FUSION*Plex*-HT Lymphoma

Description

The FUSION*Plex*-HT Lymphoma panel is a balanced pool of gene-specific primer (GSP) oligonucleotides that is optimized for use with FUSION*Plex*-HT reagents and molecular barcode (MBC) adapters to produce targeted NGS libraries. This product insert should be used in conjunction with FUSION*Plex*-HT protocol for Illumina® (RA-DOC-049).

FUSION*Plex*-HT Lymphoma contains **716** GSPs targeting **125** genes commonly mutated in hematological malignancies.

Description	Part number	Storage
FUSION*Plex*-HT Lymphoma GSP1, 24 reactions or FUSION*Plex*-HT Lymphoma GSP1, 96 reactions	SA0077241 or SA0077961	–20°C ± 10°C
FUSION*Plex*-HT Lymphoma GSP2, 24 reactions or FUSION*Plex*-HT Lymphoma GSP2, 96 reactions	SA0077242 or SA0077962	
10X VCP Primer Mix, 24 reactions or 10X VCP Primer Mix, 96 reactions	SA0840 or SA0841	

Recommended PCR cycling

	Step	Temperature (°C)	Time	Cycles
First PCR reaction	**1**	95	3 min	1
	2	95	30 sec	15
	3	60	10 sec	
	4	65	5 min (100% ramp rate)	
	5	72	3 min	1
	6	4	Hold	1

Recommended PCR cycling *(cont.)*

	Step	Temperature (°C)	Time	Cycles
Second PCR reaction	**1**	95	3 min	1
	2	95	30 sec	20†
	3	60	10 sec	
	4	65	5 min (100% ramp rate)	
	5	72	3 min	1
	6	4	Hold	1

†The number of PCR2 cycles may be decreased if you regularly experience library yields greater than 200 nM.

Recommended reads and multiplexing

FUSION*Plex*-HT Lymphoma libraries should be sequenced to a minimum of **2M** reads. Starting read depth recommendations for standard profiling may be adjusted based on user needs.

Archer™ Analysis settings

Sequencing data should be processed using Archer Analysis (v7, or greater). The FUSION*Plex*-HT Lymphoma panel requires selection of the ***Fusion*** pipeline and (optional) ***SNV/Indel*** pipeline, found under the ***RNA*** Input Type. See the Archer Analysis User Guide for more details on setting up your analysis.

Processing of FUSION*Plex*-HT Lymphoma libraries requires a one-time upload of the Custom Panel GTF. Files can be obtained by contacting archer-tech@idtdna.com.

Assay targets

Gene	Accession	Exon	Variant Type	Description*
AICDA	NM_020661	N/A	Expression	N/A
AKT3	NM_005465	N/A	Mutation	K172
ALK	NM_004304	N/A	Mutation	T1151-C1156, F1174, L1196-S1206, G1269

Gene	Accession	Exon	Variant Type	Description*
ALK	NM_004304	2, 4, 6, 10, 16, 17, 18, 19, 20, 21, 22, 23	Fusion	5'
ASB13	NM_024701	N/A	Expression	N/A
BATF3	NM_018664	N/A	Expression	N/A
BAX	NM_138761	N/A	Mutation	G179
BCL2	NM_000633	N/A	Mutation	F104
BCL2	NM_000633	N/A	Expression	N/A
BCL2	NM_000633	3	Fusion	3'
BCL2	NM_000633	2	Fusion	5'
BCL2A1	NM_004049	N/A	Expression	N/A
BCL3	NM_005178	N/A	Expression	N/A
BCL6	NM_001706	N/A	Expression	N/A
BCL6	NM_001706	2, 3	Fusion	5'
BCR	NM_004327	1, 2, 3, 8, 12, 13, 14, 15, 16	Fusion	3'
BIRC3	NM_001165	N/A	Mutation	Q547
BIRC3	NM_001165	4, 5, 6, 7	Fusion	3'
BLNK	NM_013314	N/A	Expression	N/A
BMF	NM_033503	N/A	Expression	N/A
BMP7	NM_001719	N/A	Expression	N/A
BRAF	NM_004333	N/A	Mutation	V600

Gene	Accession	Exon	Variant Type	Description*
BTK	NM_000061	N/A	Mutation	C481
CARD11	NM_032415	N/A	Mutation	D230
CBFB	NM_022845	4,5	Fusion	3'
CCDC50	NM_174908	N/A	Expression	N/A
CCND1	NM_053056	N/A	Expression	N/A
CCND1	NM_053056	5	Fusion	3'
CCND1	NM_053056	N/A	Mutation	E36, V42-C47
CCND2	NM_001759	N/A	Expression	N/A
CCND3	NM_001760	N/A	Expression	N/A
CCND3	NM_001760	2	Fusion	5'
CD274	NM_014143	N/A	Expression	N/A
CD44	NM_000610	N/A	Expression	N/A
CD79B	NM_000626	N/A	Mutation	Y196
CDC25A	NM_001789	N/A	Expression	N/A
CDK6	NM_001259	1, 2, 3, 4	Fusion	3'
CDKN2A	NM_000077	N/A	Expression	N/A
CDKN2B	NM_004936	N/A	Expression	N/A
CEBPD	NM_005195	N/A	Expression	N/A
CEBPE	NM_001805	N/A	Expression	N/A

Gene	Accession	Exon	Variant Type	Description*
CEBPG	NM_001806	N/A	Expression	N/A
CHIC2	NM_012110	1, 2, 3	Fusion	3'
CIITA	NM_000246	1, 2	Fusion	3'
CREB3L2	NM_194071	N/A	Expression	N/A
CREBBP	NM_004380	N/A	Mutation	P1053, C1240, R1446, S1680-L1681
CREBBP	NM_004380	2, 3, 4, 5, 6	Fusion	5'
CTLA4	NM_005214	N/A	Expression	N/A
CYB5R2	NM_016229	N/A	Expression	N/A
DEK	NM_003472	2, 3	Fusion	3'
DENND3	NM_014957	N/A	Expression	N/A
DLEU1	NR_002605	N/A	Expression	N/A
DNMT3A	NM_175629	N/A	Mutation	R688-K693, R882
DNMT3B	NM_006892	N/A	Expression	N/A
DNTT	NM_004088	N/A	Expression	N/A
DUSP22	NM_020185	1, 2	Fusion	3'
E2F2	NM_004091	N/A	Expression	N/A
EIF4A1	NM_001416	2, 3	Fusion	5'
ENTPD1	NM_001776	N/A	Expression	N/A
ETV6	NM_001987	N/A	Mutation	Y104-R105

Gene	Accession	Exon	Variant Type	Description*
ETV6	NM_001987	1, 2, 3, 4, 5, 6	Fusion	3'
ETV6	NM_001987	2, 3, 4, 5, 6	Fusion	5'
EXOC2	NM_018303	N/A	Expression	N/A
EZH2	NM_004456	N/A	Mutation	Y646, R690
FAM216A	NM_013300	N/A	Expression	N/A
FBXW7	NM_033632	N/A	Mutation	R224-T226, R338-I347, T385, R465, R479, R505
FGFR1	NM_023110	12, 17	Fusion	3'
FGFR1	NM_023110	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17	Fusion	5'
FOXP1	NM_032682	N/A	Expression	N/A
FUT8	NM_004480	N/A	Expression	N/A
IDH1	NM_005896	N/A	Mutation	R132
IDH2	NM_002168	N/A	Mutation	R140, R172
IL16	NM_004513	N/A	Expression	N/A
IRF4	NM_002460	N/A	Expression	N/A
IRF8	NM_002163	N/A	Expression	N/A
ITPKB	NM_002221	N/A	Expression	N/A
JAK1	NM_002227	N/A	Mutation	V658, S703, R724
JAK2	NM_004972	N/A	Mutation	F537-F547, V617-C618, L681-R683, L855, V863, A880, V911, M929-R938, I960, R980-E985, D994

Gene	Accession	Exon	Variant Type	Description*
JAK2	NM_004972	6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20	Fusion	5'
JAK2	NM_004972	9, 10, 11, 12	Fusion	3'
JAK3	NM_000215	N/A	Mutation	M511, A572-A573, R657, S789
KIAA0101	NM_014736	N/A	Expression	N/A
KMT2A	NM_005933	2, 3	Fusion	5'
KMT2A	NM_005933	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35	Fusion	3'
KRAS	NM_004985	N/A	Mutation	G12-G13, Q61, A146
LIMD1	NM_014240	N/A	Expression	N/A
LMO2	NM_005574	N/A	Expression	N/A
LRMP	NM_006152	N/A	Expression	N/A
LZTS1	NM_021020	N/A	Expression	N/A
MAL	NM_002371	N/A	Expression	N/A
MALT1	NM_006785	9	Fusion	3'
MAML3	NM_018717	N/A	Expression	N/A
MKL1	NM_020831	4, 5, 6	Fusion	5'
MLF1	NM_022443	2, 3, 4	Fusion	5'
MLLT10	NM_004641	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	Fusion	5'
MLLT10	NM_004641	7, 8, 9, 10	Fusion	3'

Gene	Accession	Exon	Variant Type	Description*
MME	NM_000902	N/A	Expression	N/A
MUC1	NM_002456	N/A	Expression	N/A
MYBL1	NM_001080416	N/A	Expression	N/A
MYC	NM_002467	N/A	Expression	N/A
MYC	NM_002467	1, 2	Fusion	5'
MYD88	NM_002468	N/A	Mutation	V217-S219, M232, S243, L265
NEK6	NM_014397	N/A	Expression	N/A
NFKB1	NM_003998	N/A	Expression	N/A
NFKB2	NM_002502	14, 15, 16, 17, 18, 19, 20, 21	Fusion	3'
NME1	NM_000269	N/A	Expression	N/A
NOTCH1	NM_017617	N/A	Mutation	L1574, V1578, L1585, F1592-L1593, R1598-L1600, L1678-I1680, P2514-E2515, P2525
NOTCH1	NM_017617	24, 25, 26, 27, 28, 29	Fusion	5'
NOTCH1	NM_017617	24	Fusion	3'
NOTCH1	NM_017617	34	Exon Skipping	N/A
NOTCH2	NM_024408	N/A	Mutation	R2400
NRAS	NM_002524	N/A	Mutation	G12-G13, G60-Q61
P2RY8	NM_178129	1	Fusion	3'
PAICS	NM_006452	N/A	Expression	N/A
PDCD1	NM_005018	N/A	Expression	N/A

Gene	Accession	Exon	Variant Type	Description*
PDCD1LG2	NM_025239	1, 2, 3	Fusion	5'
PDCD1LG2	NM_025239	5, 6	Fusion	3'
PDCD1LG2	NM_025239	N/A	Expression	N/A
PDGFRA	NM_006206	N/A	Mutation	T674
PDGFRA	NM_006206	9, 10, 11, 12, 13, 14	Fusion	5'
PIM1	NM_002648	N/A	Expression	N/A
PIM2	NM_006875	N/A	Expression	N/A
PLCG1	NM_002660	N/A	Mutation	S345
PLCG2	NM_002661	N/A	Mutation	R665, L845
PPAT	NM_002703	N/A	Expression	N/A
PRDM16	NM_022114	1, 2, 3, 4	Fusion	5'
PRKAR2B	NM_002736	N/A	Expression	N/A
PTPN1	NM_002827	N/A	Expression	N/A
PYCR1	NM_006907	N/A	Expression	N/A
RAB29	NM_003929	N/A	Expression	N/A
RAG1	NM_000448	N/A	Expression	N/A
RAG2	NM_000536	N/A	Expression	N/A
RANBP1	NM_002882	N/A	Expression	N/A
RHOA	NM_001664	N/A	Mutation	G17

Gene	Accession	Exon	Variant Type	Description*
S1PR2	NM_004230	N/A	Expression	N/A
SERPINA9	NM_175739	N/A	Expression	N/A
SF3B1	NM_012433	N/A	Mutation	E622-N626, H662-K666, K700, G742
SH3BP5	NM_004844	N/A	Expression	N/A
STAT3	NM_003150	N/A	Mutation	Y640-N647, D661
STAT5B	NM_012448	N/A	Mutation	N642
STAT6	NM_003153	N/A	Mutation	D419
STIL	NM_003035	1, 2	Fusion	3'
STRBP	NM_018387	N/A	Expression	N/A
TCF3	NM_003200	11, 12, 13, 14, 15, 16, 17, 18	Fusion	3'
TNFRSF13B	NM_012452	N/A	Expression	N/A
TNFSF4	NM_003326	N/A	Expression	N/A
TP63	NM_003722	3, 4, 5	Fusion	5'
WT1	NM_000378	N/A	Mutation	Q301-T303, G352-Q354, V359-T365, Q445-F448
WT1	NM_000378	N/A	Expression	N/A
XPO1	NM_003400	N/A	Mutation	E571

*The mutations listed under the Description column are targeted by the assay design. Version 6.2 and earlier of Archer Analysis may not support RNA SNV/Indel variant calling at exon junctions depending on the sequence context (SNVs ≤5bp, indels ≤30bp). *De Novo* RNA SNV/Indel and Internal Tandem Duplication mutation detection are not supported on the Ion Torrent Sequencing System.

Note: Fusions involving BCR and TCR loci, including IGH, IGL and IGK, are targeted for expression and may not be explicitly called as a fusion because these often do not result in chimeric transcripts. For the “Expression” assay type, unique molecules originating from probes across these genes can be counted and normalized to target control genes to enable relative expression level detection. Results are visualized in Archer Analysis.

SNPs and sites targeted for sample tracking

rs560681	rs430046	rs987640	rs10776839	rs12393891
rs740598	rs8078417	rs6444724	rs6530357	chrX 4429309
rs1498553	rs9951171	rs6811238	rs5971553	chrX 11314433
rs10773760	rs576261	rs13182883	rs5953060	chrY 6738552
rs1058083	rs1109037	rs214955	rs6524626	chrY 19490214
rs4530059	rs1523537	rs321198	rs5940270	
rs1821380	rs221956	rs4606077	rs722847	

SNPs may be used in combination to uniquely tag and track samples over time. Contact archer-tech@idtdna.com for further details.

Limitations of use

For research use only. Not for use in diagnostic procedures. Unless otherwise agreed to in writing, IDT does not intend these products to be used in clinical applications and does not warrant their fitness or suitability for any clinical diagnostic use. Purchaser is solely responsible for all decisions regarding the use of these products and any associated regulatory or legal obligations.

Safety data sheets pertaining to this product are available upon request.

Revision History

Document Number	Date	Description of change
RA-DOC-451/REV01	October 2023	Initial release.
RA-DOC-451/REV02	November 2023	Updated First and Second PCR cycling conditions to include separate anneal and extended steps. Updated branding.