**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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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) |