**Appendix 8**: Table illustrates significantly (p-value<0.05) enriched diseases and functions from ΔD64differentially expressed gene list analysis using IPA®. For each disease and function term the cluster category is reported together with p-value, z-score, predicted activation state (z-score>2= increased activation, z-score<-2=decreased activation), number of transcripts and their IDs. Data were analyzed through the use of IPA (QIAGEN Inc., <https://www.qiagenbioinformatics.com/products/ingenuitypathway-analysis>)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Categories** | **Diseases or Functions Annotation** | **p-value** | **Predicted Activation State** | **Activation z-score** | **# genes** | **Genes** |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Induction of mononuclear leukocytes | 9.96E-05 |  | 0.896 | 8 | CAT, CRH, CSF1, CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Hematological Disease, Immunological Disease | Eosinophilia of tissue | 1.25E-04 |  | 0.762 | 4 | IL1RL1, IL9, PTGDR2, SIGLEC8 |
| Molecular Transport | Transmembrane transport of ion | 1.97E-04 |  |  | 17 | ANO5, ATP6V0A2, ATP6V0D2, ATP6V1A, BSND, CACNA1E, GLRA1, HCN3, KCNG3, KCNH2, SCN4B, SLC17A3, SLC46A1, SLC8A3, SLC9B1, STOML3, TRPC6 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Hypersensitivity Response, Immune Cell Trafficking, Inflammatory Response | Activation of eosinophils | 2.29E-04 |  |  | 5 | CXCL9, IL1RL1, IL5RA, IL9, PTGDR2 |
| Cell Death and Survival | Killing of Candida albicans | 2.48E-04 |  |  | 3 | CCL28, CFHR1, PRTN3 |
| Cellular Movement, Reproductive System Development and Function | Cell movement of sperm | 2.65E-04 |  |  | 10 | ANO5, APOB, CACNA1E, DDHD1, MET, PRSS55, SLC9B1, SORD, SPAG16, VPS13A |
| Nervous System Development and Function, Organ Morphology, Tissue Morphology, Visual System Development and Function | Quantity of starburst amacrine cells | 3.84E-04 |  |  | 2 | BARHL2, PTF1A |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Proliferation of tumor-infiltrating lymphocytes | 3.84E-04 |  |  | 2 | IDO1, IL9 |
| Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities, Respiratory Disease | Nasal polyp | 3.90E-04 |  |  | 3 | CYSLTR2, IL5RA, PTGDR2 |
| Endocrine System Development and Function, Molecular Transport, Small Molecule Biochemistry | Secretion of peptide hormone derivative | 4.94E-04 |  | -1.982 | 5 | CACNA1E, CRH, FFAR4, GPER1, SMPD3 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Metastatic kidney carcinoma | 5.22E-04 |  |  | 6 | CTLA4, IDO1, IL2RA, MERTK, MET, MUC1 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation | Induction of lymphatic system cells | 5.23E-04 |  | 0.447 | 7 | CRH, CSF1, CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Differentiation of follicular T helper cells | 6.71E-04 |  | 0.784 | 4 | CTLA4, GPR183, IL2RA, MERTK |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Suppression of TREG cells | 6.71E-04 |  |  | 4 | CTLA4, FOXP3, IDO1, IL9 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Advanced kidney carcinoma | 7.08E-04 |  |  | 6 | CTLA4, IDO1, IL2RA, MERTK, MET, MUC1 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Advanced renal cancer | 7.08E-04 |  |  | 6 | CTLA4, IDO1, IL2RA, MERTK, MET, MUC1 |
| Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Hematological System Development and Function, Hematopoiesis, Organismal Development, Tissue Development | Maturation of erythroid precursor cells | 8.08E-04 |  |  | 4 | ALOX15, FOXO3, IL9, RNF112 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response | Activation of regulatory T lymphocytes | 8.36E-04 |  | 0.555 | 5 | CD2, CLC, CTLA4, FOXP3, MERTK |
| Cell-To-Cell Signaling and Interaction | Signal transduction | 9.36E-04 |  |  | 54 | ADGRE1, ATOH8, CCL23, CCL27, CCL28, CCR3, CD101, CD2, CGB3 (includes others), CORO2A, CRH, CXCL9, CYSLTR2, FFAR4, GHRHR, GNG4, GPER1, GPR183, HCAR1, HRH4, IL1RL1, IL2RA, IL5RA, KLRC1, LGR5, MERTK, MET, MOK, NAMPT, NPY4R/NPY4R2, OR10A6, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5H2, OR9Q1, P2RY10, P2RY14, PIK3R6, PMCH, PRKG1, PTGDR2, RGS1, RXFP2, SIGLEC8, SMAD5, SMPD3, SRI, STOML3, TLE1, VLDLR |
| Endocrine System Development and Function, Organ Morphology, Organismal Development | Morphology of pituitary gland | 1.13E-03 |  |  | 6 | ARNT2, CDKN2C, CGB3 (includes others), FOXL2, GSX1, SMPD3 |
| Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Lymphoid Tissue Structure and Development | Homing of helper T lymphocytes | 1.14E-03 |  |  | 4 | CCL27, CCR3, FOXP3, PTGDR2 |
| Cancer, Endocrine System Disorders, Hereditary Disorder, Organismal Injury and Abnormalities | Familial thyroid carcinoma | 1.14E-03 |  |  | 4 | HABP2, MERTK, MET, MSH2 |
| Cancer, Endocrine System Disorders, Hereditary Disorder, Organismal Injury and Abnormalities | Hereditary thyroid cancer | 1.14E-03 |  |  | 4 | HABP2, MERTK, MET, MSH2 |
| Nucleic Acid Metabolism, Small Molecule Biochemistry | Depletion of NADPH | 1.14E-03 |  |  | 2 | CD38, MET |
| Cancer, Cellular Development, Organismal Injury and Abnormalities, Tumor Morphology | Transdifferentiation of tumor | 1.14E-03 |  |  | 2 | CGB3 (includes others), MUC1 |
| Cell-To-Cell Signaling and Interaction, Cellular Compromise | Oxidative stress response of islet cells | 1.14E-03 |  |  | 2 | CAT, HFE |
| Embryonic Development, Nervous System Development and Function, Organ Development, Organ Morphology, Organismal Development, Tissue Development, Visual System Development and Function | Thickness of cornea | 1.14E-03 |  |  | 2 | AQP5, CHST6 |
| Hematological Disease, Immunological Disease | Eosinophilia of bone marrow | 1.14E-03 |  |  | 2 | IL9, SIGLEC8 |
| Amino Acid Metabolism, Small Molecule Biochemistry | Binding of L-amino acid | 1.14E-03 |  |  | 2 | CAT, IDO1 |
| Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry | Modification of glycine | 1.14E-03 |  |  | 2 | GATM, GLDC |
| Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Development of lobules of mammary gland | 1.14E-03 |  |  | 2 | CGB3 (includes others), ID2 |
| Amino Acid Metabolism, Small Molecule Biochemistry | Binding of aromatic amino acid | 1.14E-03 |  |  | 2 | CAT, IDO1 |
| Cancer, Cell Death and Survival, Organismal Injury and Abnormalities, Tumor Morphology | Cell death of acute myeloid leukemia blast cells | 1.14E-03 |  |  | 2 | MUC1, RPS3A |
| Cellular Function and Maintenance | Ion homeostasis of cells | 1.21E-03 |  | 1.269 | 30 | AQP5, ATP6V0A2, ATP6V1A, BSND, CCL23, CCL28, CCR3, CD101, CD2, CD24, CD38, CLIC5, CRH, CTLA4, FFAR4, GLRA1, GPER1, GPR183, HFE, HTR3A, HTR3C, IL1RL1, KLHL3, MON1A, PMCH, PRKG1, SLC46A1, SLC8A3, TEC, TRPC6 |
| Immunological Disease, Inflammatory Response | Abnormal inflammatory response | 1.23E-03 |  |  | 6 | CRH, FOXP3, GCNT1, LUM, MSH2, PTGDR2 |
| Inflammatory Response | Function of immune system | 1.27E-03 |  |  | 10 | ALOX15, CCR3, CYSLTR2, GCNT1, HRH4, ID2, IL1RL1, IL5RA, IL9, SIGLEC8 |
| Organ Morphology | Size of secretory structure | 1.47E-03 |  |  | 8 | AQP5, CDKN2C, CGB3 (includes others), FOXL2, HFE, NFIB, PMCH, PRLR |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Metastatic renal clear cell adenocarcinoma | 1.48E-03 |  |  | 5 | CTLA4, IL2RA, MERTK, MET, MUC1 |
| Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Differentiation of effector T lymphocytes | 1.55E-03 |  | 0.882 | 4 | CTLA4, FOXP3, ID2, IL2RA |
| Endocrine System Development and Function, Molecular Transport, Small Molecule Biochemistry | Secretion of hormone | 1.63E-03 |  | -0.842 | 9 | ARNT2, CACNA1E, CGB3 (includes others), CRH, FFAR4, GHRHR, GPER1, GSX1, SMPD3 |
| Drug Metabolism, Endocrine System Development and Function, Molecular Transport, Small Molecule Biochemistry | Secretion of glucagon | 1.79E-03 |  | -1.982 | 4 | CACNA1E, CRH, FFAR4, GPER1 |
| Cellular Function and Maintenance, Hematological System Development and Function | Function of regulatory T lymphocytes | 1.82E-03 |  |  | 5 | ADGRE1, CTLA4, FOXP3, IL2RA, IL9 |
| Endocrine System Disorders, Gastrointestinal Disease, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Neonatal diabetes mellitus | 1.85E-03 |  |  | 3 | FOXP3, GATA6, PTF1A |
| Cellular Development, Digestive System Development and Function | Differentiation of enterocytes | 1.85E-03 |  |  | 3 | GATA5, GATA6, ID2 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Suppressive capacity of TREG cells | 1.85E-03 |  |  | 3 | CTLA4, IDO1, IL9 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation | Stimulation of leukemia cell lines | 1.85E-03 |  |  | 3 | CD2, CSF1, IL9 |
| Hematological Disease, Immunological Disease | Eosinophilia | 1.97E-03 |  | 1.605 | 12 | ALOX15, CCR3, CLC, CXCL9, IL1RL1, IL2RA, IL5RA, IL9, PMCH, PTGDR2, RNASE2, SIGLEC8 |
| Cell-To-Cell Signaling and Interaction | Communication of cells | 1.99E-03 |  | -0.922 | 56 | ADGRE1, ATOH8, CCL23, CCL27, CCL28, CCR3, CD101, CD2, CGB3 (includes others), CORO2A, CRH, CTLA4, CXCL9, CYSLTR2, FFAR4, GHRHR, GNG4, GPER1, GPR183, HCAR1, HRH4, IL1RL1, IL2RA, IL5RA, KLRC1, LGR5, MERTK, MET, MOK, NAMPT, NPY4R/NPY4R2, OR10A6, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5H2, OR9Q1, P2RY10, P2RY14, PIK3R6, PMCH, PRKG1, PTGDR2, RGS1, RXFP2, SIGLEC8, SMAD5, SMPD3, SRI, STOML3, THEM4, TLE1, VLDLR |
| Endocrine System Development and Function, Molecular Transport, Small Molecule Biochemistry | Concentration of hormone | 2.02E-03 |  | 0.931 | 21 | APOB, ARNT2, CACNA1E, CD38, CDKN2C, CGB3 (includes others), CRH, FFAR4, FOXL2, FOXO3, GATA6, GATM, GPER1, LGR5, PRKG1, PRLR, SERPINA6, SMPD3, SPR, SRGAP3, SRI |
| Cancer, Organismal Injury and Abnormalities, Reproductive System Disease | Development of mammary tumor | 2.08E-03 |  | 0.478 | 10 | CDKN2C, CGB3 (includes others), CSF1, CTLA4, FOXP3, GPR34, IL2RA, MET, PRLR, WEE1 |
| Gastrointestinal Disease, Hematological Disease, Immunological Disease, Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities | Eosinophilia of esophagus | 2.16E-03 |  |  | 6 | ALOX15, CCR3, CLC, IL2RA, PMCH, SIGLEC8 |
| Cell Signaling, Molecular Transport, Vitamin and Mineral Metabolism | Quantity of Ca2+ | 2.16E-03 |  | 1.838 | 21 | CCR3, CD2, CD38, CRH, CSF1, CXCL9, CYSLTR2, FFAR4, FOXO3, GPER1, HRH4, KCNH2, PMCH, PMP22, PRKG1, PRLR, PTGDR2, RGS1, TEC, TNNC1, TRPC6 |
| Cellular Assembly and Organization, Nervous System Development and Function | Complexity of apical processes | 2.25E-03 |  |  | 2 | HTR3A, MET |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Bilateral renal cell carcinoma | 2.25E-03 |  |  | 2 | CTLA4, MET |
| Cell Death and Survival | Survival of endometrial cancer cell lines | 2.25E-03 |  |  | 2 | CRH, MSH2 |
| Auditory and Vestibular System Development and Function, Auditory Disease, Connective Tissue Development and Function, Connective Tissue Disorders, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders, Skeletal and Muscular System Development and Function, Tissue Development | Abnormal morphology of spiral ligament | 2.25E-03 |  |  | 2 | SLC4A7, SLC7A8 |
| Cellular Compromise | Depletion of regulatory T lymphocytes | 2.25E-03 |  |  | 2 | CTLA4, IL2RA |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal recessive cutis laxa type 2 | 2.25E-03 |  |  | 2 | ATP6V0A2, ATP6V1A |
| Digestive System Development and Function, Gastrointestinal Disease, Hepatic System Development and Function, Hepatic System Disease, Infectious Diseases, Inflammatory Disease, Inflammatory Response, Organ Development, Organismal Injury and Abnormalities | Hepatitis A | 2.25E-03 |  |  | 2 | CSF1, IL2RA |
| Cell Cycle, Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation | Contact growth inhibition of colorectal cancer cell lines | 2.33E-03 |  |  | 3 | CD24, FOXO3, PRKG1 |
| Endocrine System Development and Function, Organ Morphology, Organismal Development, Reproductive System Development and Function | Size of pituitary gland | 2.33E-03 |  |  | 3 | CDKN2C, CGB3 (includes others), FOXL2 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Induction of lymphocytes | 2.33E-03 |  | 0 | 6 | CRH, CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Organ Morphology | Morphology of gland | 2.35E-03 |  |  | 22 | AQP5, ARNT2, CD38, CDKN2C, CGB3 (includes others), CRH, ELOVL3, FFAR4, FOXL2, FOXP3, GATA6, GSX1, HFE, IL2RA, IL9, MET, NFIB, PMCH, PRLR, PTF1A, SMPD3, TFF3 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Unresectable renal cancer | 2.35E-03 |  |  | 4 | CTLA4, IDO1, IL2RA, MET |
| Cellular Movement, Hematological System Development and Function, Hypersensitivity Response, Immune Cell Trafficking | Cell movement of eosinophils | 2.42E-03 |  | 1.687 | 8 | CCL28, CCR3, CD2, CXCL9, IL1RL1, IL9, PTGDR2, SIGLEC8 |
| Cellular Movement | Cell movement | 2.71E-03 |  | 1.657 | 92 | ADARB1, ADGRL3, AJAP1, ALOX15, ANO5, APOB, AQP5, ATOH8, BARHL2, CACNA1E, CAT, CCL23, CCL27, CCL28, CCR3, CD2, CD24, CD38, CDKN2B-AS1, CDKN2C, CFHR1, CGB3 (includes others), COL7A1, CRH, CSF1, CTLA4, CXCL9, CYP2C8, CYSLTR2, DDHD1, DLX3, FFAR4, FKBPL, FOXO3, FOXP3, GATA6, GCNT1, GPER1, GPR183, GPR34, HABP2, HOTAIR, HOXB9, HRH4, ID2, IDO1, IGF2BP3, IGLL1/IGLL5, IL1RL1, IL2RA, IL5RA, IL9, KCNH2, KLF17, KLRC1, LDB2, LIMCH1, LUM, MAPRE3, MEOX2, MERTK, MET, mir-183, mir-28, mir-31, mir-515, MUC1, NAMPT, NKD2, NOVA1, PIK3R6, PMCH, PMP22, PRKG1, PRLR, PRSS55, PRTN3, PTGDR2, RAPH1, RGS1, RNASE2, SIGLEC8, SLC7A8, SLC9B1, SMAD5, SORD, SPAG16, TFF3, TNS4, TRPC6, VLDLR, VPS13A |
| Hematological Disease, Immunological Disease, Inflammatory Disease | Eosinophilic inflammation | 2.76E-03 |  |  | 9 | ALOX15, CCR3, CLC, IL1RL1, IL2RA, IL5RA, IL9, PMCH, SIGLEC8 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Stimulation of mononuclear leukocytes | 2.78E-03 |  | 1 | 10 | CAT, CD2, CD24, CRH, CSF1, CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Stage IV metastatic renal clear cell cancer | 2.86E-03 |  |  | 3 | CTLA4, MERTK, MET |
| Cellular Function and Maintenance, Hematological System Development and Function, Hypersensitivity Response, Inflammatory Response | Function of eosinophils | 2.86E-03 |  |  | 3 | CCR3, IL1RL1, SIGLEC8 |
| Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Lactation | 2.89E-03 |  |  | 6 | CSF1, GHRHR, HOXB9, ID2, PRLR, RXFP2 |
| Hematological System Development and Function, Tissue Morphology | Quantity of granulocytes | 2.91E-03 |  | -1.534 | 18 | ALOX15, B4GALNT2, CCL28, CCR3, CD101, CSF1, FOXP3, GCNT1, GSX1, IL1RL1, IL2RA, IL5RA, IL9, LUM, PIK3R6, PRTN3, PTGDR2, SIGLEC8 |
| Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking | Cell movement of helper T lymphocytes | 2.91E-03 |  | 0.762 | 5 | CCL27, CCR3, FOXP3, GCNT1, PTGDR2 |
| Cancer, Neurological Disease, Organismal Injury and Abnormalities | Glioblastoma | 3.01E-03 |  |  | 22 | ADARB1, CDKN2C, CSF1, CTLA4, CXCL9, EEF2K, FOXO3, FRRS1, GLDC, GPER1, HFE, IL2RA, IL9, KLRC1, LGR5, MAL, MERTK, MSH2, NAMPT, PMP22, RAPGEF5, TRPC6 |
| Cell-To-Cell Signaling and Interaction, Cellular Movement, Hematological System Development and Function, Hypersensitivity Response, Immune Cell Trafficking | Recruitment of eosinophils | 3.18E-03 | Increased | 2.17 | 5 | CCR3, CSF1, CXCL9, IL9, PTGDR2 |
| Cancer, Dermatological Diseases and Conditions, Organismal Injury and Abnormalities | Skin cancer | 3.42E-03 |  |  | 217 | ABCB5, ACSM3, ACSM5, ADARB1, ADGRE1, ADGRL3, ALDH7A1, ALOX15, ANO5, APOB, ARHGAP29, ARNT2, ARVCF, ASL, ATOH8, ATP6V0A2, B3GNT4, B4GALNT2, BATF2, BSND, C11orf88, C1QL2, CACNA1E, CAPSL, CASC1, CCL27, CCR3, CD101, CD2, CD38, CD96, CENPE, CFHR1, CHST6, CLC, CLINT1, COL7A1, CORO2A, CSF1, CT45A10/CT45A5, CT62, CTLA4, CXCL9, CYP2C8, CYSLTR2, DEFB119, DHX36, DLX3, DYNAP, DZIP3, EDDM3A, EEF2K, EFCAB5, EPN2, FAM227B, FAM47A, FFAR4, FOXO3, FRMD7, FSCB, GAPT, GASK1A, GCNT1, GHRHR, GLDC, GLRA1, GLYATL2, GPER1, GPR34, HABP2, HOXB8, HRH4, HS3ST6, HTR3A, HTR3C, IDO1, IGF2BP3, IGLL1/IGLL5, IKZF2, IL1RL1, IL2RA, IL5RA, IL9, ITM2C, KCNH2, KIAA1217, KLF12, KLF17, KLRC1, KLRC3, KRT33B, KRT36, LDB2, LGR5, LHFPL6, LILRA6, LIMCH1, LRRC17, LUM, MACC1, MAGEA11, MAGEC2, MEDAG, MEOX2, MERTK, MET, MKRN3, MON2, MS4A6E, MSH2, MUC1, NEK2, NFIB, NKAIN3, NKD2, NOVA1, NPHS2, NPY4R/NPY4R2, NRAP, OR10A6, OR10G8, OR10R2, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5F1, OR5H2, OR9Q1, P2RY10, P2RY14, PAPOLB, PARP6, PGAM2, PKLR, PNPLA7, PPP1R12B, PPP4R1, PRICKLE1, PRKG1, PRLR, PTF1A, PTGDR2, PTPN5, PWWP3B, PXDNL, RAPGEF5, RAPH1, RASIP1, RBAK, REM2, RFPL4B, RGS1, RNF112, RXFP2, SEL1L3, SERPINA6, SFMBT2, SIGLEC8, SIGLECL1, SIPA1L2, SLC15A5, SLC17A1, SLC17A3, SLC25A2, SLC25A38, SLC29A1, SLC36A3, SLC46A1, SLC4A7, SLC7A8, SLC8A3, SLC9B1, SMPD3, SNAP91, SPAG16, SPATA7, SPINDOC, SPINK5, SPNS3, SRGAP3, SSMEM1, SSX2/SSX2B, STARD8, STK19, STOML3, SYNE1, SYT17, SYT5, TBC1D8, TDRD9, TEC, TECTA, TENT5D, TEPP, TEX47, TFF3, TKTL2, TLCD3B, TLE1, TMEM108, TMEM132B, TMEM270, TMEM273, TMEM30B, TNS4, TRMT9B, TRPC6, VLDLR, VPS13A, VSTM1, WDR87, ZNF391, ZNF462, ZSCAN5A |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Suppression of lymphocytes | 3.46E-03 | Increased | 2.169 | 5 | CRH, CTLA4, FOXP3, IDO1, IL9 |
| Molecular Transport | Quantity of metal ion | 3.54E-03 |  | 1.838 | 22 | CCR3, CD2, CD38, CRH, CSF1, CXCL9, CYSLTR2, FFAR4, FOXO3, GPER1, HRH4, KCNH2, KLHL3, PMCH, PMP22, PRKG1, PRLR, PTGDR2, RGS1, TEC, TNNC1, TRPC6 |
| Organ Morphology | Size of endocrine gland | 3.54E-03 |  |  | 6 | CDKN2C, CGB3 (includes others), FOXL2, HFE, PMCH, PRLR |
| Organ Morphology | Morphology of endocrine gland | 3.55E-03 |  |  | 15 | ARNT2, CD38, CDKN2C, CGB3 (includes others), CRH, FFAR4, FOXL2, GATA6, GSX1, HFE, MET, PMCH, PRLR, SMPD3, TFF3 |
| Gastrointestinal Disease | Severe chemotherapy sickness | 3.70E-03 |  |  | 2 | HTR3A, HTR3C |
| Cell Cycle | Senescence of ovarian cancer cell lines | 3.70E-03 |  |  | 2 | HOTAIR, MET |
| Gastrointestinal Disease | Moderate chemotherapy sickness | 3.70E-03 |  |  | 2 | HTR3A, HTR3C |
| Cellular Function and Maintenance, Hematological System Development and Function | Function of natural T-regulatory cells | 3.70E-03 |  |  | 2 | FOXP3, IL9 |
| Cellular Development, Tissue Development | Differentiation of Clara cells | 3.70E-03 |  |  | 2 | GATA6, NFIB |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function, Inflammatory Response | Induction of monocytes | 3.70E-03 |  |  | 2 | CAT, CSF1 |
| Gastrointestinal Disease, Organismal Injury and Abnormalities | Motility disorder of intestine | 3.70E-03 |  |  | 2 | HTR3A, HTR3C |
| Gastrointestinal Disease, Immunological Disease, Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities | Autoimmune metaplastic atrophic gastritis | 3.70E-03 |  |  | 2 | CTLA4, IL2RA |
| Cell Morphology, Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Conversion of TREG cells | 3.70E-03 |  |  | 2 | FOXP3, IKZF2 |
| Developmental Disorder, Digestive System Development and Function, Endocrine System Disorders, Gastrointestinal Disease, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities | Congenital pancreatic agenesis | 3.70E-03 |  |  | 2 | GATA6, PTF1A |
| Reproductive System Development and Function | Reproductive function | 3.70E-03 |  |  | 2 | CGB3 (includes others), CSF1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Humoral Immune Response, Lymphoid Tissue Structure and Development | Expansion of B-1a lymphocytes | 3.70E-03 |  |  | 2 | CDKN2C, GPR183 |
| Protein Trafficking | Signaling of protein | 3.70E-03 |  |  | 2 | CTLA4, KLRC1 |
| Cancer, Organismal Injury and Abnormalities | Malignant solid organ tumor | 3.75E-03 |  |  | 220 | ABCB5, ACSM3, ACSM5, ADARB1, ADGRE1, ADGRL3, ALDH7A1, ALOX15, ANO5, APOB, ARHGAP29, ARNT2, ARVCF, ASL, ATOH8, ATP6V0A2, ATXN7L2, B3GNT4, B4GALNT2, BATF2, BSND, C11orf88, C1QL2, CACNA1E, CAPSL, CASC1, CCL27, CCR3, CD101, CD2, CD38, CD96, CENPE, CFHR1, CHST6, CLC, CLINT1, COL7A1, CORO2A, CSF1, CT45A10/CT45A5, CT62, CTLA4, CXCL9, CYP2C8, CYSLTR2, DEFB119, DHX36, DLX3, DYNAP, DZIP3, EDDM3A, EEF2K, EFCAB5, EPN2, FAM227B, FAM47A, FFAR4, FOXO3, FRMD7, FSCB, GAPT, GASK1A, GCNT1, GHRHR, GLDC, GLRA1, GLYATL2, GPER1, GPR34, HABP2, HOXB8, HRCT1, HRH4, HS3ST6, HTR3A, HTR3C, IDO1, IGF2BP3, IGLL1/IGLL5, IKZF2, IL1RL1, IL2RA, IL5RA, IL9, ITM2C, KCNH2, KIAA1217, KLF12, KLF17, KLRC1, KLRC3, KRT33B, KRT36, LDB2, LGR5, LHFPL6, LILRA6, LIMCH1, LRRC17, LUM, MACC1, MAGEA11, MAGEC2, MEDAG, MEOX2, MERTK, MET, mir-183, MKRN3, MON2, MS4A6E, MSH2, MUC1, NEK2, NFIB, NKAIN3, NKD2, NOVA1, NPHS2, NPY4R/NPY4R2, NRAP, OR10A6, OR10G8, OR10R2, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5F1, OR5H2, OR9Q1, P2RY10, P2RY14, PAPOLB, PARP6, PGAM2, PKLR, PNPLA7, PPP1R12B, PPP4R1, PRICKLE1, PRKG1, PRLR, PTF1A, PTGDR2, PTPN5, PWWP3B, PXDNL, RAPGEF5, RAPH1, RASIP1, RBAK, REM2, RFPL4B, RGS1, RNF112, RXFP2, SEL1L3, SERPINA6, SFMBT2, SIGLEC8, SIGLECL1, SIPA1L2, SLC15A5, SLC17A1, SLC17A3, SLC25A2, SLC25A38, SLC29A1, SLC36A3, SLC46A1, SLC4A7, SLC7A8, SLC8A3, SLC9B1, SMPD3, SNAP91, SPAG16, SPATA7, SPINDOC, SPINK5, SPNS3, SRGAP3, SSMEM1, SSX2/SSX2B, STARD8, STK19, STOML3, SYNE1, SYT17, SYT5, TBC1D8, TDRD9, TEC, TECTA, TENT5D, TEPP, TEX47, TFF3, TKTL2, TLCD3B, TLE1, TMEM108, TMEM132B, TMEM270, TMEM273, TMEM30B, TNS4, TRMT9B, TRPC6, VLDLR, VPS13A, VSTM1, WDR87, ZNF391, ZNF462, ZSCAN5A |
| Hematological System Development and Function, Inflammatory Response, Tissue Morphology | Quantity of plasmacytoid dendritic cells | 3.81E-03 |  | 0.218 | 4 | CSF1, GPR183, ID2, IDO1 |
| Cancer, Dermatological Diseases and Conditions, Organismal Injury and Abnormalities | Cutaneous melanoma | 3.84E-03 |  |  | 207 | ABCB5, ACSM3, ACSM5, ADARB1, ADGRE1, ADGRL3, ALDH7A1, ALOX15, ANO5, APOB, ARHGAP29, ARNT2, ARVCF, ASL, ATP6V0A2, B3GNT4, B4GALNT2, BATF2, BSND, C11orf88, C1QL2, CACNA1E, CAPSL, CASC1, CCR3, CD101, CD2, CD38, CD96, CENPE, CFHR1, CLC, CLINT1, COL7A1, CORO2A, CSF1, CT45A10/CT45A5, CT62, CTLA4, CXCL9, CYP2C8, DEFB119, DHX36, DYNAP, EDDM3A, EEF2K, EFCAB5, EPN2, FAM227B, FAM47A, FFAR4, FOXO3, FRMD7, FSCB, GASK1A, GCNT1, GHRHR, GLDC, GLRA1, GLYATL2, GPER1, GPR34, HABP2, HOXB8, HRH4, HS3ST6, HTR3A, HTR3C, IDO1, IGLL1/IGLL5, IKZF2, IL1RL1, IL2RA, IL5RA, IL9, ITM2C, KCNH2, KIAA1217, KLF12, KLF17, KLRC3, KRT33B, KRT36, LDB2, LGR5, LHFPL6, LILRA6, LIMCH1, LRRC17, LUM, MACC1, MAGEA11, MAGEC2, MEDAG, MEOX2, MERTK, MET, MKRN3, MON2, MS4A6E, MSH2, MUC1, NEK2, NFIB, NKAIN3, NKD2, NOVA1, NPHS2, NPY4R/NPY4R2, NRAP, OR10A6, OR10G8, OR10R2, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5F1, OR5H2, OR9Q1, P2RY10, P2RY14, PAPOLB, PARP6, PGAM2, PKLR, PNPLA7, PPP1R12B, PPP4R1, PRICKLE1, PRKG1, PRLR, PTF1A, PTGDR2, PTPN5, PWWP3B, PXDNL, RAPGEF5, RAPH1, RASIP1, RBAK, REM2, RFPL4B, RGS1, RNF112, RXFP2, SEL1L3, SERPINA6, SFMBT2, SIGLEC8, SIGLECL1, SIPA1L2, SLC15A5, SLC17A1, SLC17A3, SLC25A2, SLC25A38, SLC29A1, SLC36A3, SLC46A1, SLC4A7, SLC7A8, SLC8A3, SLC9B1, SMPD3, SNAP91, SPAG16, SPATA7, SPINDOC, SPINK5, SPNS3, SRGAP3, SSMEM1, STARD8, STK19, STOML3, SYNE1, SYT17, SYT5, TBC1D8, TDRD9, TEC, TECTA, TENT5D, TEPP, TEX47, TFF3, TKTL2, TLCD3B, TLE1, TMEM108, TMEM132B, TMEM270, TMEM273, TMEM30B, TNS4, TRMT9B, TRPC6, VLDLR, VPS13A, VSTM1, WDR87, ZNF391, ZNF462, ZSCAN5A |
| Cancer, Organismal Injury and Abnormalities | Metastatic RET mutation positive malignant solid tumor | 4.16E-03 |  |  | 3 | CTLA4, MERTK, MET |
| Cellular Function and Maintenance, Cellular Growth and Proliferation, Hematological System Development and Function | Production of phagocytes | 4.16E-03 |  |  | 3 | CSF1, ID2, IL9 |
| Developmental Disorder, Hematological Disease, Immunological Disease | Autoimmune lymphoproliferative syndrome | 4.16E-03 |  |  | 3 | CTLA4, FOXP3, IL2RA |
| Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking | Cell movement of granulocytes | 4.16E-03 |  | 1.941 | 20 | CCL23, CCL28, CCR3, CD2, CFHR1, CRH, CSF1, CXCL9, CYP2C8, GCNT1, IL1RL1, IL2RA, IL9, LUM, MET, PRKG1, PRTN3, PTGDR2, SIGLEC8, TRPC6 |
| Molecular Transport | Quantity of metal | 4.25E-03 |  | 1.725 | 24 | CCR3, CD2, CD38, CRH, CSF1, CXCL9, CYSLTR2, FFAR4, FOXO3, GPER1, HFE, HRH4, KCNH2, KLHL3, mir-183, PMCH, PMP22, PRKG1, PRLR, PTGDR2, RGS1, TEC, TNNC1, TRPC6 |
| Cellular Movement, Hematological System Development and Function, Hypersensitivity Response, Immune Cell Trafficking, Inflammatory Response | Chemotaxis of eosinophils | 4.26E-03 |  | 0.555 | 4 | CCL28, CCR3, CXCL9, PTGDR2 |
| Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Lymphoid Tissue Structure and Development | Homing of T lymphocytes | 4.37E-03 |  | 0.051 | 8 | CCL23, CCL27, CCL28, CCR3, CXCL9, FOXP3, PTGDR2, RGS1 |
| Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response, Lymphoid Tissue Structure and Development | Chemotaxis of T lymphocytes | 4.91E-03 |  | 0.179 | 7 | CCL23, CCL27, CCL28, CCR3, CXCL9, PTGDR2, RGS1 |
| Hematological System Development and Function, Hypersensitivity Response, Tissue Morphology | Quantity of eosinophils | 5.23E-03 |  | 0.144 | 8 | CCL28, CCR3, FOXP3, IL1RL1, IL5RA, IL9, PTGDR2, SIGLEC8 |
| Endocrine System Development and Function, Nervous System Development and Function, Organ Morphology, Tissue Morphology | Quantity of corticotroph cells | 5.47E-03 |  |  | 2 | CRH, SMPD3 |
| Cell Cycle | Termination of cell cycle progression | 5.47E-03 |  |  | 2 | CDKN2C, ID2 |
| Post-Translational Modification | Association of protein | 5.47E-03 |  |  | 2 | CD38, PLIN2 |
| Hematological System Development and Function, Lymphoid Tissue Structure and Development, Organ Morphology, Tissue Morphology | Abnormal size of lymphoid organ | 5.47E-03 |  |  | 2 | CDKN2C, IL2RA |
| Gastrointestinal Disease | Radiation induced nausea and vomiting | 5.47E-03 |  |  | 2 | HTR3A, HTR3C |
| Cell Morphology, Connective Tissue Development and Function, Tissue Morphology | Abnormal morphology of spiral ligament fibrocyte | 5.47E-03 |  |  | 2 | SLC4A7, SLC7A8 |
| Cell Morphology | Polarization of monocytes | 5.47E-03 |  |  | 2 | CSF1, NAMPT |
| Cardiovascular System Development and Function, Cell Cycle | Arrest in cell cycle progression of endothelial cells | 5.47E-03 |  |  | 2 | FOXO3, REM2 |
| Free Radical Scavenging | Scavenging of reactive oxygen species | 5.47E-03 |  |  | 2 | CAT, FOXO3 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Quantity of lipoxin A4 | 5.47E-03 |  |  | 2 | ALOX15, MERTK |
| Immunological Disease, Neurological Disease | Experimental autoimmune neuritis | 5.47E-03 |  |  | 2 | ALOX15, PMP22 |
| Cancer, Developmental Disorder, Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Thecoma | 5.47E-03 |  |  | 2 | FOXL2, GATA6 |
| Cell Morphology, Cellular Assembly and Organization | Polarization of membrane rafts | 5.47E-03 |  |  | 2 | CD2, MAL |
| Nervous System Development and Function | Response of chorda tympani | 5.47E-03 |  |  | 2 | FFAR4, HTR3A |
| Dermatological Diseases and Conditions, Organismal Injury and Abnormalities | Skin lesion | 5.53E-03 |  | -0.323 | 218 | ABCB5, ACSM3, ACSM5, ADARB1, ADGRE1, ADGRL3, ALDH7A1, ALOX15, ANO5, APOB, ARHGAP29, ARNT2, ARVCF, ASL, ATOH8, ATP6V0A2, B3GNT4, B4GALNT2, BATF2, BSND, C11orf88, C1QL2, CACNA1E, CAPSL, CASC1, CCL27, CCR3, CD101, CD2, CD38, CD96, CENPE, CFHR1, CHST6, CLC, CLINT1, COL7A1, CORO2A, CSF1, CT45A10/CT45A5, CT62, CTLA4, CXCL9, CYP2C8, CYSLTR2, DEFB119, DHX36, DLX3, DYNAP, DZIP3, EDDM3A, EEF2K, EFCAB5, EPN2, FAM227B, FAM47A, FFAR4, FOXO3, FOXP3, FRMD7, FSCB, GAPT, GASK1A, GCNT1, GHRHR, GLDC, GLRA1, GLYATL2, GPER1, GPR34, HABP2, HOXB8, HRH4, HS3ST6, HTR3A, HTR3C, IDO1, IGF2BP3, IGLL1/IGLL5, IKZF2, IL1RL1, IL2RA, IL5RA, IL9, ITM2C, KCNH2, KIAA1217, KLF12, KLF17, KLRC1, KLRC3, KRT33B, KRT36, LDB2, LGR5, LHFPL6, LILRA6, LIMCH1, LRRC17, LUM, MACC1, MAGEA11, MAGEC2, MEDAG, MEOX2, MERTK, MET, MKRN3, MON2, MS4A6E, MSH2, MUC1, NEK2, NFIB, NKAIN3, NKD2, NOVA1, NPHS2, NPY4R/NPY4R2, NRAP, OR10A6, OR10G8, OR10R2, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5F1, OR5H2, OR9Q1, P2RY10, P2RY14, PAPOLB, PARP6, PGAM2, PKLR, PNPLA7, PPP1R12B, PPP4R1, PRICKLE1, PRKG1, PRLR, PTF1A, PTGDR2, PTPN5, PWWP3B, PXDNL, RAPGEF5, RAPH1, RASIP1, RBAK, REM2, RFPL4B, RGS1, RNF112, RXFP2, SEL1L3, SERPINA6, SFMBT2, SIGLEC8, SIGLECL1, SIPA1L2, SLC15A5, SLC17A1, SLC17A3, SLC25A2, SLC25A38, SLC29A1, SLC36A3, SLC46A1, SLC4A7, SLC7A8, SLC8A3, SLC9B1, SMPD3, SNAP91, SPAG16, SPATA7, SPINDOC, SPINK5, SPNS3, SRGAP3, SSMEM1, SSX2/SSX2B, STARD8, STK19, STOML3, SYNE1, SYT17, SYT5, TBC1D8, TDRD9, TEC, TECTA, TENT5D, TEPP, TEX47, TFF3, TKTL2, TLCD3B, TLE1, TMEM108, TMEM132B, TMEM270, TMEM273, TMEM30B, TNS4, TRMT9B, TRPC6, VLDLR, VPS13A, VSTM1, WDR87, ZNF391, ZNF462, ZSCAN5A |
| Embryonic Development, Organismal Development, Tissue Development | Specification of embryonic tissue | 5.76E-03 |  |  | 3 | GATA6, MEOX2, PTF1A |
| Cellular Development, Nervous System Development and Function | Commitment of neurons | 5.79E-03 |  |  | 4 | GSX1, ID2, OLIG2, PTF1A |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Proliferation of effector T lymphocytes | 5.79E-03 |  | -1.091 | 4 | CTLA4, FOXO3, IDO1, IL2RA |
| Connective Tissue Development and Function, Skeletal and Muscular System Development and Function | Bone mineral density of femur | 6.37E-03 |  |  | 4 | CD38, CSF1, GHRHR, PRLR |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Induction of T lymphocytes | 6.40E-03 |  |  | 5 | CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Cell-To-Cell Signaling and Interaction, Cellular Compromise | Oxidative stress response of cells | 6.40E-03 |  | 0.937 | 5 | CAT, HFE, MET, MUC1, NAMPT |
| Cellular Function and Maintenance, Molecular Transport | Flux of ion | 6.44E-03 |  | 1.482 | 17 | CCL23, CCR3, CD101, CD2, CD38, CLIC5, CRH, CTLA4, GPR183, HTR3A, HTR3C, IL1RL1, PMCH, PRKG1, SLC8A3, TEC, TRPC6 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Advanced sarcomatoid renal cell carcinoma | 6.67E-03 |  |  | 3 | CTLA4, MERTK, MET |
| Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities, Renal and Urological Disease | Autosomal dominant polycystic kidney disease | 6.93E-03 |  |  | 7 | ADGRL3, CD2, MEIS2, MUC1, PPP1R12B, PRKG1, VLDLR |
| Cancer, Organismal Injury and Abnormalities, Respiratory Disease | Pulmonary adenoma | 6.99E-03 |  | -0.283 | 4 | CASC1, CDKN2C, FOXO3, MSH2 |
| Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Differentiation of induced regulatory T-lymphocyte | 6.99E-03 |  | 1.131 | 4 | FOXO3, FOXP3, HCAR1, MERTK |
| Cellular Function and Maintenance, Hematological System Development and Function | Regulation of mononuclear leukocytes | 6.99E-03 |  | 1.982 | 4 | CSF1, CTLA4, FOXP3, IL2RA |
| Hereditary Disorder, Organismal Injury and Abnormalities, Renal and Urological Disease | Autosomal dominant kidney disease | 7.04E-03 |  |  | 8 | ADGRL3, CD2, KLHL3, MEIS2, MUC1, PPP1R12B, PRKG1, VLDLR |
| Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | Mature T-cell neoplasm | 7.13E-03 |  |  | 23 | CCR3, CD2, CD24, CDKN2C, CXCL9, EPC1, FOXO3, GPER1, GPR183, ID2, IDO1, IKZF2, IL2RA, ITM2C, KLF17, MAL, MERTK, MET, mir-28, mir-876, MUC1, NFIB, PRKG1 |
| Humoral Immune Response, Protein Synthesis | Production of antibody | 7.18E-03 |  | 0.839 | 15 | CCL28, CTLA4, FOXP3, GAPT, HRH4, IGLL1/IGLL5, IL1RL1, IL2RA, IL5RA, IL9, MERTK, MSH2, PTGDR2, RGS1, TEC |
| Hematological System Development and Function, Immunological Disease, Lymphoid Tissue Structure and Development, Organ Morphology, Organismal Injury and Abnormalities, Tissue Morphology | Abnormal morphology of lymph node | 7.29E-03 |  |  | 9 | ALOX15, CDKN2C, CTLA4, FOXP3, GCNT1, ID2, IL2RA, IL5RA, MERTK |
| Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry | Transport of uric acid | 7.56E-03 |  |  | 2 | SLC17A1, SLC17A3 |
| Developmental Disorder, Organismal Survival | Sudden infant death syndrome | 7.56E-03 |  |  | 2 | KCNH2, SCN4B |
| Cell Death and Survival | Apoptosis of retinoblastoma cell lines | 7.56E-03 |  |  | 2 | HOTAIR, MET |
| Digestive System Development and Function, Gastrointestinal Disease, Hepatic System Development and Function, Hepatic System Disease, Infectious Diseases, Inflammatory Disease, Inflammatory Response, Organ Development, Organismal Injury and Abnormalities | Acute hepatitis C | 7.56E-03 |  |  | 2 | CSF1, CTLA4 |
| Embryonic Development, Organismal Development | Development of eyelid | 7.56E-03 |  |  | 2 | FOXL2, IKZF2 |
| Connective Tissue Development and Function, Tissue Morphology | Mass of perirenal white adipose tissue | 7.56E-03 |  |  | 2 | GPER1, PMCH |
| Neurological Disease, Organismal Injury and Abnormalities | Hypothalamus dysfunction | 7.56E-03 |  |  | 2 | ARNT2, SERPINA6 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Inflammatory Response | Antibody response of lymphocytes | 7.56E-03 |  |  | 2 | IL2RA, MERTK |
| Embryonic Development, Nervous System Development and Function, Ophthalmic Disease, Organ Development, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities, Tissue Development, Visual System Development and Function | Abnormal morphology of fundus of eye | 7.56E-03 |  |  | 2 | SLC4A7, VLDLR |
| Cellular Movement | Movement of osteoclast precursor cells | 7.56E-03 |  |  | 2 | CSF1, GPR183 |
| Nucleic Acid Metabolism, Small Molecule Biochemistry | Biosynthesis of NAD+ | 7.56E-03 |  |  | 2 | HAAO, NAMPT |
| Connective Tissue Disorders, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | Eosinophilia of blood | 7.56E-03 |  |  | 2 | IL1RL1, SIGLEC8 |
| Cancer, Endocrine System Disorders, Hereditary Disorder, Organismal Injury and Abnormalities | Familial thyroid gland non-medullary carcinoma | 7.56E-03 |  |  | 2 | HABP2, MSH2 |
| Connective Tissue Disorders, Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Antibody-induced arthritis | 7.56E-03 |  |  | 2 | FOXP3, IL1RL1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Humoral Immune Response, Lymphoid Tissue Structure and Development | Proliferation of B-1 lymphocytes | 7.67E-03 |  |  | 3 | CDKN2C, GPR183, IGLL1/IGLL5 |
| Hair and Skin Development and Function | Tensile strength of skin | 7.67E-03 |  |  | 3 | LUM, P3H4, SPINK5 |
| Gastrointestinal Disease, Organismal Injury and Abnormalities | Gastroparesis | 7.67E-03 |  |  | 3 | HTR3A, HTR3C, KCNH2 |
| Cellular Function and Maintenance, Molecular Transport | Flux of inorganic cation | 7.72E-03 |  | 1.261 | 16 | CCL23, CCR3, CD101, CD2, CD38, CRH, CTLA4, GPR183, HTR3A, HTR3C, IL1RL1, PMCH, PRKG1, SLC8A3, TEC, TRPC6 |
| Cancer, Organismal Injury and Abnormalities | Melanoma | 7.72E-03 |  |  | 236 | ABCB5, ACR, ACSM3, ACSM5, ADARB1, ADGRE1, ADGRL3, ALDH7A1, ALOX15, ANO5, APOB, APOBEC4, ARHGAP29, ARNT2, ARVCF, ASL, ATP6V0A2, ATP6V1A, ATXN7L2, B3GNT4, B4GALNT2, BATF2, BSND, C11orf88, C1QL2, CACNA1E, CAPSL, CASC1, CCR3, CD101, CD2, CD38, CD96, CENPE, CFHR1, CLC, CLINT1, CMBL, COL7A1, CORO2A, CSF1, CT45A10/CT45A5, CT62, CTLA4, CXCL9, CYP2C8, CYSLTR2, DEFB119, DHX36, DYNAP, EDDM3A, EEF2K, EFCAB5, EPC1, EPN2, ERMP1, FAM227B, FAM47A, FFAR4, FKBPL, FOXO3, FRMD7, FRRS1, FSCB, GASK1A, GCNT1, GHRHR, GLDC, GLRA1, GLYATL2, GPER1, GPR34, GSG1, HABP2, HOXB8, HRCT1, HRH4, HS3ST6, HTR3A, HTR3C, IDO1, IGLL1/IGLL5, IKZF2, IL1RL1, IL2RA, IL5RA, IL9, ITM2C, KCNG3, KCNH2, KIAA1217, KLF12, KLF17, KLHL3, KLRC1, KLRC3, KRT33B, KRT36, LDB2, LGR5, LHFPL6, LILRA6, LIMCH1, LRFN4, LRRC17, LUM, MACC1, MAGEA11, MAGEC2, MEDAG, MEOX2, MERTK, MET, mir-183, mir-28, MKRN3, MON2, MS4A5, MS4A6E, MSH2, MUC1, NEK2, NFIB, NKAIN3, NKD2, NOVA1, NPHS2, NPY4R/NPY4R2, NRAP, OCIAD2, OR10A6, OR10G8, OR10R2, OR12D3, OR2A14, OR2D2, OR2V2, OR2Y1, OR4K5, OR5F1, OR5H2, OR9Q1, P2RY10, P2RY14, PAPOLB, PARP6, PGAM2, PKLR, PNPLA7, PPP1R12B, PPP4R1, PRICKLE1, PRKG1, PRLR, PTF1A, PTGDR2, PTPN5, PWWP3B, PXDNL, RAPGEF5, RAPH1, RASIP1, RBAK, REG4, REM2, RFPL4B, RGS1, RNF112, RXFP2, SEL1L3, SERPINA6, SFMBT2, SIGLEC8, SIGLECL1, SIPA1L2, SLC10A5, SLC15A5, SLC17A1, SLC17A3, SLC25A2, SLC25A38, SLC29A1, SLC36A3, SLC46A1, SLC4A7, SLC7A8, SLC8A3, SLC9B1, SMPD3, SNAP91, SPAG16, SPATA31A6 (includes others), SPATA7, SPINDOC, SPINK5, SPNS3, SRGAP3, SSMEM1, STARD8, STK19, STOML3, SYNE1, SYT17, SYT5, TBC1D8, TDRD9, TEC, TECTA, TENT5D, TEPP, TEX11, TEX47, TFF3, TKTL2, TLCD3B, TLE1, TMEM108, TMEM132B, TMEM17, TMEM270, TMEM273, TMEM30B, TNNC1, TNS4, TRMT9B, TRPC6, VLDLR, VPS13A, VSTM1, WDR87, XKR7, ZNF154, ZNF391, ZNF462, ZNF551, ZSCAN5A |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation | Stimulation of lymphatic system cells | 7.83E-03 |  | 0.555 | 9 | CD2, CD24, CRH, CSF1, CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Organ Morphology | Abnormal morphology of gland | 8.06E-03 |  |  | 16 | ARNT2, CD38, CDKN2C, CRH, ELOVL3, FFAR4, FOXP3, GATA6, GSX1, IL2RA, IL9, NFIB, PRLR, PTF1A, SMPD3, TFF3 |
| Connective Tissue Development and Function, Tissue Development | Maturation of connective tissue | 8.15E-03 |  | 1.387 | 6 | ALOX15, CSF1, FOXO3, IL9, RNF112, SMAD5 |
| Inflammatory Response | Inflammatory response | 8.29E-03 | Increased | 2.527 | 35 | ALOX15, CCL23, CCL27, CCL28, CCR3, CD38, CD96, CRH, CSF1, CXCL9, FFAR4, FOXO3, FOXP3, GCNT1, GPER1, GPR183, HRH4, IDO1, IL1RL1, IL2RA, IL9, LUM, mir-147, MOK, MSH2, MUC1, PLIN2, PMP22, PRKG1, PRTN3, PTGDR2, RAPH1, RGS1, RNASE2, TRPC6 |
| Cell Death and Survival | Cell survival of tumor cell lines | 8.34E-03 |  | -0.059 | 7 | CAT, EEF2K, FOXO3, FOXP3, HOTAIR, MET, MSH2 |
| Endocrine System Development and Function, Molecular Transport, Protein Synthesis, Small Molecule Biochemistry | Quantity of IGF1 in blood | 8.35E-03 |  | 1 | 4 | FOXL2, GPER1, SMPD3, SPR |
| Cell Signaling, Cellular Function and Maintenance, Vitamin and Mineral Metabolism | Elevation of Ca2+ in cytosol | 8.60E-03 |  |  | 8 | CCL28, CD24, CD38, FFAR4, GPER1, PMCH, PRKG1, TRPC6 |
| Cell Morphology, Immunological Disease | Abnormal morphology of leukocytes | 8.65E-03 |  |  | 12 | CCL28, CDKN2C, CSF1, CTLA4, FOXO3, FOXP3, GCNT1, ID2, IGLL1/IGLL5, IL2RA, IL5RA, MERTK |
| Immunological Disease | Abnormal quantity of cytokine | 8.72E-03 |  |  | 7 | FOXP3, HRH4, IDO1, IL9, PTGDR2, RAPH1, SERPINA6 |
| Cellular Function and Maintenance | Regulation of cells | 8.72E-03 | Increased | 2.207 | 7 | CRH, CSF1, CTLA4, FOXP3, IL2RA, IL9, SRI |
| Cellular Movement, Renal and Urological System Development and Function | Scattering of kidney cell lines | 8.76E-03 |  |  | 3 | CSF1, MET, TFF3 |
| Cancer, Organismal Injury and Abnormalities | Resectable secondary tumor | 9.09E-03 |  |  | 4 | CTLA4, IL2RA, MERTK, MET |
| Cell Death and Survival, Connective Tissue Disorders, Hematological Disease, Organismal Injury and Abnormalities | Hemolysis | 9.29E-03 |  | -1 | 8 | CAT, CFHR1, CTLA4, FOXO3, IL2RA, PKLR, PRTN3, SLC29A1 |
| Skeletal and Muscular System Development and Function | Contraction of striated muscle | 9.29E-03 |  |  | 8 | KCNH2, MET, PGAM2, SCN4B, SLC8A3, SMAD5, SRI, TNNC1 |
| Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | Hyperplasia of leukocytes | 9.53E-03 |  | 0.277 | 5 | CDKN2C, FOXO3, IL2RA, IL9, MERTK |
| Humoral Immune Response, Protein Synthesis | Quantity of immunoglobulin | 9.64E-03 |  | 1.061 | 14 | CCL28, FOXP3, GAPT, HRH4, IGLL1/IGLL5, IL1RL1, IL2RA, IL5RA, IL9, MERTK, MSH2, PTGDR2, RGS1, TEC |
| Endocrine System Development and Function, Endocrine System Disorders, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities, Reproductive System Disease | Abnormal morphology of pituitary gland | 9.87E-03 |  |  | 4 | ARNT2, CDKN2C, GSX1, SMPD3 |
| Cellular Movement, Hematological System Development and Function, Hematopoiesis | Chemotaxis of hematopoietic progenitor cells | 9.93E-03 |  |  | 3 | CCR3, CXCL9, RGS1 |
| Digestive System Development and Function, Organ Morphology, Tissue Morphology | Quantity of Paneth cells | 9.95E-03 |  |  | 2 | CSF1, GATA6 |
| Cancer, Organismal Injury and Abnormalities, Tumor Morphology | Transformation of cancer cells | 9.95E-03 |  |  | 2 | MET, TFF3 |
| Molecular Transport | Secretion of Vldl-Triglyceride | 9.95E-03 |  |  | 2 | APOB, PLIN2 |
| Cancer, Organismal Injury and Abnormalities | Recurrent CD274 negative head and neck squamous cell carcinoma | 9.95E-03 |  |  | 2 | CTLA4, IDO1 |
| Embryonic Development, Organismal Development, Tissue Morphology | Abnormal size of somites | 9.95E-03 |  |  | 2 | EPN2, MEOX2 |
| Cardiovascular System Development and Function, Cellular Development, Embryonic Development, Organismal Development, Tissue Development | Differentiation of heart precursor cells | 9.95E-03 |  |  | 2 | DHX36, GATA6 |
| Cellular Function and Maintenance | Homeostasis of dendritic cells | 9.95E-03 |  |  | 2 | GPR183, ID2 |
| Cellular Development, Respiratory System Development and Function, Tissue Development | Differentiation of type II pneumocytes | 9.95E-03 |  |  | 2 | GATA6, NFIB |
| Gastrointestinal Disease, Organismal Injury and Abnormalities | Irritable bowel syndrome with diarrhea | 9.95E-03 |  |  | 2 | HTR3A, HTR3C |
| Cellular Development, Cellular Growth and Proliferation | Proliferation of retinoblastoma cell lines | 9.95E-03 |  |  | 2 | HOTAIR, MET |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Induction of cytotoxic T cells | 9.95E-03 |  |  | 2 | CTLA4, MUC1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Expansion of effector T lymphocytes | 9.95E-03 |  |  | 2 | FOXO3, IL2RA |
| Cellular Function and Maintenance, Cellular Growth and Proliferation, Hematological System Development and Function | Production of antigen presenting cells | 9.95E-03 |  |  | 2 | CSF1, ID2 |
| Organ Morphology, Reproductive System Development and Function | Morphology of gonad | 1.01E-02 |  |  | 22 | ACR, CDKN2C, CGB3 (includes others), DDHD1, EEF2K, FOXL2, FOXO3, GATA6, GATM, GPER1, IDO1, MERTK, MSH5, PAPOLB, PLIN2, RXFP2, SMAD5, SMPD3, SPAG16, TDRD9, VLDLR, VPS13A |
| Cell-To-Cell Signaling and Interaction, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking | Recruitment of leukocytes | 1.06E-02 | Increased | 2.718 | 16 | ALOX15, APOB, CAT, CCL23, CCL27, CCL28, CCR3, CSF1, CXCL9, GCNT1, IDO1, IL2RA, IL9, PRTN3, PTGDR2, TRPC6 |
| Cancer, Organismal Injury and Abnormalities | Metastatic solid tumor | 1.06E-02 |  | 0.239 | 29 | CAT, CD24, CDKN2C, CFHR1, CSF1, CTLA4, CXCL9, DLX3, GATA6, HOTAIR, ID2, IDO1, IKZF2, IL1RL1, IL2RA, KLHL3, LRRC17, MERTK, MET, mir-183, mir-28, mir-31, mir-450, MSH2, MUC1, NKD2, PRLR, SEL1L3, TNNC1 |
| Cell Death and Survival, Cellular Compromise | Cytotoxicity of lymphocytes | 1.07E-02 |  | -0.113 | 9 | CCR3, CD2, CD38, CD96, CRH, CTLA4, FOXP3, IL9, KLRC1 |
| Embryonic Development, Nervous System Development and Function, Neurological Disease, Ophthalmic Disease, Organ Development, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities, Tissue Development, Tissue Morphology, Visual System Development and Function | Abnormal morphology of retinal pigment epithelium | 1.07E-02 |  |  | 4 | ABCB5, APOB, MERTK, VLDLR |
| Cell Cycle | Arrest in interphase of epithelial cell lines | 1.07E-02 |  |  | 4 | ALOX15, DLX3, MET, MSH5 |
| Hematological Disease, Immunological Disease | Hypereosinophilia | 1.07E-02 |  |  | 4 | IL1RL1, IL2RA, IL5RA, RNASE2 |
| Cellular Movement, Hematological System Development and Function, Hypersensitivity Response, Immune Cell Trafficking | Cellular infiltration by eosinophils | 1.08E-02 |  | 1.091 | 5 | CD2, IL1RL1, IL9, PTGDR2, SIGLEC8 |
| Cell Signaling, Cellular Function and Maintenance, Molecular Transport, Vitamin and Mineral Metabolism | Flux of Ca2+ | 1.08E-02 |  | 0.985 | 15 | CCL23, CCR3, CD101, CD2, CD38, CRH, CTLA4, GPR183, HTR3A, HTR3C, IL1RL1, PRKG1, SLC8A3, TEC, TRPC6 |
| Cell-To-Cell Signaling and Interaction, Cellular Movement | Recruitment of myeloid cells | 1.08E-02 | Increased | 2.465 | 14 | ALOX15, APOB, CAT, CCL23, CCR3, CSF1, CXCL9, GCNT1, IDO1, IL2RA, IL9, PRTN3, PTGDR2, TRPC6 |
| Cellular Function and Maintenance | Cellular homeostasis | 1.09E-02 | Increased | 2.335 | 64 | ABCB5, ALOX15, AQP5, ATP6V0A2, ATP6V1A, BACE2, BNIP3, BSND, CACNA1E, CAT, CCL23, CCL28, CCR3, CD101, CD2, CD24, CD38, CLIC5, CRH, CTLA4, EEF2K, FFAR4, FOXO3, FOXP3, GAPT, GATM, GHRHR, GLRA1, GPER1, GPR183, HAAO, HCAR1, HCN3, HFE, HTR3A, HTR3C, ID2, IDO1, IKZF2, IL1RL1, IL2RA, IL5RA, IL9, KCNH2, KLHL3, MERTK, MET, mir-515, MON1A, MSH2, MUC1, NAMPT, PIK3R6, PMCH, PMP22, PRKG1, RASIP1, SLC46A1, SLC4A7, SLC8A3, SPINK5, TEC, TRPC6, VPS13A |
| Neurological Disease | Sporadic motor neuron disease | 1.11E-02 |  |  | 6 | mir-183, mir-28, mir-31, mir-3180, mir-515, PTPN5 |
| Cell-To-Cell Signaling and Interaction | Response of epithelial cells | 1.12E-02 |  |  | 3 | IL9, MERTK, MET |
| Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Lymphoid Tissue Structure and Development | Homing of lymphocytes | 1.14E-02 |  | 0.471 | 9 | CCL23, CCL27, CCL28, CCR3, CXCL9, FOXP3, GCNT1, PTGDR2, RGS1 |
| Cellular Function and Maintenance, Molecular Transport, Small Molecule Biochemistry | Homeostasis of iron ion | 1.14E-02 |  |  | 5 | ATP6V0A2, ATP6V1A, HFE, MON1A, SLC46A1 |
| Organismal Injury and Abnormalities, Tissue Morphology | Abnormal morphology of epithelial tissue | 1.16E-02 |  |  | 20 | ABCB5, APOB, BACE2, CDKN2C, CRH, FOXP3, GATA5, GATA6, GPR34, IL9, MERTK, NPHS2, PRLR, RASIP1, SLC4A7, SLC7A8, SMAD5, SPAG16, TFF3, VLDLR |
| Hematological System Development and Function, Immunological Disease, Lymphoid Tissue Structure and Development, Organ Morphology, Organismal Injury and Abnormalities, Tissue Morphology | Abnormal morphology of enlarged lymph node | 1.16E-02 |  |  | 6 | CDKN2C, CTLA4, FOXP3, IL2RA, IL5RA, MERTK |
| Organ Morphology, Reproductive System Development and Function | Morphology of genital organ | 1.24E-02 |  |  | 24 | ACR, CDKN2C, CGB3 (includes others), DDHD1, EEF2K, FOXL2, FOXO3, GATA5, GATA6, GATM, GPER1, IDO1, MERTK, MSH5, PAPOLB, PLIN2, PRLR, RXFP2, SMAD5, SMPD3, SPAG16, TDRD9, VLDLR, VPS13A |
| Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities, Tissue Morphology, Tumor Morphology | Size of digestive organ tumor | 1.25E-02 |  |  | 3 | HABP2, IDO1, MET |
| Dermatological Diseases and Conditions, Organ Morphology, Organismal Injury and Abnormalities | Abnormal morphology of granular layer of epidermis | 1.25E-02 |  |  | 3 | CRH, ELOVL3, SPINK5 |
| Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response, Tissue Development | Accumulation of regulatory T lymphocytes | 1.25E-02 |  |  | 3 | CTLA4, IL1RL1, IL2RA |
| Cell Cycle, Skeletal and Muscular System Development and Function | S phase of smooth muscle cells | 1.26E-02 |  |  | 2 | GATA6, ID2 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Connective Tissue Development and Function | Stimulation of osteoclast precursor cells | 1.26E-02 |  |  | 2 | CSF1, IL9 |
| Cancer, Organismal Injury and Abnormalities, Respiratory Disease | CD274 positive laryngeal squamous cell carcinoma | 1.26E-02 |  |  | 2 | CTLA4, IDO1 |
| Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities | CD274 positive oral squamous cell carcinoma | 1.26E-02 |  |  | 2 | CTLA4, IDO1 |
| Drug Metabolism, Endocrine System Development and Function, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of hydrocortisone | 1.26E-02 |  |  | 2 | CRH, PMCH |
| Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities, Respiratory Disease | CD274 positive hypopharyngeal squamous cell carcinoma | 1.26E-02 |  |  | 2 | CTLA4, IDO1 |
| Inflammatory Response | Memory T cell response | 1.26E-02 |  |  | 2 | CTLA4, FOXO3 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Transitional cell carcinoma of the renal pelvis | 1.26E-02 |  |  | 2 | CTLA4, IDO1 |
| Cancer, Gastrointestinal Disease, Organismal Injury and Abnormalities, Respiratory Disease | CD274 positive oropharyngeal squamous cell carcinoma | 1.26E-02 |  |  | 2 | CTLA4, IDO1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Tissue Development | Differentiation of conventional dendritic cells | 1.26E-02 |  |  | 2 | CSF1, IL2RA |
| Cancer, Organismal Injury and Abnormalities | Recurrent CD274 positive head and neck squamous cell carcinoma | 1.26E-02 |  |  | 2 | CTLA4, IDO1 |
| Cellular Movement, Hematological System Development and Function, Hematopoiesis, Humoral Immune Response, Immune Cell Trafficking, Inflammatory Response, Lymphoid Tissue Structure and Development | Chemotaxis of pre-B lymphocytes | 1.26E-02 |  |  | 2 | CCR3, RGS1 |
| Cellular Development, Cellular Growth and Proliferation | Proliferation of kidney cancer cell lines | 1.34E-02 |  | -0.644 | 6 | FOXO3, GNG4, HOTAIR, MET, NAMPT, SLC29A1 |
| Gastrointestinal Disease, Organismal Injury and Abnormalities | Metaplasia of intestine | 1.40E-02 |  |  | 3 | CCL28, FOXO3, GPER1 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Hematopoiesis | Adhesion of hematopoietic progenitor cells | 1.40E-02 |  |  | 3 | CD2, CXCL9, RGS1 |
| Cancer, Organismal Injury and Abnormalities | Embryonal tumor | 1.41E-02 |  |  | 28 | ADARB1, APOBEC4, CACNA1E, CDKN2C, CSF1, CTLA4, CXCL9, EEF2K, FOXO3, FRRS1, GLDC, GPER1, HFE, IL2RA, IL9, KCNH2, KLRC1, LGR5, MAL, MERTK, MET, MSH2, NAMPT, OLIG2, OR4K5, PMP22, RAPGEF5, TRPC6 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response | Activation of granulocytes | 1.43E-02 |  | 1.154 | 7 | CCL23, CXCL9, IL1RL1, IL5RA, IL9, PRTN3, PTGDR2 |
| Cell Death and Survival, Cellular Function and Maintenance | Colony survival of cells | 1.43E-02 |  | 0.152 | 5 | CAT, CDKN2B-AS1, FOXO3, MET, MSH2 |
| Cellular Development, Hematological System Development and Function, Hematopoiesis | Maturation of hematopoietic progenitor cells | 1.43E-02 |  |  | 5 | ALOX15, FOXO3, IGLL1/IGLL5, IL9, RNF112 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Proliferation of activated T lymphocytes | 1.43E-02 |  | 1.067 | 5 | CD24, CTLA4, FOXP3, IL2RA, IL9 |
| Cancer, Organismal Injury and Abnormalities | Advanced malignant solid tumor | 1.44E-02 |  | 0.239 | 32 | CAT, CD24, CDKN2C, CFHR1, CSF1, CTLA4, CXCL9, DLX3, GATA6, HOTAIR, ID2, IDO1, IKZF2, IL1RL1, IL2RA, KLHL3, LRRC17, MAGEA11, MERTK, MET, mir-183, mir-28, mir-31, mir-450, MSH2, MTFR2, MUC1, NKD2, PRLR, PWWP3B, SEL1L3, TNNC1 |
| Inflammatory Response | Cytotoxic T lymphocyte response | 1.44E-02 |  |  | 4 | CTLA4, FOXO3, IL9, MUC1 |
| Cancer, Organismal Injury and Abnormalities | Hyperplasia of blood cells | 1.53E-02 |  | 0.728 | 6 | CDKN2C, CSF1, FOXO3, IL2RA, IL9, MERTK |
| Cellular Movement | Migration of cells | 1.54E-02 |  | 1.516 | 79 | ADARB1, ADGRL3, ALOX15, APOB, AQP5, ATOH8, BARHL2, CAT, CCL23, CCL27, CCL28, CCR3, CD2, CD24, CD38, CDKN2B-AS1, CDKN2C, CFHR1, CGB3 (includes others), COL7A1, CRH, CSF1, CTLA4, CXCL9, CYP2C8, CYSLTR2, DLX3, FKBPL, FOXO3, FOXP3, GATA6, GCNT1, GPER1, GPR183, GPR34, HABP2, HOTAIR, HOXB9, HRH4, ID2, IDO1, IGF2BP3, IGLL1/IGLL5, IL1RL1, IL2RA, IL9, KCNH2, KLF17, LDB2, LIMCH1, LUM, MEOX2, MERTK, MET, mir-183, mir-28, mir-31, mir-515, MUC1, NAMPT, NKD2, NOVA1, PIK3R6, PMCH, PMP22, PRKG1, PRLR, PRSS55, PRTN3, PTGDR2, RAPH1, RGS1, RNASE2, SIGLEC8, SLC7A8, SMAD5, TNS4, TRPC6, VLDLR |
| Humoral Immune Response, Inflammatory Disease, Inflammatory Response | Experimentally induced inflammation | 1.55E-02 |  |  | 3 | CD2, CTLA4, IL1RL1 |
| Small Molecule Biochemistry | Metabolism of alkaloid | 1.55E-02 |  |  | 3 | CYP2C8, SLC17A1, SLC17A3 |
| Cell Cycle | G1/S phase transition of epithelial cells | 1.56E-02 |  |  | 2 | ID2, MET |
| Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities, Renal and Urological Disease | Nephrotoxic nephritis | 1.56E-02 |  |  | 2 | IDO1, IL9 |
| Lipid Metabolism, Small Molecule Biochemistry | Conversion of arachidonic acid | 1.56E-02 |  |  | 2 | ALOX15, CYP2C8 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking | Aggregation of leukocyte cell lines | 1.56E-02 |  |  | 2 | CD2, CD38 |
| Cell Morphology, Cellular Function and Maintenance | Autophagy of muscle | 1.56E-02 |  |  | 2 | BNIP3, FOXO3 |
| Cellular Development, Hematopoiesis, Tissue Development | Differentiation of bone marrow precursor cells | 1.56E-02 |  |  | 2 | CSF1, LRRC17 |
| Cancer, Connective Tissue Disorders, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Ewing sarcoma in vertebrae | 1.56E-02 |  |  | 2 | CACNA1E, OR4K5 |
| Organismal Injury and Abnormalities, Renal and Urological Disease | Cortical renal glomerulopathies | 1.56E-02 |  |  | 2 | CDKN2C, NPHS2 |
| Embryonic Development, Nervous System Development and Function, Ophthalmic Disease, Organ Development, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities, Tissue Development, Visual System Development and Function | Thinning of cornea | 1.56E-02 |  |  | 2 | CHST6, LUM |
| Embryonic Development, Nervous System Development and Function, Organ Development, Organ Morphology, Organismal Development, Tissue Development, Tissue Morphology, Visual System Development and Function | Thickness of corneal stroma | 1.56E-02 |  |  | 2 | CHST6, LUM |
| Cancer, Organismal Injury and Abnormalities | Eradication of tumor | 1.56E-02 |  |  | 2 | CTLA4, IL2RA |
| Organismal Development, Organismal Injury and Abnormalities | Abnormal morphology of abdomen | 1.56E-02 |  |  | 39 | ALOX15, CAT, CCL28, CD38, CDKN2C, CRH, CSF1, CTLA4, EEF2K, FFAR4, FOXL2, FOXO3, FOXP3, GATA5, GATA6, GCNT1, HOXB9, ID2, IDO1, IL1RL1, IL2RA, IL5RA, IL9, MEIS2, MEOX2, MERTK, MET, MSH5, NPHS2, PRKG1, PRLR, PTF1A, RAPH1, RGS1, RXFP2, SESTD1, SMPD3, TEC, TFF3 |
| Cell Death and Survival, Embryonic Development | Cell death of embryonic cells | 1.61E-02 |  | 1.664 | 7 | BNIP3, GATA6, MET, MSH2, REM2, SMAD5, SYNE1 |
| Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking | Cellular infiltration by granulocytes | 1.63E-02 |  | 0.684 | 12 | CD2, CRH, CSF1, CYP2C8, IL1RL1, IL2RA, IL9, MET, PRKG1, PRTN3, PTGDR2, SIGLEC8 |
| Cellular Compromise | Depletion of lymphatic system cells | 1.66E-02 |  | -1.951 | 4 | CD38, CSF1, CTLA4, IL2RA |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Stage IV renal cancer | 1.66E-02 |  |  | 4 | CTLA4, IL2RA, MERTK, MET |
| Cell Death and Survival | Apoptosis of granulocytes | 1.67E-02 |  | 0.848 | 6 | CAT, FOXO3, IL9, NAMPT, PRTN3, SIGLEC8 |
| Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | T-cell non-Hodgkin lymphoma | 1.70E-02 |  |  | 22 | CCR3, CD2, CD24, CDKN2C, CXCL9, EPC1, GPR183, ID2, IDO1, IKZF2, IL2RA, IL9, ITM2C, MAL, MERTK, MET, mir-28, mir-876, MSH2, MUC1, NFIB, PRKG1 |
| Hematological System Development and Function | Anergy of lymphocytes | 1.71E-02 |  |  | 3 | CTLA4, FOXP3, IDO1 |
| Cancer, Cardiovascular Disease, Organismal Injury and Abnormalities | Hemangiosarcoma | 1.71E-02 |  |  | 3 | CDKN2C, FOXO3, MSH2 |
| Dermatological Diseases and Conditions, Neurological Disease, Organismal Injury and Abnormalities | Mechanical hyperalgesia | 1.71E-02 |  |  | 3 | HTR3A, IL1RL1, TRPC6 |
| Cancer, Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Development of pituitary gland tumor | 1.71E-02 |  |  | 3 | CDKN2C, FOXO3, PRLR |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Stimulation of lymphocytes | 1.75E-02 |  | 0.152 | 8 | CD2, CD24, CRH, CTLA4, KLRC1, MERTK, MUC1, PRKG1 |
| Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | T-cell malignant neoplasm | 1.76E-02 |  |  | 26 | CCR3, CD2, CD24, CDKN2C, CXCL9, EPC1, FOXO3, GPER1, GPR183, ID2, IDO1, IKZF2, IL2RA, IL9, ITM2C, KLF17, MAL, MERTK, MET, mir-28, mir-876, MSH2, MUC1, NFIB, OLIG2, PRKG1 |
| Immunological Disease | Abnormal morphology of immune system | 1.78E-02 |  |  | 14 | CCL28, CDKN2C, CSF1, CTLA4, FOXO3, FOXP3, GCNT1, HOXB8, ID2, IGLL1/IGLL5, IL2RA, IL5RA, IL9, MERTK |
| Cellular Development | Transdifferentiation | 1.86E-02 |  | 0.472 | 5 | CGB3 (includes others), CSF1, FOXO3, MUC1, PTF1A |
| Cancer, Cardiovascular Disease, Organismal Injury and Abnormalities | Development of angiosarcoma | 1.88E-02 |  |  | 3 | CDKN2C, FOXO3, MSH2 |
| Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking | Movement of B-lymphocyte derived cell lines | 1.88E-02 |  |  | 3 | CCL27, PTGDR2, RGS1 |
| Carbohydrate Metabolism, Small Molecule Biochemistry | Biosynthesis of keratan sulfate | 1.88E-02 |  |  | 3 | B3GNT4, CHST6, LUM |
| Cancer, Organismal Injury and Abnormalities | Delay in growth of tumor | 1.88E-02 |  |  | 3 | ATP6V0A2, CTLA4, IKZF2 |
| Cellular Assembly and Organization, Cellular Function and Maintenance | Release of exosomes | 1.88E-02 |  |  | 2 | MAL, SMPD3 |
| Cell Cycle | Mitotic exit of cervical cancer cell lines | 1.88E-02 |  |  | 2 | NEK2, WEE1 |
| Cell Morphology, Hematological System Development and Function, Inflammatory Response | Polarization of M2 macrophages | 1.88E-02 |  |  | 2 | CSF1, NAMPT |
| Cell Death and Survival, Organismal Injury and Abnormalities | Apoptosis of colonocytes | 1.88E-02 |  |  | 2 | IL2RA, TFF3 |
| Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance | Permeability of plasma membrane | 1.88E-02 |  |  | 2 | BNIP3, CCL28 |
| Embryonic Development, Endocrine System Development and Function, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development | Development of hypothalamus | 1.88E-02 |  |  | 2 | ARNT2, GSX1 |
| Connective Tissue Development and Function, Skeletal and Muscular System Development and Function | Bone mineral density of tibia | 1.88E-02 |  |  | 2 | CD38, PRLR |
| Nucleic Acid Metabolism, Small Molecule Biochemistry | Metabolism of uric acid | 1.88E-02 |  |  | 2 | SLC17A1, SLC17A3 |
| Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response, Tissue Development | Accumulation of Th17 cells | 1.88E-02 |  |  | 2 | DLX3, IL9 |
| Cell Death and Survival | Apoptosis of adenocarcinoma cell lines | 1.89E-02 |  | 1.969 | 4 | ALOX15, FOXO3, GATA6, MET |
| Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | Lymphoid hyperplasia | 1.89E-02 |  | -0.152 | 4 | CDKN2C, FOXO3, IL2RA, MERTK |
| Organ Morphology | Quantity of secretory structure | 1.92E-02 |  | 0.78 | 9 | AQP5, CACNA1E, CDKN2C, CRH, CSF1, GSX1, MET, PTF1A, SMPD3 |
| Cell Signaling, Nucleic Acid Metabolism | Activation of Adenylate cyclase | 1.93E-02 |  |  | 7 | ACR, CXCL9, GHRHR, GPER1, PTGDR2, RGS1, RXFP2 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Quantity of steroid | 1.95E-02 |  | 1.087 | 21 | APOB, APOC1, CDKN2C, CGB3 (includes others), CRH, CSF1, FFAR4, FOXO3, GATA6, GATM, GHRHR, GPER1, LGR5, NAMPT, PMCH, PMP22, PRLR, SCIMP, SERPINA6, SRGAP3, VLDLR |
| Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Argininosuccinate lyase deficiency | 1.96E-02 |  |  | 1 | ASL |
| Cancer, Developmental Disorder, Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Adult granulosa cell tumor of the ovary | 1.96E-02 |  |  | 1 | FOXL2 |
| Cell Morphology | Cellularity of peripheral blood | 1.96E-02 |  |  | 1 | CSF1 |
| Cell Cycle, Digestive System Development and Function | Arrest in cell cycle progression of enterocytes | 1.96E-02 |  |  | 1 | ID2 |
| Cell Morphology | Conversion of osteoblasts | 1.96E-02 |  |  | 1 | MET |
| Hereditary Disorder, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Cerivastatin-induced rhabdomyolysis | 1.96E-02 |  |  | 1 | CYP2C8 |
| Cell Cycle, Hepatic System Development and Function | Arrest in early/mid Gap 2 phase of hepatocytes | 1.96E-02 |  |  | 1 | MET |
| Dermatological Diseases and Conditions, Hereditary Disorder, Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities | Autosomal recessive Netherton syndrome | 1.96E-02 |  |  | 1 | SPINK5 |
| Cardiovascular Disease, Cellular Development, Cellular Growth and Proliferation, Organismal Injury and Abnormalities | Development of plaque cells | 1.96E-02 |  |  | 1 | PRKG1 |
| Cardiovascular Disease, Hereditary Disorder, Organismal Injury and Abnormalities | Familial thoracic aortic aneurysm type 8 | 1.96E-02 |  |  | 1 | PRKG1 |
| Cell Cycle, Hepatic System Development and Function | Entry into S phase of hepatocytes | 1.96E-02 |  |  | 1 | MET |
| Cardiovascular Disease, Developmental Disorder, Organismal Injury and Abnormalities | Atrioventricular septal defect type 5 | 1.96E-02 |  |  | 1 | GATA6 |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | Dominant neonatal dystrophic epidermolysis bullosa | 1.96E-02 |  |  | 1 | COL7A1 |
| Cell-To-Cell Signaling and Interaction | Association of peritoneal macrophages | 1.96E-02 |  |  | 1 | APOC1 |
| Developmental Disorder, Hematological Disease, Hereditary Disorder, Metabolic Disease, Nutritional Disease, Organismal Injury and Abnormalities | Digenic juvenile hemochromatosis | 1.96E-02 |  |  | 1 | HFE |
| Metabolic Disease, Organismal Injury and Abnormalities, Renal and Urological Disease | Experimental proteinuric renal disease | 1.96E-02 |  |  | 1 | CFHR1 |
| Cell-To-Cell Signaling and Interaction, Inflammatory Response | Anti-inflammatory response of peritoneal macrophages | 1.96E-02 |  |  | 1 | FFAR4 |
| Developmental Disorder, Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Central precocious puberty type 2 | 1.96E-02 |  |  | 1 | MKRN3 |
| Nucleic Acid Metabolism, Small Molecule Biochemistry | Elevation of cyclic GMP | 1.96E-02 |  |  | 1 | CAT |
| Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry | Conversion of glycine | 1.96E-02 |  |  | 1 | GATM |
| Gastrointestinal Disease, Immunological Disease, Organismal Injury and Abnormalities | Celiac disease 3 | 1.96E-02 |  |  | 1 | CTLA4 |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Immunological Disease, Organismal Injury and Abnormalities | Dominant dystrophic epidermolysis bullosa with absence of skin | 1.96E-02 |  |  | 1 | COL7A1 |
| Cellular Movement, Hematological System Development and Function | Extravasation of dendritic precursor cells | 1.96E-02 |  |  | 1 | CSF1 |
| Cell Cycle | Exit from G1 phase of naive T lymphocytes | 1.96E-02 |  |  | 1 | CTLA4 |
| Cell Death and Survival, Cellular Function and Maintenance | Colony survival of endometrial cancer cell lines | 1.96E-02 |  |  | 1 | MSH2 |
| Nervous System Development and Function, Organismal Development, Skeletal and Muscular System Development and Function | Coordination of forelimb | 1.96E-02 |  |  | 1 | NAMPT |
| Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Connective Tissue Development and Function, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Development of lamina propria T lymphocytes | 1.96E-02 |  |  | 1 | ID2 |
| Cellular Development, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development | Differentiation of motor neuron progenitor cells | 1.96E-02 |  |  | 1 | OLIG2 |
| Organ Development, Visual System Development and Function | Growth of photoreceptor layer | 1.96E-02 |  |  | 1 | MERTK |
| Cell Cycle | Exit from quiescence of hepatocytes | 1.96E-02 |  |  | 1 | MET |
| Neurological Disease, Organ Morphology, Organismal Injury and Abnormalities, Psychological Disorders | Atrophy of stratum pyramidale | 1.96E-02 |  |  | 1 | NAMPT |
| Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Neurological Disease, Ophthalmic Disease, Organismal Injury and Abnormalities | Blepharophimosis, ptosis, and epicanthus inversus type II with Duane retraction syndrome | 1.96E-02 |  |  | 1 | FOXL2 |
| Auditory Disease, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Charcot-Marie-Tooth disease type 1e | 1.96E-02 |  |  | 1 | PMP22 |
| Cardiovascular Disease, Cell Death and Survival, Connective Tissue Disorders, Developmental Disorder, Hematological Disease, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Autosomal recessive pyruvate kinase protein deficiency anemia | 1.96E-02 |  |  | 1 | PKLR |
| Neurological Disease, Organismal Injury and Abnormalities, Reproductive System Disease | Functional hypothalamic amenorrhea | 1.96E-02 |  |  | 1 | SERPINA6 |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal recessive cutis laxa type 2A | 1.96E-02 |  |  | 1 | ATP6V0A2 |
| Organismal Injury and Abnormalities, Respiratory Disease | Hyperreactivity of bronchia | 1.96E-02 |  |  | 1 | CCR3 |
| Cell Cycle, Cellular Movement | Cytokinesis of melanoma cell lines | 1.96E-02 |  |  | 1 | CASC1 |
| Connective Tissue Disorders, Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal recessive primary microcephaly type 13 | 1.96E-02 |  |  | 1 | CENPE |
| Cell-To-Cell Signaling and Interaction, Inflammatory Response | Cytotoxic T lymphocyte response by monocyte-derived dendritic cells | 1.96E-02 |  |  | 1 | MUC1 |
| Cardiovascular Disease, Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | Atrial septal defect type 9 | 1.96E-02 |  |  | 1 | GATA6 |
| Cell Morphology, Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Conversion of natural T-regulatory cells | 1.96E-02 |  |  | 1 | FOXP3 |
| Nervous System Development and Function, Organismal Development, Skeletal and Muscular System Development and Function | Coordination of hindlimb | 1.96E-02 |  |  | 1 | NAMPT |
| Amino Acid Metabolism, Small Molecule Biochemistry | Binding of L-tryptophan | 1.96E-02 |  |  | 1 | IDO1 |
| Cell Cycle | Arrest in G0/G1 phase transition of vascular endothelial cells | 1.96E-02 |  |  | 1 | MEOX2 |
| Skeletal and Muscular System Development and Function, Tissue Development | Delay in initiation of mineralization of cartilage matrix | 1.96E-02 |  |  | 1 | SMPD3 |
| Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities, Renal and Urological Disease | Argininosuccinic aciduria | 1.96E-02 |  |  | 1 | ASL |
| Cardiovascular Disease, Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | Autosomal dominant long QT syndrome 2 | 1.96E-02 |  |  | 1 | KCNH2 |
| Cellular Compromise, Connective Tissue Disorders, Organismal Injury and Abnormalities | Damage of red blood cells | 1.96E-02 |  |  | 1 | FOXO3 |
| Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization | Cell-cell contact of osteoclasts | 1.96E-02 |  |  | 1 | GPR183 |
| Gastrointestinal Disease, Immunological Disease, Organismal Injury and Abnormalities | Anaphylaxis of intestine | 1.96E-02 |  |  | 1 | IL9 |
| Molecular Transport | Ejection of H+ | 1.96E-02 |  |  | 1 | PMCH |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Tissue Development | Colony formation of low proliferative potential colony-forming cells | 1.96E-02 |  |  | 1 | CCL23 |
| Auditory Disease | Endolymphatic hydrops | 1.96E-02 |  |  | 1 | TECTA |
| Hereditary Disorder, Immunological Disease, Organismal Injury and Abnormalities | Deficiency of alpha interleukin 2 receptor | 1.96E-02 |  |  | 1 | IL2RA |
| Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Autosomal recessive hereditary folate malabsorption | 1.96E-02 |  |  | 1 | SLC46A1 |
| Cell-To-Cell Signaling and Interaction, Skeletal and Muscular System Development and Function | Delamination of muscle precursor cells | 1.96E-02 |  |  | 1 | MET |
| Cancer, Cell Death and Survival, Organismal Injury and Abnormalities, Tumor Morphology | Cell viability of multiple myeloma cells | 1.96E-02 |  |  | 1 | BNIP3 |
| Drug Metabolism, Small Molecule Biochemistry | Bioactivation of olmesartan medoxomil | 1.96E-02 |  |  | 1 | CMBL |
| Cell Morphology, Cellular Function and Maintenance | Autophagy of endoplasmic reticulum | 1.96E-02 |  |  | 1 | BNIP3 |
| Hereditary Disorder, Immunological Disease, Neurological Disease, Organismal Injury and Abnormalities | Autosomal dominant hyperekplexia type 1 | 1.96E-02 |  |  | 1 | GLRA1 |
| Cancer, Cellular Development, Cellular Growth and Proliferation, Hematological Disease, Organismal Injury and Abnormalities, Tumor Morphology | Arrest in growth of acute myeloid leukemia blast cells | 1.96E-02 |  |  | 1 | MUC1 |
| Cancer, Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities | Formation of peripheral T-cell lymphoma | 1.96E-02 |  |  | 1 | CDKN2C |
| Cardiovascular Disease, Hereditary Disorder, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Familial hypertrophic cardiomyopathy type 13 | 1.96E-02 |  |  | 1 | TNNC1 |
| Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal dominant Emery-Dreifuss muscular dystrophy type 4 | 1.96E-02 |  |  | 1 | SYNE1 |
| Hematopoiesis | Frequency of high proliferative potential colony-forming cells | 1.96E-02 |  |  | 1 | SMAD5 |
| Cancer, Organismal Injury and Abnormalities | Extracolonic cancer | 1.96E-02 |  |  | 1 | MSH2 |
| Cardiovascular Disease, Organismal Injury and Abnormalities | Advanced chronic heart failure | 1.96E-02 |  |  | 1 | TNNC1 |
| Cancer, Organismal Injury and Abnormalities | Delay in initiation of growth of melanoma | 1.96E-02 |  |  | 1 | CTLA4 |
| Dermatological Diseases and Conditions, Developmental Disorder, Endocrine System Disorders, Hereditary Disorder, Ophthalmic Disease, Organismal Injury and Abnormalities, Reproductive System Disease | Autosomal dominant type 1 blepharophimosis, epicanthus inversus, and ptosis | 1.96E-02 |  |  | 1 | FOXL2 |
| Cell Cycle | G1/S phase transition of keratinocyte cancer cell lines | 1.96E-02 |  |  | 1 | CRH |
| Auditory Disease, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities | Autosomal recessive deafness type 97 | 1.96E-02 |  |  | 1 | MET |
| Lipid Metabolism, Small Molecule Biochemistry | Association of oleic acid | 1.96E-02 |  |  | 1 | APOC1 |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | Autosomal recessive epidermolysis bullosa dystrophica inversa | 1.96E-02 |  |  | 1 | COL7A1 |
| Cell-To-Cell Signaling and Interaction | Activation of luminal progenitor cells | 1.96E-02 |  |  | 1 | MET |
| Developmental Disorder, Hematological Disease, Hereditary Disorder, Immunological Disease, Organismal Injury and Abnormalities | Autoimmune lymphoproliferative syndrome type V | 1.96E-02 |  |  | 1 | CTLA4 |
| Developmental Disorder, Hematological Disease, Hereditary Disorder, Metabolic Disease, Nutritional Disease, Organismal Injury and Abnormalities | Autosomal recessive hereditary hemochromatosis | 1.96E-02 |  |  | 1 | HFE |
| Dermatological Diseases and Conditions, Hereditary Disorder, Organismal Injury and Abnormalities | Bothnia type palmoplantar keratoderma | 1.96E-02 |  |  | 1 | AQP5 |
| Lipid Metabolism, Small Molecule Biochemistry | Conjugation of stearoyl-coenzyme A | 1.96E-02 |  |  | 1 | GLYATL2 |
| Cell Death and Survival, Hepatic System Development and Function | Cell viability of oval cells | 1.96E-02 |  |  | 1 | MET |
| Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal recessive spastic paraplegia type 28 | 1.96E-02 |  |  | 1 | DDHD1 |
| Cell Morphology, Cellular Function and Maintenance | Depolarization of intrecalated cells | 1.96E-02 |  |  | 1 | ATP6V0D2 |
| Cancer, Cell-To-Cell Signaling and Interaction, Inflammatory Response | Cytotoxic reaction of endometrial cancer cell lines | 1.96E-02 |  |  | 1 | MSH2 |
| Developmental Disorder, Organismal Development, Organismal Injury and Abnormalities | Abnormal morphology of inguinal canal | 1.96E-02 |  |  | 1 | RXFP2 |
| Lipid Metabolism, Small Molecule Biochemistry | Conjugation of lauroyl-coenzyme A | 1.96E-02 |  |  | 1 | GLYATL2 |
| Cellular Compromise | Disruption of intracellular membranes | 1.96E-02 |  |  | 1 | CSF1 |
| Cellular Development, Connective Tissue Development and Function, Hematopoiesis, Tissue Development | Differentiation of colony forming unit fibroblasts | 1.96E-02 |  |  | 1 | CD38 |
| Cell Morphology, Cellular Compromise | Collapse of centrosome | 1.96E-02 |  |  | 1 | NEK2 |
| Cell Cycle, Cellular Movement | Cytokinesis of ovarian cancer cell lines | 1.96E-02 |  |  | 1 | GATA6 |
| Neurological Disease, Organismal Injury and Abnormalities | Astrocytosis of dentate gyrus | 1.96E-02 |  |  | 1 | NAMPT |
| Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Ophthalmic Disease, Organismal Injury and Abnormalities | Autosomal dominant type 2 blepharophimosis, epicanthus inversus, and ptosis | 1.96E-02 |  |  | 1 | FOXL2 |
| Cancer, Organismal Injury and Abnormalities, Renal and Urological Disease | Bilateral papillary renal cell carcinoma | 1.96E-02 |  |  | 1 | MET |
| Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Growth of terminal end bud | 1.96E-02 |  |  | 1 | CSF1 |
| Cell-To-Cell Signaling and Interaction, Drug Metabolism, Molecular Transport, Small Molecule Biochemistry | Delay in secretion of epinephrine | 1.96E-02 |  |  | 1 | CRH |
| Nervous System Development and Function | Flexor reflex of spinal cord | 1.96E-02 |  |  | 1 | PRKG1 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Formation of lobulo-alveolar bud cells | 1.96E-02 |  |  | 1 | PRLR |
| Hereditary Disorder, Organismal Injury and Abnormalities | Corticosteroid-binding globulin deficiency | 1.96E-02 |  |  | 1 | SERPINA6 |
| Small Molecule Biochemistry | Demethylation of rosiglitazone | 1.96E-02 |  |  | 1 | CYP2C8 |
| Auditory Disease, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities | Autosomal dominant deafness 12 | 1.96E-02 |  |  | 1 | TECTA |
| Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development | Bifurcation of sensory axons | 1.96E-02 |  |  | 1 | PRKG1 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Humoral Immune Response, Inflammatory Response | Antibody response of Ab-forming cells | 1.96E-02 |  |  | 1 | MERTK |
| Tissue Morphology | Density of pituitary cells | 1.96E-02 |  |  | 1 | FOXL2 |
| Cancer, Gastrointestinal Disease, Hepatic System Disease, Organismal Injury and Abnormalities | Childhood type hepatocellular carcinoma | 1.96E-02 |  |  | 1 | MET |
| Connective Tissue Disorders, Developmental Disorder, Hereditary Disorder, Inflammatory Disease, Inflammatory Response, Metabolic Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Gout susceptibility 4 | 1.96E-02 |  |  | 1 | SLC17A3 |
| Cell Cycle, Hematological System Development and Function | Cell division of bone marrow-derived macrophages | 1.96E-02 |  |  | 1 | CSF1 |
| Cardiovascular System Development and Function, Embryonic Development, Organ Development, Organismal Development, Tissue Development | Angiogenesis of cardiac valve | 1.96E-02 |  |  | 1 | CNMD |
| Cell Death and Survival | Cytolysis of lymphoblastoid cells | 1.96E-02 |  |  | 1 | MSH2 |
| Lipid Metabolism, Small Molecule Biochemistry | Distribution of glucocorticoid | 1.96E-02 |  |  | 1 | SERPINA6 |
| Lipid Metabolism, Small Molecule Biochemistry | Conjugation of palmitoyl-coenzyme A | 1.96E-02 |  |  | 1 | GLYATL2 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response | Activation of exudate macrophages | 1.96E-02 |  |  | 1 | IL1RL1 |
| Cardiovascular System Development and Function, Embryonic Development, Organismal Development, Tissue Development | Development of aortic sac | 1.96E-02 |  |  | 1 | KCNH2 |
| Cell Morphology, Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Conversion of peripheral T lymphocyte | 1.96E-02 |  |  | 1 | FOXP3 |
| Cardiovascular Disease, Cardiovascular System Development and Function, Hereditary Disorder, Organ Morphology, Organismal Development, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Dilated cardiomyopathy 1z | 1.96E-02 |  |  | 1 | TNNC1 |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Immunological Disease, Organismal Injury and Abnormalities | Autosomal recessive epidermolysis bullosa pruriginosa | 1.96E-02 |  |  | 1 | COL7A1 |
| Cell-To-Cell Signaling and Interaction, Nervous System Development and Function | Firing of cortical neurons | 1.96E-02 |  |  | 1 | CSF1 |
| Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance | Assembly of autophagosomes | 1.96E-02 |  |  | 1 | MET |
| Cardiovascular System Development and Function, Tissue Development | Function of vascular tissue | 1.96E-02 |  |  | 1 | PRKG1 |
| Hematological System Development and Function, Immunological Disease, Lymphoid Tissue Structure and Development, Organ Morphology, Organismal Injury and Abnormalities, Tissue Morphology | Abnormal morphology of tonsil tissue | 1.96E-02 |  |  | 1 | ID2 |
| Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Elevated adenosine triphosphate of erythrocytes | 1.96E-02 |  |  | 1 | PKLR |
| Gastrointestinal Disease, Humoral Immune Response, Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities | Experimentally induced inflammation of intestine | 1.96E-02 |  |  | 1 | CTLA4 |
| Cellular Movement, Hematological System Development and Function, Humoral Immune Response, Immune Cell Trafficking, Inflammatory Response, Lymphoid Tissue Structure and Development | Chemotaxis of plasma cells | 1.96E-02 |  |  | 1 | CCL28 |
| DNA Replication, Recombination, and Repair, Nucleic Acid Metabolism, Small Molecule Biochemistry | Chlorination of deoxycytidine | 1.96E-02 |  |  | 1 | CAT |
| Cell Cycle, Gene Expression | Binding of E2 box element | 1.96E-02 |  |  | 1 | ID2 |
| Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Morphology | Density of osteoclasts | 1.96E-02 |  |  | 1 | CSF1 |
| Cardiovascular Disease | Ectasia of vascular lesion | 1.96E-02 |  |  | 1 | CTLA4 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Humoral Immune Response, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Arrest in lymphopoiesis of pro-B lymphocytes | 1.96E-02 |  |  | 1 | IL2RA |
| Gastrointestinal Disease, Hepatic System Disease, Inflammatory Disease, Organismal Injury and Abnormalities | AMA-positive primary biliary cirrhosis | 1.96E-02 |  |  | 1 | CTLA4 |
| Embryonic Development, Hair and Skin Development and Function, Organ Development, Organismal Development, Tissue Development | Formation of hair shaft | 1.96E-02 |  |  | 1 | mir-31 |
| Cellular Development | Dedifferentiation of gonadal cell lines | 1.96E-02 |  |  | 1 | GATA6 |
| Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development | Formation of basis pontis | 1.96E-02 |  |  | 1 | NFIB |
| Cancer, Cellular Development, Organismal Injury and Abnormalities, Tumor Morphology | Differentiation of chronic lymphocytic leukemia cells | 1.96E-02 |  |  | 1 | CD38 |
| Lipid Metabolism, Small Molecule Biochemistry | Conjugation of palmitoleoyl-coenzyme A | 1.96E-02 |  |  | 1 | GLYATL2 |
| Cardiovascular Disease, Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities, Renal and Urological Disease | Autosomal dominant pseudohypoaldosteronism type IID | 1.96E-02 |  |  | 1 | KLHL3 |
| Cell Cycle, Hematopoiesis | Arrest in mitosis of erythroid cells | 1.96E-02 |  |  | 1 | FOXO3 |
| Cell Cycle, Hepatic System Development and Function | Aneuploidy of hepatocytes | 1.96E-02 |  |  | 1 | CENPE |
| Carbohydrate Metabolism, Small Molecule Biochemistry | Accumulation of sorbitol | 1.96E-02 |  |  | 1 | SORD |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Immunological Disease, Organismal Injury and Abnormalities | Autosomal recessive pretibial epidermolysis bullosa | 1.96E-02 |  |  | 1 | COL7A1 |
| Cellular Assembly and Organization, DNA Replication, Recombination, and Repair | Assembly of heterochromatin | 1.96E-02 |  |  | 1 | ADARB1 |
| Cell-To-Cell Signaling and Interaction, Nervous System Development and Function | Firing of nucleus accumbens shell | 1.96E-02 |  |  | 1 | PMCH |
| Hematological Disease, Immunological Disease, Organismal Injury and Abnormalities, Respiratory Disease | Eosinophilia of nasal tissue | 1.96E-02 |  |  | 1 | PTGDR2 |
| Digestive System Development and Function | Eruption of molar tooth | 1.96E-02 |  |  | 1 | CSF1 |
| Cell Cycle | Entry into G2/M phase of colorectal cancer cell lines | 1.96E-02 |  |  | 1 | WEE1 |
| Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities | Autosomal dominant hereditary neuropathy with liability to pressure palsies | 1.96E-02 |  |  | 1 | PMP22 |
| Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response, Tissue Development | Accumulation of memory precursor T lymphocytes | 1.96E-02 |  |  | 1 | FOXO3 |
| Cell Cycle | Arrest in early G1 phase of macrophages | 1.96E-02 |  |  | 1 | CSF1 |
| Cell Cycle | Arrest in G1/S phase transition of skin cell lines | 1.96E-02 |  |  | 1 | DLX3 |
| Cardiovascular Disease, Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities, Renal and Urological Disease | Autosomal recessive pseudohypoaldosteronism type IID | 1.96E-02 |  |  | 1 | KLHL3 |
| Cardiovascular Disease, Connective Tissue Disorders, Developmental Disorder, Gastrointestinal Disease, Hereditary Disorder, Neurological Disease, Organismal Development, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Cleft palate, cardiac defects and mental retardation | 1.96E-02 |  |  | 1 | MEIS2 |
| Cancer, Organismal Injury and Abnormalities | Dysplasia of tumor | 1.96E-02 |  |  | 1 | ID2 |
| Hereditary Disorder, Organismal Injury and Abnormalities, Renal and Urological Disease | Focal segmental glomerulosclerosis type 2 | 1.96E-02 |  |  | 1 | TRPC6 |
| Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal recessive Charcot-Marie-Tooth disease type 1A | 1.96E-02 |  |  | 1 | PMP22 |
| Developmental Disorder, Hereditary Disorder, Organismal Functions, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Familial limb-girdle muscular dystrophy type 2L | 1.96E-02 |  |  | 1 | ANO5 |
| Cell Death and Survival | Apoptosis of germinal center | 1.96E-02 |  |  | 1 | MSH2 |
| Dermatological Diseases and Conditions, Developmental Disorder, Endocrine System Disorders, Hereditary Disorder, Ophthalmic Disease, Organismal Injury and Abnormalities, Reproductive System Disease | Autosomal recessive blepharophimosis, ptosis, and epicanthus inversus type 1 | 1.96E-02 |  |  | 1 | FOXL2 |
| Cellular Compromise | Disappearance of centrosome | 1.96E-02 |  |  | 1 | NEK2 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development | Development of commissural neurons | 1.96E-02 |  |  | 1 | BARHL2 |
| Cellular Compromise | Depletion of bone marrow cells | 1.96E-02 |  |  | 1 | CSF1 |
| Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Skeletal and Muscular System Development and Function | Cell-cell adhesion of vascular smooth muscle cells | 1.96E-02 |  |  | 1 | ALOX15 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation | Co-stimulation of leukemia cell lines | 1.96E-02 |  |  | 1 | IL9 |
| Lipid Metabolism, Small Molecule Biochemistry | Conjugation of myristoyl-coenzyme A | 1.96E-02 |  |  | 1 | GLYATL2 |
| Developmental Disorder, Hereditary Disorder, Metabolic Disease, Neurological Disease, Organismal Injury and Abnormalities, Psychological Disorders | Arginine:glycine amidinotransferase deficiency | 1.96E-02 |  |  | 1 | GATM |
| Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | 3p- syndrome | 1.96E-02 |  |  | 1 | SRGAP3 |
| Cell-mediated Immune Response, Hematological System Development and Function | Anergy of regulatory T lymphocytes | 1.96E-02 |  |  | 1 | CTLA4 |
| Hematological Disease, Immunological Disease, Inflammatory Disease, Inflammatory Response, Organismal Injury and Abnormalities, Respiratory Disease | Chronic eosinophilic rhinosinusitis | 1.96E-02 |  |  | 1 | IL5RA |
| Nervous System Development and Function | Guidance of osteoclast precursor cells | 1.96E-02 |  |  | 1 | GPR183 |
| Developmental Disorder, Embryonic Development, Organismal Development, Tissue Morphology | Abnormal morphology of dental follicle | 1.96E-02 |  |  | 1 | CSF1 |
| Cellular Development, Nervous System Development and Function, Tissue Development, Visual System Development and Function | Arrest in differentiation of amacrine cells | 1.96E-02 |  |  | 1 | PTF1A |
| Behavior | Goal-directed behavior | 1.96E-02 |  |  | 1 | SLC29A1 |
| Digestive System Development and Function | Electrical resistance of jejunum | 1.96E-02 |  |  | 1 | TFF3 |
| Cell-To-Cell Signaling and Interaction, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Nervous System Development and Function | Delay in recruitment of microglia | 1.96E-02 |  |  | 1 | CSF1 |
| Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization | Cell-cell contact of osteoclast precursor cells | 1.96E-02 |  |  | 1 | GPR183 |
| Hereditary Disorder, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Gnathodiaphyseal dysplasia | 1.96E-02 |  |  | 1 | ANO5 |
| Connective Tissue Disorders, Developmental Disorder, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Acquired macrocephaly with impaired intellectual development | 1.96E-02 |  |  | 1 | NFIB |
| Cell Signaling, Vitamin and Mineral Metabolism | Delay in initiation of decay of Ca2+ | 1.96E-02 |  |  | 1 | TNNC1 |
| Cellular Assembly and Organization | Dispersal of centrosome | 1.96E-02 |  |  | 1 | NEK2 |
| Cellular Development, Cellular Growth and Proliferation, Tissue Development | Development of cuboidal cells | 1.96E-02 |  |  | 1 | FOXL2 |
| Cellular Development | Differentiation of heart cell lines | 1.96E-02 |  |  | 1 | EPC1 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response | Hyperactivation of helper T lymphocytes | 1.96E-02 |  |  | 1 | FOXO3 |
| Cell Death and Survival | Apoptosis of bone-marrow-derived monocyte/macrophage precursor cells | 1.96E-02 |  |  | 1 | CSF1 |
| Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Hyperprogesteronemia | 1.96E-02 |  |  | 1 | CGB3 (includes others) |
| Cellular Compromise | Breakdown of intracellular membranes | 1.96E-02 |  |  | 1 | ALOX15 |
| Cell Cycle, Hematological System Development and Function | Entry into S phase of naive T lymphocytes | 1.96E-02 |  |  | 1 | CTLA4 |
| Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Acatalasemia | 1.96E-02 |  |  | 1 | CAT |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | Generalized dominant dystrophic epidermolysis bullosa | 1.96E-02 |  |  | 1 | COL7A1 |
| Cell-To-Cell Signaling and Interaction, Inflammatory Response | Anti-inflammatory response of macrophage cancer cell lines | 1.96E-02 |  |  | 1 | FFAR4 |
| Hematological System Development and Function, Immune Cell Trafficking, Inflammatory Response, Tissue Development | Accumulation of bone marrow-derived macrophages | 1.96E-02 |  |  | 1 | CSF1 |
| Hematological Disease, Hereditary Disorder, Organismal Injury and Abnormalities | Factor VII Marburg I variant thrombophilia | 1.96E-02 |  |  | 1 | HABP2 |
| Cellular Movement, Nervous System Development and Function | Guidance of sensory axons | 1.96E-02 |  |  | 1 | PRKG1 |
| Embryonic Development, Organismal Development, Tissue Development | Development of cardiac loop | 1.96E-02 |  |  | 1 | KCNH2 |
| Cellular Compromise | Deformation of spindle pole | 1.96E-02 |  |  | 1 | CENPE |
| Cancer, Cellular Development, Organismal Injury and Abnormalities, Tumor Morphology | Differentiation of breast cancer epithelial cells | 1.96E-02 |  |  | 1 | ID2 |
| Developmental Disorder, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities | Cerebellar ataxia and mental retardation with quadrupedal locomotion 1 | 1.96E-02 |  |  | 1 | VLDLR |
| Dental Disease, Developmental Disorder, Gastrointestinal Disease, Hereditary Disorder, Organismal Injury and Abnormalities | Autosomal dominant amelogenesis imperfecta 4 | 1.96E-02 |  |  | 1 | DLX3 |
| Hematological Disease, Hereditary Disorder, Immunological Disease, Metabolic Disease, Organismal Injury and Abnormalities | Agammaglobulinemia type 2 | 1.96E-02 |  |  | 1 | IGLL1/IGLL5 |
| Cardiovascular Disease, Connective Tissue Disorders, Developmental Disorder, Neurological Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | C syndrome | 1.96E-02 |  |  | 1 | CD96 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development | Generation of Purkinje cells | 1.96E-02 |  |  | 1 | PTF1A |
| Cell-To-Cell Signaling and Interaction, Embryonic Development, Inflammatory Response | Cytotoxic reaction of embryonic stem cell lines | 1.96E-02 |  |  | 1 | MSH2 |
| Small Molecule Biochemistry | Damage of heme | 1.96E-02 |  |  | 1 | CAT |
| Cell-To-Cell Signaling and Interaction | Activation of ear cells | 1.96E-02 |  |  | 1 | PRKG1 |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal recessive cutis laxa type IID | 1.96E-02 |  |  | 1 | ATP6V1A |
| Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities, Skeletal and Muscular Disorders | Autosomal dominant Charcot-Marie-Tooth disease type 1A | 1.96E-02 |  |  | 1 | PMP22 |
| Auditory Disease, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities | Autosomal recessive deafness type 21 | 1.96E-02 |  |  | 1 | TECTA |
| Carbohydrate Metabolism, Small Molecule Biochemistry | Catabolism of sorbitol | 1.96E-02 |  |  | 1 | SORD |
| Cancer, Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Grade 2 ovarian carcinoma | 1.96E-02 |  |  | 1 | PRLR |
| Cancer, Cell-To-Cell Signaling and Interaction, Inflammatory Response | Cytotoxic reaction of gastrointestinal stromal tumor cell lines | 1.96E-02 |  |  | 1 | MET |
| Cardiovascular Disease, Cell Death and Survival, Connective Tissue Disorders, Developmental Disorder, Hematological Disease, Hereditary Disorder, Metabolic Disease, Organismal Injury and Abnormalities | Amish type pyruvate kinase deficiency | 1.96E-02 |  |  | 1 | PKLR |
| Immunological Disease, Inflammatory Response | Early phase nasal response | 1.96E-02 |  |  | 1 | HRH4 |
| Cellular Development | Dedifferentiation of ovarian cancer cell lines | 1.96E-02 |  |  | 1 | GATA6 |
| Connective Tissue Disorders, Developmental Disorder, Hematological Disease, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities, Psychological Disorders | Choreaacanthocytosis | 1.96E-02 |  |  | 1 | VPS13A |
| Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Development of mammary gland tissue | 1.96E-02 |  |  | 1 | PRLR |
| Endocrine System Disorders, Organismal Injury and Abnormalities, Reproductive System Disease | Atresia of oocytes | 1.96E-02 |  |  | 1 | FOXL2 |
| Developmental Disorder, Hereditary Disorder, Organismal Injury and Abnormalities | Autosomal dominant tricho-dento-osseous syndrome | 1.96E-02 |  |  | 1 | DLX3 |
| Cell Morphology | Contractility of lung cancer cell lines | 1.96E-02 |  |  | 1 | CD24 |
| Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development | Development of V3 interneurons | 1.96E-02 |  |  | 1 | OLIG2 |
| Small Molecule Biochemistry | Hydroxylation of rosiglitazone | 1.96E-02 |  |  | 1 | CYP2C8 |
| Cell-To-Cell Signaling and Interaction, Nervous System Development and Function | Activation of projection neurons | 1.96E-02 |  |  | 1 | CRH |
| Cellular Development, Embryonic Development, Tissue Development | Differentiation of umbilical cord | 1.96E-02 |  |  | 1 | CGB3 (includes others) |
| Connective Tissue Disorders, Dermatological Diseases and Conditions, Developmental Disorder, Hereditary Disorder, Immunological Disease, Organismal Injury and Abnormalities | Autosomal dominant epidermolysis bullosa pruriginosa | 1.96E-02 |  |  | 1 | COL7A1 |
| Embryonic Development, Organismal Development, Tissue Development | Development of bulbus cordis | 1.96E-02 |  |  | 1 | KCNH2 |
| Organ Development, Reproductive System Development and Function | Function of oviduct | 1.96E-02 |  |  | 1 | PRLR |
| Cellular Function and Maintenance | Cell saturation density of colorectal cancer cell lines | 1.96E-02 |  |  | 1 | CD24 |
| Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Hematopoiesis, Immune Cell Trafficking, Inflammatory Response | Activation of pro-T lymphocytes | 1.96E-02 |  |  | 1 | CD2 |
| Auditory Disease, Hereditary Disorder, Neurological Disease, Organismal Injury and Abnormalities | Autosomal recessive deafness type 103 | 1.96E-02 |  |  | 1 | CLIC5 |