Library Prep for DNA-Seq

TruePrep DNA Library Prep Kit V2 (Vazyme, #TD501 / #TD502 / #TD503)

VAHTS Universal Plus DNA Library Prep Kit (Vazyme, #ND617)

VAHTS DNA Clean Beads (Vazyme, #N411)

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TruePrep DNA Library Prep Kit V2

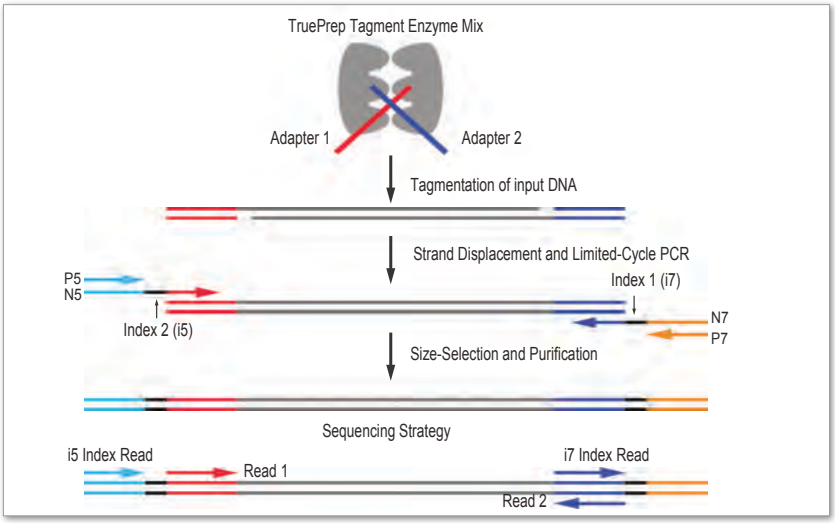
#TD501	TruePrep DNA Library Prep Kit V2 for Illumina (50 ng)	For 50 ng input DNA	24 / 96 rxn
#TD502	TruePrep DNA Library Prep Kit V2 for Illumina (5 ng)	For 5 ng input DNA	24 / 96 rxn
#TD503	TruePrep DNA Library Prep Kit V2 for Illumina (1 ng)	For 1 ng input DNA	24 / 96 rxn

Rapid · Easy · Versatile · Reliable

TruePrep DNA Library Prep Kit V2 for Illumina is specifically designed for NGS on Illumina platforms. This kit enables super fast and easy preparation of ready-to-use DNA library for sequencing by adopting a new transposase, which convert the complex steps of DNA fragmentation, end repair, dA-tailing, and adapter ligation into a one-step enzymatic reaction, significantly reducing the required amount of the initial DNA and shortening the time of library preparation.

- **Time Saving** — Library prepared within **90 min**.
- **Easy to Use** — One-step enzymatic reaction, no need for physical shearing / sonication.
- **Versatile** — Applicable for 1 ng - 50 ng of genomic DNA, cDNA, and amplicons from multiple species.
- **Reliable** — Optimized polymerase and buffer to achieve high efficiency and uniformity in library amplification.

Mechanism of Transposase-based Library Preparation



TruePrep Tagment Enzyme Mix (TTE Mix) contains transposase and two kinds of adapters (Adapter 1 and Adapter 2) with equal molar. Input DNA are fragmented and linked with adapters on both ends just by mixing with TTE Mix, followed by a 10-min incubation at 55°C. The tagged DNA fragments can be further amplified with two pairs of primers N5 (N5XX) / N7 (N7XX) and P5 / P7 (PCR Primer Mix, PPM). After size selection and purification, the library is ready for sequencing on Illumina platforms. ***Adapter 1/2****: two oligos embedded in TruePrep Tagment Enzyme.* ***P5/P7****: two universal PCR Primers.* ***N5/N7****: two index primers containing index 2 (i5) and index 1 (i7) respectively.*

TruePrep for ATAC-Seq

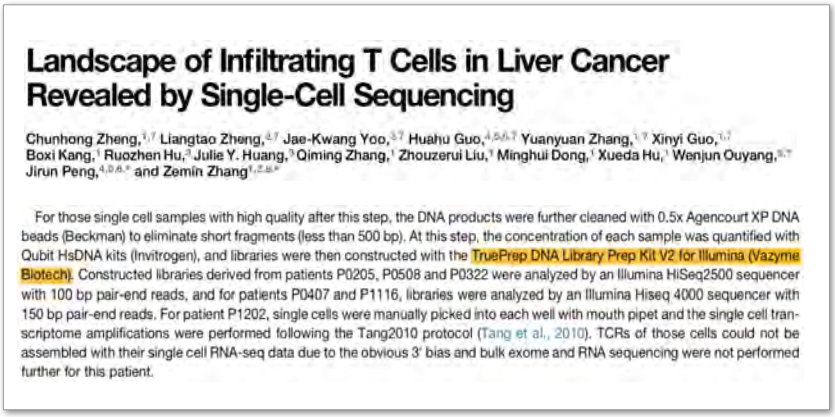
ARTICLE

The landscape of accessible chromatin in mammalian preimplantation embryos

ATAC-seq library preparation and sequencing. The ATAC-seq libraries of mESCs and early mouse embryos were prepared as previously described with minor modifications[6]. Briefly, samples were lysed in lysis buffer (10 mM Tris-HCl (pH 7.4), 10 mM NaCl, 3 mM $MgCl_2$ and NP-40) for 10 min on ice to prepare the nuclei. The optimized concentration of NP-40 is 0.15% for mESCs, the 2-cell, 4-cell, 8-cell embryos and 0.5% for early 2-cell and ICMs. Immediately after lysis, nuclei were spun at 500*g* for 5 min to remove the supernatant. Nuclei were then incubated with the Tn5 transposome and tagmentation buffer at 37 °C for 30 min (Vazyme Biotech). After the tagmentation, the stop buffer was added directly into the reaction to end the tagmentation. PCR was performed to amplify the library for 15 cycles using the following PCR conditions: 72 °C for 3 min; 98 °C for 30 s; and thermocycling at 98 °C for 15 s, 60 °C for 30 s and 72 °C for 3 min; following by 72 °C 5 min. After the PCR reaction, libraries were purified with the 1.2× AMPure (Beckman) beads before proceeding for mitochondrial DNA depletion.

Wu J, et al. The landscape of accessible chromatin in mammalian preimplantation embryos. ***Nature****, 2016, 534(7609):652-7. (Vazyme, #TD501)*

TruePrep for Single Cell-Seq



Landscape of Infiltrating T Cells in Liver Cancer Revealed by Single-Cell Sequencing

Chunhong Zheng,[1,7] Liangtao Zheng,[2,7] Jae-Kwang Yoo,[2,7] Huahu Guo,[4,5,6,7] Yuanyuan Zhang,[1,7] Xinyi Guo,[1,7] Boxi Kang,[1] Ruozhen Hu,[3] Julie Y. Huang,[3] Qiming Zhang,[1] Zhouzerui Liu,[1] Minghui Dong,[1] Xueda Hu,[1] Wenjun Ouyang,[5,7] Jirun Peng,[4,5,6,*] and Zemin Zhang[1,2,8,*]

For those single cell samples with high quality after this step, the DNA products were further cleaned with 0.5x Agencourt XP DNA beads (Beckman) to eliminate short fragments (less than 500 bp). At this step, the concentration of each sample was quantified with Qubit HsDNA kits (Invitrogen), and libraries were then constructed with the TruePrep DNA Library Prep Kit V2 for Illumina (Vazyme Biotech). Constructed libraries derived from patients P0205, P0508 and P0322 were analyzed by an Illumina HiSeq2500 sequencer with 100 bp pair-end reads, and for patients P0407 and P1116, libraries were analyzed by an Illumina Hiseq 4000 sequencer with 150 bp pair-end reads. For patient P1202, single cells were manually picked into each well with mouth pipet and the single cell transcriptome amplifications were performed following the Tang2010 protocol (Tang et al., 2010). TCRs of those cells could not be assembled with their single cell RNA-seq data due to the obvious 3' bias and bulk exome and RNA sequencing were not performed further for this patient.

Zheng C, et al. Landscape of Infiltrating T Cells in Liver Cancer Revealed by Single-Cell Sequencing. ***Cell****, 2017, 169(7):1342-356. (Vazyme, #TD503)*

Selected Product Citations

Cell, 2018, 175(7):18871-1901. (Vazyme #TD502)
Cell, 2018, 172(5):1091-107. (Vazyme #TD513)
Nature, 2018, 564(7735): 268-72. (Vazyme #TD502)
Nature, 2018, 557(7704):256-60. (Vazyme, #TD502)
Cell, 2017, 169(7):1342-56. (Vazyme, #TD503)
Nature, 2016, 537(7622):629-33. (Vazyme, #TD501)
Nature, 2016, 534(7609):652-7. (Vazyme, #TD501)
Nature Medicine, 2018, 24(7):978-85. (Vazyme, #TD501)
Neuron, 2019, pii: S0896-6273(19)30153-9. (Vazyme, #TD502)
Nat Commun, 2017, 8(1):991. (Vazyme, #TD501, #TD503)
Hepatology, 2017, 66(5):1387-401. (Vazyme, #TD502)

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VAHTS Universal Plus DNA Library Prep Kit for Illumina (#ND617)

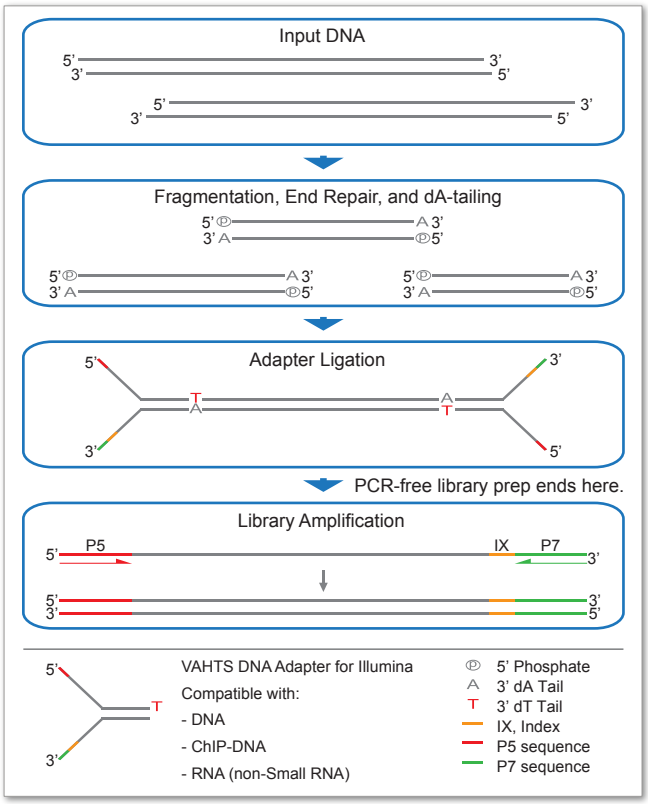
#ND617 VAHTS Universal Plus DNA Library Prep Kit for Illumina 24 / 96 rxn

Rapid · Universal · Reliable

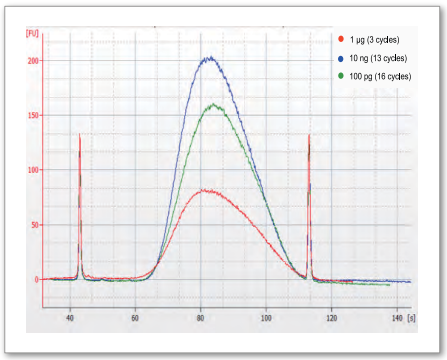
VAHTS Universal Plus DNA Library Prep Kit for Illumina (Vazyme, #ND617) is a super-fast DNA library prep kit for NGS on Illumina platforms. The enzymatic fragmentation, end repair, and dA-tailing are performed in one step without clean-ups before following adapter ligation. This kit is highly applicable for various DNA samples (e.g. genomic DNA, FFPE DNA) from different species, including animals, plants, and microorganisms. Templates of different species with different input amounts (100 pg - 1 μg) can be fragmented into the same size with a single protocol. The workflow is simple and time-saving, and is especially suitable for high-throughput and automated library preps.

- **Time-Saving** Fragmentation, end repair, and dA-tailing are performed in one step. No clean-ups needed before adapter ligation.
- **Universal** Applicable for 100 pg-1 μg of input DNA (e.g. genomic DNA, FFPE DNA) from many species.
- **Easy** Enzymatic fragmentation in a single protocol, with no need for physical shearing / sonication.
- **Reliable** Generate high-quality DNA libraries with high yields.

Mechanism & Workflow

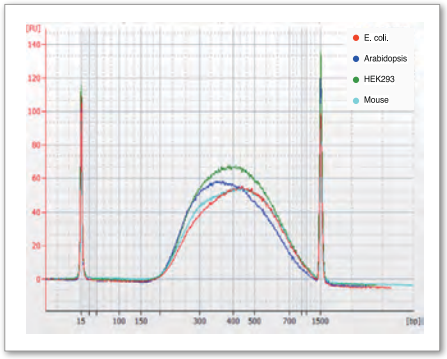


A Wide Range of Input Amouts



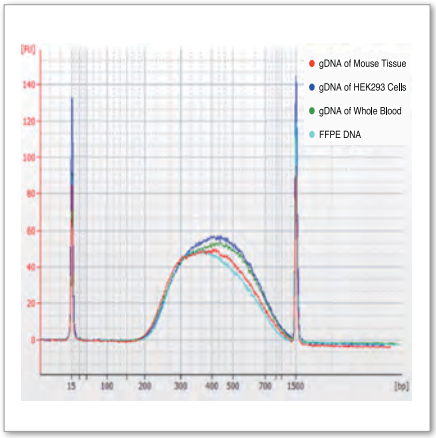
Salmon sperm gDNA samples (1 μg, 10 ng, and 100 pg were fragmented at 37°C for 22 min, and ligated to adapters, and amplified for 3, 13, 16 PCR cycles, respectively. The size distributions of these libraries were almost identical, indicating that VAHTS Universal Plus DNA Library Prep Kit for Illumina (Vazyme, #ND617) is applicable for a wide range of input amounts (100 pg to 1 μg).

A Wide Range of Compatible Species



Genomic DNA (100 ng) from E.coli., Arabidopsis, human HEK293 cells, or mouse were fragmented at 37°C for 18 min, respectively. The size distributions of these libraries were almost identical, indicating that VAHTS Universal Plus DNA Library Prep Kit for Illumina (Vazyme, #ND617) is applicable for a wide range of species.

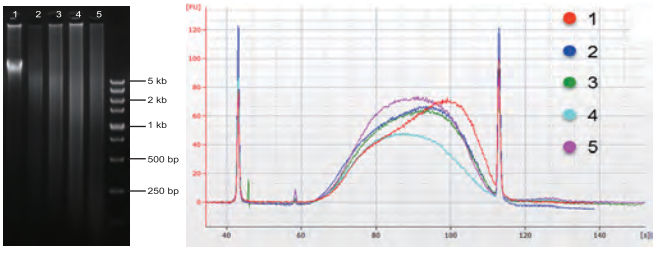
A Wide Range of Compatible DNA Samples



Genomic DNA (100 ng) from mouse tissue, HEK293 cells, human whole blood, and FFPE DNA were fragmented at 37°C for 18 min, 18 min, 18 min, 6 min, respectively, followed by adapter ligation and PCR amplification (3 cycles). The size distributions of these libraries were almost identical, indicating that VAHTS Universal Plus DNA Library Prep Kit for Illumina (Vazyme, #ND617) is applicable for a wide range of DNA samples.

Applicable FFPE DNA

Sample#	DNA Sample	Quality Level	Input Amount	Fragmentation	PCR Cycles
1	Fresh Tissue gDNA	A	100 ng	15 min	3
2	FFPE DNA	B	100 ng	10 min	6
3	FFPE DNA	C1	100 ng	8 min	6
4	FFPE DNA	C2	100 ng	8 min	6
5	FFPE DNA	D	100 ng	6 min	7



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VAHTS DNA Clean Beads (#N411)

VAHTS DNA Clean Beads	5 ml / 60 ml / 450 ml	#N411

Seamless Alternative for AMPure XP Beads

VAHTS DNA Clean Beads (Vazyme, #N411) is based on SPRI (Solid Phase Reverse Immobilization) and is applicable for DNA purification and size selection in NGS library preparation.

- Seamless alternative for AMPure® XP Beads: same usage, similar yield, and identical size-distribution.
- Compatible with almost all current protocols for DNA/RNA library preparation.
- Cost-effective.

Selection Guide for DNA-Seq Library Preparation

DNA Library Prep Kits	Genome Sequencing	Transposase (Tn5) Tagmentation	TruePrep DNA Library Prep Kit V2 for Illumina	TD501, TD502, TD503
		Enzymatic Fragmentation	VAHTS Universal Plus DNA Library Prep Kit for Illumina	ND617
		Physical Shearing	VAHTS Universal DNA Library Prep Kit for Illumina V3	ND607
	ChIP-Seq		VAHTS Universal Plus DNA Library Prep Kit for Illumina	ND617
	ATAC-Seq		TruePrep DNA Library Prep Kit V2 for Illumina	TD501, TD502, TD503
	Targeted Sequencing		TruePrep DNA Library Prep Kit V2 for Illumina VAHTS Universal Plus DNA Library Prep Kit for Illumina VAHTS AmpSeq Library Prep Kit V2 VAHTS AmpSeq General Library Prep Kit V2	TD501, TD502, TD503 ND617 NA201 NA203
	de-novo Genome Sequencing		VAHTS Mate Pair Library Prep Kit for Illumina	ND104
Adapters	Adapters for TurePrep	Single-Indexed	TruePrep Index Kit V4 for Illumina	TD204, TD205, TD206. TD207
		Dual-Indexed	TruePrep Index Kit V2 for Illumina TruePrep Index Kit V3 for Illumina	TD202 TD203
	Adapters for ND617 / ND607	Single-Indexed	VAHTS DNA Adapters Set 1 for Illumina VAHTS DNA Adapters Set 2 for Illumina VAHTS DNA Adapters Set 3 - Set 6 for Illumina	N801 N802 N805, N806, N807, N808
		Dual-Indexed	VAHTS Multiplex Oligos Set 4 for Illumina VAHTS Multiplex Oligos Set 5 for Illumina	N321 N322
		UMI-Indexed	VAHTS Dual Index UMI DNA Adapters Set 1 - Set 4 for Ilumina	N331, N332, N333, N334
	Adapters for NA201 / NA203	For Illumina	VAHTS AmpSeq Adapter 1-24 for Illumina VAHTS AmpSeq Adapter 25-96 for Illumina	NA111-01/02 NA111-03/04/05
		For Ion Torrent	VAHTS AmpSeq Adapter 1-24 for Ion Torrent VAHTS AmpSeq Adapter 25-96 for Ion Torrent	NA121-01/02 NA121-03/04/05
Beads	DNA Clean Beads		VAHTS DNA Clean Beads	N411
Library QC	Qubit		Equalbit dsDNA HS Assay Kit	EQ111
	qPCR		VAHTS Library Quantification Kit for Illumina	NQ101