

| Gene Ontology ID | Gene Ontology term (Biological Process) | Number of annotated genes | Number of significant genes | Number of expected genes | p-value | (Fisher test) |
|------------------|---|---------------------------|-----------------------------|--------------------------|----------|---------------|
| GO:0006955 | immune response | 590 | 224 | 121.25 | 7.70E-24 | |
| GO:0002376 | immune system process | 1200 | 376 | 246.61 | 3.30E-21 | |
| GO:0044699 | single-organism process | 7904 | 1774 | 1624.35 | 1.30E-20 | |
| GO:0002684 | positive regulation of immune system pro... | 394 | 156 | 80.97 | 8.80E-19 | |
| GO:0050778 | positive regulation of immune response | 248 | 110 | 50.97 | 9.90E-18 | |
| GO:0002682 | regulation of immune system process | 634 | 219 | 130.29 | 1.60E-17 | |
| GO:0050776 | regulation of immune response | 337 | 136 | 69.26 | 2.60E-17 | |
| GO:0009605 | response to external stimulus | 1216 | 364 | 249.9 | 7.20E-17 | |
| GO:0045321 | leukocyte activation | 437 | 160 | 89.81 | 1.60E-15 | |
| GO:0042110 | T cell activation | 253 | 107 | 51.99 | 1.60E-15 | |
| GO:0002252 | immune effector process | 328 | 129 | 67.41 | 2.00E-15 | |
| GO:0001775 | cell activation | 519 | 182 | 106.66 | 2.20E-15 | |
| GO:0006952 | defense response | 609 | 205 | 125.16 | 4.40E-15 | |
| GO:0002250 | adaptive immune response | 164 | 78 | 33.7 | 5.90E-15 | |
| GO:0050900 | leukocyte migration | 156 | 73 | 32.06 | 1.20E-13 | |
| GO:0002460 | adaptive immune response based on somati... | 153 | 72 | 31.44 | 1.30E-13 | |
| GO:0046649 | lymphocyte activation | 367 | 135 | 75.42 | 2.00E-13 | |
| GO:0006811 | ion transport | 837 | 255 | 172.01 | 8.80E-13 | |
| GO:0002253 | activation of immune response | 176 | 77 | 36.17 | 2.00E-12 | |
| GO:0046651 | lymphocyte proliferation | 161 | 72 | 33.09 | 2.90E-12 | |
| GO:0032943 | mononuclear cell proliferation | 162 | 72 | 33.29 | 4.20E-12 | |
| GO:0044763 | single-organism cellular process | 7050 | 1574 | 1448.84 | 5.30E-12 | |
| GO:0042098 | T cell proliferation | 117 | 57 | 24.04 | 7.90E-12 | |
| GO:0070661 | leukocyte proliferation | 167 | 73 | 34.32 | 8.10E-12 | |
| GO:0001816 | cytokine production | 350 | 125 | 71.93 | 1.70E-11 | |
| GO:0006812 | cation transport | 627 | 197 | 128.85 | 2.40E-11 | |
| GO:0044707 | single-multicellular organism process | 3634 | 876 | 746.82 | 2.80E-11 | |
| GO:0042221 | response to chemical | 2104 | 543 | 432.39 | 3.00E-11 | |
| GO:0002443 | leukocyte mediated immunity | 178 | 75 | 36.58 | 3.70E-11 | |
| GO:0030001 | metal ion transport | 451 | 151 | 92.68 | 3.70E-11 | |
| GO:0032501 | multicellular organismal process | 3754 | 899 | 771.48 | 6.40E-11 | |
| GO:0030595 | leukocyte chemotaxis | 104 | 51 | 21.37 | 7.30E-11 | |
| GO:0070887 | cellular response to chemical stimulus | 1351 | 369 | 277.64 | 8.60E-11 | |
| GO:0045087 | innate immune response | 267 | 100 | 54.87 | 8.90E-11 | |
| GO:0050670 | regulation of lymphocyte proliferation | 126 | 58 | 25.89 | 9.40E-11 | |
| GO:0002449 | lymphocyte mediated immunity | 142 | 63 | 29.18 | 1.00E-10 | |
| GO:0097530 | granulocyte migration | 62 | 36 | 12.74 | 1.00E-10 | |

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|------------|---|------|------|--------|----------|
| GO:0002456 | T cell mediated immunity | 65 | 37 | 13.36 | 1.20E-10 |
| GO:0048002 | antigen processing and presentation of p... | 52 | 32 | 10.69 | 1.30E-10 |
| GO:0032944 | regulation of mononuclear cell prolifera... | 127 | 58 | 26.1 | 1.40E-10 |
| GO:0043207 | response to external biotic stimulus | 461 | 151 | 94.74 | 2.30E-10 |
| GO:0051707 | response to other organism | 461 | 151 | 94.74 | 2.30E-10 |
| GO:0042129 | regulation of T cell proliferation | 92 | 46 | 18.91 | 2.70E-10 |
| GO:0097529 | myeloid leukocyte migration | 89 | 45 | 18.29 | 2.70E-10 |
| GO:0070663 | regulation of leukocyte proliferation | 129 | 58 | 26.51 | 3.00E-10 |
| GO:0019882 | antigen processing and presentation | 81 | 42 | 16.65 | 3.80E-10 |
| GO:0001817 | regulation of cytokine production | 302 | 108 | 62.06 | 3.80E-10 |
| GO:0034220 | ion transmembrane transport | 488 | 157 | 100.29 | 4.40E-10 |
| GO:0071621 | granulocyte chemotaxis | 59 | 34 | 12.13 | 4.40E-10 |
| GO:1990266 | neutrophil migration | 49 | 30 | 10.07 | 6.10E-10 |
| GO:0002819 | regulation of adaptive immune response | 100 | 48 | 20.55 | 6.70E-10 |
| GO:0009607 | response to biotic stimulus | 477 | 153 | 98.03 | 9.50E-10 |
| GO:0050896 | response to stimulus | 4607 | 1067 | 946.78 | 1.70E-09 |
| GO:0030593 | neutrophil chemotaxis | 48 | 29 | 9.86 | 1.80E-09 |
| GO:0002764 | immune response-regulating signaling pat... | 158 | 65 | 32.47 | 2.40E-09 |
| GO:0050863 | regulation of T cell activation | 155 | 64 | 31.85 | 2.70E-09 |
| GO:0002757 | immune response-activating signal transd... | 146 | 61 | 30 | 3.70E-09 |
| GO:0048878 | chemical homeostasis | 593 | 180 | 121.87 | 3.80E-09 |
| GO:0002822 | regulation of adaptive immune response b... | 95 | 45 | 19.52 | 3.90E-09 |
| GO:0060326 | cell chemotaxis | 140 | 59 | 28.77 | 4.50E-09 |
| GO:0002821 | positive regulation of adaptive immune r... | 63 | 34 | 12.95 | 4.60E-09 |
| GO:0034097 | response to cytokine | 409 | 133 | 84.05 | 4.80E-09 |
| GO:0098660 | inorganic ion transmembrane transport | 343 | 115 | 70.49 | 8.00E-09 |
| GO:0006954 | inflammatory response | 328 | 111 | 67.41 | 8.10E-09 |
| GO:0072676 | lymphocyte migration | 35 | 23 | 7.19 | 8.80E-09 |
| GO:0002521 | leukocyte differentiation | 303 | 104 | 62.27 | 1.00E-08 |
| GO:0002694 | regulation of leukocyte activation | 259 | 92 | 53.23 | 1.10E-08 |
| GO:0002824 | positive regulation of adaptive immune r... | 62 | 33 | 12.74 | 1.20E-08 |
| GO:0002697 | regulation of immune effector process | 174 | 68 | 35.76 | 1.30E-08 |
| GO:0050865 | regulation of cell activation | 282 | 98 | 57.95 | 1.40E-08 |
| GO:0048584 | positive regulation of response to stimu... | 1028 | 282 | 211.26 | 1.50E-08 |

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|------------|---|------|-----|--------|----------|
| GO:0002703 | regulation of leukocyte mediated immunit... | 108 | 48 | 22.2 | 1.60E-08 |
| GO:0051249 | regulation of lymphocyte activation | 222 | 81 | 45.62 | 2.20E-08 |
| GO:0051239 | regulation of multicellular organismal p... | 1570 | 405 | 322.65 | 2.60E-08 |
| GO:0098655 | cation transmembrane transport | 365 | 119 | 75.01 | 2.70E-08 |
| GO:0032879 | regulation of localization | 1325 | 349 | 272.3 | 3.00E-08 |
| GO:0010033 | response to organic substance | 1643 | 421 | 337.65 | 3.10E-08 |
| GO:0009611 | response to wounding | 484 | 149 | 99.47 | 3.40E-08 |
| GO:2000106 | regulation of leukocyte apoptotic proces... | 59 | 31 | 12.13 | 5.10E-08 |
| GO:0050801 | ion homeostasis | 404 | 128 | 83.03 | 5.30E-08 |
| GO:0071310 | cellular response to organic substance | 1085 | 292 | 222.98 | 5.90E-08 |
| GO:0072678 | T cell migration | 21 | 16 | 4.32 | 6.80E-08 |
| GO:0032844 | regulation of homeostatic process | 253 | 88 | 51.99 | 7.20E-08 |
| GO:0006091 | generation of precursor metabolites and ... | 202 | 74 | 41.51 | 7.30E-08 |
| GO:0051049 | regulation of transport | 950 | 260 | 195.23 | 7.30E-08 |
| GO:0002706 | regulation of lymphocyte mediated immuni... | 90 | 41 | 18.5 | 7.60E-08 |
| GO:0050870 | positive regulation of T cell activation | 106 | 46 | 21.78 | 7.70E-08 |
| GO:0030217 | T cell differentiation | 136 | 55 | 27.95 | 8.20E-08 |
| GO:0002705 | positive regulation of leukocyte mediate... | 63 | 32 | 12.95 | 8.80E-08 |
| GO:0055085 | transmembrane transport | 679 | 195 | 139.54 | 9.60E-08 |
| GO:0070228 | regulation of lymphocyte apoptotic proce... | 41 | 24 | 8.43 | 1.10E-07 |
| GO:0042592 | homeostatic process | 924 | 253 | 189.89 | 1.10E-07 |
| GO:0002709 | regulation of T cell mediated immunity | 52 | 28 | 10.69 | 1.10E-07 |
| GO:0031347 | regulation of defense response | 278 | 94 | 57.13 | 1.20E-07 |
| GO:0051240 | positive regulation of multicellular org... | 430 | 133 | 88.37 | 1.40E-07 |
| GO:0046631 | alpha-beta T cell activation | 76 | 36 | 15.62 | 1.40E-07 |
| GO:0006950 | response to stress | 1987 | 493 | 408.35 | 1.50E-07 |
| GO:0030098 | lymphocyte differentiation | 191 | 70 | 39.25 | 1.60E-07 |
| GO:0032101 | regulation of response to external stimu... | 368 | 117 | 75.63 | 1.60E-07 |
| GO:0055082 | cellular chemical homeostasis | 384 | 121 | 78.92 | 1.70E-07 |
| GO:0002683 | negative regulation of immune system pro... | 167 | 63 | 34.32 | 2.00E-07 |
| GO:0098662 | inorganic cation transmembrane transport | 304 | 100 | 62.47 | 2.20E-07 |

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|------------|---|------|-----|--------|----------|--|
| GO:0042102 | positive regulation of T cell proliferat... | 62 | 31 | | | |
| | 12.74 2.20E-07 | | | | | |
| GO:0001819 | positive regulation of cytokine producti... | 171 | 64 | | | |
| | 35.14 2.30E-07 | | | | | |
| GO:0043269 | regulation of ion transport | 335 | 108 | 68.85 | 2.30E-07 | |
| GO:0007584 | response to nutrient | 189 | 69 | 38.84 | 2.30E-07 | |
| GO:0002711 | positive regulation of T cell mediated i... | 45 | 25 | 9.25 | | |
| | 2.40E-07 | | | | | |
| GO:0009617 | response to bacterium | 324 | 105 | 66.59 | 2.50E-07 | |
| GO:0002685 | regulation of leukocyte migration | 84 | 38 | 17.26 | 2.80E-07 | |
| GO:0098542 | defense response to other organism | 176 | 65 | 36.17 | 3.20E-07 | |
| GO:0002699 | positive regulation of immune effector p... | 108 | 45 | 22.2 | | |
| | 4.40E-07 | | | | | |
| GO:0002708 | positive regulation of lymphocyte mediat... | 61 | 30 | | | |
| | 12.54 5.50E-07 | | | | | |
| GO:0022610 | biological adhesion | 628 | 179 | 129.06 | 5.80E-07 | |
| GO:0046633 | alpha-beta T cell proliferation | 21 | 15 | 4.32 | 7.20E-07 | |
| GO:0071345 | cellular response to cytokine stimulus | 315 | 101 | 64.74 | | |
| | 7.40E-07 | | | | | |
| GO:1901700 | response to oxygen-containing compound | 1026 | 272 | 210.85 | | |
| | 7.40E-07 | | | | | |
| GO:2000107 | negative regulation of leukocyte apoptot... | 36 | 21 | 7.4 | | |
| | 7.50E-07 | | | | | |
| GO:0007159 | leukocyte cell-cell adhesion | 36 | 21 | 7.4 | 7.50E-07 | |
| GO:0001910 | regulation of leukocyte mediated cytotox... | 50 | 26 | | | |
| | 10.28 7.90E-07 | | | | | |
| GO:0002696 | positive regulation of leukocyte activat... | 162 | 60 | | | |
| | 33.29 8.10E-07 | | | | | |
| GO:0006090 | pyruvate metabolic process | 62 | 30 | 12.74 | 8.60E-07 | |
| GO:0001913 | T cell mediated cytotoxicity | 39 | 22 | 8.01 | 9.10E-07 | |
| GO:0006875 | cellular metal ion homeostasis | 278 | 91 | 57.13 | 9.70E-07 | |
| GO:0007155 | cell adhesion | 621 | 176 | 127.62 | 1.10E-06 | |
| GO:0002474 | antigen processing and presentation of p... | 34 | 20 | 6.99 | | |
| | 1.10E-06 | | | | | |
| GO:0070838 | divalent metal ion transport | 233 | 79 | 47.88 | 1.10E-06 | |
| GO:0006935 | chemotaxis | 291 | 94 | 59.8 | 1.20E-06 | |
| GO:0055080 | cation homeostasis | 357 | 111 | 73.37 | 1.20E-06 | |
| GO:0050867 | positive regulation of cell activation | 171 | 62 | 35.14 | | |
| | 1.20E-06 | | | | | |
| GO:0050671 | positive regulation of lymphocyte prolif... | 85 | 37 | | | |
| | 17.47 1.30E-06 | | | | | |
| GO:0001909 | leukocyte mediated cytotoxicity | 63 | 30 | 12.95 | 1.30E-06 | |
| GO:0032609 | interferon-gamma production | 63 | 30 | 12.95 | 1.30E-06 | |
| GO:0031341 | regulation of cell killing | 54 | 27 | 11.1 | 1.30E-06 | |
| GO:0072511 | divalent inorganic cation transport | 238 | 80 | 48.91 | | |
| | 1.40E-06 | | | | | |
| GO:0048534 | hematopoietic or lymphoid organ developm... | 532 | 154 | | | |
| | 109.33 1.40E-06 | | | | | |
| GO:0042330 | taxis | 292 | 94 | 60.01 | 1.50E-06 | |

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|------------|---|------|-----|--------|----------|--|--|
| GO:0044765 | single-organism transport | 2107 | 511 | 433.01 | 1.80E-06 | | |
| GO:0071887 | leukocyte apoptotic process | 70 | 32 | 14.39 | 1.80E-06 | | |
| GO:0002367 | cytokine production involved in immune r... | 43 | 23 | 8.84 | 1.80E-06 | | |
| GO:0032946 | positive regulation of mononuclear cell ... | 86 | 37 | 17.67 | 1.80E-06 | | |
| GO:0030003 | cellular cation homeostasis | 301 | 96 | 61.86 | 1.80E-06 | | |
| GO:0072503 | cellular divalent inorganic cation homeo... | 232 | 78 | 47.68 | 1.80E-06 | | |
| GO:0030335 | positive regulation of cell migration | 247 | 82 | 50.76 | 1.80E-06 | | |
| GO:0045088 | regulation of innate immune response | 127 | 49 | 26.1 | 2.10E-06 | | |
| GO:0032649 | regulation of interferon-gamma productio... | 58 | 28 | 11.92 | 2.10E-06 | | |
| GO:0002687 | positive regulation of leukocyte migrati... | 61 | 29 | 12.54 | 2.10E-06 | | |
| GO:0055114 | oxidation-reduction process | 632 | 177 | 129.88 | 2.30E-06 | | |
| GO:0040017 | positive regulation of locomotion | 260 | 85 | 53.43 | 2.30E-06 | | |
| GO:0006873 | cellular ion homeostasis | 307 | 97 | 63.09 | 2.50E-06 | | |
| GO:0055065 | metal ion homeostasis | 323 | 101 | 66.38 | 2.70E-06 | | |
| GO:0030097 | hemopoiesis | 509 | 147 | 104.6 | 2.80E-06 | | |
| GO:0001912 | positive regulation of leukocyte mediate... | 47 | 24 | 9.66 | 3.20E-06 | | |
| GO:0046640 | regulation of alpha-beta T cell prolifer... | 18 | 13 | 3.7 | 3.40E-06 | | |
| GO:0006941 | striated muscle contraction | 98 | 40 | 20.14 | 3.60E-06 | | |
| GO:0070665 | positive regulation of leukocyte prolife... | 88 | 37 | 18.08 | 3.60E-06 | | |
| GO:0051251 | positive regulation of lymphocyte activa... | 147 | 54 | 30.21 | 3.80E-06 | | |
| GO:0006816 | calcium ion transport | 217 | 73 | 44.6 | 3.80E-06 | | |
| GO:0001914 | regulation of T cell mediated cytotoxici... | 36 | 20 | 7.4 | 3.90E-06 | | |
| GO:2000147 | positive regulation of cell motility | 252 | 82 | 51.79 | 4.30E-06 | | |
| GO:2000403 | positive regulation of lymphocyte migrat... | 16 | 12 | 3.29 | 4.40E-06 | | |
| GO:0030334 | regulation of cell migration | 419 | 124 | 86.11 | 4.70E-06 | | |
| GO:0009615 | response to virus | 148 | 54 | 30.42 | 4.80E-06 | | |
| GO:0072507 | divalent inorganic cation homeostasis | 245 | 80 | 50.35 | 4.90E-06 | | |
| GO:0030155 | regulation of cell adhesion | 249 | 81 | 51.17 | 5.00E-06 | | |
| GO:0002690 | positive regulation of leukocyte chemota... | 45 | 23 | 9.25 | 5.00E-06 | | |
| GO:0031343 | positive regulation of cell killing | 51 | 25 | 10.48 | 5.20E-06 | | |
| GO:0098602 | single organism cell adhesion | 269 | 86 | 55.28 | 5.60E-06 | | |
| GO:0050921 | positive regulation of chemotaxis | 73 | 32 | 15 | 5.60E-06 | | |

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|------------|---|------|-----|----------|----------|------|--|
| GO:0002520 | immune system development | 562 | 158 | 115.5 | 6.50E-06 | | |
| GO:0019725 | cellular homeostasis | 451 | 131 | 92.68 | 7.20E-06 | | |
| GO:0070227 | lymphocyte apoptotic process | 52 | 25 | 10.69 | 8.10E-06 | | |
| GO:0044259 | multicellular organismal macromolecule m... | 52 | 25 | 10.69 | 8.10E-06 | | |
| GO:0046634 | regulation of alpha-beta T cell activati... | 49 | 24 | 10.07 | 8.20E-06 | | |
| GO:0070482 | response to oxygen levels | 291 | 91 | 59.8 | 8.30E-06 | | |
| GO:0051272 | positive regulation of cellular componen... | 260 | 83 | 53.43 | 8.60E-06 | | |
| GO:0002495 | antigen processing and presentation of p... | 19 | 13 | 8.70E-06 | | 3.9 | |
| GO:0002504 | antigen processing and presentation of p... | 19 | 13 | 8.70E-06 | | 3.9 | |
| GO:0051704 | multi-organism process | 1034 | 267 | 212.5 | 9.20E-06 | | |
| GO:2000401 | regulation of lymphocyte migration | 24 | 15 | 4.93 | 9.20E-06 | | |
| GO:0002274 | myeloid leukocyte activation | 105 | 41 | 21.58 | 1.00E-05 | | |
| GO:0016337 | single organismal cell-cell adhesion | 230 | 75 | 47.27 | 1.00E-05 | | |
| GO:0051238 | sequestering of metal ion | 75 | 32 | 15.41 | 1.10E-05 | | |
| GO:0001916 | positive regulation of T cell mediated c... | 35 | 19 | 1.10E-05 | | 7.19 | |
| GO:0002704 | negative regulation of leukocyte mediate... | 17 | 12 | 1.20E-05 | | 3.49 | |
| GO:0001906 | cell killing | 72 | 31 | 14.8 | 1.20E-05 | | |
| GO:0003008 | system process | 854 | 225 | 175.5 | 1.20E-05 | | |
| GO:0050777 | negative regulation of immune response | 50 | 24 | 10.28 | 1.30E-05 | | |
| GO:0032963 | collagen metabolic process | 50 | 24 | 10.28 | 1.30E-05 | | |
| GO:0051283 | negative regulation of sequestering of c... | 69 | 30 | 14.18 | 1.30E-05 | | |
| GO:0051209 | release of sequestered calcium ion into ... | 69 | 30 | 14.18 | 1.30E-05 | | |
| GO:0002768 | immune response-regulating cell surface ... | 96 | 38 | 19.73 | 1.40E-05 | | |
| GO:0002429 | immune response-activating cell surface ... | 86 | 35 | 17.67 | 1.50E-05 | | |
| GO:0007600 | sensory perception | 217 | 71 | 44.6 | 1.50E-05 | | |
| GO:0002369 | T cell cytokine production | 15 | 11 | 3.08 | 1.60E-05 | | |
| GO:0030574 | collagen catabolic process | 15 | 11 | 3.08 | 1.60E-05 | | |
| GO:0036293 | response to decreased oxygen levels | 260 | 82 | 53.43 | 1.60E-05 | | |
| GO:0002218 | activation of innate immune response | 73 | 31 | 15 | 1.70E-05 | | |
| GO:0044236 | multicellular organismal metabolic proce... | 60 | 27 | 12.33 | 1.70E-05 | | |
| GO:0048513 | organ development | 2062 | 493 | 423.76 | 1.70E-05 | | |
| GO:0045089 | positive regulation of innate immune res... | 97 | 38 | 19.93 | 1.90E-05 | | |
| GO:0051282 | regulation of sequestering of calcium io... | 70 | 30 | 14.39 | 1.90E-05 | | |
| GO:0002455 | humoral immune response mediated by circ... | 25 | 15 | 5.14 | 1.90E-05 | | |

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|------------|---|----------|-----|--------|----------|
| GO:0002688 | regulation of leukocyte chemotaxis | 54 | 25 | 11.1 | 1.90E-05 |
| GO:0071219 | cellular response to molecule of bacteri... | 118 | 44 | | |
| | 24.25 | 1.90E-05 | | | |
| GO:0002478 | antigen processing and presentation of e... | 20 | 13 | 4.11 | |
| | 2.00E-05 | | | | |
| GO:0046641 | positive regulation of alpha-beta T cell... | 13 | 10 | 2.67 | |
| | 2.00E-05 | | | | |
| GO:2000406 | positive regulation of T cell migration | 13 | 10 | 2.67 | |
| | 2.00E-05 | | | | |
| GO:0008016 | regulation of heart contraction | 101 | 39 | 20.76 | 2.20E-05 |
| GO:0051270 | regulation of cellular component movemen... | 490 | 138 | | |
| | 100.7 | 2.30E-05 | | | |
| GO:0032729 | positive regulation of interferon-gamma ... | 28 | 16 | 5.75 | |
| | 2.30E-05 | | | | |
| GO:1903034 | regulation of response to wounding | 235 | 75 | 48.29 | 2.30E-05 |
| GO:0003015 | heart process | 119 | 44 | 24.46 | 2.40E-05 |
| GO:0060047 | heart contraction | 119 | 44 | 24.46 | 2.40E-05 |
| GO:0001666 | response to hypoxia | 255 | 80 | 52.4 | 2.50E-05 |
| GO:0051208 | sequestering of calcium ion | 71 | 30 | 14.59 | 2.60E-05 |
| GO:2000021 | regulation of ion homeostasis | 123 | 45 | 25.28 | 2.70E-05 |
| GO:0042493 | response to drug | 392 | 114 | 80.56 | 2.70E-05 |
| GO:0007166 | cell surface receptor signaling pathway | 1541 | 377 | 316.69 | |
| | 2.80E-05 | | | | |
| GO:0070229 | negative regulation of lymphocyte apopto... | 23 | 14 | 4.73 | |
| | 2.80E-05 | | | | |
| GO:0032611 | interleukin-1 beta production | 34 | 18 | 6.99 | 2.90E-05 |
| GO:0048518 | positive regulation of biological proces... | 2990 | 690 | | |
| | 614.47 | 2.90E-05 | | | |
| GO:2000145 | regulation of cell motility | 438 | 125 | 90.01 | 2.90E-05 |
| GO:0002718 | regulation of cytokine production involv... | 34 | 18 | 6.99 | |
| | 2.90E-05 | | | | |
| GO:0006096 | glycolytic process | 46 | 22 | 9.45 | 3.10E-05 |
| GO:0031349 | positive regulation of defense response | 142 | 50 | 29.18 | |
| | 3.20E-05 | | | | |
| GO:0050672 | negative regulation of lymphocyte prolif... | 40 | 20 | 8.22 | |
| | 3.20E-05 | | | | |
| GO:0032945 | negative regulation of mononuclear cell ... | 40 | 20 | 8.22 | |
| | 3.20E-05 | | | | |
| GO:0015980 | energy derivation by oxidation of organi... | 146 | 51 | 30 | |
| | 3.50E-05 | | | | |
| GO:0071222 | cellular response to lipopolysaccharide | 110 | 41 | 22.61 | |
| | 3.70E-05 | | | | |
| GO:0031667 | response to nutrient levels | 350 | 103 | 71.93 | 3.80E-05 |
| GO:0002237 | response to molecule of bacterial origin | 250 | 78 | | |
| | 51.38 | 3.90E-05 | | | |
| GO:0006874 | cellular calcium ion homeostasis | 219 | 70 | 45.01 | 4.10E-05 |
| GO:0002707 | negative regulation of lymphocyte mediat... | 16 | 11 | 3.29 | |
| | 4.20E-05 | | | | |

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|------------|---|------|--------|----------|----------|
| GO:0044243 | multicellular organismal catabolic proce... | 16 | 11 | 3.29 | 4.20E-05 |
| GO:0055074 | calcium ion homeostasis | 227 | 72 | 46.65 | 4.20E-05 |
| GO:2000404 | regulation of T cell migration | 16 | 11 | 3.29 | 4.20E-05 |
| GO:0050850 | positive regulation of calcium-mediated ... | 21 | 13 | 4.32 | 4.30E-05 |
| GO:0033993 | response to lipid653 | 175 | 134.2 | 4.40E-05 | |
| GO:0032663 | regulation of interleukin-2 production | 32 | 17 | 6.58 | 4.60E-05 |
| GO:0050920 | regulation of chemotaxis | 97 | 37 | 19.93 | 4.90E-05 |
| GO:0046635 | positive regulation of alpha-beta T cell... | 38 | 19 | 7.81 | 5.00E-05 |
| GO:0070664 | negative regulation of leukocyte prolife... | 41 | 20 | 8.43 | 5.00E-05 |
| GO:0006928 | cellular component movement | 986 | 251 | 202.63 | 5.10E-05 |
| GO:0070232 | regulation of T cell apoptotic process | 24 | 14 | 4.93 | 5.50E-05 |
| GO:0002695 | negative regulation of leukocyte activat... | 87 | 34 | 17.88 | 5.50E-05 |
| GO:0019886 | antigen processing and presentation of e... | 14 | 10 | 2.88 | 5.80E-05 |
| GO:0051179 | localization | 3260 | 744 | 669.96 | 5.90E-05 |
| GO:0009991 | response to extracellular stimulus370 | 107 | 76.04 | 6.00E-05 | |
| GO:0002440 | production of molecular mediator of immu... | 91 | 35 | 18.7 | 6.30E-05 |
| GO:0016477 | cell migration | 713 | 188 | 146.53 | 6.30E-05 |
| GO:0002698 | negative regulation of immune effector p... | 51 | 23 | 10.48 | 6.60E-05 |
| GO:0032103 | positive regulation of response to exter... | 138 | 48 | 28.36 | 6.60E-05 |
| GO:0048583 | regulation of response to stimulus2056 | 486 | 422.53 | 7.10E-05 | |
| GO:0002437 | inflammatory response to antigenic stimu... | 33 | 17 | 6.78 | 7.60E-05 |
| GO:0007186 | G-protein coupled receptor signaling pat... | 364 | 105 | 74.81 | 7.90E-05 |
| GO:0051607 | defense response to virus | 92 | 35 | 18.91 | 8.20E-05 |
| GO:0034765 | regulation of ion transmembrane transpor... | 173 | 57 | 35.55 | 8.20E-05 |
| GO:0051674 | localization of cell | 760 | 198 | 156.19 | 8.40E-05 |
| GO:0048870 | cell motility | 760 | 198 | 156.19 | 8.40E-05 |
| GO:1901701 | cellular response to oxygen-containing c... | 584 | 157 | 120.02 | 9.20E-05 |
| GO:0050663 | cytokine secretion | 96 | 36 | 19.73 | 9.20E-05 |
| GO:0031348 | negative regulation of defense response | 82 | 32 | 16.85 | 9.30E-05 |
| GO:0050707 | regulation of cytokine secretion | 82 | 32 | 16.85 | 9.30E-05 |
| GO:0014070 | response to organic cyclic compound | 683 | 180 | 140.36 | 9.30E-05 |

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|------------|---|------|-----|--------|----------|--|--|
| GO:0051234 | establishment of localization | 2620 | 606 | 538.43 | | | |
| | 9.40E-05 | | | | | | |
| GO:0015672 | monovalent inorganic cation transport | 280 | 84 | 57.54 | | | |
| | 9.50E-05 | | | | | | |
| GO:0002224 | toll-like receptor signaling pathway | 49 | 22 | 10.07 | | | |
| | 1.00E-04 | | | | | | |
| GO:0019884 | antigen processing and presentation of e... | 25 | 14 | 5.14 | | | |
| | 1.00E-04 | | | | | | |
| GO:0050727 | regulation of inflammatory response | 159 | 53 | 32.68 | | | |
| | 1.00E-04 | | | | | | |
| GO:0006810 | transport | 2535 | 587 | 520.97 | 1.10E-04 | | |
| GO:0050866 | negative regulation of cell activation | 93 | 35 | 19.11 | | | |
| | 1.10E-04 | | | | | | |
| GO:0032612 | interleukin-1 production | 37 | 18 | 7.6 | 1.20E-04 | | |
| GO:0019221 | cytokine-mediated signaling pathway | 175 | 57 | 35.96 | | | |
| | 1.20E-04 | | | | | | |
| GO:0051250 | negative regulation of lymphocyte activa... | 76 | 30 | | | | |
| | 15.62 1.20E-04 | | | | | | |
| GO:0040012 | regulation of locomotion | 476 | 131 | 97.82 | 1.20E-04 | | |
| GO:0042108 | positive regulation of cytokine biosynth... | 37 | 18 | 7.6 | | | |
| | 1.20E-04 | | | | | | |
| GO:0022407 | regulation of cell-cell adhesion | 76 | 30 | 15.62 | 1.20E-04 | | |
| | | | | | | | |
| GO:0002673 | regulation of acute inflammatory respons... | 37 | 18 | 7.6 | | | |
| | 1.20E-04 | | | | | | |
| GO:0002758 | innate immune response-activating signal... | 66 | 27 | | | | |
| | 13.56 1.30E-04 | | | | | | |
| GO:0051480 | cytosolic calcium ion homeostasis | 164 | 54 | 33.7 | 1.30E-04 | | |
| | | | | | | | |
| GO:0033630 | positive regulation of cell adhesion med... | 15 | 10 | 3.08 | | | |
| | 1.40E-04 | | | | | | |
| GO:0002526 | acute inflammatory response | 80 | 31 | 16.44 | 1.40E-04 | | |
| GO:0016064 | immunoglobulin mediated immune response | 70 | 28 | 14.39 | | | |
| | 1.50E-04 | | | | | | |
| GO:0071216 | cellular response to biotic stimulus | 131 | 45 | 26.92 | | | |
| | 1.50E-04 | | | | | | |
| GO:0006099 | tricarboxylic acid cycle | 23 | 13 | 4.73 | 1.60E-04 | | |
| GO:0006959 | humoral immune response | 60 | 25 | 12.33 | 1.60E-04 | | |
| GO:0060402 | calcium ion transport into cytosol | 84 | 32 | 17.26 | 1.60E-04 | | |
| | | | | | | | |
| GO:0007568 | aging | 256 | 77 | 52.61 | 1.70E-04 | | |
| GO:0002366 | leukocyte activation involved in immune ... | 113 | 40 | | | | |
| | 23.22 1.70E-04 | | | | | | |
| GO:0002263 | cell activation involved in immune respo... | 113 | 40 | | | | |
| | 23.22 1.70E-04 | | | | | | |
| GO:0002700 | regulation of production of molecular me... | 57 | 24 | | | | |
| | 11.71 1.70E-04 | | | | | | |
| GO:0071396 | cellular response to lipid | 285 | 84 | 58.57 | 1.80E-04 | | |
| GO:0050851 | antigen receptor-mediated signaling path... | 74 | 29 | | | | |
| | 15.21 1.80E-04 | | | | | | |
| GO:0033077 | T cell differentiation in thymus | 54 | 23 | 11.1 | 1.90E-04 | | |
| | | | | | | | |
| GO:0032623 | interleukin-2 production | 38 | 18 | 7.81 | 1.90E-04 | | |
| GO:0045058 | T cell selection | 29 | 15 | 5.96 | 1.90E-04 | | |

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|------------|---|------|-----|--------|----------------|----|----------|
| GO:0019724 | B cell mediated immunity | 71 | 28 | 14.59 | 2.00E-04 | | |
| GO:0009306 | protein secretion | 159 | 52 | 32.68 | 2.00E-04 | | |
| GO:0042130 | negative regulation of T cell proliferat... | | | | | 32 | 16 6.58 |
| | | | | | 2.00E-04 | | |
| GO:0048520 | positive regulation of behavior | 85 | 32 | 17.47 | 2.00E-04 | | |
| GO:0060401 | cytosolic calcium ion transport | 85 | 32 | 17.47 | 2.00E-04 | | |
| GO:0002027 | regulation of heart rate | 51 | 22 | 10.48 | 2.10E-04 | | |
| GO:0006979 | response to oxidative stress | 307 | 89 | 63.09 | 2.20E-04 | | |
| GO:0048871 | multicellular organismal homeostasis | 175 | 56 | 35.96 | | | |
| | | | | | 2.20E-04 | | |
| GO:0007154 | cell communication | 3249 | 735 | 667.7 | 2.30E-04 | | |
| GO:0034762 | regulation of transmembrane transport | 183 | 58 | 37.61 | | | |
| | | | | | 2.30E-04 | | |
| GO:1903035 | negative regulation of response to wound... | | | | | 68 | 27 |
| | | | | | 13.97 2.30E-04 | | |
| GO:0007275 | multicellular organismal development | 2952 | 672 | 606.66 | | | |
| | | | | | 2.40E-04 | | |
| GO:0033273 | response to vitamin | 93 | 34 | 19.11 | 2.50E-04 | | |
| GO:0002221 | pattern recognition receptor signaling p... | 65 | 26 | | | | |
| | | | | | 13.36 2.60E-04 | | |
| GO:0034341 | response to interferon-gamma | 55 | 23 | 11.3 | 2.70E-04 | | |
| GO:0040011 | locomotion | 881 | 222 | 181.05 | 2.70E-04 | | |
| GO:0002701 | negative regulation of production of mol... | 11 | 8 | 2.26 | | | |
| | | | | | 2.80E-04 | | |
| GO:0045076 | regulation of interleukin-2 biosynthetic... | 11 | 8 | 2.26 | | | |
| | | | | | 2.80E-04 | | |
| GO:0023052 | signaling | 3188 | 721 | 655.16 | 2.90E-04 | | |
| GO:0044700 | single organism signaling | 3188 | 721 | 655.16 | | | 2.90E-04 |
| GO:0032496 | response to lipopolysaccharide | 236 | 71 | 48.5 | 2.90E-04 | | |
| GO:0045333 | cellular respiration | 83 | 31 | 17.06 | 3.00E-04 | | |
| GO:0032651 | regulation of interleukin-1 beta product... | 27 | 14 | 5.55 | | | |
| | | | | | 3.00E-04 | | |
| GO:0000302 | response to reactive oxygen species | 169 | 54 | 34.73 | | | |
| | | | | | 3.00E-04 | | |
| GO:0071804 | cellular potassium ion transport | 83 | 31 | 17.06 | 3.00E-04 | | |
| GO:0071805 | potassium ion transmembrane transport | 83 | 31 | 17.06 | | | |
| | | | | | 3.00E-04 | | |
| GO:0002902 | regulation of B cell apoptotic process | 16 | 10 | 3.29 | | | |
| | | | | | 3.10E-04 | | |
| GO:0048247 | lymphocyte chemotaxis | 16 | 10 | 3.29 | 3.10E-04 | | |
| GO:0005996 | monosaccharide metabolic process | 173 | 55 | 35.55 | 3.10E-04 | | |
| GO:0048731 | system development | 2703 | 618 | 555.49 | 3.10E-04 | | |
| GO:0048771 | tissue remodeling | 113 | 39 | 23.22 | 3.70E-04 | | |
| GO:0050795 | regulation of behavior | 128 | 43 | 26.31 | 3.70E-04 | | |
| GO:0071706 | tumor necrosis factor superfamily cytoki... | 63 | 25 | | | | |
| | | | | | 12.95 3.90E-04 | | |
| GO:0032602 | chemokine production | 43 | 19 | 8.84 | 3.90E-04 | | |

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|------------|---|------|-----|--------|----------|--|
| GO:0050864 | regulation of B cell activation | 77 | 29 | 15.82 | 4.00E-04 | |
| GO:0097285 | cell-type specific apoptotic process | 341 | 96 | 70.08 | 4.00E-04 | |
| GO:0030278 | regulation of ossification | 136 | 45 | 27.95 | 4.00E-04 | |
| GO:0051050 | positive regulation of transport | 489 | 131 | 100.49 | 4.10E-04 | |
| GO:0046916 | cellular transition metal ion homeostasi... | 53 | 22 | 10.89 | 4.10E-04 | |
| GO:0016052 | carbohydrate catabolic process | 88 | 32 | 18.08 | 4.20E-04 | |
| GO:0001818 | negative regulation of cytokine producti... | 88 | 32 | 18.08 | 4.20E-04 | |
| GO:0032642 | regulation of chemokine production | 40 | 18 | 8.22 | 4.20E-04 | |
| GO:0050708 | regulation of protein secretion | 125 | 42 | 25.69 | 4.30E-04 | |
| GO:0035710 | CD4-positive, alpha-beta T cell activati... | 37 | 17 | 7.6 | 4.50E-04 | |
| GO:1902622 | regulation of neutrophil migration | 22 | 12 | 4.52 | 4.50E-04 | |
| GO:0051279 | regulation of release of sequestered cal... | 50 | 21 | 10.28 | 4.60E-04 | |
| GO:0042035 | regulation of cytokine biosynthetic proc... | 50 | 21 | 10.28 | 4.60E-04 | |
| GO:0051046 | regulation of secretion | 359 | 100 | 73.78 | 4.70E-04 | |
| GO:0070233 | negative regulation of T cell apoptotic ... | 14 | 9 | 2.88 | 4.70E-04 | |
| GO:0031294 | lymphocyte costimulation | 14 | 9 | 2.88 | 4.70E-04 | |
| GO:0031295 | T cell costimulation | 14 | 9 | 2.88 | 4.70E-04 | |
| GO:0050798 | activated T cell proliferation | 25 | 13 | 5.14 | 4.80E-04 | |
| GO:0045123 | cellular extravasation | 28 | 14 | 5.75 | 4.90E-04 | |
| GO:0001503 | ossification | 293 | 84 | 60.21 | 4.90E-04 | |
| GO:0050730 | regulation of peptidyl-tyrosine phosphor... | 145 | 47 | 29.8 | 5.00E-04 | |
| GO:0006813 | potassium ion transport | 111 | 38 | 22.81 | 5.20E-04 | |
| GO:0007204 | positive regulation of cytosolic calcium... | 149 | 48 | 30.62 | 5.20E-04 | |
| GO:0051716 | cellular response to stimulus | 3680 | 821 | 756.27 | 5.30E-04 | |
| GO:0080134 | regulation of response to stress | 622 | 161 | 127.83 | 5.40E-04 | |
| GO:0019318 | hexose metabolic process | 161 | 51 | 33.09 | 5.50E-04 | |
| GO:0009628 | response to abiotic stimulus | 798 | 201 | 164 | 5.50E-04 | |
| GO:0045785 | positive regulation of cell adhesion | 134 | 44 | 27.54 | 5.50E-04 | |
| GO:0050868 | negative regulation of T cell activation | 54 | 22 | 11.1 | 5.60E-04 | |
| GO:0008283 | cell proliferation | 1170 | 284 | 240.45 | 5.60E-04 | |
| GO:0046903 | secretion | 566 | 148 | 116.32 | 5.70E-04 | |
| GO:0032680 | regulation of tumor necrosis factor prod... | 61 | 24 | 12.54 | 5.90E-04 | |
| GO:0007165 | signal transduction | 2889 | 654 | 593.72 | 6.00E-04 | |

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|------------|---|------|-----|--------|----------------|
| GO:0050702 | interleukin-1 beta secretion | 17 | 10 | 3.49 | 6.10E-04 |
| GO:0071624 | positive regulation of granulocyte chemo... | 17 | 10 | 3.49 | 6.10E-04 |
| GO:0090023 | positive regulation of neutrophil chemot... | 17 | 10 | 3.49 | 6.10E-04 |
| GO:1902624 | positive regulation of neutrophil migrat... | 17 | 10 | 3.49 | 6.10E-04 |
| GO:0044724 | single-organism carbohydrate catabolic p... | 86 | 31 | | 17.67 6.20E-04 |
| GO:0097305 | response to alcohol | 316 | 89 | 64.94 | 6.40E-04 |
| GO:0006936 | muscle contraction | 170 | 53 | 34.94 | 6.60E-04 |
| GO:0042113 | B cell activation | 143 | 46 | 29.39 | 6.90E-04 |
| GO:0032102 | negative regulation of response to exter... | 120 | 40 | | 24.66 6.90E-04 |
| GO:0009060 | aerobic respiration | 35 | 16 | 7.19 | 7.00E-04 |
| GO:0042554 | superoxide anion generation | 20 | 11 | 4.11 | 7.10E-04 |
| GO:0046632 | alpha-beta T cell differentiation | 55 | 22 | 11.3 | 7.50E-04 |
| GO:0032652 | regulation of interleukin-1 production | 29 | 14 | 5.96 | 7.70E-04 |
| GO:0051048 | negative regulation of secretion | 113 | 38 | 23.22 | 7.70E-04 |
| GO:0032640 | tumor necrosis factor production | 62 | 24 | 12.74 | 7.70E-04 |
| GO:0042742 | defense response to bacterium | 87 | 31 | 17.88 | 7.70E-04 |
| GO:0031960 | response to corticosteroid | 175 | 54 | 35.96 | 7.70E-04 |
| GO:0032613 | interleukin-10 production | 29 | 14 | 5.96 | 7.70E-04 |
| GO:0030199 | collagen fibril organization | 29 | 14 | 5.96 | 7.70E-04 |
| GO:0045667 | regulation of osteoblast differentiation | | 87 | 31 | 17.88 7.70E-04 |
| GO:0060537 | muscle tissue development | 297 | 84 | 61.04 | 7.80E-04 |
| GO:0032502 | developmental process | 3447 | 770 | 708.39 | 7.90E-04 |
| GO:0018108 | peptidyl-tyrosine phosphorylation | 232 | 68 | 47.68 | 8.60E-04 |
| GO:0071407 | cellular response to organic cyclic comp... | 269 | 77 | | 55.28 8.70E-04 |
| GO:0042089 | cytokine biosynthetic process | 59 | 23 | 12.13 | 8.80E-04 |
| GO:0051384 | response to glucocorticoid | 164 | 51 | 33.7 | 8.80E-04 |
| GO:0010043 | response to zinc ion | 39 | 17 | 8.01 | 9.40E-04 |
| GO:0007605 | sensory perception of sound | 70 | 26 | 14.39 | 9.90E-04 |
| GO:0000041 | transition metal ion transport | 56 | 22 | 11.51 | 1.00E-03 |
| GO:0002719 | negative regulation of cytokine producti... | 10 | 7 | 2.06 | 1.02E-03 |
| GO:0071361 | cellular response to ethanol | 10 | 7 | 2.06 | 1.02E-03 |
| GO:0050877 | neurological system process | 500 | 131 | 102.75 | 1.07E-03 |
| GO:0065008 | regulation of biological quality | 1960 | 453 | 402.8 | 1.09E-03 |
| GO:0009719 | response to endogenous stimulus | 1037 | 252 | 213.11 | 1.09E-03 |

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|------------|---|----------|-----|--------|----------|--|
| GO:0018212 | peptidyl-tyrosine modification | 234 | 68 | 48.09 | 1.10E-03 | |
| GO:0050715 | positive regulation of cytokine secretio... | 53 | 21 | | | |
| | 10.89 | 1.14E-03 | | | | |
| GO:0001776 | leukocyte homeostasis | 60 | 23 | 12.33 | 1.16E-03 | |
| GO:0050728 | negative regulation of inflammatory resp... | 60 | 23 | | | |
| | 12.33 | 1.16E-03 | | | | |
| GO:0030154 | cell differentiation | 2209 | 506 | 453.97 | 1.17E-03 | |
| GO:0055076 | transition metal ion homeostasis | 78 | 28 | 16.03 | 1.19E-03 | |
| GO:0010324 | membrane invagination | 27 | 13 | 5.55 | 1.22E-03 | |
| GO:0045061 | thymic T cell selection | 21 | 11 | 4.32 | 1.22E-03 | |
| GO:0034121 | regulation of toll-like receptor signali... | 27 | 13 | 5.55 | | |
| | 1.22E-03 | | | | | |
| GO:0045471 | response to ethanol | 127 | 41 | 26.1 | 1.22E-03 | |
| GO:0071622 | regulation of granulocyte chemotaxis | 27 | 13 | 5.55 | | |
| | 1.22E-03 | | | | | |
| GO:0090022 | regulation of neutrophil chemotaxis | 21 | 11 | 4.32 | | |
| | 1.22E-03 | | | | | |
| GO:0070296 | sarcoplasmic reticulum calcium ion trans... | 24 | 12 | 4.93 | | |
| | 1.24E-03 | | | | | |
| GO:0045937 | positive regulation of phosphate metabol... | 576 | 148 | | | |
| | 118.37 | 1.25E-03 | | | | |
| GO:0010562 | positive regulation of phosphorus metabo... | 576 | 148 | | | |
| | 118.37 | 1.25E-03 | | | | |
| GO:1990267 | response to transition metal nanoparticl... | 93 | 32 | | | |
| | 19.11 | 1.26E-03 | | | | |
| GO:0042100 | B cell proliferation | 50 | 20 | 10.28 | 1.29E-03 | |
| GO:0048856 | anatomical structure development | 3156 | 706 | 648.59 | | |
| | 1.31E-03 | | | | | |
| GO:0071346 | cellular response to interferon-gamma | 40 | 17 | 8.22 | | |
| | 1.33E-03 | | | | | |
| GO:0071453 | cellular response to oxygen levels | 97 | 33 | 19.93 | 1.33E-03 | |
| GO:0044767 | single-organism developmental process | 3429 | 763 | 704.69 | | |
| | 1.37E-03 | | | | | |
| GO:0001932 | regulation of protein phosphorylation | 661 | 167 | 135.84 | | |
| | 1.40E-03 | | | | | |
| GO:0002573 | myeloid leukocyte differentiation | 132 | 42 | 27.13 | 1.47E-03 | |
| GO:0002820 | negative regulation of adaptive immune r... | 13 | 8 | 2.67 | | |
| | 1.49E-03 | | | | | |
| GO:0034123 | positive regulation of toll-like recepto... | 13 | 8 | 2.67 | | |
| | 1.49E-03 | | | | | |
| GO:0042094 | interleukin-2 biosynthetic process | 13 | 8 | 2.67 | 1.49E-03 | |
| GO:0006006 | glucose metabolic process | 136 | 43 | 27.95 | 1.50E-03 | |
| GO:0042107 | cytokine metabolic process | 61 | 23 | 12.54 | 1.50E-03 | |
| GO:0010959 | regulation of metal ion transport | 196 | 58 | 40.28 | 1.55E-03 | |
| GO:0008284 | positive regulation of cell proliferatio... | 544 | 140 | | | |
| | 111.8 | 1.57E-03 | | | | |
| GO:0006754 | ATP biosynthetic process | 34 | 15 | 6.99 | 1.61E-03 | |
| GO:0009409 | response to cold | 34 | 15 | 6.99 | 1.61E-03 | |

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|------------|---|----------|-----|--------|----------|----------|
| GO:0023056 | positive regulation of signaling | 810 | 200 | 166.46 | | |
| | 1.63E-03 | | | | | |
| GO:0044057 | regulation of system process | 283 | 79 | 58.16 | 1.65E-03 | |
| GO:0000086 | G2/M transition of mitotic cell cycle | 58 | 22 | 11.92 | | |
| | 1.72E-03 | | | | | |
| GO:0044770 | cell cycle phase transition | 246 | 70 | 50.56 | 1.73E-03 | |
| GO:0050848 | regulation of calcium-mediated signaling | | | 31 | 14 | 6.37 |
| | 1.74E-03 | | | | | |
| GO:0045824 | negative regulation of innate immune res... | | | 16 | 9 | 3.29 |
| | 1.79E-03 | | | | | |
| GO:0006958 | complement activation, classical pathway | | | 16 | 9 | 3.29 |
| | 1.79E-03 | | | | | |
| GO:0002833 | positive regulation of response to bioti... | | | 16 | 9 | 3.29 |
| | 1.79E-03 | | | | | |
| GO:0042060 | wound healing | 263 | 74 | 54.05 | 1.81E-03 | |
| GO:1902105 | regulation of leukocyte differentiation | 153 | | 47 | 31.44 | |
| | 1.82E-03 | | | | | |
| GO:0030888 | regulation of B cell proliferation | 41 | | 17 | 8.43 | 1.84E-03 |
| | | | | | | |
| GO:0070098 | chemokine-mediated signaling pathway | | | 28 | 13 | 5.75 |
| | 1.86E-03 | | | | | |
| GO:0042325 | regulation of phosphorylation | 835 | 205 | 171.6 | 1.92E-03 | |
| | | | | | | |
| GO:0032675 | regulation of interleukin-6 production | 62 | | 23 | 12.74 | |
| | 1.93E-03 | | | | | |
| GO:0050701 | interleukin-1 secretion | 19 | 10 | 3.9 | 1.94E-03 | |
| GO:0006911 | phagocytosis, engulfment | 19 | 10 | 3.9 | 1.94E-03 | |
| GO:0050852 | T cell receptor signaling pathway | 48 | 19 | 9.86 | 1.96E-03 | |
| | | | | | | |
| GO:0097306 | cellular response to alcohol | 84 | 29 | 17.26 | 1.97E-03 | |
| GO:0086010 | membrane depolarization during action po... | | | 22 | 11 | 4.52 |
| | 1.98E-03 | | | | | |
| GO:1901698 | response to nitrogen compound | 644 | 162 | 132.35 | | |
| | 1.99E-03 | | | | | |
| GO:0044772 | mitotic cell cycle phase transition | | | 239 | 68 | 49.12 |
| | 2.00E-03 | | | | | |
| GO:0006119 | oxidative phosphorylation | 38 | 16 | 7.81 | 2.06E-03 | |
| GO:0007517 | muscle organ development | 260 | 73 | 53.43 | 2.06E-03 | |
| GO:0036294 | cellular response to decreased oxygen le... | | | 88 | 30 | |
| | 18.08 | 2.07E-03 | | | | |
| GO:0014706 | striated muscle tissue development | 281 | 78 | 57.75 | 2.08E-03 | |
| | | | | | | |
| GO:0010035 | response to inorganic substance | 400 | 106 | 82.2 | 2.08E-03 | |
| | | | | | | |
| GO:0042127 | regulation of cell proliferation | 949 | 230 | 195.03 | | |
| | 2.10E-03 | | | | | |
| GO:0001649 | osteoblast differentiation | 166 | 50 | 34.11 | 2.11E-03 | |
| GO:0003012 | muscle system process | 223 | 64 | 45.83 | 2.12E-03 | |
| GO:0009967 | positive regulation of signal transducti... | | | 774 | 191 | |
| | 159.06 | 2.13E-03 | | | | |
| GO:0030316 | osteoclast differentiation | 59 | 22 | 12.13 | 2.22E-03 | |
| GO:0010647 | positive regulation of cell communicatio... | | | 815 | 200 | |
| | 167.49 | 2.23E-03 | | | | |

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|------------|---|----------|-----|-------|----------|
| GO:0050714 | positive regulation of protein secretion | 81 | 28 | | |
| | 16.65 | 2.28E-03 | | | |
| GO:0070231 | T cell apoptotic process | 35 | 15 | 7.19 | 2.29E-03 |
| GO:0042116 | macrophage activation | 35 | 15 | 7.19 | 2.29E-03 |
| GO:0097067 | cellular response to thyroid hormone sti... | 11 | 7 | | 2.26 |
| | 2.31E-03 | | | | |
| GO:0002823 | negative regulation of adaptive immune r... | 11 | 7 | | 2.26 |
| | 2.31E-03 | | | | |
| GO:0048875 | chemical homeostasis within a tissue | 11 | 7 | | 2.26 |
| | 2.31E-03 | | | | |
| GO:0043383 | negative T cell selection | 11 | 7 | 2.26 | 2.31E-03 |
| GO:0045060 | negative thymic T cell selection | 11 | 7 | 2.26 | 2.31E-03 |
| GO:0002724 | regulation of T cell cytokine production | 11 | 7 | | 2.26 |
| | 2.31E-03 | | | | |
| GO:0071900 | regulation of protein serine/threonine k... | 282 | 78 | | |
| | 57.95 | 2.31E-03 | | | |
| GO:0042095 | interferon-gamma biosynthetic process | 11 | 7 | | 2.26 |
| | 2.31E-03 | | | | |
| GO:0051924 | regulation of calcium ion transport | 131 | 41 | | 26.92 |
| | 2.35E-03 | | | | |
| GO:0045859 | regulation of protein kinase activity | 436 | 114 | | 89.6 |
| | 2.36E-03 | | | | |
| GO:0072358 | cardiovascular system development | 674 | 168 | | 138.51 |
| | 2.51E-03 | | | | |
| GO:0072359 | circulatory system development | 674 | 168 | | 138.51 |
| | 2.51E-03 | | | | |
| GO:0050709 | negative regulation of protein secretion | 32 | 14 | | 6.58 |
| | 2.52E-03 | | | | |
| GO:0072376 | protein activation cascade | 32 | 14 | 6.58 | 2.52E-03 |
| GO:0051241 | negative regulation of multicellular org... | 262 | 73 | | |
| | 53.84 | 2.55E-03 | | | |
| GO:0060341 | regulation of cellular localization | 639 | 160 | | 131.32 |
| | 2.60E-03 | | | | |
| GO:0043549 | regulation of kinase activity | 472 | 122 | 97 | 2.62E-03 |
| GO:0042327 | positive regulation of phosphorylation | 507 | 130 | | 104.19 |
| | 2.63E-03 | | | | |
| GO:0001934 | positive regulation of protein phosphory... | 420 | 110 | | |
| | 86.31 | 2.64E-03 | | | |
| GO:0098656 | anion transmembrane transport | 97 | 32 | 19.93 | 2.73E-03 |
| GO:0050954 | sensory perception of mechanical stimulu... | 82 | 28 | | |
| | 16.85 | 2.80E-03 | | | |
| GO:0044839 | cell cycle G2/M phase transition | 60 | 22 | 12.33 | 2.84E-03 |
| GO:0002275 | myeloid cell activation involved in immu... | 39 | 16 | | 8.01 |
| | 2.84E-03 | | | | |
| GO:0002577 | regulation of antigen processing and pre... | 14 | 8 | | 2.88 |
| | 2.86E-03 | | | | |
| GO:0051235 | maintenance of location | 201 | 58 | 41.31 | 2.93E-03 |
| GO:0071456 | cellular response to hypoxia | 86 | 29 | 17.67 | 2.93E-03 |
| GO:0009168 | purine ribonucleoside monophosphate bios... | 53 | 20 | | |
| | 10.89 | 2.94E-03 | | | |

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|------------|---|------|-----|--------|----------|
| GO:0009127 | purine nucleoside monophosphate biosynth... | 53 | 20 | | |
| | 10.89 2.94E-03 | | | | |
| GO:0006942 | regulation of striated muscle contractio... | 53 | 20 | | |
| | 10.89 2.94E-03 | | | | |
| GO:0006956 | complement activation | 26 | 12 | 5.34 | 2.94E-03 |
| GO:0032722 | positive regulation of chemokine product... | 26 | 12 | 5.34 | |
| | 2.94E-03 | | | | |
| GO:0033555 | multicellular organismal response to str... | 46 | 18 | 9.45 | |
| | 2.96E-03 | | | | |
| GO:0045860 | positive regulation of protein kinase ac... | 268 | 74 | | |
| | 55.08 3.09E-03 | | | | |
| GO:0042391 | regulation of membrane potential | 268 | 74 | 55.08 | 3.09E-03 |
| GO:0032635 | interleukin-6 production | 64 | 23 | 13.15 | 3.10E-03 |
| GO:0032633 | interleukin-4 production | 23 | 11 | 4.73 | 3.10E-03 |
| GO:0034113 | heterotypic cell-cell adhesion | 23 | 11 | 4.73 | 3.10E-03 |
| GO:0097009 | energy homeostasis | 17 | 9 | 3.49 | 3.12E-03 |
| GO:0002675 | positive regulation of acute inflammator... | 17 | 9 | 3.49 | |
| | 3.12E-03 | | | | |
| GO:0071495 | cellular response to endogenous stimulus | 633 | 158 | | |
| | 130.09 3.15E-03 | | | | |
| GO:0001783 | B cell apoptotic process | 20 | 10 | 4.11 | 3.18E-03 |
| GO:0014808 | release of sequestered calcium ion into ... | 20 | 10 | 4.11 | |
| | 3.18E-03 | | | | |
| GO:0043270 | positive regulation of ion transport | 129 | 40 | 26.51 | |
| | 3.18E-03 | | | | |
| GO:0002286 | T cell activation involved in immune res... | 36 | 15 | 7.4 | |
| | 3.18E-03 | | | | |
| GO:0051897 | positive regulation of protein kinase B ... | 57 | 21 | | |
| | 11.71 3.28E-03 | | | | |
| GO:0032874 | positive regulation of stress-activated ... | 57 | 21 | | |
| | 11.71 3.28E-03 | | | | |
| GO:0016310 | phosphorylation | 1351 | 316 | 277.64 | 3.39E-03 |
| GO:0051047 | positive regulation of secretion | 194 | 56 | 39.87 | 3.39E-03 |
| GO:0002260 | lymphocyte homeostasis | 50 | 19 | 10.28 | 3.39E-03 |
| GO:0009725 | response to hormone | 657 | 163 | 135.02 | 3.53E-03 |
| GO:0032760 | positive regulation of tumor necrosis fa... | 33 | 14 | 6.78 | |
| | 3.55E-03 | | | | |
| GO:0071214 | cellular response to abiotic stimulus | 178 | 52 | 36.58 | |
| | 3.55E-03 | | | | |
| GO:0071229 | cellular response to acid chemical | 118 | 37 | 24.25 | 3.61E-03 |
| GO:0032940 | secretion by cell | 485 | 124 | 99.67 | 3.63E-03 |
| GO:0001101 | response to acid chemical | 257 | 71 | 52.82 | 3.65E-03 |
| GO:0030198 | extracellular matrix organization | 134 | 41 | 27.54 | 3.71E-03 |
| GO:0009187 | cyclic nucleotide metabolic process | 95 | 31 | 19.52 | |
| | 3.80E-03 | | | | |
| GO:0060048 | cardiac muscle contraction | 65 | 23 | 13.36 | 3.89E-03 |
| GO:0050853 | B cell receptor signaling pathway | 30 | 13 | 6.17 | 3.94E-03 |
| GO:0006826 | iron ion transport | 30 | 13 | 6.17 | 3.94E-03 |

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|------------|---|-------|----------|--------|----------|
| GO:0071398 | cellular response to fatty acid | 30 | 13 | 6.17 | 3.94E-03 |
| GO:0009743 | response to carbohydrate | 175 | 51 | 35.96 | 4.07E-03 |
| GO:0007162 | negative regulation of cell adhesion | 84 | 28 | 17.26 | 4.13E-03 |
| GO:0007229 | integrin-mediated signaling pathway | 69 | 24 | 14.18 | 4.15E-03 |
| GO:0070304 | positive regulation of stress-activated ... | 11.92 | 4.16E-03 | 58 | 21 |
| GO:0010243 | response to organonitrogen compound | 602 | 150 | 123.72 | 4.25E-03 |
| GO:0072593 | reactive oxygen species metabolic proces... | 25.28 | 4.25E-03 | 123 | 38 |
| GO:0051896 | regulation of protein kinase B signaling | 18.08 | 4.28E-03 | 88 | 29 |
| GO:0006164 | purine nucleotide biosynthetic process | 143 | 43 | 29.39 | 4.29E-03 |
| GO:0043062 | extracellular structure organization | 135 | 41 | 27.74 | 4.30E-03 |
| GO:0033280 | response to vitamin D | 27 | 12 | 5.55 | 4.32E-03 |
| GO:0032653 | regulation of interleukin-10 production | 27 | 12 | 5.55 | 4.32E-03 |
| GO:0046688 | response to copper ion | 27 | 12 | 5.55 | 4.32E-03 |
| GO:0051051 | negative regulation of transport | 263 | 72 | 54.05 | 4.39E-03 |
| GO:0006937 | regulation of muscle contraction | 92 | 30 | 18.91 | 4.41E-03 |
| GO:0032570 | response to progesterone | 44 | 17 | 9.04 | 4.46E-03 |
| GO:0010522 | regulation of calcium ion transport into... | 12.74 | 4.51E-03 | 62 | 22 |
| GO:0015698 | inorganic anion transport | 62 | 22 | 12.74 | 4.51E-03 |
| GO:0071731 | response to nitric oxide | 12 | 7 | 2.47 | 4.56E-03 |
| GO:0043491 | protein kinase B signaling | 108 | 34 | 22.2 | 4.78E-03 |
| GO:0008285 | negative regulation of cell proliferatio... | 84.26 | 4.79E-03 | 410 | 106 |
| GO:0043271 | negative regulation of ion transport | 55 | 20 | 11.3 | 4.83E-03 |
| GO:0045577 | regulation of B cell differentiation | 21 | 10 | 4.32 | 4.96E-03 |
| GO:0002720 | positive regulation of cytokine producti... | 21 | 10 | 4.32 | 4.96E-03 |
| GO:0002920 | regulation of humoral immune response | 21 | 10 | 4.32 | 4.96E-03 |
| GO:0035588 | G-protein coupled purinergic receptor si... | 15 | 8 | 3.08 | 5.03E-03 |
| GO:0006882 | cellular zinc ion homeostasis | 15 | 8 | 3.08 | 5.03E-03 |
| GO:0034694 | response to prostaglandin | 15 | 8 | 3.08 | 5.03E-03 |
| GO:0002438 | acute inflammatory response to antigenic... | 15 | 8 | 3.08 | 5.03E-03 |
| GO:0061082 | myeloid leukocyte cytokine production | 18 | 9 | 3.7 | 5.11E-03 |
| GO:0050764 | regulation of phagocytosis | 41 | 16 | 8.43 | 5.11E-03 |
| GO:0071772 | response to BMP | 18 | 9 | 3.7 | 5.11E-03 |

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|------------|---|----------|------|--------|----------|
| GO:0071773 | cellular response to BMP stimulus | 18 | 9 | 3.7 | 5.11E-03 |
| GO:0007606 | sensory perception of chemical stimulus | 41 | 16 | 8.43 | 5.11E-03 |
| GO:0033674 | positive regulation of kinase activity | 286 | 77 | 58.78 | 5.22E-03 |
| GO:0006820 | anion transport | 269 | 73 | 55.28 | 5.22E-03 |
| GO:0046849 | bone remodeling | 59 | 21 | 12.13 | 5.24E-03 |
| GO:1901699 | cellular response to nitrogen compound | 329 | 87 | 67.61 | 5.31E-03 |
| GO:0034284 | response to monosaccharide | 157 | 46 | 32.26 | 5.52E-03 |
| GO:1903047 | mitotic cell cycle process | 412 | 106 | 84.67 | 5.60E-03 |
| GO:0035725 | sodium ion transmembrane transport | 63 | 22 | 12.95 | 5.61E-03 |
| GO:0009749 | response to glucose | 141 | 42 | 28.98 | 5.68E-03 |
| GO:0046330 | positive regulation of JNK cascade | 45 | 17 | 9.25 | 5.83E-03 |
| GO:0048869 | cellular developmental process | 2360 | 529 | 485 | 5.93E-03 |
| GO:0002831 | regulation of response to biotic stimulu... | 11.51 | 56 | 20 | 6.09E-03 |
| GO:0051174 | regulation of phosphorus metabolic proce... | 258.53 | 1258 | 293 | 6.11E-03 |
| GO:0035924 | cellular response to vascular endothelia... | 6.17E-03 | 28 | 12 | 5.75 |
| GO:0060538 | skeletal muscle organ development | 158 | 46 | 32.47 | 6.27E-03 |
| GO:0000278 | mitotic cell cycle | 475 | 120 | 97.62 | 6.30E-03 |
| GO:0072522 | purine-containing compound biosynthetic ... | 30.83 | 150 | 44 | 6.39E-03 |
| GO:0009888 | tissue development | 1204 | 281 | 247.43 | 6.48E-03 |
| GO:0009156 | ribonucleoside monophosphate biosyntheti... | 12.33 | 60 | 21 | 6.53E-03 |
| GO:1901654 | response to ketone | 134 | 40 | 27.54 | 6.57E-03 |
| GO:0045778 | positive regulation of ossification | 6.67E-03 | 35 | 14 | 7.19 |
| GO:0030099 | myeloid cell differentiation | 242 | 66 | 49.73 | 6.78E-03 |
| GO:0002702 | positive regulation of production of mol... | 6.82E-03 | 25 | 11 | 5.14 |
| GO:0032846 | positive regulation of homeostatic proce... | 13.15 | 64 | 22 | 6.93E-03 |
| GO:0060548 | negative regulation of cell death | 539 | 134 | 110.77 | 7.24E-03 |
| GO:0002335 | mature B cell differentiation | 10 | 6 | 2.06 | 7.30E-03 |
| GO:0034143 | regulation of toll-like receptor 4 signa... | 7.30E-03 | 10 | 6 | 2.06 |
| GO:0072604 | interleukin-6 secretion | 10 | 6 | 2.06 | 7.30E-03 |
| GO:0043129 | surfactant homeostasis | 10 | 6 | 2.06 | 7.30E-03 |
| GO:0032743 | positive regulation of interleukin-2 pro... | 7.30E-03 | 10 | 6 | 2.06 |
| GO:0045072 | regulation of interferon-gamma biosynthe... | 7.30E-03 | 10 | 6 | 2.06 |

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|------------|---|------|-----|--------|----------|--|
| GO:0002921 | negative regulation of humoral immune re... | 10 | 6 | 2.06 | | |
| | 7.30E-03 | | | | | |
| GO:0002903 | negative regulation of B cell apoptotic ... | 10 | 6 | 2.06 | | |
| | 7.30E-03 | | | | | |
| GO:0072677 | eosinophil migration | 10 | 6 | 2.06 | 7.30E-03 | |
| GO:0032682 | negative regulation of chemokine product... | 10 | 6 | 2.06 | | |
| | 7.30E-03 | | | | | |
| GO:0009746 | response to hexose | 147 | 43 | 30.21 | 7.35E-03 | |
| GO:0019220 | regulation of phosphate metabolic proces... | 1253 | 291 | 257.5 | 7.37E-03 | |
| | 7.37E-03 | | | | | |
| GO:0033500 | carbohydrate homeostasis | 143 | 42 | 29.39 | 7.42E-03 | |
| GO:0042593 | glucose homeostasis | 143 | 42 | 29.39 | 7.42E-03 | |
| GO:2000514 | regulation of CD4-positive, alpha-beta T... | 22 | 10 | 4.52 | | |
| | 7.44E-03 | | | | | |
| GO:0035587 | purinergic receptor signaling pathway | 22 | 10 | 4.52 | | |
| | 7.44E-03 | | | | | |
| GO:0098661 | inorganic anion transmembrane transport | 46 | 17 | 9.45 | | |
| | 7.51E-03 | | | | | |
| GO:0006821 | chloride transport | 46 | 17 | 9.45 | 7.51E-03 | |
| GO:0003009 | skeletal muscle contraction | 32 | 13 | 6.58 | 7.59E-03 | |
| GO:0043367 | CD4-positive, alpha-beta T cell differen... | 32 | 13 | 6.58 | | |
| | 7.59E-03 | | | | | |
| GO:0032755 | positive regulation of interleukin-6 pro... | 32 | 13 | 6.58 | | |
| | 7.59E-03 | | | | | |
| GO:0002285 | lymphocyte activation involved in immune... | 76 | 25 | 15.62 | 7.85E-03 | |
| | 15.62 7.85E-03 | | | | | |
| GO:0051899 | membrane depolarization | 76 | 25 | 15.62 | 7.85E-03 | |
| GO:0045823 | positive regulation of heart contraction | 19 | 9 | 3.9 | | |
| | 7.96E-03 | | | | | |
| GO:0046006 | regulation of activated T cell prolifera... | 19 | 9 | 3.9 | | |
| | 7.96E-03 | | | | | |
| GO:0001773 | myeloid dendritic cell activation | 19 | 9 | 3.9 | 7.96E-03 | |
| GO:0010646 | regulation of cell communication | 1837 | 416 | 377.52 | | |
| | 8.06E-03 | | | | | |
| GO:0070230 | positive regulation of lymphocyte apopto... | 13 | 7 | 2.67 | | |
| | 8.14E-03 | | | | | |
| GO:0002507 | tolerance induction | 13 | 7 | 2.67 | 8.14E-03 | |
| GO:0042832 | defense response to protozoan | 13 | 7 | 2.67 | 8.14E-03 | |
| GO:0007519 | skeletal muscle tissue development | 152 | 44 | 31.24 | 8.25E-03 | |
| GO:0034142 | toll-like receptor 4 signaling pathway | 16 | 8 | 3.29 | | |
| | 8.26E-03 | | | | | |
| GO:0032731 | positive regulation of interleukin-1 bet... | 16 | 8 | 3.29 | | |
| | 8.26E-03 | | | | | |
| GO:0002755 | MyD88-dependent toll-like receptor signa... | 16 | 8 | 3.29 | | |
| | 8.26E-03 | | | | | |
| GO:0055069 | zinc ion homeostasis | 16 | 8 | 3.29 | 8.26E-03 | |
| GO:0001562 | response to protozoan | 16 | 8 | 3.29 | 8.26E-03 | |
| GO:0042346 | positive regulation of NF-kappaB import ... | 16 | 8 | 3.29 | | |
| | 8.26E-03 | | | | | |
| GO:1902533 | positive regulation of intracellular sig... | 519 | 129 | 106.66 | 8.37E-03 | |
| | 106.66 8.37E-03 | | | | | |

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|------------|---|----------|------|---------|----------|
| GO:0045619 | regulation of lymphocyte differentiation | 88 | 28 | | |
| | 18.08 | 8.43E-03 | | | |
| GO:0031589 | cell-substrate adhesion | 202 | 56 | 41.51 | 8.45E-03 |
| GO:0030183 | B cell differentiation | 65 | 22 | 13.36 | 8.48E-03 |
| GO:0014823 | response to activity | 65 | 22 | 13.36 | 8.48E-03 |
| GO:0032964 | collagen biosynthetic process | 29 | 12 | 5.96 | 8.59E-03 |
| GO:0033628 | regulation of cell adhesion mediated by ... | 29 | 12 | 5.96 | 8.59E-03 |
| | 8.59E-03 | | | | |
| GO:0006879 | cellular iron ion homeostasis | 29 | 12 | 5.96 | 8.59E-03 |
| GO:0010951 | negative regulation of endopeptidase act... | 132 | 39 | | |
| | 27.13 | 8.67E-03 | | | |
| GO:0051216 | cartilage development | 124 | 37 | 25.48 | 8.78E-03 |
| GO:0022904 | respiratory electron transport chain | 36 | 14 | 7.4 | |
| | 8.89E-03 | | | | |
| GO:0034103 | regulation of tissue remodeling | 36 | 14 | 7.4 | 8.89E-03 |
| GO:0030816 | positive regulation of cAMP metabolic pr... | 36 | 14 | 7.4 | |
| | 8.89E-03 | | | | |
| GO:2000026 | regulation of multicellular organismal d... | 1046 | 245 | | |
| | 214.96 | 9.14E-03 | | | |
| GO:0014065 | phosphatidylinositol 3-kinase signaling | 73 | 24 | 15 | |
| | 9.15E-03 | | | | |
| GO:0023051 | regulation of signaling | 1836 | 415 | 377.32 | 9.21E-03 |
| GO:0070542 | response to fatty acid | 58 | 20 | 11.92 | 9.41E-03 |
| GO:0048522 | positive regulation of cellular process | 2673 | 592 | 549.33 | |
| | 9.56E-03 | | | | |
| GO:0045669 | positive regulation of osteoblast differ... | 47 | 17 | 9.66 | |
| | 9.56E-03 | | | | |
| GO:0065007 | biological regulation | 6206 | 1322 | 1275.39 | 9.65E-03 |
| GO:0030890 | positive regulation of B cell proliferat... | 26 | 11 | 5.34 | |
| | 9.66E-03 | | | | |
| GO:0010466 | negative regulation of peptidase activit... | 133 | 39 | | |
| | 27.33 | 9.90E-03 | | | |
| GO:0061061 | muscle structure development | 411 | 104 | 84.46 | 1.00E-02 |
| GO:0009206 | purine ribonucleoside triphosphate biosy... | 40 | 15 | 8.22 | |
| | 1.01E-02 | | | | |
| GO:0002712 | regulation of B cell mediated immunity | 33 | 13 | 6.78 | |
| | 1.02E-02 | | | | |
| GO:0002889 | regulation of immunoglobulin mediated im... | 33 | 13 | 6.78 | |
| | 1.02E-02 | | | | |
| GO:0045670 | regulation of osteoclast differentiation | 33 | 13 | 6.78 | |
| | 1.02E-02 | | | | |
| GO:0043279 | response to alkaloid | 109 | 33 | 22.4 | 1.02E-02 |
| GO:0009124 | nucleoside monophosphate biosynthetic pr... | 66 | 22 | | |
| | 13.56 | 1.03E-02 | | | |
| GO:0006468 | protein phosphorylation | 1012 | 237 | 207.98 | 1.04E-02 |
| GO:0007610 | behavior | 438 | 110 | 90.01 | 1.04E-02 |
| GO:0008015 | blood circulation | 281 | 74 | 57.75 | 1.06E-02 |
| GO:0050710 | negative regulation of cytokine secretio... | 23 | 10 | 4.73 | |
| | 1.08E-02 | | | | |

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|------------|---|--------|-----|-------|----------|
| GO:0032870 | cellular response to hormone stimulus | 329 | 85 | 67.61 | |
| | 1.10E-02 | | | | |
| GO:0051223 | regulation of protein transport | 299 | 78 | 61.45 | 1.13E-02 |
| GO:0090257 | regulation of muscle system process | 130 | 38 | 26.72 | |
| | 1.14E-02 | | | | |
| GO:0003013 | circulatory system process | 282 | 74 | 57.95 | 1.16E-02 |
| GO:0019932 | second-messenger-mediated signaling | 122 | 36 | 25.07 | |
| | 1.16E-02 | | | | |
| GO:0001501 | skeletal system development | 308 | 80 | 63.3 | 1.16E-02 |
| GO:1902476 | chloride transmembrane transport | 37 | 14 | 7.6 | 1.17E-02 |
| GO:0042345 | regulation of NF-kappaB import into nucl... | 30 | 12 | 6.17 | |
| | 1.17E-02 | | | | |
| GO:0042348 | NF-kappaB import into nucleus | 30 | 12 | 6.17 | 1.17E-02 |
| GO:0043551 | regulation of phosphatidylinositol 3-kin... | 30 | 12 | 6.17 | |
| | 1.17E-02 | | | | |
| GO:0051281 | positive regulation of release of seques... | 20 | 9 | 4.11 | |
| | 1.19E-02 | | | | |
| GO:0097066 | response to thyroid hormone | 20 | 9 | 4.11 | 1.19E-02 |
| GO:0051094 | positive regulation of developmental pro... | 136.46 | 160 | | 1.20E-02 |
| | 1.20E-02 | | | | |
| GO:0051301 | cell division | 418 | 105 | 85.9 | 1.20E-02 |
| GO:0045580 | regulation of T cell differentiation | 67 | 22 | 13.77 | |
| | 1.25E-02 | | | | |
| GO:0008037 | cell recognition | 52 | 18 | 10.69 | 1.28E-02 |
| GO:0055072 | iron ion homeostasis | 52 | 18 | 10.69 | 1.28E-02 |
| GO:0032732 | positive regulation of interleukin-1 pro... | 17 | 8 | 3.49 | |
| | 1.28E-02 | | | | |
| GO:0051926 | negative regulation of calcium ion trans... | 17 | 8 | 3.49 | |
| | 1.28E-02 | | | | |
| GO:0002861 | regulation of inflammatory response to a... | 17 | 8 | 3.49 | |
| | 1.28E-02 | | | | |
| GO:0032673 | regulation of interleukin-4 production | 17 | 8 | 3.49 | |
| | 1.28E-02 | | | | |
| GO:0009145 | purine nucleoside triphosphate biosynthe... | 41 | 15 | 8.43 | |
| | 1.29E-02 | | | | |
| GO:0055093 | response to hyperoxia | 41 | 15 | 8.43 | 1.29E-02 |
| GO:0036296 | response to increased oxygen levels | 41 | 15 | 8.43 | |
| | 1.29E-02 | | | | |
| GO:0051338 | regulation of transferase activity | 508 | 125 | 104.4 | 1.30E-02 |
| GO:2000377 | regulation of reactive oxygen species me... | 75 | 24 | | |
| | 15.41 | | | | 1.31E-02 |
| GO:0070555 | response to interleukin-1 | 79 | 25 | 16.24 | 1.33E-02 |
| GO:0061041 | regulation of wound healing | 79 | 25 | 16.24 | 1.33E-02 |
| GO:0002467 | germinal center formation | 11 | 6 | 2.26 | 1.33E-02 |
| GO:0014854 | response to inactivity | 11 | 6 | 2.26 | 1.33E-02 |
| GO:0002579 | positive regulation of antigen processin... | 11 | 6 | 2.26 | |
| | 1.33E-02 | | | | |
| GO:0002691 | regulation of cellular extravasation | 11 | 6 | 2.26 | |
| | 1.33E-02 | | | | |

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|------------|---|----------|-----|--------|----------|--|
| GO:0044712 | single-organism catabolic process | 1230 | 283 | 252.78 | | |
| | 1.33E-02 | | | | | |
| GO:0001782 | B cell homeostasis | 27 | 11 | 5.55 | 1.33E-02 | |
| GO:0050706 | regulation of interleukin-1 beta secreti... | 14 | 7 | 2.88 | | |
| | 1.34E-02 | | | | | |
| GO:0043567 | regulation of insulin-like growth factor... | 14 | 7 | 2.88 | | |
| | 1.34E-02 | | | | | |
| GO:0010460 | positive regulation of heart rate | 14 | 7 | 2.88 | 1.34E-02 | |
| GO:0042104 | positive regulation of activated T cell ... | 14 | 7 | 2.88 | | |
| | 1.34E-02 | | | | | |
| GO:0050907 | detection of chemical stimulus involved ... | 14 | 7 | 2.88 | | |
| | 1.34E-02 | | | | | |
| GO:0071478 | cellular response to radiation | 83 | 26 | 17.06 | 1.35E-02 | |
| GO:0033627 | cell adhesion mediated by integrin | 34 | 13 | 6.99 | 1.35E-02 | |
| GO:0071901 | negative regulation of protein serine/th... | 91 | 28 | 18.7 | | |
| | 1.37E-02 | | | | | |
| GO:0070588 | calcium ion transmembrane transport | 95 | 29 | 19.52 | | |
| | 1.37E-02 | | | | | |
| GO:0006094 | gluconeogenesis | 45 | 16 | 9.25 | 1.40E-02 | |
| GO:0071417 | cellular response to organonitrogen comp... | 302 | 78 | | | |
| | 62.06 | 1.45E-02 | | | | |
| GO:0061448 | connective tissue development | 161 | 45 | 33.09 | 1.46E-02 | |
| GO:0051347 | positive regulation of transferase activ... | 311 | 80 | | | |
| | 63.91 | 1.48E-02 | | | | |
| GO:0090068 | positive regulation of cell cycle proces... | 128 | 37 | | | |
| | 26.31 | 1.49E-02 | | | | |
| GO:0009266 | response to temperature stimulus | 128 | 37 | 26.31 | 1.49E-02 | |
| GO:0001894 | tissue homeostasis | 124 | 36 | 25.48 | 1.51E-02 | |
| GO:0042088 | T-helper 1 type immune response | 24 | 10 | 4.93 | 1.51E-02 | |
| GO:0002931 | response to ischemia | 24 | 10 | 4.93 | 1.51E-02 | |
| GO:0019752 | carboxylic acid metabolic process | 596 | 144 | 122.48 | | |
| | 1.52E-02 | | | | | |
| GO:0042542 | response to hydrogen peroxide | 116 | 34 | 23.84 | 1.54E-02 | |
| GO:0050766 | positive regulation of phagocytosis | 31 | 12 | 6.37 | | |
| | 1.56E-02 | | | | | |
| GO:0071356 | cellular response to tumor necrosis fact... | 80 | 25 | | | |
| | 16.44 | 1.57E-02 | | | | |
| GO:0006814 | sodium ion transport | 104 | 31 | 21.37 | 1.58E-02 | |
| GO:0071347 | cellular response to interleukin-1 | 53 | 18 | 10.89 | 1.58E-02 | |
| GO:0044281 | small molecule metabolic process | 1866 | 418 | 383.48 | | |
| | 1.60E-02 | | | | | |
| GO:0035094 | response to nicotine | 42 | 15 | 8.63 | 1.64E-02 | |
| GO:0046942 | carboxylic acid transport | 158 | 44 | 32.47 | 1.67E-02 | |
| GO:0015849 | organic acid transport | 158 | 44 | 32.47 | 1.67E-02 | |
| GO:0048545 | response to steroid hormone | 383 | 96 | 78.71 | 1.68E-02 | |

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|------------|---|------|-----|--------|----------|
| GO:0043648 | dicarboxylic acid metabolic process | 61 | 20 | 12.54 | |
| | 1.70E-02 | | | | |
| GO:0034109 | homotypic cell-cell adhesion | 61 | 20 | 12.54 | 1.70E-02 |
| GO:0048872 | homeostasis of number of cells | 175 | 48 | 35.96 | 1.70E-02 |
| GO:2000108 | positive regulation of leukocyte apoptot... | 21 | 9 | 4.32 | |
| | 1.71E-02 | | | | |
| GO:0033189 | response to vitamin A | 21 | 9 | 4.32 | 1.71E-02 |
| GO:0046835 | carbohydrate phosphorylation | 21 | 9 | 4.32 | 1.71E-02 |
| GO:0031069 | hair follicle morphogenesis | 21 | 9 | 4.32 | 1.71E-02 |
| GO:0008038 | neuron recognition | 21 | 9 | 4.32 | 1.71E-02 |
| GO:0042269 | regulation of natural killer cell mediat... | 21 | 9 | 4.32 | |
| | 1.71E-02 | | | | |
| GO:0002715 | regulation of natural killer cell mediat... | 21 | 9 | 4.32 | |
| | 1.71E-02 | | | | |
| GO:0050927 | positive regulation of positive chemotax... | 21 | 9 | 4.32 | |
| | 1.71E-02 | | | | |
| GO:1903115 | regulation of actin filament-based movem... | 35 | 13 | 7.19 | |
| | 1.75E-02 | | | | |
| GO:0009201 | ribonucleoside triphosphate biosynthetic... | 46 | 16 | 9.45 | |
| | 1.75E-02 | | | | |
| GO:0050871 | positive regulation of B cell activation | 46 | 16 | 9.45 | |
| | 1.75E-02 | | | | |
| GO:0014068 | positive regulation of phosphatidylinosi... | 46 | 16 | 9.45 | |
| | 1.75E-02 | | | | |
| GO:0015711 | organic anion transport | 205 | 55 | 42.13 | 1.75E-02 |
| GO:0050953 | sensory perception of light stimulus | 46 | 16 | 9.45 | |
| | 1.75E-02 | | | | |
| GO:0030801 | positive regulation of cyclic nucleotide... | 46 | 16 | 9.45 | |
| | 1.75E-02 | | | | |
| GO:0046058 | cAMP metabolic process | 69 | 22 | 14.18 | 1.78E-02 |
| GO:0032615 | interleukin-12 production | 28 | 11 | 5.75 | 1.80E-02 |
| GO:0050732 | negative regulation of peptidyl-tyrosine... | 28 | 11 | 5.75 | |
| | 1.80E-02 | | | | |
| GO:0001659 | temperature homeostasis | 28 | 11 | 5.75 | 1.80E-02 |
| GO:0050731 | positive regulation of peptidyl-tyrosine... | 105 | 31 | 21.58 | 1.81E-02 |
| GO:0051302 | regulation of cell division | 163 | 45 | 33.5 | 1.82E-02 |
| GO:0071322 | cellular response to carbohydrate stimul... | 85 | 26 | 17.47 | 1.84E-02 |
| GO:0010941 | regulation of cell death | 1002 | 232 | 205.92 | 1.85E-02 |
| GO:0043410 | positive regulation of MAPK cascade | 266 | 69 | 54.67 | |
| | 1.86E-02 | | | | |
| GO:0043086 | negative regulation of catalytic activit... | 429 | 106 | 88.16 | 1.87E-02 |
| GO:2000146 | negative regulation of cell motility | 134 | 38 | 27.54 | |
| | 1.87E-02 | | | | |
| GO:0034349 | glial cell apoptotic process | 18 | 8 | 3.7 | 1.90E-02 |
| GO:0002548 | monocyte chemotaxis | 18 | 8 | 3.7 | 1.90E-02 |
| GO:0010880 | regulation of release of sequestered cal... | 18 | 8 | 3.7 | |
| | 1.90E-02 | | | | |
| GO:0033762 | response to glucagon | 18 | 8 | 3.7 | 1.90E-02 |

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|------------|---|------|-----|--------|----------|
| GO:0032967 | positive regulation of collagen biosynth... | 18 | 8 | 3.7 | 1.90E-02 |
| GO:0050918 | positive chemotaxis | 39 | 14 | 8.01 | 1.91E-02 |
| GO:0090183 | regulation of kidney development | 39 | 14 | 8.01 | 1.91E-02 |
| GO:0009142 | nucleoside triphosphate biosynthetic pro... | 54 | 18 | 11.1 | 1.92E-02 |
| GO:0035690 | cellular response to drug | 54 | 18 | 11.1 | 1.92E-02 |
| GO:0050886 | endocrine process | 54 | 18 | 11.1 | 1.92E-02 |
| GO:0006793 | phosphorus metabolic process | 2569 | 565 | 527.95 | 1.98E-02 |
| GO:0042886 | amide transport | 147 | 41 | 30.21 | 1.98E-02 |
| GO:0048678 | response to axon injury | 58 | 19 | 11.92 | 1.99E-02 |
| GO:0006112 | energy reserve metabolic process | 62 | 20 | 12.74 | 2.04E-02 |
| GO:0043113 | receptor clustering | 32 | 12 | 6.58 | 2.04E-02 |
| GO:0009612 | response to mechanical stimulus | 160 | 44 | 32.88 | 2.07E-02 |
| GO:1902305 | regulation of sodium ion transmembrane t... | 25 | 10 | 5.14 | 2.07E-02 |
| GO:0086009 | membrane repolarization | 25 | 10 | 5.14 | 2.07E-02 |
| GO:0050869 | negative regulation of B cell activation | 25 | 10 | 5.14 | 2.07E-02 |
| GO:0050704 | regulation of interleukin-1 secretion | 15 | 7 | 3.08 | 2.08E-02 |
| GO:0042119 | neutrophil activation | 15 | 7 | 3.08 | 2.08E-02 |
| GO:0034105 | positive regulation of tissue remodeling | 15 | 7 | 3.08 | 2.08E-02 |
| GO:2000516 | positive regulation of CD4-positive, alp... | 15 | 7 | 3.08 | 2.08E-02 |
| GO:0045822 | negative regulation of heart contraction | 15 | 7 | 3.08 | 2.08E-02 |
| GO:0006909 | phagocytosis | 86 | 26 | 17.67 | 2.14E-02 |
| GO:0071902 | positive regulation of protein serine/th... | 173 | 47 | 35.55 | 2.14E-02 |
| GO:0030336 | negative regulation of cell migration | 131 | 37 | 26.92 | 2.14E-02 |
| GO:0010038 | response to metal ion | 259 | 67 | 53.23 | 2.14E-02 |
| GO:0006085 | acetyl-CoA biosynthetic process | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0010935 | regulation of macrophage cytokine produc... | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0032891 | negative regulation of organic acid tran... | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0007263 | nitric oxide mediated signal transductio... | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0010269 | response to selenium ion | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0060307 | regulation of ventricular cardiac muscle... | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0048266 | behavioral response to pain | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0031268 | pseudopodium organization | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0031269 | pseudopodium assembly | 12 | 6 | 2.47 | 2.20E-02 |
| GO:0001660 | fever generation | 12 | 6 | 2.47 | 2.20E-02 |

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|------------|---|----------|------|---------|----------|------|
| GO:0009966 | regulation of signal transduction | 1655 | 371 | 340.12 | | |
| | 2.23E-02 | | | | | |
| GO:1901264 | carbohydrate derivative transport | 36 | 13 | 7.4 | 2.24E-02 | |
| GO:0050729 | positive regulation of inflammatory resp... | | | 55 | 18 | 11.3 |
| | 2.32E-02 | | | | | |
| GO:0043069 | negative regulation of programmed cell d... | | | 491 | 119 | |
| | 100.91 | 2.35E-02 | | | | |
| GO:0009152 | purine ribonucleotide biosynthetic proce... | | | 136 | 38 | |
| | 27.95 | 2.35E-02 | | | | |
| GO:0051271 | negative regulation of cellular componen... | | | 136 | 38 | |
| | 27.95 | 2.35E-02 | | | | |
| GO:0050854 | regulation of antigen receptor-mediated ... | | | 29 | 11 | 5.96 |
| | 2.37E-02 | | | | | |
| GO:0043278 | response to morphine | 22 | 9 | 4.52 | 2.37E-02 | |
| GO:0007608 | sensory perception of smell | 22 | 9 | 4.52 | 2.37E-02 | |
| GO:0050926 | regulation of positive chemotaxis | 22 | 9 | 4.52 | 2.37E-02 | |
| GO:0014066 | regulation of phosphatidylinositol 3-kin... | | | 59 | 19 | |
| | 12.13 | 2.38E-02 | | | | |
| GO:0050673 | epithelial cell proliferation | 230 | 60 | 47.27 | 2.40E-02 | |
| GO:0007160 | cell-matrix adhesion | 128 | 36 | 26.31 | 2.45E-02 | |
| GO:0044070 | regulation of anion transport | 67 | 21 | 13.77 | 2.45E-02 | |
| GO:0030799 | regulation of cyclic nucleotide metaboli... | | | 67 | 21 | |
| | 13.77 | 2.45E-02 | | | | |
| GO:0010942 | positive regulation of cell death | 327 | 82 | 67.2 | 2.53E-02 | |
| GO:0030810 | positive regulation of nucleotide biosyn... | | | 44 | 15 | 9.04 |
| | 2.54E-02 | | | | | |
| GO:1900373 | positive regulation of purine nucleotide... | | | 44 | 15 | 9.04 |
| | 2.54E-02 | | | | | |
| GO:0061035 | regulation of cartilage development | | | 44 | 15 | 9.04 |
| | 2.54E-02 | | | | | |
| GO:0007601 | visual perception | 44 | 15 | 9.04 | 2.54E-02 | |
| GO:0050789 | regulation of biological process | 5920 | 1256 | 1216.62 | | |
| | 2.57E-02 | | | | | |
| GO:0022408 | negative regulation of cell-cell adhesio... | | | 33 | 12 | 6.78 |
| | 2.62E-02 | | | | | |
| GO:0006953 | acute-phase response | 33 | 12 | 6.78 | 2.62E-02 | |
| GO:0044723 | single-organism carbohydrate metabolic p... | | | 421 | 103 | |
| | 86.52 | 2.62E-02 | | | | |
| GO:0050679 | positive regulation of epithelial cell p... | | | 112 | 32 | |
| | 23.02 | 2.63E-02 | | | | |
| GO:0034110 | regulation of homotypic cell-cell adhesi... | | | 19 | 8 | 3.9 |
| | 2.70E-02 | | | | | |
| GO:0010714 | positive regulation of collagen metaboli... | | | 19 | 8 | 3.9 |
| | 2.70E-02 | | | | | |
| GO:0002544 | chronic inflammatory response | 19 | 8 | 3.9 | 2.70E-02 | |
| GO:0045597 | positive regulation of cell differentiat... | | | 480 | 116 | |
| | 98.64 | 2.71E-02 | | | | |

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|------------|---|-----|-----|-------|----------|
| GO:0046364 | monosaccharide biosynthetic process | 52 | 17 | 10.69 | |
| | 2.72E-02 | | | | |
| GO:0051781 | positive regulation of cell division | 52 | 17 | 10.69 | |
| | 2.72E-02 | | | | |
| GO:1901652 | response to peptide | 306 | 77 | 62.89 | 2.73E-02 |
| GO:0002228 | natural killer cell mediated immunity | 26 | 10 | 5.34 | |
| | 2.76E-02 | | | | |
| GO:0042267 | natural killer cell mediated cytotoxicit... | 26 | 10 | 5.34 | |
| | 2.76E-02 | | | | |
| GO:0061098 | positive regulation of protein tyrosine ... | 26 | 10 | 5.34 | |
| | 2.76E-02 | | | | |
| GO:0042993 | positive regulation of transcription fac... | 26 | 10 | 5.34 | |
| | 2.76E-02 | | | | |
| GO:0048015 | phosphatidylinositol-mediated signaling | 92 | 27 | 18.91 | |
| | 2.81E-02 | | | | |
| GO:0048017 | inositol lipid-mediated signaling | 92 | 27 | 18.91 | 2.81E-02 |
| GO:0070201 | regulation of establishment of protein l... | 333 | 83 | | |
| | 68.43 2.82E-02 | | | | |
| GO:0045576 | mast cell activation | 37 | 13 | 7.6 | 2.82E-02 |
| GO:0051928 | positive regulation of calcium ion trans... | 60 | 19 | | |
| | 12.33 2.83E-02 | | | | |
| GO:0051606 | detection of stimulus | 84 | 25 | 17.26 | 2.86E-02 |
| GO:0015833 | peptide transport | 142 | 39 | 29.18 | 2.86E-02 |
| GO:0043066 | negative regulation of apoptotic process | | 481 | 116 | |
| | 98.85 2.87E-02 | | | | |
| GO:0001678 | cellular glucose homeostasis | 80 | 24 | 16.44 | 2.88E-02 |
| GO:0050678 | regulation of epithelial cell proliferat... | 202 | 53 | | |
| | 41.51 2.92E-02 | | | | |
| GO:0051091 | positive regulation of sequence-specific... | 138 | 38 | | |
| | 28.36 2.93E-02 | | | | |
| GO:0043434 | response to peptide hormone | 285 | 72 | 58.57 | 2.94E-02 |
| GO:0022900 | electron transport chain | 41 | 14 | 8.43 | 2.98E-02 |
| GO:0061097 | regulation of protein tyrosine kinase ac... | 41 | 14 | 8.43 | |
| | 2.98E-02 | | | | |
| GO:0050906 | detection of stimulus involved in sensor... | 41 | 14 | 8.43 | |
| | 2.98E-02 | | | | |
| GO:0000280 | nuclear division | 272 | 69 | 55.9 | 2.98E-02 |
| GO:0048738 | cardiac muscle tissue development | 134 | 37 | 27.54 | 3.00E-02 |
| GO:0036230 | granulocyte activation | 16 | 7 | 3.29 | 3.05E-02 |
| GO:0009214 | cyclic nucleotide catabolic process | 16 | 7 | 3.29 | |
| | 3.05E-02 | | | | |
| GO:0043949 | regulation of cAMP-mediated signaling | 16 | 7 | 3.29 | |
| | 3.05E-02 | | | | |
| GO:0043011 | myeloid dendritic cell differentiation | 16 | 7 | 3.29 | |
| | 3.05E-02 | | | | |
| GO:0006898 | receptor-mediated endocytosis | 130 | 36 | 26.72 | 3.06E-02 |
| GO:0002637 | regulation of immunoglobulin production | 30 | 11 | 6.17 | |
| | 3.07E-02 | | | | |
| GO:0045582 | positive regulation of T cell differenti... | 45 | 15 | 9.25 | |
| | 3.10E-02 | | | | |

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|------------|---|-------|-----|----------|----------|
| GO:0055117 | regulation of cardiac muscle contraction | 45 | 15 | 9.25 | |
| | 3.10E-02 | | | | |
| GO:0002791 | regulation of peptide secretion | 101 | 29 | 20.76 | 3.12E-02 |
| GO:0043200 | response to amino acid | 101 | 29 | 20.76 | 3.12E-02 |
| GO:0006082 | organic acid metabolic process | 637 | 150 | 130.91 | |
| | 3.12E-02 | | | | |
| GO:0007267 | cell-cell signaling | 537 | 128 | 110.36 | 3.15E-02 |
| GO:0071822 | protein complex subunit organization | 992 | 227 | 203.87 | |
| | 3.16E-02 | | | | |
| GO:0031401 | positive regulation of protein modificat... | 528 | 126 | | |
| | 108.51 | | | 3.16E-02 | |
| GO:0070252 | actin-mediated cell contraction | 49 | 16 | 10.07 | 3.20E-02 |
| GO:0019319 | hexose biosynthetic process | 49 | 16 | 10.07 | 3.20E-02 |
| GO:0014072 | response to isoquinoline alkaloid | 23 | 9 | 4.73 | 3.20E-02 |
| GO:0036075 | replacement ossification | 23 | 9 | 4.73 | 3.20E-02 |
| GO:0001958 | endochondral ossification | 23 | 9 | 4.73 | 3.20E-02 |
| GO:0055081 | anion homeostasis | 23 | 9 | 4.73 | 3.20E-02 |
| GO:1902107 | positive regulation of leukocyte differe... | 89 | 26 | | |
| | 18.29 | | | 3.25E-02 | |
| GO:0071384 | cellular response to corticosteroid stim... | 53 | 17 | | |
| | 10.89 | | | 3.27E-02 | |
| GO:1900046 | regulation of hemostasis | 53 | 17 | 10.89 | 3.27E-02 |
| GO:0030193 | regulation of blood coagulation | 53 | 17 | 10.89 | 3.27E-02 |
| GO:0019233 | sensory perception of pain | 69 | 21 | 14.18 | 3.36E-02 |
| GO:0006796 | phosphate-containing compound metabolic ... | 522.2 | 555 | | |
| | 522.2 | | | 3.39E-02 | |
| GO:0050716 | positive regulation of interleukin-1 sec... | 13 | 6 | 2.67 | |
| | 3.39E-02 | | | | |
| GO:0050718 | positive regulation of interleukin-1 bet... | 13 | 6 | 2.67 | |
| | 3.39E-02 | | | | |
| GO:0046629 | gamma-delta T cell activation | 13 | 6 | 2.67 | 3.39E-02 |
| GO:0010934 | macrophage cytokine production | 13 | 6 | 2.67 | 3.39E-02 |
| GO:2000573 | positive regulation of DNA biosynthetic ... | 13 | 6 | 2.67 | |
| | 3.39E-02 | | | | |
| GO:0032928 | regulation of superoxide anion generatio... | 13 | 6 | 2.67 | |
| | 3.39E-02 | | | | |
| GO:0032303 | regulation of icosanoid secretion | 13 | 6 | 2.67 | 3.39E-02 |
| GO:0032487 | regulation of Rap protein signal transdu... | 13 | 6 | 2.67 | |
| | 3.39E-02 | | | | |
| GO:0048485 | sympathetic nervous system development | 13 | 6 | 2.67 | |
| | 3.39E-02 | | | | |
| GO:0042573 | retinoic acid metabolic process | 13 | 6 | 2.67 | 3.39E-02 |
| GO:0007567 | parturition | 13 | 6 | 2.67 | 3.39E-02 |
| GO:0043067 | regulation of programmed cell death | 943 | 216 | 193.8 | |
| | 3.42E-02 | | | | |

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|------------|---|------|-----|--------|----------|
| GO:0032386 | regulation of intracellular transport | 296 | 74 | 60.83 | |
| | 3.43E-02 | | | | |
| GO:0043436 | oxoacid metabolic process | 630 | 148 | 129.47 | 3.46E-02 |
| GO:0006801 | superoxide metabolic process | 38 | 13 | 7.81 | 3.50E-02 |
| GO:0045453 | bone resorption | 38 | 13 | 7.81 | 3.50E-02 |
| GO:0071695 | anatomical structure maturation | 38 | 13 | 7.81 | 3.50E-02 |
| GO:0032880 | regulation of protein localization | 399 | 97 | 82 | 3.52E-02 |
| GO:0048519 | negative regulation of biological proces... | 2638 | 575 | | |
| | 542.13 | | | | 3.52E-02 |
| GO:0022402 | cell cycle process | 635 | 149 | 130.5 | 3.54E-02 |
| GO:0044262 | cellular carbohydrate metabolic process | 200 | 52 | 41.1 | |
| | 3.57E-02 | | | | |
| GO:0010712 | regulation of collagen metabolic process | 27 | 10 | 5.55 | |
| | 3.59E-02 | | | | |
| GO:0032655 | regulation of interleukin-12 production | 27 | 10 | 5.55 | |
| | 3.59E-02 | | | | |
| GO:0060350 | endochondral bone morphogenesis | 42 | 14 | 8.63 | 3.65E-02 |
| GO:0001658 | branching involved in ureteric bud morph... | 42 | 14 | 8.63 | |
| | 3.65E-02 | | | | |
| GO:0032677 | regulation of interleukin-8 production | 42 | 14 | 8.63 | |
| | 3.65E-02 | | | | |
| GO:0050855 | regulation of B cell receptor signaling ... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:1900744 | regulation of p38MAPK cascade | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0071243 | cellular response to arsenic-containing ... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0071467 | cellular response to pH | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0033275 | actin-myosin filament sliding | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0050857 | positive regulation of antigen receptor-... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0010447 | response to acidic pH | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0031338 | regulation of vesicle fusion | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0006012 | galactose metabolic process | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0061081 | positive regulation of myeloid leukocyte... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0002864 | regulation of acute inflammatory respons... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0045066 | regulatory T cell differentiation | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0055119 | relaxation of cardiac muscle | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0046031 | ADP metabolic process | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0006026 | aminoglycan catabolic process | 10 | 5 | 2.06 | 3.65E-02 |
| GO:0086019 | cell-cell signaling involved in cardiac ... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0031652 | positive regulation of heat generation | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0048535 | lymph node development | 10 | 5 | 2.06 | 3.65E-02 |

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|------------|---|------|-----|-------|----------|
| GO:0090184 | positive regulation of kidney developmen... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0032753 | positive regulation of interleukin-4 pro... | 10 | 5 | 2.06 | |
| | 3.65E-02 | | | | |
| GO:0000082 | G1/S transition of mitotic cell cycle | 119 | 33 | 24.46 | |
| | 3.66E-02 | | | | |
| GO:0060306 | regulation of membrane repolarization | 20 | 8 | 4.11 | |
| | 3.72E-02 | | | | |
| GO:0048265 | response to pain | 20 | 8 | 4.11 | 3.72E-02 |
| GO:0043536 | positive regulation of blood vessel endo... | 20 | 8 | 4.11 | |
| | 3.72E-02 | | | | |
| GO:0008217 | regulation of blood pressure | 115 | 32 | 23.63 | 3.74E-02 |
| GO:0071230 | cellular response to amino acid stimulus | 46 | 15 | 9.45 | |
| | 3.75E-02 | | | | |
| GO:0051222 | positive regulation of protein transport | 179 | 47 | | |
| | 36.79 | | | | 3.77E-02 |
| GO:0060359 | response to ammonium ion | 50 | 16 | 10.28 | 3.83E-02 |
| GO:0046637 | regulation of alpha-beta T cell differen... | 31 | 11 | 6.37 | |
| | 3.90E-02 | | | | |
| GO:0045668 | negative regulation of osteoblast differ... | 31 | 11 | 6.37 | |
| | 3.90E-02 | | | | |
| GO:0002377 | immunoglobulin production | 58 | 18 | 11.92 | 3.91E-02 |
| GO:0005977 | glycogen metabolic process | 58 | 18 | 11.92 | 3.91E-02 |
| GO:0006073 | cellular glucan metabolic process | 58 | 18 | 11.92 | 3.91E-02 |
| | | | | | |
| GO:0044042 | glucan metabolic process | 58 | 18 | 11.92 | 3.91E-02 |
| GO:0048285 | organelle fission | 298 | 74 | 61.24 | 3.94E-02 |
| GO:0090087 | regulation of peptide transport | 103 | 29 | 21.17 | 3.98E-02 |
| | | | | | |
| GO:0045786 | negative regulation of cell cycle | 184 | 48 | 37.81 | 4.00E-02 |
| | | | | | |
| GO:0044843 | cell cycle G1/S phase transition | 120 | 33 | 24.66 | 4.08E-02 |
| | | | | | |
| GO:0072521 | purine-containing compound metabolic pro... | 1008 | 229 | | |
| | 207.15 | | | | 4.08E-02 |
| GO:0031663 | lipopolysaccharide-mediated signaling pa... | 35 | 12 | 7.19 | |
| | 4.12E-02 | | | | |
| GO:0009593 | detection of chemical stimulus | 35 | 12 | 7.19 | 4.12E-02 |
| | | | | | |
| GO:0032787 | monocarboxylic acid metabolic process | 330 | 81 | 67.82 | |
| | 4.16E-02 | | | | |
| GO:0033003 | regulation of mast cell activation | 24 | 9 | 4.93 | 4.22E-02 |
| | | | | | |
| GO:0048730 | epidermis morphogenesis | 24 | 9 | 4.93 | 4.22E-02 |
| GO:0044253 | positive regulation of multicellular org... | 24 | 9 | 4.93 | |
| | 4.22E-02 | | | | |
| GO:0032094 | response to food | 24 | 9 | 4.93 | 4.22E-02 |
| GO:0048585 | negative regulation of response to stimu... | 777 | 179 | | |
| | 159.68 | | | | 4.23E-02 |
| GO:0032147 | activation of protein kinase activity | 146 | 39 | 30 | |
| | 4.29E-02 | | | | |
| GO:0014850 | response to muscle activity | 17 | 7 | 3.49 | 4.29E-02 |
| GO:0038084 | vascular endothelial growth factor signa... | 17 | 7 | 3.49 | |
| | 4.29E-02 | | | | |

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|------------|---|------|-----|--------|----------|--|--|--|
| GO:0031649 | heat generation | 17 | 7 | 3.49 | 4.29E-02 | | | |
| GO:0061217 | regulation of mesonephros development | 17 | 7 | 3.49 | 4.29E-02 | | | |
| GO:0050881 | musculoskeletal movement | 39 | 13 | 8.01 | 4.29E-02 | | | |
| GO:0050879 | multicellular organismal movement | 39 | 13 | 8.01 | 4.29E-02 | | | |
| GO:0002790 | peptide secretion | 129 | 35 | 26.51 | 4.32E-02 | | | |
| GO:0032872 | regulation of stress-activated MAPK casc... | 129 | 35 | 26.51 | 4.32E-02 | | | |
| GO:0052547 | regulation of peptidase activity | 242 | 61 | 49.73 | 4.39E-02 | | | |
| GO:0055008 | cardiac muscle tissue morphogenesis | 43 | 14 | 8.84 | 4.42E-02 | | | |
| GO:0071333 | cellular response to glucose stimulus | 75 | 22 | 15.41 | 4.46E-02 | | | |
| GO:0015718 | monocarboxylic acid transport | 75 | 22 | 15.41 | 4.46E-02 | | | |
| GO:0019722 | calcium-mediated signaling | 75 | 22 | 15.41 | 4.46E-02 | | | |
| GO:0008219 | cell death | 1235 | 277 | 253.8 | 4.50E-02 | | | |
| GO:0060675 | ureteric bud morphogenesis | 47 | 15 | 9.66 | 4.50E-02 | | | |
| GO:0043068 | positive regulation of programmed cell d... | 300 | 74 | 61.65 | 4.50E-02 | | | |
| GO:0050768 | negative regulation of neurogenesis | 71 | 21 | 14.59 | 4.51E-02 | | | |
| GO:0051346 | negative regulation of hydrolase activit... | 216 | 55 | 44.39 | 4.52E-02 | | | |
| GO:0007059 | chromosome segregation | 121 | 33 | 24.87 | 4.54E-02 | | | |
| GO:0060415 | muscle tissue morphogenesis | 51 | 16 | 10.48 | 4.55E-02 | | | |
| GO:0071385 | cellular response to glucocorticoid stim... | 51 | 16 | 10.48 | 4.55E-02 | | | |
| GO:0045981 | positive regulation of nucleotide metabo... | 63 | 19 | 12.95 | 4.57E-02 | | | |
| GO:1900544 | positive regulation of purine nucleotide... | 63 | 19 | 12.95 | 4.57E-02 | | | |
| GO:0000910 | cytokinesis | 63 | 19 | 12.95 | 4.57E-02 | | | |
| GO:0000079 | regulation of cyclin-dependent protein s... | 55 | 17 | 11.3 | 4.58E-02 | | | |
| GO:0042981 | regulation of apoptotic process | 932 | 212 | 191.53 | 4.58E-02 | | | |
| GO:0031099 | regeneration | 151 | 40 | 31.03 | 4.59E-02 | | | |
| GO:0000060 | protein import into nucleus, translocati... | 28 | 10 | 5.75 | 4.59E-02 | | | |
| GO:0052548 | regulation of endopeptidase activity | 234 | 59 | 48.09 | 4.67E-02 | | | |
| GO:0009260 | ribonucleotide biosynthetic process | 147 | 39 | 30.21 | 4.72E-02 | | | |
| GO:0070371 | ERK1 and ERK2 cascade | 147 | 39 | 30.21 | 4.72E-02 | | | |
| GO:0010721 | negative regulation of cell development | 92 | 26 | 18.91 | 4.75E-02 | | | |
| GO:0040013 | negative regulation of locomotion | 160 | 42 | 32.88 | 4.76E-02 | | | |
| GO:0070302 | regulation of stress-activated protein k... | 130 | 35 | 26.72 | 4.78E-02 | | | |

| | | | | | |
|------------|---|-----|----|-------|----------|
| GO:1901215 | negative regulation of neuron death | 130 | 35 | 26.72 | |
| | 4.78E-02 | | | | |
| GO:0086004 | regulation of cardiac muscle cell contra... | 32 | 11 | 6.58 | |
| | 4.87E-02 | | | | |
| GO:0007528 | neuromuscular junction development | 32 | 11 | 6.58 | 4.87E-02 |
| GO:0030819 | positive regulation of cAMP biosynthetic... | 32 | 11 | 6.58 | |
| | 4.87E-02 | | | | |
| GO:0003044 | regulation of systemic arterial blood pr... | 32 | 11 | 6.58 | |
| | 4.87E-02 | | | | |
| GO:0048705 | skeletal system morphogenesis | 156 | 41 | 32.06 | 4.89E-02 |
| GO:0006309 | apoptotic DNA fragmentation | 14 | 6 | 2.88 | 4.93E-02 |
| GO:0032660 | regulation of interleukin-17 production | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0060999 | positive regulation of dendritic spine d... | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0007413 | axonal fasciculation | 14 | 6 | 2.88 | 4.93E-02 |
| GO:0050901 | leukocyte tethering or rolling | 14 | 6 | 2.88 | 4.93E-02 |
| GO:0006198 | cAMP catabolic process | 14 | 6 | 2.88 | 4.93E-02 |
| GO:0032332 | positive regulation of chondrocyte diffe... | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0002320 | lymphoid progenitor cell differentiation | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0050930 | induction of positive chemotaxis | 14 | 6 | 2.88 | 4.93E-02 |
| GO:0098581 | detection of external biotic stimulus | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0035590 | purinergic nucleotide receptor signaling... | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0002686 | negative regulation of leukocyte migrati... | 14 | 6 | 2.88 | |
| | 4.93E-02 | | | | |
| GO:0043552 | positive regulation of phosphatidylinosi... | 21 | 8 | 4.32 | |
| | 4.95E-02 | | | | |
| GO:0045124 | regulation of bone resorption | 21 | 8 | 4.32 | 4.95E-02 |
| GO:0007157 | heterophilic cell-cell adhesion | 21 | 8 | 4.32 | 4.95E-02 |
| GO:0035136 | forelimb morphogenesis | 21 | 8 | 4.32 | 4.95E-02 |