

## FUSIONPlex-HT Pan-Heme v2

### Description

The FUSIONPlex-HT Pan-Heme v2 panel is a balanced pool of gene-specific primer (GSP) oligonucleotides that is optimized for use with FUSIONPlex-HT reagents and molecular barcode (MBC) adapters to produce targeted NGS libraries. This product insert should be used in conjunction with FUSIONPlex-HT protocol for Illumina® (RA-DOC-049).

FUSIONPlex-HT Pan-Heme v2 contains 1748 GSPs targeting 218 genes commonly mutated in hematological malignancies.

| Description  | Part number                | Storage      |
|--|----------------------------|--------------|
| FUSIONPlex-HT Pan-Heme v2 GSP1, 24 reactions<br>or<br>FUSIONPlex-HT Pan-Heme v2 GSP1, 96 reactions | 10034909<br>or<br>10034914 |              |
| FUSIONPlex-HT Pan-Heme GSP2, 24 reactions<br>or<br>FUSIONPlex-HT Pan-Heme GSP2, 96 reactions       | 10034910<br>or<br>10034915 | -20°C ± 10°C |
| 10X VCP Primer Mix, 24 reactions<br>or<br>10X VCP Primer Mix, 96 reactions                         | SA0840<br>or<br>SA0841     |              |

### Recommended PCR cycling

|                    | Step | Temperature (°C) | Time                   | Cycles |
|--------------------|------|------------------|------------------------|--------|
| First PCR reaction | 1    | 95               | 3 min                  | 1      |
|                    | 2    | 95               | 30 sec                 |        |
|                    | 3    | 60               | 10 sec                 | 15     |
|                    | 4    | 62               | 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                 |        |
|                     | 3    | 60               | 10 sec                 | 20†    |
|                     | 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

FUSIONPlex-HT Pan-Heme v2 libraries should be sequenced to a minimum of **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 (v7.5, or greater). The FUSIONPlex-HT Pan-Heme v2 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 FUSIONPlex-HT Pan-Heme v2 libraries requires a one-time upload of the Panel GTF. Files can be obtained by contacting [archer-tech@idtdna.com](mailto:archer-tech@idtdna.com).

## Assay targets

| Gene        | Accession | Exon                              | Assay Type           | Description**   |
|-------------|-----------|-----------------------------------|----------------------|---|
| <i>ABL1</i> | NM_005157 | –                                 | Expression Imbalance | –   |
| <i>ABL1</i> | NM_005157 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 | Fusion               | 5'  |
| <i>ABL1</i> | NM_005157 | 4, 5, 6                           | Mutation             | Full exon coverage including, p.Y253–p.E255, p.V299, p.T315–p.F317, p.M351–p.F359 |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>  | <b>Assay Type</b>   | <b>Description**</b>   |
|---------------|------------------|--|---|--|
| <i>ABL2</i>   | NM_005158        | 2, 3, 4, 5, 6, 7, 8  | Fusion  | 5'   |
| <i>AICDA</i>  | NM_020661        | –  | Expression  | –  |
| <i>AKT3</i>   | NM_005465        | 6  | Mutation  | p.K172   |
| <i>ALK</i>    | NM_004304        | 2, 4, 6, 8, 10, 12, 13, 14, 16, 17, 18, 19, intron19, 20, mid-exon20, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 | Fusion, ALK ATIV<br>Internal deletion (ALKΔ2–17, ALKΔ2–3), Expression | 5'   |
| <i>ALK</i>    | NM_004304        | 1, 2   | Internal deletion (ALKΔ2–17, ALKΔ2–3)                                 | 3'   |
| <i>ALK</i>    | NM_004304        | 21, 22, 23, 24, 25   | Mutation  | Full exon coverage including p.P1153–p.C1156, p.F1174, p.L1196–p.S1206, p.G1269    |
| <i>ALK</i>    | NM_004304        | 9, 12, 16, 20  | Mutation  | Hotspot coverage including p.V597, p.H694, p.G881, p.K1062                         |
| <i>ASB13</i>  | NM_024701        | –  | Expression  | –  |
| <i>ASXL1</i>  | NM_015338        | 11, 12, 13   | Mutation  | Full exon coverage including p.Y591, p.H630–p.E635, p.I641–p.G646, p.R693, p.E1102 |
| <i>BATF3</i>  | NM_018664        | –  | Expression  | –  |
| <i>BAX</i>    | NM_138761        | 6  | Mutation  | p.G179   |
| <i>BCL11B</i> | NM_138576        | 1, 2, 3, 4   | Fusion, Expression  | 5'   |
| <i>BCL11B</i> | NM_138576        | 2, 3   | Fusion, Expression  | 3'   |
| <i>BCL2</i>   | NM_000633        | *1, 2, 3   | Fusion, Expression  | 3'   |
| <i>BCL2</i>   | NM_000633        | 1*, 2, 3*, mid exon 3  | Fusion, Expression  | 5'   |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>                                   | <b>Assay Type</b>   | <b>Description**</b>                   |
|---------------|------------------|---|---|--|
| <i>BCL2</i>   | NM_000633        | 2   | Mutation  | p.F104                                 |
| <i>BCL2A1</i> | NM_004049        | –   | Expression  | –                                      |
| <i>BCL3</i>   | NM_005178        | –   | Expression  | –                                      |
| <i>BCL6</i>   | NM_001706        | 2, 3, 4, 5, 8, 9                              | Fusion, Expression  | 5'                                     |
| <i>BCR</i>    | NM_004327        | 1, 2, 3, 4, 8, 12,<br>13, 14, 15, 16          | Fusion  | 3'                                     |
| <i>BIRC3</i>  | NM_182962        | 4, 5, 6, 7, 8                                 | Fusion, Expression  | 3'                                     |
| <i>BIRC3</i>  | NM_182962        | 9   | Mutation  | p.Q547                                 |
| <i>BLNK</i>   | NM_013314        | –   | Expression  | –                                      |
| <i>BMF</i>    | NM_033503        | –   | Expression  | –                                      |
| <i>BMP7</i>   | NM_001719        | –   | Expression  | –                                      |
| <i>BRAF</i>   | NM_004333        | 1, 2, 3, 7, 8, 10,<br>13, 14, 18              | Fusion, Kinase<br>Domain Duplication,<br>BRAF $\Delta$ 2–10,<br>BRAF $\Delta$ 4–10,<br>BRAF $\Delta$ 2–8,<br>BRAF $\Delta$ 3–8,<br>BRAF $\Delta$ 4–8,<br>Expression | 3'                                     |
| <i>BRAF</i>   | NM_004333        | 2, 3, 4, 5, 7, 8,<br>9, 10, 11, 12,<br>15, 16 | Fusion, Kinase<br>Domain Duplication,<br>BRAF $\Delta$ 2–10,<br>BRAF $\Delta$ 4–10,<br>BRAF $\Delta$ 2–8,<br>BRAF $\Delta$ 3–8,<br>BRAF $\Delta$ 4–8,<br>Expression | 5'                                     |
| <i>BRAF</i>   | NM_004333        | 11, 15  | Mutation  | Full exon coverage including p.V600    |
| <i>BTK</i>    | NM_000061        | 11, 15, 16                                    | Mutation  | p.C481, p.T474, p.L528, p.T316, p.V537 |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>                | <b>Assay Type</b>  | <b>Description**</b>   |
|---------------|------------------|----------------------------|--------------------|--|
| <i>CALR</i>   | NM_004343        | 9                          | Mutation           | p.E364–p.L367, p.K385  |
| <i>CARD11</i> | NM_032415        | 5, 6                       | Mutation           | p.D230 p.K215T   |
| <i>CBFB</i>   | NM_022845        | 4, 5                       | Fusion             | 3'   |
| <i>CBL</i>    | NM_005188        | 8, 9                       | Mutation           | Full exon coverage including p.Q367–p.Y371, p.L380–p.C384, p.C404–p.W408, p.R420 |
| <i>CCDC50</i> | NM_174908        | –                          | Expression         | –  |
| <i>CCND1</i>  | NM_053056        | 2, 3, 4, 5                 | Fusion, Expression | 5'   |
| <i>CCND1</i>  | NM_053056        | 1, 2, 3, 4, mid–<br>exon5* | Fusion, Expression | 3'   |
| <i>CCND1</i>  | NM_053056        | 1                          | Mutation           | p.E36, p.V42–p.C47   |
| <i>CCND2</i>  | NM_001759        | –                          | Expression         | –  |
| <i>CCND3</i>  | NM_001760        | 2, 3, 4, 5                 | Fusion, Expression | 5'   |
| <i>CCND3</i>  | NM_001760        | 2, 4                       | Fusion, Expression | 3'   |
| <i>CD274</i>  | NM_014143        | –                          | Expression         | –  |
| <i>CD28</i>   | NM_006139        | 2, 4                       | Fusion             | 5'   |
| <i>CD44</i>   | NM_000610        | –                          | Expression         | –  |
| <i>CD79B</i>  | NM_000626        | –                          | Expression         | 5'   |
| <i>CD79B</i>  | NM_000626        | 5                          | Mutation           | p.Y196   |
| <i>CDC25A</i> | NM_001789        | –                          | Expression         | 5'   |

| <b>Gene</b>    | <b>Accession</b> | <b>Exon</b>              | <b>Assay Type</b>  | <b>Description**</b>                           |
|----------------|------------------|--------------------------|--------------------|--|
| <i>CDK6</i>    | NM_001259        | 1, 2, 3, 4               | Fusion, Expression | 3'   |
| <i>CDKN2A</i>  | NM_000077        | –                        | Expression         | –  |
| <i>CDKN2B</i>  | NM_004936        | –                        | Expression         | –  |
| <i>CEBPA</i>   | NM_004364        | 1                        | Mutation           | Full exon coverage                             |
| <i>CEBPD</i>   | NM_005195        | –                        | Expression         | –  |
| <i>CEBPE</i>   | NM_001805        | –                        | Expression         | –  |
| <i>CEBPG</i>   | NM_001806        | –                        | Expression         | –  |
| <i>CHD1</i>    | NM_001270        | 2*, 3                    | Fusion             | 5'   |
| <i>CHIC2</i>   | NM_012110        | 1, 2, 3                  | Fusion             | 3'   |
| <i>CIITA</i>   | NM_000246        | 1, 2                     | Fusion             | 3'   |
| <i>CREB3L2</i> | NM_194071        | –                        | Expression         | –  |
| <i>CREBBP</i>  | NM_004380        | –                        | Expression         | –  |
| <i>CREBBP</i>  | NM_004380        | 16, 20, 26, 30           | Mutation           | p.P1053, p.C1240, p.R1446, p.S1680–<br>p.L1681 |
| <i>CRLF2</i>   | NM_022148        | –                        | Expression         | –  |
| <i>CRLF2</i>   | NM_022148        | 1*                       | Fusion             | 5'   |
| <i>CRLF2</i>   | NM_022148        | 6                        | Mutation           | p.F232   |
| <i>CSF1R</i>   | NM_005211        | 9, 10, 11, 12,<br>13, 14 | Fusion             | 5'   |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>  | <b>Assay Type</b>  | <b>Description**</b>          |
|---------------|------------------|--|--------------------|-------------------------------|
| <i>CSF3R</i>  | NM_156039        | 14, 17   | Mutation           | p.T618, p.Q766–p.Q768, p.Q776 |
| <i>CTLA4</i>  | NM_005214        | –  | Expression         | –                             |
| <i>CYB5R2</i> | NM_016229        | –  | Expression         | –                             |
| <i>DCK</i>    | NM_000788        | 2, 3   | Mutation           | p.A32, p.E70                  |
| <i>DDX4</i>   | NM_024415        | –  | Expression         | –                             |
| <i>DDX41</i>  | NM_016222        | 1, 2, 3, 4, 5, 6,<br>7, 8, 9, 10, 11,<br>12, 13, 14, 15,<br>16, 17 | Fusion, Expression | 3'                            |
| <i>DEK</i>    | NM_003472        | 2, 3   | Fusion             | 3'                            |
| <i>DENND3</i> | NM_014957        | –  | Expression         | –                             |
| <i>DLEU1</i>  | NR_002605        | –  | Expression         | –                             |
| <i>DNM2</i>   | NM_004945        | 17   | Mutation           | p.V649, p.L789                |
| <i>DNMT3A</i> | NM_175629        | 17, 23   | Mutation           | p.R688–p.K693, p.R882         |
| <i>DNMT3B</i> | NM_006892        | –  | Expression         | –                             |
| <i>DNTT</i>   | NM_004088        | –  | Expression         | –                             |
| <i>DUSP22</i> | NM_020185        | 1, 2   | Fusion             | 3'                            |
| <i>E2F2</i>   | NM_004091        | –  | Expression         | –                             |
| <i>EBF1</i>   | NM_024007        | 10, 11, 12, 13,<br>14, 15  | Fusion             | 3'                            |
| <i>EIF4A1</i> | NM_001416        | 2, 3   | Fusion             | 5'                            |

| <b>Gene</b>    | <b>Accession</b> | <b>Exon</b>  | <b>Assay Type</b> | <b>Description**</b>  |
|----------------|------------------|--|-------------------|---|
| <i>ENTPD1</i>  | NM_001776        | –  | Expression        | –   |
| <i>EPOR</i>    | NM_000121        | 6, 7, 8  | Fusion            | 3'  |
| <i>ERG</i>     | NM_004449        | 2*, 3*, 4, 5, 6, 7,<br>8, 9, 10, 11                                  | Fusion            | 5'  |
| <i>ETV6</i>    | NM_001987        | 2, 3, 4, 5, 6, 7   | Fusion            | 5'  |
| <i>ETV6</i>    | NM_001987        | 1, 2, 3, 4, 5, 6   | Fusion            | 3'  |
| <i>ETV6</i>    | NM_001987        | 3  | Mutation          | p.Y104–p.R105   |
| <i>EXOC2</i>   | NM_018303        | –  | Expression        | –   |
| <i>EZH2</i>    | NM_004456        | 15, 16, 18   | Mutation          | p.K602, p.Y646, p.R690  |
| <i>FAM216A</i> | NM_013300        | –  | Expression        | –   |
| <i>FBXW7</i>   | NM_033632        | 4, 7, 8, 9, 10   | Mutation          | p.R224–p.T226, p.R338–p.I347, p.T385,<br>p.R465, p.R479, p.R505                   |
| <i>FGFR1</i>   | NM_023110        | 2*, 3, 4, 5, 6, 7,<br>8, 9, 10, 11, 12,<br>13, 14, 15, 16,<br>17, 18 | Fusion            | 5'  |
| <i>FGFR1</i>   | NM_023110        | 12, 17   | Fusion            | 3'  |
| <i>FGFR1</i>   | NM_023110        | 4, 12, 13, 14  | Mutation          | Hotspot coverage including p.T141, p.V561,<br>p.N546, p.K656                      |
| <i>FGFR2</i>   | NM_000141        | 2*, 3, 5, 6, 7, 8,<br>9, 10  | Fusion            | 5'  |
| <i>FGFR2</i>   | NM_000141        | 11, 16, 17, 18   | Fusion            | 3'  |
| <i>FGFR2</i>   | NM_000141        | 2, 7, 9, 12, 13,<br>14   | Mutation          | p.R6, p.S252–p.P253, p.G305, p.Y375–V395,<br>p.I547–p.N549, p.V564, p.A648–p.K659 |
| <i>FGFR3</i>   | NM_000142        | 3, 5, 8, 10, 11,<br>12, 13, 14                                       | Fusion            | 5'  |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>                                      | <b>Assay Type</b>                               | <b>Description**</b>  |
|---------------|------------------|--|---|---|
| <i>FGFR3</i>  | NM_000142        | 16, 17, intron17, mid-exon18                     | Fusion  | 3'  |
| <i>FGFR3</i>  | NM_000142        | 7, 9, 13, 14, 16                                 | Mutation  | Hotspot coverage including p.R248, p.S249, p.G370, p.S371, p.Y373, p.G380, p.R399, p.V555, p.D641, p.K650, p.G697, p.K715 |
| <i>FLT3</i>   | NM_004119        | 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24   | Fusion, Internal Tandem Duplication, Expression | 5'  |
| <i>FLT3</i>   | NM_004119        | 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21 | Mutation  | Full exon coverage including p.F590–p.N609, p.D835–p.S838   |
| <i>FOXP1</i>  | NM_032682        | –  | Expression                                      | –   |
| <i>FUT8</i>   | NM_004480        | –  | Expression                                      | –   |
| <i>GATA1</i>  | NM_002049        | 2  | Mutation  | p.M1, p.S30, p.Y62–p.D65  |
| <i>GATA2</i>  | NM_032638        | 4, 5   | Mutation  | p.A318–p.L321, p.R362   |
| <i>GLIS2</i>  | NM_032575        | 2, 3   | Fusion  | 5'  |
| <i>GNAS</i>   | NM_000516        | 11   | Mutation  | p.D323  |
| <i>HOXA10</i> | NM_018951        | –  | Expression                                      | –   |
| <i>HOXA9</i>  | NM_152739        | –  | Expression                                      | –   |
| <i>ID4</i>    | NM_001546        | –  | Expression                                      | –   |
| <i>IDH1</i>   | NM_005896        | 3, 4   | Mutation  | Full exon coverage including p.R132   |
| <i>IDH2</i>   | NM_002168        | 4, 6   | Mutation  | Full exon coverage including p.R140 and p.R172  |
| <i>IKZF1</i>  | NM_006060        | 1*, 2*, 3, 4, 5, 6, 7, 8                         | Fusion, Exon Skipping                           | 5'  |
| <i>IKZF1</i>  | NM_006060        | 1*, 2, 3, 5                                      | Fusion, Exon Skipping                           | 3'  |

| <b>Gene</b>  | <b>Accession</b> | <b>Exon</b>   | <b>Assay Type</b> | <b>Description**</b>  |
|--------------|------------------|---|-------------------|---|
| <i>IKZF2</i> | NM_016260        | 3, 4, 6   | Fusion            | 3'  |
| <i>IKZF3</i> | NM_012481        | 2, 3, 4, 5, 6, 7  | Fusion            | 3'  |
| <i>IKZF3</i> | NM_012481        | 5   | Mutation          | p.L162  |
| <i>IL16</i>  | NM_004513        | –   | Expression        | –   |
| <i>IL2RB</i> | NM_000878        | 2   | Fusion            | 5'  |
| <i>IL7R</i>  | NM_002185        | 5, 6  | Mutation          | p.S185, p.P240–p.S246   |
| <i>IRF4</i>  | NM_002460        | –   | Expression        | –   |
| <i>IRF8</i>  | NM_002163        | –   | Expression        | –   |
| <i>ITPKB</i> | NM_002221        | –   | Expression        | –   |
| <i>JAK1</i>  | NM_002227        | 5, 14, 15, 16,<br>17  | Mutation          | Full exon coverage including, p.V658, p.S703,<br>p.R724, p.A634D, p.V658, p.R724  |
| <i>JAK1</i>  | NM_002227        | 13  | Mutation          | p.R629_D630del  |
| <i>JAK2</i>  | NM_004972        | 6, 7, 8, 9, 10,<br>11, 12, 13, 14,<br>15, 16, 17, 18,<br>19, 20, 21, 22 | Fusion            | 5'  |
| <i>JAK2</i>  | NM_004972        | 9, 10, 11, 12,<br>18, 19, 20, 22  | Fusion            | 3'  |
| <i>JAK2</i>  | NM_004972        | 12, 13, 14, 15,<br>16, 19, 20, 21,<br>22                                | Mutation          | Full exon coverage including p.F537–F547,<br>p.V617–C618, p.L681–R683, p.L855, p.V863,<br>p.A880, p.V911, p.M929–R938, p.I960,<br>p.R980–E985, p.D994 |
| <i>JAK3</i>  | NM_000215        | 22, 23  | Fusion            | 3'  |
| <i>JAK3</i>  | NM_000215        | 10, 11, 12, 17,<br>18, 19   | Fusion            | 5'  |
| <i>JAK3</i>  | NM_000215        | 4, 13, 15, 16,<br>18  | Mutation          | Full exon coverage including p.A572–A573,<br>p.R657, p.S789   |

| <b>Gene</b>     | <b>Accession</b> | <b>Exon</b>   | <b>Assay Type</b> | <b>Description**</b>   |
|-----------------|------------------|---|-------------------|--|
| <i>JAK3</i>     | NM_000215        | 11  | Mutation          | p.M511   |
| <i>KAT6A</i>    | NM_006766        | 13, 14, 15, 16,<br>17*  | Fusion            | 3'   |
| <i>KDM6A</i>    | NM_021140        | 23  | Mutation          | p.V1113  |
| <i>KIAA0101</i> | NM_014736        | –   | Expression        | –  |
| <i>KIT</i>      | NM_000222        | 2, 8, 9, 10, 11,<br>12, 13, 14, 15,<br>17, 18   | Mutation          | Full exon coverage including p.T417–p.D419,<br>p.T670, p.R796, p.D816, p.N822–p.V825 |
| <i>KLF2</i>     | NM_016270        | 2, 3  | Fusion            | 5'   |
| <i>KMT2A</i>    | NM_005933        | 4, 5, 6, 7, 8, 9,<br>10, 11, 12, 13,<br>14, 15, 16, 17,<br>18, 19, 20, 21,<br>22, 23, 24, 25,<br>26, 27, 28, 29,<br>30, 31, 32, 33,<br>34, 35 | Fusion            | 3'   |
| <i>KMT2A</i>    | NM_005933        | 2, 3  | Fusion            | 5'   |
| <i>KRAS</i>     | NM_004985        | 2, 3, 4   | Mutation          | Full exon coverage including p.G12–p.G13,<br>p.Q61, p.K117, p.A146                   |
| <i>KRAS</i>     | NM_004985        | 5   | Mutation          | Hotspot coverage including p.D153–p.156  |
| <i>LIMD1</i>    | NM_014240        | –   | Expression        | –  |
| <i>LMO1</i>     | NM_002315        | –   | Expression        | –  |
| <i>LMO2</i>     | NM_005574        | –   | Expression        | –  |
| <i>LRMP</i>     | NM_006152        | –   | Expression        | –  |
| <i>LYL1</i>     | NM_005583        | –   | Expression        | –  |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>  | <b>Assay Type</b>  | <b>Description**</b> |
|---------------|------------------|--|--------------------|----------------------|
| <i>LYN</i>    | NM_001111097     | 2*, 3, 4, 5, 6, 7, 8                                       | Fusion             | 5'                   |
| <i>LZTS1</i>  | NM_021020        | –  | Expression         | –                    |
| <i>MAL</i>    | NM_002371        | –  | Expression         | –                    |
| <i>MALT1</i>  | NM_006785        | 9  | Fusion             | 3'                   |
| <i>MAML3</i>  | NM_018717        | –  | Expression         | –                    |
| <i>MAML3</i>  | NM_018717        | 2  | Fusion             | 5'                   |
| <i>MECOM</i>  | NM_004991        | 1*, 2, 3, 4, 5, 8  | Fusion, Expression | 5'                   |
| <i>MEF2C</i>  | NM_002397        | 5  | Fusion             | 3'                   |
| <i>MEF2D</i>  | NM_005920        | 3, 4, 5, 6, 7, 9   | Fusion             | 3'                   |
| <i>MEN1</i>   | NM_130799        | 2, 3, 4, 5, 6, 7, 8, 9, 10                                 | Mutation           | Full exon coverage   |
| <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'                   |
| <i>MLLT4</i>  | NM_001040000     | 2  | Fusion             | 5'                   |
| <i>MME</i>    | NM_000902        | –  | Expression         | –                    |
| <i>MPL</i>    | NM_005373        | 10   | Mutation           | p.S505, p.W515       |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>                                       | <b>Assay Type</b>    | <b>Description**</b>   |
|---------------|------------------|---|----------------------|--|
| <i>MUC1</i>   | NM_002456        | –   | Expression           | –  |
| <i>MYBL1</i>  | NM_001080416     | –   | Expression           | –  |
| <i>MYC</i>    | NM_002467        | 1, 2  | Fusion, Expression   | 3'   |
| <i>MYC</i>    | NM_002467        | 1, 2, 3   | Fusion, Expression   | 5'   |
| <i>MYD88</i>  | NM_002468        | 3, 4, 5   | Mutation             | p.V217–p.S219, p.M232, p.S243, p.L265  |
| <i>MYH11</i>  | NM_002474        | –   | Expression Imbalance | –  |
| <i>MYH11</i>  | NM_002474        | 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 18, 19, 20, 33 | Fusion               | 5'   |
| <i>NEK6</i>   | NM_014397        | –   | Expression           | –  |
| <i>NF1</i>    | NM_000267        | 14  | Fusion               | 3'   |
| <i>NF1</i>    | NM_000267        | 36  | Fusion               | 5'   |
| <i>NFKB1</i>  | NM_003998        | –   | Expression           | –  |
| <i>NFKB2</i>  | NM_002502        | 14, 15, 16, 17, 18, 19, 20, 21                    | Fusion               | 3'   |
| <i>NME1</i>   | NM_000269        | –   | Expression           | –  |
| <i>NOTCH1</i> | NM_017617        | 34  | Exon Skipping        | –  |
| <i>NOTCH1</i> | NM_017617        | 2, 4, 24, 29, 30, 31                              | Fusion               | 3'   |
| <i>NOTCH1</i> | NM_017617        | 5, 24, 25, 26, 27, 28, 29                         | Fusion               | 5'   |
| <i>NOTCH1</i> | NM_017617        | 26, 27, 34  | Mutation             | p.L1574, p.V1578, p.L1585, p.F1592–p.L1593, p.R1598–p.L1600, p.L1678–p.L1680, p.P2514–p.E2515, p.P2525 |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>  | <b>Assay Type</b> | <b>Description**</b>  |
|---------------|------------------|--|-------------------|---|
| <i>NOTCH2</i> | NM_024408        | 24, 25, 26, 27, 28, 29                               | Fusion            | 5'  |
| <i>NOTCH2</i> | NM_024408        | 5, 6, 7  | Fusion            | 3'  |
| <i>NOTCH2</i> | NM_024408        | 34   | Mutation          | p.R2400   |
| <i>NPM1</i>   | NM_002520        | 11   | Mutation          | p.W22–W290  |
| <i>NRAS</i>   | NM_002524        | 2, 3, 4  | Mutation          | Full exon coverage including p.G12, p.G13, p.Q61, p.K117, p.A146                                |
| <i>NT5C2</i>  | NM_012229        | 11, 15   | Mutation          | p.R238, p.R367  |
| <i>NTRK1</i>  | NM_001007792     | 1, 2   | Fusion            | 5'  |
| <i>NTRK1</i>  | NM_002529        | 15, 16, 17   | Fusion            | 3'  |
| <i>NTRK1</i>  | NM_002529        | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14        | Fusion            | 5'  |
| <i>NTRK1</i>  | NM_002529        | 13, 14, 15, 16, 17                                   | Mutation          | Full kinase domain coverage for resistance mutations including p.G595                           |
| <i>NTRK2</i>  | NM_006180        | 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 | Fusion            | 5'  |
| <i>NTRK2</i>  | NM_006180        | 11, 14   | Fusion            | 3'  |
| <i>NTRK2</i>  | NM_006180        | 16, 17, 18, 19, 20, 21                               | Mutation          | Full kinase domain coverage for resistance mutations  |
| <i>NTRK3</i>  | NM_001007156     | 15   | Fusion            | 5'  |
| <i>NTRK3</i>  | NM_002530        | 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16      | Fusion            | 5'  |
| <i>NTRK3</i>  | NM_002530        | 13, 14, 15, 17                                       | Fusion            | 3'  |
| <i>NTRK3</i>  | NM_002530        | 15, 16, 17, 18, 19                                   | Mutation          | Full kinase domain coverage for resistance mutations detection including p.F617, p.G623, p.G696 |

| Gene            | Accession | Exon                                 | Assay Type | Description**   |
|-----------------|-----------|--------------------------------------|------------|---|
| <i>NUDT15</i>   | NM_018283 | 1, 2, 3                              | Mutation   | p.M1T (rs769369441), p.M1I, p.del17_18GV (rs746071566), p.V18I (rs186364861), p.C28fs (rs777311140), p.L30V (rs1202487323), p.R34T (rs766023281), p.K35E, p.G47R (rs1950545307), p.F52L (rs149436418), p.N74fs (rs1457579126), p.E115fs (rs761191455), p.E118X (rs1368252918), p.P129R (rs768324690), p.R139C (rs116855232), p.R139H (rs147390019), p.L156Q (rs139551410) |
| <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'  |
| <i>NUTM1</i>    | NM_175741 | 2*, 3, mid-exon3, 4, 5, mid-exon6, 6 | Fusion     | 5'  |
| <i>P2RY8</i>    | NM_178129 | 1                                    | Fusion     | 3'  |
| <i>PAG1</i>     | NM_018440 | 2                                    | Fusion     | 5'  |
| <i>PAICS</i>    | NM_006452 | –                                    | Expression | –   |
| <i>PAX5</i>     | NM_016734 | 6, 7, 8                              | Fusion     | 5'  |
| <i>PAX5</i>     | NM_016734 | 1, 4, 5, 6, 7, 8                     | Fusion     | 3'  |
| <i>PAX5</i>     | NM_016734 | 3                                    | Mutation   | p.P80   |
| <i>PBX1</i>     | NM_002585 | 1*, 2, 3, 4, 5, 6, 7, 8, 9           | Fusion     | 5'  |
| <i>PDCD1</i>    | NM_005018 | –                                    | Expression | –   |
| <i>PDCD1LG2</i> | NM_025239 | 3, 5, 6                              | Fusion     | 3'  |
| <i>PDCD1LG2</i> | NM_025239 | 1*, 2, 3                             | Fusion     | 5'  |

| <b>Gene</b>   | <b>Accession</b> | <b>Exon</b>   | <b>Assay Type</b>  | <b>Description**</b>                      |
|---------------|------------------|---|--------------------|---|
| <i>PDGFRA</i> | NM_006206        | 9, 10, 11, 12, mid-exon12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23     | Fusion, PDGFRAΔ8,9 | 5'  |
| <i>PDGFRA</i> | NM_006206        | 7   | Fusion, PDGFRAΔ8,9 | 3'  |
| <i>PDGFRA</i> | NM_006206        | 12, 14, 18  | Mutation           | Full exon coverage including p.D842       |
| <i>PDGFRA</i> | NM_006206        | 6, 15   | Mutation           | Hotspot coverage including p.Y288, p.T674 |
| <i>PDGFRB</i> | NM_002609        | 8, 9, 10, 11, 12, mid-exon 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 | Fusion             | 5'  |
| <i>PHF6</i>   | NM_032458        | 4, 8, 9   | Mutation           | p.R116, p.R274–p.G275, p.I314–p.R319      |
| <i>PICALM</i> | NM_007166        | 16, 17, 18, 19  | Fusion             | 3'  |
| <i>PIM1</i>   | NM_002648        | –   | Expression         | –   |
| <i>PIM2</i>   | NM_006875        | –   | Expression         | –   |
| <i>PIM2</i>   | NM_006875        | 2, 3, 5, 6  | Fusion             | 5'  |
| <i>PLCG1</i>  | NM_002660        | 11  | Mutation           | p.S345                                    |
| <i>PLCG2</i>  | NM_002661        | 19, 20, 24  | Mutation           | p.R665, p.L845, p.S707                    |
| <i>PML</i>    | NM_002675        | 2, 3, 4, 5, 6, 7*   | Fusion             | 3'  |
| <i>PML</i>    | NM_002675        | 2   | Fusion             | 5'  |
| <i>PML</i>    | NM_002675        | 3   | Mutation           | p.C212–p.S220                             |
| <i>PPAT</i>   | NM_002703        | –   | Expression         | –   |

| <b>Gene</b>    | <b>Accession</b> | <b>Exon</b>                                   | <b>Assay Type</b>    | <b>Description**</b>   |
|----------------|------------------|---|----------------------|--|
| <i>PRDM16</i>  | NM_022114        | 1*, 2, 3, 4                                   | Fusion               | 5'   |
| <i>PRKAR2B</i> | NM_002736        | –   | Expression           | –  |
| <i>PTK2B</i>   | NM_173176        | 2*, 3, 4, 5, 6, 7, 8                          | Fusion               | 5'   |
| <i>PTPN1</i>   | NM_002827        | –   | Expression           | –  |
| <i>PTPN11</i>  | NM_002834        | 3, 13   | Mutation             | p.G60–p.D61, p.E69–p.T73, p.E76, p.S502–p.G503               |
| <i>PYCR1</i>   | NM_006907        | –   | Expression           | –  |
| <i>RAB29</i>   | NM_003929        | –   | Expression           | –  |
| <i>RAG1</i>    | NM_000448        | –   | Expression           | –  |
| <i>RAG2</i>    | NM_000536        | –   | Expression           | –  |
| <i>RANBP1</i>  | NM_002882        | –   | Expression           | –  |
| <i>RARA</i>    | NM_000964        | –   | Expression Imbalance | –  |
| <i>RARA</i>    | NM_000964        | 1*, 2*, 3, 4, 5, 6, 8, 9                      | Fusion               | 5'   |
| <i>RARA</i>    | NM_000964        | 5, 7, 9                                       | Mutation             | p.E197, p.R272, p.T283–p.M284, p.L290–p.M297, p.R394, p.Q411 |
| <i>RBM15</i>   | NM_022768        | 1   | Fusion               | 3'   |
| <i>RET</i>     | NM_020630        | 2, 4, 6, 8, 9, 10, 11, mid–exon11, 12, 13, 14 | Fusion               | 5'   |
| <i>RET</i>     | NM_020630        | 8, 10, 11, 13, 14, 15, 16                     | Mutation             | Hotspot coverage including p.A883, p.M918                    |
| <i>RHOA</i>    | NM_001664        | 2   | Mutation             | p.G17  |

| <b>Gene</b>     | <b>Accession</b> | <b>Exon</b>                           | <b>Assay Type</b>    | <b>Description**</b>  |
|-----------------|------------------|---------------------------------------|----------------------|---|
| <i>ROS1</i>     | NM_002944        | –                                     | Expression Imbalance | –   |
| <i>ROS1</i>     | NM_002944        | 2, 4, 7, 31, 32, 33, 34, 35, 36, 37   | Fusion               | 5'  |
| <i>ROS1</i>     | NM_002944        | 38, 39, 40                            | Mutation             | Hotspot coverage including p.G2032, p.C2060, p.V2098, p.G2101 |
| <i>RUNX1</i>    | NM_001122607     | 1, 5                                  | Mutation             | Full exon coverage  |
| <i>RUNX1</i>    | NM_001754        | –                                     | Expression Imbalance | –   |
| <i>RUNX1</i>    | NM_001754        | 2, 3, 4, 5, 6, 7, 8                   | Fusion               | 3'  |
| <i>RUNX1</i>    | NM_001754        | 2, 3, 4, 5, 6, 7, 8, 9                | Fusion               | 5'  |
| <i>RUNX1</i>    | NM_001754        | 2, 3, 4, 5, 6, 7, 8, 9                | Mutation             | Full exon coverage  |
| <i>RUNX1T1</i>  | NM_001198679     | –                                     | Expression Imbalance | –   |
| <i>RUNX1T1</i>  | NM_001198679     | 2, 3                                  | Fusion               | 5'  |
| <i>S1PR2</i>    | NM_004230        | –                                     | Expression           | –   |
| <i>SEMA6A</i>   | NM_020796        | 1*, 2                                 | Fusion               | 3'  |
| <i>SERPINA9</i> | NM_175739        | –                                     | Expression           | –   |
| <i>SETBP1</i>   | NM_015559        | 2*, 3                                 | Fusion               | 5'  |
| <i>SETBP1</i>   | NM_015559        | 4                                     | Mutation             | p.D868–p.I871   |
| <i>SETD2</i>    | NM_014159        | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 | Fusion               | 3'  |
| <i>SF3B1</i>    | NM_012433        | 14, 15, 16                            | Mutation             | p.E622–p.N626, p.H662–p.K666, p.K700, p.I704, p.G740, p.G742  |

| <b>Gene</b>    | <b>Accession</b> | <b>Exon</b>                       | <b>Assay Type</b> | <b>Description**</b>  |
|----------------|------------------|-----------------------------------|-------------------|---|
| <i>SH2B3</i>   | NM_005475        | 2, 3, 6, 7                        | Mutation          | p.E208, p.M211fs, p.D231–p.D234, p.M268, p.R392, p.E400, p.L438 |
| <i>SH3BP5</i>  | NM_004844        | –                                 | Expression        | –   |
| <i>SLC29A1</i> | NM_001078175     | 4, 13                             | Mutation          | p.Y11, p.P419   |
| <i>SOX11</i>   | NM_003108        | –                                 | Expression        | –   |
| <i>SRSF2</i>   | NM_003016        | 1                                 | Mutation          | p.P95   |
| <i>STAT3</i>   | NM_003150        | 21, 23                            | Fusion            | 3'  |
| <i>STAT3</i>   | NM_003150        | 21                                | Mutation          | p.Y640–p.N647, p.D661   |
| <i>STAT5B</i>  | NM_012448        | 16                                | Mutation          | p.N642  |
| <i>STAT6</i>   | NM_003153        | 12                                | Mutation          | p.D419  |
| <i>STIL</i>    | NM_003035        | 1*, 2                             | Fusion            | 3'  |
| <i>STRBP</i>   | NM_018387        | –                                 | Expression        | –   |
| <i>TAL1</i>    | NM_001290404     | 2, 3                              | Fusion            | 5'  |
| <i>TAL1</i>    | NM_003189        | –                                 | Expression        | –   |
| <i>TAL1</i>    | NM_003189        | 2, 4                              | Fusion            | 5'  |
| <i>TCF3</i>    | NM_003200        | 11, 12, 13, 14,<br>15, 16, 17, 18 | Fusion            | 3'  |
| <i>TFG</i>     | NM_006070        | 2, 3, 4, 5, 6, 7,<br>8            | Fusion            | 3'  |
| <i>TFG</i>     | NM_006070        | 6                                 | Fusion            | 5'  |

| Gene      | Accession    | Exon                              | Assay Type | Description**   |
|-----------|--------------|-----------------------------------|------------|---|
| TLX1      | NM_005521    | –                                 | Expression | –   |
| TLX3      | NM_021025    | –                                 | Expression | –   |
| TNFRSF13B | NM_012452    | –                                 | Expression | –   |
| TNFSF4    | NM_003326    | –                                 | Expression | –   |
| TP53      | NM_000546    | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 | Mutation   | Full exon coverage  |
| TP53      | NM_001276695 | 10                                | Mutation   | Full exon coverage  |
| TP53      | NM_001276696 | 10                                | Mutation   | Full exon coverage  |
| TP63      | NM_003722    | 3, 4, 5                           | Fusion     | 5'  |
| TPMT      | NM_000367    | 2, 3, 4, 5, 6, 7, 8, 9            | Mutation   | Full exon coverage including p.Y240C, p.Y240S, p.K238E (rs150900439), p.H227Q (rs72552736), p.R226Q (rs139392616), p.C216X (rs398122996), p.R215H (rs56161402), p.C212R (rs377085266), rs1800584, p.F208L (rs72556347), p.I204T (rs79901429), p.V199I, p.Y180F (rs75543815), p.Q179H (rs6921269), p.S172P (rs772832951), p.A167G (rs74423290), p.Y166C (rs201695576), rs9333570, p.R163H, p.R163P, p.R163C (rs112339338), p.A154T (rs1800460), p.G144R (rs72552737), p.C132Y (rs72552738), p.S125L (rs200220210), p.K122T, p.K119T (rs151149760), p.G117R, p.E114K (rs115106679), p.Y107D, p.G88S (rs753545734), p.R82W (rs111901354), p.A80P (rs1800462), p.W78C (rs1256618794), p.A73V (rs281874771), p.G71R (rs777686348), p.L69V (rs200591577), p.F67S, p.L49S (rs72552740), p.Q42E, p.G36S (rs750424422), p.K32KfsX58 (rs759836180), p.E28V (rs72552742), p.M1T (rs267607275), p.M1V (rs9333569) |
| TSLP      | NM_033035    | 1, 3                              | Fusion     | 3'  |

| Gene   | Accession    | Exon                          | Assay Type  | Description**  |
|--------|--------------|-------------------------------|---|--|
| TSLP   | NM_033035    | 1, 2, 4                       | Fusion  | 5'   |
| TYK2   | NM_003331    | 16, 18, 19                    | Fusion  | 5'   |
| TYK2   | NM_003331    | 7                             | Mutation  | p.W327   |
| U2AF1  | NM_006758    | 2, 6                          | Mutation  | p.S34, p.R156–p.Q157   |
| UBA1   | NM_003334    | 3                             | Mutation  | p.M41  |
| UBTF   | NM_014233    | 14, 15, 16, 17,<br>18, 19, 20 | Fusion, Internal<br>Tandem Duplication,<br>Expression | 3'   |
| UBTF   | NM_014233    | 14                            | Fusion, Internal<br>Tandem Duplication,<br>Expression | 5'   |
| UBTF   | NM_014233    | 9, 13                         | Mutation  | Full exon coverage   |
| WT1    | NM_000378    | –                             | Expression  | –  |
| WT1    | NM_000378    | 4, 6, 8                       | Mutation  | p.Q301–p.T303, p.G352–p.Q354, p.V359–<br>p.T365, p.Q445–p.F448 |
| XPO1   | NM_003400    | 15                            | Mutation  | p.E571   |
| ZCCHC7 | NM_032226    | 2*, 3, 4                      | Fusion  | 5'   |
| ZCCHC7 | NM_032226    | 1*, 2, 3                      | Fusion  | 3'   |
| ZNF384 | NM_001039920 | 5                             | Fusion  | 5'   |
| ZNF384 | NM_001135734 | 8                             | Fusion  | 5'   |
| ZNF384 | NM_133476    | 2*, 3, 4, 5, 6, 7,<br>8       | Fusion  | 5'   |

\*Indicates exons that are entirely untranslated region (UTR), or for which the UTR is targeted.

\*\*The mutations listed under the Description column are targeted by the assay design. *De Novo* RNA SNV/Indel and Internal Tandem Duplication mutation detection are not supported on the Ion Torrent Sequencing System.

∇ALK-ATI currently requires review outside of Archer Analysis

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](mailto:archer-tech@idtdna.com) for further details.

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## Revision History

| Document Number  | Date       | Description of change |
|------------------|------------|-----------------------|
| RA-DOC-649/REV01 | March 2026 | Initial release.      |