

FusionPlex Heme v2

Description

The FusionPlex Heme v2 panel is a balanced pool of gene-specific primer (GSP) oligonucleotides that is optimized for use with FusionPlex reagents and molecular barcode (MBC) adapters to produce targeted NGS libraries. This product insert should be used in conjunction with FusionPlex protocol for Illumina® (RA-DOC-047) or FusionPlex protocol for Ion Torrent[™] (RA-DOC-048).

FusionPlex Heme v2 contains **607** GSPs targeting **87** genes commonly mutated in hematological malignancies.

Description	Part number	Storage
FusionPlex Heme v2 GSP1, 8 reactions	SA0073-8-1	
FusionPlex Heme v2 GSP2, 8 reactions	SA0073-8-2	-20°C ± 10°C
10X VCP Primer Mix	SA0126	

Recommended PCR cycling

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

FusionPlex Heme v2 libraries should be sequenced to a minimum of **1.5M 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 (v7.0, or greater). The FusionPlex Heme v2 panel requires selection of the **Fusion** and (optional) **SNV/Indel** pipeline(s), found under the **RNA** Input Type (see the Archer Analysis User Guide for more details on setting up your analysis).

Processing of FusionPlex Heme v2 panel libraries requires a one-time upload of the Panel GTF. Files can be obtained by contacting archer-tech@idtdna.com.

Assay targets

Gene	Accession	Exon	Variant Type	Description*
<i>ABL1</i>	NM_005157	N/A	Mutation	Y253-E255, V299, T315-F317, M351-F359
<i>ABL1</i>	NM_005157	1, 2, 3, 4, 5	Fusion	5'
<i>ABL1</i>	NM_005157	N/A	Expression Imbalance	N/A
<i>ABL2</i>	NM_005158	2, 3, 4, 5, 6, 7, 8	Fusion	5'

Gene	Accession	Exon	Variant Type	Description*
<i>ALK</i>	NM_004304	N/A	Mutation	T1151-C1156, F1174, L1196-S1206, G1269
<i>ALK</i>	NM_004304	2, 4, 6, 10, 16, 17, 18, 19, 20, 21, 22, 23	Fusion	5'
<i>BCL11B</i>	NM_138576	3, 4	Fusion	5'
<i>BCL11B</i>	NM_138576	2, 3	Fusion	3'
<i>BCL2</i>	NM_000633	N/A	Mutation	F104
<i>BCL2</i>	NM_000633	N/A	Expression	N/A
<i>BCL2</i>	NM_000633	3	Fusion	3'
<i>BCL2</i>	NM_000633	2	Fusion	5'
<i>BCL3</i>	NM_005178	N/A	Expression	N/A
<i>BCL6</i>	NM_001706	2,3	Fusion	5'
<i>BCL6</i>	NM_001706	N/A	Expression	N/A
<i>BCR</i>	NM_004327	1, 2, 3, 8, 12, 13, 14, 15, 16	Fusion	3'
<i>BIRC3</i>	NM_001165	N/A	Mutation	Q547
<i>BIRC3</i>	NM_001165	4, 5, 6, 7	Fusion	3'
<i>CBFB</i>	NM_022845	4, 5	Fusion	3'
<i>CCND1</i>	NM_053056	N/A	Expression	N/A
<i>CCND1</i>	NM_053056	5	Fusion	3'
<i>CCND1</i>	NM_053056	N/A	Mutation	E36, V42-C47
<i>CCND2</i>	NM_001759	N/A	Expression	N/A

Gene	Accession	Exon	Variant Type	Description*
<i>CCND3</i>	NM_001760	2	Fusion	5'
<i>CCND3</i>	NM_001760	N/A	Expression	N/A
<i>CD274</i>	NM_014143	N/A	Expression	N/A
<i>CDK6</i>	NM_001259	1, 2, 3, 4	Fusion	3'
<i>CDKN2A</i>	NM_000077	N/A	Expression	N/A
<i>CEBPA</i>	NM_004364	N/A	Mutation	P23-H24, Q83, K304-L317
<i>CEBPA</i>	NM_004364	N/A	Expression	N/A
<i>CEBPD</i>	NM_005195	N/A	Expression	N/A
<i>CEBPE</i>	NM_001805	N/A	Expression	N/A
<i>CEBPG</i>	NM_001806	N/A	Expression	N/A
<i>CHD1</i>	NM_001270	1, 2	Fusion	5'
<i>CHIC2</i>	NM_012110	1, 2, 3	Fusion	3'
<i>CIITA</i>	NM_000246	1, 2	Fusion	3'
<i>CREBBP</i>	NM_004380	N/A	Mutation	P1053, C1240, R1446, S1680-L1681
<i>CREBBP</i>	NM_004380	2, 3, 4, 5, 6	Fusion	5'
<i>CRLF2</i>	NM_022148	N/A	Mutation	F232
<i>CRLF2</i>	NM_022148	1	Fusion	5'
<i>CRLF2</i>	NM_022148	N/A	Expression	N/A
<i>CSF1R</i>	NM_005211	9, 10, 11, 12, 13, 14	Fusion	5'

Gene	Accession	Exon	Variant Type	Description*
<i>CTLA4</i>	NM_005214	N/A	Expression	N/A
<i>DEK</i>	NM_003472	2, 3	Fusion	3'
<i>DUSP22</i>	NM_020185	1, 2	Fusion	3'
<i>EBF1</i>	NM_024007	10, 11, 12, 13, 14, 15	Fusion	3'
<i>EIF4A1</i>	NM_001416	2, 3	Fusion	5'
<i>EPOR</i>	NM_000121	7, 8	Fusion	3'
<i>ERG</i>	NM_004449	7, 8, 9, 10, 11	Fusion	5'
<i>ETV6</i>	NM_001987	N/A	Mutation	Y104-R105
<i>ETV6</i>	NM_001987	1, 2, 3, 4, 5, 6	Fusion	3'
<i>ETV6</i>	NM_001987	2, 3, 4, 5, 6	Fusion	5'
<i>FGFR1</i>	NM_023110	12, 17	Fusion	3'
<i>FGFR1</i>	NM_023110	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17	Fusion	5'
<i>FOXP1</i>	NM_032682	N/A	Expression	N/A
<i>GLIS2</i>	NM_032575	2, 3	Fusion	5'
<i>ID4</i>	NM_001546	N/A	Expression	N/A
<i>IKZF1</i>	NM_006060	1, 2, 3	Exon Skipping	3'
<i>IKZF1</i>	NM_006060	7, 8	Exon Skipping	5'
<i>IKZF2</i>	NM_016260	3, 4	Fusion	3'
<i>IKZF3</i>	NM_012481	2, 3, 4, 5, 6, 7	Fusion	3'

Gene	Accession	Exon	Variant Type	Description*
<i>IKZF3</i>	NM_012481	N/A	Mutation	L162
<i>IRF4</i>	NM_002460	N/A	Expression	N/A
<i>IRF8</i>	NM_002163	N/A	Expression	N/A
<i>JAK2</i>	NM_004972	N/A	Mutation	F537-F547, V617-C618, L681-R683, L855, V863, A880, V911, M929-R938, I960, R980-E985, D994
<i>JAK2</i>	NM_004972	6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20	Fusion	5'
<i>JAK2</i>	NM_004972	9, 10, 11, 12	Fusion	3'
<i>KAT6A</i>	NM_006766	13, 14, 15, 16	Fusion	3'
<i>KLF2</i>	NM_016270	2, 3	Fusion	5'
<i>KMT2A</i>	NM_005933	2, 3	Fusion	5'
<i>KMT2A</i>	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'
<i>MALT1</i>	NM_006785	9	Fusion	3'
<i>MECOM</i>	NM_004991	N/A	Expression	N/A
<i>MECOM</i>	NM_004991	1, 2, 3, 4	Fusion	5'
<i>MKL1</i>	NM_020831	4, 5, 6	Fusion	5'
<i>MLF1</i>	NM_022443	2, 3, 4	Fusion	5'
<i>MLLT10</i>	NM_004641	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	Fusion	5'
<i>MLLT10</i>	NM_004641	7, 8, 9, 10	Fusion	3'

Gene	Accession	Exon	Variant Type	Description*
<i>MLLT4</i>	NM_001040000	2	Fusion	5'
<i>MUC1</i>	NM_002456	N/A	Expression	N/A
<i>MYC</i>	NM_002467	N/A	Expression	N/A
<i>MYC</i>	NM_002467	1, 2	Fusion	5'
<i>MYH11</i>	NM_002474	N/A	Expression Imbalance	N/A
<i>MYH11</i>	NM_002474	7, 8, 9, 10, 11, 14, 15, 16	Fusion	5'
<i>NF1</i>	NM_000267	14	Fusion	3'
<i>NF1</i>	NM_000267	36	Fusion	5'
<i>NFKB2</i>	NM_002502	14, 15, 16, 17, 18, 19, 20, 21	Fusion	3'
<i>NOTCH1</i>	NM_017617	N/A	Mutation	L1574, V1578, L1585, F1592-L1593, R1598-L1600, L1678-I1680, P2514-E2515, P2525
<i>NOTCH1</i>	NM_017617	24, 25, 26, 27, 28, 29	Fusion	5'
<i>NOTCH1</i>	NM_017617	24	Fusion	3'
<i>NOTCH1</i>	NM_017617	34	Exon Skipping	N/A
<i>NTRK3</i>	NM_002530	N/A	Expression Imbalance	N/A
<i>NTRK3</i>	NM_002530	13, 14, 15	Fusion	5'
<i>NTRK3</i>	NM_001007156	15	Fusion	5'
<i>NUP214</i>	NM_005085	17, 18, 19	Fusion	5'
<i>NUP98</i>	NM_016320	8, 9, 10, 11, 12, 13, 14, 15, 16, 17	Fusion	3'
<i>NUP98</i>	NM_016320	12, 13	Fusion	5'

Gene	Accession	Exon	Variant Type	Description*
<i>P2RY8</i>	NM_178129	1	Fusion	3'
<i>PAG1</i>	NM_018440	2	Fusion	5'
<i>PAX5</i>	NM_016734	N/A	Mutation	P80
<i>PAX5</i>	NM_016734	1, 4, 5, 6, 7, 8	Fusion	3'
<i>PAX5</i>	NM_016734	6, 7, 8	Fusion	5'
<i>PDCD1</i>	NM_005018	N/A	Expression	N/A
<i>PDCD1LG2</i>	NM_025239	N/A	Expression	N/A
<i>PDCD1LG2</i>	NM_025239	1, 2, 3	Fusion	5'
<i>PDCD1LG2</i>	NM_025239	5, 6	Fusion	3'
<i>PDGFRA</i>	NM_006206	N/A	Mutation	T674
<i>PDGFRA</i>	NM_006206	9, 10, 11, 12, 13, 14	Fusion	5'
<i>PDGFRB</i>	NM_002609	8, 9, 10, 11, 12, 13, 14	Fusion	5'
<i>PICALM</i>	NM_007166	16, 17, 18, 19	Fusion	3'
<i>PML</i>	NM_002675	N/A	Mutation	C212-S220
<i>PML</i>	NM_002675	2	Fusion	5'
<i>PML</i>	NM_002675	2, 3, 4, 5, 6, 7	Fusion	3'
<i>PRDM16</i>	NM_022114	1, 2, 3, 4	Fusion	5'
<i>PTK2B</i>	NM_173176	2, 3, 4, 5, 6, 7, 8	Fusion	5'
<i>RARA</i>	NM_000964	N/A	Mutation	E197, R272, T283-M284, L290-M297, R394, Q411

Gene	Accession	Exon	Variant Type	Description*
<i>RARA</i>	NM_000964	N/A	Expression Imbalance	N/A
<i>RARA</i>	NM_000964	2, 3, 4, 5	Fusion	5'
<i>RBM15</i>	NM_022768	1	Fusion	3'
<i>ROS1</i>	NM_002944	N/A	Expression Imbalance	N/A
<i>ROS1</i>	NM_002944	31, 32, 33, 34, 35, 36	Fusion	5'
<i>RUNX1</i>	NM_001754	5, 6, 7, 8, 9	Fusion	5'
<i>RUNX1</i>	NM_001754	2, 3, 4, 5, 6, 7, 8	Fusion	3'
<i>RUNX1</i>	NM_001754	N/A	Expression Imbalance	N/A
<i>RUNX1T1</i>	NM_001198679	N/A	Expression Imbalance	N/A
<i>RUNX1T1</i>	NM_001198679	2,3	Fusion	5'
<i>SEMA6A</i>	NM_020796	1,2	Fusion	3'
<i>SETD2</i>	NM_014159	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	Fusion	3'
<i>STIL</i>	NM_003035	1, 2	Fusion	3'
<i>TAL1</i>	NM_003189	N/A	Expression	N/A
<i>TAL1</i>	NM_003189	2, 4	Fusion	5'
<i>TAL1</i>	NM_001290404	2, 3	Fusion	5'
<i>TCF3</i>	NM_003200	11, 12, 13, 14, 15, 16, 17, 18	Fusion	3'
<i>TFG</i>	NM_006070	2, 3, 4	Fusion	3'
<i>TP63</i>	NM_003722	3, 4, 5	Fusion	5'

Gene	Accession	Exon	Variant Type	Description*
<i>TYK2</i>	NM_003331	16, 18	Fusion	5'
<i>TYK2</i>	NM_003331	N/A	Mutation	W327
<i>ZCCHC7</i>	NM_032226	1, 2	Fusion	3'
<i>ZCCHC7</i>	NM_032226	2, 3, 4	Fusion	5'

*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

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

Note: SNPs may be used in combination to uniquely tag and track samples over time. Contact



Product Insert

FusionPlex™ Heme v2 Panel

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.

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