### Supplementary Table 1.

| Term                                                                 | Pop Hits | Pop Total | P Value    |
|----------------------------------------------------------------------|----------|-----------|------------|
| positive regulation of peptidyl-serine phosphorylation               | 58       | 13824     | 1.39E-06   |
| positive regulation of transcription from RNA polymerase II promoter | 580      | 13824     | 4.30E-05   |
| lipopolysaccharide-mediated signaling pathway                        | 28       | 13824     | 5.90E-05   |
| epithelial cell proliferation involved in salivary gland morphogenesis | 5        | 13824     | 0.002169   |
| cellular response to granulocyte macrophage colony-stimulating factor stimulus | 6        | 13824     | 0.002602   |
| apoptotic process                                                    | 204      | 13824     | 0.003126   |
| response to glucocorticoid                                           | 10       | 13824     | 0.004333   |
| negative regulation of apoptotic process                            | 246      | 13824     | 0.004513   |
| cellular response to vascular endothelial growth factor stimulus     | 11       | 13824     | 0.004766   |
| positive regulation of blood vessel endothelial cell migration       | 14       | 13824     | 0.006062   |
| labyrinthine layer blood vessel development                          | 16       | 13824     | 0.006926   |
| positive regulation of nitric oxide biosynthetic process             | 18       | 13824     | 0.007789   |
| positive regulation of smooth muscle cell proliferation              | 21       | 13824     | 0.009082   |
| protein import into nucleus, translocation                          | 24       | 13824     | 0.010373   |
| protein kinase B signaling                                           | 26       | 13824     | 0.011234   |
| peptidyl-threonine phosphorylation                                    | 28       | 13824     | 0.012094   |
| positive regulation of MAP kinase activity                           | 35       | 13824     | 0.015098   |
| glucose metabolic process                                            | 38       | 13824     | 0.016383   |
| positive regulation of interleukin-6 production                      | 40       | 13824     | 0.017239   |
| positive regulation of endothelial cell proliferation                | 48       | 13824     | 0.020657   |
| cellular response to hypoxia                                         | 50       | 13824     | 0.02151    |
| response to exogenous dsRNA                                          | 51       | 13824     | 0.021936   |
| humoral immune response                                              | 56       | 13824     | 0.024065   |
| positive regulation of protein phosphorylation                       | 59       | 13824     | 0.02534    |
| positive regulation of sequence-specific DNA binding transcription factor activity | 65       | 13824     | 0.027887   |
| glucose homeostasis                                                  | 86       | 13824     | 0.036757   |
| peptidyl-serine phosphorylation                                      | 112      | 13824     | 0.047646   |
| defense response to virus                                            | 125      | 13824     | 0.053051   |
| positive regulation of apoptotic process                             | 133      | 13824     | 0.056365   |
## Supplementary Table 2.

| Term                                                                 | Pop Hits | Pop Total | P Value       |
|----------------------------------------------------------------------|----------|-----------|---------------|
| Hepatitis B                                                           | 148      | 7550      | 1.60E-08      |
| Toll-like receptor signaling pathway                                   | 105      | 7550      | 5.19E-07      |
| Chagas disease (American trypanosomiasis)                             | 114      | 7550      | 7.23E-07      |
| PI3K-Akt signaling pathway                                            | 347      | 7550      | 1.15E-06      |
| Hepatitis C                                                           | 133      | 7550      | 1.34E-06      |
| Influenza A                                                           | 173      | 7550      | 3.85E-06      |
| Tuberculosis                                                          | 181      | 7550      | 4.62E-06      |
| Proteoglycans in cancer                                               | 203      | 7550      | 7.30E-06      |
| Pancreatic cancer                                                     | 65       | 7550      | 1.20E-05      |
| HIF-1 signaling pathway                                               | 105      | 7550      | 5.19E-07      |
| TNF signaling pathway                                                 | 108      | 7550      | 5.52E-05      |
| Sphingolipid signaling pathway                                        | 120      | 7550      | 7.56E-05      |
| Pathways in cancer                                                    | 398      | 7550      | 1.05E-04      |
| Osteoclast differentiation                                            | 134      | 7550      | 1.05E-04      |
| Measles                                                               | 140      | 7550      | 1.20E-04      |
| Herpes simplex infection                                              | 190      | 7550      | 2.97E-04      |
| Bladder cancer                                                        | 40       | 7550      | 4.05E-04      |
| NOD-like receptor signaling pathway                                   | 51       | 7550      | 6.60E-04      |
| Endometrial cancer                                                    | 51       | 7550      | 6.60E-04      |
| MAPK signaling pathway                                                | 255      | 7550      | 7.06E-04      |
| Non-small cell lung cancer                                            | 56       | 7550      | 7.95E-04      |
| HTLV-I infection                                                      | 267      | 7550      | 8.08E-04      |
| mTOR signaling pathway                                                | 59       | 7550      | 8.83E-04      |
| VEGF signaling pathway                                                | 59       | 7550      | 8.83E-04      |
| Apoptosis                                                             | 62       | 7550      | 9.74E-04      |
| Central carbon metabolism in cancer                                   | 62       | 7550      | 9.74E-04      |
| Glioma                                                                | 65       | 7550      | 0.001071      |
| Renal cell carcinoma                                                  | 66       | 7550      | 0.001104      |
| Colorectal cancer                                                     | 66       | 7550      | 0.001104      |
| Fc epsilon RI signaling pathway                                       | 67       | 7550      | 0.001137      |
| Melanoma                                                              | 72       | 7550      | 0.001312      |
| Chronic myeloid leukemia                                              | 73       | 7550      | 0.001349      |
| Pertussis                                                             | 77       | 7550      | 0.0015       |
| Prostate cancer                                                       | 86       | 7550      | 0.001867      |
| Rheumatoid arthritis                                                  | 95       | 7550      | 0.002274      |
| T cell receptor signaling pathway                                     | 105      | 7550      | 0.002771      |
| Insulin resistance                                                    | 111      | 7550      | 0.003092      |
| Thyroid hormone signaling pathway                                     | 113      | 7550      | 0.003202      |
| Toxoplasmosis                                                         | 113      | 7550      | 0.003202      |
| Natural killer cell mediated cytotoxicity                             | 117      | 7550      | 0.003429      |
| Neurotrophin signaling pathway                                        | 125      | 7550      | 0.003905      |
| FoxO signaling pathway                                                | 132      | 7550      | 0.004346      |
| Jak-STAT signaling pathway                                           | 151      | 7550      | 0.005654      |
| Non-alcoholic fatty liver disease (NAFLD)                             | 160      | 7550      | 0.00633       |
| Focal adhesion                                                        | 208      | 7550      | 0.010532      |
| Rap1 signaling pathway                                                | 214      | 7550      | 0.011126      |
| Pathway                                           | Score | Significance | p-value |
|--------------------------------------------------|-------|--------------|---------|
| Cytokine-cytokine receptor interaction           | 218   | 7550         | 0.01153 |
| Ras signaling pathway                            | 235   | 7550         | 0.01332 |
| Thyroid cancer                                   | 31    | 7550         | 0.02439 |
| Prion diseases                                   | 32    | 7550         | 0.02517 |
| African trypanosomiasis                          | 37    | 7550         | 0.02906 |
| Graft-versus-host disease                        | 42    | 7550         | 0.03292 |
| Type II diabetes mellitus                        | 47    | 7550         | 0.03678 |
| Malaria                                          | 53    | 7550         | 0.0414  |
| Amyotrophic lateral sclerosis (ALS)              | 54    | 7550         | 0.04216 |
| Acute myeloid leukemia                           | 56    | 7550         | 0.0437  |
| Legionellosis                                    | 57    | 7550         | 0.04446 |
| Cytosolic DNA-sensing pathway                    | 61    | 7550         | 0.04752 |
| B cell receptor signaling pathway                | 70    | 7550         | 0.05437 |
| Inflammatory bowel disease (IBD)                 | 70    | 7550         | 0.05437 |
| Leishmaniasis                                   | 71    | 7550         | 0.05513 |
| Adipocytokine signaling pathway                  | 71    | 7550         | 0.05513 |
| Prolactin signaling pathway                      | 74    | 7550         | 0.05740 |
| RIG-I-like receptor signaling pathway            | 76    | 7550         | 0.05891 |
| Hypertrophic cardiomyopathy (HCM)                | 80    | 7550         | 0.06193 |
| TGF-beta signaling pathway                       | 83    | 7550         | 0.06419 |
| Salmonella infection                             | 83    | 7550         | 0.06419 |
| Fc gamma R-mediated phagocytosis                 | 85    | 7550         | 0.06569 |
| ErbB signaling pathway                           | 86    | 7550         | 0.06644 |
| Small cell lung cancer                           | 87    | 7550         | 0.06719 |
| Progesterone-mediated oocyte maturation          | 88    | 7550         | 0.06794 |
| Hematopoietic cell lineage                       | 92    | 7550         | 0.07094 |
| Estrogen signaling pathway                       | 98    | 7550         | 0.07542 |
| Choline metabolism in cancer                     | 99    | 7550         | 0.07616 |
| Cholinergic synapse                              | 110   | 7550         | 0.08432 |
| Amoebiasis                                       | 112   | 7550         | 0.08579 |
| Epstein-Barr virus infection                     | 118   | 7550         | 0.09021 |
| Platelet activation                              | 127   | 7550         | 0.09680 |