**Supplement**

Supplement Caption: Table S1 contains all of the genes tested. Table S2 describes patient selection. Figure S1 provides risk score for melanoma patients and normals.

**Table S1: List of genes as ordered in Spider Plot in Figure 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- | --- |
| **A. TRAINING\*** |  |  |
| Genes | p-value | Mean ΔCt | Genes | p-value | Mean ΔCt | Genes | p-value | Mean ΔCt |
| **IL8** | 0.001 | 0.558 | CD40 | 0.691 | 0.044 | CDH1 | 0.215 | -0.144 |
| **CD19** | 0.01 | 0.466 | CTLA4SOL | 0.477 | 0.034 | IL1R1 | 0.203 | -0.154 |
| **TNFRSF13B** | 0.012 | 0.451 | IL12B | 0.494 | 0.029 | TLR4 | 0.138 | -0.155 |
| **CNKSR2** | 0.006 | 0.441 | HMGA1 | 0.701 | 0.029 | TLR2 | 0.125 | -0.157 |
| **LARGE** | 0.011 | 0.426 | MHC2TA | 0.837 | 0.023 | CXCL10 | 0.307 | -0.157 |
| **IL7R** | 0.006 | 0.407 | CCR5 | 0.887 | 0.017 | PLAUR | 0.082 | -0.16 |
| **IL23A** | 0.007 | 0.382 | MMP12 | 0.692 | 0.016 | TNFRSF1A | 0.092 | -0.166 |
| PTPRK | 0.059 | 0.365 | NEDD9 | 0.891 | 0.015 | CASP1 | 0.037 | -0.179 |
| **AXIN2** | 0.018 | 0.363 | PDE3B | 0.905 | 0.012 | MAPK14 | 0.066 | -0.182 |
| **INPP4B** | 0.007 | 0.359 | TLK2 | 0.917 | 0.009 | FCGR2B | 0.056 | -0.183 |
| IGHG2 | 0.17 | 0.359 | CCR3 | 0.95 | 0.009 | BPGM | 0.227 | -0.184 |
| **CCR7** | 0.032 | 0.339 | BAX | 0.997 | 0 | IL1R2 | 0.131 | -0.188 |
| **NBEA** | 0.049 | 0.325 | TLR9 | 0.943 | -0.006 | NUDT4 | 0.074 | -0.194 |
| **TOSO** | 0.008 | 0.324 | S100A4 | 0.891 | -0.011 | PLEK2 | 0.094 | -0.195 |
| **PP2A** | 0.016 | 0.324 | TXNRD1 | 0.888 | -0.012 | **IL1RN** | 0.044 | -0.199 |
| SCN3A | 0.086 | 0.297 | RBM5 | 0.883 | -0.013 | **PLXDC2** | 0.026 | -0.205 |
| HMGB1 | 0.161 | 0.297 | NME4 | 0.839 | -0.015 | **IFI16** | 0.023 | -0.206 |
| **FOXP3** | 0.017 | 0.294 | SOCS1 | 0.847 | -0.019 | **NEDD4L** | 0.029 | -0.206 |
| **ERBB2** | 0.028 | 0.294 | NRAS | 0.701 | -0.029 | GYPB | 0.16 | -0.206 |
| TNFSF5 | 0.019 | 0.293 | TNS1 | 0.825 | -0.03 | CD86 | 0.024 | -0.215 |
| **MSH2** | 0.007 | 0.276 | CSF2 | 0.75 | -0.031 | **CHPT1** | 0.008 | -0.217 |
| **NAB2** | 0.007 | 0.269 | CASP3 | 0.757 | -0.033 | **RP51077B9.4** | <.001 | -0.218 |
| **IL2RA** | 0.029 | 0.261 | FOS | 0.757 | -0.034 | HSPA1A | 0.03 | -0.228 |
| **CTLA4** | 0.034 | 0.249 | ADAM17 | 0.719 | -0.036 | SLC4A1 | 0.087 | -0.228 |
| **ICOS** | 0.04 | 0.248 | TNF | 0.629 | -0.037 | **GLRX5** | 0.031 | -0.24 |
| CD8A | 0.114 | 0.248 | NFKB1 | 0.664 | -0.037 | **GADD45A** | 0.006 | -0.245 |
| CD28 | 0.065 | 0.238 | HLADRA | 0.67 | -0.039 | **TMOD1** | 0.036 | -0.258 |
| CCND1 | 0.163 | 0.226 | MYC | 0.664 | -0.043 | XK | 0.057 | -0.261 |
| NUCKS1 | 0.028 | 0.225 | CD4 | 0.601 | -0.051 | CDC25A | 0.093 | -0.267 |
| ZBTB10 | 0.072 | 0.225 | HOXA10 | 0.731 | -0.051 | **SERPINA1** | 0.004 | -0.271 |
| DPP4 | 0.087 | 0.218 | ITGAL | 0.497 | -0.063 | **SIAH2** | 0.017 | -0.277 |
| LCK | 0.05 | 0.214 | S100A6 | 0.529 | -0.064 | **PBX1** | 0.017 | -0.291 |
| IL32 | 0.068 | 0.192 | PTPRC | 0.432 | -0.065 | **CARD12** | 0.003 | -0.294 |
| NFATC1 | 0.305 | 0.188 | IL15 | 0.534 | -0.067 | **IGF2BP2** | 0.007 | -0.296 |
| LTA | 0.075 | 0.18 | PTGS2 | 0.491 | -0.068 | **SSI3** | 0.027 | -0.31 |
| MIF | 0.103 | 0.158 | CD80 | 0.536 | -0.07 | SERPINE1 | 0.031 | -0.313 |
| CXCR3 | 0.163 | 0.153 | APAF1 | 0.417 | -0.081 | **E2F1** | 0.001 | -0.316 |
| ITGA4 | 0.153 | 0.139 | CD97 | 0.378 | -0.09 | HMOX1 | 0.001 | -0.318 |
| PLA2G7 | 0.26 | 0.135 | C20orf108 | 0.454 | -0.096 | **TIMP1** | <.001 | -0.32 |
| CDKN2A | 0.239 | 0.134 | ICAM1 | 0.271 | -0.099 | **F5** | 0.007 | -0.334 |
| IL5 | 0.479 | 0.121 | IL1B | 0.336 | -0.099 | CTSD | <.001 | -0.338 |
| IL6 | 0.08 | 0.12 | BRCA1 | 0.263 | -0.101 | **IRAK3** | 0.001 | -0.349 |
| FYN | 0.195 | 0.118 | EGR1 | 0.3 | -0.103 | ANLN | 0.003 | -0.349 |
| CDKN1B | 0.175 | 0.113 | LGALS3 | 0.224 | -0.104 | **ALOX5** | 0.001 | -0.351 |
| IL18BP | 0.317 | 0.098 | BLVRB | 0.236 | -0.104 | ST14 | 0.002 | -0.361 |
| TNFSF6 | 0.44 | 0.098 | TNFRSF1B | 0.22 | -0.107 | PDGFA | 0.006 | -0.363 |
| GZMB | 0.501 | 0.089 | CDKN2D | 0.074 | -0.109 | VEGF | 0.005 | -0.364 |
| GZMA | 0.472 | 0.088 | MNDA | 0.22 | -0.112 | **CDKN1A** | <.001 | -0.366 |
| CXCL1 | 0.434 | 0.078 | IRF1 | 0.168 | -0.113 | THBS1 | 0.024 | -0.368 |
| MCAM | 0.322 | 0.068 | RHOC | 0.194 | -0.114 | DLC1 | 0.002 | -0.402 |
| CDK2 | 0.447 | 0.067 | TSPAN5 | 0.174 | -0.116 | **SPARC** | <.001 | -0.521 |
| IFNG | 0.717 | 0.06 | CCL5 | 0.194 | -0.124 | IL10 | 0.002 | -0.558 |
| CCR9 | 0.685 | 0.059 | GYPA | 0.349 | -0.129 | **MMP9** | <.001 | -0.648 |
| TP53 | 0.506 | 0.055 | PTEN | 0.096 | -0.137 | ELA2 | 0.009 | -0.667 |
| BAD | 0.45 | 0.053 | UBE2C | 0.121 | -0.137 | **C1QA** | <.001 | -0.708 |
| CCL3 | 0.687 | 0.047 | IL18 | 0.178 | -0.14 |  |  |  |
| IL2 | 0.373 | 0.044 | TGFB1 | 0.048 | -0.143 |  |  |  |
| **B. VALIDATION** |  |  |  |  |  |  |  |
| Genes | p-value | Mean ΔCt | Genes | p-value | Mean ΔCt | Genes | p-value | Mean ΔCt |  |
| **IL8** | 0.01 | 0.321 | CD40 | 0.279 | 0.097 | CDH1 | 0.196 | -0.127 |
| **CD19** | 0.001 | 0.498 | CTLA4SOL | 0.359 | 0.031 | IL1R1 | 0.08 | -0.169 |
| **TNFRSF13B** | 0.033 | 0.321 | IL12B | 0.857 | 0.005 | TLR4 | 0.032 | -0.164 |
| **CNKSR2** | <.001 | 0.532 | HMGA1 | 0.02 | 0.147 | TLR2 | 0.015 | -0.189 |
| **LARGE** | <.001 | 0.564 | MHC2TA | 0.01 | 0.22 | CXCL10 | 0.602 | -0.07 |
| **IL7R** | 0.001 | 0.338 | CCR5 | 0.112 | 0.157 | PLAUR | 0.003 | -0.21 |
| **IL23A** | <.001 | 0.366 | MMP12 | 0.57 | 0.017 | TNFRSF1A | 0.63 | -0.21 |
| PTPRK | 0.006 | 0.399 | NEDD9 | 0.021 | 0.23 | CASP1 | 0.052 | -0.134 |
| **AXIN2** | <.001 | 0.379 | PDE3B | 0.288 | 0.072 | MAPK14 | 0.001 | -0.241 |
| **INPP4B** | <.001 | 0.386 | TLK2 | 0.35 | 0.059 | FCGR2B | 0.002 | -0.231 |
| IGHG2 | 0.749 | 0.066 | CCR3 | 0.74 | -0.041 | BPGM | 0.058 | -0.238 |
| **CCR7** | <.001 | 0.422 | BAX | 0.157 | 0.086 | IL1R2 | 0.008 | -0.261 |
| **NBEA** | 0.006 | 0.356 | TLR9 | 0.903 | 0.008 | NUDT4 | 0.006 | -0.248 |
| **TOSO** | <.001 | 0.397 | S100A4 | 0.363 | -0.053 | PLEK2 | 0.009 | -0.271 |
| **PP2A** | 0.013 | 0.285 | TXNRD1 | 0.858 | -0.012 | **IL1RN** | <.001 | -0.306 |
| SCN3A | 0.003 | 0.459 | RBM5 | 0.715 | 0.024 | **PLXDC2** | 0.035 | -0.152 |
| HMGB1 | 0.28 | 0.157 | NME4 | 0.771 | 0.018 | **IFI16** | 0.013 | -0.193 |
| **FOXP3** | <.001 | 0.352 | SOCS1 | 0.911 | -0.009 | **NEDD4L** | 0.062 | -0.146 |
| **ERBB2** | 0.016 | 0.295 | NRAS | 0.145 | 0.088 | GYPB | 0.243 | -0.15 |
| TNFSF5 | <.001 | 0.343 | TNS1 | 0.019 | 0.257 | CD86 | 0.64 | -0.037 |
| **MSH2** | <.001 | 0.312 | CSF2 | 0.612 | -0.037 | **CHPT1** | 0.006 | -0.198 |
| **NAB2** | <.001 | 0.277 | CASP3 | 0.558 | -0.068 | **RP51077B9.4** | <.001 | -0.169 |
| **IL2RA** | 0.014 | 0.228 | FOS | 0.216 | -0.096 | HSPA1A | 0.118 | -0.132 |
| **CTLA4** | <.001 | 0.376 | ADAM17 | 0.913 | 0.008 | SLC4A1 | 0.163 | -0.175 |
| **ICOS** | <.001 | 0.344 | TNF | 0.207 | 0.089 | **GLRX5** | 0.023 | -0.229 |
| CD8A | 0.09 | 0.19 | NFKB1 | 0.925 | 0.006 | **GADD45A** | 0.011 | -0.19 |
| CD28 | <.001 | 0.355 | HLADRA | 0.756 | 0.024 | **TMOD1** | 0.019 | -0.249 |
| CCND1 | 0.007 | 0.365 | MYC | 0.039 | 0.178 | XK | 0.019 | -0.279 |
| NUCKS1 | <.001 | 0.305 | CD4 | 0.035 | 0.174 | CDC25A | 0.766 | 0.043 |
| ZBTB10 | <.001 | 0.393 | HOXA10 | 0.544 | -0.082 | **SERPINA1** | 0.012 | -0.2 |
| DPP4 | <.001 | 0.327 | ITGAL | 0.099 | 0.125 | **SIAH2** | 0.002 | -0.309 |
| LCK | <.001 | 0.291 | S100A6 | 0.087 | -0.115 | **PBX1** | 0.022 | -0.255 |
| IL32 | 0.005 | 0.244 | PTPRC | 0.396 | -0.053 | **CARD12** | 0.007 | -0.217 |
| NFATC1 | 0.347 | 0.179 | IL15 | 0.792 | 0.025 | **IGF2BP2** | 0.039 | -0.206 |
| LTA | 0.002 | 0.262 | PTGS2 | 0.181 | -0.098 | **SSI3** | 0.015 | -0.256 |
| MIF | 0.03 | 0.153 | CD80 | 0.002 | 0.368 | SERPINE1 | 0.669 | -0.052 |
| CXCR3 | 0.001 | 0.319 | APAF1 | 0.253 | -0.087 | **E2F1** | 0.001 | -0.248 |
| ITGA4 | 0.002 | 0.239 | CD97 | 0.699 | -0.028 | HMOX1 | 0.124 | -0.119 |
| PLA2G7 | 0.373 | 0.092 | C20orf108 | 0.042 | -0.281 | **TIMP1** | 0.002 | -0.216 |
| CDKN2A | 0.294 | 0.104 | ICAM1 | 0.099 | -0.115 | **F5** | 0.003 | -0.288 |
| IL5 | 0.009 | 0.372 | IL1B | 0.022 | -0.189 | CTSD | 0.068 | -0.127 |
| IL6 | 0.782 | 0.019 | BRCA1 | 0.899 | -0.008 | **IRAK3** | 0.001 | -0.276 |
| FYN | 0.003 | 0.226 | EGR1 | 0.867 | 0.012 | ANLN | 0.633 | -0.043 |
| CDKN1B | 0.298 | 0.055 | LGALS3 | 0.074 | -0.127 | **ALOX5** | 0.008 | -0.244 |
| IL18BP | 0.01 | 0.189 | BLVRB | 0.057 | -0.145 | ST14 | 0.054 | -0.176 |
| TNFSF6 | 0.005 | 0.308 | TNFRSF1B | 0.176 | -0.103 | PDGFA | 0.082 | -0.185 |
| GZMB | 0.093 | 0.218 | CDKN2D | 0.001 | -0.167 | VEGF | 0.163 | -0.168 |
| GZMA | 0.006 | 0.291 | MNDA | 0.042 | -0.144 | **CDKN1A** | 0.041 | -0.147 |
| CXCL1 | 0.348 | -0.078 | IRF1 | 0.198 | -0.082 | THBS1 | 0.721 | 0.039 |
| MCAM | 0.11 | 0.099 | RHOC | 0.125 | 0.125 | DLC1 | 0.31 | -0.105 |
| CDK2 | 0.006 | 0.179 | TSPAN5 | 0.479 | -0.057 | **SPARC** | 0.004 | -0.321 |
| IFNG | 0.115 | 0.244 | CCL5 | 0.489 | 0.056 | IL10 | 0.143 | -0.22 |
| CCR9 | 0.063 | 0.242 | GYPA | 0.023 | -0.273 | **MMP9** | <.001 | -0.477 |
| TP53 | 0.018 | 0.168 | PTEN | 0.143 | -0.092 | ELA2 | 0.232 | -0.257 |
| BAD | 0.62 | -0.023 | UBE2C | 0.265 | -0.078 | **C1QA** | 0.002 | -0.441 |
| CCL3 | 0.271 | 0.097 | IL18 | 0.998 | 0 |  |  |  |
| IL2 | 0.708 | 0.012 | TGFB1 | 0.135 | -0.082 |  |  |  |

\*Genes are listed in the same order as shown in the spider plot in Figure 2 according to relative expression in patients surviving more or less than one year, and genes that are significantly differentially expressed are bolded. **Table S2: Patients Included in the Training and Test Populations**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **# patients enrolled** | **# patients treated** | **# specimens harvested** | **# specimens successfully measured** |
| **Training Set from Phase II trial** | 251 | 246 | 229 | 218 |
| **Test Set from Phase III trial** | 328 | 325 | 268 | 260 |

**Figure S1: Risk Category in Melanoma vs. Control Patients**Risk score is overall higher in the melanoma patients compared to the normal patients as calculated using the 4-gene score. Low Risk category, shown in red, Medium Risk Category, shown in blue, and High Risk category shown in green. (Mann Whitney test, p=.0154) |