**Supplementary Table 1: Targeted genes in the CORE sequencing assay**

**Genes covered for all coding exons**

| Gene   | Gene 1 | Gene 2 | Gene 3 | Gene 4 | Gene 5 | Gene 6 | Gene 7 | Gene 8 | Gene 9 | Gene 10 | Gene 11 | Gene 12 | Gene 13 | Gene 14 | Gene 15 | Gene 16 | Gene 17 | Gene 18 | Gene 19 | Gene 20 | Gene 21 | Gene 22 | Gene 23 | Gene 24 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| AKT1   | AKT2   | AKT3   | ALK    | AMER1  | APC    | APLNR  | AR     | ARAF   | ARID1A | ARID1B |
| ARID2  | ASXL1  | ATM    | ATR    | ATRX   | B2M    | BAP1   | BLM    | BAF    | BRCA1  | BRCA2  |
| CBL    | CCND1  | CCND3  | CD274  | CD58   | CDK4   | CDN1A  | CDN1B  | CDN2A  | CDN2B  |
| CHEK2  | CIITA  | CREBBP | CTCF   | CTNNB1 | DAXX   | Dicer1 | DNMT3A | EGFR   | EP300  | EPHA3  |
| ERBB2  | ERBB3  | ERBB4  | ERG    | ESR1   | ET6    | EZH2   | FAS    | FBXW7  | FGFR1  | FGFR2  |
| FGFR3  | FGFR4  | GATA3  | GNA11  | GNAQ   | GNAS   | H3F3A  | H3F3B  | HIST1H3B | HIST1H3C | HIST2H3C |
| HLA-A  | HLA-B  | HLA-C  | HNF1A  | HRAS   | IDH1   | IDH2   | JAK1   | JAK2   | JAK3   | JUN    |
| KDR    | KIT    | KLF4   | KMT2A  | KRAS   | MAP2K1 | MAP2K2 | MAP2K4 | MAP3K1 | MAPK1  | MAX    |
| MED12  | MEN1   | MET    | MLH1   | MS2    | MS6    | MTROR  | MLYH   | MYB    | MYC    | MYCN   |
| NBN    | NF1    | NF2    | NFE2L2 | NOTCH1 | NOTCH2 | NOTCH3 | NOTCH4 | NPM1   | NRAS   | NTRK1  |
| PALB2  | PBRM1  | PDCD1LG2 | PDGFR A | PDGFRA | PHF6   | PIK3CA | PIK3B  | PIK3R1 | PMS2   | POLE   |
| POLQ   | PPP2R1A | PTC1   | PTEN   | PTPN11 | RAC1   | RAD21  | RAD50  | RAF1   | RB1    | RET    |
| RHOA   | RNF43  | ROS1   | RPL5   | RUNX1  | SETBP1 | SETD2  | SF3B1  | SMAD4  | SMARCA4 | SMARCB1 |
| SMO    | SOCS1  | SPOP   | STAG1  | STAG2  | STAT3  | STAT5B | STK11  | SYK    | TGFB2   | TP53   |
| TSC1   | TSC2   | U2AF1  | VHL    | WT1    |        |        |        |        |        |        |

**Cancer CORE: genes covered for copy number alterations**

| Gene 1 | Gene 2 | Gene 3 | Gene 4 | Gene 5 | Gene 6 | Gene 7 | Gene 8 | Gene 9 | Gene 10 | Gene 11 | Gene 12 | Gene 13 | Gene 14 | Gene 15 | Gene 16 | Gene 17 | Gene 18 | Gene 19 | Gene 20 | Gene 21 | Gene 22 | Gene 23 | Gene 24 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| AKT1   | AKT2   | AKT3   | ALK    | AMER1  | APC    | APLNR  | AR     | AURKA  | AXL    | B2M    | BCL2   |
| BRAF   | BRCA1  | BRCA2  | CCND1  | CCND2  | CCND3  | CCNE1  | CD274  | CDK2    | CDK4    | CDK6    |
| CDKN1B | CDKN2A | CDKN1B | CITA   | CTNNB1 | EGFR   | EPHA3  | ERBB2  | ERG    | ESR1   | ET6    |
| EZH2   | FGFR1  | FGFR2  | FGFR3  | HGF    | HLA-A  | HLA-B  | HLA-C  | IGF1R  |
| JAK1   | JAK2   | JAK3   | JUN    | KIT    | KRAS   | MCL1   | MDM2   | MET    | MLH1   | MYC    |
| NFE2L2 | NOTCH1 | NOTCH2 | NOTCH3 | NOTCH4 | NTRK1  | PALB2  | PDCD1LG2 | PDGFR A | PDGFRB | PIK3CB |
| PTEN   | RAF1   | RB1    | RET    | SMAD4  | SOCS1  | SRC    | STAT3  | SYK    | TERT   | TP53   |
| TSC1   | TSC2   | VHL    | YAP1   |        |        |        |        |        |        |        |

**Cancer CORE: genes with full-gene footprint for structural variations**

| Gene 1 | Gene 2 | Gene 3 | Gene 4 | Gene 5 | Gene 6 | Gene 7 | Gene 8 | Gene 9 | Gene 10 | Gene 11 | Gene 12 | Gene 13 | Gene 14 | Gene 15 | Gene 16 | Gene 17 | Gene 18 | Gene 19 | Gene 20 | Gene 21 | Gene 22 | Gene 23 | Gene 24 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| APLNR  | B2M    | BRCA1  | BRCA2  | CDKN2A | CDKN2B | HLA-A  | HLA-B  | HLA-C  | PTEN   | RB1    |
| TP53   | TSC1   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

**Cancer CORE: genes covered for fusions detection**

| Gene 1 | Gene 2 | Gene 3 | Gene 4 | Gene 5 | Gene 6 | Gene 7 | Gene 8 | Gene 9 | Gene 10 | Gene 11 | Gene 12 | Gene 13 | Gene 14 | Gene 15 | Gene 16 | Gene 17 | Gene 18 | Gene 19 | Gene 20 | Gene 21 | Gene 22 | Gene 23 | Gene 24 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ALK    | BRAF   | EGFR   | ETV6*  | FGFR2  | FGFR3  | NTRK1  | RAF1   | RET    | ROS1   | TERT   |

*ETV6 reports NTRK3 fusions*