN >7)	✓	✓	✓
FFPE	✓		✓
Blood	✓		✓
Tissue biopsies	✓	✓	✓
Dried blood spots*	✓		✓
Cell lines and organoids	✓	✓	✓
Application			
Gene expression analysis	✓	✓	
Gene fusion detection	✓	✓	✓
Isoform/alternative splicing analysis	✓	✓	✓
Novel transcript discovery	✓	✓	
Single nucleotide variant (SNV) detection	✓	✓	✓
Long non-coding RNA-seq	✓		
Targeted sequencing			✓

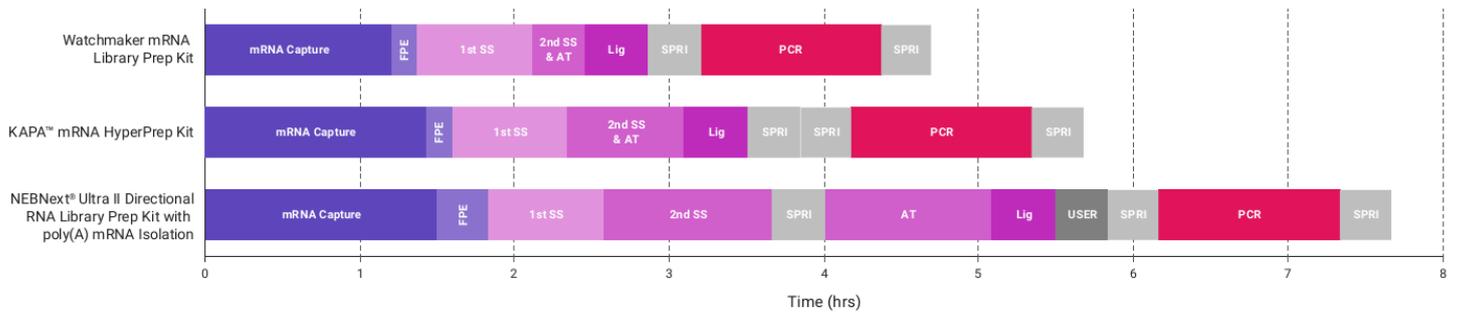
*From external testing.



Watchmaker RNA 產品組合提供三種簡化的工作流程

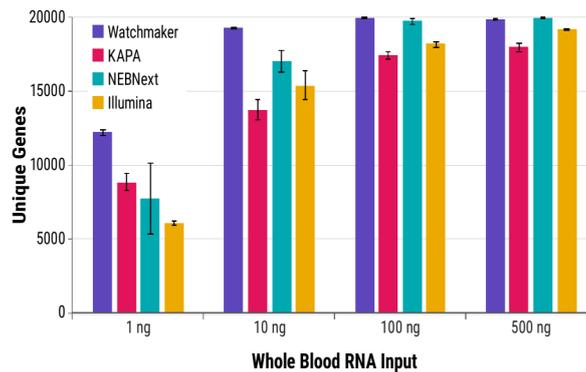
滿足任何 RNA 定序應用和相關樣本類型。減少 incubation 時間以及更少的純化和處理步驟使所有三個工作流程高

度自動化 **單一工作天內輕鬆完成**



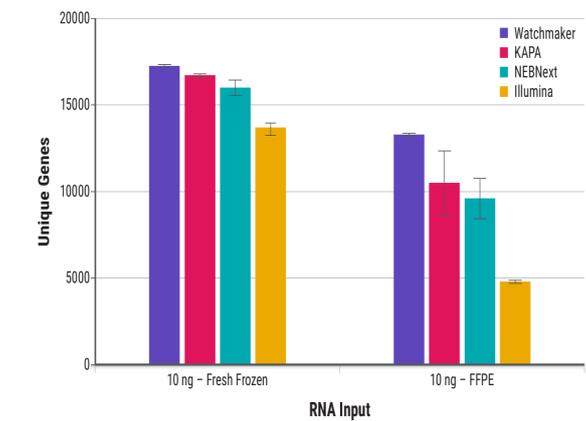
Watchmaker 經由縮短酵素反應和 beads 純化步驟縮短整個工作時間

與它牌工時相比，beads 純化步驟更少，而實現高度 automat 的工作流程，顯著減少手動操作時間（每塊板最多一小時）

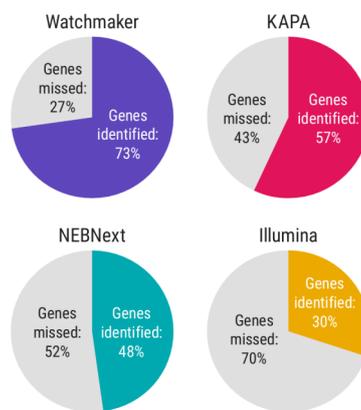


Watchmaker kit 在 NGS 定序流程提供了較好的經濟性和基因檢測靈敏度

由全血中萃取 RNA 後進行 library preparation。使用 featureCounts 識別的 unique gene。Watchmaker 此條件下檢測到更多的 unique gene。

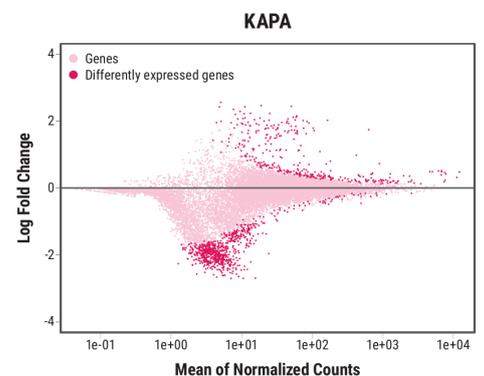
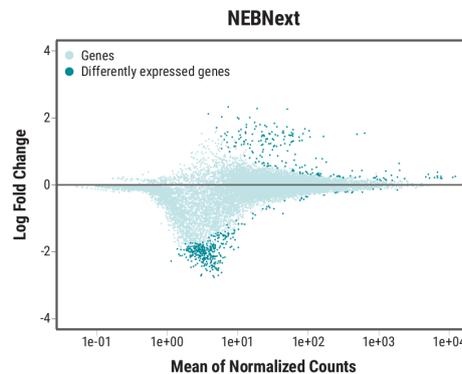
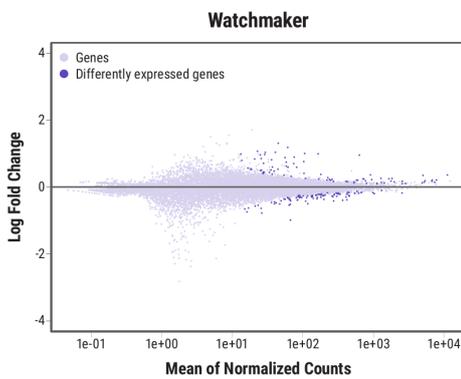


Percentage of Fresh Frozen Genes Detected in Matched FFPE



FFPE 和冷凍組織分析

Watchmaker kit 展現了良好的 unique gene 表現。和 FFPE 檢體進行比較，也具有高度的重疊。

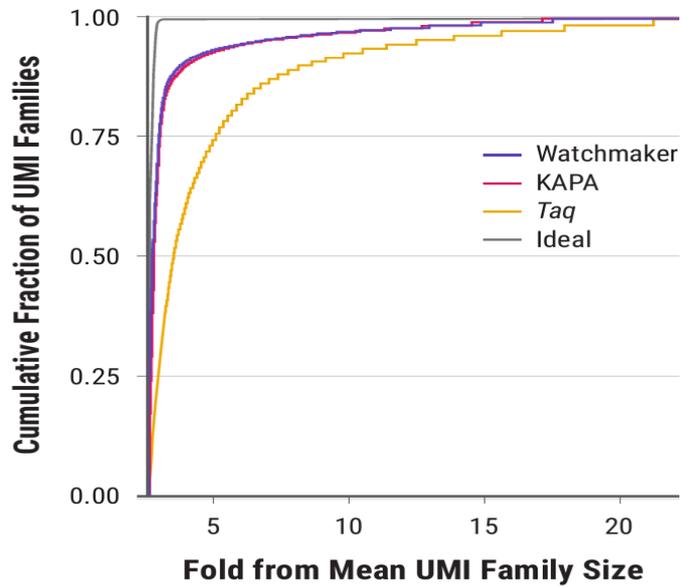
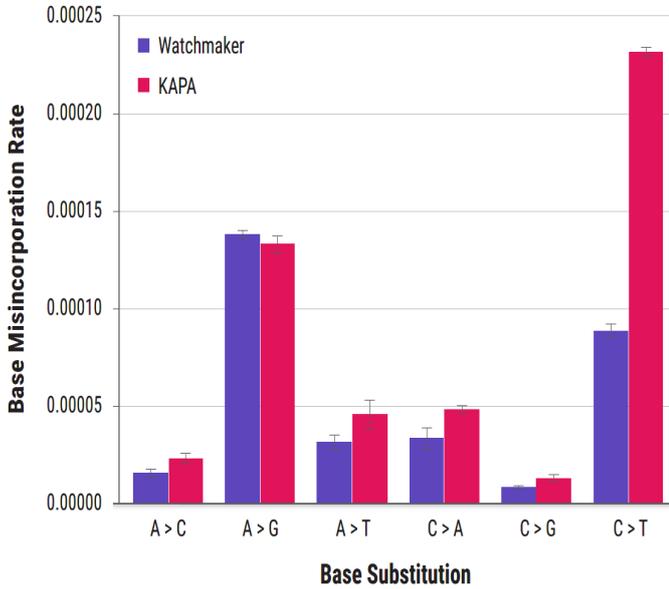


在 low input 的條件下減少 data distortion 的情況

它牌在 low input 的情況下，low abundance gene 失去了代表性，而 Watchmaker kit 具有較佳的結果。

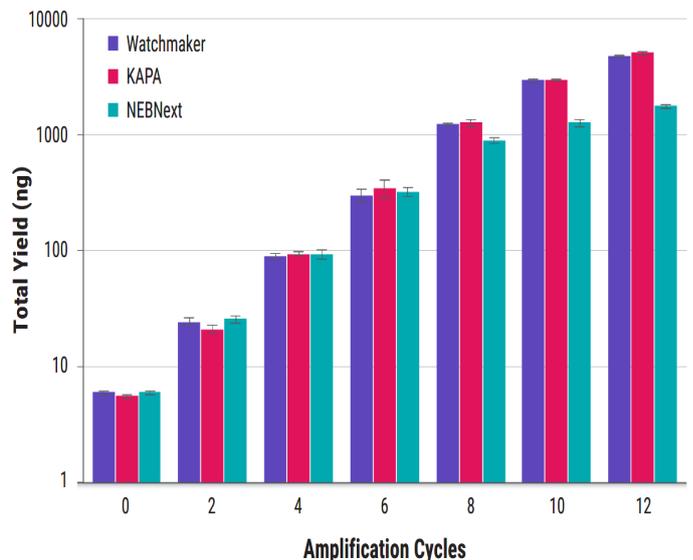
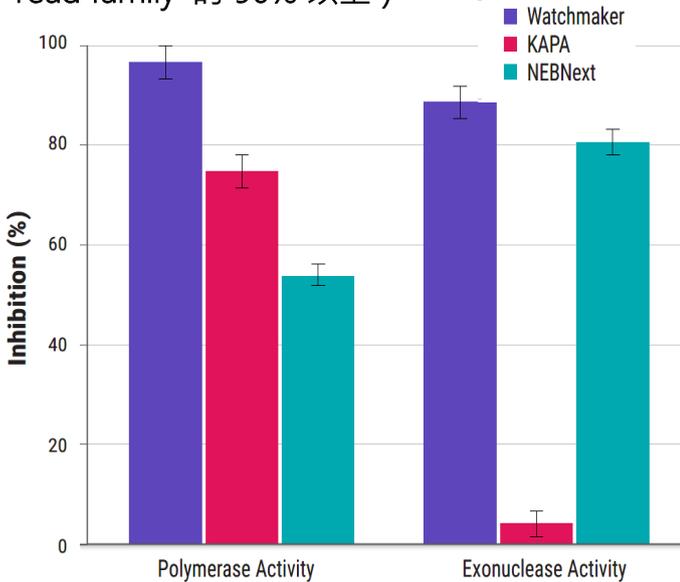
Equinox® library amplification kit

有良好的 fidelity、均勻的序列 coverage、以及 complexity。專門滿足應用程式的嚴格要求，例如稀有變異檢測、cell-free DNA (cfDNA) 分析、single cell 分析、和利用 hybridization capture。



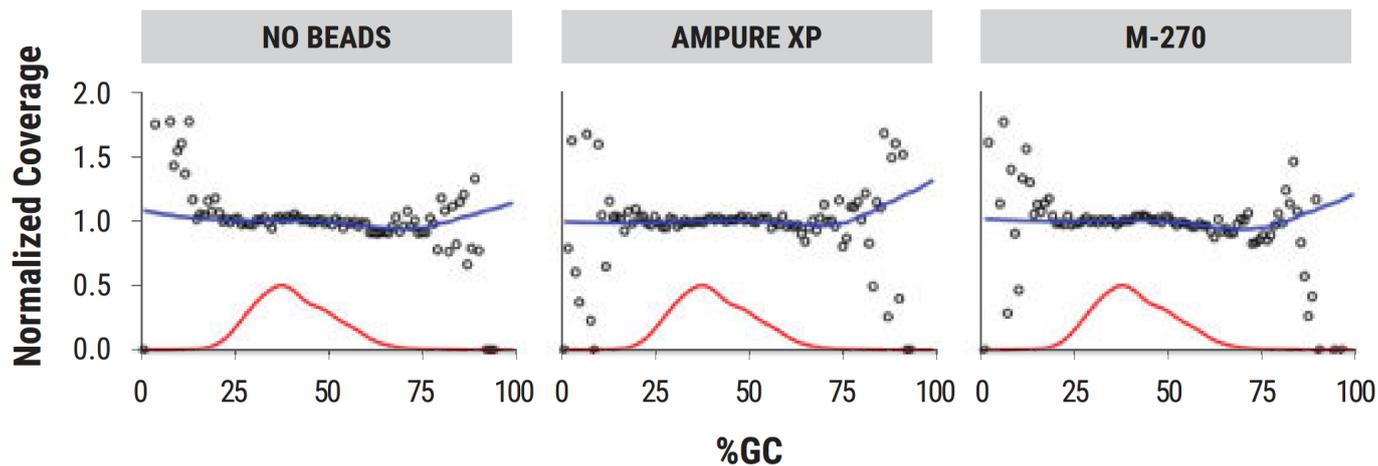
(左) Equinox® library amplification kit 中的 polymerase 錯誤率降低高達 40%。

(右) Low Bias UMI amplification。使用含有 UMI 的 adaptor 來製備 Whole genome library。Equinox library kit coverage overall read family 的 75% 以上 (以及 GC 含量為 25 – 75% 的 read family 的 90% 以上)。



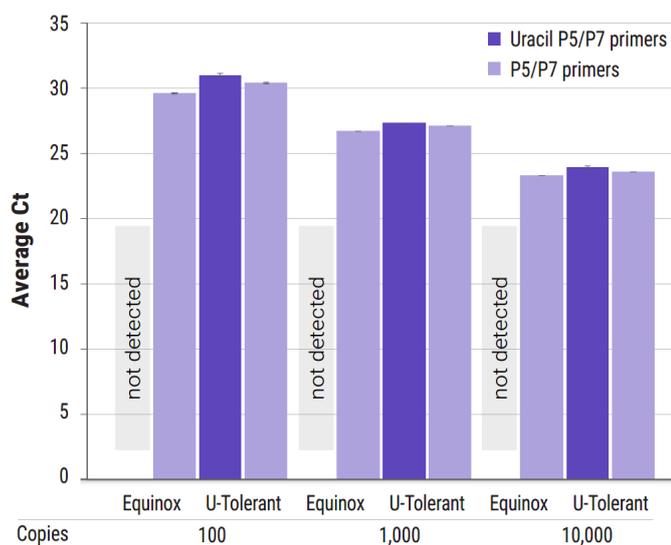
(左) Hot Start 功能改善。透過在 25°C 下 incubation 後分別檢測 dNTP 混入或 dNMP release 來評估 Equinox Library Amplification polymerase、KAPA HiFi HotStart DNA polymerase 和 NEB Q5 DNA 的 polymerase 和 exonuclease 活性。

(右) 高效率 Library amplification。使用 Equinox library amplification kit、KAPA HiFi HotStart ReadyMix 和 NEBNext Ultra II Q5 Master Mix 對 human Whole genome (10 ng) 進行三次擴增。



在磁珠的存在下進行 amplification，序列仍具有高度一致性的 coverage

使用 Equinox library amplification kit 對 human whole genome library (0.04 pg) 並且存在 AMPure XP 和 Dynabeads™ M-270 的情況下，進行 26 個 cycle amplification。

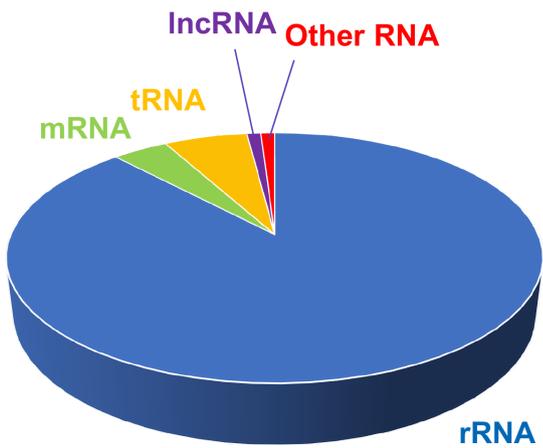


Equinox Uracil tolerance library amplification kit 可有效放大含尿嘧啶 (uracil) 的 template

如預期的那樣，Equinox library amplification kit 被含有 Uracil 的 primer 抑制，而 Equinox Uracil tolerance library amplification kit 則顯示在一系列輸入中沒有抑制。

PRODUCT	24 RXN	96 RXN	384 RXN
Equinox Library Amplification Kit Includes P5/P7 Primer Mix (10X)	7K0014-024	7K0014-096	7K0014-384
Equinox Library Amplification Kit (w/o primers)	7K0021-024	7K0021-096	7K0021-384
Equinox HC Library Amplification Kit Includes P5/P7 Primer Mix (10X)	-	7K0094-096	7K0094-384
Equinox HC Library Amplification Kit (w/o primers)	-	7K0065-096	7K0065-384
Equinox Uracil Tolerant Library Amplification Kit Includes P5/P7 Primer Mix (10X)	7K0023-024	7K0023-096	7K0023-384
Equinox Uracil Tolerant Library Amplification Kit (w/o primers)	7K0028-024	7K0028-096	7K0028-384

mRNA enrichment / rRNA&Globin (HMR) depletion kit

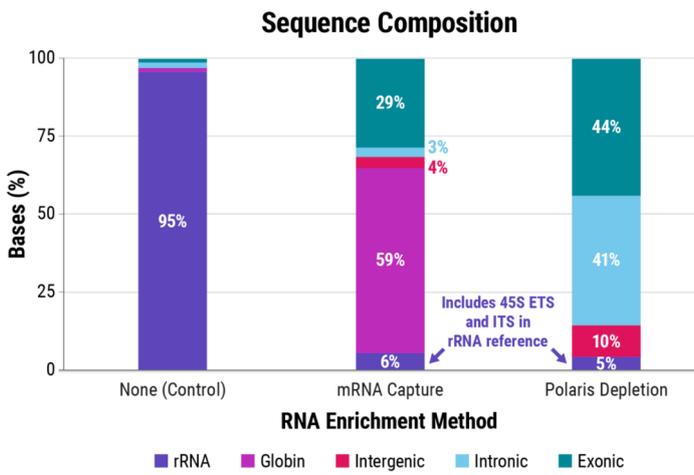
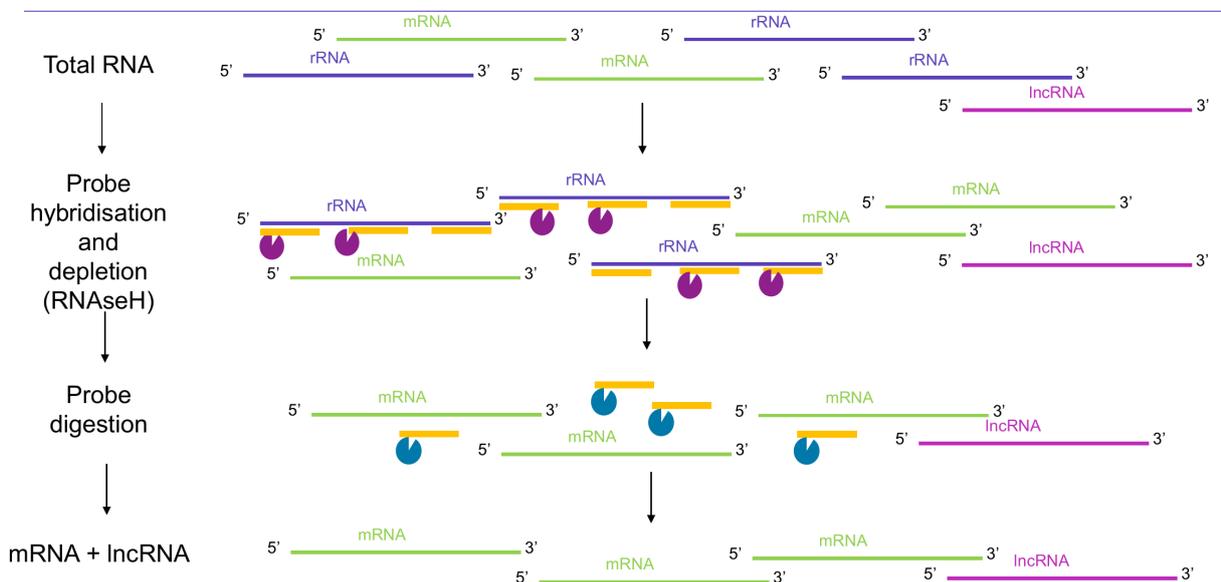


Total RNA

rRNA – ribosomal RNA (80-90%)

Intronic – non-coding RNA (within gene sequences) and **Intergenic** – RNA between gene sequences

Exonic – coding mRNA (**Globin mRNA** – up to 70% in whole blood)



Polaris Depletion kit 處理過後的 mRNA sample 可幫助定序後序列分析的組成。

Kit	Kit code	Description	Component volume	
			24 rxn	96 rxn
Polaris Depletion Kit – rRNA/Globin (HMR)	7K0077-024 (24 rxn)	Depletion Master Mix	120 µL	540 µL
	7K0077-096 (96 rxn)	Depletion Probes – rRNA/Globin (HMR)	70 µL	300 µL
		Probe Digestion Master Mix	925 µL	4.2 mL

Accessory, Enzyme 及相關試劑

Category	Product	Description
Precision Enzymes (engineered for demanding applications)		
Reverse Transcriptases	StellarScript HT+	Delivers best-in-class thermostability and inhibitor tolerance
	StellarScript HT	Provides increased thermostability and inhibitor tolerance
	StellarScript	Offers template switching and robust performance
DNA Polymerases	Equinox Polymerase*	Yields excellent fidelity, uniform sequence coverage, and high-complexity PCR products
Core Enzymes (enzymes of broad utility manufactured to high purity)		
RNase Inhibitors	RNase Inhibitor	Protects RNA from degradation at temperatures $\leq 55^{\circ}\text{C}$
DNA Polymerases (DNAP)	phi29 DNAP	Strong strand displacement activity and processivity for isothermal amplification with $3' \rightarrow 5'$ exonuclease activity
	Taq DNAP	Exhibits $5' \rightarrow 3'$ exonuclease activity, lacks $3' \rightarrow 5'$ exonuclease activity, and has strong terminal transferase activity to generate A-tailed products
	T4 DNAP	Exhibits $3' \rightarrow 5'$ exonuclease activity, lacks $5' \rightarrow 3'$ exonuclease activity, and forms blunted DNA ends by removing $3'$ overhangs and filling-in $5'$ overhangs
	E. coli DNAP	Exhibits both $3' \rightarrow 5'$ and $5' \rightarrow 3'$ exonuclease activity and performs nick translation and second strand synthesis
Ligases	T4 DNA Ligase	Joins blunt and cohesive (sticky) ends and repairs single-stranded nicks
Kinases	T4 Polynucleotide Kinase	Prepares DNA for ligation through $5'$ phosphorylation and $3'$ dephosphorylation
Single-strand DNA binding proteins	T4 Gene 32 Protein	Assists isothermal amplification applications

*2X and 4X mastermix formats

Product Name	Catalog Number
phi29 DNA Polymerase Kit (10 U/uL) w/ 10X buffer	7K0104-100UL
T4 DNA Ligase Kit (600 U/uL) with 10X Buffer	7K0026-500UL
T4 DNA Ligase Kit (600 U/uL) with 5X Rapid Buffer	7K0004-500UL
T4 DNA Ligase Kit (600 U/uL) with 2X Rapid Buffer	7K0025-500UL
T4 DNA Ligase (600 U/uL)	7K0027-500UL
T4 DNA Ligase Kit (120 U/uL) with 10X Buffer	7K0039-500UL
T4 DNA Ligase (120 U/uL)	7K0042-500UL
T4 DNA Ligase Kit (120 U/uL) with 2X Rapid Buffer	7K0041-500UL
T4 DNA Ligase Kit (120 U/uL) with 5X Rapid Buffer	7K0040-500UL



MACHEREY-NAGEL

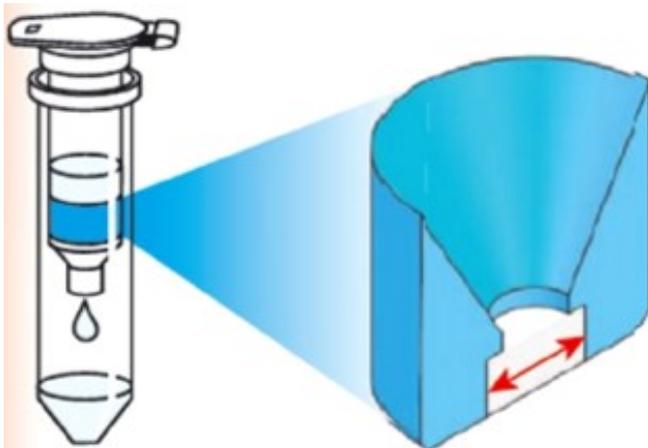
Filtration · Rapid Tests · Water Analysis · Chromatography · Bioanalysis
 Filtration · Schnellteste · Wasseranalytik · Chromatographie · Bioanalytik

NucleoSpin -XS 系列

一顆細胞就能抽

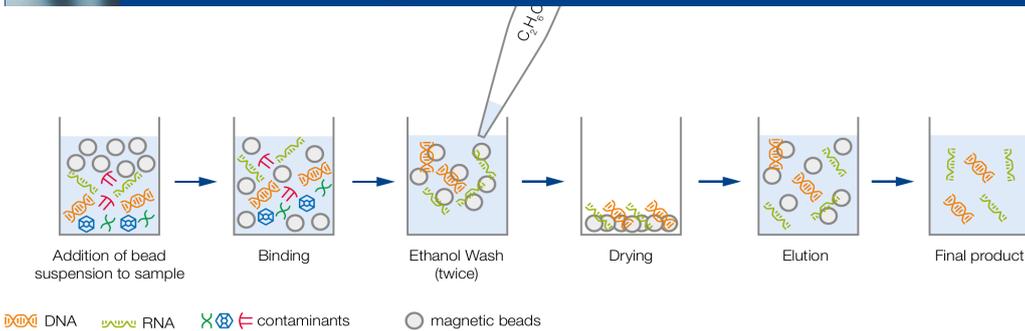
微量檢體

珍貴檢體

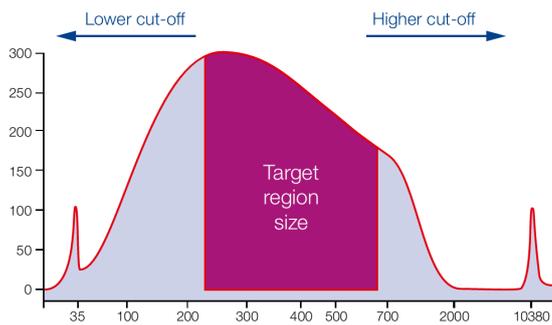


Function	Product	Cat. No.
Clean up	NucleoSpin Gel and PCR Clean-up XS	740611.50
	NucleoSpin gDNA Clean-up XS	740904.50
	NucleoSpin RNA Clean-up XS	740903.50
DNA	NucleoSpin Tissue XS;	740901.50
	NucleoSpin cfDNA XS	740900.50
	NucleoSpin DNA FFPE XS	740980.50
RNA	NucleoSpin RNA XS;	740902.50
	NucleoSpin RNA Plus XS	740990.50
	NucleoSpin totalRNA FFPE XS	740969.50

NucleoMag[®] NGS Clean-up and Size Select

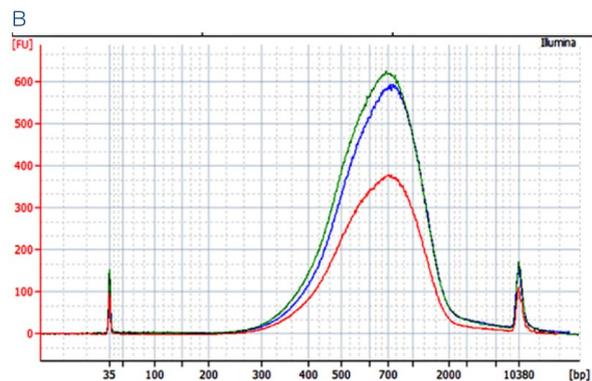
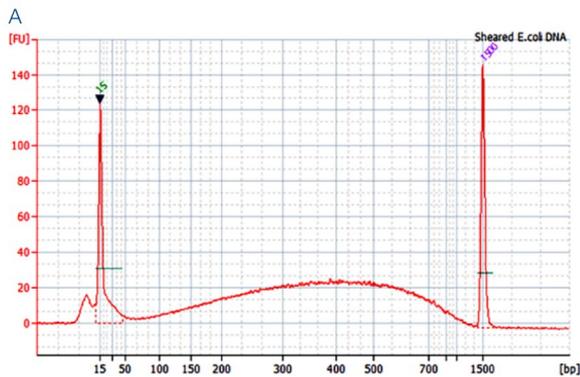


REF	Volume
744970.5	5 mL
744970.50	50 mL
744970.500	500 mL



核酸 fragment mix 片段選擇

對 single sided size selection (left or right), 樣品和磁珠按預定比例混合, 以排除較小或較大的片段。對於 double sided size selection, 會進行兩個步驟的結合, 以排除高於 cut-off 值的較大片段和低於 cut-off 值的較小片段。



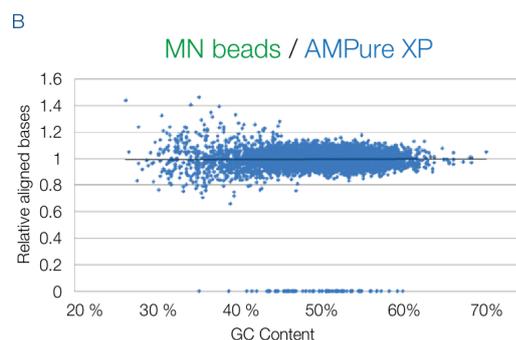
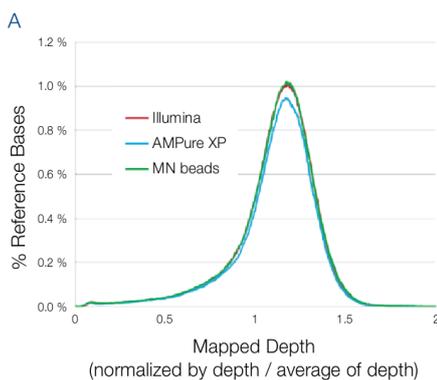
NGS library preparation 結果分析

利用 Truseq[™] DNA PCR Free kit from Illumina (red) 製備 NGS library; 並且利用 AMPure[®] XP (blue) and NucleoMag[®] NGS Clean-up and Size Select (green) 進行 clean up 和 size selection. (A) 1 µg sheared E. coli DNA input (B) Library 製備後, 進行 size selection 和 clean up 後的結果。(預期目標為 650 bp (insert + adapters))

定序分析

(A) 基因定序結果
AMPure XP 和 MN beads 結果相近。

(B) (B) MN 磁珠與 AMPure[®] XP 磁珠的水平圖譜結果也具高度相似度。





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