

Figure S1

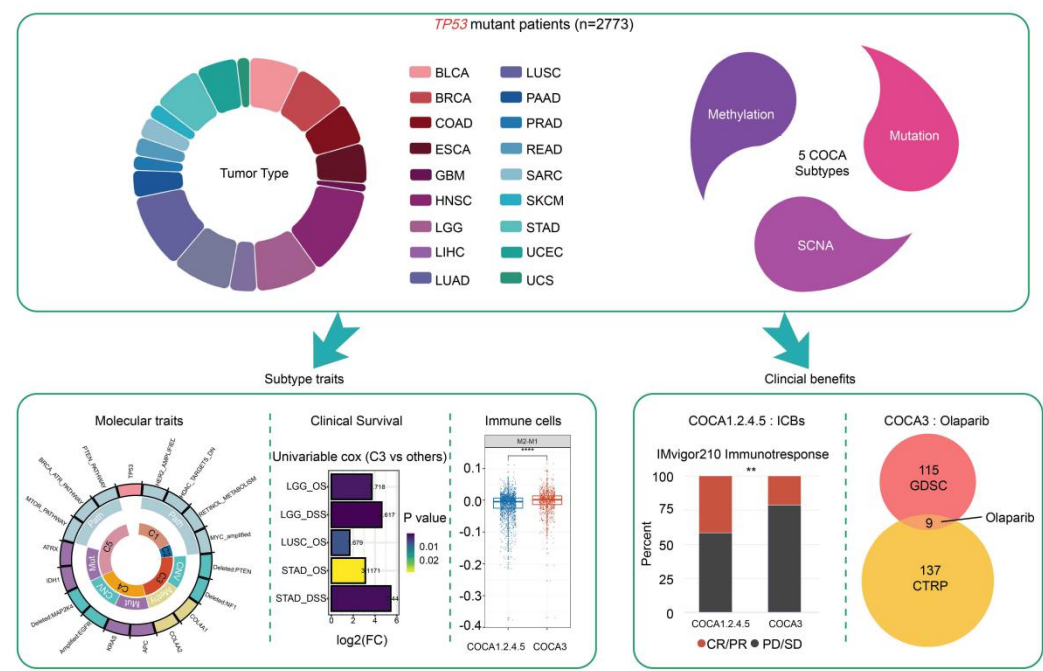
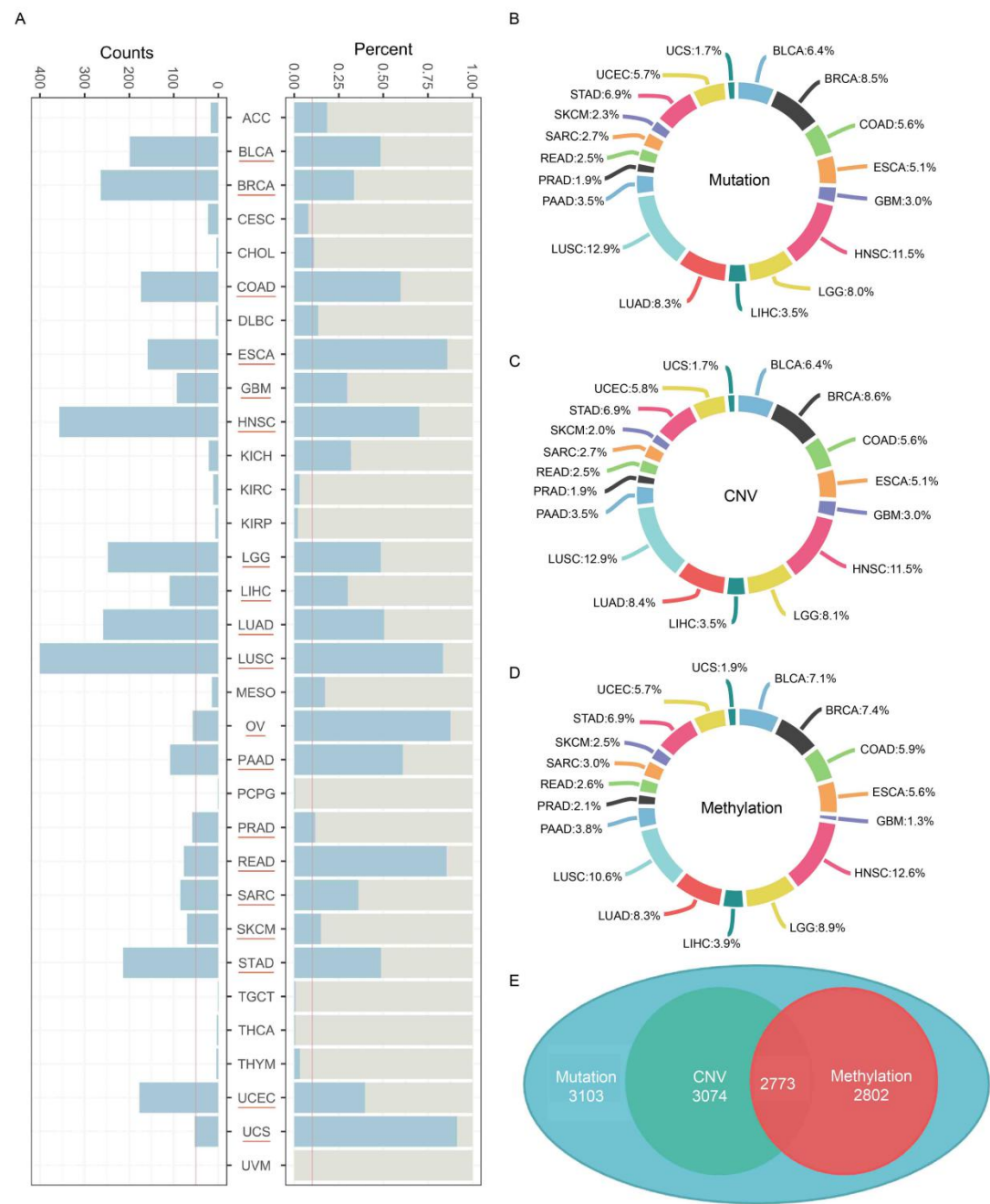


Figure S1. The whole flowchart to exhibit the analysis process of *TP53mut* patients.

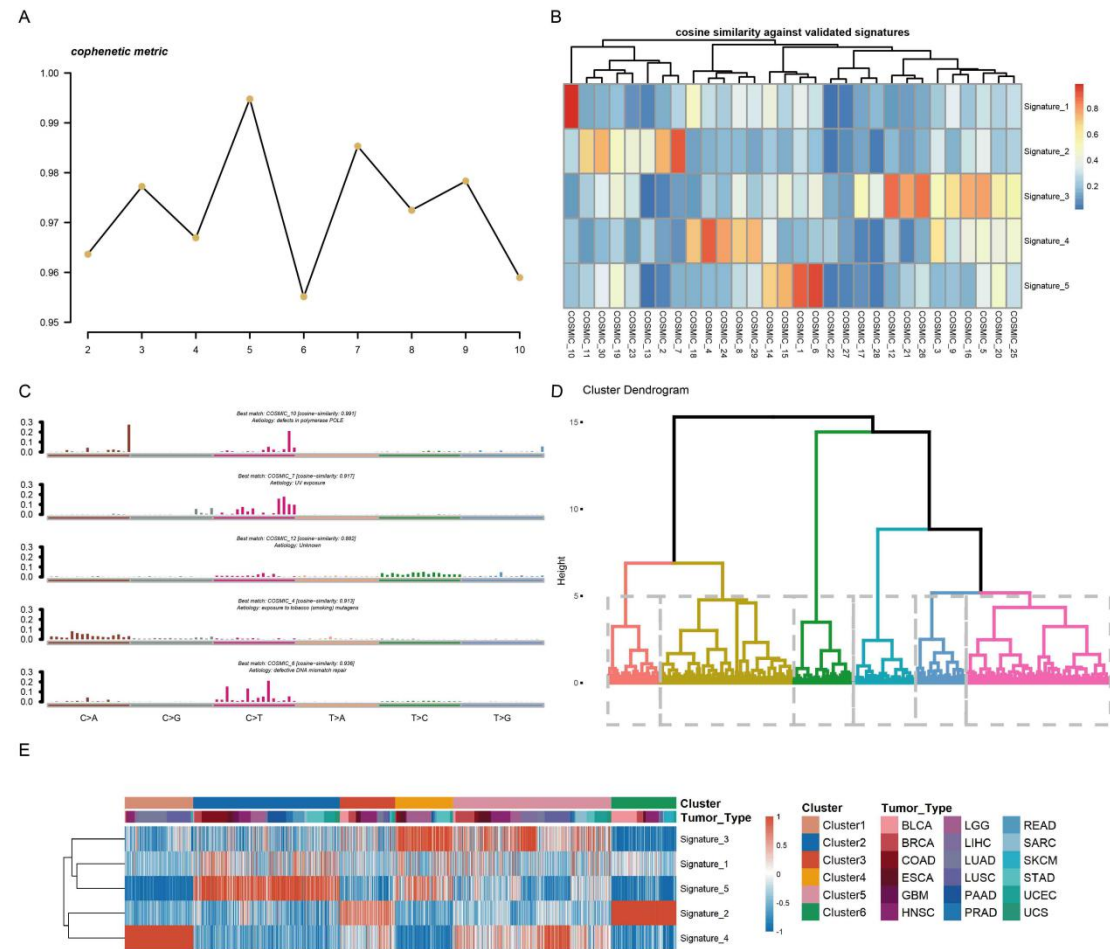
Figure S2



**Figure S2. Identification of 18 cancer types involved in our study.**

(A). The number and percent of *TP53mut* patients in each cancer type. (B-E). The proportion of different cancer types in the three omic platforms and identified a total of 2773 patients from 18 cancer types for further study.

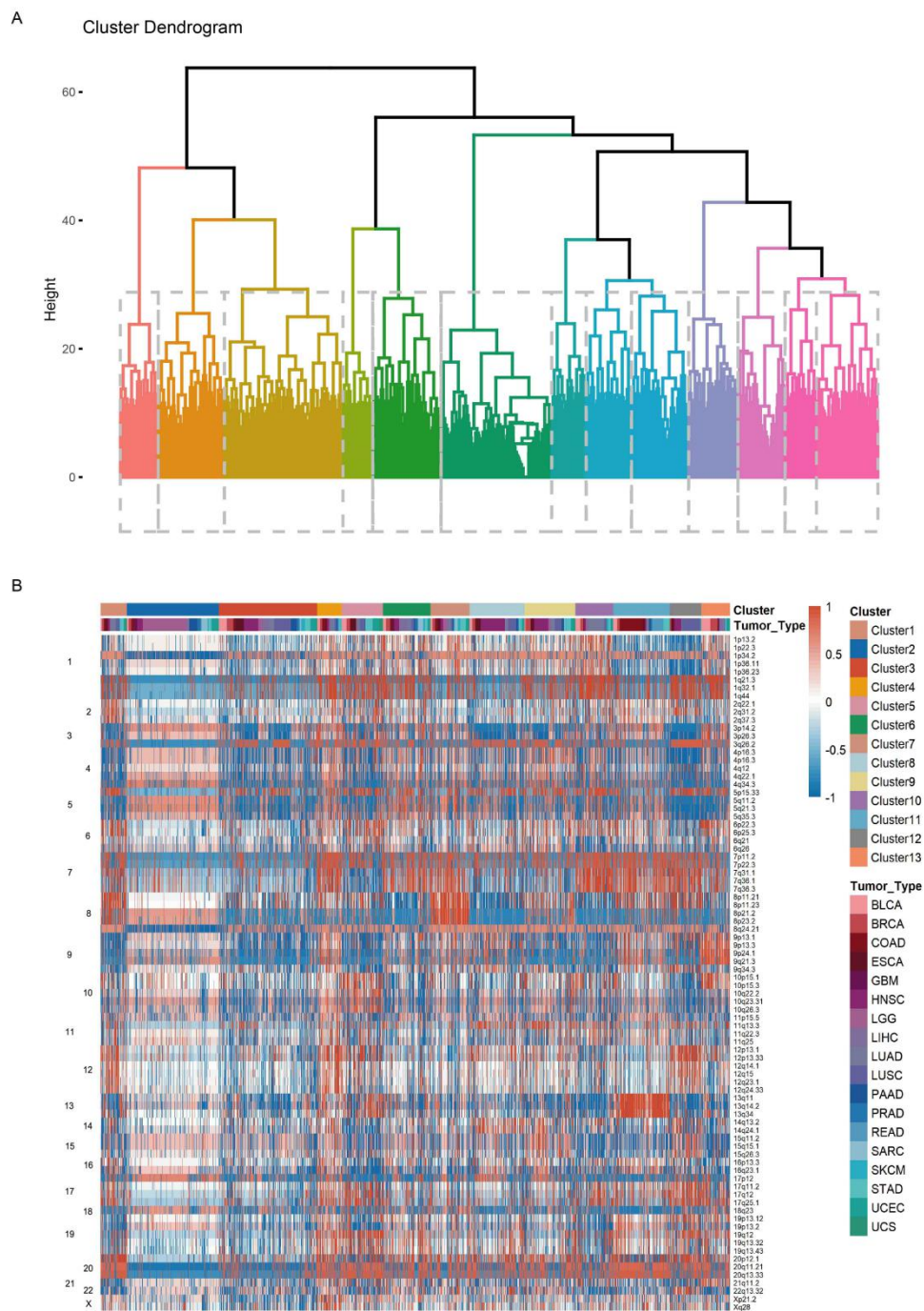
**Figure S3**



**Figure S3. Clustering of mutations in *TP53mut* patients.**

(A).  $K=5$  was selected as the promising threshold where the magnitude of the cophenetic correlation coefficient began to fall. (B). The clustered heatmap revealed correlations between five of our mutation signatures and 30 COSMIC signatures. (C). The five most correlated COSMIC signatures with our mutation signatures. (D-E). There clustered a sum of six clusters based on the five mutation signatures.

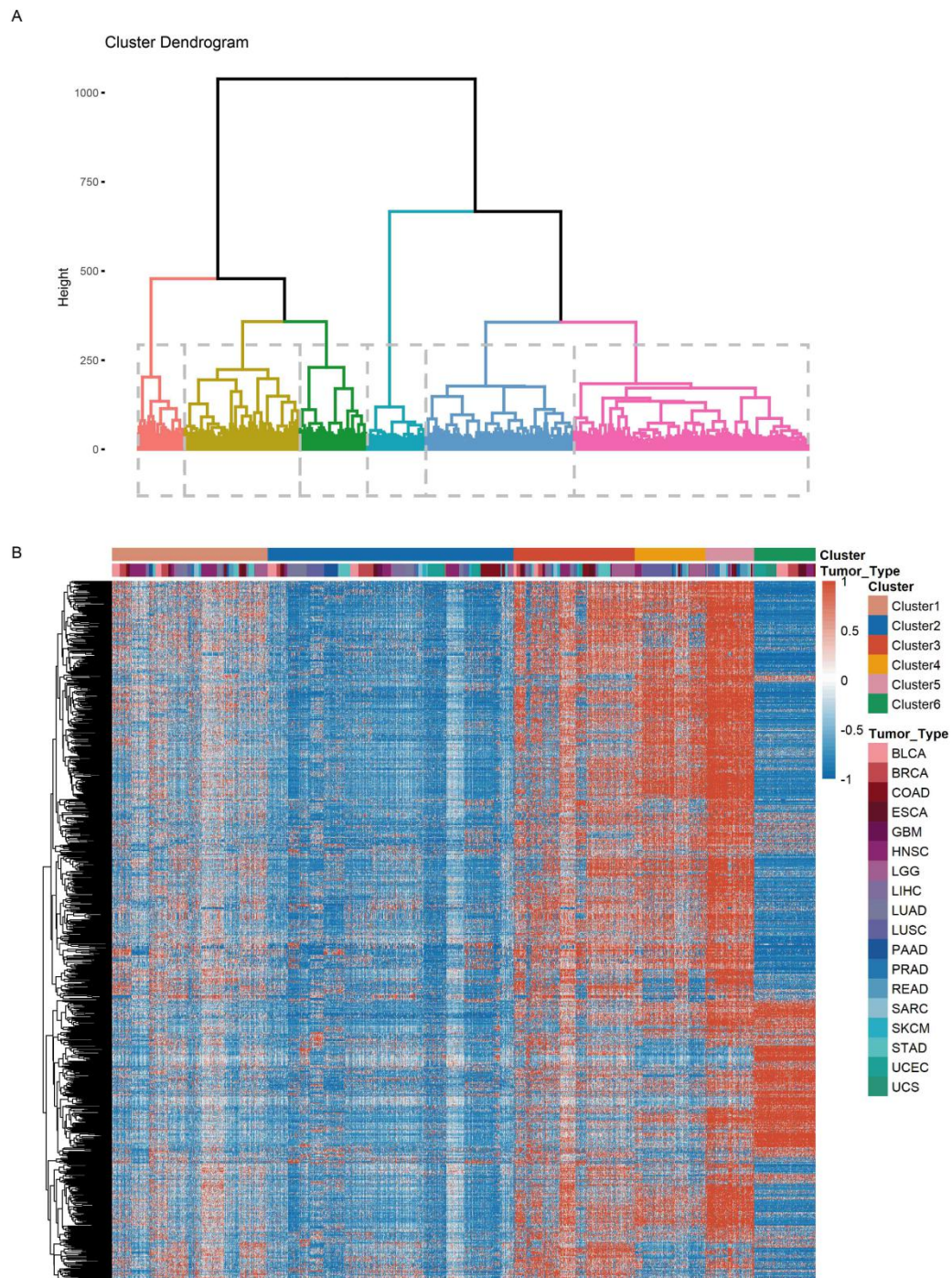
**Figure S4**



**Figure S4. Clustering of Copy number variation in *TP53mut* patients.**

(A-B). The heatmap illustrated the copy number in tumor samples plotted by chromosomal location. Red indicates amplifications and blue represents deletions.

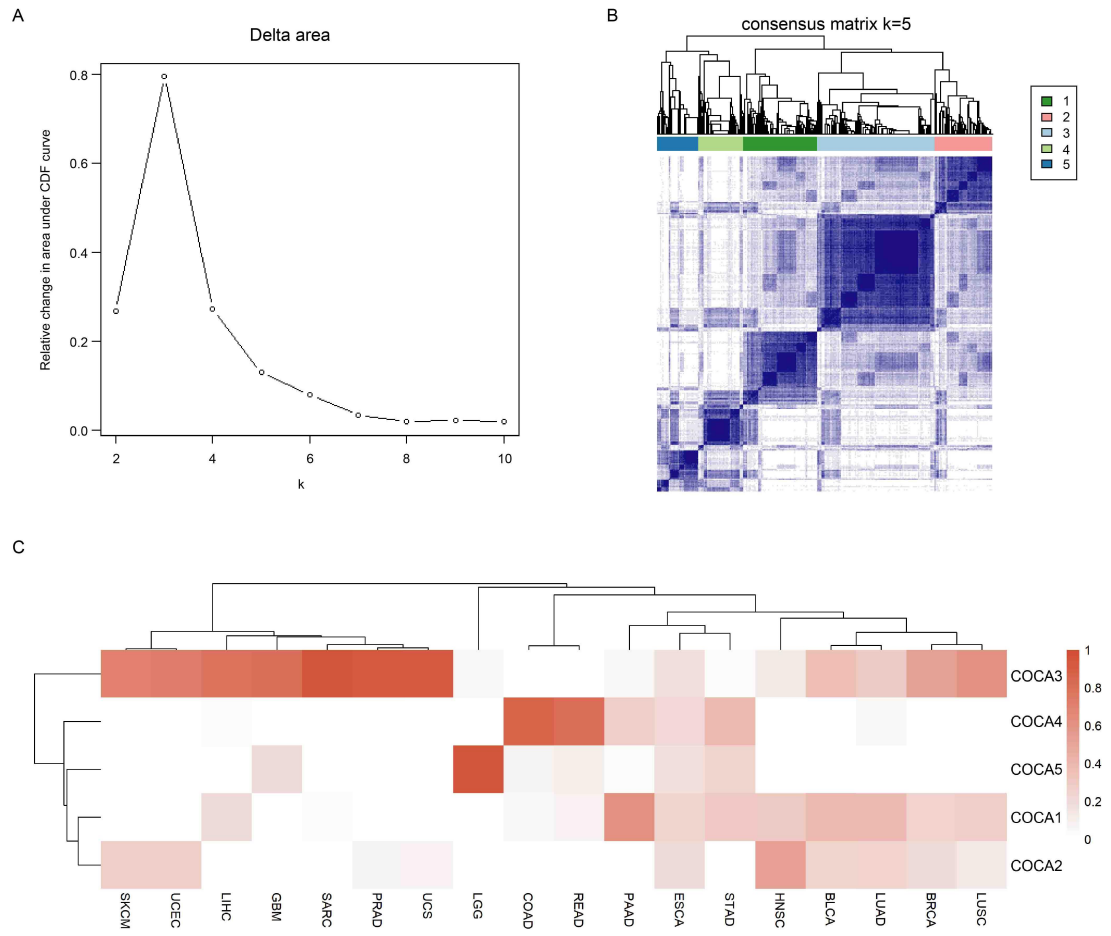
**Figure S5**



**Figure S5. Clustering of DNA methylation in *TP53mut* patients.**

(A-B). Cancer-specific DNA methylation heterogeneity within the *TP53mut* samples.

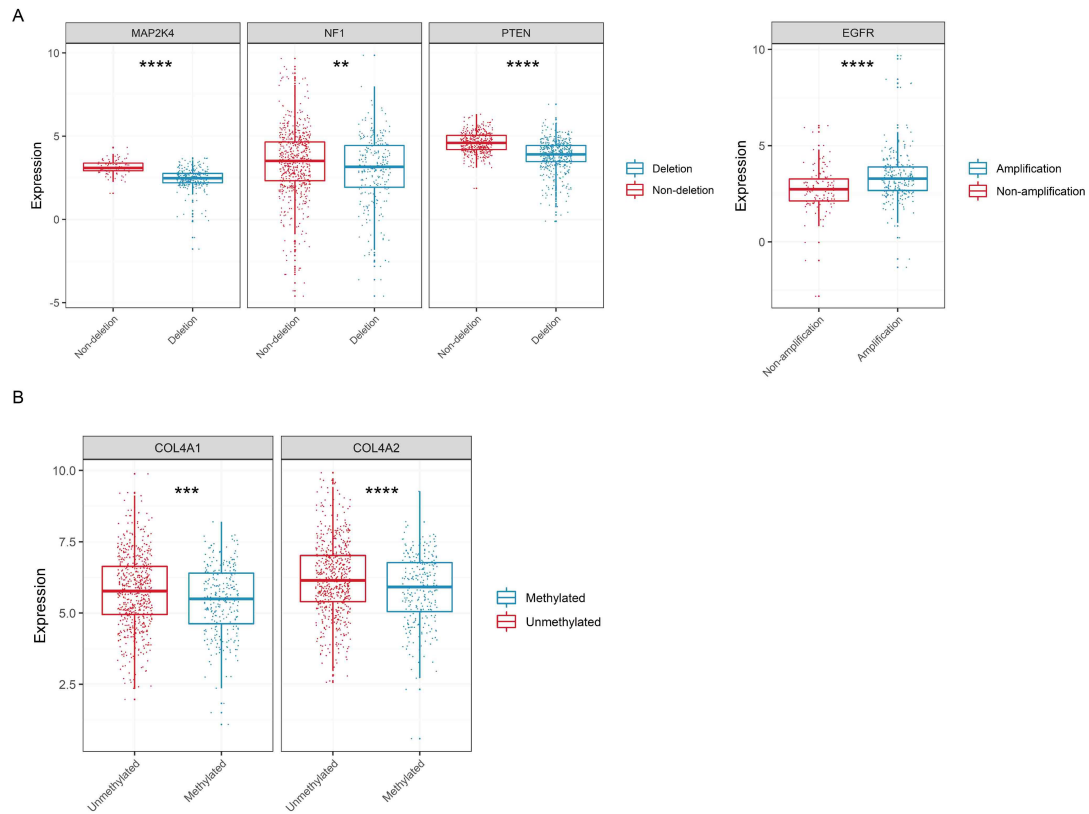
**Figure S6**



**Figure S6. Integrated clustering analysis from three omic platforms.**

(A-B). Unsupervised cluster analysis based on the data of the three omics identified a sum of five subtypes. (C). The proportion of 18 different types of cancer in the five categories.

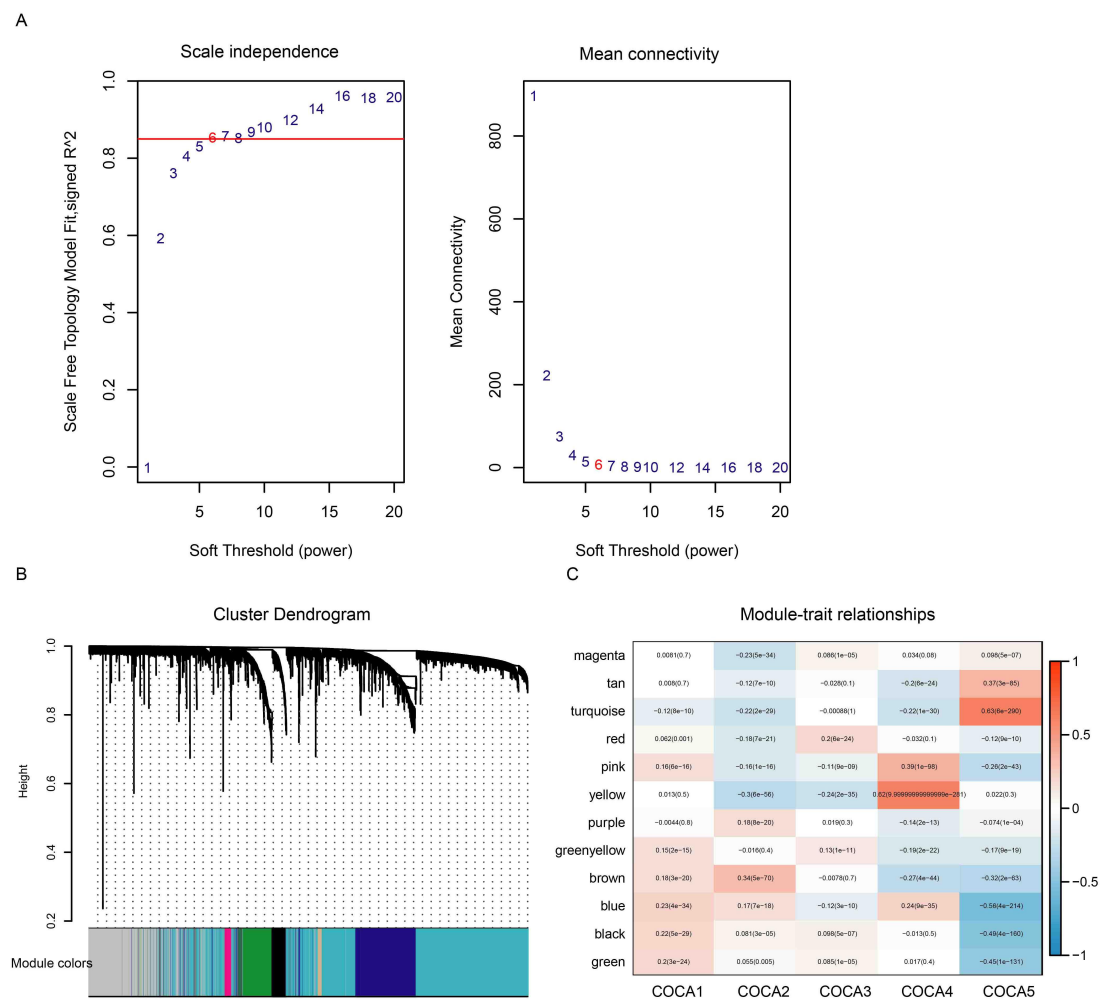
**Figure S7**



**Figure S7. Genomic alterations regulated gene expression.**

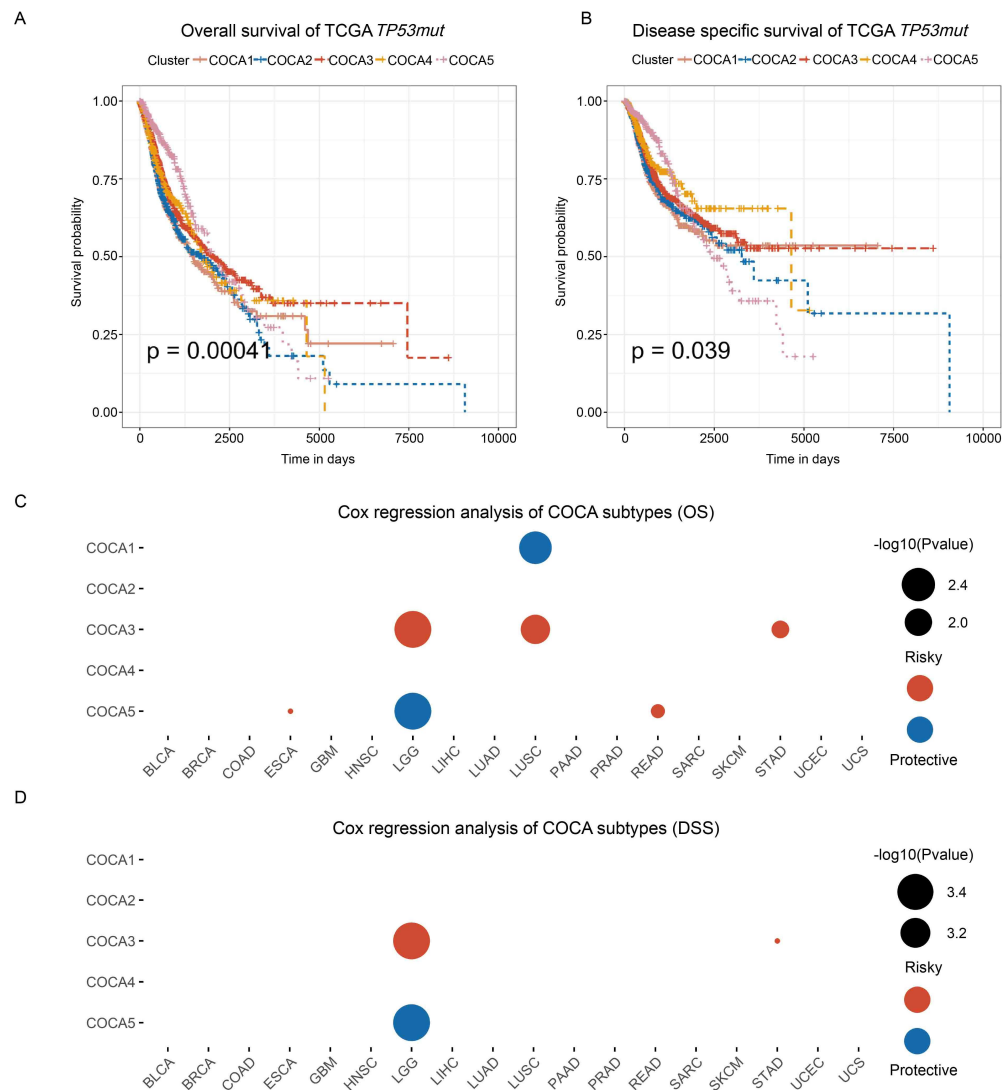
(A). The expression of PTEN (wilcoxon rank-sum test) and NF1 (student's t-test) was significantly decreased with their copy number deletions in **COCA3** subtype; MAP2K (wilcoxon rank-sum test) was down-regulated by copy number deletion and EGFR (student's t-test) was up-regulated by copy number amplification in **COCA4** subtype. (B). COL4A1 and COL4A2 were down-regulated by their DNA hypermethylation in **COCA3** (student's t-test). (\*\*indicates  $P < 0.01$ , \*\*\*indicates  $P < 0.001$ , \*\*\*\*indicates  $P < 0.0001$ .)

Figure S8



**Figure S8. WGCNA identified the hub genes within five subtypes.**  
(A). Calculation of scale-free  $R^2$  and analysis of mean connectivity. (B). Dendrogram plot with colour annotation. (C). The correlation of genes in different color modules with five subtypes.

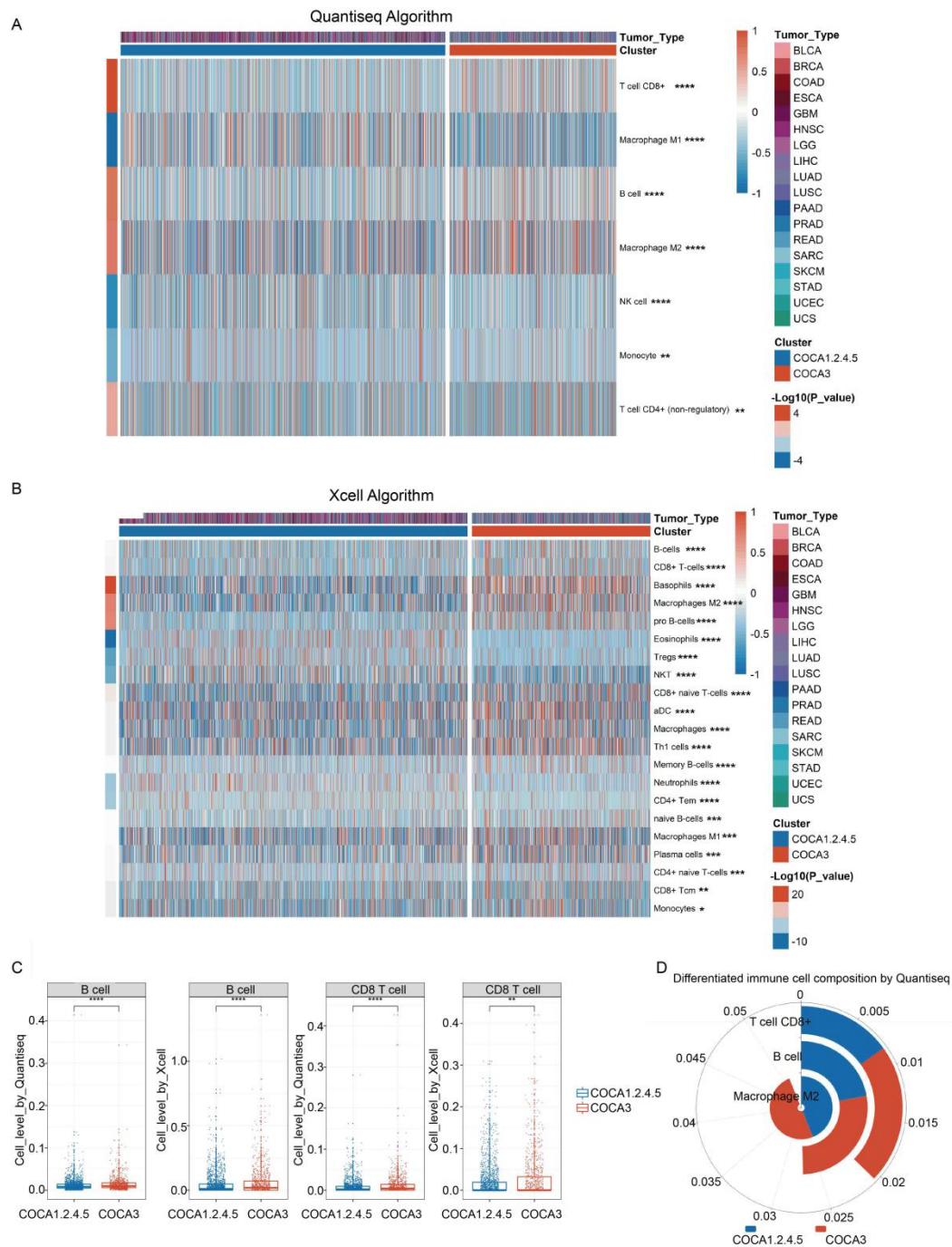
**Figure S9**



**Figure S9. The survival curve of the five subtypes in *TP53mut* patients.**

(A-B). The overall survival and the disease specific survival of COCA subtypes by Kaplan-Meier plot. COCA subtypes are highly correlated with overall and disease specific survival outcomes (log-rank test). (C-D). **COCA3** cluster correlated with patient overall survival and disease-specific survival times in 3 and 2 cancer types, respectively (Wald test).

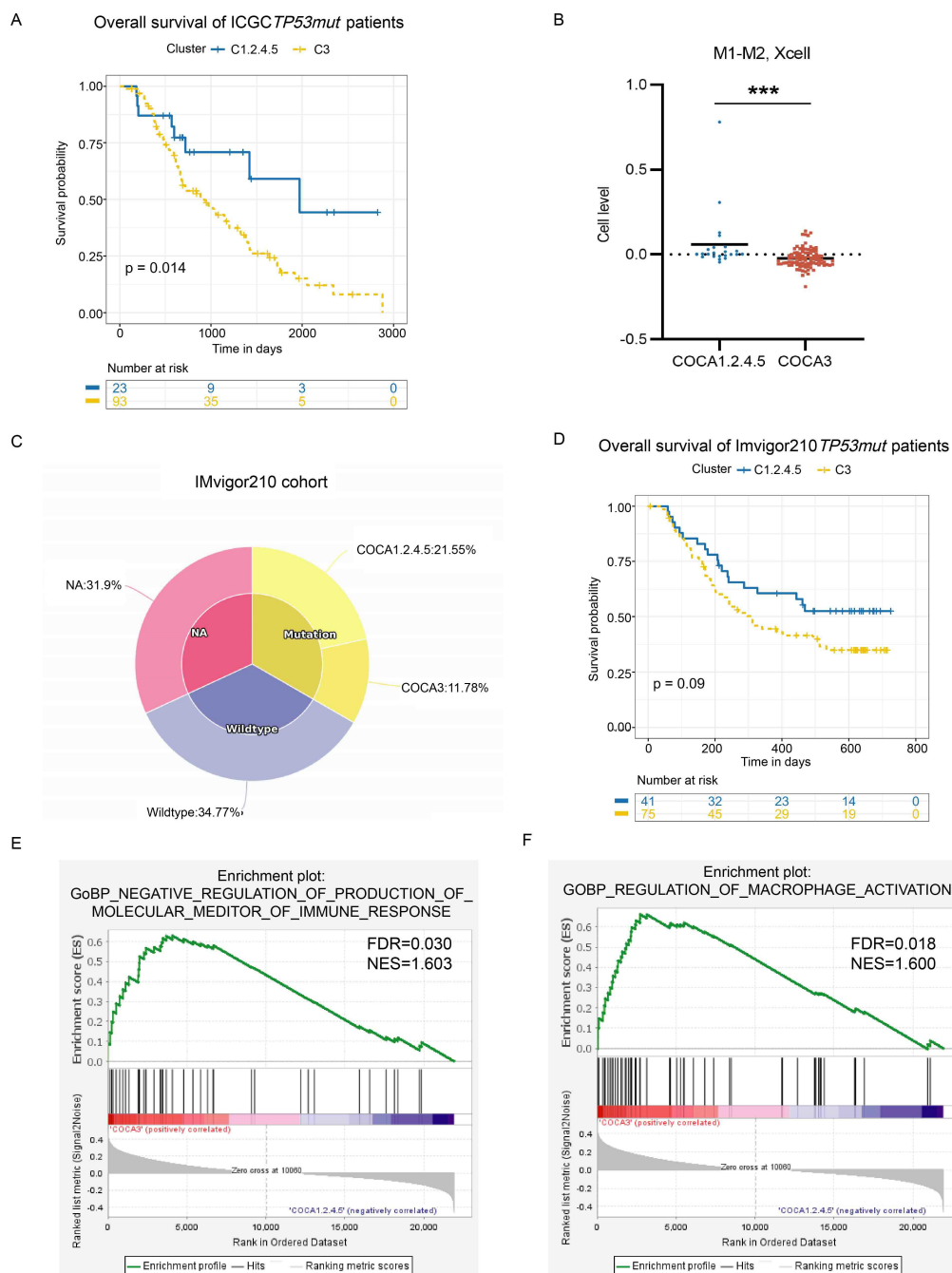
**Figure S10**



**Figure S10. The immune microenviroment features between COCA3 and COCA1.2.4.5 subtypes.**

(A-B). The heatmap illustrated distinct immune cells estimated by quantiseq or xcell algorithms distributed in **COCA3** and **COCA1.2.4.5** subtypes (wilcoxon rank-sum test). (C). The contents of B cells and CD8+ T cells elevated in COCA3 subtype by quantiseq and xcell algorithms (wilcoxon rank-sum test). (D). The proportion of three significantly different immune cells (M2 macrophage, B cell and CD8+ T cell) in *TP53mut* patients. (\*indicates  $P < 0.05$ , \*\*indicates  $P < 0.01$ , \*\*\*indicates  $P < 0.001$ , \*\*\*\*indicates  $P < 0.0001$ .)

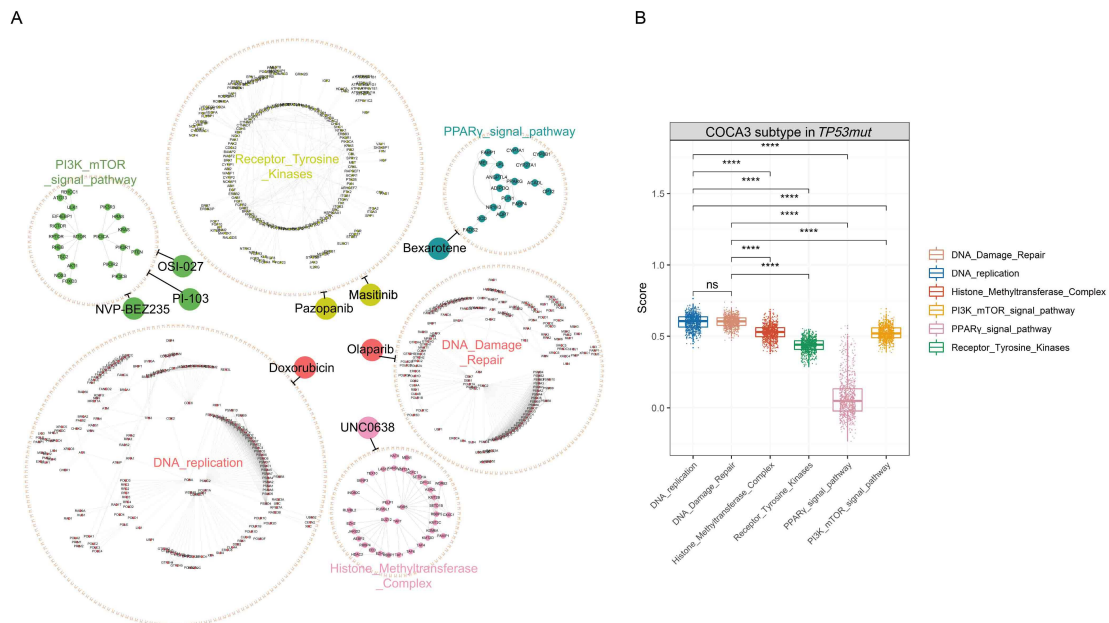
**Figure S11**



**Figure S11. Machine learning to predict the COCA subtypes in ICGC and IMvigor210 cohorts.**

(A). **COCA3** conferred a significantly worse prognosis than **COCA1.2.4.5** in ICGC cohort (log-rank test). (B). The contents of M1-M2 were decreased in **COCA3** subtype in ICGC cohort (wilcoxon rank-sum test). (C). The proportion of predicted **COCA3** and **COCA1.2.4.5** subtype in IMvigor210 cohort. (D). **COCA3** exhibited worse prognosis than **COCA1.2.4.5** subtype in IMvigor210 cohort (log-rank test). (E-F). **COCA3** was positively correlated with negative immune response and macrophage activation (permutation test). (\*\*\*) indicates  $P < 0.001$ .

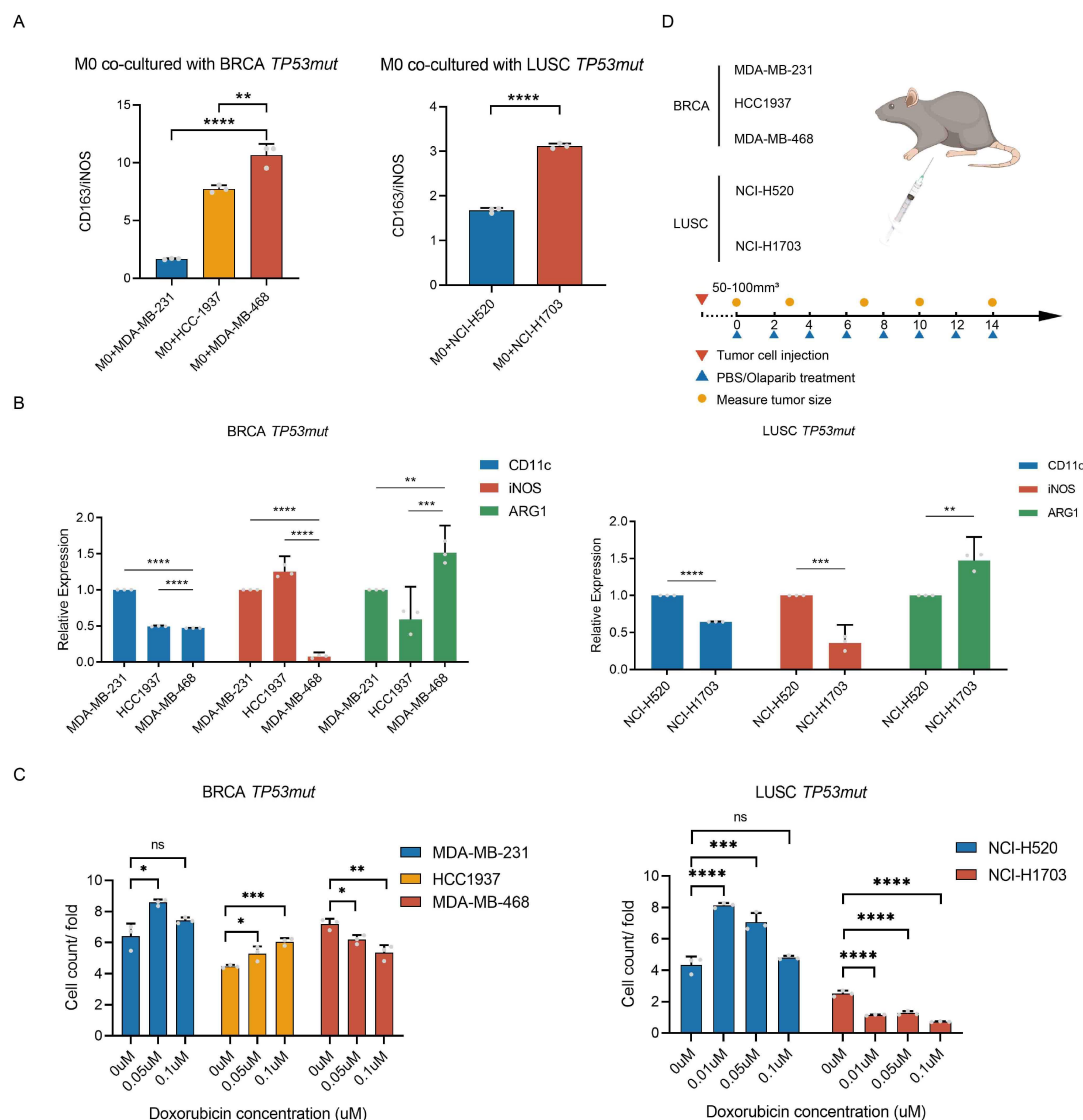
Figure S12



**Figure S12. The activity of target pathway of the 9 small molecule perturbagens in COCA3 subtype.**

(A). The schematic diagram of nine drug-targeted signaling pathways and their related gene sets (Only a subset of important genes shown due to some pathways containing too many genes). (B). The ssGSEA-calculated scores of DNA replication and DNA damage repair were significantly higher than those of other pathways in **COCA3** subtype (1-way Welch ANOVA test followed by Games-Howell multiple comparisons). (\*\*\*\*indicates  $P < 0.0001$ , NS indicates no statistical significance.)

# Figure S13

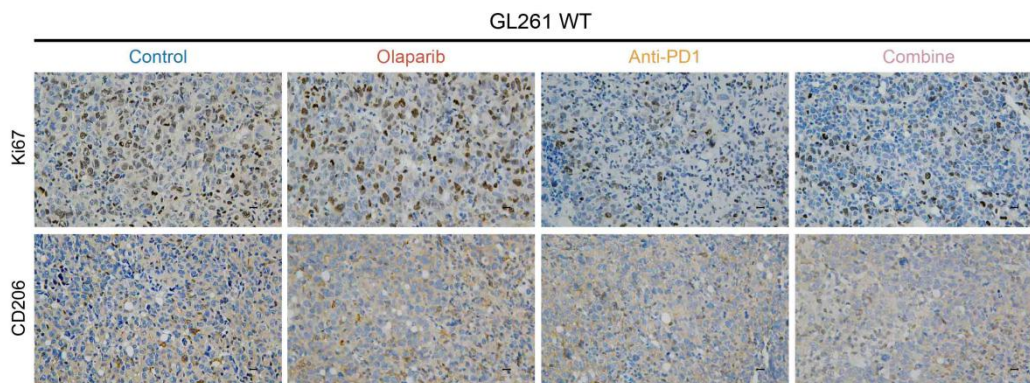


**Figure S13. COCA3-identified cancer cell lines associated with M2 infiltration and doxorubicin sensitivity.**

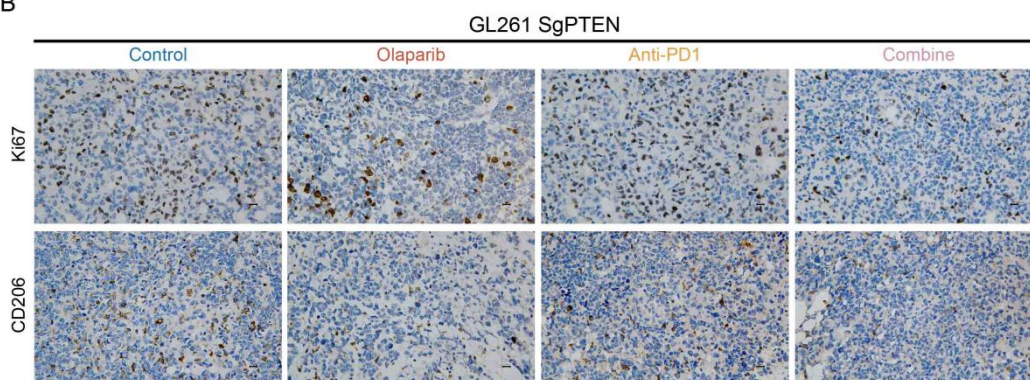
(A). The index of CD163/iNOS relatively elevated in M0 macrophage co-cultured with **COCA3** cell lines (MDA-MB-468 and NCI-H1703) than **non-COCA3** cell lines (MDA-MB-231, HCC1937 and NCI-H520) by flow cytometry (n=3) (1-way ANOVA test followed by Turkey's multiple comparisons for BRCA and student's t-test for LUSC). (B). CD11c and iNOS down-regulated but ARG1 increased in M0 macrophage co-cultured with **COCA3** cell lines by RT-PCR (n=3) (1-way ANOVA test followed by Turkey's multiple comparisons for BRCA and student's t-test for LUSC). (C). **COCA3** cell lines (MDA-MB-468 and NCI-H1703) more sensitive to different concentrations of doxorubicin (n=3) (1-way ANOVA test followed by Turkey's multiple comparisons). (D). The Schematic diagram of in vivo experiment. (\*indicates  $P < 0.05$ , \*\*indicates  $P < 0.01$ , \*\*\*indicates  $P < 0.001$ , \*\*\*\*indicates  $P < 0.0001$ , NS indicates no statistical significance.)

## Figure S14

A



B



**Figure S14. IHC staining of tissue samples in various groups.**

(A). The images of IHC staining of Ki67 and CD206 from GL261 WT-bearing mice in different groups.

(B). The images of IHC staining of Ki67 and CD206 from GL261 SgPTEN-bearing mice in different groups.

## Supplementary Tables

**Supplementary Table 1. 84 focal amplification or deletion loci in regulating tumorigenesis.**

| Amplification | Deletion |
|---------------|----------|
| 1p34.2        | 1p36.23  |
| 1p22.3        | 1p36.11  |
| 1q21.3        | 1p13.2   |
| 1q32.1        | 2q22.1   |
| 1q44          | 2q37.3   |
| 2q31.2        | 3p26.3   |
| 3q26.2        | 3p14.2   |
| 4p16.3        | 4p16.3   |
| 4q12          | 4q22.1   |
| 5p15.33       | 4q34.3   |
| 5q35.3        | 5q11.2   |
| 6p22.3        | 5q21.3   |
| 7p11.2        | 6p25.3   |
| 7q36.3        | 6q21     |
| 8p11.23       | 6q26     |
| 8p11.21       | 7p22.3   |
| 8q24.21       | 7q31.1   |
| 9p13.3        | 7q36.1   |
| 10p15.1       | 8p23.2   |
| 10q22.2       | 8p21.2   |
| 11q13.3       | 9p24.1   |
| 12p13.33      | 9p13.1   |
| 12q14.1       | 9q21.3   |
| 12q15         | 9q34.3   |
| 13q34         | 10p15.3  |
| 14q13.2       | 10q23.31 |
| 15q26.3       | 10q26.3  |
| 17q12         | 11p15.5  |
| 17q25.1       | 11q22.3  |
| 19p13.12      | 11q25    |
| 19q12         | 12p13.1  |
| 20q11.21      | 12q23.1  |
| 20q13.33      | 12q24.33 |
| Xq28          | 13q11    |
|               | 13q14.2  |
|               | 14q24.1  |
|               | 15q11.2  |

15q15.1  
16p13.3  
16q23.1  
17p12  
17q11.2  
18q23  
19p13.2  
19q13.32  
19q13.43  
20p12.1  
21q11.2  
22q13.32  
Xp21.2

**Supplementary Table 2. The number of available omics data in different tumor types.**

|      | CNV | SNP | Methylation |
|------|-----|-----|-------------|
| BLCA | 197 | 199 | 199         |
| BRCA | 264 | 264 | 208         |
| COAD | 173 | 173 | 165         |
| ESCA | 158 | 158 | 158         |
| GBM  | 92  | 93  | 36          |
| HNSC | 353 | 357 | 353         |
| LGG  | 248 | 248 | 248         |
| LIHC | 108 | 109 | 108         |
| LUAD | 257 | 259 | 233         |
| LUSC | 398 | 401 | 296         |
| PAAD | 108 | 108 | 106         |
| PRAD | 57  | 58  | 58          |
| READ | 76  | 77  | 74          |
| SARC | 83  | 85  | 85          |
| SKCM | 61  | 70  | 70          |
| STAD | 212 | 214 | 194         |
| UCEC | 178 | 178 | 159         |
| UCS  | 51  | 52  | 52          |

**Supplementary Table 3. The univariant and multivariant Cox analysis of COCA3 subtype in different tumor types.**

LGG

| Viable                       | Univariate |         | Multivariate |         | Univariate |         | Multivariate |         |
|------------------------------|------------|---------|--------------|---------|------------|---------|--------------|---------|
|                              | Regression |         | Regression   |         | Regression |         | Regression   |         |
|                              | (OS)       |         | (OS)         |         | (DSS)      |         | (DSS)        |         |
|                              | HR         | P value | HR           | P value | HR         | P value | HR           | P value |
| Cluster (COCA3vsCOCA1.2.4.5) | 3.711      | 0.002   | 2.721        | 0.027   | 4.607      | 0.00038 | 3.439        | 0.00709 |

|                             |       |       |       |       |       |        |       |         |
|-----------------------------|-------|-------|-------|-------|-------|--------|-------|---------|
| Age (Old>=60 vs Young<60)   | 0.850 | 0.823 |       |       | 0.958 | 0.952  |       |         |
| Gender (Female vs Male)     | 0.951 | 0.851 |       |       | 0.961 | 0.889  |       |         |
| Histological grade (G3vsG2) | 2.023 | 0.010 | 1.740 | 0.055 | 2.065 | 0.0137 | 1.703 | 0.08633 |

#### LUSC

| Viable                                | Univariate |         | Multivariate |         |
|---------------------------------------|------------|---------|--------------|---------|
|                                       | Regression |         | Regression   |         |
|                                       | (OS)       |         | (OS)         |         |
|                                       | HR         | P value | HR           | P value |
| Cluster (COCA3vsCOCA1.2.4.5)          | 1.702      | 0.0069  | 1.656        | 0.0105  |
| Age (Old>=60 vs Young<60)             | 1.557      | 0.11    |              |         |
| Gender (Female vs Male)               | 1.557      | 0.11    |              |         |
| Pathologic tumor stage (III-IVvsI-II) | 1.712      | 0.0144  | 1.638        | 0.0249  |

#### STAD

| Viable                                | Univariate |         | Multivariate |         | Univariate |          | Multivariate |         |
|---------------------------------------|------------|---------|--------------|---------|------------|----------|--------------|---------|
|                                       | Regression |         | Regression   |         | Regression |          | Regression   |         |
|                                       | (OS)       |         | (OS)         |         | (DSS)      |          | (DSS)        |         |
|                                       | HR         | P value | HR           | P value | HR         | P value  | HR           | P value |
| Cluster (COCA3vsCOCA1.2.4.5)          | 3.265      | 0.0233  | 3.081        | 0.03208 | 5.922      | 0.000891 | 5.939        | 0.00109 |
| Age (Old>=60 vs Young<60)             | 1.460      | 0.191   |              |         | 1.109      | 0.758    |              |         |
| Gender (Female vs Male)               | 1.017      | 0.168   |              |         | 0.995      | 0.746    |              |         |
| Histological grade (G3vsG1-G2)        | 1.360      | 0.227   |              |         | 1.248      | 0.479    |              |         |
| Pathologic tumor stage (III-IVvsI-II) | 2.268      | 0.0019  | 2.241        | 0.00219 | 2.268      | 0.00186  | 2.912        | 0.00184 |

#### Supplementary Table 4. The list of immune checkpoint associated genes.

| HGNC Symbol | Gene Family    | Super Category | Immune Checkpoint |
|-------------|----------------|----------------|-------------------|
| ADORA2A     | Receptor       | Receptor       | Inhibitory        |
| ARG1        | Enzyme         | Other          | Inhibitory        |
| BTLA        | Immunoglobulin | Receptor       | Inhibitory        |
| CD274       | B7/CD28        | Co-inhibitor   | Inhibitory        |
| CD276       | B7/CD28        | Co-inhibitor   | Inhibitory        |
| CTLA4       | Receptor       | Receptor       | Inhibitory        |
| EDNRB       | Receptor       | Receptor       | Inhibitory        |
| HAVCR2      | Immunoglobulin | Receptor       | Inhibitory        |
| IDO1        | Enzyme         | Other          | Inhibitory        |
| IL10        | Cytokine       | Ligand         | Inhibitory        |
| IL13        | Cytokine       | Ligand         | Inhibitory        |
| IL4         | Cytokine       | Ligand         | Inhibitory        |
| KIR2DL1     | KIR            | Receptor       | Inhibitory        |
| KIR2DL2     | KIR            | Receptor       | Inhibitory        |
| KIR2DL3     | KIR            | Receptor       | Inhibitory        |

|          |                          |               |             |
|----------|--------------------------|---------------|-------------|
| LAG3     | Immunoglobulin           | Receptor      | Inhibitory  |
| PDCD1    | B7/CD28                  | Receptor      | Inhibitory  |
| SLAMF7   | SLAM                     | Co-inhibitor  | Inhibitory  |
| TGFB1    | Cytokine                 | Ligand        | Inhibitory  |
| TIGIT    | PVR                      | Receptor      | Inhibitory  |
| VEGFA    | Growth factor            | Ligand        | Inhibitory  |
| VEGFB    | Growth factor            | Ligand        | Inhibitory  |
| C10orf54 | Immunoglobulin           | Co-inhibitor  | Inhibitory  |
| VTCN1    | B7/CD28                  | Co-inhibitor  | Inhibitory  |
| GZMA     | Granzyme                 | Other         | Stimulatory |
| BTN3A1   | Butyrophilins            | Co-inhibitor  | Stimulatory |
| BTN3A2   | Butyrophilins            | Co-inhibitor  | Stimulatory |
| CCL5     | Chemokine                | Ligand        | Stimulatory |
| CD27     | TNFR                     | Receptor      | Stimulatory |
| CD28     | B7/CD28                  | Co-stimulator | Stimulatory |
| CD40     | TNFR                     | Receptor      | Stimulatory |
| CD40LG   | TNF                      | Ligand        | Stimulatory |
| CD70     | TNF                      | Ligand        | Stimulatory |
| CD80     | B7/CD28                  | Co-stimulator | Stimulatory |
| CX3CL1   | CXC chemokine            | Ligand        | Stimulatory |
| CXCL10   | CXC chemokine            | Ligand        | Stimulatory |
| CXCL9    | CXC chemokine            | Ligand        | Stimulatory |
| ENTPD1   | Ectonucleotidase         | Other         | Stimulatory |
| HMGB1    | HMG-box                  | Other         | Stimulatory |
| ICAM1    |                          | Cell adhesion | Stimulatory |
| ICOS     | B7/CD28                  | Receptor      | Stimulatory |
| ICOSLG   | Ligand                   | Co-stimulator | Stimulatory |
| IFNA1    | Cytokine                 | Ligand        | Stimulatory |
| IFNA2    | Cytokine                 | Ligand        | Stimulatory |
| IFNG     | Cytokine                 | Ligand        | Stimulatory |
| IL1A     | Cytokine                 | Ligand        | Stimulatory |
| IL1B     | Cytokine                 | Ligand        | Stimulatory |
| IL2      | Cytokine                 | Ligand        | Stimulatory |
| IL2RA    | Type I cytokine receptor | Receptor      | Stimulatory |
| ITGB2    | Integrin                 | Cell adhesion | Stimulatory |
| PRF1     | Pore                     | Other         | Stimulatory |
| SELP     | Selectin                 | Cell adhesion | Stimulatory |
| TLR4     | Receptor                 | Receptor      | Stimulatory |
| TNF      | Cytokine                 | Ligand        | Stimulatory |
| TNFRSF14 | TNFR                     | Receptor      | Stimulatory |
| TNFRSF18 | TNFR                     | Receptor      | Stimulatory |
| TNFRSF4  | TNFR                     | Receptor      | Stimulatory |
| TNFRSF9  | TNFR                     | Receptor      | Stimulatory |

|        |          |        |             |
|--------|----------|--------|-------------|
| TNFSF4 | TNF      | Ligand | Stimulatory |
| TNFSF9 | TNF      | Ligand | Stimulatory |
| IL12A  | Cytokine | Ligand | Stimulatory |

**Supplementary Table 5. The list of biomarkers for response to immune checkpoint therapy that were compared in this study.**

| IFNG.Sig | CD8.Sig | PDL1.Sig | IMPRES.Sig |
|----------|---------|----------|------------|
| IFNG     | CD8A    | PDL1     | BTLA       |
| STAT1    | CD8B    | PDCD1LG2 | CD200      |
| IDO1     | CD3D    | PDCD1    | CD200R1    |
| CXCL10   | CD3E    |          | CD27       |
| CXCL9    | CD3G    |          | CD276      |
| HLA-DRA  |         |          | CD28       |
|          |         |          | CD40       |
|          |         |          | CD80       |
|          |         |          | CD86       |
|          |         |          | CEACAM1    |
|          |         |          | CTLA4      |
|          |         |          | IDO1       |
|          |         |          | IL2RB      |
|          |         |          | LAG3       |
|          |         |          | PVR        |
|          |         |          | PVRL2      |
|          |         |          | TIGIT      |
|          |         |          | TNFRSF18   |
|          |         |          | TNFRSF4    |
|          |         |          | TNFRSF9    |
|          |         |          | PDL1       |
|          |         |          | HAVCR2     |
|          |         |          | PDCD1      |
|          |         |          | PDCD1LG2   |
|          |         |          | TNFRSF14   |
|          |         |          | TNFSF4     |
|          |         |          | TNFSF9     |
|          |         |          | C10orf54   |

**Supplementary Table 6. The target pathway associated genes of the 9 small molecule perturbagens.**

| PI3K-AKT-mTOR DNA signaling pathway | DNA replication | Signaling by Receptor Tyrosine Kinases | DNA repair pathways | HISTONE_METHYLTRANSFERASE_COMPLEX | PPAR $\gamma$ signal pathway |
|-------------------------------------|-----------------|----------------------------------------|---------------------|-----------------------------------|------------------------------|
| TFEB                                | CDC45           | AKT3                                   | POLD1               | AEBP2                             | PEPC                         |

|          |       |               |         |          |         |
|----------|-------|---------------|---------|----------|---------|
| AKT1     | CDC6  | ABI1          | PCNA    | ASH2L    | AQP7    |
| HRAS     | CDC7  | SH2B3         | RPA2    | BOD1     | CYP8B1  |
| PTEN     | CDK2  | CDH5          | RPA3    | BOD1L1   | CYP7A1  |
| GSK3B    | CDT1  | RANBP9        | POLD2   | C17orf49 | CYP27   |
| NOS3     | DBF4  | PTPRU         | POLD4   | CBX5     | NR1H3   |
| CDKN1B   | GMNN  | DNAL4         | MSH2    | CHD8     | ME1     |
| NRAS     | MCM10 | ABI2          | LIG1    | CXXC1    | SCD     |
| PIK3CG   | MCM2  | WASF2         | POLD3   | DPY30    | FADS2   |
| ULK1     | MCM3  | RNF41         | RPA1    | DYDC1    | UCP1    |
| PIK3R3   | MCM4  | ADAM10        | MSH6    | DYDC2    | CAP     |
| MTOR     | MCM5  | CDK5          | MSH3    | E2F6     | MMP1    |
| KRAS     | MCM6  | TRIB1         | ERCC1   | EED      | ADIPOQ  |
| PIK3CA   | MCM7  | SPRY1         | ERCC4   | EZH1     | PGAR    |
| PIK3CB   | ORC1  | SPRY2         | GTF2H1  | EZH2     | AP2     |
| PIK3R1   | ORC2  | STAM2         | GTF2H2  | HCFC1    | PLIN1   |
| PIK3R2   | ORC3  | STUB1         | GTF2H3  | HCFC2    | KLK15   |
| FOXO3    | ORC4  | TCIRG1        | POLE    | HDAC2    | SCP2    |
| ATG13    | ORC5  | LAMC3         | XPA     | HDAC9    | CPT2    |
| TSC2     | ORC6  | YAP1          | ERCC8   | INO80C   | CYP4A1  |
| FOXO4    | PCNA  | VAV3          | ERCC5   | JARID2   | LCAD    |
| FOXO1    | POLA1 | BAIAP2        | ERCC6   | KANSL1   | CPT1    |
| EIF4EBP1 | POLA2 | SH2B2         | RAD23B  | KAT8     | MCAD    |
| GRB10    | POLD1 | MXD4          | RFC1    | KDM6A    | ACBP    |
| PDK1     | POLD2 | CDC37         | UBC     | KDM6B    | FABP1   |
| RHEB     | POLD3 | ADCYAP1       | ARPC3   | KMT2A    | FABP3   |
| RICTOR   | POLD4 | ADCYAP1<br>R1 | ATRIP   | KMT2B    | LPL     |
| RPTOR    | POLE  | THEM4         | BARD1   | KMT2C    | ACS     |
| RB1CC1   | POLE2 | AP2M1         | CHEK2   | KMT2D    | FATP1   |
| BAD      | PRIM1 | AP2S1         | DCLRE1A | LAS1L    | FATP4   |
|          | PRIM2 | CLTA          | GADD45A | MAX      | FARCD36 |
|          | RFC1  | CLTC          | GADD45B | MCRS1    | OLR1    |
|          | RFC2  | CMA1          | PSMA4   | MEN1     | GK      |
|          | RFC3  | ATP6V1G3      | PSMA5   | MGA      | PPARG   |
|          | RFC4  | COL1A1        | PSMA6   | NCOA6    |         |
|          | RFC5  | COL1A2        | PSMA7   | PAGR1    |         |
|          | RPA1  | SPINT2        | PSMB1   | PAXIP1   |         |
|          | RPA2  | NRG3          | PSMB10  | PELP1    |         |
|          | RPA3  | GRAP          | PSMB2   | PHF20    |         |
|          | RPA4  | AHCYL1        | PSMB3   | PRDM4    |         |
|          | UBA52 | NCKAP1        | PSMB4   | PRMT5    |         |
|          | UBC   | WASF3         | PSMB5   | PRPF31   |         |
|          | POLD1 | FRS3          | PSMB6   | RBBP4    |         |

|        |         |         |        |
|--------|---------|---------|--------|
| PCNA   | FRS2    | PSMB7   | RBBP5  |
| RPA2   | ADAP1   | PSMB8   | RBBP7  |
| RPA3   | WWP1    | PSMB9   | RNF2   |
| POLD2  | CHD4    | PSMC1   | RUVBL1 |
| POLD4  | CHEK1   | PSMC2   | RUVBL2 |
| MSH2   | COL9A1  | PSMC3   | SEN3   |
| LIG1   | COL9A2  | PSMC4   | SETD1A |
| POLD3  | COL9A3  | PSMC5   | SETD1B |
| RPA1   | COL11A1 | PSMC6   | SUZ12  |
| MSH6   | COL11A2 | PSMD1   | TAF1   |
| MSH3   | COL6A6  | PSMD2   | TAF4   |
| ERCC1  | ADORA2A | PSMD3   | TAF6   |
| ERCC4  | CREB1   | PSMD4   | TAF7   |
| GTF2H1 | ATF2    | PSMD5   | TAF9   |
| GTF2H2 | CRK     | PSMD7   | TEX10  |
| GTF2H3 | CRKL    | RAD1    | UTY    |
| POLE   | AAMP    | RAD17   | WDR5   |
| XPA    | COL2A1  | RAD9A   | WDR5B  |
| ERCC8  | COL3A1  | POLR1D  | WDR82  |
| ERCC5  | COL4A1  | TP53    |        |
| ERCC6  | COL4A2  | TREX1   |        |
| RAD23B | COL4A3  | TREX2   |        |
| RFC1   | COL4A4  | APEX2   |        |
| RFC2   | COL4A5  | MUTYH   |        |
| RFC3   | COL5A1  | CENPX   |        |
| RFC4   | COL5A2  | USP1    |        |
| RFC5   | COL6A1  | POLI    |        |
| XPC    | COL6A2  | RAD51C  |        |
| ERCC2  | COL6A3  | REV3L   |        |
| ERCC3  | AP2A1   | HMGB1   |        |
| POLE2  | AP2A2   | UNG     |        |
| POLE4  | SPRED1  | H2AX    |        |
| MLH1   | AP2B1   | MPG     |        |
| PMS2   | DIAPH1  | RAP1A   |        |
| LIG3   | DLG4    | FAAP100 |        |
| LIG4   | DNM1    | TDG     |        |
| DDB1   | DNM2    | TERF2   |        |
| DDB2   | DOCK1   | PALB2   |        |
| GTF2H4 | DOCK3   | FANCM   |        |
| GTF2H5 | HBEGF   | FANCB   |        |
| POLK   | DUSP3   | CENPS   |        |
| POLE3  | MAPK14  | NEIL3   |        |
| CUL4B  | FGFBP3  | WDR48   |        |

|        |          |         |
|--------|----------|---------|
| CUL4A  | CSK      | NEIL2   |
| RBX1   | CSN2     | BRIP1   |
| EXO1   | NRG4     | FAAP24  |
| PARP1  | CTNNA1   | FANCL   |
| ATM    | CTNNB1   | FANCI   |
| BRCA1  | CTNND1   | REV1    |
| BRCA2  | KLB      | FAN1    |
| XRCC6  | CYBA     | SLX4IP  |
| MRE11  | CYBB     | USP7    |
| NBN    | ATP6V0E2 | HMGN1   |
| POLH   | EP300    | UVSSA   |
| PRKDC  | EPS15    | SLX4    |
| RAD50  | ERBB2    | APEX1   |
| RAD51  | ERBB3    | ATR     |
| XRCC1  | ERBB4    | CHEK1   |
| XRCC4  | EREG     | FANCA   |
| XRCC5  | AKT1     | FANCC   |
| RAD23A | AKT2     | FANCD2  |
| CDK7   | ESR1     | FANCE   |
| CETN2  | F3       | FANCF   |
| MNAT1  | PTK2B    | FANCG   |
| CCNH   | FER      | FEN1    |
| POLR1A | DUSP4    | MBD4    |
| POLR2A | DUSP6    | MGMT    |
| POLR2B | DUSP7    | NTHL1   |
| POLR2C | EGF      | OGG1    |
| PARP2  | EGFR     | PNKP    |
| CHD1L  | EGR1     | POLB    |
| APEX1  | EGR2     | SMUG1   |
| ATR    | EGR3     | XAB2    |
| CHEK1  | EGR4     | RAD54B  |
| FANCA  | ELK1     | RAD52   |
| FANCC  | SPRED2   | WRN     |
| FANCD2 | MUC20    | DCLRE1C |
| FANCE  | FGFR3    | NHEJ1   |
| FANCF  | FGFR2    | POLM    |
| FANCG  | FGFR4    | GADD45G |
| FEN1   | VEGFD    | HUS1    |
| MBD4   | NCBP2    | IGF1    |
| MGMT   | TAB2     | MAPK10  |
| NTHL1  | GGA3     | MAPK11  |
| OGG1   | CYFIP1   | MAPK12  |
| PNKP   | FLT1     | MAPK13  |

|             |          |        |
|-------------|----------|--------|
| POLB        | FLT3     | MAPK14 |
| SMUG1       | FLT3LG   | MAPK8  |
| XAB2        | ARC      | MAPK9  |
| RAD54B      | FES      | MDM2   |
| RAD52       | FGF1     | PSMD6  |
| WRN         | FGF2     | POLA1  |
| DCLRE1<br>C | FGF3     | POLG   |
| NHEJ1       | FGF4     | POLQ   |
| POLM        | FGF5     | POLR1B |
| POLL        | FGF6     | POLR1C |
| RPS27A      | FGF7     | POLR3D |
| UBA52       | FGF8     | POLR3F |
| UBB         | FGF9     | POLR3K |
| UBC         | FGF10    | TENT4A |
| ARPC3       | FGFR1    | PSMA1  |
| ATRIP       | ATP6V1C2 | PSMA2  |
| BARD1       | MTOR     | PSMA3  |
| CHEK2       | RICTOR   | RFC2   |
| DCLRE1<br>A | FYN      | RFC3   |
| GADD45<br>A | GAB1     | RFC4   |
| GADD45<br>B | EPGN     | RFC5   |
| GADD45<br>G | GABRA1   | XPC    |
| HUS1        | COL24A1  | ERCC2  |
| IGF1        | GABRB1   | ERCC3  |
| MAPK10      | COL6A5   | POLE2  |
| MAPK11      | GABRB2   | POLE4  |
| MAPK12      | GABRB3   | MLH1   |
| MAPK13      | FLT4     | PMS2   |
| MAPK14      | FN1      | LIG3   |
| MAPK8       | NCSTN    | LIG4   |
| MAPK9       | FOS      | DDB1   |
| MDM2        | FOSB     | DDB2   |
| PSMD6       | RBFOX2   | GTF2H4 |
| POLA1       | ATP6V0A2 | GTF2H5 |
| POLG        | FLRT3    | POLK   |
| POLQ        | FLRT2    | POLE3  |
| POLR1B      | FLRT1    | CUL4B  |
| POLR1C      | ALK      | CUL4A  |

|        |          |        |
|--------|----------|--------|
| POLR3D | ATP6V0D2 | RBX1   |
| POLR3F | FGF22    | EXO1   |
| POLR3K | LAMA1    | PARP1  |
| TENT4A | GRB2     | ATM    |
| PSMA1  | GRB7     | BRCA1  |
| PSMA2  | GRB10    | BRCA2  |
| PSMA3  | RAPGEF1  | XRCC6  |
| PSMA4  | GRIN2B   | MRE11  |
| PSMA5  | CD274    | NBN    |
| PSMA6  | GTF2F1   | POLH   |
| PSMA7  | GTF2F2   | PRKDC  |
| PSMB1  | EPN1     | RAD50  |
| PSMB10 | SH3KBP1  | RAD51  |
| PSMB2  | GABRG2   | XRCC1  |
| PSMB3  | GABRG3   | XRCC4  |
| PSMB4  | SHC2     | XRCC5  |
| PSMB5  | GALNT3   | RAD23A |
| PSMB6  | NELFB    | CDK7   |
| PSMB7  | SIN3A    | CETN2  |
| PSMB8  | LRIG1    | MNAT1  |
| PSMB9  | DNM3     | CCNH   |
| PSMC1  | FGF20    | POLR1A |
| PSMC2  | PTPN18   | POLR2A |
| PSMC3  | GFAP     | POLR2B |
| PSMC4  | CYFIP2   | POLR2C |
| PSMC5  | HRAS     | PARP2  |
| PSMC6  | HSPB1    | CHD1L  |
| PSMD1  | HSP90AA1 | POLL   |
| PSMD2  | ID1      | RPS27A |
| PSMD3  | ID2      | UBA52  |
| PSMD4  | ID3      | UBB    |
| PSMD5  | ID4      |        |
| PSMD7  | IGF1     |        |
| RAD1   | APOE     |        |
| RAD17  | IGF1R    |        |
| RAD9A  | IGF2     |        |
| POLR1D | IL2RG    |        |
| TP53   | HDAC1    |        |
| TREX1  | HDAC2    |        |
| TREX2  | NCKAP1L  |        |
| APEX2  | HGF      |        |
| MUTYH  | HGFAC    |        |
| CENPX  | NRG1     |        |

|         |         |
|---------|---------|
| USP1    | PIK3R4  |
| POLI    | HIF1A   |
| RAD51C  | HNRNPA1 |
| REV3L   | HNRNPF  |
| HMGB1   | HNRNPH1 |
| UNG     | HPN     |
| H2AX    | JAK3    |
| MPG     | JUNB    |
| RAP1A   | JUND    |
| FAAP100 | JUP     |
| TDG     | ANOS1   |
| TERF2   | AREG    |
| PALB2   | KDR     |
| FANCM   | KIT     |
| FANCB   | ARF6    |
| CENPS   | KRAS    |
| NEIL3   | RHOA    |
| WDR48   | LAMA2   |
| NEIL2   | INS     |
| BRIP1   | INSR    |
| FAAP24  | IRS1    |
| FANCL   | ITGA2   |
| FANCI   | ITGA3   |
| REV1    | ITGAV   |
| FAN1    | ITGB1   |
| SLX4IP  | ITGB3   |
| USP7    | ITPR1   |
| HMG1    | ITPR2   |
| UVSSA   | ITPR3   |
| SLX4    | JAK2    |
|         | MATK    |
|         | MDK     |
|         | MEF2A   |
|         | MEF2C   |
|         | MEF2D   |
|         | MET     |
|         | KITLG   |
|         | ASCL1   |
|         | MMP9    |
|         | MST1    |
|         | MST1R   |
|         | MYC     |
|         | LAMA3   |

LAMA4  
LAMA5  
LAMB1  
LAMB2  
LAMB3  
LAMC1  
LAMC2  
STMN1  
LCK  
LYL1  
LYN  
NRAS  
NTF3  
NTF4  
NTRK1  
NTRK2  
NTRK3  
FURIN  
PCSK6  
COL5A3  
PAK1  
ATP6V0A4  
PAK2  
MYCN  
ATF1  
NAB1  
NAB2  
HNRNPM  
NCBP1  
NCF2  
NCF4  
NCK1  
NEDD4  
NGF  
NOS3  
PDPK1  
WWOX  
PGF  
ATP6V1A  
PGR  
ATP6V1B1  
ATP6V1B2  
ATP6V0C

ATP6V1C1  
PIK3C3  
ATP6V1E1  
PIK3CA  
PAK3  
MEMO1  
APH1A  
VRK3  
PCSK5  
ATP6V1D  
PDE3B  
PDGFA  
PDGFB  
PDGFRA  
PDGFRB  
ATP6V1H  
RAB4B  
TLR9  
POLR2A  
POLR2B  
POLR2C  
POLR2D  
POLR2E  
POLR2F  
POLR2G  
POLR2H  
POLR2I  
POLR2J  
PIK3CB  
PIK3R1  
PIK3R2  
PLAT  
ATP6V0B  
PLCG1  
SHC3  
ATP6V1G2  
PLG  
ATP6V0A1  
ATP6AP1  
FGFRL1  
PRKCA  
PRKCB  
AXL

PRKCD  
PRKCE  
PAG1  
BRK1  
PSENEN  
GABRQ  
PRKCZ  
ERBIN  
MAPK1  
POLR2K  
POLR2L  
ESRP1  
PPP2CA  
PPP2CB  
PPP2R1A  
PPP2R1B  
PPP2R5D  
PRR5  
PRKACA  
PRKACB  
PRKACG  
KIDINS220  
PTK6  
RANBP10  
PTN  
PTPN1  
PTPN2  
PTPN3  
TRIB3  
PTPN6  
PTPN11  
PTPN12  
PTPRJ  
MAPK3  
MAPK7  
MAPK11  
MAPK13  
PDGFC  
MAP2K1  
MAP2K2  
MAP2K5  
PSEN1  
PSEN2

PTBP1  
PTK2  
RAP1A  
RAP1B  
RASA1  
REST  
ACTB  
RIT2  
RIT1  
ROCK1  
RPS6KA1  
RPS6KA2  
RPS6KA3  
RPS27A  
PTPRK  
PTPRO  
PTPRS  
PTPRZ1  
BAX  
PXN  
EPS15L1  
RAB4A  
RAC1  
RALA  
RALB  
RALGDS  
SHB  
SHC1  
TNS3  
NCF1  
SOS1  
SPARC  
SPINT1  
SPP1  
SRC  
SRF  
BRAF  
STAT1  
RRAD  
BDNF  
S100B  
MAPK12  
CXCL12

PRDM1  
ELMO2  
MLST8  
SGK1  
SH3GL1  
SH3GL2  
SH3GL3  
STAT3  
STAT5A  
STAT5B  
STAT6  
BTC  
ADAM17  
TCF12  
TEC  
TGFA  
THBS1  
THBS2  
THBS3  
THBS4  
TIA1  
TIAL1  
TIAM1  
ACTG1  
TPH1  
UBA52  
UBB  
UBC  
VAV1  
VAV2  
VEGFA  
VEGFB  
VEGFC  
VGF  
YES1  
YWHAB  
MAPKAPK3  
MAPKAP1  
ESRP2  
CALM1  
STAM  
PDGFD  
ADAM12

CALM2  
FOSL1  
CUL5  
FGF23  
CALM3  
APH1B  
ITCH  
FGFBP2  
NCK2  
IRS4  
CILP  
TNS4  
NRP1  
HDAC3  
CDK5R1  
ARHGEF7  
SPHK1  
WASF1  
CDK5R2  
ATP6V0E1  
ATP6V1E2  
SH2D2A  
USP8  
ATP6V0D1  
PIK3R3  
COL27A1  
DOCK7  
MKNK1  
CAV1  
SOCS1  
IRS2  
CBL  
FGF18  
FGF17  
FGF16  
NRP2  
HGS  
RPS6KA5  
MAPKAPK2  
ATP6V1F  
SOCS6  
KL  
GRAP2

ROCK2  
 NRG2  
 ATP6V1G1  
 BCAR1  
 NCOR1  
 ELMO1  
 GAB2  
 FGF19  
 CDC42  
 FGFBP1

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**Supplementary Table 7. The predicted subtypes of TP53 mutant tumor cell lines.**

| Cells      | Cluster     |
|------------|-------------|
| COLO-783   | COCA1.2.4.5 |
| VCaP       | COCA1.2.4.5 |
| RKN        | COCA1.2.4.5 |
| SK-UT-1    | COCA1.2.4.5 |
| 8-MG-BA    | COCA1.2.4.5 |
| CAL-120    | COCA1.2.4.5 |
| NCI-H596   | COCA1.2.4.5 |
| RERF-LC-KJ | COCA1.2.4.5 |
| UACC-893   | COCA1.2.4.5 |
| MKN7       | COCA1.2.4.5 |
| DAN-G      | COCA1.2.4.5 |
| HCC-15     | COCA1.2.4.5 |
| SK-LU-1    | COCA1.2.4.5 |
| 42-MG-BA   | COCA1.2.4.5 |
| HOP-62     | COCA1.2.4.5 |
| 647-V      | COCA1.2.4.5 |
| HSC-3      | COCA1.2.4.5 |
| HCC-44     | COCA1.2.4.5 |
| NCI-H2291  | COCA1.2.4.5 |
| HSC-4      | COCA1.2.4.5 |
| SNU-407    | COCA1.2.4.5 |
| MeWo       | COCA1.2.4.5 |
| UM-UC-3    | COCA1.2.4.5 |
| HCC1569    | COCA1.2.4.5 |
| HCC-78     | COCA1.2.4.5 |
| MDA-MB-231 | COCA1.2.4.5 |
| FaDu       | COCA1.2.4.5 |
| EFM-19     | COCA1.2.4.5 |
| TC-71      | COCA1.2.4.5 |

|             |             |
|-------------|-------------|
| SK-MEL-3    | COCA1.2.4.5 |
| PA-TU-8902  | COCA1.2.4.5 |
| SNU-81      | COCA1.2.4.5 |
| NCI-H1568   | COCA1.2.4.5 |
| SW948       | COCA1.2.4.5 |
| NUGC-3      | COCA1.2.4.5 |
| 639-V       | COCA1.2.4.5 |
| CL-40       | COCA1.2.4.5 |
| SCC-15      | COCA1.2.4.5 |
| HUP-T3      | COCA1.2.4.5 |
| HSC-2       | COCA1.2.4.5 |
| SW620       | COCA1.2.4.5 |
| KYSE-180    | COCA1.2.4.5 |
| NCI-H2087   | COCA1.2.4.5 |
| KYSE-410    | COCA1.2.4.5 |
| J82         | COCA1.2.4.5 |
| KP-2        | COCA1.2.4.5 |
| JIMT-1      | COCA1.2.4.5 |
| HCC1599     | COCA1.2.4.5 |
| NCI-H2030   | COCA1.2.4.5 |
| NCI-H2405   | COCA1.2.4.5 |
| NCI-N87     | COCA1.2.4.5 |
| TE-6        | COCA1.2.4.5 |
| T98G        | COCA1.2.4.5 |
| OE19        | COCA1.2.4.5 |
| OE21        | COCA1.2.4.5 |
| NCI-H1975   | COCA1.2.4.5 |
| KNS-62      | COCA1.2.4.5 |
| CAMA-1      | COCA1.2.4.5 |
| PA-TU-8988T | COCA1.2.4.5 |
| EC-GI-10    | COCA1.2.4.5 |
| Capan-1     | COCA1.2.4.5 |
| QGP-1       | COCA1.2.4.5 |
| JHH-7       | COCA1.2.4.5 |
| TGBC11TKB   | COCA1.2.4.5 |
| KYSE-140    | COCA1.2.4.5 |
| CAL-148     | COCA1.2.4.5 |
| ECC12       | COCA1.2.4.5 |
| EN          | COCA1.2.4.5 |
| PE/CA-PJ15  | COCA1.2.4.5 |
| MFE-296     | COCA1.2.4.5 |
| PSN1        | COCA1.2.4.5 |
| CAL-33      | COCA1.2.4.5 |

|           |             |
|-----------|-------------|
| NCI-H1355 | COCA1.2.4.5 |
| SNU-C5    | COCA1.2.4.5 |
| TE-9      | COCA1.2.4.5 |
| HCC1937   | COCA1.2.4.5 |
| HCC202    | COCA1.2.4.5 |
| BT-474    | COCA1.2.4.5 |
| HCC-366   | COCA1.2.4.5 |
| LOU-NH91  | COCA1.2.4.5 |
| TE-15     | COCA1.2.4.5 |
| YAPC      | COCA1.2.4.5 |
| TE-5      | COCA1.2.4.5 |
| LXF-289   | COCA1.2.4.5 |
| BFTC-905  | COCA1.2.4.5 |
| NCI-H2122 | COCA1.2.4.5 |
| CFPAC-1   | COCA1.2.4.5 |
| Calu-6    | COCA1.2.4.5 |
| SUIT-2    | COCA1.2.4.5 |
| Calu-3    | COCA1.2.4.5 |
| COLO-680N | COCA1.2.4.5 |
| EBC-1     | COCA1.2.4.5 |
| SCC-25    | COCA1.2.4.5 |
| KNS-42    | COCA1.2.4.5 |
| MKN1      | COCA1.2.4.5 |
| BxPC-3    | COCA1.2.4.5 |
| NCI-H23   | COCA1.2.4.5 |
| NCI-H747  | COCA1.2.4.5 |
| TE-4      | COCA1.2.4.5 |
| SW837     | COCA1.2.4.5 |
| ABC-1     | COCA1.2.4.5 |
| NCI-H1781 | COCA1.2.4.5 |
| HT55      | COCA1.2.4.5 |
| T84       | COCA1.2.4.5 |
| NCI-H1838 | COCA1.2.4.5 |
| SNU-449   | COCA1.2.4.5 |
| NCI-H441  | COCA1.2.4.5 |
| SNU-C1    | COCA1.2.4.5 |
| BT-20     | COCA1.2.4.5 |
| KYSE-70   | COCA1.2.4.5 |
| NCI-H2228 | COCA1.2.4.5 |
| HCC1954   | COCA1.2.4.5 |
| NCI-H520  | COCA1.2.4.5 |
| NCI-H1792 | COCA1.2.4.5 |
| AsPC-1    | COCA1.2.4.5 |

|            |             |
|------------|-------------|
| TE-11      | COCA1.2.4.5 |
| NCI-H508   | COCA1.2.4.5 |
| HCC1143    | COCA1.2.4.5 |
| SW1463     | COCA1.2.4.5 |
| BT-483     | COCA1.2.4.5 |
| SNU-1040   | COCA1.2.4.5 |
| NCI-H1648  | COCA1.2.4.5 |
| SNU-61     | COCA1.2.4.5 |
| HCC2218    | COCA1.2.4.5 |
| HGC-27     | COCA1.2.4.5 |
| NCI-H1869  | COCA1.2.4.5 |
| NCI-H716   | COCA1.2.4.5 |
| OCUM-1     | COCA1.2.4.5 |
| SW1417     | COCA1.2.4.5 |
| OE33       | COCA1.2.4.5 |
| RCM-1      | COCA1.2.4.5 |
| HCC1419    | COCA1.2.4.5 |
| MDA-MB-361 | COCA1.2.4.5 |
| SK-MEL-30  | COCA1.2.4.5 |
| HPAF-II    | COCA1.2.4.5 |
| LK-2       | COCA1.2.4.5 |
| RT-112     | COCA1.2.4.5 |
| KYSE-450   | COCA1.2.4.5 |
| C2BBel     | COCA1.2.4.5 |
| CL-11      | COCA1.2.4.5 |
| TE-1       | COCA1.2.4.5 |
| KYSE-150   | COCA1.2.4.5 |
| SW1116     | COCA1.2.4.5 |
| KYSE-510   | COCA1.2.4.5 |
| EFM-192A   | COCA1.2.4.5 |
| HT-29      | COCA1.2.4.5 |
| KYSE-520   | COCA1.2.4.5 |
| KM12       | COCA1.2.4.5 |
| HCT-15     | COCA1.2.4.5 |
| HCC2157    | COCA1.2.4.5 |
| NCI-H1437  | COCA1.2.4.5 |
| CCK-81     | COCA1.2.4.5 |
| LN-18      | COCA1.2.4.5 |
| CL-34      | COCA1.2.4.5 |
| HCC-56     | COCA1.2.4.5 |
| IGR-37     | COCA1.2.4.5 |
| MFE-319    | COCA1.2.4.5 |
| RL95-2     | COCA1.2.4.5 |

|            |       |
|------------|-------|
| NCI-H1650  | COCA3 |
| FU97       | COCA3 |
| MDA-MB-436 | COCA3 |
| KYSE-270   | COCA3 |
| SK-ES-1    | COCA3 |
| GI-1       | COCA3 |
| SCC-9      | COCA3 |
| HCC1806    | COCA3 |
| NCI-H1623  | COCA3 |
| MDA-MB-468 | COCA3 |
| JHH-6      | COCA3 |
| RERF-LC-MS | COCA3 |
| KLE        | COCA3 |
| TE-8       | COCA3 |
| SF539      | COCA3 |
| CAL-85-1   | COCA3 |
| NCI-H2342  | COCA3 |
| NCI-H838   | COCA3 |
| BT-549     | COCA3 |
| NCI-H2009  | COCA3 |
| TCCSUP     | COCA3 |
| CAL-29     | COCA3 |
| RH-41      | COCA3 |
| NCI-H1651  | COCA3 |
| SF268      | COCA3 |
| HOS        | COCA3 |
| EPLC-272H  | COCA3 |
| NCI-H522   | COCA3 |
| NCI-H2023  | COCA3 |
| NCI-H1693  | COCA3 |
| GMS-10     | COCA3 |
| SK-MES-1   | COCA3 |
| HCC1395    | COCA3 |
| SNU-182    | COCA3 |
| NCI-H2085  | COCA3 |
| HT-1376    | COCA3 |
| SNU-423    | COCA3 |
| huH-1      | COCA3 |
| NCI-H647   | COCA3 |
| HUP-T4     | COCA3 |
| IPC-298    | COCA3 |
| HuH-7      | COCA3 |
| SNU-475    | COCA3 |

|             |       |
|-------------|-------|
| AU565       | COCA3 |
| 5637        | COCA3 |
| HDQ-P1      | COCA3 |
| NCI-H1755   | COCA3 |
| SCC-4       | COCA3 |
| NCI-H1703   | COCA3 |
| BHY         | COCA3 |
| RERF-LC-Sq1 | COCA3 |
| RD          | COCA3 |
| MDA-MB-415  | COCA3 |
| SNU-387     | COCA3 |
| CAS-1       | COCA3 |
| 22Rv1       | COCA3 |
| SNB75       | COCA3 |
| EKVX        | COCA3 |
| RERF-GC-1B  | COCA3 |
| MDA-MB-157  | COCA3 |
| ESS-1       | COCA3 |
| JHH-4       | COCA3 |
| YH-13       | COCA3 |
| HARA        | COCA3 |
| HCC38       | COCA3 |
| SK-MEL-28   | COCA3 |
| MFE-280     | COCA3 |
| NCI-H1793   | COCA3 |
| PC-3        | COCA3 |
| NCI-H2170   | COCA3 |
| TE-10       | COCA3 |
| GCT         | COCA3 |
| NCI-H1435   | COCA3 |
| JHH-2       | COCA3 |
| KALS-1      | COCA3 |
| NCI-H1734   | COCA3 |
| RVH-421     | COCA3 |
| COLO-800    | COCA3 |
| RPMI-7951   | COCA3 |
| HCC70       | COCA3 |
| GCIY        | COCA3 |
| PC-14       | COCA3 |
| NCI-H1573   | COCA3 |
| A2058       | COCA3 |

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