# Supplementary material

## Characterization of a new murine cell line of sarcomatoid hepatocellular carcinoma and its application for biomarker/therapy development

Chia-Hung Yen, Chih-Chung Lai, Chen-Chung Liao, Sheng-Fan Wang, Yi-Jen Liao, Chien-Yi Tung, Jung-Hsien Hung, Shiu-Feng Huang, Yi-Ming Arthur Chen*

**Table of content**

## Supplementary Materials and Methods

### Primary culture

All mice were kept in a 12-hour light-dark–cycle room with water and standard mouse pellet chow. All animal experiments were performed in accordance with the Laboratory Animal Welfare Act, Guide for the Care and Use of Laboratory Animals evaluated and approved by the Institutional Animal Care and Use Committee of Kaohsiung Medical University. Liver tumor from a 22 month old *Gnmt-/-* mouse was separated and divided into several parts. One part was fixed in buffered formalin to perform hematoxylin and eosin (H&E) stain and immunohistochemical (IHC) staining (see below). Three parts were stored in liquid nitrogen for DNA, RNA, and protein analyses. The remnant tumor tissue was cut into pieces about 1 $cm^3$ in size. Each piece was minced in 0.5ml trypsin with scissors under sterile conditions. Minced tissue was filtered through a sterile iron mesh to remove large tissue clump. The resultant cell suspension was subjected to collagenase/trypsin treatment for 16–18h at 37ºC in a petri dish. The digested supernatant was collected and washed with DMEM supplemented with penicillin (100 U/ml) and streptomycin (100 μg/ml) (Thermo Fisher Scientific); and then subjected to additional collagenase treatment for 90 min at 37◦C. The digested supernatant was collected and washed as described above; then it was resuspended and subcultured in DMEM with 10% heat-inactivated fetal bovine

serum (HyClone), penicillin (100 U/ml), streptomycin (100 μg/ml), nonessential amino acids (0.1 mM), and L-glutamine (2 mM) (Life Technologies) in a humidified incubator with 5% $CO_2$.

**RNA isolation, reverse transcription and real-time PCR**

Total RNA was isolated from cells or tissues by using Trizol reagent (Life Technologies) according to the manufacturer's protocol. In brief, Complementary DNA was produced from cellular RNA (1 μg) using a SuperScript II RNase H-Reverse Transcriptase Kit (Life Technologies). Real-time PCR reactions were performed in 10-μl quantities of diluted cDNA sample, primers (100 nM), and a SYBR Green PCR Master Mix containing nucleotides, AmpliTaq Gold DNA polymerase, and optimized buffer components (Applied Biosystems). Reactions were assayed using an Applied Biosystems Step-One-plus real-time PCR system. The primer pairs used are shown in Table 1.

**Western blotting**

Cells and tissues were lysed in lysis buffer (50 mM Tris [pH 7.5], 150 mM NaCl, 1% Tx-100) supplemented with protease- and phosphatase-inhibitors (1 mM PMSF, 10 μg/ml Leupeptin, 50 μg/ml TLCK, 50 μg/ml TPCK, 1 μg/ml Aprotinin, 1 mM NaF, 5

mM NaPPi, and 10 mM $Na_3VO_4$). The cell lysates were cleared via two 20 min spins at 13,200 rpm, 4°C. Protein concentrations were determined by Bio-Rad Protein Assay (Bio-Rad). Samples corresponded to 20 μg of protein which were used for Western blotting as described previously [1]. The antibodies used were: Mouse-Anti-GNMT monoclonal antibody [2]; Goat-Anti-vimentin polyclonal antibody (Santa Cruz); Rabbit-Anti-N-cadherin polyclonal antibody (Abcam); Rat-Anti-E-cadherin monoclonal antibody (Abcam); Mouse-Anti-GAPDH (Millipore).

**Knock down experiment**

Lentivirus production, infection and stable cell selection were carried out according to the protocol published on the web site of RNAi Core (http://rnai.genmed.sinica.edu.tw/). For lentivirus preparation, HEK293T cells were cotransfected with a packaging plasmid-pCMV-ΔR8.91, a VSV-G envelope expressing plasmid-pMD.G and the lentiviral constructs by using TurboFect™ Reagent (Fermentas). All transfections were performed according to the manufacturers' instructions. Supernatant containing lentiviruses was harvested according to the protocol published on the web site (http://rnai.genmed.sinica.edu.tw/). Ymac-1 cells were infected with pseudotyped lentivirus in medium containing polybrene (8 μg/ml). Lentivirus-infected Ymac-1 cells were selected and grown in

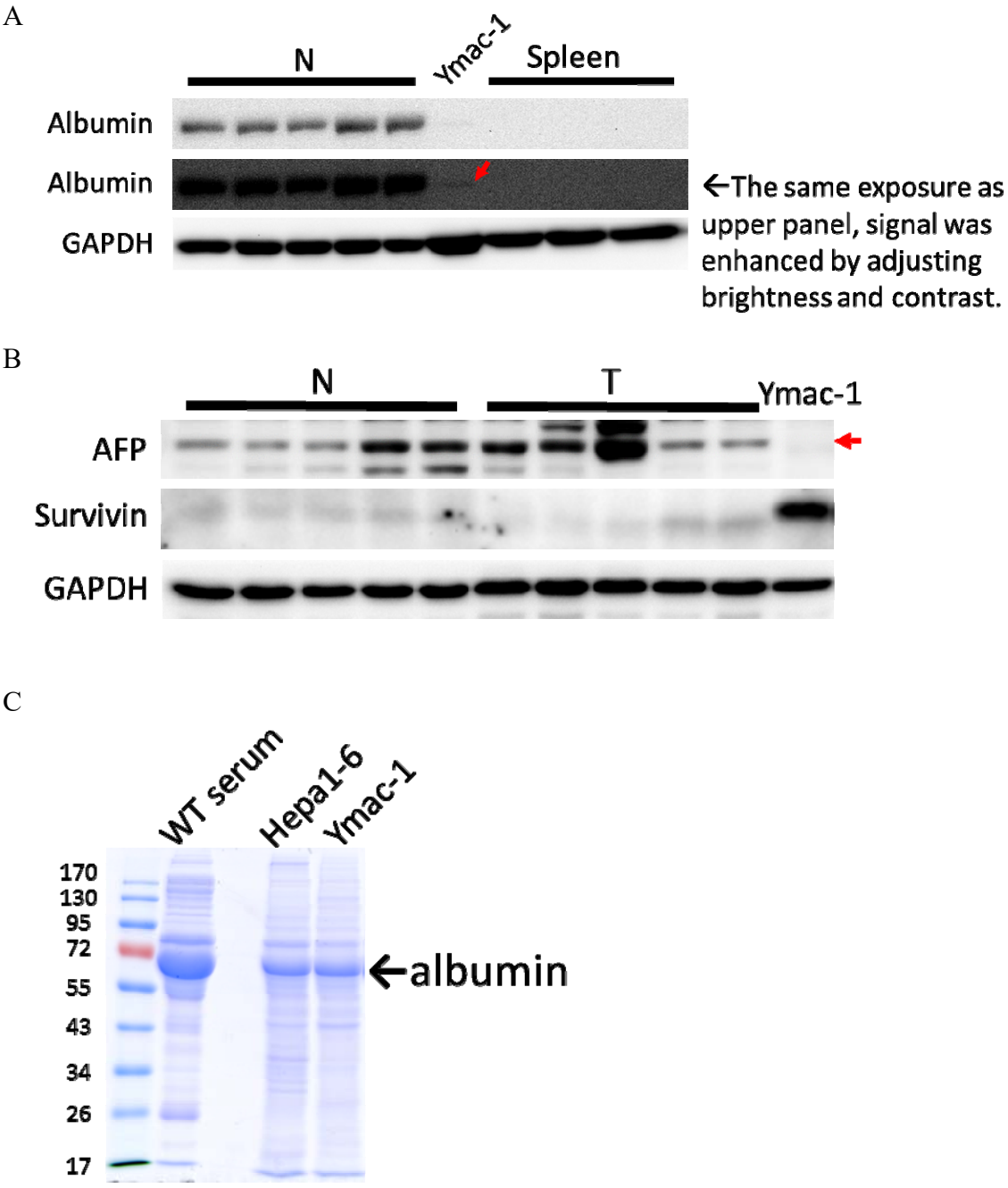
complete DMEM supplemented with puromycin (1 μg/ml, Sigma-Aldrich).

**Microarray analysis**

Total RNA was extracted as described previously. The RNA quality was accessed using Agilent 2100 Bioanalyzer (Agilent Technologies). Fluorescent antisense RNA (aRNA) targets were prepared from 1 μg total RNA samples using OneArray® Amino Allyl aRNA Amplification Kit (Phalanx Biotech Group) and Cy5 dyes (Amersham Pharmacia). Fluorescent targets were hybridized to the Mouse Whole Genome OneArray® with Phalanx hybridization buffer using Phalanx Hybridization System. The detailed descriptions of the gene array list are available from http://www.phalanx.com.tw/attachment/download/MOA/MOA2_probeSequence.zip. After 16 hrs hybridization at 50°C, non-specific binding targets were washed away by three different washing steps (Wash I, 42°C 5 mins; Wash II, 42°C 5 mins, 25°C 5 mins; Wash III, rinse 20 times), and the slides were dried by centrifugation and scanned by an Axon 4000B scanner (Molecular Devices). The Cy5 fluorescent intensities of each spot were analyzed by GenePix 4.1 software (Molecular Devices). The signal intensity of each spot was loaded into Rosetta Resolver System® (Rosetta Biosoftware) to process data analysis. The error model of Rosetta Resolver System® could remove both systematic and random errors form the data. We filtered out spots

that the flag is less than 0. Spots that passed the criteria were normalized by 50% media scaling normalization method. The technical repeat data was tested by Pearson correlation coefficient calculation to check the reproducibility (R value >0.975). Normalized spot intensities were transformed to gene expression log2 ratios between the control and treatment groups. The microarray data are available at GSE88827. The spots with log2 ratio ≥2 or log2 ratio ≤-2 and *P* value <0.05 are tested for further analysis. Genes that progressively up-regulated or down-regulated from normal to HCC to SHC were defined as the difference of Ymac-1 to HCC and HCC to WT mice liver; both were higher than 4-folds. Differentially expressed genes were annotated and pathway enrichment analysis was performed by using DAVID Bioinformatics online tools (Database for Annotation, Visualization and Integrated Discovery; http://david.abcc.ncifcrf.gov/) [3].

**Supplementary Fig 1**



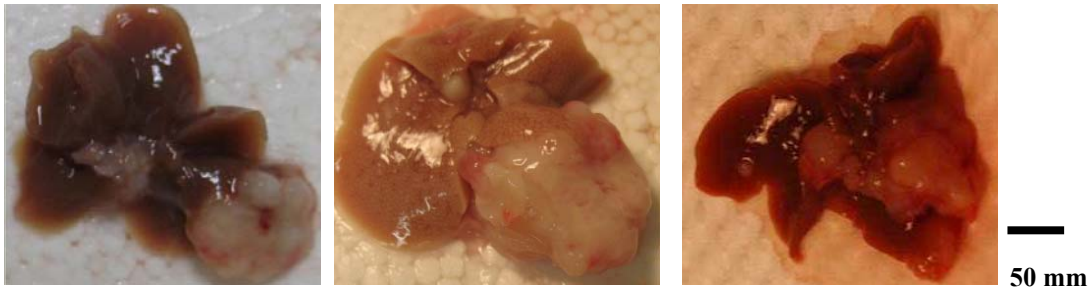

**Supplementary Fig 1. SDS-PAGE analysis of secretory proteins from Ymac-1 cells cultured in serum free medium.** (A) Western blot of analyses of Albumin in normal liver (N, n=5), Ymac-1 cell, and normal spleen (n=3). The protein amount is 20μg/lane for normal liver lysate and 200μg/lane for Ymac-1 and normal spleen

lysates. No Albumin signal was observed in spleen, while a vague band can still be seen in Ymac-1. We tried to enhance signal by adjust brightness and contrast (middle panel), but the signal was still weak (red arrow). Nevertheless, the result was consist with the qPCR data showed in Fig 1C. (B) Western blot of analyses of AFP and Survivin in normal liver (N, n=5), HCC tissues from Gnmt-/- mice (T, n=5) and Ymac-1 cells (correlated with Fig 1E and F). (C) Twenty uL of wild-type mouse serum and the culture supernatant from Hepa1-6 cells, an ordinary mouse HCC cell line, were also loaded next to Ymac-1 for comparison.

**Supplementary Fig 2**

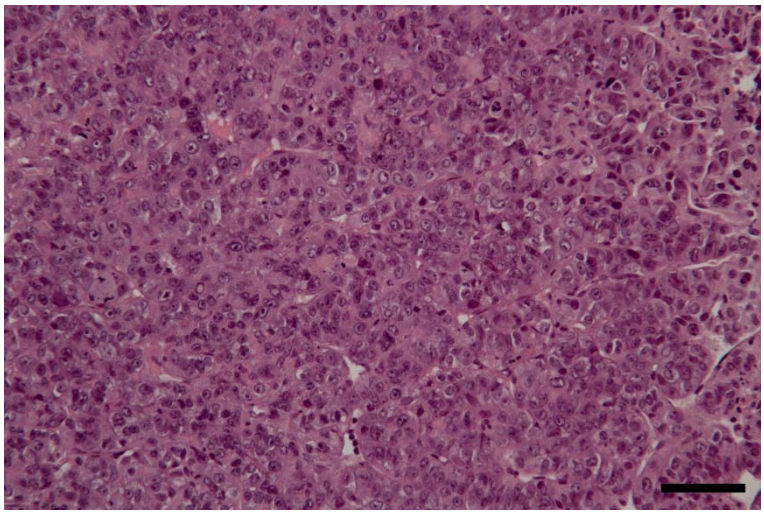
A


B




**Supplementary Fig 2. Gross tumor pictures of Ymac-1 allograft tumors described in Fig 2.** (A) Allograft tumors formed from subcutaneous inoculation. (B) Allograft tumors formed from intrahepatic inoculation. Bar: 50mm.

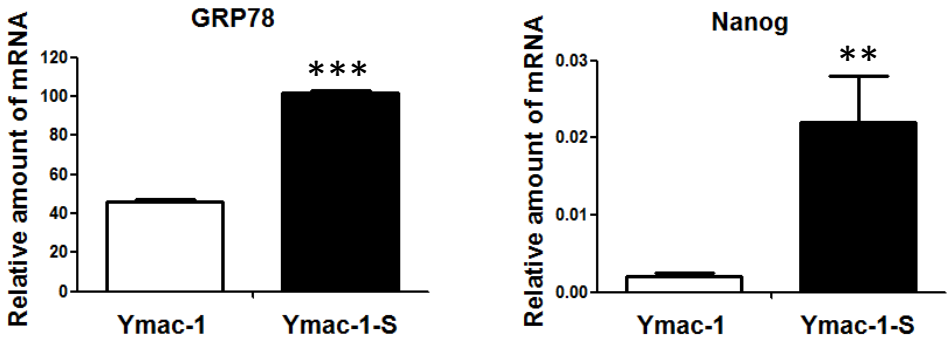
**Supplementary Fig 3**



**Supplementary Fig 3. H&E staining of allograft tumor formed from Hepa1-6 cell.**

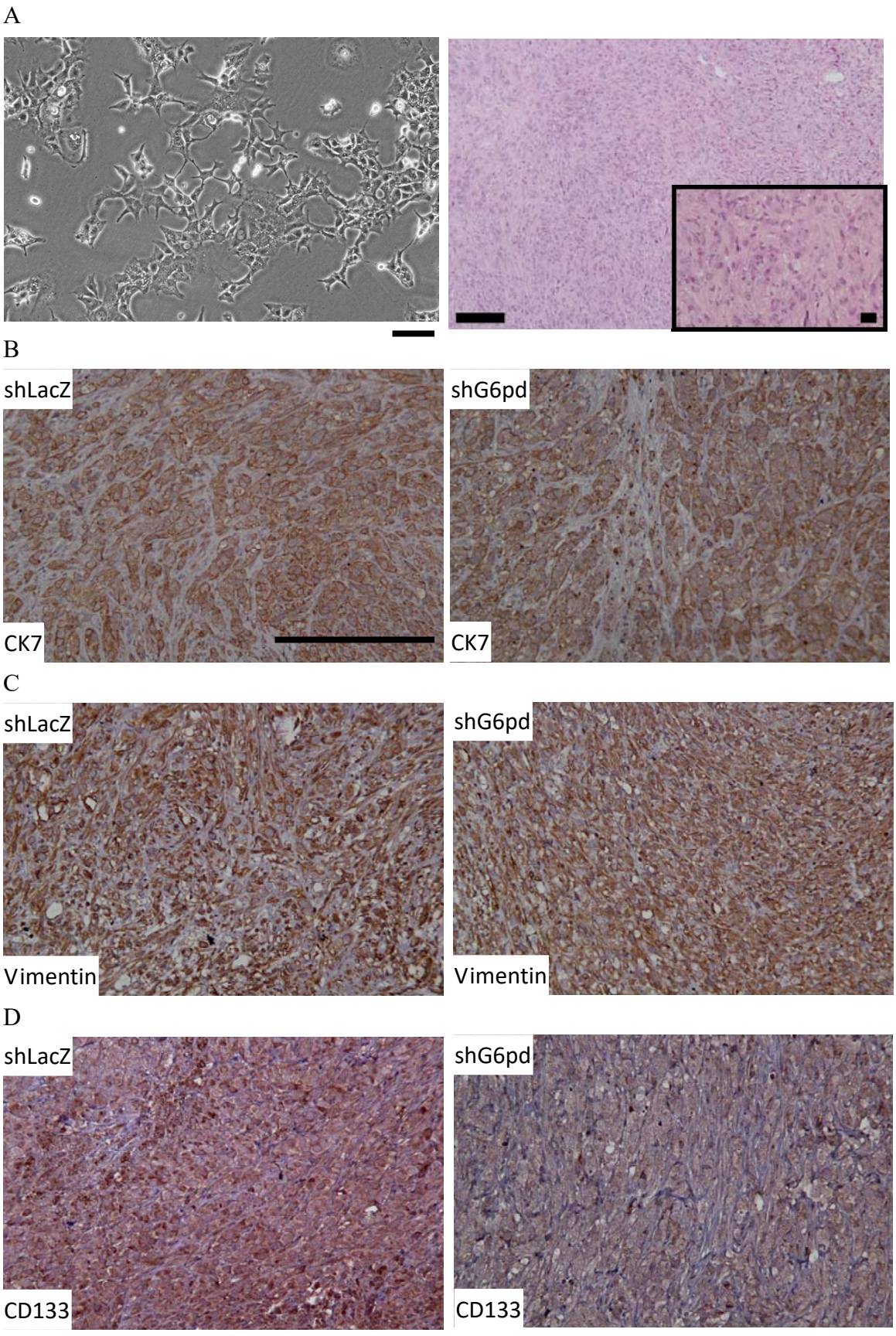
Hepa1-6 cells displayed typical HCC morphological features. Bar: 50μm.

**Supplementary Fig 4**




**Supplementary Fig 4. The expression of Grp78 and Nanog in non-sphere (Ymac-1) and sphere (Ymac-1-S) cells.**

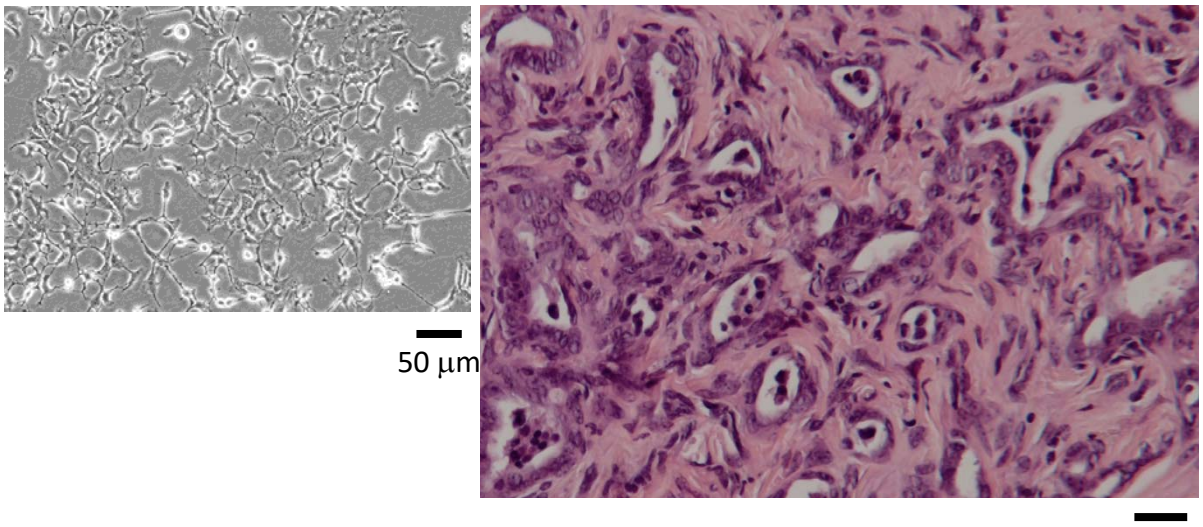
**Supplementary Fig 5**



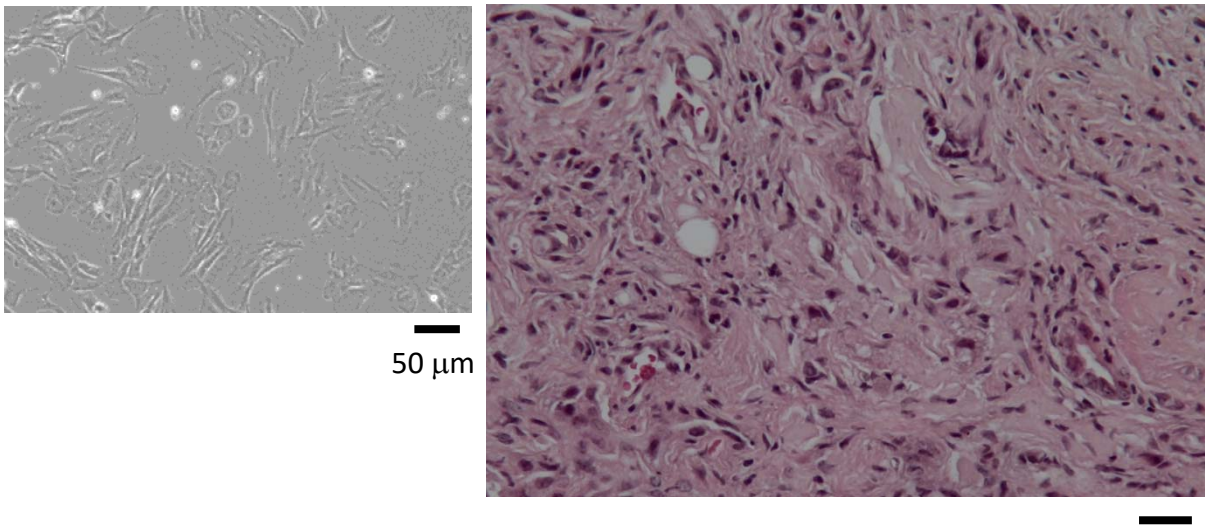
**Supplementary Fig 5. Cell morphology and H&E staining of allograft tumor formed from G6pd-knock down Ymac-1 cell. (A)** Left panel, an elongated, irregular fibroblastoid morphology was observed in G6pd knocked down Ymac-1 cell. Bar: 50μm. Right panel, a sarcomatoid appearance of allograft tumors formed from G6pd knock down Ymac-1 cells was observed. Bars: 100μm for lower magnification, 25μm for inset. (B-D) IHC staining of CK7 (B), and Vimentin (C) and CD133 (D) in Ymac-1 allograft tumor expressed of shG6pd (right panel) or control shRNA (shLacZ, left panel). Bars: 250μm.

**Supplementary Fig 6**

A




B




**Supplementary Fig 6. Cell morphology and H&E staining of allograft tumors of Ymac-4 and Ymac-5 cells.** (A) Cell morphology and pathology image of Ymac-4 cells. (B) Cell morphology and pathology image of Ymac-5 cells. Bars: 50μm for cell image, 25μm for H&E.

Supplementary Table1: List of genes up- or down-regulated in normal mice liver, Gnmt-/- mice liver tumor, and Ymac-1 cells.

| | | | | Normalize Value | | |
|---|---|---|---|---|---|---|
| Group | Entrez Gene | Gene symbol | Description | Normal liver | Gnmt-/- HCC | Ymac-1 |
| Pattern I -Up | 16852 | Lgals1 | lectin, galactose binding, | 1077.78381 | 9607.65625 | 64393.375 |
| | 20200 | S100a6 | S100 calcium binding pr | 539.55249 | 2387.40283 | 53889.7773 |
| | 12306 | Anxa2 | annexin A2 | 1535.88647 | 13267.5 | 52868.0938 |
| | 22352 | Vim | vimentin | 811.868286 | 5942.52637 | 37270.2812 |
| | 18103l433968 | Nme2lGm5566 | non-metastatic cells 2, pr | 6896.01758 | 14253.5225 | 30957.0566 |
| | 27279 | Tnfrsf12a | tumor necrosis factor rec | 1926.28662 | 11701.293 | 29715.7305 |
| | 18746 | Pkm2 | pyruvate kinase, muscle | 309.031097 | 2151.33154 | 29111.5449 |
| | 20250 | Scd2 | stearoyl-Coenzyme A de | 335.545837 | 8834.62012 | 28634.9746 |
| | 16691 | Krt8 | keratin 8 | 1859.44617 | 10538.3818 | 28087.5781 |
| | 20296 | Ccl2 | chemokine (C-C motif) l | 50 | 235.515152 | 27796.8398 |
| | 18858 | Pmp22 | peripheral myelin protein | 155.541321 | 577.748108 | 26863.7969 |
| | 13014 | Cstb | cystatin B | 3541.21973 | 11011.9102 | 24834.2617 |
| | 70350 | Basp1 | brain abundant, membran | 160.786591 | 1246.84314 | 24333.0762 |
| | 21346 | Tagln2 | transgelin 2 | 559.722534 | 5237.14258 | 20616.1777 |
| | 12389 | Cav1 | caveolin 1, caveolae prot | 145.38504 | 566.33136 | 20466.0312 |
| | 66395 | Ahnak | AHNAK nucleoprotein ( | 324.556244 | 1399.74292 | 18756.3184 |
| | 27053 | Asns | asparagine synthetase | 50 | 383.986938 | 18739.9297 |
| | 13730 | Emp1 | epithelial membrane prot | 50 | 959.952515 | 18560.4023 |
| | 59069 | Tpm3 | tropomyosin 3, gamma | 2706.69751 | 6296.23535 | 18463.0996 |
| | 22381 | Wbp5 | WW domain binding pro | 965.945801 | 2672.04248 | 16818.7109 |
| | 11745 | Anxa3 | annexin A3 | 51.7541656 | 313.930115 | 16253.9043 |
| | 11674 | Aldoa | aldolase A, fructose-bisp | 1807.84082 | 6093.19141 | 15920.3828 |
| | 19240 | Tmsb10 | thymosin, beta 10 | 501.775726 | 2800.68018 | 15902.1641 |
| | 12484 | Cd24a | CD24a antigen | 69.8758087 | 895.444214 | 15842.7949 |
| | 20753 | Sprr1a | small proline-rich protein | 50 | 297.15155 | 15682.4629 |
| | 665433 | Hist1h2ao | histone cluster 1, H2ao | 604.507812 | 2907.31152 | 15506.041 |
| | 14115 | Fbln2 | fibulin 2 | 50 | 235.638229 | 13920.792 |
| | 16765l111186 | Stmn1lStmn1-rs1 | stathmin 1lstathmin 1, re | 594.555908 | 2115.67651 | 13792.0547 |
| | 59090 | Midn | midnolin | 2676.68335 | 6335.41895 | 13669.8711 |
| | 74107 | Cep55 | centrosomal protein 55 | 136.957092 | 1571.54492 | 13527.6875 |
| | 11974 | Atp6v0e | ATPase, H+ transporting | 1568.11377 | 3683.10449 | 13346.9824 |
| | 98238 | Lrrc59 | leucine rich repeat contai | 1523.95898 | 3946.55469 | 13343.8711 |
| | 18787 | Serpine1 | serine (or cysteine) pepti | 50 | 4672.50732 | 13070.4697 |
| | 26425 | Nubp1 | nucleotide binding protei | 3014.36938 | 6348.03711 | 13026.9678 |
| | 192176 | Flna | filamin, alpha | 600.837219 | 2350.52808 | 12805.2734 |
| | 55989 | Nop58 | NOP58 ribonucleoprotein | 1500.05981 | 3836.02295 | 12540.7256 |
| | 67511 | Tmed9 | transmembrane emp24 pr | 1848.96045 | 5285.26562 | 12270.3467 |
| | 67951 | Tubb6 | tubulin, beta 6 class V | 531.693359 | 1973.99817 | 12187.1494 |
| | 107435 | Hat1 | histone aminotransferase | 735.891724 | 1537.66235 | 12117.2959 |
| | 74122 | Tmem43 | transmembrane protein 4 | 536.894226 | 2434.84668 | 11973.9238 |
| | 12827 | Col4a2 | collagen, type IV, alpha 2 | 524.735535 | 3776.44775 | 11919.1934 |
| | 23886 | Gdf15 | growth differentiation fa | 973.188721 | 3298.41895 | 11716.8203 |
| | 13681 | Eif4a1 | eukaryotic translation ini | 2403.36621 | 5564.9834 | 11705.7266 |
| | 227737 | Fam129b | family with sequence sin | 171.386475 | 1793.62158 | 11632.1641 |
| | 66286 | Sec11c | SEC11 homolog C (S. ce | 849.182495 | 2839.50977 | 11601.6895 |
| | 21807 | Tsc22d1 | TSC22 domain family, m | 1028.87329 | 2232.67651 | 11503.3672 |
| | 69639 | Exosc8 | exosome component 8 | 1467.06091 | 4938.36816 | 11375.9375 |
| | 106957 | Slc39a6 | solute carrier family 39 ( | 562.672302 | 1294.2334 | 11248.0527 |
| | 12876 | Cpe | carboxypeptidase E | 152.079834 | 5403.36914 | 11184.418 |
| | 60527 | Fads3 | fatty acid desaturase 3 | 50 | 447.311127 | 11084.4326 |
| | 12615 | Cenpa | centromere protein A | 413.998474 | 1408.41663 | 10645.7695 |
| | 16573 | Kif5b | kinesin family member 5 | 2261.63916 | 5192.20947 | 10636.0723 |
| | 353172 | Gars | glycyl-tRNA synthetase | 1990.03638 | 4482.01562 | 10486.8301 |
| | 52398 | Sept11 | septin 11 | 1302.13013 | 4382.03467 | 10142.5869 |
| | 83397 | Akap12 | A kinase (PRKA) anchor | 115.453186 | 1187.66833 | 10120.6426 |
| | 15374 | Hn1 | hematological and neuro | 486.694153 | 2303.95142 | 10013.3086 |
| | 12070 | Ngfrap1 | nerve growth factor rece | 50 | 205.08316 | 9855.21191 |

| | | | | | |
|---|---|---|---|---|---|
| 17254 | Slc3a2 | solute carrier family 3 (a | 1200.31836 | 2899.13721 | 9648.21094 |
| 13427 | Dync1i2 | dynein cytoplasmic 1 int | 1258.60571 | 2677.33228 | 9396.61328 |
| 16905 | Lmna | lamin A | 1113.07495 | 2698.05933 | 9317.54492 |
| 20195l100502897 | S100a11lGm12854 | S100 calcium binding pr | 50 | 448.609863 | 9197.0625 |
| 14225 | Fkbp1a | FK506 binding protein 1a | 1430.53723 | 3210.6936 | 9054.07812 |
| 224023 | Klhl22 | kelch-like 22 (Drosophil | 639.280945 | 1305.61621 | 8950.11133 |
| 22142 | Tuba1a | tubulin, alpha 1A | 63.2205925 | 381.243805 | 8825.24219 |
| 70769 | Nolc1 | nucleolar and coiled-bod | 573.360901 | 1220.60864 | 8783.75977 |
| 73690 | Glipr1 | GLI pathogenesis-related | 153.982468 | 777.605286 | 8781.45703 |
| 21858 | Timp2 | tissue inhibitor of metall | 736.78833 | 2730.67969 | 8770.52344 |
| 97064 | Wwtr1 | WW domain containing t | 919.044006 | 3573.53613 | 8683.56445 |
| 108143 | Taf9 | TAF9 RNA polymerase I | 1291.54443 | 3174.24756 | 8667.17969 |
| 67134 | Nop56 | NOP56 ribonucleoprotein | 322.634613 | 871.321899 | 8645.73828 |
| 22156 | Tuft1 | tuftelin 1 | 150.226334 | 1582.65186 | 8582.07324 |
| 12476 | Cd151 | CD151 antigen | 850.487793 | 1727.76807 | 8563.48828 |
| 229731 | Slc25a24 | solute carrier family 25 ( | 131.781525 | 1819.74304 | 8352.09375 |
| 11821 | Aprt | adenine phosphoribosyl t | 840.23645 | 2023.28687 | 8236.21094 |
| 22038 | Plscr1 | phospholipid scramblase | 455.122681 | 1852.51636 | 8214.43262 |
| 56433 | Vps29 | vacuolar protein sorting 2 | 1771.74023 | 3796.46582 | 8177.14014 |
| 68219 | Nudt21 | nudix (nucleoside diphos | 1032.67383 | 2280.45581 | 8034.29199 |
| 107272 | Psat1 | phosphoserine aminotran | 50 | 194.445892 | 7965.07812 |
| 54673 | Sh3glb1 | SH3-domain GRB2-like | 708.141296 | 1562.10449 | 7927.15576 |
| 67834 | Idh3a | isocitrate dehydrogenase | 941.628296 | 2098.50464 | 7908.69873 |
| 16669 | Krt19 | keratin 19 | 50 | 110.246124 | 7890.83154 |
| 14219 | Ctgf | connective tissue growth | 220.759598 | 728.07605 | 7814.63428 |
| 17698 | Msn | moesin | 1158.44324 | 3148.92285 | 7758.78125 |
| 15382l434858 | Hnrnpa1lGm5643 | heterogeneous nuclear rib | 1054.39478 | 2116.25635 | 7651.09961 |
| 13685 | Eif4ebp1 | eukaryotic translation ini | 1064.6825 | 3469.55859 | 7622.96484 |
| 16779 | Lamb2 | laminin, beta 2 | 302.649963 | 1458.33069 | 7592.29199 |
| 53331 | Stx7 | syntaxin 7 | 913.241089 | 2385.06836 | 7469.47559 |
| 58523 | Elp2 | elongation protein 2 hom | 1345.78906 | 3227.16943 | 7445.15039 |
| 11739 | Slc25a4 | solute carrier family 25 ( | 111.722397 | 1505.24268 | 7270.80078 |
| 67938 | Myl12b | myosin, light chain 12B, | 248.061646 | 1087.87415 | 7085.21973 |
| 16952 | Anxa1 | annexin A1 | 58.518692 | 496.560303 | 7077.87109 |
| 66054 | Cndp2 | CNDP dipeptidase 2 (me | 909.611694 | 1966.39844 | 6953.17139 |
| 11544 | Adprh | ADP-ribosylarginine hyd | 759.36792 | 2136.56494 | 6914.64453 |
| 68816 | Ppil1 | peptidylprolyl isomerase | 424.918365 | 896.979187 | 6906.57129 |
| 20641 | Snrpd1 | small nuclear ribonucleo | 299.163147 | 629.432007 | 6874.32715 |
| 11632 | Aip | aryl-hydrocarbon recepto | 948.601929 | 1898.11694 | 6823.59277 |
| 67041 | Oxct1 | 3-oxoacid CoA transfera | 189.308502 | 922.973206 | 6722.25586 |
| 68480 | 1110007C09Rik | RIKEN cDNA 1110007C | 310.624817 | 639.299683 | 6721.26807 |
| 98878 | Ehd4 | EH-domain containing 4 | 291.283325 | 845.097229 | 6600.0752 |
| 14609 | Gja1 | gap junction protein, alph | 602.874512 | 2018.24353 | 6397.23486 |
| 67896 | Ccdc80 | coiled-coil domain conta | 522.877258 | 2090.4917 | 6373.88086 |
| 66409 | Rsl1d1 | ribosomal L1 domain co | 742.421753 | 1699.27698 | 6291.18652 |
| 14062 | F2r | coagulation factor II (thr | 335.90387 | 2485.33105 | 6177.80371 |
| 16573 | Kif5b | kinesin family member 5 | 929.612183 | 2267.24072 | 6167.84863 |
| 15277 | Hk2 | hexokinase 2 | 161.165222 | 2946.37476 | 6076.60938 |
| 12527 | Cd9 | CD9 antigen | 317.733093 | 2288.47314 | 6043.69971 |
| 21859 | Timp3 | tissue inhibitor of metall | 768.702026 | 1844.05212 | 6018.47363 |
| 16007 | Cyr61 | cysteine rich protein 61 | 114.486832 | 458.519958 | 6013.0708 |
| 67116 | Cuedc2 | CUE domain containing | 839.997314 | 1755.56567 | 5982.81006 |
| 11983 | Atpif1 | ATPase inhibitory factor | 553.899048 | 2361.66211 | 5845.13037 |
| 228359 | Arhgap1 | Rho GTPase activating p | 735.1297 | 1775.08887 | 5838.66895 |
| 16400 | Itga3 | integrin alpha 3 | 88.6596451 | 432.78479 | 5826.73389 |
| 56449 | Csda | cold shock domain protei | 430.187408 | 1127.72253 | 5819.14648 |
| 20708 | Serpinb6b | serine (or cysteine) pepti | 50 | 989.135376 | 5805.64062 |
| 27214 | Dbf4 | DBF4 homolog (S. cerev | 62.8023643 | 248.895554 | 5711.30078 |
| 227620 | Uap1l1 | UDP-N-acteylglucosamin | 227.61441 | 2700.13037 | 5639.125 |
| 12798 | Cnn2 | calponin 2 | 190.922791 | 600.762756 | 5628.02637 |
| 19041 | Ppl | periplakin | 436.253296 | 2294.3667 | 5547.37939 |

| | | | | | |
|---|---|---|---|---|---|
| 12336 | Capns1 | calpain, small subunit 1 | 610.480225 | 1458.68579 | 5533.05518 |
| 121022 | Mrps6 | mitochondrial ribosomal | 801.65332 | 1973.47192 | 5530.93848 |
| 73916 | Ift57 | intraflagellar transport 57 | 135.89093 | 542.729614 | 5503.9873 |
| 104458 | Rars | arginyl-tRNA synthetase | 412.474487 | 937.113281 | 5501.94824 |
| 16998 | Ltbp3 | latent transforming grow | 108.305283 | 1172.04138 | 5493.8501 |
| 12334 | Capn2 | calpain 2 | 815.435852 | 2047.18713 | 5425.18945 |
| 330171 | Kctd10 | potassium channel tetram | 499.784393 | 1269.69653 | 5282.41016 |
| 23789 | Coro1b | coronin, actin binding pr | 1107.66333 | 2288.16455 | 5250.55078 |
| 76453 | Prss23 | protease, serine, 23 | 288.602875 | 1322.79785 | 5178.68359 |
| 14156 | Fen1 | flap structure specific en | 166.096832 | 344.570068 | 5175.69824 |
| 69051 | Pycr2 | pyrroline-5-carboxylate r | 219.927887 | 715.452515 | 5169.22168 |
| 140559 | Igsf8 | immunoglobulin superfa | 186.165466 | 759.520996 | 5120.37109 |
| 11848 | Rhoa | ras homolog gene family | 629.519165 | 1832.70886 | 5082.56396 |
| 66059 | Krtcap2 | keratinocyte associated p | 1077.90259 | 2309.8125 | 5076.21924 |
| 326618 | Tpm4 | tropomyosin 4 | 236.012253 | 1126.36865 | 5057.08984 |
| 21873 | Tjp2 | tight junction protein 2 | 563.20459 | 1677.70679 | 5041.87305 |
| 76522 | Naa38 | N(alpha)-acetyltransferas | 244.709503 | 701.131348 | 5011.31006 |
| 16881 | Lig1 | ligase I, DNA, ATP-depe | 279.751953 | 669.433105 | 5001.83008 |
| 21335 | Tacc3 | transforming, acidic coile | 50 | 242.692017 | 4993.16992 |
| 12315 | Calm3 | calmodulin 3 | 1065.02002 | 2218.927 | 4982.55127 |
| 51792 | Ppp2r1a | protein phosphatase 2 (fo | 733.401367 | 1919.34619 | 4979.83691 |
| 56434 | Tspan3 | tetraspanin 3 | 57.970562 | 265.330322 | 4934.81445 |
| 21857 | Timp1 | tissue inhibitor of metall | 50 | 802.012024 | 4932.34961 |
| 11746 | Anxa4 | annexin A4 | 624.657227 | 1260.4187 | 4931.77051 |
| 329384 | Ptrh1 | peptidyl-tRNA hydrolase | 54.936821 | 515.306702 | 4907.58203 |
| 17191 | Mbd2 | methyl-CpG binding don | 678.139771 | 1522.83337 | 4867.20166 |
| 67203 | Nde1 | nuclear distribution gene | 1072.01575 | 2171.18164 | 4863.49609 |
| 107373 | Fam111a | family with sequence sim | 87.3495178 | 194.689209 | 4828.21191 |
| 74202 | Fblim1 | filamin binding LIM prot | 50 | 477.610138 | 4823.5957 |
| 51797 | Ctps | cytidine 5'-triphosphate s | 140.622925 | 757.008423 | 4735.09082 |
| 245446 | Slitrk4 | SLIT and NTRK-like fam | 50 | 113.7136 | 4725.43994 |
| 94352 | Loxl2 | lysyl oxidase-like 2 | 246.965393 | 1832.06665 | 4721.87793 |
| 21973 | Top2a | topoisomerase (DNA) II | 50 | 147.809723 | 4649.19922 |
| 13197 | Gadd45a | growth arrest and DNA-d | 356.157837 | 1937.36121 | 4616.05762 |
| 18701 | Pigf | phosphatidylinositol glyc | 812.600159 | 1704.7915 | 4599.24219 |
| 15469 | Prmt1 | protein arginine N-methy | 318.425415 | 955.852661 | 4568.04297 |
| 20719 | Serpinb6a | serine (or cysteine) pepti | 158.296234 | 1253.90967 | 4563.30176 |
| 13007 | Csrp1 | cysteine and glycine-rich | 371.828735 | 919.89624 | 4539.37109 |
| 56405 | Dusp14 | dual specificity phosphat | 50 | 176.699677 | 4501.55469 |
| 56200 | Ddx21 | DEAD (Asp-Glu-Ala-As | 442.540985 | 914.316528 | 4494.58203 |
| 11853 | Rhoc | ras homolog gene family | 344.387238 | 859.844238 | 4490.48535 |
| 27357 | Gyg | glycogenin | 294.36142 | 1359.25098 | 4453.84863 |
| 76252 | Atp6v0e2 | ATPase, H+ transporting | 176.901062 | 1621.92017 | 4434.22266 |
| 12585 | Cdr2 | cerebellar degeneration-r | 97.5311584 | 859.821655 | 4432.04248 |
| 110829 | Lims1 | LIM and senescent cell a | 400.11615 | 1039.55591 | 4420.16504 |
| 52009 | Hn1l | hematological and neuro | 308.831482 | 701.663208 | 4380.43359 |
| 12334 | Capn2 | calpain 2 | 242.29834 | 561.248291 | 4319.71289 |
| 69065 | Chac1 | ChaC, cation transport re | 97.4313507 | 306.136444 | 4310.09521 |
| 73710 | Tubb2b | tubulin, beta 2B class IIB | 50 | 156.638977 | 4303.34473 |
| 213539 | Bag2 | BCL2-associated athanog | 60.974205 | 263.557678 | 4283.22266 |
| 22319 | Vamp3 | vesicle-associated memb | 425.455383 | 917.549194 | 4208.35205 |
| 94181 | Nans | N-acetylneuraminic acid | 240.051956 | 566.020142 | 4188.82373 |
| 72050 | Kdelc1 | KDEL (Lys-Asp-Glu-Le | 295.481445 | 882.809326 | 4187.71436 |
| 12018 | Bak1 | BCL2-antagonist/killer 1 | 699.06543 | 1948.82178 | 4180.9668 |
| 22629 | Ywhah | tyrosine 3-monooxygena | 232.355927 | 622.754517 | 4165.93604 |
| 14594 | Ggta1 | glycoprotein galactosyltr | 207.056274 | 586.943787 | 4124.30713 |
| 16582 | Kifc3 | kinesin family member C | 399.941895 | 1310.24231 | 4119.15723 |
| 223921 | Aaas | achalasia, adrenocortical | 394.736206 | 1303.47424 | 4066.27148 |
| 104445 | Cdc42ep1 | CDC42 effector protein ( | 437.848602 | 1389.30371 | 4043.57495 |
| 67849 | Cdca5 | cell division cycle associ | 50 | 121.48748 | 4025.72729 |
| 12444 | Ccnd2 | cyclin D2 | 166.694077 | 356.310822 | 3992.84863 |

| | | | | | |
|---|---|---|---|---|---|
| 233406 | Prc1 | protein regulator of cytol | 50 | 292.76593 | 3921.84473 |
| 114774 | Pawr | PRKC, apoptosis, WT1, | 443.347351 | 1093.82019 | 3910.97949 |
| 17684 | Cited2 | Cbp/p300-interacting tra | 646.623718 | 1754.91504 | 3906.08228 |
| 11886 | Asah1 | N-acylsphingosine amido | 625.598267 | 1882.51685 | 3903.07031 |
| 27280 | Phlda3 | pleckstrin homology-like | 50 | 166.922546 | 3902.19116 |
| 12406 | Serpinh1 | serine (or cysteine) pepti | 75.1258392 | 351.019775 | 3891.22217 |
| 94242 | Tinagl1 | tubulointerstitial nephriti | 169.174927 | 378.676086 | 3866.20654 |
| 20620 | Plk2 | polo-like kinase 2 (Dros | 333.662231 | 1479.54443 | 3840.18896 |
| 13043 | Cttn | cortactin | 545.665894 | 1668.61157 | 3804.27197 |
| 226351 | Tmem185b | transmembrane protein 1 | 701.307068 | 1466.85571 | 3785.64868 |
| 76205 | Stard3nl | STARD3 N-terminal like | 327.062439 | 743.271484 | 3764.7627 |
| 66578 | 2610039C10Rik | RIKEN cDNA 2610039C | 130.232178 | 426.776489 | 3764.4292 |
| 67703 | Kirrel3 | kin of IRRE like 3 (Dros | 237.610703 | 496.52774 | 3759.18384 |
| 99480 | Dnttip2 | deoxynucleotidyltransfer | 623.446899 | 1524.00903 | 3695.8457 |
| 72621 | Pdzd11 | PDZ domain containing | 259.089264 | 528.183472 | 3657.60986 |
| 56367 | Scoc | short coiled-coil protein | 719.602966 | 1490.68115 | 3637.29102 |
| 11799 | Birc5 | baculoviral IAP repeat-c | 50 | 111.469856 | 3628.4043 |
| 66665 | 5730528L13Rik | RIKEN cDNA 5730528L | 50 | 617.363037 | 3616.58252 |
| 19285 | Ptrf | polymerase I and transcr | 249.028015 | 507.041931 | 3601.07471 |
| 100678 | Psph | phosphoserine phosphata | 50 | 210.153503 | 3598.1499 |
| 76895 | Bicd2 | bicaudal D homolog 2 (D | 781.694031 | 1606.16736 | 3586.08154 |
| 223593 | E430025E21Rik | RIKEN cDNA E430025E | 492.984985 | 1238.45532 | 3577.15723 |
| 81703 | Jdp2 | Jun dimerization protein | 114.456726 | 606.783813 | 3571.44678 |
| 15937 | Ier3 | immediate early response | 50 | 753.531006 | 3468.35107 |
| 68151 | Wls | wntless homolog (Droso | 70.7471161 | 262.629639 | 3441.99463 |
| 106878 | 2010002N04Rik | RIKEN cDNA 2010002N | 59.2410889 | 380.052612 | 3436.33374 |
| 64143 | Ralb | v-ral simian leukemia vi | 342.573334 | 1023.80865 | 3427.34668 |
| 17219 | Mcm6 | minichromosome mainte | 108.374992 | 225.208923 | 3423.85303 |
| 20405 | Sh3gl1 | SH3-domain GRB2-like | 480.587097 | 1102.74414 | 3404.99512 |
| 77125 | Il33 | interleukin 33 | 50 | 367.441833 | 3401.31567 |
| 29856 | Smtn | smoothelin | 145.763641 | 525.038574 | 3319.87012 |
| 68682 | Slc44a2 | solute carrier family 44, | 458.913696 | 1023.34888 | 3318.73779 |
| 108013 | Celf4 | CUGBP, Elav-like famil | 83.7882385 | 236.463013 | 3310.00073 |
| 66128l170755 | Mrps36lSgk3 | mitochondrial ribosomal | 414.790588 | 1072.81873 | 3306.20801 |
| 12428 | Ccna2 | cyclin A2 | 50 | 211.244247 | 3305.70703 |
| 11799 | Birc5 | baculoviral IAP repeat-c | 50 | 127.297729 | 3305.62158 |
| 68201 | Ccdc34 | coiled-coil domain conta | 50 | 229.850616 | 3291.53198 |
| 72657 | 2700094K13Rik | RIKEN cDNA 2700094K | 201.348419 | 559.199768 | 3285.77881 |
| 75416 | Nop14 | NOP14 nucleolar protein | 700.320129 | 1489.89868 | 3249.87012 |
| 110033 | Kif22 | kinesin family member 2 | 65.4970856 | 272.958496 | 3232.24268 |
| 17427 | Mns1 | meiosis-specific nuclear | 50 | 111.865982 | 3219.37451 |
| 237107 | Gnl3l | guanine nucleotide bindi | 459.640808 | 1103.89575 | 3202.1167 |
| 14793 | Cdca3 | cell division cycle associ | 50 | 215.938293 | 3197.64697 |
| 20135 | Rrm2 | ribonucleotide reductase | 50 | 447.213501 | 3187.52783 |
| 59003 | Maea | macrophage erythroblast | 496.357788 | 1390.72559 | 3139.84668 |
| 98053 | Gtf2f1 | general transcription fact | 569.778992 | 1172.5238 | 3121.34521 |
| 12488 | Cd2ap | CD2-associated protein | 497.702759 | 1174.04468 | 3109.10254 |
| 66609 | Cryzl1 | crystallin, zeta (quinone | 332.103363 | 982.450806 | 3092.72583 |
| 67306 | Fam164a | family with sequence sin | 76.4708252 | 365.964844 | 3085.34424 |
| 20677 | Sox4 | SRY-box containing gen | 50.6182938 | 434.966309 | 3084.74268 |
| 223752 | Gramd4 | GRAM domain containin | 649.717651 | 1307.49927 | 3070.08008 |
| 17873 | Gadd45b | growth arrest and DNA-d | 629.03595 | 1372.35266 | 3069.88916 |
| 101772 | Ano1 | anoctamin 1, calcium act | 50 | 113.508469 | 3052.36719 |
| 107094 | Rrp12 | ribosomal RNA processi | 433.52533 | 926.330322 | 3049.21851 |
| 70123 | 2210013O21Rik | RIKEN cDNA 2210013O | 110.860596 | 690.301636 | 3048.49561 |
| 56150 | Mad2l1 | MAD2 mitotic arrest def | 50 | 153.013062 | 3044.81128 |
| 14700 | Gng10 | guanine nucleotide bindi | 654.135986 | 1337.09082 | 3010.39795 |
| 52033 | Pbk | PDZ binding kinase | 50 | 187.635437 | 3008.00879 |
| 56297 | Arl6 | ADP-ribosylation factor- | 153.668793 | 362.83551 | 2989.49878 |
| 11854 | Rhod | ras homolog gene family | 347.809082 | 794.912964 | 2971.20752 |
| 15979 | Ifngr1 | interferon gamma recept | 164.377991 | 705.697998 | 2956.89307 |

| | | | | | |
|---|---|---|---|---|---|
| 66964 | Golt1b | golgi transport 1 homolo | 195.754608 | 796.928955 | 2939.93945 |
| 66468 | Ska1 | spindle and kinetochore a | 50 | 136.490555 | 2914.03809 |
| 13803 | Enc1 | ectodermal-neural cortex | 422.36145 | 992.182617 | 2908.67773 |
| 100045148l14000 | LOC100045148lDr | ribonuclease 3-likeldrosh | 264.369385 | 903.145935 | 2889.31836 |
| 64540 | Tspan4 | tetraspanin 4 | 317.145386 | 719.35144 | 2884.73047 |
| 20775 | Sqle | squalene epoxidase | 582.262451 | 1287.65637 | 2873.75171 |
| 19255 | Ptpn2 | protein tyrosine phospha | 439.71637 | 951.117554 | 2840.28003 |
| 78372 | Snrnp25 | small nuclear ribonucleo | 226.762115 | 567.178772 | 2808.1228 |
| 65106 | Arl6ip5 | ADP-ribosylation factor- | 378.911682 | 1171.04114 | 2798.76758 |
| 72388 | Ripk4 | receptor-interacting serin | 426.142944 | 1380.49438 | 2795.90186 |
| 226251 | Ablim1 | actin-binding LIM protei | 230.627563 | 718.250854 | 2792.32959 |
| 98386 | Lbr | lamin B receptor | 622.589844 | 1258.36316 | 2789.94653 |
| 27279 | Tnfrsf12a | tumor necrosis factor rec | 132.747879 | 582.512878 | 2776.83667 |
| 22200 | Uba3 | ubiquitin-like modifier a | 482.00177 | 1111.48584 | 2771.92651 |
| 67678 | Lsm3 | LSM3 homolog, U6 sma | 180.671448 | 424.44928 | 2715.02661 |
| 21929 | Tnfaip3 | tumor necrosis factor, alp | 150.600204 | 936.3479 | 2710.80835 |
| 80286 | Tusc3 | tumor suppressor candida | 93.9445343 | 222.543594 | 2710.54541 |
| 56772 | Mllt11 | myeloid/lymphoid or mix | 85.660759 | 338.762665 | 2699.58984 |
| 67177 | Cdt1 | chromatin licensing and | 97.1873856 | 324.587189 | 2669.0708 |
| 216829 | Mmgt2 | membrane magnesium tr | 89.212532 | 447.694519 | 2668.47754 |
| 208092 | Chmp6 | charged multivesicular b | 216.645416 | 458.773193 | 2632.43091 |
| 100608 | Noc4l | nucleolar complex associ | 304.996155 | 668.345215 | 2614.20361 |
| 69161 | Manbal | mannosidase, beta A, lys | 332.546936 | 769.346191 | 2594.66211 |
| 12400 | Cbfb | core binding factor beta | 456.204681 | 1271.23145 | 2575.91382 |
| 58859 | Efemp2 | epidermal growth factor- | 64.2867584 | 200.464096 | 2566.09033 |
| 15200 | Hbegf | heparin-binding EGF-like | 50 | 210.043152 | 2549.2666 |
| 67249 | Tbc1d19 | TBC1 domain family, m | 85.6259079 | 300.546875 | 2548.10815 |
| 67399 | Pdlim7 | PDZ and LIM domain 7 | 119.632309 | 530.144287 | 2543.67627 |
| 17755 | Mtap1b | microtubule-associated p | 50 | 103.565834 | 2534.07617 |
| 11603 | Agrn | agrin | 344.422089 | 833.995972 | 2530.54639 |
| 18105 | Nqo2 | NAD(P)H dehydrogenas | 504.690674 | 1116.63953 | 2518.99609 |
| 74257 | Tspan17 | tetraspanin 17 | 78.4780121 | 273.36734 | 2518.60156 |
| 19108 | Prkx | protein kinase, X-linked | 378.224121 | 975.998291 | 2499.4707 |
| 16978 | Lrrfip1 | leucine rich repeat (in FL | 341.86676 | 984.203613 | 2464.79932 |
| 14187 | Akr1b8 | aldo-keto reductase fami | 151.431915 | 318.64679 | 2430.91016 |
| 11769 | Ap1s1 | adaptor protein complex | 155.362305 | 370.518829 | 2430.81152 |
| 83554 | Fstl3 | follistatin-like 3 | 50 | 324.366516 | 2427.04346 |
| 21982 | Tmem165 | transmembrane protein 1 | 144.379059 | 413.724304 | 2410.80957 |
| 97165 | Hmgb2 | high mobility group box 2 | 61.3528214 | 176.689758 | 2397.87549 |
| 105348 | Golm1 | golgi membrane protein | 50 | 425.948883 | 2394.99805 |
| 12286 | Cacna1a | calcium channel, voltage | 69.2579727 | 189.64151 | 2394.87646 |
| 20198 | S100a4 | S100 calcium binding pr | 157.638794 | 394.734558 | 2380.04932 |
| 227700 | Sh3glb2 | SH3-domain GRB2-like | 238.428162 | 598.292664 | 2344.8042 |
| 21985 | Tpd52 | tumor protein D52 | 167.376862 | 626.217773 | 2326.87939 |
| 74451 | Pgs1 | phosphatidylglycerophos | 234.736969 | 567.850708 | 2323.58154 |
| 83396 | Glis2 | GLIS family zinc finger | 50 | 274.415649 | 2314.58936 |
| 70235 | Poc1a | POC1 centriolar protein 1 | 249.53653 | 541.031982 | 2312.78516 |
| 53605 | Nap1l1 | nucleosome assembly pr | 216.331757 | 716.82196 | 2310.75098 |
| 52713 | Ccdc59 | coiled-coil domain conta | 343.002655 | 815.535278 | 2306.7627 |
| 66441 | Magohb | mago-nashi homolog B ( | 50 | 157.1129 | 2292.89844 |
| 226101 | Myof | myoferlin | 111.727158 | 249.34967 | 2289.16968 |
| 56233 | Hdac7 | histone deacetylase 7 | 223.31015 | 598.026672 | 2284.30737 |
| 29858 | Pmm1 | phosphomannomutase 1 | 280.239899 | 769.590942 | 2270.43164 |
| 12444 | Ccnd2 | cyclin D2 | 171.486267 | 382.045959 | 2235.73242 |
| 105298 | Epdr1 | ependymin related protei | 50 | 171.840118 | 2211.43652 |
| 226419 | Dyrk3 | dual-specificity tyrosine- | 100.400139 | 601.158875 | 2209.9165 |
| 19703 | Renbp | renin binding protein | 266.018555 | 1015.19727 | 2207.25439 |
| 20818 | Srprb | signal recognition particl | 381.889954 | 764.415894 | 2205.67188 |
| 79201 | Tnfrsf23 | tumor necrosis factor rec | 75.2652512 | 164.046432 | 2203.53418 |
| 26417 | Mapk3 | mitogen-activated protein | 218.169434 | 446.054871 | 2202.81592 |
| 65964 | B230120H23Rik | RIKEN cDNA B230120I | 184.776108 | 393.10199 | 2198.58594 |

| | | | | | |
|---|---|---|---|---|---|
| 27416 | Abcc5 | ATP-binding cassette, su | 171.077545 | 923.670654 | 2182.6167 |
| 239273 | Abcc4 | ATP-binding cassette, su | 122.596344 | 602.385376 | 2182.21094 |
| 22154 | Tubb5 | tubulin, beta 5 class I | 161.822662 | 325.898621 | 2173.73975 |
| 67267 | 2900010M23Rik | RIKEN cDNA 2900010M | 355.57959 | 772.924011 | 2159.6521 |
| 26362 | Axl | AXL receptor tyrosine ki | 206.359222 | 703.325562 | 2133.4436 |
| 216963 | Git1 | G protein-coupled recept | 214.090118 | 688.912354 | 2128.66504 |
| 17345 | Mki67 | antigen identified by mor | 50 | 226.961761 | 2120.0625 |
| 448850 | Znhit3 | zinc finger, HIT type 3 | 286.939453 | 644.921753 | 2116.87769 |
| 13872 | Ercc3 | excision repair cross-con | 361.656586 | 929.465332 | 2083.23682 |
| 106795 | Tcf19 | transcription factor 19 | 50 | 126.07399 | 2071.31958 |
| 16477 | Junb | Jun-B oncogene | 263.563049 | 641.085022 | 2060.27856 |
| 67203 | Nde1 | nuclear distribution gene | 220.849884 | 452.378662 | 2030.5387 |
| 20877 | Aurkb | aurora kinase B | 50 | 121.113998 | 2028.07544 |
| 73112 | 3110003A17Rik | RIKEN cDNA 3110003A | 247.652939 | 608.315918 | 2025.92773 |
| 107449 | Unc5b | unc-5 homolog B (C. ele | 69.8457108 | 915.036621 | 2015.19214 |
| 17776 | Mast2 | microtubule associated se | 290.252014 | 997.671753 | 2006.88379 |
| 19332 | Rab20 | RAB20, member RAS or | 227.623932 | 863.781433 | 1994.03662 |
| 19376 | Rab34 | RAB34, member of RAS | 63.0415802 | 397.259827 | 1992.23401 |
| 224105 | Pak2 | p21 protein (Cdc42/Rac) | 377.805908 | 926.094116 | 1983.60193 |
| 16319 | Incenp | inner centromere protein | 50 | 182.961212 | 1980.02954 |
| 12927 | Bcar1 | breast cancer anti-estroge | 138.929428 | 302.961823 | 1966.39697 |
| 17876 | Myef2 | myelin basic protein expr | 50 | 106.178818 | 1947.35132 |
| 270685 | Mthfd1l | methylenetetrahydrofolat | 50 | 311.580261 | 1941.922 |
| 11845 | Arf6 | ADP-ribosylation factor | 251.887482 | 635.96936 | 1937.34546 |
| 69692 | Hddc2 | HD domain containing 2 | 84.694397 | 402.349976 | 1933.70239 |
| 613262 | BC029722 | cDNA sequence BC0297 | 248.440277 | 629.10376 | 1904.08899 |
| 18767 | Pkia | protein kinase inhibitor, a | 50 | 126.437576 | 1902.52124 |
| 66120 | Fkbp11 | FK506 binding protein 11 | 145.559296 | 814.181396 | 1890.84253 |
| 12579 | Cdkn2b | cyclin-dependent kinase | 50 | 151.734146 | 1889.47205 |
| 18817 | Plk1 | polo-like kinase 1 (Drosc | 50 | 216.093903 | 1879.41528 |
| 67429 | Nudcd1 | NudC domain containing | 200.934937 | 561.920288 | 1869.6394 |
| 67936 | Wdr55 | WD repeat domain 55 | 211.016769 | 438.303619 | 1865.34558 |
| 53886 | Cdkl2 | cyclin-dependent kinase- | 251.827301 | 835.748779 | 1861.73535 |
| 66583 | Exosc1 | exosome component 1 | 213.019196 | 645.78186 | 1859.6073 |
| 218138 | Gmds | GDP-mannose 4, 6-dehyd | 86.5526581 | 177.735229 | 1859.48071 |
| 66061 | Tctex1d2 | Tctex1 domain containin | 142.241974 | 463.60022 | 1852.81885 |
| 100929 | Tyw1 | tRNA-yW synthesizing p | 317.075684 | 773.352661 | 1837.05347 |
| 17215 | Mcm3 | minichromosome mainte | 50 | 100.358665 | 1835.6123 |
| 192662 | Arhgdia | Rho GDP dissociation in | 209.73674 | 547.536804 | 1825.26953 |
| 56356 | Gltp | glycolipid transfer protein | 101.540756 | 417.077209 | 1816.50427 |
| 17876 | Myef2 | myelin basic protein expr | 50 | 228.659424 | 1807.73584 |
| 12337 | Capn5 | calpain 5 | 153.115906 | 469.235016 | 1805.62085 |
| 72275 | 2200002D01Rik | RIKEN cDNA 2200002D | 106.302856 | 692.184631 | 1802.82739 |
| 227522 | Rpp38 | ribonuclease P/MRP 38 k | 202.519135 | 442.315765 | 1799.08069 |
| 20525 | Slc2a1 | solute carrier family 2 (fa | 59.8034782 | 788.4505 | 1798.60583 |
| 16897 | Llgl1 | lethal giant larvae homol | 319.905029 | 751.86731 | 1792.18066 |
| 227059 | Slc39a10 | solute carrier family 39 ( | 50 | 103.543198 | 1785.70947 |
| 104346 | Gas8 | growth arrest specific 8 | 107.373779 | 332.436035 | 1781.03101 |
| 18476 | Pafah1b3 | platelet-activating factor | 50 | 381.286255 | 1778.95886 |
| 68475 | Ssna1 | Sjogren's syndrome nucle | 231.329346 | 538.068115 | 1761.70776 |
| 15468 | Prmt2 | protein arginine N-methy | 50 | 131.761154 | 1759.54529 |
| 18582 | Pde6d | phosphodiesterase 6D, c( | 145.763641 | 328.699768 | 1758.6792 |
| 53890 | Sart3 | squamous cell carcinoma | 370.353821 | 781.675415 | 1755.58008 |
| 76273 | Ndfip2 | Nedd4 family interacting | 307.412048 | 635.771362 | 1755.52905 |
| 319757 | Smo | smoothened homolog (D | 174.285553 | 696.239197 | 1754.4248 |
| 109711 | Actn1 | actinin, alpha 1 | 172.287872 | 585.797852 | 1726.31836 |
| 12380 | Cast | calpastatin | 191.445587 | 644.104004 | 1717.81934 |
| 208943 | Myo5c | myosin VC | 50 | 318.539276 | 1706.13574 |
| 103468 | Nup107 | nucleoporin 107 | 71.2255478 | 144.040909 | 1705.49316 |
| 13642 | Efnb2 | ephrin B2 | 77.8902664 | 184.83429 | 1700.30371 |
| 57373 | D930014E17Rik | RIKEN cDNA D930014 | 287.452759 | 608.030151 | 1685.88562 |

| | | | | | |
|---|---|---|---|---|---|
| 20018 | Polr1d | polymerase (RNA) I poly | 294.0224 | 591.890991 | 1678.42358 |
| 17869 | Myc | myelocytomatosis oncog | 50 | 578.578552 | 1663.73267 |
| 68948 | 1500011H22Rik | RIKEN cDNA 1500011H | 50 | 138.749863 | 1656.44971 |
| 72729 | Cdc42se2 | CDC42 small effector 2 | 216.570969 | 491.808258 | 1656.41357 |
| 69787 | Anxa13 | annexin A13 | 50 | 151.315399 | 1647.5564 |
| 232566 | Amn1 | antagonist of mitotic exit | 390.851746 | 789.423828 | 1646.68872 |
| 11987 | Slc7a1 | solute carrier family 7 (c | 50 | 114.203094 | 1643.31348 |
| 110208 | Pgd | phosphogluconate dehyd | 117.625122 | 502.523315 | 1638.8667 |
| 19826 | Rnps1 | ribonucleic acid binding | 50 | 131.475388 | 1626.06396 |
| 18034 | Nfkb2 | nuclear factor of kappa li | 127.746567 | 537.837524 | 1618.03662 |
| 17089 | Lyar | Ly1 antibody reactive clo | 256.828613 | 540.95697 | 1616.25696 |
| 16452 | Jak2 | Janus kinase 2 | 149.942764 | 390.566803 | 1615.91357 |
| 21753 | Tes | testis derived transcript | 50 | 155.934448 | 1611.66406 |
| 77305 | Wdr82 | WD repeat domain conta | 240.99295 | 508.827301 | 1607.13513 |
| 67936 | Wdr55 | WD repeat domain 55 | 273.340698 | 561.880615 | 1573.40869 |
| 105372 | Utp15 | UTP15, U3 small nucleo | 284.753296 | 579.786743 | 1562.72095 |
| 68298 | Ncapd2 | non-SMC condensin I co | 103.090103 | 308.574005 | 1559.80396 |
| 14825 | Cxcl1 | chemokine (C-X-C motif | 158.15683 | 751.421692 | 1559.68237 |
| 56306 | Fam60a | family with sequence sin | 50 | 135.101303 | 1556.87402 |
| 12709 | Ckb | creatine kinase, brain | 58.6581039 | 161.037323 | 1549.03247 |
| 20617 | Snca | synuclein, alpha | 50 | 156.418274 | 1546.63818 |
| 93715l93702l9370 | Pcdhga7lPcdhgb5l | protocadherin gamma su | 269.091888 | 641.669312 | 1535.505 |
| 66147 | Necap2 | NECAP endocytosis asso | 253.10257 | 542.534363 | 1535.00537 |
| 232210 | 8430410A17Rik | RIKEN cDNA 8430410A | 267.50769 | 603.687012 | 1534.2627 |
| 59015 | Nup160 | nucleoporin 160 | 98.123642 | 249.778336 | 1531.50525 |
| 19822 | Rnf4 | ring finger protein 4 | 178.11615 | 356.233002 | 1527.54175 |
| 384009 | Glipr2 | GLI pathogenesis-related | 50 | 413.568695 | 1524.48853 |
| 107047 | Psmg2 | proteasome (prosome, ma | 297.235168 | 663.44751 | 1524.41626 |
| 56070 | Tcerg1 | transcription elongation r | 221.207916 | 495.940643 | 1523.3562 |
| 94352 | Loxl2 | lysyl oxidase-like 2 | 50 | 148.757568 | 1520.3031 |
| 12305 | Ddr1 | discoidin domain recepto | 50 | 407.926819 | 1516.85718 |
| 78749 | Filip1l | filamin A interacting pro | 115.244072 | 356.551331 | 1507.43958 |
| 67429 | Nudcd1 | NudC domain containing | 81.4467926 | 184.184937 | 1505.88672 |
| 106672 | AI413582 | expressed sequence AI41 | 169.344452 | 677.969604 | 1504.68872 |
| 101631 | Pwwp2b | PWWP domain containin | 80.8289566 | 199.782196 | 1499.52881 |
| 68262 | Agpat4 | 1-acylglycerol-3-phospha | 102.1586 | 211.695541 | 1494.06335 |
| 56693 | Crtap | cartilage associated prote | 161.025818 | 626.613892 | 1491.18433 |
| 67629 | Spc24 | SPC24, NDC80 kinetoch | 109.271652 | 219.102997 | 1485.72705 |
| 23999 | Twf2 | twinfilin, actin-binding p | 50 | 296.635193 | 1478.61169 |
| 19221 | Ptgfrn | prostaglandin F2 recepto | 85.0334167 | 535.422607 | 1470.36243 |
| 225348 | Wdr36 | WD repeat domain 36 | 220.20195 | 520.529846 | 1469.38635 |
| 214459 | Fnbp1l | formin binding protein 1- | 187.545288 | 487.3349 | 1469.25977 |
| 76594 | Dnajc18 | DnaJ (Hsp40) homolog, | 150.490906 | 413.967651 | 1461.11414 |
| 320078 | Olfml2b | olfactomedin-like 2B | 50 | 229.045639 | 1444.77344 |
| 94280 | Sfxn3 | sideroflexin 3 | 83.553772 | 283.242065 | 1444.70435 |
| 105837 | Mtbp | Mdm2, transformed 3T3 | 50 | 102.838669 | 1429.47949 |
| 18793 | Plaur | plasminogen activator, u | 50 | 174.914291 | 1423.4585 |
| 67877 | Naa20 | N(alpha)-acetyltransferas | 153.294922 | 320.519897 | 1417.60864 |
| 16475 | Jub | ajuba | 67.6690216 | 441.280182 | 1415.66455 |
| 17974 | Nck2 | non-catalytic region of ty | 117.455612 | 369.593628 | 1410.94019 |
| 20773 | Sptlc2 | serine palmitoyltransfera | 107.647842 | 624.715332 | 1398.97058 |
| 20733 | Spint2 | serine protease inhibitor, | 232.49057 | 631.694092 | 1388.86108 |
| 67824 | Nmral1 | NmrA-like family domai | 174.21109 | 515.076111 | 1376.97375 |
| 16569 | Kif3b | kinesin family member 3 | 251.996811 | 579.014282 | 1376.96387 |
| 51793 | Ddah2 | dimethylarginine dimethy | 251.922348 | 567.597534 | 1371.97327 |
| 20556 | Slfn2 | schlafen 2 | 104.679062 | 407.287354 | 1363.57935 |
| 70472 | Atad2 | ATPase family, AAA do | 50 | 140.447525 | 1353.47998 |
| 18432 | Mybbp1a | MYB binding protein (P | 163.341919 | 328.015045 | 1352.45288 |
| 13555 | E2f1 | E2F transcription factor | 50 | 181.240906 | 1348.18701 |
| 102545 | Cmtm7 | CKLF-like MARVEL tra | 95.5683289 | 261.330933 | 1343.60217 |
| 72662 | Dis3 | DIS3 mitotic control hon | 205.492676 | 458.055908 | 1333.59631 |

| | | | | | |
|---|---|---|---|---|---|
| 50766 | Crim1 | cysteine rich transmembr | 92.5947876 | 330.362061 | 1332.68921 |
| 217333 | Trim47 | tripartite motif-containing | 82.6523666 | 258.727844 | 1323.65625 |
| 320394 | Cenpt | centromere protein T | 75.7832794 | 350.490662 | 1318.28589 |
| 72425 | 2410042D21Rik | RIKEN cDNA 2410042I | 114.521683 | 329.790527 | 1311.18701 |
| 107566 | Arl2bp | ADP-ribosylation factor- | 89.4564972 | 643.389587 | 1302.01587 |
| 15958 | Ifit2 | interferon-induced protei | 90.5923691 | 594.212585 | 1287.89697 |
| 114641 | Rpl31 | ribosomal protein L31 | 124.220139 | 344.755402 | 1280.95251 |
| 57444 | Isg20 | interferon-stimulated pro | 63.6293182 | 570.561401 | 1280.43481 |
| 211323 | Nrg1 | neuregulin 1 | 50 | 315.085938 | 1280.01587 |
| 20362 | Sept8 | septin 8 | 65.6317444 | 195.922852 | 1271.3147 |
| 243983 | Zdhhc13 | zinc finger, DHHC doma | 151.636261 | 421.397766 | 1266.44238 |
| 216766 | Gemin5 | gem (nuclear organelle) a | 181.363739 | 450.034485 | 1264.7926 |
| 217125 | Samd14 | sterile alpha motif domai | 50 | 364.134216 | 1255.05457 |
| 54135 | Lsr | lipolysis stimulated lipop | 204.32196 | 476.087891 | 1244.89917 |
| 12390 | Cav2 | caveolin 2 | 50 | 105.902939 | 1241.79663 |
| 110749 | Chaf1b | chromatin assembly facto | 50 | 109.298264 | 1235.03125 |
| 76477 | Pcolce2 | procollagen C-endopepti | 52.5811195 | 128.631805 | 1227.94727 |
| 67619 | Nob1 | NIN1/RPN12 binding pr | 143.865784 | 461.073486 | 1226.34827 |
| 71242 | Spata24 | spermatogenesis associat | 80.5802307 | 608.371094 | 1224.23828 |
| 19088 | Prkar2b | protein kinase, cAMP de | 55.0667267 | 331.387756 | 1223.16858 |
| 223626 | 4930572J05Rik | RIKEN cDNA 4930572J | 50 | 162.689728 | 1212.49048 |
| 27388 | Ptdss2 | phosphatidylserine synth | 221.53743 | 507.854004 | 1211.4668 |
| 16449 | Jag1 | jagged 1 | 55.3455429 | 128.498825 | 1206.25928 |
| 67458 | Ergic1 | endoplasmic reticulum-g | 242.467865 | 485.968323 | 1202.14453 |
| 68815 | Btbd10 | BTB (POZ) domain cont | 87.3146591 | 196.838165 | 1198.27625 |
| 67588 | Rnf41 | ring finger protein 41 | 123.149223 | 259.740784 | 1197.82275 |
| 76630 | Stambpl1 | STAM binding protein li | 50 | 210.351562 | 1196.15479 |
| 19250 | Ptpn14 | protein tyrosine phospha | 56.9344978 | 353.873291 | 1194.73657 |
| 67920 | Mak16 | MAK16 homolog (S. cer | 125.80909 | 328.268311 | 1192.3999 |
| 224619 | Traf7 | TNF receptor-associated | 172.143707 | 396.231323 | 1192.37036 |
| 66569 | Gdpd1 | glycerophosphodiester ph | 58.075119 | 518.536499 | 1191.18396 |
| 63913 | Fam129a | family with sequence sim | 50 | 170.373047 | 1181.85999 |
| 53886 | Cdkl2 | cyclin-dependent kinase- | 207.599655 | 525.560608 | 1180.02783 |
| 108116 | Slco3a1 | solute carrier organic ani | 50 | 180.536377 | 1177.72876 |
| 17035 | Lxn | latexin | 50 | 390.446564 | 1169.08362 |
| 12048 | Bcl2l1 | BCL2-like 1 | 137.445023 | 359.901367 | 1161.48511 |
| 75739 | Mpp7 | membrane protein, palmi | 243.399353 | 494.463684 | 1160.93787 |
| 26944 | Tinag | tubulointerstitial nephriti | 50 | 287.309387 | 1156.95129 |
| 230145 | Galnt12 | UDP-N-acetyl-alpha-D-g | 50 | 203.430756 | 1151.69604 |
| 67416 | Armcx2 | armadillo repeat containi | 104.579254 | 278.778625 | 1150.76282 |
| 58801 | Pmaip1 | phorbol-12-myristate-13- | 50 | 119.890259 | 1146.61511 |
| 67843 | Slc35a4 | solute carrier family 35, | 107.40863 | 235.141663 | 1146.59705 |
| 70233 | Cd2bp2 | CD2 antigen (cytoplasmi | 207.081619 | 430.879181 | 1144.37695 |
| 69940 | Exoc1 | exocyst complex compor | 238.014679 | 522.240234 | 1143.47656 |
| 21923 | Tnc | tenascin C | 50 | 119.637024 | 1139.91882 |
| 66934 | Dsn1 | DSN1, MIND kinetochor | 50 | 167.363953 | 1137.63306 |
| 226977 | Actr1b | ARP1 actin-related prote | 182.53447 | 407.575958 | 1136.90015 |
| 68549 | Sgol2 | shugoshin-like 2 (S. pom | 50 | 101.108467 | 1133.34399 |
| 19981 | Rpl37a | ribosomal protein L37a | 168.831146 | 459.590881 | 1132.84949 |
| 105844 | Card10 | caspase recruitment dom | 165.20018 | 342.135376 | 1130.22192 |
| 106869 | Tnfaip8 | tumor necrosis factor, alp | 50 | 157.366135 | 1129.37891 |
| 74838 | Naa15 | N(alpha)-acetyltransferas | 234.667267 | 560.238159 | 1126.61157 |
| 108927 | Lhfp | lipoma HMGIC fusion pa | 86.452858 | 355.989685 | 1125.08984 |
| 230972 | Arhgef16 | Rho guanine nucleotide e | 50 | 234.314056 | 1103.26733 |
| 19716 | Bex1 | brain expressed gene 1 | 50 | 364.523254 | 1086.96606 |
| 13732 | Emp3 | epithelial membrane prot | 50 | 164.939117 | 1085.54785 |
| 11717 | Ampd3 | adenosine monophosphat | 56.9043961 | 331.423096 | 1083.95068 |
| 320982 | Arl4c | ADP-ribosylation factor- | 50 | 111.083641 | 1082.51941 |
| 22375 | Wars | tryptophanyl-tRNA synth | 109.650269 | 223.78714 | 1081.47266 |
| 97487 | Cmtm4 | CKLF-like MARVEL tra | 173.837219 | 348.238434 | 1075.60779 |
| 56213 | Htra1 | HtrA serine peptidase 1 | 50 | 293.337494 | 1074.27661 |

| | | | | | |
|---|---|---|---|---|---|
| 72018 | Fundc1 | FUN14 domain containin | 125.565125 | 281.589661 | 1066.07349 |
| 105722 | Ano6 | anoctamin 6 | 71.1257401 | 267.183594 | 1065.69055 |
| 69719 | Cad | carbamoyl-phosphate syn | 74.40345 | 163.053299 | 1057.67969 |
| 19069 | Nup88 | nucleoporin 88 | 147.3526 | 372.524902 | 1057.5564 |
| 74044 | Ttf2 | transcription termination | 156.602722 | 478.168945 | 1048.00574 |
| 67861 | Akr1b10 | aldo-keto reductase fami | 86.9360352 | 285.920135 | 1038.18396 |
| 19075 | Prim1 | DNA primase, p49 subun | 50 | 100.877869 | 1024.69434 |
| 11443 | Chrnb1 | cholinergic receptor, nic | 50 | 143.015228 | 1018.37103 |
| 13017 | Ctbp2 | C-terminal binding prote | 66.7723694 | 179.124496 | 1014.77881 |
| 20088 | Rps24 | ribosomal protein S24 | 151.322601 | 410.007874 | 1012.15613 |
| 12589 | Ift81 | intraflagellar transport 81 | 89.6260071 | 228.351013 | 1009.88843 |
| 72391 | Cdkn3 | cyclin-dependent kinase | 50 | 156.09996 | 1008.49988 |
| 19889 | Rp2h | retinitis pigmentosa 2 ho | 78.0692825 | 174.154602 | 1008.46533 |
| 13025 | Ctla2b | cytotoxic T lymphocyte- | 139.377747 | 323.451172 | 1007.72095 |
| 18475 | Pafah1b2 | platelet-activating factor | 222.787354 | 471.601837 | 1006.85498 |
| 20621 | Snn | stannin | 68.3613129 | 203.969757 | 1001.18732 |
| 28040 | D6Wsu163e | DNA segment, Chr 6, W | 146.316528 | 313.180328 | 994.768677 |
| 66912 | Bzw2 | basic leucine zipper and | 122.491776 | 368.798553 | 994.147583 |
| 22403 | Wisp2 | WNT1 inducible signalin | 50 | 303.698883 | 993.891235 |
| 67313 | 5730559C18Rik | RIKEN cDNA 5730559C | 50 | 125.467072 | 993.449158 |
| 329540 | 8430427H17Rik | RIKEN cDNA 8430427H | 50 | 163.539963 | 981.671875 |
| 56613 | Rps6ka4 | ribosomal protein S6 kin | 104.60936 | 270.842072 | 977.539001 |
| 22051 | Trip6 | thyroid hormone recepto | 188.202728 | 462.632507 | 971.480225 |
| 98170 | Tmem132a | transmembrane protein 1 | 50.1303635 | 128.300751 | 971.376709 |
| 26356 | Ing1 | inhibitor of growth famil | 156.019745 | 416.99939 | 969.818909 |
| 94249 | Slc24a3 | solute carrier family 24 ( | 71.8481369 | 241.325394 | 966.400879 |
| 66681 | Pgm1 | phosphoglucomutase 1 | 62.3239403 | 302.091766 | 966.087036 |
| 72440 | 5930416I19Rik | RIKEN cDNA 5930416I | 89.5214539 | 284.751587 | 959.541931 |
| 432486 | Gnptab | N-acetylglucosamine-1-p | 121.216499 | 329.501923 | 958.408081 |
| 56449 | Csda | cold shock domain prote | 70.2940369 | 193.134445 | 956.477173 |
| 15547 | Trmt2a | TRM2 tRNA methyltrans | 134.541199 | 322.506165 | 955.683533 |
| 227753 | Gsn | gelsolin | 118.21286 | 305.993561 | 950.687988 |
| 52690 | Setd3 | SET domain containing 3 | 50 | 266.015045 | 949.503174 |
| 18983 | Cnot7 | CCR4-NOT transcription | 183.271118 | 424.341766 | 946.926514 |
| 23790 | Coro1c | coronin, actin binding pr | 142.416229 | 321.535645 | 946.752319 |
| 226154 | Lzts2 | leucine zipper, putative t | 177.110168 | 390.621979 | 945.613525 |
| 21427 | Vps72 | vacuolar protein sorting 7 | 218.369034 | 469.861755 | 944.706421 |
| 14063 | F2rl1 | coagulation factor II (thr | 50 | 111.304337 | 944.246338 |
| 97031 | Tprn | taperin | 50 | 302.46524 | 943.027039 |
| 170643 | Kirrel | kin of IRRE like (Drosop | 52.2024956 | 173.106293 | 939.334595 |
| 57915l100862515 | Tbc1d1lLOC10086 | TBC1 domain family, m | 167.033081 | 345.329773 | 937.398804 |
| 16776 | Lama5 | laminin, alpha 5 | 50 | 363.660278 | 930.260498 |
| 51812 | Mcrs1 | microspherule protein 1 | 120.912338 | 273.036285 | 928.370728 |
| 102693 | Phldb1 | pleckstrin homology-like | 50 | 173.216644 | 927.039673 |
| 68501 | Nsmce2 | non-SMC element 2 hom | 91.4240723 | 190.235687 | 926.359375 |
| 72843 | Prdm4 | PR domain containing 4 | 90.8363342 | 204.61911 | 921.894592 |
| 57278 | Bcam | basal cell adhesion mole | 62.7025604 | 257.140503 | 921.115662 |
| 81601 | Kat5 | K(lysine) acetyltransfera | 79.0958405 | 176.887817 | 920.499451 |
| 69941 | 2810408I11Rik | RIKEN cDNA 2810408I | 103.090103 | 266.719574 | 914.309265 |
| 494448 | Cbx6 | chromobox homolog 6 | 114.242859 | 312.771484 | 910.343994 |
| 71709 | Syde1 | synapse defective 1, Rho | 79.8879395 | 188.119263 | 901.212402 |
| 329165 | Abi2 | abl-interactor 2 | 90.7666321 | 256.370911 | 900.729248 |
| 68401 | G6pc3 | glucose 6 phosphatase, c | 134.301971 | 305.143311 | 900.165649 |
| 19296 | Pvt1 | plasmacytoma variant tra | 50 | 185.827423 | 898.083618 |
| 225870 | Rin1 | Ras and Rab interactor 1 | 114.730797 | 249.327026 | 895.852051 |
| 118445 | Klf16 | Kruppel-like factor 16 | 122.14801 | 329.23877 | 893.549805 |
| 13078 | Cyp1b1 | cytochrome P450, family | 50 | 288.134155 | 890.498291 |
| 66617 | Mettl11a | methyltransferase like 11 | 121.525421 | 352.198242 | 883.371338 |
| 19183 | Psmc3ip | proteasome (prosome, m | 50 | 198.159515 | 881.389587 |
| 15499 | Hsf1 | heat shock factor 1 | 204.282349 | 430.048737 | 881.087219 |
| 19038 | Ppic | peptidylprolyl isomerase | 50 | 214.72728 | 879.353577 |

| | | | | | |
|---|---|---|---|---|---|
| 69178 | Snx5 | sorting nexin 5 | 196.068268 | 403.142212 | 878.336426 |
| 76448 | Ppp1r18 | protein phosphatase 1, re | 92.8039093 | 368.720734 | 874.139465 |
| 16600 | Klf4 | Kruppel-like factor 4 (gu | 50 | 166.581604 | 868.611572 |
| 54219 | Cd320 | CD320 antigen | 79.3746643 | 224.96843 | 866.421021 |
| 68099 | Fam92a | family with sequence sin | 54.5486908 | 169.954285 | 861.594727 |
| 21825 | Thbs1 | thrombospondin 1 | 50 | 328.235748 | 855.04303 |
| 15275 | Hk1 | hexokinase 1 | 66.8420715 | 227.380524 | 846.795471 |
| 232023 | Vopp1 | vesicular, overexpressed | 57.0042 | 176.709564 | 844.521179 |
| 14660 | Gls | glutaminase | 50 | 336.513245 | 842.097351 |
| 214230 | Pak6 | p21 protein (Cdc42/Rac) | 50 | 199.415787 | 837.760742 |
| 104015 | Synj1 | synaptojanin 1 | 126.845154 | 277.785522 | 836.569397 |
| 72309 | Tmem158 | transmembrane protein 1 | 173.423752 | 372.457001 | 833.231934 |
| 94192 | C1galt1 | core 1 synthase, glycopro | 134.162567 | 302.332275 | 820.890991 |
| 232286 | Tmf1 | TATA element modulato | 55.6243629 | 150.86409 | 820.176147 |
| 109019 | Obfc2a | oligonucleotide/oligosacc | 68.0824966 | 185.661896 | 817.79834 |
| 319520 | Dusp4 | dual specificity phosphat | 50 | 338.827759 | 816.769653 |
| 67285 | Cwc27 | CWC27 spliceosome-ass | 145.285217 | 315.692871 | 810.300049 |
| 19094 | Mapk11 | mitogen-activated protei | 55.6243629 | 126.58046 | 809.537598 |
| 108067 | Eif2b3 | eukaryotic translation ini | 180.532043 | 364.786377 | 809.498169 |
| 70799 | Cep192 | centrosomal protein 192 | 82.9311829 | 263.554871 | 805.950317 |
| 72515 | Wdr43 | WD repeat domain 43 | 91.9072571 | 218.706879 | 803.771362 |
| 52055 | Rab11fip5 | RAB11 family interactin | 50 | 243.120667 | 801.416504 |
| 12530 | Cdc25a | cell division cycle 25 hor | 84.2761688 | 175.144897 | 800.614624 |
| 68554 | 1110001A16Rik | RIKEN cDNA 1110001A | 154.744476 | 342.962952 | 793.737549 |
| 104732 | 4930427A07Rik | RIKEN cDNA 4930427A | 50 | 105.010254 | 791.011353 |
| 108909 | Aida | axin interactor, dorsaliza | 87.6235809 | 322.395813 | 790.853638 |
| 72572 | Spats2 | spermatogenesis associat | 57.487381 | 137.847275 | 790.704041 |
| 80294 | Pofut2 | protein O-fucosyltransfer | 89.2822418 | 235.261902 | 786.564697 |
| 100217453 | Snord16a | small nucleolar RNA, C/ | 50 | 109.915085 | 784.651917 |
| 67966 | Zcchc10 | zinc finger, CCHC doma | 70.5380096 | 144.040909 | 782.9823 |
| 545085 | Wdr70 | WD repeat domain 70 | 50 | 149.07872 | 780.570007 |
| 66111 | Tmed3 | transmembrane emp24 d | 169.897324 | 382.81842 | 779.533081 |
| 69241 | Polr2d | polymerase (RNA) II (D | 67.7038727 | 182.685333 | 776.246582 |
| 11783 | Apaf1 | apoptotic peptidase activ | 121.629974 | 317.776733 | 773.264038 |
| 76464 | Casc5 | cancer susceptibility can | 50 | 116.098816 | 771.781799 |
| 50918 | Myadm | myeloid-associated differ | 56.7950859 | 134.517029 | 770.863159 |
| 99526 | Usp53 | ubiquitin specific peptida | 99.3244629 | 274.214752 | 768.758179 |
| 73739 | Cby1 | chibby homolog 1 (Dros | 55.1063309 | 146.378021 | 762.492371 |
| 73668 | Ttc21b | tetratricopeptide repeat d | 90.9060364 | 221.670715 | 754.497864 |
| 12449 | Ccnf | cyclin F | 50 | 186.168365 | 750.051208 |
| 213109 | Phf3 | PHD finger protein 3 | 160.886414 | 331.322662 | 748.319214 |
| 225651 | Mppe1 | metallophosphoesterase 1 | 167.367371 | 342.300873 | 739.238464 |
| 240055 | Neurl1b | neuralized homolog 1b ( | 50 | 214.08783 | 738.738892 |
| 102626 | Mapkapk3 | mitogen-activated protei | 50 | 118.887222 | 737.430908 |
| 240263 | Fem1c | fem-1 homolog c (C.eleg | 54.3490829 | 111.723091 | 733.565918 |
| 107029 | Me2 | malic enzyme 2, NAD(+ | 50 | 142.077271 | 732.489563 |
| 23917 | Impdh1 | inosine 5'-phosphate deh | 76.7543945 | 206.086182 | 730.072266 |
| 27373 | Csnk1e | casein kinase 1, epsilon | 70.7772217 | 244.266586 | 729.955627 |
| 15463 | Agfg1 | ArfGAP with FG repeats | 79.2352524 | 283.936707 | 729.852112 |
| 69860 | Eif1ad | eukaryotic translation ini | 51.2804947 | 147.777191 | 729.176758 |
| 18141 | Nup50 | nucleoporin 50 | 105.441055 | 230.545242 | 724.927246 |
| 75788 | Smurf1 | SMAD specific E3 ubiqu | 93.1825333 | 213.802063 | 724.723511 |
| 16001 | Igf1r | insulin-like growth factor | 97.9145355 | 256.215302 | 720.439453 |
| 14766 | Gpr56 | G protein-coupled recept | 50 | 254.760971 | 718.833984 |
| 64602 | Ireb2 | iron responsive element l | 104.95787 | 229.928421 | 718.061646 |
| 259300 | Ehd2 | EH-domain containing 2 | 50 | 137.879807 | 716.050293 |
| 72061 | 2010111I01Rik | RIKEN cDNA 2010111I | 50 | 136.688614 | 710.109863 |
| 226551 | AI848100 | expressed sequence AI84 | 140.622925 | 340.60321 | 707.365601 |
| 69698 | 2310046K01Rik | RIKEN cDNA 2310046K | 50 | 129.501846 | 703.720825 |
| 26921 | Map4k4 | mitogen-activated protei | 95.2546692 | 274.029419 | 694.983521 |
| 75472 | 1700009P17Rik | RIKEN cDNA 1700009P | 50 | 136.91922 | 692.594238 |

| | | | | | |
|---|---|---|---|---|---|
| 319622 | Itpripl2 | inositol 1,4,5-triphosphat | 68.5656738 | 153.431808 | 691.547485 |
| 56212 | Rhog | ras homolog gene family | 89.1776733 | 270.676544 | 690.099731 |
| 100515 | Zfp518b | zinc finger protein 518B | 104.574493 | 212.412811 | 689.623169 |
| 67268 | Myl12a | myosin, light chain 12A, | 50 | 202.249466 | 685.78125 |
| 76411 | 1700019E19Rik | RIKEN cDNA 1700019E | 94.0791855 | 244.133606 | 685.641541 |
| 109082 | Fbxw17 | F-box and WD-40 domai | 69.8805618 | 236.255035 | 683.403442 |
| 18516 | Pbx3 | pre B cell leukemia hom | 50 | 142.23291 | 683.37384 |
| 233806 | Tmem159 | transmembrane protein 1 | 67.3252487 | 202.635681 | 678.253418 |
| 19164 | Psen1 | presenilin 1 | 139.308044 | 296.381958 | 676.079346 |
| 66822 | Fbxo25 | F-box protein 25 | 117.729675 | 241.533356 | 675.694824 |
| 320183 | Msrb3 | methionine sulfoxide red | 116.937576 | 263.986328 | 666.499146 |
| 237500 | Tmtc3 | transmembrane and tetra | 90.8014832 | 211.487579 | 658.779053 |
| 17685 | Msh2 | mutS homolog 2 (E. coli) | 88.211319 | 252.180527 | 649.810059 |
| 102774 | Bbs4 | Bardet-Biedl syndrome 4 | 93.2522354 | 296.161255 | 646.972107 |
| 103268 | Cep57l1 | centrosomal protein 57-li | 80.1018066 | 170.902161 | 646.676331 |
| 83924l664862 | Gpr137blGpr137b- | G protein-coupled recept | 50 | 156.892212 | 639.187927 |
| 19893 | Rpgr | retinitis pigmentosa GTP | 80.8242035 | 170.538574 | 635.176758 |
| 14537 | Gcnt1 | glucosaminyl (N-acetyl) | 86.1740417 | 261.285645 | 635.130676 |
| 270669 | Mbtps2 | membrane-bound transcr | 93.9445343 | 269.696136 | 635.066589 |
| 22379 | Fmnl3 | formin-like 3 | 92.7041016 | 301.153809 | 630.910767 |
| 23999 | Twf2 | twinfilin, actin-binding p | 50 | 197.201752 | 630.427612 |
| 69399 | 1700025G04Rik | RIKEN cDNA 1700025( | 50 | 133.757324 | 629.78186 |
| 231123 | Haus3 | HAUS augmin-like comp | 71.2603989 | 171.002594 | 623.843018 |
| 21824 | Thbd | thrombomodulin | 50 | 266.729492 | 620.441528 |
| 68283 | 9530077C05Rik | RIKEN cDNA 9530077( | 50 | 136.214691 | 620.121033 |
| 226122 | Ubtd1 | ubiquitin domain contain | 93.5263062 | 188.625732 | 614.778809 |
| 66208 | Nenf | neuron derived neurotrop | 64.5956726 | 299.137817 | 612.865967 |
| 68732 | Lrrc16a | leucine rich repeat contai | 50 | 121.730804 | 611.459351 |
| 665563 | Mthfd2l | methylenetetrahydrofolat | 50 | 105.70488 | 611.441284 |
| 16763 | Lad1 | ladinin | 50 | 128.531357 | 607.977295 |
| 75458 | Cklf | chemokine-like factor | 72.7796478 | 149.572449 | 602.884766 |
| 218699 | Pxk | PX domain containing se | 64.0919037 | 255.234894 | 602.768127 |
| 70240 | Ufsp1 | UFM1-specific peptidase | 50 | 117.874283 | 600.786377 |
| 22393 | Wfs1 | Wolfram syndrome 1 hor | 87.628334 | 221.946594 | 598.037109 |
| 20617 | Snca | synuclein, alpha | 50 | 123.087524 | 596.467773 |
| 239027 | Arhgap22 | Rho GTPase activating p | 50 | 230.454712 | 592.607788 |
| 237436 | Gas2l3 | growth arrest-specific 2 l | 50 | 273.653107 | 591.799316 |
| 27886 | Dgcr14 | DiGeorge syndrome criti | 86.7966309 | 190.995392 | 585.469421 |
| 16579 | Kifap3 | kinesin-associated protei | 121.634727 | 248.103302 | 584.09729 |
| 171212 | Galnt10 | UDP-N-acetyl-alpha-D-g | 90.6620712 | 236.595993 | 583.561584 |
| 14911 | Thumpd3 | THUMP domain contain | 133.923355 | 288.124268 | 581.394104 |
| 432572 | Specc1 | sperm antigen with calpo | 50 | 129.965881 | 578.464111 |
| 72512 | Tmem173 | transmembrane protein 1 | 57.2133141 | 200.376373 | 576.842224 |
| 233280 | Nipa1 | non imprinted in Prader- | 133.335617 | 269.287292 | 562.268066 |
| 69101 | Ydjc | YdjC homolog (bacterial | 50 | 226.608093 | 559.855713 |
| 24100 | Tpra1 | transmembrane protein, a | 95.1849518 | 243.704956 | 559.170532 |
| 211329 | Ncoa7 | nuclear receptor coactiva | 50 | 163.043396 | 555.542114 |
| 11833 | Aqp8 | aquaporin 8 | 50 | 111.336876 | 554.414917 |
| 55991 | Panx1 | pannexin 1 | 50 | 169.360107 | 553.700073 |
| 193385 | Fam65b | family with sequence sin | 50 | 100.491653 | 550.433228 |
| 18011 | Neurl1a | neuralized homolog 1A ( | 50 | 115.933296 | 544.509277 |
| 67695 | Ost4 | oligosaccharyltransferase | 109.78968 | 264.164612 | 544.229858 |
| 69568 | Vkorc1l1 | vitamin K epoxide reduc | 74.0945282 | 170.869629 | 543.911133 |
| 380711 | Rap1gap2 | RAP1 GTPase activating | 50 | 186.720123 | 533.749146 |
| 68294 | Mfsd10 | major facilitator superfar | 50 | 199.925079 | 532.929138 |
| 73379 | Dcbld2 | discoidin, CUB and LCC | 50 | 109.684486 | 531.348267 |
| 237253 | Lrp11 | low density lipoprotein r | 50 | 241.854492 | 527.971375 |
| 106707 | Rpusd1 | RNA pseudouridylate syl | 50 | 151.568634 | 526.075073 |
| 67296 | Socs4 | suppressor of cytokine si | 118.905159 | 247.694458 | 522.093384 |
| 68481 | Mpzl1 | myelin protein zero-like | 55.1015778 | 203.573639 | 520.036011 |
| 14013 | Mecom | MDS1 and EVI1 comple | 87.9372559 | 213.315399 | 518.849609 |

| | | | | | |
|---|---|---|---|---|---|
| 104884 | Tdp1 | tyrosyl-DNA phosphodie | 88.4251862 | 249.612823 | 518.180786 |
| 19877 | Rock1 | Rho-associated coiled-co | 79.0958405 | 162.647278 | 512.135193 |
| 68259 | Ift80 | intraflagellar transport 8( | 71.0861359 | 164.21196 | 512.036621 |
| 224008 | 2310008H04Rik | RIKEN cDNA 2310008H | 72.296463 | 192.173859 | 512.01355 |
| 18011 | Neurl1a | neuralized homolog 1A ( | 50 | 107.909012 | 511.136078 |
| 66854 | Trim35 | tripartite motif-containin | 80.2412186 | 241.348022 | 504.061768 |
| 67980 | Gnpda2 | glucosamine-6-phosphate | 74.8866272 | 197.146576 | 503.363403 |
| 434215 | Lrrc32 | leucine rich repeat contai | 50 | 174.066879 | 501.049683 |
| 56016 | Hebp2 | heme binding protein 2 | 50 | 110.664886 | 500.224762 |
| 22321 | Vars | valyl-tRNA synthetase | 73.262825 | 215.191315 | 498.561768 |
| 50492 | Thop1 | thimet oligopeptidase 1 | 65.9105606 | 164.818878 | 495.59729 |
| 69428 | 1700016C15Rik | RIKEN cDNA 1700016( | 65.5271912 | 157.75235 | 495.480621 |
| 13025 | Ctla2b | cytotoxic T lymphocyte-a | 53.5126266 | 107.545425 | 493.654968 |
| 217325 | Llgl2 | lethal giant larvae homol | 61.3179703 | 134.328873 | 487.987305 |
| 229906 | Gtf2b | general transcription fact | 50 | 150.510406 | 482.122498 |
| 67115 | Rpl14 | ribosomal protein L14 | 50 | 110.389015 | 481.895691 |
| 195208 | Dcdc2a | doublecortin domain con | 72.84935 | 153.762848 | 476.890289 |
| 67973 | Mphosph10 | M-phase phosphoprotein | 91.319519 | 201.996231 | 474.448395 |
| 106582 | Nrm | nurim (nuclear envelope | 76.7940063 | 180.646729 | 473.809143 |
| 71820 | Wdr34 | WD repeat domain 34 | 66.7026596 | 135.409714 | 473.541321 |
| 217370 | BC017643 | cDNA sequence BC0176 | 50 | 135.013596 | 470.954803 |
| 319996 | Casc4 | cancer susceptibility can | 67.1858368 | 203.109619 | 470.803619 |
| 330817 | Dhps | deoxyhypusine synthase | 103.408531 | 232.044846 | 469.472595 |
| 11352 | Abl2 | v-abl Abelson murine leu | 87.3495178 | 216.876236 | 462.927429 |
| 380752 | Tssc1 | tumor suppressing subtra | 90.3182983 | 195.020264 | 462.270142 |
| 74895 | 4930455F23Rik | RIKEN cDNA 4930455F | 94.2185974 | 199.76947 | 458.927704 |
| 21853 | Timeless | timeless homolog (Drosc | 50 | 135.211655 | 457.021515 |
| 382985 | Rrm2b | ribonucleotide reductase | 81.3770905 | 208.423309 | 454.213165 |
| 14381 | G6pdx | glucose-6-phosphate deh | 50 | 193.773895 | 454.020905 |
| 235283 | Gramd1b | GRAM domain containir | 50 | 195.757324 | 453.0448 |
| 74360 | Cep57 | centrosomal protein 57 | 50 | 114.12529 | 452.352966 |
| 68146 | Arl13b | ADP-ribosylation factor- | 50 | 162.98822 | 445.82428 |
| 66089 | Rmnd5b | required for meiotic nucl | 93.2173843 | 190.664337 | 445.574493 |
| 80287 | Apobec3 | apolipoprotein B mRNA | 71.3301086 | 146.608612 | 445.365784 |
| 17250 | Abcc1 | ATP-binding cassette, su | 50 | 126.570557 | 444.830078 |
| 60364 | Donson | downstream neighbor of | 75.0957413 | 201.379425 | 443.185181 |
| 20514 | Slc1a5 | solute carrier family 1 (n | 65.1881638 | 163.57251 | 441.2034 |
| 18286 | Odf2 | outer dense fiber of sperr | 62.1496773 | 145.683395 | 439.075378 |
| 382252 | A830080D01Rik | RIKEN cDNA A830080 | 54.6881027 | 112.229568 | 433.959839 |
| 67629 | Spc24 | SPC24, NDC80 kinetoch | 50 | 142.034836 | 429.634766 |
| 224022 | Slc7a4 | solute carrier family 7 (c | 50 | 132.796722 | 428.658661 |
| 57265 | Fzd2 | frizzled homolog 2 (Dros | 56.2073479 | 133.448914 | 423.199707 |
| 225849 | Ppp2r5b | protein phosphatase 2, re | 76.6450882 | 190.180511 | 422.723175 |
| 22240 | Dpysl3 | dihydropyrimidinase-like | 50 | 188.680908 | 417.729279 |
| 58193 | Extl2 | exostoses (multiple)-like | 80.8242035 | 180.348236 | 414.143646 |
| 191578 | Helq | helicase, POLQ-like | 50 | 143.544342 | 413.323669 |
| 11785 | Apbb1 | amyloid beta (A4) precur | 50 | 111.667923 | 412.950623 |
| 15064 | Mr1 | major histocompatibility | 50 | 150.344894 | 408.364258 |
| 67326 | 1700037H04Rik | RIKEN cDNA 1700037H | 50 | 158.161209 | 406.039062 |
| 226352 | Epb4.1l5 | erythrocyte protein band | 50 | 174.638428 | 396.0578 |
| 16196 | Il7 | interleukin 7 | 50 | 137.415787 | 395.150726 |
| 16210 | Impact | imprinted and ancient | 52.7949867 | 120.584885 | 395.075134 |
| 17161 | Maoa | monoamine oxidase A | 50 | 106.51976 | 392.947113 |
| 18861 | Pms2 | postmeiotic segregation i | 50 | 156.363098 | 389.128143 |
| 73738l100048005 | Haus7lLOC100048 | HAUS augmin-like comp | 58.5281982 | 128.917572 | 386.710876 |
| 98415 | Nucks1 | nuclear casein kinase and | 51.9632835 | 136.74379 | 380.321838 |
| 252903 | Ap1s3 | adaptor-related protein c | 50 | 160.926971 | 375.65332 |
| 56321 | Aatf | apoptosis antagonizing tr | 69.9803696 | 161.676788 | 375.525146 |
| 68964 | 1500010J02Rik | RIKEN cDNA 1500010J | 72.644989 | 156.077332 | 374.752808 |
| 27392 | Pign | phosphatidylinositol glyc | 59.524662 | 180.182709 | 370.125366 |
| 77579 | Myh10 | myosin, heavy polypepti | 50 | 182.519806 | 370.038269 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 75568 | Capsl | calcyphosine-like | 50 | 142.927521 | 369.206787 |
| | 73914 | Irak3 | interleukin-1 receptor-ass | 50 | 133.426285 | 368.579041 |
| | 78255 | Ralgps2 | Ral GEF with PH domai | 50 | 117.014137 | 367.451752 |
| | 60363 | Cldn15 | claudin 15 | 61.0740051 | 179.98465 | 367.381104 |
| | 75570 | Nhej1 | nonhomologous end-join | 64.8744965 | 170.869629 | 365.852844 |
| | 78394 | Ddx52 | DEAD (Asp-Glu-Ala-As | 66.9418793 | 142.982697 | 364.5448 |
| | 207175 | Cetn4 | centrin 4 | 50 | 108.074539 | 364.184937 |
| | 239393 | Lrp12 | low density lipoprotein-r | 62.7326622 | 143.820221 | 362.102905 |
| | 212123 | Dcaf15 | DDB1 and CUL4 associa | 63.3203964 | 152.451401 | 360.900024 |
| | 216892 | Spns2 | spinster homolog 2 (Dros | 50 | 106.961151 | 360.783356 |
| | 216618 | Ccdc104 | coiled-coil domain conta | 64.3168564 | 135.322006 | 356.801697 |
| | 76453 | Prss23 | protease, serine, 23 | 50 | 101.108467 | 354.458405 |
| | 327900 | Ubtd2 | ubiquitin domain contain | 67.3252487 | 149.299408 | 352.930176 |
| | 66871 | Cpne8 | copine VIII | 62.9370232 | 153.597321 | 352.412537 |
| | 69159 | Rhebl1 | Ras homolog enriched in | 50 | 108.184883 | 352.336945 |
| | 170835 | Inpp5j | inositol polyphosphate 5- | 50 | 101.890808 | 348.628082 |
| | 171531 | Mlph | melanophilin | 59.071579 | 127.550964 | 344.861725 |
| | 16196 | Il7 | interleukin 7 | 50 | 121.643097 | 343.936554 |
| | 18844 | Plxna1 | plexin A1 | 50 | 115.040604 | 339.448792 |
| | 227399 | Ppip5k2 | diphosphoinositol pentak | 50 | 152.097717 | 337.100525 |
| | 16440 | Itpr3 | inositol 1,4,5-triphosphat | 50 | 108.967224 | 336.385742 |
| | 210148 | Slc30a6 | solute carrier family 30 ( | 60.3167572 | 156.60643 | 330.159363 |
| | 20723 | Serpinb9 | serine (or cysteine) pepti | 50 | 151.536087 | 326.40448 |
| | 66196 | Myo19 | myosin XIX | 59.5199051 | 160.011658 | 321.689941 |
| | 16563 | Kif2a | kinesin family member 2 | 60.4213142 | 138.970566 | 321.643921 |
| | 217578l100048557 | Baz1alLOC100048 | bromodomain adjacent to | 58.3586922 | 155.879272 | 320.585693 |
| | 72462 | Rrp1b | ribosomal RNA processi | 56.695282 | 133.712067 | 320.184723 |
| | 66595 | Aste1 | asteroid homolog 1 (Dros | 50 | 100.248322 | 320.143646 |
| | 77300 | Raph1 | Ras association (RalGDS | 57.487381 | 142.343246 | 316.49884 |
| | 59053 | Fam203a | family with sequence sim | 50 | 129.612198 | 309.644775 |
| | 11641 | Akap2 | A kinase (PRKA) anchor | 50 | 131.751251 | 308.570068 |
| | 74166 | Tmem38a | transmembrane protein 3 | 51.3058395 | 147.85498 | 305.0354 |
| | 109929 | Zbtb25 | zinc finger and BTB dom | 50 | 128.797318 | 297.152649 |
| | 244329 | Mcph1 | microcephaly, primary au | 52.4021072 | 112.758667 | 294.483948 |
| | 217578 | Baz1a | bromodomain adjacent to | 50 | 101.835632 | 293.908813 |
| | 71566 | 9030425E11Rik | RIKEN cDNA 9030425E | 50 | 131.673447 | 291.519501 |
| | 103841 | Cuedc1 | CUE domain containing | 54.7578049 | 112.13195 | 291.507996 |
| | 56312 | Nupr1 | nuclear protein 1 | 50 | 130.108765 | 288.770325 |
| | 380753 | Atxn7l1 | ataxin 7-like 1 | 50 | 107.909012 | 287.572388 |
| | 67157 | 2610301B20Rik | RIKEN cDNA 2610301E | 50 | 100.556725 | 287.182922 |
| | 216835 | Usp43 | ubiquitin specific peptida | 50 | 122.944633 | 286.479614 |
| | 57258 | Xpo4 | exportin 4 | 50 | 128.488922 | 285.897888 |
| | 21808 | Tgfb2 | transforming growth fact | 50 | 127.849457 | 282.555481 |
| | 75316 | Taf1d | TATA box binding prote | 50 | 107.214386 | 279.201538 |
| | 53618 | Fut8 | fucosyltransferase 8 | 50.3093796 | 106.123642 | 278.282959 |
| | 18452 | P4ha2 | procollagen-proline, 2-ox | 59.4597092 | 133.283401 | 277.939514 |
| | 212391 | Lcor | ligand dependent nuclear | 50 | 109.165283 | 277.103088 |
| | 54384 | Mtmr7 | myotubularin related pro | 50 | 133.900208 | 270.929321 |
| | 73047 | Camk2n2 | calcium/calmodulin-depe | 50 | 132.841995 | 266.093201 |
| | 224523 | 4732491K20Rik | RIKEN cDNA 4732491K | 50 | 127.297729 | 264.267517 |
| | 72355 | 2210021J22Rik | RIKEN cDNA 2210021J | 50 | 100.887772 | 263.348938 |
| | 74133 | 1200011M11Rik | RIKEN cDNA 1200011M | 50 | 103.91951 | 258.774048 |
| | 72149 | Strada | STE20-related kinase ada | 50 | 106.01329 | 243.171204 |
| | 268396 | Sh3pxd2b | SH3 and PX domains 2B | 50 | 100.998116 | 241.061249 |
| | 19326 | Rab11b | RAB11B, member RAS | 50 | 110.025436 | 227.533829 |
| | 12830 | Col4a5 | collagen, type IV, alpha 5 | 50 | 103.169708 | 227.38266 |
| | 13488 | Drd1a | dopamine receptor D1A | 50 | 100.722244 | 203.246292 |
| Pattern I -Down | 216454 | BC089597 | cDNA sequence BC0895 | 18599.9023 | 1750.01294 | 50 |
| | 21936 | Tnfrsf18 | tumor necrosis factor rec | 346.733459 | 104.39344 | 50 |
| | 75104 | Mmd2 | monocyte to macrophage | 889.570007 | 110.3013 | 50 |
| | 54150 | Rdh7 | retinol dehydrogenase 7 | 12174.1455 | 5574.52002 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 53412 | Ppp1r3c | protein phosphatase 1, re | 2828.66016 | 686.556885 | 50 |
| 94179 | Krt23 | keratin 23 | 379.394836 | 120.948471 | 50 |
| 71773 | Ugt2b1 | UDP glucuronosyltransfe | 8916.39648 | 2163.38086 | 50 |
| 13124 | Cyp8b1 | cytochrome P450, family | 11715.2129 | 5670.45801 | 50 |
| 20211 | Saa4 | serum amyloid A 4 | 5370.1084 | 2197.74707 | 50 |
| 71911 | Bdh1 | 3-hydroxybutyrate dehyd | 3162.01367 | 1541.63782 | 50 |
| 16325 | Inhbc | inhibin beta-C | 1349.71924 | 412.094574 | 50 |
| 23945 | Mgll | monoglyceride lipase | 11059.4941 | 5360.46484 | 50 |
| 207742 | Rnf43 | ring finger protein 43 | 300.085144 | 137.603943 | 50 |
| 12355 | Nr1i3 | nuclear receptor subfami | 2003.02368 | 820.783875 | 50 |
| 15450 | Lipc | lipase, hepatic | 994.119141 | 455.95224 | 50 |
| 11835 | Ar | androgen receptor | 436.921844 | 113.508469 | 50 |
| 75178 | 4930528F23Rik | RIKEN cDNA 4930528F | 601.977844 | 127.924438 | 50 |
| 17167 | Marco | macrophage receptor wit | 693.113586 | 228.682068 | 50 |
| 20520 | Slc22a5 | solute carrier family 22 ( | 315.451874 | 121.984039 | 50 |
| 171281 | Acot3 | acyl-CoA thioesterase 3 | 5349.12256 | 343.170929 | 50 |
| 384198 | Fam47e | family with sequence sin | 1168.22095 | 150.588226 | 50 |
| 64385 | Cyp4f14 | cytochrome P450, family | 3376.84326 | 939.09668 | 50 |
| 272428 | Acsm5 | acyl-CoA synthetase me | 3076.46826 | 1213.6001 | 50 |
| 68444 | Cyp2d13 | cytochrome P450, family | 943.217285 | 200.91539 | 50 |
| 100038948 | Mup9 | major urinary protein 9 | 1597.84595 | 107.710953 | 50 |
| 23957 | Nr0b2 | nuclear receptor subfami | 395.967163 | 113.144882 | 50 |
| 56636\|100862558 | Fgf21\|LOC100862 | fibroblast growth factor 2 | 1517.55408 | 368.65564 | 50 |
| 13482 | Dpp4 | dipeptidylpeptidase 4 | 403.289307 | 195.205597 | 50 |
| 320571 | Atp8b5 | ATPase, class I, type 8B, | 302.54541 | 132.653839 | 50 |
| 20532 | Slc3a1 | solute carrier family 3, m | 1075.50098 | 244.92868 | 50 |
| 217082 | Hlf | hepatic leukemia factor | 932.139038 | 401.314423 | 50 |
| 116852 | Akr1c20 | aldo-keto reductase fami | 415.712585 | 189.927277 | 50 |
| 14451 | Gas1 | growth arrest specific 1 | 230.901627 | 114.115379 | 50 |
| 13095 | Cyp2c29 | cytochrome P450, family | 18297.0352 | 6966.94043 | 50 |
| 64697 | Keg1 | kidney expressed gene 1 | 499.201416 | 247.992966 | 50 |
| 18559 | Pctp | phosphatidylcholine trans | 1848.89062 | 794.250854 | 50 |
| 226781 | Slc30a10 | solute carrier family 30, | 469.464417 | 107.522797 | 50 |
| 83702 | Akr1c6 | aldo-keto reductase fami | 654.519348 | 135.354553 | 50 |
| 13897 | Ces1e | carboxylesterase 1E | 1811.78247 | 595.07843 | 50 |
| 66438 | Hamp2 | hepcidin antimicrobial pe | 3872.55176 | 189.794296 | 50 |
| 54357 | Epb4.1l4b | erythrocyte protein band | 1146.2688 | 484.082489 | 50 |
| 109254 | 9530008L14Rik | RIKEN cDNA 9530008L | 2816.74072 | 1112.53406 | 50 |
| 171282 | Acot4 | acyl-CoA thioesterase 4 | 872.484375 | 173.437332 | 50 |
| 12350 | Car3 | carbonic anhydrase 3 | 6733.21875 | 1547.89648 | 50 |
| 19266 | Ptprd | protein tyrosine phospha | 695.957214 | 323.087585 | 50 |
| 234564 | Ces1f | carboxylesterase 1F | 1952.41016 | 367.010345 | 50 |
| 13094 | Cyp2b9 | cytochrome P450, family | 2839.35352 | 258.045959 | 50 |
| 13089 | Cyp2b13 | cytochrome P450, family | 2866.3562 | 208.98494 | 50 |
| 13109 | Cyp2j5 | cytochrome P450, family | 3842.21582 | 536.659058 | 50 |
| 75552 | Paqr9 | progestin and adipoQ rec | 343.420868 | 115.547073 | 50 |
| 337924\|53973\|100 | Cyp3a44\|Cyp3a41a | cytochrome P450, family | 17973.1445 | 2851.57861 | 50 |
| 107141\|404195\|13 | Cyp2c50\|Cyp2c54 | cytochrome P450, family | 16145.7305 | 2608.37891 | 50 |
| 72948 | Tppp | tubulin polymerization p | 384.187073 | 191.579666 | 50.6094513 |
| 57742 | Abhd1 | abhydrolase domain cont | 2649.22266 | 878.618958 | 53.3882217 |
| 69638 | Enho | energy homeostasis asso | 1208.32007 | 396.364319 | 53.539402 |
| 75698 | Fam35a | family with sequence sim | 422.77652 | 183.445038 | 54.7718582 |
| 215929 | AI317395 | expressed sequence AI31 | 883.399536 | 378.585571 | 60.7418594 |
| 18628 | Per3 | period homolog 3 (Droso | 541.656372 | 244.828232 | 64.6249084 |
| 67307 | Pbld2 | phenazine biosynthesis-li | 10919.0947 | 5423.56396 | 73.9669037 |
| 66116 | Cml1 | camello-like 1 | 1219.1814 | 576.088623 | 79.5359497 |
| 15439 | Hp | haptoglobin | 20623.6348 | 7430.90039 | 87.1919403 |
| 100216530 | Snord118 | small nucleolar RNA, C/ | 2870.16943 | 378.455383 | 90.662529 |
| 68616 | Gdpd3 | glycerophosphodiester ph | 7153.09277 | 3260.56104 | 98.568306 |
| 192136 | 5033411D12Rik | RIKEN cDNA 5033411D | 1141.25317 | 346.874664 | 103.747894 |
| 232370 | Clstn3 | calsyntenin 3 | 1265.73462 | 434.615479 | 109.113174 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 15483 | Hsd11b1 | hydroxysteroid 11-beta d | 49274.5078 | 16211.248 | 111.415398 |
| | 16841 | Lect2 | leukocyte cell-derived ch | 3501.32031 | 1611.0127 | 120.292343 |
| | 75735 | Pank1 | pantothenate kinase 1 | 1435.99792 | 624.617737 | 153.502838 |
| | 12401 | Serpina6 | serine (or cysteine) pepti | 13168.4355 | 4677.94678 | 168.588074 |
| | 14373 | G0s2 | G0/G1 switch gene 2 | 7635.54346 | 3459.38672 | 174.459473 |
| | 100217422 | Snord13 | small nucleolar RNA, C/ | 1318.35864 | 564.611023 | 195.991257 |
| | 69772 | Bdh2 | 3-hydroxybutyrate dehyd | 1298.11401 | 528.291016 | 262.90686 |
| | 13170 | Dbp | D site albumin promoter | 4214.5752 | 2055.66284 | 307.15686 |
| | 67475 | Ero1lb | ERO1-like beta (S. cerev | 2370.48315 | 1182.3999 | 338.204834 |
| | 19363 | Rad51l1 | RAD51-like 1 (S. cerevis | 6146.80273 | 924.372314 | 357.353882 |
| | 20322 | Sord | sorbitol dehydrogenase | 11552.6602 | 3874.11816 | 562.780762 |
| | 22361 | Vnn1 | vanin 1 | 16013.2354 | 6664.88281 | 1327.27136 |
| | 67442 | Retsat | retinol saturase (all trans | 33140.9688 | 13459.6035 | 1890.65186 |
| Pattern II -Up | 12468 | Cct7 | chaperonin containing Tc | 22120.9316 | 26603.1016 | 65430.1641 |
| | 23980 | Pebp1 | phosphatidylethanolamin | 18629.1348 | 16641.0859 | 41907.8086 |
| | 15387l100504131 | HnrnpklGm20077 | heterogeneous nuclear rit | 13175.6221 | 16883.875 | 40963.3594 |
| | 14873 | Gsto1 | glutathione S-transferase | 12182.5176 | 11097.4551 | 36592.375 |
| | 276770 | Eif5a | eukaryotic translation ini | 13489.2832 | 15265.4873 | 31305.8555 |
| | 67332 | Snrpd3 | small nuclear ribonucleo | 6598.4165 | 7614.50098 | 30101.7324 |
| | 22608 | Ybx1 | Y box protein 1 | 8007.22461 | 6471.17773 | 28225.5742 |
| | 12443 | Ccnd1 | cyclin D1 | 3996.84155 | 3391.0376 | 27519.8984 |
| | 71994 | Cnn3 | calponin 3, acidic | 7428.07324 | 10756.7734 | 26488.2852 |
| | 20610 | Sumo3 | SMT3 suppressor of mif | 8176.70068 | 10975.0273 | 23373.2207 |
| | 66271 | Tmem126a | transmembrane protein 1 | 7341.04883 | 8264.38086 | 22297.5195 |
| | 382010 | BC088983 | cDNA sequence BC0889 | 1285.35327 | 1179.61157 | 22196.2617 |
| | 12466 | Cct6a | chaperonin containing Tc | 4182.33203 | 3883.92236 | 21924.4355 |
| | 19166 | Psma2 | proteasome (prosome, m | 5701.87402 | 7244.95801 | 20830.1445 |
| | 276770 | Eif5a | eukaryotic translation ini | 3384.99878 | 3632.77466 | 20795.0195 |
| | 15516 | Hsp90ab1 | heat shock protein 90 alp | 5374.80225 | 6741.94824 | 18712.1562 |
| | 19181 | Psmc2 | proteasome (prosome, m | 6621.05176 | 8063.58301 | 18198.9336 |
| | 15526 | Hspa9 | heat shock protein 9 | 7001.83398 | 6777.4292 | 17563.4336 |
| | 276770 | Eif5a | eukaryotic translation ini | 2293.07129 | 2518.85132 | 16365.1865 |
| | 17149 | Magoh | mago-nashi homolog, pr | 4202.8584 | 5278.90527 | 15518.4189 |
| | 20867 | Stip1 | stress-induced phosphopr | 2027.77832 | 2278.90381 | 15122.7988 |
| | 56350 | Arl3 | ADP-ribosylation factor- | 1357.6261 | 1874.4657 | 14574.8359 |
| | 68544 | 2310036O22Rik | RIKEN cDNA 2310036( | 3608.21533 | 5110.13037 | 14312.5029 |
| | 14791 | Emg1 | EMG1 nucleolar protein | 6120.88672 | 6792.13672 | 14301.0195 |
| | 67089 | Psmc6 | proteasome (prosome, m | 5540.29883 | 5484.31934 | 13878.416 |
| | 54198 | Snx3 | sorting nexin 3 | 2198.53735 | 2811.09814 | 13570.4609 |
| | 12464 | Cct4 | chaperonin containing Tc | 4911.35303 | 6582.43164 | 13349.7012 |
| | 22384 | Eif4h | eukaryotic translation ini | 5210.65869 | 6531.26123 | 13241.4619 |
| | 107765 | Ankrd1 | ankyrin repeat domain 1 | 50 | 50 | 13167.7012 |
| | 20973 | Syngr2 | synaptogyrin 2 | 4124.64648 | 6144.07812 | 12632.1045 |
| | 19045 | Ppp1ca | protein phosphatase 1, ca | 1945.30652 | 2572.08569 | 12187.7822 |
| | 67068 | Dynlrb1 | dynein light chain roadbl | 4247.64844 | 5204.32666 | 12114.0469 |
| | 68041 | Mid1ip1 | Mid1 interacting protein | 1535.63135 | 1723.24658 | 12092.3477 |
| | 15901 | Id1 | inhibitor of DNA binding | 1845.78406 | 2262.46338 | 11904.3936 |
| | 100504986l66882 | LOC100504986lBz | uncharacterized LOC100 | 4248.42334 | 5341.37012 | 11707.8945 |
| | 100041585l11702 | Amd2lAmd1 | S-adenosylmethionine de | 4038.729 | 5242.40527 | 11446.8105 |
| | 12465 | Cct5 | chaperonin containing Tc | 3155.99829 | 3756.53979 | 11416.1924 |
| | 72787 | Tmem48 | transmembrane protein 4 | 385.527283 | 486.121094 | 11256.7891 |
| | 211556 | Ap1ar | adaptor-related protein c | 1875.97412 | 2748.76709 | 11050.5918 |
| | 26441 | Psma4 | proteasome (prosome, m | 5135.77832 | 5323.04541 | 10869.667 |
| | 12785 | Cnbp | cellular nucleic acid bind | 3690.21826 | 4833.28857 | 10833.7051 |
| | 66647 | Ndnl2 | necdin-like 2 | 3408.4165 | 3470.94092 | 10794.834 |
| | 171283 | Havcr1 | hepatitis A virus cellular | 50 | 50 | 10719.5156 |
| | 76959 | Chmp5 | charged multivesicular b | 2882.07617 | 3190.71338 | 9963.78125 |
| | 26987 | Eif4e2 | eukaryotic translation ini | 2124.25586 | 2632.46582 | 9803.52637 |
| | 12261 | C1qbp | complement component | 1061.28918 | 1387.14771 | 9708.45996 |
| | 56332 | Amotl2 | angiomotin-like 2 | 371.245728 | 391.900879 | 9651.38281 |
| | 12387 | Ctnnb1 | catenin (cadherin associa | 2771.69092 | 3812.00952 | 9645.94629 |

| | | | | | |
|---|---|---|---|---|---|
| 66235 | Eif1ax | eukaryotic translation ini | 1077.65393 | 1549.8418 | 9595.85938 |
| 59054 | Mrps30 | mitochondrial ribosomal | 3410.21289 | 3945.1499 | 9363.15039 |
| 19170 | Psmb1 | proteasome (prosome, m | 4340.03906 | 3790.41528 | 9017.45703 |
| 20643 | Snrpe | small nuclear ribonucleo | 1380.94543 | 2047.98364 | 8985.25293 |
| 225363 | Etf1 | eukaryotic translation ter | 1953.89136 | 2256.64893 | 8968.59863 |
| 66181 | Nop10 | NOP10 ribonucleoprotein | 2204.15015 | 2776.12476 | 8900.60156 |
| 110750 | Cse1l | chromosome segregation | 1342.80591 | 1783.60962 | 8887.26465 |
| 68095 | Ociad1 | OCIA domain containing | 3117.73975 | 4281.75391 | 8872.15332 |
| 66256 | Ssr2 | signal sequence receptor, | 2845.47656 | 3975.69092 | 8855.36523 |
| 13200 | Ddost | dolichyl-di-phosphooligo | 3602.77856 | 4128.38867 | 8842.70898 |
| 12301 | Cacybp | calcyclin binding protein | 1963.64844 | 2127.99023 | 8622.75195 |
| 209318 | Gps1 | G protein pathway suppr | 2973.06934 | 3746.01416 | 8479.18359 |
| 12343 | Capza2 | capping protein (actin fil | 1569.09424 | 2158.05713 | 8466.10352 |
| 66448 | Mrpl20 | mitochondrial ribosomal | 2982.30664 | 3055.38867 | 8465.88672 |
| 14870 | Gstp1 | glutathione S-transferase | 2667.90039 | 2870.19092 | 8398.41406 |
| 12462 | Cct3 | chaperonin containing Tc | 1377.58862 | 1343.88855 | 8292.02734 |
| 19072 | Prep | prolyl endopeptidase | 912.51239 | 1107.68726 | 8229.77734 |
| 94066 | Mrpl36 | mitochondrial ribosomal | 2456.34814 | 3322.05591 | 8078.10986 |
| 23874 | Farsb | phenylalanyl-tRNA synth | 2509.54883 | 2875.4126 | 7891.64795 |
| 20810 | Srm | spermidine synthase | 804.56665 | 933.604858 | 7861.46094 |
| 68212 | Tmbim4 | transmembrane BAX inh | 2576.2356 | 3263.3916 | 7734.40332 |
| 407819 | BC031181 | cDNA sequence BC0311 | 3060.83228 | 3451.46021 | 7681.81543 |
| 74287 | Kcmf1 | potassium channel modu | 2406.35889 | 3425.92725 | 7652.60156 |
| 26443 | Psma6 | proteasome (prosome, m | 3182.66016 | 3081.6062 | 7647.95947 |
| 218335 | Clptm1l | CLPTM1-like | 2835.33105 | 3084.89111 | 7623.14551 |
| 26446 | Psmb3 | proteasome (prosome, m | 2785.88354 | 2930.64014 | 7610.43848 |
| 56207 | Uchl5 | ubiquitin carboxyl-termin | 1086.66321 | 1315.89697 | 7556.14941 |
| 66357 | Ostc | oligosaccharyltransferase | 2142.09229 | 2677.99707 | 7554.79102 |
| 23837 | Cfdp1 | craniofacial development | 2924.4502 | 3728.7251 | 7540.76855 |
| 15460 | Hr | hairless | 3207.15186 | 2744.0249 | 7533.09277 |
| 26445 | Psmb2 | proteasome (prosome, m | 2382.60229 | 2454.70093 | 7499.27783 |
| 20382 | Srsf2 | serine/arginine-rich splic | 1056.01062 | 1261.67224 | 7476.21973 |
| 68275 | Rpa1 | replication protein A1 | 1261.96265 | 1835.33032 | 7256.2168 |
| 98711 | Rdh10 | retinol dehydrogenase 10 | 548.425659 | 441.413177 | 7185.57568 |
| 52502 | Carhsp1 | calcium regulated heat st | 2120.77075 | 2919.21631 | 7168.78613 |
| 67054 | Paics | phosphoribosylaminoimi | 2456.68115 | 2252.2959 | 7147.48926 |
| 110052 | Dek | DEK oncogene (DNA bi | 1283.85315 | 1913.50195 | 7135.75 |
| 12793 | Cnih | cornichon homolog (Dro | 2160.93652 | 2889.28662 | 7104.38184 |
| 20637 | Snrnp70 | small nuclear ribonucleo | 1557.57886 | 2196.20068 | 7031.97461 |
| 16911 | Lmo4 | LIM domain only 4 | 1506.56604 | 1881.24084 | 7000.53369 |
| 14621 | Gjb4 | gap junction protein, beta | 50 | 50 | 6988.9043 |
| 24030 | Mrps12 | mitochondrial ribosomal | 2066.14917 | 2499.57153 | 6939.71484 |
| 67804 | Snx2 | sorting nexin 2 | 1886.30151 | 2580.98145 | 6873.80469 |
| 15191 | Hdgf | hepatoma-derived growth | 1936.59656 | 2798.01465 | 6855.32275 |
| 12345 | Capzb | capping protein (actin fil | 2122.44214 | 3108.91895 | 6836.71582 |
| 66143 | Eef1e1 | eukaryotic translation elo | 391.135345 | 499.070007 | 6652.18945 |
| 14852 | Gspt1 | G1 to S phase transition 1 | 1151.6438 | 1415.28223 | 6584.82422 |
| 22192 | Ube2m | ubiquitin-conjugating enz | 704.570557 | 1051.27112 | 6564.25342 |
| 66276 | 1810009A15Rik | RIKEN cDNA 1810009A | 758.759583 | 955.022217 | 6526.91992 |
| 230126 | Shb | src homology 2 domain-c | 3114.85034 | 3176.39233 | 6428.20898 |
| 107071 | Wdr74 | WD repeat domain 74 | 1165.54199 | 1441.71765 | 6372.16992 |
| 68202 | Ndufa5 | NADH dehydrogenase (u | 3130.4895 | 3080.62598 | 6340.30371 |
| 26891 | Cops4 | COP9 (constitutive photo | 1890.14478 | 2126.6123 | 6328.4834 |
| 12558 | Cdh2 | cadherin 2 | 793.741821 | 866.336426 | 6256.91406 |
| 52615 | Suz12 | suppressor of zeste 12 ho | 1740.27173 | 2322.65405 | 6228.87842 |
| 56047 | Msln | mesothelin | 50 | 50 | 6204.8667 |
| 23897 | Hax1 | HCLS1 associated X-1 | 1253.82312 | 1425.96191 | 6142.81055 |
| 268656 | Sptlc1 | serine palmitoyltransfera | 1394.61865 | 1116.16431 | 6080.32031 |
| 52502 | Carhsp1 | calcium regulated heat st | 1753.00867 | 2399.65283 | 6025.22754 |
| 218121 | Mboat1 | membrane bound O-acyl | 50 | 50 | 5967.36328 |
| 74493 | Tnks2 | tankyrase, TRF1-interact | 1931.34338 | 2615.27686 | 5963.47217 |

| | | | | | |
|---|---|---|---|---|---|
| 68441 | Rraga | Ras-related GTP binding | 2105.27734 | 2910.85962 | 5879.90332 |
| 52858 | Cdipt | CDP-diacylglycerol--ino | 2423.22412 | 2577.42773 | 5688.26562 |
| 235036 | Ppan | peter pan homolog (Dros | 1682.99341 | 2515.81396 | 5636.04541 |
| 225995 | D030056L22Rik | RIKEN cDNA D030056 | 637.429077 | 803.960083 | 5635.1123 |
| 26356 | Ing1 | inhibitor of growth famil | 605.947876 | 901.27002 | 5630.49414 |
| 21915 | Dtymk | deoxythymidylate kinase | 784.417236 | 1153.40527 | 5599.87402 |
| 50927 | Nasp | nuclear autoantigenic spe | 504.944122 | 540.17749 | 5531.27393 |
| 20901 | Strap | serine/threonine kinase re | 1529.17896 | 2124.5144 | 5416.19238 |
| 13204 | Dhx15 | DEAH (Asp-Glu-Ala-His | 1718.51587 | 2084.04492 | 5411.64209 |
| 75062 | Sf3a3 | splicing factor 3a, subuni | 1292.39197 | 1383.73413 | 5293.65332 |
| 230075 | Ndufb6 | NADH dehydrogenase (u | 2193.62158 | 2162.42871 | 5272.61133 |
| 26754 | Cops5 | COP9 (constitutive photo | 1820.12476 | 2331.00098 | 5222.40625 |
| 67180 | Yipf5 | Yip1 domain family, me | 1757.02783 | 2477.68018 | 5202 |
| 66868 | Mfsd1 | major facilitator superfan | 2480.6167 | 2485.00977 | 5201.33105 |
| 22370 | Vtn | vitronectin | 1819.39771 | 2497.65039 | 5196.41943 |
| 27979 | Eif3b | eukaryotic translation ini | 1050.45959 | 1294.08911 | 5170.88965 |
| 226016 | Fam108b | family with sequence sin | 1210.18799 | 1651.8811 | 5072.93115 |
| 66890 | Lman2 | lectin, mannose-binding 2 | 1981.67334 | 2013.45752 | 5060.84961 |
| 18813 | Pa2g4 | proliferation-associated 2 | 2154.70581 | 2448.55664 | 5035.33154 |
| 68051l100043462 | Nutf2lNutf2-ps1lG | nuclear transport factor 2 | 1241.45996 | 1536.38916 | 5029.72266 |
| 211652 | Wwc1 | WW, C2 and coiled-coil | 968.250732 | 1162.26001 | 4961.27051 |
| 53893 | Nudt5 | nudix (nucleoside diphos | 566.810242 | 596.386963 | 4956.22607 |
| 97820 | 4833439L19Rik | RIKEN cDNA 4833439L | 1501.7627 | 2146.50317 | 4948.20703 |
| 216443 | Mars | methionine-tRNA synthe | 1324.65723 | 1955.45544 | 4917.68799 |
| 70396 | Asnsd1 | asparagine synthetase do | 1760.08374 | 1778.32007 | 4909.80664 |
| 75616 | 2810008M24Rik | RIKEN cDNA 2810008M | 895.726196 | 996.926147 | 4905.63965 |
| 19823 | Rnf7 | ring finger protein 7 | 1593.05859 | 2347.98291 | 4898.93164 |
| 76936 | Hnrnpm | heterogeneous nuclear rib | 1635.4231 | 2038.84473 | 4858.19189 |
| 105083 | Pelo | pelota homolog (Drosoph | 1726.88843 | 2022.0929 | 4832.93311 |
| 29864 | Rnf11 | ring finger protein 11 | 2117.70532 | 1500.91943 | 4809.07129 |
| 14976 | H2-Ke2 | H2-K region expressed g | 1635.21094 | 2321.09912 | 4781.37012 |
| 20311 | Cxcl5 | chemokine (C-X-C motif | 50 | 59.2016945 | 4778.77588 |
| 70025 | Acot7 | acyl-CoA thioesterase 7 | 369.292419 | 464.197205 | 4771.59961 |
| 97130 | C77080 | expressed sequence C77( | 1871.82983 | 2217.97607 | 4715.80371 |
| 266781 | Snx17 | sorting nexin 17 | 1236.02942 | 1787.88501 | 4667.7417 |
| 19352 | Rabggtb | RAB geranylgeranyl tran | 1649.12646 | 1859.43579 | 4647.63281 |
| 72692 | Hnrpll | heterogeneous nuclear rib | 866.386841 | 1288.99316 | 4632.82227 |
| 381038 | Parl | presenilin associated, rho | 997.922852 | 1303.46436 | 4626.88477 |
| 19718 | Rfc2 | replication factor C (activ | 955.380737 | 1042.25366 | 4617.36865 |
| 22234 | Ugcg | UDP-glucose ceramide g | 1318.46313 | 1519.5625 | 4568.82324 |
| 56736 | Rnf14 | ring finger protein 14 | 1314.74658 | 1912.50464 | 4558.83057 |
| 66521 | Rwdd1 | RWD domain containing | 400.236572 | 561.157715 | 4525.69043 |
| 67781 | Ilf2 | interleukin enhancer bind | 468.612152 | 647.564453 | 4519.09668 |
| 76561 | Snx7 | sorting nexin 7 | 417.116211 | 526.917297 | 4480.96289 |
| 225288 | Fhod3 | formin homology 2 doma | 89.1428223 | 73.6954803 | 4479.43066 |
| 66997 | Psmd12 | proteasome (prosome, m | 1685.58362 | 1828.65857 | 4421.28906 |
| 17846 | Commd1 | COMM domain containi | 839.244751 | 1068.35815 | 4413.90723 |
| 19720 | Trim27 | tripartite motif-containing | 838.956421 | 1122.22351 | 4391.89893 |
| 19139 | Prps1 | phosphoribosyl pyrophos | 1144.14587 | 1337.57605 | 4374.07617 |
| 22122 | Tsta3 | tissue specific transplanta | 1636.94714 | 2038.23486 | 4301.2085 |
| 69790 | Med30 | mediator complex subun | 540.081665 | 655.445801 | 4290.92676 |
| 12540 | Cdc42 | cell division cycle 42 ho | 1526.6853 | 1869.87073 | 4287.59229 |
| 66366 | Ergic3 | ERGIC and golgi 3 | 717.77002 | 811.279785 | 4268.83936 |
| 67205 | Utp11l | UTP11-like, U3 small nu | 916.891113 | 1295.01147 | 4234.64941 |
| 433702 | Ncbp1 | nuclear cap binding prote | 954.972046 | 960.7547 | 4214.5 |
| 15115 | Hars | histidyl-tRNA synthetase | 904.572388 | 1102.03967 | 4207.73096 |
| 64657 | Mrps10 | mitochondrial ribosomal | 1815.8855 | 1710.22546 | 4171.5625 |
| 70356 | St13 | suppression of tumorigen | 993.441101 | 1295.23926 | 4149.62793 |
| 226830 | Smyd2 | SET and MYND domain | 1237.62146 | 1694.39758 | 4118.03467 |
| 71974 | Prmt3 | protein arginine N-methy | 1257.03589 | 1841.68237 | 4105.13672 |
| 109054 | Pfdn4 | prefoldin 4 | 462.435333 | 615.480042 | 4084.16357 |

| | | | | | |
|---|---|---|---|---|---|
| 56445 | Dnaja2 | DnaJ (Hsp40) homolog, | 1011.54846 | 1030.87231 | 4059.19897 |
| 12977 | Csf1 | colony stimulating factor | 142.42099 | 204.742203 | 4047.95752 |
| 66917 | Chordc1 | cysteine and histidine-ric | 1684.104 | 1128.63501 | 4039.72461 |
| 77862 | Thyn1 | thymocyte nuclear protei | 1097.8667 | 1574.05322 | 4039.14795 |
| 68090 | Yif1a | Yip1 interacting factor h | 1977.93469 | 1919.79468 | 4002.56543 |
| 14620 | Gjb3 | gap junction protein, beta | 50 | 50 | 3979.72559 |
| 66126 | Elof1 | elongation factor 1 homo | 1227.58081 | 1399.76282 | 3961.93213 |
| 72612 | 2700029M09Rik | RIKEN cDNA 2700029M | 791.207153 | 820.946594 | 3928.8894 |
| 70160 | Vps36 | vacuolar protein sorting | 1308.17212 | 1562.60815 | 3925.64062 |
| 11933 | Atp1b3 | ATPase, Na+/K+ transpo | 1319.28223 | 1903.14209 | 3919.88916 |
| 66958 | Tmx2 | thioredoxin-related transı | 1443.34546 | 1910.698 | 3917.0625 |
| 12539 | Cdc37 | cell division cycle 37 hor | 844.151001 | 1200.82666 | 3898.97681 |
| 229877 | Rap1gds1 | RAP1, GTP-GDP dissoc | 1000.1803 | 1292.52148 | 3884.86938 |
| 67166 | Arl8b | ADP-ribosylation factor- | 1205.25952 | 1798.49963 | 3883.82422 |
| 60411 | Cenpk | centromere protein K | 114.27771 | 139.752899 | 3855.39233 |
| 12181 | Bop1 | block of proliferation 1 | 424.340149 | 558.625366 | 3840.55371 |
| 54709 | Eif3i | eukaryotic translation ini | 604.642456 | 454.452637 | 3804.72876 |
| 66537 | Pomp | proteasome maturation p | 881.918335 | 1136.54468 | 3795.82715 |
| 67618 | Aasdhppt | aminoadipate-semialdehy | 972.868652 | 729.306885 | 3789.91797 |
| 229877 | Rap1gds1 | RAP1, GTP-GDP dissoc | 804.959595 | 949.234619 | 3772.97754 |
| 27407 | Abcf2 | ATP-binding cassette, su | 245.924591 | 286.812805 | 3760.19287 |
| 66928 | 3110001D03Rik | RIKEN cDNA 3110001I | 1198.66284 | 1244.88232 | 3747.14697 |
| 22680 | Zfp207 | zinc finger protein 207 | 707.084656 | 934.633301 | 3715.23291 |
| 68079 | Pdcd2l | programmed cell death 2 | 1082.67432 | 1568.45093 | 3685.54053 |
| 13511 | Dsg2 | desmoglein 2 | 1288.88135 | 1692.77637 | 3683.83154 |
| 59050 | Nsa2 | NSA2 ribosome biogenes | 810.848022 | 1013.46704 | 3677.84863 |
| 83703 | Dbr1 | debranching enzyme hon | 511.176392 | 500.150818 | 3639.82471 |
| 17220 | Mcm7 | minichromosome mainte | 231.389557 | 345.462769 | 3595.54858 |
| 195040 | Tmem199 | transmembrane protein 1 | 672.062744 | 932.569214 | 3587.08398 |
| 68565 | Mrps18a | mitochondrial ribosomal | 1020.40576 | 1427.77002 | 3532.04932 |
| 12757 | Clta | clathrin, light polypeptid | 911.57135 | 1146.03601 | 3512.05566 |
| 20479 | Vps4b | vacuolar protein sorting | 1332.49756 | 1669.70801 | 3511.63477 |
| 66399 | Tsfm | Ts translation elongation | 651.53949 | 948.617798 | 3507.27539 |
| 70358 | Steap1 | six transmembrane epithe | 50 | 50 | 3463.28516 |
| 66310 | Dpy30 | dpy-30 homolog (C. eleg | 820.56073 | 1180.83386 | 3434.83496 |
| 14227 | Fkbp2 | FK506 binding protein 2 | 1136.47998 | 1501.11035 | 3434.62646 |
| 69885 | 2610002D18Rik | RIKEN cDNA 2610002I | 50 | 69.6281662 | 3406.7959 |
| 20224 | Sar1a | SAR1 gene homolog A ( | 517.766602 | 640.488037 | 3380.73682 |
| 72084 | Pigx | phosphatidylinositol glyc | 1296.04041 | 1420.65674 | 3377.97607 |
| 107732 | Mrpl10 | mitochondrial ribosomal | 782.145508 | 1002.09277 | 3376.08496 |
| 100972 | Rab28 | RAB28, member RAS or | 968.784668 | 1125.86206 | 3364.24658 |
| 17218 | Mcm5 | minichromosome mainte | 50 | 50 | 3345.2998 |
| 28106 | D17Wsu104e | DNA segment, Chr 17, W | 807.700195 | 826.205078 | 3316.40283 |
| 209354 | Eif2b1 | eukaryotic translation ini | 751.263184 | 892.515747 | 3305.13672 |
| 223691 | Eif3l | eukaryotic translation ini | 707.995544 | 837.494507 | 3291.25757 |
| 13722 | Aimp1 | aminoacyl tRNA synthet | 703.160583 | 1033.18823 | 3284.62207 |
| 13726 | Emd | emerin | 289.703888 | 359.196838 | 3278.76855 |
| 15182 | Hdac2 | histone deacetylase 2 | 521.825317 | 691.840881 | 3248.5144 |
| 68184 | Denr | density-regulated protein | 1131.56885 | 1383.76233 | 3243.24951 |
| 66495 | Ndufb3 | NADH dehydrogenase (u | 1116.51111 | 1078.54688 | 3241.67017 |
| 109778 | Blvra | biliverdin reductase A | 1023.84668 | 1492.30518 | 3241.62915 |
| 60409 | Trappc4 | trafficking protein partic | 222.448334 | 227.558777 | 3239.53223 |
| 68115 | 9430016H08Rik | RIKEN cDNA 9430016H | 1085.08545 | 1512.93604 | 3237.91357 |
| 67767 | Jagn1 | jagunal homolog 1 (Dros | 964.222168 | 1280.57983 | 3231.3457 |
| 66998 | Psmd5 | proteasome (prosome, m | 825.473328 | 1116.61694 | 3229.44922 |
| 66844 | Ormdl2 | ORM1-like 2 (S. cerevisi | 1223.52222 | 1274.14294 | 3207.68896 |
| 66671 | Ccnh | cyclin H | 1103.78369 | 1166.25659 | 3204.23486 |
| 66407 | Mrps15 | mitochondrial ribosomal | 978.39917 | 1130.6311 | 3163.04639 |
| 68794 | Flnc | filamin C, gamma | 50 | 50 | 3161.68896 |
| 72635 | Lins | lines homolog (Drosophi | 997.33667 | 1049.99512 | 3043.66748 |
| 74168 | Zdhhc16 | zinc finger, DHHC doma | 268.743347 | 380.52655 | 3034.64941 |

| | | | | | |
|---|---|---|---|---|---|
| 268996 | Ss18 | synovial sarcoma translo | 970.324524 | 1322.2688 | 3019.0022 |
| 28015 | Polr2m | polymerase (RNA) II (D | 802.953979 | 967.582092 | 3017.88965 |
| 12928 | Crk | v-crk sarcoma virus CT1 | 558.168457 | 766.895874 | 2989.63184 |
| 74137 | Nuak2 | NUAK family, SNF1-lik | 496.332458 | 539.908691 | 2964.01831 |
| 105148 | Iars | isoleucine-tRNA synthet | 409.914429 | 581.587646 | 2956.49854 |
| 58184 | Rqcd1 | rcd1 (required for cell di | 532.933716 | 774.533936 | 2953.26953 |
| 100505064l56397 | LOC100505064lM | mortality factor 4-like pr | 231.319855 | 249.437378 | 2950.27246 |
| 20638 | Snrpb | small nuclear ribonucleo | 551.513245 | 772.339722 | 2948.97266 |
| 109075 | Exosc4 | exosome component 4 | 811.046021 | 949.289795 | 2929.7561 |
| 66618 | Snrnp27 | small nuclear ribonucleo | 958.962646 | 1312.57666 | 2928.02393 |
| 17274 | Rab8a | RAB8A, member RAS o | 1253.5332 | 1434.15186 | 2921.8667 |
| 56258 | Hnrnph2 | heterogeneous nuclear rib | 726.491089 | 1057.01917 | 2916.00537 |
| 68572 | Ict1 | immature colon carcinon | 1049.85278 | 1405.53625 | 2912.12695 |
| 66799 | Ube2w | ubiquitin-conjugating enz | 682.10022 | 986.778442 | 2911.15283 |
| 22402 | Wisp1 | WNT1 inducible signalin | 50 | 67.9531403 | 2909.91699 |
| 66073 | Txndc12 | thioredoxin domain conta | 1032.11621 | 1142.88831 | 2894.1958 |
| 56390 | Sssca1 | Sjogren's syndrome/scler | 353.886108 | 429.76297 | 2891.61255 |
| 11772 | Ap2a2 | adaptor protein complex | 898.151611 | 1138.4021 | 2870.61816 |
| 15528 | Hspe1 | heat shock protein 1 (cha | 498.773682 | 632.538696 | 2857.49487 |
| 68026 | 2810417H13Rik | RIKEN cDNA 2810417H | 50 | 50 | 2851.17822 |
| 11732 | Ank | progressive ankylosis | 676.810608 | 591.118652 | 2837.18262 |
| 20492 | Slbp | stem-loop binding protein | 346.250244 | 507.791748 | 2828.97754 |
| 83435 | Plekha3 | pleckstrin homology dom | 480.243286 | 651.985474 | 2817.98096 |
| 94067 | Mrpl43 | mitochondrial ribosomal | 961.543335 | 1097.55371 | 2790.34082 |
| 53356 | Eif3g | eukaryotic translation ini | 1032.56921 | 1354.38574 | 2782.29883 |
| 110959 | Nudt19 | nudix (nucleoside diphos | 780.128845 | 931.215332 | 2774.33228 |
| 380601 | Fastkd5 | FAST kinase domains 5 | 1007.21252 | 1188.00928 | 2759.72192 |
| 242960 | Fbxl5 | F-box and leucine-rich re | 540.680481 | 544.87854 | 2758.37109 |
| 27756 | Lsm2 | LSM2 homolog, U6 sma | 524.157288 | 723.928101 | 2745.51074 |
| 67841 | Atg3 | autophagy-related 3 (yea | 1111.28638 | 1019.61829 | 2745.11328 |
| 66201 | Vta1 | Vps20-associated 1 hom | 249.645844 | 325.775574 | 2744.073 |
| 66206 | 1110059E24Rik | RIKEN cDNA 1110059E | 431.806458 | 456.127655 | 2741.82031 |
| 70396 | Asnsd1 | asparagine synthetase do | 1179.54639 | 1309.40198 | 2722.58081 |
| 18120 | Mrpl49 | mitochondrial ribosomal | 1197.3147 | 922.200806 | 2720.72217 |
| 72519 | Tmem55a | transmembrane protein 5 | 544.978394 | 559.242188 | 2706.80518 |
| 19944 | Rpl29 | ribosomal protein L29 | 135.372894 | 198.039276 | 2701.66699 |
| 11538 | Adnp | activity-dependent neuro | 1033.45166 | 1315.81201 | 2694.91626 |
| 19177 | Psmb7 | proteasome (prosome, m | 622.585083 | 829.758911 | 2688.69482 |
| 75734 | Mff | mitochondrial fission fac | 510.010376 | 729.264404 | 2675.43042 |
| 245474 | Dkc1 | dyskeratosis congenita 1, | 504.516388 | 567.441895 | 2646.88672 |
| 13800 | Enah | enabled homolog (Droso | 50 | 50 | 2642.60278 |
| 26440 | Psma1 | proteasome (prosome, m | 900.592896 | 1130.13452 | 2624.33618 |
| 108062 | Cstf2 | cleavage stimulation fact | 805.50769 | 932.867737 | 2622.53174 |
| 67665 | Dctn4 | dynactin 4 | 805.85144 | 1175.06738 | 2609.17041 |
| 268996 | Ss18 | synovial sarcoma translo | 772.904907 | 1094.36487 | 2605.06396 |
| 77809 | Lrrc42 | leucine rich repeat contai | 550.906494 | 593.628296 | 2603.05762 |
| 109145 | Gins4 | GINS complex subunit 4 | 711.403198 | 1007.03711 | 2600.37891 |
| 66230 | Mrps28 | mitochondrial ribosomal | 919.197632 | 1062.41919 | 2594.59277 |
| 100504952l23827 | LOC100504952lBr | uncharacterized LOC100 | 799.974121 | 1021.80963 | 2586.97461 |
| 20523 | Slc25a14 | solute carrier family 25 ( | 402.985168 | 565.383484 | 2586.49658 |
| 16906 | Lmnb1 | lamin B1 | 50 | 50.1319389 | 2535.09033 |
| 69082 | Zc3h15 | zinc finger CCCH-type c | 618.654724 | 833.083496 | 2523.89795 |
| 17826 | Fam89b | family with sequence sim | 406.601868 | 607.929688 | 2514.64941 |
| 12856 | Cox17 | cytochrome c oxidase, su | 782.324585 | 1067.44849 | 2507.72632 |
| 14168 | Fgf13 | fibroblast growth factor 1 | 50 | 50 | 2503.14014 |
| 68153 | Gtf2e2 | general transcription fact | 558.233398 | 633.84021 | 2498.57007 |
| 80914 | Uck2 | uridine-cytidine kinase 2 | 50 | 68.5147858 | 2496.08887 |
| 68499 | Mrpl53 | mitochondrial ribosomal | 664.805542 | 918.594604 | 2480.97217 |
| 381493 | S100a7a | S100 calcium binding pr | 50 | 50 | 2477.35693 |
| 101739 | Psip1 | PC4 and SFRS1 interacti | 336.491577 | 309.421417 | 2465.69971 |
| 67383 | 2410127L17Rik | RIKEN cDNA 2410127L | 495.022278 | 635.177124 | 2443.87891 |

| | | | | | |
|---|---|---|---|---|---|
| 26914 | H2afy | H2A histone family, mer | 556.340271 | 817.528625 | 2412.44458 |
| 22409 | Wnt10a | wingless related MMTV | 50 | 50 | 2394.02515 |
| 269704 | Zfp664 | zinc finger protein 664 | 478.743103 | 632.466553 | 2390.78125 |
| 103733 | Tubg1 | tubulin, gamma 1 | 482.324951 | 648.5802 | 2389.56055 |
| 20930 | Surf1 | surfeit gene 1 | 950.284363 | 720.951538 | 2364.97217 |
| 18769 | Pkig | protein kinase inhibitor, | 909.399414 | 1173.32593 | 2363.24512 |
| 53598 | Dctn3 | dynactin 3 | 451.686584 | 570.960266 | 2356.42725 |
| 64656 | Mrps23 | mitochondrial ribosomal | 926.247314 | 1037.79028 | 2348.60205 |
| 69535 | 2310004N24Rik | RIKEN cDNA 2310004N | 356.341614 | 414.519409 | 2344.23584 |
| 12042 | Bcl10 | B cell leukemia/lymphon | 682.527954 | 983.119934 | 2335.99951 |
| 52392 | D1Ertd622e | DNA segment, Chr 1, ER | 350.115723 | 497.693481 | 2335.17139 |
| 14181 | Fgfbp1 | fibroblast growth factor b | 50 | 71.6894073 | 2327.40039 |
| 16329 | Inpp1 | inositol polyphosphate-1- | 427.014282 | 389.937256 | 2320.66797 |
| 101214 | Tra2a | transformer 2 alpha hom | 658.970947 | 860.564331 | 2306.82007 |
| 320438 | Alg6 | asparagine-linked glycos | 990.07312 | 895.638 | 2305.45605 |
| 99167 | Ssx2ip | synovial sarcoma, X brea | 630.873657 | 794.283447 | 2303.50391 |
| 68861 | 1190002N15Rik | RIKEN cDNA 1190002N | 810.892395 | 912.338806 | 2303.14746 |
| 67283 | Slc25a19 | solute carrier family 25 ( | 548.938904 | 623.589233 | 2273.75098 |
| 56420 | Ppp4c | protein phosphatase 4, ca | 452.000244 | 654.35791 | 2257.94922 |
| 74108 | Parn | poly(A)-specific ribonuc | 547.205811 | 726.583496 | 2257.92285 |
| 13626 | Eed | embryonic ectoderm dev | 657.602234 | 821.375244 | 2257.17676 |
| 20187 | Ryk | receptor-like tyrosine kin | 627.600708 | 781.720703 | 2256.6543 |
| 66229 | Rpl7l1 | ribosomal protein L7-like | 870.059021 | 770.596802 | 2240.54541 |
| 17184 | Matr3 | matrin 3 | 215.574509 | 251.729218 | 2239.74854 |
| 26891 | Cops4 | COP9 (constitutive photo | 237.835663 | 325.866089 | 2236.71973 |
| 56327 | Arl2 | ADP-ribosylation factor- | 89.1824341 | 105.594536 | 2225.7002 |
| 100048603 | LOC100048603 | 39S ribosomal protein L4 | 367.758911 | 274.016693 | 2216.33984 |
| 13006 | Smc3 | structural maintenance of | 240.913757 | 247.187988 | 2207.92139 |
| 56443 | Arpc1a | actin related protein 2/3 c | 953.810791 | 854.234863 | 2207.23145 |
| 52276 | Cdca8 | cell division cycle associ | 50 | 50 | 2191.11084 |
| 433653 | Gm5549 | predicted gene 5549 | 86.3831558 | 82.0281677 | 2188.83154 |
| 68240 | Rpa3 | replication protein A3 | 256.345428 | 207.783844 | 2185.30347 |
| 26426 | Nubp2 | nucleotide binding protei | 691.22522 | 976.871094 | 2174.51855 |
| 28030 | Gfm1 | G elongation factor, mito | 972.564575 | 810.269714 | 2169.61377 |
| 52575 | Rg9mtd1 | RNA (guanine-9-) methy | 861.943176 | 694.634949 | 2168.33496 |
| 68612 | Ube2c | ubiquitin-conjugating enz | 50 | 73.2993622 | 2155.59326 |
| 59001 | Pole3 | polymerase (DNA directe | 238.602417 | 256.348267 | 2148.60938 |
| 66596 | Gtf3a | general transcription fact | 375.494568 | 499.7547 | 2140.84326 |
| 67949 | Mki67ip | Mki67 (FHA domain) int | 635.535889 | 831.493286 | 2139.80469 |
| 17766 | Nudt1 | nudix (nucleoside diphos | 680.291077 | 884.371216 | 2133.39746 |
| 69577 | Fastkd3 | FAST kinase domains 3 | 300.956451 | 331.83905 | 2116.69043 |
| 68098 | Rchy1 | ring finger and CHY zinc | 768.18396 | 1035.83936 | 2115.31152 |
| 66421 | 2410004B18Rik | RIKEN cDNA 2410004B | 351.082062 | 515.956055 | 2113.32495 |
| 245841l665137 | Polr2hlGm7511 | polymerase (RNA) II (DI | 358.439087 | 488.367645 | 2108.52832 |
| 69048 | Slc30a5 | solute carrier family 30 ( | 733.466309 | 863.888916 | 2104.02246 |
| 17192 | Mbd3 | methyl-CpG binding dom | 591.582336 | 611.088745 | 2101.83203 |
| 66310 | Dpy30 | dpy-30 homolog (C. eleg | 565.834351 | 724.256287 | 2097.61694 |
| 67864 | Yipf4 | Yip1 domain family, mer | 850.223267 | 852.108582 | 2096.72949 |
| 76561 | Snx7 | sorting nexin 7 | 496.048859 | 605.94342 | 2089.94775 |
| 19272 | Ptprk | protein tyrosine phospha | 525.367615 | 614.775513 | 2088.6958 |
| 66818 | 9130011J15Rik | RIKEN cDNA 9130011J | 640.950684 | 859.538696 | 2083.80518 |
| 100102 | Pcsk9 | proprotein convertase sub | 482.94278 | 508.892395 | 2079.65601 |
| 19946 | Rpl30 | ribosomal protein L30 | 206.842407 | 280.453644 | 2078.24609 |
| 18674 | Slc25a3 | solute carrier family 25 ( | 839.091064 | 959.014587 | 2076.42383 |
| 56418 | Ykt6 | YKT6 homolog (S. Cere | 772.687866 | 787.495605 | 2069.98877 |
| 20496 | Slc12a2 | solute carrier family 12, | 283.58255 | 280.563995 | 2069.51538 |
| 65961 | Utp3 | UTP3, small subunit (SS | 550.607056 | 803.213135 | 2051.073 |
| 216363 | Rab3ip | RAB3A interacting prote | 544.042114 | 717.410461 | 2050.2793 |
| 19361 | Rad51 | RAD51 homolog (S. cere | 50 | 50 | 2039.64233 |
| 14467 | Gbas | glioblastoma amplified s | 712.594482 | 1004.2771 | 2029.29297 |
| 59052 | Mettl9 | methyltransferase like 9 | 304.652405 | 393.676331 | 2028.64404 |

| | | | | | |
|---|---|---|---|---|---|
| 231440 | Parm1 | prostate androgen-regula | 50 | 74.0816956 | 2018.59863 |
| 14976 | H2-Ke2 | H2-K region expressed g | 656.550293 | 802.320435 | 2018.14014 |
| 109077 | Ints5 | integrator complex subur | 249.715561 | 348.549683 | 2012.85376 |
| 67282 | Ccdc53 | coiled-coil domain conta | 619.844482 | 583.392822 | 2010.68298 |
| 52443 | Mrpl48 | mitochondrial ribosomal | 890.441284 | 991.086243 | 2010.51208 |
| 68250 | Fam96a | family with sequence sin | 518.064453 | 615.304626 | 2009.61816 |
| 50884 | Nckap1 | NCK-associated protein | 400.390228 | 526.518372 | 1999.69775 |
| 22225 | Usp5 | ubiquitin specific peptida | 758.873657 | 668.33252 | 1999.37573 |
| 70285 | Rpf1 | ribosome production fact | 392.515167 | 574.661194 | 1988.78809 |
| 56452 | Orc6 | origin recognition compl | 114.173157 | 165.909607 | 1985.49988 |
| 53861 | Zranb2 | zinc finger, RAN-binding | 682.627808 | 984.158325 | 1978.08545 |
| 102209 | Snapc2 | small nuclear RNA activ | 252.280365 | 365.526306 | 1965.46021 |
| 380863 | Tmem171 | transmembrane protein 1 | 50 | 55.82901 | 1961.8269 |
| 228410 | Cstf3 | cleavage stimulation fact | 359.753967 | 341.638794 | 1958.18701 |
| 66194 | Pycrl | pyrroline-5-carboxylate r | 421.963837 | 470.491272 | 1953.68286 |
| 69617 | Pitrm1 | pitrilysin metallepetidase | 460.219055 | 383.701172 | 1950.29773 |
| 66070 | Cwc15 | CWC15 homolog (S. cer | 623.774841 | 785.775269 | 1913.75806 |
| 14056 | Ezh2 | enhancer of zeste homol | 94.5623627 | 121.312057 | 1904.24023 |
| 26886 | Cenph | centromere protein H | 50 | 50 | 1902.96826 |
| 66815 | Ccdc109b | coiled-coil domain conta | 50 | 50 | 1901.91162 |
| 230484 | Usp1 | ubiquitin specific peptida | 97.8448334 | 86.7901077 | 1901.2478 |
| 224045 | Eif2b5 | eukaryotic translation ini | 361.681946 | 479.099854 | 1901.00952 |
| 15975 | Ifnar1 | interferon (alpha and bet | 733.071777 | 910.570374 | 1899.31201 |
| 54638 | Ccdc22 | coiled-coil domain conta | 757.045532 | 869.919861 | 1893.85474 |
| 66789 | Alg14 | asparagine-linked glycos | 559.090454 | 820.369385 | 1881.42664 |
| 60315 | Myg1 | melanocyte proliferating | 395.309692 | 566.085205 | 1878.80884 |
| 69860 | Eif1ad | eukaryotic translation ini | 431.483276 | 604.697083 | 1858.20227 |
| 69085 | Zcchc9 | zinc finger, CCHC doma | 233.113159 | 305.870483 | 1857.34778 |
| 110119 | Mpi | mannose phosphate isom | 355.539978 | 434.878601 | 1855.78345 |
| 12370 | Casp8 | caspase 8 | 365.865784 | 525.327148 | 1851.93652 |
| 238673 | Zfp367 | zinc finger protein 367 | 194.583893 | 160.122009 | 1847.44702 |
| 75624 | Metap1 | methionyl aminopeptidas | 254.522003 | 335.75354 | 1845.03638 |
| 225908 | Gm98 | predicted gene 98 | 303.023834 | 446.155334 | 1843.099 |
| 329934 | Foxo6 | forkhead box O6 | 50 | 50 | 1841.65283 |
| 108664 | Atp6v1h | ATPase, H+ transporting | 605.151001 | 838.160889 | 1838.85107 |
| 94062 | Mrpl3 | mitochondrial ribosomal | 323.650085 | 387.680786 | 1838.5127 |
| 226971 | Plekhb2 | pleckstrin homology dom | 368.660339 | 490.662323 | 1832.08252 |
| 12235 | Bub1 | budding uninhibited by b | 50 | 50 | 1825.79199 |
| 14479 | Usp15 | ubiquitin specific peptida | 577.356201 | 718.098022 | 1821.68713 |
| 56844 | Tssc4 | tumor-suppressing subch | 734.983948 | 793.571777 | 1816.23645 |
| 28135 | Cep63 | centrosomal protein 63 | 336.212769 | 481.745361 | 1810.28943 |
| 100972 | Rab28 | RAB28, member RAS or | 258.626678 | 243.042862 | 1808.70703 |
| 26572 | Cops3 | COP9 (constitutive photo | 365.73114 | 459.315002 | 1797.35693 |
| 73274 | Gpbp1 | GC-rich promoter bindin | 532.455322 | 697.320068 | 1795.42932 |
| 108143 | Taf9 | TAF9 RNA polymerase I | 225.726044 | 252.050369 | 1791.73853 |
| 17083 | Tmed1 | transmembrane emp24 d | 603.13269 | 594.052734 | 1780.50842 |
| 66231 | Thoc7 | THO complex 7 homolog | 505.965942 | 733.522705 | 1779.13794 |
| 66442 | Spc25 | SPC25, NDC80 kinetoch | 201.69693 | 207.011414 | 1770.70142 |
| 67711 | Nsmce1 | non-SMC element 1 hom | 370.179565 | 536.110107 | 1770.55029 |
| 104303 | Arl1 | ADP-ribosylation factor- | 413.097076 | 409.163269 | 1770.47949 |
| 11837 | Rplp0 | ribosomal protein, large, | 537.382141 | 793.518066 | 1767.20618 |
| 98710 | Rabif | RAB interacting factor | 260.419983 | 274.22467 | 1759.90503 |
| 85305l631033 | KarslLOC631033 | lysyl-tRNA synthetaselly | 417.919373 | 549.221741 | 1759.37598 |
| 21974 | Top2b | topoisomerase (DNA) II | 551.608276 | 670.689453 | 1757.82642 |
| 20833 | Ssrp1 | structure specific recogni | 351.943848 | 495.963257 | 1754.69263 |
| 230393 | BC057079 | cDNA sequence BC0570 | 648.779785 | 662.590149 | 1753.89575 |
| 68087 | Dcakd | dephospho-CoA kinase d | 737.963867 | 771.265991 | 1746.76221 |
| 14590 | Ggh | gamma-glutamyl hydrola | 662.787292 | 755.298035 | 1736.12378 |
| 20530 | Slc31a2 | solute carrier family 31, | 385.257965 | 563.916382 | 1735.38586 |
| 52551 | Sgta | small glutamine-rich tetr | 654.414795 | 814.542175 | 1717.03223 |
| 241576 | Ldlrad3 | low density lipoprotein r | 364.032898 | 540.801331 | 1700.2561 |

| | | | | | |
|---|---|---|---|---|---|
| 21454 | Tcp1 | t-complex protein 1 | 503.580139 | 410.87085 | 1697.31458 |
| 76563 | Qrsl1 | glutaminyl-tRNA syntha | 377.706085 | 534.40686 | 1696.18567 |
| 70083 | Metrn | meteorin, glial cell differ | 276.230286 | 300.95575 | 1695.01245 |
| 13445 | Cdk2ap1 | CDK2 (cyclin-dependent | 90.0046234 | 112.693588 | 1694.72485 |
| 80751 | Rnf34 | ring finger protein 34 | 382.747009 | 495.632233 | 1687.24133 |
| 11545 | Parp1 | poly (ADP-ribose) polyn | 617.439636 | 790.557007 | 1685.03772 |
| 226162 | Dpcd | deleted in primary ciliary | 335.480896 | 360.430481 | 1676.16736 |
| 18567 | Pdcd2 | programmed cell death 2 | 502.628021 | 686.75354 | 1669.89502 |
| 78894 | Aacs | acetoacetyl-CoA syntheta | 743.053833 | 720.237061 | 1659.73462 |
| 230734 | Yrdc | yrdC domain containing | 261.869537 | 241.708771 | 1659.02966 |
| 50786 | Hs6st2 | heparan sulfate 6-O-sulfo | 50 | 50 | 1658.57129 |
| 381801 | Tatdn2 | TatD DNase domain con | 590.585876 | 816.106812 | 1641.75232 |
| 215387 | Ncaph | non-SMC condensin I co | 50 | 55.2447319 | 1633.90735 |
| 69109l732482 | Fam58blGm9731 | family with sequence sim | 467.57608 | 542.905029 | 1633.00354 |
| 76459 | Car12 | carbonic anyhydrase 12 | 50 | 50 | 1628.50427 |
| 72043 | Sulf2 | sulfatase 2 | 516.291748 | 596.179077 | 1624.63269 |
| 54141 | Spag5 | sperm associated antigen | 50 | 68.8783646 | 1613.10022 |
| 19891 | Rpa2 | replication protein A2 | 240.226227 | 235.989075 | 1612.28345 |
| 22201 | Uba1 | ubiquitin-like modifier ac | 207.769165 | 213.448364 | 1607.80396 |
| 266692 | Cpne1 | copine I | 145.489578 | 204.047577 | 1606.90503 |
| 216011 | Lrrc20 | leucine rich repeat contai | 262.59668 | 368.013367 | 1604.30383 |
| 98766 | Ubac1 | ubiquitin associated dom | 560.380005 | 707.174988 | 1599.86377 |
| 72373 | Psca | prostate stem cell antiger | 50 | 50 | 1598.32556 |
| 236792 | Mmgt1 | membrane magnesium tr | 455.247864 | 537.860168 | 1592.97681 |
| 67082 | 1700011H14Rik | RIKEN cDNA 1700011H | 50 | 50 | 1591.02295 |
| 12345 | Capzb | capping protein (actin fil | 183.540436 | 249.184158 | 1587.35181 |
| 72745 | Tmem161b | transmembrane protein 1 | 319.451965 | 431.437988 | 1586.02734 |
| 231329 | Polr2b | polymerase (RNA) II (D | 411.398804 | 513.333191 | 1576.7561 |
| 109212 | Fam64a | family with sequence sim | 50 | 50 | 1563.96313 |
| 56705 | Ranbp9 | RAN binding protein 9 | 582.655396 | 737.847473 | 1553.77661 |
| 24128 | Xrn2 | 5'-3' exoribonuclease 2 | 352.048401 | 472.263916 | 1551.10791 |
| 269514 | Fbxl4 | F-box and leucine-rich re | 566.656555 | 679.450806 | 1550.79395 |
| 67724 | Pop1 | processing of precursor 1 | 139.033966 | 133.481461 | 1545.9397 |
| 17295 | Met | met proto-oncogene | 748.733215 | 755.343262 | 1542.11426 |
| 11938 | Atp2a2 | ATPase, Ca++ transporti | 312.791992 | 400.947998 | 1541.50293 |
| 29805 | Znhit2-ps | zinc finger, HIT domain | 739.213745 | 655.102051 | 1533.47717 |
| 18221 | Nudc | nuclear distribution gene | 274.750641 | 244.908875 | 1530.88403 |
| 217127 | Myst2 | MYST histone acetyltran | 304.238892 | 427.438599 | 1530.82007 |
| 72098 | Tmem68 | transmembrane protein 6 | 299.441956 | 430.811279 | 1528.11353 |
| 67967 | Pold3 | polymerase (DNA-direct | 518.363892 | 688.3479 | 1527.80298 |
| 17349 | Mlf1 | myeloid leukemia factor | 50 | 50 | 1520.2981 |
| 225215 | Rsl24d1 | ribosomal L24 domain co | 511.415588 | 608.832275 | 1519.47314 |
| 66498 | Dda1 | DET1 and DDB1 associa | 528.724548 | 747.394043 | 1503.9707 |
| 60530 | Fignl1 | fidgetin-like 1 | 50 | 52.8199043 | 1503.25415 |
| 66241 | Tmem9 | transmembrane protein 9 | 338.997803 | 285.225494 | 1497.81982 |
| 109905 | Rap1a | RAS-related protein-1a | 301.997253 | 409.93573 | 1495.20544 |
| 27632 | Rdbp | RD RNA-binding protein | 363.310486 | 515.936279 | 1494.49561 |
| 73296 | Rhobtb3 | Rho-related BTB domain | 109.824539 | 154.577728 | 1493.70349 |
| 17344 | Pias2 | protein inhibitor of activa | 274.680939 | 377.329285 | 1484.12317 |
| 13838 | Epha4 | Eph receptor A4 | 50 | 50 | 1472.2522 |
| 229593 | Golph3l | golgi phosphoprotein 3-l | 253.894684 | 369.59079 | 1462.9397 |
| 66072 | Sdhaf2 | succinate dehydrogenase | 254.656677 | 379.698944 | 1461.77307 |
| 74112 | Usp16 | ubiquitin specific peptida | 710.409851 | 717.67926 | 1458.05762 |
| 268697 | Ccnb1 | cyclin B1 | 50 | 61.1525917 | 1457.69287 |
| 104662 | Tsr1 | TSR1, 20S rRNA accum | 523.843628 | 687.179382 | 1454.36523 |
| 18481 | Pak3 | p21 protein (Cdc42/Rac) | 50 | 50 | 1449.32532 |
| 52715 | Ccdc43 | coiled-coil domain conta | 328.128601 | 491.454559 | 1447.9696 |
| 67628 | Anp32b | acidic (leucine-rich) nucl | 451.152679 | 584.704224 | 1446.19324 |
| 240641 | Kif20b | kinesin family member 2 | 50 | 50 | 1440.98413 |
| 20174 | Ruvbl2 | RuvB-like protein 2 | 292.976837 | 415.762939 | 1440.146 |
| 66492 | Zmat2 | zinc finger, matrin type 2 | 659.012146 | 595.250977 | 1438.70483 |

| | | | | | |
|---|---|---|---|---|---|
| 66406 | Sac3d1 | SAC3 domain containing | 143.800827 | 202.216934 | 1428.32422 |
| 433693 | Akirin2 | akirin 2 | 448.413605 | 560.927124 | 1422.93933 |
| 231642 | Alkbh2 | alkB, alkylation repair ho | 404.773682 | 589.677002 | 1407.60425 |
| 74493 | Tnks2 | tankyrase, TRF1-interact | 75.1258392 | 111.590111 | 1405.33655 |
| 74051 | Steap2 | six transmembrane epithe | 91.9769592 | 117.939362 | 1403.32031 |
| 77577 | Spns3 | spinster homolog 3 (Dros | 50 | 50 | 1401.52246 |
| 99349 | Dnajc24 | DnaJ (Hsp40) homolog, | 149.877808 | 199.185181 | 1395.98804 |
| 212627 | Prpsap2 | phosphoribosyl pyrophos | 621.124512 | 626.019653 | 1392.38428 |
| 14113l100044829 | FbllLOC10004482 | fibrillarinlrRNA 2'-O-me | 111.622597 | 164.400116 | 1387.50879 |
| 69556 | Bod1 | biorientation of chromos | 421.803833 | 536.824585 | 1381.72607 |
| 68355 | 2010204K13Rik | RIKEN cDNA 2010204K | 50 | 50 | 1374.95752 |
| 67149 | Nkain1 | Na+/K+ transporting AT | 50 | 50 | 1371.32251 |
| 68597 | 1110021J02Rik | RIKEN cDNA 1110021J | 410.706543 | 407.683472 | 1371.21411 |
| 78832 | 2700078E11Rik | RIKEN cDNA 2700078E | 655.838989 | 653.903809 | 1366.39929 |
| 72068 | Cnot2 | CCR4-NOT transcription | 357.756287 | 437.17041 | 1364.26807 |
| 14265 | Fmr1 | fragile X mental retardat | 258.078552 | 338.454254 | 1363.18506 |
| 73804 | Kif2c | kinesin family member 2 | 50 | 50 | 1363.17847 |
| 72661 | Serp2 | stress-associated endopla | 50 | 50 | 1355.89551 |
| 66506 | Psmg3 | proteasome (prosome, m | 647.395264 | 634.352417 | 1355.85449 |
| 242960 | Fbxl5 | F-box and leucine-rich re | 612.129395 | 543.680298 | 1355.74597 |
| 209416 | Gpkow | G patch domain and KO | 283.691833 | 330.748291 | 1353.02966 |
| 15364 | Hmga2 | high mobility group AT- | 50 | 50 | 1352.11108 |
| 69136 | Tusc1 | tumor suppressor candida | 438.810181 | 318.390747 | 1351.8136 |
| 98402 | Sh3bp4 | SH3-domain binding pro | 50 | 60.3702507 | 1350.72083 |
| 14375 | Xrcc6 | X-ray repair complement | 285.52478 | 297.560425 | 1350.35596 |
| 67149 | Nkain1 | Na+/K+ transporting AT | 50 | 50 | 1330.88 |
| 64655 | Mrps22 | mitochondrial ribosomal | 371.280579 | 401.522369 | 1322.49927 |
| 18969 | Pola2 | polymerase (DNA directe | 174.355255 | 220.690308 | 1320.66211 |
| 21770 | Ppp2r5d | protein phosphatase 2, re | 309.244965 | 453.926331 | 1315.93604 |
| 18187 | Nrp2 | neuropilin 2 | 430.745056 | 393.500916 | 1312.26172 |
| 68276 | Toe1 | target of EGR1, member | 322.290833 | 396.948608 | 1308.60217 |
| 20306 | Ccl7 | chemokine (C-C motif) l | 50 | 50 | 1307.13965 |
| 65105 | Arl6ip4 | ADP-ribosylation factor- | 426.03363 | 558.041077 | 1306.71069 |
| 106021 | Topors | topoisomerase I binding, | 263.044983 | 308.671631 | 1306.40186 |
| 110854 | Ppp2r4 | protein phosphatase 2A, | 598.142456 | 584.207703 | 1305.15295 |
| 67755 | Ddx47 | DEAD (Asp-Glu-Ala-As | 252.171082 | 271.283447 | 1295.36401 |
| 445007 | Nup85 | nucleoporin 85 | 168.273529 | 241.864395 | 1286.86499 |
| 18645 | Pfn2 | profilin 2 | 486.215759 | 503.601318 | 1264.89612 |
| 17216 | Mcm2 | minichromosome mainte | 50 | 50 | 1259.85132 |
| 77975 | Tmem50b | transmembrane protein 5 | 280.140076 | 367.354126 | 1257.54248 |
| 56412 | Noa1 | nitric oxide associated 1 | 240.853546 | 314.712463 | 1254.88525 |
| 231506 | Lin54 | lin-54 homolog (C. elega | 242.228638 | 305.032959 | 1253.13037 |
| 11767 | Ap1m1 | adaptor-related protein c | 419.452881 | 566.020142 | 1250.15918 |
| 20955 | Vamp7 | vesicle-associated memb | 414.272552 | 589.852417 | 1247.6073 |
| 107271 | Yars | tyrosyl-tRNA synthetase | 574.531616 | 479.197449 | 1237.06738 |
| 78294 | Rps27a | ribosomal protein S27A | 136.239441 | 188.460205 | 1225.50696 |
| 76789 | Mzt1 | mitotic spindle organizin | 282.351624 | 341.463379 | 1224.9137 |
| 108115 | Slco4a1 | solute carrier organic ani | 50 | 50 | 1218.63477 |
| 20321 | Frrs1 | ferric-chelate reductase 1 | 141.898209 | 184.194839 | 1217.87891 |
| 13175 | Dclk1 | doublecortin-like kinase 1 | 50 | 50 | 1217.43188 |
| 78523 | Mrpl9 | mitochondrial ribosomal | 517.836304 | 572.577271 | 1213.78052 |
| 67141 | Fbxo5 | F-box protein 5 | 50 | 67.7876205 | 1210.66492 |
| 667705 | Gm8773 | predicted gene 8773 | 50 | 50 | 1198.23022 |
| 69752 | Zfp511 | zinc finger protein 511 | 344.935364 | 484.137665 | 1197.21313 |
| 83815 | Cenpq | centromere protein Q | 70.0152206 | 95.1128922 | 1193.95776 |
| 70088 | Meaf6 | MYST/Esa1-associated f | 240.031372 | 286.484619 | 1191.61121 |
| 13486 | Dr1 | down-regulator of transc | 294.351929 | 351.945007 | 1189.26123 |
| 71835 | Lancl2 | LanC (bacterial lantibioti | 88.2810211 | 132.345428 | 1187.55725 |
| 13605 | Ect2 | ect2 oncogene | 50 | 61.0196075 | 1174.76758 |
| 66471 | Anp32e | acidic (leucine-rich) nucl | 407.881897 | 541.827026 | 1164.79297 |
| 19225 | Ptgs2 | prostaglandin-endoperox | 50 | 50 | 1162.63696 |

| | | | | | |
|---|---|---|---|---|---|
| 68618 | 1110012L19Rik | RIKEN cDNA 1110012L | 232.420868 | 296.479584 | 1160.99707 |
| 66895 | 1300014I06Rik | RIKEN cDNA 1300014I | 423.03949 | 456.218201 | 1156.44678 |
| 69305 | Dcps | decapping enzyme, scave | 254.452316 | 306.57782 | 1154.87085 |
| 74268 | Aven | apoptosis, caspase activa | 449.95343 | 495.677521 | 1150.64941 |
| 12566 | Cdk2 | cyclin-dependent kinase | 164.856415 | 189.365631 | 1143.97607 |
| 100503199 | 5430416N02Rik | RIKEN cDNA 5430416N | 174.803589 | 206.316772 | 1142.45264 |
| 55988 | Snx12 | sorting nexin 12 | 254.935501 | 211.111267 | 1140.76672 |
| 14758 | Gpm6b | glycoprotein m6b | 50 | 50 | 1140.48242 |
| 26413 | Mapk1 | mitogen-activated protein | 76.3757706 | 99.7743835 | 1133.19946 |
| 216527 | Ccm2 | cerebral cavernous malfo | 357.377655 | 499.757568 | 1129.65991 |
| 16560 | Kif1a | kinesin family member 1 | 50 | 50 | 1128.4668 |
| 52443 | Mrpl48 | mitochondrial ribosomal | 342.245422 | 341.242676 | 1127.70435 |
| 69612 | 2310037I24Rik | RIKEN cDNA 2310037I | 273.535553 | 367.672424 | 1127.42004 |
| 75565 | Ccdc101 | coiled-coil domain conta | 238.5327 | 180.007278 | 1125.12939 |
| 67581 | Tbc1d23 | TBC1 domain family, m | 65.0788574 | 97.3721924 | 1120.53149 |
| 67010 | Rbm7 | RNA binding motif prote | 221.795654 | 317.864441 | 1116.4939 |
| 18719 | Pip5k1b | phosphatidylinositol-4-ph | 50 | 50 | 1114.28711 |
| 71878 | Fam83d | family with sequence sin | 50 | 54.0889053 | 1113.23535 |
| 319572 | C730027H18Rik | RIKEN cDNA C730027 | 150.913879 | 198.204788 | 1111.91577 |
| 216001 | Micu1 | mitochondrial calcium up | 513.506714 | 519.77301 | 1108.29565 |
| 19047 | Ppp1cc | protein phosphatase 1, ca | 331.924377 | 468.056549 | 1107.54468 |
| 67136 | Kbtbd4 | kelch repeat and BTB (P | 221.038406 | 320.896179 | 1106.35498 |
| 216616 | Efemp1 | epidermal growth factor- | 58.0703659 | 64.437561 | 1105.30164 |
| 18176 | Nras | neuroblastoma ras oncog | 393.999573 | 507.152283 | 1102.3667 |
| 15376 | Foxa2 | forkhead box A2 | 376.22168 | 317.708832 | 1101.67493 |
| 237175 | Gpr64 | G protein-coupled recept | 367.758911 | 278.314606 | 1100.36523 |
| 67057 | Yaf2 | YY1 associated factor 2 | 316.896637 | 424.507324 | 1095.64575 |
| 12442 | Ccnb2 | cyclin B2 | 50 | 50 | 1092.6156 |
| 66714 | 4921524J17Rik | RIKEN cDNA 4921524J | 206.254669 | 261.318176 | 1092.42993 |
| 100859931\64113 | Gm20604\Moap1 | predicted gene 20604\mo | 213.432678 | 303.147156 | 1092.20312 |
| 69028 | Mitd1 | MIT, microtubule interac | 232.46048 | 332.533661 | 1089.87305 |
| 67884 | 1810043G02Rik | RIKEN cDNA 1810043G | 121.355911 | 166.338272 | 1089.82031 |
| 74167 | Nudt9 | nudix (nucleoside diphos | 444.204407 | 541.343201 | 1083.92603 |
| 78733 | Troap | trophinin associated prot | 50 | 65.9470673 | 1083.08301 |
| 70120 | Yars2 | tyrosyl-tRNA synthetase | 287.866211 | 347.877686 | 1079.16541 |
| 19155 | Npepps | aminopeptidase puromyc | 386.268677 | 346.255005 | 1078.29944 |
| 108096 | Slco1a5 | solute carrier organic ani | 50 | 50 | 1077.13599 |
| 66821 | Bcs1l | BCS1-like (yeast) | 316.174255 | 393.91687 | 1075.40405 |
| 59048 | C1galt1c1 | C1GALT1-specific chap | 232.664825 | 279.1521 | 1071.78223 |
| 71701\100505160 | Pnpt1\LOC100505 | polyribonucleotide nucle | 348.227356 | 455.962128 | 1069.36987 |
| 66929 | Asf1b | ASF1 anti-silencing func | 50 | 50 | 1062.59131 |
| 16434 | Itpa | inosine triphosphatase (n | 149.942764 | 208.796783 | 1060.82983 |
| 12028 | Bax | BCL2-associated X prote | 234.488251 | 295.278503 | 1059.10437 |
| 15223 | Foxj1 | forkhead box J1 | 109.925919 | 115.573959 | 1056.54578 |
| 74326 | Hnrnpr | heterogeneous nuclear rib | 291.08847 | 431.064514 | 1054.58215 |
| 15288 | Hmbs | hydroxymethylbilane syn | 412.618652 | 369.184753 | 1051.00635 |
| 24061 | Smc1a | structural maintenance of | 191.854309 | 244.311859 | 1050.28992 |
| 15939 | Ier5 | immediate early response | 50 | 62.8502541 | 1050.08936 |
| 216825 | Usp22 | ubiquitin specific peptida | 347.834473 | 515.757996 | 1048.66309 |
| 19170 | Psmb1 | proteasome (prosome, ma | 328.576965 | 384.98999 | 1047.97119 |
| 69716 | Trip13 | thyroid hormone receptor | 50 | 50 | 1046.15869 |
| 140494 | Atp6v0a4 | ATPase, H+ transporting | 50 | 58.3641815 | 1040.80322 |
| 66902 | Mtap | methylthioadenosine pho | 208.152542 | 252.378586 | 1035.27527 |
| 59045 | Stard3 | START domain containi | 258.143494 | 353.697815 | 1033.78162 |
| 54352 | Irx5 | Iroquois related homeobo | 50 | 54.9363213 | 1025.93335 |
| 67453 | Slc25a46 | solute carrier family 25, | 454.032776 | 500.040497 | 1022.21301 |
| 28010 | Miip | migration and invasion in | 349.428162 | 484.523865 | 1021.71832 |
| 72297 | B3gnt3 | UDP-GlcNAc:betaGal be | 50 | 50 | 1020.46289 |
| 234549 | Heatr3 | HEAT repeat containing | 359.235931 | 333.835205 | 1018.78345 |
| 16571 | Kif4 | kinesin family member 4 | 50 | 74.0590668 | 1015.31287 |
| 12236 | Bub1b | budding uninhibited by b | 50 | 51.2877655 | 1011.43146 |

| | | | | | |
|---|---|---|---|---|---|
| 230596 | Prpf38a | PRP38 pre-mRNA proce | 308.13446 | 307.62616 | 1010.97632 |
| 67204 | Eif2s2 | eukaryotic translation ini | 234.732208 | 178.871262 | 1010.70837 |
| 16661 | Krt10 | keratin 10 | 277.510315 | 211.916229 | 1008.84827 |
| 22137 | Ttk | Ttk protein kinase | 50 | 50 | 1003.43689 |
| 76131 | Depdc1a | DEP domain containing | 50 | 50 | 994.129456 |
| 381633 | Gm1673 | predicted gene 1673 | 50 | 50 | 993.805725 |
| 67513 | 2610002J02Rik | RIKEN cDNA 2610002J | 370.184326 | 472.198853 | 991.153503 |
| 24059 | Slco2a1 | solute carrier organic ani | 435.009705 | 450.430603 | 988.491455 |
| 68842 | Tulp4 | tubby like protein 4 | 464.189026 | 414.860352 | 987.740417 |
| 68014 | Zwilch | Zwilch, kinetochore asso | 50 | 50 | 985.46283 |
| 67728 | Dph2 | DPH2 homolog (S. cerev | 170.066833 | 226.078979 | 985.084839 |
| 70454 | Cenpl | centromere protein L | 122.87516 | 179.90683 | 978.957153 |
| 18642 | Pfkm | phosphofructokinase, mu | 407.821716 | 399.207886 | 976.85376 |
| 66398 | Commd5 | COMM domain containi | 397.247192 | 376.99823 | 975.85791 |
| 218210 | Nup153 | nucleoporin 153 | 250.955994 | 261.473816 | 973.085754 |
| 114663 | Impa2 | inositol (myo)-1(or 4)-m | 170.454956 | 146.741608 | 968.453369 |
| 242362 | Manea | mannosidase, endo-alpha | 289.559723 | 335.389984 | 966.905396 |
| 12181 | Bop1 | block of proliferation 1 | 165.792664 | 231.77887 | 966.070679 |
| 102580 | Alg9 | asparagine-linked glycos | 264.773376 | 322.17511 | 960.215637 |
| 20873 | Plk4 | polo-like kinase 4 (Dros | 50 | 50 | 957.116455 |
| 14200 | Fhl2 | four and a half LIM dom | 50 | 50 | 950.80957 |
| 75678 | Ippk | inositol 1,3,4,5,6-pentaki | 247.339264 | 241.611176 | 941.14386 |
| 69871 | Ppp1r35 | protein phosphatase 1, re | 351.943848 | 437.466125 | 937.584534 |
| 12544 | Cdc45 | cell division cycle 45 ho | 50 | 52.5114975 | 935.939575 |
| 83701 | Srrt | serrate RNA effector mo | 127.293488 | 190.014984 | 934.79425 |
| 80509 | Med8 | mediator of RNA polyme | 299.601959 | 252.41394 | 931.987549 |
| 229937 | Znhit6 | zinc finger, HIT type 6 | 352.018311 | 450.385315 | 929.098694 |
| 72486 | Rnf219 | ring finger protein 219 | 227.828278 | 153.298828 | 926.51709 |
| 217578 | Baz1a | bromodomain adjacent to | 234.28389 | 345.121826 | 919.779663 |
| 234388 | Ccdc124 | coiled-coil domain conta | 340.665955 | 438.21875 | 911.484497 |
| 56454 | Aldh18a1 | aldehyde dehydrogenase | 50 | 50 | 910.797607 |
| 216705 | Clint1 | clathrin interactor 1 | 375.683075 | 380.682159 | 907.946472 |
| 192174 | Rwdd4a | RWD domain containing | 234.423294 | 243.130569 | 903.356812 |
| 16351 | Ipp | IAP promoted placental | 298.127075 | 413.925232 | 902.717651 |
| 22218 | Sumo1 | SMT3 suppressor of mif | 137.788803 | 197.146576 | 899.578979 |
| 67466 | Pdcl | phosducin-like | 209.39772 | 200.266037 | 898.68335 |
| 109115 | Supt3h | suppressor of Ty 3 homo | 245.720215 | 343.755188 | 895.782959 |
| 74098 | 0610037L13Rik | RIKEN cDNA 0610037L | 372.207336 | 426.101685 | 893.212891 |
| 107368 | Pdzd8 | PDZ domain containing 8 | 200.695709 | 288.269958 | 891.144043 |
| 217198 | Plekhh3 | pleckstrin homology dom | 215.130936 | 291.113556 | 889.213196 |
| 68080 | Gpn3 | GPN-loop GTPase 3 | 101.98909 | 122.315094 | 881.908875 |
| 11752 | Anxa8 | annexin A8 | 50 | 50 | 875.680908 |
| 67770 | 5830433M19Rik | RIKEN cDNA 5830433M | 281.375763 | 257.559265 | 875.47052 |
| 75533 | Nme5 | non-metastatic cells 5, pr | 50 | 50 | 871.291687 |
| 20297 | Ccl20 | chemokine (C-C motif) l | 50 | 50 | 869.29187 |
| 236900 | Pdk3 | pyruvate dehydrogenase | 50 | 50 | 868.494873 |
| 319801 | 9630033F20Rik | RIKEN cDNA 9630033F | 212.949493 | 233.87265 | 867.02417 |
| 67242 | Gemin6 | gem (nuclear organelle) a | 52.4813156 | 59.0913467 | 864.217407 |
| 102323 | Dcun1d2 | DCN1, defective in culli | 114.900299 | 135.046127 | 859.981079 |
| 12054 | Bcl7b | B cell CLL/lymphoma 7 | 272.060669 | 403.375671 | 856.845703 |
| 232983 | Cxcl17 | chemokine (C-X-C motif | 50 | 50 | 855.205688 |
| 58246 | Slc35b4 | solute carrier family 35, | 319.112946 | 332.80954 | 854.096558 |
| 72151 | Rfc5 | replication factor C (acti | 136.722626 | 172.512115 | 853.062866 |
| 72201 | Otud6b | OTU domain containing | 367.345428 | 313.732056 | 850.67688 |
| 269582 | Clspn | claspin homolog (Xenop | 50 | 50 | 848.096924 |
| 68436 | Rpl34 | ribosomal protein L34 | 210.498749 | 193.420212 | 847.911255 |
| 16341 | Eif3e | eukaryotic translation ini | 280.997131 | 349.763519 | 845.510437 |
| 217038 | Mrm1 | mitochondrial rRNA met | 257.869446 | 340.768738 | 840.639771 |
| 54369 | Nme6 | non-metastatic cells 6, pr | 152.288971 | 162.040375 | 839.800049 |
| 22110 | Tspyl1 | testis-specific protein, Y- | 221.0289 | 247.067734 | 833.302551 |
| 66067 | Gtpbp8 | GTP-binding protein 8 (g | 137.858505 | 201.311523 | 830.191895 |

| | | | | | |
|---|---|---|---|---|---|
| 107371 | Exoc6 | exocyst complex compor | 118.940002 | 163.241455 | 829.227295 |
| 74035 | Nol9 | nucleolar protein 9 | 191.545395 | 211.71817 | 823.250732 |
| 11692 | Gfer | growth factor, erv1 (S. c | 381.49707 | 317.026947 | 821.117676 |
| 320685 | Dctd | dCMP deaminase | 50 | 50 | 818.897644 |
| 75533 | Nme5 | non-metastatic cells 5, pr | 50 | 50 | 818.212402 |
| 75939 | 4930579G24Rik | RIKEN cDNA 4930579( | 50 | 50 | 815.851013 |
| 70427 | Mier2 | mesoderm induction earl | 289.181091 | 383.899231 | 814.137085 |
| 13144 | Dapk3 | death-associated protein | 149.459579 | 211.520111 | 813.612915 |
| 109093 | Rars2 | arginyl-tRNA synthetase | 303.058655 | 312.716309 | 811.415833 |
| 20706 | Serpinb9b | serine (or cysteine) pepti | 50 | 50 | 807.950195 |
| 12581 | Cdkn2d | cyclin-dependent kinase | 50 | 50 | 807.741455 |
| 67695 | Ost4 | oligosaccharyltransferase | 115.278931 | 129.050552 | 807.590332 |
| 106522 | Pkdcc | protein kinase domain co | 268.573853 | 228.406189 | 805.330811 |
| 27221 | Chaf1a | chromatin assembly facto | 50 | 50 | 803.00885 |
| 73162 | Otud3 | OTU domain containing | 264.529388 | 318.260559 | 801.741943 |
| 66336 | Cenpp | centromere protein P | 50 | 69.540451 | 800.930176 |
| 22230 | Ufd1l | ubiquitin fusion degradat | 263.711975 | 327.265259 | 798.871094 |
| 19358 | Rad23a | RAD23a homolog (S. ce | 265.739746 | 379.179749 | 797.883545 |
| 22213 | Ube2g2 | ubiquitin-conjugating en | 74.4383011 | 88.8513489 | 795.684814 |
| 381802 | Tsen2 | tRNA splicing endonucle | 160.503021 | 229.354065 | 794.085938 |
| 110173 | Manba | mannosidase, beta A, lys | 210.250015 | 306.113831 | 792.75647 |
| 76890 | Memo1 | mediator of cell motility | 175.630539 | 237.985229 | 790.779663 |
| 77134 | Hnrnpa0 | heterogeneous nuclear rit | 50 | 50 | 786.16864 |
| 14235 | Foxm1 | forkhead box M1 | 50 | 50 | 783.733276 |
| 68550 | 1110002N22Rik | RIKEN cDNA 1110002N | 361.308044 | 341.077148 | 775.106079 |
| 19076 | Prim2 | DNA primase, p58 subur | 50 | 73.5851288 | 772.251831 |
| 107753 | Lgals2 | lectin, galactose-binding, | 50 | 50 | 770.84021 |
| 80385 | Tusc2 | tumor suppressor candida | 308.587524 | 251.664154 | 770.212463 |
| 107829 | Thoc5 | THO complex 5 | 196.4263 | 240.189377 | 769.049072 |
| 13367 | Diap1 | diaphanous homolog 1 (I | 319.974731 | 347.137787 | 766.787903 |
| 66401 | Nudt2 | nudix (nucleoside diphos | 108.992828 | 119.591751 | 763.963135 |
| 234729 | Vac14 | Vac14 homolog (S. cere | 189.089874 | 247.947693 | 762.697815 |
| 78634 | Spaca7 | sperm acrosome associat | 50 | 50 | 761.434143 |
| 103710 | Slc35e4 | solute carrier family 35, | 50 | 50 | 760.824463 |
| 15205 | Hes1 | hairy and enhancer of sp | 194.857956 | 270.546387 | 759.136841 |
| 268882 | Fbxo45 | F-box protein 45 | 287.80603 | 336.194946 | 753.52832 |
| 17345 | Mki67 | antigen identified by mo | 50 | 69.9040375 | 753.21936 |
| 77116 | Mtmr2 | myotubularin related pro | 97.9794846 | 119.977974 | 751.301697 |
| 52552 | Parp8 | poly (ADP-ribose) polyn | 50 | 61.7694092 | 749.522095 |
| 56368 | Cyb561d2 | cytochrome b-561 domai | 188.163132 | 268.196533 | 748.103882 |
| 66855 | Tcf25 | transcription factor 25 (b | 295.810974 | 270.413391 | 747.831116 |
| 73569 | Vgll3 | vestigial like 3 (Drosoph | 50 | 50 | 745.813171 |
| 13684 | Eif4e | eukaryotic translation ini | 130.536346 | 173.515137 | 745.098389 |
| 227358 | Fam132b | family with sequence sin | 50 | 50 | 744.482178 |
| 69902 | Mrto4 | MRT4, mRNA turnover | 281.280701 | 293.713806 | 738.780029 |
| 74442 | Sgms2 | sphingomyelin synthase 2 | 287.013916 | 307.304993 | 736.420288 |
| 234344l100039062 | Naf1lGm2027 | nuclear assembly factor 1 | 182.843384 | 253.261368 | 736.250977 |
| 80385 | Tusc2 | tumor suppressor candida | 329.936188 | 243.143311 | 734.670166 |
| 74253 | Klrg2 | killer cell lectin-like rece | 50 | 50 | 733.286499 |
| 83945 | Dnaja3 | DnaJ (Hsp40) homolog, | 302.819458 | 230.522614 | 732.931641 |
| 237459 | Cdk17 | cyclin-dependent kinase | 272.478882 | 362.5271 | 732.862549 |
| 18005 | Nek2 | NIMA (never in mitosis | 50 | 50 | 729.811035 |
| 73212 | 3110082I17Rik | RIKEN cDNA 3110082I | 50 | 50 | 727.705994 |
| 231440 | Parm1 | prostate androgen-regula | 50 | 50 | 727.089722 |
| 59002 | Wdr8 | WD repeat domain 8 | 219.409851 | 201.931152 | 726.711792 |
| 55988 | Snx12 | sorting nexin 12 | 179.839752 | 232.08728 | 726.439026 |
| 243958 | Siglecg | sialic acid binding Ig-like | 50 | 50 | 723.183716 |
| 66225 | Llph | LLP homolog, long-term | 252.375427 | 360.771423 | 723.078552 |
| 69549 | 2310009B15Rik | RIKEN cDNA 2310009E | 299.367493 | 294.275452 | 721.113159 |
| 67531 | 5730408K05Rik | RIKEN cDNA 5730408E | 179.077759 | 202.116486 | 719.857788 |
| 237211 | Fancb | Fanconi anemia, comple | 50 | 50 | 716.886719 |

| | | | | | |
|---|---|---|---|---|---|
| 69263 | Rfc3 | replication factor C (acti | 63.1112823 | 87.7931442 | 714.213135 |
| 20133 | Rrm1 | ribonucleotide reductase | 50 | 50 | 714.132568 |
| 68187 | Fam135a | family with sequence sin | 174.83844 | 231.061615 | 711.823792 |
| 15944 | Irgm1 | immunity-related GTPas | 324.532471 | 338.795197 | 706.760864 |
| 13590 | Lefty1 | left right determination f | 50 | 72.5495605 | 705.551392 |
| 74340 | Ahcyl2 | S-adenosylhomocysteine | 264.355133 | 347.74472 | 705.208008 |
| 71735 | Lrwd1 | leucine-rich repeats and | 98.5371246 | 133.614441 | 705.122559 |
| 71517 | 9030624J02Rik | RIKEN cDNA 9030624J | 203.559952 | 290.36377 | 704.696899 |
| 20348 | Sema3c | sema domain, immunogl | 50 | 50 | 704.272949 |
| 72170 | Chchd4 | coiled-coil-helix-coiled-c | 259.806915 | 332.501129 | 704.222046 |
| 116748 | Lsm10 | U7 snRNP-specific Sm-l | 138.102463 | 124.035385 | 700.186157 |
| 71514 | Sfpq | splicing factor proline/gl | 168.861267 | 225.595154 | 699.721069 |
| 229927 | Clca4 | chloride channel calcium | 50 | 50 | 699.088379 |
| 24105 | Rbck1 | RanBP-type and C3HC4 | 111.826958 | 161.092499 | 697.478027 |
| 76843 | Dtl | denticleless homolog (D | 50 | 50 | 697.157593 |
| 98386 | Lbr | lamin B receptor | 50 | 50 | 697.123047 |
| 226245 | 9930023K05Rik | RIKEN cDNA 9930023K | 50 | 50 | 693.414185 |
| 213556 | Plekhh2 | pleckstrin homology dor | 117.903946 | 139.356781 | 693.146362 |
| 69216 | Ccdc23 | coiled-coil domain conta | 272.260284 | 343.511902 | 692.571228 |
| 214791 | Sertad4 | SERTA domain containi | 50 | 50 | 691.274658 |
| 114863 | Prosc | proline synthetase co-tra | 153.325027 | 155.162003 | 690.9953 |
| 228421 | Kif18a | kinesin family member 1 | 50 | 50 | 687.565796 |
| 56031 | Ppie | peptidylprolyl isomerase | 129.196106 | 159.61554 | 687.565796 |
| 27784 | Commd8 | COMM domain containi | 179.461121 | 185.386032 | 684.136353 |
| 208084 | Pif1 | PIF1 5'-to-3' DNA helica | 50 | 50 | 684.065674 |
| 72065 | Rap2c | RAP2C, member of RAS | 260.838196 | 310.830475 | 682.450317 |
| 17967 | Ncam1 | neural cell adhesion mol | 50 | 50 | 681.096313 |
| 26909 | Exo1 | exonuclease 1 | 50 | 50 | 679.380676 |
| 67832 | Brix1 | BRX1, biogenesis of ribo | 134.058014 | 156.165039 | 677.167236 |
| 22722 | Zfp64 | zinc finger protein 64 | 113.311356 | 148.780212 | 675.172241 |
| 65964 | B230120H23Rik | RIKEN cDNA B230120 | 138.17218 | 203.275146 | 675.090088 |
| 24058 | Sigirr | single immunoglobulin a | 184.01886 | 138.860214 | 674.207642 |
| 77022 | 2700099C18Rik | NDC80 homolog, kineto | 50 | 65.2199097 | 671.944885 |
| 67674 | Trmt112 | tRNA methyltransferase | 150.809326 | 200.210861 | 671.563599 |
| 66980 | Zdhhc6 | zinc finger, DHHC doma | 186.63913 | 232.054749 | 671.241577 |
| 68642 | Tmem216 | transmembrane protein 2 | 228.455627 | 188.603104 | 670.888306 |
| 73998 | Herc3 | hect domain and RLD 3 | 228.102341 | 314.819977 | 668.439819 |
| 66355 | Gmpr | guanosine monophospha | 50 | 50 | 664.911743 |
| 320213 | Senp5 | SUMO/sentrin specific p | 294.461243 | 301.053345 | 663.342346 |
| 108121 | U2af1 | U2 small nuclear ribonuc | 115.423088 | 168.30191 | 663.273315 |
| 98376 | Gorab | golgin, RAB6-interacting | 109.78968 | 118.997574 | 661.842041 |
| 105351 | AW209491 | expressed sequence AW | 251.752838 | 325.502502 | 658.261353 |
| 71707 | Ubiad1 | UbiA prenyltransferase d | 158.544952 | 200.554657 | 657.00592 |
| 66278 | 1810013D10Rik | RIKEN cDNA 1810013D | 323.909912 | 277.123413 | 656.476807 |
| 16497 | Kcnab1 | potassium voltage-gated | 50 | 50 | 655.732422 |
| 67674 | Trmt112 | tRNA methyltransferase | 183.226776 | 174.638428 | 651.808228 |
| 20729 | Spin1 | spindlin 1 | 50 | 50 | 646.681274 |
| 100336 | Ppp1r8 | protein phosphatase 1, re | 206.59845 | 199.626587 | 645.414307 |
| 215999 | Ccdc109a | coiled-coil domain conta | 50 | 51.5636368 | 643.095581 |
| 19881 | Rom1 | rod outer segment memb | 201.278702 | 161.2453 | 642.275635 |
| 108961 | E2f8 | E2F transcription factor 8 | 135.407745 | 169.954285 | 641.753052 |
| 241846 | Lsm14b | LSM14 homolog B (SCI | 80.1018066 | 96.148468 | 641.613403 |
| 68051 | Nutf2 | nuclear transport factor 2 | 139.412598 | 187.457184 | 638.699829 |
| 229782 | Slc35a3 | solute carrier family 35 ( | 314.585327 | 306.434937 | 638.560181 |
| 57434 | Xrcc2 | X-ray repair complement | 92.7342072 | 111.226532 | 638.11322 |
| 233726 | Ipo7 | importin 7 | 156.707291 | 168.675385 | 636.356567 |
| 107746 | Rapgef1 | Rap guanine nucleotide e | 212.431458 | 312.39801 | 636.008179 |
| 100087 | Kti12 | KTI12 homolog, chroma | 253.520813 | 203.285034 | 635.840576 |
| 237211 | Fancb | Fanconi anemia, comple | 50 | 50 | 631.195068 |
| 231876 | Lmtk2 | lemur tyrosine kinase 2 | 178.220703 | 244.256683 | 630.695496 |
| 328801 | Zfp414 | zinc finger protein 414 | 230.453308 | 284.686493 | 630.370117 |

| | | | | | |
|---|---|---|---|---|---|
| 22158 | Tulp3 | tubby-like protein 3 | 50 | 71.2154846 | 628.631592 |
| 19012 | Ppap2a | phosphatidic acid phosph | 50 | 50 | 626.615234 |
| 68449 | Tbc1d10b | TBC1 domain family, me | 222.752502 | 283.881531 | 621.463623 |
| 230376 | Haus6 | HAUS augmin-like comp | 57.1737061 | 51.9922943 | 619.935364 |
| 15247 | Hiat1 | hippocampus abundant g | 170.171387 | 242.922607 | 619.626465 |
| 234686 | Fhod1 | formin homology 2 doma | 194.33992 | 262.376404 | 617.697266 |
| 107823 | Whsc1 | Wolf-Hirschhorn syndror | 212.440964 | 300.669983 | 611.211243 |
| 14048 | Eya1 | eyes absent 1 homolog (I | 50 | 50 | 610.249939 |
| 330122 | Cxcl3 | chemokine (C-X-C motif | 50 | 50 | 607.482666 |
| 56217 | Mpp5 | membrane protein, palmi | 50 | 50 | 606.495056 |
| 67052 | Ndc80 | NDC80 homolog, kineto | 50 | 50 | 606.19928 |
| 214580 | Pstk | phosphoseryl-tRNA kina | 120.658859 | 173.690567 | 605.656982 |
| 23825 | Banf1 | barrier to autointegration | 50 | 50 | 603.519104 |
| 67573 | Loxl4 | lysyl oxidase-like 4 | 50 | 50 | 600.543091 |
| 433813 | Pusl1 | pseudouridylate synthase | 125.08194 | 178.916534 | 600.472473 |
| 212307 | Mapre2 | microtubule-associated p | 192.551361 | 236.297485 | 598.949158 |
| 78895 | Pus7l | pseudouridylate synthase | 128.503815 | 175.586288 | 598.24585 |
| 272551 | Gins2 | GINS complex subunit 2 | 50 | 50 | 598.124268 |
| 69770 | 1600002K03Rik | RIKEN cDNA 1600002K | 106.990402 | 160.066833 | 597.979614 |
| 109065 | 1110034A24Rik | RIKEN cDNA 1110034A | 78.5429535 | 75.3705063 | 595.1828 |
| 76832 | Hyls1 | hydrolethalus syndrome | 99.8076477 | 140.028763 | 594.165649 |
| 66190 | Acer3 | alkaline ceramidase 3 | 204.252243 | 274.974457 | 594.025879 |
| 70454 | Cenpl | centromere protein L | 128.264603 | 164.156784 | 592.87561 |
| 20346 | Sema3a | sema domain, immunogl | 50 | 50 | 590.944763 |
| 66664 | Tmem41a | transmembrane protein 4 | 205.278809 | 255.234894 | 590.729492 |
| 12545 | Cdc7 | cell division cycle 7 (S. c | 50 | 50 | 590.660522 |
| 432508 | Cpsf6 | cleavage and polyadenyla | 63.2807922 | 73.2993622 | 589.166748 |
| 218581 | Depdc1b | DEP domain containing | 50 | 50 | 588.805298 |
| 18617 | Rhox5 | reproductive homeobox 5 | 50 | 50 | 587.235962 |
| 66973 | Mrps18b | mitochondrial ribosomal | 88.24617 | 100.491653 | 586.672241 |
| 229672 | Bcl2l15 | BCL2-like 15 | 50 | 50 | 584.835083 |
| 56470 | Rgs19 | regulator of G-protein sig | 50 | 50 | 584.835083 |
| 22422 | Wnt7b | wingless-related MMTV | 50.9620705 | 52.9627914 | 584.411133 |
| 105785 | Kdelr3 | KDEL (Lys-Asp-Glu-Le | 50 | 53.4692612 | 583.242798 |
| 212377 | Mms22l | MMS22-like, DNA repai | 75.574173 | 110.554535 | 581.504211 |
| 20419 | Shcbp1 | Shc SH2-domain binding | 50 | 50 | 578.487183 |
| 11781 | Ap4m1 | adaptor-related protein c | 116.210434 | 160.122009 | 577.783813 |
| 70784 | Rasl12 | RAS-like, family 12 | 50 | 50 | 576.569458 |
| 544717l10050327 | 1190007I07RiklGr | RIKEN cDNA 1190007I | 207.769165 | 220.833206 | 575.813599 |
| 108899 | 2700081O15Rik | RIKEN cDNA 2700081 | 121.216499 | 168.532501 | 575.701782 |
| 272396 | Tarsl2 | threonyl-tRNA synthetas | 263.358673 | 249.778336 | 575.121704 |
| 50760 | Fbxo17 | F-box protein 17 | 50 | 55.5305023 | 574.807861 |
| 381318 | Nsl1 | NSL1, MIND kinetochor | 50 | 50 | 574.516968 |
| 108689 | Obfc1 | oligonucleotide/oligosac | 50 | 50 | 573.83667 |
| 70355 | Gprc5c | G protein-coupled recept | 56.585968 | 70.5434875 | 571.76123 |
| 16571 | Kif4 | kinesin family member 4 | 50 | 50 | 571.628174 |
| 72614 | Pih1d2 | PIH1 domain containing | 50 | 50 | 569.749878 |
| 225997 | Trpm6 | transient receptor potenti | 127.811516 | 140.480072 | 568.668579 |
| 22036 | Traip | TRAF-interacting protein | 50 | 68.9561768 | 567.942261 |
| 329369 | 5730588L14Rik | RIKEN cDNA 5730588I | 50 | 53.9983635 | 567.855225 |
| 12224 | Klf5 | Kruppel-like factor 5 | 50 | 50 | 567.727051 |
| 71971 | Zswim1 | zinc finger, SWIM doma | 80.1319122 | 115.592346 | 566.675293 |
| 23797 | Akt3 | thymoma viral proto-onc | 50 | 67.7324448 | 564.709961 |
| 237459 | Cdk17 | cyclin-dependent kinase | 157.952469 | 190.080063 | 564.59491 |
| 223828 | Pphln1 | periphilin 1 | 50 | 50 | 563.896545 |
| 26885 | Casp8ap2 | caspase 8 associated prot | 140.000336 | 156.385742 | 561.66333 |
| 226043 | Cbwd1 | COBW domain containin | 50 | 67.4565735 | 561.23938 |
| 13481 | Dpm2 | dolichol-phosphate (beta- | 138.959518 | 201.720367 | 560.320801 |
| 241035 | Pkhd1 | polycystic kidney and he | 168.378082 | 229.45166 | 559.757141 |
| 27966 | Rrp9 | RRP9, small subunit (SS | 50 | 50 | 559.292114 |
| 50883 | Chek2 | checkpoint kinase 2 | 50 | 66.586525 | 556.181396 |

| | | | | | |
|---|---|---|---|---|---|
| 21956 | Tnnt2 | troponin T2, cardiac | 50 | 50 | 555.961182 |
| 67884 | 1810043G02Rik | RIKEN cDNA 1810043( | 94.7017822 | 132.929718 | 551.75769 |
| 114715 | Spred1 | sprouty protein with EVI | 103.364174 | 121.510117 | 551.49646 |
| 80905 | Polh | polymerase (DNA directe | 85.2773895 | 99.245285 | 550.955811 |
| 114863 | Prosc | proline synthetase co-tra | 104.644211 | 154.775787 | 550.921265 |
| 13836 | Epha2 | Eph receptor A2 | 185.777328 | 174.97937 | 549.613281 |
| 18393 | Orc2 | origin recognition compl | 50 | 50 | 548.600952 |
| 235169 | Foxred1 | FAD-dependent oxidored | 167.307159 | 205.787674 | 546.962646 |
| 69962 | 2810422O20Rik | RIKEN cDNA 2810422( | 216.680267 | 203.814148 | 546.177124 |
| 66549 | Aggf1 | angiogenic factor with G | 195.524902 | 225.221649 | 538.225342 |
| 69257 | Elf2 | E74-like factor 2 | 232.211761 | 258.552429 | 536.527893 |
| 66580 | Esf1 | ESF1, nucleolar pre-rRN | 110.581772 | 133.744598 | 536.108826 |
| 56401 | Lepre1 | leprecan 1 | 246.955887 | 238.777496 | 535.783447 |
| 100088 | Rcc1 | regulator of chromosome | 99.0155487 | 137.38324 | 535.405518 |
| 52679 | E2f7 | E2F transcription factor 7 | 50 | 50 | 534.876404 |
| 12563 | Cdh6 | cadherin 6 | 50 | 50 | 534.505005 |
| 30938 | Fgd3 | FYVE, RhoGEF and PH | 50 | 50 | 534.085938 |
| 51812 | Mcrs1 | microspherule protein 1 | 50 | 51.6612473 | 532.638245 |
| 66748 | 4933404M02Rik | RIKEN cDNA 4933404M | 50 | 50 | 532.493652 |
| 15476 | Hs3st1 | heparan sulfate (glucosan | 50 | 50 | 531.934937 |
| 208624 | Alg3 | asparagine-linked glycos | 176.562042 | 264.207031 | 530.679443 |
| 215707 | Ccdc92 | coiled-coil domain conta | 50 | 50 | 524.586243 |
| 108013 | Celf4 | CUGBP, Elav-like famil | 50 | 50 | 517.960571 |
| 20017 | Polr1b | polymerase (RNA) I poly | 187.505692 | 226.753799 | 517.715698 |
| 110012 | Gm16517 | predicted gene, Gm1651 | 175.491119 | 246.726776 | 516.309082 |
| 233875 | Ino80e | INO80 complex subunit | 61.0042992 | 88.3448792 | 514.996094 |
| 22137 | Ttk | Ttk protein kinase | 50 | 50 | 514.91394 |
| 70466 | Ckap2l | cytoskeleton associated p | 50 | 50 | 514.739746 |
| 11920 | Atm | ataxia telangiectasia mut | 208.531158 | 254.572815 | 514.251709 |
| 68588 | Cthrc1 | collagen triple helix repe | 50 | 50 | 509.798431 |
| 66129 | 1110018J18Rik | RIKEN cDNA 1110018J | 235.354797 | 238.767578 | 509.001465 |
| 17760 | Mtap6 | microtubule-associated p | 50 | 50 | 508.845337 |
| 72454 | Ccdc71 | coiled-coil domain conta | 153.808197 | 200.73996 | 508.276794 |
| 76932 | Arfip2 | ADP-ribosylation factor | 134.854858 | 196.409515 | 507.979309 |
| 68193 | Rpl24 | ribosomal protein L24 | 50 | 58.925827 | 507.938263 |
| 234814 | Mthfsd | methenyltetrahydrofolate | 193.478119 | 224.504395 | 507.560303 |
| 30953l100505386 | Schip1lIqcj-schip1 | schwannomin interacting | 50 | 50 | 506.7995 |
| 269623 | C030048B08Rik | RIKEN cDNA C030048I | 112.066177 | 160.375244 | 505.798737 |
| 225895 | Taf6l | TAF6-like RNA polymer | 63.9730911 | 79.1520462 | 502.996948 |
| 207521 | Dtx4 | deltex 4 homolog (Droso | 177.010376 | 239.053345 | 501.340515 |
| 71116 | Stx18 | syntaxin 18 | 102.367706 | 84.9170227 | 500.591187 |
| 22375 | Wars | tryptophanyl-tRNA synth | 50 | 50 | 500.270752 |
| 22268 | Upk1b | uroplakin 1B | 53.2433167 | 64.7558746 | 497.881439 |
| 83767 | Wasf1 | WASP family 1 | 96.3255768 | 113.839508 | 497.643188 |
| 66464 | Taf12 | TAF12 RNA polymerase | 197.034637 | 197.234283 | 497.2948 |
| 65962 | Slc9a3r2 | solute carrier family 9 (s | 74.1246338 | 99.8295593 | 495.59729 |
| 216274 | Cep290 | centrosomal protein 290 | 50 | 73.5525894 | 495.178284 |
| 66949 | Trim59 | tripartite motif-containin | 50 | 50 | 492.312408 |
| 22720 | Zfp62 | zinc finger protein 62 | 172.691849 | 213.448364 | 492.172729 |
| 74246 | Gale | galactose-4-epimerase, U | 111.483185 | 161.874847 | 489.923096 |
| 17760 | Mtap6 | microtubule-associated p | 50 | 50 | 488.795776 |
| 67196 | Ube2t | ubiquitin-conjugating en | 50 | 50 | 486.371948 |
| 13732 | Emp3 | epithelial membrane prot | 50 | 51.4108467 | 484.947266 |
| 30937 | Lmcd1 | LIM and cysteine-rich do | 50 | 57.8902512 | 483.384521 |
| 77552 | Shisa4 | shisa homolog 4 (Xenopu | 50 | 50 | 479.756165 |
| 218343 | Ttc37 | tetratricopeptide repeat d | 193.034546 | 216.934235 | 477.541016 |
| 54200 | Sult2b1 | sulfotransferase family, c | 50 | 50 | 477.483521 |
| 26379 | Esrra | estrogen related receptor, | 183.675095 | 231.801514 | 477.227173 |
| 57895 | Ccdc126 | coiled-coil domain conta | 118.940002 | 145.495239 | 474.021149 |
| 232946 | Bloc1s3 | biogenesis of lysosome-r | 154.191589 | 176.534149 | 473.582397 |
| 70967 | 4931408A02Rik | RIKEN cDNA 4931408A | 50 | 50 | 473.529816 |

| | | | | | |
|---|---|---|---|---|---|
| 218973 | Wdhd1 | WD repeat and HMG-bo | 50 | 70.4883118 | 471.421509 |
| 94353 | Hmgn3 | high mobility group nucl | 50 | 50 | 470.164368 |
| 20355 | Sema4f | sema domain, immunogl | 50 | 50 | 469.786438 |
| 68327 | 0610007P22Rik | RIKEN cDNA 0610007F | 158.300995 | 168.973907 | 469.48407 |
| 232187 | Smyd5 | SET and MYND domain | 160.921265 | 206.306885 | 468.315735 |
| 70218 | Kif18b | kinesin family member 1 | 50 | 50 | 466.659302 |
| 234086 | Erich1 | glutamate-rich 1 | 50 | 69.2971191 | 465.472839 |
| 210530 | Leprel1 | leprecan-like 1 | 50 | 50 | 465.362762 |
| 14391 | Gabpb1 | GA repeat binding protei | 69.0140076 | 85.9851379 | 464.50824 |
| 66440 | Cdc26 | cell division cycle 26 | 148.841751 | 109.551498 | 464.258484 |
| 100039781 | Hrct1 | histidine rich carboxyl te | 50 | 60.7564697 | 464.031708 |
| 105988 | Espl1 | extra spindle poles-like 1 | 50 | 50 | 461.589813 |
| 67706 | Tmem179b | transmembrane protein 1 | 135.925781 | 163.241455 | 459.589935 |
| 209003 | Rbmx2 | RNA binding motif prote | 50 | 50 | 458.648346 |
| 100206 | Adprhl2 | ADP-ribosylhydrolase lik | 126.740601 | 125.093597 | 457.793854 |
| 67203 | Nde1 | nuclear distribution gene | 50 | 50 | 456.67807 |
| 18760 | Prkd1 | protein kinase D1 | 50 | 50 | 455.52121 |
| 13017 | Ctbp2 | C-terminal binding prote | 50 | 50 | 455.230347 |
| 12448 | Ccne2 | cyclin E2 | 50 | 50 | 454.323242 |
| 208117 | Aph1b | anterior pharynx defectiv | 81.9949265 | 118.027077 | 454.183594 |
| 225651 | Mppe1 | metallophosphoesterase 1 | 114.865448 | 172.025436 | 453.207458 |
| 26951 | Zw10 | ZW10 homolog (Drosop | 136.443817 | 148.05304 | 452.568237 |
| 54722 | Dfna5 | deafness, autosomal dom | 106.75119 | 149.793152 | 452.527161 |
| 20349 | Sema3e | sema domain, immunogl | 50 | 50 | 451.143524 |
| 68092 | Ncbp2 | nuclear cap binding prote | 76.4407272 | 109.463791 | 450.23645 |
| 75317 | 4930547N16Rik | RIKEN cDNA 4930547N | 50 | 50 | 449.748413 |
| 232313 | Gxylt2 | glucoside xylosyltransfer | 50 | 50 | 449.446045 |
| 78906 | 9130017N09Rik | RIKEN cDNA 9130017N | 50 | 50 | 447.71405 |
| 69185 | Dtwd1 | DTW domain containing | 160.403229 | 171.707123 | 446.504578 |
| 624086 | A230045G11Rik | RIKEN cDNA A230045( | 50 | 60.8767242 | 444.568817 |
| 66374 | 2310011J03Rik | RIKEN cDNA 2310011J | 125.774246 | 170.626282 | 443.045502 |
| 623474 | Rad54b | RAD54 homolog B (S. c | 50 | 70.1799088 | 442.587036 |
| 241627 | Wdr76 | WD repeat domain 76 | 63.0067291 | 91.9156342 | 442.02832 |
| 75572 | Acyp2 | acylphosphatase 2, musc | 148.184296 | 105.120605 | 441.837708 |
| 215707 | Ccdc92 | coiled-coil domain conta | 50 | 50 | 441.278992 |
| 57785 | Rangrf | RAN guanine nucleotide | 50 | 68.3167191 | 440.546082 |
| 72672 | Zfp518a | zinc finger protein 518A | 152.672333 | 156.55127 | 437.389343 |
| 102920 | Cenpi | centromere protein I | 50 | 50 | 437.366333 |
| 218271 | B4galt7 | xylosylprotein beta1,4-ga | 50 | 72.6047287 | 429.007019 |
| 67564 | Tmem35 | transmembrane protein 3 | 50 | 52.345974 | 428.541992 |
| 13593 | Ebf3 | early B cell factor 3 | 50 | 50 | 428.408875 |
| 67870 | Enoph1 | enolase-phosphatase 1 | 50 | 50 | 427.989868 |
| 19362 | Rad51ap1 | RAD51 associated protei | 50 | 50 | 427.380188 |
| 26934 | Racgap1 | Rac GTPase-activating p | 50 | 50 | 426.693298 |
| 228482 | Arhgap11a | Rho GTPase activating p | 50 | 50 | 425.815796 |
| 219072 | Haus4 | HAUS augmin-like comp | 154.156738 | 148.747681 | 425.391846 |
| 236899 | Pcyt1b | phosphate cytidylyltransf | 50 | 52.9076157 | 424.001648 |
| 212898 | Dse | dermatan sulfate epimera | 110.238007 | 149.838425 | 422.553925 |
| 232157 | Mob1a | MOB kinase activator 1A | 50 | 50 | 422.129944 |
| 241308 | Ralgps1 | Ral GEF with PH domai | 50 | 50 | 421.827576 |
| 240756 | Klhl12 | kelch-like 12 (Drosophila | 196.869873 | 209.228271 | 421.479218 |
| 232164 | Paip2b | poly(A) binding protein i | 209.985458 | 195.283401 | 421.101257 |
| 58186 | Rad18 | RAD18 homolog (S. cere | 81.0285645 | 119.935532 | 421.071655 |
| 74201 | Cep97 | centrosomal protein 97 | 50 | 50 | 419.729126 |
| 100647 | Upk3b | uroplakin 3B | 50 | 50 | 419.531921 |
| 75623 | 1700029F09Rik | RIKEN cDNA 1700029F | 50 | 67.566925 | 418.665924 |
| 215708 | Fam73a | family with sequence sin | 162.510223 | 180.435944 | 413.282593 |
| 18760 | Prkd1 | protein kinase D1 | 50 | 50 | 412.410004 |
| 18783 | Pla2g4a | phospholipase A2, group | 50 | 50 | 412.224304 |
| 207704 | Gtpbp10 | GTP-binding protein 10 ( | 122.531387 | 142.531403 | 411.282715 |
| 67049 | Pus3 | pseudouridine synthase 3 | 184.36264 | 199.38324 | 410.91626 |

| | | | | | |
|---|---|---|---|---|---|
| 226841 | Vash2 | vasohibin 2 | 50 | 50 | 409.323944 |
| 69776 | 1600002D24Rik | RIKEN cDNA 1600002I | 50 | 50 | 408.865479 |
| 226154 | Lzts2 | leucine zipper, putative t | 50 | 50 | 406.612549 |
| 71874 | 2310007B03Rik | RIKEN cDNA 2310007I | 50 | 50 | 405.993042 |
| 217219 | Fam171a2 | family with sequence sin | 50 | 67.5018463 | 404.336609 |
| 74732 | Stx11 | syntaxin 11 | 50 | 54.5501022 | 404.178864 |
| 76789 | Mzt1 | mitotic spindle organizin | 122.287422 | 159.021362 | 404.114777 |
| 16975 | Lrp8 | low density lipoprotein r | 50 | 50 | 403.940582 |
| 224171 | C330027C09Rik | RIKEN cDNA C330027 | 50 | 50 | 403.033508 |
| 102124 | E130303B06Rik | RIKEN cDNA E130303 | 50 | 50 | 402.28418 |
| 15369 | Hmox2 | heme oxygenase (decycli | 50 | 51.0217972 | 401.441162 |
| 14573 | Gdnf | glial cell line derived neu | 50 | 50 | 395.877045 |
| 231872 | Aimp2 | aminoacyl tRNA synthet | 50 | 50 | 395.104706 |
| 18704 | Pik3c2a | phosphatidylinositol 3-ki | 50 | 50 | 394.14505 |
| 269252 | Gtf3c4 | general transcription fact | 123.881126 | 144.271515 | 393.709595 |
| 52184 | Odf2l | outer dense fiber of sperr | 83.6535797 | 109.915085 | 393.709595 |
| 70078 | Nol7 | nucleolar protein 7 | 149.076202 | 176.754852 | 393.656982 |
| 270906 | Prr11 | proline rich 11 | 50 | 50 | 393.256042 |
| 27078 | B9d1 | B9 protein domain 1 | 50 | 61.3506546 | 393.203461 |
| 17151 | Ccndbp1 | cyclin D-type binding-pr | 122.14801 | 117.322556 | 392.726929 |
| 67689 | Aldh3b1 | aldehyde dehydrogenase | 50 | 58.484436 | 392.511658 |
| 380840 | Lyrm4 | LYR motif containing 4 | 147.487259 | 188.736084 | 391.308777 |
| 12237 | Bub3 | budding uninhibited by b | 125.086693 | 138.19812 | 390.919312 |
| 68865 | Arv1 | ARV1 homolog (yeast) | 68.1870575 | 100.524185 | 389.668762 |
| 76179 | Usp31 | ubiquitin specific peptida | 116.593811 | 146.917023 | 388.617065 |
| 68559 | Pdrg1 | p53 and DNA damage re | 87.3146591 | 115.371651 | 388.099457 |
| 379043 | Raet1e | retinoic acid early transc | 50 | 50 | 387.838196 |
| 12532 | Cdc25c | cell division cycle 25 ho | 50 | 50 | 387.634399 |
| 14697 | Gnb5 | guanine nucleotide bindi | 50 | 61.1525917 | 385.524445 |
| 319953 | Ttll1 | tubulin tyrosine ligase-lik | 50 | 55.4102516 | 385.396301 |
| 216049 | Zfp365 | zinc finger protein 365 | 50 | 50 | 383.687256 |
| 67838 | Dnajb11 | DnaJ (Hsp40) homolog, | 101.710274 | 102.530258 | 381.449158 |
| 100210 | Gpn2 | GPN-loop GTPase 2 | 131.886078 | 132.147369 | 380.839478 |
| 13800 | Enah | enabled homolog (Droso | 50 | 50 | 379.961975 |
| 232539 | Klhdc5 | kelch domain containing | 143.651917 | 144.326691 | 379.815735 |
| 26896 | Med14 | mediator complex subun | 123.806664 | 181.020218 | 379.653046 |
| 13527 | Dtna | dystrobrevin alpha | 50 | 50 | 377.879944 |
| 67121 | Mastl | microtubule associated se | 50 | 65.4505005 | 377.217712 |
| 14659 | Glrp1 | glutamine repeat protein | 50 | 50 | 377.013947 |
| 210719 | Mkx | mohawk homeobox | 121.181648 | 135.763397 | 375.456116 |
| 75219 | Dusp18 | dual specificity phosphat | 50 | 50.8463745 | 374.688721 |
| 70134 | 2210011C24Rik | RIKEN cDNA 2210011C | 50 | 50 | 374.549042 |
| 20210 | Saa3 | serum amyloid A 3 | 50 | 50 | 373.055298 |
| 67979 | Atad1 | ATPase family, AAA do | 131.402893 | 102.387375 | 372.310913 |
| 64297 | Gprc5b | G protein-coupled recept | 50 | 50 | 371.758759 |
| 66607 | Ms4a4d | membrane-spanning 4-do | 50 | 50 | 371.183655 |
| 224170 | Dzip3 | DAZ interacting protein | 50 | 73.9161758 | 369.735901 |
| 56075 | Pdss1 | prenyl (solanesyl) diphos | 50 | 69.2971191 | 368.957001 |
| 53886 | Cdkl2 | cyclin-dependent kinase- | 50 | 59.3997574 | 366.741882 |
| 66078 | Tsen34 | tRNA splicing endonucle | 50 | 50 | 366.66626 |
| 218454 | Lhfpl2 | lipoma HMGIC fusion p | 95.3893204 | 117.741302 | 366.62027 |
| 237211 | Fancb | Fanconi anemia, comple | 50 | 50 | 366.184814 |
| 216795 | Wnt9a | wingless-type MMTV in | 50 | 50 | 366.091125 |
| 75212 | Rnf121 | ring finger protein 121 | 125.983353 | 121.136627 | 366.068115 |
| 11416 | Slc33a1 | solute carrier family 33 ( | 123.218925 | 116.936325 | 365.823273 |
| 321000 | 4933421E11Rik | RIKEN cDNA 4933421E | 170.176147 | 175.985229 | 365.305664 |
| 77951 | Cyp20a1 | cytochrome P450, family | 50 | 50 | 364.579346 |
| 21778 | Tex9 | testis expressed gene 9 | 50 | 50 | 363.736328 |
| 15893 | Ica1 | islet cell autoantigen 1 | 50 | 55.1895561 | 363.573639 |
| 21987 | Tpd52l1 | tumor protein D52-like 1 | 50 | 50 | 362.707642 |
| 60527 | Fads3 | fatty acid desaturase 3 | 50 | 50 | 361.899139 |

| | | | | | |
|---|---|---|---|---|---|
| 330695 | Ctxn1 | cortexin 1 | 50 | 50 | 361.894226 |
| 245670 | Rragb | Ras-related GTP binding | 50 | 50 | 361.754547 |
| 72137 | Wdsub1 | WD repeat, SAM and U- | 89.1079712 | 128.047531 | 361.701965 |
| 72433 | Rab38 | RAB38, member of RAS | 50 | 50 | 361.614868 |
| 229841 | Cenpe | centromere protein E | 50 | 50 | 361.399597 |
| 56513 | Pard6a | par-6 (partitioning defect | 74.5032501 | 77.3440399 | 361.358521 |
| 210094 | Iglon5 | IgLON family member 5 | 81.7905579 | 82.437027 | 361.213928 |
| 76804 | Kdm4c | lysine (K)-specific demet | 115.966469 | 157.531647 | 361.115295 |
| 68277 | 2310057M21Rik | RIKEN cDNA 2310057M | 50 | 50 | 360.678192 |
| 223690 | Ankrd54 | ankyrin repeat domain 54 | 89.003418 | 107.821304 | 360.533569 |
| 218756 | Slc4a7 | solute carrier family 4, so | 109.032433 | 135.26683 | 360.068542 |
| 381822 | 1190002F15Rik | RIKEN cDNA 1190002F | 50 | 50 | 359.731689 |
| 76547 | Tmem101 | transmembrane protein 1 | 83.9624939 | 123.736877 | 357.592133 |
| 404710 | Iqgap3 | IQ motif containing GTP | 50 | 50 | 357.429443 |
| 68895 | Rasl11a | RAS-like, family 11, me | 50 | 50 | 357.104065 |
| 68214 | Gsto2 | glutathione S-transferase | 50 | 50 | 356.162476 |
| 67391 | Fundc2 | FUN14 domain containin | 64.1124954 | 94.2527466 | 355.871643 |
| 20197 | S100a3 | S100 calcium binding pr | 50 | 50 | 355.807556 |
| 20589 | Ighmbp2 | immunoglobulin mu bind | 142.346527 | 147.722015 | 355.796021 |
| 381306 | BC055324 | cDNA sequence BC0553 | 50 | 50 | 355.633362 |
| 71233 | Enkur | enkurin, TRPC channel i | 50 | 50 | 355.528198 |
| 74136 | Sec14l1 | SEC14-like 1 (S. cerevis | 50 | 59.8736877 | 355.051636 |
| 230157 | Tmeff1 | transmembrane protein w | 50 | 50 | 354.545532 |
| 30056 | Timm9 | translocase of inner mito | 160.477692 | 151.006989 | 354.26123 |
| 77593 | Usp45 | ubiquitin specific petidas | 116.110634 | 88.1793594 | 353.755096 |
| 94180 | Acsbg1 | acyl-CoA synthetase bub | 50 | 50 | 353.331116 |
| 66405 | Mcts2 | malignant T cell amplifie | 112.828171 | 137.470963 | 351.743744 |
| 56496 | Tspan6 | tetraspanin 6 | 50 | 50 | 350.215485 |
| 242466 | Zfp462 | zinc finger protein 462 | 50 | 50 | 349.796448 |
| 232431 | Gprc5a | G protein-coupled recept | 50 | 50 | 348.12854 |
| 72119 | Tpx2 | TPX2, microtubule-assoc | 50 | 50 | 346.053101 |
| 19872 | Rny1 | RNA, Y1 small cytoplasi | 50 | 50 | 344.215912 |
| 103551 | E130012A19Rik | RIKEN cDNA E130012A | 50 | 50 | 344.064728 |
| 69757 | Leng1 | leukocyte receptor cluste | 111.617844 | 157.664642 | 343.936554 |
| 27401 | Skp2 | S-phase kinase-associate | 50 | 50 | 343.78537 |
| 67994 | Mrps11 | mitochondrial ribosomal | 140.348862 | 166.802307 | 342.745178 |
| 100048499 | LOC100048499 | uncharacterized LOC100 | 110.860596 | 99.8295593 | 339.879333 |
| 18974 | Pole2 | polymerase (DNA directe | 50 | 50 | 338.646851 |
| 64406 | Sp5 | trans-acting transcription | 50 | 50 | 338.559753 |
| 319482 | 9530053A07Rik | RIKEN cDNA 9530053A | 50 | 50 | 338.042145 |
| 56419 | Diap3 | diaphanous homolog 3 (D | 50 | 50 | 336.786682 |
| 15394 | Hoxa1 | homeobox A1 | 50 | 50 | 336.292053 |
| 232664 | Ccdc136 | coiled-coil domain conta | 50 | 50 | 335.130249 |
| 75317 | 4930547N16Rik | RIKEN cDNA 4930547N | 50 | 50 | 334.990601 |
| 234825 | Klhdc4 | kelch domain containing | 115.557739 | 121.246971 | 332.124725 |
| 68281 | 4930430F08Rik | RIKEN cDNA 4930430F | 50 | 71.0499573 | 330.502808 |
| 269033 | 4930503L19Rik | RIKEN cDNA 4930503L | 50 | 50 | 329.723907 |
| 21384 | Tbx15 | T-box 15 | 50 | 50 | 328.956512 |
| 268783 | Mtmr12 | myotubularin related pro | 107.647842 | 141.252502 | 327.758545 |
| 56220 | Zfp386 | zinc finger protein 386 (K | 50 | 72.1534424 | 327.607361 |
| 66362 | Exosc3 | exosome component 3 | 149.494446 | 156.275391 | 327.125916 |
| 73680 | Zbtb8a | zinc finger and BTB dom | 50 | 50 | 325.753784 |
| 93737 | Pard6g | par-6 partitioning defecti | 50 | 50 | 325.375793 |
| 71306 | Mfap3l | microfibrillar-associated | 50 | 50 | 323.119598 |
| 66140 | Fam33a | family with sequence sim | 50 | 50 | 321.806641 |
| 243339 | Tmem130 | transmembrane protein 1 | 50 | 50 | 320.934052 |
| 66437 | Fis1 | fission 1 (mitochondrial | 50 | 52.6317444 | 320.492004 |
| 18162 | Npr3 | natriuretic peptide recept | 50 | 50 | 320.086121 |
| 70681 | Fam175a | family with sequence sim | 132.857178 | 114.732208 | 319.765686 |
| 319765 | Igf2bp2 | insulin-like growth factor | 50 | 50 | 319.126465 |
| 105377 | Ankrd32 | ankyrin repeat domain 32 | 50 | 66.8397598 | 318.771484 |

| | | | | | |
|---|---|---|---|---|---|
| 214901 | Chtf18 | CTF18, chromosome tra | 50 | 50 | 317.603149 |
| 217653 | Mis18bp1 | MIS18 binding protein 1 | 50 | 50 | 317.080566 |
| 22145 | Tuba4a | tubulin, alpha 4A | 134.027924 | 128.190414 | 316.801239 |
| 208628 | Kntc1 | kinetochore associated 1 | 50 | 50 | 315.795532 |
| 20539 | Slc7a5 | solute carrier family 7 (c | 50 | 50 | 314.975525 |
| 232827 | Nlrp2 | NLR family, pyrin doma | 50 | 50 | 314.784943 |
| 242620 | Dmrta2 | doublesex and mab-3 rel | 50 | 50 | 314.673187 |
| 268490 | Lsm12 | LSM12 homolog (S. cere | 79.2003937 | 94.3178177 | 314.056976 |
| 66682 | Trappc5 | trafficking protein particl | 114.482071 | 136.633438 | 313.656006 |
| 77634 | Snapc3 | small nuclear RNA activ | 50 | 50 | 312.65033 |
| 66098 | Chchd6 | coiled-coil-helix-coiled-c | 50 | 50 | 312.366028 |
| 100342 | Fam46b | family with sequence sin | 50 | 50 | 310.755646 |
| 57810 | Cdon | cell adhesion molecule-re | 50 | 50 | 310.638977 |
| 239839 | Ccdc14 | coiled-coil domain conta | 50 | 57.1404533 | 310.400696 |
| 232946 | Bloc1s3 | biogenesis of lysosome-r | 89.0731201 | 113.200058 | 308.982544 |
| 12297 | Cacnb3 | calcium channel, voltage | 50 | 50 | 308.505981 |
| 67030 | Fancl | Fanconi anemia, comple | 50 | 71.9652786 | 308.377808 |
| 270669 | Mbtps2 | membrane-bound transcr | 50 | 50 | 307.871704 |
| 53885 | Nphp1 | nephronophthisis 1 (juve | 50 | 58.2212982 | 307.569336 |
| 193385 | Fam65b | family with sequence sin | 50 | 74.3349304 | 307.104279 |
| 83675 | Bicc1 | bicaudal C homolog 1 (D | 50 | 50 | 306.488068 |
| 66060 | 0610010O12Rik | RIKEN cDNA 0610010( | 50 | 52.9076157 | 306.465027 |
| 11636 | Ak1 | adenylate kinase 1 | 50 | 50 | 306.128174 |
| 22059 | Trp53 | transformation related pr | 50 | 63.9410019 | 305.447876 |
| 24116 | Whsc2 | Wolf-Hirschhorn syndro | 90.0046234 | 102.221848 | 302.332214 |
| 19249 | Ptpn13 | protein tyrosine phospha | 50 | 50 | 301.931274 |
| 71436 | Flrt3 | fibronectin leucine rich t | 50 | 50 | 301.546753 |
| 18108 | Nmt2 | N-myristoyltransferase 2 | 50 | 50 | 301.285461 |
| 101985 | AA960436 | expressed sequence AA9 | 73.850563 | 93.9995117 | 301.012695 |
| 100040736 | 9130206I24Rik | RIKEN cDNA 9130206I | 50 | 50 | 300.593628 |
| 78833 | Gins3 | GINS complex subunit 3 | 50 | 50 | 300.442474 |
| 13732 | Emp3 | epithelial membrane prot | 50 | 50 | 300.192688 |
| 21939 | Cd40 | CD40 antigen | 50 | 50 | 298.350586 |
| 100862531l70359 | LOC100862531lGt | tRNA modification GTP | 129.848801 | 140.953995 | 297.844452 |
| 17245 | Mdm1 | transformed mouse 3T3 c | 50 | 50 | 295.525818 |
| 67877 | Naa20 | N(alpha)-acetyltransferas | 50 | 63.4996109 | 294.437958 |
| 11834 | Aqr | aquarius | 57.8612518 | 68.2290115 | 294.13562 |
| 103743 | Tmem98 | transmembrane protein 9 | 52.5858727 | 55.9945297 | 294.083008 |
| 330959 | Snapc5 | small nuclear RNA activ | 104.335289 | 135.851105 | 294.071503 |
| 67222 | Srfbp1 | serum response factor bi | 50 | 57.2182617 | 293.542358 |
| 71793 | Ints12 | integrator complex subur | 61.6316414 | 79.0417023 | 292.461121 |
| 94220 | Cnnm4 | cyclin M4 | 50 | 55.6733894 | 291.833374 |
| 67486 | Polr3g | polymerase (RNA) III (D | 87.628334 | 65.2750778 | 289.572235 |
| 100043314 | Tigit | T cell immunoreceptor w | 50 | 50 | 289.258362 |
| 26895 | Cops7b | COP9 (constitutive photo | 117.934044 | 126.184341 | 288.642151 |
| 14299 | Ncs1 | neuronal calcium sensor | 50 | 50 | 288.154114 |
| 240261 | Ccdc112 | coiled-coil domain conta | 50 | 50 | 288.147522 |
| 28081 | D11Wsu99e | DNA segment, Chr 11, W | 78.8613815 | 98.2097092 | 286.846039 |
| 67008 | 1600012F09Rik | RIKEN cDNA 1600012F | 90.970993 | 78.5125961 | 286.676788 |
| 621080 | AI429214 | expressed sequence AI42 | 72.709938 | 96.589859 | 286.630798 |
| 54635 | Pdgfc | platelet-derived growth f | 50 | 61.5161743 | 286.392517 |
| 14221 | Fjx1 | four jointed box 1 (Dros | 50 | 50 | 286.275818 |
| 233826 | Palb2 | partner and localizer of B | 50 | 56.2251282 | 285.851868 |
| 14697 | Gnb5 | guanine nucleotide bindi | 50 | 50 | 285.810791 |
| 17231 | Mcpt8 | mast cell protease 8 | 50 | 50 | 285.746704 |
| 75659 | Wdr54 | WD repeat domain 54 | 50 | 50 | 285.648102 |
| 66959 | Dusp26 | dual specificity phosphat | 50 | 50 | 285.531433 |
| 12571 | Cdk6 | cyclin-dependent kinase | 50 | 50 | 284.566833 |
| 72930 | Ppp2r2b | protein phosphatase 2 (fo | 50 | 73.1338348 | 284.555328 |
| 12816 | Col12a1 | collagen, type XII, alpha | 50 | 51.6739845 | 284.520813 |
| 69917 | Obfc2b | oligonucleotide/oligosacc | 92.2510223 | 115.40419 | 284.037689 |

| | | | | | |
|---|---|---|---|---|---|
| 67538 | Zswim3 | zinc finger, SWIM doma | 107.169418 | 132.037033 | 282.71814 |
| 22174 | Tyro3 | TYRO3 protein tyrosine | 50 | 50 | 279.160461 |
| 16551 | Kif11 | kinesin family member 1 | 50 | 50 | 276.684082 |
| 101631 | Pwwp2b | PWWP domain containin | 50 | 50 | 276.672546 |
| 77591 | Ddx10 | DEAD (Asp-Glu-Ala-As | 50 | 73.6855774 | 276.585449 |
| 242642 | Hpdl | 4-hydroxyphenylpyruvat | 50 | 50 | 275.905151 |
| 228859 | Fitm2 | fat storage-inducing trans | 79.5093155 | 97.3495636 | 275.311951 |
| 80913 | Pum2 | pumilio 2 (Drosophila) | 83.997345 | 110.64225 | 275.28894 |
| 103199 | Fig4 | FIG4 homolog (S. cerevi | 85.3122406 | 121.058823 | 275.039154 |
| 66356 | 2310008H09Rik | RIKEN cDNA 2310008H | 114.242859 | 112.670952 | 274.789368 |
| 214239 | A430105I19Rik | RIKEN cDNA A430105 | 50 | 50 | 274.725281 |
| 15561 | Htr3a | 5-hydroxytryptamine (se | 50 | 50 | 274.498505 |
| 74174 | Gtsf1 | gametocyte specific facto | 50 | 50 | 274.358826 |
| 27366 | Txnl4a | thioredoxin-like 4A | 50 | 50 | 274.033447 |
| 98366 | Smap1 | stromal membrane-assoc | 50 | 52.8425407 | 273.870789 |
| 270685 | Mthfd1l | methylenetetrahydrofolat | 50 | 50 | 273.719604 |
| 332397 | Nanos1 | nanos homolog 1 (Droso | 50 | 50 | 273.591431 |
| 209630 | Frmd4a | FERM domain containin | 78.8217773 | 106.552299 | 271.09201 |
| 271981 | Tbck | TBC1 domain containing | 50 | 50 | 269.898987 |
| 66583 | Exosc1 | exosome component 1 | 50 | 50 | 267.545837 |
| 12578 | Cdkn2a | cyclin-dependent kinase | 50 | 50 | 267.383148 |
| 18452 | P4ha2 | procollagen-proline, 2-ox | 50 | 50 | 266.778412 |
| 56220 | Zfp386 | zinc finger protein 386 ( | 50 | 60.4579697 | 265.708649 |
| 71860 | Wdr16 | WD repeat domain 16 | 50 | 50 | 264.918213 |
| 228071 | Sestd1 | SEC14 and spectrin dom | 50 | 50 | 264.656952 |
| 234912 | 9230110C19Rik | RIKEN cDNA 9230110C | 50 | 66.002243 | 264.150818 |
| 72569 | Bbs5 | Bardet-Biedl syndrome 5 | 50 | 55.0792084 | 264.011169 |
| 77532 | Jrkl | jerky homolog-like (mou | 50 | 50 | 263.912537 |
| 69706 | Lrr1 | leucine rich repeat protei | 50 | 50 | 263.738373 |
| 17005 | Ltk | leukocyte tyrosine kinase | 50 | 50 | 263.610199 |
| 67883 | Uxs1 | UDP-glucuronate decarb | 50 | 50 | 263.511597 |
| 28015 | Polr2m | polymerase (RNA) II (D | 67.8781357 | 84.6411514 | 263.186218 |
| 66209 | 1110054O05Rik | RIKEN cDNA 1110054O | 97.775116 | 130.748215 | 263.058044 |
| 101351 | A130022J15Rik | RIKEN cDNA A130022J | 50 | 50 | 260.907013 |
| 211666 | Mgst2 | microsomal glutathione S | 50 | 70.4105072 | 260.698334 |
| 20908 | Stx3 | syntaxin 3 | 104.230728 | 113.508469 | 260.418976 |
| 171170 | Mbnl3 | muscleblind-like 3 (Dros | 50 | 50 | 260.128113 |
| 19099 | Mapk8ip1 | mitogen-activated protein | 50 | 50 | 259.976929 |
| 210992 | Lpcat1 | lysophosphatidylcholine | 50 | 50 | 259.640045 |
| 68190 | 5330426P16Rik | RIKEN cDNA 5330426P | 50 | 50 | 259.621979 |
| 12981 | Csf2 | colony stimulating factor | 50 | 50 | 258.861145 |
| 67291 | Ccdc137 | coiled-coil domain conta | 75.4743652 | 96.5346832 | 258.657379 |
| 67180 | Yipf5 | Yip1 domain family, me | 81.5117493 | 86.7901077 | 256.826782 |
| 64297 | Gprc5b | G protein-coupled recept | 50 | 50 | 255.715927 |
| 68925 | Rpap1 | RNA polymerase II asso | 76.8542023 | 114.787369 | 255.617325 |
| 20729 | Spin1 | spindlin 1 | 50 | 50 | 255.507233 |
| 237877 | Atad5 | ATPase family, AAA do | 50 | 50 | 254.698746 |
| 73673 | 2410076I21Rik | RIKEN cDNA 2410076I | 97.9493866 | 110.246124 | 254.158112 |
| 54607 | Socs6 | suppressor of cytokine si | 50 | 50 | 254.094025 |
| 14349 | Fv1 | Friend virus susceptibilit | 50 | 50 | 253.91983 |
| 70408 | Polr3f | polymerase (RNA) III (D | 104.021614 | 124.662109 | 253.001236 |
| 57080 | Gtf2ird1 | general transcription fact | 50 | 50 | 252.169754 |
| 16469 | Jrk | jerky | 50 | 72.2185135 | 252.123749 |
| 243312 | Elfn1 | leucine rich repeat and fi | 50 | 73.22155 | 251.972565 |
| 73067 | Tmem192 | transmembrane protein 1 | 65.0091553 | 83.9366226 | 251.379333 |
| 230500 | Efcab7 | EF-hand calcium binding | 50 | 50 | 250.275055 |
| 240334 | Pcyox1l | prenylcysteine oxidase 1 | 50 | 50 | 248.501968 |
| 245522 | Zc4h2 | zinc finger, C4H2 domai | 50 | 50 | 248.275192 |
| 320213 | Senp5 | SUMO/sentrin specific p | 50 | 57.3611488 | 248.101013 |
| 74238 | Mterfd3 | MTERF domain containi | 50 | 59.367218 | 247.670471 |
| 53892 | Ppm1d | protein phosphatase 1D r | 50 | 50 | 247.322113 |

| | | | | | |
|---|---|---|---|---|---|
| 67553 | Gstcd | glutathione S-transferase | 50 | 50 | 246.978668 |
| 15408 | Hoxb13 | homeobox B13 | 50 | 50 | 245.397827 |
| 65112 | Pmepa1 | prostate transmembrane | 50 | 50 | 245.159546 |
| 116905 | Dph1 | DPH1 homolog (S. cerev | 90.2184982 | 109.100204 | 244.328064 |
| 407821 | Znrf3 | zinc and ring finger 3 | 53.2734146 | 50 | 243.79892 |
| 268469 | Zfp652 | zinc finger protein 652 | 50 | 74.5782623 | 243.76442 |
| 240672 | Dusp5 | dual specificity phosphat | 50 | 50 | 243.333893 |
| 67573 | Loxl4 | lysyl oxidase-like 4 | 103.742798 | 90.9578705 | 242.293701 |
| 15425 | Hoxc6 | homeobox C6 | 50 | 50 | 241.194351 |
| 633640 | Gm7120 | predicted gene 7120 | 50 | 50 | 241.182831 |
| 235973 | A630095E13Rik | RIKEN cDNA A630095 | 50 | 50 | 239.915878 |
| 74430 | 4930452B06Rik | RIKEN cDNA 4930452 | 50 | 50 | 238.759018 |
| 72267 | Lrrc8e | leucine rich repeat contai | 50 | 53.391449 | 238.736008 |
| 116972 | Fam57a | family with sequence sim | 50 | 50 | 238.660431 |
| 69195 | Tmem121 | transmembrane protein 1 | 50 | 50 | 238.0672 |
| 53607 | Snrpa | small nuclear ribonucleo | 50 | 50 | 238.003113 |
| 19092 | Prkg2 | protein kinase, cGMP-de | 50 | 50 | 236.974426 |
| 18693 | Pick1 | protein interacting with C | 50 | 58.3486214 | 236.445282 |
| 72155 | Cenpn | centromere protein N | 50 | 50 | 236.305603 |
| 66044 | Dtd1 | D-tyrosyl-tRNA deacylas | 50 | 50 | 236.032837 |
| 79264 | Krit1 | KRIT1, ankyrin repeat c | 50 | 64.0838852 | 235.6138 |
| 66371 | Chmp4c | charged multivesicular b | 50 | 63.5222473 | 234.940063 |
| 66311 | Cenpw | centromere protein W | 50 | 50 | 234.788879 |
| 15395 | Hoxa10 | homeobox A10 | 50 | 50 | 234.765869 |
| 233276 | Tubgcp5 | tubulin, gamma complex | 71.1209869 | 105.627075 | 234.282745 |
| 109229 | Fam118b | family with sequence sim | 50 | 50 | 233.91629 |
| 237859 | Ccdc55 | coiled-coil domain conta | 50 | 50 | 233.017426 |
| 230098 | E130306D19Rik | RIKEN cDNA E130306 | 50 | 50 | 232.660843 |
| 58186 | Rad18 | RAD18 homolog (S. cere | 50 | 50 | 232.108704 |
| 76916 | 4930455C21Rik | RIKEN cDNA 4930455 | 82.5478058 | 112.472893 | 231.858917 |
| 74998 | Rab11fip2 | RAB11 family interactin | 50 | 65.2298126 | 231.817841 |
| 57764 | Ntn4 | netrin 4 | 50 | 50 | 231.480972 |
| 74365 | Lonrf3 | LON peptidase N-termin | 50 | 51.508461 | 231.288712 |
| 26432 | Plod2 | procollagen lysine, 2-oxo | 50 | 50 | 231.027435 |
| 50912 | Exosc10 | exosome component 10 | 50 | 50 | 230.853241 |
| 52592 | Brms1l | breast cancer metastasis- | 50 | 59.6529922 | 230.823669 |
| 105203 | BC016423 | cDNA sequence BC0164 | 63.4249573 | 85.0924454 | 229.242828 |
| 17245 | Mdm1 | transformed mouse 3T3 c | 50 | 50 | 229.242828 |
| 14841 | Gsg2 | germ cell-specific gene 2 | 50 | 50 | 229.190247 |
| 71844 | Nupl1 | nucleoporin like 1 | 58.0703659 | 79.4052811 | 228.649612 |
| 66337 | 1700025K23Rik | RIKEN cDNA 1700025 | 50 | 57.6695557 | 227.155884 |
| 231830 | Micall2 | MICAL-like 2 | 50 | 69.232048 | 226.981689 |
| 71793 | Ints12 | integrator complex subur | 59.524662 | 79.8792114 | 226.940613 |
| 72136 | Chst14 | carbohydrate (N-acetylga | 50 | 56.3680153 | 226.388474 |
| 207596 | Thsd4 | thrombospondin, type I, | 50 | 50 | 226.138702 |
| 171180 | Syt12 | synaptotagmin XII | 74.3733521 | 96.0706558 | 225.673645 |
| 18973 | Pole | polymerase (DNA directe | 50 | 50 | 224.958832 |
| 69928 | Apitd1 | apoptosis-inducing, TAF | 50 | 50 | 224.267014 |
| 74041 | 4632434I11Rik | RIKEN cDNA 4632434 | 50 | 50 | 223.348419 |
| 237436 | Gas2l3 | growth arrest-specific 2 l | 50 | 65.8367233 | 223.046051 |
| 76167 | Snrnp35 | small nuclear ribonucleo | 50 | 50 | 222.871887 |
| 269356 | Slc4a11 | solute carrier family 4, s | 50 | 50 | 222.796295 |
| 68190 | 5330426P16Rik | RIKEN cDNA 5330426 | 50 | 50 | 222.755203 |
| 70546 | Zdhhc2 | zinc finger, DHHC doma | 50 | 54.163887 | 221.522751 |
| 106565 | Dlk2 | delta-like 2 homolog (Dr | 50 | 71.8025894 | 221.034698 |
| 223669 | Zfp7 | zinc finger protein 7 | 50 | 50 | 220.970612 |
| 13639 | Efna4 | ephrin A4 | 50 | 50 | 220.267288 |
| 20460 | Stil | Scl/Tal1 interrupting locu | 50 | 50 | 220.157196 |
| 66197 | Cks2 | CDC28 protein kinase re | 50 | 50 | 219.831818 |
| 244238 | Mrgpre | MAS-related GPR, mem | 50 | 50 | 219.586975 |
| 57230 | Sap30bp | SAP30 binding protein | 53.9308548 | 76.0325928 | 219.174515 |

| | | | | | |
|---|---|---|---|---|---|
| 69137 | 2200002K05Rik | RIKEN cDNA 2200002I | 50 | 50 | 219.098923 |
| 381066 | Zfp948 | zinc finger protein 948 | 50 | 50 | 218.901733 |
| 114679 | Selm | selenoprotein M | 50 | 56.9423904 | 217.552612 |
| 57808 | Rpl35a | ribosomal protein L35A | 50 | 50 | 216.384247 |
| 20055 | Rps16 | ribosomal protein S16 | 50 | 50 | 215.919189 |
| 56844 | Tssc4 | tumor-suppressing subch | 50 | 50 | 215.919189 |
| 75216 | 4930534B04Rik | RIKEN cDNA 4930534I | 50 | 65.5608521 | 214.634155 |
| 103765 | Tmem17 | transmembrane protein 1 | 50 | 50 | 214.448456 |
| 66184 | Rps4y2 | ribosomal protein S4, Y- | 50 | 50 | 214.100098 |
| 13797 | Emx2 | empty spiracles homolog | 50 | 50 | 213.541382 |
| 12572 | Cdk7 | cyclin-dependent kinase | 64.6653824 | 72.8254318 | 213.390198 |
| 17954 | Nap1l2 | nucleosome assembly pr | 50 | 50 | 213.239014 |
| 212391 | Lcor | ligand dependent nuclear | 50 | 65.2750778 | 212.913651 |
| 11486 | Ada | adenosine deaminase | 50 | 64.5252762 | 212.611298 |
| 171167 | Fut10 | fucosyltransferase 10 | 50 | 50 | 212.460114 |
| 240084 | Cchcr1 | coiled-coil alpha-helical | 50 | 56.7216949 | 212.070648 |
| 69310 | Pacrg | PARK2 co-regulated | 50 | 68.8458252 | 211.972061 |
| 66101 | Ppih | peptidyl prolyl isomerase | 50 | 50 | 211.972061 |
| 108673 | Ccdc86 | coiled-coil domain conta | 50 | 56.1501541 | 211.617111 |
| 69885 | 2610002D18Rik | RIKEN cDNA 2610002I | 50 | 50 | 211.454437 |
| 17187 | Max | Max protein | 50 | 50 | 211.018951 |
| 76793 | Snip1 | Smad nuclear interacting | 50 | 50 | 209.507156 |
| 77015 | Mpped2 | metallophosphoesterase d | 96.7089539 | 76.8149338 | 209.355988 |
| 110253 | Triobp | TRIO and F-actin bindin | 50 | 50 | 209.204788 |
| 77622 | Apex2 | apurinic/apyrimidinic en | 50 | 54.3294067 | 208.373291 |
| 20841 | Zfp143 | zinc finger protein 143 | 50 | 62.7073669 | 208.123505 |
| 20238 | Atxn1 | ataxin 1 | 83.8626938 | 98.8816986 | 208.047928 |
| 74111 | Rbm19 | RNA binding motif prote | 50 | 51.2325897 | 207.809662 |
| 381259 | Als2cr4 | amyotrophic lateral scler | 50 | 50 | 207.646973 |
| 72008 | Zfyve19 | zinc finger, FYVE doma | 52.2373466 | 50 | 207.623962 |
| 69408 | Dnajc17 | DnaJ (Hsp40) homolog, | 50 | 67.9757767 | 207.582886 |
| 19014 | Med1 | mediator complex subun | 50 | 50 | 207.541809 |
| 67219 | Med18 | mediator of RNA polyme | 50 | 50 | 207.15892 |
| 74187 | Katnb1 | katanin p80 (WD40-cont | 50 | 50 | 206.879562 |
| 75284 | Bcdin3d | BCDIN3 domain contain | 50 | 60.1495552 | 205.885376 |
| 101831 | C230052I12Rik | RIKEN cDNA C230052I | 50 | 70.4331436 | 205.117981 |
| 56401 | Lepre1 | leprecan 1 | 50 | 59.8736877 | 204.577332 |
| 269060 | Dagla | diacylglycerol lipase, alp | 50 | 50 | 204.531326 |
| 66912 | Bzw2 | basic leucine zipper and | 96.4998474 | 82.0833435 | 203.484558 |
| 264134 | Ttc26 | tetratricopeptide repeat d | 50 | 50 | 203.408981 |
| 71785 | Pdgfd | platelet-derived growth f | 50 | 50 | 202.542969 |
| 100568458l71766 | Raver1-fdx1llRave | Raver1-Fdx1l readthroug | 50 | 50 | 202.066422 |
| 73754 | Thap1 | THAP domain containing | 60.5559692 | 84.4756317 | 201.060745 |
| 66656 | Eef1d | eukaryotic translation elo | 50 | 50 | 200.682785 |
| 83672 | Sytl3 | synaptotagmin-like 3 | 59.9682312 | 84.2223969 | 200.595703 |
| 97863 | C78339 | expressed sequence C78 | 50 | 50 | 200.403427 |
| 230674 | Kdm4a | lysine (K)-specific deme | 50 | 63.9735413 | 200.217743 |
| 52864 | Slx4 | SLX4 structure-specific e | 50 | 50 | 199.700104 |
| 20289 | Scx | scleraxis | 50 | 50 | 199.624527 |
| 78611 | Btbd19 | BTB (POZ) domain cont | 50 | 50 | 198.281967 |
| 546336 | Prrg1 | proline rich Gla (G-carbo | 50 | 50 | 197.968109 |
| 245631 | Mum1l1 | melanoma associated ant | 50 | 50 | 197.968109 |
| 78755 | Fam122b | family with sequence sin | 51.7541656 | 69.0438843 | 197.85144 |
| 59004 | Pias4 | protein inhibitor of activa | 50 | 70.8518982 | 197.752838 |
| 15275 | Hk1 | hexokinase 1 | 50 | 50 | 197.06102 |
| 78796 | Zcchc4 | zinc finger, CCHC doma | 50 | 50 | 196.724152 |
| 57265 | Fzd2 | frizzled homolog 2 (Dros | 50 | 50 | 196.660065 |
| 76303 | Osbp | oxysterol binding protein | 50 | 50 | 196.520386 |
| 75747 | Sesn3 | sestrin 3 | 50 | 72.2185135 | 196.305115 |
| 70892 | Ttll7 | tubulin tyrosine ligase-lik | 50 | 50 | 195.881149 |
| 17454 | Mov10 | Moloney leukemia virus | 67.1462402 | 80.5342255 | 195.70697 |

| | | | | | |
|---|---|---|---|---|---|
| 75668 | Rasl10a | RAS-like, family 10, mei | 50 | 50 | 195.189331 |
| 386454 | Rnf39 | ring finger protein 39 | 50 | 50 | 195.038147 |
| 407793 | BC039966 | cDNA sequence BC0399 | 50 | 50 | 194.921478 |
| 101148 | B630005N14Rik | RIKEN cDNA B630005I | 50 | 50 | 194.57312 |
| 18483 | Palm | paralemmin | 50 | 62.7399025 | 194.561615 |
| 66768 | Pacrgl | PARK2 co-regulated-like | 50 | 50 | 194.19516 |
| 54651 | Usp27x | ubiquitin specific peptida | 95.5984344 | 91.3638916 | 194.043976 |
| 266744 | Lgsn | lengsin, lens protein with | 50 | 67.2033386 | 192.951202 |
| 24083 | Gm16515 | predicted gene, Gm1651 | 50 | 50 | 192.712921 |
| 24017 | Rnf13 | ring finger protein 13 | 50 | 71.0499573 | 192.195297 |
| 71310 | Tbc1d9 | TBC1 domain family, me | 50 | 50 | 192.119705 |
| 332579 | Card9 | caspase recruitment dom | 50 | 50 | 191.782837 |
| 108950 | 1700049L16Rik | hematological and neuro | 50 | 61.4836349 | 190.271027 |
| 216019 | Hkdc1 | hexokinase domain conta | 50 | 50 | 189.794479 |
| 18971 | Pold1 | polymerase (DNA directe | 50 | 50 | 188.527527 |
| 58175 | Rgs20 | regulator of G-protein sig | 50 | 50 | 188.410843 |
| 208820 | Gm11818 | predicted gene 11818 | 50 | 70.764183 | 188.300751 |
| 237246 | BC022960 | cDNA sequence BC0229 | 50 | 50 | 188.096985 |
| 83671 | Sytl2 | synaptotagmin-like 2 | 50 | 60.3476181 | 187.696014 |
| 270118 | Maml2 | mastermind like 2 (Drosc | 50 | 62.9606018 | 187.673019 |
| 72543 | Fam125b | family with sequence sim | 50 | 70.6212921 | 187.673019 |
| 407785 | Ndufs6 | NADH dehydrogenase (u | 79.4744644 | 70.465683 | 187.544846 |
| 67694 | Ift74 | intraflagellar transport 74 | 50 | 50 | 187.370651 |
| 67774 | Loh12cr1 | loss of heterozygosity, 12 | 78.6475143 | 80.2102585 | 186.864532 |
| 68423 | Ankrd13d | ankyrin repeat domain 13 | 50 | 50 | 186.678833 |
| 19012 | Ppap2a | phosphatidic acid phosph | 50 | 50 | 186.550659 |
| 226182 | Taf5 | TAF5 RNA polymerase I | 63.4598083 | 91.7727432 | 186.539154 |
| 193452 | Zfp184 | zinc finger protein 184 (I | 50 | 50 | 186.376465 |
| 18599 | Padi1 | peptidyl arginine deimina | 50 | 50 | 185.835846 |
| 330836 | Slc7a6 | solute carrier family 7 (c | 50 | 50 | 184.853165 |
| 214616 | Spata5l1 | spermatogenesis associat | 50 | 50 | 184.84166 |
| 66067 | Gtpbp8 | GTP-binding protein 8 (p | 50 | 50 | 184.84166 |
| 99512 | Wdr47 | WD repeat domain 47 | 50 | 62.7724457 | 183.650299 |
| 69727 | Usp46 | ubiquitin specific peptida | 50 | 50 | 183.586197 |
| 14201 | Fhl3 | four and a half LIM dom | 50 | 50.9241829 | 183.283844 |
| 384864 | Gm1943 | WD repeat domain 70 ps | 50 | 50 | 183.045563 |
| 11490 | Adam15 | a disintegrin and metallo | 50 | 60.6786613 | 182.452332 |
| 26448 | Stk30 | serine/threonine kinase 3 | 50 | 50 | 181.877197 |
| 71131 | Zfp689 | zinc finger protein 689 | 50 | 72.0204544 | 181.423645 |
| 69590 | Gpx8 | glutathione peroxidase 8 | 50 | 59.6529922 | 181.260971 |
| 13394 | Dlx4 | distal-less homeobox 4 | 50 | 50 | 181.231384 |
| 67096 | Mmachc | methylmalonic aciduria c | 59.041481 | 64.3045807 | 180.040024 |
| 57753 | Noc3l | nucleolar complex associ | 69.8805618 | 82.1611481 | 179.801743 |
| 100042856l74558 | Gm4070lGvin1lGn | predicted gene 4070lGTF | 50 | 50 | 179.121429 |
| 665162 | Gm15754 | predicted gene 15754 | 50 | 50 | 179.086929 |
| 68052 | Rps13 | ribosomal protein S13 | 50 | 56.280304 | 178.354034 |
| 67980 | Gnpda2 | glucosamine-6-phosphate | 50 | 50 | 177.726288 |
| 67574 | Alg13 | asparagine-linked glycos | 62.4189911 | 82.5247345 | 177.650711 |
| 243979 | Mrgprb2 | MAS-related GPR, mem | 50 | 50 | 176.860291 |
| 70239 | Gtf3c5 | general transcription fact | 50 | 50 | 176.610519 |
| 60507 | Qtrt1 | queuine tRNA-ribosyltra | 50 | 50 | 176.296661 |
| 227099 | Pms1 | postmeiotic segregation i | 50 | 50.9567184 | 175.930206 |
| 240726 | Slco5a1 | solute carrier organic ani | 50 | 50 | 175.174301 |
| 12836 | Col7a1 | collagen, type VII, alpha | 50 | 50 | 174.697754 |
| 56176 | Pigp | phosphatidylinositol glyc | 50 | 50 | 174.535065 |
| 16201 | Ilf3 | interleukin enhancer bind | 50 | 50 | 174.244202 |
| 100039596 | Tcf24 | transcription factor 24 | 50 | 50 | 174.16861 |
| 100038398 | Gm10567 | predicted gene 10567 | 50 | 50 | 173.692078 |
| 268880 | AI480653 | expressed sequence AI48 | 50 | 50 | 173.442291 |
| 675363 | Gm9640 | predicted gene 9640 | 50 | 64.6030884 | 173.279602 |
| 170762 | Nup155 | nucleoporin 155 | 50 | 54.3746796 | 172.860565 |

| | | | | | |
|---|---|---|---|---|---|
| 22351 | Vill | villin-like | 50 | 50 | 171.605118 |
| 67169 | Nradd | neurotrophin receptor ass | 50 | 50 | 170.988892 |
| 381677 | Vgf | VGF nerve growth factor | 50 | 70.8193588 | 170.901794 |
| 20588 | Smarcc1 | SWI/SNF related, matrix | 50 | 50 | 170.686523 |
| 208836 | Fanci | Fanconi anemia, comple | 50 | 50 | 170.209976 |
| 78832 | 2700078E11Rik | RIKEN cDNA 2700078E | 50.0305634 | 61.5388107 | 169.623322 |
| 64929 | Scel | sciellin | 50 | 50 | 169.355469 |
| 67220 | Plekho1 | pleckstrin homology dom | 50 | 71.4913483 | 169.087616 |
| 75291 | Zbtb3 | zinc finger and BTB dom | 50 | 50 | 168.803345 |
| 66590 | Farsa | phenylalanyl-tRNA synth | 50 | 70.0695572 | 168.79184 |
| 24069 | Sufu | suppressor of fused hom | 50 | 50 | 167.408203 |
| 16854 | Lgals3 | lectin, galactose binding, | 50 | 50 | 167.344116 |
| 14823 | Grm8 | glutamate receptor, meta | 50 | 50 | 167.291534 |
| 399558 | Flrt2 | fibronectin leucine rich t | 50 | 50 | 167.041748 |
| 432628 | Mfsd2b | major facilitator superfar | 50 | 50 | 165.396835 |
| 78619 | Zfp449 | zinc finger protein 449 | 50 | 50 | 164.304062 |
| 56376 | Pdlim5 | PDZ and LIM domain 5 | 50 | 50 | 163.548157 |
| 83922 | Tsga14 | testis specific gene A14 | 50 | 65.0543823 | 162.769257 |
| 70325 | Pigw | phosphatidylinositol glyc | 50 | 70.3779678 | 162.693665 |
| 56455 | Dynll1 | dynein light chain LC8-t | 50 | 54.9363213 | 162.682159 |
| 17309 | Mgat3 | mannoside acetylglucosa | 50 | 50 | 161.763565 |
| 51944 | D2Ertd750e | DNA segment, Chr 2, ER | 50 | 50 | 161.548309 |
| 74307 | 1700092M07Rik | RIKEN cDNA 1700092M | 58.0006599 | 57.3385162 | 161.472717 |
| 320642 | A630066F11Rik | RIKEN cDNA A630066 | 58.414135 | 66.5313492 | 161.245941 |
| 399603 | Fam84b | family with sequence sin | 50 | 50 | 161.158844 |
| 70422 | Ints2 | integrator complex subun | 50 | 50 | 160.769379 |
| 270685 | Mthfd1l | methylenetetrahydrofolat | 50 | 50 | 160.519608 |
| 71924 | Tube1 | epsilon-tubulin 1 | 50 | 50 | 159.967468 |
| 171567 | Nme7 | non-metastatic cells 7, pr | 50 | 63.6552277 | 159.612518 |
| 68229 | AI846148 | expressed sequence AI84 | 50 | 50 | 159.415344 |
| 12556 | Cdh16 | cadherin 16 | 50 | 50 | 158.973297 |
| 230767 | Iqcc | IQ motif containing C | 50 | 50 | 158.315979 |
| 69955 | Fars2 | phenylalanine-tRNA syn | 50 | 50 | 158.130295 |
| 17865 | Mybl2 | myeloblastosis oncogene | 50 | 50 | 158.043213 |
| 72415 | Sgol1 | shugoshin-like 1 (S. pom | 50 | 50 | 157.839447 |
| 215798 | Gpr126 | G protein-coupled recept | 50 | 50 | 157.665253 |
| 192897 | Itgb4 | integrin beta 4 | 50 | 50 | 157.310303 |
| 140571 | Plxnb3 | plexin B3 | 50 | 64.5153809 | 156.932343 |
| 68531 | 1110020A21Rik | RIKEN cDNA 1110020A | 50 | 50 | 156.81076 |
| 69269 | Scnm1 | sodium channel modifier | 50 | 72.1307983 | 156.735153 |
| 16878 | Lif | leukemia inhibitory facto | 50 | 50 | 156.40979 |
| 21898 | Tlr4 | toll-like receptor 4 | 50 | 50 | 156.141937 |
| 192287 | Slc25a36 | solute carrier family 25, | 50 | 53.1834869 | 156.118927 |
| 243659 | Styk1 | serine/threonine/tyrosine | 50 | 50 | 156.05484 |
| 21983 | Tpbg | trophoblast glycoprotein | 50 | 50 | 156.03183 |
| 22673 | Zfp185 | zinc finger protein 185 | 50 | 57.371048 | 155.729477 |
| 17688 | Msh6 | mutS homolog 6 (E. coli) | 50 | 73.3092651 | 155.717987 |
| 212679 | Mars2 | methionine-tRNA synthe | 50 | 50 | 154.107574 |
| 22038 | Plscr1 | phospholipid scramblase | 50 | 50 | 153.95639 |
| 194744 | Slc25a43 | solute carrier family 25, | 50 | 50.5931396 | 153.816711 |
| 58230 | Rnf8 | ring finger protein 8 | 50 | 50 | 153.654022 |
| 18510 | Pax8 | paired box gene 8 | 50 | 50 | 153.566925 |
| 14420 | Galc | galactosylceramidase | 50 | 50 | 153.427246 |
| 66658 | Ccdc51 | coiled-coil domain conta | 50 | 72.7150803 | 152.962204 |
| 233902 | Fbxl19 | F-box and leucine-rich re | 50 | 73.2441864 | 152.950714 |
| 77065 | Ints7 | integrator complex subun | 50 | 50 | 152.247391 |
| 67371 | Gtf3c6 | general transcription fact | 50 | 61.9349289 | 151.945023 |
| 217216 | BC030867 | cDNA sequence BC0308 | 50 | 50 | 151.880936 |
| 70551 | Tmtc4 | transmembrane and tetra | 50 | 50 | 151.619659 |
| 12021 | Bard1 | BRCA1 associated RING | 50 | 50 | 151.521057 |
| 268980 | Strn | striatin, calmodulin bindi | 50 | 50 | 151.47998 |

| | | | | | |
|---|---|---|---|---|---|
| 67304 | 3110070M22Rik | RIKEN cDNA 3110070M | 50 | 60.9545326 | 151.427399 |
| 100043040 | 1110002L01Rik | RIKEN cDNA 1110002L | 50 | 50 | 151.264709 |
| 80707 | Wwox | WW domain-containing | 52.8852844 | 72.2185135 | 151.177612 |
| 64051 | Sv2a | synaptic vesicle glycoprc | 50 | 50 | 150.549881 |
| 102747 | Lrrc49 | leucine rich repeat contai | 50 | 50 | 150.334625 |
| 74125 | Armc8 | armadillo repeat containi | 50 | 50 | 150.259033 |
| 217430 | Pqlc3 | PQ loop repeat containin | 50 | 52.0149307 | 149.956665 |
| 69785 | Ceacam13 | carcinoembryonic antiger | 50 | 50 | 149.445618 |
| 55984 | Camkk1 | calcium/calmodulin-depe | 50 | 50 | 149.20076 |
| 66236 | 1500011B03Rik | RIKEN cDNA 1500011B | 50 | 50 | 149.113678 |
| 18227 | Nr4a2 | nuclear receptor subfami | 50 | 65.9470673 | 147.306061 |
| 71354 | Wdr31 | WD repeat domain 31 | 50 | 50 | 147.003708 |
| 14853 | Gspt2 | G1 to S phase transition 2 | 50 | 62.3536911 | 147.003708 |
| 76781 | Mettl4 | methyltransferase like 4 | 50 | 50 | 146.538666 |
| 212276 | Zfp748 | zinc finger protein 748 | 50 | 59.4874687 | 145.933929 |
| 57258 | Xpo4 | exportin 4 | 50 | 50 | 145.846848 |
| 94092 | Trim16 | tripartite motif-containing | 50 | 50 | 145.457397 |
| 94216 | Col4a6 | collagen, type IV, alpha 6 | 50 | 50 | 145.143524 |
| 12386 | Ctnna2 | catenin (cadherin associa | 50 | 50 | 145.067932 |
| 56190 | Rbm38 | RNA binding motif prote | 50 | 50 | 145.067932 |
| 71592 | Pogk | pogo transposable eleme | 53.7217407 | 50 | 144.21344 |
| 66067 | Gtpbp8 | GTP-binding protein 8 (p | 50 | 50 | 144.178925 |
| 72469 | Plcd3 | phospholipase C, delta 3 | 50 | 50 | 144.050751 |
| 246154 | Vasn | vasorin | 50 | 50 | 143.487122 |
| 213027 | Evi5l | ecotropic viral integratio | 50 | 50 | 143.44603 |
| 71831 | 1700007B14Rik | RIKEN cDNA 1700007B | 50 | 50 | 143.434525 |
| 226075 | Glis3 | GLIS family zinc finger | 50 | 50 | 142.916901 |
| 194952 | Jmjd4 | jumonji domain containi | 50 | 50 | 142.89389 |
| 74420 | 4933406P04Rik | RIKEN cDNA 4933406P | 70.6077118 | 64.580452 | 141.760025 |
| 100043899 | R3hdml | R3H domain containing-l | 50 | 50 | 141.33606 |
| 100040608 | Fancf | Fanconi anemia, comple | 53.2686615 | 56.3354759 | 141.271988 |
| 214639 | 4930486L24Rik | RIKEN cDNA 4930486L | 50 | 50 | 140.795441 |
| 381534 | Ube2u | ubiquitin-conjugating en | 50 | 50 | 140.754349 |
| 235584 | Dusp7 | dual specificity phosphat | 50 | 56.1374168 | 140.568665 |
| 74254 | Gpn1 | GPN-loop GTPase 1 | 50 | 63.5547791 | 140.330383 |
| 66993 | Smarcd3 | SWI/SNF related, matrix | 50 | 51.6838837 | 140.202209 |
| 68916 | Cdkal1 | CDK5 regulatory subunit | 50 | 50 | 140.190704 |
| 71988 | Esco2 | establishment of cohesio | 50 | 50 | 139.888336 |
| 74255 | Smu1 | smu-1 suppressor of mec | 50 | 56.6113472 | 139.475891 |
| 110784 | Nr3c2 | nuclear receptor subfami | 50 | 50 | 139.411804 |
| 117171 | 1110038F14Rik | RIKEN cDNA 1110038F | 50 | 50 | 139.272125 |
| 17756 | Mtap2 | microtubule-associated p | 50 | 50 | 139.26062 |
| 22351 | Vill | villin-like | 50 | 50 | 139.173523 |
| 71436 | Flrt3 | fibronectin leucine rich t | 50 | 50 | 138.807068 |
| 228356 | 1110051M20Rik | RIKEN cDNA 1110051M | 50 | 50 | 138.772568 |
| 232879 | Zbtb45 | zinc finger and BTB dom | 50 | 50 | 138.731476 |
| 209737 | Kif15 | kinesin family member 1 | 50 | 50 | 138.254944 |
| 223739 | 5031439G07Rik | RIKEN cDNA 5031439G | 50 | 50 | 138.10376 |
| 18968 | Pola1 | polymerase (DNA directe | 50 | 50 | 137.88356 |
| 237336 | Tbpl1 | TATA box binding prote | 50 | 52.7647285 | 137.400436 |
| 106628 | Trip10 | thyroid hormone recepto | 50 | 52.9302521 | 136.882812 |
| 56224 | Tspan5 | tetraspanin 5 | 50 | 50 | 136.871307 |
| 14862 | Gstm1 | glutathione S-transferase | 50 | 50 | 135.918213 |
| 73261 | 1700037C18Rik | RIKEN cDNA 1700037C | 50 | 50 | 135.725952 |
| 233552 | Gdpd5 | glycerophosphodiester ph | 50 | 50 | 135.336487 |
| 66520 | 2610001J05Rik | RIKEN cDNA 2610001J | 50 | 65.6613007 | 135.226395 |
| 22685 | Zfp239 | zinc finger protein 239 | 50 | 50 | 135.162292 |
| 71544 | Arhgap42 | Rho GTPase activating p | 50 | 50 | 135.162292 |
| 229521 | Syt11 | synaptotagmin XI | 50 | 50 | 134.924026 |
| 73451 | Zfp763 | zinc finger protein 763 | 50 | 54.2515984 | 134.621674 |
| 55979 | Agpat1 | 1-acylglycerol-3-phospha | 50 | 50 | 134.534576 |

| | | | | | |
|---|---|---|---|---|---|
| 13175 | Dclk1 | doublecortin-like kinase 1 | 50 | 50 | 134.220703 |
| 67071 | Rps6ka6 | ribosomal protein S6 kin | 50 | 50 | 133.615982 |
| 68545 | Ecscr | endothelial cell-specific | 50 | 57.9227905 | 133.551895 |
| 71532 | 9030418K01Rik | RIKEN cDNA 9030418 | 50 | 54.8811493 | 132.988251 |
| 18378 | Omp | olfactory marker protein | 50 | 50.7034874 | 132.621811 |
| 26447 | Poli | polymerase (DNA directe | 50 | 50 | 132.459106 |
| 51801 | Ramp1 | receptor (calcitonin) acti | 50 | 50 | 132.18634 |
| 77744 | 6720463M24Rik | RIKEN cDNA 6720463 | 50 | 65.5509491 | 131.842896 |
| 73340l504193 | NptxrlNpcd | neuronal pentraxin recep | 50 | 50 | 131.767303 |
| 68736 | 1110034B05Rik | RIKEN cDNA 1110034 | 50 | 50 | 131.709793 |
| 68980 | Wdr53 | WD repeat domain 53 | 50 | 50 | 131.627625 |
| 108812 | Als2cr12 | amyotrophic lateral scler | 50 | 50 | 131.616119 |
| 68617 | 1110012J17Rik | RIKEN cDNA 1110012 | 50 | 50 | 131.593109 |
| 230996 | 9430015G10Rik | RIKEN cDNA 9430015 | 50 | 50 | 131.506027 |
| 68519 | Eml1 | echinoderm microtubule | 50 | 57.3059731 | 130.988388 |
| 67463 | Poc5 | POC5 centriolar protein | 50 | 50 | 130.523346 |
| 100503044 | A730020M07Rik | RIKEN cDNA A730020 | 50 | 50 | 130.360657 |
| 76813 | Armc6 | armadillo repeat containi | 54.4140358 | 57.260704 | 129.884125 |
| 66548 | Adamtsl5 | ADAMTS-like 5 | 50 | 50 | 129.820023 |
| 13713 | Elk3 | ELK3, member of ETS c | 50 | 50 | 129.593262 |
| 224111 | Ubxn7 | UBX domain protein 7 | 50 | 50 | 129.180801 |
| 14687 | Gnaz | guanine nucleotide bindi | 50 | 50 | 129.128204 |
| 71020 | Spats1 | spermatogenesis associat | 50 | 61.6590576 | 129.116714 |
| 72661 | Serp2 | stress-associated endopla | 50 | 50 | 128.96553 |
| 17930 | Myom2 | myomesin 2 | 50 | 50 | 128.58757 |
| 70928 | Trim69 | tripartite motif-containin | 50 | 50 | 128.360809 |
| 100113398 | Adat3 | adenosine deaminase, tR | 50 | 50 | 128.360809 |
| 67216 | Mboat2 | membrane bound O-acyl | 50 | 50 | 128.122528 |
| 19726 | Rfx3 | regulatory factor X, 3 (in | 50 | 50 | 127.808662 |
| 237339 | L3mbtl3 | l(3)mbt-like 3 (Drosophi | 50 | 56.0270691 | 127.494797 |
| 16578 | Kif9 | kinesin family member 9 | 50 | 62.0778198 | 126.965668 |
| 13640 | Efna5 | ephrin A5 | 50 | 50 | 126.954163 |
| 69942 | Rnf113a1 | ring finger protein 113A | 50 | 60.600853 | 126.878571 |
| 109168 | Atl3 | atlastin GTPase 3 | 50 | 50 | 126.878571 |
| 18452 | P4ha2 | procollagen-proline, 2-ox | 50 | 50 | 126.867065 |
| 72371 | 2210408I21Rik | RIKEN cDNA 2210408 | 50 | 50 | 126.825989 |
| 14221 | Fjx1 | four jointed box 1 (Dros | 50 | 50 | 126.402023 |
| 71176 | Fbxo24 | F-box protein 24 | 50 | 56.666523 | 126.273849 |
| 100216533 | Snord55 | small nucleolar RNA, C/ | 50 | 50 | 126.262344 |
| 70835 | Prss22 | protease, serine, 22 | 50 | 50 | 126.11116 |
| 19653 | Rbm4 | RNA binding motif prote | 50 | 50 | 125.808807 |
| 66101 | Ppih | peptidyl prolyl isomerase | 50 | 50 | 125.646118 |
| 210035 | Tmem194 | transmembrane protein 1 | 50 | 52.8199043 | 125.181076 |
| 21819 | Tg | thyroglobulin | 50 | 50 | 125.169571 |
| 77286 | Nkrf | NF-kappaB repressing fa | 50 | 50 | 125.006889 |
| 385658 | Fam55c | family with sequence sin | 50 | 50 | 124.739029 |
| 109294 | Prex2 | phosphatidylinositol-3,4, | 50 | 50 | 124.628937 |
| 73420 | 1700054N08Rik | RIKEN cDNA 1700054 | 50 | 50 | 124.349579 |
| 17196 | Mbp | myelin basic protein | 50 | 50 | 124.088295 |
| 70808 | 4632415L05Rik | RRS1 ribosome biogenes | 50 | 50 | 123.884537 |
| 225182 | Rbbp8 | retinoblastoma binding p | 50 | 50 | 123.861526 |
| 71934 | Car13 | carbonic anhydrase 13 | 50 | 50 | 123.570671 |
| 11982 | Atp10a | ATPase, class V, type 10 | 50 | 50 | 123.105621 |
| 19725 | Rfx2 | regulatory factor X, 2 (in | 50 | 50 | 122.85585 |
| 19058 | Ppp3r1 | protein phosphatase 3, re | 50 | 50 | 122.693161 |
| 70080 | 2210010C17Rik | RIKEN cDNA 2210010 | 50 | 50 | 122.663582 |
| 218397 | Rasa1 | RAS p21 protein activato | 50 | 52.0474701 | 122.564987 |
| 24113 | Vax2 | ventral anterior homeobo | 50 | 50 | 121.245438 |
| 226250 | Afap1l2 | actin filament associated | 50 | 50 | 121.222435 |
| 20761 | Sprr2g | small proline-rich protein | 50 | 50 | 121.007172 |
| 12704 | Cit | citron | 50 | 50 | 120.844482 |

| | | | | | |
|---|---|---|---|---|---|
| 13527 | Dtna | dystrobrevin alpha | 50 | 50 | 120.757385 |
| 75871 | Zfp821 | zinc finger protein 821 | 50 | 50 | 120.681801 |
| 70645 | Oip5 | Opa interacting protein 5 | 50 | 50 | 120.303848 |
| 224014 | Fgd4 | FYVE, RhoGEF and PH | 50 | 50 | 120.228256 |
| 76498 | Paqr4 | progestin and adipoQ rec | 50 | 50 | 120.216751 |
| 209212 | Osgin2 | oxidative stress induced | 50 | 59.2894058 | 119.850304 |
| 109294 | Prex2 | phosphatidylinositol-3,4, | 50 | 50 | 119.838806 |
| 69234 | Zfp688 | zinc finger protein 688 | 50 | 53.5597992 | 118.943214 |
| 74051 | Steap2 | six transmembrane epithe | 50 | 50 | 118.769035 |
| 74243 | 2210009G21Rik | RIKEN cDNA 2210009( | 50 | 50 | 118.681938 |
| 242297 | Fam110b | family with sequence sin | 50 | 50 | 118.681938 |
| 21983 | Tpbg | trophoblast glycoprotein | 50 | 50 | 118.606354 |
| 74559 | Elovl7 | ELOVL family member | 50 | 50 | 118.466675 |
| 16196 | Il7 | interleukin 7 | 50 | 50 | 118.391083 |
| 72119 | Tpx2 | TPX2, microtubule-assoc | 50 | 50 | 118.391083 |
| 18393 | Orc2 | origin recognition compl | 50 | 50 | 118.29248 |
| 22070 | Tpt1 | tumor protein, translation | 50 | 50 | 118.141304 |
| 67803 | Limd2 | LIM domain containing 2 | 50 | 50 | 118.118301 |
| 12023 | Barx2 | BarH-like homeobox 2 | 50 | 50 | 117.815933 |
| 12064 | Bdnf | brain derived neurotroph | 50 | 50 | 117.618744 |
| 238799 | Tnpo1 | transportin 1 | 50 | 50 | 117.449486 |
| 68549 | Sgol2 | shugoshin-like 2 (S. pom | 50 | 50 | 117.222717 |
| 234258 | Neil3 | nei like 3 (E. coli) | 50 | 50 | 117.211212 |
| 192656 | Ripk2 | receptor (TNFRSF)-inter | 50 | 50 | 117.037018 |
| 66296 | Haus2 | HAUS augmin-like comp | 50 | 50 | 116.972939 |
| 18020 | Nfatc2ip | nuclear factor of activate | 50 | 52.4336853 | 115.967255 |
| 54216 | Pcdh7 | protocadherin 7 | 50 | 50 | 115.967255 |
| 50762 | Fbxo6 | F-box protein 6 | 50 | 50 | 115.653397 |
| 320150 | Zdhhc17 | zinc finger, DHHC doma | 50 | 50 | 115.135757 |
| 20166 | Rtkn | rhotekin | 50 | 52.4336853 | 114.723297 |
| 22348 | Slc32a1 | solute carrier family 32 ( | 50 | 50 | 114.508026 |
| 18423 | Otx1 | orthodenticle homolog 1 | 50 | 50 | 114.420944 |
| 15331 | Hmgn2 | high mobility group nucl | 50 | 50 | 114.333847 |
| 15245 | Hhip | Hedgehog-interacting pro | 55.6893158 | 50 | 114.281265 |
| 245469 | Pdzd4 | PDZ domain containing 4 | 50 | 50 | 113.717621 |
| 231503 | Tmem150c | transmembrane protein 1 | 50 | 50 | 113.014297 |
| 208228 | Mob3a | MOB kinase activator 3A | 50 | 50 | 112.810532 |
| 73293 | Ccdc103 | coiled-coil domain conta | 50 | 50 | 112.799026 |
| 23967 | Osr1 | odd-skipped related 1 (D | 50 | 50 | 112.64785 |
| 270106 | Rpl13 | ribosomal protein L13 | 50 | 50 | 112.258392 |
| 12005 | Axin1 | axin 1 | 50 | 50 | 112.1828 |
| 381073 | Npw | neuropeptide W | 50 | 50 | 112.171295 |
| 68800 | 1110059M19Rik | RIKEN cDNA 1110059M | 50 | 50 | 111.81636 |
| 75782 | Lca5 | Leber congenital amauro | 50 | 50 | 111.177124 |
| 213389 | Prdm9 | PR domain containing 9 | 50 | 50 | 111.101532 |
| 19240 | Tmsb10 | thymosin, beta 10 | 50 | 50 | 110.863258 |
| 56468 | Socs5 | suppressor of cytokine si | 50 | 50 | 110.560898 |
| 225467 | Pggt1b | protein geranylgeranyltra | 50 | 50 | 110.398209 |
| 269224 | Pask | PAS domain containing s | 50 | 50 | 110.031761 |
| 73720 | Cst6 | cystatin E/M | 50 | 50 | 109.834564 |
| 105522 | Ankrd28 | ankyrin repeat domain 28 | 50 | 52.6770172 | 109.630806 |
| 26465 | Zfp146 | zinc finger protein 146 | 50 | 50 | 109.630806 |
| 99010 | Lpcat4 | lysophosphatidylcholine | 50 | 50 | 109.555214 |
| 79456 | Recql4 | RecQ protein-like 4 | 50 | 50 | 109.252853 |
| 18181 | Nrf1 | nuclear respiratory factor | 50 | 50 | 109.252853 |
| 98488 | Gtf3c3 | general transcription fact | 50 | 50 | 108.950485 |
| 68876 | Xrcc6bp1 | XRCC6 binding protein 1 | 50 | 50 | 108.851891 |
| 69312 | Ppp1r42 | protein phosphatase 1, re | 50 | 50 | 108.851891 |
| 12316 | Aspm | asp (abnormal spindle)-li | 50 | 50 | 108.590614 |
| 382090 | 4922501C03Rik | RIKEN cDNA 4922501( | 50 | 50 | 108.450935 |
| 73467 | 1700066M21Rik | RIKEN cDNA 1700066M | 50 | 50 | 108.398354 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 73681 | Trmt11 | tRNA methyltransferase | 53.7217407 | 50 | 108.13707 |
| | 113853 | Vmn1r53 | vomeronasal 1 receptor 5 | 50 | 50 | 107.933304 |
| | 170763 | Zfp87 | zinc finger protein 87 | 50 | 50 | 107.706535 |
| | 22696 | Zfp37 | zinc finger protein 37 | 50 | 50 | 107.381165 |
| | 68659 | Fam198b | family with sequence sin | 50 | 50 | 107.317078 |
| | 52665 | Echdc1 | enoyl Coenzyme A hydra | 50 | 50 | 106.84053 |
| | 16420 | Itgb6 | integrin beta 6 | 50 | 50 | 106.613754 |
| | 212679 | Mars2 | methionine-tRNA synthe | 50 | 50 | 106.375488 |
| | 266690 | Cyb5r4 | cytochrome b5 reductase | 50 | 50 | 106.322899 |
| | 71710 | Lrrcc1 | leucine rich repeat and c | 50 | 50 | 106.160217 |
| | 76820 | Fam49a | family with sequence sin | 50 | 50 | 105.770767 |
| | 13175 | Dclk1 | doublecortin-like kinase 1 | 50 | 50 | 105.497978 |
| | 100900 | Hscb | HscB iron-sulfur cluster | 50 | 50 | 105.433884 |
| | 12566 | Cdk2 | cyclin-dependent kinase | 50 | 50 | 105.282715 |
| | 20732 | Spint1 | serine protease inhibitor, | 50 | 50 | 105.055939 |
| | 76507 | Abp1 | amiloride binding protein | 50 | 50 | 105.055939 |
| | 17279 | Melk | maternal embryonic leuc | 50 | 50 | 104.968842 |
| | 101631 | Pwwp2b | PWWP domain containin | 50 | 50 | 104.852173 |
| | 22367 | Vrk1 | vaccinia related kinase 1 | 50 | 50 | 104.765076 |
| | 19279 | Ptprr | protein tyrosine phospha | 50 | 50 | 104.590897 |
| | 100217451 | Snora7a | small nucleolar RNA, H/ | 50 | 50 | 104.515305 |
| | 65102 | Nif3l1 | Ngg1 interacting factor 3 | 50 | 50 | 104.428207 |
| | 269437 | Plch1 | phospholipase C, eta 1 | 50 | 50 | 104.201431 |
| | 30050 | Fbxw2 | F-box and WD-40 domai | 50 | 50 | 104.178429 |
| | 268465 | Eme1 | essential meiotic endonu | 50 | 50 | 104.027252 |
| | 74007 | Btbd11 | BTB (POZ) domain cont | 50 | 50 | 103.899078 |
| | 225289 | AW554918 | expressed sequence AW5 | 50 | 50 | 103.445534 |
| | 66660 | Sltm | SAFB-like, transcription | 50 | 50 | 103.381447 |
| | 225998 | Rorb | RAR-related orphan rece | 50 | 50 | 103.218765 |
| | 277328 | Trpa1 | transient receptor potenti | 50 | 50 | 103.143173 |
| | 319859 | E030011O05Rik | RIKEN cDNA E030011( | 50 | 50 | 102.980484 |
| | 230967 | BC046331 | cDNA sequence BC0463 | 50 | 50 | 102.806297 |
| | 12669 | Chrm1 | cholinergic receptor, mus | 50 | 50 | 102.666626 |
| | 78767 | 2610021K21Rik | RIKEN cDNA 2610021K | 50 | 50 | 102.43985 |
| | 15427 | Hoxc9 | homeobox C9 | 50 | 50 | 102.43985 |
| | 209334 | Gen1 | Gen homolog 1, endonuc | 50 | 50 | 102.428345 |
| | 218311 | Zfp455 | zinc finger protein 455 | 50 | 50 | 102.35276 |
| | 72022 | Slc35f2 | solute carrier family 35, | 50 | 50 | 102.254166 |
| | 11537 | Cfd | complement factor D (ad | 50 | 50 | 102.147346 |
| | 19383 | Raly | hnRNP-associated with l | 50 | 50 | 101.736526 |
| | 76072 | Rnf183 | ring finger protein 183 | 50 | 50 | 101.725029 |
| | 387524 | Znrf2 | zinc and ring finger 2 | 50 | 50 | 101.49826 |
| | 667063 | Gm8439 | predicted gene 8439 | 50 | 50 | 100.615822 |
| | 71177 | 4933424B01Rik | RIKEN cDNA 4933424E | 50 | 50 | 100.492577 |
| | 270097 | Vat1l | vesicle amine transport p | 50 | 50 | 100.42849 |
| | 74320 | Wdr33 | WD repeat domain 33 | 50 | 50 | 100.42849 |
| | 71361 | Aifm2 | apoptosis-inducing factor | 50 | 50 | 100.265808 |
| Pattern II -Down | 71760 | Agxt2l1 | alanine-glyoxylate amino | 1141.25317 | 1633.60291 | 50 |
| | 18171 | Nr1i2 | nuclear receptor subfami | 529.233032 | 578.67334 | 50 |
| | 14120 | Fbp2 | fructose bisphosphatase 2 | 103.608139 | 101.559761 | 50 |
| | 18670 | Abcb4 | ATP-binding cassette, su | 23244.5625 | 18359.5586 | 50 |
| | 246278 | Cd207 | CD207 antigen | 652.272949 | 448.203827 | 50 |
| | 18383 | Tnfrsf11b | tumor necrosis factor rec | 114.93515 | 107.071503 | 50 |
| | 26876 | Adh4 | alcohol dehydrogenase 4 | 4548.24072 | 3390.19434 | 50 |
| | 18815 | Plg | plasminogen | 37147.4453 | 38324.5977 | 50 |
| | 100038347 | Fam174b | family with sequence sin | 178.564484 | 248.411713 | 50 |
| | 232714 | Mgam | maltase-glucoamylase | 737.938477 | 619.775146 | 50 |
| | 23923 | Aadat | aminoadipate aminotrans | 6195.4043 | 5038.36865 | 50 |
| | 73644 | 2210039B01Rik | RIKEN cDNA 2210039E | 266.984894 | 242.338318 | 50 |
| | 14317 | Ftcd | formiminotransferase cyc | 18980.9883 | 19433.0449 | 50 |
| | 20493 | Slc10a1 | solute carrier family 10 ( | 144.832138 | 145.485336 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 18762 | Prkcz | protein kinase C, zeta | 311.038269 | 322.52594 | 50 |
| 11699 | Ambp | alpha 1 microglobulin/bi | 12280.5703 | 12746.127 | 50 |
| 69861 | 2010003K11Rik | RIKEN cDNA 2010003K | 1053.59302 | 1044.22729 | 50 |
| 216166 | Plk5 | polo-like kinase 5 (Dros | 128.259842 | 174.55072 | 50 |
| 15360 | Hmgcs2 | 3-hydroxy-3-methylgluta | 43320.8672 | 31370.6426 | 50 |
| 67260 | Lass4 | LAG1 homolog, ceramid | 130.884857 | 189.122314 | 50 |
| 104816 | Aspg | asparaginase homolog (S | 504.999573 | 700.176392 | 50 |
| 74374 | Clec16a | C-type lectin domain fan | 160.75174 | 209.182999 | 50 |
| 272538 | Tmco7 | transmembrane and coile | 154.465652 | 212.666046 | 50 |
| 170757 | Eltd1 | EGF, latrophilin seven tr | 692.18689 | 1010.27686 | 50 |
| 22413 | Wnt2 | wingless-related MMTV | 309.214874 | 326.008972 | 50 |
| 50500 | Ttpa | tocopherol (alpha) transf | 1877.34912 | 1559.39111 | 50 |
| 22035 | Tnfsf10 | tumor necrosis factor (lig | 118.730896 | 121.367233 | 50 |
| 27276 | Plekhb1 | pleckstrin homology dom | 4014.43701 | 2767.56982 | 50 |
| 64381 | Ms4a8a | membrane-spanning 4-do | 157.334625 | 213.107422 | 50 |
| 67477 | Abhd15 | abhydrolase domain cont | 494.912994 | 376.271088 | 50 |
| 69865 | A1cf | APOBEC1 complementa | 1454.63281 | 1512.0603 | 50 |
| 11826 | Aqp1 | aquaporin 1 | 1022.30841 | 1308.35645 | 50 |
| 108000 | Cenpf | centromere protein F | 135.582001 | 134.78299 | 50 |
| 117147 | Acsm1 | acyl-CoA synthetase me | 1295.39563 | 1872.73413 | 50 |
| 234353 | Psd3 | pleckstrin and Sec7 dom | 130.297119 | 106.542397 | 50 |
| 108114 | Slc22a7 | solute carrier family 22 ( | 248.261261 | 278.204254 | 50 |
| 14198 | Fhit | fragile histidine triad gen | 495.017578 | 359.518005 | 50 |
| 14618 | Gjb1 | gap junction protein, beta | 4024.8501 | 4184.51758 | 50 |
| 75847 | Ispd | isoprenoid synthase dom | 284.662964 | 229.419128 | 50 |
| 64075 | Smoc1 | SPARC related modular | 4029.05786 | 5223.9248 | 50 |
| 26459 | Slc27a5 | solute carrier family 27 ( | 4516.96387 | 4915.38867 | 50 |
| 78057 | 4930583I09Rik | RIKEN cDNA 4930583I | 318.146576 | 262.752716 | 50 |
| 66825 | Rnf186 | ring finger protein 186 | 750.322144 | 757.690308 | 50 |
| 230558 | C8a | complement component | 1859.17371 | 2028.58228 | 50 |
| 330166 | Miat | myocardial infarction ass | 276.3396 | 342.885162 | 50 |
| 15112 | Hao1 | hydroxyacid oxidase 1, li | 4376.65137 | 5871.02246 | 50 |
| 11818 | Apoh | apolipoprotein H | 11227.9082 | 15509.0996 | 50 |
| 76654 | Upp2 | uridine phosphorylase 2 | 778.927979 | 988.706665 | 50 |
| 14121 | Fbp1 | fructose bisphosphatase 1 | 14388.4795 | 11550.7891 | 50 |
| 76559 | Atg2b | ATG2 autophagy related | 113.206802 | 134.263794 | 50 |
| 53872 | Caprin1 | cell cycle associated prot | 141.823746 | 146.387924 | 50 |
| 234199 | Fgl1 | fibrinogen-like protein 1 | 15284.9863 | 21015.8398 | 50 |
| 18979 | Pon1 | paraoxonase 1 | 49672.668 | 39213.1484 | 50 |
| 244416 | Ppp1r3b | protein phosphatase 1, re | 2863.70264 | 2437.42017 | 50 |
| 217721 | Mfsd7c | major facilitator superfar | 162.654373 | 216.028824 | 50 |
| 14547 | Gdap2 | ganglioside-induced diffe | 213.298004 | 206.4823 | 50 |
| 16912 | Psmb9 | proteasome (prosome, m | 780.038574 | 843.784363 | 50 |
| 218865 | Chdh | choline dehydrogenase | 1662.44165 | 2009.33936 | 50 |
| 22262 | Uox | urate oxidase | 12504.1201 | 12981.9727 | 50 |
| 12165 | Gdf2 | growth differentiation fa | 531.430298 | 717.059631 | 50 |
| 54140 | Avpr1a | arginine vasopressin rece | 683.907837 | 559.560486 | 50 |
| 320440 | 9530091C08Rik | RIKEN cDNA 9530091C | 269.052277 | 332.380859 | 50 |
| 12611 | Cebpg | CCAAT/enhancer bindin | 126.287521 | 164.585449 | 50 |
| 55985 | Cxcl13 | chemokine (C-X-C motif | 153.778107 | 136.886688 | 50 |
| 234878 | BC021891 | cDNA sequence BC0218 | 330.265686 | 295.531738 | 50 |
| 74637 | Shpk | sedoheptulokinase | 306.998596 | 272.572266 | 50 |
| 27413 | Abcb11 | ATP-binding cassette, su | 6217.62109 | 5074.75977 | 50 |
| 212965 | BC024386 | cDNA sequence BC0234 | 9567.01367 | 8524.57422 | 50 |
| 18551 | Pcsk4 | proprotein convertase sul | 179.774811 | 213.834595 | 50 |
| 79235 | Lrat | lecithin-retinol acyltransf | 345.901733 | 366.945251 | 50 |
| 16918 | Mycl1 | v-myc myelocytomatosis | 372.625549 | 356.32074 | 50 |
| 67473 | Slc47a1 | solute carrier family 47, | 5141.84766 | 4589.18652 | 50 |
| 15160 | Serpind1 | serine (or cysteine) pepti | 3774.02539 | 4364.03223 | 50 |
| 22139 | Ttr | transthyretin | 43707.8125 | 56918.5312 | 50 |
| 71776 | Tha1 | threonine aldolase 1 | 201.971008 | 219.466583 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 13106 | Cyp2e1 | cytochrome P450, family | 33193.5547 | 33997.9375 | 50 |
| 243537 | Uroc1 | urocanase domain contai | 10726.1807 | 9933.13672 | 50 |
| 239037 | Lrit1 | leucine-rich repeat, immu | 796.134033 | 533.108093 | 50 |
| 72107 | Dscc1 | defective in sister chroma | 395.583771 | 293.295044 | 50 |
| 71775 | 1300017J02Rik | RIKEN cDNA 1300017J | 11207.3037 | 11010.0908 | 50 |
| 71902 | Cand1 | cullin associated and ned | 108.683914 | 106.035927 | 50 |
| 15109 | Hal | histidine ammonia lyase | 5785.76709 | 6030.59814 | 50 |
| 75957 | Mir17hg | MIR17 host gene 1 (non- | 129.818695 | 132.676483 | 50 |
| 13082 | Cyp26a1 | cytochrome P450, family | 369.69165 | 377.394348 | 50 |
| 103655 | Sec14l4 | SEC14-like 4 (S. cerevis | 8139.44189 | 10322.5332 | 50 |
| 12352 | Car5a | carbonic anhydrase 5a, m | 3386.45801 | 4703.62109 | 50 |
| 110446 | Acat1 | acetyl-Coenzyme A acety | 494.987427 | 403.420929 | 50 |
| 15139 | Hc | hemolytic complement | 11510.5723 | 16217.3984 | 50 |
| 71724 | Aox3 | aldehyde oxidase 3 | 3931.23828 | 5579.85059 | 50 |
| 16790 | Anpep | alanyl (membrane) amino | 163.650818 | 154.291962 | 50 |
| 75462 | 1700001C19Rik | RIKEN cDNA 1700001C | 227.345093 | 184.723938 | 50 |
| 71756 | Cpn2 | carboxypeptidase N, poly | 4499.86523 | 5024.61621 | 50 |
| 16995 | Ltb4r1 | leukotriene B4 receptor 1 | 121.873947 | 165.214996 | 50 |
| 99586 | Dpyd | dihydropyrimidine dehyd | 6072.52246 | 4569.70703 | 50 |
| 20672 | Sox18 | SRY-box containing gene | 109.620171 | 100.280853 | 50 |
| 11607 | Agtr1a | angiotensin II receptor, t | 639.596191 | 929.134277 | 50 |
| 237758 | Zfp454 | zinc finger protein 454 | 121.664825 | 129.446686 | 50 |
| 212980 | Slc45a3 | solute carrier family 45, | 361.582123 | 530.189514 | 50 |
| 104158 | Ces1d | carboxylesterase 1D | 15496.9414 | 10711.0664 | 50 |
| 14164 | Fgf1 | fibroblast growth factor 1 | 479.69043 | 364.322388 | 50 |
| 233058 | Zfp420 | zinc finger protein 420 | 119.557846 | 134.043091 | 50 |
| 103149 | Upb1 | ureidopropionase, beta | 6929.81934 | 6980.72559 | 50 |
| 212892 | Rsph4a | radial spoke head 4 homo | 144.662628 | 101.196182 | 50 |
| 17175 | Masp2 | mannan-binding lectin se | 960.416992 | 1321.03809 | 50 |
| 13123 | Cyp7b1 | cytochrome P450, family | 614.710083 | 755.849792 | 50 |
| 268756 | Gulo | gulonolactone (L-) oxida | 4376.4502 | 5662.58887 | 50 |
| 11812 | Apoc1 | apolipoprotein C-I | 44939.2422 | 59389.4258 | 50 |
| 16424 | Itih1 | inter-alpha trypsin inhibi | 16600.584 | 18281.1211 | 50 |
| 28253 | Slco1b2 | solute carrier organic ani | 37855.9453 | 33193.5 | 50 |
| 26930 | Ppnr | per-pentamer repeat gene | 725.819336 | 815.934204 | 50 |
| 30924 | Angptl3 | angiopoietin-like 3 | 4487.88086 | 5351.78809 | 50 |
| 19647 | Rbbp6 | retinoblastoma binding p | 133.918594 | 126.768616 | 50 |
| 66107 | 1100001G20Rik | RIKEN cDNA 1100001G | 13160.2061 | 12197.0547 | 50 |
| 13009 | Csrp3 | cysteine and glycine-rich | 880.8078 | 1075.52222 | 50 |
| 14061 | F2 | coagulation factor II | 24353.9277 | 31468.9766 | 50 |
| 54326 | Elovl2 | elongation of very long c | 5408.18164 | 4932.35986 | 50 |
| 15233 | Hgd | homogentisate 1, 2-dioxy | 4138.99463 | 5917.04736 | 50 |
| 20872 | Stk16 | serine/threonine kinase 1 | 226.966476 | 176.97554 | 50 |
| 217316 | Slc16a5 | solute carrier family 16 ( | 994.653076 | 1444.38586 | 50 |
| 20304 | Ccl5 | chemokine (C-C motif) l | 108.305283 | 150.377426 | 50 |
| 16596 | Klf1 | Kruppel-like factor 1 (ery | 141.863342 | 121.367233 | 50 |
| 52685 | Cd300lg | CD300 antigen like fami | 172.352844 | 186.062256 | 50 |
| 16011 | Igfbp5 | insulin-like growth factor | 308.757019 | 362.095612 | 50 |
| 236920 | Stard8 | START domain containi | 607.989868 | 718.682251 | 50 |
| 230163 | Aldob | aldolase B, fructose-bisp | 16058.3555 | 21430.3203 | 50 |
| 18573 | Pde1a | phosphodiesterase 1A, ca | 286.551331 | 193.309875 | 50 |
| 329251 | Ppp1r12b | protein phosphatase 1, re | 108.40509 | 161.939911 | 50 |
| 243168 | Hsd17b13 | hydroxysteroid (17-beta) | 179.839752 | 215.421906 | 50 |
| 14130 | Fcgr2b | Fc receptor, IgG, low aff | 463.492004 | 682.073608 | 50 |
| 76263 | Gstk1 | glutathione S-transferase | 7946.54053 | 5457.95166 | 50 |
| 18703 | Pigr | polymeric immunoglobul | 22524.6816 | 19294.6367 | 50 |
| 237320 | Aldh8a1 | aldehyde dehydrogenase | 3541.88672 | 3345.83447 | 50 |
| 74519 | Cyp2j9 | cytochrome P450, family | 493.284424 | 413.834656 | 50 |
| 330938 | Dixdc1 | DIX domain containing 1 | 591.308228 | 794.581909 | 50 |
| 11536 | Gpr182 | G protein-coupled recept | 377.680756 | 520.691162 | 50 |
| 20743 | Spnb3 | spectrin beta 3 | 895.821289 | 1059.56836 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 226143 | Cyp2c44 | cytochrome P450, family | 3632.66919 | 2482.27661 | 50 |
| 20317 | Serpinf1 | serine (or cysteine) pepti | 19642.5957 | 18500.1953 | 50 |
| 210108 | D130043K22Rik | RIKEN cDNA D130043 | 430.779907 | 588.041626 | 50 |
| 668253 | Dleu2 | deleted in lymphocytic le | 335.122864 | 228.406189 | 50 |
| 76257 | Slc38a3 | solute carrier family 38, | 2500.53467 | 2626.40527 | 50 |
| 56508 | Rapgef4 | Rap guanine nucleotide e | 363.654236 | 419.612366 | 50 |
| 102141 | Snx25 | sorting nexin 25 | 505.57782 | 487.585327 | 50 |
| 11814 | Apoc3 | apolipoprotein C-III | 18147.2363 | 24045.1055 | 50 |
| 72090 | Entpd8 | ectonucleoside triphosph | 244.400574 | 220.888382 | 50 |
| 76654 | Upp2 | uridine phosphorylase 2 | 1723.55518 | 2082.40381 | 50 |
| 19130 | Prox1 | prospero-related homeob | 302.470947 | 367.850708 | 50 |
| 218103 | Slc17a2 | solute carrier family 17 ( | 1605.58008 | 1156.63501 | 50 |
| 230678 | Tmem125 | transmembrane protein 1 | 174.942993 | 141.109619 | 50 |
| 17858 | Mx2 | myxovirus (influenza vir | 277.789124 | 189.011963 | 50 |
| 66901 | Proz | protein Z, vitamin K-dep | 992.755127 | 1137.65234 | 50 |
| 76654 | Upp2 | uridine phosphorylase 2 | 1460.32007 | 1712.69556 | 50 |
| 19699 | Reln | reelin | 1631 | 1540.87244 | 50 |
| 57757 | Pglyrp2 | peptidoglycan recognitio | 460.323608 | 636.485779 | 50 |
| 13982 | Esr1 | estrogen receptor 1 (alph | 1560.07861 | 2126.44678 | 50 |
| 17761 | Mtap7 | microtubule-associated p | 199.490143 | 222.926987 | 50 |
| 13195 | Ddc | dopa decarboxylase | 1013.37512 | 1228.68811 | 50 |
| 11536 | Gpr182 | G protein-coupled recept | 296.294128 | 362.040436 | 50 |
| 19228 | Pth1r | parathyroid hormone 1 re | 128.812729 | 143.070404 | 50 |
| 70373 | 1700020O03Rik | RIKEN cDNA 1700020( | 120.668365 | 140.051407 | 50 |
| 26458 | Slc27a2 | solute carrier family 27 ( | 40538.6953 | 30344.6699 | 50 |
| 18534 | Pck1 | phosphoenolpyruvate car | 29267.418 | 40259.2969 | 50 |
| 170442 | Bbox1 | butyrobetaine (gamma), | 6385.625 | 4260.0293 | 50 |
| 93841 | Uchl4 | ubiquitin carboxyl-termin | 1487.69189 | 1577.74426 | 50 |
| 20678 | Sox5 | SRY-box containing gen | 739.761902 | 864.758972 | 50 |
| 433855 | AI506816 | expressed sequence AI50 | 135.133682 | 100.215775 | 50 |
| 68910 | Zfp467 | zinc finger protein 467 | 271.577515 | 332.919861 | 50 |
| 20493 | Slc10a1 | solute carrier family 10 ( | 148.46312 | 132.280365 | 50 |
| 17289 | Mertk | c-mer proto-oncogene ty | 581.932983 | 779.711792 | 50 |
| 224860 | Plcl2 | phospholipase C-like 2 | 125.360764 | 136.941864 | 50 |
| 269423 | 3110057O12Rik | RIKEN cDNA 3110057( | 197.13443 | 194.897186 | 50 |
| 72792 | 2810459M11Rik | RIKEN cDNA 2810459M | 1282.34497 | 1052.58691 | 50 |
| 16427 | Itih4 | inter alpha-trypsin inhibi | 3410.01489 | 4571.86035 | 50 |
| 625098 | Slc38a6 | solute carrier family 38, | 226.448441 | 336.402924 | 50 |
| 66451 | 2610528J11Rik | RIKEN cDNA 2610528J | 128.473724 | 147.270706 | 50 |
| 225884 | BC021614 | cDNA sequence BC0216 | 1090.12622 | 1614.26514 | 50 |
| 12359 | Cat | catalase | 174.455048 | 150.565582 | 50 |
| 22354 | Vipr1 | vasoactive intestinal pept | 652.875 | 550.390259 | 50 |
| 14161 | Fga | fibrinogen alpha chain | 1399.69922 | 1804.78381 | 50 |
| 59083 | Fetub | fetuin beta | 10194.5391 | 14402.6641 | 50 |
| 14068 | F7 | coagulation factor VII | 955.160522 | 1249.17603 | 50 |
| 102022 | Ces2a | carboxylesterase 2A | 1363.98022 | 1598.28308 | 50 |
| 225631 | Onecut2 | one cut domain, family m | 168.347977 | 167.662445 | 50 |
| 235106 | Ntm | neurotrimin | 130.780304 | 189.034592 | 50 |
| 53321 | Cntnap1 | contactin associated prot | 412.818268 | 276.561768 | 50 |
| 27421 | Abcc6 | ATP-binding cassette, su | 166.101593 | 177.637634 | 50 |
| 11816 | Apoe | apolipoprotein E | 25954.0176 | 32831.4883 | 50 |
| 16000 | Igf1 | insulin-like growth factor | 1919.77722 | 1499.06616 | 50 |
| 21834 | Thrb | thyroid hormone recepto | 228.769287 | 257.857788 | 50 |
| 13435 | Dnmt3a | DNA methyltransferase 3 | 106.995155 | 146.046982 | 50 |
| 228357 | Lrp4 | low density lipoprotein re | 179.047653 | 149.861053 | 50 |
| 66175 | Mustn1 | musculoskeletal, embryo | 174.803589 | 233.067688 | 50 |
| 20183 | Rxrg | retinoid X receptor gamn | 163.615982 | 135.883636 | 50 |
| 228993 | Slc17a9 | solute carrier family 17, | 263.711975 | 385.275757 | 50 |
| 217692 | Sipa1l1 | signal-induced proliferati | 255.348969 | 268.858643 | 50 |
| 16542 | Kdr | kinase insert domain prot | 401.770081 | 319.218323 | 50 |
| 13074 | Cyp17a1 | cytochrome P450, family | 2340.36279 | 2131.39673 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 21835 | Thrsp | thyroid hormone respons | 2173.34399 | 2119.21631 | 50 |
| 16917 | Lmx1b | LIM homeobox transcrip | 4518.52588 | 6406.38281 | 50 |
| 11848 | Rhoa | ras homolog gene family | 23641.4297 | 28182.9023 | 50 |
| 16782 | Lamc2 | laminin, gamma 2 | 322.664734 | 284.709137 | 50 |
| 68509 | Ptx4 | pentraxin 4 | 396.429749 | 283.904175 | 50 |
| 239789 | Gm606 | predicted gene 606 | 296.229187 | 258.133667 | 50 |
| 13819 | Epas1 | endothelial PAS domain | 4080.67896 | 6061.76855 | 50 |
| 13609 | S1pr1 | sphingosine-1-phosphate | 788.875244 | 733.893372 | 50 |
| 230766 | Fam167b | family with sequence sin | 150.256439 | 176.005035 | 50 |
| 240327 | Gm4951 | predicted gene 4951 | 684.685669 | 891.334473 | 50 |
| 70456 | Brp44 | brain protein 44 | 290.730469 | 202.414993 | 50 |
| 69291 | 1700001L05Rik | RIKEN cDNA 1700001I | 339.8992 | 280.872406 | 50 |
| 94175 | Hrg | histidine-rich glycoprotei | 6524.44727 | 8965.70703 | 50 |
| 240752 | Pik3c2b | phosphoinositide-3-kinas | 151.013672 | 187.051163 | 50 |
| 192216 | Tmem47 | transmembrane protein 4 | 116.454399 | 154.269318 | 50 |
| 380713 | Scarf1 | scavenger receptor class | 120.145584 | 170.042007 | 50 |
| 216198 | Tcp11l2 | t-complex 11 (mouse) lik | 189.642761 | 221.758423 | 50 |
| 54604 | Pcnx | pecanex homolog (Drosc | 191.680054 | 169.171967 | 50 |
| 26464 | Vnn3 | vanin 3 | 1400.89209 | 1141.03491 | 50 |
| 11889 | Asgr1 | asialoglycoprotein recept | 4824.38525 | 4231.11963 | 50 |
| 13101 | Cyp2d10 | cytochrome P450, family | 4970.7998 | 5127.66895 | 50 |
| 11988 | Slc7a2 | solute carrier family 7 (c | 1798.18677 | 2369.44287 | 50 |
| 21789 | Tfpi2 | tissue factor pathway inh | 1107.24829 | 852.001038 | 50 |
| 327956 | Vmo1 | vitelline membrane outer | 158.988525 | 134.263794 | 50 |
| 13998 | Fgd6 | FYVE, RhoGEF and PH | 185.847031 | 265.826904 | 50 |
| 217593 | Slc25a21 | solute carrier family 25 ( | 388.152283 | 273.046204 | 50 |
| 214547 | She | src homology 2 domain-( | 101.471054 | 147.942703 | 50 |
| 212933 | Pm20d1 | peptidase M20 domain c | 1500.18018 | 2087.46143 | 50 |
| 20717 | Serpina3m | serine (or cysteine) pepti | 2577.9624 | 3193.72974 | 50 |
| 13143 | Dapk2 | death-associated protein | 102.1586 | 149.25415 | 50 |
| 235386 | Agphd1 | aminoglycoside phospho | 641.761841 | 560.0401 | 50 |
| 56189 | Prodh2 | proline dehydrogenase (c | 880.278687 | 633.547424 | 50 |
| 11287 | Pzp | pregnancy zone protein | 19714.3457 | 27766.7148 | 50 |
| 230857 | Ece1 | endothelin converting en | 288.797729 | 313.533997 | 50 |
| 232493 | Gys2 | glycogen synthase 2 | 1600.20166 | 1900.78516 | 50 |
| 19208 | Ptcra | pre T cell antigen recepto | 495.296387 | 482.086304 | 50 |
| 435684 | Shf | Src homology 2 domain | 185.368607 | 215.168671 | 50 |
| 67217 | 2810055F11Rik | RIKEN cDNA 2810055F | 354.085693 | 270.676544 | 50 |
| 11625 | Ahsg | alpha-2-HS-glycoprotein | 29315.4219 | 38903.0938 | 50 |
| 240638 | Slc16a12 | solute carrier family 16 ( | 762.187805 | 811.402954 | 50 |
| 11890 | Asgr2 | asialoglycoprotein recept | 12120.5605 | 12896.8262 | 50 |
| 66968 | Plin5 | perilipin 5 | 2024.27734 | 1484.61475 | 50 |
| 20714 | Serpina3k | serine (or cysteine) pepti | 7551.63623 | 9635.15234 | 50 |
| 257633 | Acsf3 | acyl-CoA synthetase fam | 123.702103 | 153.376633 | 50 |
| 231103 | Gckr | glucokinase regulatory pr | 6181.71094 | 9183.13672 | 50 |
| 53376 | Usp2 | ubiquitin specific peptida | 225.661102 | 248.411713 | 50 |
| 384059 | Tlr12 | toll-like receptor 12 | 1510.20654 | 1463.53406 | 50 |
| 107526 | Gimap4 | GTPase, IMAP family m | 166.68457 | 233.245941 | 50 |
| 14067 | F5 | coagulation factor V | 6222.18164 | 7037.0708 | 50 |
| 231510 | Agpat9 | 1-acylglycerol-3-phospha | 161.329987 | 115.767776 | 50 |
| 242341 | Atp6v0d2 | ATPase, H+ transporting | 174.21109 | 260.581116 | 50 |
| 230801 | Pigv | phosphatidylinositol glyc | 152.323822 | 138.19812 | 50 |
| 12038 | Bche | butyrylcholinesterase | 4352.04395 | 4870.99219 | 50 |
| 243374 | Gimap8 | GTPase, IMAP family m | 158.50061 | 176.699677 | 50 |
| 20503 | Slc16a7 | solute carrier family 16 ( | 1177.22241 | 1259.8374 | 50 |
| 71985 | Acad10 | acyl-Coenzyme A dehyd | 190.209915 | 161.566437 | 50 |
| 72094 | Ugt2a3 | UDP glucuronosyltransfe | 878.261963 | 666.368896 | 50 |
| 15007 | H2-Q10 | histocompatibility 2, Q re | 14312.7246 | 20517.7461 | 50 |
| 17777 | Mttp | microsomal triglyceride t | 1795.9895 | 2051.12305 | 50 |
| 240328 | F830016B08Rik | RIKEN cDNA F830016I | 282.994812 | 195.416382 | 50 |
| 56188 | Fxyd1 | FXYD domain-containin | 9786.4248 | 13813.876 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 14160 | Lgr5 | leucine rich repeat contai | 383.09079 | 428.283203 | 50 |
| 13108 | Cyp2g1 | cytochrome P450, family | 458.270508 | 330.527588 | 50 |
| 192653 | Ttc36 | tetratricopeptide repeat d | 6484.11035 | 6464.82715 | 50 |
| 68312 | Gstm7 | glutathione S-transferase | 296.782104 | 391.981506 | 50 |
| 14453 | Gas2 | growth arrest specific 2 | 323.954254 | 279.064392 | 50 |
| 52815 | Ldhd | lactate dehydrogenase D | 313.832825 | 360.388062 | 50 |
| 27400 | Hsd17b6 | hydroxysteroid (17-beta) | 3615.07666 | 4608.46436 | 50 |
| 69721 | Nkiras1 | NFKB inhibitor interacti | 110.51207 | 129.027924 | 50 |
| 11905 | Serpinc1 | serine (or cysteine) pepti | 945.294189 | 1365.68799 | 50 |
| 320011 | Uggt1 | UDP-glucose glycoprote | 269.819031 | 284.962341 | 50 |
| 52076 | Tmem38b | transmembrane protein 3 | 135.995483 | 144.712891 | 50 |
| 101613 | Nlrp6 | NLR family, pyrin doma | 1084.46277 | 1198.96777 | 50 |
| 13077 | Cyp1a2 | cytochrome P450, family | 7650.71387 | 8798.42871 | 50 |
| 66112 | Mosc1 | MOCO sulphurase C-terr | 2366.09961 | 2620.50146 | 50 |
| 381626 | Rbm33 | RNA binding motif prote | 375.529419 | 418.27829 | 50 |
| 194590 | Reps2 | RALBP1 associated Eps | 220.171844 | 314.02774 | 50 |
| 20216 | Acsm3 | acyl-CoA synthetase me | 286.282013 | 425.838562 | 50 |
| 14411 | Slc6a12 | solute carrier family 6 (n | 516.152344 | 705.224121 | 50 |
| 14080 | Fabp1 | fatty acid binding protein | 38064.7266 | 39394.5312 | 50 |
| 74318 | Hopx | HOP homeobox | 1222.28967 | 1506.62915 | 50 |
| 12583 | Cdo1 | cysteine dioxygenase 1, | 13340.709 | 19445.1484 | 50 |
| 239102 | Zfhx2 | zinc finger homeobox 2 | 115.109421 | 108.548462 | 50 |
| 16562 | Kif1c | kinesin family member 1 | 100.639351 | 123.957581 | 50 |
| 12124 | Bik | BCL2-interacting killer | 198.145157 | 268.618134 | 50 |
| 320311 | Rnf152 | ring finger protein 152 | 215.156281 | 159.979126 | 50 |
| 16597 | Klf12 | Kruppel-like factor 12 | 175.904602 | 245.204559 | 50 |
| 26874 | Abcd2 | ATP-binding cassette, su | 330.300537 | 277.412018 | 50 |
| 107526 | Gimap4 | GTPase, IMAP family m | 101.784729 | 122.250008 | 50 |
| 70772 | Ggnbp1 | gametogenetin binding p | 173.21463 | 184.889465 | 50 |
| 71687 | Tmem25 | transmembrane protein 2 | 1278.73291 | 1689.51257 | 50 |
| 27376 | Slc25a10 | solute carrier family 25 ( | 195.6548 | 184.590973 | 50 |
| 140792 | Colec12 | collectin sub-family mem | 141.693848 | 155.626038 | 50 |
| 58909 | Fam13a | family with sequence sin | 148.17955 | 207.650864 | 50 |
| 12012 | Baat | bile acid-Coenzyme A: a | 1881.7041 | 1957.8562 | 50 |
| 106648 | Cyp4f15 | cytochrome P450, family | 4261.14258 | 5181.50977 | 50 |
| 214579 | Aldh5a1 | aldhehyde dehydrogenas | 290.077759 | 236.099426 | 50 |
| 11302 | Aatk | apoptosis-associated tyro | 158.709717 | 161.654144 | 50 |
| 98496 | Pid1 | phosphotyrosine interacti | 681.791321 | 989.882324 | 50 |
| 102103 | Mtus1 | mitochondrial tumor sup | 837.316772 | 856.727661 | 50 |
| 70789 | Kynu | kynureninase (L-kynuren | 813.97522 | 899.933105 | 50 |
| 108151 | Sema3d | sema domain, immunogl | 134.336838 | 134.341599 | 50 |
| 68126 | Fahd2a | fumarylacetoacetate hydr | 120.872726 | 135.322006 | 50 |
| 11522 | Adh1 | alcohol dehydrogenase 1 | 22533.6953 | 29724.9805 | 50 |
| 236149 | Slc22a26 | solute carrier family 22 ( | 943.480286 | 639.011047 | 50 |
| 14060 | F13b | coagulation factor XIII, b | 9056.43164 | 11122.6514 | 50 |
| 319848 | Slc17a4 | solute carrier family 17 ( | 208.461456 | 203.219971 | 50 |
| 268860 | Abat | 4-aminobutyrate aminotr | 1993.90186 | 2420.43213 | 50 |
| 217258 | Abca8a | ATP-binding cassette, su | 299.850677 | 398.172302 | 50 |
| 320405 | Cadps2 | Ca2+-dependent activato | 145.86821 | 186.321167 | 50 |
| 68350 | Mul1 | mitochondrial ubiquitin l | 130.954575 | 185.418579 | 50 |
| 98256 | Kmo | kynurenine 3-monooxyge | 6313.77051 | 7298.96191 | 50 |
| 75396 | Spp2 | secreted phosphoprotein | 5205.94141 | 6529.77832 | 50 |
| 280662 | Afm | afamin | 1835.77039 | 1283.4447 | 50 |
| 104776 | Aldh6a1 | aldehyde dehydrogenase | 1550.71448 | 1381.08423 | 50 |
| 14261 | Fmo1 | flavin containing monoo | 2004.70605 | 2326.35205 | 50 |
| 20776 | Tmie | transmembrane inner ear | 251.169861 | 356.298096 | 50 |
| 208677 | Creb3l3 | cAMP responsive elemer | 6347.08008 | 5951.68652 | 50 |
| 69836 | Pla2g12b | phospholipase A2, group | 6527.04834 | 8639.17188 | 50 |
| 74129 | Dmgdh | dimethylglycine dehydro | 1507.1427 | 1274.56738 | 50 |
| 74156 | Acot12 | acyl-CoA thioesterase 12 | 1641.77576 | 1361.0957 | 50 |
| 55938 | Apom | apolipoprotein M | 5580.1748 | 5855.98535 | 50 |

| | | | | | |
|---|---|---|---|---|---|
| 15446 | Hpgd | hydroxyprostaglandin de | 5220.24512 | 3642.29004 | 50 |
| 12623 | Ces1g | carboxylesterase 1G | 2230.92163 | 2757.73486 | 50 |
| 209645 | Bend7 | BEN domain containing | 312.123474 | 312.01178 | 50 |
| 60344 | Fign | fidgetin | 507.420227 | 350.610901 | 50 |
| 14468 | Gbp1 | guanylate binding protein | 174.455048 | 125.457169 | 50 |
| 76279 | Cyp2d26 | cytochrome P450, family | 9755.9707 | 7059.45459 | 50 |
| 17195 | Mbl2 | mannose-binding lectin ( | 23271.8223 | 18034.9355 | 50 |
| 16621 | Klkb1 | kallikrein B, plasma 1 | 4683.28076 | 4065.24268 | 50 |
| 56720 | Tdo2 | tryptophan 2,3-dioxygena | 9341.47754 | 8935.70117 | 50 |
| 18478 | Pah | phenylalanine hydroxyla | 1139.85742 | 1708.41748 | 50 |
| 667716 | Gm11789 | predicted gene 11789 | 411.791687 | 556.797546 | 50 |
| 235302 | D630033O11Rik | RIKEN cDNA D630033 | 207.355682 | 155.658569 | 50 |
| 100504343 | Gm20185 | predicted gene, 20185 | 159.058228 | 120.948471 | 50 |
| 99650 | 4933434E20Rik | RIKEN cDNA 4933434E | 143.895874 | 193.189621 | 50 |
| 214253 | Etnk2 | ethanolamine kinase 2 | 2582.37109 | 3134.62988 | 50 |
| 71891 | Cdadc1 | cytidine and dCMP deam | 342.145599 | 440.530396 | 50 |
| 19893 | Rpgr | retinitis pigmentosa GTP | 115.866669 | 111.138809 | 50 |
| 30056 | Timm9 | translocase of inner mito | 135.930527 | 149.331955 | 50 |
| 14728 | Lilrb4 | leukocyte immunoglobul | 100.051613 | 121.312057 | 50 |
| 23965 | Odz3 | odd Oz/ten-m homolog 3 | 170.624481 | 150.86409 | 50 |
| 14263 | Fmo5 | flavin containing monoo | 549.391968 | 686.851135 | 50 |
| 12398 | Cbfa2t3 | core-binding factor, runt | 206.333878 | 257.41922 | 50 |
| 100038730 | Gm10387 | predicted gene 10387 | 120.489349 | 111.171356 | 50 |
| 242484 | D630039A03Rik | RIKEN cDNA D630039 | 363.410278 | 270.400665 | 50 |
| 12398 | Cbfa2t3 | core-binding factor, runt | 585.13147 | 474.84436 | 50 |
| 108030 | Lin7a | lin-7 homolog A (C. eleg | 233.087814 | 206.615295 | 50 |
| 13085l233005 | Cyp2a12lCyp2a22 | cytochrome P450, family | 9494.03906 | 9671.84961 | 50 |
| 121021 | Cspg4 | chondroitin sulfate prote | 208.805237 | 199.042297 | 50 |
| 11606 | Agt | angiotensinogen (serpin | 2685.74658 | 2086.20801 | 50 |
| 26557 | Homer2 | homer homolog 2 (Drosc | 140.583313 | 120.309021 | 50 |
| 54710 | Hs3st3b1 | heparan sulfate (glucosar | 770.15155 | 936.097534 | 50 |
| 12491 | Cd36 | CD36 antigen | 334.500244 | 232.781921 | 50 |
| 19013 | Ppara | peroxisome proliferator a | 427.223389 | 501.926331 | 50 |
| 320311 | Rnf152 | ring finger protein 152 | 427.731903 | 424.604919 | 50 |
| 18208 | Ntn1 | netrin 1 | 115.383484 | 147.381058 | 50 |
| 11905 | Serpinc1 | serine (or cysteine) pepti | 28333.4062 | 29545.7344 | 50 |
| 229900 | Gbp7 | guanylate binding protein | 216.849792 | 195.085342 | 50 |
| 18366 | Olfr64 | olfactory receptor 64 | 210.543091 | 249.307236 | 50 |
| 319430 | Gpr77 | G protein-coupled recept | 271.233734 | 389.33316 | 50 |
| 67801 | Pllp | plasma membrane protec | 668.347778 | 500.053223 | 50 |
| 12895l100134861 | Cpt1blBC090627 | carnitine palmitoyltransfe | 256.245636 | 294.385803 | 50 |
| 17329 | Cxcl9 | chemokine (C-X-C motif | 241.780304 | 248.53479 | 50 |
| 319772 | C130050O18Rik | RIKEN cDNA C130050 | 153.016113 | 159.605637 | 50 |
| 12944 | Crp | C-reactive protein, pentra | 1784.03992 | 1996.44141 | 50 |
| 18606 | Enpp2 | ectonucleotide pyrophosp | 689.90564 | 919.873535 | 50 |
| 71891 | Cdadc1 | cytidine and dCMP deam | 105.680267 | 123.262955 | 50 |
| 217214 | Nags | N-acetylglutamate syntha | 536.764343 | 683.192688 | 50 |
| 59083 | Fetub | fetuin beta | 824.769958 | 1088.8645 | 50 |
| 18606 | Enpp2 | ectonucleotide pyrophosp | 146.281677 | 109.584045 | 50 |
| 433281 | Gm5524 | predicted gene 5524 | 208.735535 | 147.997879 | 50 |
| 104307 | Rnu12 | RNA U12, small nuclear | 130.33197 | 160.761459 | 50 |
| 320977 | A330023F24Rik | RIKEN cDNA A330023 | 459.322388 | 617.872314 | 50 |
| 100038628 | Gm10768 | predicted gene 10768 | 551.613037 | 612.942017 | 50 |
| 12895l100134861 | Cpt1blBC090627 | carnitine palmitoyltransfe | 108.026474 | 129.85553 | 50 |
| 100041449l56388 | Cyp3a59lCyp3a25 | cytochrome P450, subfar | 4451.20508 | 3134.89868 | 50 |
| 11722l109959l545 | Amy1lAmy2a5lAm | amylase 1, salivarylamyla | 7774.81152 | 8860.40723 | 50 |
| 26365l26367 | Ceacam1lCeacam2 | carcinoembryonic antige | 2157.89648 | 2672.18701 | 50 |
| 69627 | Fam89a | family with sequence sim | 577.60498 | 477.191406 | 50.7491302 |
| 338350 | Acad12 | acyl-Coenzyme A dehyd | 130.506241 | 186.311249 | 50.9118118 |
| 26419 | Mapk8 | mitogen-activated protein | 367.853973 | 453.559937 | 51.0744972 |
| 17329 | Cxcl9 | chemokine (C-X-C motif | 204.675232 | 207.88147 | 51.3653564 |

| | | | | | |
|---|---|---|---|---|---|
| 66113 | Apoa5 | apolipoprotein A-V | 2217.49707 | 2859.10791 | 52.0160904 |
| 12499 | Entpd5 | ectonucleoside triphosph | 425.824524 | 512.676758 | 52.3710365 |
| 16169 | Il15ra | interleukin 15 receptor, a | 601.592896 | 544.053772 | 52.4581299 |
| 50765 | Trfr2 | transferrin receptor 2 | 4438.58105 | 5244.70264 | 52.4581299 |
| 230661 | Tesk2 | testis-specific kinase 2 | 132.130035 | 108.934685 | 52.5452232 |
| 70373 | 1700020O03Rik | RIKEN cDNA 1700020( | 211.609253 | 264.91156 | 52.609314 |
| 207781 | C2cd2 | C2 calcium-dependent d | 1259.84302 | 1412.79517 | 52.6208115 |
| 68338 | Golt1a | golgi transport 1 homolo | 135.995483 | 162.67981 | 52.6849022 |
| 76088 | Dock8 | dedicator of cytokinesis 8 | 464.741943 | 457.714966 | 52.7719955 |
| 237387 | Lrrc3 | leucine rich repeat contai | 399.907043 | 343.514709 | 52.8771667 |
| 15445 | Hpd | 4-hydroxyphenylpyruvic | 4777.01758 | 4620.89697 | 53.0628548 |
| 19212 | Pter | phosphotriesterase relate | 237.05307 | 292.84375 | 53.3011284 |
| 12606 | Cebpa | CCAAT/enhancer bindin | 2555.12451 | 2593.61768 | 53.3126297 |
| 11991 | Hnrnpd | heterogeneous nuclear rit | 231.319855 | 234.888428 | 53.7776794 |
| 22680 | Zfp207 | zinc finger protein 207 | 352.914978 | 345.663666 | 53.8532677 |
| 77219 | Ptgr2 | prostaglandin reductase 2 | 203.002319 | 210.51709 | 53.9288559 |
| 100041089 | Gm3134 | predicted gene 3134 | 323.266724 | 314.810059 | 53.9288559 |
| 229503 | Rrnad1 | ribosomal RNA adenine | 147.317749 | 209.458862 | 54.2427216 |
| 26358 | Aldh1a7 | aldehyde dehydrogenase | 6212.08301 | 7135.21582 | 54.6206741 |
| 72055 | Slc38a10 | solute carrier family 38, | 189.329102 | 163.936096 | 54.6321793 |
| 20979 | Syt1 | synaptotagmin I | 274.018738 | 336.56842 | 54.9345398 |
| 66948 | Acad8 | acyl-Coenzyme A dehyd | 139.965485 | 141.086975 | 54.9345398 |
| 230866 | C230096C10Rik | RIKEN cDNA C230096( | 136.797089 | 168.94136 | 54.9986267 |
| 192119 | Dicer1 | Dicer1, Dcr-1 homolog ( | 289.599335 | 420.041016 | 55.0101318 |
| 105171 | Arrdc3 | arrestin domain containir | 1386.67871 | 1674.05396 | 55.0857201 |
| 19193 | Pipox | pipecolic acid oxidase | 2207.53735 | 1740.20898 | 55.1613083 |
| 246103 | Atxn7 | ataxin 7 | 257.03772 | 363.351868 | 55.1728134 |
| 75475 | Oplah | 5-oxoprolinase (ATP-hyd | 1054.95874 | 1085.93176 | 55.3239937 |
| 111975 | Igf2as | insulin-like growth factor | 196.372437 | 238.702499 | 55.550766 |
| 54354 | Rassf5 | Ras association (RalGDS | 136.100037 | 187.369476 | 56.0914001 |
| 106861 | Abhd3 | abhydrolase domain cont | 785.871582 | 702.387573 | 56.3296738 |
| 70750 | Kdsr | 3-ketodihydrosphingosin | 164.164124 | 171.10022 | 56.7832184 |
| 58911 | Sumf1 | sulfatase modifying facto | 167.620819 | 179.741302 | 57.097084 |
| 26378 | Decr2 | 2-4-dienoyl-Coenzyme A | 584.394836 | 697.056885 | 57.3468628 |
| 93760 | Arid1a | AT rich interactive doma | 164.442932 | 127.638672 | 57.7248154 |
| 30935 | Tor3a | torsin family 3, member | 222.573502 | 179.819122 | 57.7889023 |
| 72472 | Slc16a10 | solute carrier family 16 ( | 799.88855 | 979.659546 | 57.7889023 |
| 268936 | Brpf3 | bromodomain and PHD f | 154.500504 | 219.40152 | 58.1783562 |
| 22282 | Usf2 | upstream transcription fa | 401.008057 | 375.222778 | 58.1783562 |
| 112419 | 2010002M12Rik | RIKEN cDNA 2010002M | 146.590607 | 207.949371 | 58.4166298 |
| 75863 | Clec4g | C-type lectin domain fam | 4466.35986 | 4582.0166 | 58.4807167 |
| 13690 | Eif4g2 | eukaryotic translation ini | 193.547821 | 190.378571 | 59.3467216 |
| 227696 | Phyhd1 | phytanoyl-CoA dioxyger | 3068.70117 | 3483.18091 | 59.573494 |
| 11727l11730l2190 | AnglAng3lAng4 | angiogenin, ribonuclease | 7034.62402 | 6764.40234 | 60.1256332 |
| 234797 | 6430548M08Rik | RIKEN cDNA 6430548M | 352.750244 | 471.251007 | 60.3524017 |
| 72780 | Rspo3 | R-spondin 3 homolog (X | 151.910339 | 179.731415 | 60.4279938 |
| 240025 | Dact2 | dapper homolog 2, antag | 137.066406 | 195.867676 | 60.5035858 |
| 240613 | 9930021J03Rik | RIKEN cDNA 9930021J | 233.666046 | 213.711517 | 60.7303543 |
| 237542 | Osbpl8 | oxysterol binding protein | 159.676086 | 176.115387 | 61.1954002 |
| 71750 | R3hdm2 | R3H domain containing 2 | 143.965576 | 200.850311 | 61.1954002 |
| 414085 | 9330151L19Rik | RIKEN cDNA 9330151L | 232.699692 | 192.826035 | 61.4336739 |
| 414872 | Zyg11b | zyg-ll homolog B (C. ele | 171.346863 | 159.0737 | 61.6719513 |
| 231999 | Plekha8 | pleckstrin homology dor | 311.530975 | 213.282852 | 61.8116226 |
| 66391 | 2310061J03Rik | RIKEN cDNA 2310061J | 445.848816 | 514.017944 | 62.514946 |
| 382051 | Pdp2 | pyruvate dehyrogenase p | 728.190918 | 989.170654 | 62.590538 |
| 68021 | Bphl | biphenyl hydrolase-like ( | 486.56427 | 348.231384 | 62.8813934 |
| 69536 | Hemk1 | HemK methyltransferase | 155.53183 | 223.017517 | 63.1426773 |
| 68943 | Pink1 | PTEN induced putative k | 549.08783 | 708.265747 | 63.5091248 |
| 171207 | Arhgap4 | Rho GTPase activating p | 227.932831 | 322.756531 | 63.5962181 |
| 234135 | Whsc1l1 | Wolf-Hirschhorn syndro | 234.611816 | 311.317139 | 63.7358971 |
| 14852 | Gspt1 | G1 to S phase transition l | 142.037613 | 138.253296 | 64.1483612 |

| | | | | | |
|---|---|---|---|---|---|
| 104175 | Sbk1 | SH3-binding kinase 1 | 177.77713 | 209.205627 | 64.9157639 |
| 23806 | Arih1 | ariadne ubiquitin-conjug | 322.943542 | 357.080444 | 65.2181244 |
| 246738 | Dnajc28 | DnaJ (Hsp40) homolog, | 334.579468 | 388.229675 | 65.5319901 |
| 239796 | 1600021P15Rik | RIKEN cDNA 1600021F | 369.796204 | 497.11908 | 65.5319901 |
| 66333 | Aqp11 | aquaporin 11 | 511.524902 | 533.35144 | 65.6190796 |
| 103677 | Smg6 | Smg-6 homolog, nonsens | 143.487152 | 203.716522 | 66.2123108 |
| 66412 | Arrdc4 | arrestin domain containir | 156.67244 | 223.566437 | 66.2238083 |
| 241274 | Pnpla7 | patatin-like phospholipas | 1833.63013 | 1485.41968 | 66.473587 |
| 232371 | C1rl | complement component | 448.787476 | 417.515747 | 66.537674 |
| 329828 | AI464131 | expressed sequence AI46 | 211.5047 | 166.526428 | 66.6773529 |
| 211446 | Exoc3 | exocyst complex compor | 138.65535 | 204.531403 | 66.688858 |
| 16880 | Lifr | leukemia inhibitory facto | 841.52124 | 761.153564 | 66.7003555 |
| 232146 | Fam176a | family with sequence sin | 3663.55322 | 3271.76709 | 66.8515396 |
| 104776 | Aldh6a1 | aldehyde dehydrogenase | 1369.65967 | 979.436035 | 66.8630371 |
| 235582 | Glyctk | glycerate kinase | 4945.15674 | 4851.21729 | 67.0783081 |
| 104910 | Slc25a47 | solute carrier family 25, | 24977.1738 | 27574.4922 | 67.2409897 |
| 56441 | Nat6 | N-acetyltransferase 6 | 153.155518 | 203.891953 | 67.3050842 |
| 319565 | Syne2 | synaptic nuclear envelop | 174.041595 | 159.891418 | 67.5433578 |
| 319278 | A230050P20Rik | RIKEN cDNA A230050 | 1670.35156 | 2232.11914 | 68.1595764 |
| 16971 | Lrp1 | low density lipoprotein r | 4544.71436 | 4081.36475 | 68.8398972 |
| 54598 | Calcrl | calcitonin receptor-like | 1066.71826 | 1302.18823 | 68.9269867 |
| 17777 | Mttp | microsomal triglyceride t | 1402.6886 | 1357.43018 | 69.0781708 |
| 217869 | Eif5 | eukaryotic translation ini | 142.416229 | 178.25444 | 69.7814941 |
| 11807 | Apoa2 | apolipoprotein A-II | 58553.8516 | 65665.2109 | 69.7929916 |
| 102442 | Dennd4a | DENN/MADD domain c | 370.223938 | 449.768494 | 70.083847 |
| 243085 | Ugt2b35 | UDP glucuronosyltransfe | 2367.5127 | 2267.5437 | 70.0953522 |
| 17920 | Myo6 | myosin VI | 171.625687 | 159.349579 | 70.2465363 |
| 217351 | Tnrc6c | trinucleotide repeat conta | 154.639908 | 226.620819 | 70.2580414 |
| 216874 | Camta2 | calmodulin binding trans | 202.523895 | 268.803467 | 70.8512573 |
| 21386 | Tbx3 | T-box 3 | 3129.11914 | 2609.94775 | 70.8627625 |
| 11990 | Atrn | attractin | 287.352936 | 195.338562 | 71.4904938 |
| 544963 | Iqgap2 | IQ motif containing GTP | 3677.77148 | 3511.23047 | 72.0311279 |
| 72180 | Zfp661 | zinc finger protein 661 | 146.630203 | 158.479523 | 72.3334961 |
| 57344 | As3mt | arsenic (+3 oxidation sta | 2458.13208 | 2685.64355 | 72.420578 |
| 13423 | Dnase2a | deoxyribonuclease II alp | 152.532928 | 223.235397 | 73.1879883 |
| 74616 | Scrn3 | secernin 3 | 490.355286 | 549.214661 | 73.8798065 |
| 219189 | 1300010F03Rik | RIKEN cDNA 1300010F | 2072.67456 | 1383.56152 | 74.5075378 |
| 234733 | Ddx19b | DEAD (Asp-Glu-Ala-As | 241.252777 | 282.930817 | 74.97258 |
| 230103 | Npr2 | natriuretic peptide recept | 258.327271 | 294.684296 | 76.2806244 |
| 240753 | Plekha6 | pleckstrin homology dom | 287.039276 | 314.634644 | 76.2806244 |
| 67432 | Hoga1 | 4-hydroxy-2-oxoglutarate | 1297.45667 | 1362.01392 | 76.4433136 |
| 213742 | Xist | inactive X specific transc | 464.363312 | 499.686829 | 76.6815872 |
| 226418 | Yod1 | YOD1 OTU deubiquitina | 384.296356 | 429.045715 | 77.3733978 |
| 223672l71898 | Apol9alApol9b | apolipoprotein L 9alapoli | 1441.4729 | 1618.59705 | 77.6642609 |
| 319530 | Zfp750 | zinc finger protein 750 | 411.443176 | 611.779175 | 78.1408081 |
| 16008 | Igfbp2 | insulin-like growth factor | 2310.44043 | 3262.70996 | 78.2164001 |
| 27362 | Dnajb9 | DnaJ (Hsp40) homolog, | 616.717224 | 745.716187 | 79.146492 |
| 11606 | Agt | angiotensinogen (serpin p | 4973.33789 | 6940.79199 | 79.2220764 |
| 60440 | Iigp1 | interferon inducible GTP | 7088.36279 | 8578.43945 | 79.3847656 |
| 76261 | 0610040J01Rik | RIKEN cDNA 0610040J | 4032.65869 | 4502.2627 | 79.5244446 |
| 17388 | Mmp15 | matrix metallopeptidase | 530.462402 | 762.646057 | 79.600029 |
| 12684 | Cideb | cell death-inducing DNA | 5237.43652 | 4733.16504 | 79.6871262 |
| 100503386 | Gm4980 | predicted gene 4980 | 897.414917 | 780.506897 | 79.8498077 |
| 20869 | Stk11 | serine/threonine kinase 1 | 166.176056 | 177.647522 | 80.1406708 |
| 69179 | Tmem110 | transmembrane protein 1 | 216.401459 | 298.794067 | 81.4602127 |
| 227377 | Farp2 | FERM, RhoGEF and ple | 641.338867 | 727.664307 | 81.9252625 |
| 320940 | Atp11c | ATPase, class VI, type 1 | 504.795197 | 401.259216 | 82.7797623 |
| 100861531 | Rn45s | 45S pre-ribosomal RNA | 1070.57568 | 886.289551 | 83.483078 |
| 11761 | Aox1 | aldehyde oxidase 1 | 2267.14893 | 2057.27686 | 83.622757 |
| 71768 | Vwce | von Willebrand factor C | 284.319214 | 311.404846 | 83.6868439 |
| 320302 | Glt28d2 | glycosyltransferase 28 do | 377.392426 | 518.614319 | 83.7969513 |

| | | | | | |
|---|---|---|---|---|---|
| 19263 | Ptprb | protein tyrosine phosphat | 1132.73975 | 1285.62207 | 84.0993042 |
| 330790 | Hapln4 | hyaluronan and proteogly | 204.839981 | 301.364594 | 84.5643539 |
| 15451 | Hpn | hepsin | 21182.2109 | 29081.9727 | 84.6514435 |
| 14528 | Gch1 | GTP cyclohydrolase 1 | 1561.85144 | 1975.02673 | 84.9538116 |
| 14871 | Gstt1 | glutathione S-transferase | 4609.16553 | 6476.35156 | 85.2676697 |
| 14635 | Galk1 | galactokinase 1 | 402.42749 | 290.152954 | 85.3317642 |
| 110265 | Msra | methionine sulfoxide red | 2166.97852 | 1861.43042 | 86.110672 |
| 67630 | Samd8 | sterile alpha motif domai | 200.805023 | 285.855042 | 86.8024902 |
| 17979 | Ncoa3 | nuclear receptor coactiva | 230.318634 | 315.293884 | 87.581398 |
| 67484 | Eepd1 | endonuclease/exonucleas | 224.1371 | 335.730927 | 88.2617188 |
| 11529 | Adh7 | alcohol dehydrogenase 7 | 289.952606 | 220.271561 | 88.8779373 |
| 269823 | Pon3 | paraoxonase 3 | 465.413635 | 696.261841 | 89.3429871 |
| 22259 | Nr1h3 | nuclear receptor subfami | 2425.61011 | 1961.79346 | 90.1333923 |
| 280408 | Rilp | Rab interacting lysosoma | 254.317657 | 325.690674 | 90.1333923 |
| 245860 | Atg9a | autophagy-related 9A (ye | 225.656342 | 325.479858 | 90.2089844 |
| 320817 | Atad2b | ATPase family, AAA do | 334.579468 | 412.513306 | 90.4472656 |
| 21429 | Ubtf | upstream binding transcr | 331.08313 | 419.511902 | 91.7668076 |
| 16005 | Igfals | insulin-like growth factor | 13145.373 | 12810.2314 | 91.8308945 |
| 71893 | Noxo1 | NADPH oxidase organiz | 397.765198 | 426.137054 | 92.057663 |
| 103142 | Rdh9 | retinol dehydrogenase 9 | 1945.11646 | 2131.69385 | 92.2203522 |
| 218989 | 6720456H20Rik | RIKEN cDNA 6720456H | 243.125305 | 271.468781 | 92.6623917 |
| 239570 | Ttc38 | tetratricopeptide repeat d | 939.077759 | 1340.97852 | 93.4643097 |
| 102093 | Phkb | phosphorylase kinase bet | 195.211227 | 234.963409 | 93.5399017 |
| 214137 | Arhgap29 | Rho GTPase activating p | 1222.47498 | 1628.17468 | 94.307312 |
| 69134 | Fam25c | family with sequence sin | 3320.19092 | 4789.40674 | 94.3828964 |
| 12361 | Cask | calcium/calmodulin-depe | 208.56601 | 255.157089 | 94.3828964 |
| 207798 | Gramd1c | GRAM domain containin | 663.595215 | 977.82605 | 94.7723541 |
| 72129 | Pex13 | peroxisomal biogenesis f | 311.268005 | 345.641022 | 95.4756699 |
| 66468 | Ska1 | spindle and kinetochore a | 323.84494 | 404.897888 | 95.7665253 |
| 171210 | Acot2 | acyl-CoA thioesterase 2 | 936.257935 | 895.657837 | 97.09758 |
| 68177 | Ebpl | emopamil binding protei | 916.198792 | 799.564575 | 97.3243484 |
| 21355 | Tap2 | transporter 2, ATP-bindi | 979.853455 | 1199.27893 | 99.0974426 |
| 213989 | Tmem82 | transmembrane protein 8 | 536.320801 | 627.581543 | 99.4228058 |
| 21375 | Tbr1 | T-box brain gene 1 | 459.591736 | 449.447357 | 99.6380768 |
| 78329 | 2310010J17Rik | RIKEN cDNA 2310010J | 272.295135 | 381.474426 | 99.6495819 |
| 353170 | Txlng | taxilin gamma | 370.732452 | 331.894226 | 99.9634399 |
| 67155 | Smarca2 | SWI/SNF related, matrix | 264.524658 | 293.074341 | 100.341393 |
| 93765 | Ube2n | ubiquitin-conjugating enz | 227.658768 | 216.204254 | 100.579666 |
| 252966 | Cables2 | CDK5 and Abl enzyme s | 416.17041 | 530.621033 | 100.591171 |
| 624219 | Gm6484 | predicted gene 6484 | 392.524689 | 398.668884 | 100.655258 |
| 67727 | Stx17 | syntaxin 17 | 305.688446 | 321.986938 | 101.422668 |
| 12724 | Clcn2 | chloride channel 2 | 459.770721 | 467.933472 | 101.974808 |
| 244416 | Ppp1r3b | protein phosphatase 1, re | 457.74295 | 444.246826 | 102.0504 |
| 71918 | Zcchc24 | zinc finger, CCHC doma | 5063.03516 | 4881.26562 | 102.201576 |
| 20623 | Snrk | SNF related kinase | 610.570557 | 721.051941 | 102.300171 |
| 15220 | Foxq1 | forkhead box Q1 | 559.5578 | 739.736145 | 102.526947 |
| 12176 | Bnip3 | BCL2/adenovirus E1B in | 335.6203 | 406.482361 | 102.893394 |
| 11425 | Apoc4 | apolipoprotein C-IV | 21871.75 | 17659.4805 | 103.20726 |
| 70503 | Ddo | D-aspartate oxidase | 294.291748 | 315.793304 | 103.20726 |
| 15377 | Foxa3 | forkhead box A3 | 6983.89453 | 9637.91992 | 103.358444 |
| 68440 | Dusp23 | dual specificity phosphat | 228.246506 | 300.524231 | 103.509621 |
| 12572 | Cdk7 | cyclin-dependent kinase | 322.081726 | 295.463806 | 104.212944 |
| 110616 | Atxn3 | ataxin 3 | 218.543304 | 273.046204 | 105.207123 |
| 74008 | Arsg | arylsulfatase G | 595.796265 | 812.471008 | 105.986031 |
| 213988 | Tnrc6b | trinucleotide repeat conta | 560.305542 | 803.38855 | 106.386986 |
| 78914 | Nadsyn1 | NAD synthetase 1 | 243.773224 | 364.036621 | 106.84053 |
| 227541 | Camk1d | calcium/calmodulin-depe | 545.900391 | 444.334564 | 107.456757 |
| 54338 | Slc23a2 | solute carrier family 23 ( | 265.734985 | 276.110474 | 107.706535 |
| 14555 | Gpd1 | glycerol-3-phosphate deh | 17519.7812 | 17194.6562 | 109.479622 |
| 66836 | Tmem223 | transmembrane protein 2 | 1152.34412 | 1392.55762 | 109.566711 |
| 231207 | Cpeb2 | cytoplasmic polyadenyla | 637.229431 | 871.331787 | 110.031761 |

| | | | | | |
|---|---|---|---|---|---|
| 232906 | Grlf1 | glucocorticoid receptor D | 281.893799 | 384.701355 | 110.473801 |
| 219189 | 1300010F03Rik | RIKEN cDNA 1300010F | 2544.32812 | 1790.42725 | 110.560898 |
| 75869 | Arl5b | ADP-ribosylation factor- | 283.417786 | 360.320129 | 111.037445 |
| 19885 | Rorc | RAR-related orphan rece | 423.009399 | 567.830933 | 111.241211 |
| 67769 | Gpatch2 | G patch domain containi | 298.261719 | 407.365173 | 111.717758 |
| 545622 | Ptpn3 | protein tyrosine phospha | 382.577515 | 362.459167 | 112.333984 |
| 11432 | Acp2 | acid phosphatase 2, lysos | 343.48584 | 403.395447 | 113.1129 |
| 68750 | Rreb1 | ras responsive element b | 702.473022 | 523.077759 | 113.264076 |
| 13107 | Cyp2f2 | cytochrome P450, family | 10398.1484 | 7865.29346 | 113.688034 |
| 15357 | Hmgcr | 3-hydroxy-3-methylgluta | 322.012024 | 334.848145 | 114.258255 |
| 170716 | Cyp4f13 | cytochrome P450, family | 1124.54614 | 994.416504 | 114.420944 |
| 16439 | Itpr2 | inositol 1,4,5-triphosphat | 894.55072 | 1032.46948 | 115.176842 |
| 68777 | Tmem53 | transmembrane protein 5 | 1130.49329 | 823.075745 | 116.269615 |
| 320808 | Dcaf5 | DDB1 and CUL4 associa | 316.831696 | 353.885986 | 116.420799 |
| 12013 | Bach1 | BTB and CNC homology | 267.837189 | 375.71936 | 116.594986 |
| 382117 | D9Ertd402e | DNA segment, Chr 9, ER | 392.320312 | 578.831787 | 117.060028 |
| 68646 | 1110020G09Rik | RIKEN cDNA 1110020G | 391.757935 | 351.847382 | 118.594849 |
| 67958 | 2610101N10Rik | RIKEN cDNA 2610101N | 270.367157 | 375.33313 | 119.332672 |
| 21843 | Tial1 | Tia1 cytotoxic granule-as | 668.476196 | 777.329468 | 119.751709 |
| 232078 | Thnsl2 | threonine synthase-like 2 | 1470.79321 | 1199.65796 | 120.984161 |
| 269630 | 5031425E22Rik | RIKEN cDNA 5031425E | 304.17395 | 372.249023 | 121.158348 |
| 77031 | Slc9a8 | solute carrier family 9 (s | 583.756348 | 825.091675 | 122.489403 |
| 68671 | Pcyt2 | phosphate cytidylyltransf | 593.534058 | 492.906067 | 122.617569 |
| 219181 | Akap11 | A kinase (PRKA) anchor | 410.248688 | 462.905579 | 123.181213 |
| 218850 | D14Abb1e | DNA segment, Chr 14, A | 254.975098 | 381.130615 | 124.186897 |
| 67867 | Lrrc28 | leucine rich repeat contai | 256.903076 | 364.74115 | 124.250984 |
| 20338 | Sel1l | sel-1 suppressor of lin-12 | 511.355408 | 617.839844 | 124.791626 |
| 22318 | Vamp2 | vesicle-associated memb | 423.09021 | 613.019897 | 125.33226 |
| 102448 | Xylb | xylulokinase homolog (H | 1439.74927 | 1426.63391 | 126.122665 |
| 23802 | Amfr | autocrine motility factor | 1126.18579 | 1064.18469 | 126.239342 |
| 192166 | Sardh | sarcosine dehydrogenase | 3610.86426 | 4921.53125 | 126.285355 |
| 18706 | Pik3ca | phosphatidylinositol 3-ki | 255.802063 | 286.549683 | 126.779976 |
| 69215 | Sat2 | spermidine/spermine N1- | 409.117554 | 420.316895 | 126.890076 |
| 73137 | Prrc1 | proline-rich coiled-coil 1 | 425.046692 | 460.192139 | 127.872749 |
| 100503842 | 2410022M11Rik | RIKEN cDNA 2410022M | 484.492126 | 434.577271 | 129.506165 |
| 13688 | Eif4ebp2 | eukaryotic translation ini | 452.035095 | 570.496277 | 131.529022 |
| 72194 | Fbxl20 | F-box and leucine-rich re | 297.195557 | 360.62854 | 132.122253 |
| 22770 | Zhx1 | zinc fingers and homeob | 333.687561 | 489.516418 | 132.610291 |
| 234854 | Cdk10 | cyclin-dependent kinase | 340.377625 | 347.105286 | 132.610291 |
| 240753 | Plekha6 | pleckstrin homology dom | 691.190369 | 559.31012 | 132.848572 |
| 66205 | Cd302 | CD302 antigen | 2420.09082 | 3513.61279 | 132.999756 |
| 212862 | Chpt1 | choline phosphotransfera | 366.274536 | 303.964844 | 133.354706 |
| 68204 | 2900060B14Rik | RIKEN cDNA 2900060B | 928.30835 | 1390.87134 | 135.453156 |
| 77733 | Rnf170 | ring finger protein 170 | 282.720734 | 382.454803 | 135.476166 |
| 29809 | Rabgap1l | RAB GTPase activating | 647.759644 | 822.86499 | 136.458832 |
| 12751 | Tpp1 | tripeptidyl peptidase I | 504.202728 | 563.96167 | 137.17366 |
| 52633 | Nit2 | nitrilase family, member | 580.847778 | 544.572998 | 137.313339 |
| 320808 | Dcaf5 | DDB1 and CUL4 associa | 294.196686 | 418.057587 | 137.400436 |
| 19934 | Rpl22 | ribosomal protein L22 | 468.965393 | 388.959686 | 137.615707 |
| 278279 | Tmtc2 | transmembrane and tetrat | 709.028442 | 624.03064 | 139.952438 |
| 14874 | Gstz1 | glutathione transferase ze | 4110.88281 | 4512.09521 | 141.196381 |
| 213649 | Arhgef19 | Rho guanine nucleotide e | 1123.7002 | 1405.42737 | 143.207764 |
| 229487 | Pet112l | PET112-like (yeast) | 307.611664 | 332.501129 | 143.335922 |
| 53972 | Ngef | neuronal guanine nucleot | 863.429138 | 1082.71887 | 143.975159 |
| 68526 | Gpr155 | G protein-coupled recept | 338.414795 | 331.91684 | 144.463211 |
| 71336 | Rbks | ribokinase | 390.213318 | 391.936249 | 145.132019 |
| 380629 | Heca | headcase homolog (Dros | 543.419556 | 583.834229 | 147.218979 |
| 70012 | Ccdc21 | coiled-coil domain conta | 497.94043 | 658.578003 | 147.608429 |
| 27364 | Srr | serine racemase | 2349.37207 | 1745.62451 | 147.910797 |
| 56358 | Copz2 | coatomer protein comple | 588.089172 | 728.391479 | 151.07901 |
| 67201 | Glod4 | glyoxalase domain conta | 347.565125 | 318.932556 | 151.793854 |

| | | | | | |
|---|---|---|---|---|---|
| 50776 | Polg2 | polymerase (DNA direct | 345.836792 | 328.674316 | 154.043488 |
| 70209 | Tmem143 | transmembrane protein 1 | 370.862366 | 310.599854 | 154.822388 |
| 18128 | Notch1 | Notch gene homolog 1 (I | 607.357788 | 887.770813 | 155.037659 |
| 240186 | Zfp438 | zinc finger protein 438 | 773.465698 | 1118.89746 | 156.368713 |
| 20318 | Sdf4 | stromal cell derived fact | 423.582886 | 413.769592 | 157.060516 |
| 64008 | Aqp9 | aquaporin 9 | 3944.47119 | 4431.43799 | 157.502563 |
| 11819 | Nr2f2 | nuclear receptor subfami | 464.741943 | 641.094971 | 159.775208 |
| 94217 | Lrp1b | low density lipoprotein-r | 406.292969 | 413.912476 | 159.914886 |
| 231326 | Aasdh | aminoadipate-semialdehy | 363.858643 | 529.855652 | 160.077576 |
| 67207 | Lsm1 | LSM1 homolog, U6 sma | 588.722839 | 521.59375 | 160.315842 |
| 78255 | Ralgps2 | Ral GEF with PH domai | 691.100098 | 825.854248 | 162.304199 |
| 21685 | Tef | thyrotroph embryonic fa | 606.326477 | 556.080322 | 163.646759 |
| 223646 | Naprt1 | nicotinate phosphoribosy | 4590.65137 | 5662.1377 | 164.867706 |
| 67422 | Dhdds | dehydrodolichyl diphosp | 371.350281 | 398.393005 | 165.58252 |
| 225913 | Dak | dihydroxyacetone kinase | 1813.73254 | 1800.15479 | 165.733704 |
| 74764 | Klc4 | kinesin light chain 4 | 1281.56714 | 1189.43384 | 167.041748 |
| 224656 | Zfp523 | zinc finger protein 523 | 339.246521 | 456.130493 | 167.367126 |
| 12339 | Capn7 | calpain 7 | 428.793304 | 531.442993 | 167.733582 |
| 16988 | Lst1 | leukocyte specific transc | 544.86438 | 704.997681 | 168.837845 |
| 71670 | Acy3 | aspartoacylase (aminoacy | 751.038208 | 673.438232 | 169.117203 |
| 53621 | Cnot4 | CCR4-NOT transcription | 562.856079 | 632.872559 | 169.669342 |
| 100504663 | Atg14 | VATG14 autophagy rela | 797.841797 | 1013.94519 | 169.832031 |
| 110095 | Pygl | liver glycogen phosphory | 4649.18896 | 5198.5376 | 169.832031 |
| 17117 | Amacr | alpha-methylacyl-CoA ra | 646.713989 | 514.153687 | 171.854889 |
| 212483 | Fam193b | family with sequence sin | 602.918823 | 771.048096 | 174.081512 |
| 329650 | Med12l | mediator of RNA polyme | 487.779358 | 476.840515 | 174.319794 |
| 14913 | Guca1a | guanylate cyclase activat | 897.579712 | 966.990723 | 176.08139 |
| 69870 | Polr3gl | polymerase (RNA) III (D | 431.253571 | 483.131775 | 176.319672 |
| 243382 | Ppm1k | protein phosphatase 1K ( | 1748.76294 | 1982.41162 | 177.249756 |
| 107766 | Haao | 3-hydroxyanthranilate 3,4 | 5613.83887 | 6424.4248 | 179.941422 |
| 213819 | Casd1 | CAS1 domain containing | 381.611145 | 412.282715 | 180.202698 |
| 21416 | Tcf7l2 | transcription factor 7 like | 496.750641 | 424.37146 | 180.330872 |
| 71361 | Aifm2 | apoptosis-inducing factor | 412.753296 | 605.030945 | 181.03421 |
| 320560 | Dennd5b | DENN/MADD domain c | 658.454529 | 871.695312 | 182.039886 |
| 98432 | Phlpp1 | PH domain and leucine r | 462.872559 | 619.183777 | 183.272339 |
| 223631 | BC025446 | cDNA sequence BC0254 | 2658.0957 | 2005.75732 | 184.591888 |
| 71755 | Dhdh | dihydrodiol dehydrogena | 1675.30371 | 2076.39258 | 185.23111 |
| 68636 | Fahd1 | fumarylacetoacetate hydr | 608.926147 | 538.476929 | 186.213791 |
| 170460 | Stard5 | StAR-related lipid transf | 1624.93262 | 2294.77539 | 186.678833 |
| 14544 | Gda | guanine deaminase | 1031.11023 | 1000.43182 | 187.132385 |
| 15586 | Hyal1 | hyaluronoglucosaminidas | 1016.0318 | 1460.69751 | 188.08548 |
| 15458 | Hpx | hemopexin | 22475.9238 | 31850.582 | 188.550522 |
| 209558 | Enpp3 | ectonucleotide pyrophosp | 476.373108 | 568.041748 | 189.968658 |
| 382793 | Mtx3 | metaxin 3 | 855.275269 | 710.609924 | 190.5849 |
| 67800 | Dgat2 | diacylglycerol O-acyltran | 3303.48071 | 2936.69092 | 193.125397 |
| 224585 | Zfp160 | zinc finger protein 160 | 598.525879 | 617.505981 | 194.834381 |
| 52637 | Cisd1 | CDGSH iron sulfur dom | 989.965393 | 1178.85181 | 194.886963 |
| 66443 | Tnfaip8l1 | tumor necrosis factor, alp | 438.371399 | 464.067017 | 195.90416 |
| 100504527 | Gm10374 | predicted gene 10374 | 882.970215 | 706.249756 | 198.694427 |
| 270076 | Gcdh | glutaryl-Coenzyme A de | 2607.94971 | 2514.76978 | 201.08374 |
| 76974 | 1190003J15Rik | RIKEN cDNA 1190003J | 12460.1016 | 13359.2852 | 202.089432 |
| 67017 | 2010011I20Rik | RIKEN cDNA 2010011I | 947.05896 | 863.249512 | 203.56015 |
| 71782 | Ankle2 | ankyrin repeat and LEM | 560.135986 | 839.19928 | 205.873886 |
| 54403 | Slc4a4 | solute carrier family 4 (a | 1120.90405 | 1254.11768 | 207.862244 |
| 107351 | Kank1 | KN motif and ankyrin re | 901.150513 | 1029.69812 | 208.274704 |
| 227334 | Usp40 | ubiquitin specific peptida | 555.194885 | 751.36084 | 209.053604 |
| 72108 | Ddhd2 | DDHD domain containin | 558.865479 | 479.278076 | 210.02478 |
| 29869 | Ulk2 | Unc-51 like kinase 2 (C. | 569.943787 | 689.990417 | 214.1987 |
| 16438 | Itpr1 | inositol 1,4,5-trisphospha | 667.818726 | 954.65863 | 214.547058 |
| 71664 | Mettl7b | methyltransferase like 7B | 26093.7383 | 23428.1055 | 215.55275 |
| 19883 | Rora | RAR-related orphan rece | 1315.24084 | 1295.94385 | 216.070374 |

| | | | | | |
|---|---|---|---|---|---|
| 21848 | Trim24 | tripartite motif-containin | 726.720825 | 683.851929 | 216.785202 |
| 11639 | Ak4 | adenylate kinase 4 | 907.073792 | 612.139893 | 216.872284 |
| 246103 | Atxn7 | ataxin 7 | 573.335571 | 838.387207 | 217.034973 |
| 232232 | Hdac11 | histone deacetylase 11 | 953.015564 | 1022.79712 | 217.151642 |
| 52466 | Slc46a1 | solute carrier family 46, | 587.477661 | 476.32135 | 218.25592 |
| 381110 | Fam82a1 | family with sequence sin | 745.23053 | 628.895874 | 218.668396 |
| 15511 | Hspa1b | heat shock protein 1B | 515.718262 | 645.882324 | 219.238602 |
| 67393 | Cxxc5 | CXXC finger 5 | 591.726501 | 752.359619 | 219.889343 |
| 208922 | Cpeb3 | cytoplasmic polyadenyla | 488.267273 | 645.51593 | 220.535141 |
| 71330 | Rcbtb1 | regulator of chromosome | 863.125 | 907.483459 | 221.499756 |
| 76784 | Mtif2 | mitochondrial translation | 663.983398 | 677.801208 | 221.889191 |
| 235493 | BC031353 | cDNA sequence BC0313 | 1153.12817 | 1258.21179 | 223.284332 |
| 67815 | Sec14l2 | SEC14-like 2 (S. cerevis | 5835.41309 | 6561.57422 | 223.749374 |
| 53323 | Ube2k | ubiquitin-conjugating enz | 473.84314 | 565.899841 | 224.237427 |
| 56738 | Mocs1 | molybdenum cofactor sy | 2100.63403 | 1923.29895 | 225.208603 |
| 68267 | Slc25a22 | solute carrier family 25 ( | 3702.21069 | 5220.81641 | 225.371277 |
| 56632 | Sphk2 | sphingosine kinase 2 | 1325.39722 | 1960.06604 | 225.481384 |
| 212503 | Paox | polyamine oxidase (exo- | 662.831665 | 878.485962 | 226.010529 |
| 13688 | Eif4ebp2 | eukaryotic translation ini | 827.265076 | 889.491089 | 226.970184 |
| 224826 | Ubr2 | ubiquitin protein ligase E | 673.068726 | 682.349487 | 230.26001 |
| 77411 | Esrp2 | epithelial splicing regulat | 511.16687 | 658.221497 | 230.63797 |
| 14132 | Fcgrt | Fc receptor, IgG, alpha c | 7221.70312 | 6797.57617 | 231.696228 |
| 103140 | Gstt3 | glutathione S-transferase | 9524.61133 | 10885.4541 | 233.655014 |
| 69993 | Chn2 | chimerin (chimaerin) 2 | 522.707764 | 582.918945 | 237.16011 |
| 54636 | Wdr45 | WD repeat domain 45 | 735.861572 | 871.062988 | 237.67775 |
| 67118 | Bfar | bifunctional apoptosis re | 789.667358 | 938.869019 | 238.660431 |
| 232947 | Ppp1r37 | protein phosphatase 1, re | 588.225464 | 802.651489 | 239.084381 |
| 110821 | Pcca | propionyl-Coenzyme A c | 491.136261 | 502.543152 | 239.386749 |
| 68364 | 0610030E20Rik | RIKEN cDNA 0610030E | 515.490112 | 540.794312 | 240.997147 |
| 18186 | Nrp1 | neuropilin 1 | 1312.44946 | 1413.39502 | 242.717651 |
| 382073 | Ccdc84 | coiled-coil domain conta | 547.982056 | 625.475037 | 243.723343 |
| 71448 | Tmem80 | transmembrane protein 8 | 668.466675 | 774.200073 | 243.787415 |
| 22034 | Traf6 | TNF receptor-associated | 512.730469 | 600.44165 | 244.880188 |
| 212073 | 4831426I19Rik | RIKEN cDNA 4831426I | 632.834839 | 552.665161 | 244.891693 |
| 69020 | Zfp707 | zinc finger protein 707 | 594.307129 | 652.105713 | 247.322113 |
| 68404 | Nrn1 | neuritin 1 | 6815.77783 | 7446.36426 | 248.902924 |
| 18633 | Pex16 | peroxisomal biogenesis f | 1072.79199 | 906.412476 | 250.740097 |
| 208846 | Daam1 | dishevelled associated ac | 647.908508 | 905.432129 | 251.390839 |
| 21763 | Tex2 | testis expressed gene 2 | 996.779053 | 937.785278 | 251.594604 |
| 70804 | Pgrmc2 | progesterone receptor me | 955.919373 | 907.25 | 252.797485 |
| 18618 | Pemt | phosphatidylethanolamin | 6004.92334 | 5540.20312 | 252.891144 |
| 72244 | 1600014C10Rik | RIKEN cDNA 1600014C | 3512.41748 | 3421.54028 | 254.536057 |
| 15258 | Hipk2 | homeodomain interacting | 830.842163 | 834.693359 | 254.943588 |
| 75352 | 4930550L24Rik | RIKEN cDNA 4930550L | 629.932617 | 541.92041 | 255.349472 |
| 67528 | Nudt7 | nudix (nucleoside diphos | 1256.56689 | 917.438843 | 255.628845 |
| 231997 | Fkbp14 | FK506 binding protein 14 | 581.321472 | 824.351807 | 260.377899 |
| 59038 | Pxmp4 | peroxisomal membrane p | 2349.07593 | 1567.7251 | 261.738525 |
| 18563 | Pcx | pyruvate carboxylase | 3210.3313 | 3313.8999 | 263.639771 |
| 209200 | Dtx3l | deltex 3-like (Drosophila) | 1126.78784 | 1366.44763 | 264.842651 |
| 320683 | Zfp629 | zinc finger protein 629 | 767.138428 | 1076.97095 | 265.028351 |
| 26363 | Btd | biotinidase | 1084.39624 | 1546.93164 | 267.598419 |
| 20315 | Cxcl12 | chemokine (C-X-C motif | 10355.6562 | 8990.01758 | 268.301727 |
| 17714 | Grpel2 | GrpE-like 2, mitochondri | 677.078369 | 552.938232 | 268.656677 |
| 68636 | Fahd1 | fumarylacetoacetate hydr | 953.776001 | 1296.72192 | 271.818329 |
| 99887 | Tmem56 | transmembrane protein 5 | 18902.3164 | 13782.3457 | 275.893616 |
| 244631 | Pskh1 | protein serine kinase H1 | 714.856689 | 753.879089 | 277.980591 |
| 54426 | Hgfac | hepatocyte growth factor | 2269.28613 | 3189.31714 | 278.14328 |
| 224647 | D17Wsu92e | DNA segment, Chr 17, W | 632.128296 | 687.723999 | 279.102966 |
| 108934 | BC024659 | cDNA sequence BC0246 | 673.786377 | 840.987488 | 282.241608 |
| 72947 | Agxt2l2 | alanine-glyoxylate amino | 728.035645 | 1017.7395 | 282.986023 |
| 110135 | Fgb | fibrinogen beta chain | 23522.0117 | 34436.1562 | 285.206055 |

| | | | | | |
|---|---|---|---|---|---|
| 114664 | Hsd17b11 | hydroxysteroid (17-beta) | 1241.95581 | 854.137329 | 285.288208 |
| 15486 | Hsd17b2 | hydroxysteroid (17-beta) | 5397.71924 | 5828.70508 | 285.961975 |
| 68631 | Cryl1 | crystallin, lambda 1 | 1086.73462 | 1564.4812 | 286.717865 |
| 70031 | Cmtm8 | CKLF-like MARVEL tra | 582.028076 | 793.860352 | 287.444183 |
| 14186 | Fgfr4 | fibroblast growth factor r | 1109.43298 | 1109.19678 | 287.455688 |
| 15525 | Hspa4 | heat shock protein 4 | 971.884888 | 767.973877 | 288.979004 |
| 114229 | Kiss1r | KISS1 receptor | 2847.15088 | 3111.2417 | 291.402832 |
| 76574 | Mfsd2a | major facilitator superfan | 4959.24512 | 3776.64429 | 297.001465 |
| 14431 | Gamt | guanidinoacetate methylt | 1014.54108 | 1091.974 | 302.843292 |
| 80283 | Abtb1 | ankyrin repeat and BTB | 2260.19775 | 2354.53882 | 304.84314 |
| 59007 | Ngly1 | N-glycanase 1 | 973.337646 | 1125.13208 | 306.151184 |
| 58223 | Mmp19 | matrix metallopeptidase | 2448.41626 | 2643.20508 | 307.081299 |
| 70484 | Slc35d2 | solute carrier family 35, | 1585.98022 | 1168.99976 | 311.947021 |
| 320191 | Hook3 | hook homolog 3 (Drosop | 1538.83777 | 1595.19189 | 313.080872 |
| 14073 | Faah | fatty acid amide hydrolas | 2024.47522 | 1798.20398 | 317.719788 |
| 328133 | Slc39a9 | solute carrier family 39 ( | 828.709839 | 970.905273 | 318.638397 |
| 74781 | Wipi2 | WD repeat domain, phos | 1059.3374 | 1287.1853 | 319.89386 |
| 268566 | Gphn | gephyrin | 1890.51392 | 2105.69287 | 323.160675 |
| 74525 | 8430419L09Rik | RIKEN cDNA 8430419L | 2841.21191 | 2242.1665 | 323.387451 |
| 13382 | Dld | dihydrolipoamide dehydr | 952.397705 | 756.888184 | 324.835175 |
| 68066 | Slc25a39 | solute carrier family 25, | 945.477905 | 1344.19556 | 325.172058 |
| 73166 | Tm7sf2 | transmembrane 7 superfa | 1026.01379 | 1132.10107 | 329.758423 |
| 434402 | Gm5617 | predicted gene 5617 | 765.090088 | 1016.87231 | 331.538086 |
| 100383 | Bsdc1 | BSD domain containing | 894.748779 | 1056.50415 | 334.555115 |
| 18634 | Pex7 | peroxisomal biogenesis f | 921.432983 | 793.578857 | 334.729309 |
| 212647 | Aldh4a1 | aldehyde dehydrogenase | 3579.90283 | 2428.37305 | 334.926514 |
| 50850 | Spast | spastin | 744.359253 | 980.429199 | 339.21051 |
| 20181 | Rxra | retinoid X receptor alpha | 3168.29492 | 3030.76831 | 339.803711 |
| 12411 | Cbs | cystathionine beta-syntha | 2297.73047 | 1927.06909 | 341.391113 |
| 235132 | Zbtb44 | zinc finger and BTB don | 2161.9248 | 2440.85352 | 342.768188 |
| 108077 | Skiv2l | superkiller viralicidic act | 708.957153 | 1030.90491 | 351.796326 |
| 14081 | Acsl1 | acyl-CoA synthetase long | 10363.2715 | 9082.23242 | 354.900452 |
| 20186 | Nr1h4 | nuclear receptor subfami | 5198.62988 | 5522.80371 | 358.336548 |
| 20502 | Slc16a2 | solute carrier family 16 ( | 1187.61304 | 1181.94434 | 359.330719 |
| 18569 | Pdcd4 | programmed cell death 4 | 1774.74231 | 2499.66479 | 365.962952 |
| 18553 | Pcsk6 | proprotein convertase sul | 4025.89087 | 3072.28613 | 366.212738 |
| 20969 | Sdc1 | syndecan 1 | 1093.27417 | 1320.19482 | 366.450989 |
| 69834 | Rab43 | RAB43, member RAS on | 2374.45166 | 2398.3667 | 367.369598 |
| 11938 | Atp2a2 | ATPase, Ca++ transporti | 1060.99609 | 1222.4718 | 370.386658 |
| 67732 | Iah1 | isoamyl acetate-hydrolyz | 2851.09863 | 2553.38184 | 374.532623 |
| 12411 | Cbs | cystathionine beta-syntha | 1500.77271 | 1239.51343 | 375.217834 |
| 100037258 | Dnajc3 | DnaJ (Hsp40) homolog, | 2892.60449 | 2410.9082 | 375.316467 |
| 320541 | Slc35e2 | solute carrier family 35, | 1647.60559 | 1585.82373 | 376.235046 |
| 211922 | Fam116a | family with sequence sin | 1324.80786 | 1678.3208 | 378.257904 |
| 67101 | 2310039H08Rik | RIKEN cDNA 2310039H | 1226.14709 | 1195.58789 | 380.408936 |
| 15259 | Hipk3 | homeodomain interacting | 1444.29126 | 1776.6012 | 381.286438 |
| 67914 | Coq9 | coenzyme Q9 homolog ( | 2125.69287 | 1765.17871 | 381.955261 |
| 66586 | Crls1 | cardiolipin synthase 1 | 793.513733 | 819.346558 | 382.11795 |
| 320415 | Gchfr | GTP cyclohydrolase I fee | 4393.86865 | 3773.43311 | 393.732605 |
| 30934 | Tor1b | torsin family 1, member | 902.824951 | 1069.79968 | 396.255005 |
| 18408 | Slc25a15 | solute carrier family 25 ( | 4822.61719 | 6091.95312 | 400.511078 |
| 13113 | Cyp3a13 | cytochrome P450, family | 4226.4502 | 6161.18506 | 402.865906 |
| 110446 | Acat1 | acetyl-Coenzyme A acety | 2029.54785 | 1392.4303 | 403.248779 |
| 104009 | Qsox1 | quiescin Q6 sulfhydryl o | 2175.26709 | 2894.75171 | 404.847656 |
| 67880 | Dcxr | dicarbonyl L-xylulose red | 1387.26807 | 1180.13635 | 407.47525 |
| 235293 | Sc5d | sterol-C5-desaturase (fun | 1159.91187 | 1175.96155 | 409.78241 |
| 246277 | Csad | cysteine sulfinic acid dec | 14201.416 | 13701.5469 | 411.346802 |
| 15500 | Hsf2 | heat shock factor 2 | 1157.12683 | 976.213257 | 414.299744 |
| 67384 | Bag4 | BCL2-associated athanog | 1114.51343 | 1062.96655 | 414.805908 |
| 108958 | Fam73b | family with sequence sin | 1175.30396 | 1637.36182 | 414.897919 |
| 231670 | Fbxo21 | F-box protein 21 | 1649.51611 | 1138.86621 | 418.141724 |

| | | | | | |
|---|---|---|---|---|---|
| 65116 | Prrg2 | proline-rich Gla (G-carbo | 875.991821 | 1090.67529 | 431.774292 |
| 142688 | Asb13 | ankyrin repeat and SOCS | 1824.21997 | 1435.75464 | 436.621948 |
| 75578 | Fggy | FGGY carbohydrate kina | 2392.04736 | 1836.45789 | 439.075378 |
| 72144 | Slc37a3 | solute carrier family 37 ( | 1003.1554 | 1032.22339 | 445.650085 |
| 16432 | Itm2b | integral membrane protei | 3457.78027 | 3462.44116 | 451.505066 |
| 58809 | Rnase4 | ribonuclease, RNase A fa | 22701.9199 | 29873.4805 | 455.660889 |
| 71898l223672 | Apol9blApol9a | apolipoprotein L 9blapoli | 1390.04028 | 1326.59497 | 456.190002 |
| 74440 | 4933407C03Rik | RIKEN cDNA 4933407( | 937.016724 | 1160.19312 | 459.71814 |
| 20181 | Rxra | retinoid X receptor alpha | 4146.5498 | 4264.89453 | 462.084442 |
| 20334 | Sec23a | SEC23A (S. cerevisiae) | 1686.56897 | 2109.61572 | 463.56665 |
| 226252 | Fam160b1 | family with sequence sim | 960.920654 | 1058.08154 | 465.536926 |
| 66146 | Tmem57 | transmembrane protein 5 | 1644.70337 | 1545.41797 | 469.751953 |
| 74178 | Stk40 | serine/threonine kinase 4 | 1908.77966 | 1519.2146 | 471.321259 |
| 16922 | Phyh | phytanoyl-CoA hydroxyl | 6675.09473 | 9557.85938 | 473.763153 |
| 20411 | Sorbs1 | sorbin and SH3 domain c | 1569.75183 | 2169.90137 | 479.110352 |
| 104174 | Gldc | glycine decarboxylase | 2418.2229 | 3133.31543 | 481.721497 |
| 68477 | Rmnd5a | required for meiotic nucl | 2118.6543 | 2478.64795 | 482.62204 |
| 353156 | Egfl7 | EGF-like domain 7 | 2320.30835 | 3258.48975 | 485.888855 |
| 52588 | Tspan14 | tetraspanin 14 | 1077.76953 | 1421.53247 | 488.615051 |
| 225010 | Lclat1 | lysocardiolipin acyltransf | 1760.85352 | 1651.92639 | 492.493164 |
| 74754 | Dhcr24 | 24-dehydrocholesterol re | 2813.604 | 2466.92676 | 493.173462 |
| 12509 | Cd59a | CD59a antigen | 1962.68518 | 2046.91138 | 494.03949 |
| 207304 | Hectd1 | HECT domain containing | 1364.45874 | 1450.40125 | 497.31781 |
| 52633 | Nit2 | nitrilase family, member | 1316.75854 | 1273.67188 | 500.568207 |
| 102294 | Cyp4v3 | cytochrome P450, family | 11565.3496 | 10629.9453 | 502.433289 |
| 110391 | Qdpr | quinoid dihydropteridine | 2645.88965 | 2795.21362 | 510.984894 |
| 11639 | Ak4 | adenylate kinase 4 | 3206.58496 | 2221.25391 | 511.956055 |
| 235043 | Tmem205 | transmembrane protein 2 | 9080.33789 | 6180.95605 | 516.762573 |
| 80285 | Parp9 | poly (ADP-ribose) polyn | 1517.52551 | 1461.55066 | 516.879272 |
| 66972 | Slc25a23 | solute carrier family 25 ( | 2200.73779 | 2361.70459 | 518.251404 |
| 67302 | Zc3h13 | zinc finger CCCH type c | 1273.75073 | 1539.60339 | 524.697998 |
| 226791 | Lyplal1 | lysophospholipase-like 1 | 1555.45435 | 1771.57324 | 526.070068 |
| 140630 | Ube4a | ubiquitination factor E4A | 1800.95752 | 2065.82324 | 527.337036 |
| 11798 | Xiap | X-linked inhibitor of apo | 1135.32031 | 1267.29285 | 529.616333 |
| 56690 | Mlycd | malonyl-CoA decarboxyl | 9857.61133 | 8986.04492 | 530.040283 |
| 67095 | Trak1 | trafficking protein, kines | 1229.72266 | 1245.64917 | 537.405396 |
| 72278 | Ccpg1 | cell cycle progression 1 | 2585.33203 | 3854.49048 | 540.64917 |
| 74334 | Ranbp10 | RAN binding protein 10 | 3112.35522 | 3875.14111 | 541.288452 |
| 28042 | Ept1 | ethanolaminephosphotran | 1480.08142 | 2066.06665 | 543.061523 |
| 12892 | Cpox | coproporphyrinogen oxid | 3037.68872 | 3733.74854 | 544.154297 |
| 216440 | Os9 | amplified in osteosarcom | 1123.61475 | 1536.58728 | 547.095764 |
| 11981 | Atp9a | ATPase, class II, type 9A | 2263.18555 | 2954.94775 | 556.222473 |
| 272589 | Tbcel | tubulin folding cofactor l | 1677.13196 | 1618.38196 | 557.44342 |
| 69129 | Pex11c | peroxisomal biogenesis f | 2316.60303 | 1893.82056 | 558.623291 |
| 52065 | Mfhas1 | malignant fibrous histioc | 1173.20325 | 1347.04333 | 558.914185 |
| 15490 | Hsd17b7 | hydroxysteroid (17-beta) | 2902.38721 | 3380.33105 | 561.111206 |
| 13804 | Endog | endonuclease G | 2495.96899 | 2973.14697 | 562.187561 |
| 212862 | Chpt1 | choline phosphotransfera | 1976.9541 | 1743.72168 | 562.657532 |
| 270166 | Clpx | caseinolytic peptidase X | 2449.73877 | 2839.34985 | 566.936646 |
| 223267 | A2ld1 | AIG2-like domain 1 | 1260.87439 | 1447.57031 | 577.731262 |
| 57435 | Plin4 | perilipin 4 | 1322.08459 | 1825.4585 | 579.062317 |
| 20425 | Shmt1 | serine hydroxymethyltran | 1648.15381 | 1319.44507 | 584.89917 |
| 110198 | Akr7a5 | aldo-keto reductase fami | 2795.45361 | 2409.31812 | 586.049438 |
| 57279 | Slc25a20 | solute carrier family 25 ( | 3512.26392 | 2852.29883 | 586.422485 |
| 18569 | Pdcd4 | programmed cell death 4 | 2374.61304 | 3289.83447 | 587.631958 |
| 70510 | Rnf167 | ring finger protein 167 | 1331.26978 | 1598.88574 | 589.30481 |
| 109299 | C330006A16Rik | RIKEN cDNA C330006/ | 1398.10071 | 1364.05249 | 596.415222 |
| 67155 | Smarca2 | SWI/SNF related, matrix | 2135.67651 | 2681.53271 | 602.501953 |
| 228607 | Mavs | mitochondrial antiviral si | 1250.10815 | 1284.67969 | 613.087891 |
| 73389 | Hbp1 | high mobility group box | 1706.04663 | 1674.59448 | 637.224243 |
| 66552 | 2010106G01Rik | RIKEN cDNA 2010106( | 1393.62219 | 1290.38965 | 638.159241 |

| | | | | | |
|---|---|---|---|---|---|
| 67636 | Lyrm5 | LYR motif containing 5 | 2325.62793 | 2008.97705 | 645.036377 |
| 69632 | Arhgef12 | Rho guanine nucleotide e | 1470.69666 | 1813.86621 | 645.244995 |
| 664994 | Isoc2a | isochorismatase domain c | 1314.49634 | 1663.15784 | 649.512573 |
| 13528 | Dtnb | dystrobrevin, beta | 1470.79639 | 2109.65137 | 652.151672 |
| 23972 | Papss2 | 3'-phosphoadenosine 5'-p | 2925.69702 | 3667.86377 | 652.465576 |
| 13177 | Eci1 | enoyl-Coenzyme A delta | 4209.4248 | 3310.53296 | 657.848938 |
| 70335 | Reep6 | receptor accessory protei | 18253.3555 | 23482.1035 | 659.603882 |
| 14287 | Fpgs | folylpolyglutamyl synthe | 1350.29919 | 1405.84473 | 660.156067 |
| 14962 | Cfb | complement factor B | 45025.6797 | 53988.0664 | 660.400879 |
| 170459 | Stard4 | StAR-related lipid transfe | 1668.59302 | 1888.33838 | 670.045288 |
| 13850 | Ephx2 | epoxide hydrolase 2, cyto | 44938.4023 | 32613.1523 | 676.026733 |
| 27376 | Slc25a10 | solute carrier family 25 ( | 1633.5 | 2235.73364 | 682.264648 |
| 214627 | Papd5 | PAP associated domain c | 1436.74878 | 1898.28955 | 682.862793 |
| 28199 | Dcaf11 | DDB1 and CUL4 associa | 3826.59399 | 4400.26611 | 693.675537 |
| 16432 | Itm2b | integral membrane protei | 3414.99072 | 4070.75854 | 704.795532 |
| 22117 | Tst | thiosulfate sulfurtransfera | 4891.43848 | 5045.56543 | 705.342773 |
| 100046684l28295 | LOC100046684lD | ES1 protein homolog, mi | 1675.5509 | 1696.14197 | 707.708984 |
| 58887 | Repin1 | replication initiator 1 | 1485.23169 | 1839.61694 | 708.888916 |
| 55951 | Brp44l | brain protein 44-like | 2381.89404 | 3017.31006 | 711.687378 |
| 66273 | 1810020D17Rik | RIKEN cDNA 1810020I | 1451.44067 | 2027.79565 | 712.847534 |
| 224824 | Pex6 | peroxisomal biogenesis f | 4425.0293 | 3731.48364 | 724.396484 |
| 16548 | Khk | ketohexokinase | 7964.07422 | 9458.14258 | 727.793091 |
| 27399 | Ip6k1 | inositol hexaphosphate k | 1519.23804 | 2033.39648 | 732.885559 |
| 14600 | Ghr | growth hormone receptor | 2831.53076 | 2128.18262 | 740.832397 |
| 319263 | Pcmtd1 | protein-L-isoaspartate (D | 3495.29077 | 4259.41553 | 741.187378 |
| 233016 | Blvrb | biliverdin reductase B (fl | 18166.9844 | 18652.8633 | 750.992798 |
| 68024 | Hist1h2bc | histone cluster 1, H2bc | 4577.18555 | 6184.19727 | 758.313538 |
| 66790 | Grtp1 | GH regulated TBC prote | 1776.52441 | 2247.30762 | 766.263672 |
| 66885 | Acadsb | acyl-Coenzyme A dehyd | 1613.97949 | 1880.37793 | 770.851685 |
| 217463 | Snx13 | sorting nexin 13 | 2016.578 | 2498.10449 | 770.950317 |
| 19662 | Rbp4 | retinol binding protein 4, | 4052.13623 | 4596.04199 | 775.792969 |
| 57279 | Slc25a20 | solute carrier family 25 ( | 2884.12305 | 2174.17236 | 780.134521 |
| 21452 | Tcn2 | transcobalamin 2 | 2076.36572 | 2949.91016 | 829.756409 |
| 13202 | Ddt | D-dopachrome tautomera | 6461.34863 | 9691.35938 | 831.563965 |
| 28169 | Agpat3 | 1-acylglycerol-3-phospha | 2274.53931 | 1811.35376 | 858.950745 |
| 68778 | 1110038D17Rik | RIKEN cDNA 1110038I | 2837.04395 | 2995.64941 | 863.58313 |
| 68728 | Trp53inp2 | transformation related pr | 5483.72559 | 5007.16602 | 864.158264 |
| 229003 | BC006779 | cDNA sequence BC0067 | 3722.1145 | 4106.54395 | 866.820312 |
| 235439 | Herc1 | hect (homologous to the | 2974.50464 | 2396.1499 | 871.36731 |
| 108156 | Mthfd1 | methylenetetrahydrofolat | 1788.67371 | 2253.68652 | 875.04657 |
| 239743 | Klhl6 | kelch-like 6 (Drosophila) | 2017.55872 | 2107.46704 | 887.410522 |
| 15529 | Sdc2 | syndecan 2 | 7581.4668 | 8058.92871 | 909.251221 |
| 12040 | Bckdhb | branched chain ketoacid | 8930.25195 | 9978.89844 | 935.683228 |
| 13036 | Ctsh | cathepsin H | 8866.05078 | 9012.18262 | 946.137756 |
| 68180 | Hyi | hydroxypyruvate isomera | 6778.32422 | 5575.72266 | 950.839111 |
| 140740 | Sec63 | SEC63-like (S. cerevisiae | 1959.26331 | 2485.16553 | 961.691284 |
| 15356 | Hmgcl | 3-hydroxy-3-methylgluta | 15003.0498 | 10306.375 | 990.869202 |
| 67836 | Wdr83 | WD repeat domain conta | 2208.08838 | 2291.72827 | 1012.67377 |
| 17117 | Amacr | alpha-methylacyl-CoA ra | 3978.31738 | 4323.92773 | 1018.23792 |
| 214597 | Sidt2 | SID1 transmembrane fan | 2667.50122 | 3423.69189 | 1030.97327 |
| 15199 | Hebp1 | heme binding protein 1 | 11255.5195 | 11303.3809 | 1038.37939 |
| 22661 | Zfp148 | zinc finger protein 148 | 2389.44922 | 2355.3042 | 1047.46509 |
| 69635 | Dapk1 | death associated protein 1 | 2690.98682 | 3279.1123 | 1065.79419 |
| 235674 | Acaa1b | acetyl-Coenzyme A acyl | 34858.2695 | 27056.0859 | 1070.63696 |
| 192197 | Bcas3 | breast carcinoma amplifi | 2291.33838 | 3286.07959 | 1071.76416 |
| 64384 | Sirt3 | sirtuin 3 (silent mating ty | 4301.28125 | 5555.99561 | 1092.6748 |
| 66349 | Atp5sl | ATP5S-like | 2743.17383 | 2896.32495 | 1099.46472 |
| 17158 | Man2a1 | mannosidase 2, alpha 1 | 4257.79688 | 5549.93359 | 1108.86597 |
| 66904 | Pccb | propionyl Coenzyme A c | 4231.21387 | 4521.97559 | 1119.82983 |
| 74159 | Acbd5 | acyl-Coenzyme A bindin | 3109.73804 | 2897.54004 | 1141.71484 |
| 57875 | Angptl4 | angiopoietin-like 4 | 6672.93701 | 9018.84277 | 1146.80737 |

| | | | | | |
|---|---|---|---|---|---|
| 12633 | Cflar | CASP8 and FADD-like a | 2403.80347 | 2565.22559 | 1148.96509 |
| 100727 | Ugt2b34 | UDP glucuronosyltransfe | 3147.63525 | 2789.56323 | 1149.31348 |
| 14854 | Gss | glutathione synthetase | 2348.64819 | 3030.4502 | 1161.53271 |
| 76491 | Abhd14b | abhydrolase domain cont | 2386.82715 | 3081.17749 | 1171.04236 |
| 20656 | Sod2 | superoxide dismutase 2, | 3103.02905 | 3433.86963 | 1199.05688 |
| 93721 | Cpn1 | carboxypeptidase N, poly | 9510.39746 | 13364.0039 | 1296.14783 |
| 11946 | Atp5a1 | ATP synthase, H+ transp | 2899.18066 | 3244.50098 | 1316.07739 |
| 66890 | Lman2 | lectin, mannose-binding 2 | 5884.12695 | 4965.30566 | 1350.60583 |
| 23821 | Bace1 | beta-site APP cleaving e | 3602.74365 | 3296.99561 | 1362.87769 |
| 56876 | Nelf | nasal embryonic LHRH f | 6422.48975 | 7427.90674 | 1381.78369 |
| 74148 | 1300001I01Rik | RIKEN cDNA 1300001I | 5420.05811 | 5479.37451 | 1388.25146 |
| 13601 | Ecm1 | extracellular matrix prote | 3453.5835 | 3353.00708 | 1389.27026 |
| 76408 | Abcc3 | ATP-binding cassette, su | 3795.37256 | 4517.02539 | 1414.30054 |
| 20917 | Suclg2 | succinate-Coenzyme A li | 3281.17383 | 4090.7854 | 1430.92725 |
| 12894 | Cpt1a | carnitine palmitoyltransfe | 7801.28516 | 11602.3525 | 1431.53027 |
| 14085 | Fah | fumarylacetoacetate hydr | 14215.6133 | 20951.0742 | 1482.62292 |
| 68917 | Hint2 | histidine triad nucleotide | 9683.99219 | 8048.03906 | 1486.93652 |
| 19305 | Pex5 | peroxisomal biogenesis f | 3636.47754 | 4491.41797 | 1513.18286 |
| 70361 | Lman1 | lectin, mannose-binding, | 3109.18848 | 3184.71777 | 1531.19141 |
| 19301 | Pxmp2 | peroxisomal membrane p | 9699.36914 | 9583.78711 | 1531.67285 |
| 12780 | Abcc2 | ATP-binding cassette, su | 5650.38184 | 6397.67188 | 1543.98096 |
| 19268 | Ptprf | protein tyrosine phospha | 4319.33691 | 5157.42285 | 1574.38965 |
| 12266 | C3 | complement component | 36598.5117 | 47907.4297 | 1580.3186 |
| 73724 | Mcee | methylmalonyl CoA epir | 3341.00879 | 4976.7749 | 1615.29236 |
| 27981 | D4Wsu53e | DNA segment, Chr 4, W | 6598.14697 | 6974.5293 | 1622.82507 |
| 14860 | Gsta4 | glutathione S-transferase | 3680.95068 | 3772.8374 | 1623.51196 |
| 69574 | Cmbl | carboxymethylenebuteno | 7220.53564 | 6872.44336 | 1643.05371 |
| 50799 | Slc25a13 | solute carrier family 25 ( | 7119.96582 | 7329.59375 | 1643.30518 |
| 29811 | Ndrg2 | N-myc downstream regu | 60692.1133 | 62133.7148 | 1648.67542 |
| 22134 | Tgoln1 | trans-golgi network prote | 3959.64136 | 4312.66553 | 1661.81995 |
| 67452 | Pnpla8 | patatin-like phospholipas | 4809.94727 | 5992.17188 | 1663.30225 |
| 14651 | Hagh | hydroxyacyl glutathione | 4845.43457 | 6972.12402 | 1681.61316 |
| 56752 | Aldh9a1 | aldehyde dehydrogenase | 5813.29395 | 5762.7666 | 1725.39307 |
| 230249 | AI314180 | expressed sequence AI31 | 3637.78613 | 3746.72876 | 1738.98462 |
| 208884 | Zdhhc9 | zinc finger, DHHC doma | 5891.66113 | 6104.1123 | 1761.37085 |
| 15488 | Hsd17b4 | hydroxysteroid (17-beta) | 7184.96387 | 4920.7041 | 1776.00928 |
| 211389 | Suox | sulfite oxidase | 9515.08008 | 10090.0957 | 1807.021 |
| 14645 | Glul | glutamate-ammonia ligas | 10078.7344 | 10861.7148 | 1820.25427 |
| 51798 | Ech1 | enoyl coenzyme A hydra | 10560.3242 | 8522.71973 | 1862.99072 |
| 100502992l20280 | Gm19491lScp2 | predicted gene, 19491lste | 15690.2021 | 11628.293 | 1879.94775 |
| 78920 | Dlst | dihydrolipoamide S-succ | 4094.6167 | 5123.20117 | 1917.72803 |
| 73192 | Xpot | exportin, tRNA (nuclear | 5556.7002 | 6132.7793 | 1928.86621 |
| 217069 | Trim25 | tripartite motif-containin | 5735.76465 | 7958.29248 | 1984.25757 |
| 12460 | Ccs | copper chaperone for sup | 8400.47168 | 11714.0957 | 1990.8125 |
| 72999 | Insig2 | insulin induced gene 2 | 10764.3145 | 12566.1719 | 1992.77795 |
| 11370 | Acadvl | acyl-Coenzyme A dehyd | 12938.7002 | 12432.5039 | 2004.56519 |
| 13849 | Ephx1 | epoxide hydrolase 1, mic | 5250.54102 | 6969.00488 | 2038.62024 |
| 70984 | 4931406C07Rik | RIKEN cDNA 4931406C | 10842.1475 | 9986.63086 | 2120.5144 |
| 18035 | Nfkbia | nuclear factor of kappa li | 6857.57861 | 8629.6416 | 2177.74463 |
| 14828 | Hspa5 | heat shock protein 5 | 5116.59082 | 5764.19824 | 2242.62573 |
| 14473 | Gc | group specific componen | 11648.6348 | 17316.6641 | 2275.8938 |
| 15473 | Hrsp12 | heat-responsive protein 1 | 15376.2822 | 12922.7969 | 2291.1582 |
| 18082 | Nipsnap1 | 4-nitrophenylphosphatase | 9170.51562 | 12629.8691 | 2316.18677 |
| 16010 | Igfbp4 | insulin-like growth factor | 12931.5557 | 16646.7539 | 2332.50439 |
| 11655 | Alas1 | aminolevulinic acid synth | 12460.6748 | 14272.0283 | 2345.18896 |
| 74114 | Crot | carnitine O-octanoyltrans | 21497.1406 | 17274.3828 | 2398.70361 |
| 238055 | Apob | apolipoprotein B | 14862.5879 | 19347.9688 | 2414.20288 |
| 58875 | Hibadh | 3-hydroxyisobutyrate deh | 6479.65723 | 8707.10254 | 2425.95557 |
| 23986 | Eci2 | enoyl-Coenzyme A delta | 9487.41797 | 6908.33008 | 2632.22559 |
| 217615 | Ctage5 | CTAGE family, member | 7087.7041 | 8398.00391 | 2808.09155 |
| 64209 | Herpud1 | homocysteine-inducible, | 14149.3398 | 20928.4258 | 2863.43359 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 53945 | Slc40a1 | solute carrier family 40 ( | 17442.9375 | 18887.2031 | 3087.62012 |
| 113868 | Acaa1a | acetyl-Coenzyme A acyl | 12772.25 | 11770.5879 | 3124.4541 |
| 56615 | Mgst1 | microsomal glutathione S | 12267.1064 | 9509.38672 | 3164.51709 |
| 12896 | Cpt2 | carnitine palmitoyltransfe | 21977.1289 | 14835.3193 | 3208.0686 |
| 57436 | Gabarapl1 | gamma-aminobutyric aci | 10044.8281 | 13311.1221 | 3221.03076 |
| 11430 | Acox1 | acyl-Coenzyme A oxidas | 13612.6582 | 16231.4395 | 3344.74121 |
| 11364 | Acadm | acyl-Coenzyme A dehyd | 20127.1211 | 14720.0156 | 3400.06836 |
| 27973 | Vkorc1 | vitamin K epoxide reduc | 11726.043 | 12399.4668 | 3657.93359 |
| 15473 | Hrsp12 | heat-responsive protein 1 | 28073.873 | 19593.125 | 3958.26123 |
| 67125 | Tspan31 | tetraspanin 31 | 8038.1499 | 8075.72412 | 4000.60156 |
| 19299 | Abcd3 | ATP-binding cassette, su | 28246.4375 | 19228.2051 | 4051.77148 |
| 14600 | Ghr | growth hormone receptor | 14200.9746 | 13495.5322 | 4493.60254 |
| 11534 | Adk | adenosine kinase | 10073.7227 | 14015.4043 | 4955.31055 |
| 110213 | Tmbim6 | transmembrane BAX inh | 11330.9453 | 13882.0752 | 5005.15137 |
| 66092 | Ghitm | growth hormone inducib | 10572.4473 | 12834.0879 | 5272.12988 |
| 71900 | Tmem106b | transmembrane protein 1 | 15437.873 | 16232.6035 | 5340.8335 |
| 76238 | Grhpr | glyoxylate reductase/hyd | 19756.8086 | 19426.6328 | 5724.86133 |
| 56018 | Stard10 | START domain containi | 13550.0566 | 18595.168 | 5937.09766 |
| 103172 | Chchd10 | coiled-coil-helix-coiled-c | 20447.5234 | 22940.8574 | 6042.87305 |
| 101502 | Hsd3b7 | hydroxy-delta-5-steroid d | 30313.2559 | 25661.1055 | 6657.59277 |
| 18242 | Oat | ornithine aminotransferas | 35267.5547 | 29672.2051 | 6711.43799 |
| 57874 | Ptplad1 | protein tyrosine phosphat | 15874.5127 | 20008.6484 | 7067.60205 |
| 14661 | Glud1 | glutamate dehydrogenase | 56500.0977 | 51925.8555 | 7726.37793 |
| 14859 | Gsta3 | glutathione S-transferase | 31050.5449 | 38174.0586 | 8070.07227 |
| 68465 | Adipor2 | adiponectin receptor 2 | 34666.9258 | 35141.5039 | 8213.96094 |
| 57874 | Ptplad1 | protein tyrosine phosphat | 19765.9922 | 19155.998 | 8255.71973 |
| 107503 | Atf5 | activating transcription fa | 30668.832 | 39056.1016 | 8504.11621 |
| 14775 | Gpx1 | glutathione peroxidase 1 | 18224.084 | 19215.7031 | 8647.5918 |
| 52538 | Acaa2 | acetyl-Coenzyme A acyl | 58482.6641 | 60199.0938 | 9620.22461 |
| 15107 | Hadh | hydroxyacyl-Coenzyme A | 25414.0977 | 27484.125 | 11338.5996 |
| 11669 | Aldh2 | aldehyde dehydrogenase | 36541.8281 | 35247.5117 | 11820.4688 |
| 68801 | Elovl5 | ELOVL family member | 35787.543 | 42984.6797 | 12511.3457 |
| 22041 | Trf | transferrin | 31044.0117 | 42361.9453 | 14671.0234 |
| 19662 | Rbp4 | retinol binding protein 4, | 37808.9648 | 45243.7891 | 16254.9609 |
| 20363 | Sepp1 | selenoprotein P, plasma, | 62336.0312 | 65664.625 | 23347.7969 |

Supplementary Table 2: List of genes participate in Glutathion pathway.

| | | | | Normalize Value | | |
|---|---|---|---|---|---|---|
| Group | Entrez Gene | Gene symbol | Description | Normal liver | Gnmt-/- HCC | Ymac-1 |
| Up regulation | 20810 | Srm | spermidine synthase | 804.56665 | 933.604858 | 7861.4609 |
| | 14381 | G6pdx | glucose-6-phosphate dehy | 50 | 193.773895 | 454.02091 |
| | 110208 | Pgd | phosphogluconate dehydr | 117.625122 | 502.523315 | 1638.8667 |
| | 382985 | Rrm2b | ribonucleotide reductase M | 81.3770905 | 208.423309 | 454.21317 |
| | 72692 | Hnrpll | heterogeneous nuclear ribo | 866.386841 | 1288.99316 | 4632.8223 |
| | 14862 | Gstm1 | glutathione S-transferase | 50 | 50 | 135.91821 |
| | 66073 | Txndc12 | thioredoxin domain contai | 1032.11621 | 1142.88831 | 2894.1958 |
| | 20135 | Rrm2 | ribonucleotide reductase M | 50 | 447.213501 | 3187.5278 |
| | 20133 | Rrm1 | ribonucleotide reductase M | 50 | 50 | 714.13257 |
| | 68214 | Gsto2 | glutathione S-transferase o | 50 | 50 | 356.16248 |
| | 14873 | Gsto1 | glutathione S-transferase o | 12182.5176 | 11097.4551 | 36592.375 |
| | 14870 | Gstp1 | glutathione S-transferase | 2667.90039 | 2870.19092 | 8398.4141 |
| | 211666 | Mgst2 | microsomal glutathione S- | 50 | 70.4105072 | 260.69833 |
| Down regulation | 14854 | Gss | glutathione synthetase | 2348.64819 | 3030.4502 | 1161.5327 |
| | 14775 | Gpx1 | glutathione peroxidase 1 | 18224.084 | 19215.7031 | 8647.5918 |
| | 14859 | Gsta3 | glutathione S-transferase | 31050.5449 | 38174.0586 | 8070.0723 |
| | 14860 | Gsta4 | glutathione S-transferase | 3680.95068 | 3772.8374 | 1623.512 |
| | 75475 | Oplah | 5-oxoprolinase (ATP-hydr | 1054.95874 | 1085.93176 | 55.323994 |
| | 76263 | Gstk1 | glutathione S-transferase k | 7946.54053 | 5457.95166 | 50 |
| | 14871 | Gstt1 | glutathione S-transferase | 4609.16553 | 6476.35156 | 85.26767 |
| | 14874 | Gstz1 | glutathione transferase zet | 4110.88281 | 4512.09521 | 141.19638 |
| | 16790 | Anpep | alanyl (membrane) aminop | 163.650818 | 154.291962 | 50 |
| | 56615 | Mgst1 | microsomal glutathione S- | 12267.1064 | 9509.38672 | 3164.5171 |
| | 68312 | Gstm7 | glutathione S-transferase | 296.782104 | 391.981506 | 50 |

**Supplementary Table 3.** G6PD and CD133 expression in Tumor (T) versus tumor-adjacent (TA) tissues from 37 HCC patients and the associations with their clinical characteristics.

| | | G6PD expression (T/TA) | | | CD133 expression (T/TA) | | |
|---|---|---|---|---|---|---|---|
| | | Low | High | *P* value[c] | Low | High | *P* value |
| **Age** | | | | 0.823 | | | 0.098 |
| | < 60 | 7 | 6 | | 5 | 8 | |
| | ≥ 60 | 12 | 12 | | 16 | 8 | |
| **Gender** | | | | 0.248 | | | 0.236 |
| | Female | 8 | 11 | | 9 | 10 | |
| | Male | 11 | 7 | | 12 | 6 | |
| **Cirrhosis** | | | | 0.909 | | | 0.565 |
| | Negative | 13 | 12 | | 15 | 10 | |
| | Positive | 6 | 6 | | 6 | 6 | |
| **Viral infection**[a] | | | | 0.281 | | | 0.983 |
| | NBNC | 6 | 5 | | 6 | 5 | |
| | HBV | 8 | 4 | | 7 | 5 | |
| | HCV | 5 | 9 | | 8 | 6 | |
| **Tumor size (cm)** | | | | 0.419 | | | **0.039** |
| | < 5 | 12 | 9 | | 15 | 6 | |
| | ≥ 5 | 7 | 9 | | 6 | 10 | |
| **AFP (ng/ml)** | | | | 0.254 | | | |
| | < 20 | 12 | 8 | | 12 | 8 | 0.666 |
| | ≥ 20 | 7 | 10 | | 9 | 8 | |
| **TNM**[b] **stage** | | | | **0.033** | | | **0.005** |
| | Early | 13 | 6 | | 15 | 4 | |
| | Late | 6 | 12 | | 6 | 12 | |
| **Tumor type** | | | | 0.092 | | | **0.041** |
| | Solitary | 17 | 12 | | 19 | 10 | |
| | Multiple | 2 | 6 | | 2 | 6 | |
| **PVTT** | | | | 0.072 | | | **0.015** |
| | Negative | 13 | 7 | | 15 | 5 | |
| | Positive | 6 | 11 | | 6 | 11 | |

[a]HBV, HBV sAg (+); HCV, anti-HCV antibody (+); NBNC, HBV sAg (−) and anti-HCV antibodies (−).

[b]Early stage, TNM stage = I; Late stage, beyond TNM stage I (TNM stage = II+IIIA+IIIB+IIIC+IV).

[c]Estimated by $\chi^2$ test.

**Supplementary Table 4.** Characteristics and univariate survival analysis of 37 HCC cases

| | | Case No. | Median OS[c] (years) | *P* value[e] |
|---|---|---|---|---|
| **Age** | | | | 0.44 |
| | < 60 | 13 | 2.858 | |
| | ≥ 60 | 24 | —[d] | |
| **Gender** | | | | 0.246 |
| | Female | 19 | —[d] | |
| | Male | 18 | —[d] | |
| **Cirrhosis** | | | | 0.311 |
| | Negative | 25 | —[d] | |
| | Positive | 12 | 2.858 | |
| **Viral infection**[a] | | | | 0.974 |
| | NBNC | 11 | —[d] | |
| | HBV | 12 | —[d] | |
| | HCV | 14 | —[d] | |
| **Tumor size (cm)** | | | | 0.057 |
| | < 5 | 21 | —[d] | |
| | ≥ 5 | 16 | 2.542 | |
| **AFP (ng/ml)** | | | | 0.649 |
| | < 20 | 20 | —[d] | |
| | ≥ 20 | 17 | —[d] | |
| **TNM**[b] **stage** | | | | **0.014** |
| | Early | 19 | —[d] | |
| | Late | 18 | 2.542 | |
| **Tumor type** | | | | **0.003** |
| | Solitary | 29 | —[d] | |
| | Multiple | 8 | 1.194 | |
| **PVTT** | | | | **0.007** |
| | Negative | 20 | —[d] | |
| | Positive | 17 | 2.514 | |

| | | | | |
|---|---|---|---|---|
| **G6PD expression** | | | | **0.003** |
| | Low | 19 | —[d] | |
| | High | 18 | 1.617 | |
| **CD133 expression** | | | | **<0.0001** |
| | Low | 21 | —[d] | |
| | High | 16 | 1.617 | |

[a]HBV, HBV sAg (+); HCV, anti-HCV antibody (+); NBNC, HBV sAg (−) and anti-HCV antibodies (−).

[b]Early stage, TNM stage = I; Late stage, beyond TNM stage I (TNM stage = II+IIIA+IIIB+IIIC+IV).

[c]OS, overall survival.

[d]Median survival was not reached.

[e]Estimated by log-rank test.

**Supplementary Table 5.** The comparison of gene expression profile in SH-J1 and Ymac-1.

| Official symbol | | Full name | Expression in SH-J1 | Expression in Ymac-1[a] | References |
|---|---|---|---|---|---|
| Human | Mouse | | | | |
| EPCAM | Epcam | Epithelial cell adhesion molecule | Non-detectable | Ymac-1 << HCC[b] | [4] |
| SRF | Srf | Serum response factor | Ddetectable | Ymac-1 ≈ HCC | [5, 6] |
| DDR1 | Ddr1 | Discoidin domain receptor tyrosine kinase 1 | Non-detectable | Ymac-1 >> HCC | [7] |
| SIRT1 | Sirt1 | Sirtuin 1 | Ddetectable | Ymac-1 ≈ HCC | [8] |
| PPARG | Pparg | Peroxisome proliferator activated receptor gamma | Ddetectable | Ymac-1 ≈ HCC | [9] |
| HMGB2 | Hmgb2 | High mobility group box 2 | Ddetectable | Ymac-1 >> HCC | [10] |
| NME2 | Nme2 | NME/NM23 nucleoside diphosphate kinase 2 (NM23-H2) | Ddetectable | Ymac-1 > HCC | [11] |
| MOK | Mok | MOK protein kinase (RAGE) | Ddetectable | Ymac-1 >> HCC | [12] |
| LCN2 | Lcn2 | Lipocalin 2 | Non-detectable | Ymac-1 << HCC | [13] |
| PTTG1 | Pttg1 | Pituitary tumor-transforming 1 | Ddetectable | Ymac-1 ≈ HCC | [14] |
| EPHA2 | Epha2 | EPH receptor A2 | Ddetectable | Ymac-1 >> HCC | [15] |
| DUSP1 | Dusp1 | Dual specificity phosphatase 1 | Non-detectable | Ymac-1 ≈ HCC | [16] |
| VRK1 | Vrk1 | Vaccinia related kinase 1 | Ddetectable | Ymac-1 >> HCC | [17] |
| RPL36A | Mrpl44 | Ribosomal protein L36a | Ddetectable | Ymac-1 > HCC | [18] |

aThe expression in Ymac-1 is showed as comparison of Ymac-1 and Gnmt KO HCC tissue (HCC).

b">>" or "<<" represent a difference in expression is >3-folds; ">" or "<" represent a difference in expression is >1.5-folds but <3-folds; "≈" represent a different in expression is <1.5-folds.

## Supplementary References


1. Yen, C.H., et al., *Functional characterization of glycine N-methyltransferase and its interactive protein DEPDC6/DEPTOR in hepatocellular carcinoma.* Molecular Medicine, 2012. **18**(1): p. 286-296.
2. Liu, H.H., et al., *Characterization of reduced expression of glycine N-methyltransferase in cancerous hepatic tissues using two newly developed monoclonal antibodies.* Journal of Biomedical Science, 2003. **10**(1): p. 87-97.
3. Huang da, W., B.T. Sherman, and R.A. Lempicki, *Systematic and integrative analysis of large gene lists using DAVID bioinformatics resources.* Nat Protoc, 2009. **4**(1): p. 44-57.
4. Bae, J.S., et al., *Expression and role of epithelial cell adhesion molecule in dysplastic nodule and hepatocellular carcinoma.* Int J Oncol, 2012. **41**(6): p. 2150-8.
5. Kwon, C.Y., et al., *The role of serum response factor in hepatocellular carcinoma: implications for disease progression.* Int J Oncol, 2010. **37**(4): p. 837-44.
6. Bae, J.S., et al., *Serum response factor induces epithelial to mesenchymal transition with resistance to sorafenib in hepatocellular carcinoma.* Int J Oncol, 2014. **44**(1): p. 129-36.
7. Park, H.S., et al., *Overexpression of discoidin domain receptor 1 increases the migration and invasion of hepatocellular carcinoma cells in association with matrix metalloproteinase.* Oncol Rep, 2007. **18**(6): p. 1435-41.
8. Choi, H.N., et al., *Expression and role of SIRT1 in hepatocellular carcinoma.* Oncol Rep, 2011. **26**(2): p. 503-10.
9. Kim, K.R., et al., *A peroxisome proliferator-activated receptor gamma antagonist induces vimentin cleavage and inhibits invasion in high-grade hepatocellular carcinoma.* Oncol Rep, 2007. **18**(4): p. 825-32.
10. Kwon, J.H., et al., *Overexpression of high-mobility group box 2 is associated with tumor aggressiveness and prognosis of hepatocellular carcinoma.* Clin Cancer Res, 2010. **16**(22): p. 5511-21.
11. Lee, M.J., et al., *Pro-oncogenic potential of NM23-H2 in hepatocellular carcinoma.* Exp Mol Med, 2012. **44**(3): p. 214-24.
12. Cha, H.J., et al., *Overexpression of renal tumor antigen is associated with tumor invasion and poor prognosis of hepatocellular carcinoma.* Ann Surg Oncol, 2012. **19 Suppl 3**: p. S404-11.
13. Wang, Y.P., et al., *Lipocalin-2 negatively modulates the*

*epithelial-to-mesenchymal transition in hepatocellular carcinoma through the epidermal growth factor (TGF-beta1)/Lcn2/Twist1 pathway.* Hepatology, 2013. **58**(4): p. 1349-61.

14. Cho-Rok, J., et al., *Adenovirus-mediated transfer of siRNA against PTTG1 inhibits liver cancer cell growth in vitro and in vivo.* Hepatology, 2006. **43**(5): p. 1042-52.
15. Cui, X.D., et al., *EFNA1 ligand and its receptor EphA2: potential biomarkers for hepatocellular carcinoma.* Int J Cancer, 2010. **126**(4): p. 940-9.
16. Hao, P.P., et al., *Disruption of a regulatory loop between DUSP1 and p53 contributes to hepatocellular carcinoma development and progression.* J Hepatol, 2015. **62**(6): p. 1278-86.
17. Lee, N., et al., *Vaccinia-related kinase 1 promotes hepatocellular carcinoma by controlling the levels of cell cycle regulators associated with G1/S transition.* Oncotarget, 2015. **6**(30): p. 30130-48.
18. Kim, J.H., et al., *Over-expression of the ribosomal protein L36a gene is associated with cellular proliferation in hepatocellular carcinoma.* Hepatology, 2004. **39**(1): p. 129-38.