

Supplementary Data

Figure S1 Heatmaps of the expression of 6 FIGs (A-C). Risk score curves for each patient's survival status (D-F) and scatter plots (G-I).

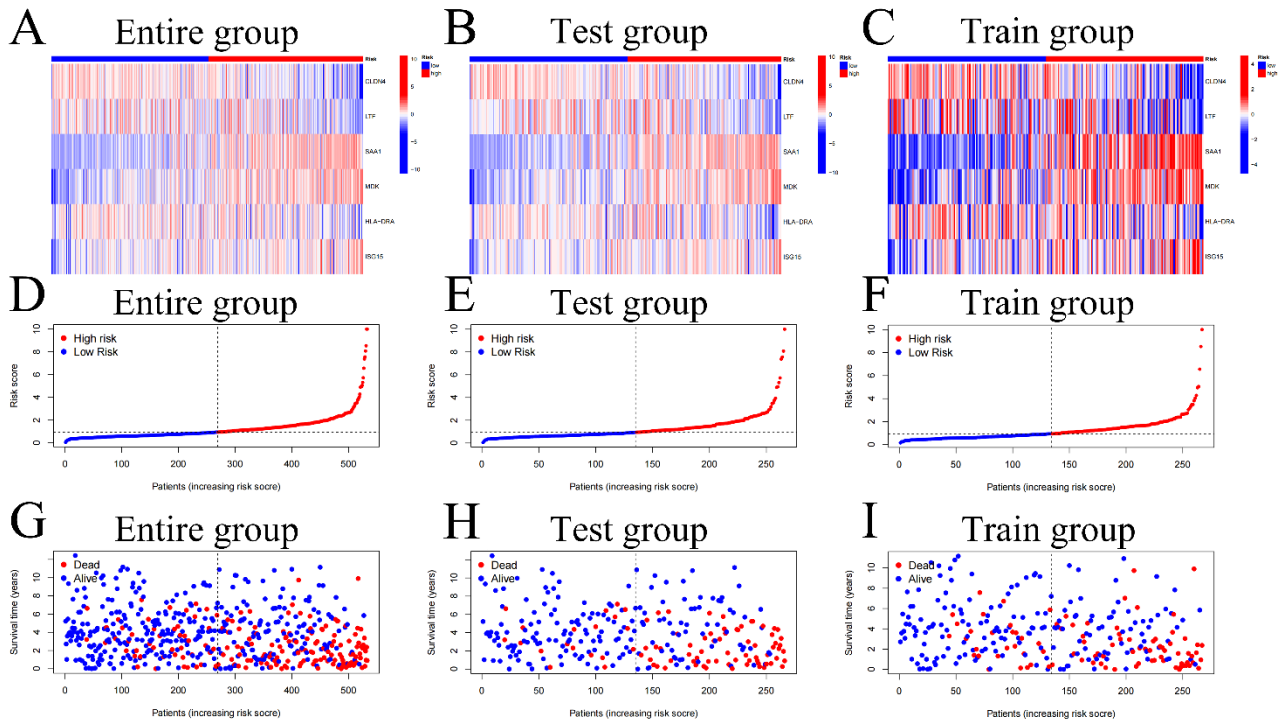


Figure S2 Relationship between risk genes and model risk scores (A-L).

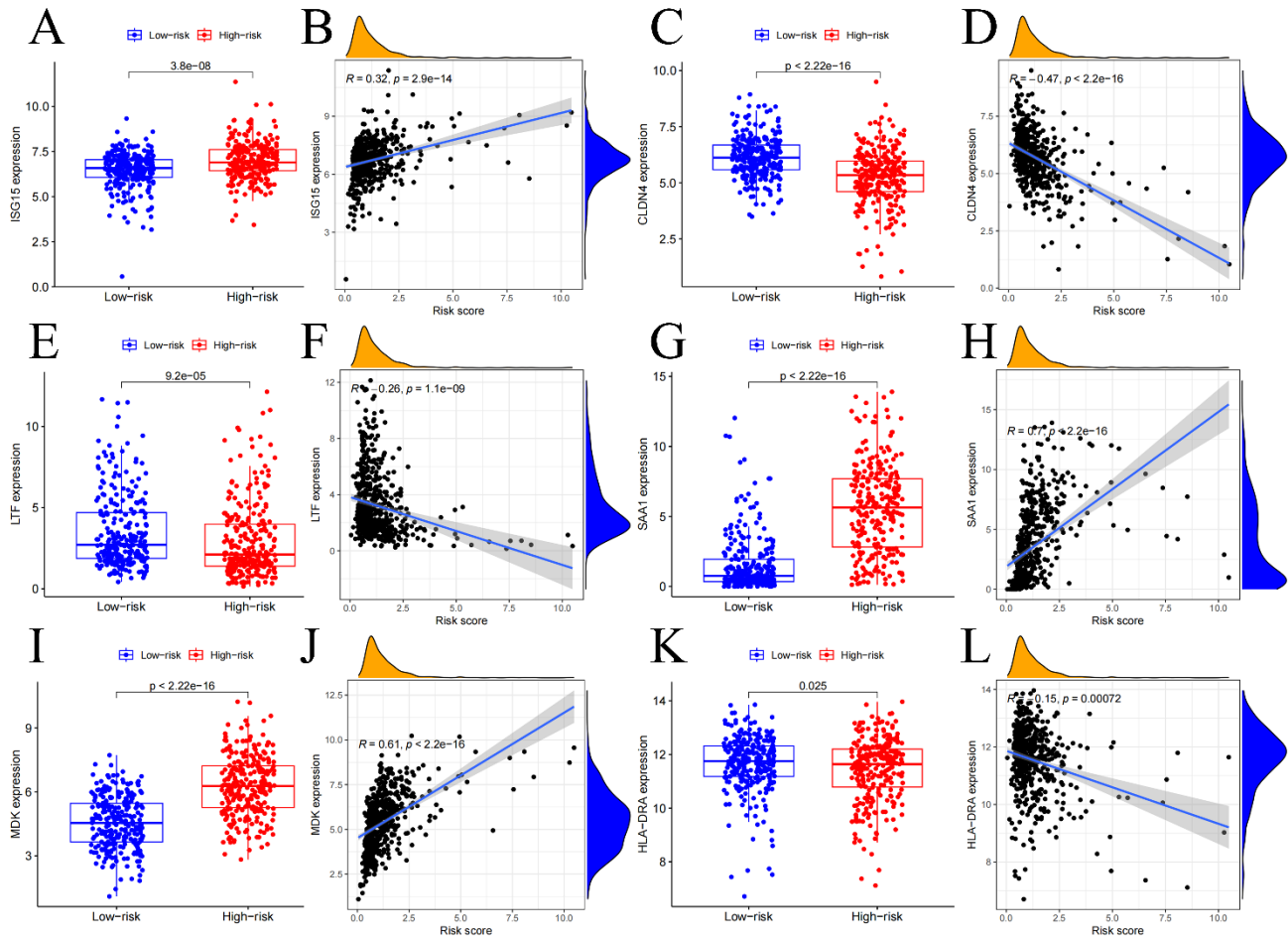


Figure S3 Survival curves for risk genes (A-F).

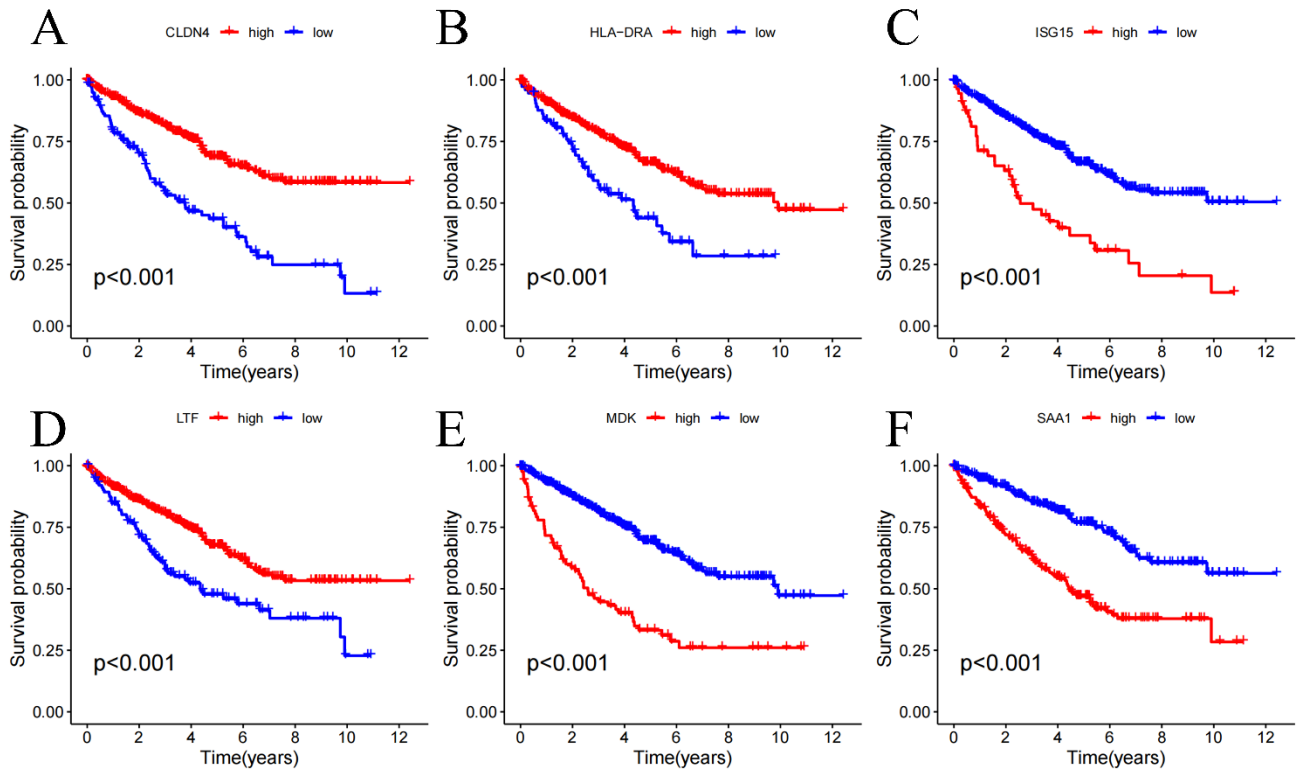


Figure S4 Univariate (A) and multivariate (B) Cox analyses of age, gender, stage, grade, and risk score showed that age, stage, grade, and risk score are independent prognostic factors. Clinical relevance circle diagram (C) and risk heatmap (D).

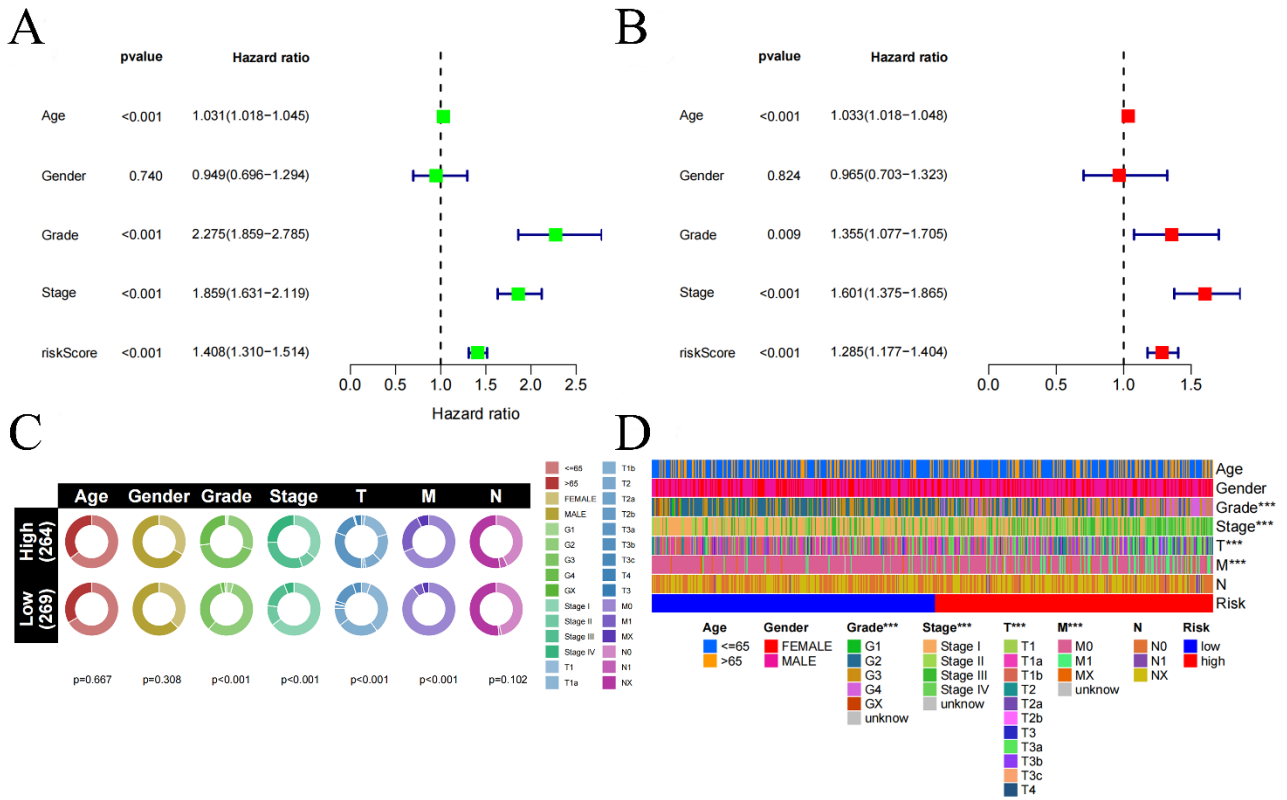


Figure S5 Scatter plots of risk scores in different clinical groupings (A-G), PCA principal component analysis of all fibroblast immune-related genes (H) and model genes (I).

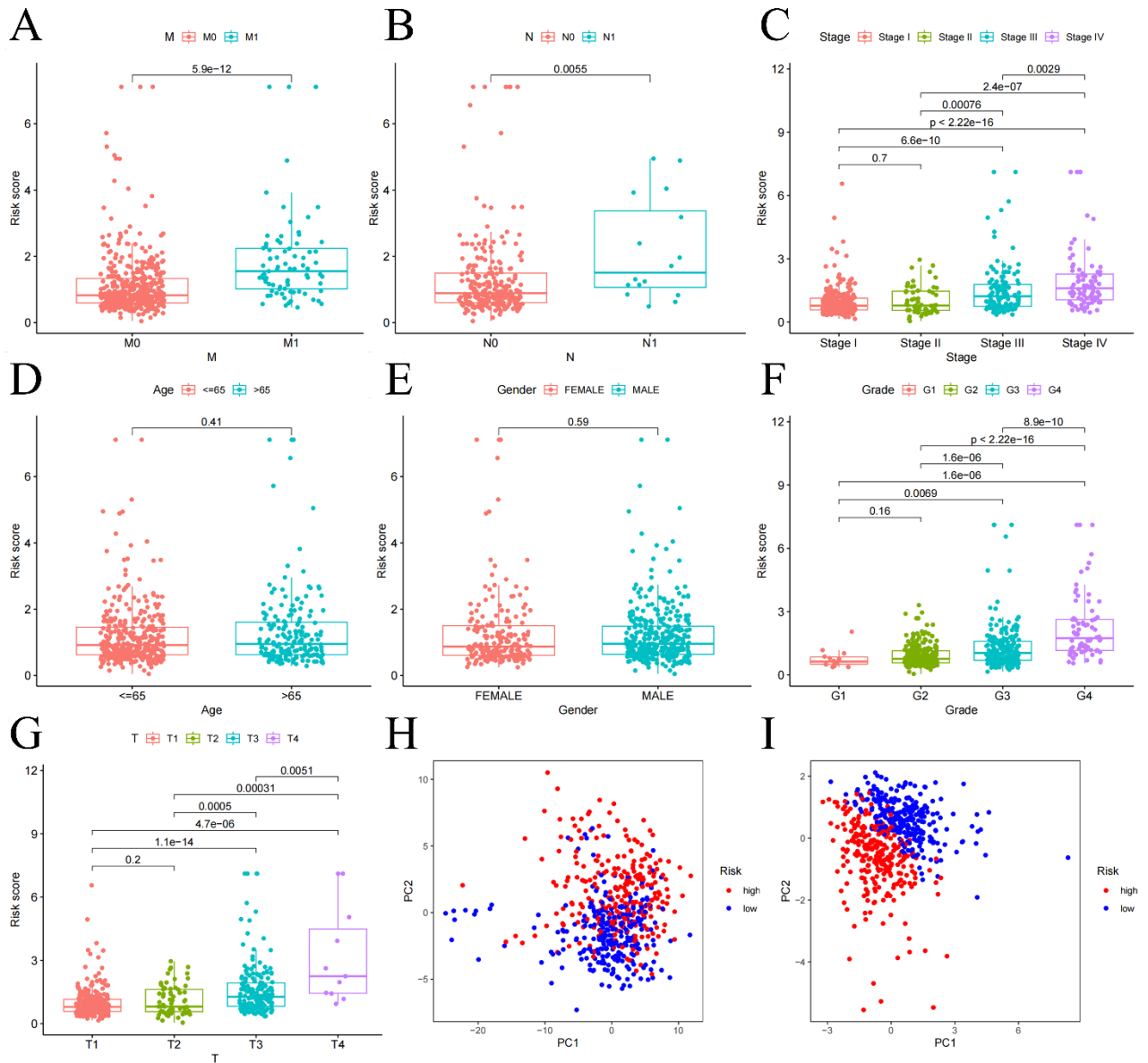


Figure S6 Clinical grouping validation of the risk model ($p < 0.01$) (A-H).

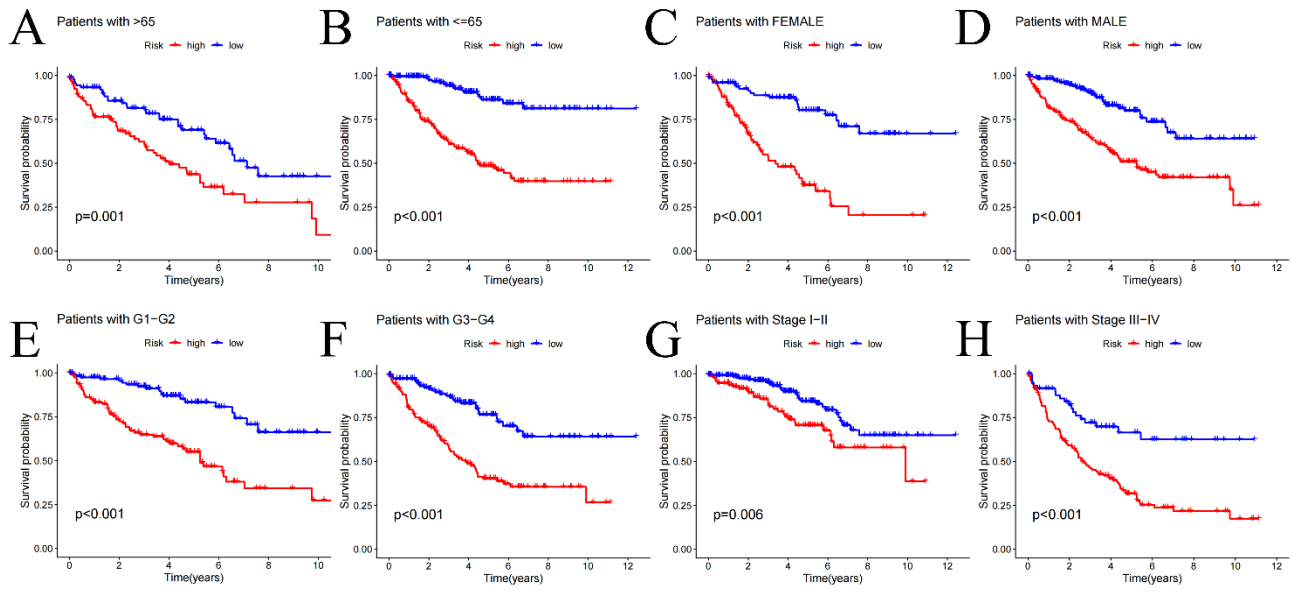


Figure S7 Survival curves for clinical subgroups (A-G).

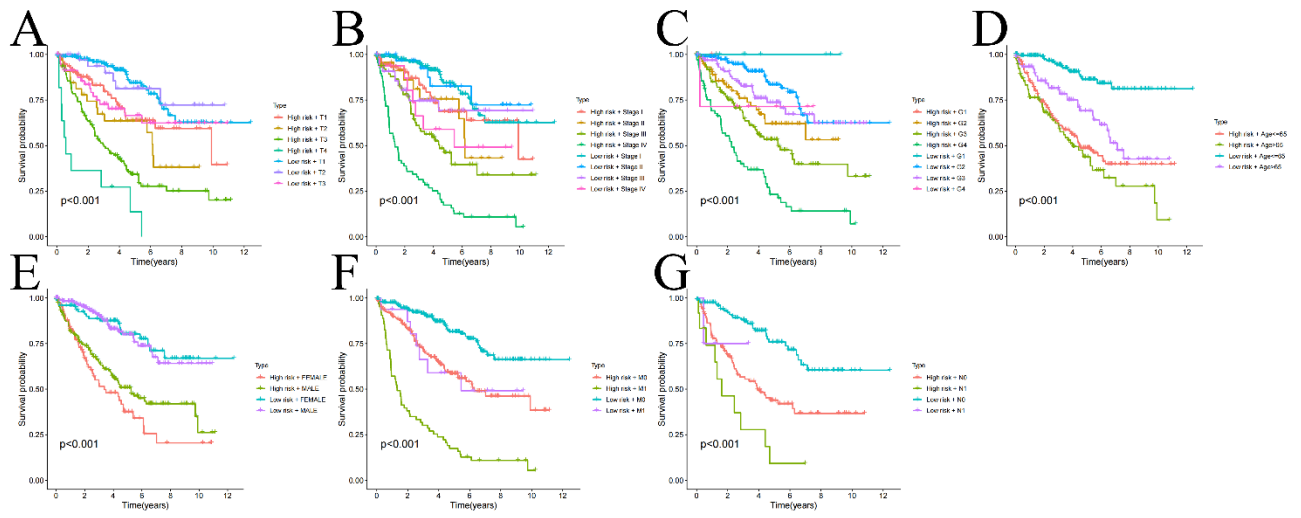


Figure S8 Results of GSEA enrichment analysis performed with 6 genes and files, showing the top 5 enriched pathways in high and low-risk groups (A-L).

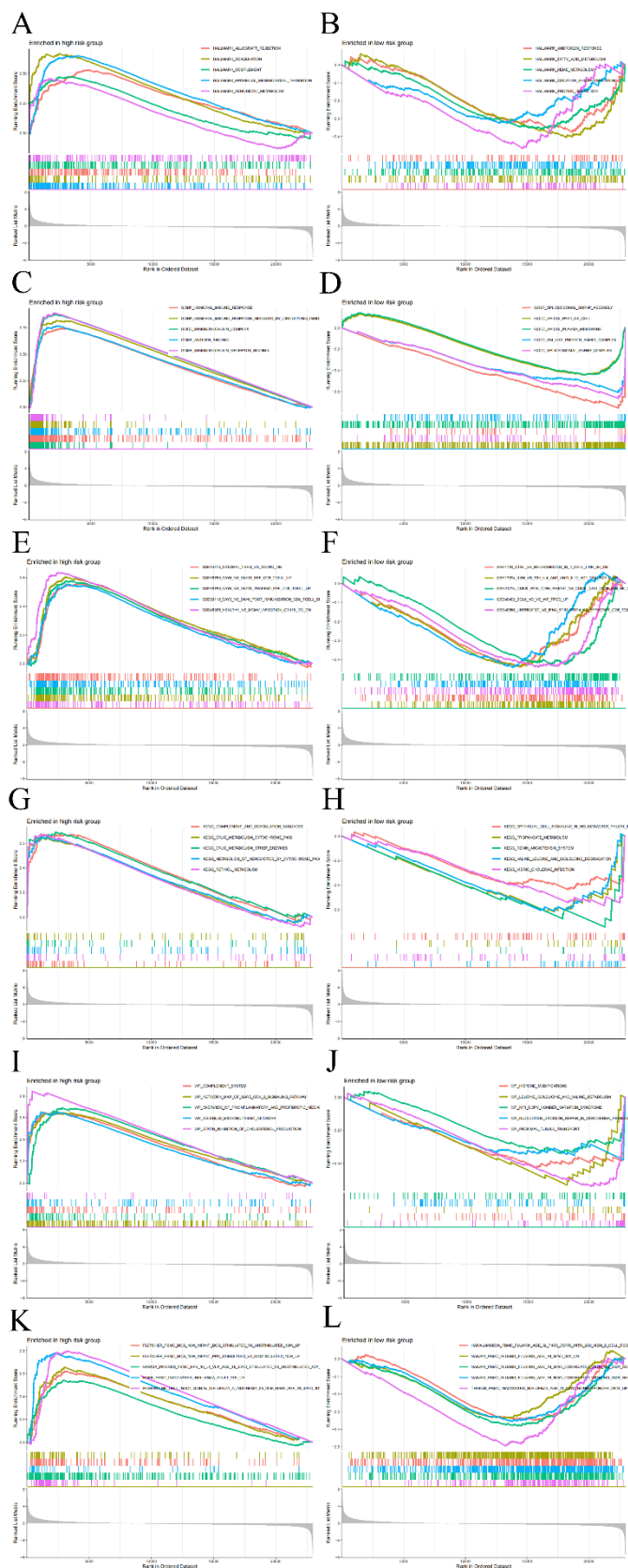


Figure S9 Tumor microenvironment (TME) analysis (A) showing the infiltration of stromal and immune cells in high and low-risk groups, immune typing (B), tumor tissue immune cells (C), and immune function analysis (D).

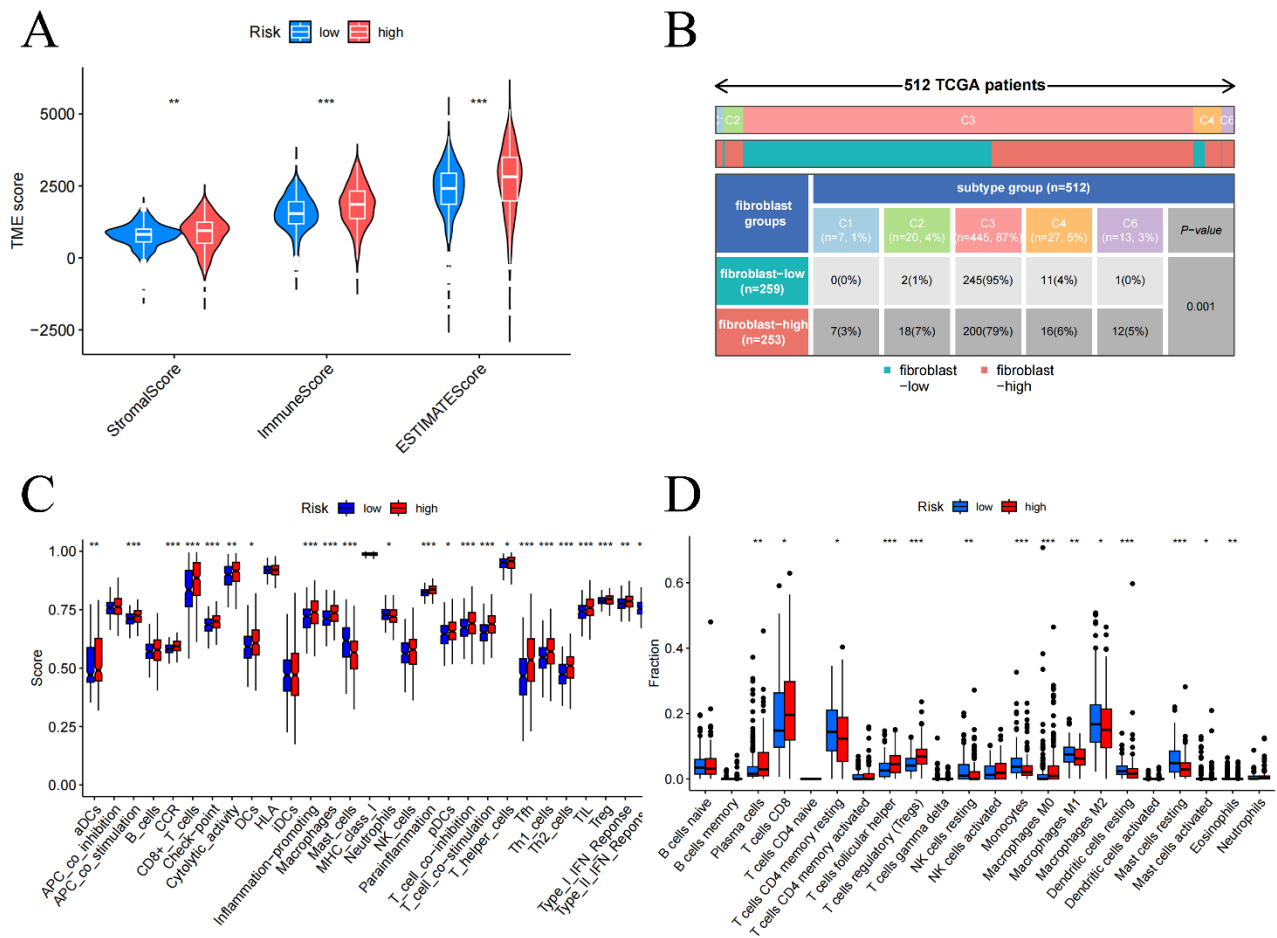


Figure S10 Correlation of immune cells with risk score (A-N).

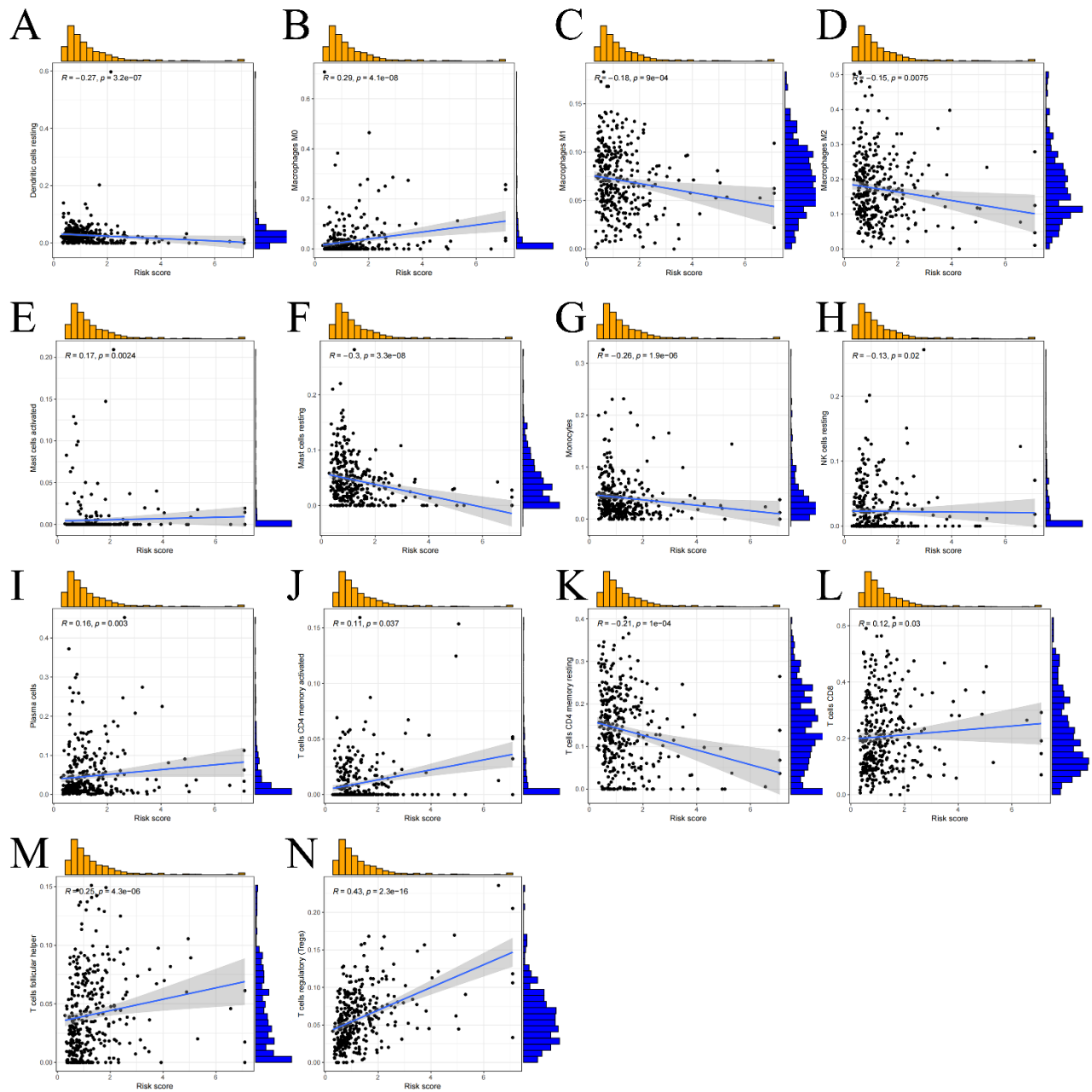


Figure S11 Differential analysis results of drug sensitivity between high and low-risk groups (L), showing that the high-risk group is sensitive to some PI3K/AKT drugs (A-K).

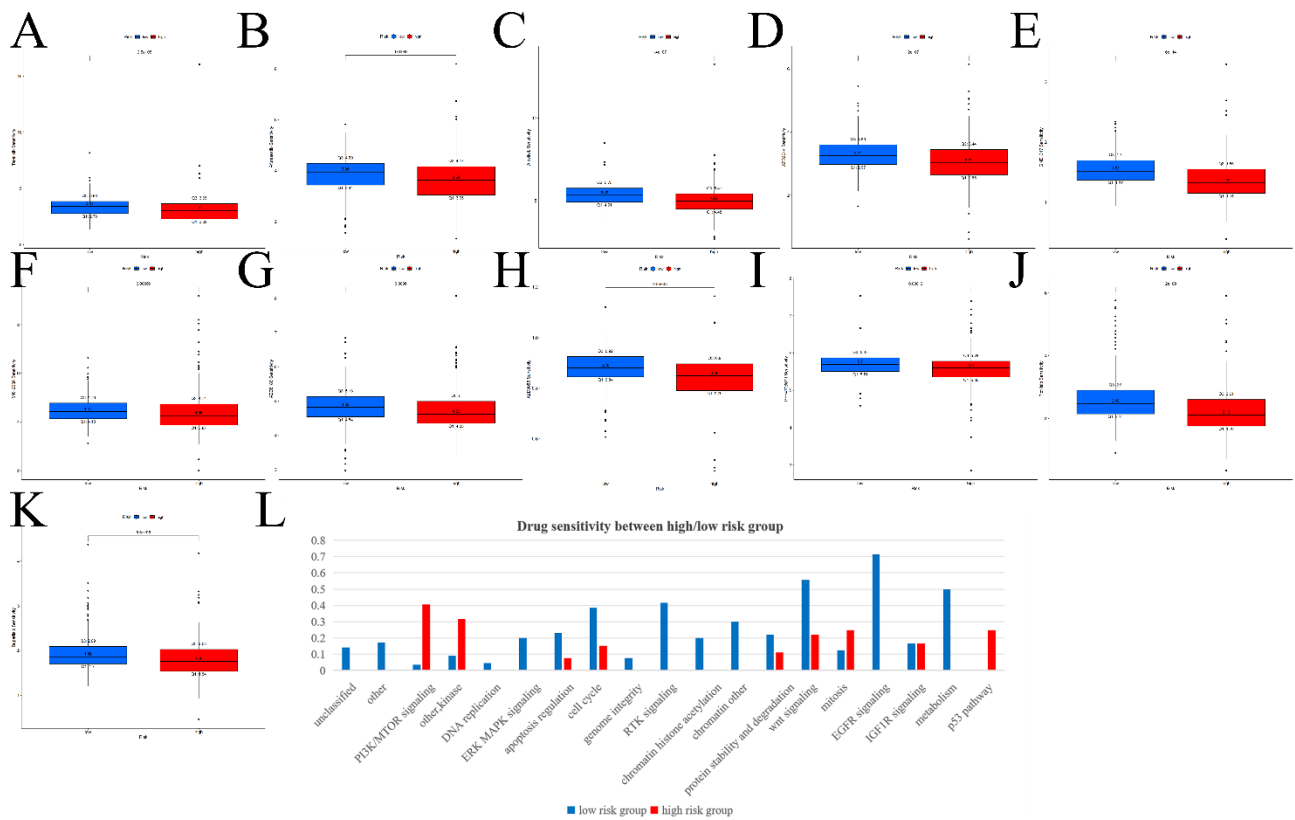


Figure S12 Experimental validation of the risk model in vitro included immunohistochemical staining images of select FIGs proteins in KIRC and normal tissues (A), as well as the relative expression of 6 FIGs in various cell lines (B-C). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

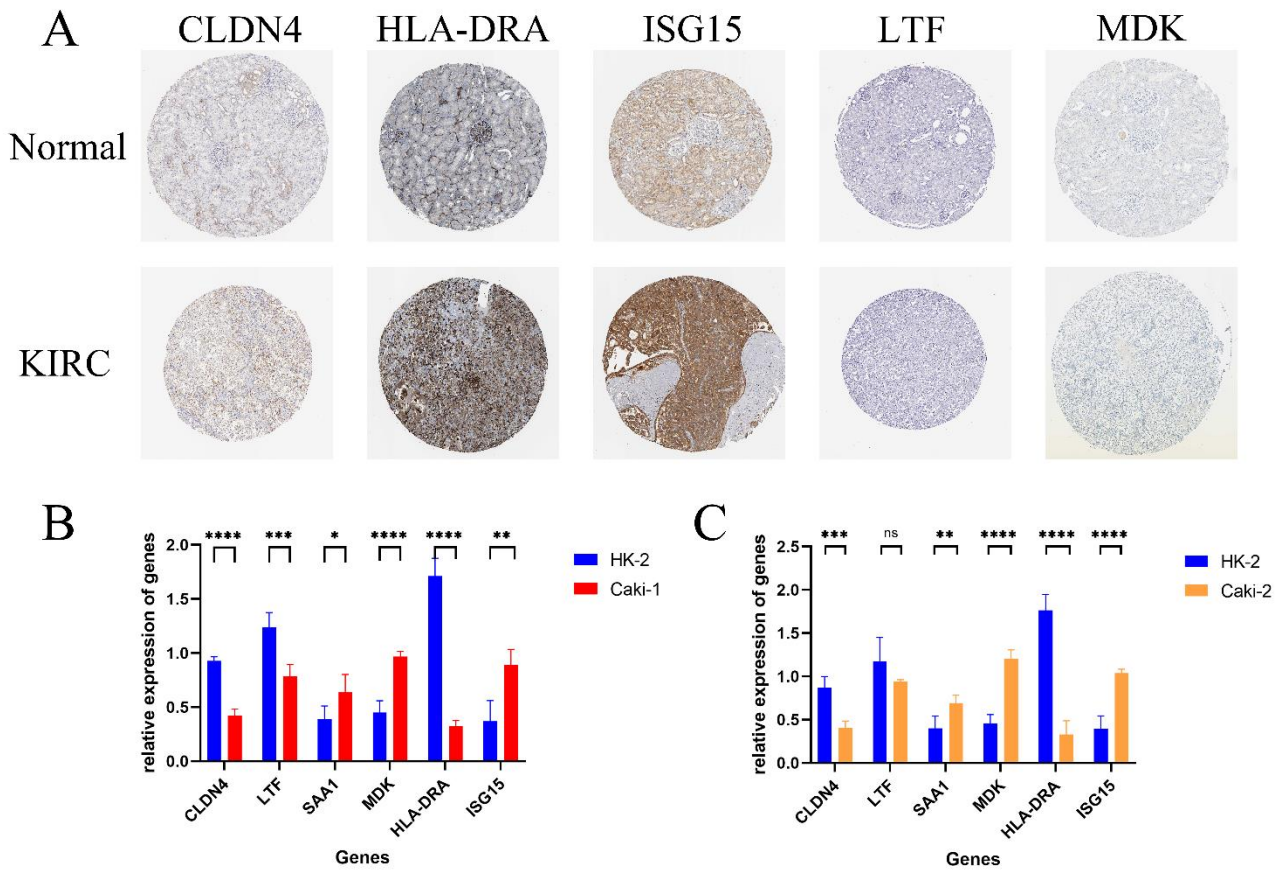


Table S1 Primer sequences for 6 fibroblast immune-related genes (5'→3').

| Gene Id | Primer F | Primer R |
|----------------|----------------------|-----------------------|
| CLDN4 | CTTTGCTGCAACTGTCCACC | CCTACCCGGAACAGAGGAGA |
| LTF | AACCACCATGGGTGAAGGTC | TCCTTGGACCAACAGCATCC |
| SAA1 | GACAGTCAGGAGGGAGACGA | TACCCTCTCCCCGCTTTGTA |
| MDK | GAAGAAGGCGCGCTACAATG | CCCTTCTCCTTTCGCTGACC |
| HLA-DRA | CTCACAAACAGCCCTGTGGA | ACATTTCCCTTCCCCACCCTG |
| ISG15 | GGCCAGGTTCTAAGTGTGCT | GCGTCACACAGGTTTCAGAGA |

Table S2 Fibroblast cell differentially expressed genes.

| Gene | log2FC | Percentage (%) | Adjusted p-value |
|-------------|---------------|-----------------------|-------------------------|
| NDUFA4L2 | 3.32 | 99.1 | 0 |
| CRYAB | 3.19 | 99.7 | 0 |
| FXYD2 | 2.79 | 98.9 | 0 |
| RARRES2 | 2.76 | 98 | 0 |
| CD24 | 2.74 | 99.1 | 0 |
| RHEX | 2.71 | 98.6 | 0 |
| NNMT | 2.48 | 99.5 | 0 |
| MGST1 | 2.38 | 97.4 | 0 |
| CXCL14 | 2.38 | 96.5 | 0 |
| CLU | 2.37 | 97.3 | 0 |
| ANGPTL4 | 2.32 | 99.1 | 0 |
| KRT19 | 2.31 | 97.9 | 0 |
| KRT18 | 2.3 | 99.2 | 0 |
| DEPP1 | 2.17 | 96.2 | 0 |
| SERPINE1 | 2.14 | 95.5 | 0 |
| IGFBP3 | 2.1 | 93.5 | 0 |
| GPX3 | 2.09 | 98.3 | 0 |
| PDZK1IP1 | 2.02 | 96.1 | 0 |
| HSPB8 | 1.96 | 98.2 | 0 |
| KRT8 | 1.95 | 98.3 | 0 |
| UGT2B7 | 1.87 | 98.5 | 0 |
| SLC17A3 | 1.82 | 91.7 | 0 |
| BNIP3 | 1.81 | 97.3 | 0 |
| FABP7 | 1.77 | 95.5 | 0 |
| CAV1 | 1.76 | 96.4 | 0 |
| ADIRF | 1.72 | 96.4 | 0 |
| IGFBP7 | 1.72 | 96.7 | 0 |
| UCHL1 | 1.72 | 95 | 0 |
| C1S | 1.7 | 98.5 | 0 |
| C19orf33 | 1.64 | 96.2 | 0 |
| S100A1 | 1.63 | 97.4 | 0 |
| CYB5A | 1.57 | 96.8 | 0 |
| RRAD | 1.53 | 95.2 | 0 |
| HILPDA | 1.52 | 96.8 | 0 |
| ANXA4 | 1.5 | 97.1 | 0 |
| CA12 | 1.47 | 97.3 | 0 |
| IGFBP5 | 1.43 | 91.4 | 0 |
| PLOD2 | 1.42 | 97.1 | 0 |
| RBP5 | 1.42 | 96.4 | 0 |
| ERRF1 | 1.42 | 96.5 | 0 |
| PGRMC1 | 1.42 | 96.5 | 0 |
| BEX3 | 1.42 | 96.4 | 0 |
| S100A13 | 1.4 | 97 | 0 |
| CLDN4 | 1.39 | 92.9 | 0 |
| TNFRSF12A | 1.39 | 93.5 | 0 |

| | | | |
|----------------|------|------|---|
| CP | 1.38 | 96.2 | 0 |
| EGLN3 | 1.36 | 96.8 | 0 |
| CCDC146 | 1.35 | 95.6 | 0 |
| MT3 | 1.35 | 92 | 0 |
| MET | 1.35 | 96.7 | 0 |
| BHMT2 | 1.32 | 97.4 | 0 |
| PAX8 | 1.3 | 97.4 | 0 |
| VCAM1 | 1.28 | 97.1 | 0 |
| ENO2 | 1.25 | 96.7 | 0 |
| AKR1C3 | 1.24 | 94.2 | 0 |
| PPP1R1A | 1.23 | 94.8 | 0 |
| CALD1 | 1.23 | 97.4 | 0 |
| DEFB1 | 1.23 | 91.5 | 0 |
| LTF | 1.23 | 80.8 | 0 |
| CAV2 | 1.22 | 95.3 | 0 |
| LINC01320 | 1.19 | 96.2 | 0 |
| VEGFA | 1.18 | 96.5 | 0 |
| TFPI | 1.18 | 95.9 | 0 |
| NDRG1 | 1.16 | 97.6 | 0 |
| PDLIM1 | 1.14 | 96.8 | 0 |
| PFKP | 1.12 | 97.7 | 0 |
| WFDC2 | 1.12 | 90.6 | 0 |
| SLC22A5 | 1.11 | 94.7 | 0 |
| BHMT | 1.11 | 90.2 | 0 |
| ABCC3 | 1.11 | 97 | 0 |
| FABP6 | 1.11 | 93.8 | 0 |
| NOL3 | 1.08 | 96.2 | 0 |
| CAVIN3 | 1.06 | 95.2 | 0 |
| ATP1B1 | 1.06 | 97.4 | 0 |
| LOX | 1.04 | 93.8 | 0 |
| CYP3A5 | 1.04 | 94.7 | 0 |
| GNG11 | 1.03 | 90.6 | 0 |
| C1R | 1.03 | 95.9 | 0 |
| ERGIC1 | 1.02 | 97.1 | 0 |
| TPM1 | 1.02 | 96.5 | 0 |
| YBX3 | 1 | 97.9 | 0 |
| RTEL1-TNFRSF6B | 1 | 89.7 | 0 |
| HPN | 1 | 93 | 0 |
| CISD1 | 1 | 95.2 | 0 |
| PLEKHA5 | 0.99 | 97.1 | 0 |
| LINC02532 | 0.99 | 94.1 | 0 |
| TCEA3 | 0.99 | 93.8 | 0 |
| AK4 | 0.97 | 96.4 | 0 |
| ITGA3 | 0.97 | 92.6 | 0 |
| CDH6 | 0.97 | 94.2 | 0 |
| SPARC | 0.97 | 92.1 | 0 |
| TM4SF18 | 0.96 | 92.3 | 0 |
| GADD45A | 0.96 | 95.8 | 0 |

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|------------|------|------|---|
| S100A16 | 0.95 | 92.3 | 0 |
| ANPEP | 0.93 | 93.6 | 0 |
| AGRN | 0.9 | 93.8 | 0 |
| RNLS | 0.9 | 91.8 | 0 |
| HP | 0.89 | 69.2 | 0 |
| BACE2 | 0.89 | 93.8 | 0 |
| PFN2 | 0.88 | 91.1 | 0 |
| MGLL | 0.87 | 94.5 | 0 |
| CNN3 | 0.87 | 93 | 0 |
| COL6A2 | 0.87 | 92.6 | 0 |
| EPS8L2 | 0.87 | 97.3 | 0 |
| CES2 | 0.86 | 94.1 | 0 |
| SNCG | 0.85 | 85.5 | 0 |
| MAOA | 0.84 | 92.9 | 0 |
| SLC3A1 | 0.84 | 89.7 | 0 |
| CRACR2B | 0.84 | 94.2 | 0 |
| NRN1 | 0.84 | 90.3 | 0 |
| ABI3BP | 0.82 | 88.5 | 0 |
| CRNDE | 0.81 | 93 | 0 |
| ACSM2A | 0.81 | 85.6 | 0 |
| RND3 | 0.8 | 87.3 | 0 |
| GSTA1 | 0.8 | 81.2 | 0 |
| HSF4 | 0.78 | 94.7 | 0 |
| GGT1 | 0.78 | 93.9 | 0 |
| PDLIM4 | 0.78 | 91.7 | 0 |
| C16orf74 | 0.78 | 93.6 | 0 |
| CA9 | 0.78 | 93.5 | 0 |
| PPP1R3C | 0.78 | 91.2 | 0 |
| MT1A | 0.76 | 83.3 | 0 |
| SPINK13 | 0.76 | 91.4 | 0 |
| ITIH5 | 0.75 | 91.7 | 0 |
| AOC1 | 0.75 | 89.1 | 0 |
| GPX8 | 0.75 | 92.9 | 0 |
| CRIP2 | 0.74 | 90.3 | 0 |
| GAL3ST1 | 0.72 | 90.8 | 0 |
| P4HA2 | 0.71 | 93 | 0 |
| TMEM45A | 0.71 | 89.8 | 0 |
| AC245595.1 | 0.71 | 93.9 | 0 |
| CDHR5 | 0.7 | 87.6 | 0 |
| IL20RB | 0.7 | 93 | 0 |
| HSD3B7 | 0.69 | 91.7 | 0 |
| MT1G | 0.69 | 84.5 | 0 |
| SERINC2 | 0.69 | 91.5 | 0 |
| SNHG18 | 0.68 | 94.1 | 0 |
| MAP1B | 0.67 | 87.6 | 0 |
| ENPP3 | 0.66 | 87 | 0 |
| WWTR1 | 0.66 | 92.6 | 0 |
| OSMR | 0.66 | 93 | 0 |

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|----------|-------|------|-----------|
| PTPRK | 0.66 | 91.7 | 0 |
| MVK | 0.65 | 92.7 | 0 |
| ENPEP | 0.65 | 91.1 | 0 |
| ITGB8 | 0.65 | 88.9 | 0 |
| KCNJ15 | 0.64 | 90.3 | 0 |
| LAMA4 | 0.64 | 90.6 | 0 |
| SERPINF2 | 0.64 | 88.2 | 0 |
| REPS2 | 0.64 | 90.6 | 0 |
| CFB | 0.63 | 89.2 | 0 |
| RBPMS | 0.63 | 93.2 | 0 |
| EGFR | 0.62 | 91.2 | 0 |
| ELF3 | 0.62 | 86.7 | 0 |
| BCAM | 0.62 | 89.4 | 0 |
| ARHGAP29 | 0.62 | 90.5 | 0 |
| CMBL | 0.62 | 90.6 | 0 |
| TSPAN12 | 0.61 | 88 | 0 |
| REG1A | 0.61 | 76.5 | 0 |
| ACSM2B | 0.61 | 83.5 | 0 |
| GSTA2 | 0.6 | 79.7 | 0 |
| UBD | 0.6 | 82.1 | 0 |
| GALNT14 | 0.59 | 90.9 | 0 |
| BICDL2 | 0.59 | 89.4 | 0 |
| LAMA5 | 0.59 | 88.5 | 0 |
| CDK18 | 0.59 | 92.4 | 0 |
| USH1C | 0.59 | 89.5 | 0 |
| IGKV3-11 | -1.17 | 43.8 | 0 |
| TCEAL9 | 0.71 | 94.8 | 2.64E-307 |
| COL18A1 | 0.7 | 94.1 | 3.52E-307 |
| TCN2 | 0.71 | 91.1 | 4.31E-305 |
| SERPING1 | 0.99 | 97 | 3.93E-302 |
| ASPH | 0.98 | 95.2 | 9.29E-302 |
| MIF | 1.64 | 98.8 | 3.91E-300 |
| PERP | 0.93 | 93.6 | 9.73E-296 |
| C12orf75 | 1.47 | 95.8 | 1.01E-295 |
| PAM | 0.83 | 95.2 | 1.13E-295 |
| GAPDH | 1.87 | 100 | 8.05E-295 |
| CRYZ | 0.94 | 95.2 | 2.37E-294 |
| CYSTM1 | 1.21 | 95.3 | 6.38E-293 |
| PON2 | 1.08 | 95.2 | 1.14E-292 |
| HCFC1R1 | 1.1 | 97 | 3.46E-289 |
| APP | 1.01 | 96.2 | 1.21E-286 |
| HMGN3 | 1.3 | 99.4 | 1.42E-281 |
| ANO6 | 0.75 | 95.5 | 3.56E-281 |
| NET1 | 0.69 | 93.8 | 1.54E-280 |
| IGFBP4 | 1.1 | 92.3 | 1.77E-280 |
| SAA2 | 2.27 | 86.8 | 1.82E-280 |
| SPP1 | 1.24 | 99.1 | 7.68E-280 |
| CD151 | 1.28 | 97.6 | 1.13E-279 |

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| OCIAD2 | 1.2 | 96.5 | 9.65E-279 |
| SAA1 | 3.29 | 93.2 | 3.21E-273 |
| ADM | 1.09 | 95.8 | 1.88E-270 |
| IGFBP6 | 0.73 | 84.4 | 4.97E-270 |
| LDHA | 1.66 | 98.6 | 6.70E-270 |
| SMPDL3A | 0.64 | 92.9 | 1.53E-269 |
| TIMP1 | 1.26 | 97.3 | 7.54E-268 |
| S100A10 | 1.58 | 98.8 | 5.92E-267 |
| PHLDA2 | 0.7 | 87.7 | 7.67E-267 |
| BIRC3 | 1.13 | 96.4 | 9.13E-267 |
| RAB13 | 0.6 | 91.7 | 1.36E-266 |
| TMEM176A | 1.62 | 96.1 | 6.13E-265 |
| NIT2 | 0.77 | 96.5 | 4.37E-264 |
| SYTL2 | 0.65 | 91.2 | 1.42E-263 |
| FN1 | 1.54 | 92.7 | 3.02E-262 |
| GRAMD2B | 0.61 | 94.8 | 6.04E-262 |
| MDK | 0.63 | 81.4 | 1.55E-261 |
| RTL8A | 0.63 | 95.5 | 4.93E-257 |
| AMACR | 0.63 | 87.4 | 2.25E-255 |
| TBCA | 0.97 | 97.9 | 2.51E-255 |
| CKB | 0.69 | 91.8 | 1.19E-254 |
| LTBR | 0.63 | 95.6 | 1.79E-254 |
| NDUFC1 | 0.94 | 97.4 | 1.90E-251 |
| SOD2 | 1.37 | 99.2 | 2.31E-249 |
| UBR4 | 0.67 | 93.9 | 4.19E-249 |
| P4HB | 1.25 | 97.7 | 3.15E-246 |
| SELENOM | 1.03 | 93.6 | 3.90E-245 |
| IFITM3 | 1.11 | 98.5 | 7.19E-245 |
| UQCRQ | 1.06 | 97.9 | 2.11E-244 |
| SEC61G | 1.29 | 97.1 | 3.53E-243 |
| KHK | 0.62 | 87.6 | 3.95E-243 |
| RTL8C | 0.72 | 96.8 | 4.01E-243 |
| AIG1 | 0.64 | 95.2 | 6.99E-243 |
| PGM1 | 0.66 | 93.2 | 1.52E-242 |
| C11orf54 | 0.65 | 93.2 | 1.03E-238 |
| PCBD1 | 0.87 | 95 | 2.12E-238 |
| NME3 | 0.76 | 98.2 | 2.27E-237 |
| BET1 | 0.62 | 94.5 | 8.54E-237 |
| S100A6 | 1.39 | 99.5 | 1.36E-236 |
| GAMT | 0.63 | 90.6 | 1.72E-233 |
| MT1X | 2.15 | 95.6 | 2.74E-233 |
| FHL1 | 0.73 | 85.2 | 4.16E-233 |
| HEBP1 | 0.85 | 93.6 | 1.31E-231 |
| MT-ND4 | 1.59 | 98.9 | 2.11E-231 |
| GCSH | 0.59 | 91.5 | 3.74E-231 |
| MYC | 0.64 | 95.6 | 1.23E-230 |
| MRPL17 | 0.62 | 94.2 | 1.46E-230 |
| TPI1 | 1.31 | 99.1 | 1.38E-228 |

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| PKM | 1.15 | 98.6 | 1.50E-227 |
| PGGHG | 0.73 | 90.5 | 7.85E-227 |
| MT1F | 0.93 | 91.2 | 9.15E-226 |
| TMEM205 | 0.7 | 95.5 | 1.00E-224 |
| ALDH1A1 | 0.6 | 90 | 1.96E-223 |
| TXN | 0.91 | 97.4 | 5.83E-223 |
| SPINT2 | 1.06 | 95.2 | 1.16E-219 |
| RCN1 | 0.77 | 91.7 | 4.72E-218 |
| MT2A | 1.93 | 98.5 | 8.52E-218 |
| RPS27L | 0.84 | 98.3 | 2.27E-217 |
| CBR1 | 0.72 | 93.9 | 7.18E-216 |
| SHMT2 | 0.69 | 94.2 | 1.35E-215 |
| FAM162A | 0.7 | 96.1 | 8.39E-213 |
| TMEM243 | 0.73 | 97.4 | 1.40E-211 |
| HINT1 | 1.32 | 98 | 2.81E-208 |
| ENO1 | 1 | 98.2 | 9.07E-208 |
| ALDOA | 1.18 | 99.1 | 9.63E-206 |
| MZT2A | 0.7 | 96.5 | 8.98E-204 |
| MZT2B | 0.7 | 96.4 | 5.29E-202 |
| ADI1 | 0.85 | 94.1 | 1.35E-201 |
| LGALS3BP | 0.8 | 95.3 | 6.15E-201 |
| TIPARP | 0.75 | 96.1 | 6.63E-200 |
| NME4 | 0.7 | 93.8 | 7.02E-197 |
| PRDX6 | 0.83 | 96.8 | 1.37E-194 |
| HSP90B1 | 0.89 | 98 | 3.18E-194 |
| METTL26 | 0.64 | 97.3 | 3.98E-194 |
| GLRX | 0.86 | 97.1 | 2.41E-193 |
| SLPI | 0.74 | 88.2 | 1.57E-191 |
| MT-CO2 | 1.35 | 99.4 | 2.73E-191 |
| ARL1 | 0.6 | 92.7 | 3.61E-191 |
| P4HA1 | 0.59 | 94.5 | 5.91E-190 |
| GSTP1 | -1.36 | 73 | 1.28E-185 |
| PDCD5 | 0.61 | 94.1 | 4.38E-184 |
| MLEC | 0.63 | 94.7 | 8.20E-184 |
| CD63 | 0.87 | 98.2 | 5.33E-182 |
| COX7C | 0.63 | 98.8 | 4.41E-180 |
| PEBP1 | 0.83 | 97.1 | 1.58E-179 |
| DSTN | 0.8 | 94.5 | 1.08E-177 |
| MT-ND2 | 1.35 | 99.1 | 3.50E-177 |
| VDAC1 | 0.86 | 96.7 | 3.81E-177 |
| CALU | 0.6 | 92.1 | 1.44E-176 |
| ARPC1A | 0.74 | 92.1 | 6.00E-174 |
| ATP1A1 | 0.67 | 98.2 | 1.27E-169 |
| ANXA2 | 0.97 | 96.4 | 4.22E-167 |
| MGST3 | 0.78 | 95.2 | 5.07E-162 |
| PSMB5 | 0.59 | 92.3 | 1.86E-158 |
| MT-ND4L | 1.31 | 99.2 | 9.04E-157 |
| DDT | 0.71 | 94.8 | 1.34E-153 |

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| KDELR2 | 0.61 | 95.8 | 1.29E-152 |
| DDIT4 | 0.78 | 99.7 | 1.54E-151 |
| CD69 | -2.09 | 71.2 | 3.20E-150 |
| HLA-DPB1 | -2.51 | 79.4 | 4.20E-148 |
| DUSP23 | 0.59 | 95.5 | 5.28E-146 |
| VIM | 0.9 | 99.4 | 9.91E-145 |
| TGFBI | 0.77 | 95.3 | 5.83E-144 |
| LAMTOR5 | 0.59 | 94.8 | 1.72E-140 |
| TMEM176B | 0.82 | 95.5 | 2.92E-138 |
| HLA-DPA1 | -2.52 | 79.5 | 1.35E-134 |
| C12orf57 | 0.61 | 95.9 | 3.20E-132 |
| MT1E | 1.13 | 80 | 3.23E-130 |
| CANX | 0.61 | 96.5 | 4.16E-129 |
| PDK4 | 0.96 | 98.2 | 3.06E-123 |
| NME2 | 0.7 | 96.8 | 2.98E-122 |
| POLR2L | 0.65 | 96.5 | 3.41E-121 |
| CD74 | -2.01 | 98 | 1.18E-120 |
| SERPINA1 | 1.43 | 96.7 | 9.30E-117 |
| HLA-DRB1 | -2.64 | 86.7 | 3.39E-113 |
| PGAM1 | 0.71 | 95.9 | 6.69E-109 |
| RPLP0 | 0.83 | 98.8 | 8.71E-108 |
| HLA-DRA | -2.82 | 83.9 | 1.26E-103 |
| SKP1 | 0.61 | 96.8 | 9.81E-100 |
| TAGLN2 | 0.63 | 97.1 | 5.34E-97 |
| IGKC | -0.68 | 67.9 | 1.07E-92 |
| HLA-DRB5 | -2.18 | 83.8 | 3.33E-88 |
| DUSP2 | -1.58 | 78.2 | 5.13E-87 |
| TMED2 | 0.6 | 93.3 | 2.09E-85 |
| LAPTM4A | 0.62 | 94.2 | 7.28E-84 |
| LDHB | 0.59 | 96.2 | 1.39E-81 |
| CCL4 | -2.45 | 71.1 | 2.72E-74 |
| NR4A2 | -1.24 | 72.6 | 4.90E-63 |
| HMGB2 | -0.88 | 88 | 6.25E-50 |
| GPR34 | -0.99 | 70.6 | 1.87E-44 |
| C1QA | -2.31 | 73.5 | 1.48E-43 |
| CTSW | -1.63 | 70.5 | 3.64E-43 |
| LYZ | -2.39 | 75.2 | 4.38E-43 |
| FCGR3A | -0.88 | 70.2 | 7.96E-43 |
| GPR183 | -1.05 | 67.7 | 6.85E-41 |
| LTB | -1.42 | 70.5 | 1.35E-40 |
| SLC2A3 | -0.92 | 79.8 | 6.38E-40 |
| ZNF331 | -1.21 | 76.2 | 7.74E-40 |
| CD7 | -1.7 | 71.2 | 3.50E-39 |
| CD83 | -1.18 | 71.2 | 7.05E-39 |
| PLEK | -0.68 | 71.1 | 3.15E-36 |
| FGL2 | -0.84 | 70.9 | 1.61E-35 |
| HSPA6 | -1.37 | 87.6 | 5.65E-35 |
| BCL2A1 | -1.2 | 70.9 | 2.65E-34 |

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| MS4A6A | -1.64 | 72.1 | 3.42E-34 |
| MS4A7 | -1.3 | 72.3 | 9.71E-34 |
| TREM2 | -1.24 | 71.2 | 5.11E-33 |
| C1QC | -2.44 | 73.9 | 9.18E-33 |
| KLRC1 | -0.9 | 21.2 | 1.01E-32 |
| C1QB | -2.45 | 74.7 | 1.52E-31 |
| NKG7 | -2.11 | 69.7 | 4.72E-31 |
| APOE | -2.91 | 79.2 | 1.78E-29 |
| GZMB | -0.66 | 67.3 | 6.86E-28 |
| CCL5 | -2.3 | 73.3 | 9.99E-28 |
| CTSB | -1.16 | 92 | 6.16E-27 |
| EIF4A3 | -0.79 | 85.2 | 8.16E-27 |
| KLRB1 | -1.68 | 69.2 | 3.66E-26 |
| APOC1 | -2.49 | 77.3 | 7.48E-25 |
| LILRB4 | -0.97 | 71.1 | 1.82E-23 |
| CST7 | -1.45 | 70.2 | 6.99E-21 |
| KLF2 | -0.89 | 71.1 | 2.79E-20 |
| ZFAND2A | -0.94 | 87.6 | 6.77E-19 |
| IGHG1 | -0.72 | 37.7 | 2.50E-18 |
| S100A8 | -0.86 | 71.4 | 3.48E-18 |
| RGCC | -1.22 | 69.5 | 7.99E-18 |
| MNDA | -0.77 | 71.2 | 1.28E-17 |
| CCL3 | -1.75 | 69.8 | 5.07E-17 |
| CYBB | -0.83 | 70.9 | 6.40E-17 |
| TRDC | -0.63 | 30.6 | 2.95E-16 |
| A2M | -0.87 | 70.6 | 3.92E-16 |
| OLR1 | -1.02 | 70.2 | 6.00E-16 |
| STMN1 | -0.85 | 82 | 2.92E-15 |
| KLRD1 | -0.79 | 67.3 | 5.16E-15 |
| FCGR2B | -0.73 | 70.8 | 9.32E-14 |
| GZMA | -1.46 | 68.9 | 1.46E-13 |
| GZMH | -0.63 | 67 | 3.40E-13 |
| MS4A4A | -0.85 | 70.9 | 8.40E-13 |
| IFITM1 | -1.09 | 90.9 | 1.03E-12 |
| CKS2 | -0.8 | 82.9 | 1.40E-12 |
| MAFB | -1.33 | 76.1 | 1.42E-12 |
| CD163 | -0.78 | 65.2 | 1.52E-12 |
| CD247 | -0.95 | 69.1 | 2.50E-12 |
| CRIP1 | -0.69 | 82.7 | 3.90E-12 |
| XCL1 | -1.09 | 68.6 | 7.16E-12 |
| SLC1A3 | -0.94 | 71.7 | 1.26E-10 |
| SGK1 | -0.98 | 90.3 | 1.58E-10 |
| SELENOP | -0.97 | 77 | 1.81E-10 |
| IL2RB | -0.71 | 49.1 | 1.90E-10 |
| VSIG4 | -0.72 | 70.6 | 4.95E-10 |
| CCL4L2 | -1.87 | 70.3 | 1.17E-09 |
| CD2 | -1.11 | 70 | 1.68E-09 |
| CD3D | -1.13 | 70 | 5.07E-09 |

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| IFNG | -0.8 | 66.8 | 5.58E-09 |
| PLD4 | -0.82 | 71.1 | 1.16E-08 |
| IGSF6 | -0.61 | 70.9 | 2.39E-08 |
| BCAS2 | -0.6 | 87.4 | 3.19E-08 |
| IER3 | -0.85 | 87.9 | 3.22E-08 |
| ISG15 | -0.64 | 82.1 | 5.26E-08 |
| TNF | -0.93 | 71.7 | 1.69E-07 |
| KRT86 | -0.62 | 67.6 | 4.97E-07 |
| PRF1 | -0.89 | 68.2 | 3.26E-06 |
| ZFAND5 | -0.63 | 95.3 | 4.19E-06 |
| CD14 | -1.22 | 75.2 | 9.97E-06 |
| TM4SF18 | 0.91 | 81.9 | 0 |
| MUC3A | 0.76 | 74.6 | 0 |
| GPX8 | 0.63 | 77.4 | 3.22E-294 |
| RBPMS | 0.61 | 80.8 | 2.29E-282 |
| CLTRN | 1.04 | 78 | 1.63E-273 |
| LOX | 0.77 | 79.1 | 1.79E-271 |
| CA12 | 1.1 | 83.6 | 2.14E-269 |
| CTGF | 0.63 | 72.9 | 1.09E-268 |
| RNF128 | 0.6 | 75.1 | 4.80E-244 |
| USH1C | 0.63 | 80.2 | 1.18E-226 |
| REG1A | 0.96 | 77.4 | 1.00E-219 |
| GSTA2 | 1.16 | 78 | 1.45E-219 |
| FKBP10 | 0.85 | 76.8 | 2.44E-211 |
| S100A16 | 1 | 84.2 | 4.26E-208 |
| C1S | 1.32 | 87 | 1.42E-204 |
| SLC16A4 | 0.66 | 79.1 | 1.34E-197 |
| FABP6 | 0.97 | 84.7 | 1.64E-194 |
| ASS1 | 0.75 | 77.4 | 1.61E-190 |
| TFPI2 | 0.87 | 78 | 1.66E-185 |
| TMEM98 | 0.59 | 74.6 | 2.01E-185 |
| CLDN4 | 0.6 | 74.6 | 1.81E-181 |
| SNCG | 0.87 | 78.5 | 3.08E-176 |
| HSPB8 | 1.8 | 92.7 | 1.63E-174 |
| NRN1 | 0.74 | 84.2 | 2.63E-171 |
| PDZK1IP1 | 2.34 | 94.9 | 2.32E-168 |
| TMEM45A | 0.78 | 84.2 | 1.81E-163 |
| FABP7 | 1.96 | 89.8 | 6.59E-159 |
| LTF | 1.41 | 78.5 | 8.52E-152 |
| TM4SF1 | 0.94 | 77.4 | 6.40E-149 |
| CXCL14 | 2.31 | 93.2 | 7.00E-148 |
| CALD1 | 0.91 | 80.8 | 6.22E-146 |
| CYR61 | 0.7 | 73.4 | 2.41E-145 |
| AOC1 | 0.79 | 79.7 | 2.15E-140 |
| UGT2B7 | 0.74 | 81.9 | 5.87E-140 |
| TFPI | 1.3 | 85.9 | 1.51E-135 |
| RBP5 | 1.16 | 84.2 | 3.31E-135 |
| MGST1 | 2.3 | 97.7 | 9.27E-132 |

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| HP | 0.63 | 69.5 | 7.40E-131 |
| COL1A2 | 0.78 | 74.6 | 2.25E-130 |
| C19orf33 | 1.81 | 92.1 | 2.30E-130 |
| MT3 | 1.28 | 88.1 | 3.78E-129 |
| CAV2 | 0.96 | 84.2 | 4.92E-126 |
| RARRES2 | 2.44 | 97.7 | 2.66E-123 |
| CP | 0.72 | 78.5 | 3.14E-123 |
| NDUFA4L2 | 2.91 | 98.9 | 4.97E-123 |
| CD24 | 2.7 | 97.7 | 7.24E-122 |
| NNMT | 2.53 | 98.9 | 2.24E-121 |
| CLU | 2.35 | 96 | 1.71E-120 |
| S100A1 | 1.79 | 89.3 | 1.50E-119 |
| TSPAN1 | 0.71 | 76.8 | 8.65E-118 |
| BNIP3 | 2.46 | 98.3 | 1.02E-112 |
| CRYAB | 2.72 | 97.2 | 1.07E-111 |
| UBD | 0.85 | 80.2 | 1.30E-111 |
| PLOD2 | 1.27 | 88.1 | 2.89E-111 |
| NPTX2 | 0.76 | 78 | 6.76E-109 |
| CAV1 | 1.59 | 91 | 2.61E-106 |
| KRT19 | 1.74 | 93.8 | 2.69E-106 |
| GAPDH | 2 | 100 | 3.75E-104 |
| KRT8 | 1.66 | 94.9 | 2.02E-103 |
| DEFB1 | 1.27 | 82.5 | 2.31E-103 |
| CRNDE | 0.87 | 84.7 | 1.23E-102 |
| ADIRF | 2.08 | 90.4 | 2.16E-102 |
| CA9 | 0.6 | 80.2 | 1.64E-101 |
| IGFBP5 | 0.8 | 75.7 | 6.58E-101 |
| CFB | 0.94 | 80.8 | 6.74E-100 |
| RARRES1 | 0.59 | 76.3 | 2.20E-98 |
| MIF | 1.9 | 100 | 4.23E-98 |
| SFRP2 | 0.88 | 71.2 | 3.26E-96 |
| AKR1C3 | 1.57 | 88.7 | 2.95E-95 |
| BCAM | 0.66 | 75.7 | 1.55E-92 |
| GNG11 | 0.7 | 79.7 | 1.56E-92 |
| FXVD2 | 2.51 | 94.4 | 6.69E-92 |
| ANPEP | 0.85 | 83.1 | 1.53E-91 |
| LDHA | 1.89 | 98.9 | 2.59E-91 |
| PCSK1N | 0.62 | 77.4 | 2.97E-90 |
| WFDC2 | 1.47 | 83.1 | 1.43E-89 |
| SPARC | 1.33 | 80.8 | 5.19E-88 |
| GPX3 | 2.53 | 94.4 | 5.54E-88 |
| RPLP0 | 1.3 | 100 | 6.74E-88 |
| HINT1 | 1.76 | 99.4 | 3.68E-87 |
| EFNA1 | 0.63 | 75.1 | 5.55E-86 |
| UCHL1 | 1.33 | 88.7 | 8.96E-84 |
| KRT18 | 1.7 | 92.7 | 1.35E-82 |
| BEX3 | 1.66 | 92.7 | 5.06E-82 |
| RNLS | 1.29 | 85.9 | 1.54E-79 |

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| PDLIM1 | 1.47 | 88.1 | 2.49E-79 |
| TPI1 | 1.54 | 100 | 4.19E-78 |
| ANGPTL4 | 1.41 | 88.7 | 2.51E-77 |
| CCDC146 | 1.16 | 87 | 2.75E-77 |
| GSTA1 | 0.89 | 79.1 | 1.68E-76 |
| MMP7 | 1.09 | 72.9 | 7.66E-76 |
| ALDOA | 1.3 | 100 | 1.15E-75 |
| SAA2 | 2.3 | 80.8 | 4.83E-75 |
| FSTL1 | 0.66 | 68.4 | 1.60E-74 |
| PTGR1 | 0.79 | 83.1 | 1.36E-72 |
| VCAM1 | 0.77 | 85.3 | 2.21E-72 |
| MAOA | 0.73 | 80.8 | 7.91E-72 |
| PCBD1 | 1.44 | 92.7 | 4.06E-67 |
| IGFBP6 | 0.7 | 76.3 | 7.46E-66 |
| TNFRSF12A | 1.35 | 88.1 | 7.55E-66 |
| C1R | 0.72 | 80.2 | 1.09E-65 |
| C12orf75 | 1.84 | 93.8 | 3.62E-65 |
| IFITM3 | 1.3 | 98.3 | 3.18E-64 |
| KRT7 | 0.67 | 71.2 | 3.26E-64 |
| PGRMC1 | 1.58 | 92.7 | 8.37E-64 |
| S100A10 | 1.53 | 100 | 3.91E-63 |
| CYB5A | 1.68 | 94.4 | 3.47E-62 |
| HSD3B7 | 0.7 | 80.2 | 7.15E-62 |
| IGFBP7 | 1.74 | 87.6 | 7.94E-60 |
| UQCRCQ | 1.61 | 98.9 | 1.35E-58 |
| S100A6 | 1.11 | 98.9 | 3.11E-58 |
| RHEX | 0.65 | 77.4 | 4.87E-58 |
| IGFBP3 | 1.92 | 85.3 | 6.06E-58 |
| NOL3 | 0.81 | 83.1 | 6.06E-58 |
| AMACR | 0.65 | 81.9 | 1.65E-57 |
| PFKP | 1.32 | 87 | 6.92E-56 |
| NQO1 | 0.59 | 78 | 4.17E-55 |
| RPL41 | 0.78 | 100 | 7.23E-55 |
| SPP1 | 1.25 | 96 | 9.68E-55 |
| ANXA4 | 1.8 | 93.8 | 1.16E-53 |
| RACK1 | 0.82 | 99.4 | 3.20E-53 |
| OCIAD2 | 1.46 | 93.2 | 5.46E-53 |
| EGLN3 | 0.86 | 84.7 | 2.63E-52 |
| TMEM176A | 1.8 | 92.7 | 2.78E-52 |
| VIM | 0.95 | 99.4 | 3.73E-52 |
| P4HA2 | 0.6 | 79.1 | 2.27E-51 |
| MT-CO2 | -0.9 | 84.2 | 6.81E-51 |
| CAVIN3 | 0.7 | 81.9 | 9.48E-51 |
| RNASE4 | 0.61 | 79.7 | 2.33E-50 |
| PRDX6 | 1.3 | 96.6 | 7.25E-50 |
| ENO2 | 0.87 | 82.5 | 4.05E-49 |
| MT-ND4L | -0.71 | 83.6 | 1.46E-48 |
| NME2 | 1.07 | 96.6 | 1.85E-48 |

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| COX7C | 0.88 | 98.3 | 3.84E-47 |
| CNN3 | 0.86 | 85.3 | 2.46E-45 |
| MXRA7 | 0.66 | 78 | 8.27E-45 |
| GAMT | 0.74 | 84.7 | 2.83E-44 |
| SEC61G | 1.37 | 98.9 | 3.44E-44 |
| DEPP1 | 1.13 | 85.3 | 7.58E-44 |
| GSTP1 | -1.21 | 75.1 | 9.30E-44 |
| S100A13 | 1.32 | 89.8 | 1.81E-43 |
| SAA1 | 2.66 | 84.2 | 2.14E-43 |
| TIMP1 | 1.21 | 93.8 | 4.04E-43 |
| RPS27L | 1.08 | 95.5 | 4.69E-43 |
| CYSTM1 | 1.13 | 91.5 | 7.92E-43 |
| SPINT2 | 1.45 | 92.7 | 9.27E-43 |
| CISD1 | 0.99 | 86.4 | 4.79E-42 |
| PFN2 | 1.01 | 83.6 | 7.86E-42 |
| NPM1 | 0.98 | 97.7 | 1.59E-41 |
| PRDX1 | 1.09 | 98.9 | 2.15E-40 |
| RPS23 | 0.61 | 100 | 7.03E-40 |
| ADI1 | 1.32 | 91.5 | 2.06E-39 |
| LAPTM4A | 1.23 | 94.9 | 7.25E-39 |
| HLA-DPB1 | -2.15 | 76.8 | 7.41E-39 |
| IGHG1 | -0.64 | 55.4 | 1.69E-38 |
| HLA-DPA1 | -2.13 | 78 | 2.43E-38 |
| VDAC1 | 1.43 | 94.4 | 4.22E-38 |
| SERPING1 | 1.1 | 87 | 2.72E-37 |
| RIDA | 0.6 | 79.7 | 3.17E-37 |
| HSPA6 | -2.1 | 78.5 | 5.97E-37 |
| CD69 | -1.47 | 73.4 | 2.88E-35 |
| FN1 | 0.86 | 84.7 | 3.27E-35 |
| CRACR2B | 0.62 | 81.4 | 7.62E-35 |
| TPM1 | 1.09 | 86.4 | 5.01E-34 |
| RAB13 | 0.91 | 81.9 | 5.29E-34 |
| ENO1 | 1.02 | 96.6 | 8.02E-34 |
| IL1R2 | 0.7 | 74 | 8.79E-34 |
| SPAG4 | 0.68 | 80.2 | 1.00E-33 |
| TCEAL9 | 0.68 | 83.6 | 2.08E-33 |
| IGFBP4 | 1.21 | 84.2 | 5.90E-33 |
| SLPI | 1.17 | 77.4 | 3.27E-32 |
| BET1 | 0.74 | 83.1 | 3.85E-32 |
| P4HB | 1.14 | 94.9 | 6.23E-32 |
| TGFBI | 0.98 | 88.1 | 1.50E-31 |
| SLC22A18 | 0.74 | 80.8 | 2.29E-31 |
| MYL6B | 0.62 | 80.8 | 6.30E-31 |
| LYZ | -1.7 | 74.6 | 1.22E-30 |
| HLA-DRA | -2.2 | 81.4 | 1.63E-30 |
| TAGLN2 | 0.73 | 96 | 3.64E-30 |
| CD151 | 1.21 | 89.3 | 4.66E-30 |
| DUSP2 | -1.49 | 75.1 | 5.13E-30 |

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| NUPR1 | 0.68 | 84.7 | 7.25E-30 |
| CKB | 0.99 | 83.1 | 8.64E-30 |
| C1QA | -1.89 | 74 | 9.12E-30 |
| CALU | 0.92 | 82.5 | 2.56E-29 |
| SMPDL3A | 0.7 | 84.2 | 3.24E-29 |
| IFT22 | 0.61 | 78.5 | 5.56E-29 |
| SERINC2 | 0.64 | 81.9 | 1.17E-28 |
| PKM | 0.88 | 95.5 | 1.53E-27 |
| SOD2 | 1.12 | 94.9 | 2.32E-27 |
| MT1E | 1.81 | 81.4 | 1.18E-25 |
| ANXA2 | 1.09 | 94.4 | 2.04E-25 |
| SERPINA1 | 1.38 | 93.8 | 4.45E-25 |
| C1QB | -2.07 | 75.1 | 1.45E-24 |
| NDRG1 | 0.66 | 83.1 | 1.62E-24 |
| CD74 | -1.57 | 97.2 | 2.22E-24 |
| TBCA | 1.04 | 95.5 | 7.61E-24 |
| MS4A7 | -1.14 | 74 | 1.15E-23 |
| HLA-DRB1 | -1.91 | 83.1 | 1.26E-23 |
| DSTN | 0.95 | 89.3 | 1.26E-23 |
| TMED2 | 1.13 | 93.8 | 2.07E-23 |
| HMGB2 | -0.87 | 78.5 | 2.56E-23 |
| RCN1 | 0.87 | 84.2 | 4.67E-23 |
| MT2A | 1.11 | 93.8 | 7.38E-23 |
| PLIN2 | 0.98 | 92.1 | 7.82E-23 |
| GADD45B | -1.13 | 85.9 | 1.05E-22 |
| MAFB | -1.34 | 74 | 1.68E-22 |
| NME1 | 0.67 | 81.9 | 1.83E-22 |
| PEBP1 | 1.01 | 96 | 2.08E-22 |
| HCFC1R1 | 0.92 | 88.1 | 4.53E-22 |
| PON2 | 1 | 86.4 | 6.75E-22 |
| LDHB | 0.95 | 96 | 7.49E-22 |
| RRAD | 0.9 | 79.7 | 1.50E-21 |
| TMEM176B | 1 | 90.4 | 1.55E-21 |
| POLR2L | 0.89 | 94.4 | 1.84E-21 |
| LGALS3BP | 0.97 | 84.7 | 2.39E-21 |
| CCL4 | -2.08 | 75.1 | 3.55E-21 |
| AP1S1 | 0.59 | 84.7 | 9.62E-21 |
| TMEM9 | 0.6 | 80.2 | 3.92E-20 |
| SELENOM | 0.99 | 85.9 | 5.16E-20 |
| ZFAS1 | 0.88 | 93.8 | 7.74E-20 |
| HLA-DRB5 | -1.55 | 79.7 | 1.77E-19 |
| NDUFC1 | 0.98 | 89.8 | 1.89E-19 |
| MS4A6A | -1.55 | 74 | 2.14E-19 |
| BAG3 | -1.05 | 79.7 | 2.44E-19 |
| HMGN3 | 0.93 | 93.8 | 2.61E-19 |
| ARPC1A | 0.85 | 85.9 | 3.96E-19 |
| GPR34 | -0.95 | 74 | 4.32E-19 |
| MZT2A | 0.76 | 89.3 | 5.18E-19 |

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| CBR1 | 0.6 | 84.7 | 1.76E-18 |
| ALDH1A1 | 0.79 | 82.5 | 3.14E-18 |
| PGAM1 | 0.91 | 93.8 | 7.83E-18 |
| DDT | 0.9 | 89.3 | 2.48E-17 |
| ATP1B1 | 0.85 | 85.3 | 3.00E-17 |
| MPC2 | 0.98 | 90.4 | 3.75E-17 |
| PLEK | -0.65 | 72.3 | 4.45E-17 |
| SGK1 | -1.05 | 79.7 | 1.01E-16 |
| FHL1 | 0.78 | 78 | 1.03E-16 |
| NDUFAB1 | 0.98 | 88.1 | 1.19E-16 |
| HMOX1 | -0.86 | 77.4 | 1.60E-16 |
| PDCD6 | 0.88 | 88.7 | 1.75E-16 |
| PGK1 | 0.75 | 93.8 | 2.03E-16 |
| PERP | 0.7 | 83.6 | 2.46E-16 |
| SLC2A3 | -0.86 | 76.8 | 2.96E-16 |
| NR4A2 | -1.08 | 74 | 8.20E-16 |
| PDCD5 | 0.79 | 84.7 | 1.31E-15 |
| METTTL26 | 1.02 | 87.6 | 1.31E-15 |
| TXNDC17 | 0.82 | 86.4 | 2.41E-15 |
| CD63 | 0.68 | 96.6 | 2.72E-15 |
| HEBP1 | 0.68 | 83.1 | 4.09E-15 |
| APOE | -2.47 | 78 | 6.08E-15 |
| C1QC | -2.14 | 74.6 | 6.41E-15 |
| RHOC | 0.77 | 91.5 | 1.28E-14 |
| PLVAP | 0.75 | 52 | 3.41E-14 |
| NHP2 | 0.91 | 88.7 | 6.47E-14 |
| YBX3 | 0.67 | 83.1 | 7.96E-14 |
| CCL5 | -2.02 | 73.4 | 2.99E-13 |
| KHK | 0.84 | 81.9 | 4.26E-13 |
| TMEM243 | 0.75 | 87.6 | 4.32E-13 |
| HSP90B1 | 0.73 | 91.5 | 1.51E-12 |
| DNAJB9 | 0.74 | 83.6 | 1.74E-12 |
| RAN | 0.92 | 94.9 | 2.49E-12 |
| ISG15 | -0.68 | 75.1 | 3.30E-12 |
| AC245595.1 | 0.67 | 82.5 | 4.20E-12 |
| ERRFI1 | 0.8 | 84.2 | 4.65E-12 |
| GLRX | 0.87 | 91.5 | 5.20E-12 |
| CTSW | -1.42 | 74 | 5.65E-12 |
| CYB5R3 | 0.81 | 86.4 | 5.90E-12 |
| ZNF331 | -1.09 | 74.6 | 9.11E-12 |
| GPR183 | -0.95 | 68.4 | 1.10E-11 |
| LAMTOR5 | 0.71 | 89.3 | 1.11E-11 |
| ECHS1 | 0.6 | 87 | 1.25E-11 |
| MGST3 | 0.92 | 87 | 1.61E-11 |
| IER3 | -0.77 | 79.1 | 1.86E-11 |
| LILRB4 | -0.95 | 74.6 | 2.48E-11 |
| MNDA | -0.74 | 73.4 | 2.89E-11 |
| RHOB | -0.96 | 86.4 | 3.51E-11 |

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| NUCB2 | 0.62 | 79.1 | 3.56E-11 |
| PAM | 0.74 | 81.9 | 4.57E-11 |
| MRPS24 | 0.73 | 86.4 | 7.33E-11 |
| NME4 | 0.72 | 84.7 | 8.53E-11 |
| CD7 | -1.67 | 74.6 | 9.56E-11 |
| FCGR3A | -0.86 | 71.8 | 1.39E-10 |
| FGL2 | -0.75 | 74 | 2.01E-10 |
| CRYZ | 0.72 | 85.3 | 2.48E-10 |
| RTL8A | 0.66 | 80.2 | 3.10E-10 |
| KLRB1 | -1.47 | 73.4 | 4.97E-10 |
| CXCL10 | -0.68 | 67.8 | 9.35E-10 |
| EIF4A3 | -0.65 | 80.8 | 9.49E-10 |
| ZFAND5 | -0.6 | 80.8 | 1.36E-09 |
| AP3S1 | 0.59 | 86.4 | 1.66E-09 |
| CTSB | -0.94 | 83.1 | 2.49E-09 |
| MT1X | 1.07 | 85.3 | 2.49E-09 |
| SLC1A3 | -0.96 | 74 | 2.85E-09 |
| KDELR2 | 0.79 | 88.7 | 3.78E-09 |
| TUBA1C | 0.72 | 88.7 | 4.37E-09 |
| PRDX4 | 0.8 | 83.1 | 5.57E-09 |
| HTATIP2 | 0.62 | 84.7 | 6.40E-09 |
| NKG7 | -1.58 | 73.4 | 7.81E-09 |
| CD163 | -0.72 | 71.2 | 1.16E-08 |
| CCNG1 | 0.62 | 83.6 | 1.28E-08 |
| TXN | 0.68 | 90.4 | 1.39E-08 |
| C11orf54 | 0.75 | 81.9 | 1.65E-08 |
| LTB | -1.25 | 74 | 2.00E-08 |
| IFITM1 | -0.83 | 79.7 | 2.74E-08 |
| CST7 | -1.16 | 73.4 | 3.22E-08 |
| DNAJA4 | -0.65 | 74 | 3.26E-08 |
| TALDO1 | 0.74 | 89.8 | 4.93E-08 |
| BCL2A1 | -0.88 | 73.4 | 8.80E-08 |
| DUSP23 | 0.64 | 83.1 | 2.57E-07 |
| ITM2C | -0.68 | 72.9 | 3.42E-07 |
| CYBB | -0.8 | 72.3 | 6.17E-07 |
| XCL1 | -1 | 72.3 | 9.33E-07 |
| FAM162A | 0.63 | 85.9 | 9.91E-07 |
| TMED9 | 0.59 | 88.1 | 1.26E-06 |
| XCL2 | -0.98 | 70.6 | 1.97E-06 |
| KLRD1 | -0.7 | 72.3 | 2.95E-06 |
| FCGR1A | -0.61 | 74 | 4.49E-06 |
| CD247 | -0.93 | 72.9 | 5.33E-06 |

Abbreviations: Percentage: percentage of fibroblast that express this specific gene.

Table S3 Thirteen differentially expressed fibroblast immune-related genes.

| Gene | HR (95%CI) | P-value |
|-------------|---------------------|----------------|
| CLDN4 | 0.254(0.133-0.483) | 0 |
| TNFRSF12A | 3.252(1.178-8.981) | 0.023 |
| DEFB1 | 0.594(0.377-0.938) | 0.025 |
| LTF | 0.712(0.531-0.955) | 0.023 |
| SAA2 | 1.384(1.120-1.710) | 0.003 |
| SAA1 | 1.473(1.218-1.780) | 0 |
| MDK | 2.976(1.572-5.630) | 0.001 |
| SLPI | 1.328(1.051-1.678) | 0.018 |
| CANX | 0.118(0.028-0.496) | 0.004 |
| HLA-DRA | 0.280(0.086-0.909) | 0.034 |
| LYZ | 0.626(0.418-0.935) | 0.022 |
| A2M | 0.276(0.113-0.675) | 0.005 |
| ISG15 | 3.843(1.261-11.718) | 0.018 |

Abbreviation: HR: Hazard Ratio; CL: Confidence level.

Table S4 Six differentially expressed FIGs.

| Gene | Coefficient |
|-------------|--------------------|
| CLDN4 | -0.666898209 |
| LTF | -0.318111131 |
| SAA1 | 0.260840889 |
| MDK | 0.741319658 |
| HLA-DRA | -1.30194155 |
| ISG15 | 0.793055552 |

Abbreviation: FIGs: fibroblast immune related genes.

Table S5 The most enriched 5 GSEA pathways for different risk groups.

| Pathways | Group |
|--|-------|
| h.all.v2023.2.Hs.symbols.gmt | |
| HALLMARK_PROTEIN_SECRETION | low |
| HALLMARK_FATTY_ACID_METABOLISM | low |
| HALLMARK_ANDROGEN_RESPONSE | low |
| HALLMARK_HEME_METABOLISM | low |
| HALLMARK_OXIDATIVE_PHOSPHORYLATION | low |
| HALLMARK_IL6_JAK_STAT3_SIGNALING | high |
| HALLMARK_ALLOGRAFT_REJECTION | high |
| HALLMARK_ANGIOGENESIS | high |
| HALLMARK_EPITHELIAL_MESENCHYMAL_TRANSITION | high |
| HALLMARK_COAGULATION | high |
| c2.cp.kegg.Hs.symbols.gmt | |
| KEGG_ADIPOCYTOKINE_SIGNALING_PATHWAY | low |
| KEGG_ARACHIDONIC_ACID_METABOLISM | low |
| KEGG_ASCORBATE_AND_ALDARATE_METABOLISM | low |
| KEGG_BASAL_CELL_CARCINOMA | low |
| KEGG_CITRATE_CYCLE_TCA_CYCLE | low |
| KEGG_STEROID_HORMONE_BIOSYNTHESIS | high |
| KEGG_TYPE_II_DIABETES_MELLITUS | high |
| KEGG_TYROSINE_METABOLISM | high |
| KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_DEGRADATION | high |
| KEGG_VIBRIO_CHOLERAЕ_INFECTION | high |
| c2.cp.wikipathways.v2023.2.Hs.symbols.gmt | |
| WP_PROXIMAL_TUBULE_TRANSPORT | low |
| WP_LEUCINE_ISOLEUCINE_AND_VALINE_METABOLISM | low |
| WP_TYPE_II_DIABETES_MELLITUS | low |
| WP_ERK_PATHWAY_IN_HUNTINGTON_39_S_DISEASE | low |
| WP_NOTCH1_REGULATION_OF_ENDOTHELIAL_CELL_CALCIFICATION | low |
| WP_GLUCURONIDATION | high |
| WP_TAMOXIFEN_METABOLISM | high |
| WP_STATIN_INHIBITION_OF_CHOLESTEROL_PRODUCTION | high |
| WP_FAMILIAL_HYPERLIPIDEMIA_TYPE_4 | high |
| WP_FAMILIAL_HYPERLIPIDEMIA_TYPE_1 | high |
| c5.go.Hs.symbols.gmt | |
| GOBP_SPLICEOSOMAL_TRI_SNRNP_COMPLEX_ASSEMBLY | low |
| GOBP_REGULATION_OF_SYSTEMIC_ARTERIAL_BLOOD_PRESSURE_BY_CIRCULATORY_RENIN_ANGIOTENSIN | low |
| GOCC_U5_SNRNP | low |
| GOBP_SPLICEOSOMAL_SNRNP_ASSEMBLY | low |
| GOCC_SPLICEOSOMAL_TRI_SNRNP_COMPLEX | low |
| GOCC_IMMUNOGLOBULIN_COMPLEX | high |

| | |
|---|------|
| GOBP_REGULATION_OF_LIPOPROTEIN_LIPASE_ACTIVITY | high |
| GOMF_IMMUNOGLOBULIN_RECEPTOR_BINDING | high |
| GOCC_IMMUNOGLOBULIN_COMPLEX_CIRCULATING | high |
| GOCC_HIGH_DENSITY_LIPOPROTEIN_PARTICLE | high |
| c7.immunsigdb.v2023.2.Hs.symbols.gmt | |
| GSE40274_FOXP3_VS_FOXP3_AND_HELIOS_TRANSDUCED_ACTIVATED_CD4_TCELL_DN | low |
| GSE40493_BCL6_KO_VS_WT_TREG_UP | low |
| GSE1791_CTRL_VS_NEUROMEDINU_IN_T_CELL_LINE_6H_DN | low |
| GSE17974_CTRL_VS_ACT_IL4_AND_ANTI_IL12_24H_CD4_TCELL_UP | low |
| GSE40666_UNTREATED_VS_IFNA_STIM_STAT4_KO_EFFECTOR_CD8_TCELL_90MIN_DN | low |
| GSE39110_DAY3_VS_DAY6_POST_IMMUNIZATION_CD8_TCELL_DN | high |
| GSE14415_NATURAL_TREG_VS_TCONV_DN | high |
| GSE15750_DAY6_VS_DAY10_TRAF6KO_EFF_CD8_TCELL_UP | high |
| GSE15750_DAY6_VS_DAY10_EFF_CD8_TCELL_UP | high |
| GSE45365_HEALTHY_VS_MCMV_INFECTION_CD11B_DC_DN | high |
| c7.vax.v2023.2.Hs.symbols.gmt | |
| KENNEDY_PBMC_DRYVAX_AGE_18_50YO_STIMULATED_VS_UNSTIMULATED_1_TO_48MO_TOP_DEG_UP | low |
| HOFT_CD4_POSITIVE_ALPHA_BETA_MEMORY_T_CELL_BCG_VACCINE_AGE_18_45YO_56D_TOP_100_DEG_AFTER_IN_VITRO_RE_STIMULATION_UP | low |
| HOEK_NEUTROPHIL_2011_2012_TIV_ADULT_1DY_UP | low |
| ERWIN_COHEN_BLOOD_VACCINE_TC_83_AGE_23_48YO_VACCINATED_VS_CONTROL_2DY_DN | low |
| THAKAR_PBMC_INACTIVATED_INFLUENZA_AGE_21_30YO_NONRESPONDER_28DY_UP | low |
| LI_PBMC_MENOMUNE_A_C_Y_W_135_AGE_18_45YO_3DY_UP | high |
| SOBOLEV_PBMC_PANDEMRIX_AGE_18_64YO_RESPONDERS_VS_NONRESPONDERS_7DY_UP | high |
| HOEK_PBMC_INACTIVATED_INFLUENZA_ADULT_7DY_UP | high |
| LI_PBMC_MENACTRA_AGE_18_45YO_ANTI_DT_ANTIBODY_CORRELATION_PROFILE_3DY_DN | high |
| HOWARD_NK_CELL_INACT_MONOV_INFLUENZA_A_INDONESIA_05_2005_H5N1_AGE_18_49YO_3DY_UP | high |

Abbreviations: GSEA: Gene Set Enrichment Analysis.

Table S6 Antineoplastic drug sensitivity information (no obviously sensitive group).

| Drug | High risk group | Low risk group | P-value |
|--------------------|-----------------|-----------------|---------|
| | ISS (25%-75%) | ISS (25%-75%) | |
| Camptothecin | 0.10(0.06-0.20) | 0.12(0.07-0.19) | 0.170 |
| Cisplatin | 4.46(3.54-5.54) | 4.83(3.99-5.60) | 0.011 |
| Cytarabine | 2.64(2.01-3.48) | 2.60(2.01-3.30) | 0.542 |
| Docetaxel | 0.01(0.01-0.02) | 0.01(0.01-0.02) | 0.306 |
| Navitoclax | 3.16(1.73-4.18) | 2.96(1.87-3.98) | 0.413 |
| Vorinostat | 2.43(1.91-2.89) | 2.40(2.06-2.76) | 0.932 |
| Nilotinib | 5.22(4.63-5.95) | 5.07(4.66-5.55) | 0.057 |
| Olaparib | 6.35(5.58-7.02) | 6.08(5.54-6.65) | 0.024 |
| KU-55933 | 6.46(6.35-6.56) | 6.48(6.40-6.56) | 0.044 |
| Staurosporine | 0.06(0.03-0.10) | 0.07(0.04-0.11) | 0.010 |
| PLX-4720 | 6.33(5.96-6.82) | 6.44(5.99-6.80) | 0.554 |
| NU7441 | 3.83(3.56-4.09) | 3.77(3.53-4.01) | 0.061 |
| Doramapimod | 6.55(6.38-6.75) | 6.48(6.33-6.64) | 0.001 |
| Mirin | 6.67(6.15-7.32) | 6.86(6.45-7.21) | 0.022 |
| ZM447439 | 4.34(4.06-4.61) | 4.31(4.02-4.51) | 0.142 |
| Alisertib | 2.88(2.21-3.72) | 2.72(2.26-3.32) | 0.177 |
| Palbociclib | 5.16(4.52-5.78) | 5.34(4.89-5.86) | 0.006 |
| Dactolisib | 0.23(0.15-0.39) | 0.25(0.18-0.37) | 0.018 |
| PD0325901 | 1.31(1.04-1.72) | 1.38(1.15-1.74) | 0.117 |
| Obatoclax Mesylate | 2.26(1.96-2.65) | 2.26(2.01-2.59) | 0.865 |
| 5-Fluorouracil | 6.55(5.51-7.59) | 6.90(6.17-7.83) | 0.001 |
| Paclitaxel | 0.07(0.04-0.16) | 0.08(0.04-0.14) | 0.794 |
| Crizotinib | 4.70(4.27-5.16) | 4.57(4.24-5.00) | 0.622 |
| Rapamycin | 0.15(0.09-0.25) | 0.15(0.10-0.22) | 0.485 |
| Sorafenib | 3.96(3.43-4.54) | 3.79(3.36-4.23) | 0.011 |
| Irinotecan | 3.60(2.89-4.42) | 3.82(3.21-4.63) | 0.014 |
| Oxaliplatin | 5.53(4.81-6.17) | 5.31(4.71-5.81) | 0.014 |
| PRIMA-1MET | 6.59(5.65-7.38) | 6.48(5.92-7.15) | 0.915 |
| Niraparib | 6.19(5.50-6.81) | 6.12(5.62-6.69) | 0.993 |
| MK-1775 | 1.48(1.16-1.90) | 1.33(1.13-1.68) | 0.010 |
| Gemcitabine | 0.53(0.26-0.93) | 0.56(0.35-1.07) | 0.038 |
| Bortezomib | 0.01(0.01-0.01) | 0.01(0.01-0.01) | 0.604 |
| GSK269962A | 4.26(3.99-4.47) | 4.30(4.11-4.47) | 0.096 |
| Tamoxifen | 5.15(4.85-5.46) | 5.16(4.93-5.41) | 0.792 |
| Fulvestrant | 4.22(3.97-4.58) | 4.24(4.01-4.54) | 0.633 |
| EPZ004777 | 7.34(6.92-7.96) | 7.30(6.96-7.81) | 0.580 |
| YK-4-279 | 3.33(2.49-4.13) | 3.35(2.65-4.00) | 0.568 |
| Talazoparib | 4.47(3.51-5.44) | 4.62(3.83-5.40) | 0.194 |
| Trametinib | 1.50(0.92-1.89) | 1.53(1.13-2.07) | 0.034 |
| Dabrafenib | 6.56(6.00-7.01) | 6.70(6.22-7.13) | 0.009 |
| Temozolomide | 8.60(8.15-9.11) | 8.51(8.10-8.96) | 0.113 |
| AZD5438 | 3.20(2.71-4.11) | 3.05(2.60-3.51) | 0.003 |
| AZD1208 | 7.69(7.14-8.24) | 7.57(7.15-7.93) | 0.013 |
| AZD1332 | 5.58(5.09-5.99) | 5.56(5.21-5.92) | 0.150 |

| | | | |
|----------------------------|-----------------|-----------------|-------|
| Linsitinib | 5.51(3.01-6.03) | 5.38(5.01-5.79) | 0.046 |
| Epirubicin | 0.43(0.23-0.71) | 0.42(0.29-0.61) | 0.969 |
| Cyclophosphamide | 7.46(7.15-7.84) | 7.33(7.05-7.62) | 0.001 |
| Pevonedistat | 1.59(1.05-2.41) | 1.43(0.98-2.02) | 0.065 |
| Sapitinib | 5.78(5.41-6.15) | 5.70(5.38-5.98) | 0.028 |
| Uprosertib | 4.33(3.80-4.80) | 4.34(3.98-4.77) | 0.318 |
| Lapatinib | 4.31(3.91-4.69) | 4.48(4.13-4.77) | 0.004 |
| Luminespib | 0.12(0.06-0.21) | 0.14(0.09-0.23) | 0.001 |
| EPZ5676 | 7.99(7.67-8.44) | 7.84(7.57-8.17) | 0.001 |
| SCH772984 | 3.85(3.18-4.48) | 3.97(3.51-4.45) | 0.103 |
| Leflunomide | 7.18(6.91-7.53) | 7.13(6.88-7.38) | 0.104 |
| Entinostat | 3.19(2.49-3.94) | 3.46(2.90-3.94) | 0.006 |
| VE-822 | 4.84(4.33-5.32) | 4.79(4.38-5.22) | 0.922 |
| CZC24832 | 7.23(6.98-7.53) | 7.31(7.10-7.54) | 0.020 |
| AZD5582 | 3.29(2.54-4.21) | 3.07(2.46-3.77) | 0.076 |
| I-BET-762 | 4.98(4.30-5.47) | 4.70(4.23-5.17) | 0.003 |
| OTX015 | 3.73(3.03-4.33) | 3.64(3.11-4.10) | 0.426 |
| GSK343 | 4.11(3.81-4.45) | 4.08(3.85-4.35) | 0.671 |
| Entospletinib | 5.42(4.98-5.80) | 5.29(4.99-5.67) | 0.187 |
| Ribociclib | 5.58(5.11-5.70) | 5.58(5.49-5.67) | 0.732 |
| Picolinici-acid | 7.37(7.08-7.79) | 7.29(7.07-7.56) | 0.009 |
| AZD5153 | 2.73(2.20-3.24) | 2.66(2.24-3.02) | 0.181 |
| CDK9_5038 | 0.12(0.07-0.27) | 0.10(0.06-0.17) | 0.010 |
| Eg5_9814 | 0.06(0.03-0.13) | 0.05(0.03-0.08) | 0.002 |
| ERK_2440 | 3.94(3.17-4.84) | 3.72(3.13-4.25) | 0.018 |
| ERK_6604 | 4.96(4.92-4.99) | 4.96(4.93-4.99) | 0.540 |
| IRAK4_4710 | 7.11(6.75-7.55) | 7.02(6.70-7.31) | 0.028 |
| JAK1_8709 | 5.97(5.60-6.53) | 5.94(5.59-6.27) | 0.111 |
| PAK_5339 | 3.58(3.36-3.83) | 3.4(3.30-3.73) | 0.011 |
| VSP34_8731 | 3.55(3.02-4.22) | 3.33(2.88-3.86) | 0.002 |
| Selumetinib | 5.934929633 | 6.10(5.52-6.73) | 0.079 |
| IGF1R_3801 | 2.53(1.94-3.16) | 2.62(2.20-3.09) | 0.090 |
| JAK_8517 | 4.26(3.51-5.10) | 4.38(3.80-4.95) | 0.199 |
| Oxaliplatin | 5.53(4.81-6.17) | 5.31(4.73-5.81) | 0.014 |
| Topotecan | 1.03(0.61-1.49) | 1.09(0.76-1.48) | 0.060 |
| Teniposide | 1.40(0.81-2.29) | 1.25(0.82-1.79) | 0.114 |
| Mitoxantrone | 1.45(1.00-2.16) | 1.38(1.03-1.82) | 0.070 |
| Dactinomycin | 0.12(0.07-0.19) | 0.10(0.07-0.14) | 0.016 |
| Fludarabine | 7.14(6.37-8.04) | 7.25(6.49-7.84) | 0.882 |
| Fulvestrant | 4.22(3.97-4.58) | 4.24(4.01-4.54) | 0.631 |
| Vincristine | 0.21(0.10-0.50) | 0.17(0.10-0.28) | 0.014 |
| Docetaxel | 0.01(0.01-0.02) | 0.01(0.01-0.02) | 0.306 |
| Podophyllotoxin bromide | 0.54(0.40-0.84) | 0.54(0.42-0.73) | 0.969 |
| Elephantin | 5.04(4.15-5.87) | 4.71(4.23-5.23) | 0.004 |
| Sabutoclax | 0.70(0.53-0.97) | 0.72(0.53-0.93) | 0.968 |
| BDP-00009066 | 3.50(3.11-3.83) | 3.51(3.21-3.82) | 0.405 |
| Venetoclax | 3.18(2.78-3.68) | 3.26(2.88-3.59) | 0.721 |

| | | | |
|----------------------------|-----------------|-----------------|-------|
| ABT737 | 3.28(1.82-4.31) | 3.57(2.52-4.37) | 0.102 |
| Dactinomycin | 0.12(0.07-0.19) | 0.10(0.07-0.14) | 0.016 |
| AGI-5198 | 6.64(6.36-7.00) | 6.79(6.56-7.00) | 0.005 |
| AZD6738 | 2.99(2.52-3.56) | 3.09(2.76-3.50) | 0.06 |
| Ipatasertib | 5.04(4.59-5.45) | 5.21(4.76-5.60) | 0.008 |
| GDC0810 | 7.09(6.83-7.41) | 7.05(6.84-7.35) | 0.182 |
| Telomerase Inhibitor IX | 1.35(1.04-1.75) | 1.33(1.06-1.69) | 0.882 |
| MIRA-1 | 7.87(7.42-8.25) | 7.78(7.33-8.14) | 0.174 |
| NVP-ADW742 | 4.08(3.74-4.50) | 3.92(3.53-4.30) | 0.001 |
| Savolitinib | 3.84(3.61-4.14) | 3.86(3.57-4.12) | 0.771 |
| MIM1 | 5.69(5.13-6.16) | 5.58(5.22-5.98) | 0.220 |
| WEHI-539 | 5.15(4.53-5.76) | 5.07(4.46-5.51) | 0.060 |
| BPD-00008900 | 6.52(6.01-6.91) | 6.49(6.17-6.85) | 0.589 |
| Foretinib | 1.83(1.55-2.18) | 1.79(1.60-2.06) | 0.669 |
| Pyridostatin | 4.84(4.36-5.24) | 4.86(4.45-5.28) | 0.261 |
| AMG-319 | 6.96(6.60-7.30) | 6.92(6.68-7.17) | 0.589 |
| VX-11e | 4.14(3.57-4.62) | 4.29(3.78-4.73) | 0.007 |
| Uprosertib | 4.33(3.90-4.80) | 4.349342875 | 0.318 |
| LJI308 | 7.24(6.85-7.65) | 7.36(7.06-7.71) | 0.019 |
| AZ6102 | 3.67(3.29-4.00) | 3.49(3.25-3.82) | 0.003 |
| GSK591 | 6.60(6.16-7.06) | 6.50(6.12-7.02) | 0.148 |
| VE821 | 5.90(5.38-6.41) | 5.86(5.48-6.30) | 0.895 |
| AZD6482 | 4.50(4.20-4.93) | 4.59(4.23-4.89) | 0.454 |
| AT13148 | 5.14(4.76-5.79) | 5.10(4.67-5.74) | 0.496 |
| BMS-754807 | 1.27(0.91-1.58) | 1.23(0.98-1.46) | 0.517 |
| JQ1 | 3.54(3.06-4.01) | 3.38(2.94-3.92) | 0.088 |

Abbreviation: ISS: Imputed sensitivity score.

Table S7 Antineoplastic drug sensitivity information (sensitive group: low).

| Drug | High risk group | Low risk group | P-value |
|----------------|-----------------|-----------------|---------|
| | ISS (25%-75%) | ISS (25%-75%) | |
| Gefitinib | 4.80(4.46-5.14) | 4.62(4.31-4.93) | 0 |
| Axitinib | 4.54(4.30-4.87) | 4.42(4.15-4.63) | 0 |
| SB216763 | 7.49(7.17-7.96) | 7.35(7.10-7.65) | 0 |
| Afatinib | 2.87(2.58-3.15) | 2.74(2.51-2.97) | 0 |
| Wee1 Inhibitor | 3.01(2.62-3.75) | 2.81(2.47-3.35) | 0 |
| PD173074 | 5.99(5.43-6.50) | 5.65(5.21-6.11) | 0 |
| RO-3306 | 4.16(3.83-4.45) | 3.92(3.62-4.25) | 0 |
| BI-2536 | 1.25(0.95-1.60) | 1.09(0.83-1.42) | 0 |
| GSK1904529 A | 6.42(5.94-6.91) | 5.93(5.54-6.37) | 0 |
| Tozasertib | 4.33(3.90-4.75) | 4.20(3.77-4.46) | 0 |
| Erlotinib | 3.96(3.60-4.30) | 3.73(3.47-4.04) | 0 |
| Dinaciclib | 0.08(0.06-0.15) | 0.06(0.04-0.09) | 0 |
| SB505124 | 3.40(3.25-3.62) | 3.30(3.18-3.44) | 0 |
| Daporinad | 0.02(0.01-0.04) | 0.01(0.01-0.02) | 0 |
| BMS-345541 | 5.06(4.50-5.76) | 4.42(4.01-5.04) | 0 |
| IAP_5620 | 7.48(7.01-8.08) | 7.03(6.64-7.57) | 0 |
| Ruxolitinib | 7.10(6.77-7.49) | 6.81(6.52-7.13) | 0 |
| LCL161 | 7.29(6.95-7.63) | 6.85(6.52-7.28) | 0 |
| IWP-2 | 4.15(3.87-4.41) | 3.98(3.72-4.19) | 0 |
| OSI-027 | 6.77(6.67-6.88) | 6.68(6.59-6.78) | 0 |
| LGK974 | 5.94(5.52-6.41) | 5.61(5.27-6.01) | 0 |
| GSK2606414 | 5.50(5.08-5.95) | 5.27(4.98-5.61) | 0 |
| PFI3 | 7.59(7.33-7.90) | 7.46(7.26-7.68) | 0 |
| PCI-34051 | 6.49(6.02-7.18) | 6.25(5.88-6.64) | 0 |
| Wnt-C59 | 6.20(5.91-6.63) | 5.88(5.66-6.15) | 0 |
| RVX-208 | 6.91(6.62-7.24) | 6.78(6.54-7.02) | 0 |
| ML323 | 6.61(6.29-6.96) | 6.24(5.99-6.54) | 0 |
| AGI-6780 | 6.01(5.65-6.48) | 5.76(5.52-6.05) | 0 |
| CDK9_5576 | 0.72(0.51-1.20) | 0.58(0.45-0.81) | 0 |
| AZD5991 | 6.39(5.45-7.27) | 5.86(5.07-6.60) | 0 |
| TAF1_5496 | 5.79(5.28-6.33) | 5.34(4.86-5.80) | 0 |
| AZD4547 | 4.29(3.94-4.77) | 4.12(3.77-4.41) | 0 |
| Ibrutinib | 6.78(6.31-7.31) | 6.17(5.67-6.63) | 0 |
| Zoledronate | 5.53(5.12-5.97) | 5.27(5.00-5.63) | 0 |
| Acetalax | 7.19(6.58-7.90) | 6.90(6.34-7.34) | 0 |
| Carmustine | 8.95(8.59-9.37) | 8.56(8.25-8.96) | 0 |
| Nelarabine | 8.76(8.15-9.44) | 8.42(7.88-8.98) | 0 |
| Dihydrorotone | 1.98(1.68-2.31) | 1.57(1.31-7.84) | 0 |
| Gallibiscoquin | 3.93(3.60-4.39) | 3.61(3.36-3.94) | 0 |

| | | | |
|-----------------------------|-----------------|-----------------|---|
| azole | | | |
| Sinularin | 5.32(4.82-5.99) | 4.84(4.41-5.32) | 0 |
| LY2109761 | 7.64(7.08-8.25) | 7.03(6.61-7.50) | 0 |
| OF-1 | 6.16(5.76-6.78) | 5.59(5.17-6.00) | 0 |
| MN-64 | 6.86(6.49-7.40) | 6.66(6.26-6.98) | 0 |
| KRAS (G12C) Inhibitor-12 | 6.41(5.80-7.24) | 5.91(5.44-6.52) | 0 |
| Ulixertinib | 4.19(3.83-4.69) | 3.99(3.59-4.32) | 0 |
| AZD3759 | 4.00(3.72-4.33) | 3.84(3.60-4.11) | 0 |
| Osimertinib | 2.91(2.52-3.22) | 2.59(2.27-2.89) | 0 |
| Cediranib | 3.32(2.97-3.75) | 3.10(2.82-3.36) | 0 |
| I-BRD9 | 6.40(6.03-6.80) | 6.22(5.77-6.53) | 0 |
| P22077 | 6.77(6.19-7.34) | 5.99(5.56-6.57) | 0 |
| UMI-77 | 4.06(3.59-4.81) | 3.76(3.30-4.19) | 0 |
| BIBR-1532 | 7.20(6.75-7.79) | 6.91(6.53-7.23) | 0 |

Abbreviation: ISS: Imputed sensitivity score.

Table S8 Antineoplastic drug sensitivity information (sensitive group: high).

| Drug | High risk group | Low risk group | P-value |
|----------------------|-----------------|-----------------|---------|
| | ISS (25%-75%) | ISS (25%-75%) | |
| Vinblastine | 0.02(0.01-0.05) | 0.03(0.02-0.06) | 0 |
| AZD7762 | 0.89(0.65-1.24) | 1.16(0.90-1.46) | 0 |
| Nutlin-3a (-) | 6.45(5.61-7.38) | 6.83(6.32-7.44) | 0 |
| MK-2206 | 4.26(3.87-4.73) | 4.43(4.13-4.77) | 0 |
| Pictilisib | 2.11(1.75-2.60) | 2.47(2.14-2.89) | 0 |
| AZD8055 | 0.84(0.79-0.89) | 0.88(0.84-0.92) | 0 |
| Dasatinib | 2.50(1.64-3.29) | 2.84(2.22-3.48) | 0 |
| BMS-536924 | 3.10(2.71-3.50) | 3.31(2.97-3.61) | 0 |
| PF-4708671 | 5.60(5.35-5.78) | 5.70(5.50-5.87) | 0 |
| AZ960 | 2.90(2.37-3.45) | 3.21(2.85-3.71) | 0 |
| XAV939 | 6.17(5.91-6.49) | 6.48(6.26-6.73) | 0 |
| AZD2014 | 3.01(2.61-3.44) | 3.24(2.97-3.59) | 0 |
| Alpelisib | 4.97(4.48-5.40) | 5.32(4.90-5.75) | 0 |
| Taselisib | 3.00(2.29-3.65) | 3.43(2.77-3.86) | 0 |
| WZ4003 | 5.23(4.85-5.64) | 5.49(5.12-5.81) | 0 |
| PRT062607 | 4.57(4.26-4.94) | 4.81(4.55-5.13) | 0 |
| ULK1_4989 | 3.14(2.61-3.77) | 3.66(3.10-4.21) | 0 |
| MG-132 | 0.25(0.21-0.29) | 0.26(0.23-0.31) | 0 |
| Buparlisib | 1.75(1.53-2.02) | 1.86(1.70-2.09) | 0 |
| Afuresertib | 3.63(3.04-4.16) | 3.95(3.43-4.28) | 0 |
| AZD5363 | 4.19(3.73-4.55) | 4.43(4.08-4.80) | 0 |
| AZD8186 | 4.62(4.35-4.99) | 4.82(4.54-5.13) | 0 |
| GNE-317 | 1.32(1.15-1.54) | 1.52(1.37-1.69) | 0 |
| GSK2578215A | 6.97(6.70-7.30) | 7.11(6.95-7.32) | 0 |
| WIKI4 | 5.30(5.14-5.51) | 5.40(5.26-5.57) | 0 |
| Sepantronium bromide | 0.02(0.01-0.04) | 0.01(0.01-0.02) | 0 |
| MK-8776 | 4.51(3.99-5.01) | 4.74(4.38-5.05) | 0 |
| Vinorelbine | 0.05(0.02-0.12) | 0.07(0.03-0.14) | 0 |
| Vinblastine | 0.03(0.01-0.05) | 0.04(0.02-0.07) | 0 |

Abbreviation: ISS: Imputed sensitivity score.