RNA sequencing of lake trout epidermal mucus to assess molecular effects of diluted bitumen additions in a boreal lake

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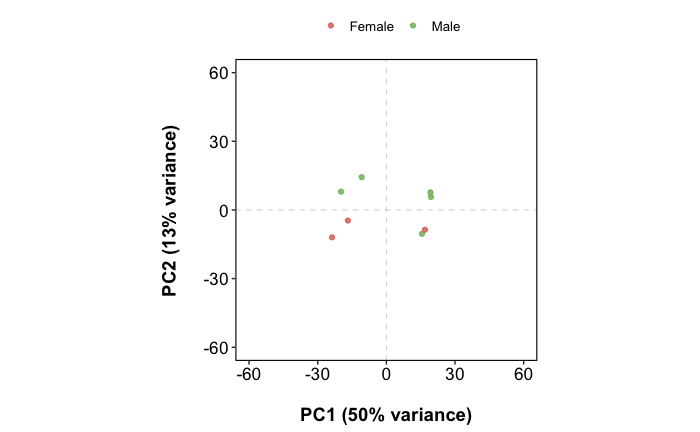
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**Figure S1.** Average weight, total length, and condition factors of lake trout sampled in 2017 (n = 7), 2018 (n = 6), and 2019 (n = 7).



**Figure S2**. Sample-to-sample Euclidian distance heat map of transcriptome-wide count data from 2018 and 2019 lake trout.



**Figure S3.** Principal component analysis of transcriptome-wide count data by sex for 2018 and 2019 sequencing data.

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**Figure S4.** Confirmation of RNA sequencing results through qPCR. qPCR data calculated using 2−ΔΔCt method and normalized by β-actin. (CPT1 = Carnitine palmitoyltransferase 1, CYP1A = Cytochrome P450 1A, G6PD = Glucose-6-phosphate 1-dehydrogenase, HK1 = Hexokinase 1, HSP90A = Heat shock protein 90A).

**Table S1.** Information for forward (F) and reverse (R) primers used for qPCR confirmation of RNA sequencing results (β-actin = beta-actin, CPT1 = Carnitine palmitoyltransferase 1, CYP1A = Cytochrome P450 1A, G6PD = Glucose-6-phosphate 1-dehydrogenase, HK1 = Hexokinase 1, HSP90A = Heat shock protein 90A).

|  |  |  |  |
| --- | --- | --- | --- |
| **Gene** | **Sequence (5` 🡪 3`)** | | **Tm (°C)** |
| β-actin | F | AGAGCTACGAGCTGCCTGAC | 59.0 |
| R | GCAAGACTCCATACCGAGGA | 56.3 |
| CPT1 | F | ATGAGGAATGCCCTCAAGTG | 54.9 |
| R | GCTTCCTGCCAGAGAACAAC | 56.3 |
| CYP1A | F | CCAACTTACCTCTGCTGGAAGC |  |
| R | GGTGAACGGCAGGAAGGA |  |
| G6PD | F | TGGTGCAGAACCTCATGGTCCTCA | 62.1 |
| R | ATCCCGGATGATTCCAAAGTCGTC | 58.9 |
| HK1 | F | CTGGGACGCTGAAGACCAGA | 59.1 |
| R | CGGTGCTGCATACCTCCTTG | 58.4 |
| HSP90A | F | TCCAGCAGCTGAAGGAGTTT | 56.5 |
| R | TGAGCTTGCAGAGGTTCTCA | 56.2 |

**Table S2.** Information on lake trout sampled in 2017, 2018, and 2019 sampling from Lake 260.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sampling Season** | **Sample** | **Weight (g)** | **Total Length (cm)** | **Fork Length (cm)** | **Condition Index** | **Sex** | **Sequenced?** |
| Sep-19 | 2019-260-01 | 1159 | 52.90 | 47.80 | 0.78 | M | Y (T1) |
| Sep-19 | 2019-260-02 | 910 | 47.70 | 43.20 | 0.84 | M | N |
| Sep-19 | 2019-260-03 | 1186 | 52.50 | 47.70 | 0.82 | F | N |
| Sep-19 | 2019-260-04 | 1118 | 50.70 | 45.90 | 0.86 | F | N |
| Sep-19 | 2019-260-05 | 779 | 45.50 | 41.30 | 0.83 | M | Y (T2) |
| Sep-19 | 2019-260-06 | 735 | 43.80 | 39.50 | 0.87 | F | Y (T3) |
| Sep-19 | 2019-260-07 | 846 | 48.10 | 43.50 | 0.76 | F | Y (T4) |
| Sep-18 | M18-260-01 | 941 | 48.00 | 44.80 | 0.85 | M | Y (R1) |
| Sep-18 | M18-260-02 | 885 | 48.10 | 42.30 | 0.80 | F | N |
| Sep-18 | M18-260-03 | 879 | 50.10 | 45.60 | 0.70 | F | Y (R2) |
| Sep-18 | M18-260-04 | 551 | 41.10 | 37.80 | 0.79 | immature | N |
| Sep-18 | M18-260-05 | 529 | 42.10 | 37.50 | 0.71 | M | Y (R3) |
| Sep-18 | M18-260-06 | 1101 | 51.50 | 47.00 | 0.81 | M | Y (R4) |
| Sept-17 | M17-260-01 | 567 | 40.5 | 36.6 | 0.85 | M | Y (A1) |
| Sept-17 | M17-260-02 | 362 | 36.8 | 33.4 | 0.72 | M | N |
| Sept-17 | M17-260-03 | 978 | 50.0 | 45.5 | 0.78 | F | N |
| Sept-17 | M17-260-04 | 378 | 36.2 | 32.4 | 0.79 | ? | Y (A2) |
| Sept-17 | M17-260-05 | 877 | 47.9 | 43.3 | 0.79 | M | N |
| Sept-17 | M17-260-06 | 648 | 42.6 | 38.4 | 0.84 | M | Y (A3) |
| Sept-17 | M17-260-07 | 700 | 44.1 | 39.4 | 0.82 | M | Y (A4) |

**Table S3.** Results from 1 x 75 bp single-end sequencing and bioinformatics analysis.

|  |  |
| --- | --- |
| **Sample** | **Read Count** |
| T1 | 52,481,921 |
| T2 | 65,117,353 |
| T3 | 45,903,972 |
| T4 | 74,522,170 |
| R1 | 83,414,656 |
| R2 | 60,264,337 |
| R3 | 78,306,002 |
| R4 | 70,278,578 |
| A1 | 19,840,892 |
| A2 | 19,931,020 |
| A3 | 24,288,841 |
| A4 | 22,146,500 |
| **TOTAL** | 616,496,242 |
| **AVERAGE** | 51,374,687 |

**Table S4.** All differentially expressed transcripts among non-exposed (2018) and dilbit-exposed (2019) lake trout ( at a FDR adjusted p-value of ≤ 0.1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Rank** | **Gene Symbol** | **Uniprot ID and Gene Name** | **log2 FoldChange** | **p-adj** |
| 1 | FRRS1 | FRRS1\_HUMAN Ferric-chelate reductase 1 | 3.00216561 | 2.72E-21 |
| 2 | LMO7 | LMO7\_HUMAN LIM domain only protein 7 | 2.60553225 | 6.31E-17 |
| 3 | HLF | HLF\_HUMAN Hepatic leukemia factor | 4.92300023 | 2.29E-16 |
| 4 | CR1 | CR1\_HUMAN Complement receptor type 1 | 4.87823206 | 1.55E-14 |
| 5 | HIP1R | HIP1R\_HUMAN Huntingtin-interacting protein 1-related protein | 2.65704546 | 1.05E-11 |
| 6 | ST3GAL1 | SIA4A\_CHICK CMP-N-acetylneuraminate-beta-galactosamide-alpha-2,3-sialyltransferase 1 | 4.26599266 | 5.05E-11 |
| 7 | Plec | PLEC\_MOUSE Plectin | -3.9619519 | 5.05E-11 |
| 8 | Kiaa1671 | K1671\_MOUSE Uncharacterized protein KIAA1671 | 2.2746408 | 9.32E-11 |
| 9 | TGas006m08.1 | H4\_XENTR Histone H4 | -3.3312774 | 1.86E-10 |
| 10 | Hpgd | PGDH\_MOUSE 15-hydroxyprostaglandin dehydrogenase [NAD(+)] | 5.17973815 | 6.86E-10 |
| 11 | GIMAP7 | GIMA7\_HUMAN GTPase IMAP family member 7 | 2.82179506 | 1.12E-09 |
| 12 | Myo1e | MYO1E\_MOUSE Unconventional myosin-Ie | 2.83524083 | 1.12E-09 |
| 13 | #N/A | #N/A | 3.91405134 | 1.55E-09 |
| 14 | EZR | EZRI\_RABIT Ezrin | 2.05138126 | 4.06E-09 |
| 15 | PPL | PEPL\_HUMAN Periplakin | 2.1694717 | 4.71E-09 |
| 16 | TAR1 | TAR1\_YEAST Protein TAR1 | -3.0156992 | 9.51E-09 |
| 17 | SEC23A | SC23A\_CHICK Protein transport protein Sec23A | 2.74111801 | 1.01E-08 |
| 18 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 3.43996519 | 1.07E-08 |
| 19 | Plec | PLEC\_MOUSE Plectin | -4.4120578 | 1.08E-08 |
| 20 | CAPN9 | CAN9\_HUMAN Calpain-9 | 2.20139297 | 1.28E-08 |
| 21 | EVPL | EVPL\_HUMAN Envoplakin | 3.07711384 | 1.95E-08 |
| 22 | WDTC1 | WDTC1\_HUMAN WD and tetratricopeptide repeats protein 1 | -2.7500128 | 3.12E-08 |
| 23 | Ly6g6d | LY66D\_RAT Lymphocyte antigen 6 complex locus protein G6d | 4.29810534 | 4.68E-08 |
| 24 | MYH9 | MYH9\_CHICK Myosin-9 | 1.96438761 | 4.86E-08 |
| 25 | #N/A | LEC\_GALNI Mannose-specific lectin | -3.7880336 | 5.73E-08 |
| 26 | RDX | RADI\_HUMAN Radixin | 3.157817 | 5.73E-08 |
| 27 | rrm2 | RIR2\_DANRE Ribonucleoside-diphosphate reductase subunit M2 | -4.8536383 | 5.99E-08 |
| 28 | Rrbp1 | RRBP1\_MOUSE Ribosome-binding protein 1 | 5.18126611 | 5.99E-08 |
| 29 | Eps8l2 | ES8L2\_MOUSE Epidermal growth factor receptor kinase substrate 8-like protein 2 | 3.98245102 | 7.88E-08 |
| 30 | MXD4 | MAD4\_HUMAN Max dimerization protein 4 | 3.2780418 | 1.73E-07 |
| 31 | LITAF | LITAF\_CHICK Lipopolysaccharide-induced tumor necrosis factor-alpha factor homolog | 3.00129409 | 2.42E-07 |
| 32 | mt-co1 | COX1\_ONCMY Cytochrome c oxidase subunit 1 | 3.77433058 | 2.53E-07 |
| 33 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 2.83472223 | 2.63E-07 |
| 34 | TUFT1 | TUFT1\_BOVIN Tuftelin {ECO:0000303|PubMed:1874744} | 2.31781979 | 3.71E-07 |
| 35 | Proser2 | PRSR2\_MOUSE Proline and serine-rich protein 2 | 5.38064146 | 5.08E-07 |
| 36 | UPK1A | UPK1A\_BOVIN Uroplakin-1a | 2.52853261 | 5.70E-07 |
| 37 | rps7 | RS7\_TAKRU 40S ribosomal protein S7 | -2.2950318 | 5.97E-07 |
| 38 | MYH9 | MYH9\_HUMAN Myosin-9 | 3.68786162 | 6.58E-07 |
| 39 | RHOBTB1 | RHBT1\_HUMAN Rho-related BTB domain-containing protein 1 | 3.2121993 | 1.00E-06 |
| 40 | SYNE1 | SYNE1\_HUMAN Nesprin-1 | -3.6751274 | 1.15E-06 |
| 41 | jag1b | JAG1B\_DANRE Protein jagged-1b | -2.8592979 | 1.20E-06 |
| 42 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 3.92339833 | 1.34E-06 |
| 43 | #N/A | #N/A | 5.3384117 | 1.34E-06 |
| 44 | #N/A | H3\_URECA Histone H3 | -4.5378253 | 1.34E-06 |
| 45 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 5.03051136 | 1.56E-06 |
| 46 | APLP1 | APLP1\_HUMAN Amyloid-like protein 1 | 3.38808013 | 1.62E-06 |
| 47 | LRP1 | LRP1\_CHICK Low-density lipoprotein receptor-related protein 1 | -3.3667429 | 1.64E-06 |
| 48 | #N/A | DFNA5\_HUMAN Non-syndromic hearing impairment protein 5 | -6.8624062 | 1.99E-06 |
| 49 | Ly6g6d | LY66D\_RAT Lymphocyte antigen 6 complex locus protein G6d | 2.82613469 | 2.00E-06 |
| 50 | OSBPL6 | OSBL6\_HUMAN Oxysterol-binding protein-related protein 6 | 2.17598586 | 2.00E-06 |
| 51 | gmppb | GMPPB\_DANRE Mannose-1-phosphate guanyltransferase beta | 2.4030835 | 2.12E-06 |
| 52 | Tf2-9 | TF29\_SCHPO Transposon Tf2-9 polyprotein | -2.6542089 | 2.19E-06 |
| 53 | CAPZB | CAPZB\_CHICK F-actin-capping protein subunit beta isoforms 1 and 2 | 2.23483272 | 2.19E-06 |
| 54 | #N/A | TCB1\_CAEBR Transposable element Tcb1 transposase | -2.9952155 | 2.32E-06 |
| 55 | Map7d1 | MA7D1\_MOUSE MAP7 domain-containing protein 1 | 6.14558459 | 2.52E-06 |
| 56 | rsmG | RSMG\_METC4 Ribosomal RNA small subunit methyltransferase G {ECO:0000255|HAMAP-Rule:MF\_00074} | -3.0680105 | 2.52E-06 |
| 57 | Eppk1 | EPIPL\_MOUSE Epiplakin | -2.8102623 | 2.57E-06 |
| 58 | Tf2-6 | TF26\_SCHPO Transposon Tf2-6 polyprotein | -2.0161083 | 4.60E-06 |
| 59 | TSPAN8 | TSN8\_PONAB Tetraspanin-8 | 2.85640693 | 4.89E-06 |
| 60 | cxadr | CXAR\_DANRE Coxsackievirus and adenovirus receptor homolog | 2.65293696 | 5.98E-06 |
| 61 | TNIP1 | TNIP1\_HUMAN TNFAIP3-interacting protein 1 | 1.99285798 | 6.09E-06 |
| 62 | #N/A | #N/A | 2.50542054 | 6.23E-06 |
| 63 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | -3.598231 | 6.83E-06 |
| 64 | EPS8L1 | ES8L1\_HUMAN Epidermal growth factor receptor kinase substrate 8-like protein 1 | 3.00747644 | 7.69E-06 |
| 65 | #N/A | H2B\_SALTR Histone H2B | -2.7007007 | 8.50E-06 |
| 66 | Rpl12 | RL12\_MOUSE 60S ribosomal protein L12 | -2.821501 | 8.50E-06 |
| 67 | URGCP | URGCP\_BOVIN Up-regulator of cell proliferation | 2.78879443 | 1.16E-05 |
| 68 | LMO7 | LMO7\_HUMAN LIM domain only protein 7 | 6.88987006 | 1.16E-05 |
| 69 | PITPNA | PIPNA\_RABIT Phosphatidylinositol transfer protein alpha isoform | 2.395344 | 1.19E-05 |
| 70 | EVPL | EVPL\_HUMAN Envoplakin | 1.94764815 | 1.31E-05 |
| 71 | #N/A | #N/A | 4.02060292 | 1.34E-05 |
| 72 | #N/A | SLP1\_PINMG Shematrin-like protein 1 | 2.37811574 | 1.34E-05 |
| 73 | Homer2 | HOME2\_RAT Homer protein homolog 2 | 2.40476288 | 1.56E-05 |
| 74 | SYNE2 | SYNE2\_HUMAN Nesprin-2 | -1.7417907 | 1.77E-05 |
| 75 | #N/A | #N/A | 2.82729139 | 2.17E-05 |
| 76 | #N/A | #N/A | 4.02097435 | 2.67E-05 |
| 77 | Dsg2 | DSG2\_MOUSE Desmoglein-2 | 2.00343144 | 3.03E-05 |
| 78 | GADL1 | GADL1\_BOVIN Acidic amino acid decarboxylase GADL1 | 2.88940422 | 3.38E-05 |
| 79 | Myo5b | MYO5B\_MOUSE Unconventional myosin-Vb | 1.79505012 | 3.38E-05 |
| 80 | SYNE2 | SYNE2\_HUMAN Nesprin-2 | -3.469167 | 3.95E-05 |
| 81 | PLA2G4C | PA24C\_HUMAN Cytosolic phospholipase A2 gamma | -2.3328972 | 3.95E-05 |
| 82 | Klf2 | KLF2\_MOUSE Krueppel-like factor 2 | 2.78326041 | 3.97E-05 |
| 83 | paqr5b | MPRGB\_DANRE Membrane progestin receptor gamma-B | 3.36963956 | 3.97E-05 |
| 84 | Svmpi-Cce12 | SVMI1\_CERCE Snake venom metalloprotease inhibitor 02A10 | 4.18733978 | 4.10E-05 |
| 85 | tcaf | TCAF\_DANRE TRPM8 channel-associated factor homolog | 1.96318692 | 4.27E-05 |
| 86 | #N/A | H3\_URECA Histone H3 | -3.7187474 | 4.27E-05 |
| 87 | PNP | PNPH\_BOVIN Purine nucleoside phosphorylase | 4.15976813 | 4.54E-05 |
| 88 | Proser2 | PRSR2\_MOUSE Proline and serine-rich protein 2 | 3.72133672 | 4.95E-05 |
| 89 | PLCD1 | PLCD1\_BOVIN 1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase delta-1 | 4.01235179 | 4.95E-05 |
| 90 | TMEM131 | TM131\_HUMAN Transmembrane protein 131 | 2.9603154 | 4.95E-05 |
| 91 | Gnaq | GNAQ\_MOUSE Guanine nucleotide-binding protein G(q) subunit alpha | 3.35747462 | 4.96E-05 |
| 92 | stk10 | STK10\_DANRE Serine/threonine-protein kinase 10 | 1.90071594 | 5.11E-05 |
| 93 | Sqstm1 | SQSTM\_MOUSE Sequestosome-1 | 2.68594041 | 5.27E-05 |
| 94 | Rnf186 | RN186\_MOUSE RING finger protein 186 | -2.879655 | 5.30E-05 |
| 95 | FGD3 | FGD3\_HUMAN FYVE, RhoGEF and PH domain-containing protein 3 | 3.09691061 | 5.35E-05 |
| 96 | PDLIM2 | PDLI2\_MACFA PDZ and LIM domain protein 2 | 6.2012689 | 5.59E-05 |
| 97 | UU149 | Y149\_UREPA Uncharacterized protein UU149 | 3.22902496 | 6.48E-05 |
| 98 | #N/A | #N/A | -3.2597268 | 6.57E-05 |
| 99 | CGNL1 | CGNL1\_HUMAN Cingulin-like protein 1 | 2.8796623 | 6.73E-05 |
| 100 | BTN1A1 | BT1A1\_HUMAN Butyrophilin subfamily 1 member A1 | 2.35484036 | 6.80E-05 |
| 101 | RRT12 | RRT12\_YEAST Subtilase-type proteinase RRT12 | -2.7960904 | 6.80E-05 |
| 102 | Lrrk1 | LRRK1\_MOUSE Leucine-rich repeat serine/threonine-protein kinase 1 | -2.7930065 | 7.25E-05 |
| 103 | Dock8 | DOCK8\_MOUSE Dedicator of cytokinesis protein 8 | -3.3378972 | 7.53E-05 |
| 104 | Krt42 | K1C42\_RAT Keratin, type I cytoskeletal 42 | -4.8461186 | 7.79E-05 |
| 105 | COL6A2 | CO6A2\_CHICK Collagen alpha-2(VI) chain | -5.5987367 | 7.99E-05 |
| 106 | HERC2 | HERC2\_HUMAN E3 ubiquitin-protein ligase HERC2 | -1.4652163 | 8.00E-05 |
| 107 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 2.83473784 | 8.98E-05 |
| 108 | EIF4A1 | IF4A1\_PONAB Eukaryotic initiation factor 4A-I | -2.7442893 | 8.98E-05 |
| 109 | rps2 | RS2\_ICTPU 40S ribosomal protein S2 | -2.4562119 | 8.98E-05 |
| 110 | Proser2 | PRSR2\_MOUSE Proline and serine-rich protein 2 | 5.66710228 | 0.00011507 |
| 111 | ANXA11 | ANX11\_HUMAN Annexin A11 | 6.10429642 | 0.00011735 |
| 112 | BRD7 | BRD7\_CHICK Bromodomain-containing protein 7 | 3.4772755 | 0.00012064 |
| 113 | cep170b | C170B\_XENTR Centrosomal protein of 170 kDa protein B | -6.2845313 | 0.00012064 |
| 114 | SYNE1 | SYNE1\_HUMAN Nesprin-1 | -4.923489 | 0.00012227 |
| 115 | B4GALNT1 | B4GN1\_HUMAN Beta-1,4 N-acetylgalactosaminyltransferase 1 | 4.00338238 | 0.00012643 |
| 116 | TOP2A | TOP2A\_CHICK DNA topoisomerase 2-alpha | -6.0882522 | 0.00013168 |
| 117 | #N/A | PVRL2\_MOUSE Nectin-2 | 3.40740244 | 0.00013372 |
| 118 | ITPR2 | ITPR2\_HUMAN Inositol 1,4,5-trisphosphate receptor type 2 | -2.5353566 | 0.00013627 |
| 119 | pssA | PSS\_ECOLI CDP-diacylglycerol--serine O-phosphatidyltransferase | 3.12304406 | 0.00014218 |
| 120 | Hsd3b7 | 3BHS7\_MOUSE 3 beta-hydroxysteroid dehydrogenase type 7 | 4.04373508 | 0.00014364 |
| 121 | cxadr | CXAR\_DANRE Coxsackievirus and adenovirus receptor homolog | 3.75258149 | 0.00014633 |
| 122 | STK17A | ST17A\_RABIT Serine/threonine-protein kinase 17A | 2.38035862 | 0.00014964 |
| 123 | Cuzd1 | CUZD1\_MOUSE CUB and zona pellucida-like domain-containing protein 1 | 5.01033908 | 0.00015129 |
| 124 | Gtpbp2 | GTPB2\_MOUSE GTP-binding protein 2 | 4.70566042 | 0.00015231 |
| 125 | rpl9 | RL9\_ICTPU 60S ribosomal protein L9 | -2.444945 | 0.0001728 |
| 126 | NIAD | NIA\_LEPMC Nitrate reductase [NADPH] | -5.3713395 | 0.00018647 |
| 127 | ALOXE3 | LOXE3\_HUMAN Hydroperoxide isomerase ALOXE3 | -4.72285 | 0.00019076 |
| 128 | #N/A | #N/A | 2.14294661 | 0.00019444 |
| 129 | Sdr16c5 | RDHE2\_MOUSE Epidermal retinol dehydrogenase 2 | 4.46734557 | 0.00020217 |
| 130 | #N/A | #N/A | 4.35393495 | 0.00022369 |
| 131 | myzap | MYZAP\_XENTR Myocardial zonula adherens protein | 1.96533563 | 0.00022369 |
| 132 | ZNF185 | ZN185\_HUMAN Zinc finger protein 185 | 2.81336471 | 0.00024227 |
| 133 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 4.24440971 | 0.0002526 |
| 134 | ncapd2 | CND1\_XENLA Condensin complex subunit 1 | -5.9198974 | 0.00027783 |
| 135 | NCAPG | CND3\_HUMAN Condensin complex subunit 3 | -5.5895837 | 0.00028374 |
| 136 | Slc43a1 | LAT3\_MOUSE Large neutral amino acids transporter small subunit 3 | 2.6625355 | 0.00028625 |
| 137 | MT-ND5 | NU5M\_SALSA NADH-ubiquinone oxidoreductase chain 5 | 1.71070513 | 0.00028625 |
| 138 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 4.45957668 | 0.00028625 |
| 139 | alas1 | HEM1\_OPSTA 5-aminolevulinate synthase, nonspecific, mitochondrial | 3.28903754 | 0.0002997 |
| 140 | EIF4A2 | IF4A2\_CHICK Eukaryotic initiation factor 4A-II | -4.5032084 | 0.00031981 |
| 141 | SPPL2A | SPP2A\_HUMAN Signal peptide peptidase-like 2A {ECO:0000303|PubMed:15385547, ECO:0000312|HGNC:HGNC:30227} | 5.26718313 | 0.00032835 |
| 142 | LMO7 | LMO7\_HUMAN LIM domain only protein 7 | 4.15625357 | 0.00037079 |
| 143 | BAHD1 | BAHD1\_ARATH BAHD acyltransferase At5g47980 | 4.17361865 | 0.00042671 |
| 144 | MCTP2 | MCTP2\_HUMAN Multiple C2 and transmembrane domain-containing protein 2 | 1.26201325 | 0.00048033 |
| 145 | #N/A | NATTL\_DANRE Natterin-like protein | -2.6679357 | 0.00052219 |
| 146 | C6orf132 | CF132\_HUMAN Uncharacterized protein C6orf132 | 2.5938625 | 0.0005273 |
| 147 | PDLIM2 | PDLI2\_BOVIN PDZ and LIM domain protein 2 | 2.89169173 | 0.0005545 |
| 148 | MTH\_1421 | Y1421\_METTH Uncharacterized protein MTH\_1421 | -1.8605266 | 0.00059531 |
| 149 | #N/A | GRM1C\_HUMAN GRAM domain-containing protein 1C | 2.77770122 | 0.00061042 |
| 150 | SPACA4 | SACA4\_BOVIN Sperm acrosome membrane-associated protein 4 | 2.93720951 | 0.00064534 |
| 151 | TMEM131 | TM131\_HUMAN Transmembrane protein 131 | 5.46805164 | 0.00068553 |
| 152 | Foxq1 | FOXQ1\_RAT Forkhead box protein Q1 | 3.39110607 | 0.00068994 |
| 153 | RUNX3 | RUNX3\_HUMAN Runt-related transcription factor 3 | -2.2788647 | 0.00068994 |
| 154 | MT-CO2 | COX2\_TINMA Cytochrome c oxidase subunit 2 | 2.45416992 | 0.00068994 |
| 155 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 4.38879378 | 0.00071761 |
| 156 | Adgrg2 | AGRG2\_MOUSE Adhesion G-protein coupled receptor G2 | 1.65748193 | 0.00072559 |
| 157 | ESYT2 | ESYT2\_HUMAN Extended synaptotagmin-2 | 1.85802688 | 0.00074531 |
| 158 | ybx1 | YBOX1\_XENLA Nuclease-sensitive element-binding protein 1 | 5.59339035 | 0.00074531 |
| 159 | CENPF | CENPF\_HUMAN Centromere protein F | -6.6350257 | 0.00075372 |
| 160 | NOS2 | NOS2\_CHICK Nitric oxide synthase, inducible | 3.98072189 | 0.00083343 |
| 161 | SGPL1 | SGPL1\_HUMAN Sphingosine-1-phosphate lyase 1 | 2.49390427 | 0.00086332 |
| 162 | Trim16 | TRI16\_MOUSE Tripartite motif-containing protein 16 | 1.6492835 | 0.00087386 |
| 163 | #N/A | #N/A | 1.33449342 | 0.00088952 |
| 164 | rt | POMT1\_DROME Protein O-mannosyltransferase 1 | -5.4903863 | 0.00089435 |
| 165 | mrh4 | MRH4\_ASPTN ATP-dependent RNA helicase mrh4, mitochondrial | -1.4744327 | 0.0008959 |
| 166 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 4.80318415 | 0.0008959 |
| 167 | TP\_0404 | Y404\_TREPA Uncharacterized protein TP\_0404 | 2.51353201 | 0.00090275 |
| 168 | Nlrc3 | NLRC3\_MOUSE Protein NLRC3 | -2.4907363 | 0.00090289 |
| 169 | TAN1 | TAN1\_YEAST tRNA acetyltransferase TAN1 | -2.8130889 | 0.00090289 |
| 170 | EEF2 | EF2\_CHICK Elongation factor 2 | -1.8710523 | 0.00096782 |
| 171 | #N/A | #N/A | 3.35288587 | 0.00100618 |
| 172 | WASF2 | WASF2\_HUMAN Wiskott-Aldrich syndrome protein family member 2 | 2.2002526 | 0.00107379 |
| 173 | Myh9 | MYH9\_MOUSE Myosin-9 | 1.56964929 | 0.00107596 |
| 174 | Serp1 | SERP1\_RAT Stress-associated endoplasmic reticulum protein 1 | 4.21268043 | 0.00114089 |
| 175 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | -1.4651929 | 0.00114299 |
| 176 | HERC1 | HERC1\_HUMAN Probable E3 ubiquitin-protein ligase HERC1 | -1.5756656 | 0.00115641 |
| 177 | cgn | CING\_DANRE Cingulin | 1.73601119 | 0.00117723 |
| 178 | MDN1 | MDN1\_HUMAN Midasin | -5.442343 | 0.00118209 |
| 179 | MPN\_639 | Y639\_MYCPN Uncharacterized lipoprotein MG439 homolog 6 | -3.1831213 | 0.00130488 |
| 180 | Rps20 | RS20\_RAT 40S ribosomal protein S20 | -4.6595494 | 0.00134235 |
| 181 | #N/A | #N/A | -5.3199439 | 0.00135864 |
| 182 | RPL29 | RL29\_MACFA 60S ribosomal protein L29 | -2.5791618 | 0.00137017 |
| 183 | Ldlr | LDLR\_RAT Low-density lipoprotein receptor | 2.75756051 | 0.00138149 |
| 184 | dlx3b | DLX3B\_DANRE Homeobox protein Dlx3b | 3.23854993 | 0.00138268 |
| 185 | Tprn | TPRN\_MOUSE Taperin | 3.53358441 | 0.00140242 |
| 186 | Cdc42ep4 | BORG4\_MOUSE Cdc42 effector protein 4 | 3.3867011 | 0.00143992 |
| 187 | SPACA4 | SACA4\_HUMAN Sperm acrosome membrane-associated protein 4 | 2.69306285 | 0.00144502 |
| 188 | ABLIM1 | ABLM1\_HUMAN Actin-binding LIM protein 1 | 2.62731192 | 0.00151524 |
| 189 | Cds1 | CDS1\_RAT Phosphatidate cytidylyltransferase 1 | 2.29305487 | 0.00153871 |
| 190 | #N/A | #N/A | -3.7891709 | 0.00156159 |
| 191 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 2.48397971 | 0.00157056 |
| 192 | #N/A | #N/A | 5.89119351 | 0.00160911 |
| 193 | junb | JUNB\_CYPCA Transcription factor jun-B | -5.192448 | 0.00162705 |
| 194 | ELOVL6 | ELOV6\_HUMAN Elongation of very long chain fatty acids protein 6 {ECO:0000255|HAMAP-Rule:MF\_03206, ECO:0000305} | 2.5856828 | 0.00163189 |
| 195 | Sarg | SARG\_MOUSE Specifically androgen-regulated gene protein | 2.86832589 | 0.00163189 |
| 196 | PARP14 | PAR14\_HUMAN Poly [ADP-ribose] polymerase 14 | 2.00226514 | 0.00163189 |
| 197 | ARG2 | ARGI2\_HUMAN Arginase-2, mitochondrial | 3.83992063 | 0.00163607 |
| 198 | TBC1D5 | TBCD5\_HUMAN TBC1 domain family member 5 | 2.19998483 | 0.00165723 |
| 199 | Ppp1r14b | PP14B\_RAT Protein phosphatase 1 regulatory subunit 14B | 3.10648677 | 0.00165723 |
| 200 | #N/A | #N/A | 2.39239666 | 0.00184585 |
| 201 | ubiG | UBIG\_RHORT Ubiquinone biosynthesis O-methyltransferase {ECO:0000255|HAMAP-Rule:MF\_00472} | 3.197218 | 0.00187834 |
| 202 | CLDN8 | CLD8\_HUMAN Claudin-8 | 2.07036412 | 0.00193327 |
| 203 | frrs1 | FRRS1\_DANRE Putative ferric-chelate reductase 1 | 2.25863788 | 0.00193327 |
| 204 | TGM1 | TGM1\_HUMAN Protein-glutamine gamma-glutamyltransferase K | 2.72691671 | 0.00202734 |
| 205 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | -1.3980334 | 0.00204369 |
| 206 | uspl1 | USPL1\_DANRE SUMO-specific isopeptidase USPL1 | -3.2558346 | 0.00204369 |
| 207 | #N/A | #N/A | 3.14887095 | 0.00212579 |
| 208 | Proser2 | PRSR2\_MOUSE Proline and serine-rich protein 2 | 6.14021145 | 0.00214485 |
| 209 | #N/A | BICR2\_DANRE Bicaudal D-related protein 2 | 2.36836992 | 0.00216281 |
| 210 | #N/A | #N/A | 2.19422806 | 0.00222156 |
| 211 | #N/A | #N/A | 2.98214659 | 0.00223441 |
| 212 | HIP1R | HIP1R\_HUMAN Huntingtin-interacting protein 1-related protein | 1.93245238 | 0.00224104 |
| 213 | #N/A | PERQ1\_MOUSE PERQ amino acid-rich with GYF domain-containing protein 1 | 2.2132697 | 0.00226582 |
| 214 | rlmC | RLMC\_HAEIE 23S rRNA (uracil(747)-C(5))-methyltransferase | -5.704669 | 0.00231084 |
| 215 | gpt2 | ALAT2\_XENTR Alanine aminotransferase 2 | 2.37124366 | 0.00232813 |
| 216 | Sec14l1 | S14L1\_MOUSE SEC14-like protein 1 {ECO:0000305} | 2.36819883 | 0.00242307 |
| 217 | pol | POL3\_DROME Retrovirus-related Pol polyprotein from transposon 17.6 | -2.2388792 | 0.00242307 |
| 218 | Higd1a | HIG1A\_MOUSE HIG1 domain family member 1A, mitochondrial | 2.69069134 | 0.00242952 |
| 219 | EML3 | EMAL3\_HUMAN Echinoderm microtubule-associated protein-like 3 | -4.1787181 | 0.00242952 |
| 220 | #N/A | #N/A | 3.99866347 | 0.00247566 |
| 221 | RPL5 | RL5\_CHICK 60S ribosomal protein L5 | -2.2899102 | 0.00247566 |
| 222 | ybx1 | YBOX1\_XENLA Nuclease-sensitive element-binding protein 1 | 1.49430235 | 0.00247566 |
| 223 | Cdk6 | CDK6\_MOUSE Cyclin-dependent kinase 6 | -5.6852301 | 0.00247566 |
| 224 | fam214a | F214A\_DANRE Protein FAM214A | 2.52524234 | 0.00258306 |
| 225 | #N/A | UBIQP\_XENLA Polyubiquitin | 5.27586784 | 0.00260524 |
| 226 | tax1bp1b | TXB1B\_DANRE Tax1-binding protein 1 homolog B | 1.56678803 | 0.00260524 |
| 227 | #N/A | #N/A | 5.43075974 | 0.00260524 |
| 228 | #N/A | TBA\_LEPDS Tubulin alpha chain | -4.612879 | 0.00260524 |
| 229 | CERS5 | CERS5\_HUMAN Ceramide synthase 5 | 4.64813897 | 0.00260524 |
| 230 | At4g23580 | FBK88\_ARATH F-box/kelch-repeat protein At4g23580 | 3.44172129 | 0.00260524 |
| 231 | yap1 | YAP1\_DANRE Transcriptional coactivator YAP1 | 2.17036587 | 0.00275137 |
| 232 | CCL3 | CCL3\_HUMAN C-C motif chemokine 3 | -4.6604062 | 0.00282406 |
| 233 | FSIP2 | FSIP2\_HUMAN Fibrous sheath-interacting protein 2 | -5.5022731 | 0.00282406 |
| 234 | #N/A | #N/A | 5.52523568 | 0.00290044 |
| 235 | #N/A | YTX2\_XENLA Transposon TX1 uncharacterized 149 kDa protein | -3.5749399 | 0.00291569 |
| 236 | #N/A | AIM1\_HUMAN Absent in melanoma 1 protein | 1.18701452 | 0.00292281 |
| 237 | OSBPL3 | OSBL3\_HUMAN Oxysterol-binding protein-related protein 3 | 2.58342774 | 0.00292281 |
| 238 | HBEGF | HBEGF\_CHICK Proheparin-binding EGF-like growth factor | 5.05390563 | 0.00292281 |
| 239 | Upk3b | UPK3B\_MOUSE Uroplakin-3b | 2.27995316 | 0.00294247 |
| 240 | B3GALT2 | B3GT2\_PONAB Beta-1,3-galactosyltransferase 2 | 2.33784779 | 0.00297477 |
| 241 | #N/A | #N/A | 3.2506304 | 0.00297477 |
| 242 | #N/A | #N/A | 2.71595147 | 0.00300771 |
| 243 | Il22ra2 | I22R2\_MOUSE Interleukin-22 receptor subunit alpha-2 | 2.16823244 | 0.0031531 |
| 244 | gefW | GEFW\_DICDI Ras guanine nucleotide exchange factor W | -6.6563023 | 0.0031531 |
| 245 | GPR50 | MTR1L\_HUMAN Melatonin-related receptor | 4.44403679 | 0.0031531 |
| 246 | pepA | AMPA\_GEOSM Probable cytosol aminopeptidase | -2.459999 | 0.0031531 |
| 247 | DSG2 | DSG2\_HUMAN Desmoglein-2 | 1.40404117 | 0.00320681 |
| 248 | Trim16 | TRI16\_MOUSE Tripartite motif-containing protein 16 | 2.46927627 | 0.0032596 |
| 249 | ncl | NUCL\_XENLA Nucleolin | -2.2443297 | 0.00330472 |
| 250 | CLDN4 | CLD4\_BOVIN Claudin-4 | 2.77019618 | 0.00330472 |
| 251 | jag1b | JAG1B\_DANRE Protein jagged-1b | -2.151445 | 0.00336687 |
| 252 | ICE1 | ICE1\_HUMAN Little elongation complex subunit 1 | -3.8912718 | 0.00344182 |
| 253 | SFMBT2 | SMBT2\_HUMAN Scm-like with four MBT domains protein 2 | -5.5918495 | 0.00344182 |
| 254 | #N/A | #N/A | 1.68174329 | 0.00350934 |
| 255 | #N/A | #N/A | 4.68651789 | 0.00353629 |
| 256 | PPM2 | TYW4\_YEAST tRNA wybutosine-synthesizing protein 4 | -6.2678224 | 0.00354174 |
| 257 | ybcI | YBCI\_BACSU Uncharacterized protein YbcI | 3.31653016 | 0.00357664 |
| 258 | b2m | B2MG\_ICTPU Beta-2-microglobulin | 2.94654641 | 0.00357664 |
| 259 | Cps1 | CPSM\_RAT Carbamoyl-phosphate synthase [ammonia], mitochondrial | -3.2086109 | 0.00357664 |
| 260 | chaf1a | CAF1A\_DANRE Chromatin assembly factor 1 subunit A | -4.5307831 | 0.0036989 |
| 261 | At1g19060 | Y1196\_ARATH UPF0725 protein At1g19060 | 2.00986145 | 0.00374899 |
| 262 | TAR1 | TAR1\_YEAST Protein TAR1 | -3.7584572 | 0.00377214 |
| 263 | #N/A | #N/A | 4.2728368 | 0.00380472 |
| 264 | Klf4 | KLF4\_MOUSE Krueppel-like factor 4 | 2.89180185 | 0.00380472 |
| 265 | ARHGAP27 | RHG27\_HUMAN Rho GTPase-activating protein 27 | 1.33761102 | 0.00380472 |
| 266 | abhd17b | AB17B\_XENLA Protein ABHD17B {ECO:0000305} | 3.90743073 | 0.0039061 |
| 267 | Pol | LORF2\_MOUSE LINE-1 retrotransposable element ORF2 protein | 3.17594474 | 0.00396311 |
| 268 | #N/A | #N/A | 2.88774995 | 0.00396311 |
| 269 | BCAR3 | BCAR3\_BOVIN Breast cancer anti-estrogen resistance protein 3 | -3.2621046 | 0.00399945 |
| 270 | pol | RTJK\_DROME RNA-directed DNA polymerase from mobile element jockey | 4.68339054 | 0.00418555 |
| 271 | pilA | PILA\_MYXXD Fimbrial protein | 4.46492487 | 0.00435182 |
| 272 | CLDN4 | CLD4\_BOVIN Claudin-4 | 1.96423742 | 0.00436398 |
| 273 | Ocln | OCLN\_RAT Occludin | 2.11158012 | 0.00440783 |
| 274 | DUSP1 | DUS1\_HUMAN Dual specificity protein phosphatase 1 | 2.15597694 | 0.00465847 |
| 275 | ART2 | ART2\_YEAST Putative uncharacterized protein ART2 | -2.3432277 | 0.00470642 |
| 276 | #N/A | YS003\_HUMAN Uncharacterized protein LOC113230 | 4.37138967 | 0.00470642 |
| 277 | lap-2 | YH24\_CAEEL Putative aminopeptidase W07G4.4 | -1.8063645 | 0.00470642 |
| 278 | ULK2 | ULK2\_HUMAN Serine/threonine-protein kinase ULK2 | 2.00333705 | 0.00470642 |
| 279 | Capn5 | CAN5\_MOUSE Calpain-5 | 1.97174109 | 0.00473808 |
| 280 | Ddx17 | DDX17\_MOUSE Probable ATP-dependent RNA helicase DDX17 | -3.7052158 | 0.00473808 |
| 281 | SLC2A3 | GTR3\_CHICK Solute carrier family 2, facilitated glucose transporter member 3 | -2.8768453 | 0.00474017 |
| 282 | ube2d2 | UB2D2\_XENLA Ubiquitin-conjugating enzyme E2 D2 | 4.62058742 | 0.00495564 |
| 283 | TJP3 | ZO3\_HUMAN Tight junction protein ZO-3 | 1.43859655 | 0.00499941 |
| 284 | septin7 | SEPT7\_XENLA Septin-7 | 3.38660806 | 0.00499941 |
| 285 | Hmmr | HMMR\_RAT Hyaluronan-mediated motility receptor | -5.7417441 | 0.00512265 |
| 286 | TBC1D31 | TBC31\_HUMAN TBC1 domain family member 31 | -2.8458652 | 0.00512481 |
| 287 | #N/A | #N/A | 5.54731566 | 0.0052497 |
| 288 | Syne2 | SYNE2\_MOUSE Nesprin-2 | -1.6246892 | 0.0052497 |
| 289 | #N/A | #N/A | 2.77411898 | 0.00530819 |
| 290 | Trim16 | TRI16\_MOUSE Tripartite motif-containing protein 16 | 2.12492744 | 0.00586576 |
| 291 | #N/A | TCB2\_CAEBR Transposable element Tcb2 transposase | -1.7113544 | 0.00594826 |
| 292 | #N/A | #N/A | 4.20015545 | 0.00594826 |
| 293 | MUC15 | MUC15\_BOVIN Mucin-15 | 2.05990933 | 0.00596091 |
| 294 | midn | MIDN\_DANRE Midnolin | 3.1281621 | 0.00598133 |
| 295 | #N/A | #N/A | 2.66865094 | 0.0060476 |
| 296 | rps3a | RS3A\_SALSA 40S ribosomal protein S3a | 1.23274097 | 0.00607621 |
| 297 | #N/A | DFNA5\_HUMAN Non-syndromic hearing impairment protein 5 | -4.850601 | 0.00607621 |
| 298 | CNKSR3 | CNKR3\_HUMAN Connector enhancer of kinase suppressor of ras 3 | 2.44280155 | 0.00607621 |
| 299 | YSL7 | YSL7\_ARATH Probable metal-nicotianamine transporter YSL7 | 1.76927927 | 0.00607621 |
| 300 | uspl1 | USPL1\_DANRE SUMO-specific isopeptidase USPL1 | -4.7627023 | 0.0062224 |
| 301 | PTPRZ1 | PTPRZ\_HUMAN Receptor-type tyrosine-protein phosphatase zeta | -1.3339983 | 0.00638071 |
| 302 | #N/A | TCB2\_CAEBR Transposable element Tcb2 transposase | 4.42301981 | 0.0064309 |
| 303 | ANP32B | AN32B\_BOVIN Acidic leucine-rich nuclear phosphoprotein 32 family member B | -4.9752134 | 0.00654786 |
| 304 | STRN | STRN\_HUMAN Striatin | 1.43031895 | 0.00683874 |
| 305 | glud1 | DHE3\_CHAAC Glutamate dehydrogenase, mitochondrial | 4.02273857 | 0.00688364 |
| 306 | anln | ANLN\_XENLA Actin-binding protein anillin | -5.219897 | 0.00739481 |
| 307 | #N/A | NATTL\_DANRE Natterin-like protein | -4.756171 | 0.00739768 |
| 308 | sibE | SIBE\_DICDI Integrin beta-like protein E | -5.8377403 | 0.00741425 |
| 309 | sh2d4a | SH24A\_XENTR SH2 domain-containing protein 4A | 2.55498502 | 0.00796344 |
| 310 | VSIG10L | VS10L\_HUMAN V-set and immunoglobulin domain-containing protein 10-like | 2.58000072 | 0.00805951 |
| 311 | Litaf | LITAF\_RAT Lipopolysaccharide-induced tumor necrosis factor-alpha factor homolog | -3.7040778 | 0.00809055 |
| 312 | MDN1 | MDN1\_HUMAN Midasin | -2.1957094 | 0.00809055 |
| 313 | #N/A | #N/A | 2.80472966 | 0.00811634 |
| 314 | lepA1 | LEPA\_METFK Elongation factor 4 | 4.33034911 | 0.0084423 |
| 315 | AHNAK | AHNK\_HUMAN Neuroblast differentiation-associated protein AHNAK | 5.17515189 | 0.00865384 |
| 316 | LARS2 | SYLM\_HUMAN Probable leucine--tRNA ligase, mitochondrial | -5.2091896 | 0.00867791 |
| 317 | Galnt6 | GALT6\_MOUSE Polypeptide N-acetylgalactosaminyltransferase 6 | 1.61114404 | 0.00883047 |
| 318 | grhl3 | GRHL3\_XENTR Grainyhead-like protein 3 homolog | 2.07458897 | 0.00889402 |
| 319 | rps4 | RS4\_ICTPU 40S ribosomal protein S4 | -3.3331482 | 0.00921512 |
| 320 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | 4.71145021 | 0.00921512 |
| 321 | efnb2a | EFNB2\_DANRE Ephrin-B2a | 2.65560775 | 0.00921512 |
| 322 | Ank3 | ANK3\_MOUSE Ankyrin-3 | -6.0497819 | 0.00921512 |
| 323 | alr | ALR\_NOSS1 Alanine racemase | 4.11160809 | 0.00925648 |
| 324 | Tacc1 | TACC1\_MOUSE Transforming acidic coiled-coil-containing protein 1 | 2.0069515 | 0.00937019 |
| 325 | TY3B-G | YG31B\_YEAST Transposon Ty3-G Gag-Pol polyprotein | -1.8827276 | 0.00959041 |
| 326 | IKBKB | IKKB\_HUMAN Inhibitor of nuclear factor kappa-B kinase subunit beta | -6.1217929 | 0.00975959 |
| 327 | SCEL | SCEL\_HUMAN Sciellin | 3.59544891 | 0.00977153 |
| 328 | #N/A | RLA0\_RANSY 60S acidic ribosomal protein P0 | -2.0966168 | 0.00977309 |
| 329 | thrb | THB\_DANRE Thyroid hormone receptor beta | -1.7042969 | 0.0097898 |
| 330 | LRP4 | LRP4\_HUMAN Low-density lipoprotein receptor-related protein 4 | -2.8651141 | 0.00982582 |
| 331 | LY75 | LY75\_MESAU Lymphocyte antigen 75 | -1.6480998 | 0.01002949 |
| 332 | CASZ1 | CASZ1\_HUMAN Zinc finger protein castor homolog 1 | 5.43931764 | 0.01002949 |
| 333 | RBM25 | RBM25\_HUMAN RNA-binding protein 25 | 4.96480137 | 0.01004872 |
| 334 | DOCK10 | DOC10\_HUMAN Dedicator of cytokinesis protein 10 | -4.7642228 | 0.01005069 |
| 335 | rep | R1AB\_BCHK4 Replicase polyprotein 1ab | -4.496844 | 0.01030324 |
| 336 | OAT | OAT\_HUMAN Ornithine aminotransferase, mitochondrial | 3.79319191 | 0.0103516 |
| 337 | alcama | C166A\_DANRE CD166 antigen homolog A | 2.156727 | 0.0103516 |
| 338 | tpt1 | TCTP\_DANRE Translationally-controlled tumor protein homolog | 1.46568498 | 0.0103516 |
| 339 | SVIL | SVIL\_BOVIN Supervillin | -4.1858926 | 0.01042366 |
| 340 | #N/A | PPAF\_PHAVU Fe(3+)-Zn(2+) purple acid phosphatase | -5.6698 | 0.01067681 |
| 341 | Ddx17 | DDX17\_MOUSE Probable ATP-dependent RNA helicase DDX17 | -2.3529996 | 0.01069404 |
| 342 | #N/A | #N/A | 5.11677818 | 0.01095566 |
| 343 | Rgl1 | RGL1\_MOUSE Ral guanine nucleotide dissociation stimulator-like 1 | 2.16588416 | 0.0109613 |
| 344 | CUL9 | CUL9\_HUMAN Cullin-9 | -1.0275557 | 0.0109613 |
| 345 | Wnk1 | WNK1\_RAT Serine/threonine-protein kinase WNK1 | 2.71149088 | 0.01103234 |
| 346 | #N/A | SYG\_PROAC Glycine--tRNA ligase | 4.40789608 | 0.01112286 |
| 347 | smc2 | SMC2\_XENLA Structural maintenance of chromosomes protein 2 | -4.8049855 | 0.01114255 |
| 348 | BNIPL | BNIPL\_HUMAN Bcl-2/adenovirus E1B 19 kDa-interacting protein 2-like protein | 1.91319579 | 0.01136751 |
| 349 | tmem150a | T150A\_XENTR Transmembrane protein 150A | 3.08149913 | 0.01136751 |
| 350 | Cit | CTRO\_MOUSE Citron Rho-interacting kinase | -5.6051504 | 0.01142313 |
| 351 | Zdbf2 | ZDBF2\_MOUSE DBF4-type zinc finger-containing protein 2 homolog | 2.58936621 | 0.01142313 |
| 352 | ERBB3 | ERBB3\_PONAB Receptor tyrosine-protein kinase erbB-3 | 1.97805744 | 0.01145141 |
| 353 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | -2.5418478 | 0.01147436 |
| 354 | RTN3 | RTN3\_HUMAN Reticulon-3 | 3.36118163 | 0.01147436 |
| 355 | #N/A | #N/A | 2.27586568 | 0.01148229 |
| 356 | HHLA2 | HHLA2\_HUMAN HERV-H LTR-associating protein 2 | 4.35705626 | 0.01168469 |
| 357 | Trim16 | TRI16\_MOUSE Tripartite motif-containing protein 16 | 1.99463386 | 0.01169579 |
| 358 | araB | ARAB\_PECAS Ribulokinase | 3.35448097 | 0.01186336 |
| 359 | #N/A | #N/A | 2.07155146 | 0.01202108 |
| 360 | Cluh | CLU\_MOUSE Clustered mitochondria protein homolog | -2.6332855 | 0.01206357 |
| 361 | HERC1 | HERC1\_HUMAN Probable E3 ubiquitin-protein ligase HERC1 | -1.5911016 | 0.01207344 |
| 362 | IST1 | IST1\_BOVIN IST1 homolog | 2.47588979 | 0.01207344 |
| 363 | ankhb | ANKHB\_DANRE Progressive ankylosis protein homolog B | 2.78942454 | 0.01218141 |
| 364 | ier2 | IER2\_DANRE Immediate early response gene 2 protein | -3.0998085 | 0.0127615 |
| 365 | Txnl4a | TXN4A\_MOUSE Thioredoxin-like protein 4A | -3.9988083 | 0.01287665 |
| 366 | ENO1 | ENOA\_CHICK Alpha-enolase | -2.2745662 | 0.01292419 |
| 367 | Prdm1 | PRDM1\_MOUSE PR domain zinc finger protein 1 | 1.63746375 | 0.01298021 |
| 368 | DIP2A | DIP2A\_HUMAN Disco-interacting protein 2 homolog A | -1.9096837 | 0.01302018 |
| 369 | mt-co2 | COX2\_ONCMY Cytochrome c oxidase subunit 2 | 1.4258981 | 0.01320856 |
| 370 | #N/A | TCB2\_CAEBR Transposable element Tcb2 transposase | -1.1038378 | 0.01326786 |
| 371 | rps3-a | RS31\_XENLA 40S ribosomal protein S3-A | -2.2189815 | 0.01326786 |
| 372 | #N/A | NATTL\_DANRE Natterin-like protein | -5.9303639 | 0.01334721 |
| 373 | NRPC2 | NRPC2\_ARATH DNA-directed RNA polymerase III subunit 2 | 4.20238109 | 0.01334721 |
| 374 | #N/A | LECG\_THANI Galactose-specific lectin nattectin | 1.98436832 | 0.01344853 |
| 375 | #N/A | #N/A | 4.74836477 | 0.01344853 |
| 376 | Rps14 | RS14\_MOUSE 40S ribosomal protein S14 | -3.9114709 | 0.01344853 |
| 377 | IST1 | IST1\_BOVIN IST1 homolog | 3.5766879 | 0.01344853 |
| 378 | #N/A | #N/A | 3.7697223 | 0.01362693 |
| 379 | DOCK1 | DOCK1\_HUMAN Dedicator of cytokinesis protein 1 | -2.2925334 | 0.01362693 |
| 380 | slc35c1 | FUCT1\_NEMVE GDP-fucose transporter 1 | 1.68804557 | 0.01365309 |
| 381 | Nqo1 | NQO1\_RAT NAD(P)H dehydrogenase [quinone] 1 | 2.76458581 | 0.01384922 |
| 382 | MT-ND5 | NU5M\_SALSA NADH-ubiquinone oxidoreductase chain 5 | 1.37032754 | 0.01390616 |
| 383 | Map2 | MTAP2\_RAT Microtubule-associated protein 2 | 2.41861722 | 0.01394225 |
| 384 | MCTP2 | MCTP2\_HUMAN Multiple C2 and transmembrane domain-containing protein 2 | 2.23674451 | 0.01404236 |
| 385 | TBC1D17 | TBC17\_HUMAN TBC1 domain family member 17 | 3.1002592 | 0.01410292 |
| 386 | #N/A | NATTL\_DANRE Natterin-like protein | -3.6913948 | 0.0145343 |
| 387 | ARAP1 | ARAP1\_HUMAN Arf-GAP with Rho-GAP domain, ANK repeat and PH domain-containing protein 1 | -1.4078229 | 0.0145679 |
| 388 | #N/A | #N/A | 1.99026902 | 0.01456905 |
| 389 | wdhd1 | WDHD1\_XENLA WD repeat and HMG-box DNA-binding protein 1 | -4.5561014 | 0.01460331 |
| 390 | dip2ba | DI2BA\_DANRE Disco-interacting protein 2 homolog B-A | -2.7100647 | 0.01462855 |
| 391 | VPS13A | VP13A\_HUMAN Vacuolar protein sorting-associated protein 13A | -1.5133362 | 0.01470157 |
| 392 | EPS8L1 | ES8L1\_HUMAN Epidermal growth factor receptor kinase substrate 8-like protein 1 | 1.59452154 | 0.01494843 |
| 393 | incenp-a | INCEA\_XENLA Inner centromere protein A | -4.2197046 | 0.01498028 |
| 394 | #N/A | #N/A | 4.08946694 | 0.01498028 |
| 395 | ARHGEF15 | ARHGF\_HUMAN Rho guanine nucleotide exchange factor 15 | 1.91704143 | 0.01498028 |
| 396 | DDR2 | DDR2\_HUMAN Discoidin domain-containing receptor 2 | -3.0312898 | 0.01498028 |
| 397 | CDKN1C | CDN1C\_HUMAN Cyclin-dependent kinase inhibitor 1C | 2.66589329 | 0.01498028 |
| 398 | NLRC3 | NLRC3\_HUMAN Protein NLRC3 | 1.25239761 | 0.01498028 |
| 399 | #N/A | #N/A | 2.34768646 | 0.01524587 |
| 400 | MYH11 | MYH11\_CHICK Myosin-11 | -5.0834612 | 0.01525516 |
| 401 | #N/A | #N/A | 1.94980284 | 0.0155316 |
| 402 | ASPM | ASPM\_MACFA Abnormal spindle-like microcephaly-associated protein homolog | -5.1573304 | 0.01556278 |
| 403 | CLDN4 | CLD4\_BOVIN Claudin-4 | 2.23094075 | 0.01568128 |
| 404 | melk | MELK\_DANRE Maternal embryonic leucine zipper kinase | -4.9657834 | 0.01582636 |
| 405 | TEAD3 | TEAD3\_CHICK Transcriptional enhancer factor TEF-5 | 1.9384965 | 0.01582636 |
| 406 | SYNE2 | SYNE2\_HUMAN Nesprin-2 | -1.1916904 | 0.01594389 |
| 407 | MSH6 | MSH6\_HUMAN DNA mismatch repair protein Msh6 | -5.0296549 | 0.0159678 |
| 408 | CHD9 | CHD9\_HUMAN Chromodomain-helicase-DNA-binding protein 9 | -1.5198258 | 0.0159703 |
| 409 | RAB11A | RB11A\_CHICK Ras-related protein Rab-11A | 1.85700371 | 0.01601765 |
| 410 | TEF | TEF\_CHICK Transcription factor VBP | 1.88253035 | 0.01624859 |
| 411 | HELZ2 | HELZ2\_HUMAN Helicase with zinc finger domain 2 | 1.58611663 | 0.01624859 |
| 412 | SAFB | SAFB1\_HUMAN Scaffold attachment factor B1 | -2.0949787 | 0.01625047 |
| 413 | RTase | RTBS\_DROME Probable RNA-directed DNA polymerase from transposon BS | -4.2784353 | 0.01639257 |
| 414 | #N/A | #N/A | 4.5574682 | 0.01666018 |
| 415 | KRTCAP2 | KTAP2\_CANLF Keratinocyte-associated protein 2 | 4.24434642 | 0.01678851 |
| 416 | #N/A | #N/A | -1.7058583 | 0.01686918 |
| 417 | GATAD2A | P66A\_HUMAN Transcriptional repressor p66-alpha | 4.56330493 | 0.01692331 |
| 418 | #N/A | #N/A | 4.05855985 | 0.01719865 |
| 419 | DOCK2 | DOCK2\_HUMAN Dedicator of cytokinesis protein 2 | -4.8105268 | 0.0173111 |
| 420 | KMT2A | KMT2A\_HUMAN Histone-lysine N-methyltransferase 2A | -1.8504834 | 0.01736922 |
| 421 | TSPYL1 | TSYL1\_BOVIN Testis-specific Y-encoded-like protein 1 | -4.0491214 | 0.01756631 |
| 422 | #N/A | #N/A | 4.17978056 | 0.01763044 |
| 423 | Cdc34 | UB2R1\_MOUSE Ubiquitin-conjugating enzyme E2 R1 | 2.30593753 | 0.0177731 |
| 424 | M2 | TARS\_RHISY Taraxerol synthase | 3.1264617 | 0.01805694 |
| 425 | TCN1 | TCO1\_HUMAN Transcobalamin-1 | 3.97592188 | 0.01837951 |
| 426 | #N/A | #N/A | 4.99281118 | 0.01837951 |
| 427 | ANXA11 | ANX11\_HUMAN Annexin A11 | 1.97496195 | 0.01837951 |
| 428 | #N/A | #N/A | 1.9071837 | 0.0184167 |
| 429 | GDPD5 | GDPD5\_HUMAN Glycerophosphodiester phosphodiesterase domain-containing protein 5 | 4.54194524 | 0.01860442 |
| 430 | #N/A | AIM1L\_HUMAN Absent in melanoma 1-like protein | 1.24315362 | 0.01864212 |
| 431 | #N/A | #N/A | -3.1122547 | 0.01893145 |
| 432 | lepA | LEPA\_BUCBP Elongation factor 4 | 1.959295 | 0.01893145 |
| 433 | Rab11fip1 | RFIP1\_MOUSE Rab11 family-interacting protein 1 | 4.88248618 | 0.01893145 |
| 434 | SPAG1 | SPAG1\_HUMAN Sperm-associated antigen 1 | 2.12466632 | 0.01909565 |
| 435 | #N/A | #N/A | -5.1943239 | 0.01909565 |
| 436 | ZC3H7B | Z3H7B\_HUMAN Zinc finger CCCH domain-containing protein 7B | -3.1371312 | 0.01914844 |
| 437 | ADAM9 | ADAM9\_HUMAN Disintegrin and metalloproteinase domain-containing protein 9 | 1.65962132 | 0.01914844 |
| 438 | #N/A | #N/A | 1.55189269 | 0.01920421 |
| 439 | Capn8 | CAN8\_RAT Calpain-8 | -1.6164242 | 0.0194086 |
| 440 | NLRC3 | NLRC3\_HUMAN Protein NLRC3 | 2.5195735 | 0.0194086 |
| 441 | NEDD4L | NED4L\_HUMAN E3 ubiquitin-protein ligase NEDD4-like | 3.5292765 | 0.0194086 |
| 442 | ZFAND5 | ZFAN5\_HUMAN AN1-type zinc finger protein 5 | 3.5028566 | 0.01963272 |
| 443 | atp8b1 | AT8B1\_XENTR Phospholipid-transporting ATPase IC | 1.49038927 | 0.01963272 |
| 444 | Adcy5 | ADCY5\_RAT Adenylate cyclase type 5 | 3.21476683 | 0.01963272 |
| 445 | ildr1 | ILDR1\_XENLA Immunoglobulin-like domain-containing receptor 1 | 1.95838279 | 0.01971359 |
| 446 | Cab39l | CB39L\_MOUSE Calcium-binding protein 39-like | 3.40967219 | 0.01971359 |
| 447 | KIF20B | KI20B\_HUMAN Kinesin-like protein KIF20B {ECO:0000305} | -5.0055622 | 0.01982667 |
| 448 | Syne2 | SYNE2\_MOUSE Nesprin-2 | -2.5389992 | 0.01982667 |
| 449 | SPATS2 | SPAS2\_HUMAN Spermatogenesis-associated serine-rich protein 2 | 1.98121263 | 0.01982667 |
| 450 | Cebpd | CEBPD\_RAT CCAAT/enhancer-binding protein delta | -5.2376584 | 0.01982667 |
| 451 | rps6 | RS6\_ONCMY 40S ribosomal protein S6 | -1.7925443 | 0.01982667 |
| 452 | ADAR | DSRAD\_HUMAN Double-stranded RNA-specific adenosine deaminase | -1.9517498 | 0.01982667 |
| 453 | vps36 | VPS36\_DANRE Vacuolar protein-sorting-associated protein 36 | 1.23557981 | 0.01994371 |
| 454 | NLRC3 | NLRC3\_HUMAN Protein NLRC3 | 1.34145088 | 0.01998281 |
| 455 | Nsun5 | NSUN5\_MOUSE Probable 28S rRNA (cytosine-C(5))-methyltransferase | 2.56444926 | 0.02023022 |
| 456 | ACTN4 | ACTN4\_HUMAN Alpha-actinin-4 {ECO:0000305} | 1.04786947 | 0.02034574 |
| 457 | trio | TRIO\_DANRE Triple functional domain protein | -2.6917818 | 0.02037865 |
| 458 | #N/A | #N/A | 3.78469806 | 0.02047406 |
| 459 | KMT2D | KMT2D\_HUMAN Histone-lysine N-methyltransferase 2D | -1.5531454 | 0.02050366 |
| 460 | GIMAP4 | GIMA4\_HUMAN GTPase IMAP family member 4 | 1.86811532 | 0.02051179 |
| 461 | dennd5b | DEN5B\_DANRE DENN domain-containing protein 5B | -2.8629524 | 0.02065835 |
| 462 | abhd2a | ABH2A\_DANRE Abhydrolase domain-containing protein 2-A | 1.25754995 | 0.02090514 |
| 463 | ATM | ATM\_HUMAN Serine-protein kinase ATM | -2.4373731 | 0.02093662 |
| 464 | Frk | FRK\_MOUSE Tyrosine-protein kinase FRK | 3.77123058 | 0.02096986 |
| 465 | Haspin | HASP\_MOUSE Serine/threonine-protein kinase haspin | -5.018988 | 0.02117534 |
| 466 | TNIP1 | TNIP1\_HUMAN TNFAIP3-interacting protein 1 | 2.19816066 | 0.0212129 |
| 467 | NBEAL1 | NBEL1\_HUMAN Neurobeachin-like protein 1 | 1.33256107 | 0.0212129 |
| 468 | chtf18 | CTF18\_XENLA Chromosome transmission fidelity protein 18 homolog | -4.4347212 | 0.0212287 |
| 469 | tpt1 | TCTP\_DANRE Translationally-controlled tumor protein homolog | 2.33120337 | 0.0212287 |
| 470 | SPAG5 | SPAG5\_HUMAN Sperm-associated antigen 5 | -4.9909606 | 0.02135225 |
| 471 | FAM83F | FA83F\_HUMAN Protein FAM83F | 1.55839159 | 0.02136943 |
| 472 | Slc25a5 | ADT2\_RAT ADP/ATP translocase 2 | 2.24557523 | 0.02151132 |
| 473 | Tnrc6a | TNR6A\_MOUSE Trinucleotide repeat-containing gene 6A protein | -2.9893193 | 0.02152412 |
| 474 | Esyt1 | ESYT1\_MOUSE Extended synaptotagmin-1 | -4.5461458 | 0.02171695 |
| 475 | #N/A | #N/A | 5.0327638 | 0.02196964 |
| 476 | rrm2 | RIR2\_DANRE Ribonucleoside-diphosphate reductase subunit M2 | -4.6248675 | 0.02214736 |
| 477 | CROCC | CROCC\_HUMAN Rootletin | -2.459952 | 0.02226108 |
| 478 | pim2 | PIM2\_DANRE Serine/threonine-protein kinase pim-2 | 3.49570226 | 0.02226108 |
| 479 | #N/A | #N/A | 2.22892195 | 0.02241405 |
| 480 | GRK5 | GRK5\_HUMAN G protein-coupled receptor kinase 5 | -2.0771815 | 0.02249511 |
| 481 | RAB11A | RB11A\_CHICK Ras-related protein Rab-11A | 1.77184654 | 0.02265741 |
| 482 | #N/A | DPOM\_CLAPU Probable DNA polymerase | 2.9330865 | 0.02275633 |
| 483 | jockey\pol | RTJK\_DROFU RNA-directed DNA polymerase from mobile element jockey | 1.79818505 | 0.0228528 |
| 484 | ccnd1 | CCND1\_DANRE G1/S-specific cyclin-D1 | -4.1977921 | 0.02287746 |
| 485 | LARP1 | LARP1\_HUMAN La-related protein 1 | -3.1392834 | 0.02314198 |
| 486 | RPL5 | RL5\_CHICK 60S ribosomal protein L5 | -2.5503147 | 0.02314198 |
| 487 | frrs1 | FRRS1\_DANRE Putative ferric-chelate reductase 1 | 2.66815533 | 0.02321514 |
| 488 | #N/A | #N/A | -5.0976551 | 0.02325358 |
| 489 | dlx3b | DLX3B\_DANRE Homeobox protein Dlx3b | 2.55918501 | 0.02325358 |
| 490 | ZFP36L1 | TISB\_HUMAN Zinc finger protein 36, C3H1 type-like 1 | -3.0413022 | 0.02333847 |
| 491 | #N/A | #N/A | 3.03328187 | 0.02333847 |
| 492 | MCF2L | MCF2L\_HUMAN Guanine nucleotide exchange factor DBS | -5.277262 | 0.02344848 |
| 493 | DNAH6 | DYH6\_HUMAN Dynein heavy chain 6, axonemal | -3.6055715 | 0.02364029 |
| 494 | #N/A | #N/A | 2.64841861 | 0.02368014 |
| 495 | ERVFC1 | EFC1\_HUMAN Endogenous retrovirus group FC1 Env polyprotein | 2.76262353 | 0.02376219 |
| 496 | lrmp | LRMP\_DANRE Lymphoid-restricted membrane protein | -5.1652832 | 0.02376219 |
| 497 | #N/A | #N/A | 2.33919108 | 0.02376219 |
| 498 | rps3-a | RS31\_XENLA 40S ribosomal protein S3-A | -5.2320936 | 0.02376219 |
| 499 | focA | FOCA\_ECOLI Probable formate transporter 1 | 3.41326194 | 0.02376219 |
| 500 | APLP1 | APLP1\_HUMAN Amyloid-like protein 1 | 3.98252617 | 0.02376219 |
| 501 | ADCY9 | ADCY9\_CHICK Adenylate cyclase type 9 | -1.9139684 | 0.02376219 |
| 502 | ivns1abpa | NS1BA\_DANRE Influenza virus NS1A-binding protein homolog A | -2.0785801 | 0.02376219 |
| 503 | TGL2 | TGM2\_CHICK Protein-glutamine gamma-glutamyltransferase 2 | -2.3546111 | 0.02376219 |
| 504 | MKI67 | KI67\_HUMAN Antigen KI-67 | -4.8882725 | 0.02384987 |
| 505 | PC | PYC\_BOVIN Pyruvate carboxylase, mitochondrial | -1.7193869 | 0.02393033 |
| 506 | Tprn | TPRN\_MOUSE Taperin | 3.96419026 | 0.02393033 |
| 507 | Klf6 | KLF6\_MOUSE Krueppel-like factor 6 | -3.3811641 | 0.02393033 |
| 508 | Clta | CLCA\_MOUSE Clathrin light chain A | 1.62723821 | 0.02408431 |
| 509 | MT-ND5 | NU5M\_SALSA NADH-ubiquinone oxidoreductase chain 5 | 1.2502807 | 0.02410004 |
| 510 | FPV226 | V226\_FOWPN Probable serine/threonine-protein kinase FPV226 | 1.93104121 | 0.0242265 |
| 511 | PLEKHG4B | PKH4B\_HUMAN Pleckstrin homology domain-containing family G member 4B | 2.49938724 | 0.02447581 |
| 512 | #N/A | #N/A | -2.741676 | 0.0245358 |
| 513 | TPD52L1 | TPD53\_HUMAN Tumor protein D53 | 4.40786504 | 0.02469635 |
| 514 | krt13 | K1C13\_ONCMY Keratin, type I cytoskeletal 13 | -1.6681335 | 0.02502505 |
| 515 | Plec | PLEC\_MOUSE Plectin | -2.4197112 | 0.02512997 |
| 516 | PCM1 | PCM1\_HUMAN Pericentriolar material 1 protein | 3.53869958 | 0.0253796 |
| 517 | FAM83C | FA83C\_HUMAN Protein FAM83C {ECO:0000305} | 2.09937308 | 0.02579764 |
| 518 | RAB44 | RAB44\_HUMAN Ras-related protein Rab-44 | -3.7953768 | 0.02579764 |
| 519 | MCM3 | MCM3\_CHICK DNA replication licensing factor MCM3 | -4.4210405 | 0.02579764 |
| 520 | LRRC31 | LRC31\_HUMAN Leucine-rich repeat-containing protein 31 | -2.9359984 | 0.02597956 |
| 521 | mknk2 | MKNK2\_XENTR MAP kinase-interacting serine/threonine-protein kinase 2 | 1.62241748 | 0.02601774 |
| 522 | trm1 | TRM1\_METM7 tRNA (guanine(26)-N(2))-dimethyltransferase | -1.734936 | 0.02631413 |
| 523 | RPS2 | RS2\_CRIGR 40S ribosomal protein S2 | -2.8806185 | 0.02632656 |
| 524 | HMGCR | HMDH\_BOVIN 3-hydroxy-3-methylglutaryl-coenzyme A reductase | 2.1881701 | 0.02654392 |
| 525 | Wnk3 | WNK3\_MOUSE Serine/threonine-protein kinase WNK3 | 1.84512281 | 0.02684126 |
| 526 | Rin2 | RIN2\_MOUSE Ras and Rab interactor 2 | -2.1689818 | 0.02700933 |
| 527 | prkcbb | KPCB\_DANRE Protein kinase C beta type | -1.9572354 | 0.02700933 |
| 528 | pheS | SYFA\_ALISL Phenylalanine--tRNA ligase alpha subunit | -1.3526571 | 0.02726899 |
| 529 | Spag9 | JIP4\_MOUSE C-Jun-amino-terminal kinase-interacting protein 4 | -1.815136 | 0.02726899 |
| 530 | GRB7 | GRB7\_HUMAN Growth factor receptor-bound protein 7 | 3.15257567 | 0.02727153 |
| 531 | TJP1 | ZO1\_CANLF Tight junction protein ZO-1 | 2.17681497 | 0.02750608 |
| 532 | #N/A | CISY\_TETTH Citrate synthase, mitochondrial | -3.6772932 | 0.02750608 |
| 533 | SLC22A6 | S22A6\_BOVIN Solute carrier family 22 member 6 | -3.8241471 | 0.02752164 |
| 534 | Pard6b | PAR6B\_MOUSE Partitioning defective 6 homolog beta | 2.42546567 | 0.02752164 |
| 535 | #N/A | #N/A | 4.57859371 | 0.02783888 |
| 536 | cnpy3 | CNPY3\_DANRE Protein canopy homolog 3 | -4.7916587 | 1 |
| 537 | Vamp8 | VAMP8\_RAT Vesicle-associated membrane protein 8 {ECO:0000303|PubMed:10336434} | 2.94982615 | 0.02790039 |
| 538 | spire1 | SPIR1\_DANRE Protein spire homolog 1 | 1.16739665 | 0.02791775 |
| 539 | ZNF679 | ZN679\_HUMAN Zinc finger protein 679 | -4.8671628 | 0.02814205 |
| 540 | CELA1 | CELA1\_PIG Chymotrypsin-like elastase family member 1 | 2.95146263 | 0.0284729 |
| 541 | #N/A | #N/A | 3.34139405 | 0.02874544 |
| 542 | PPIP5K1 | VIP1\_HUMAN Inositol hexakisphosphate and diphosphoinositol-pentakisphosphate kinase 1 | -1.8180161 | 0.02880849 |
| 543 | Brwd3 | BRWD3\_MOUSE Bromodomain and WD repeat-containing protein 3 | -1.75553 | 0.02885197 |
| 544 | NLRP1 | NLRP1\_HUMAN NACHT, LRR and PYD domains-containing protein 1 | 4.06557723 | 0.02895084 |
| 545 | Slc25a5 | ADT2\_MOUSE ADP/ATP translocase 2 | 3.86361272 | 0.02969673 |
| 546 | Trim16 | TRI16\_MOUSE Tripartite motif-containing protein 16 | 1.64401853 | 0.02977062 |
| 547 | NCOR2 | NCOR2\_HUMAN Nuclear receptor corepressor 2 | -4.3278993 | 0.02980929 |
| 548 | Mob4 | PHOCN\_RAT MOB-like protein phocein | 1.45855357 | 0.02989547 |
| 549 | MPP6 | MPP6\_HUMAN MAGUK p55 subfamily member 6 | 1.71267651 | 0.0300007 |
| 550 | #N/A | #N/A | -4.0007176 | 0.0300236 |
| 551 | LEPR | LEPR\_HUMAN Leptin receptor | -3.5866244 | 0.03005838 |
| 552 | GHRH | SLIB\_HUMAN Somatoliberin | 2.49660887 | 0.03008541 |
| 553 | SDC4 | SDC4\_CHICK Syndecan-4 | 1.89000871 | 0.03010179 |
| 554 | pat | PAT\_ALCFA Phosphinothricin N-acetyltransferase | -3.1622186 | 0.03012599 |
| 555 | krt13 | K1C13\_ONCMY Keratin, type I cytoskeletal 13 | 2.23964794 | 0.03019543 |
| 556 | LMO7 | LMO7\_HUMAN LIM domain only protein 7 | 2.18420072 | 0.03036334 |
| 557 | mdtC | MDTC\_PECAS Multidrug resistance protein MdtC | 2.34721119 | 0.03059946 |
| 558 | b2m | B2MG\_ICTPU Beta-2-microglobulin | 2.37788224 | 0.03079709 |
| 559 | rplp0 | RLA0\_DANRE 60S acidic ribosomal protein P0 | -2.1967313 | 0.03081516 |
| 560 | PTMS | PTMS\_HUMAN Parathymosin | -4.3866132 | 0.03086717 |
| 561 | rps3a | RS3A\_SALSA 40S ribosomal protein S3a | -1.5636746 | 0.03105283 |
| 562 | #N/A | TCB1\_CAEBR Transposable element Tcb1 transposase | 1.73513515 | 0.03121329 |
| 563 | PCNT | PCNT\_HUMAN Pericentrin | -1.6324034 | 0.03140387 |
| 564 | Bcor | BCOR\_MOUSE BCL-6 corepressor | -3.6305854 | 0.03140387 |
| 565 | jarid2b | JARD2\_DANRE Protein Jumonji | 1.78439239 | 0.03140387 |
| 566 | LECASAL | ASAL\_ALLSA Mannose-specific lectin | -4.5432786 | 0.03140387 |
| 567 | F2rl1 | PAR2\_MOUSE Proteinase-activated receptor 2 | 3.82144979 | 0.03140387 |
| 568 | Aloxe3 | LOXE3\_RAT Hydroperoxide isomerase ALOXE3 | -2.4525326 | 0.03140387 |
| 569 | #N/A | #N/A | 4.46652029 | 0.03144056 |
| 570 | #N/A | STXA\_SYNVE Neoverrucotoxin subunit alpha | 3.94541706 | 0.03144056 |
| 571 | PGBD4 | PGBD4\_HUMAN PiggyBac transposable element-derived protein 4 | -2.1374454 | 0.03157253 |
| 572 | jak1 | JAK1\_DANRE Tyrosine-protein kinase JAK1 | 1.44675049 | 0.03157253 |
| 573 | ITA | BIR\_CHICK Inhibitor of apoptosis protein | -1.1945402 | 0.03199208 |
| 574 | Cast | ICAL\_RAT Calpastatin | 4.43924291 | 0.03205195 |
| 575 | #N/A | FYB\_HUMAN FYN-binding protein | 1.57223658 | 0.03260092 |
| 576 | Tmem87a | TM87A\_MOUSE Transmembrane protein 87A | -1.1241402 | 0.03276487 |
| 577 | SEMA6D | SEM6D\_HUMAN Semaphorin-6D | -2.8530323 | 0.03276487 |
| 578 | Foxq1 | FOXQ1\_MOUSE Forkhead box protein Q1 | 2.78426221 | 0.03276487 |
| 579 | Med13 | MED13\_MOUSE Mediator of RNA polymerase II transcription subunit 13 | -2.476223 | 0.03276487 |
| 580 | rpl36a | RL36A\_TAKRU 60S ribosomal protein L36a | -5.218186 | 0.03284517 |
| 581 | YSL7 | YSL7\_ARATH Probable metal-nicotianamine transporter YSL7 | 1.48218044 | 0.03285886 |
| 582 | chac1 | CHAC1\_DANRE Glutathione-specific gamma-glutamylcyclotransferase 1 | 1.8977671 | 0.03319467 |
| 583 | Tiam1 | TIAM1\_MOUSE T-lymphoma invasion and metastasis-inducing protein 1 | 1.97324788 | 0.03324007 |
| 584 | ELOVL7 | ELOV7\_BOVIN Elongation of very long chain fatty acids protein 7 | 3.41234784 | 0.03342019 |
| 585 | Sorl1 | SORL\_MOUSE Sortilin-related receptor | -1.3174069 | 0.03378255 |
| 586 | rpsG | RS7\_SULNB 30S ribosomal protein S7 | 2.56987051 | 0.03393091 |
| 587 | #N/A | STXB\_SYNHO Stonustoxin subunit beta | 2.57953715 | 0.03394328 |
| 588 | SPAC26H5.02c | WRIP1\_SCHPO ATPase WRNIP1 homolog C26H5.02c | 1.65604226 | 0.03397918 |
| 589 | csnk1a1 | KC1A\_XENLA Casein kinase I isoform alpha | 1.2037371 | 0.03420306 |
| 590 | RPL14 | RL14\_PIG 60S ribosomal protein L14 | -4.1889349 | 0.03456 |
| 591 | cadm4 | CADM4\_XENLA Cell adhesion molecule 4 | 1.98342057 | 0.03461284 |
| 592 | nuoC | NUOC\_ROSS1 NADH-quinone oxidoreductase subunit C | 2.57197745 | 0.03461552 |
| 593 | TNFRSF12A | TNR12\_HUMAN Tumor necrosis factor receptor superfamily member 12A | 3.26247191 | 0.03461552 |
| 594 | MAP4K5 | M4K5\_HUMAN Mitogen-activated protein kinase kinase kinase kinase 5 | -2.8435685 | 0.03461552 |
| 595 | DNMBP | DNMBP\_HUMAN Dynamin-binding protein | 1.37904933 | 0.03461552 |
| 596 | PPFIBP2 | LIPB2\_HUMAN Liprin-beta-2 | -3.3936251 | 0.03461552 |
| 597 | IFI30 | GILT\_BOVIN Gamma-interferon-inducible lysosomal thiol reductase | -4.6376656 | 0.03464906 |
| 598 | Ralgds | GNDS\_MOUSE Ral guanine nucleotide dissociation stimulator | 4.06599326 | 0.03474428 |
| 599 | Ldlr | LDLR\_RAT Low-density lipoprotein receptor | 2.04296216 | 0.03474428 |
| 600 | SNRK | SNRK\_HUMAN SNF-related serine/threonine-protein kinase | 2.23858456 | 0.03474428 |
| 601 | axin2 | AXIN2\_DANRE Axin-2 | -3.4266986 | 0.03474428 |
| 602 | Ccl28 | CCL28\_MOUSE C-C motif chemokine 28 | -2.0971862 | 0.03493522 |
| 603 | mnmA | MNMA\_NATTJ tRNA-specific 2-thiouridylase MnmA | -2.7926745 | 0.03493522 |
| 604 | ERN1 | ERN1\_HUMAN Serine/threonine-protein kinase/endoribonuclease IRE1 | 2.7630989 | 0.03525973 |
| 605 | ght1 | GHT1\_SCHPO High-affinity glucose transporter ght1 | 2.54201819 | 0.0361207 |
| 606 | #N/A | ETUD1\_MOUSE Elongation factor Tu GTP-binding domain-containing protein 1 | -3.5742266 | 0.03636358 |
| 607 | #N/A | #N/A | 3.04208946 | 0.03640804 |
| 608 | Sema4g | SEM4G\_MOUSE Semaphorin-4G | 3.20954455 | 0.03656655 |
| 609 | Spaca4 | SACA4\_MOUSE Sperm acrosome membrane-associated protein 4 | 1.79202757 | 0.03656655 |
| 610 | ncoa3 | NCOA3\_XENLA Nuclear receptor coactivator 3 | -1.9973354 | 0.03656655 |
| 611 | BTK | BTK\_HUMAN Tyrosine-protein kinase BTK | -3.5336756 | 0.03658722 |
| 612 | Akap5 | AKAP5\_MOUSE A-kinase anchor protein 5 | -2.0767853 | 0.03658722 |
| 613 | Klf3 | KLF3\_MOUSE Krueppel-like factor 3 | 1.44722579 | 0.03665685 |
| 614 | pol | RTJK\_DROME RNA-directed DNA polymerase from mobile element jockey | 1.69028788 | 0.03665685 |
| 615 | SIPA1L1 | SI1L1\_HUMAN Signal-induced proliferation-associated 1-like protein 1 | -4.4151308 | 0.03672626 |
| 616 | Syne3 | SYNE3\_MOUSE Nesprin-3 | 2.16545373 | 0.03672626 |
| 617 | TNKS1BP1 | TB182\_HUMAN 182 kDa tankyrase-1-binding protein | 2.3287981 | 0.03724146 |
| 618 | ECU11\_1100 | SYIC\_ENCCU Probable isoleucine--tRNA ligase, cytoplasmic | -3.4862775 | 0.03738258 |
| 619 | GMDS | GMDS\_CRIGR GDP-mannose 4,6 dehydratase | 1.25208899 | 0.03763493 |
| 620 | Taok1 | TAOK1\_MOUSE Serine/threonine-protein kinase TAO1 | 1.83571157 | 0.03763493 |
| 621 | VPS13B | VP13B\_HUMAN Vacuolar protein sorting-associated protein 13B | -1.1545292 | 0.03777444 |
| 622 | FAM111A | F111A\_HUMAN Protein FAM111A | 3.3242626 | 0.03777444 |
| 623 | htt | HD\_TAKRU Huntingtin | -0.9984525 | 0.03821622 |
| 624 | LMO7 | LMO7\_HUMAN LIM domain only protein 7 | 3.22649357 | 0.03822682 |
| 625 | Lifr | LIFR\_RAT Leukemia inhibitory factor receptor | -4.7554118 | 1 |
| 626 | SH2D7 | SH2D7\_HUMAN SH2 domain-containing protein 7 | -3.7320773 | 0.03850003 |
| 627 | Pde4dip | MYOME\_MOUSE Myomegalin | -2.6240526 | 0.03850003 |
| 628 | tc1a | TC1A\_CAEEL Transposable element Tc1 transposase | 1.24779703 | 0.03850003 |
| 629 | THADA | THADA\_HUMAN Thyroid adenoma-associated protein | -3.8818703 | 0.03850003 |
| 630 | Nampt | NAMPT\_RAT Nicotinamide phosphoribosyltransferase | 2.53937672 | 0.03898951 |
| 631 | KIF5C | KIF5C\_HUMAN Kinesin heavy chain isoform 5C | -4.9447995 | 0.03912031 |
| 632 | BQ2027\_MB2317 | Y2317\_MYCBO UPF0167 protein Mb2317 | -3.7927968 | 0.03912031 |
| 633 | SPTBN1 | SPTB2\_HUMAN Spectrin beta chain, non-erythrocytic 1 | -1.4687114 | 0.03912031 |
| 634 | #N/A | #N/A | 2.02095303 | 0.03934462 |
| 635 | KDM5B | KDM5B\_CHICK Lysine-specific demethylase 5B | -1.6284077 | 0.03940165 |
| 636 | HK1 | HXK1\_HUMAN Hexokinase-1 | -3.1130752 | 0.03948494 |
| 637 | PF10\_0343 | SANT\_PLAF7 S-antigen protein | -4.4551504 | 0.03953817 |
| 638 | #N/A | LORF2\_HUMAN LINE-1 retrotransposable element ORF2 protein | 1.44581195 | 0.03963646 |
| 639 | #N/A | NIBL1\_RAT Niban-like protein 1 | 1.76442808 | 0.03967464 |
| 640 | FKBP5 | FKBP5\_HUMAN Peptidyl-prolyl cis-trans isomerase FKBP5 | 2.85145975 | 0.04019394 |
| 641 | RPTN | RPTN\_HUMAN Repetin | 4.22582393 | 0.04022106 |
| 642 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | -1.4925359 | 0.04051254 |
| 643 | sstT | SSTT\_CAMJD Serine/threonine transporter SstT | 2.91598386 | 0.04051254 |
| 644 | XPC | XPC\_HUMAN DNA repair protein complementing XP-C cells | -3.7606627 | 0.04051254 |
| 645 | NLRP12 | NAL12\_HUMAN NACHT, LRR and PYD domains-containing protein 12 | 2.40501299 | 0.04053084 |
| 646 | fabZ | FABZ\_XANC5 3-hydroxyacyl-[acyl-carrier-protein] dehydratase | -2.3021839 | 0.04053084 |
| 647 | Proser2 | PRSR2\_MOUSE Proline and serine-rich protein 2 | 3.73891352 | 0.04053084 |
| 648 | GFPT1 | GFPT1\_HUMAN Glutamine--fructose-6-phosphate aminotransferase [isomerizing] 1 | 1.11444073 | 0.04059393 |
| 649 | hsp90ab1 | HS90B\_DANRE Heat shock protein HSP 90-beta | -1.3249327 | 0.04076961 |
| 650 | #N/A | LIN1\_NYCCO LINE-1 reverse transcriptase homolog | 3.15944752 | 0.04086674 |
| 651 | CCNG2 | CCNG2\_HUMAN Cyclin-G2 | 3.45007752 | 0.04086674 |
| 652 | RRT15 | RRT15\_YEAST Regulator of rDNA transcription protein 15 | -2.0341694 | 0.04099316 |
| 653 | GLO1 | LGUL\_HUMAN Lactoylglutathione lyase | -5.1100395 | 0.04132613 |
| 654 | Edil3 | EDIL3\_MOUSE EGF-like repeat and discoidin I-like domain-containing protein 3 | 2.53795016 | 0.04132613 |
| 655 | ARAP1 | ARAP1\_HUMAN Arf-GAP with Rho-GAP domain, ANK repeat and PH domain-containing protein 1 | -1.0644371 | 0.04134702 |
| 656 | Rab11fip1 | RFIP1\_MOUSE Rab11 family-interacting protein 1 | 4.89534366 | 0.04146877 |
| 657 | PDIA3 | PDIA3\_CHICK Protein disulfide-isomerase A3 | -4.6509705 | 1 |
| 658 | LYST | LYST\_BOVIN Lysosomal-trafficking regulator | 2.57151683 | 0.04150963 |
| 659 | #N/A | TCB2\_CAEBR Transposable element Tcb2 transposase | 5.13611624 | 0.04170937 |
| 660 | ARRDC1 | ARRD1\_HUMAN Arrestin domain-containing protein 1 | 2.75434056 | 0.04179856 |
| 661 | Tnfrsf26 | TNR26\_MOUSE Tumor necrosis factor receptor superfamily member 26 | 3.0163254 | 0.0418955 |
| 662 | SLA1 | SLA1\_VANPO Actin cytoskeleton-regulatory complex protei | -1.3629051 | 0.0418955 |
| 663 | tsr1 | TSR1\_XENLA Pre-rRNA-processing protein TSR1 homolog | -4.2433828 | 0.04268066 |
| 664 | ST14 | ST14\_HUMAN Suppressor of tumorigenicity 14 protein | 1.37510818 | 0.04268066 |
| 665 | metN | METN\_RHILO Methionine import ATP-binding protein MetN | 2.57899765 | 0.04286838 |
| 666 | PRKCD | KPCD\_HUMAN Protein kinase C delta type | 1.84949398 | 0.04288698 |
| 667 | ART2 | ART2\_YEAST Putative uncharacterized protein ART2 | -2.2132157 | 0.0429856 |
| 668 | Fam111a | F111A\_MOUSE Protein FAM111A | 2.76015377 | 0.04306464 |
| 669 | #N/A | #N/A | 4.45320297 | 0.04324023 |
| 670 | ART2 | ART2\_YEAST Putative uncharacterized protein ART2 | -2.597852 | 0.04324023 |
| 671 | g6pd | G6PD\_TAKRU Glucose-6-phosphate 1-dehydrogenase | -2.1117538 | 0.04341425 |
| 672 | hspa8 | HSP7C\_DANRE Heat shock cognate 71 kDa protein | 2.15209852 | 0.04341425 |
| 673 | #N/A | #N/A | 2.97919912 | 0.04342334 |
| 674 | Tnik | TNIK\_MOUSE Traf2 and NCK-interacting protein kinase | -1.6925695 | 0.0434365 |
| 675 | ZNF180 | ZN180\_HUMAN Zinc finger protein 180 | -4.6379904 | 1 |
| 676 | RBMS1 | RBMS1\_HUMAN RNA-binding motif, single-stranded-interacting protein 1 | 2.1889557 | 0.04393509 |
| 677 | CAD | PYR1\_SQUAC CAD protein | -3.7203206 | 0.04398302 |
| 678 | Rpl3 | RL3\_RAT 60S ribosomal protein L3 | -5.4137807 | 0.04398302 |
| 679 | WDFY4 | WDFY4\_HUMAN WD repeat- and FYVE domain-containing protein 4 | -3.7421982 | 0.04398302 |
| 680 | Hip1r | HIP1R\_MOUSE Huntingtin-interacting protein 1-related protein | 1.25026531 | 0.04435145 |
| 681 | NF1 | NF1\_HUMAN Neurofibromin | -1.9456362 | 0.04435145 |
| 682 | trpS | SYW\_THEMA Tryptophan--tRNA ligase | -2.1489169 | 0.04448431 |
| 683 | #N/A | LIN1\_NYCCO LINE-1 reverse transcriptase homolog | 2.11657997 | 0.04448431 |
| 684 | Pold1 | DPOD1\_MOUSE DNA polymerase delta catalytic subunit | -4.7047196 | 1 |
| 685 | Rnf213 | RN213\_MOUSE E3 ubiquitin-protein ligase RNF213 | -0.915476 | 0.04488016 |
| 686 | Rpl17 | RL17\_RAT 60S ribosomal protein L17 | -5.1732113 | 0.04488016 |
| 687 | ADAM29 | ADA29\_HUMAN Disintegrin and metalloproteinase domain-containing protein 29 | -1.3361406 | 0.04498231 |
| 688 | #N/A | MUC2L\_RAT Intestinal mucin-like protein | 2.29994903 | 0.045005 |
| 689 | #N/A | #N/A | 1.71896077 | 0.045005 |
| 690 | ABCA12 | ABCAC\_HUMAN ATP-binding cassette sub-family A member 12 | 1.40421836 | 0.045005 |
| 691 | PSD4 | PSD4\_HUMAN PH and SEC7 domain-containing protein 4 | -4.757789 | 1 |
| 692 | Map3k14 | M3K14\_MOUSE Mitogen-activated protein kinase kinase kinase 14 | -1.3473914 | 0.04579715 |
| 693 | SAMD9 | SAMD9\_HUMAN Sterile alpha motif domain-containing protein 9 | 2.01515292 | 0.04580103 |
| 694 | CENPE | CENPE\_HUMAN Centromere-associated protein E | -5.0135054 | 0.04580103 |
| 695 | FNBP4 | FNBP4\_HUMAN Formin-binding protein 4 | -2.6825867 | 0.04584389 |
| 696 | #N/A | #N/A | 2.12338946 | 0.04584389 |
| 697 | #N/A | #N/A | 1.92910737 | 0.04584389 |
| 698 | sox8 | SOX8\_TETNG Transcription factor Sox-8 | -2.7790499 | 0.04656712 |
| 699 | myo19 | MYO19\_XENLA Unconventional myosin-XIX | 1.56918391 | 0.04656712 |
| 700 | SPEN | MINT\_HUMAN Msx2-interacting protein | 4.28807981 | 0.04709868 |
| 701 | Arhgap17 | RHG17\_RAT Rho GTPase-activating protein 17 | -3.2613751 | 0.04744651 |
| 702 | U2surp | SR140\_MOUSE U2 snRNP-associated SURP motif-containing protein | -3.1836503 | 0.04763184 |
| 703 | AMBRA1 | AMRA1\_HUMAN Activating molecule in BECN1-regulated autophagy protein 1 | -4.3547638 | 0.04774509 |
| 704 | A2M | A2MG\_PONAB Alpha-2-macroglobulin | 2.75486605 | 0.04819828 |
| 705 | PLXNB1 | PLXB1\_HUMAN Plexin-B1 | -4.1304094 | 1 |
| 706 | MYL6 | MYL6\_CHICK Myosin light polypeptide 6 | 1.76808128 | 0.04890308 |
| 707 | #N/A | #N/A | 4.47589382 | 0.04890724 |
| 708 | Rabgap1 | RBGP1\_MOUSE Rab GTPase-activating protein 1 | 1.23395903 | 0.04890724 |
| 709 | PREX1 | PREX1\_HUMAN Phosphatidylinositol 3,4,5-trisphosphate-dependent Rac exchanger 1 protein | -3.8760852 | 0.04911192 |
| 710 | ccnd1 | CCND1\_DANRE G1/S-specific cyclin-D1 | -3.2235189 | 0.04918168 |
| 711 | Coro1a | COR1A\_RAT Coronin-1A | -4.1064727 | 1 |
| 712 | Zfp26 | ZFP26\_MOUSE Zinc finger protein 26 | -3.1256584 | 0.04951665 |
| 713 | #N/A | #N/A | 4.30005012 | 0.04951665 |
| 714 | PKN1 | PKN1\_HUMAN Serine/threonine-protein kinase N1 | -5.2497563 | 0.04981833 |
| 715 | Top3a | TOP3A\_MOUSE DNA topoisomerase 3-alpha | -2.5268352 | 0.05011019 |
| 716 | cyoA | CYOA\_BUCAI Cytochrome bo(3) ubiquinol oxidase subunit 2 | 4.58969876 | 0.05073954 |
| 717 | max | MAX\_DANRE Protein max | 2.14027474 | 0.0508528 |
| 718 | PCP4L1 | PC4L1\_BOVIN Purkinje cell protein 4-like protein 1 | -2.2364003 | 0.0508528 |
| 719 | #N/A | #N/A | 2.8740688 | 0.0508528 |
| 720 | Tecta | TECTA\_MOUSE Alpha-tectorin | -5.619951 | 0.0508528 |
| 721 | #N/A | PCTL\_HUMAN PCTP-like protein | 2.6799026 | 0.05093368 |
| 722 | #N/A | #N/A | 4.23071338 | 0.05093368 |
| 723 | IGFBP3 | IBP3\_HUMAN Insulin-like growth factor-binding protein 3 | -2.5878409 | 0.05093368 |
| 724 | CAPNS1 | CPNS1\_PIG Calpain small subunit 1 | 3.72935945 | 0.05109897 |
| 725 | SCAMP2 | SCAM2\_HUMAN Secretory carrier-associated membrane protein 2 | 1.69310047 | 0.05109897 |
| 726 | #N/A | #N/A | 3.80180219 | 0.05113181 |
| 727 | ACIN1 | ACINU\_HUMAN Apoptotic chromatin condensation inducer in the nucleus | -3.81794 | 0.05148345 |
| 728 | grhl3 | GRHL3\_XENLA Grainyhead-like protein 3 homolog | 1.23828416 | 0.05164487 |
| 729 | #N/A | TYB12\_ONCMY Thymosin beta-12 | -2.7505392 | 0.05164487 |
| 730 | Rab11fip1 | RFIP1\_MOUSE Rab11 family-interacting protein 1 | 3.25975859 | 0.05164487 |
| 731 | Sfpq | SFPQ\_MOUSE Splicing factor, proline- and glutamine-rich | -5.1010266 | 0.05199232 |
| 732 | FKBP5 | FKBP5\_HUMAN Peptidyl-prolyl cis-trans isomerase FKBP5 | 2.87461155 | 0.05218791 |
| 733 | mutS | MUTS\_PROMT DNA mismatch repair protein MutS {ECO:0000255|HAMAP-Rule:MF\_00096} | -2.4391198 | 0.05218791 |
| 734 | JAK2 | JAK2\_PIG Tyrosine-protein kinase JAK2 | -4.5934817 | 1 |
| 735 | Akap12 | AKA12\_MOUSE A-kinase anchor protein 12 | -3.6116557 | 0.05218791 |
| 736 | hsc71 | HSP70\_ONCMY Heat shock cognate 70 kDa protein | 1.91124991 | 0.05218791 |
| 737 | atg2a | ATG2A\_XENTR Autophagy-related protein 2 homolog A | 1.65136027 | 0.05218791 |
| 738 | RRT15 | RRT15\_YEAST Regulator of rDNA transcription protein 15 | -2.282268 | 0.05328519 |
| 739 | Arhgap35 | RHG35\_MOUSE Rho GTPase-activating protein 35 | 1.47659252 | 0.05328519 |
| 740 | #N/A | BICR1\_MOUSE Bicaudal D-related protein 1 | 1.7808942 | 0.05328519 |
| 741 | EPS15L1 | EP15R\_HUMAN Epidermal growth factor receptor substrate 15-like 1 | 1.89369306 | 0.05328519 |
| 742 | LYST | LYST\_HUMAN Lysosomal-trafficking regulator | -1.6218423 | 0.05328519 |
| 743 | KIAA0232 | K0232\_HUMAN Uncharacterized protein KIAA0232 | 1.23364801 | 0.05347631 |
| 744 | #N/A | BICR1\_MOUSE Bicaudal D-related protein 1 | 1.59533838 | 0.05360057 |
| 745 | CPAMD8 | CPMD8\_HUMAN C3 and PZP-like alpha-2-macroglobulin domain-containing protein 8 | -2.197322 | 0.05390931 |
| 746 | Dennd2d | DEN2D\_MOUSE DENN domain-containing protein 2D | -4.3404507 | 0.05399946 |
| 747 | F2rl1 | PAR2\_MOUSE Proteinase-activated receptor 2 | 3.02134865 | 0.05420949 |
| 748 | Os08g0242700 | UP12\_ORYSJ ACT domain-containing protein DS12, chloroplastic | -1.6927378 | 0.05457395 |
| 749 | rlmH | RLMH\_CAMLR Ribosomal RNA large subunit methyltransferase H | 2.87280723 | 0.05457395 |
| 750 | ZNF609 | ZN609\_HUMAN Zinc finger protein 609 | -2.5228458 | 0.05457395 |
| 751 | ZP2 | ZP2\_BOVIN Zona pellucida sperm-binding protein 2 | -2.8080294 | 0.05457395 |
| 752 | SCN2A | SCN2A\_HUMAN Sodium channel protein type 2 subunit alpha | 1.87437031 | 0.05462926 |
| 753 | rpoC | RPOC\_CHLL2 DNA-directed RNA polymerase subunit beta' | 2.43347655 | 0.0548548 |
| 754 | ncapg2 | CNDG2\_XENLA Condensin-2 complex subunit G2 | -4.099399 | 1 |
| 755 | Patr-G | HLAG\_PANTR Patr class I histocompatibility antigen, alpha chain G | 1.67254418 | 0.0552417 |
| 756 | SPHK2 | SPHK2\_HUMAN Sphingosine kinase 2 | 2.46274301 | 0.05531128 |
| 757 | krt13 | K1C13\_ONCMY Keratin, type I cytoskeletal 13 | -1.9777744 | 0.05531128 |
| 758 | Arid1a | ARI1A\_MOUSE AT-rich interactive domain-containing protein 1A | -1.9850406 | 0.05531128 |
| 759 | #N/A | HRSL4\_HUMAN Retinoic acid receptor responder protein 3 | 2.45593523 | 0.05532156 |
| 760 | Kiaa1109 | K1109\_MOUSE Uncharacterized protein KIAA1109 | -1.3755429 | 0.05547345 |
| 761 | #N/A | #N/A | 3.00672102 | 0.05554942 |
| 762 | Atrn | ATRN\_MOUSE Attractin | -1.6274023 | 0.05593006 |
| 763 | FRY | FRY\_HUMAN Protein furry homolog | -1.9978931 | 0.05615941 |
| 764 | STK26 | STK26\_HUMAN Serine/threonine-protein kinase 26 | 1.8628181 | 0.05653808 |
| 765 | PRKCH | KPCL\_HUMAN Protein kinase C eta type | 3.20927233 | 0.05668012 |
| 766 | VPS4B | VPS4B\_BOVIN Vacuolar protein sorting-associated protein 4B | 1.85377468 | 0.05671664 |
| 767 | STK35 | STK35\_HUMAN Serine/threonine-protein kinase 35 | 1.87187734 | 0.05678397 |
| 768 | Tf2-6 | TF26\_SCHPO Transposon Tf2-6 polyprotein | -1.3515323 | 0.05688946 |
| 769 | igf2bp1 | IF2B1\_DANRE Insulin-like growth factor 2 mRNA-binding protein 1 | 1.67540284 | 0.05738598 |
| 770 | TINF2 | TINF2\_HUMAN TERF1-interacting nuclear factor 2 | -4.052007 | 0.05745183 |
| 771 | Phldb1 | PHLB1\_RAT Pleckstrin homology-like domain family B member 1 | 1.40445215 | 0.05755639 |
| 772 | NLRC3 | NLRC3\_HUMAN Protein NLRC3 | 1.88692291 | 0.05769645 |
| 773 | stac3 | STAC3\_DANRE SH3 and cysteine-rich domain-containing protein 3 | -2.4088182 | 0.05769645 |
| 774 | cnfn-b | CNFNB\_XENLA Cornifelin homolog B | 1.73472867 | 0.05785701 |
| 775 | scrib | SCRIB\_DANRE Protein scribble homolog | -4.8739398 | 1 |
| 776 | NFKB1 | NFKB1\_CANLF Nuclear factor NF-kappa-B p105 subunit | -3.1148118 | 0.05842136 |
| 777 | PLA2R1 | PLA2R\_PONAB Secretory phospholipase A2 receptor | -2.2722005 | 0.05852761 |
| 778 | Nlrc3 | NLRC3\_MOUSE Protein NLRC3 | -2.142722 | 0.05862159 |
| 779 | GIMAP4 | GIMA4\_HUMAN GTPase IMAP family member 4 | 2.75519319 | 0.05868786 |
| 780 | nipblb | NIPLB\_DANRE Nipped-B-like protein B | 1.74456488 | 0.0589185 |
| 781 | DGKQ | DGKQ\_HUMAN Diacylglycerol kinase theta | 2.46003479 | 0.05910271 |
| 782 | A2m | A2MG\_RAT Alpha-2-macroglobulin | -3.5682737 | 0.05910271 |
| 783 | #N/A | PRVB\_OPSTA Parvalbumin beta | 1.93093539 | 0.05910271 |
| 784 | SPBPJ4664.02 | YHU2\_SCHPO Uncharacterized threonine-rich GPI-anchored glycoprotein PJ4664.02 | 1.17916342 | 0.05918492 |
| 785 | Cpt1a | CPT1A\_MOUSE Carnitine O-palmitoyltransferase 1, liver isoform | -4.6200845 | 0.0600814 |
| 786 | SLC2A2 | GTR2\_CHICK Solute carrier family 2, facilitated glucose transporter member 2 | -2.6200885 | 0.06030586 |
| 787 | #N/A | #N/A | 1.47808062 | 0.06030586 |
| 788 | Tmprss4 | TMPS4\_MOUSE Transmembrane protease serine 4 | 1.52302286 | 0.06030586 |
| 789 | SI | SUIS\_HUMAN Sucrase-isomaltase, intestinal | 5.14950943 | 0.06031079 |
| 790 | DNMT1 | DNMT1\_CHICK DNA (cytosine-5)-methyltransferase 1 | -2.3810846 | 0.06031079 |
| 791 | BQ2027\_MB2259 | Y2259\_MYCBO Uncharacterized SURF1-like protein Mb2259 | -5.330115 | 0.06045762 |
| 792 | Hmbs | HEM3\_RAT Porphobilinogen deaminase | -2.614709 | 0.06045762 |
| 793 | PDE4DIP | MYOME\_HUMAN Myomegalin | -2.7877969 | 0.06066083 |
| 794 | DDB1 | DDB1\_CHICK DNA damage-binding protein 1 | -2.1267484 | 0.0607745 |
| 795 | #N/A | #N/A | 2.43891502 | 0.06131287 |
| 796 | #N/A | #N/A | 2.86708269 | 0.06131287 |
| 797 | pth | PTH\_DICNV Peptidyl-tRNA hydrolase | 4.27303248 | 0.06145111 |
| 798 | #N/A | #N/A | 4.07061074 | 1 |
| 799 | samm50a | SAM5A\_DANRE Sorting and assembly machinery component 50 homolog A | -3.7752356 | 0.06199869 |
| 800 | Grm3 | GRM3\_MOUSE Metabotropic glutamate receptor 3 | -2.0344926 | 0.06270708 |
| 801 | ELF3 | ELF3\_HUMAN ETS-related transcription factor Elf-3 | -1.9131365 | 0.06270708 |
| 802 | scrib | SCRIB\_DANRE Protein scribble homolog | -3.5501465 | 0.06272323 |
| 803 | SAT1 | SAT1\_CHICK Diamine acetyltransferase 1 | 1.71249549 | 0.0628293 |
| 804 | Tf2-6 | TF26\_SCHPO Transposon Tf2-6 polyprotein | -1.8770366 | 0.0630378 |
| 805 | SCAPER | SCAPE\_HUMAN S phase cyclin A-associated protein in the endoplasmic reticulum | -2.3670433 | 0.06306027 |
| 806 | #N/A | #N/A | 3.16461815 | 0.06328042 |
| 807 | LARP4 | LARP4\_HUMAN La-related protein 4 | -3.8442264 | 0.06343414 |
| 808 | Rbm47 | RBM47\_RAT RNA-binding protein 47 | 1.00056749 | 0.06362028 |
| 809 | ADGRF3 | AGRF3\_HUMAN Adhesion G-protein coupled receptor F3 | -2.3900652 | 0.06405973 |
| 810 | actb | ACTB\_SALSA Actin, cytoplasmic 1 | 3.78065284 | 0.06427381 |
| 811 | Eml1 | EMAL1\_MOUSE Echinoderm microtubule-associated protein-like 1 | -1.6199457 | 0.06427381 |
| 812 | #N/A | EFCB\_PAPAN ERV-BabFcenv provirus ancestral Env polyprotein | -4.4924545 | 0.06455031 |
| 813 | wee1-b | WEE1B\_XENLA Wee1-like protein kinase 1-B | 2.52464732 | 0.06455031 |
| 814 | ext1b | EXT1B\_DANRE Exostosin-1b | -1.6124607 | 0.06455031 |
| 815 | PVR | PVR\_HUMAN Poliovirus receptor | 2.28158112 | 0.06455031 |
| 816 | Ppp1r9b | NEB2\_RAT Neurabin-2 | -4.0679161 | 0.06455031 |
| 817 | Myo9b | MYO9B\_RAT Unconventional myosin-IXb | 1.4374151 | 0.06455031 |
| 818 | Znf185 | ZN185\_MOUSE Zinc finger protein 185 | 1.3030276 | 0.06455031 |
| 819 | SNRNP70 | RU17\_HUMAN U1 small nuclear ribonucleoprotein 70 kDa | -1.9809265 | 0.06457621 |
| 820 | ANKRD50 | ANR50\_HUMAN Ankyrin repeat domain-containing protein 50 | -3.6009332 | 0.06485465 |
| 821 | FLNA | FLNA\_HUMAN Filamin-A | -2.4876305 | 0.06492808 |
| 822 | ERBB3 | ERBB3\_HUMAN Receptor tyrosine-protein kinase erbB-3 | 2.79409183 | 0.06513325 |
| 823 | Map7d1 | MA7D1\_MOUSE MAP7 domain-containing protein 1 | 2.56814235 | 0.06562605 |
| 824 | PTPN6 | PTN6\_HUMAN Tyrosine-protein phosphatase non-receptor type 6 | -3.6945291 | 0.06562605 |
| 825 | Prpf8 | PRP8\_MOUSE Pre-mRNA-processing-splicing factor 8 | -1.3098843 | 0.06639193 |
| 826 | MCL1 | MCL1\_CANLF Induced myeloid leukemia cell differentiation protein Mcl-1 homolog | 2.09097949 | 0.06639193 |
| 827 | ybx1 | YBOX1\_XENLA Nuclease-sensitive element-binding protein 1 | 4.14058227 | 0.06648498 |
| 828 | #N/A | SLP1\_PINMG Shematrin-like protein 1 | 2.96513806 | 0.0665835 |
| 829 | #N/A | #N/A | 2.89249965 | 0.06698132 |
| 830 | PARP1 | PARP1\_CHICK Poly [ADP-ribose] polymerase 1 | -4.0146889 | 1 |
| 831 | asna1 | ASNA\_DANRE ATPase asna1 { | 4.08088755 | 1 |
| 832 | Slco2b1 | SO2B1\_RAT Solute carrier organic anion transporter family member 2B1 | -2.9486003 | 0.06745758 |
| 833 | SEC61B | SC61B\_PONAB Protein transport protein Sec61 subunit beta | 3.32119373 | 0.06751756 |
| 834 | TAR1 | TAR1\_YEAST Protein TAR1 | -2.0597527 | 0.06799054 |
| 835 | #N/A | #N/A | -4.307969 | 0.06825079 |
| 836 | PLXNA1 | PLXA1\_HUMAN Plexin-A1 | 1.57469422 | 0.06831107 |
| 837 | NUP188 | NU188\_HUMAN Nucleoporin NUP188 homolog | -5.5993431 | 0.06831107 |
| 838 | CAPN2 | CAN2\_HUMAN Calpain-2 catalytic subunit | -2.2644371 | 0.06855663 |
| 839 | fam83h | FA83H\_DANRE Protein FAM83H {ECO:0000305} | 4.90570394 | 0.06855663 |
| 840 | #N/A | #N/A | 3.74659999 | 0.06855663 |
| 841 | SLC27A4 | S27A4\_HUMAN Long-chain fatty acid transport protein 4 | 1.3608706 | 0.06867675 |
| 842 | Gab2 | GAB2\_MOUSE GRB2-associated-binding protein 2 | 1.88847311 | 0.06867675 |
| 843 | PLEKHA5 | PKHA5\_HUMAN Pleckstrin homology domain-containing family A member 5 | 2.71076623 | 0.06875884 |
| 844 | nodQ | NODQ\_RHIME Bifunctional enzyme NodQ | 2.29999535 | 0.06915681 |
| 845 | rpl13a | RL13A\_SALTR 60S ribosomal protein L13a | -2.0617302 | 0.06924472 |
| 846 | PCDH1 | PCDH1\_HUMAN Protocadherin-1 | 1.57679975 | 0.06924472 |
| 847 | SZT2 | SZT2\_HUMAN Protein SZT2 | -1.5370762 | 0.06924472 |
| 848 | mug79 | MUG79\_SCHPO Meiotically up-regulated gene 79 protein | 2.27111608 | 0.06929553 |
| 849 | rpsa | RSSA\_SALSA 40S ribosomal protein | -2.6115369 | 0.0696083 |
| 850 | STAG1 | STAG1\_HUMAN Cohesin subunit SA-1 | -2.8959864 | 0.06988355 |
| 851 | FLNC | FLNC\_HUMAN Filamin-C | 1.92095427 | 0.06993001 |
| 852 | #N/A | LAP2\_HUMAN Protein LAP2 | -1.7601071 | 0.06993001 |
| 853 | U2AF1 | U2AF1\_BOVIN Splicing factor U2AF 35 kDa subunit | -2.2112783 | 0.07013451 |
| 854 | ZDHHC14 | ZDH14\_HUMAN Probable palmitoyltransferase ZDHHC14 | -2.7388273 | 0.07017429 |
| 855 | #N/A | #N/A | 0.84028336 | 0.07035872 |
| 856 | nfil3 | NFIL3\_XENLA Nuclear factor interleukin-3-regulated protein | 2.61393949 | 0.07035872 |
| 857 | chd8 | CHD8\_DANRE Chromodomain-helicase-DNA-binding protein 8 | -1.7890211 | 0.07046609 |
| 858 | Srsf5 | SRSF5\_RAT Serine/arginine-rich splicing factor 5 | -2.7151144 | 0.07056505 |
| 859 | SASH1 | SASH1\_HUMAN SAM and SH3 domain-containing protein 1 | 2.66189453 | 0.07075454 |
| 860 | thiE | THIE\_THEVO Thiamine-phosphate synthase | 1.29723953 | 0.07075454 |
| 861 | rps27 | RS27\_XENLA 40S ribosomal protein S27 | -3.8026462 | 0.07084168 |
| 862 | FZD10 | FZD10\_CHICK Frizzled-10 | -3.2632078 | 0.07107655 |
| 863 | Kmt2d | KMT2D\_MOUSE Histone-lysine N-methyltransferase 2D | 2.35992141 | 0.07132054 |
| 864 | ART2 | ART2\_YEAST Putative uncharacterized protein ART2 | -2.5320792 | 0.07132054 |
| 865 | prkci | KPCI\_DANRE Protein kinase C iota type | 1.79205425 | 0.07132054 |
| 866 | DYNC2H1 | DYHC2\_HUMAN Cytoplasmic dynein 2 heavy chain 1 | -2.4547958 | 0.07137493 |
| 867 | ZNF195 | ZN195\_HUMAN Zinc finger protein 195 | -1.8741158 | 0.07153121 |
| 868 | WNK3 | WNK3\_HUMAN Serine/threonine-protein kinase WNK3 | 1.71270859 | 0.07156693 |
| 869 | Serbp1 | PAIRB\_MOUSE Plasminogen activator inhibitor 1 RNA-binding protein | -1.9324214 | 0.07227404 |
| 870 | krt8 | K2C8\_DANRE Keratin, type II cytoskeletal 8 | 4.58640154 | 0.07268512 |
| 871 | Acbd3 | GCP60\_RAT Golgi resident protein GCP60 | 1.62967654 | 0.07330116 |
| 872 | #N/A | #N/A | 1.7643441 | 0.07330116 |
| 873 | Cbx4 | CBX4\_MOUSE E3 SUMO-protein ligase CBX4 | 4.64122526 | 0.07330116 |
| 874 | rpl15 | RL15\_PARDA 60S ribosomal protein L15 | -4.0582403 | 0.07330116 |
| 875 | Cfh | CFAH\_MOUSE Complement factor H | 3.81973234 | 0.07330116 |
| 876 | #N/A | #N/A | 2.99697121 | 0.07330116 |
| 877 | Eif4b | IF4B\_MOUSE Eukaryotic translation initiation factor 4B | -3.6617403 | 0.07330116 |
| 878 | Spea\_2046 | DGTL1\_SHEPA Deoxyguanosinetriphosphate triphosphohydrolase-like protein | 1.96661866 | 0.07358756 |
| 879 | DUSP7 | DUS7\_HUMAN Dual specificity protein phosphatase 7 | 1.62284886 | 0.07372312 |
| 880 | ndhG | NU6C\_IPOPU NAD(P)H-quinone oxidoreductase subunit 6, chloroplastic | 1.38700818 | 0.07376143 |
| 881 | Prr15 | PRR15\_MOUSE Proline-rich protein 15 | 2.01052113 | 0.07395016 |
| 882 | Cdc5l | CDC5L\_RAT Cell division cycle 5-like protein | -1.3438213 | 0.07397014 |
| 883 | NT5C2 | 5NTC\_CHICK Cytosolic purine 5'-nucleotidase | 1.39844024 | 0.0746671 |
| 884 | Ltc4s | LTC4S\_RAT Leukotriene C4 synthase | -2.0161187 | 0.0746671 |
| 885 | RASA2 | RASA2\_HUMAN Ras GTPase-activating protein 2 | -1.8730411 | 0.07510734 |
| 886 | ITPKB | IP3KB\_HUMAN Inositol-trisphosphate 3-kinase B | 2.51287757 | 0.07516374 |
| 887 | ptdss1 | PTSS1\_DANRE Phosphatidylserine synthase 1 | 1.5980637 | 0.07516374 |
| 888 | #N/A | #N/A | 3.30992391 | 0.07516374 |
| 889 | Rru\_A3059 | Y3059\_RHORT UPF0301 protein Rru\_A3059 | 3.10075349 | 0.07534236 |
| 890 | #N/A | #N/A | 4.50389868 | 0.07547764 |
| 891 | #N/A | VPRBP\_MOUSE Protein VPRBP | -3.4607228 | 0.07549374 |
| 892 | sema4e | SEM4E\_DANRE Semaphorin-4E | -2.25663 | 0.07561537 |
| 893 | speE | SPEE\_ALKEH Polyamine aminopropyltransferase | 2.3802647 | 0.07562097 |
| 894 | phactr4a | PHR4A\_DANRE Phosphatase and actin regulator 4A | 4.53889533 | 0.07566145 |
| 895 | #N/A | #N/A | 1.86452544 | 0.07566145 |
| 896 | PPP2R3A | P2R3A\_HUMAN Serine/threonine-protein phosphatase 2A regulatory subunit B'' subunit alpha | 2.63166966 | 0.07566145 |
| 897 | NOP9 | NOP9\_PODAN Nucleolar protein 9 | 3.30323342 | 0.07570141 |
| 898 | USP43 | UBP43\_HUMAN Ubiquitin carboxyl-terminal hydrolase 43 | 1.3080626 | 0.07628874 |
| 899 | esyt3 | ESYT3\_XENTR Extended synaptotagmin-3 | 0.84039245 | 0.07670014 |
| 900 | kdm2b | KDM2B\_XENLA Lysine-specific demethylase 2B | -3.2683326 | 0.07670014 |
| 901 | #N/A | #N/A | 4.84591759 | 0.07678225 |
| 902 | nbn | NBN\_DANRE Nibrin | -4.7846329 | 1 |
| 903 | Myh9 | MYH9\_MOUSE Myosin-9 | 1.88459553 | 0.07710034 |
| 904 | #N/A | #N/A | 2.17510441 | 0.07732611 |
| 905 | Cpeb3 | CPEB3\_MOUSE Cytoplasmic polyadenylation element-binding protein 3 | -4.5104004 | 1 |
| 906 | Stap2 | STAP2\_MOUSE Signal-transducing adaptor protein 2 | 2.7963684 | 0.07766557 |
| 907 | KLHL24 | KLH24\_HUMAN Kelch-like protein 24 | 1.16254023 | 0.07766557 |
| 908 | Ddx58 | DDX58\_MOUSE Probable ATP-dependent RNA helicase DDX58 | 1.49905592 | 0.07766557 |
| 909 | KRAS | RASK\_HUMAN GTPase KRas | 2.33440678 | 0.07766557 |
| 910 | Picalm | PICAL\_RAT Phosphatidylinositol-binding clathrin assembly protein | 3.010242 | 0.07766557 |
| 911 | #N/A | #N/A | 2.82610828 | 0.07795898 |
| 912 | MAZ | MAZ\_HUMAN Myc-associated zinc finger protein | -4.7458406 | 1 |
| 913 | #N/A | TCB1\_CAEBR Transposable element Tcb1 transposase | -4.394082 | 1 |
| 914 | glnE | GLNE\_IDILO Glutamate-ammonia-ligase adenylyltransferase | 2.12818315 | 0.07897728 |
| 915 | GNE | GLCNE\_HUMAN Bifunctional UDP-N-acetylglucosamine 2-epimerase/N-acetylmannosamine kinase | 1.41895359 | 0.07906066 |
| 916 | MGA | MGAP\_HUMAN MAX gene-associated protein | -3.6846811 | 0.07906066 |
| 917 | #N/A | #N/A | 2.8950444 | 0.07906066 |
| 918 | hisS | SYH\_NEOSM Histidine--tRNA ligase | 3.2628037 | 0.07915532 |
| 919 | DMXL1 | DMXL1\_HUMAN DmX-like protein 1 | 3.49667979 | 0.07915532 |
| 920 | PNPLA6 | PLPL6\_HUMAN Neuropathy target esterase | -2.1022482 | 0.07915532 |
| 921 | mtus1a | MTS1A\_DANRE Microtubule-associated tumor suppressor 1 homolog A | 3.03914445 | 0.07915532 |
| 922 | BAZ2A | BAZ2A\_HUMAN Bromodomain adjacent to zinc finger domain protein 2A | 3.68895984 | 0.07915532 |
| 923 | #N/A | EFCB\_PAPAN ERV-BabFcenv provirus ancestral Env polyprotein | 3.59581698 | 0.07915532 |
| 924 | creD | CRED\_ECOLI Inner membrane protein CreD | 2.23746664 | 0.07917327 |
| 925 | Smarca5 | SMCA5\_MOUSE SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily A member 5 | -4.4970866 | 1 |
| 926 | FMRFa | FMRF\_DROME FMRFamide-related peptides | 1.88903159 | 0.07919258 |
| 927 | PIK3CG | PK3CG\_PIG Phosphatidylinositol 4,5-bisphosphate 3-kinase catalytic subunit gamma isoform | -3.4570878 | 0.07919258 |
| 928 | Trim29 | TRI29\_MOUSE Tripartite motif-containing protein 29 | 2.14672207 | 0.07919258 |
| 929 | cldnd | CLDY\_DANRE Claudin-like protein ZF-A89 | 4.0169037 | 1 |
| 930 | #N/A | TCB1\_CAEBR Transposable element Tcb1 transposase | 3.5930755 | 0.07922407 |
| 931 | ADGRG3 | AGRG3\_HUMAN Adhesion G protein-coupled receptor G3 {ECO:0000303|PubMed:25713288} | -3.8292864 | 0.07922407 |
| 932 | Mapk12 | MK12\_MOUSE Mitogen-activated protein kinase 12 | -2.1725469 | 0.07922407 |
| 933 | TRO | TROP\_HUMAN Trophinin | -1.2441709 | 0.07943356 |
| 934 | Rpl38 | RL38\_RAT 60S ribosomal protein L38 | -3.2869406 | 0.07990082 |
| 935 | znf703 | ZN703\_DANRE Zinc finger protein 703 | -3.5717552 | 0.08004186 |
| 936 | KIF14 | KIF14\_HUMAN Kinesin-like protein KIF14 { | -4.8396208 | 1 |
| 937 | Gpbp1l1 | GPBL1\_RAT Vasculin-like protein 1 | -4.2084408 | 0.08004186 |
| 938 | TJP1 | ZO1\_HUMAN Tight junction protein ZO-1 | 4.26286771 | 0.08004186 |
| 939 | #N/A | #N/A | 4.38630338 | 0.08005877 |
| 940 | RPS27L | RS27L\_BOVIN 40S ribosomal protein S27-like | 3.92019813 | 1 |
| 941 | NCKAP5 | NCKP5\_HUMAN Nck-associated protein 5 | 1.2857062 | 0.08014657 |
| 942 | cyp1a3 | CP1A3\_ONCMY Cytochrome P450 1A3 | 3.09910551 | 0.08069964 |
| 943 | URB1 | NPA1P\_HUMAN Nucleolar pre-ribosomal-associated protein 1 | -4.3778116 | 1 |
| 944 | Fnbp4 | FNBP4\_MOUSE Formin-binding protein 4 | -2.1165217 | 0.08125165 |
| 945 | P2RX1 | P2RX1\_HUMAN P2X purinoceptor 1 | 4.19419938 | 0.08125165 |
| 946 | B4GALT3 | B4GT3\_BOVIN Beta-1,4-galactosyltransferase 3 | 2.13379371 | 0.08125165 |
| 947 | SECISBP2L | SBP2L\_HUMAN Selenocysteine insertion sequence-binding protein 2-like | 1.55151414 | 0.08125165 |
| 948 | gcnt4 | GCNT4\_DANRE Beta-1,3-galactosyl-O-glycosyl-glycoprotein beta-1,6-N-acetylglucosaminyltransferase 4 | 3.13887028 | 0.08140295 |
| 949 | Kmt2d | KMT2D\_MOUSE Histone-lysine N-methyltransferase 2D | -1.1280468 | 0.08140295 |
| 950 | Nlrc3 | NLRC3\_MOUSE Protein NLRC3 | -1.7984372 | 0.08159777 |
| 951 | #N/A | #N/A | -1.4285515 | 0.08164035 |
| 952 | Tacstd2 | TACD2\_MOUSE Tumor-associated calcium signal transducer 2 | 1.22837936 | 0.08182974 |
| 953 | Cpsf1 | CPSF1\_MOUSE Cleavage and polyadenylation specificity factor subunit 1 | -1.8659669 | 0.08182974 |
| 954 | Klc4 | KLC4\_RAT Kinesin light chain 4 | 2.81056686 | 0.08182974 |
| 955 | PPM1G | PPM1G\_MACFA Protein phosphatase 1G | -3.4716548 | 0.08243467 |
| 956 | Specc1 | CYTSB\_MOUSE Cytospin-B | 1.25161555 | 0.08269554 |
| 957 | fut11 | FUT11\_ORYLA Alpha-(1,3)-fucosyltransferase 11 | 1.20527244 | 0.08278171 |
| 958 | sibA | SIBA\_DICDI Integrin beta-like protein A | 3.90279568 | 1 |
| 959 | #N/A | #N/A | 2.63247521 | 0.0828295 |
| 960 | MYOF | MYOF\_HUMAN Myoferlin | -2.9004498 | 0.08307857 |
| 961 | TMEM131L | T131L\_HUMAN Transmembrane protein 131-like | -2.0963325 | 0.0833518 |
| 962 | depdc7 | DEPD7\_DANRE DEP domain-containing protein 7 | -3.1114853 | 0.0833518 |
| 963 | SLC9A5 | SL9A5\_HUMAN Sodium/hydrogen exchanger 5 | 3.73444975 | 0.08341964 |
| 964 | Itsn2 | ITSN2\_MOUSE Intersectin-2 | 2.12945088 | 0.08341964 |
| 965 | #N/A | #N/A | 2.14198196 | 0.0836312 |
| 966 | #N/A | #N/A | 1.9882733 | 0.0836312 |
| 967 | NAA15 | NAA15\_HUMAN N-alpha-acetyltransferase 15, NatA auxiliary subunit | -2.6565222 | 0.08399579 |
| 968 | #N/A | CE042\_HUMAN Uncharacterized protein C5orf42 | 3.37574601 | 0.08404851 |
| 969 | ZBED5 | ZBED5\_CANLF Zinc finger BED domain-containing protein 5 | 2.16242712 | 0.08404851 |
| 970 | TFG | TFG\_HUMAN Protein TFG | 2.16172283 | 0.0847211 |
| 971 | NLRC3 | NLRC3\_HUMAN Protein NLRC3 | 3.10068558 | 0.0847211 |
| 972 | ELOVL1 | ELOV1\_HUMAN Elongation of very long chain fatty acids protein 1 | 1.9350949 | 0.08475905 |
| 973 | PNN | PININ\_PONAB Pinin | -2.4280556 | 0.08498179 |
| 974 | rpsE | RS5\_SALAI 30S ribosomal protein S5 | 2.53369777 | 0.08507935 |
| 975 | RTP2 | RTP2\_HUMAN Receptor-transporting protein 2 | 3.96153982 | 1 |
| 976 | #N/A | #N/A | 1.80220803 | 0.08544714 |
| 977 | Nlrc3 | NLRC3\_MOUSE Protein NLRC3 | -2.5865692 | 0.0859016 |
| 978 | CCNG2 | CCNG2\_HUMAN Cyclin-G2 | 3.31288456 | 0.0859016 |
| 979 | Dpp3 | DPP3\_RAT Dipeptidyl peptidase 3 | -3.0902818 | 0.08598495 |
| 980 | Cldn3 | CLD3\_RAT Claudin-3 | 3.28767208 | 0.08610078 |
| 981 | Soga1 | SOGA1\_MOUSE Protein SOGA1 | -2.8099405 | 0.08647825 |
| 982 | RGL1 | RGL1\_HUMAN Ral guanine nucleotide dissociation stimulator-like 1 | 3.99970806 | 1 |
| 983 | #N/A | #N/A | 1.67230644 | 0.08667813 |
| 984 | ITSN2 | ITSN2\_HUMAN Intersectin-2 | 0.96786598 | 0.08673725 |
| 985 | PRUNE2 | PRUN2\_PONAB Protein prune homolog 2 | 3.18114294 | 0.08673725 |
| 986 | NEIL3 | NEIL3\_HUMAN Endonuclease 8-like 3 | -3.2199666 | 0.08700651 |
| 987 | PIK3R3 | P55G\_BOVIN Phosphatidylinositol 3-kinase regulatory subunit gamma | -4.3001506 | 1 |
| 988 | TIAM1 | TIAM1\_HUMAN T-lymphoma invasion and metastasis-inducing protein 1 | 2.67823507 | 0.08747379 |
| 989 | Espl1 | ESPL1\_MOUSE Separin | -4.6625181 | 1 |
| 990 | tc1a | TC1A\_CAEEL Transposable element Tc1 transposase | 3.9619624 | 1 |
| 991 | npc2 | NPC2\_DANRE Epididymal secretory protein E1 | 2.93452558 | 0.08783601 |
| 992 | brms1la | BM1LA\_DANRE Breast cancer metastasis-suppressor 1-like protein-A | -4.0453031 | 1 |
| 993 | PF14\_0175 | YPF17\_PLAF7 Protein PF14\_0175 | -1.6109046 | 0.08828283 |
| 994 | KCNK1 | KCNK1\_HUMAN Potassium channel subfamily K member 1 | 2.0154727 | 0.08847164 |
| 995 | xynB | XYNB\_NEOPA Endo-1,4-beta-xylanase B | 3.75770894 | 0.08870729 |
| 996 | Ylpm1 | YLPM1\_MOUSE YLP motif-containing protein 1 | -2.8947658 | 0.08881352 |
| 997 | SAT1 | SAT1\_CHICK Diamine acetyltransferase 1 | 3.34475043 | 0.08891786 |
| 998 | WDR7 | WDR7\_HUMAN WD repeat-containing protein 7 | -5.381301 | 0.08891786 |
| 999 | EHMT1 | EHMT1\_HUMAN Histone-lysine N-methyltransferase EHMT1 | -2.5578762 | 0.08920703 |
| 1000 | CUL9 | CUL9\_HUMAN Cullin-9 | -1.8507813 | 0.08934394 |
| 1001 | RPL6 | RL6\_HUMAN 60S ribosomal protein L6 | -3.606923 | 0.08934394 |
| 1002 | #N/A | YD023\_HUMAN Putative uncharacterized protein FLJ45035 | 3.62562388 | 0.08937766 |
| 1003 | FAM49A | FA49A\_CHICK Protein FAM49A | -4.3750413 | 1 |
| 1004 | Ngef | NGEF\_MOUSE Ephexin-1 | 1.47426396 | 0.09004606 |
| 1005 | PSD3 | PSD3\_HUMAN PH and SEC7 domain-containing protein 3 | -1.8977841 | 0.09004606 |
| 1006 | Inpp4b | INP4B\_MOUSE Type II inositol 3,4-bisphosphate 4-phosphatase | -2.7429096 | 0.09009321 |
| 1007 | hpcR | HPCR\_SHIFL Homoprotocatechuate degradative operon repressor | 4.13185769 | 0.09056557 |
| 1008 | #N/A | STXB\_SYNHO Stonustoxin subunit beta | 1.66244492 | 0.09067257 |
| 1009 | SSRP1 | SSRP1\_CHICK FACT complex subunit SSRP1 | -2.5479535 | 0.09067257 |
| 1010 | FBF1 | FBF1\_CHICK Fas-binding factor 1 homolog | -4.1051161 | 0.09068408 |
| 1011 | #N/A | #N/A | 2.99665993 | 0.09074552 |
| 1012 | #N/A | #N/A | 4.23984237 | 0.09083449 |
| 1013 | SAR1A | SAR1A\_PIG GTP-binding protein SAR1a | 2.0643368 | 0.09083449 |
| 1014 | #N/A | FUK\_HUMAN L-fucose kinase | -3.1258945 | 0.09117493 |
| 1015 | apaf1 | APAF\_DANRE Apoptotic protease-activating factor 1 | -1.2249246 | 0.09177503 |
| 1016 | PAPOLA | PAPOA\_HUMAN Poly(A) polymerase alpha | -2.6275916 | 0.09192148 |
| 1017 | Adcy2 | ADCY2\_MOUSE Adenylate cyclase type 2 | -3.4115249 | 0.09192148 |
| 1018 | gefW | GEFW\_DICDI Ras guanine nucleotide exchange factor W | -1.9720039 | 0.09192148 |
| 1019 | #N/A | AIM1\_HUMAN Absent in melanoma 1 protein | -1.3469814 | 0.09192148 |
| 1020 | MYO3A | MYO3A\_HUMAN Myosin-IIIa | 3.33924602 | 0.09199383 |
| 1021 | #N/A | #N/A | 2.86441632 | 0.09199383 |
| 1022 | ZNF799 | ZN799\_HUMAN Zinc finger protein 799 | -3.8814013 | 1 |
| 1023 | Tbc1d12 | TBC12\_MOUSE TBC1 domain family member 12 | -2.2553709 | 0.09199383 |
| 1024 | Arf2 | ARF2\_RAT ADP-ribosylation factor 2 | 1.45141156 | 0.09199383 |
| 1025 | daf-1 | DAF1\_CAEEL Cell surface receptor daf-1 | 3.46342899 | 0.09218004 |
| 1026 | Lonrf3 | LONF3\_MOUSE LON peptidase N-terminal domain and RING finger protein 3 | 1.97264997 | 0.09258562 |
| 1027 | #N/A | FRIH\_SALSA Ferritin, heavy subunit | 4.0169205 | 1 |
| 1028 | SLC25A17 | PM34\_HUMAN Peroxisomal membrane protein PMP34 | -2.9103356 | 0.0930922 |
| 1029 | CLIP1 | CLIP1\_HUMAN CAP-Gly domain-containing linker protein 1 | -5.3476126 | 0.09343546 |
| 1030 | REV1 | REV1\_CHICK DNA repair protein REV1 | -2.1666983 | 0.09370337 |
| 1031 | mcm7 | MCM7\_XENTR DNA replication licensing factor mcm7 | -3.8906357 | 1 |
| 1032 | #N/A | #N/A | 2.40365659 | 0.09400319 |
| 1033 | srrt | SRRT\_DANRE Serrate RNA effector molecule homolog | -1.7125307 | 0.09408972 |
| 1034 | NCOR2 | NCOR2\_HUMAN Nuclear receptor corepressor 2 | 2.79403419 | 0.09499531 |
| 1035 | #N/A | #N/A | 1.92942577 | 0.09517487 |
| 1036 | TAR1 | TAR1\_YEAST Protein TAR1 | -1.6445967 | 0.09526523 |
| 1037 | naca | NACA\_DANRE Nascent polypeptide-associated complex subunit alpha | -2.4562859 | 0.09608258 |
| 1038 | LRP8 | LRP8\_CHICK Low-density lipoprotein receptor-related protein 8 | 3.02367877 | 0.09614198 |
| 1039 | hdgfl2 | HDGR2\_DANRE Hepatoma-derived growth factor-related protein 2 | -3.3863067 | 0.09630499 |
| 1040 | Tf2-6 | TF26\_SCHPO Transposon Tf2-6 polyprotein | -1.0201432 | 0.0969793 |
| 1041 | GIMAP2 | GIMA2\_HUMAN GTPase IMAP family member 2 | -3.6691941 | 0.0969793 |
| 1042 | rpmI | RL35\_BLOPB 50S ribosomal protein L35 | 4.19503926 | 0.09729154 |
| 1043 | Tom1l2 | TM1L2\_MOUSE TOM1-like protein 2 | 4.17293692 | 0.09729154 |
| 1044 | PF14\_0175 | YPF17\_PLAF7 Protein PF14\_0175 | 1.3865003 | 0.09729154 |
| 1045 | ERMAP | ERMAP\_HUMAN Erythroid membrane-associated protein | 1.77887577 | 0.09781026 |
| 1046 | OVA1 | SYMM\_ARATH Methionine--tRNA ligase, chloroplastic/mitochondrial {ECO:0000305} | 3.68550874 | 0.09791011 |
| 1047 | rtel1 | RTEL1\_DANRE Regulator of telomere elongation helicase 1 | -3.8742281 | 1 |
| 1048 | PERP | PERP\_HUMAN p53 apoptosis effector related to PMP-22 | 1.22408261 | 0.09845983 |
| 1049 | #N/A | TCB2\_CAEBR Transposable element Tcb2 transposase | 4.14411137 | 0.09845983 |
| 1050 | #N/A | #N/A | 2.29146789 | 0.09845983 |
| 1051 | #N/A | #N/A | 3.61450953 | 0.09845983 |
| 1052 | ELP1 | ELP1\_RABIT Elongator complex protein 1 | -1.4695689 | 0.09845983 |
| 1053 | IFFO1 | IFFO1\_HUMAN Intermediate filament family orphan 1 | -5.0314434 | 0.09914396 |
| 1054 | Smarca4 | SMCA4\_RAT Transcription activator BRG1 | -4.0631033 | 0.09920034 |
| 1055 | FER | FER\_CANLF Tyrosine-protein kinase Fer | 2.22806187 | 0.09969386 |
| 1056 | Pik3c2g | P3C2G\_MOUSE Phosphatidylinositol 4-phosphate 3-kinase C2 domain-containing subunit gamma | 1.76538829 | 0.09984877 |

**Table S5**. KEGG pathways as well as associated genes with each pathway.

|  |  |
| --- | --- |
| **Term** | **Genes** |
| cfa03010:Ribosome | RPL14, RPS3A, RPLP0, RPL9, RPS14, RPL3, RPL5, RPS20, RPL12, RPS6, RPS2, RPL29, RPS7 |
| cfa04530:Tight junction | CLDN8, PARD6B, TJP1, OCLN, ACTN4, CLDN4, CGN, MYH11, TJP3, MYH9 |
| cfa00220:Arginine biosynthesis | GLUD1, ARG2, NOS2, CPS1, GPT2 |
| cfa04915:Estrogen signaling pathway | HSP90AB1, ADCY9, GNAQ, FKBP5, ADCY5, HBEGF, PRKCD, HSPA8, ITPR2 |
| cfa00250:Alanine, aspartate and glutamate metabolism | GFPT1, GLUD1, CAD, CPS1, GPT2 |
| cfa04144:Endocytosis | PARD6B, CLTA, LDLR, KIF5C, PSD4, CAPZB, RAB11A, NEDD4L, GRK5, RAB11FIP1, VPS36, HSPA8, ARAP1 |
| cfa04612:Antigen processing and presentation | HSP90AB1, PDIA3, IFI30, HSPA8, B2M |
| cfa05205:Proteoglycans in cancer | CCND1, EZR, ANK3, ERBB3, TIAM1, HBEGF, RDX, RPS6, SDC4, ITPR2 |
| cfa05206:MicroRNAs in cancer | CCND1, EZR, ERBB3, ST14, CDK6, RDX, IKBKB, ATM |
| cfa04062:Chemokine signaling pathway | DOCK2, CCL3, ADCY9, TIAM1, ADCY5, PREX1, GRK5, IKBKB, CCL28 |
| cfa01200:Carbon metabolism | G6PD, GLUD1, HK1, CPS1, GPT2, PC, ENO1 |
| cfa05212:Pancreatic cancer | CCND1, JAK1, CDK6, IKBKB, RALGDS |
| cfa04115:p53 signaling pathway | CCND1, RRM2, CDK6, CCNG2, ATM |

**Table S6.** All GO Biological Processes with genes associated with each pathway

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| **Term** | **Genes** |
| GO:0035023~regulation of Rho protein signal transduction | TIAM1, PREX1, TRIO, PLEKHG4B, ARHGEF15, EPS8L2, MCF2L, FGD3, EPS8L1, DNMBP |
| GO:0008360~regulation of cell shape | CSNK1A1, SYNE3, BRWD3, CCL3, CORO1A, EZR, PLXNB1, RDX, CDC42EP4, MYH9, ARAP1 |
| GO:0006412~translation | RPL14, RPS3A, SLC25A5, RRBP1, RPS14, RPL3, RPL5, EEF2, RPS20, RPL12, RPS6, RPS2, RPS7 |
| GO:0030216~keratinocyte differentiation | EVPL, ST14, TGM1, YAP1, SCEL, ADAM9 |
| GO:0030335~positive regulation of cell migration | SPAG9, CCL3, CORO1A, SYNE2, SEMA4G, ACTN4, SEMA6D, F2RL1, RDX, GRB7 |
| GO:1902966~positive regulation of protein localization to early endosome | EZR, SORL1, RDX |
| GO:0090316~positive regulation of intracellular protein transport | ICE1, PCNT, KIF20B, PCM1 |
| GO:0061436~establishment of skin barrier | ALOXE3, CLDN4, GRHL3, ABCA12 |
| GO:0035556~intracellular signal transduction | ADCY5, PREX1, WNK1, MKNK2, STK17A, PRKCD, MCF2L, DNMBP, ADCY9, SNRK, TIAM1, MYZAP, JAK1, PLCD1, CIT, MELK |
| GO:0000027~ribosomal large subunit assembly | RPL3, RPL5, RPL12, MDN1 |
| GO:0000050~urea cycle | ARG2, CAD, CPS1 |
| GO:0045909~positive regulation of vasodilation | F2RL1, NOS2, CPS1 |
| GO:0090286~cytoskeletal anchoring at nuclear membrane | SYNE3, SYNE1, SYNE2 |
| GO:0031532~actin cytoskeleton reorganization | TNIK, EZR, SIPA1L1, CXADR, MYH9 |
| GO:0007010~cytoskeleton organization | ABLIM1, BRWD3, CCL3, DOCK1, SVIL, KRT13 |
| GO:0046777~protein autophosphorylation | TNIK, ULK2, STK10, MKNK2, GRK5, PIM2, DDR2, MELK |
| GO:0006413~translational initiation | EIF4A2, EIF4A1, LARP1 |
| GO:0030033~microvillus assembly | TNIK, EZR, RDX |
| GO:0007264~small GTPase mediated signal transduction | DOCK2, RAB44, DOCK1, RAB11A, RHOBTB1, DOCK8, DOCK10, LRRK1, RALGDS, RGL1, BCAR3 |
| GO:0001570~vasculogenesis | ZFP36L1, SGPL1, MYO1E, YAP1, JUNB |
| GO:0010761~fibroblast migration | ZFAND5, SGPL1, SYNE2 |
| GO:0009791~post-embryonic development | SGPL1, GNAQ, KMT2A, PRDM1, CELA1, KDM5B |
| GO:0007076~mitotic chromosome condensation | NCAPG, SMC2, NCAPD2 |
| GO:0000226~microtubule cytoskeleton organization | PCNT, CUL9, MAP2, MAP7D1, TACC1 |
| GO:0061028~establishment of endothelial barrier | EZR, F2RL1, RDX |
| GO:0010628~positive regulation of gene expression | CCL3, EZR, LDLR, ERBB3, CDK6, RDX, PRDM1, KDM5B |
| GO:0042127~regulation of cell proliferation | FRK, ERBB3, JAK1, PLCD1, NOS2, CELA1, JUNB, BTK |
| GO:0043407~negative regulation of MAP kinase activity | HMGCR, SORL1, NF1, PRKCD |
| GO:0090002~establishment of protein localization to plasma membrane | EZR, RDX, IKBKB, TMEM150A |
| GO:0051295~establishment of meiotic spindle localization | SPIRE1, MYH9 |
| GO:0071709~membrane assembly | ANK3, SPTBN1 |
| GO:0032796~uropod organization | CORO1A, MYH9 |
| GO:1902115~regulation of organelle assembly | EZR, RDX |
| GO:0051490~negative regulation of filopodium assembly | CAPZB, PRKCD |
| GO:0007189~adenylate cyclase-activating G-protein coupled receptor signaling pathway | ADCY9, GNAQ, GHRH, ADCY5 |
| GO:0002244~hematopoietic progenitor cell differentiation | DOCK1, PTPRZ1, ANLN, EEF2, TOP2A |
| GO:0045444~fat cell differentiation | CCND1, ALOXE3, GRK5, SOX8, KLF4 |
| GO:0070830~bicellular tight junction assembly | TJP1, OCLN, ACTN4 |
| GO:0031175~neuron projection development | MAP2, RAB11A, GDPD5, HERC1, CAPZB |
| GO:0006509~membrane protein ectodomain proteolysis | SPPL2A, MYH9, ADAM9 |
| GO:0006364~rRNA processing | RPL5, RPS6, MDN1, RPS7 |
| GO:0043525~positive regulation of neuron apoptotic process | CCL3, NF1, ATM |
| GO:0010629~negative regulation of gene expression | CCL3, LDLR, NOS2, SFMBT2, PC |
| GO:0033077~T cell differentiation in thymus | ZFP36L1, CDK6, B2M |
| GO:0045746~negative regulation of Notch signaling pathway | SLC35C1, CHAC1, GDPD5 |
| GO:0006909~phagocytosis | CSNK1A1, LEPR, ANXA11 |
| GO:0000281~mitotic cytokinesis | ANK3, SPTBN1, ANLN |
| GO:0016572~histone phosphorylation | PRKCD, ATM |
| GO:0035166~post-embryonic hemopoiesis | MYO1E, KLF4 |
| GO:0010032~meiotic chromosome condensation | SMC2, NCAPD2 |
| GO:0001768~establishment of T cell polarity | DOCK2, MYH9 |
| GO:0042159~lipoprotein catabolic process | LDLR, ATM |
| GO:0030036~actin cytoskeleton organization | DOCK2, CORO1A, WASF2, NF1, CAPZB |

**Table S7.** All GO Molecular Functions with genes associated with each pathway.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  | | --- | --- | | **Term** | **Genes** | | GO:0005524~ATP binding | HSP90AB1, ADCY5, CAD, DDR2, BTK, DDX17, NLRC3, ATP8B1, TOP2A, MDN1, TNIK, KIF5C, WNK1, CDK6, PIM2, MYH9, MCM3, PRKCD, NLRP1, MAP4K5, EIF4A2, EIF4A1, ERN1, MAP3K14, LRRK1, MELK, FRK, ERBB3, STK10, MKNK2, HK1, STK17A, CDC34, DNAH6, CHD9, UBE2D2, SNRK, HSPA8, RUNX3, MYO5B, ABCA12, CSNK1A1, MSH6, TAOK1, MYO1E, TRIO, CENPE, LARS2, CPS1, SMC2, ATM, ULK2, MYH11, KIF20B, JAK1, CHTF18, GRK5, MYO19, CIT, IKBKB, PC | | GO:0044822~poly(A) RNA binding | CAST, HSP90AB1, HELZ2, U2SURP, RDX, YBX1, EZR, SPATS2, RPS3A, SAFB, RPL5, NQO1, CDC42EP4, TNRC6A, TOP2A, HSPA8, NSUN5, ENO1, PLEC, RBMS1, MKI67, ACTN4, RRBP1, SLC25A5, EEF2, SPEN, MYH9, NCL, RPS7, CORO1A, SYNE1, LRP1, EIF4A2, ANXA11, EIF4A1, SPTBN1 | | GO:0005089~Rho guanyl-nucleotide exchange factor activity | TIAM1, PREX1, TRIO, PLEKHG4B, ARHGEF15, MCF2L, FGD3, DNMBP | | GO:0003774~motor activity | CGNL1, CGN, MYO1E, MYH11, MYO19, MYO5B | | GO:0030676~Rac guanyl-nucleotide exchange factor activity | DOCK2, TIAM1, EPS8L2, EPS8L1 | | GO:0003735~structural constituent of ribosome | RPL14, RPS3A, SLC25A5, RPLP0, RPL9, RPS14, RPL3, RPL5, RPS20, RPL12, RPS6, RPS2, RPS7 | | GO:0008429~phosphatidylethanolamine binding | ANXA11, NF1, ESYT2 | | GO:0005516~calmodulin binding | TJP1, MKNK2, NOS2, MYH9, ASPM | | GO:0005536~glucose binding | G6PD, SLC2A3, HK1 | | GO:0004674~protein serine/threonine kinase activity | CSNK1A1, SNRK, ULK2, ERN1, WNK1, TRIO, STK17A, PIM2, CIT, PRKCD, MELK, ATM | | GO:0004715~non-membrane spanning protein tyrosine kinase activity | FRK, JAK1, PRKCD, MELK, BTK | | GO:0005096~GTPase activator activity | DOCK2, DOCK1, RABGAP1, GNAQ, SIPA1L1, NF1, TBC1D5, CDC42EP4, AXIN2, ARAP1 | | GO:0005543~phospholipid binding | PREX1, WDFY4, PSD4, SPTBN1, NBEAL1 | | GO:0035091~phosphatidylinositol binding | HIP1R, MYO1E, ESYT2, GRB7, MCF2L, ITPR2 | | GO:0005085~guanyl-nucleotide exchange factor activity | DOCK1, DOCK8, DOCK10, RALGDS, BCAR3 | | GO:0005198~structural molecule activity | CLDN8, CLTA, EVPL, CLDN4, KRT42, CROCC, KRT13, MAP7D1 | | GO:0004070~aspartate carbamoyltransferase activity | CAD, CPS1 | | GO:0004088~carbamoyl-phosphate synthase (glutamine-hydrolyzing) activity | CAD, CPS1 | | GO:0004151~dihydroorotase activity | CAD, CPS1 | | GO:0004087~carbamoyl-phosphate synthase (ammonia) activity | CAD, CPS1 | | GO:0004702~receptor signaling protein serine/threonine kinase activity | MAP4K5, TNIK, TAOK1, STK10, MAP3K14 | | GO:0043531~ADP binding | MSH6, ERN1, MYH9 | | GO:0004198~calcium-dependent cysteine-type endopeptidase activity | CAPN5, CAPN8, CAPN9 | | GO:0004672~protein kinase activity | CCL3, CCND1, SNRK, ERBB3, ERN1, STK17A, LRRK1 | | GO:0016887~ATPase activity | MSH6, KIF20B, MYH9, MDN1, RNF213, DNAH6 | | GO:0001882~nucleoside binding | ACTN4, PNP | |  |  |  |  |