|  |  |
| --- | --- |
| Abbreviation | Full name |
| BAK1 | BRI1-associated receptor kinase 1 |
| BAX | Bcl-2-associated X protein |
| CASP1 | cysteine-aspartic acid protease-1 |
| CASP3 | cysteine-aspartic acid protease-3 |
| CASP4 | cysteine-aspartic acid protease-4 |
| CASP5 | cysteine-aspartic acid protease-5 |
| CHMP2A | Charged Multivesicular Body Protein 2A |
| CHMP2B | Charged Multivesicular Body Protein 2B |
| CHMP3 | Charged Multivesicular Body Protein 3 |
| CHMP4A | Charged Multivesicular Body Protein 4A |
| CHMP4B | Charged Multivesicular Body Protein 4B |
| CHMP4C | Charged Multivesicular Body Protein 4C |
| CHMP6 | Charged Multivesicular Body Protein 6 |
| CHMP7 | Charged Multivesicular Body Protein 7 |
| CYCS | Recombinant Cytochrome C, Somatic |
| ELANE | elastase, neutrophil expressed |
| GSDMD | gasdermin D |
| GSDME | gasdermin E |
| GZMB | granzyme B |
| HMGB1 | high-mobility group box-1 protein |
| IL18 | interleukin 18 |
| IL1A | interleukin 1 a |
| IL1B | interleukin 1 beta |
| IRF1 | interferon regulatory factor 1 |
| IRF2 | interferon regulatory factor 2 |
| TP53 | Tumor Protein P53 |
| TP63 | Tumor Protein P63 |
| AIM2 | Absent in melanoma 2 |
| CASP6 | cysteine-aspartic acid protease-6 |
| CASP8 | cysteine-aspartic acid protease-8 |
| CASP9 | cysteine-aspartic acid protease-9 |
| GPX4 | glutathione peroxidase 4 |
| GSDMA | gasdermin A |
| GSDMB | gasdermin B |
| GSDMC | gasdermin C |
| IL6 | interleukin 6 |
| NLRC4 | NLR family CARD domain containing 4 |
| NLRP1 | NLR family pyrin domain containing 1 |
| NLRP2 | NLR family pyrin domain containing 2 |
| NLRP3 | NLR family pyrin domain containing 3 |
| NLRP6 | NLR family pyrin domain containing 6 |
| NLRP7 | NLR family pyrin domain containing 7 |
| NOD1 | nucleotide binding oligomerization domain containing 1 |
| NOD2 | nucleotide binding oligomerization domain containing 2 |
| PJVK | pejvakin/deafness, autosomal recessive 59 |
| PLCG1 | phospholipase C gamma 1 |
| PRKACA | protein kinase cAMP-activated catalytic subunit alpha |
| PYCARD | PYD and CARD domain containing |
| SCAF11 | SR-related CTD associated factor 11 |
| TIRAP | TIR domain containing adaptor protein |
| TNF | tumor necrosis factor |
| GZMA | granzyme A |

Table S1: The list of full names of 52 pyroptosis-related genes.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genes | lowMean | highMean | logFC | pValue | fdr |
| AIM2 | 4.551543 | 2.326691 | -2.22485 | 1.54E-28 | 9.99E-25 |
| KRT5 | 7.106242 | 5.08509 | -2.02115 | 1.83E-07 | 5.26E-06 |
| CXCL10 | 5.420615 | 3.577795 | -1.84282 | 1.74E-12 | 2.03E-10 |
| S100A2 | 8.784845 | 6.995431 | -1.78941 | 7.91E-09 | 3.48E-07 |
| PSMB9 | 5.387156 | 3.651667 | -1.73549 | 8.29E-21 | 8.78E-18 |
| UBD | 6.358339 | 1.959486 | -1.69817 | 1.37E-11 | 4.09E-09 |
| CXCL9 | 4.517991 | 2.826624 | -1.69137 | 1.14E-11 | 1.16E-09 |
| CXCL11 | 13.53824 | 4.257351 | -1.66901 | 1.49E-18 | 9.81E-15 |
| IDO1 | 3.2606 | 1.627221 | -1.63338 | 1.07E-17 | 4.77E-15 |
| IGLV1-47 | 113.8571 | 38.33983 | -1.57031 | 0.003703 | 0.014621 |
| KRT6A | 5.791204 | 4.232897 | -1.55831 | 2.53E-05 | 0.00035 |
| LAMB3 | 6.512889 | 4.980862 | -1.53203 | 1.11E-14 | 2.66E-12 |
| CXCL11 | 3.350112 | 1.823324 | -1.52679 | 2.07E-11 | 1.95E-09 |
| SERPINB3 | 3.911814 | 2.4224 | -1.48941 | 2.39E-08 | 8.99E-07 |
| HLA-DRA | 8.994009 | 7.507572 | -1.48644 | 8.64E-12 | 9.06E-10 |
| CXCL13 | 7.032647 | 2.512934 | -1.4847 | 1.98E-08 | 1.32E-06 |
| GZMA | 3.477309 | 1.992739 | -1.48457 | 5.88E-16 | 1.96E-13 |
| CLCA2 | 4.153765 | 2.689016 | -1.46475 | 1.22E-07 | 3.69E-06 |
| HCP5 | 4.413298 | 2.981728 | -1.43157 | 1.13E-20 | 1.05E-17 |
| JCHAIN | 58.51074 | 22.10654 | -1.40423 | 0.000999 | 0.005418 |
| AC003035.2 | 1.553487 | 0.595566 | -1.38318 | 4.08E-10 | 6.62E-08 |
| CD74 | 8.709704 | 7.348623 | -1.36108 | 5.18E-16 | 1.77E-13 |
| OR2I1P | 2.191951 | 0.854297 | -1.3594 | 1.57E-06 | 3.92E-05 |
| MMP1 | 5.461601 | 4.104431 | -1.35717 | 3.55E-08 | 1.26E-06 |
| IFI16 | 6.112792 | 4.759146 | -1.35365 | 3.03E-19 | 1.88E-16 |
| MMP12 | 4.388033 | 3.045466 | -1.34257 | 1.15E-09 | 6.31E-08 |
| BST2 | 7.825638 | 6.487297 | -1.33834 | 7.44E-12 | 7.93E-10 |
| IGKJ5 | 4.413991 | 1.755287 | -1.33038 | 0.016918 | 0.045943 |
| HLA-F | 5.623733 | 4.296922 | -1.32681 | 2.20E-19 | 1.51E-16 |
| KLHDC7B | 4.609294 | 3.28253 | -1.32676 | 5.91E-08 | 1.96E-06 |
| SERPINB4 | 3.064553 | 1.737859 | -1.32669 | 4.89E-09 | 2.29E-07 |
| CXCL13 | 3.996735 | 2.670944 | -1.32579 | 9.93E-09 | 4.22E-07 |
| IRF1 | 4.801688 | 3.477429 | -1.32426 | 2.22E-30 | 2.89E-26 |
| TNFSF10 | 6.505008 | 5.183812 | -1.3212 | 7.26E-16 | 2.30E-13 |
| CASP1 | 4.027574 | 2.708993 | -1.31858 | 2.14E-21 | 3.48E-18 |
| TAP1 | 6.505775 | 5.21792 | -1.28785 | 5.25E-19 | 3.10E-16 |
| GBP4 | 4.070182 | 2.794629 | -1.27555 | 1.15E-21 | 2.57E-18 |
| LY6D | 6.313143 | 5.070391 | -1.24275 | 0.000452 | 0.003668 |
| PSMB8 | 6.774805 | 5.539807 | -1.235 | 3.04E-25 | 1.32E-21 |
| CXCL1 | 4.21184 | 2.983641 | -1.2282 | 1.02E-08 | 4.31E-07 |
| NKG7 | 3.307357 | 2.080496 | -1.22686 | 2.67E-14 | 5.68E-12 |
| HLA-DQA1 | 3.807908 | 2.581956 | -1.22595 | 5.72E-10 | 3.51E-08 |
| GZMB | 3.214155 | 1.989831 | -1.22432 | 1.32E-13 | 2.17E-11 |
| TMPRSS4 | 4.81012 | 3.588964 | -1.22116 | 7.65E-08 | 2.44E-06 |
| GBP1 | 5.270869 | 4.055219 | -1.21565 | 2.25E-16 | 8.60E-14 |
| IFI44 | 4.939736 | 3.724601 | -1.21513 | 5.32E-12 | 5.91E-10 |
| IGHV4-59 | 57.2945 | 24.77766 | -1.20936 | 0.005371 | 0.019417 |
| RTP4 | 4.065348 | 2.858346 | -1.207 | 3.64E-18 | 1.89E-15 |
| IGHG1 | 5.949759 | 4.767761 | -1.182 | 4.48E-05 | 0.000561 |
| CP | 2.685551 | 1.508893 | -1.17666 | 9.03E-08 | 2.81E-06 |
| TRIM22 | 4.680569 | 3.504386 | -1.17618 | 2.41E-15 | 6.67E-13 |
| CD2 | 3.472944 | 2.30394 | -1.169 | 1.80E-14 | 4.01E-12 |
| HLA-DPA1 | 5.704828 | 4.546229 | -1.1586 | 5.30E-10 | 3.31E-08 |
| KRT15 | 4.755416 | 3.610384 | -1.14503 | 1.07E-06 | 2.41E-05 |
| UBE2L6 | 6.801654 | 5.66751 | -1.13414 | 6.99E-21 | 8.27E-18 |
| CXCL8 | 4.653188 | 3.521655 | -1.13153 | 2.24E-08 | 8.46E-07 |
| AC007991.2 | 1.69361 | 0.773721 | -1.13022 | 4.5E-07 | 1.44E-05 |
| TP63 | 4.321859 | 3.197336 | -1.12452 | 6.00E-13 | 8.39E-11 |
| IFI27 | 6.82265 | 5.698765 | -1.12388 | 9.11E-07 | 2.08E-05 |
| CDH3 | 5.409387 | 4.287171 | -1.12222 | 7.25E-09 | 3.24E-07 |
| KRT13 | 6.98092 | 5.861446 | -1.11947 | 0.003419 | 0.017945 |
| TRAC | 3.718394 | 2.601248 | -1.11715 | 3.15E-13 | 4.82E-11 |
| IL2RG | 4.242369 | 3.126211 | -1.11616 | 1.26E-12 | 1.53E-10 |
| HLA-B | 10.26456 | 9.148548 | -1.11601 | 2.72E-16 | 1.01E-13 |
| IGKC | 6.816735 | 5.702341 | -1.11439 | 0.000109 | 0.001156 |
| OAS2 | 4.584921 | 3.476217 | -1.1087 | 9.21E-16 | 2.85E-13 |
| APOL3 | 3.956223 | 2.847561 | -1.10866 | 5.57E-20 | 4.26E-17 |
| SLPI | 7.269559 | 6.162384 | -1.10717 | 4.16E-05 | 0.000532 |
| C1QB | 6.405717 | 5.299464 | -1.10625 | 5.07E-07 | 1.26E-05 |
| CCL5 | 5.130109 | 4.024958 | -1.10515 | 6.72E-09 | 3.04E-07 |
| TSPAN1 | 5.413581 | 4.318413 | -1.09517 | 4.22E-07 | 1.08E-05 |
| IFI44L | 3.498664 | 2.405523 | -1.09314 | 5.54E-11 | 4.62E-09 |
| STAT1 | 6.382517 | 5.29135 | -1.09117 | 3.30E-16 | 1.19E-13 |
| HLA-A | 9.957932 | 8.866829 | -1.0911 | 1.01E-17 | 4.77E-15 |
| GBP5 | 2.507176 | 1.422423 | -1.08475 | 2.23E-11 | 2.09E-09 |
| GBP1P1 | 4.023787 | 1.900626 | -1.08208 | 7.18E-17 | 3.15E-13 |
| HLA-DQB1 | 4.475435 | 3.398329 | -1.07711 | 6.17E-10 | 3.77E-08 |
| CFH | 4.283815 | 3.20745 | -1.07636 | 3.03E-13 | 4.70E-11 |
| CD3D | 3.812273 | 2.746844 | -1.06543 | 1.18E-13 | 2.03E-11 |
| CLDN1 | 6.585091 | 5.520414 | -1.06468 | 3.70E-08 | 1.31E-06 |
| CLCA4 | 3.329832 | 2.267235 | -1.0626 | 0.000143 | 0.001454 |
| C1QA | 6.698426 | 5.639093 | -1.05933 | 4.16E-07 | 1.07E-05 |
| IFIT3 | 4.959725 | 3.903504 | -1.05622 | 1.81E-10 | 1.34E-08 |
| SAMD9 | 4.001308 | 2.95397 | -1.04734 | 8.51E-14 | 1.56E-11 |
| NLRC5 | 3.432249 | 2.397622 | -1.03463 | 1.10E-17 | 4.77E-15 |
| IFITM1 | 7.013611 | 5.983474 | -1.03014 | 8.32E-09 | 3.63E-07 |
| CCL4 | 2.935245 | 1.906983 | -1.02826 | 2.51E-13 | 3.98E-11 |
| GNLY | 2.312666 | 1.286096 | -1.02657 | 5.82E-13 | 8.22E-11 |
| MMP7 | 4.087504 | 3.073557 | -1.01395 | 1.32E-05 | 0.000203 |
| AL357507.1 | 2.257488 | 1.119733 | -1.01156 | 0.016829 | 0.045748 |
| B2M | 9.972775 | 8.963762 | -1.00901 | 3.93E-20 | 3.20E-17 |
| C1QC | 6.70168 | 5.697883 | -1.0038 | 7.19E-07 | 1.70E-05 |
| HLA-DPB1 | 5.915758 | 4.912891 | -1.00287 | 2.49E-09 | 1.28E-07 |
| BTN3A3 | 3.622247 | 2.6196 | -1.00265 | 3.20E-20 | 2.77E-17 |
| CLDN3 | 2.314635 | 3.316343 | 1.001709 | 3.41E-05 | 0.000452 |
| ELN | 5.597953 | 11.2175 | 1.00278 | 8.74E-06 | 0.000147 |
| IGF2 | 265.3199 | 538.3825 | 1.020898 | 8.43E-06 | 0.000144 |
| UPK2 | 5.473044 | 6.506004 | 1.032961 | 0.001455 | 0.009227 |
| SLIT3 | 2.412635 | 4.939877 | 1.033865 | 5.23E-11 | 1.17E-08 |
| SYT8 | 0.724582 | 1.484283 | 1.034544 | 0.000545 | 0.003465 |
| NKD2 | 3.0066 | 6.166519 | 1.036323 | 0.000182 | 0.001507 |
| MAL | 2.914615 | 3.976144 | 1.061529 | 0.000538 | 0.004216 |
| FXYD4 | 1.549285 | 2.620593 | 1.071308 | 1.65E-06 | 3.46E-05 |
| AOX1 | 0.710216 | 1.549595 | 1.125561 | 0.000423 | 0.002853 |
| PTN | 3.4806 | 4.616365 | 1.135765 | 8.91E-07 | 2.05E-05 |
| UPK3A | 3.276674 | 4.451361 | 1.174687 | 0.000111 | 0.001174 |
| FGF9 | 0.771996 | 1.747576 | 1.17869 | 5.24E-07 | 1.62E-05 |
| GDPD3 | 3.072466 | 4.279807 | 1.207341 | 3.97E-09 | 1.91E-07 |
| SPINK1 | 5.340357 | 6.619113 | 1.278756 | 0.001799 | 0.01087 |
| THBS4 | 1.479864 | 3.807223 | 1.363274 | 3.47E-05 | 0.000428 |
| IGF2-AS | 1.042122 | 2.911226 | 1.482103 | 4.07E-05 | 0.000482 |
| COL26A1 | 2.881414 | 8.530274 | 1.565815 | 6.48E-07 | 1.91E-05 |
| KRT20 | 3.862749 | 5.534695 | 1.671946 | 1.38E-05 | 0.000211 |
| GFRA3 | 0.743789 | 3.144625 | 2.079922 | 0.000825 | 0.004704 |

Table S2: The data of 114 DEGs between the low- and high-risk groups.