supplement table 2:

Top 20 GO, KEGG results for TCGA (up) and CPTAC(down) databases

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Description** | **P value** | **Count** |
| GO:0015267 | channel activity | 1.66E-28 | 245 |
| GO:0022803 | passive transmembrane transporter activity | 2.49E-28 | 245 |
| GO:0005216 | ion channel activity | 3.29E-24 | 217 |
| GO:0022836 | gated channel activity | 1.65E-23 | 179 |
| GO:0005261 | cation channel activity | 7.49E-20 | 170 |
| GO:0046873 | metal ion transmembrane transporter activity | 2.34E-17 | 199 |
| GO:0030546 | signaling receptor activator activity | 5.49E-17 | 221 |
| GO:0048018 | receptor ligand activity | 6.53E-17 | 219 |
| GO:0005539 | glycosaminoglycan binding | 1.27E-14 | 119 |
| GO:0015079 | potassium ion transmembrane transporter activity | 9.93E-14 | 87 |
| GO:0008528 | G protein-coupled peptide receptor activity | 2.41E-13 | 83 |
| GO:0001653 | peptide receptor activity | 5.20E-13 | 84 |
| GO:0015276 | ligand-gated ion channel activity | 1.20E-12 | 78 |
| GO:0022834 | ligand-gated channel activity | 1.20E-12 | 78 |
| GO:0034987 | immunoglobulin receptor binding | 3.03E-12 | 52 |
| GO:0005244 | voltage-gated ion channel activity | 3.66E-12 | 100 |
| GO:0022832 | voltage-gated channel activity | 3.66E-12 | 100 |
| GO:0008201 | heparin binding | 4.09E-12 | 89 |
| GO:0099094 | ligand-gated cation channel activity | 4.68E-12 | 64 |
| GO:0022843 | voltage-gated cation channel activity | 6.62E-12 | 77 |
| **ID** | **Description** | **P value** | **Count** |
| hsa04080 | Neuroactive ligand-receptor interaction | 3.78E-24 | 181 |
| hsa04020 | Calcium signaling pathway | 3.86E-12 | 116 |
| hsa04270 | Vascular smooth muscle contraction | 2.28E-09 | 69 |
| hsa04024 | cAMP signaling pathway | 2.42E-09 | 100 |
| hsa04060 | Cytokine-cytokine receptor interaction | 2.52E-09 | 128 |
| hsa04512 | ECM-receptor interaction | 8.39E-08 | 48 |
| hsa04713 | Circadian entrainment | 1.61E-07 | 51 |
| hsa04950 | Maturity onset diabetes of the young | 2.40E-07 | 20 |
| hsa05414 | Dilated cardiomyopathy | 3.13E-07 | 50 |
| hsa04911 | Insulin secretion | 3.36E-07 | 46 |
| hsa05144 | Malaria | 3.75E-07 | 31 |
| hsa05032 | Morphine addiction | 9.68E-07 | 47 |
| hsa04022 | cGMP-PKG signaling pathway | 2.35E-06 | 74 |
| hsa04970 | Salivary secretion | 5.86E-06 | 46 |
| hsa04726 | Serotonergic synapse | 6.90E-06 | 54 |
| hsa04061 | Viral protein interaction with cytokine and cytokine receptor | 1.06E-05 | 48 |
| hsa04510 | Focal adhesion | 1.68E-05 | 83 |
| hsa04514 | Cell adhesion molecules | 1.77E-05 | 65 |
| hsa04930 | Type II diabetes mellitus | 3.45E-05 | 26 |
| hsa05226 | Gastric cancer | 3.68E-05 | 64 |
| **ID** | **Description** | **P value** | **Count** |
| GO:0022803 | passive transmembrane transporter activity | 3.53E-19 | 225 |
| GO:0015267 | channel activity | 6.04E-19 | 224 |
| GO:0030546 | signaling receptor activator activity | 2.62E-18 | 227 |
| GO:0048018 | receptor ligand activity | 3.03E-18 | 225 |
| GO:0022836 | gated channel activity | 2.16E-17 | 167 |
| GO:0046873 | metal ion transmembrane transporter activity | 2.80E-16 | 198 |
| GO:0005216 | ion channel activity | 3.03E-16 | 199 |
| GO:0005125 | cytokine activity | 2.03E-15 | 123 |
| GO:0015079 | potassium ion transmembrane transporter activity | 2.07E-14 | 89 |
| GO:0005539 | glycosaminoglycan binding | 1.07E-13 | 118 |
| GO:0005261 | cation channel activity | 1.55E-13 | 156 |
| GO:0005201 | extracellular matrix structural constituent | 3.24E-12 | 90 |
| GO:0008201 | heparin binding | 9.61E-12 | 89 |
| GO:0005267 | potassium channel activity | 1.04E-11 | 69 |
| GO:0022843 | voltage-gated cation channel activity | 1.43E-11 | 77 |
| GO:0004714 | transmembrane receptor protein tyrosine kinase activity | 3.67E-11 | 42 |
| GO:0015077 | monovalent inorganic cation transmembrane transporter activity | 1.35E-10 | 164 |
| GO:0005244 | voltage-gated ion channel activity | 1.69E-10 | 97 |
| GO:0022832 | voltage-gated channel activity | 1.69E-10 | 97 |
| GO:0005249 | voltage-gated potassium channel activity | 2.40E-10 | 53 |
| **ID** | **Description** | **P value** | **Count** |
| hsa04080 | Neuroactive ligand-receptor interaction | 1.73E-13 | 158 |
| hsa04060 | Cytokine-cytokine receptor interaction | 7.31E-11 | 134 |
| hsa04020 | Calcium signaling pathway | 2.00E-07 | 104 |
| hsa04061 | Viral protein interaction with cytokine and cytokine receptor | 9.27E-07 | 51 |
| hsa04972 | Pancreatic secretion | 5.20E-06 | 50 |
| hsa00830 | Retinol metabolism | 6.40E-06 | 37 |
| hsa04974 | Protein digestion and absorption | 7.39E-06 | 50 |
| hsa04657 | IL-17 signaling pathway | 1.30E-05 | 46 |
| hsa04512 | ECM-receptor interaction | 2.59E-05 | 43 |
| hsa04024 | cAMP signaling pathway | 3.29E-05 | 88 |
| hsa04713 | Circadian entrainment | 3.60E-05 | 46 |
| hsa04270 | Vascular smooth muscle contraction | 3.79E-05 | 59 |
| hsa04976 | Bile secretion | 5.13E-05 | 43 |
| hsa04610 | Complement and coagulation cascades | 5.79E-05 | 41 |
| hsa05150 | Staphylococcus aureus infection | 6.22E-05 | 45 |
| hsa02010 | ABC transporters | 9.42E-05 | 25 |
| hsa05226 | Gastric cancer | 0.000120482 | 63 |
| hsa04726 | Serotonergic synapse | 0.000125788 | 51 |
| hsa05414 | Dilated cardiomyopathy | 0.000143664 | 44 |