

BXD reproducibility with mm10: visualization

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Plan

The goal is to reproduce and assess key steps from Diessler, S. et al. A systems genetics resource and analysis of sleep regulation in the mouse. PLOS Biology 16, e2005750 (2018) using mm10 instead of mm10

- lower-level steps:
 - eQTL detection with fastQTL (check Fig2c)
 - differential gene expression (check Fig4c) with R script: limma_RNA.R
 - phQTL detection with R/ql (4 examples)
 - mQTL detection with R/ql (2 examples)
- higher-layer:
 - gene prioritization for the 4 examples
 - 1) *Wrn* for delta1-power gain in NREM sleep
 - 2) *Kif16b* for delta2-power gain in NREM sleep
 - 3) *Cyp4a32* for theta frequency in REM sleep
 - 4) *Acott11* for compensation for NREM sleep time lost
 - hiveplots visualization

Analysis

eQTL detection

Software

The eQTL detection was performed with fastQTL version 2.184 using default parameters, except for:

- used the beta distribution approximation estimated from 1000 permutations to calculate adjusted p-values (`-permute 1000`, no default)
- tests association for a molecular phenotype only for variants that are 2 Mb above or below the transcription start site of the gene coding for the phenotype (`-window 2e6`, default is `1e6`)
- chose to use seed one to help reproducibility of permutations (`-seed 1`, no default)
- *Ndufa12* had to be removed to avoid an error in FastQTL during beta parameter estimation for Cortex.SD. Same with *Mettl25* for LNSD and LSD. The reason of this error is not completely understood. The fastQTL was run separately for them on not log CPM data, and the output was added before the qvalues calculation.

Visualization

Trying to reproduce the venn diagram (Figure 2c) with the newly calculated data.

```
#loading needed library
##install.packages("VennDiagram")
library(VennDiagram)
```

```
## Loading required package: grid
```

```
## Loading required package: futile.logger
```

```
# load files with qvalues of genes for cis-eQTL expression
ceLNSD<-read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/IntermediateLayer
ceLSD<-read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/IntermediateLayer
ceCNSD<-read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/IntermediateLayer
ceCSD<-read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/IntermediateLayer
```

Check which genes have a q-value at 0.05 or below, and if they are also significant in liver/cortex for sd/nsd.

```
# save the names of the rows (gene names)
ceLNSDn<-rownames(ceLNSD)
ceLSDn<-rownames(ceLSD)
ceCNSDn<-rownames(ceCNSD)
ceCSDn<-rownames(ceCSD)

# selects gene names that are at 0.05 or below
ceLNSDnp<-rownames(ceLNSD)[ceLNSD$adjustedpvalue<=0.05]
ceLSDnp<-rownames(ceLSD)[ceLSD$adjustedpvalue<=0.05]
ceCNSDnp<-rownames(ceCNSD)[ceCNSD$adjustedpvalue<=0.05]
ceCSDnp<-rownames(ceCSD)[ceCSD$adjustedpvalue<=0.05]
```

```
# check how many genes are at 0.05 or below
length(ceLNSDnp)
```

```
## [1] 3092
```

```
length(ceLSDnp)
```

```
## [1] 2695
```

```
length(ceCNSDnp)
```

```
## [1] 4192
```

```
length(ceCSDnp)
```

```
## [1] 4542
```

```
# create a function that check is the gene is significant also in the other condition (sd or nsd)??
OnInOtherNotsignif<-function(d1,d1p,d2,d2p,d3,d3p,d4,d4p){
  nn<-d1[d1 %in% d1p & (d1 %in% d2 & ! d1 %in% d2p) & (d1 %in% d3 & ! d1 %in% d3p) & (d1 %in% d4 & ! d1
  return(nn)
}
```

```
# create a function that check is the gene is significant also in the other tissue (liver or cortex)??
OnInOtherNotsignif_OppositeTissu<-function(d1,d1p,d2,d2p){
  nn<-d1[d1 %in% d1p & (d1 %in% d2 & ! d1 %in% d2p)]
  return(nn)
}
```

```
#### divide by the number of uniquely significant genes per tissue and condition
length(OnInOtherNotsignif(ceCSDn,ceCSDnp,ceCNSDn,ceCNSDnp,ceLSDn,ceLSDnp,ceLNSDn,ceLNSDnp))/872
```

```
## [1] 0.7029817
```

```
length(OnInOtherNotsignif(ceCNSDn,ceCNSDnp,ceCSDn,ceCSDnp,ceLSDn,ceLSDnp,ceLNSDn,ceLNSDnp))/727
```

```
## [1] 0.5969739
```

```
length(OnInOtherNotsignif(ceLSDn,ceLSDnp,ceCSDn,ceCSDnp,ceCNSDn,ceCNSDnp,ceLNSDn,ceLNSDnp))/314
```

```
## [1] 0.8694268
```

```
length(OnInOtherNotsignif(ceLNSDn,ceLNSDnp,ceCSDn,ceCSDnp,ceCNSDn,ceCNSDnp,ceLSDn,ceLSDnp))/553
```

```
## [1] 0.8535262
```

Filtering

```
ceLNSD<-rownames(ceLNSD)[ceLNSD$adjustedpvalue<=0.05]  
ceLSD<-rownames(ceLSD)[ceLSD$adjustedpvalue<=0.05]  
ceCNSD<-rownames(ceCNSD)[ceCNSD$adjustedpvalue<=0.05]  
ceCSD<-rownames(ceCSD)[ceCSD$adjustedpvalue<=0.05]
```

Venn Diagram

```
# prepare parameters for the Venn diagram
```

```
# areas
```

```
a1<-length(ceCNSD)  
a2<-length(ceLNSD)  
a3<-length(ceCSD)  
a4<-length(ceLSD)
```

```
# Intersections
```

```
n12=length(ceCNSD[ceCNSD %in% ceLNSD])  
n13=length(ceCNSD[ceCNSD %in% ceCSD])  
n14=length(ceCNSD[ceCNSD %in% ceLSD])
```

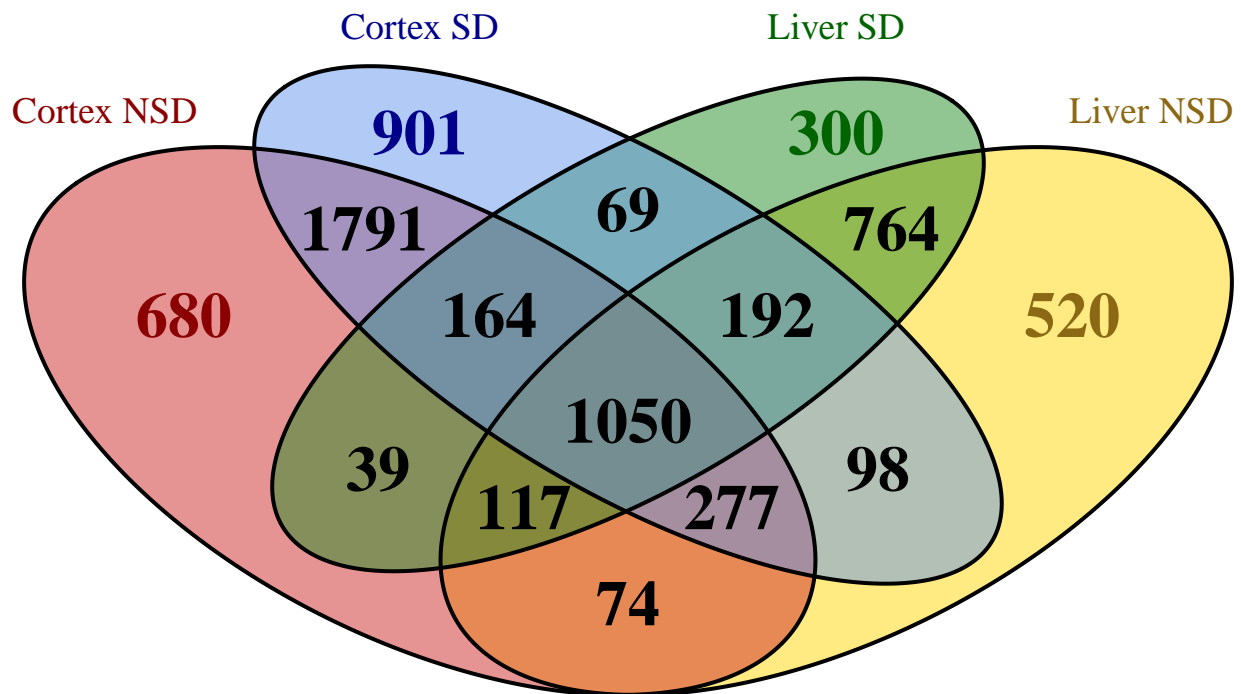
```
n23=length(ceLNSD[ceLNSD %in% ceCSD])  
n24=length(ceLNSD[ceLNSD %in% ceLSD])  
n34=length(ceCSD[ceCSD %in% ceLSD])
```

```
n123=length(ceCNSD[ceCNSD %in% ceLNSD & ceCNSD %in% ceCSD])  
n124=length(ceCNSD[ceCNSD %in% ceLNSD & ceCNSD %in% ceLSD])  
n134=length(ceCNSD[ceCNSD %in% ceCSD & ceCNSD %in% ceLSD])  
n234=length(ceLNSD[ceLNSD %in% ceCSD & ceLNSD %in% ceLSD])
```

```
n1234=length(ceCNSD[ceCNSD %in% ceCSD & ceCNSD %in% ceLNSD & ceCNSD %in% ceLSD])
```

```
# plot the Venn diagram
```

```
v<-draw.quad.venn(area1=a1,area2=a2,area3=a3,area4=a4,  
  n12=n12,n13=n13,n14=n14,n23=n23,n24=n24,n34=n34,  
  n123=n123,n124=n124,n134=n134,n234=n234,  
  n1234=n1234,  
  c("Cortex NSD","Liver NSD","Cortex SD","Liver SD"),  
  fill = c("firebrick3", "gold", "cornflowerblue", "forestgreen"),  
  col = "black", alpha=0.50,  
  label.col = c("darkblue", "black", "darkgreen", "black", "black", "black", "black", "black", "black"),  
  cex=2, fontfamily = "serif", fontface = "bold",  
  cat.col = c("darkred", "goldenrod4", "darkblue", "darkgreen"),  
  cat.cex=1.2, font=2)
```



Explore which genes are different between the published and the reproduced results

```
# original data (=published)
# load files with qvalues of genes for cis-eQTL expression
ceLNSD_published <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/Analysis/Results/R
ceLSD_published <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/Analysis/Results/Rej
ceCNSD_published <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/Analysis/Results/R
ceCSD_published <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/Analysis/Results/Rej

# selects gene names that are at 0.05 or below
ceLNSDnp_published <- rownames(ceLNSD_published)[ceLNSD_published$adjustedpvalue<=0.05]
ceLSDnp_published <- rownames(ceLSD_published)[ceLSD_published$adjustedpvalue<=0.05]
ceCNSDnp_published <- rownames(ceCNSD_published)[ceCNSD_published$adjustedpvalue<=0.05]
ceCSDnp_published <- rownames(ceCSD_published)[ceCSD_published$adjustedpvalue<=0.05]

# newly generated data (=reproduced)
# load files with qvalues of genes for cis-eQTL expression
ceLNSD_reproduced <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/Inte
ceLSD_reproduced <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/Inte
ceCNSD_reproduced <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/Inte
ceCSD_reproduced <- read.table("//nas.unil.ch/CIG/GROUPS/FRANKEN/common/PROJECTS/BXD/BXD_mm10/Data/Inte

# selects gene names that are at 0.05 or below
ceLNSDnp_reproduced <- rownames(ceLNSD_reproduced)[ceLNSD_reproduced$adjustedpvalue<=0.05]
ceLSDnp_reproduced <- rownames(ceLSD_reproduced)[ceLSD_reproduced$adjustedpvalue<=0.05]
ceCNSDnp_reproduced <- rownames(ceCNSD_reproduced)[ceCNSD_reproduced$adjustedpvalue<=0.05]
```

```
ceCSDnp_reproduced <- rownames(ceCSD_reproduced)[ceCSD_reproduced$adjustedpvalue<=0.05]
```

```
# find the differences
```

```
# for each category (condition and tissue) individually
```

```
for(tissue in c("L","C")){
```

```
  for(condition in c("SD","NSD")){
```

```
    print(c(tissue,condition))
```

```
    print(setdiff(eval(parse(text=paste("ce", tissue, condition, "np_published", sep=""))), eval(parse(
```

```
    print(setdiff(eval(parse(text=paste("ce", tissue, condition, "np_reproduced", sep=""))), eval(parse(
```

```
  }
```

```
}
```

```
## [1] "L" "SD"
```

```
## [1] "Sntg1" "Rrs1" "2610203C22Rik" "3110035E14Rik"
```

```
## [5] "1700034P13Rik" "Snhg6" "Ppp1r42" "Efhc1"
```

```
## [9] "Hs6st1" "Sema4c" "Txndc9" "Col3a1"
```

```
## [13] "Gm20257" "Map2" "Vil1" "Stk36"
```

```
## [17] "Ap1s3" "Col4a3" "Ncl" "Inpp5d"
```

```
## [21] "Ugt1a2" "Asb1" "Mterfd2" "Gm9994"
```

```
## [25] "Ralb" "Kiss1" "Zc3h11a" "Nmnat2"
```

```
## [29] "Rgs8" "Rnasel" "Gas5" "Dnm3"
```

```
## [33] "Gm16548" "1700009P17Rik" "Mpz" "Adamts4"
```

```
## [37] "Slamf7" "Igsf9" "Slamf8" "Darc"
```

```
## [41] "Aim2" "Spta1" "Grem2" "Rgs7"
```

```
## [45] "Traf5" "Gm10516" "Nudt5" "Gm13375"
```

```
## [49] "Pnp1a7" "Gpsm1" "Snhg7" "Surf6"
```

```
## [53] "D330023K18Rik" "Ncs1" "Exosc2" "Crb2"
```

```
## [57] "Rnd3" "Klhl141" "Ccadc173" "Chn1os3"
```

```
## [61] "Frzb" "Gm13710" "P2rx3" "Ptpmt1"
```

```
## [65] "Ckap5" "Gm10804" "2810002D19Rik" "Abtb2"
```

```
## [69] "A930018P22Rik" "Prrg4" "0610012H03Rik" "Mpped2"
```

```
## [73] "Il7" "Hey1" "Fabp12" "Gm5150"
```

```
## [77] "Gpr160" "Lxn" "Fhdc1" "Tmem154"
```

```
## [81] "Mab2112" "Lrrc71" "Pbxip1" "Atp8b2"
```

```
## [85] "Them5" "Tdrkh" "Selenbp1" "Tmod4"
```

```
## [89] "Gdap2" "A930005H10Rik" "Frrs1" "1700061I17Rik"
```

```
## [93] "4833424015Rik" "Egf" "4930579F01Rik" "0610031016Rik"
```

```
## [97] "Adh7" "Clca1" "Clca2" "Sdr16c5"
```

```
## [101] "Chd7" "4930412C18Rik" "Gdf6" "1110037F02Rik"
```

```
## [105] "Tmem67" "Runx1t1" "4930480G23Rik" "4933421010Rik"
```

```
## [109] "Orc3" "Cntfr" "Ccl19" "Car9"
```

```
## [113] "1300002K09Rik" "5830415F09Rik" "Rad23b" "Mup7"
```

```
## [117] "Mup2" "Pole3" "Tnfsf15" "Tnc"
```

```
## [121] "Kank4" "Efcab7" "Leprot" "Prpf38a"
```

```
## [125] "Btf314" "Cyp4a31" "A630072M18Rik" "Armc10"
```

```
## [129] "6030443J06Rik" "AI506816" "Slbp" "Haus3"
```

```
## [133] "Mxd4" "Sorcs2" "Pacrgl" "Tlr1"
```

```
## [137] "Afp" "Ppbp" "Cxc12" "Gm1045"
```

```
## [141] "Tmem150c" "2310034005Rik" "Fam175a" "D930016D06Rik"
```

```
## [145] "Abcg3" "Gngt1" "Gm16039" "Mkln1"
```

```
## [149] "Agbl3" "Gpnmb" "Fam221a" "Dfna5"
```

```
## [153] "Tax1bp1" "Rnf103" "Gm11128" "Cml5"
```

```
## [157] "2610306M01Rik" "Vmn1r53" "0610040F04Rik" "Bhlhe40"
```

```
## [161] "Fancd2" "8430408G22Rik" "Clec4d" "Cira"
```

## [165]	"C1s"	"Gm5077"	"9330102E08Rik"	"Foxm1"
## [169]	"Klrb1c"	"BC064078"	"Klrd1"	"Klrc1"
## [173]	"Klra3"	"2700089E24Rik"	"Bcl2l14"	"8430419L09Rik"
## [177]	"Ptpro"	"Bhlhe41"	"Fgfr1op2"	"Rps4l"
## [181]	"Nlrp12"	"Cacng7"	"Pira6"	"Lilra6"
## [185]	"Shisa7"	"Zfp128"	"2310014L17Rik"	"Pglyrp1"
## [189]	"Qpct1"	"Zfp296"	"Igsf23"	"Zfp850"
## [193]	"Zfp940"	"Zfp14"	"BC053749"	"Psenen"
## [197]	"Gapdhs"	"Sbsn"	"Hamp"	"Lgi4"
## [201]	"Fxyd3"	"Gpi1"	"Cep89"	"Vmn2r57"
## [205]	"Zfp719"	"Klk1"	"1700028J19Rik"	"1700008003Rik"
## [209]	"Napsa"	"Gm15545"	"0610005C13Rik"	"D7Erttd715e"
## [213]	"E030018B13Rik"	"Fan1"	"Apba2"	"Fam189a1"
## [217]	"Tm2d3"	"1810008I18Rik"	"Adamts17"	"Kbtbd11"
## [221]	"Mcp1"	"Nek5"	"1810012K16Rik"	"Rnf170"
## [225]	"Nrg1"	"Tmem66"	"Gm16793"	"Pdgr1"
## [229]	"Mtus1"	"Pcm1"	"Gm10033"	"Pbx4"
## [233]	"Slc25a42"	"Tmem221"	"Fam129c"	"Glt25d1"
## [237]	"Unc13a"	"Fcho1"	"Zfp617"	"Cyp4f18"
## [241]	"1700030K09Rik"	"Prmt10"	"Frem3"	"Inpp4b"
## [245]	"Elmod2"	"Scoc"	"Podnl1"	"Dand5"
## [249]	"Klf1"	"LOC100503676"	"BC056474"	"Neto2"
## [253]	"Ces1a"	"Gpr56"	"Csnk2a2"	"4931428F04Rik"
## [257]	"Ddx28"	"Vps4a"	"Tmed6"	"3010033K07Rik"
## [261]	"Chst4"	"Cdh13"	"Map1lc3b"	"Agt"
## [265]	"D630033011Rik"	"Usp2"	"Mpz12"	"Nxpe4"
## [269]	"Zbtb16"	"Slc35f2"	"Gldn"	"Fbxo22"
## [273]	"Peak1"	"Lingo1"	"Cilp"	"Slc51b"
## [277]	"Mns1"	"4930509E16Rik"	"Arpp19"	"Myo5a"
## [281]	"Gnb5"	"C920006011Rik"	"Gm3776"	"Gm10639"
## [285]	"Hmgn3"	"Tpbg"	"Cyb5r4"	"9430037G07Rik"
## [289]	"9330159M07Rik"	"Plscr4"	"Spsb4"	"Clcn18"
## [293]	"Il20rb"	"Twf2"	"Tmpe"	"Dync1li1"
## [297]	"Myd88"	"Ulk4"	"Lonrf3"	"Rnf113a1"
## [301]	"Mbnl3"	"Xlr4a"	"Fam3a"	"Mpp1"
## [305]	"5430427019Rik"	"Taf9b"	"Srp2"	"Tmem35"
## [309]	"Gprasp1"	"Tmsb15b1"	"Rnf128"	"A630066F11Rik"
## [313]	"Adgb"	"Phactr2"	"Gpr126"	"Abracl"
## [317]	"Ifngr1"	"Rtnk2"	"Mum1"	"Dot1l"
## [321]	"Thop1"	"Zfp781"	"Btg1"	"Pawr"
## [325]	"Bbs10"	"4933440J02Rik"	"Wif1"	"Ppm1h"
## [329]	"Slc16a7"	"Kif5a"	"Rdh1"	"Dnajc14"
## [333]	"Sfi1"	"Rnf215"	"Tbc1d10a"	"Rhbdd3"
## [337]	"Rps15a-ps6"	"5730522E02Rik"	"Thg1l"	"Ccgc69"
## [341]	"2610507I01Rik"	"B9d1"	"Ttc19"	"Ccgc42"
## [345]	"Eif4a1"	"G630025P09Rik"	"Eif5a"	"Clec10a"
## [349]	"Tm4sf5"	"Camta2"	"6330403K07Rik"	"Nlrp1a"
## [353]	"Wscd1"	"Smtnl2"	"Spns3"	"P2rx1"
## [357]	"1200014J11Rik"	"Pafah1b1"	"Sgsm2"	"Smg6"
## [361]	"Dph1"	"Myo1c"	"Cpd"	"Slc6a4"
## [365]	"Ccgc55"	"Myo18a"	"Greb1"	"5730507C01Rik"
## [369]	"1700030C10Rik"	"Tpo"	"4921506M07Rik"	"4930404H11Rik"
## [373]	"2310015A10Rik"	"Gm20337"	"Med6"	"Entpd5"
## [377]	"Dlst"	"Esrrb"	"Cep128"	"Ttc7b"

## [381]	"D130020L05Rik"	"Serpina1a"	"Serpina3j"	"Serpina3k"
## [385]	"Hhip11"	"Ev1"	"Meg3"	"Dio3os"
## [389]	"Dio3"	"Snora28"	"2810029C07Rik"	"5033406009Rik"
## [393]	"D430020J02Rik"	"Ptprn2"	"Dnah11"	"Arid4b"
## [397]	"Mrpl32"	"Psm2"	"5033411D12Rik"	"Aoah"
## [401]	"Serpina6a"	"Pxd1"	"Ranbp9"	"Cks2"
## [405]	"1810034E14Rik"	"Hiat11"	"Gm10767"	"F630042J09Rik"
## [409]	"Zfp429"	"Zfp87"	"4930525G20Rik"	"Adcy2"
## [413]	"El12"	"Mctp1"	"Ssbp2"	"4833422C13Rik"
## [417]	"Zcchc9"	"Rasgrf2"	"Mtx3"	"F2r11"
## [421]	"Oc1n"	"Smim15"	"Plk2"	"Dhx29"
## [425]	"3110070M22Rik"	"Vcl1"	"Anxa8"	"Syt15"
## [429]	"Gm3219"	"Sncg"	"Grid1"	"Rubie"
## [433]	"3632451006Rik"	"Ccnb1ip1"	"Klhl133"	"Pnp"
## [437]	"Ear11"	"Hnrnp1"	"Tox4"	"Slc7a7"
## [441]	"Gm5801"	"Gzmb"	"N6amt2"	"Phf11a"
## [445]	"Gata4"	"Cysl1r2"	"Nudt15"	"Lrrc63"
## [449]	"Pcdh9"	"Bora"	"Klf5"	"Gm17066"
## [453]	"A630020A06"	"Cdh18"	"0610007N19Rik"	"Eif3e"
## [457]	"Nudcd1"	"Pkhd111"	"Ext1"	"Col14a1"
## [461]	"Apol11b"	"1700088E04Rik"	"Pla2g6"	"Cby1"
## [465]	"Pmm1"	"Gm20324"	"Nfam1"	"Cyb5r3"
## [469]	"1700001L05Rik"	"Pnp1a5"	"Arhgap8"	"Smc1b"
## [473]	"Ppara"	"Fam19a5"	"Odf3b"	"Slc11a2"
## [477]	"Esp11"	"Prr13"	"Pam16"	"Dnaja3"
## [481]	"Socs1"	"Rmi2"	"Gspt1"	"Ntan1"
## [485]	"2900011008Rik"	"Klhl124"	"Senp5"	"Ptplb"
## [489]	"Eaf2"	"Stxbp51"	"Gtf2e1"	"Popdc2"
## [493]	"Ccdc80"	"Dcbld2"	"Nrip1"	"E330011021Rik"
## [497]	"D16Ert472e"	"N6amt1"	"Eva1c"	"1810053B23Rik"
## [501]	"Ripk4"	"A630089N07Rik"	"Rnaset2b"	"Mpc1"
## [505]	"Prr18"	"4732491K20Rik"	"Airn"	"Mrpl18"
## [509]	"1600012H06Rik"	"9030025P20Rik"	"Riok2"	"Zfp677"
## [513]	"Pkmyt1"	"Paqr4"	"9530082P21Rik"	"Flywch2"
## [517]	"Ntn3"	"Dnase112"	"Zfp598"	"Spsb3"
## [521]	"BC003965"	"Tsr3"	"Pi16"	"Pim1"
## [525]	"Hsf2bp"	"Zfp414"	"AA388235"	"Rxbp"
## [529]	"H2-0a"	"Pbx2"	"C4a"	"Dxo"
## [533]	"Vwa7"	"Msh5"	"Ltb"	"Ddx39b"
## [537]	"Gm8801"	"A930015D03Rik"	"C920025E04Rik"	"Gm7030"
## [541]	"H2-T3"	"Gpr110"	"Ppp2r5d"	"Tbcc"
## [545]	"Unc5c1"	"Gm17830"	"Sgol1"	"Pot1b"
## [549]	"My112a"	"Myom1"	"Trmt61b"	"Ttc27"
## [553]	"1110001A16Rik"	"Prkd3"	"Cox7a21"	"Thada"
## [557]	"1110020A21Rik"	"1010001N08Rik"	"Lama3"	"Cabyr"
## [561]	"Osbpl1a"	"Dsc2"	"Dsg1c"	"Mep1b"
## [565]	"Myo7b"	"Reep5"	"Hbegf"	"Tmco6"
## [569]	"Dnd1"	"Pcdhga4"	"Pcdhgb4"	"Pcdhgb6"
## [573]	"Pcdh1"	"Nr3c1"	"Trim36"	"Ccdc112"
## [577]	"Ticam2"	"Mapk4"	"Neto1"	"Ighmbp2"
## [581]	"Clcf1"	"A930001C03Rik"	"B3gnt1"	"Sipa1"
## [585]	"Malat1"	"Snhg1"	"Fen1"	"2410127L17Rik"
## [589]	"E030003E18Rik"	"Fam122a"	"2610016A17Rik"	"Dmrt2"
## [593]	"2700046G09Rik"	"Cyp26a1"	"Ffar4"	"Ankrd2"

## [597]	"Morn4"	"Loxl4"	"Cnm1"	"BC037704"
## [601]	"Gm10768"	"Cwf1911"	"Bloc1s2"	"Btrc"
## [605]	"Psd"	"2010012005Rik"	"Neurl1a"	"Col17a1"
## [609]	"Gsto2"	"Sfxn4"	"Slfn10-ps"	"AA465934"
## [613]	"Acaca"	"D630032N06Rik"	"Rnft1"	"Tubd1"
## [617]	"C030037D09Rik"	"Gm15698"	"Cwc25"	"Stac2"
## [621]	"Cdk12"	"Ormdl3"	"Casc3"	"Tubg2"
## [625]	"Cntd1"	"Meox1"	"Tmem101"	"BC030867"
## [629]	"Eftud2"	"Gfap"	"Plcd3"	"Hexim2"
## [633]	"C130046K22Rik"	"1700052K11Rik"	"4933422H20Rik"	"Armc7"
## [637]	"2310067B10Rik"	"Foxj1"	"2810008D09Rik"	"Ccdc40"
## [641]	"Fsip1"	"5430417L22Rik"	"Rad51"	"Ltk"
## [645]	"Tyro3"	"Ell3"	"Mfap1b"	"Gm14085"
## [649]	"Usp50"	"Kcnp3"	"Mal"	"Gm14005"
## [653]	"Fbln7"	"A730036I17Rik"	"Hspa12b"	"Ism1"
## [657]	"Tasp1"	"BC039771"	"Entpd6"	"Rem1"
## [661]	"Mapre1"	"Necab3"	"Spag4"	"Cnbd2"
## [665]	"4930405A21Rik"	"5430405H02Rik"	"9430008C03Rik"	"Fam83d"
## [669]	"Ptprt"	"Slc2a10"	"Spata2"	"Sall4"
## [673]	"Gm14322"	"4921531C22Rik"	"Gm16157"	"Ap3s2"
## [677]	"Blm"	"Slc28a1"	"2900076A07Rik"	"Fam154b"
## [681]	"Folh1"	"2310010J17Rik"	"Fam181b"	"Tenm4"
## [685]	"Nars2"	"Rsfl"	"Tsku"	"Gm4980"
## [689]	"Lipt2"	"Xndr"	"Trim6"	"Arfip2"
## [693]	"Gm4759"	"Olfr701"	"Rnf141"	"Rassf10"
## [697]	"Eri2"	"Fus"	"Tgfb1i1"	"Adam12"
## [701]	"Myo18b"	"Gm13826"	"Cit"	"Gm16063"
## [705]	"Niacr1"	"Tmed2"	"Abhd11os"	"Stx1a"
## [709]	"Hspb1"	"Ywhag"	"Tmem184a"	"D130017N08Rik"
## [713]	"Eif2ak1"	"Gm15708"	"Smurf1"	"Zfp655"
## [717]	"Mutyh"	"Hpd1"	"Ptch2"	"Fhl3"
## [721]	"Sf3a3"	"Grik3"	"Smpd13b"	"1810019J16Rik"
## [725]	"Sfn"	"Cnksr1"	"Igsf21"	"Padi2"
## [729]	"Hspb7"	"Cela2a"	"Tmem51os1"	"Kazn"
## [733]	"Gm13178"	"Fbxo2"	"Angptl7"	"Nmnat1"
## [737]	"Prdm16"	"Ttc34"	"Mmel1"	"2610002J02Rik"
## [741]	"Gltpd1"	"Fam132a"		
## [1]	"Chst7"	"Atp6ap1"	"Armxc3"	"Ripply1"
## [5]	"Capn6"	"Car5b"	"Gm9826"	"Adhfe1"
## [9]	"Sgk3"	"Lactb2"	"Tmem70"	"Ly96"
## [13]	"Jph1"	"Pkhd1"	"Tram2"	"Gm18776"
## [17]	"Ptp4a1"	"Fer115"	"Cox5b"	"Actr1b"
## [21]	"Vwa3b"	"Pdc13"	"Hspe1"	"Bzw1"
## [25]	"Ndufb3"	"Abi2"	"Pard3b"	"Idh1"
## [29]	"Xrcc5"	"Mff"	"Agfg1"	"Ugt1a7c"
## [33]	"Scly"	"Agxt"	"Mterf4"	"Dtymk"
## [37]	"Dbi"	"Ccdc93"	"Pigr"	"Rbbp5"
## [41]	"Rabif"	"Cfhr3"	"Gm16332"	"Gm5834"
## [45]	"Tpr"	"Lamc2"	"Qsox1"	"Sec16b"
## [49]	"Rfwd2"	"Tnr"	"Zbtb37"	"Mett113"
## [53]	"F5"	"Mpc2"	"Creg1"	"Tmco1"
## [57]	"Aldh9a1"	"Cfap126"	"Ndufs2"	"Dedd"
## [61]	"Pfdn2"	"Crp"	"Ackr1"	"Gm4955"
## [65]	"Lbr"	"Tatdn3"	"Ppp2r5a"	"Ints7"

## [69]	"Rcor3"	"Diexf"	"Hsd11b1"	"Hacd1"
## [73]	"A930004D18Rik"	"Pdss1"	"Zmynd19"	"BC029214"
## [77]	"C8g"	"Sardh"	"Olfm1"	"Mbd5"
## [81]	"Gm13509"	"Rif1"	"Cacnb4"	"Kcnh7"
## [85]	"Fign"	"Stk39"	"Mettl5"	"Mettl8"
## [89]	"Dcaf17"	"Cwc22"	"2700094K13Rik"	"Ndufs3"
## [93]	"Kbtbd4"	"Gm17661"	"Atg13"	"Cd82"
## [97]	"Lrrc4c"	"Trim44"	"Cat"	"Cd59b"
## [101]	"Cd59a"	"Tcp1111"	"Ccgc73"	"Them7"
## [105]	"Lgr4"	"Nop10"	"Car1"	"Car3"
## [109]	"Armc1"	"Pde7a"	"Gm10259"	"Slc2a2"
## [113]	"Nudt6"	"Ankrd50"	"Rnf13"	"Igsf10"
## [117]	"Rap2b"	"Ppm11"	"Nmd3"	"Pdcd10"
## [121]	"Gatb"	"Isg2012"	"Slc25a44"	"Dap3"
## [125]	"Pklr"	"Adam15"	"Cers2"	"Ensa"
## [129]	"Ecm1"	"Hmgcs2"	"Hsd3b5"	"Dennd2d"
## [133]	"Olfm3"	"Extl2"	"Mfsd14a"	"Alg14"
## [137]	"Bcar3"	"Gimd1"	"Ccb12"	"Clca3a1"
## [141]	"Adgr12"	"Tyw3"	"Rad54b"	"Epha7"
## [145]	"Mob3b"	"Aptx"	"Rnf38"	"Slc25a51"
## [149]	"Stra6l"	"Tstd2"	"Trmo"	"Anp32b"
## [153]	"Mup-ps1"	"Mup-ps4"	"Mup1"	"Mup-ps6"
## [157]	"Gm21286"	"Mup13"	"Mup-ps10"	"Mup15"
## [161]	"Mup-ps14"	"Mup18"	"Mup-ps15"	"Mup-ps16"
## [165]	"Mup-ps19"	"Cdc26"	"Orm1"	"Atp6v1g1"
## [169]	"Ptprd"	"Lurap11"	"Zdhhc21"	"Snapc3"
## [173]	"Psip1"	"Rraga"	"Gm26566"	"Fggy"
## [177]	"Cyb5rl"	"Scp2"	"Echdc2"	"Mob3c"
## [181]	"Gm10108"	"Sema3c"	"Napepld"	"Pmpcb"
## [185]	"Cdk5"	"Tmub1"	"Acox3"	"5730480H06Rik"
## [189]	"Wdr19"	"Tmem33"	"Ociad2"	"Paics"
## [193]	"Cenpc1"	"Afm"	"Cxc111"	"Ccni"
## [197]	"Antxr2"	"Hsd17b13"	"Pon1"	"Slc25a13"
## [201]	"Gm9825"	"Rpa3"	"Umad1"	"Met"
## [205]	"Atp6v1f"	"Chchd3"	"Zfp398"	"Rarres2"
## [209]	"Gars"	"Reep1"	"Immt"	"Tmem150a"
## [213]	"Nat8f6"	"Nat8f5"	"Nat8f2"	"Nat8f1"
## [217]	"Vmn1r51"	"Gm20426"	"Camk1"	"Cidec"
## [221]	"Emc3"	"March8"	"Bms1"	"Zfp248"
## [225]	"Erc1"	"Mug1"	"C1s1"	"C1s2"
## [229]	"Tapbpl"	"Clec2d"	"Smim1011"	"Etv6"
## [233]	"Crebl2"	"Ddx47"	"Hebp1"	"Rerg"
## [237]	"Strap"	"Rps9"	"Pira2"	"Isoc2a"
## [241]	"Zfp524"	"Zik1"	"Rnf225"	"Slc27a5"
## [245]	"Ppp5c"	"Nectin2"	"Bcam"	"Cblc"
## [249]	"Zfp112"	"Zfp109"	"Phldb3"	"Cyp2a12"
## [253]	"Cyp2f2"	"Akt2"	"Eid2b"	"Zfp84"
## [257]	"Capns1"	"Alkbh6"	"Proser3"	"U2af114"
## [261]	"Lsr"	"Fxyd1"	"Uba2"	"Pepd"
## [265]	"Zfp141"	"Vsig101"	"Josd2"	"Pold1"
## [269]	"Atf5"	"Irf3"	"Rpl13a"	"Gys1"
## [273]	"Nucb1"	"Bcat2"	"Gm38393"	"Snrpn"
## [277]	"Mtmr10"	"Tjp1"	"Asb7"	"Prr36"
## [281]	"Col4a1"	"F7"	"Gm6483"	"Gm21811"

## [285]	"2610005L07Rik"	"Gm21092"	"Mrps31"	"Tm2d2"
## [289]	"Pomk"	"Eif4ebp1"	"Saraf"	"D8Ert82e"
## [293]	"Micu3"	"Gm5345"	"Cep44"	"Csgalnact1"
## [297]	"Zfp930"	"Borcs8"	"Cope"	"Kxd1"
## [301]	"Use1"	"Babam1"	"Slc27a1"	"Pgls"
## [305]	"Colgalt1"	"Calr3"	"Smim7"	"Tmem38a"
## [309]	"Ptger1"	"Adgre5"	"Gadd45gip1"	"Syce2"
## [313]	"Gcdh"	"Dnase2a"	"Prdx2"	"Hook2"
## [317]	"Wdr83os"	"Vps35"	"Dnaja2"	"Lonp2"
## [321]	"Brd7"	"Cyld"	"Ces1b"	"Adgrg1"
## [325]	"Pdf"	"Nob1"	"Wwp2"	"Hp"
## [329]	"Nudt7"	"Plcg2"	"Gm20388"	"Gm3952"
## [333]	"2610044015Rik8"	"Mmp12"	"Tmed1"	"Elof1"
## [337]	"St14"	"Fli1"	"St3gal4"	"Tirap"
## [341]	"Dpagt1"	"Ccdc84"	"Tmprss4"	"1810046K07Rik"
## [345]	"Fdx1"	"Zc3h12c"	"Rcn2"	"Sin3a"
## [349]	"Fam219b"	"Mtfmt"	"Rbpms2"	"Rora"
## [353]	"Elov15"	"Gsta4"	"Mthfsl"	"Atp1b3"
## [357]	"Nmnat3"	"Cep70"	"Dbr1"	"Pccb"
## [361]	"Nphp3"	"Aste1"	"Abhd14b"	"Slc38a3"
## [365]	"Arih2"	"Slc25a20"	"Tmie"	"Acaa1a"
## [369]	"Eif1b"	"Tmem42"	"2010315B03Rik"	"Ppp2r3d"
## [373]	"Adgrg6"	"Akap7"	"Amd2"	"Gucd1"
## [377]	"Col6a2"	"Mier2"	"Cfd"	"2310011J03Rik"
## [381]	"Reep6"	"Adat3"	"Zbtb7a"	"Zfp433"
## [385]	"Gm4924"	"1190007I07Rik"	"Tdg"	"Polr3b"
## [389]	"Nup37"	"Uhrf1bp11"	"Amdhd1"	"Ntn4"
## [393]	"Ndufa12"	"Cdk4"	"Tspan31"	"Pip4k2c"
## [397]	"Ndufa412"	"Tmem194"	"Patz1"	"Selm"
## [401]	"Zmat5"	"Wdr92"	"Xpo1"	"Vrk2"
## [405]	"Hba-a2"	"Fbxw11"	"Ttc1"	"Trim7"
## [409]	"Vdac1"	"Hint1"	"Gm12248"	"Gm12247"
## [413]	"Cnot8"	"2310033P09Rik"	"Arf1"	"Mmgt2"
## [417]	"Slc25a35"	"Rangrf"	"Tmem107"	"Tnfsfm13"
## [421]	"Acadv1"	"Asgr2"	"Slc16a11"	"Gm21988"
## [425]	"Pel1"	"Zmynd15"	"Scimp"	"Txndc17"
## [429]	"Spns2"	"Ncbp3"	"Slc43a2"	"Gemin4"
## [433]	"Nsrp1"	"Hs1bp3"	"Rdh14"	"Pdia6"
## [437]	"3110053B16Rik"	"Zfp125"	"Ywhaq"	"Rps7"
## [441]	"Rnaseh1"	"Sh3yl1"	"Dnab9"	"Cfl2"
## [445]	"Fam177a"	"Srp54b"	"Pygl"	"Arid4a"
## [449]	"Slc10a1"	"Smoc1"	"Gstz1"	"Gm8893"
## [453]	"Serpina5"	"Serpina3d-ps"	"Serpina3e-ps"	"Serpina3l-ps"
## [457]	"Serpina3n"	"Vrk1"	"Zfyve21"	"Ighm"
## [461]	"Itgb8"	"Fam208b"	"Akr1c12"	"Sugct"
## [465]	"Mplkip"	"Hist1h2be"	"Fam8a1"	"Kdm1b"
## [469]	"F12"	"Hnrnpa0"	"Idnk"	"Gkap1"
## [473]	"Aaed1"	"Mfsd14b"	"Ptdss1"	"Gm28557"
## [477]	"Ttc37"	"2210408I21Rik"	"Zbed3"	"Gm10260"
## [481]	"Cd180"	"Mast4"	"Gpx8"	"Gm21967"
## [485]	"Hmgcs1"	"Zfp131"	"Pxxk"	"Pdhhb"
## [489]	"Gm3839"	"3830406C13Rik"	"Thoc7"	"Slc4a7"
## [493]	"Thrb"	"Rpl15"	"Gch1"	"Naa30"
## [497]	"Ndrgr2"	"Mmp14"	"Thtpa"	"Sdr39u1"

## [501]	"Mphosph8"	"Eef1akmt1"	"Bnip3l"	"Gm16867"
## [505]	"Gm21685"	"Esd"	"Dnajc21"	"Sdc2"
## [509]	"Pabpc1"	"Ncald"	"Emc2"	"Taf2"
## [513]	"Fam49b"	"Wisp1"	"Ndrgr1"	"Chrac1"
## [517]	"Zfp41"	"Tigd5"	"Zfp623"	"Nrbp2"
## [521]	"Dgat1"	"Clqtnf6"	"Cyth4"	"Card10"
## [525]	"Eif31"	"Csnk1e"	"Josd1"	"Mief1"
## [529]	"Tob2"	"Xrcc6"	"Ccdc134"	"Serhl1"
## [533]	"Gm29666"	"Atxn10"	"Pkdrej"	"Sco2"
## [537]	"Tuba1c"	"Mcrs1"	"Tmbim6"	"Soat2"
## [541]	"Csad"	"Pfdn5"	"Gpr84"	"Clec16a"
## [545]	"Mk12"	"Ncbp2"	"Snx4"	"Hacd2"
## [549]	"Cep97"	"Zbtb11"	"Impg2"	"Abi3bp"
## [553]	"Tfg"	"Tomm70a"	"Nit2"	"Cmss1"
## [557]	"Cpox"	"Btg3"	"Ifnar1"	"Gm5678"
## [561]	"Tmem242"	"Serac1"	"Dynlt1b"	"Dynlt1f"
## [565]	"Tagap"	"Rnaset2a"	"Plg"	"Acat3"
## [569]	"Acat2"	"Tcte2"	"Ermard"	"Fam120b"
## [573]	"Chd1"	"Zfp97"	"Zfp820"	"Zfp947"
## [577]	"Gm4944"	"Atp6v0c"	"Tbc1d24"	"Pkd1"
## [581]	"Nme3"	"Ift140"	"Gnptg"	"Rgs11"
## [585]	"Hmga1"	"Ppil1"	"Zfand3"	"Cbs"
## [589]	"Cyp4f17"	"Rps28"	"Vps52"	"H2-Ke6"
## [593]	"C4b"	"H2-Q4"	"H2-Q6"	"H2-Q7"
## [597]	"H2-Q10"	"Mdc1"	"H2-T22"	"Gm8810"
## [601]	"H2-B1"	"Gm8815"	"Gm10499"	"Cd2ap"
## [605]	"Adgrf1"	"Rcan2"	"Gm5093"	"Taf8"
## [609]	"Rab5a"	"Dennd1c"	"Myl12b"	"Spdya"
## [613]	"Cebpzoz"	"Em14"	"Zfp3612"	"Mcf2"
## [617]	"Cables1"	"Polr2d"	"Camk4"	"Pkd212"
## [621]	"Zmat2"	"Dpys13"	"Commd10"	"Ablim3"
## [625]	"Lman1"	"Lipg"	"Rps6kb2"	"Ccs"
## [629]	"B4gat1"	"Map3k11"	"Mrpl49"	"Nrxn2"
## [633]	"Prdx5"	"Glyat"	"Carnmt1"	"Gm9938"
## [637]	"Mb12"	"Cpn1"	"Npm3"	"Fbx115"
## [641]	"Borcs7"	"Smndc1"	"Bbip1"	"Dclre1a"
## [645]	"Gfra1"	"Knstrn"	"Ubr1"	"Tubgcp4"
## [649]	"Hypk"	"Wdr76"	"Eif3j1"	"Slc30a4"
## [653]	"Sqr1"	"Chchd5"	"Snrbp"	"Ddrgk1"
## [657]	"Slc23a2"	"Pcna"	"Mkks"	"Btbd3"
## [661]	"Chmp4b"	"Rpn2"	"Ctnnb11"	"Pltp"
## [665]	"Gm4723"	"Gm8898"	"Gm14416"	"Gm14418"
## [669]	"Gm14324"	"Ss1811"	"Mtg2"	"Osbpl2"
## [673]	"Dnajc5"	"Slfn8"	"Taf15"	"Znhit3"
## [677]	"Ppm1d"	"Dyn112"	"Mmd"	"Ppp1r9b"
## [681]	"Samd14"	"Snf8"	"Med24"	"Pecam1"
## [685]	"Apoh"	"Amz2"	"Cd3001f"	"Tmem94"
## [689]	"St6galnac2"	"Syng2"	"Timp2"	"P4hb"
## [693]	"Prc1"	"Furin"	"Stard5"	"Mesdc2"
## [697]	"Eed"	"Picalm"	"Sytl2"	"Tmem126a"
## [701]	"Tmem126b"	"Emsy"	"Arrb1"	"Tpbgl1"
## [705]	"Fam168a"	"Arhgef17"	"Lamtor1"	"Xndc1"
## [709]	"Stim1"	"Trim5"	"Trim12c"	"Trim30a"
## [713]	"Gm4070"	"Gm18852"	"Gvin1"	"Psmal1"

## [717]	"Gde1"	"9030624J02Rik"	"Sgf29"	"Coro1a"
## [721]	"Mapk3"	"Ypel3"	"Ppp4c"	"Tmem219"
## [725]	"Maz"	"Sept1"	"Hsd3b7"	"Stx4a"
## [729]	"Kat8"	"Elov11"	"Ebna1bp2"	"Slc2a1"
## [733]	"AU022252"	"P3h1"	"Utp111"	"Yrdc"
## [737]	"Txlna"	"Kdf1"	"Nr0b2"	"Mtfr11"
## [741]	"Asap3"	"C1qa"	"Ddost"	"Aldh4a1"
## [745]	"Rcc2"	"Sdhb"	"Szrd1"	"Dhrs3"
## [749]	"Gm13244"	"Znf41-ps"	"Gm13051"	"Zfp600"
## [753]	"Gm13251"	"Gm13233"	"Fv1"	"Srm"
## [757]	"Casz1"	"Eno1"	"Vamp3"	"Pex10"
## [761]	"Rer1"	"Faap20"	"Aurkaip1"	"Cptp"
## [765]	"Ube2j2"	"Klhl17"	"Noc21"	"Pcgf3"
## [769]	"4930522L14Rik"	"Chfr"	"Srrd"	"Srsf9"
## [773]	"Wsb2"	"Oas1c"	"Tctn1"	"Hpd"
## [777]	"Dhx37"	"Ift22"	"Azgp1"	"Zkscan1"
## [781]	"BC037034"	"Sun1"	"Fbxl18"	"Actb"
## [785]	"Cyp3a41a"	"Cyp3a25"	"Urad"	
## [1]	"L"	"NSD"		
## [1]	"Sox17"	"Sntg1"	"Rrs1"	"3110035E14Rik"
## [5]	"1700034P13Rik"	"Snhg6"	"Ppp1r42"	"Prex2"
## [9]	"Kcnq5"	"Dst"	"Il18r1"	"Slc39a10"
## [13]	"Nab1"	"Stk17b"	"Hspe1"	"Rftn2"
## [17]	"Gm20257"	"Stradb"	"Klf7"	"Vil1"
## [21]	"Mogat1"	"Sp100"	"Psm1"	"Armc9"
## [25]	"Ptma"	"Inpp5d"	"Agap1"	"Cops8"
## [29]	"Col6a3"	"Dusp28"	"Rnpepl1"	"Gm9994"
## [33]	"D830032E09Rik"	"Tmem163"	"Cxcr4"	"Pfkfb2"
## [37]	"5430435G22Rik"	"Zc3h11a"	"Ptpn7"	"Nav1"
## [41]	"Phlda3"	"Gm16880"	"Fam129a"	"Rgs8"
## [45]	"Ralgps2"	"Gas5"	"Dnm3"	"Vamp4"
## [49]	"Gm16548"	"Fam78b"	"1700009P17Rik"	"Mpz"
## [53]	"Ppox"	"Slamf6"	"Atp1a2"	"Igsf9"
## [57]	"Slamf8"	"Darc"	"Spta1"	"Rgs7"
## [61]	"6330403A02Rik"	"Nv1"	"Gm2061"	"Spata17"
## [65]	"Ush2a"	"Gm10516"	"Fbxo18"	"Itga8"
## [69]	"Pter"	"Gm3230"	"Gm13375"	"Mrpl41"
## [73]	"Pnp1a7"	"Nelfb"	"Snhg7"	"Ppp2r4"
## [77]	"D330023K18Rik"	"Ncs1"	"Scn7a"	"Ccdc173"
## [81]	"Dusp19"	"Nup35"	"Gm13710"	"Tmx2"
## [85]	"Timm10"	"P2rx3"	"Ptprj"	"Ptpmt1"
## [89]	"2810002D19Rik"	"Pdhh"	"A930018P22Rik"	"Prrg4"
## [93]	"0610012H03Rik"	"Hey1"	"Fabp12"	"Mtfr1"
## [97]	"Pld1"	"Eif5a2"	"Gpr160"	"Mrpl47"
## [101]	"Pex51"	"Bbs12"	"Ankrd50"	"Pcdh18"
## [105]	"Arhgef26"	"Gmps"	"Mlf1"	"Lxn"
## [109]	"Fcrl1"	"Lrrc71"	"Lamtor2"	"Mtx1"
## [113]	"Dpm3"	"Lenep"	"Jtb"	"Npr1"
## [117]	"Chtop"	"S100a1"	"Them5"	"Rorc"
## [121]	"Cgn"	"Selenbp1"	"Psm4"	"Tmod4"
## [125]	"Sema6c"	"Gm16740"	"Pdzk1"	"Fndc7"
## [129]	"A930005H10Rik"	"Cdc14a"	"Slc35a3"	"Frrs1"
## [133]	"1700061I17Rik"	"4833424015Rik"	"Alg14"	"Abca4"
## [137]	"Ccdc109b"	"4930579F01Rik"	"0610031016Rik"	"Gbp3"

## [141]	"Clca1"	"Clca2"	"Lphn2"	"Ptgfr"
## [145]	"Sdr16c5"	"Car8"	"4930412C18Rik"	"Trp53inp1"
## [149]	"Rbm12b2"	"4930528A17Rik"	"4933421010Rik"	"Gabrr2"
## [153]	"Tmem215"	"Ccl19"	"Cd72"	"Car9"
## [157]	"Spag8"	"Melk"	"1300002K09Rik"	"5830415F09Rik"
## [161]	"Nans"	"Mup7"	"Mup8"	"Tnfsf15"
## [165]	"C630043F03Rik"	"Haus6"	"Kank4"	"Efcab7"
## [169]	"Sgip1"	"Zyg11a"	"Btf314"	"Cyp4a31"
## [173]	"Mterf1a"	"Cdk14"	"A630072M18Rik"	"Armc10"
## [177]	"6030443J06Rik"	"AI506816"	"Atg9b"	"Smarcd3"
## [181]	"Depdc5"	"Whsc1"	"Mxd4"	"Cpz"
## [185]	"Trmt44"	"Sorcs2"	"Man2b2"	"Lyar"
## [189]	"Gm3414"	"Sod3"	"Lgi2"	"Pgm1"
## [193]	"Tlr1"	"Lias"	"Tec"	"Dcun1d4"
## [197]	"Chic2"	"Cenpc1"	"Igj"	"Gm9958"
## [201]	"Afp"	"Cxc12"	"Ereg"	"Gm1045"
## [205]	"Hnrnpd"	"Hnrnpd1"	"2310034005Rik"	"Hpse"
## [209]	"D930016D06Rik"	"Gm16039"	"1810058I24Rik"	"Atp6v0a4"
## [213]	"Ubn2"	"Zfp786"	"Zfp212"	"Gpnmb"
## [217]	"Igf2bp3"	"Prr15"	"Fabp1"	"Krccl1"
## [221]	"Tgoln1"	"Gm11128"	"Cml5"	"C87436"
## [225]	"2610306M01Rik"	"Vmn1r53"	"0610040F04Rik"	"Thumpd3"
## [229]	"Il17re"	"Fancd2"	"Atg7"	"Pparg"
## [233]	"2510049J12Rik"	"Fbx114"	"C1ra"	"C1s"
## [237]	"Gm5077"	"Ptms"	"9630033F20Rik"	"9330102E08Rik"
## [241]	"Tulp3"	"Foxm1"	"Klrb1c"	"BC064078"
## [245]	"Klrd1"	"Klrc1"	"Klra3"	"2700089E24Rik"
## [249]	"Bcl2l14"	"8430419L09Rik"	"H2afj"	"Nlrp12"
## [253]	"Myadm"	"Cacng7"	"Pira6"	"Lilra6"
## [257]	"Ncr1"	"Shisa7"	"2310014L17Rik"	"Ube2m"
## [261]	"Prr24"	"Pnmal2"	"Sympk"	"Qpctl"
## [265]	"Zfp296"	"Igsf23"	"Prx"	"Zfp14"
## [269]	"Zfp82"	"Zfp566"	"BC053749"	"Gapdhs"
## [273]	"Sbsn"	"Hamp"	"Lgi4"	"Fxyd3"
## [277]	"Gramd1a"	"Gpi1"	"Vmn2r57"	"AW146154"
## [281]	"Iglon5"	"Klk1"	"1700028J19Rik"	"1700008003Rik"
## [285]	"Syt3"	"Gm15545"	"0610005C13Rik"	"Fut1"
## [289]	"A230056P14Rik"	"D7Ertd715e"	"Mkrn3"	"E030018B13Rik"
## [293]	"Apba2"	"Fam189a1"	"1810008I18Rik"	"Adamts17"
## [297]	"1810012K16Rik"	"Rnf170"	"Tmem66"	"Pdgrfl"
## [301]	"Hmgb2"	"Zfp868"	"Zfp869"	"Pbx4"
## [305]	"Mau2"	"2310045N01Rik"	"Lrrc25"	"2010320M18Rik"
## [309]	"Ccdc124"	"Tmem221"	"Fam129c"	"Glt25d1"
## [313]	"Cyp4f18"	"1700030K09Rik"	"Mcm5"	"Zfp330"
## [317]	"Elmod2"	"Scoc"	"Lphn1"	"Prkaca"
## [321]	"Podn11"	"LOC100503676"	"Wdr83"	"BC056474"
## [325]	"Zfp791"	"Neto2"	"Papd5"	"Ces1a"
## [329]	"Rspry1"	"Gpr56"	"Cog8"	"Tmed6"
## [333]	"3010033K07Rik"	"Chst4"	"Aprt"	"Rhou"
## [337]	"Mre11a"	"4930581F22Rik"	"D630033011Rik"	"BC049352"
## [341]	"Nxpe4"	"Tex12"	"Slc35f2"	"Gldn"
## [345]	"Gm10658"	"Man2c1os"	"2410076I21Rik"	"Itga11"
## [349]	"Oaz2"	"Mns1"	"4930509E16Rik"	"Arpp19"
## [353]	"Myo5a"	"Gnb5"	"C920006011Rik"	"Gm3776"

## [357]	"Gm10639"	"Senp6"	"Hmgn3"	"Tpbg"
## [361]	"Me1"	"9430037G07Rik"	"Gm2382"	"9330159M07Rik"
## [365]	"Morf411"	"Acpl2"	"Mras"	"Clcn18"
## [369]	"Il20rb"	"Cish"	"Rassf1"	"Slc25a20"
## [373]	"Tmie"	"Ulk4"	"Fam198a"	"Zkscan7"
## [377]	"Xk"	"Rnf113a1"	"Mbnl3"	"Cxx1c"
## [381]	"Mtap7d3"	"Hmgb3"	"Xlr4a"	"Prrg1"
## [385]	"Pdk3"	"Foxo4"	"Nlgn3"	"Nhs12"
## [389]	"Tmem35"	"Tmsb15b1"	"Rai2"	"Bmx"
## [393]	"Egfl6"	"Plekhhg1"	"A630066F11Rik"	"Adgb"
## [397]	"Shprh"	"Epm2a"	"B230208H11Rik"	"Stx11"
## [401]	"Pex3"	"Gpr126"	"Abracl"	"Hebp2"
## [405]	"Hbs11"	"A830082N09Rik"	"Atg5"	"Prdm1"
## [409]	"Ado"	"Rtkn2"	"Bicc1"	"Mmp11"
## [413]	"Zfp781"	"Rfx4"	"BC030307"	"Ntn4"
## [417]	"Msrb3"	"Wif1"	"Ppm1h"	"Slc16a7"
## [421]	"Pip4k2c"	"Rdh18-ps"	"Smarcc2"	"Sfi1"
## [425]	"5730522E02Rik"	"Gnb211"	"Rnf130"	"Sqstm1"
## [429]	"Canx"	"Rmnd5b"	"Sec24a"	"Ube2b"
## [433]	"Hspa4"	"Uqcrq"	"Slc22a21"	"Cdc42se2"
## [437]	"Ccadc69"	"Atox1"	"Galnt10"	"2610507I01Rik"
## [441]	"Gid4"	"Ubb"	"Arhgap44"	"Ccadc42"
## [445]	"Ctc1"	"Aloxe3"	"Eif4a1"	"Alox12"
## [449]	"Tm4sf5"	"Kif1c"	"6330403K07Rik"	"Wscd1"
## [453]	"4930563E22Rik"	"Smtnl2"	"Spns3"	"P2rx1"
## [457]	"1200014J11Rik"	"Pafah1b1"	"Mettl16"	"Smg6"
## [461]	"Myo1c"	"Gemin4"	"Dbil5"	"Tlcl1"
## [465]	"Kcns3"	"Smc6"	"Greb1"	"5730507C01Rik"
## [469]	"1700030C10Rik"	"Tpo"	"Hdac9"	"Bzw2"
## [473]	"Ankmy2"	"Foxa1"	"4921506M07Rik"	"Klhdcl1"
## [477]	"Psma3"	"3110056K07Rik"	"4930404H11Rik"	"Srsf5"
## [481]	"Numb"	"Ptgr2"	"Vash1"	"Nrnx3"
## [485]	"Cep128"	"D130020L05Rik"	"Serpina3j"	"Serpina3k"
## [489]	"Setd3"	"Ccadc85c"	"Hhpl1"	"Dio3os"
## [493]	"Dio3"	"Snora28"	"5033406009Rik"	"Siva1"
## [497]	"D430020J02Rik"	"Ptprn2"	"Dnah11"	"5033411D12Rik"
## [501]	"Cdk13"	"Aoah"	"Hist1h2bc"	"Slc17a2"
## [505]	"Cmah"	"Cdy1"	"Ranbp9"	"BB123696"
## [509]	"Tifab"	"Ercc612"	"1810034E14Rik"	"Cdk20"
## [513]	"Hiat11"	"Gm10767"	"F630042J09Rik"	"Zfp429"
## [517]	"Zfp85os"	"Mctp1"	"Vcan"	"Ssbp2"
## [521]	"4833422C13Rik"	"Lhfp12"	"F2rl1"	"Mrps27"
## [525]	"Smn1"	"Cwc27"	"3110070M22Rik"	"Fam107a"
## [529]	"Mss51"	"1700112E06Rik"	"Pbrm1"	"Gm3219"
## [533]	"Sncg"	"Sftpa1"	"Rubie"	"Ttc5"
## [537]	"Ccnb1ip1"	"Parp2"	"Klhl133"	"Pnp"
## [541]	"Zfp219"	"Slc7a8"	"Homez"	"Gm5801"
## [545]	"N6amt2"	"Fgf9"	"Phf11a"	"Arl11"
## [549]	"Elp3"	"1700092C10Rik"	"Cysltr2"	"Nudt15"
## [553]	"Lrrc63"	"Pcdh9"	"Dach1"	"Klf12"
## [557]	"Gm17066"	"Spry2"	"Mir17hg"	"Uggt2"
## [561]	"A330035P11Rik"	"A630020A06"	"Clqtnf3"	"Slc45a2"
## [565]	"Cdh18"	"Ropn11"	"0610007N19Rik"	"Tspyl5"
## [569]	"Eif3e"	"Utp23"	"Gm9920"	"D15Ertd621e"

## [573]	"Trmt12"	"Tatdn1"	"Ptk2"	"Apol11b"
## [577]	"Triobp"	"Apobec3"	"Mgat3"	"Tob2"
## [581]	"Nfam1"	"Cyb5r3"	"A4galt"	"Arfgap3"
## [585]	"1700001L05Rik"	"Smc1b"	"Ppara"	"Tbc1d22a"
## [589]	"Fam19a5"	"Zbed4"	"Alg12"	"Prr13"
## [593]	"Smug1"	"Nfe2"	"Cdip1"	"Socs1"
## [597]	"Rrn3"	"2900011008Rik"	"Zdhhc8"	"Tango2"
## [601]	"Comt"	"Alg3"	"Thpo"	"Tra2b"
## [605]	"Rtp4"	"Ptplb"	"Stxbp51"	"Popdc2"
## [609]	"Sidt1"	"Rp124"	"Dcbl2"	"E330011021Rik"
## [613]	"Eva1c"	"Cryz11"	"Setd4"	"Hlcs"
## [617]	"A630089N07Rik"	"1700102H20Rik"	"Tmem181b-ps"	"Rps6ka2"
## [621]	"4732491K20Rik"	"9030025P20Rik"	"Gm3435"	"Chd1"
## [625]	"Zfp960"	"Riok2"	"Gm10509"	"Pkmyt1"
## [629]	"9530082P21Rik"	"Flywch2"	"Ntn3"	"D330041H03Rik"
## [633]	"Eci1"	"Pgp"	"Spsb3"	"BC003965"
## [637]	"Haghl"	"Dusp1"	"AI413582"	"Abcg1"
## [641]	"Wdr4"	"Zfp955b"	"Rab11b"	"BC051226"
## [645]	"AA388235"	"Rxrb"	"H2-0b"	"C4a"
## [649]	"Nelfe"	"Msh5"	"Atp6v1g2"	"Gm8801"
## [653]	"A930015D03Rik"	"C920025E04Rik"	"Gm7030"	"H2-T3"
## [657]	"Znrd1"	"Gpr110"	"Slc25a27"	"Mad2l1bp"
## [661]	"Gm17830"	"Mllt1"	"Tubb4a"	"Ralbp1"
## [665]	"Ptprm"	"Zbtb14"	"Myom1"	"Trmt61b"
## [669]	"Lclat1"	"Dpy30"	"Fam98a"	"1110001A16Rik"
## [673]	"Rmdn2"	"Slc8a1"	"Pkdcc"	"Cox7a21"
## [677]	"Thada"	"1110020A21Rik"	"Srbd1"	"1010001N08Rik"
## [681]	"Rbbp8"	"Cables1"	"Kctd1"	"Mep1b"
## [685]	"Polr2d"	"Nme5"	"Snhg4"	"Hars2"
## [689]	"Pcdhb11"	"Pcdhga4"	"Pcdhgb2"	"Pcdhgb6"
## [693]	"Pcdhga12"	"Ticam2"	"Tnfaip8"	"Neto1"
## [697]	"Tcirg1"	"A930001C03Rik"	"Dpp3"	"Eif1ad"
## [701]	"Rela"	"Malat1"	"Frmd8"	"Snx15"
## [705]	"Chrm1"	"Snhg1"	"Wdr74"	"Lrrn4c1"
## [709]	"AI462493"	"Fads3"	"Cyb561a3"	"A330040F15Rik"
## [713]	"2410127L17Rik"	"Trpm6"	"2610016A17Rik"	"Uhrf2"
## [717]	"2700046G09Rik"	"4931408D14Rik"	"Cep55"	"Ffar4"
## [721]	"Pde6c"	"Cyp2c40"	"Ankrd2"	"Morn4"
## [725]	"BC037704"	"Gm10768"	"Psd"	"Wbp11"
## [729]	"2010012005Rik"	"Col17a1"	"Gsto2"	"Smndc1"
## [733]	"Zfp207"	"Slfn10-ps"	"AA465934"	"Taf15"
## [737]	"Cc13"	"Acaca"	"D630032N06Rik"	"Rnft1"
## [741]	"Mks1"	"Dynl12"	"Srsf1"	"Cuedc1"
## [745]	"C030037D09Rik"	"Gm15698"	"Tmem100"	"Samd14"
## [749]	"Ar15c"	"Cacnb1"	"Stac2"	"Krt23"
## [753]	"Hap1"	"Tubg2"	"Ptges31"	"Meox1"
## [757]	"Tmem101"	"BC030867"	"Gfap"	"C130046K22Rik"
## [761]	"1700052K11Rik"	"Pecam1"	"Smurf2"	"4933422H20Rik"
## [765]	"2310067B10Rik"	"Pde6g"	"Ccgc137"	"Hgs"
## [769]	"Anapc11"	"Cd7"	"Bub1b"	"5430417L22Rik"
## [773]	"Rad51"	"Oip5"	"Ltk"	"Tyro3"
## [777]	"Ell3"	"Mfap1b"	"Gm14085"	"Spata511"
## [781]	"Usp50"	"Kcnip3"	"Gm14005"	"Fbln7"
## [785]	"A730036I17Rik"	"Ap5s1"	"Ism1"	"Rrbp1"

## [789]	"BC039771"	"Acss1"	"Rem1"	"Tspyl3"
## [793]	"Necab3"	"4930405A21Rik"	"5430405H02Rik"	"Fam83d"
## [797]	"Ptprt"	"Jph2"	"Wisp2"	"Mmp9"
## [801]	"Spata2"	"Snai1"	"Mocs3"	"Sall4"
## [805]	"Gm14322"	"Gm14326"	"4921531C22Rik"	"Mrgbp"
## [809]	"Helz2"	"Gmeb2"	"Znf512b"	"Samd10"
## [813]	"Prpf6"	"Ap3s2"	"Slc28a1"	"Cpeb1"
## [817]	"2900076A07Rik"	"Fam103a1"	"Hdgfrp3"	"Fam154b"
## [821]	"Folh1"	"2310010J17Rik"	"Fam181b"	"2210018M11Rik"
## [825]	"Dnajb13"	"Fchsd2"	"Art2b"	"Xndr"
## [829]	"Trim6"	"Gm4759"	"Olfr701"	"Rp127a"
## [833]	"Rassf10"	"Abca14"	"Fam175b"	"Mgmt"
## [837]	"Zfp941"	"R74862"	"Idua"	"Gm10416"
## [841]	"Ep400"	"Myo18b"	"2610524H06Rik"	"Gm13826"
## [845]	"Cit"	"Gm16063"	"1110008J03Rik"	"Aldh2"
## [849]	"Diablo"	"Niacr1"	"Tmed2"	"Nupr11"
## [853]	"Tpst1"	"Gtf2i"	"Dtx2"	"Rab15"
## [857]	"Serpine1"	"Ache"	"Rnf216"	"Dag1b"
## [861]	"D130017N08Rik"	"Usp11"	"Brca2"	"Mutyh"
## [865]	"Plk3"	"Eri3"	"Lepre1"	"Fhl3"
## [869]	"Grik3"	"Phc2"	"Dcdc2b"	"Smpd13b"
## [873]	"1810019J16Rik"	"Gpn2"	"Sfn"	"Cnksr1"
## [877]	"Zfp593"	"Grhl3"	"E2f2"	"Zfp46"
## [881]	"Wnt4"	"Nbl1"	"Igsf21"	"Padi2"
## [885]	"Mfap2"	"Fam131c"	"Cela2a"	"Tmem51os1"
## [889]	"Gm13178"	"Miip"	"Fbxo2"	"Angpt17"
## [893]	"Nmnat1"	"Zbtb48"	"Smim1"	"5930403L14Rik"
## [897]	"Ttc34"	"Mmel1"	"2610002J02Rik"	"Gltpd1"
## [1]	"Cask"	"Rbm10"	"Nkap"	"Ocr1"
## [5]	"Atp6ap1"	"Heph"	"SrpX2"	"Rnf128"
## [9]	"Nup62c1"	"Ubqln2"	"Mrpl15"	"Atp6v1h"
## [13]	"Rb1cc1"	"Lactb2"	"Gm28437"	"Gm28661"
## [17]	"Gm18776"	"Actr1b"	"Vwa3b"	"Cnot11"
## [21]	"Bivm"	"Ercc5"	"Hspd1"	"Fam126b"
## [25]	"Idh1"	"Rqcd1"	"Ap1s3"	"Ugt1a7c"
## [29]	"Mlph"	"Ppp1r7"	"Dbi"	"Mgat5"
## [33]	"Rab7b"	"Cdk18"	"Atp2b4"	"Ppp1r12b"
## [37]	"F13b"	"Cfhr1"	"Gm16332"	"Gm5834"
## [41]	"Rgl1"	"Rnasel"	"Qsox1"	"Serpinc1"
## [45]	"Zbtb37"	"Gorab"	"F5"	"Tipr1"
## [49]	"Mpc2"	"Creg1"	"Tmco1"	"Aldh9a1"
## [53]	"Cfap126"	"Sdhc"	"Apoa2"	"Ndufs2"
## [57]	"Pfdn2"	"Crp"	"Ackr1"	"Gm4955"
## [61]	"Nenf"	"Ppp2r5a"	"Irf6"	"Hsd11b1"
## [65]	"Hacd1"	"Zmynd19"	"Dph7"	"Tor4a"
## [69]	"C8g"	"Ubac1"	"Gpsm1"	"Sardh"
## [73]	"Trub2"	"Gm28035"	"Nup188"	"Hspa5"
## [77]	"Psmb7"	"Ppp6c"	"Cacnb4"	"Kcnh7"
## [81]	"Grb14"	"Ola1"	"Gpr155"	"Mtx2"
## [85]	"Agps"	"Rbm45"	"Fkbp7"	"Ndufs3"
## [89]	"Kbtbd4"	"Gm17661"	"Madd"	"B230118H07Rik"
## [93]	"Cat"	"Fbxo3"	"Tcpl111"	"Them7"
## [97]	"Zfp704"	"Car3"	"Car2"	"Pde7a"
## [101]	"Gm10259"	"Pgrmc2"	"Nbea"	"Rnf13"

## [105]	"Eif2a"	"Igsf10"	"Rap2b"	"Slc33a1"
## [109]	"Veph1"	"Golm4"	"Glr1b"	"Arfip1"
## [113]	"Gatb"	"Arhgef11"	"Hdgf"	"Ssr2"
## [117]	"Dap3"	"Muc1"	"Il6ra"	"Rps27"
## [121]	"Ilf2"	"Ecm1"	"Hsd3b5"	"Rap1a"
## [125]	"Slc30a7"	"Extl2"	"Ptbp2"	"Rpl34"
## [129]	"Gimd1"	"H2afz"	"Mttp"	"Metap1"
## [133]	"Pdlm5"	"Gbp2"	"Clca3a1"	"Dnase2b"
## [137]	"Adgr12"	"Asph"	"Dpy19l4"	"Rad54b"
## [141]	"Ttpa"	"Mob3b"	"Nol6"	"Ubap1"
## [145]	"Nudt2"	"Enho"	"Creb3"	"Stra6l"
## [149]	"Trmo"	"Rad23b"	"Pakap"	"Ptgr1"
## [153]	"Mup-ps1"	"Mup-ps4"	"Mup1"	"Mup-ps6"
## [157]	"Gm21286"	"Mup13"	"Mup-ps10"	"Mup15"
## [161]	"Mup-ps14"	"Mup18"	"Mup-ps15"	"Mup19"
## [165]	"Mup-ps16"	"Mup-ps19"	"Mup-ps20"	"Cdc26"
## [169]	"Atp6v1g1"	"Gm26566"	"Usp24"	"Scp2"
## [173]	"Prpf38a"	"Cc2d1b"	"Txndc12"	"Pdzk1ip1"
## [177]	"Rsbn11"	"Gsap"	"Psmc2"	"Pus7"
## [181]	"Tmub1"	"Xrcc2"	"Ift172"	"Rgs12"
## [185]	"Grpel1"	"D5Ertd579e"	"Rel11"	"Wdr19"
## [189]	"N4bp2"	"Limch1"	"Slain2"	"Ociad1"
## [193]	"Ociad2"	"Srd5a3"	"Paics"	"Srp72"
## [197]	"Jchain"	"Afm"	"Cxc111"	"Hsd17b13"
## [201]	"Pon1"	"Pon2"	"Gm9825"	"Umad1"
## [205]	"Rarres2"	"Gimap3"	"Reep1"	"Immt"
## [209]	"0610030E20Rik"	"Rnf181"	"Vamp8"	"Ggcx"
## [213]	"1700003E16Rik"	"Gm18537"	"Nat8f6"	"Nat8f5"
## [217]	"Nat8f2"	"Nat8f1"	"Nfu1"	"Sec61a1"
## [221]	"Abtb1"	"Vmn1r51"	"Gm20426"	"Fbln2"
## [225]	"Trnt1"	"Cidec"	"Il17rc"	"Emc3"
## [229]	"Sec13"	"Mkrn2os"	"Mical3"	"Mug1"
## [233]	"M6pr"	"Foxj2"	"C1s1"	"C1s2"
## [237]	"Emg1"	"Tpi1"	"Iffo1"	"Tigar"
## [241]	"Clec2d"	"Smim1011"	"Fam234b"	"Eps8"
## [245]	"Strap"	"Slco1a6"	"Kcnj8"	"Sox5"
## [249]	"Lym5"	"Mrps35"	"Ndufa3"	"Rps9"
## [253]	"Suv420h2"	"Isoc2a"	"Zfp524"	"2810047C21Rik1"
## [257]	"Zscan22"	"Rnf225"	"Zfp446"	"Slc27a5"
## [261]	"Kptn"	"Inafm1"	"Fxa3"	"Cblc"
## [265]	"Zfp112"	"Zfp93"	"Bckdha"	"Cyp2a5"
## [269]	"Cyp2a12"	"Cyp2f2"	"Akt2"	"Dyrk1b"
## [273]	"Zfp260"	"Gm5113"	"Sdhaf1"	"Nphs1"
## [277]	"Proser3"	"Fxyd5"	"Fxyd1"	"Pepd"
## [281]	"2610021A01Rik"	"Polld1"	"Rpl13a"	"Nucb1"
## [285]	"Bcat2"	"Rpl18"	"Gtf2h1"	"Gm38393"
## [289]	"Snrpn"	"Cdc16"	"Gm6483"	"Gm21811"
## [293]	"2610005L07Rik"	"Gm21092"	"Kat6a"	"Prosc"
## [297]	"Eif4ebp1"	"Saraf"	"Gm5345"	"Tlr3"
## [301]	"Ufsp2"	"Hand2"	"Tma16"	"Zfp930"
## [305]	"Gm10311"	"Ndufa13"	"Gatad2a"	"Sugp1"
## [309]	"Borcs8"	"Fkbp8"	"Pgpep1"	"Use1"
## [313]	"Ushbp1"	"Dda1"	"Pgls"	"Colgalt1"
## [317]	"Zfp709"	"Rab8a"	"Cib3"	"Smim7"

## [321]	"Ptger1"	"Adgrl1"	"Gadd45gip1"	"Gcdh"
## [325]	"Wdr83os"	"Ces1b"	"Adgrg1"	"Cngb1"
## [329]	"Esrp2"	"Hp"	"Tcf25"	"Arv1"
## [333]	"Itgb1"	"Gm3952"	"2610044015Rik8"	"Sesn3"
## [337]	"Eif3g"	"Fdx11"	"Cdc37"	"Elof1"
## [341]	"Zfp872"	"Fli1"	"Gramd1b"	"Sik3"
## [345]	"Rbm7"	"Zw10"	"2310030G06Rik"	"Fdx1"
## [349]	"Cox5a"	"Rec114"	"Clpx"	"Fam96a"
## [353]	"Tcf12"	"Gclc"	"Elov15"	"Gsta4"
## [357]	"Mthfs1"	"Rnf7"	"Zbtb38"	"Pxylp1"
## [361]	"Cep70"	"Cep63"	"Anapc13"	"Aste1"
## [365]	"Sema3b"	"Slc38a3"	"Gnat1"	"Amigo3"
## [369]	"Usp4"	"Cmtm8"	"Acaa1a"	"Cx3cr1"
## [373]	"Nktr"	"2010315B03Rik"	"Armt1"	"Adgrg6"
## [377]	"Med23"	"Echdc1"	"Amd2"	"Mfsd4b1"
## [381]	"Tbc1d32"	"Sept10"	"Pla2g12b"	"Micu1"
## [385]	"Pbld2"	"Susd2"	"Col18a1"	"Pttg1ip"
## [389]	"Sumo3"	"Trpm2"	"D10Jhu81e"	"Gm9978"
## [393]	"Stk11"	"Csnk1g2"	"Btbd2"	"Sppl2b"
## [397]	"Lmn2"	"Pias4"	"BC025920"	"Gm4767"
## [401]	"AU041133"	"Tdg"	"Polr3b"	"Amdhd1"
## [405]	"Ndufa12"	"Nudt4"	"Gm15662"	"Nap111"
## [409]	"Cand1"	"Mon2"	"Cdk4"	"Shmt2"
## [413]	"Tmem198b"	"Patz1"	"Sf3a1"	"C1d"
## [417]	"Vrk2"	"Hba-a2"	"Gm12191"	"Ppp2ca"
## [421]	"Hint1"	"Mfap3"	"Gm12248"	"Gm12247"
## [425]	"Cnot8"	"Irgm2"	"2810021J22Rik"	"Pmp22"
## [429]	"Rpl26"	"Slc25a35"	"Rangrf"	"Trappc1"
## [433]	"Cyb5d1"	"Sat2"	"Tnfsfm13"	"Gm21988"
## [437]	"Pfn1"	"Med31"	"Ncbp3"	"Spata22"
## [441]	"Glod4"	"Laptm4a"	"Pdia6"	"Nol10"
## [445]	"3110053B16Rik"	"Zfp125"	"Dld"	"Agmo"
## [449]	"Heatr5a"	"Fam177a"	"Srp54b"	"Ppp2r3c"
## [453]	"Ctage5"	"Sav1"	"Gphn"	"Zfp3611"
## [457]	"Smoc1"	"Tt115"	"Cipc"	"Gstz1"
## [461]	"Cpsf2"	"Gm20604"	"Gm8893"	"Serpina3d-ps"
## [465]	"Serpina3e-ps"	"Serpina3l-ps"	"Serpina3n"	"Eif5"
## [469]	"Apopt1"	"2010107E04Rik"	"Ighm"	"Itgb8"
## [473]	"Adarb2"	"Sugct"	"Hist1h2be"	"Hfe"
## [477]	"Serpina9"	"Rpp40"	"Fars2"	"Gcnt2"
## [481]	"Kif13a"	"Dek"	"Fgfr4"	"F12"
## [485]	"Caml"	"Klhl3"	"Aaed1"	"Mfsd14b"
## [489]	"Zfp712"	"Gm28557"	"Zfp455"	"Zfp595"
## [493]	"Zfp58"	"Zfp65"	"Zfp85"	"Nsun2"
## [497]	"Fam151b"	"Ankdd1b"	"Gm10260"	"Tnpo1"
## [501]	"Cd180"	"Mast4"	"Erbb2ip"	"Smim15"
## [505]	"Slc38a9"	"Gm21967"	"Hmgcs1"	"Nim1k"
## [509]	"Zfp131"	"Pdhhb"	"Acox2"	"Gm3839"
## [513]	"Ptprg"	"Thoc7"	"Rpl15"	"Anxa7"
## [517]	"Vdac2"	"Itih4"	"Glud1"	"Grid1"
## [521]	"Gm16439"	"Apex1"	"Ndrp2"	"Acin1"
## [525]	"Nedd8"	"Sdr39u1"	"Mphosph8"	"Pspc1"
## [529]	"Eef1akmt1"	"Spata13"	"Fam167a"	"Ccgc25"
## [533]	"Gm16867"	"Gm21685"	"Med4"	"Esd"

## [537]	"Tpt1"	"Gtf2f2"	"Pibf1"	"Dap"
## [541]	"Pop1"	"Lrp12"	"Emc2"	"Eif3h"
## [545]	"Med30"	"Mal2"	"Ndrgr1"	"Zfat"
## [549]	"Slc45a4"	"Jrk"	"Zc3h3"	"Naprt"
## [553]	"Hgh1"	"Lrrc14"	"Commd5"	"1110038F14Rik"
## [557]	"Apol9b"	"Tmprss6"	"Eif3l"	"Cbx6"
## [561]	"L3mbtl2"	"Phf5a"	"Naga"	"Mcat"
## [565]	"Selo"	"Tubgcp6"	"Slc48a1"	"Rnd1"
## [569]	"Tuba1c"	"Tfcp2"	"Aaas"	"Gpr84"
## [573]	"Dnase1"	"Hmox2"	"Nagpa"	"Txndc11"
## [577]	"Parn"	"Arvcf"	"St6gal1"	"Rubcn"
## [581]	"Lrch3"	"Kalrn"	"Hacd2"	"Gramd1c"
## [585]	"Phldb2"	"Tomm70a"	"Nit2"	"Cmss1"
## [589]	"Col8a1"	"Gbe1"	"Btg3"	"Sod1"
## [593]	"Scaf4"	"Ifnar1"	"Ifngr2"	"Gm5678"
## [597]	"Ttc3"	"Tmem242"	"Gm5812"	"Dynlt1f"
## [601]	"Tagap1"	"Tagap"	"Rnaset2a"	"Plg"
## [605]	"Mrpl18"	"Acat3"	"Ermard"	"Zfp160"
## [609]	"Gm4944"	"Hcfc1r1"	"Atp6v0c"	"Nme3"
## [613]	"Gnptg"	"Rgs11"	"Rps10"	"D17Wsu92e"
## [617]	"Glo1"	"Pknnox1"	"Cbs"	"Zfp955a"
## [621]	"Zfp414"	"Rgl2"	"H2-Ke6"	"Ddah2"
## [625]	"Apom"	"H2-Q4"	"H2-Q6"	"H2-Q7"
## [629]	"Tcf19"	"Tubb5"	"H2-T22"	"Gm8810"
## [633]	"Gm8815"	"Gm10499"	"Adgrf1"	"Rcan2"
## [637]	"Tomm6"	"Daam2"	"Myl12b"	"Spdya"
## [641]	"Ttc27"	"Cebpzoz"	"Ndufaf7"	"4921513D11Rik"
## [645]	"Hnrnp11"	"Lrprrc"	"Pigf"	"Mcfid2"
## [649]	"Calm2"	"Msh2"	"Ston1"	"Psmas8"
## [653]	"Camk4"	"Pkd2l2"	"Brd8"	"Pfdn1"
## [657]	"Pcdhb22"	"Tcerg1"	"Dpysl3"	"Tcof1"
## [661]	"Napg"	"Wdr7"	"Ccbe1"	"Afg3l2"
## [665]	"Cxxc1"	"Smad2"	"Cpt1a"	"Ndufs8"
## [669]	"Ndufv1"	"Coro1b"	"Rce1"	"Banf1"
## [673]	"Mus81"	"Map4k2"	"Prdx5"	"Fkbp2"
## [677]	"Uqcc3"	"Sdhaf2"	"Ddb1"	"Keg1"
## [681]	"Cntf"	"Carnmt1"	"Tmem2"	"Gm9938"
## [685]	"Gm5822"	"Mbl2"	"Pten"	"Zfyve27"
## [689]	"Nfkb2"	"Borcs7"	"Cnm2"	"Vti1a"
## [693]	"Dclre1a"	"Nhlrc2"	"Gfra1"	"Eif3a"
## [697]	"Meis2"	"Knstrn"	"Rpusd2"	"Dnajc17"
## [701]	"Vps18"	"Tmem87a"	"Ubr1"	"Eif3j1"
## [705]	"Sqrd1"	"Fbn1"	"Zfp661"	"Tmem87b"
## [709]	"Ttl1"	"Polr1b"	"Ddrgk1"	"Smox"
## [713]	"Pcna"	"Btbd3"	"H13"	"Pofut1"
## [717]	"Cbfa2t2"	"Chmp4b"	"Rpn2"	"Sdc4"
## [721]	"Pltp"	"Gm20431"	"Pmepa1"	"Rab22a"
## [725]	"Gm8898"	"Gm14296"	"Gm14411"	"Gm14416"
## [729]	"Gm14418"	"Gm14324"	"Gm14327"	"Etohi1"
## [733]	"Ss1811"	"Osbpl2"	"Ptk6"	"Zfp512b"
## [737]	"Wfdc21"	"Znhit3"	"Appbp2"	"Stxbp4"
## [741]	"Tom111"	"Mien1"	"Smarce1"	"Vat1"
## [745]	"Lsm12"	"Hexim2"	"Nsf"	"Cdc27"
## [749]	"Mett12"	"Apoh"	"Cog1"	"Atp5h"

## [753]	"Tmem94"	"Srp68"	"Prpsap1"	"Syng2"
## [757]	"Timp2"	"Engase"	"P4hb"	"Prc1"
## [761]	"Whamm"	"Mesdc2"	"Eed"	"Tmem126b"
## [765]	"Emsy"	"Spcs2"	"Lamtor1"	"Xndc1"
## [769]	"Pgap2"	"Trim5"	"Gm4070"	"Gm18852"
## [773]	"Gvin1"	"Psm1"	"Plekha7"	"Acsm1"
## [777]	"Nfatc2ip"	"Pgr1a"	"Gm4459"	"Zfp511"
## [781]	"Fuom"	"Mmachc"	"Atp6v0b"	"Elov11"
## [785]	"AU022252"	"P3h1"	"AA415398"	"Inpp5b"
## [789]	"Mtf1"	"Ptp4a2"	"Pef1"	"Ptpru"
## [793]	"Kdf1"	"Nudc"	"Tceb3"	"Ephb2"
## [797]	"Camk2n1"	"Akr7a5"	"Iffo2"	"Sdhh"
## [801]	"Dhrs3"	"Gm13244"	"Znf41-ps"	"Gm13051"
## [805]	"Zfp600"	"Gm13251"	"Gm13233"	"Eno1"
## [809]	"Rer1"	"Faap20"	"Aurkaip1"	"Mxra8"
## [813]	"Cptp"	"Noc21"	"Tmem175"	"4930522L14Rik"
## [817]	"Zfp605"	"Chfr"	"Ttc28"	"Ssh1"
## [821]	"Pxn"	"Wsb2"	"Vps33a"	"Baz1b"
## [825]	"Ift22"	"Trip6"	"Gnb2"	"Mepce"
## [829]	"Azgp1"	"Tmem184a"	"Psmg3"	"Actb"
## [833]	"Zfp12"	"Cyp3a57"	"Cyp3a25"	
## [1]	"C" "SD"			
## [1]	"Rgs20"	"Npbwr1"	"Mybl1"	"Sgk3"
## [5]	"Snhg6"	"Ncoa2"	"Sbspon"	"Rdh10"
## [9]	"Kcnq5"	"Bai3"	"Khdrbs2"	"Arhgef4"
## [13]	"Neurl3"	"Unc50"	"2610017I09Rik"	"Wdr75"
## [17]	"1700019D03Rik"	"Osgpl1"	"Asnsd1"	"Gtf3c3"
## [21]	"Fam126b"	"Gm13749"	"Map2"	"Plcd4"
## [25]	"Gm17751"	"Ap1s3"	"Col4a3"	"C130036L24Rik"
## [29]	"Ptma"	"Mterfd2"	"Stk25"	"D2hgdh"
## [33]	"B230216N24Rik"	"Rnf152"	"Ralb"	"Epb4.115"
## [37]	"B230209K01Rik"	"Lypd1"	"Ccnt2"	"Dars"
## [41]	"5430435G22Rik"	"Cdk18"	"Kiss1"	"Sox13"
## [45]	"Snrpe"	"Zc3h11a"	"Rabif"	"Ptprv"
## [49]	"Tmem9"	"Ascl5"	"Cfh"	"Kcnt2"
## [53]	"Brinp3"	"Ptgs2os"	"1700025G04Rik"	"Ncf2"
## [57]	"E330020D12Rik"	"5830403L16Rik"	"Cacna1e"	"Mr1"
## [61]	"Cep350"	"Abl2"	"Cacybp"	"Gpr52"
## [65]	"Gas5"	"Snord47"	"Dnm3"	"Mettl13"
## [69]	"Vamp4"	"Fmo1"	"Slc19a2"	"Gm20743"
## [73]	"Dcaf6"	"Rcsd1"	"Gm16701"	"Fam78b"
## [77]	"Aldh9a1"	"Fcgr2b"	"1700009P17Rik"	"Pvrl4"
## [81]	"Ccadc19"	"Darc"	"Rgs7"	"Adck3"
## [85]	"Lin9"	"Degs1"	"1700047M11Rik"	"Trp53bp2"
## [89]	"Gm2061"	"1700007P06Rik"	"Nsl1"	"Ppp2r5a"
## [93]	"1700034H15Rik"	"Gm10516"	"Lamb3"	"Cd34"
## [97]	"A330023F24Rik"	"Rbm17"	"BC061194"	"Gm3230"
## [101]	"Gm13375"	"Gpr158"	"C8g"	"C330006A16Rik"
## [105]	"Gpsm1"	"Egfl7"	"Snhg7"	"Dolpp1"
## [109]	"D330023K18Rik"	"Rnd3"	"Gm13629"	"Ccadc173"
## [113]	"Zak"	"Wipf1"	"Rbm45"	"Tmx2"
## [117]	"Timm10"	"P2rx3"	"Ptpmt1"	"Madd"
## [121]	"A330069E16Rik"	"2810002D19Rik"	"Cd59b"	"Muc15"
## [125]	"Eif5a2"	"Actrt3"	"Trpc3"	"Spry1"

##	[129]	"2610316D01Rik"	"Frem2"	"Alg5"	"Dclk1"
##	[133]	"Rnf13"	"Serp1"	"Fam194a"	"Gria2"
##	[137]	"Lrrc71"	"Isg2012"	"1700113A16Rik"	"1500004A13Rik"
##	[141]	"Dap3"	"Gm15417"	"Shc1"	"Rab13"
##	[145]	"Gatad2b"	"Chtop"	"Lingo4"	"Zfp687"
##	[149]	"Vps72"	"6330549D23Rik"	"Tbx15"	"Igsf3"
##	[153]	"Kcnd3os"	"AI504432"	"Kcna2"	"Slc16a4"
##	[157]	"Slc25a24"	"A930005H10Rik"	"Extl2"	"Dbt"
##	[161]	"A730020M07Rik"	"Abcd3"	"Usp53"	"LOC100862268"
##	[165]	"Gar1"	"Ostc"	"Sgms2"	"Ube2d3"
##	[169]	"H2afz"	"Gbp5"	"Pkn2"	"Clca1"
##	[173]	"Ddah1"	"Uox"	"Lphn2"	"Gm1653"
##	[177]	"Eltd1"	"Ak5"	"4922501L14Rik"	"4930570G19Rik"
##	[181]	"Negr1"	"Rpe65"	"Lyn"	"Chchd7"
##	[185]	"Car8"	"4930412C18Rik"	"Fam92a"	"4930528A17Rik"
##	[189]	"4933421010Rik"	"Ube2j1"	"Akirin2"	"1700003M02Rik"
##	[193]	"Gm3893"	"N28178"	"Vcp"	"Rusc2"
##	[197]	"Tesk1"	"Reck"	"5830415F09Rik"	"Trim14"
##	[201]	"Zfp462"	"BC026590"	"Tmem245"	"Epb4.114b"
##	[205]	"Kdm4c"	"Zdhhc21"	"Rps6"	"Focad"
##	[209]	"Mysm1"	"E130114P18Rik"	"Nfia"	"Pde4b"
##	[213]	"Dab1"	"0610037L13Rik"	"Btf314"	"Stil"
##	[217]	"C530005A16Rik"	"Tesk2"	"Hpd1"	"Ccdc24"
##	[221]	"A330021E22Rik"	"Sema3e"	"4921504A21Rik"	"A630072M18Rik"
##	[225]	"Armc10"	"Pmpcb"	"6030443J06Rik"	"Srp2"
##	[229]	"AI506816"	"2700038G22Rik"	"Nub1"	"Dok7"
##	[233]	"Rab28"	"Prom1"	"Tapt1"	"Lcor1"
##	[237]	"Gpr125"	"Zcchc4"	"Gm3716"	"Fam114a1"
##	[241]	"Rpl9"	"Lias"	"C330024D21Rik"	"Dcun1d4"
##	[245]	"Pdgra"	"4930467D21Rik"	"Mapk10"	"Lrrc8d"
##	[249]	"Asb4"	"A430035B10Rik"	"1110019D14Rik"	"Cttnbp2"
##	[253]	"Ndufa5"	"Arf5"	"Prmt4"	"Strip2"
##	[257]	"3110062M04Rik"	"9330158H04Rik"	"Chrm2"	"Zfp398"
##	[261]	"Krbal"	"Zfp467"	"Gimap9"	"Malsu1"
##	[265]	"Cbx3"	"6430584L05Rik"	"Ccser1"	"Ptcd3"
##	[269]	"Vamp8"	"Elmod3"	"Retsat"	"Alms1"
##	[273]	"Cml3"	"Cml5"	"Snrgp"	"1600020E01Rik"
##	[277]	"Ccdc37"	"Adamts9"	"Fam19a4"	"Itpr1"
##	[281]	"0610040F04Rik"	"Bhlhe40"	"Sec13"	"Zfp422"
##	[285]	"Zfp9"	"Cacna2d4"	"C1s"	"Gm5077"
##	[289]	"Ptms"	"E130112N10Rik"	"Ndufa9"	"Rad51ap1"
##	[293]	"9630033F20Rik"	"Cnd2"	"Tead4"	"1700101I11Rik"
##	[297]	"2700089E24Rik"	"Loh12cr1"	"Dusp16"	"8430419L09Rik"
##	[301]	"Grin2b"	"H2afj"	"Smco3"	"Rerg"
##	[305]	"Bhlhe41"	"Itpr2"	"Fgfr1op2"	"Med21"
##	[309]	"4930479D17Rik"	"Stk381"	"Tfpt"	"Cnot3"
##	[313]	"D630041G03Rik"	"Zfp329"	"Zfp110"	"Zfp128"
##	[317]	"Mzf1"	"Meis3"	"Prr24"	"Bbc3"
##	[321]	"Grfl1"	"Pnmal1"	"Mypop"	"Gpr4"
##	[325]	"Opa3"	"Pvrl2"	"Rps19"	"Ltbp4"
##	[329]	"Blvrb"	"Zfp59"	"Zfp850"	"Paf1"
##	[333]	"Sirt2"	"Capn12"	"Eif3k"	"Rasgrp4"
##	[337]	"Dpf1"	"Zfp566"	"Capns1"	"BC053749"
##	[341]	"Igflr1"	"Cox6b1"	"Mag"	"Lsr"

##	[345]	"Fxyd7"	"A230077H06Rik"	"Vmn2r57"	"Zfp715"
##	[349]	"Siglec5"	"Etfb"	"Zfp719"	"Klk6"
##	[353]	"Rras"	"Aldh16a1"	"Ldha"	"Nipa2"
##	[357]	"Gabrg3"	"Gabbrb3"	"Ube3a"	"A230073K19Rik"
##	[361]	"C230091D08Rik"	"Ipw"	"D7Erttd715e"	"B230209E15Rik"
##	[365]	"A230057D06Rik"	"A330076H08Rik"	"Otud7a"	"Lins"
##	[369]	"Lamp1"	"Tm2d2"	"Htra4"	"Rnf170"
##	[373]	"Mak16"	"Wrn"	"Ubxn8"	"Leprot11"
##	[377]	"Tmem66"	"D8Erttd82e"	"Pcm1"	"Fbxo8"
##	[381]	"BC030500"	"Spock3"	"Cpe"	"March1"
##	[385]	"Ints10"	"Atp6v1b2"	"Zfp869"	"Ndufa13"
##	[389]	"2310045N01Rik"	"Slc25a42"	"Pgpep1"	"Lsm4"
##	[393]	"2010320M18Rik"	"Ushbp1"	"Bst2"	"Slc27a1"
##	[397]	"Zfp882"	"Slc35e1"	"Large"	"Tmem184c"
##	[401]	"Zfp330"	"Rnf150"	"Lphn1"	"Palm3"
##	[405]	"Ier2"	"Nacc1"	"Trmt1"	"Farsa"
##	[409]	"BC056474"	"Zfp791"	"Orc6"	"Gpt2"
##	[413]	"Itfg1"	"Gm2694"	"Cnep1r1"	"Cyld"
##	[417]	"Fto"	"Lpcat2"	"Herpud1"	"Fam192a"
##	[421]	"Arl2bp"	"Gtl3"	"Tango6"	"Znrf1"
##	[425]	"Cdh13"	"4933417D19Rik"	"Fanca"	"Afg3l1"
##	[429]	"Trim67"	"Pcnxl2"	"Nfrkb"	"1700063D05Rik"
##	[433]	"3110039I08Rik"	"Tbcel"	"Ube4a"	"Amica1"
##	[437]	"2900052N01Rik"	"Htr3a"	"Ncam1"	"Dmxl2"
##	[441]	"Hykk"	"Rcn2"	"Man2c1os"	"Anp32a"
##	[445]	"Coro2b"	"Ras112"	"Plekho2"	"Snx1"
##	[449]	"Narg2"	"Fam81a"	"Aqp9"	"Gnb5"
##	[453]	"C920006011Rik"	"Gm10635"	"Me1"	"Mrap2"
##	[457]	"4922501C03Rik"	"9430037G07Rik"	"Gm2382"	"9330159M07Rik"
##	[461]	"Mthfs"	"Tbc1d2b"	"Rnf7"	"Slc25a36"
##	[465]	"Armc8"	"Pccb"	"Ephb1"	"Cpne4"
##	[469]	"Nudt16"	"Wdr82"	"Tlr9"	"Abhd14b"
##	[473]	"Gpr62"	"Rbm6"	"Ip6k1"	"Mir425"
##	[477]	"Trex1"	"Prss50"	"Dcl3"	"Cmtm6"
##	[481]	"Rbms3"	"Plcd1"	"Xylb"	"Cx3cr1"
##	[485]	"Trak1"	"Vipr1"	"Deb1"	"Tcaim"
##	[489]	"Plp2"	"Slc35a2"	"Lanc13"	"Tspan7"
##	[493]	"Rap2c"	"Sox3"	"Emd"	"Fam3a"
##	[497]	"F8"	"Rgag4"	"Jpx"	"Magee2"
##	[501]	"Lpar4"	"Diap2"	"Armcx1"	"Armcx3"
##	[505]	"Zmat1"	"Arxes2"	"BC065397"	"Fam199x"
##	[509]	"D330045A20Rik"	"Atg4a"	"2900056M20Rik"	"9530051G07Rik"
##	[513]	"Bmx"	"Fancb"	"Glra2"	"Gemin8"
##	[517]	"Ipcef1"	"A630066F11Rik"	"Nup43"	"BC020402"
##	[521]	"Ginm1"	"Sf3b5"	"Phactr2"	"Fuca2"
##	[525]	"Gpr126"	"Heca"	"Reps1"	"Samd3"
##	[529]	"Ddo"	"Sowahc"	"Cdh23"	"Ank3"
##	[533]	"Der13"	"Mmp11"	"Lrrc3"	"E130317F20Rik"
##	[537]	"Slc39a3"	"Creb3l3"	"Zfp781"	"Glt8d2"
##	[541]	"Prdm4"	"Syn3"	"Gas2l3"	"Actr6"
##	[545]	"Cdk17"	"Elk3"	"Vezt"	"Poc1b"
##	[549]	"Slc6a15"	"Gm15663"	"E2f7"	"Csrp2"
##	[553]	"Phlda1"	"Cpm"	"Rassf3"	"Lrig3"
##	[557]	"LOC100504703"	"Dtx3"	"Naca"	"Nabp2"

##	[561]	"Selm"	"Mir3060"	"Zmat5"	"Fignl1"
##	[565]	"C1d"	"Ehbp1"	"0610010F05Rik"	"Pnpt1"
##	[569]	"Smek2"	"Ccdc104"	"Ccdc88a"	"Rtn4"
##	[573]	"Sptbn1"	"Erlec1"	"Stk10"	"Dock2"
##	[577]	"Fam196b"	"Gabra1"	"Gabrb2"	"Ccnjl"
##	[581]	"Nhp2"	"Rmnd5b"	"Cdkn2aipnl"	"Vdac1"
##	[585]	"P4ha2"	"Cdc42se2"	"Anxa6"	"Larp1"
##	[589]	"Cnot8"	"Gm12250"	"2810021J22Rik"	"Hist3h2ba"
##	[593]	"Hist3h2a"	"Gjc2"	"Guk1"	"2610507I01Rik"
##	[597]	"Ubb"	"Fam211a"	"Glp2r"	"Wdr16"
##	[601]	"Rangrf"	"2310047M10Rik"	"Vamp2"	"Trappc1"
##	[605]	"Lsmd1"	"G630025P09Rik"	"Elp5"	"Dvl2"
##	[609]	"Dlg4"	"Mink1"	"1200014J11Rik"	"Mir212"
##	[613]	"Tlcd2"	"Glod4"	"Rnmtl1"	"Timm22"
##	[617]	"Coro6"	"Rdh14"	"Vsnl1"	"Nbas"
##	[621]	"2410004P03Rik"	"Pdla6"	"1700030C10Rik"	"Ywhaq"
##	[625]	"2410018L13Rik"	"Klf11"	"Cys1"	"Gm20187"
##	[629]	"Gm9866"	"Colec11"	"Myt11"	"Acp1"
##	[633]	"Ahr"	"Gm5434"	"2700097009Rik"	"Atp5s"
##	[637]	"Sav1"	"3110056K07Rik"	"Syne2"	"Sptb"
##	[641]	"Actn1"	"Rbm25"	"Gtf2a1"	"Em15"
##	[645]	"Rin3"	"Serpina3h"	"Serpina3m"	"Clmn"
##	[649]	"D430019H16Rik"	"Bdkrb2"	"Ccnk"	"Rian"
##	[653]	"Mir341"	"Snora28"	"2810029C07Rik"	"Tdrd9"
##	[657]	"Tmem179"	"BC022687"	"D430020J02Rik"	"Gm10421"
##	[661]	"Sp8"	"Hist1h1e"	"1110046J04Rik"	"Ppp1r3g"
##	[665]	"Nrn1"	"C78339"	"Rnf144b"	"9430083A17Rik"
##	[669]	"Gm2762"	"Rnf44"	"Mxd3"	"Mir6945"
##	[673]	"H2afy"	"Tifab"	"Hnrnpk"	"Ctla2b"
##	[677]	"Zfp808"	"2010111I01Rik"	"Mir24-1"	"Hiatl1"
##	[681]	"Mterfd1"	"Zfp458"	"F630042J09Rik"	"AA987161"
##	[685]	"A530054K11Rik"	"Zfp85os"	"4930525G20Rik"	"Fastkd3"
##	[689]	"Nsun2"	"Ankrd32"	"C130071C03Rik"	"Mir9-2"
##	[693]	"Ccnh"	"Cox7c"	"Tmem167"	"4833422C13Rik"
##	[697]	"Jmy"	"Bhmt2"	"Dmgdh"	"AW495222"
##	[701]	"Col4a3bp"	"Enc1"	"Foxd1"	"Tnpo1"
##	[705]	"Ptcd2"	"Mrps27"	"Map1b"	"Naip2"
##	[709]	"Ocln"	"Marveld2"	"5930438M14Rik"	"Cd180"
##	[713]	"Mast4"	"Htr1a"	"3830408C21Rik"	"Smim15"
##	[717]	"Ppap2a"	"Paip1"	"Fam107a"	"Atxn7"
##	[721]	"Oxsm"	"Ube2e1"	"1810062018Rik"	"Bap1"
##	[725]	"Zfp488"	"Cnih1"	"Gmfb"	"Samd4"
##	[729]	"Peli2"	"Ttc5"	"Rnase4"	"Rpgr1p1"
##	[733]	"A430107P09Rik"	"Dad1"	"Lrp10"	"Ajuba"
##	[737]	"Psmb11"	"1700123020Rik"	"Bcl2l2"	"Lrrc16b"
##	[741]	"Zmym2"	"N6amt2"	"Cab391"	"Kpna3"
##	[745]	"Dleu2"	"Kcnrg"	"Stmn4"	"Pnma2"
##	[749]	"Ppp2r2a"	"Loxl2"	"Tnfrsf10b"	"Akap11"
##	[753]	"Dgkh"	"Zbtbd6"	"Pcdh17"	"Bora"
##	[757]	"Pibf1"	"Tbc1d4"	"Spry2"	"Gpc5"
##	[761]	"Dnajc3"	"Ghr"	"AW549877"	"BC037032"
##	[765]	"Ptger4"	"Cdh6"	"Gm5468"	"Myo10"
##	[769]	"Ank"	"Pkhd111"	"Ebag9"	"Ndufb9"
##	[773]	"Trappc9"	"Bai1"	"Scx"	"Zfp251"

##	[777]	"Eif3d"	"Micall1"	"Sox10"	"Gm10863"
##	[781]	"Maff"	"Mir1943"	"Csnk1e"	"Tomm22"
##	[785]	"Sun2"	"Apobec3"	"Mgat3"	"Rps19bp1"
##	[789]	"Slc25a17"	"Nfam1"	"Rrp7a"	"Cyb5r3"
##	[793]	"1700001L05Rik"	"Sult4a1"	"Mir1249"	"AU022754"
##	[797]	"Mirlet7b"	"Rabl2"	"Abcd2"	"Pced1b"
##	[801]	"Rapgef3"	"AI836003"	"9330020H09Rik"	"Tuba1b"
##	[805]	"Dazap2"	"Npff"	"Itga5"	"Nckap11"
##	[809]	"Crebbp"	"Rbfox1"	"Clcn26"	"2610020C07Rik"
##	[813]	"2310015D24Rik"	"Cebpd"	"Sdf211"	"Camk2n2"
##	[817]	"Rtp1"	"Snp5"	"Mylk"	"Dtx31"
##	[821]	"Kpna1"	"Fam162a"	"Slc15a2"	"Golgb1"
##	[825]	"Gtf2e1"	"Rabl3"	"2610015P09Rik"	"Slc35a5"
##	[829]	"Atg3"	"Clcn25"	"Crybg3"	"Adamts5"
##	[833]	"Hunk"	"Urb1"	"Synj1"	"4932438H23Rik"
##	[837]	"A930006K02Rik"	"Ifngr2"	"Pcp4"	"Pisd-ps2"
##	[841]	"Tmem181a"	"Rps6ka2"	"4930506C21Rik"	"T2"
##	[845]	"Gm16702"	"4732491K20Rik"	"Tcp1"	"2700054A10Rik"
##	[849]	"1600012H06Rik"	"9030025P20Rik"	"Gm3435"	"Zfp960"
##	[853]	"Riok2"	"Zfp52"	"Gm10509"	"Gm16386"
##	[857]	"Srrm2"	"D330041H03Rik"	"Pgp"	"Bricd5"
##	[861]	"Rab26os"	"Snora64"	"Eme2"	"Clcn7"
##	[865]	"BC003965"	"Tsr3"	"Pdia2"	"Neurl1b"
##	[869]	"AI413582"	"Pacsin1"	"Fgd2"	"Cmtr1"
##	[873]	"Zfp563"	"Rab11b"	"Rps28"	"BC051226"
##	[877]	"Daxx"	"H2-Ke2"	"AA388235"	"Tap2"
##	[881]	"H2-Aa"	"H2-Ea-ps"	"Stk19"	"Nelfe"
##	[885]	"Abhd16a"	"D17H6S53E"	"Lta"	"H2-D1"
##	[889]	"Mdc1"	"Gm8801"	"Abcf1"	"A930015D03Rik"
##	[893]	"Trim39"	"Ptchd4"	"Gpr115"	"Gpr111"
##	[897]	"E130008D07Rik"	"Rcan2"	"Tcte1"	"Rsph9"
##	[901]	"Mocs1"	"Rab5a"	"Zfp119b"	"Uhrf1"
##	[905]	"Vmac"	"Tgif1"	"Trmt61b"	"Crim1"
##	[909]	"1110001A16Rik"	"Prkd3"	"Cox7a21"	"Plekhh2"
##	[913]	"Dync21i1"	"Mettl4"	"Thoc1"	"Cdh2"
##	[917]	"Dsg2"	"Zfp35"	"Map3k2"	"Epb4.114a"
##	[921]	"Brd8"	"Kif20a"	"Kdm3b"	"Hspa9"
##	[925]	"Psd2"	"Pcdhb4"	"Pcdhb6"	"Pcdhb11"
##	[929]	"Pcdhb12"	"Pcdhb14"	"Pcdhga6"	"Pcdhgb4"
##	[933]	"Pcdhga8"	"Pcdhgb5"	"Pcdhgc4"	"Diap1"
##	[937]	"Fchsd1"	"1700086006Rik"	"Gm5820"	"Yipf5"
##	[941]	"Lars"	"Dpysl3"	"Dcp2"	"A930012L18Rik"
##	[945]	"Ap3s1"	"4833403I15Rik"	"Sema6a"	"Tnfaip8"
##	[949]	"Lox"	"9330117012Rik"	"Pmaip1"	"Seh11"
##	[953]	"Mapk4"	"Gstp1"	"Pcx"	"Lrfn4"
##	[957]	"Rbm4b"	"Zdhhc24"	"Dpp3"	"B3gnt1"
##	[961]	"Eif1ad"	"4930481A15Rik"	"Rnaseh2c"	"Map3k11"
##	[965]	"Scyl1"	"Malat1"	"Neat1"	"Tm7sf2"
##	[969]	"Atg2a"	"Rasgrp2"	"Nrnx2"	"Prdx5"
##	[973]	"Snhg1"	"Wdr74"	"Tmem223"	"Rab3il1"
##	[977]	"Fads1"	"Syt7"	"Dak"	"Osbp"
##	[981]	"Mpeg1"	"Zfp91"	"D030056L22Rik"	"E030003E18Rik"
##	[985]	"Tmem2"	"Fam122a"	"2700046G09Rik"	"Atad1"
##	[989]	"Rnls"	"Ide"	"Myof"	"Lgi1"

## [993]	"Tbc1d12"	"Arhgap19"	"Mms19"	"Pi4k2a"
## [997]	"Avpi1"	"BC037704"	"Cox15"	"Lzts2"
## [1001]	"Poll"	"Trim8"	"2010012005Rik"	"Nt5c2"
## [1005]	"Ina"	"Taf5"	"Neurl1a"	"Sh3pxd2a"
## [1009]	"Ittrip"	"5830416P10Rik"	"A630007B06Rik"	"6720468P15Rik"
## [1013]	"4930506M07Rik"	"Pdzd8"	"Emx2os"	"Emx2"
## [1017]	"D19Erttd737e"	"Tlcd1"	"Snord42b"	"Slfn9"
## [1021]	"AA465934"	"Taf15"	"Dhrs11"	"Tbx2"
## [1025]	"C030037D09Rik"	"4932411E22Rik"	"Ankfn1"	"Zfp652os"
## [1029]	"Abi3"	"Mien1"	"Wipf2"	"Krt9"
## [1033]	"Atxn713"	"Arhgap27os3"	"C130046K22Rik"	"1700052K11Rik"
## [1037]	"Gm11696"	"Amz2"	"LOC100503496"	"Kif19a"
## [1041]	"AF251705"	"Slc9a3r1"	"Hid1"	"Ict1"
## [1045]	"2310067B10Rik"	"Sphk1"	"Ube2o"	"Srsf2"
## [1049]	"Mfsd11"	"2900041M22Rik"	"Syng2"	"Socs3"
## [1053]	"Clqtnf1"	"Gm11762"	"Azi1"	"Csnk1d"
## [1057]	"A530058N18Rik"	"D330050G23Rik"	"Eif2ak4"	"Bmf"
## [1061]	"5430417L22Rik"	"A430105I19Rik"	"Rpusd2"	"Ndufaf1"
## [1065]	"Rtf1"	"Snap23"	"Ttbk2"	"Zscan29"
## [1069]	"Serinc4"	"Casc4"	"Ctdspl2"	"Gatm"
## [1073]	"Eid1"	"Hdc"	"Usp8"	"Blvra"
## [1077]	"Tmem127"	"Ttl"	"AI847159"	"A730036I17Rik"
## [1081]	"Ap5s1"	"Mavs"	"Adra1d"	"5330413P13Rik"
## [1085]	"Slc23a2"	"Tmem230"	"Tasp1"	"Flrt3"
## [1089]	"Pcsk2os1"	"Dstn"	"Gm5535"	"Snx5"
## [1093]	"Zfp133-ps"	"Zfp937"	"H13"	"Hck"
## [1097]	"Kif3b"	"2500004C02Rik"	"8430427H17Rik"	"Pxmp4"
## [1101]	"Gm14169"	"9830001H06Rik"	"Samhd1"	"Gm14204"
## [1105]	"Ift52"	"Mybl2"	"Ywhab"	"Slc12a5"
## [1109]	"Dok5"	"Ppp4r11-ps"	"Etohi1"	"Col20a1"
## [1113]	"Rtel1"	"Zbtb46"	"Dnajc5"	"Ttc23"
## [1117]	"Fanci"	"AI854517"	"Slc28a1"	"2900076A07Rik"
## [1121]	"Mir1839"	"3110040N11Rik"	"Eftud1"	"Mesdc2"
## [1125]	"Arnt2"	"Gm2115"	"E230029C05Rik"	"Tmem126b"
## [1129]	"Fam181b"	"Kctd21"	"Aamd1"	"Rsf1"
## [1133]	"Pak1"	"Capn5"	"Gm16938"	"2210018M11Rik"
## [1137]	"Prkrir"	"Uvrag"	"Arrb1"	"Gm4980"
## [1141]	"Xrra1"	"P2ry2"	"Fchsd2"	"Clpb"
## [1145]	"Rnf121"	"Xndr"	"Nup98"	"Psm1"
## [1149]	"4933406I18Rik"	"Ccp110"	"Eef2k"	"Ppp4c"
## [1153]	"Hirip3"	"Rnf40"	"Bub3"	"Tcerg11"
## [1157]	"Nkx6-2"	"E030019B06Rik"	"Gpr123"	"Cd81"
## [1161]	"Kcnq1ot1"	"Slc26a1"	"Zfp932"	"LOC101056043"
## [1165]	"Ttc28"	"C130026L21Rik"	"Miat"	"Tfip11"
## [1169]	"Sgsm1"	"Ube3b"	"Glt1"	"Cabp1"
## [1173]	"Pxn"	"Tesc"	"Fbxw8"	"Hrk"
## [1177]	"2410131K14Rik"	"Oas1b"	"Rpl6"	"Acad12"
## [1181]	"Rhof"	"Setd1b"	"Ccdc62"	"Cdk2ap1"
## [1185]	"Tmed2"	"Abhd11os"	"Rhbd2"	"Srcrb4d"
## [1189]	"4933404012Rik"	"Gm20605"	"Zfp68"	"Pdgfa"
## [1193]	"Mad111"	"Ftsj2"	"Usp42"	"D130017N08Rik"
## [1197]	"Bud31"	"Wdr65"	"Ccdc23"	"4930538K18Rik"
## [1201]	"Lepre1"	"Pabpc4"	"Dnali1"	"Oscp1"
## [1205]	"Ncdn"	"AU040320"	"Zmym6"	"Tmem234"

## [1209]	"Ptp4a2"	"1700003M07Rik"	"Stx12"	"Fam76a"
## [1213]	"Ahdcl1"	"Rps6ka1"	"Pdik11"	"Mtfr11"
## [1217]	"Id3"	"Luzp1"	"Epha8"	"Zbtb40"
## [1221]	"Gm13003"	"Cda"	"Gm16287"	"Arhgef101"
## [1225]	"Rcc2"	"Sdhhb"	"Atp13a2"	"Fblim1"
## [1229]	"Slc25a34"	"Efhd2"	"Tmem51os1"	"Kazn"
## [1233]	"Gm13178"	"Smarca5-ps"	"Ptchd2"	"Ctnnbip1"
## [1237]	"Camta1"	"Plekhhg5"	"Rnf207"	"A430005L14Rik"
## [1241]	"Trp73"	"2610002J02Rik"	"Atad3aos"	"Mrpl20"
## [1245]	"Dvl1"	"Gltpd1"	"Tnfrsf4"	"Gm10560"
## [1249]	"AW011738"	"2310042D19Rik"		
## [1]	"Zfp182"	"Stag2"	"Xpnpep2"	"Igsf1"
## [5]	"Slc9a6"	"Xlr4a"	"Xlr4b"	"Xlr3c"
## [9]	"Avpr2"	"Gm7173"	"Gm7061"	"Zc4h2"
## [13]	"Nap112"	"Zdhhc15"	"Gm14849"	"Chm"
## [17]	"Nap113"	"Taf71"	"Tmsb151"	"Tmsb15b2"
## [21]	"Tmsb15b1"	"Rbm41"	"Gm19026"	"St18"
## [25]	"Vcpip1"	"Stau2"	"B3gat2"	"Snap1"
## [29]	"Adgrb3"	"4931428L18Rik"	"Ankrd23"	"Actr1b"
## [33]	"Mitd1"	"Dnah7c"	"Trak2"	"Akr1c1"
## [37]	"Gm15789"	"Cxcr2"	"Usp37"	"Bcs11"
## [41]	"Stk36"	"Ttll4"	"Ihh"	"BC035947"
## [45]	"Gpr55"	"Eif4e2"	"Ngef"	"Ugt1a6b"
## [49]	"Mterf4"	"Ppp1r7"	"Gm6086"	"Slco4c1"
## [53]	"Pam"	"Cdh20"	"Gm17916"	"Tsn"
## [57]	"Steap3"	"Ddx18"	"Cxcr4"	"Elk4"
## [61]	"Gm28040"	"Syt2"	"Ppp1r12b"	"Lmod1"
## [65]	"Ipo9"	"Phlda3"	"Nek7"	"Crb1"
## [69]	"Gm5263"	"Swt1"	"Nmnat2"	"Tedd2"
## [73]	"BC034090"	"Ralgps2"	"Astn1"	"Tnr"
## [77]	"4930523C07Rik"	"Scyl3"	"Nme7"	"Gm18186"
## [81]	"Pogk"	"Uck2"	"Cfap126"	"Dedd"
## [85]	"Nectin4"	"Slamf7"	"Pea15a"	"Casq1"
## [89]	"Cfap45"	"Ackr1"	"Ifi204"	"Rbm8a2"
## [93]	"Sdccag8"	"Gm16432"	"Smyd3"	"Cdc42bpa"
## [97]	"9130409I23Rik"	"Gm6606"	"Disp1"	"Taf1a"
## [101]	"Mark1"	"Gm8407"	"Batf3"	"Sertad4"
## [105]	"Syt14"	"Cd46"	"Usp6n1"	"Rsu1"
## [109]	"St8sia6"	"Bmi1"	"Spag6"	"Gm13416"
## [113]	"Cacna1b"	"Zmynd19"	"Cysrt1"	"Ssna1"
## [117]	"Anapc2"	"Clic3"	"Ccdc187"	"Snapc4"
## [121]	"Tsc1"	"Endog"	"Gpr107"	"Hmcn2"
## [125]	"Ass1"	"Ciz1"	"Lrsam1"	"Ralgps1"
## [129]	"Lrp1b"	"Rbm43"	"Gca"	"Grb14"
## [133]	"Cobll1"	"Scn9a"	"Xirp2"	"Rps6-ps4"
## [137]	"Ttc30b"	"Nup35"	"Zc3h15"	"Calcr1"
## [141]	"Tfpi"	"Zdhhc5"	"Pdhx"	"Ccdc73"
## [145]	"Wt1"	"Gm9864"	"Gm38400"	"Egfem1"
## [149]	"Prkci"	"Pgrmc2"	"Jade1"	"Cog6"
## [153]	"Supt20"	"Ankub1"	"Erich6"	"Siah2"
## [157]	"Fam188b2-ps"	"Arhgef26"	"Gmps"	"4931440P22Rik"
## [161]	"Rsrc1"	"Rarres1"	"Schip1"	"Ppm11"
## [165]	"Tdo2"	"Dchs2"	"Rps27"	"Gm43743"
## [169]	"Gm42464"	"Ankrd34a"	"Hsd3b2"	"Fam46c"

##	[173]	"Man1a2"	"Slc22a15"	"Rap1a"	"Gstm7"
##	[177]	"Ntng1"	"Gm9761"	"Alg14"	"Rpl34"
##	[181]	"Gstcd"	"Nfkb1"	"1110002E22Rik"	"Ccb12"
##	[185]	"Adgrl2"	"Adgrl4"	"Erich3"	"9430025C20Rik"
##	[189]	"Dpy1914"	"Rbm12b1"	"Pm20d2"	"Cfap206"
##	[193]	"Mob3b"	"Ddx58"	"Gm12396"	"Aqp3"
##	[197]	"AI464131"	"Gm13302"	"Gm20878"	"Fam205a4"
##	[201]	"Gm13303"	"Gm13304"	"Gm13306"	"Gm13305"
##	[205]	"Gm13301"	"Gm5859"	"Gm17081"	"Gm10600"
##	[209]	"Fam205a3"	"Gm3883"	"Gm2163"	"4930578G10Rik"
##	[213]	"Gm12394"	"Fam205a1"	"Fam205c"	"Phf24"
##	[217]	"Cd72"	"Gm12504"	"Grhpr"	"Polr1e"
##	[221]	"Trmo"	"Nans"	"Gng10"	"Cdc26"
##	[225]	"Bspry"	"Pole3"	"Col27a1"	"Cdk5rap2"
##	[229]	"Hacd4"	"Gm26566"	"Cdkn2b"	"Caap1"
##	[233]	"Tek"	"Ndc1"	"Scp2"	"3110021N24Rik"
##	[237]	"Ccadc17"	"Zswim5"	"Ptch2"	"Cfap69"
##	[241]	"Steap2"	"Rsbn11"	"Fgl2"	"Gm6560"
##	[245]	"Gm43058"	"Pus7"	"4933427G23Rik"	"Slc4a1ap"
##	[249]	"Cfap99"	"Stx18"	"Ncapg"	"Adgra3"
##	[253]	"Sod3"	"Klb"	"Ras11b"	"Scfd2"
##	[257]	"Chic2"	"Srd5a3"	"Stap1"	"Cxc15"
##	[261]	"Mthfd21"	"Nup54"	"Ccng2"	"Enoph1"
##	[265]	"Gbp8"	"Lrrc8b"	"Ccadc18"	"Umad1"
##	[269]	"Gm45062"	"Gm16042"	"Cav1"	"Tmem229a"
##	[273]	"Smo"	"Klhdc10"	"Zfp786"	"Zfp282"
##	[277]	"Zfp956"	"Gimap8"	"Igf2bp3"	"Ggct"
##	[281]	"Grid2"	"Thns12"	"Gm17825"	"Tmem150a"
##	[285]	"Sh2d6"	"Gcfc2"	"Hk2"	"Nat8f7"
##	[289]	"Alms1-ps1"	"Nat8f3"	"Nat8f6"	"Nat8f5"
##	[293]	"C87436"	"Kbtbd12"	"Zxdc"	"Cfap100"
##	[297]	"Xpc"	"Nr2c2"	"Shq1"	"Rad18"
##	[301]	"Camk1"	"A2m"	"C1s1"	"C1s2"
##	[305]	"Atn1"	"Gm45234"	"Gapdh"	"Tigar"
##	[309]	"Itfg2"	"Gm44958"	"Smim1011"	"Fam234b"
##	[313]	"Plbd1"	"Slco1b2"	"Lmntd1"	"Fam60a"
##	[317]	"Prpf31"	"Tnnt1"	"Tmem150b"	"Zfp579"
##	[321]	"Epn1"	"Gm20482"	"Gltscr2"	"Inafm1"
##	[325]	"Ccadc9"	"Tmem160"	"Npas1"	"Arhgap35"
##	[329]	"Gng8"	"Psg23"	"Sympk"	"Gm4969"
##	[333]	"Qpctl"	"Ercc1"	"Exoc3l2"	"Tomm40"
##	[337]	"Nectin2"	"Ceacam20"	"Lipe"	"BC024978"
##	[341]	"Hipk4"	"Zfp27"	"Gm10169"	"Zfp568"
##	[345]	"Gm10988"	"Arhgap33"	"U2af114"	"Fxyd3"
##	[349]	"Gramd1a"	"Cebpg"	"Tdrd12"	"Ankrd27"
##	[353]	"Tshz3"	"Gm20449"	"2610021A01Rik"	"Gm7221"
##	[357]	"Gm5595"	"Gm17067"	"Siglecf"	"Vsig101"
##	[361]	"Gm10109"	"Lrrc4b"	"Nr1h2"	"Tbcd17"
##	[365]	"Ptov1"	"Dkk11"	"Slc6a16"	"Gm38393"
##	[369]	"Chrna7"	"Trpm1"	"Apba2"	"Pcsk6"
##	[373]	"Stxbp2"	"Proz"	"Myom2"	"Gm6483"
##	[377]	"Gm21769"	"Gm21092"	"Gm21119"	"Slc25a15"
##	[381]	"Ido1"	"Fnta"	"Brf2"	"5930422012Rik"
##	[385]	"Saraf"	"Gm19410"	"Sgc2"	"Zdhc2"

##	[389]	"Vps37a"	"Mtus1"	"Fam149a"	"Cenpu"
##	[393]	"Cdkn2aip"	"Cep44"	"Ddx60"	"Nat1"
##	[397]	"Lpl1"	"Gm10311"	"Zfp964"	"Cilp2"
##	[401]	"Mau2"	"Hapln4"	"Nr2c2ap"	"Borcs8"
##	[405]	"Cers1"	"Klhl26"	"Fkbp8"	"Gm10654"
##	[409]	"Ccnb2-ps"	"Zfp961"	"Fam32a"	"Tmem38a"
##	[413]	"Nwd1"	"Ndufb7"	"Pkn1"	"Adgre5"
##	[417]	"Adgrl1"	"Gm10644"	"Rfx1"	"Rtbdn"
##	[421]	"Dhps"	"Zfp319"	"Gm5912"	"4931428F04Rik"
##	[425]	"Exoc3l"	"Maf"	"Atp2c2"	"Fbxo31"
##	[429]	"Jph3"	"Irf2bp2"	"Pard3"	"Ccdc7b"
##	[433]	"Tmem123"	"Slc36a4"	"Ldlr"	"Prdm10"
##	[437]	"Stt3a"	"Esam"	"Gm8707"	"Rps25"
##	[441]	"Gm9830"	"Pcsk7"	"Timm8b"	"Fdxacb1"
##	[445]	"Elmod1"	"Hmg20a"	"Sin3a"	"1700017B05Rik"
##	[449]	"Arid3b"	"Rec114"	"Polr2m"	"Pigb"
##	[453]	"Unc13c"	"Gm7972"	"Bmp5"	"Klhl31"
##	[457]	"Prss35"	"Cep162"	"Mthfsl"	"Trim43c"
##	[461]	"Trim43b"	"Tmed3"	"Il20rb"	"Bfsp2"
##	[465]	"Uba5"	"Acad11"	"Ackr4"	"Acpp"
##	[469]	"Alas1"	"Mst1r"	"Amigo3"	"1700102P08Rik"
##	[473]	"Qars"	"Ndufaf3"	"Gm42641"	"Atrip"
##	[477]	"Spink8"	"Cspg5"	"Klhl18"	"Tmie"
##	[481]	"Zcwpw2"	"Golga4"	"Oxsr1"	"Cyp8b1"
##	[485]	"Zfp445"	"2010315B03Rik"	"Syne1"	"Ppil4"
##	[489]	"Pex3"	"Adgrg6"	"Abrac1"	"Amd2"
##	[493]	"Amd1"	"Nr2e1"	"Herc4"	"Arid5b"
##	[497]	"Rhobtb1"	"A930033H14Rik"	"Gucd1"	"D10Jhu81e"
##	[501]	"BC025920"	"Gm3055"	"Gm4924"	"Tdg"
##	[505]	"Hcfc2"	"Ano4"	"Cfap54"	"Ccdc38"
##	[509]	"Tmem5"	"Slc16a7"	"Agap2"	"Lrp1"
##	[513]	"Tmem194"	"Zbtb39"	"Rpl41"	"Gm11400"
##	[517]	"Sec14l3"	"Camk2b"	"Fbxo48"	"Ugp2"
##	[521]	"Commd1"	"5730522E02Rik"	"Cfap36"	"Acyp2"
##	[525]	"Gpr75"	"Rhbdfl"	"Hba-a1"	"Hba-a2"
##	[529]	"Sap30l"	"Zfp39"	"Rnf187"	"Trim17"
##	[533]	"Trim11"	"Pld6"	"Lrrc75a"	"Arhgap44"
##	[537]	"Myh13"	"Cfap52"	"Myh10"	"Rpl26"
##	[541]	"Borcs6"	"9130213A22Rik"	"Naa38"	"Kdm6b"
##	[545]	"Tnfsfm13"	"Chrnbl"	"Nlgn2"	"Eif5a"
##	[549]	"Slc2a4"	"Clec10a"	"Slc16a11"	"Arrb2"
##	[553]	"Zmynd15"	"Gp1ba"	"Kif1c"	"Zfp3"
##	[557]	"Derl2"	"Spns2"	"Spns3"	"Ankfy1"
##	[561]	"P2rx1"	"Ywhae"	"Laptm4a"	"Pqlc3"
##	[565]	"B430203G13Rik"	"5730507C01Rik"	"Gm5784"	"Gm6802"
##	[569]	"Zfp125"	"Gm20472"	"Gm9285"	"Gm20474"
##	[573]	"Dcdc2c"	"Rps7"	"Baz1a"	"Fam177a"
##	[577]	"Srp54b"	"1700047I17Rik2"	"Ppp2r3c"	"Nfkb1a"
##	[581]	"Mipol1"	"Sstr1"	"Sos2"	"Abhd12b"
##	[585]	"Rhoj"	"Kcnk10"	"Psmc1"	"Dicer1"
##	[589]	"Atg2b"	"1700001K19Rik"	"Wdr20"	"Tnfaip2"
##	[593]	"Klc1"	"Xrcc3"	"A530016L24Rik"	"Cdca4"
##	[597]	"Ighg2c"	"Ighd"	"Ighm"	"Vipr2"
##	[601]	"Ncapg2"	"Pou6f2"	"Zscan26"	"Hist1h4i"

##	[605]	"Gm11361"	"Ripk1"	"Eci3"	"Eci2"
##	[609]	"Cdy1"	"Rpp40"	"Bmp6"	"Fam8a1"
##	[613]	"Susd3"	"Unc5a"	"Dbn1"	"Gkap1"
##	[617]	"Isca1"	"Ptch1"	"Slc35d2"	"Mfsd14b"
##	[621]	"Mterf3"	"Ptdss1"	"Zfp759"	"Zfp87"
##	[625]	"Zfp729b"	"Zfp729a"	"Gm26587"	"Zfp85"
##	[629]	"Gm10037"	"1700001L19Rik"	"Ice1"	"Adamts16"
##	[633]	"Ell2"	"Arsk"	"Ttc37"	"Mctp1"
##	[637]	"Slf1"	"Mef2c"	"Ankrd34b"	"Papd4"
##	[641]	"Iqgap2"	"Sv2c"	"Gm10260"	"Srek1"
##	[645]	"Map3k1"	"Il6st"	"Plpp1"	"Nnt"
##	[649]	"Gm21967"	"Cc128"	"Hmgcs1"	"Nim1k"
##	[653]	"Zfp131"	"Gm3005"	"Gm3264"	"Dnase113"
##	[657]	"3830406C13Rik"	"Anxa7"	"Oxnad1"	"Sncg"
##	[661]	"Bmpr1a"	"Opn4"	"Sh2d4b"	"Gm16439"
##	[665]	"Ktn1"	"A930018M24Rik"	"Pnp"	"Pnp2"
##	[669]	"Ndrp2"	"Tmem253"	"Gm20726"	"Cideb"
##	[673]	"Eef1akmt1"	"Shisa2"	"Stc1"	"Gm16867"
##	[677]	"Gm21685"	"Serp2"	"Rgcc"	"Kbtbd6"
##	[681]	"Diaph3"	"Fbxl3"	"Cldn10"	"Rad1"
##	[685]	"March6"	"Fam173b"	"Emc2"	"Eny2"
##	[689]	"Eif3h"	"Gm6569"	"Adgrb1"	"Apol7e"
##	[693]	"Slc16a8"	"Mkl1"	"Phf5a"	"Ttll12"
##	[697]	"Gm29666"	"5031439G07Rik"	"Fbln1"	"Mapk8ip2"
##	[701]	"Ccadc184"	"Kansl2"	"Cbx5"	"Tek5"
##	[705]	"Ciita"	"Socs1"	"Shisa9"	"Gm15950"
##	[709]	"Hira"	"Lsg1"	"Snx4"	"Dir2"
##	[713]	"Ildr1"	"Gm6030"	"Gm609"	"Tagln3"
##	[717]	"Alcam"	"Tbc1d23"	"Cldnd1"	"Arl6"
##	[721]	"Hspa13"	"Btg3"	"Cbr1"	"Gm5678"
##	[725]	"Sh3bgr"	"Tfb1m"	"Tmem242"	"Gtf2h5"
##	[729]	"Dynlt1b"	"Dynlt1c"	"Tmem181c-ps"	"Dynlt1f"
##	[733]	"Ttll2"	"Tagap"	"Rnaset2a"	"Prr18"
##	[737]	"Wtap"	"Unc93a"	"Gm3448"	"Prdm9"
##	[741]	"Chd1"	"Fpr1"	"Zfp948"	"Zfp947"
##	[745]	"Gm4944"	"Prss30"	"Gm43796"	"Atp6v0c"
##	[749]	"Abca3"	"Syng3"	"Rps2"	"Telo2"
##	[753]	"Gnptg"	"Kifc5b"	"Hmga1"	"Tulp1"
##	[757]	"Stk38"	"Wiz"	"Cyp4f17"	"Zfp422-ps"
##	[761]	"Zfp81"	"Adamts10"	"Hnrrnp"	"Gm4134"
##	[765]	"Wdr46"	"Gm18733"	"H2-Q2"	"H2-Q6"
##	[769]	"H2-Q10"	"Tcf19"	"Vars2"	"H2-T22"
##	[773]	"Gm10499"	"Gm8909"	"Adgrf4"	"Adgrf2"
##	[777]	"Tnfrsf21"	"Pla2g7"	"1700061G19Rik"	"Arhgap28"
##	[781]	"Zbtb14"	"Myl12b"	"Ypel5"	"Cebpz0s"
##	[785]	"Em14"	"Ppm1b"	"G430049J08Rik"	"Epb4114a"
##	[789]	"Slc35a4"	"Pcdha7"	"Pcdhb21"	"Pcdhga7"
##	[793]	"Pcdhga9"	"Pcdhga10"	"Pcdhga12"	"Diaph1"
##	[797]	"Lvrn"	"Snx24"	"Tcf4"	"Me2"
##	[801]	"Gm9925"	"Ier3ip1"	"Gm7276"	"Tshz1"
##	[805]	"Coro1b"	"Rad9a"	"Peli3"	"B4gat1"
##	[809]	"Fosl1"	"Sssca1"	"Vps51"	"Naalad11"
##	[813]	"Gpr137"	"Ubxn1"	"Ganab"	"Lrrc10b"
##	[817]	"Tkfc"	"Vps37c"	"Slc15a3"	"Ms4a6c"

##	[821]	"Carnmt1"	"Anxa1"	"Mamdc2"	"1700028P14Rik"
##	[825]	"Gm9938"	"Tjp2"	"Pgm5"	"Papss2"
##	[829]	"Lipo2"	"Hectd2"	"Noc31"	"Morn4"
##	[833]	"Abcc2"	"Erln1"	"Scd1"	"Btrc"
##	[837]	"Psd"	"2310034G01Rik"	"Sfxn2"	"Borcs7"
##	[841]	"Pdcd11"	"Cfap43"	"Ccfdc186"	"Shtn1"
##	[845]	"Slc18a2"	"Rab11fip2"	"Fam204a"	"Eif3a"
##	[849]	"Zfp950"	"Plcb2"	"Ccfdc32"	"Casc5"
##	[853]	"Rmdn3"	"Dnajc17"	"Gm14137"	"Gm28042"
##	[857]	"Pla2g4b"	"Sptbn5"	"Stard9"	"Ccndbp1"
##	[861]	"Catsper2"	"Ell3"	"Hypk"	"Mfap1b"
##	[865]	"Frmd5"	"Eif3j1"	"Shf"	"Slc30a4"
##	[869]	"Cep152"	"Slc27a2"	"Itpripl1"	"1810024B03Rik"
##	[873]	"Stard7"	"Gpat2"	"1500011K16Rik"	"Ndufaf5"
##	[877]	"Cfap61"	"Kiz"	"Cd93"	"Zfp345"
##	[881]	"Rem1"	"Nol41"	"Dnmt3b"	"Mapre1"
##	[885]	"1700003F12Rik"	"Actl10"	"Spag4"	"Tgif2"
##	[889]	"Ptprt"	"Pigt"	"Gm11469"	"Ptgis"
##	[893]	"B4galt5"	"Spata2"	"Dpm1"	"Gm14445"
##	[897]	"Gm2004"	"2210418010Rik"	"Gm14421"	"Gm14401"
##	[901]	"Gm14412"	"Gm14418"	"Gm14327"	"Adrm1"
##	[905]	"Uckl1"	"Rab34"	"Unc119"	"Ift20"
##	[909]	"Mrm1"	"Bcas3"	"Rnft1"	"Dynll2"
##	[913]	"Cuedc1"	"Trim25"	"Hlf"	"Phb"
##	[917]	"Zfp652"	"Skap1"	"Casc3"	"Krt10"
##	[921]	"Krt20"	"Ccr10"	"Acbd4"	"Arf2"
##	[925]	"Tlk2"	"Kcnh6"	"Gna13"	"Rpl38"
##	[929]	"Cd300c2"	"Slc16a5"	"Tmem94"	"Myo15b"
##	[933]	"Unk"	"Unc13d"	"Galr2"	"Tk1"
##	[937]	"Arhgdia"	"Gps1"	"Lins1"	"Cers3"
##	[941]	"Agbl1"	"Pex11a"	"Prc1"	"Man2a2"
##	[945]	"Gm18782"	"Rps17"	"Btbd1"	"Efl1"
##	[949]	"B3gnt6"	"Tpbgl"	"Gm7067"	"C2cd3"
##	[953]	"Dnajb13"	"Fam168a"	"Arhgef17"	"Folr2"
##	[957]	"Xndc1"	"Trim21"	"Hbb-bs"	"Trim5"
##	[961]	"Trim12c"	"Gm15645"	"Gm4070"	"Gvin1"
##	[965]	"Gm8995"	"Tub"	"Ampd3"	"Micalc1"
##	[969]	"Iqck"	"Gm5601"	"Gm19963"	"Dnah3"
##	[973]	"Sbk1"	"Sh2b1"	"Apobr"	"Gdpd3"
##	[977]	"Tbc1d10b"	"Bckdk"	"Acadsb"	"Bnip3"
##	[981]	"Cfap46"	"6430531B16Rik"	"Olfr536"	"Brsk2"
##	[985]	"Tpcn2"	"Kdm4a"	"Ptprf"	"Cfap57"
##	[989]	"Svbp"	"Foxj3"	"Cap1"	"Rhbd12"
##	[993]	"Utp111"	"Meaf6"	"Thrap3"	"Spocd1"
##	[997]	"Gmeb1"	"Gm13033"	"Nudc"	"Aim11"
##	[1001]	"Hnrnpr"	"Ephb2"	"Cdc42"	"Ubxn10"
##	[1005]	"Otud3"	"Klhdc7a"	"Fbxo42"	"Zbtb17"
##	[1009]	"Gm13212"	"Gm13248"	"Gm13152"	"Gm16503"
##	[1013]	"Nppa"	"Ubiad1"	"Casz1"	"Eno1"
##	[1017]	"Gm13092"	"Espn"	"Ccfdc27"	"Faap20"
##	[1021]	"Prkcz"	"Cfap74"	"Gnb1"	"Tmem240"
##	[1025]	"Mxra8"	"Cptp"	"Acap3"	"Tnfrsf18"
##	[1029]	"Isg15"	"Perm1"	"Samd11"	"5430403G16Rik"
##	[1033]	"4930522L14Rik"	"Gm15446"	"Gm17655"	"Pus1"

## [1037]	"Usp30"	"Ung"	"Tchp"	"Gm20499"
## [1041]	"Gm9936"	"Gm10401"	"Taok3"	"Rfc5"
## [1045]	"Rnf34"	"Wdr66"	"Dnah10"	"Ncor2"
## [1049]	"Ubc"	"Slc15a4"	"Ssc4d"	"Ift22"
## [1053]	"Muc3a"	"Zan"	"Stag3"	"Fbxl18"
## [1057]	"Ankrd61"	"Rsph10b"	"Smurf1"	"Arpc1a"
## [1061]	"Wasf3"	"Polr1d"	"Brca2"	
## [1]	"C" "NSD"			
## [1]	"Rgs20"	"Rrs1"	"Sgk3"	"Snhg6"
## [5]	"Ppp1r42"	"Prex2"	"Msc"	"Sbspon"
## [9]	"Ly96"	"Col19a1"	"Bai3"	"Neurl3"
## [13]	"Cox5b"	"Wdr75"	"1700019D03Rik"	"Gtf3c3"
## [17]	"Fam126b"	"Tmem237"	"Map2"	"Vil1"
## [21]	"Zfp142"	"Nhej1"	"Gm17751"	"Sgpp2"
## [25]	"Scg2"	"Ap1s3"	"C130036L24Rik"	"Nppc"
## [29]	"Dis3l2"	"Ilkap"	"Twist2"	"Mterfd2"
## [33]	"Hdlbp"	"Stk25"	"Bok"	"D2hgdh"
## [37]	"Gin1"	"2310035C23Rik"	"Kdsr"	"B230209K01Rik"
## [41]	"Cc dc93"	"Lypd1"	"Dars"	"Cd55"
## [45]	"5430435G22Rik"	"Slc41a1"	"Cdk18"	"Kiss1"
## [49]	"Sox13"	"Zc3h11a"	"Atp2b4"	"Kdm5b"
## [53]	"Ptprv"	"Ascl5"	"Ptgs2os"	"1700025G04Rik"
## [57]	"Lamc1"	"E330020D12Rik"	"5830403L16Rik"	"Cacna1e"
## [61]	"Cep350"	"Tor1aip1"	"Abl2"	"Sec16b"
## [65]	"4930523C07Rik"	"Gas5"	"Snord47"	"Cenpl"
## [69]	"Vamp4"	"Fmo1"	"F5"	"Slc19a2"
## [73]	"Gm20743"	"Pou2f1"	"Gm16701"	"Fam78b"
## [77]	"Tmco1"	"Aldh9a1"	"3110045C21Rik"	"1700009P17Rik"
## [81]	"Sdhc"	"Ppox"	"Usp21"	"Pvr14"
## [85]	"Dusp23"	"Darc"	"Rgs7"	"Exo1"
## [89]	"Pld5"	"Akt3"	"Smyd3"	"Adck3"
## [93]	"Itpkb"	"Ac bd3"	"Cc dc121"	"Degs1"
## [97]	"1700047M11Rik"	"Rab3gap2"	"Gm2061"	"1700007P06Rik"
## [101]	"Prox1"	"Vash2"	"Nsl1"	"Batf3"
## [105]	"1700034H15Rik"	"Traf5"	"Gm10516"	"A130010J15Rik"
## [109]	"Hsd11b1"	"A330023F24Rik"	"Cr11"	"Optn"
## [113]	"Nudt5"	"Taf3"	"Gm3230"	"Gm13375"
## [117]	"Nxph2"	"Spopl"	"Psd4"	"Ptgds"
## [121]	"Phpt1"	"C330006A16Rik"	"Sdccag3"	"Egfl7"
## [125]	"Snhg7"	"Ntmt1"	"D330023K18Rik"	"Rpl12"
## [129]	"Nek6"	"Rnd3"	"Gm13629"	"Fastkd1"
## [133]	"Metap1d"	"Itga6"	"Plekha3"	"Tmx2"
## [137]	"Timm10"	"Celf1"	"A330069E16Rik"	"Phf21a"
## [141]	"Cry2"	"Alx4"	"2810002D19Rik"	"Mpped2"
## [145]	"Muc15"	"Lpcat4"	"Crh"	"Eif5a2"
## [149]	"Actrt3"	"Pex5l"	"Trpc3"	"2610316D01Rik"
## [153]	"Pcdh10"	"Pabpc41"	"Elf2"	"Dclk1"
## [157]	"Gm410"	"Fam194a"	"B3galnt1"	"Pet112"
## [161]	"Etv3"	"Rrnad1"	"1700113A16Rik"	"1500004A13Rik"
## [165]	"Ash1l"	"Gm15417"	"Chtop"	"Tnfaip812"
## [169]	"Hist2h3c2"	"Gdap2"	"Atp1a1"	"Csde1"
## [173]	"Dclre1b"	"A1504432"	"Kcnc4"	"Ahcyl1"
## [177]	"A930005H10Rik"	"Dbt"	"A730020M07Rik"	"Abcd3"
## [181]	"Usp53"	"Ank2"	"LOC100862268"	"Gar1"

##	[185]	"Ostc"	"Bank1"	"H2afz"	"Lamtor3"
##	[189]	"Rap1gds1"	"Pkn2"	"Clca1"	"Ddah1"
##	[193]	"Lphn2"	"Gm1653"	"Eltd1"	"4930412C18Rik"
##	[197]	"Ints8"	"Cpne3"	"Ccnc"	"4930528A17Rik"
##	[201]	"Bach2"	"4933421010Rik"	"Orc3"	"Slc35a1"
##	[205]	"1700003M02Rik"	"Gm3893"	"N28178"	"Vcp"
##	[209]	"Rusc2"	"Xpa"	"5830415F09Rik"	"Trim14"
##	[213]	"Grin3a"	"Tmem245"	"Epb4.114b"	"Cdc26"
##	[217]	"Whrn"	"Kdm4c"	"Zdhhc21"	"Adamts11"
##	[221]	"Rps6"	"Slc24a2"	"Ptplad2"	"Plaa"
##	[225]	"Mysm1"	"Nfia"	"Lepr"	"Pars2"
##	[229]	"Btf314"	"Atpaf1"	"Tmem69"	"C530005A16Rik"
##	[233]	"Hpd1"	"Ccgc24"	"A330021E22Rik"	"Dbf4"
##	[237]	"Abcb1b"	"Sema3a"	"4921504A21Rik"	"Armc10"
##	[241]	"Napepld"	"6030443J06Rik"	"AI506816"	"2700038G22Rik"
##	[245]	"Nub1"	"Gpn1"	"Yes1"	"Slbp"
##	[249]	"Tacc3"	"Whsc1"	"Tbc1d14"	"Rab28"
##	[253]	"Gpr125"	"Pi4k2b"	"Arap2"	"Gm3716"
##	[257]	"Fam114a1"	"Klhl5"	"Rpl9"	"C330024D21Rik"
##	[261]	"Usp46"	"Scfd2"	"Paics"	"4930467D21Rik"
##	[265]	"Tmem150c"	"Pkd2"	"Lrrc8d"	"Fam69a"
##	[269]	"Cplx1"	"Peg10"	"Slc25a13"	"Dlx6"
##	[273]	"A430035B10Rik"	"Cav2"	"Cftr"	"Cttnbp2"
##	[277]	"Snd1"	"Prtr4"	"Trpv6"	"Cul1"
##	[281]	"Pdla4"	"Zfp746"	"Zfp467"	"Atp6v0e2"
##	[285]	"Gimap9"	"6430584L05Rik"	"Gng12"	"Reep1"
##	[289]	"Ptcd3"	"Vamp8"	"4930414L22Rik"	"Elmod3"
##	[293]	"Retsat"	"Tcf711"	"1700124L16Rik"	"Cml5"
##	[297]	"Cml2"	"1600020E01Rik"	"1810020005Rik"	"Mcm2"
##	[301]	"Ccgc37"	"Nup210"	"Grip2"	"Nr2c2"
##	[305]	"Trh"	"Fam19a4"	"Tmf1"	"Mitf"
##	[309]	"Pdzn3"	"Trnt1"	"Lrrn1"	"0610040F04Rik"
##	[313]	"Jagn1"	"March8"	"Cacna2d4"	"Wnt5b"
##	[317]	"Cecr2"	"Cd163"	"C1s"	"Gm5077"
##	[321]	"9630033F20Rik"	"2700089E24Rik"	"Loh12cr1"	"Dusp16"
##	[325]	"2810454H06Rik"	"Apold1"	"8430419L09Rik"	"Grin2b"
##	[329]	"Rerg"	"Itpr2"	"Fgfr1op2"	"4930479D17Rik"
##	[333]	"Prpf31"	"D630041G03Rik"	"Ppp1r12c"	"Suv420h2"
##	[337]	"Zfp110"	"Rps5"	"Zbtb45"	"Ube2m"
##	[341]	"Prr24"	"Bbc3"	"Grlf1"	"Pnmal1"
##	[345]	"Gipr"	"Gpr4"	"Opa3"	"Ercc2"
##	[349]	"A930016022Rik"	"Pvrl2"	"Ethe1"	"Adck4"
##	[353]	"Ltbp4"	"Ttc9b"	"Fam98c"	"Zfp27"
##	[357]	"Zfp383"	"Zfp82"	"Zfp260"	"Capns1"
##	[361]	"Clip3"	"Igflr1"	"Dmkn"	"Mag"
##	[365]	"Scn1b"	"Gramd1a"	"Uba2"	"Chst8"
##	[369]	"Pdcd5"	"Uri1"	"Ccne1"	"A230077H06Rik"
##	[373]	"Vmn2r57"	"9830147E19Rik"	"Siglec5"	"Etfb"
##	[377]	"Zfp719"	"Klk6"	"Fuz"	"Bcat2"
##	[381]	"Sphk2"	"Ldha"	"Atp10a"	"Ube3a"
##	[385]	"A230073K19Rik"	"C230091D08Rik"	"Ipw"	"D7Ert715e"
##	[389]	"Snord64"	"Snrpn"	"B230209E15Rik"	"A230057D06Rik"
##	[393]	"A330076H08Rik"	"Mkrn3"	"Tm2d3"	"Chsy1"
##	[397]	"Arhgef7"	"Tdrp"	"Kbtbd11"	"Agpat5"

##	[401]	"Thsd1"	"Slc20a2"	"Rnf170"	"Leprot11"
##	[405]	"Tmem66"	"Eri1"	"Gm16793"	"D8Ert82e"
##	[409]	"Pcm1"	"Galntl6"	"BC030500"	"Palld"
##	[413]	"Tll1"	"Cpe"	"Psd3"	"Atp6v1b2"
##	[417]	"Zfp866"	"Lpar2"	"Gatad2a"	"2310045N01Rik"
##	[421]	"Slc25a42"	"Homer3"	"Uba52"	"Rpl18a"
##	[425]	"Myo9b"	"Mrpl34"	"Mvb12a"	"Slc27a1"
##	[429]	"Glt25d1"	"Slc35e1"	"Tmem38a"	"Zfp330"
##	[433]	"Rnf150"	"Tbc1d9"	"Clgn"	"Cd97"
##	[437]	"Lphn1"	"Ier2"	"Nacc1"	"Farsa"
##	[441]	"BC056474"	"Orc6"	"4921524J17Rik"	"Gpt2"
##	[445]	"Itfg1"	"Cnep1r1"	"Cyld"	"Chd9"
##	[449]	"Fto"	"Lpcat2"	"Herpud1"	"Fam192a"
##	[453]	"Katnb1"	"Gtl3"	"Ndr4"	"Got2"
##	[457]	"Tango6"	"Has3"	"Pdf"	"Pkd1l3"
##	[461]	"Chek1"	"Spa17"	"1700063D05Rik"	"3110039I08Rik"
##	[465]	"2610203C20Rik"	"Tbcel"	"Tmem136"	"Ccadc153"
##	[469]	"Ddx6"	"Atp5l"	"Il10ra"	"Fxyd6"
##	[473]	"Nxpe2"	"Ncam1"	"Hspb2"	"Tnfaip8l3"
##	[477]	"Acsbg1"	"Wdr61"	"AI118078"	"Dennd4a"
##	[481]	"Gm514"	"Ras112"	"Snx1"	"Tln2"
##	[485]	"Dyx1c1"	"Rab27a"	"Scg3"	"Hmgcl11"
##	[489]	"Gclc"	"C920006011Rik"	"Mb21d1"	"Gm10635"
##	[493]	"Tmem30a"	"Myo6"	"A330041J22Rik"	"4922501C03Rik"
##	[497]	"9430037G07Rik"	"Gm2382"	"9330159M07Rik"	"Atr"
##	[501]	"Spsb4"	"Pccb"	"Ephb1"	"Nudt16"
##	[505]	"Nek11"	"Atp2c1"	"Pik3r4"	"Wdr82"
##	[509]	"Dusp7"	"Abhd14b"	"Rrp9"	"Rad54l2"
##	[513]	"Tmem115"	"Rbm6"	"Mon1a"	"Ip6k1"
##	[517]	"Ccadc71"	"Mir425"	"Uqcrc1"	"Lrrc2"
##	[521]	"AU023762"	"Stt3b"	"Rbms3"	"Xylb"
##	[525]	"5830454E08Rik"	"Trak1"	"E530011L22Rik"	"Zfp651"
##	[529]	"2010204K13Rik"	"Ppp1r3f"	"Magix"	"Suv39h1"
##	[533]	"Lanc13"	"Sytl5"	"Cxx1a"	"6330419J24Rik"
##	[537]	"Vma21"	"Gabra3"	"Tab3"	"Pola1"
##	[541]	"Pcyt1b"	"Nhs12"	"Jpx"	"Magee2"
##	[545]	"Diap2"	"Armcx1"	"Armcx3"	"Zmat1"
##	[549]	"BC065397"	"Slc25a53"	"D330045A20Rik"	"2900056M20Rik"
##	[553]	"Ace2"	"Gla2"	"Gpm6b"	"Trappc2"
##	[557]	"Ipcef1"	"Syne1"	"Ppp1r14c"	"Lrp11"
##	[561]	"A630066F11Rik"	"Ginm1"	"Ust"	"Plagl1"
##	[565]	"Fuca2"	"Gpr126"	"Arhgap18"	"Lrrtm3"
##	[569]	"Cabin1"	"Itgb2"	"Zfp781"	"Appl2"
##	[573]	"Actr6"	"Lta4h"	"Metap2"	"Vezt"
##	[577]	"Acss3"	"Pawr"	"Osbp18"	"Phlda1"
##	[581]	"Cpsf6"	"Lemd3"	"Rassf3"	"BC048403"
##	[585]	"LOC100504703"	"Kif5a"	"Ndufa412"	"Nab2"
##	[589]	"Patz1"	"Tcn2"	"Nipsnap1"	"Ap1b1"
##	[593]	"Vps54"	"Ehbp1"	"Ahsa2"	"Pnpt1"
##	[597]	"Smek2"	"Ccadc104"	"Ccadc88a"	"Rtn4"
##	[601]	"Em16"	"Psme4"	"Stk10"	"Lcp2"
##	[605]	"Gabra1"	"Gabrb2"	"Psme2b"	"Nhp2"
##	[609]	"Cdkn2aipn1"	"Rad50"	"Anxa6"	"Sparc"
##	[613]	"Gria1"	"Larp1"	"Cnot8"	"Mrpl22"

##	[617]	"Gm12250"	"2810021J22Rik"	"Hist3h2a"	"Gjc2"
##	[621]	"2610507I01Rik"	"Pld6"	"Cops3"	"Aldh3a1"
##	[625]	"Slc47a1"	"Fam211a"	"Zfp286"	"Trim16"
##	[629]	"Glp2r"	"Wdr16"	"Rangrf"	"Pfas"
##	[633]	"2310047M10Rik"	"Vamp2"	"Mpdu1"	"G630025P09Rik"
##	[637]	"Elp5"	"Ctdnep1"	"Phf23"	"Dvl2"
##	[641]	"Dlg4"	"Rnasek"	"Med11"	"Mink1"
##	[645]	"Pfn1"	"Wscd1"	"Pitpnm3"	"Tek1"
##	[649]	"Smtnl2"	"Ankfy1"	"Camkk1"	"1200014J11Rik"
##	[653]	"Ovca2"	"Tlcd2"	"Inpp5k"	"Doc2b"
##	[657]	"Timm22"	"Adcy3"	"Rdh14"	"2410004P03Rik"
##	[661]	"1700030C10Rik"	"Ywhaq"	"2410018L13Rik"	"Taf1b"
##	[665]	"Kidins220"	"Gm20187"	"Gm9866"	"Colec11"
##	[669]	"Tmem18"	"Acp1"	"Ahr"	"Dgkb"
##	[673]	"Gm7008"	"2700097009Rik"	"Sav1"	"3110056K07Rik"
##	[677]	"Zfp3611"	"2310015A10Rik"	"Cox16"	"Zfyve1"
##	[681]	"Prox2"	"Pgf"	"Slirp"	"Smek1"
##	[685]	"Serpina3h"	"Serpina3m"	"Clmn"	"D430019H16Rik"
##	[689]	"Bdkrb2"	"Ccnk"	"Cyp46a1"	"Evl"
##	[693]	"Meg3"	"Rian"	"Wdr20"	"Zfp839"
##	[697]	"Snora28"	"2810029C07Rik"	"Bag5"	"Ppp1r13b"
##	[701]	"Tdrd9"	"Tmem179"	"D430020J02Rik"	"Gm10421"
##	[705]	"5033411D12Rik"	"Trim27"	"Hist1h2ac"	"Hist1h1c"
##	[709]	"Gmds"	"Serpina1b"	"Slc22a23"	"Ppp1r3g"
##	[713]	"Ranbp9"	"Dtnbp1"	"C78339"	"Tpmt"
##	[717]	"Secisbp2"	"Gm2762"	"Mxd3"	"Cxc114"
##	[721]	"Isca1"	"Ctla2b"	"Mir23b"	"Mir24-1"
##	[725]	"Hiatl1"	"Mterfd1"	"Zfp712"	"Zfp458"
##	[729]	"F630042J09Rik"	"AA987161"	"A530054K11Rik"	"Zfp85os"
##	[733]	"Zfp493"	"4930525G20Rik"	"Nsun2"	"Nkd2"
##	[737]	"Ahrr"	"Cast"	"Pcsk1"	"Ttc37"
##	[741]	"Mctp1"	"C130071C03Rik"	"Mir9-2"	"Ccnh"
##	[745]	"Cox7c"	"4833422C13Rik"	"Msh3"	"Dmgdh"
##	[749]	"AW495222"	"Arse"	"Polk"	"Enc1"
##	[753]	"Mrps27"	"Map1b"	"Oc1n"	"Marveld2"
##	[757]	"5930438M14Rik"	"Smim15"	"Ppap2a"	"Paip1"
##	[761]	"3110070M22Rik"	"Atxn7"	"Oxsm"	"Rpl15"
##	[765]	"Ttc18"	"Ap3m1"	"Galnt15"	"Gm3219"
##	[769]	"Sh2d4b"	"Cnih1"	"Samd4"	"Fbxo34"
##	[773]	"Peli2"	"Osgep"	"Tmem55b"	"Rnase4"
##	[777]	"Rpgr1p1"	"Mettl3"	"A430107P09Rik"	"Dad1"
##	[781]	"Slc7a7"	"Lrp10"	"Ajuba"	"Slc22a17"
##	[785]	"Cmtm5"	"Zfhx2"	"Rec8"	"Cideb"
##	[789]	"Nynrin"	"Zmym2"	"N6amt2"	"Rc1tb1"
##	[793]	"Mipep"	"Kpna3"	"Dleu2"	"Ints6"
##	[797]	"Neil2"	"4930471C04Rik"	"Msra"	"Kif13b"
##	[801]	"Ppp2r2a"	"Fam160b2"	"Htr2a"	"Akap11"
##	[805]	"Pibf1"	"Rnf219"	"Dnajc3"	"BC037032"
##	[809]	"Gm5468"	"Fam105b"	"Oxr1"	"Sybu"
##	[813]	"Bai1"	"Csf2rb2"	"Tst"	"Rac2"
##	[817]	"Micall1"	"Polr2f"	"Sox10"	"Gm10863"
##	[821]	"Pick1"	"Csnk1e"	"Ddx17"	"Tomm22"
##	[825]	"Sun2"	"Apobec3"	"Mgat3"	"Slc25a17"
##	[829]	"Cc1c134"	"Rrp7a"	"1700001L05Rik"	"Mpped1"

##	[833]	"Parvb"	"Prr5"	"Mir1249"	"Wnt7b"
##	[837]	"AU022754"	"Mirlet7c-2"	"Ppara"	"Rab12"
##	[841]	"Syt10"	"Abcd2"	"Dbx2"	"E330033B04Rik"
##	[845]	"Slc38a1"	"Hdac7"	"AI836003"	"Prkag1"
##	[849]	"4930578M01Rik"	"Cox14"	"Galnt6"	"Aaas"
##	[853]	"Sp7"	"Map3k12"	"Nckap11"	"Ppl"
##	[857]	"Rbfox1"	"2610020C07Rik"	"Shisa9"	"2310015D24Rik"
##	[861]	"Ifitm7"	"Yars2"	"Top3b"	"Ppm1f"
##	[865]	"Hic2"	"Ccdc74a"	"Slc25a1"	"Sept5"
##	[869]	"Ece2"	"Clcn2"	"Chrd"	"Tbccd1"
##	[873]	"Ncbp2"	"Senp5"	"1700021K19Rik"	"Dir2"
##	[877]	"Gtf2e1"	"Rab13"	"Cox17"	"2610015P09Rik"
##	[881]	"Clcn25"	"Crybg3"	"Samsn1"	"Usp25"
##	[885]	"Scaf4"	"Hunk"	"Urb1"	"Synj1"
##	[889]	"4932438H23Rik"	"A930006K02Rik"	"Morc3"	"Pcp4"
##	[893]	"A630089N07Rik"	"Pisd-ps2"	"Synj2"	"Tmem181a"
##	[897]	"Rps6ka2"	"Fgfr1op"	"Mpc1"	"4930506C21Rik"
##	[901]	"T2"	"Gm16702"	"Qk"	"2700054A10Rik"
##	[905]	"Mllt4"	"1600012H06Rik"	"9030025P20Rik"	"Gm3435"
##	[909]	"Chd1"	"Zfp960"	"Zfp97"	"Riok2"
##	[913]	"Zfp52"	"Zfp948"	"Gm10509"	"Zfp945"
##	[917]	"Tnfrsf12a"	"Kremen2"	"Tbc1d24"	"Ntn3"
##	[921]	"1600002H07Rik"	"D330041H03Rik"	"Pgp"	"Bricd5"
##	[925]	"Snora64"	"Msrb1"	"Mrps34"	"Telo2"
##	[929]	"BC003965"	"Gnptg"	"Jmjd8"	"Spdef"
##	[933]	"Fkbp5"	"Gm6402"	"Rrp1b"	"Zfp563"
##	[937]	"Zfp955b"	"Rab11b"	"BC051226"	"H2-Ke2"
##	[941]	"Wdr46"	"B3galt4"	"AA388235"	"Tap2"
##	[945]	"H2-Aa"	"H2-Ea-ps"	"Pbx2"	"Stk19"
##	[949]	"Nelfe"	"Abhd16a"	"Lta"	"Gm8801"
##	[953]	"A930015D03Rik"	"Gpr115"	"Gpr111"	"E130008D07Rik"
##	[957]	"Rcan2"	"Clic5"	"Tmem151b"	"Nfkbie"
##	[961]	"Slc35b2"	"Mea1"	"Frs3"	"Foxp4"
##	[965]	"Tbc1d5"	"Rab5a"	"Trip10"	"Fert2"
##	[969]	"Dlga1"	"Trmt61b"	"Clip4"	"Fam98a"
##	[973]	"Crim1"	"Gm6548"	"1110001A16Rik"	"Cox7a21"
##	[977]	"Dync2li1"	"Mcf2"	"2610044015Rik8"	"Lama3"
##	[981]	"Cdh2"	"Gm15328"	"4930426D05Rik"	"Epb4.114a"
##	[985]	"Hspa9"	"Cxxc5"	"Ik"	"Pcdha11"
##	[989]	"Pcdhb12"	"Pcdhga6"	"Pcdhga8"	"Pcdhgb5"
##	[993]	"Fchsd1"	"1700086006Rik"	"0610009020Rik"	"Spry4"
##	[997]	"Fgf1"	"A930012L18Rik"	"4833403I15Rik"	"Tnfaip8"
##	[1001]	"Zfp532"	"Lman1"	"Gnal"	"Seh11"
##	[1005]	"Cep192"	"Mex3c"	"Elac1"	"Smad2"
##	[1009]	"Cpt1a"	"Pitpnm1"	"Lrnf4"	"Rbm4b"
##	[1013]	"Rbm4"	"Actn3"	"Dpp3"	"Slc29a2"
##	[1017]	"Eif1ad"	"4930481A15Rik"	"Map3k11"	"Neat1"
##	[1021]	"Sf1"	"Rasgrp2"	"Nrxn2"	"Bad"
##	[1025]	"Ppp1r14b"	"Macrodi1"	"Snhg1"	"Tmem223"
##	[1029]	"Ttc9c"	"Syt7"	"Dak"	"AW112010"
##	[1033]	"Pcsk5"	"Ostf1"	"2410127L17Rik"	"D030056L22Rik"
##	[1037]	"E030003E18Rik"	"Trpm3"	"Fam189a2"	"Fam122a"
##	[1041]	"Rfx3"	"Plgrkt"	"2700046G09Rik"	"Atad1"
##	[1045]	"Rnls"	"Cpeb3"	"Exoc6"	"Lgi1"

## [1049]	"Pdlim1"	"Pik3ap1"	"Pi4k2a"	"Crtac1"
## [1053]	"Got1"	"BC037704"	"Arl3"	"Ina"
## [1057]	"Neurl1a"	"Wdr96"	"Ittrip"	"5830416P10Rik"
## [1061]	"A630007B06Rik"	"6720468P15Rik"	"4930506M07Rik"	"Emx2os"
## [1065]	"Emx2"	"D19Erttd737e"	"Nlk"	"Slfn9"
## [1069]	"AA465934"	"Taf15"	"Acaca"	"Dhrs11"
## [1073]	"Ggnbp2"	"Msi2"	"C030037D09Rik"	"Trim25"
## [1077]	"4932411E22Rik"	"Ankfn1"	"Rsad1"	"Ngfr"
## [1081]	"Zfp652os"	"Tbkbp1"	"Mrpl45"	"Fbxl20"
## [1085]	"Smarce1"	"Leprel4"	"Dnajc7"	"Aoc2"
## [1089]	"Ifi35"	"Atxn7l3"	"Gjc1"	"Hexim1"
## [1093]	"Arhgap27os3"	"C130046K22Rik"	"1700052K11Rik"	"Dcaf7"
## [1097]	"Gm11696"	"Amz2"	"LOC100503496"	"Abca9"
## [1101]	"Kif19a"	"AF251705"	"Hid1"	"2310067B10Rik"
## [1105]	"Sap30bp"	"Exoc7"	"Srsf2"	"Mfsd11"
## [1109]	"2900041M22Rik"	"Birc5"	"Usp36"	"Rbfox3"
## [1113]	"Card14"	"Endov"	"Azi1"	"P4hb"
## [1117]	"Arhgdia"	"Aspscr1"	"Dus1l"	"Fasn"
## [1121]	"Slc16a3"	"BC017643"	"A530058N18Rik"	"Eif2ak4"
## [1125]	"Bmf"	"5430417L22Rik"	"Rpusd2"	"Rtf1"
## [1129]	"Tyro3"	"Ttbk2"	"Map1a"	"Serinc4"
## [1133]	"Casc4"	"Ctdspl2"	"Spata5l1"	"Eid1"
## [1137]	"Hdc"	"Usp8"	"Tmem127"	"Mertk"
## [1141]	"Ttl1"	"AI847159"	"A730036I17Rik"	"Mavs"
## [1145]	"Adra1d"	"5330413P13Rik"	"Slc23a2"	"Taspl1"
## [1149]	"Pcsk2os1"	"Dstn"	"Gm5535"	"Snx5"
## [1153]	"Sec23b"	"4930529M08Rik"	"Snph"	"H13"
## [1157]	"Id1"	"Pdrg1"	"Hck"	"Kif3b"
## [1161]	"2500004C02Rik"	"8430427H17Rik"	"Aar2"	"Gm14169"
## [1165]	"My19"	"Samhd1"	"Gm14204"	"Slc32a1"
## [1169]	"Mybl2"	"Ywhab"	"Slc12a5"	"Gm14295"
## [1173]	"Gm14322"	"Cdh4"	"Taf4a"	"Slco4a1"
## [1177]	"Ntsr1"	"Arfgap1"	"Col20a1"	"Dnajc5"
## [1181]	"Rgs19"	"Aen"	"Acan"	"Fanci"
## [1185]	"AI854517"	"Ngrn"	"Man2a2"	"Slc28a1"
## [1189]	"2900076A07Rik"	"Eftud1"	"9930013L23Rik"	"Arnt2"
## [1193]	"l7Rn6"	"E230029C05Rik"	"2310010J17Rik"	"Tmem126b"
## [1197]	"Pcf11"	"Fam181b"	"Kctd21"	"Aamdc"
## [1201]	"Rsf1"	"Capn5"	"Gm16938"	"Acer3"
## [1205]	"Tsku"	"Prkrir"	"Uvrag"	"Gm4980"
## [1209]	"Lipt2"	"Pgm2l1"	"P2ry6"	"P2ry2"
## [1213]	"Fchsd2"	"Rrm1"	"Trim3"	"Arfip2"
## [1217]	"Adm"	"Tead1"	"Psmal1"	"4933406I18Rik"
## [1221]	"Smg1"	"Mettl9"	"Asphd1"	"Maz"
## [1225]	"Zfp747"	"Fbxl19"	"Fam175b"	"E030019B06Rik"
## [1229]	"Tubgcp2"	"Sprn"	"Ric8"	"Rassf7"
## [1233]	"Dusp8"	"Mrgpre"	"Tmem175"	"Slc26a1"
## [1237]	"LOC101056043"	"Noc4l"	"Ddx51"	"Ep400"
## [1241]	"Ttc28"	"C130026L21Rik"	"Miat"	"Usp30"
## [1245]	"Myo1h"	"Ube3b"	"1500011B03Rik"	"Pxn"
## [1249]	"Tmem116"	"B3gnt4"	"Tmed2"	"Eif2b1"
## [1253]	"Kctd7"	"Wbscr22"	"Srcrb4d"	"Dtx2"
## [1257]	"Rabl5"	"Gal3st4"	"Zfp68"	"Rnf216"
## [1261]	"Baiap2l1"	"Zkscan5"	"Wdr65"	"4930538K18Rik"

## [1265]	"Lepre1"	"Yrdc"	"Dnali1"	"Psmb2"
## [1269]	"Ncdn"	"Khdrbs1"	"1700003M07Rik"	"Mecr"
## [1273]	"Gm12992"	"Epb4.1"	"Phactr4"	"Ahdc1"
## [1277]	"Slc9a1"	"Ubxn11"	"Zfp593"	"Stmn1"
## [1281]	"Mtfr11"	"Zfp46"	"Luzp1"	"Zbtb40"
## [1285]	"Gm13003"	"Alpl"	"Ddost"	"Cda"
## [1289]	"Ubxn10"	"Iffo2"	"Arhgef101"	"Rcc2"
## [1293]	"Gm13031"	"Sdhhb"	"Tmem82"	"Agmat"
## [1297]	"Tmem51os1"	"Kazn"	"Gm13178"	"Fbxo6"
## [1301]	"Ptchd2"	"Pex14"	"Pgd"	"Nmnat1"
## [1305]	"Lzic"	"Slc45a1"	"Camta1"	"Thap3"
## [1309]	"Ajap1"	"Megf6"	"Morn1"	"2610002J02Rik"
## [1313]	"Gabrd"	"Atad3aos"	"Dvl1"	"Gltgpd1"
## [1317]	"Gm10560"	"2310042D19Rik"		
## [1]	"Cacna1f"	"Syp"	"Prickle3"	"Zfp182"
## [5]	"Rap2c"	"Smim1012a"	"Zic3"	"Atp11c"
## [9]	"Xlr4a"	"Xlr3c"	"Bgn"	"Avpr2"
## [13]	"Slc10a3"	"Prrg1"	"Nap112"	"Gm14914"
## [17]	"Tnmd"	"SrpX2"	"Taf71"	"Tmsb15b2"
## [21]	"Tmsb15b1"	"Rnf128"	"Tmem164"	"Rgag1"
## [25]	"Tceanc"	"Gm19026"	"Vcpip1"	"Arfgef1"
## [29]	"Kcnb2"	"Terf1"	"Stau2"	"Tram2"
## [33]	"Rims1"	"Adgrb3"	"Vwa3b"	"Tsga10"
## [37]	"Lipt1"	"Dnah7c"	"Tmeff2"	"Stat4"
## [41]	"Ppil3"	"Gm11578"	"Gm15789"	"BC035947"
## [45]	"Gpr55"	"Gm21972"	"Ugt1a6b"	"Asb18"
## [49]	"Lrrfip1"	"Hdac4"	"Ppp1r7"	"Slco4c1"
## [53]	"Pam"	"Cdh20"	"Cdh7"	"Gm17916"
## [57]	"Insig2"	"Ddx18"	"Srgap2"	"Elk4"
## [61]	"Gm28040"	"Adora1"	"Lmod1"	"Kif21b"
## [65]	"Camsap2"	"Gm5263"	"Ivns1abp"	"Fam129a"
## [69]	"Teddm2"	"Stx6"	"Ralgps2"	"Rasal2"
## [73]	"Serpinc1"	"Gm15429"	"Dnm3"	"Scyl3"
## [77]	"Nme7"	"Gm18186"	"Pogk"	"Cfap126"
## [81]	"Nectin4"	"Slamf7"	"Pea15a"	"Cfap45"
## [85]	"Ackr1"	"Grem2"	"Rbm8a2"	"Sdccag8"
## [89]	"Gm16432"	"Cdc42bpa"	"9130409I23Rik"	"Gm6606"
## [93]	"Iars2"	"5033404E19Rik"	"Rps6kc1"	"Gm8407"
## [97]	"Rcor3"	"Syt14"	"Diexf"	"Lamb3"
## [101]	"Cd46"	"Usp6nl"	"Il15ra"	"Fam188a"
## [105]	"Bmi1"	"Gm13416"	"Zmynd19"	"Cysrt1"
## [109]	"Clic3"	"Card9"	"Gm10134"	"Ak8"
## [113]	"Endog"	"Gpr107"	"Ncs1"	"Ass1"
## [117]	"Dpm2"	"Ralgps1"	"March7"	"Gca"
## [121]	"Xirp2"	"Lrp2"	"Ola1"	"Gpr155"
## [125]	"Nfe212"	"Ttn"	"Zc3h15"	"Gm17661"
## [129]	"Cd82"	"Gm10038"	"Ccdc73"	"Wt1"
## [133]	"Gm9864"	"Emc7"	"Grem1"	"Hey1"
## [137]	"Chmp4c"	"Snx16"	"Ythdf3"	"Prkci"
## [141]	"Gnb4"	"Rab33b"	"Erich6"	"Arhgef26"
## [145]	"4931440P22Rik"	"Lekr1"	"Rsrc1"	"Kpna4"
## [149]	"Ppm11"	"Tdo2"	"Dchs2"	"Gm9790"
## [153]	"Pear1"	"Clk2"	"Dcst2"	"Gm43743"
## [157]	"Pogz"	"Pip5k1a"	"I830077J02Rik"	"5330417C22Rik"

## [161]	"Alg14"	"Rp134"	"Gstcd"	"1110002E22Rik"
## [165]	"Unc5c"	"Ccbl2"	"Clca3a1"	"Adgr12"
## [169]	"Adgr14"	"Erich3"	"Ankrd13c"	"9430025C20Rik"
## [173]	"Dpy1914"	"Gm10604"	"Ttpa"	"Cfap206"
## [177]	"Mob3b"	"Nudt2"	"Sigmar1"	"Gm13302"
## [181]	"Gm20878"	"Fam205a4"	"Gm13303"	"Gm21093"
## [185]	"Gm13304"	"Gm13306"	"Gm13305"	"Gm13301"
## [189]	"Gm5859"	"Gm17081"	"Gm10600"	"Gm3883"
## [193]	"Gm2163"	"4930578G10Rik"	"Gm12394"	"Fam205a1"
## [197]	"Fam205c"	"Phf24"	"Cd72"	"Gm12504"
## [201]	"Trmo"	"Epb4114b"	"Gng10"	"Bspry"
## [205]	"Pole3"	"Rgs3"	"Cdk5rap2"	"Gm26566"
## [209]	"Ins15"	"0610037L13Rik"	"Zyg11b"	"Efcab14"
## [213]	"Dmbx1"	"Ccde17"	"Btbd19"	"Cfap69"
## [217]	"Slc25a40"	"Gm43058"	"Pus7"	"4933427G23Rik"
## [221]	"Slc4a2"	"Fastk"	"Wdr86"	"Prkag2"
## [225]	"Paxip1"	"Ift172"	"Letm1"	"Cfap99"
## [229]	"Htra3"	"Adgra3"	"Sod3"	"Lgi2"
## [233]	"Pcdh7"	"Chic2"	"Srd5a3"	"Hmgn2-ps1"
## [237]	"Cxc115"	"Uso1"	"Ppef2"	"Nup54"
## [241]	"Prdm8"	"Enoph1"	"Gbp8"	"Gm43302"
## [245]	"Mios"	"Umad1"	"Gm45062"	"Gm16042"
## [249]	"Phf14"	"Ptprz1"	"Smo"	"Zc3hc1"
## [253]	"Zyx"	"AI854703"	"Gimap5"	"Cbx3"
## [257]	"Mturn"	"Gm4045"	"Eif2ak3"	"Gm17825"
## [261]	"Mat2a"	"Sh2d6"	"Paip2b"	"Alms1-ps1"
## [265]	"Nat8f6"	"Nat8f5"	"Gm18290"	"Gmcl1"
## [269]	"Kbtbd12"	"Cfap100"	"Rad18"	"Gm20589"
## [273]	"Ghrl1"	"Mkrn2os"	"Csgalnact2"	"Zfp9"
## [277]	"Cacna1c"	"C1s1"	"C1s2"	"Chd4"
## [281]	"Gapdh"	"Foxm1"	"Gm44958"	"Smim1011"
## [285]	"Cdkn1b"	"Fam234b"	"Plbd1"	"Eps8"
## [289]	"Casc1"	"Lmntd1"	"Fam60a"	"Mett120"
## [293]	"Rps9"	"Tmem150b"	"Rnf225"	"Nlrp5-ps"
## [297]	"Inafm1"	"Ccde9"	"Tmem160"	"Npas1"
## [301]	"Arhgap35"	"Ppp5c"	"Exoc3l2"	"Nectin2"
## [305]	"Gm10175"	"Irgq"	"Hipk4"	"Ryr1"
## [309]	"Gm10169"	"Zfp568"	"Gm10988"	"Cox7a1"
## [313]	"Gapdhs"	"Usf2"	"Fxyd5"	"Fxyd3"
## [317]	"Rhpn2"	"Tdrd12"	"Ankrd27"	"Gm20449"
## [321]	"2610021A01Rik"	"Gm2308"	"Zfp141"	"Gm7221"
## [325]	"Gm17067"	"Siglecf"	"Nr1h2"	"Bcl2l12"
## [329]	"Aldh16a1"	"Slc6a16"	"Fut2"	"Kcnj14"
## [333]	"Grin2d"	"Gm38393"	"Trpm1"	"Apba2"
## [337]	"Cers4"	"Col4a1"	"Gm6483"	"Gm21769"
## [341]	"Gm21092"	"Pomk"	"Brf2"	"5930422012Rik"
## [345]	"Saraf"	"Gm19410"	"Clcn23"	"Zdhhc2"
## [349]	"Vps37a"	"Pdgrl1"	"Mtus1"	"Primpol"
## [353]	"Wwc2"	"Cep44"	"Nek1"	"Spock3"
## [357]	"Ints10"	"Gm10311"	"Cilp2"	"Hapln4"
## [361]	"Nr2c2ap"	"Borcs8"	"Cers1"	"Crtcl1"
## [365]	"Ell"	"Lrrc25"	"Gm10654"	"Pgls"
## [369]	"Colgalt1"	"Ccnb2-ps"	"Zfp961"	"Rab8a"
## [373]	"Usp38"	"Inpp4b"	"Ddx39"	"Adgre5"

## [377]	"Adgr11"	"1700067K01Rik"	"Ly11"	"Vps35"
## [381]	"Snx20"	"Sal11"	"Coq9"	"Zfp319"
## [385]	"Emc8"	"Mvd"	"Ccdc7b"	"Casp1"
## [389]	"Zfp426"	"Olfm2"	"Col5a3"	"A230050P20Rik"
## [393]	"Sept7"	"Kcnj5"	"Ddx25"	"Stt3a"
## [397]	"Vwa5a"	"Gm8707"	"C1qtnf5"	"Rps25"
## [401]	"BC049352"	"Zbtb16"	"Arhgap20"	"Elmod1"
## [405]	"Cyp19a1"	"1700017B05Rik"	"Edc3"	"Ccdc33"
## [409]	"Mtfmt"	"Ankdd1a"	"Polr2m"	"Leo1"
## [413]	"Gm7972"	"Tmod2"	"Klhl131"	"Ube2cbp"
## [417]	"Cep162"	"Trim43a"	"Mthfs1"	"Trim43c"
## [421]	"1190002N15Rik"	"Pcolce2"	"Zbtb38"	"Il20rb"
## [425]	"Anapc13"	"Bfsp2"	"Uba5"	"Ackr4"
## [429]	"Acpp"	"Gm17205"	"Gnai2"	"Gnat1"
## [433]	"Amigo3"	"Arih2"	"Prkar2a"	"Gm42641"
## [437]	"Tmie"	"Vipr1"	"Higd1a"	"Cyp8b1"
## [441]	"1110059G10Rik"	"2010315B03Rik"	"Ppil4"	"Adgrg6"
## [445]	"Gm9996"	"Amd2"	"Amd1"	"Lac1"
## [449]	"Arid5b"	"A930033H14Rik"	"Gnaz"	"Gipc3"
## [453]	"Gm3055"	"Gm4924"	"Tdg"	"Bpifc"
## [457]	"Asc11"	"Scyl2"	"Cfap54"	"Ccdc38"
## [461]	"Cradd"	"Ccdc59"	"Caps2"	"Zfc3h1"
## [465]	"Grip1"	"Slc16a7"	"Agap2"	"Zbtb39"
## [469]	"Rdh9"	"Ikzf4"	"Mrps24"	"Camk2b"
## [473]	"Fbxo48"	"Fanc1"	"Cfap36"	"4931440F15Rik"
## [477]	"Acyp2"	"Gpr75"	"Gm12106"	"Hba-a1"
## [481]	"Hba-a2"	"Rmnd5b"	"Skp1a"	"Irf1"
## [485]	"Gm17334"	"Lyrm7"	"Sh3bp51"	"Zfp39"
## [489]	"Gm10434"	"Zfp867"	"Lrrc75a"	"Cfap52"
## [493]	"Myh10"	"Ndel1"	"Rpl26"	"9130213A22Rik"
## [497]	"Tnfsfm13"	"Tnfsf13"	"Chrnbl"	"Clec10a"
## [501]	"Slc16a11"	"Arrb2"	"Cxc116"	"Zmynd15"
## [505]	"P2rx5"	"Rpa1"	"Ywhae"	"Glod4"
## [509]	"Pomc"	"Gen1"	"Pqlc3"	"B430203G13Rik"
## [513]	"5730507C01Rik"	"Gm5784"	"Gm6802"	"3110053B16Rik"
## [517]	"Zfp125"	"Gm5977"	"Gm20472"	"Gm9285"
## [521]	"Gm20474"	"Rsad2"	"Lamb1"	"Prkd1"
## [525]	"Fam177a"	"Srp54b"	"1700047I17Rik2"	"Ppp2r3c"
## [529]	"Sstr1"	"Abhd12b"	"Rhoj"	"Gm10451"
## [533]	"Lgmn"	"1700001K19Rik"	"Tnfaip2"	"Klc1"
## [537]	"Xrcc3"	"A530016L24Rik"	"Ighg2c"	"Ighd"
## [541]	"Ighm"	"Esyt2"	"Sugct"	"Pou6f2"
## [545]	"Exoc2"	"Eci3"	"Rpp40"	"Lyrm4"
## [549]	"Fam8a1"	"Nhlrc1"	"Auh"	"Simc1"
## [553]	"Unc5a"	"Idnk"	"Golm1"	"Aaed1"
## [557]	"Mfsd14b"	"Gm10775"	"Mterf3"	"Rslcan18"
## [561]	"Zfp429"	"Zfp729b"	"Zfp729a"	"Gm26587"
## [565]	"Zfp85"	"Gm10037"	"1700001L19Rik"	"Zfp825"
## [569]	"Rhobtb3"	"Spata9"	"Arsk"	"2210408I21Rik"
## [573]	"Cetn3"	"Rasa1"	"Serinc5"	"Papd4"
## [577]	"Iqgap2"	"Sv2c"	"Gm10260"	"Naip6"
## [581]	"Ercc8"	"Plpp1"	"Hspb3"	"Mocs2"
## [585]	"Gm21967"	"Cc128"	"Nim1k"	"Zfp131"
## [589]	"Gm10409"	"Gm3020"	"2610042L04Rik"	"Gm3636"

## [593]	"Gm3739"	"Gm3755"	"Dnase113"	"Ptprg"
## [597]	"3830406C13Rik"	"Cfap70"	"Plau"	"Mustn1"
## [601]	"Spcs1"	"Colq"	"Opn4"	"Gm16439"
## [605]	"Exoc5"	"A930018M24Rik"	"Pnp2"	"Mett117"
## [609]	"Oxa11"	"Pck2"	"Gm4491"	"Eef1akmt1"
## [613]	"Fam124a"	"Fdft1"	"Ptk2b"	"Synb"
## [617]	"Gm16867"	"Gm21685"	"Rgcc"	"Diaph3"
## [621]	"Pcdh20"	"Klf5"	"Cldn10"	"Dab2"
## [625]	"Lifr"	"Egflam"	"Dnajc21"	"Fam173b"
## [629]	"Eny2"	"Sntb1"	"Sqle"	"Gm6569"
## [633]	"Adgrb1"	"Baiap212"	"Rps19bp1"	"Phf5a"
## [637]	"Tspo"	"Tt1112"	"Phf21b"	"Gm29666"
## [641]	"5031439G07Rik"	"Fbln1"	"Trmu"	"Mapk8ip2"
## [645]	"Prickle1"	"Twf1"	"Ano6"	"Pced1b"
## [649]	"Ccdc184"	"Olf287"	"Ccdc65"	"Prpf40b"
## [653]	"Smagp"	"Prr13"	"Ciita"	"Ranbp1"
## [657]	"BC106179"	"Gm15696"	"Tfrc"	"Hcls1"
## [661]	"Stxbp51"	"Ccdc191"	"Cd200r4"	"Gm6030"
## [665]	"Gm609"	"Tagln3"	"Cldnd1"	"Btg3"
## [669]	"D16Ert472e"	"Il10rb"	"Son"	"Gm5678"
## [673]	"Prdm15"	"Tfb1m"	"Tmem242"	"Gm5812"
## [677]	"Dynlt1c"	"Tmem181c-ps"	"Tt112"	"Tagap"
## [681]	"Rsph3a"	"Rnaset2a"	"Sft2d1"	"Map3k4"
## [685]	"Wtap"	"Unc93a"	"Gm3448"	"Ermard"
## [689]	"Fpr1"	"Zfp947"	"Prss30"	"Prss22"
## [693]	"Atp6v0c"	"Abca3"	"Syng3"	"Rps2"
## [697]	"Kifc5b"	"Syngap1"	"Hmga1"	"AI413582"
## [701]	"Tulp1"	"Mapk14"	"Cyp4f16"	"Zfp422-ps"
## [705]	"Zfp81"	"Pram1"	"Hnrnpm"	"Gm4134"
## [709]	"Tapbp"	"Zbtb22"	"Gm18733"	"H2-Q2"
## [713]	"H2-Q5"	"H2-Q6"	"H2-Q10"	"Vars2"
## [717]	"Atat1"	"H2-T22"	"Gm10499"	"Gm8909"
## [721]	"Rnf39"	"Zfp57"	"Adgrf4"	"Adgrf2"
## [725]	"Pla2g7"	"Taf8"	"Usp49"	"Rftn1"
## [729]	"Kat2b"	"St6gal2"	"1700061G19Rik"	"Cebpzoz"
## [733]	"Srsf7"	"Em14"	"Stard4"	"Epb4114a"
## [737]	"Cdc23"	"Pcdhga7"	"Pcdhga10"	"Hdac3"
## [741]	"Arap3"	"2900055J20Rik"	"Lvrn"	"Snx24"
## [745]	"Slmo1"	"Me2"	"Gm9925"	"Lipg"
## [749]	"Gm7276"	"Rbfa"	"Clcf1"	"B4gat1"
## [753]	"Cnih2"	"Fosl1"	"Sssca1"	"Tm7sf2"
## [757]	"Naalad11"	"Ppp1r32"	"Tkfc"	"Prune2"
## [761]	"Carnmt1"	"1700028P14Rik"	"Gm9938"	"Rpp30"
## [765]	"Noc31"	"Marveld1"	"Abcc2"	"Btrc"
## [769]	"Pdcd11"	"Cfap43"	"Smndc1"	"Atrn11"
## [773]	"Shtn1"	"Slc18a2"	"Rab11fip2"	"Fam204a"
## [777]	"Eif3a"	"Sfxn4"	"Zfp950"	"A430105I19Rik"
## [781]	"Casc5"	"Gm14137"	"Vps18"	"Nusap1"
## [785]	"Jmjd7"	"Gm28042"	"Pla2g4b"	"Sptbn5"
## [789]	"Lrrc57"	"Stard9"	"Ccndbp1"	"Ell3"
## [793]	"Hypk"	"Mfap1b"	"Eif3j1"	"Sqrd1"
## [797]	"Kcnip3"	"Mcm8"	"Plcb4"	"Ndufaf5"
## [801]	"Zfp345"	"Nol41"	"1700003F12Rik"	"Act110"
## [805]	"Tgif2"	"4930518I15Rik"	"Ndr3"	"Pigt"

## [809]	"Wfdc3"	"Ctsa"	"Gm11469"	"Ptgis"
## [813]	"Spata2"	"Tshz2"	"Gm14421"	"Gm14412"
## [817]	"Gm14418"	"Gm14327"	"Nkain4"	"Uckl1"
## [821]	"Rab34"	"Wsb1"	"Evi2b"	"Lig3"
## [825]	"1700020L24Rik"	"Myo19"	"Ptrh2"	"Rnf43"
## [829]	"Dynl12"	"Cuedc1"	"Fam117a"	"Phb"
## [833]	"Zfp652"	"Atp5g1"	"Stac2"	"Rara"
## [837]	"Krt10"	"Krt20"	"Cntnap1"	"Brca1"
## [841]	"Spata32"	"Arf2"	"Itgb3"	"Gm11620"
## [845]	"Tlk2"	"March10"	"Cd300c2"	"Slc16a5"
## [849]	"Mif4gd"	"Tmem94"	"Myo15b"	"Recql5"
## [853]	"Itgb4"	"Galr2"	"Ubal2"	"Tmc6"
## [857]	"Tk1"	"Tha1"	"Cep131"	"Vimp"
## [861]	"Lins1"	"Cers3"	"Mef2a"	"Agbl1"
## [865]	"Hapl3"	"Polg"	"Mesp2"	"Ap3s2"
## [869]	"Rccd1"	"Prc1"	"Gm18782"	"Cpeb1"
## [873]	"Btbd1"	"Hdgfrp3"	"Saxo2"	"Efl1"
## [877]	"Mesdc2"	"Fzd4"	"Picalm"	"B3gnt6"
## [881]	"Slco2b1"	"Pold3"	"Gm7067"	"C2cd3"
## [885]	"Dnajb13"	"Fam168a"	"Relt"	"Inpp11"
## [889]	"Folr2"	"Xndc1"	"Xntrpc"	"Trim21"
## [893]	"Hbb-bt"	"Hbb-bs"	"Trim5"	"Olfr692"
## [897]	"Gm15645"	"Gm4070"	"Gvin1"	"Gm8995"
## [901]	"Syt9"	"4930431P19Rik"	"Micalc1"	"Gde1"
## [905]	"Iqck"	"Gprc5b"	"Gm5601"	"Gm19963"
## [909]	"Polr3e"	"Zfp689"	"Gm43580"	"Zranb1"
## [913]	"Bnip3"	"Jakmip3"	"Cfap46"	"Muc2"
## [917]	"Lsp1"	"Kdm4a"	"Cfap57"	"Foxj3"
## [921]	"Bmp8b"	"Oxct2b"	"Meaf6"	"Thrap3"
## [925]	"Clspn"	"Sync"	"Tmem39b"	"Spocd1"
## [929]	"Gm13033"	"Nudc"	"Zdhhc18"	"Slc30a2"
## [933]	"Ephb2"	"Pla2g5"	"Otud3"	"Pqlc2"
## [937]	"Klhd7a"	"Fbxo42"	"Slc25a34"	"Efhd2"
## [941]	"Gm13212"	"Znf41-ps"	"Gm13248"	"Gm13152"
## [945]	"Gm16503"	"Gm13204"	"Tardbp"	"Casz1"
## [949]	"Clstn1"	"Eno1"	"Espn"	"Ccdc27"
## [953]	"Pex10"	"Faap20"	"Gnb1"	"Mxra8"
## [957]	"Cptp"	"Tnfrsf18"	"Perm1"	"Samd11"
## [961]	"5430403G16Rik"	"4930522L14Rik"	"Gm15446"	"Gm17655"
## [965]	"Hscb"	"Ung"	"Kctd10"	"Tchp"
## [969]	"Ankrd13a"	"Gm20499"	"Gm9936"	"Oasl2"
## [973]	"Spp13"	"Taok3"	"Wdr66"	"Zcchc8"
## [977]	"Caln1"	"Ssc4d"	"Lrwd1"	"Gm20768"
## [981]	"Muc3a"	"Zan"	"Azgp1"	"Ankrd61"
## [985]	"Rsph10b"	"Smurf1"	"Pan3"	

```
# for total unique eQTL
```

```
tot_published <- c(ceLNSDnp_published, ceLSDnp_published, ceCNSDnp_published, ceCSDnp_published)
tot_reproduced <- c(ceLNSDnp_reproduced, ceLSDnp_reproduced, ceCNSDnp_reproduced, ceCSDnp_reproduced)
```

```
# list of genes interesting to look at
```

```
list_genes <- c(setdiff(tot_reproduced, tot_published), setdiff(tot_published, tot_reproduced))
length(list_genes)
```

```
## [1] 3191
```

```
summary(ceLNSD_published[, "adjustedpvalue"] - ceLNSD_reproduced[rownames(ceLNSD_published), "adjustedpvalue"])

##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.     NA's
## -1.0000 -0.0359  0.0019  0.0367  0.0937  0.9980    2364

head(ceLNSD_published)

##      adjustedpvalue      marker
## Sox17      1.574287e-02 rs13471444
## Mrpl15      5.017609e-01 rs6269442
## Lypla1      3.520240e-01 rs13471444
## Tcea1       1.869983e-13 rs31675768
## Atp6v1h     1.737344e-01 rs6269442
## Rb1cc1      1.400594e-01 rs6365999

head(ceLNSD_reproduced[rownames(ceLNSD_published),])

##      adjustedpvalue      marker
## Sox17      0.0593278352 rs30847416
## Mrpl15      0.0035390018 rs31443144
## Lypla1      0.0792134087 rs31443144
## Tcea1       0.0004132031 Affy_10344635
## Atp6v1h     0.0070132914 rs31625087
## Rb1cc1      0.0184067025 rs30658298

# calculate ratio of significant associations

length(ceLNSDnp_reproduced)/length(ceLNSD_reproduced$adjustedpvalue)

## [1] 0.2444849

length(ceLSDnp_reproduced)/length(ceLSD_reproduced$adjustedpvalue)

## [1] 0.213094

length(ceCNSDnp_reproduced)/length(ceCNSD_reproduced$adjustedpvalue)

## [1] 0.2664294

length(ceCSDnp_reproduced)/length(ceCSD_reproduced$adjustedpvalue)

## [1] 0.2886742

length(ceLNSDnp_published)/length(ceLNSD_published$adjustedpvalue)

## [1] 0.2238531

length(ceLSDnp_published)/length(ceLSD_published$adjustedpvalue)

## [1] 0.1879033

length(ceCNSDnp_published)/length(ceCNSD_published$adjustedpvalue)

## [1] 0.3037813

length(ceCSDnp_published)/length(ceCSD_published$adjustedpvalue)

## [1] 0.317617
```

Differential gene expression

Understand and explain principles used for gene expression.

Reproducing Figure 4c

Loading data

```
# loading newly generated datasets
# load table with results of differential expression
DEdata_cortex <- read.table('../Data/IntermediateLayer/DE/Limma_Cortex.txt', sep="\t")
DEdata_liver <- read.table('../Data/IntermediateLayer/DE/Limma_Liver.txt', sep="\t")

# loading reference list of 78 genes from (Mongrain, Sleep, 2010)
list_78 <- read.table("../Data/Exome/78RNA.txt", stringsAsFactors=FALSE)
```

Functions

```
# creating a function that plots a volcano plot

volcano_plot <- function(xvariable, yvariable, labels, tissue, dversion, threshold=0.05){
  # process data set

  dataset <- data.frame(x=xvariable, y=yvariable)
  rownames(dataset) <- labels

  # sort the dataset by adjusted p-value (lower to higher)
  dataset_sorted <- sort_df(dataset, vars="x")

  # selects transcripts with color
  dataset_sorted$x_selected <- dataset_sorted$x < threshold

  # selects rank of transcripts from 78 genes lists
  list_78_rank <- match(list_78$V1, rownames(dataset_sorted))

  #####
  # plotting

  # setting palette
  palette(c("black", "brown2", "dodgerblue4"))

  # plot the graph
  # plot all transcripts in black and significant in red
  plot(1:length(dataset_sorted$x), dataset_sorted$y, pch=20, col=as.factor(dataset_sorted$x_selected),
       main=paste("DE (sd vs nsd) in", tissue), sub=dversion, cex.sub=0.5,
       xlab="", ylab="", ylim=c(-3,3))

  # add transcripts from the 78 list in blue
  points(list_78_rank, dataset_sorted$y[list_78_rank], pch=20, col=3)
}
```

The volcano_plot function has 6 parameters:

- xvariable: DEdata_cortex\$adj.P.Val
- yvariable: DEdata_cortex\$logFC

- labels: list of gene names (eg: rownames(DEdata_cortex))
- tissue: tissue of the sample ("cortex" or "liver")
- dversion: version of the dataset used ("newly generated" or "reference")
- threshold: cutoff for significance of x values (default is 0.05)

Plotting

```
# plot figures

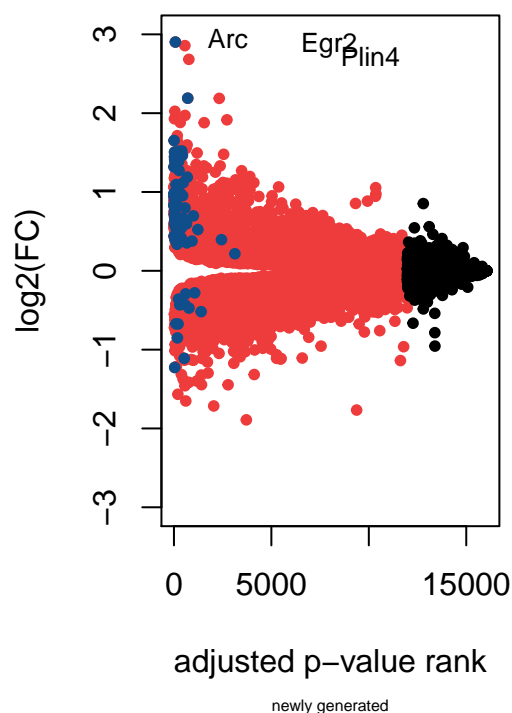
# setting graphical parameters
par(mfrow=c(1,2))

# from newly generated dataset

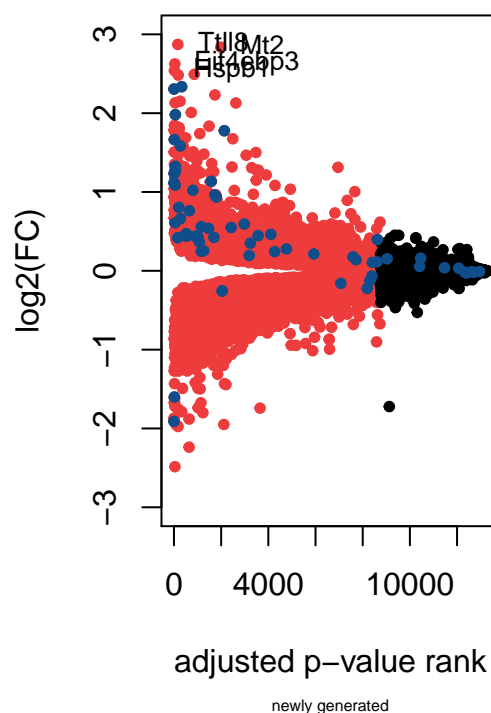
# log FC vs adjusted p-value rank

# cortex
volcano_plot(xvariable=DEdata_cortex$adj.P.Val, yvariable=DEdata_cortex$logFC, labels=rownames(DEdata_cortex))
# add labels for x and y axes
title(xlab="adjusted p-value rank", ylab="log2(FC)")
# add top logFc genes labels
text(x=which(DEdata_cortex$logFC>2.5)*10, y=DEdata_cortex$logFC[DEdata_cortex$logFC>2.5], labels=rownames(DEdata_cortex)[1:10])
# liver
volcano_plot(xvariable=DEdata_liver$adj.P.Val, yvariable=DEdata_liver$logFC, labels=rownames(DEdata_liver))
# add labels for x and y axes
title(xlab="adjusted p-value rank", ylab="log2(FC)")
# add top logFc genes labels
text(x=which(DEdata_liver$logFC>2.5), y=DEdata_liver$logFC[DEdata_liver$logFC>2.5], labels=rownames(DEdata_liver)[1:10])
```

DE (sd vs nsd) in cortex



DE (sd vs nsd) in liver



Versions

This report is built with R version 3.5.1. More info:

`sessionInfo()`

```
## R version 3.5.1 (2018-07-02)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows 10 x64 (build 17134)
##
## Matrix products: default
##
## locale:
## [1] LC_COLLATE=French_Switzerland.1252 LC_CTYPE=French_Switzerland.1252
## [3] LC_MONETARY=French_Switzerland.1252 LC_NUMERIC=C
## [5] LC_TIME=French_Switzerland.1252
##
## attached base packages:
## [1] grid      stats      graphics  grDevices  utils      datasets  methods
## [8] base
##
## other attached packages:
## [1] VennDiagram_1.6.20 futile.logger_1.4.3 reshape_0.8.8
## [4] knitr_1.21
##
## loaded via a namespace (and not attached):
```

```
## [1] Rcpp_1.0.0          digest_0.6.18        plyr_1.8.4
## [4] futile.options_1.0.1 formatR_1.5          magrittr_1.5
## [7] evaluate_0.12        stringi_1.2.4        rmarkdown_1.11
## [10] lambda.r_1.2.3       tools_3.5.1          stringr_1.3.1
## [13] xfun_0.4             yaml_2.2.0           compiler_3.5.1
## [16] htmltools_0.3.6
```