

**VAHTS® Dual UMI UDB
Adapters Set 1-8 for MGI**

NM35101-NM35108



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User's Manual

Version 21.1

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01/Product Description

VAHTS Dual UMI UDB Adapters Set 1-8 for MGI is a special kit for library construction on the BGI high-throughput sequencing platform, suitable for multi-sample DNA library construction. The kit contains VAHTS Dual UMI Adapters for MGI UDB and VAHTS Unique Dual Barcode Primer for MGI. The VAHTS Dual UMI Adapters for MGI UDB in the kit are incomplete double-ended UMI adapters, which are compatible with a variety of T-A ligated library construction kits. Adding 5-6 nt of Unique Molecular Identifier (UMI) to the Insert DNA at both ends after adapter ligation can detect low-frequency mutations. The VAHTS Unique Dual Barcode Primer for MGI includes the Unique Dual Barcode (UDB) with specific matching. After library amplification, it can carry out two completely independent Index double tests, which minimizes Index hopping & Index misassignment and ensures that the Reads that finally enter the analysis process are closest to the real situation of the sample.

All adapters provided in the kit have undergone strict quality control and functional verification to ensure the stability and reproducibility of library construction to the greatest extent.

02/Components

Component	NM35101 (96 rxns)	NM35102 (96 rxns)	NM35103 (96 rxns)	NM35104 (96 rxns)	NM35105 (96 rxns)	NM35106 (96 rxns)	NM35107 (96 rxns)	NM35108 (96 rxns)
■ VAHTS Unique Dual Barcode Primer for MGI UDB 001 - 024	20 µl each							
■ VAHTS Unique Dual Barcode Primer for MGI UDB 025 - 048		20 µl each						
■ VAHTS Unique Dual Barcode Primer for MGI UDB 049 - 072			20 µl each					
■ VAHTS Unique Dual Barcode Primer for MGI UDB 073 - 096				20 µl each				
■ VAHTS Unique Dual Barcode Primer for MGI UDB 097 - 120					20 µl each			
■ VAHTS Unique Dual Barcode Primer for MGI UDB 121 - 144						20 µl each		
■ VAHTS Unique Dual Barcode Primer for MGI UDB 145 - 168							20 µl each	
■ VAHTS Unique Dual Barcode Primer for MGI UDB 169 - 192								20 µl each
■ VAHTS Dual UMI Adapters for MGI UDB	480 µl	480 µl	480 µl	480 µl	480 µl	480 µl	480 µl	480 µl

▲ The concentration of VAHTS Unique Dual Barcode Primer for MGI is 10 µM. The concentration of VAHTS Dual UMI Adapters for MGI UDB is 10 µM.

▲ Every 8 UDBs is a preset balanced base Barcode combination, such as UDB 025 - UDB 032 and UDB 033 - UDB 040.

03/Storage

Store at -30 ~ -15°C and transport at ≤0°C

04/Applications

This kit is a special adaptor kit for Vazyme NDM series library construction kits. It is compatible with a variety of sample types: genomic DNA, cell-free DNA (cfDNA, ctDNA), FFPE DNA, etc. It is suitable for the construction of multi-sample double-ended Index-labeled DNA libraries on the MGI high-throughput sequencing platform, which can effectively avoid crosstalk between samples and detect of low-frequency mutations.

05/Notes

1. The amount of adaptor used depends on the input amount of the starting template. For the specific concentration, please refer to Appendix.
2. Do not premix Adapter, Ligation Buffer and Ligase, as it may cause self-ligation of the adaptor.
3. Do not store this product in an environment higher than room temperature, otherwise the ligation efficiency may decrease.

06/Library Structure and Sequence Information

The structure of the complete DNA library constructed by this kit is as follows:

5' - DNA Adapter X - UMI - Insert DNA Sequence - UMI - DNA Adapter X - 3'

The Barcode sequence corresponding to each VAHTS Unique Dual Barcode Primer for MGI is shown in the following table:

UDB Number	Barcode 1 Sequence	Barcode 2 Sequence
UDB 001	GTGAGTGATG	TAGAGGACAA
UDB 002	GAGTCAGCTG	CCTAGCGAAT
UDB 003	TGTCTGCGAA	GTAGTCATCG
UDB 004	ATTGGTACAA	GCTGAGCTGT
UDB 005	CGATTGTGGT	AACCTAGATA
UDB 006	ACAGACTTCC	TTGCCATCTC
UDB 007	TCCCACTCT	AGATCTTGCG
UDB 008	CACCACAAGC	CGCTATCGGC
UDB 009	TAGAGGACAA	GCAACGATGG
UDB 010	CCTAGCGAAT	TAATCGTTCA
UDB 011	GTAGTCATCG	GTTTCGCTCTA
NM35101 UDB 012	GCTGAGCTGT	TCTCACGCAT
UDB 013	AACCTAGATA	CTGTTAGGAT
UDB 014	TTGCCATCTC	CGCAGACGCG
UDB 015	AGATCTTGCG	AAGGATCATC
UDB 016	CGCTATCGGC	AGCGTTAAGC
UDB 017	GCAACGATGG	TTAGATGCAT
UDB 018	TAATCGTTCA	GTCCAGAGCT
UDB 019	GTTTCGCTCTA	CACGTGATAG
UDB 020	TCTCACACAT	CCACTAGTCC
UDB 021	CTGTTAGGAT	TGGACTTGCC
UDB 022	CGCAGACGCG	GCTTGACAGG
UDB 023	AAGGATCATC	AAGACCTCTA
UDB 024	AGCGTTGAGC	AGTTGCCATA

UDB 025	TTAGATGCAT	ATGTACGCAG
UDB 026	GTCCAGAGCT	TTAATGAGAT
UDB 027	CACGTGATAG	TGCGCCACTT
UDB 028	CCACTAGTCC	CATTAAGGCC
UDB 029	TGGACTTGCC	CCGCCTCAGA
UDB 030	GCTTGACAGG	AATCGGCTCG
UDB 031	AAGACCTCTA	GCCGGTTATC
UDB 032	AGTTGCCATA	GGAATATTGA
UDB 033	ATGTACGCAG	ATTCACGGGA
UDB 034	TTAATGAGAT	AACTGTACTG
UDB 035	TGCGCCACTT	GTACCTCAAT
NM35102 UDB 036	CATTAAGGCC	GACTTCTAAT
UDB 037	CCGCCTCAGA	TGAAGCGTTG
UDB 038	AATCGGCTCG	CGTGCGATCC
UDB 039	GCCGGTTATC	TCGGAAGGCA
UDB 040	GGAATATTGA	CCGATGTCGC
UDB 041	ATTCACGGGA	ACTTAGAATG
UDB 042	AACTGTACTG	TCCAAGCCTG
UDB 043	GTACCTCAAT	AGACGATGAT
UDB 044	GACTTCTAAT	CTCACAAGAC
UDB 045	TGAAGCGTTG	CGTTCCTACT
UDB 046	CGTGCGATCC	GTGGTTGTGA
UDB 047	TCGGAAGGCA	GAAGGCCTGC
UDB 048	CCGATGTCGC	TAGCTTGCCA
UDB 049	ACTTAGAATG	GACAATGCTC
UDB 050	TCCAAGCCTG	GCTAATCACA
UDB 051	AGACGATGAT	AGTCCATAGG
UDB 052	CTCACAAGAC	CTATCGCCTA
UDB 053	CGTTCCTACT	ATCGTGGTCT
UDB 054	GTGGTTGTGA	TGGCTAATAC
UDB 055	GAAGGCCTGC	CAGTGCAGAG
UDB 056	TAGCTTGCCA	TCAGGCTGGT
UDB 057	GACAATGCTC	ATACTCACGC
UDB 058	GCTAATCACA	ATGCTCCGCG
UDB 059	AGTCCATAGG	TGTGAACCTG
NM35103 UDB 060	CTATCGCCTA	GAGAGGTGCT
UDB 061	ATCGTGGTCT	TGCACTGTAA
UDB 062	TGGCTAATAC	GCCTAGGCAA
UDB 063	CAGTGCAGAG	CCATCATAGC
UDB 064	TCAGGCTGGT	CATGGTAATT
UDB 065	ATACTCACGC	CACCATGTCT
UDB 066	ATGCTCCGCG	ATATGTCTGG
UDB 067	TGTGAACCTG	AAGGAAGCGT
UDB 068	GAGAGGTGCT	TCAAGACGTC
UDB 069	TGCACTGTAA	CCGCTCAGTA
UDB 070	GCCTAGGCAA	GGTGTGTACA
UDB 071	CCATCATAGC	TTCACGTAAG
UDB 072	CATGGTAATT	GTTCCACAC

	UDB 073	CACCATGTCT	AGGTATTCTT
	UDB 074	ACGTGTCTGG	CGAATGCAAC
	UDB 075	AAGGAAGCGT	TTCAACGGCG
	UDB 076	TCAAGACGTC	CTCGGCGGAA
	UDB 077	CTACTCAGTA	ACGGTAATGG
	UDB 078	GGTGTGTACA	GATCCGACGT
	UDB 079	TTCACGTAAG	TCACGATACA
	UDB 080	GGTCCACAC	GATTCTCTTC
	UDB 081	AGCTGCGCAC	ATTCAAGTTC
	UDB 082	GATTAATGAA	ACGGCTTCCG
	UDB 083	CCAATGCTTG	CAATGGCAGA
NM35104	UDB 084	TTGCCTATGT	GGCATCAGAT
	UDB 085	AACGCTCACG	TAACCTGAAC
	UDB 086	CCGATCGGCC	CCGTAGATCA
	UDB 087	TTAGGAACTA	TGTATATCGG
	UDB 088	GGTCAGTAGT	GTCGGCCGTT
	UDB 089	TGCCGGATCA	TGCATGACGA
	UDB 090	ACTCATGACC	GCATAGCGTA
	UDB 091	CAAGTCTCAT	AAGCCTGTAG
	UDB 092	GTGACATGTG	CTTGGAATACT
	UDB 093	AAGTACCTGG	AACTACGTCC
	UDB 094	CCTATAGCAC	CCGGTCTAAC
	UDB 095	TTCGGTCAGT	TTACGACCGG
	UDB 096	GGATCGAGTA	GGTACTAGTT
	UDB 097	AGGACGTAGA	TATGGCACTG
	UDB 098	CTGAACCGAA	GTTAGGTAGG
	UDB 099	GAACGTGTCTG	ACACATGTCA
	UDB 100	AATTCACGTG	AAGCTCTGTC
	UDB 101	TCCGTGACTC	CGCTCACGAT
	UDB 102	CCTGAAGGAT	CCAGAGATCT
	UDB 103	TTCTTACTG	GTGATTGCAC
	UDB 104	GGATGCTACC	TGCTCACAGA
	UDB 105	CGACGATATG	GTGATCTAGA
	UDB 106	GACGGTCGAG	TCTGTATAGT
	UDB 107	ACGAAGGTCC	AACCGTCGTC
NM35105	UDB 108	TTAACGACGA	CGATAGGTCCG
	UDB 109	AATTCGGAGT	AACGCAACTA
	UDB 110	CCTGTAACCA	CCATACATAT
	UDB 111	TTGCTTCGTT	TTGAGTCGAC
	UDB 112	GGCTACTTAC	GGTCCGGCCG
	UDB 113	TAATGGCCTT	AGAGTACGAC
	UDB 114	GTGACCGGTA	ATCGAAGGTA
	UDB 115	ACCGATTAGG	CAGACGTTGG
	UDB 116	CGTCTGATAT	GCTCGTAACT
	UDB 117	AACGCATTCC	TAATCTACTT
	UDB 118	CCGAGAGACC	CCGTACCTGA
	UDB 119	TGATTCCGAG	GTCATGGACG
	UDB 120	GTTCATACGA	TGTCGCTCAC

	UDB 121	TAGACTGATC	TCGATCGAGT
	UDB 122	GATTCCATGA	AGTAAGCCGG
	UDB 123	ACACAGTGCT	CAACCTTGCC
	UDB 124	CGCGTACCAG	GTCGGAATTA
	UDB 125	ATACGCTAGA	AACTACTGAG
	UDB 126	CCGGAATCTC	CCATCGGAAT
	UDB 127	TGCTTGCCGG	TTGGTTCTTA
	UDB 128	GTTAGAGTAT	GGTCGAATCC
	UDB 129	TGCTATGCAC	GTAGGATTC
	UDB 130	GTGCATAGAG	CGTCGTTGCA
	UDB 131	AATGCGTACT	AACTAGGCTT
NM35106	UDB 132	CCAGGACCTA	TCGACGCAGG
	UDB 133	AAGCTCATGA	AACGTGACAC
	UDB 134	CCTAGAGTTG	CCATCTGATA
	UDB 135	TGCATCCGGT	TGTATCACGT
	UDB 136	GTATCGTACC	GTGCAACTAG
	UDB 137	GTATCGAATT	TATGGATCGT
	UDB 138	CGTACTACGT	AGCTGAATGG
	UDB 139	AACGTACTCG	CCAACCTGGC
	UDB 140	TCGCACTGAC	GTGCAGCATA
	UDB 141	AACTGTGTGA	AACGACCAAT
	UDB 142	CCGATGCACA	CCATTCGGCA
	UDB 143	TGTGACGCAG	TGTATGATTC
	UDB 144	GTACGATGTC	GTGCCCTCAG
	UDB 145	CTCGTCCGG	GGCTGGCTTG
	UDB 146	CGTGCCAGGA	CATAGAGACG
	UDB 147	AAGCGATATC	ACACATTGAC
	UDB 148	GCAACTGTCT	TTGGTACAGT
	UDB 149	TAATGGTCAG	AACCTTCGGA
	UDB 150	ACCTAGGACC	CCGACCATCC
	UDB 151	TTGCACATTA	TTAGCATCAA
	UDB 152	GGTATACGAT	GGTTAGGATT
	UDB 153	CACACACAGG	CGGTCGTCTC
	UDB 154	TAGTGCTGTC	AATCCTAGCC
	UDB 155	ACACTGATAT	CGAAGCCTGT
	UDB 156	GGTAATGCCT	TTCGAAGTAG
NM35107	UDB 157	ATAGCACAGA	AACCGGTACA
	UDB 158	CCTGACATCG	CCATTCAATG
	UDB 159	TTGCTGTGAC	TTGGTAGCAA
	UDB 160	GGCTGTGCTA	GGTAATCGGT
	UDB 161	AGGCACTGCC	ACGACGAACG
	UDB 162	CGTCGTTAAC	ACGTCTCAAC
	UDB 163	GAAGTAATGT	CAACGCTGTA
	UDB 164	TCCAGTGCTA	GGCAAGTCGT
	UDB 165	ATATCGCAAG	TTAGTAGTTG
	UDB 166	CACGCAGTTG	CATCGTCGGT
	UDB 167	TTGATCCGGA	TTGCTCACAC
	UDB 168	GCTTAGACCT	GGTTAAGTCA

	UDB 169	GACAGATTGG	AGACTAAGGA
	UDB 170	GAATTGGCCG	GCGTGATCGT
	UDB 171	ACGCATCAAT	CACACTGATG
	UDB 172	CGTGACAGTC	TTAGAGCTAC
	UDB 173	TTAACTTGAA	AATCACTTCA
	UDB 174	ACGCGACCGT	CCGATCACAG
	UDB 175	TGTGTCATCA	TGTGCGCGTC
	UDB 176	CTCTCGGATC	GTCTGTGACT
	UDB 177	AGTAAGTGCT	AGATTAACCA
	UDB 178	TATACTGCGT	AGCTATGCCG
	UDB 179	CCAGTCCTTC	CAGACGTGTC
NM35108	UDB 180	GTCCGTAAGG	GCTCGGCAAT
	UDB 181	AAGTCATTAA	TTAGCCTTGG
	UDB 182	CCGTTGGATC	CACGAACGTC
	UDB 183	TTCGGACGCA	TCTCGTATGA
	UDB 184	GGACACACAG	GTGATCGAAT
	UDB 185	AGCTCTGTGT	TAGTACAGCA
	UDB 186	CTGACGTTAC	GGATGTGTAC
	UDB 187	GAACGCAGTG	ACCATGTATG
	UDB 188	TCTGAACCGA	CTTCCAGCGT
	UDB 189	AAGCTGAACC	AACGCGCTGG
	UDB 190	CCTATATACA	CCGAACTCAT
	UDB 191	TTCGGTCGTG	TGTCGTAGTC
	UDB 192	GGATACGCAT	GTAGTACACA

▲ The whole kit includes Set 1 - Set 8, and the Barcode information of the whole kit is shown in the table above.

Appendix: Recommended Adaptor Dilutions and Volumes for Library Construction

Input DNA	Dual UMI Adapters Pre-dilutions	Use Volume
1 ng	1:45	5 µl
5 ng	1:15	5 µl
10 ng	1:10	5 µl
25 ng	1:10	5 µl
50 ng	1:5	5 µl
100 ng	1:2	5 µl
1 µg	Not diluted	5 µl

