

DNA-omic Feature Selection

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Contents

- 1 Analyze and visualize the relationship between TMB (Tumor Mutation Burden) and pCR (pathological complete response) in breast cancer samples, and investigate the influence of HER2 status on this relationship. 91

```
library(broom)
library(readxl)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##   filter, lag
```

```
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
library(readr)
library(stringr)
library(tidyr)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v forcats 1.0.0      v purrr 1.0.1
## v ggplot2 3.5.2      v tibble 3.2.1
## v lubridate 1.9.2
```

```
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag() masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(tibble)
library(ggplot2)
library(ggpubr)
library(ggsignif)
```

```

library(ggrepel)
# read data
mut_df <- read_excel("41586_2021_4278_MOESM4_ESM.xlsx", sheet = 2)
clin_df <- read_excel("41586_2021_4278_MOESM4_ESM.xlsx", sheet = 1)

# Count the number of mutations of each gene
gene_freq <- table(mut_df$Hugo_Symbol)

# Calculate the total number of mutations
total_mutations <- sum(gene_freq)

# Calculate the frequency percentage of each gene
gene_freq_percent <- (gene_freq / total_mutations) * 100

# Sort in descending order of frequency
gene_freq_percent_sorted <- sort(gene_freq_percent, decreasing = TRUE)

# Print the percentages of all gene frequencies
print(gene_freq_percent_sorted)

```

```

##
##          TP53          TTN          PIK3CA          SYNE1
##    0.619809099    0.359489277    0.291310276    0.179744639
##          HMCN1          MT-ND5          MUC16          MT-CO1
##    0.148754184    0.148754184    0.142556093    0.136358002
##          MT-ND4          MT-CYB          MAP3K1          DNAH5
##    0.136358002    0.130159911    0.117763729    0.111565638
##          GATA3          SPTA1          MT-ND1          RYR1
##    0.105367547    0.105367547    0.099169456    0.099169456
##          COL5A1          RYR2          ACE          COL12A1
##    0.092971365    0.092971365    0.086773274    0.086773274
##          MACF1          MYO3A          NEB          DNAH3
##    0.080575183    0.080575183    0.080575183    0.074377092
##          LYST          OBSCN          LAMA1          MT-CO3
##    0.074377092    0.074377092    0.068179001    0.068179001
##          RYR3          ABCA13          APOB          COL22A1
##    0.068179001    0.061980910    0.061980910    0.061980910
##          DNAH8          DST          DYSF          FAT1
##    0.061980910    0.061980910    0.061980910    0.061980910
##          MALAT1          NF1          PTEN          RNF213
##    0.061980910    0.061980910    0.061980910    0.061980910
##          SPTAN1          ANK2          ASH1L          COL7A1
##    0.061980910    0.055782819    0.055782819    0.055782819
##          CSMD1          CSMD2          CSMD3          CUBN
##    0.055782819    0.055782819    0.055782819    0.055782819
##          DMD          FBN2          FMN2          NOTCH1
##    0.055782819    0.055782819    0.055782819    0.055782819
##          OTOF          PCDH15          PNPLA6          RGS7
##    0.055782819    0.055782819    0.055782819    0.055782819
##          Unknown          VPS13B          VWF          ADAR
##    0.055782819    0.055782819    0.055782819    0.049584728
##          ADCY10          AHNAK2          ATM          ATP13A4
##    0.049584728    0.049584728    0.049584728    0.049584728

```

##	CACNA1F	CACNA1S	CBFB	CDH1
##	0.049584728	0.049584728	0.049584728	0.049584728
##	CDH23	CFH	COL1A2	COL5A2
##	0.049584728	0.049584728	0.049584728	0.049584728
##	COL6A2	EYS	FBN1	GPR158
##	0.049584728	0.049584728	0.049584728	0.049584728
##	IGF1R	INPPL1	KIF26B	LAMA2
##	0.049584728	0.049584728	0.049584728	0.049584728
##	LRP2	MUC19	MYH9	NOTCH3
##	0.049584728	0.049584728	0.049584728	0.049584728
##	OCA2	OTOG	PCNT	PTPRD
##	0.049584728	0.049584728	0.049584728	0.049584728
##	RAB3GAP2	SI	TAB3	TG
##	0.049584728	0.049584728	0.049584728	0.049584728
##	TGFBR3	TMEM132D	USH2A	VCAN
##	0.049584728	0.049584728	0.049584728	0.049584728
##	WDR72	WT1	ABCA5	ADAMTS20
##	0.049584728	0.049584728	0.043386637	0.043386637
##	ALS2	ANK1	CACNA1D	CACNA1E
##	0.043386637	0.043386637	0.043386637	0.043386637
##	CFI	COL6A1	COL6A3	COL6A5
##	0.043386637	0.043386637	0.043386637	0.043386637
##	DCC	DNAH11	DNAH14	DNAH17
##	0.043386637	0.043386637	0.043386637	0.043386637
##	EGFR	F8	FASN	FAT2
##	0.043386637	0.043386637	0.043386637	0.043386637
##	FAT3	FER1L6	GRID2IP	HIVEP1
##	0.043386637	0.043386637	0.043386637	0.043386637
##	IGSF10	ITCH	KCNT2	KMT2C
##	0.043386637	0.043386637	0.043386637	0.043386637
##	KMT2D	LAMB3	LMTK2	LRP1B
##	0.043386637	0.043386637	0.043386637	0.043386637
##	LRP4	MAP2K4	MED12	MID1
##	0.043386637	0.043386637	0.043386637	0.043386637
##	MT-CO2	MT-ND2	MYH2	MYH7
##	0.043386637	0.043386637	0.043386637	0.043386637
##	MYH8	NCOR1	NFASC	OGDHL
##	0.043386637	0.043386637	0.043386637	0.043386637
##	PKHD1L1	RELN	RP1	SEMA4A
##	0.043386637	0.043386637	0.043386637	0.043386637
##	SZT2	TBX3	WDFY3	XIRP2
##	0.043386637	0.043386637	0.043386637	0.043386637
##	ZFPM2	ZNF527	ABCA1	ABCA12
##	0.043386637	0.043386637	0.037188546	0.037188546
##	ABCA4	ABCC11	ABCC2	ABCC3
##	0.037188546	0.037188546	0.037188546	0.037188546
##	ABCC9	AHNAK	ASXL3	ATG2B
##	0.037188546	0.037188546	0.037188546	0.037188546
##	ATP6VOA4	BLM	BTBD11	C3
##	0.037188546	0.037188546	0.037188546	0.037188546
##	C6	CABIN1	CACNA1B	CLU
##	0.037188546	0.037188546	0.037188546	0.037188546
##	COL1A1	COL4A3	COL4A5	DCHS2
##	0.037188546	0.037188546	0.037188546	0.037188546

##	DISC1	DNAH7	DNAH9	EBF3
##	0.037188546	0.037188546	0.037188546	0.037188546
##	EP300	FLNC	FRAS1	GPR98
##	0.037188546	0.037188546	0.037188546	0.037188546
##	GREB1	HCFC1	HERC2	HSPG2
##	0.037188546	0.037188546	0.037188546	0.037188546
##	HTT	KDM5C	KIF16B	L1CAM
##	0.037188546	0.037188546	0.037188546	0.037188546
##	LAMC3	LCT	LPHN3	MASP1
##	0.037188546	0.037188546	0.037188546	0.037188546
##	MDN1	MED13L	MT-ND3	MYO5A
##	0.037188546	0.037188546	0.037188546	0.037188546
##	MYO5B	MYO7A	NALCN	NAV2
##	0.037188546	0.037188546	0.037188546	0.037188546
##	NCOA2	NHSL2	NLRP5	NRXN1
##	0.037188546	0.037188546	0.037188546	0.037188546
##	OPHN1	PKHD1	PLEC	PTPRQ
##	0.037188546	0.037188546	0.037188546	0.037188546
##	REV3L	RNGTT	RP11-1055B8.7	SACS
##	0.037188546	0.037188546	0.037188546	0.037188546
##	SHROOM4	SLC2A10	STAG2	TBCD
##	0.037188546	0.037188546	0.037188546	0.037188546
##	TEK	TMEM131	TOPAZ1	VPS13A
##	0.037188546	0.037188546	0.037188546	0.037188546
##	WDFY4	XBP1	XDH	ZMYM3
##	0.037188546	0.037188546	0.037188546	0.037188546
##	ZNF423	36951	ADAMTS16	AFAP1L1
##	0.037188546	0.030990455	0.030990455	0.030990455
##	AKAP6	AKAP9	AKNA	AMPH
##	0.030990455	0.030990455	0.030990455	0.030990455
##	ANO2	ANTXR1	APC	ARHGEF17
##	0.030990455	0.030990455	0.030990455	0.030990455
##	ATP1A2	ATP9A	BAI1	BAI3
##	0.030990455	0.030990455	0.030990455	0.030990455
##	BCL11B	BCL9	BRCA2	CACNA1A
##	0.030990455	0.030990455	0.030990455	0.030990455
##	CACNA1H	CACNA2D1	CBS	CCDC180
##	0.030990455	0.030990455	0.030990455	0.030990455
##	CD19	CDC6	CDH4	CELSR3
##	0.030990455	0.030990455	0.030990455	0.030990455
##	CENPC	CEP112	CFHR5	CHD8
##	0.030990455	0.030990455	0.030990455	0.030990455
##	CNTN1	CNTNAP5	COBL	COL14A1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	COL18A1	COL4A1	COL4A4	COL9A1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	CTD-307407.11	CUX1	DAPK1	DARS2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	DDX4	DIAPH3	DLG2	DNAH12
##	0.030990455	0.030990455	0.030990455	0.030990455
##	DNM2	DNMT1	DNMT3B	DOCK8
##	0.030990455	0.030990455	0.030990455	0.030990455
##	DROSHA	DTL	DYNC1H1	EIF2AK4
##	0.030990455	0.030990455	0.030990455	0.030990455

##	ESR1	FAT4	FBLN2	FBRSL1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	FCRL3	FNDC1	FOXN1	FRMPD4
##	0.030990455	0.030990455	0.030990455	0.030990455
##	FRY	GART	GHRHR	GPR116
##	0.030990455	0.030990455	0.030990455	0.030990455
##	GPR133	GPR179	GRIN1	GRIN2B
##	0.030990455	0.030990455	0.030990455	0.030990455
##	GTF3C1	GVINP1	HACE1	HGF
##	0.030990455	0.030990455	0.030990455	0.030990455
##	HIVEP3	HP1BP3	HSPA9	ITPR1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	JAG2	KCNN3	KDM6A	KIAA0586
##	0.030990455	0.030990455	0.030990455	0.030990455
##	KIAA1109	KIAA2026	KIF5A	KIRREL3
##	0.030990455	0.030990455	0.030990455	0.030990455
##	KMT2A	LAMA3	LAMB2	LETM2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	LRRN2	LTBP2	MAN2B1	MAP2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	MED24	MET	MTR	MYBPC2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	MYH1	MYH11	MYH14	MYH6
##	0.030990455	0.030990455	0.030990455	0.030990455
##	MYO18B	MYOM2	MYOM3	MYT1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	NBAS	NCOA6	NEBL	NOTCH2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	NPAS4	NRK	OPA1	PADI6
##	0.030990455	0.030990455	0.030990455	0.030990455
##	PBRM1	PCDHA10	PCL0	PDE6C
##	0.030990455	0.030990455	0.030990455	0.030990455
##	PHF20	PIEZ01	PIEZ02	PIKFYVE
##	0.030990455	0.030990455	0.030990455	0.030990455
##	PLB1	PLD1	POLR3B	PTPRC
##	0.030990455	0.030990455	0.030990455	0.030990455
##	PXDN	PYGL	RIMS2	RNF17
##	0.030990455	0.030990455	0.030990455	0.030990455
##	RPS6KA6	SCN10A	SCN1A	SCN4A
##	0.030990455	0.030990455	0.030990455	0.030990455
##	SCNN1B	SDK1	SF3B2	SLC4A1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	SMARCA4	SOS1	SPTBN2	SREBF2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	SSH2	STXBP5	SUPT6H	SVEP1
##	0.030990455	0.030990455	0.030990455	0.030990455
##	SYNE2	SYT11	TARBP1	TBC1D22A
##	0.030990455	0.030990455	0.030990455	0.030990455
##	TBC1D4	TDRD15	TENM3	TGFBR2
##	0.030990455	0.030990455	0.030990455	0.030990455
##	TRMT13	TR0	TSHZ2	UBR5
##	0.030990455	0.030990455	0.030990455	0.030990455
##	UMODL1	UNC13A	UNC13B	UNC13C
##	0.030990455	0.030990455	0.030990455	0.030990455

##	UNC80	UTP20	VPS13C	VPS13D
##	0.030990455	0.030990455	0.030990455	0.030990455
##	VPS8	WDR36	ZC3H6	ZFXH4
##	0.030990455	0.030990455	0.030990455	0.030990455
##	ZFYVE26	ZNF544	AARS2	ABAT
##	0.030990455	0.030990455	0.024792364	0.024792364
##	ABCA2	ABCA6	ABCB1	ABCB5
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ABCC5	ABCC8	AC01	ACVR2A
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ADAM22	ADAMTS2	ADAMTSL4	ADCY1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ADCY2	ADRBK2	AGRN	AHI1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	AK9	AKR1B1	ANK3	ANKRD11
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ANKRD12	ANKRD17	ANO7	ARAP3
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ARHGAP20	ARHGAP35	ARID2	ARNT
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ASPM	ASTN1	ATAD2	ATP2B2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ATP2B3	ATP2C2	ATR	ATRX
##	0.024792364	0.024792364	0.024792364	0.024792364
##	BAIAP3	BIRC6	BMPER	BRCA1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	C11orf63	C1orf167	C20orf26	C8orf33
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CACNA1G	CAD	CARD11	CASC5
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CASK	CASP8AP2	CCDC114	CCDC168
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CCDC178	CCDC22	CCR7	CD1C
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CDH9	CDHR1	CDHR2	CDK5RAP2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CECR2	CEP128	CEP250	CEP290
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CFB	CHD6	CHIT1	CHL1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CHRNA2	CIT	CKAP5	CLCN4
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CMYA5	CNDP1	CNGB1	CNGB3
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CNTN4	CNTN6	CNTNAP4	COL11A2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	COL24A1	COL3A1	COL4A6	COL5A3
##	0.024792364	0.024792364	0.024792364	0.024792364
##	COL6A6	COMP	CPNE4	CR1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CRB1	CREBBP	CSPP1	CSRNP1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	CTTN	CUL4B	CUL9	DAW1
##	0.024792364	0.024792364	0.024792364	0.024792364

##	DBT	DCDC1	DDC	DGKK
##	0.024792364	0.024792364	0.024792364	0.024792364
##	DIP2C	DISP1	DNAH6	DNAJC13
##	0.024792364	0.024792364	0.024792364	0.024792364
##	DNMBP	DOCK11	DOCK2	DPYD
##	0.024792364	0.024792364	0.024792364	0.024792364
##	DPYSL5	DRC1	DYNC2H1	EFCAB4B
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ENOX2	EPB41L1	ERAP1	F5
##	0.024792364	0.024792364	0.024792364	0.024792364
##	FAM120B	FAM161A	FANCD2	FARP2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	FES	FGFR2	FLG	FLG2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	FLNA	FLNB	FLVCR1	FN1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	FNDC7	FOXI3	FOXP2	FRMD7
##	0.024792364	0.024792364	0.024792364	0.024792364
##	FSD1	FSIP2	GABRG2	GABRG3
##	0.024792364	0.024792364	0.024792364	0.024792364
##	GABRQ	GALNT10	GALNT13	GBF1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	GCK	GLS	GNL3L	GNPAT
##	0.024792364	0.024792364	0.024792364	0.024792364
##	GON4L	GRIN2A	GRM6	HDAC4
##	0.024792364	0.024792364	0.024792364	0.024792364
##	HDAC6	HECTD4	HECW1	HERC1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	HUWE1	IDH3B	INTS1	INTS6
##	0.024792364	0.024792364	0.024792364	0.024792364
##	INVS	IRF2BP1	ITGA6	ITGA8
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ITGAM	ITGAX	ITGB4	ITPR2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	JAK2	JAKMIP1	KCNA5	KCNH7
##	0.024792364	0.024792364	0.024792364	0.024792364
##	KCNMA1	KCNU1	KCTD3	KDM2B
##	0.024792364	0.024792364	0.024792364	0.024792364
##	KDR	KIAA0100	KIAA1107	KIAA1549L
##	0.024792364	0.024792364	0.024792364	0.024792364
##	KIF2C	KIFAP3	KIFC2	KMT2B
##	0.024792364	0.024792364	0.024792364	0.024792364
##	KRTAP10-11	L3MBTL4	LAMC1	LCLAT1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	LIPA	LRRK2	LRRTM4	LRTOMT
##	0.024792364	0.024792364	0.024792364	0.024792364
##	MAP1A	MAT1A	MCF2	MDM2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	MED15	MEGF6	METTL3	MLLT4
##	0.024792364	0.024792364	0.024792364	0.024792364
##	MLPH	MOCOS	MORC1	MOV10
##	0.024792364	0.024792364	0.024792364	0.024792364
##	MRC2	MTA1	MTHFR	MUC17
##	0.024792364	0.024792364	0.024792364	0.024792364

##	MUC5AC	MYCBP2	MYH10	MYH3
##	0.024792364	0.024792364	0.024792364	0.024792364
##	MYH4	MYH7B	MYO15A	MYO16
##	0.024792364	0.024792364	0.024792364	0.024792364
##	MYO1F	MYO7B	MYO9A	MYRFL
##	0.024792364	0.024792364	0.024792364	0.024792364
##	NAA35	NARG2	NCAPD2	NDE1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	NHEJ1	NLRP1	NLRP4	NOTCH4
##	0.024792364	0.024792364	0.024792364	0.024792364
##	NRP2	NWD1	OR2G6	OR2M2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	OR8K3	OTC	OTUD5	PAH
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PALB2	PALLD	PALM2	PAPPA2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PARP1	PATL2	PAX3	PCDH17
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PCDHB15	PCDP1	PCNXL2	PDHA1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PDSS1	PENK	PER2	PHKA2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PIK3CG	PITPNM2	PKN2	PLA2G6
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PLCE1	PLEKHG4B	PNPLA7	PODN
##	0.024792364	0.024792364	0.024792364	0.024792364
##	POLD1	POM121L12	PPFIA2	PPIP5K2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PRAM1	PRDM5	PRKCG	PRKDC
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PRTG	PSMB11	PTGS2	PTPRB
##	0.024792364	0.024792364	0.024792364	0.024792364
##	PTPRN2	QSER1	RAD54L	RALGPS2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	RAPGEF3	RASAL2	RB1	RGS9
##	0.024792364	0.024792364	0.024792364	0.024792364
##	RNF103	RNF170	ROBO2	RP11-192H23.4
##	0.024792364	0.024792364	0.024792364	0.024792364
##	RP11-286H14.4	RTEL1	RUNX1	SAMHD1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SATB2	SBN01	SCAF11	SCN2A
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SCN3A	SCNN1G	SETBP1	SETD1B
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SETD2	SETX	SF3A1	SH3BP1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SH3BP4	SH3TC2	SHANK2	SLC12A6
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SLC15A1	SLC1A3	SLC39A4	SLC43A3
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SLC4A4	SLC5A7	SLC8A3	SNAP91
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SNRNP200	SNX13	SP100	SPAG17
##	0.024792364	0.024792364	0.024792364	0.024792364

##	SPG11	SPG7	SPOCK2	SPTB
##	0.024792364	0.024792364	0.024792364	0.024792364
##	SRGAP3	SRRM4	ST7	STAB2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	STAT1	SUPT5H	SUSD1	TACC2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	TBX22	TCF4	TCFL5	TET2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	THSD7A	THSD7B	TLN2	TLR5
##	0.024792364	0.024792364	0.024792364	0.024792364
##	TMEM132B	TMEM63C	TMEM87B	TOX
##	0.024792364	0.024792364	0.024792364	0.024792364
##	TPO	TPP2	TPR	TRDN
##	0.024792364	0.024792364	0.024792364	0.024792364
##	TRIM55	TRIOBP	TRIP11	TRPM2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	TRPM3	TRPV4	TSKS	TTC40
##	0.024792364	0.024792364	0.024792364	0.024792364
##	TTC6	TULP2	UHRF1	UNC79
##	0.024792364	0.024792364	0.024792364	0.024792364
##	URB1	USB1	USP38	USP43
##	0.024792364	0.024792364	0.024792364	0.024792364
##	VAV1	VSIG4	VWA8	WDR52
##	0.024792364	0.024792364	0.024792364	0.024792364
##	WDR60	WDR64	WDR65	WDR87
##	0.024792364	0.024792364	0.024792364	0.024792364
##	WDR96	WIPF1	WLS	WNK1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	WNK4	XP01	XPOT	XRN1
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ZBTB37	ZEB2	ZFAT	ZFR2
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ZNF250	ZNF292	ZNF592	ZNF665
##	0.024792364	0.024792364	0.024792364	0.024792364
##	ZNF91	40057	AAAS	ABCA10
##	0.024792364	0.018594273	0.018594273	0.018594273
##	ABCA8	ABCA9	ABCB11	ABCB4
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ABI3BP	AC004381.6	AC074212.3	AC079354.1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ACAP3	ACCS	ACIN1	ACTA1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ACTN2	ACTR6	ADAM33	ADAM9
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ADAMTS10	ADAMTS13	ADAMTS14	ADCY8
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ADD2	AFF1	AFF3	AGMO
##	0.018594273	0.018594273	0.018594273	0.018594273
##	AK2	AKAP13	AKT1	ALDH18A1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ALDH1L1	ALMS1	AMBRA1	ANKFY1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ANKRD13C	ANKS1A	ANO3	ANO8
##	0.018594273	0.018594273	0.018594273	0.018594273

##	AOC1	AOX1	AP2A1	AP3M1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	APBB1IP	ARHGAP22	ARHGAP24	ARHGAP31
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ARHGAP32	ARHGEF10	ARHGEF6	ARID4B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ARMC3	ARMC4	ASB4	ASXL1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ATP13A2	ATP13A5	ATP1A3	ATP6V1B1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ATP6V1C2	ATP7A	ATRNL1	ATXN1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	AVL9	AXIN2	AXL	BAIAP2L2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	BAZ1B	BAZ2B	BCAS3	BCO2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	BCORL1	BIRC7	BPIFB1	BPIFB4
##	0.018594273	0.018594273	0.018594273	0.018594273
##	BRAF	BRDT	BRWD3	BSN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	C10orf12	C10orf129	C10orf2	C12orf55
##	0.018594273	0.018594273	0.018594273	0.018594273
##	C14orf159	C14orf37	C19orf12	C1orf168
##	0.018594273	0.018594273	0.018594273	0.018594273
##	C2orf16	C3orf72	C7	C8orf34
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CACNA1I	CACNA2D2	CAMK2D	CAMSAP3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CAPS2	CATSPERG	CBLB	CC2D1B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CC2D2A	CCAR1	CCDC142	CCDC17
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CCDC60	CCDC80	CCM2	CCSER1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CCSER2	CD101	CD46	CD84
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CDC25A	CDC42BPA	CDCP1	CDH13
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CDH26	CDKL5	CDON	CEBPZ
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CEP152	CEP85L	CHD1	CHD5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CHERP	CHFR	CHRD1	CHRNA4
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CITED1	CLASP1	CLCA1	CLCN5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CLINT1	CLIP2	CLSPN	CMAS
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CMIP	CNBD1	CNGA3	CNNM4
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CNTNAP2	COL11A1	COL25A1	COL27A1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	COL9A2	COLEC11	COLGALT2	CORIN
##	0.018594273	0.018594273	0.018594273	0.018594273

##	CPEB2	CPS1	CPSF1	CPT1C
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CPXCR1	CR2	CSAD	CSF3R
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CSGALNACT1	CTNND2	CUL7	CUX2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	CYLC1	CYLD	CYP26A1	DAAM1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DAPP1	DCHS1	DCLK2	DCTN1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DECR1	DENND4C	DGKA	DGKQ
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DHX9	DISP2	DLG3	DLL3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DNAAF1	DNAH1	DNAH2	DNAI1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DNAI2	DNASE1L2	DOCK1	DOCK5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DOCK7	DOCK9	DOPEY2	DPCR1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DPP4	DRGX	DSP	DUOX2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	DUSP21	DUSP27	EDEM3	EDN3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	EFEMP1	EFEMP2	EGF	EGLN2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	EHBP1L1	EHMT2	EIF4A2	EIF4G3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ELMO1	EMC2	EMR1	EPAS1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	EPB41	EPB42	EPHA1	EPHB1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	EPOR	ERBB3	ERCC2	ERGIC2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ERMN	ERN2	ERVMER34-1	ESYT3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ETFDH	ETS1	EVL	EXOC3L4
##	0.018594273	0.018594273	0.018594273	0.018594273
##	EXPH5	EXT1	EYA4	FAAH2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	FAH	FAM131A	FAM73A	FANCI
##	0.018594273	0.018594273	0.018594273	0.018594273
##	FANCM	FBXW7	FBXW9	FCRL1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	FCRL5	FGD5	FGF13	FGFR3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	FHDC1	FHOD3	FLRT2	FM01
##	0.018594273	0.018594273	0.018594273	0.018594273
##	FNBP4	FSD2	FTCD	FYC01
##	0.018594273	0.018594273	0.018594273	0.018594273
##	FZD6	G6PC2	GABBR2	GAD1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	GALNT2	GCN1L1	GCNT3	GDF6
##	0.018594273	0.018594273	0.018594273	0.018594273

##	GFAP	GIGYF1	GK	GLE1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	GLI2	GLI3	GLYR1	GNAL
##	0.018594273	0.018594273	0.018594273	0.018594273
##	GOLGB1	GPR112	GPR114	GPR155
##	0.018594273	0.018594273	0.018594273	0.018594273
##	GPR56	GPR82	GRHL2	GRIN3B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	GRIP1	GRN	GSDMD	GSN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	GSTP1	GTF2A1	GTPBP10	GUCY2D
##	0.018594273	0.018594273	0.018594273	0.018594273
##	HCN1	HECTD1	HECTD3	HELZ
##	0.018594273	0.018594273	0.018594273	0.018594273
##	HELZ2	HEPHL1	HERC3	HEXA
##	0.018594273	0.018594273	0.018594273	0.018594273
##	HID1	HIP1R	HIST1H2AD	HIST1H4D
##	0.018594273	0.018594273	0.018594273	0.018594273
##	HK3	HLX	HMCN2	HOXA10
##	0.018594273	0.018594273	0.018594273	0.018594273
##	HPS5	HSPA12B	HSPA4	HSPA4L
##	0.018594273	0.018594273	0.018594273	0.018594273
##	HTR1B	HTR5A	IDH1	IDS
##	0.018594273	0.018594273	0.018594273	0.018594273
##	IFT88	IGDCC4	IGHMBP2	IKZF1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	IL17RE	INSRR	INTS2	IP013
##	0.018594273	0.018594273	0.018594273	0.018594273
##	IP05	IQCA1	IQCH	IQGAP1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	IQSEC2	ISLR2	ITGA2	ITGA2B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ITGA7	ITGA9	ITGAD	ITGB1BP2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ITIH2	ITLN1	ITPR3	ITPRIPL1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	JPH2	JPH3	KALRN	KAT6B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KCNA10	KCNA6	KCNAB1	KCNJ12
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KCNQ2	KCNT1	KCP	KDM2A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KDM3A	KIAA0196	KIAA0226L	KIAA0556
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KIAA1009	KIAA1210	KIAA1211	KIAA1211L
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KIAA1217	KIAA1429	KIAA1524	KIAA1549
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KIAA1731	KIF1A	KIF1B	KIF5C
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KIRREL	KLHL9	KMT2E	KNDC1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	KRIT1	KRT36	KRT4	KRT75
##	0.018594273	0.018594273	0.018594273	0.018594273

##	KSR2	KTN1	LAMC2	LAMP2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	LAP3	LAYN	LEMD2	LEMD3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	LGR5	LHX3	LIG4	LINC00283
##	0.018594273	0.018594273	0.018594273	0.018594273
##	LINS	LMAN1	LPCAT1	LPO
##	0.018594273	0.018594273	0.018594273	0.018594273
##	LRIG1	LRP12	LRP5	LRRC16A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	LRRIQ1	LSAMP	LUZP4	MAGI1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MAGI3	MAN1B1	MAP1B	MAPK15
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MBD1	MBTPS2	MCM3	MCMD2C2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MED1	MED13	MEGF10	MEGF8
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MEI1	MEPE	METTL22	MFN2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MFSD4	MFSD6	MGRN1	MIB2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MKL2	MKLN1	MKS1	MLF1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MMRN1	MNDA	MORC2	MROH2B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MRPL1	MS4A2	MS4A7	MSH5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MT-ATP8	MT-ND4L	MTIF2	MTM1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MTOR	MUC22	MUC3A	MYCBPAP
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MYH13	MYLK	MYLK2	MYLK3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MYO15B	MYO1C	MYO6	MYOT
##	0.018594273	0.018594273	0.018594273	0.018594273
##	MYT1L	NACAD	NADSYN1	NARF
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NCKAP1L	NCL	NDRG1	NDUFAF5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NECAB1	NEDD4	NFATC3	NFIX
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NGFR	NID2	NKX2-2	NLGN1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NLRC4	NLRP3	NME8	NOS1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NOS3	NPHP3	NPHP4	NPR1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NRXN3	NTRK3	NUMA1	NUP155
##	0.018594273	0.018594273	0.018594273	0.018594273
##	NUP210L	NUP98	NVL	OC90
##	0.018594273	0.018594273	0.018594273	0.018594273
##	OGDH	OR10X1	OR14K1	OR2L13
##	0.018594273	0.018594273	0.018594273	0.018594273

##	OR2M1P	OR5B3	OR5D13	OR8A1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ORC1	OSBPL6	OSBPL9	OTOP2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PAK6	PARN	PASD1	PCBP3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PCDH10	PCDH19	PCDHA11	PCDHA5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PCDHGA3	PCDHGA6	PCYT1B	PDE2A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PDE4D	PDE4DIP	PDE6B	PDSS2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PEPD	PFAS	PHF14	PHF3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PHKA1	PHKB	PI16	PI4KA
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PIANP	PIGU	PIK3R1	PIP5K1A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PIWIL1	PKD2	PKDREJ	PKN0X2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PLA2G4E	PLEKHA5	PLEKHA6	PLEKHG2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PLEKHH1	PLIN1	PLK2	PLXNA3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PLXNA4	PMFBP1	PMM1	PNKP
##	0.018594273	0.018594273	0.018594273	0.018594273
##	POLG	POLR3A	PPA1	PPFIA3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PPP1R36	PPRC1	PRDM16	PREX1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PREX2	PRKAG1	PRKAG3	PRKAR1A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PRKCQ	PROM1	PROM2	PRPF8
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PRRC2B	PRSS3P2	PSME4	PSTPIP1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PTPN4	PTPN7	PTPRM	PTPRS
##	0.018594273	0.018594273	0.018594273	0.018594273
##	PWP2	PYGM	R3HCC1L	RAB11FIP3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RAB3GAP1	RAB40C	RALGDS	RAPGEF2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RASGRP2	RBCK1	RBM12	RBM34
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RBM5	RC3H1	REEP3	REPS1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RET	RFTN2	RGL1	RGN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RGS22	RGSL1	RLF	RNASEL
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RNF111	RNF216	RNF40	RP11-159G9.5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RP11-510H23.1	RP11-56A10.1	RPA1	RPL23A
##	0.018594273	0.018594273	0.018594273	0.018594273

##	RPL3	RPL7L1	RPS6KC1	RPTN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	RPTOR	RRP12	SALL3	SARM1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SCAF4	SCARB2	SCFD1	SCIN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SCN7A	SCN8A	SCRIB	SDK2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SEC23A	SEC24A	SEC31A	SEC61A2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SEMA5A	SEMA6D	SESN2	SESTD1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SEZ6L	SH2D5	SH3TC1	SHB
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SIGLEC6	SLC12A3	SLC12A5	SLC13A3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC17A5	SLC1A1	SLC23A1	SLC24A4
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC25A13	SLC26A3	SLC26A4	SLC26A7
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC26A9	SLC28A2	SLC28A3	SLC29A2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC2A9	SLC38A2	SLC5A12	SLC5A6
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC6A18	SLC6A3	SLC7A4	SLC8A1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC9A4	SLC9A6	SLC9A9	SLC02A1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLC04A1	SLC05A1	SLIT2	SLIT3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SLITRK3	SMARCA2	SMG1	SNED1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SNTG2	SNX32	SON	SORCS2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SOX5	SPAG9	SPEG	SPEN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SPG20	SRCAP	SRPK2	SRRM3
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SSFA2	ST5	ST6GALNAC6	ST7L
##	0.018594273	0.018594273	0.018594273	0.018594273
##	STARD9	STAT3	STIM1	STK32B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	SUGP1	SV2B	SVOPL	SWT1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TACR3	TAF2	TANC2	TAT
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TBC1D32	TBL1X	TBL1XR1	TBX15
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TBX19	TCOF1	TCTN1	TECPR1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TENC1	TENM4	TET1	TFAP2E
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TGFB1I1	THRA	TIAM2	TLL2
##	0.018594273	0.018594273	0.018594273	0.018594273

##	TLR9	TMBIM6	TMC3	TMC5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TMEM144	TMEM245	TMPRSS6	TNC
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TNFRSF11B	TNRC18	TNXB	TOP2A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TPCN2	TPP1	TRAPPC9	TRERF1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TREX1	TRIM67	TRIO	TRMT1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TROAP	TRPM1	TRPM6	TRPS1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TRRAP	TSC2	TSPAN1	TTBK2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TTC21A	TTC27	TTC37	TULP1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	TXLNG	TYROBP	UBN2	UBR2
##	0.018594273	0.018594273	0.018594273	0.018594273
##	UNC5D	UPB1	USP13	USP24
##	0.018594273	0.018594273	0.018594273	0.018594273
##	USP34	USP40	USP42	USP5
##	0.018594273	0.018594273	0.018594273	0.018594273
##	USP9X	VAR52	VPS39	VWA3B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	VWA7	WDR35	WDR41	WDR59
##	0.018594273	0.018594273	0.018594273	0.018594273
##	WDR62	WDR70	WDR75	WDYHV1
##	0.018594273	0.018594273	0.018594273	0.018594273
##	WFS1	WISP1	WNK3	WNT3A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	XIST	XKR4	XPNPEP2	XP04
##	0.018594273	0.018594273	0.018594273	0.018594273
##	XP05	YARS	YME1L1	ZAN
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZBTB24	ZC3H13	ZCCHC11	ZCCHC8
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZCWPW1	ZFAND2B	ZFHX3	ZFP92
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZFYVE1	ZKSCAN2	ZMIZ2	ZMPSTE24
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZNF180	ZNF304	ZNF425	ZNF462
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZNF467	ZNF473	ZNF493	ZNF518A
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZNF548	ZNF551	ZNF638	ZNF677
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZNF687	ZNF7	ZNF726	ZNF804B
##	0.018594273	0.018594273	0.018594273	0.018594273
##	ZP1	ZSWIM8	A2ML1	AARS
##	0.018594273	0.018594273	0.012396182	0.012396182
##	AASS	ABCC1	ABCC10	ABCC4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ABCG1	ABCG8	ABHD12	ABI2
##	0.012396182	0.012396182	0.012396182	0.012396182

##	ABLIM1	AC114783.1	ACACA	ACACB
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ACAD10	ACAD8	ACADL	ACADM
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ACAP1	ACBD3	ACBD5	ACCSL
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ACER1	ACSS3	ACTA2	ACTC1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ACTRT3	ADAD1	ADAM10	ADAM15
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ADAM2	ADAM28	ADAM7	ADAM8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ADAMTS1	ADAMTS12	ADAMTS18	ADAMTS4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ADAMTS5	ADAMTS6	ADAMTSL3	ADCK1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ADCK2	ADCY4	ADCY5	ADCYAP1R1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ADD3	ADGB	ADNP	ADRBK1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AES	AFF2	AFM	AFMID
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AGAP1	AGAP3	AGBL1	AGER
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AGK	AGL	AGMAT	AGT
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AGXT2	AHCYL1	AIFM1	AIFM3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AIM1	AIM2	AIRE	AKAP3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AKAP5	AKAP7	ALCAM	ALDH16A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ALDH7A1	ALDH9A1	ALDOA	ALG13
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ALG6	ALK	ALKBH4	ALLC
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ALOX5	ALS2CR11	AMER1	AMICA1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AMIGO2	AMOTL1	ANGPT1	ANKFN1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ANKRD30A	ANKRD31	ANKRD33	ANKRD35
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ANKRD6	ANKS1B	ANKS3	ANO4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ANO5	ANXA3	AOAH	AP1B1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AP1G1	AP3D1	APAF1	APBB3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	APC2	APP	AQP2	AQP4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	AQR	ARAP1	ARFGEF2	ARG1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARHGAP10	ARHGAP18	ARHGAP19-SLIT1	ARHGAP23
##	0.012396182	0.012396182	0.012396182	0.012396182

##	ARHGAP33	ARHGAP4	ARHGAP40	ARHGAP42
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARHGAP9	ARHGEF12	ARHGEF19	ARHGEF26
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARHGEF37	ARHGEF7	ARHGEF9	ARID1A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARID1B	ARID4A	ARMC12	ARMC5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARMC8	ARNT2	ARR3	ARRB1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARRDC2	ARRDC3	ARSB	ARSE
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ARSF	ARVCF	ASAH1	ASB12
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ASB14	ASB15	ASB5	ASCC1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ASCC3	ASCL1	ASIC2	ASIC3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ASPA	ASPH	ASUN	ATAD3C
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATF6	ATF7	ATF7IP	ATG16L1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATG16L2	ATG4A	ATG4D	ATG7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATIC	ATP10B	ATP10D	ATP12A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATP13A3	ATP1A4	ATP1B3	ATP2B4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATP4A	ATP6VOA1	ATP6V1E1	ATP6V1G3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATP7B	ATP8A2	ATP8B2	ATRAID
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ATXN2	ATXN7L1	AURKA	AUTS2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	B3GNT6	B4GALNT2	B4GALNT3	B4GALT3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BAIAP2	BANK1	BARHL2	BAZ1A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BBS10	BBX	BCAM	BCAS1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BCHE	BCKDHB	BCL11A	BCL2L11
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BDP1	BECN1	BEST1	BFSP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BIN1	BIN2	BIRC3	BLK
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BMP10	BMP2K	BMP7	BMPR1B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BMPR2	BOD1L1	BPTF	BRAT1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BRCC3	BRINP1	BRINP3	BTBD9
##	0.012396182	0.012396182	0.012396182	0.012396182
##	BTK	BTN3A1	BTN3A2	BTN3A3
##	0.012396182	0.012396182	0.012396182	0.012396182

##	BTNL9	BTRC	BYSL	BZRAP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C10orf71	C11orf95	C12orf42	C14orf164
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C16orf46	C16orf89	C18orf42	C19orf26
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C19orf81	C1orf112	C1orf159	C1orf173
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C1orf222	C1orf27	C1QTNF3	C1QTNF4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C1S	C20orf195	C21orf59	C2CD3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C2orf71	C2orf78	C3orf20	C3P1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C4orf47	C4orf50	C5	C5orf45
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C5orf52	C6orf10	C6orf15	C6orf163
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C7orf13	C7orf43	C8orf46	C9orf57
##	0.012396182	0.012396182	0.012396182	0.012396182
##	C9orf91	CA5B	CA8	CACFD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CACNA1C	CACNA2D3	CACNB1	CACNB3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CACNG5	CADM3	CALCOCO2	CALM2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CAMK1D	CAMK2G	CAPN11	CAPN2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CAPN3	CAPNS1	CAPRIN1	CARM1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CASP9	CATSPER1	CATSPER3	CBFA2T3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CBR3	CBX7	CCBE1	CCDC116
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCDC138	CCDC14	CCDC155	CCDC159
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCDC170	CCDC171	CCDC173	CCDC18
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCDC19	CCDC27	CCDC37	CCDC39
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCDC40	CCDC64	CCDC66	CCDC68
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCDC8	CCDC88A	CCDC88B	CCDC94
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCNB3	CCND2	CCNJL	CCNT1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CCT2	CCT5	CD164	CD1E
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CD2	CD300A	CD37	CD55
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CD5L	CD79A	CD81	CD96
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CD99L2	CDAN1	CDC16	CDC25B
##	0.012396182	0.012396182	0.012396182	0.012396182

##	CDC42BPB	CDC45	CDCA2	CDCA5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CDCA7L	CDH10	CDH12	CDH22
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CDH3	CDHR3	CDIPT	CDK5RAP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CDK7	CDK8	CDKN2A	CDR1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CDR2	CDS1	CDS2	CEACAM16
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CEACAM18	CELF3	CELF6	CENPF
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CEP120	CEP164	CEP192	CEP41
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CEP55	CEP95	CES3	CFLAR
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CGNL1	CHAF1A	CHAMP1	CHCHD3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CHD3	CHD7	CHEK2	CHMP1A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CHMP7	CHRNA10	CHRNA4	CHRNA4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CHST6	CHTF18	CIC	CILP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CLASP2	CLCA4	CLCN7	CLDN8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CLEC16A	CLEC17A	CLEC19A	CLEC3A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CLMP	CLOCK	CLPS	CLRN1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CLSTN3	CMKLR1	CNGA2	CNOT3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CNOT6	CNOT6L	CNTROB	COBLL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	COCH	COG2	COG7	COL15A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	COL17A1	COL19A1	COL21A1	COL28A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	COL4A2	COL4A3BP	COLQ	COMMD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	COMMD3-BMI1	COPB2	COPG2	COPZ1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	COQ9	CORO2B	CPA6	CPAMD8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CPD	CPEB4	CPED1	CPNE8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CPT2	CRABP2	CRCP	CREB3L3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CREB3L4	CRIM1	CRNKL1	CRP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CRTAC1	CTAGE1	CTDP1	CTH
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CTHRC1	CTNNA3	CUL4A	CWF19L2
##	0.012396182	0.012396182	0.012396182	0.012396182

##	CXCL16	CXorf22	CXorf23	CXorf67
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CYB561	CYB5R4	CYBB	CYC1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CYFIP2	CYHR1	CYP11A1	CYP4F2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	CYP4F3	CYP4X1	CYP7A1	DACH2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DAG1	DBF4	DCAF12L1	DCAF17
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DCAF5	DCBLD2	DCLRE1A	DCST2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DCT	DCXR	DDB1	DDHD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DDO	DDX10	DDX17	DDX26B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DDX49	DDX6	DEF6	DENND1A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DENND1B	DENND1C	DENND4A	DENND6B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DEPDC5	DGCR2	DGKD	DGKI
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DGUOK	DHCR7	DHX15	DHX34
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DHX40	DICER1	DID01	DIP2B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DLAT	DLC1	DLG1	DLG5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DLL1	DLX5	DMBT1	DMXL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DNAJC2	DNAJC5	DNAJC6	DNASE1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DNER	DNMT3A	DOC2A	DOCK10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DOCK3	DOCK4	DPP3	DPYS
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DPYSL3	DQX1	DSC2	DSC3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DSG1	DSTYK	DTNA	DTNBP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DTX3L	DUOX1	DUSP13	DVL2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	DYNC1LI1	DYTN	DZANK1	DZIP3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	E2F1	E2F3	EBF1	ECEL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ECM1	ECT2	EDA	EEA1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EEF1D	EFCAB13	EFHB	EFHC2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EFR3A	EGFL6	EHBP1	EHMT1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EIF2A	EIF2B5	EIF4A1	EIF4G1
##	0.012396182	0.012396182	0.012396182	0.012396182

##	EIF5B	ELMO2	ELMO3	ELP5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EMID1	EMILIN1	EML2	EML6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ENDOG	ENDOV	ENKUR	ENO2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ENPP1	ENPP3	ENTPD5	EPC2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EPHA2	EPHA5	EPHA7	EPHB3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EPHB6	EPN2	EPPK1	EPRS
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EPS8L2	EPSTI1	ERBB2	ERBB2IP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ERCC4	ERCC5	ERCC6L	ERLIN2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ERO1L	ERP27	ESM1	ETNPPL
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ETV3	ETV4	ETV5	ETV6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EVC	EVC2	EVI5L	EXOC4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	EXOSC10	EXOSC9	EYA2	F13A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	F9	FAIM2	FAM101A	FAM107B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FAM110B	FAM111B	FAM120A	FAM124B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FAM129B	FAM135B	FAM149B1	FAM171A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FAM184B	FAM186B	FAM200A	FAM208B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FAM20A	FAM3A	FAM65A	FAM65C
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FAM71F1	FAM98C	FANCC	FANCG
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FANCL	FASLG	FBP1	FBXL18
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FBXL20	FBX024	FCER2	FCGBP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FCH01	FCH02	FER	FERMT3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FEZF2	FGG	FHL1	FIG4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FLRT3	FLT1	FMN1	FMNL3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FMO3	FN3K	FNBP1	FOCAD
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FOLR2	FOLR4	FOPNL	FOXDL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FOXI1	FOXK1	FOXP1	FPR2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FREM1	FREM2	FRMD3	FRMD4B
##	0.012396182	0.012396182	0.012396182	0.012396182

##	FRMD8P1	FSHB	FSHR	FTH1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	FTO	FUK	FXYD3	GABPA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GABRB1	GABRE	GABRP	GABRR1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GADD45B	GALK2	GALNS	GALNT12
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GALNT8	GAREML	GAS1	GATAD2A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GBGT1	GCAT	GCC2	GCKR
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GCNT2	GCOM1	GDF2	GFRA1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GGCX	GGNBP2	GJB6	GJC2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GKAP1	GLB1L3	GLDC	GLRA1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GLRA4	GLRX2	GLT1D1	GLUL
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GMFB	GNAT2	GNB2	GNMT
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GOLIM4	GP1BB	GP6	GPAM
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GPC2	GPC6	GPCPD1	GPHN
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GPR115	GPR124	GPR143	GPR146
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GPR37L1	GPR39	GPR64	GPR97
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GPRASP1	GPSM1	GRAMD1B	GRB7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GRHL1	GRID2	GRIK2	GRIK5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GRIPAP1	GRM3	GRM7	GSTCD
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GTF2E2	GTF2F1	GTPBP1	GTPBP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GUCA1B	GUCY1A2	GUCY2C	GUCY2F
##	0.012396182	0.012396182	0.012396182	0.012396182
##	GYG2	GYPA	GYS1	H19
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HAAO	HADHA	HAL	HBP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HCK	HDAC9	HELQ	HEPH
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HEY2	HGD	HGSNAT	HHLA1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HHLA2	HIF1A	HIPK1	HIPK2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HIST1H1C	HIST1H2AB	HIST1H2AM	HIST1H2BD
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HIST1H2BN	HIST1H3B	HMMR	HNRNPL
##	0.012396182	0.012396182	0.012396182	0.012396182

##	HOGA1	HOMER2	HOOKE2	HOXB9
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HOXD13	HOXD9	HPD	HPGD
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HPS3	HPS6	HS3ST5	HS6ST2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HSD17B3	HSD17B4	HSF1	HSPA1L
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HSPH1	HTR2A	HTR3B	HTR3E
##	0.012396182	0.012396182	0.012396182	0.012396182
##	HTR4	IARS	ICK	IDI1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IFLTD1	IFNAR2	IFRG15	IFT122
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IFT20	IFT46	IFT52	IGFALS
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IGFBP7	IGFN1	IGHD3-10	IGHV1-24
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IGHV3-23	IGHV3-43	IGKC	IGSF21
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IGSF9B	IK	IKBKE	IKZF5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IL16	IL17REL	IL18RAP	IL1RL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IL23R	IL31RA	IL36A	IL5RA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IL6ST	ILDR2	IMPDH2	IMPG2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	INO80	INPP4B	INPP5B	INTS8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IPO4	IPPK	IQCJ-SCHIP1	IQGAP3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IQSEC1	IRF2BP2	IRS4	IRX1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IRX4	IST1	ITGA1	ITGA10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ITGA11	ITGA5	ITGAL	ITGAV
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ITGB6	ITGB8	ITIH4	ITSN1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	IVD	IVNS1ABP	IWS1	JADE1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	JAKMIP3	JARID2	JAZF1	JMJD1C
##	0.012396182	0.012396182	0.012396182	0.012396182
##	JMY	JPH4	JRKL	JSRP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	JUP	KANSL1	KAT5	KBTBD2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KBTBD7	KCNA1	KCNA3	KCNB1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KCNC2	KCND2	KCND3	KCNH2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KCNH6	KCNH8	KCNIP1	KCNJ16
##	0.012396182	0.012396182	0.012396182	0.012396182

##	KCNJ2	KCNQ1	KCNQ3	KCNV1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KCTD16	KDM3B	KDM4C	KDM6B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIAA0195	KIAA0319	KIAA0319L	KIAA0368
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIAA0430	KIAA0753	KIAA1024	KIAA1199
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIAA1244	KIAA1324	KIAA1324L	KIAA1377
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIAA1462	KIAA1614	KIAA1755	KIAA2018
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIAA2022	KIF11	KIF13B	KIF18B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIF19	KIF21A	KIF24	KIF2B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KIF3B	KIF4B	KIF6	KLB
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KLC3	KLF1	KLF6	KLHDC10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KLHL31	KLHL7	KLRC1	KLRK1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KMO	KNTC1	KPNA6	KPRP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KPTN	KRT12	KRT19	KRT24
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KRT28	KRT72	KRTAP9-6	KSR1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	KYNU	LAMA4	LAMA5	LANCL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LANCL2	LAPTM4A	LARP4	LARS2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LAS1L	LBH	LBR	LDHA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LDLRAP1	LECT1	LENG8	LGALS13
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LGALS8	LHCGR	LHFPL3	LHX4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LIAS	LILRA2	LINC00478	LIPG
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LIP1	LIPK	LIPM	LMAN2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LMAN2L	LMNB1	LMO4	LMOD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LMOD2	LMOD3	LONRF3	LPA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LPHN2	LPL	LPP	LRBA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LRCH2	LRFN2	LRP1	LRP10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LRP6	LRRC37B	LRRC42	LRRC45
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LRRC4C	LRRFIP1	LRRIQ4	LRRTM1
##	0.012396182	0.012396182	0.012396182	0.012396182

##	LRSAM1	LTA4H	LTBP1	LTBP3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	LTBP4	LY75	LYN	LZTS2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MACROD2	MADD	MAGEB1	MAGED1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MAGEE2	MAGEH1	MAGT1	MALRD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MAN2A1	MANBA	MAOB	MAP2K7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MAP3K12	MAP3K15	MAP3K4	MAP3K8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MAP3K9	MAP4	MAP7D2	MAPK7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MAPK8IP3	MAPKBP1	MARCO	MARK4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MAST1	MAST3	MATK	MAZ
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MBD4	MBOAT2	MC4R	MC5R
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MCAM	MCHR2	MCM3AP	MCMBP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MCOLN1	MCTP1	MDGA2	MDK
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MED23	MED25	MEF2B	MEFV
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MEIS1	MELK	METAP1	METAP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	METTL13	METTL15	MEX3D	MFHAS1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MFSD11	MGA	MGAT1	MIA2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MIA3	MICAL2	MICU1	MKI67
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MKKS	MLC1	MLH3	MLIP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MLK4	MLTK	MMAA	MMD2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MME	MMP19	MMP26	MMS19
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MOG	MON2	MOSPD1	MPHOSPH10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MPPED1	MPZ	MPZL1	MRE11A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MRGPRX1	MRGPRX2	MROH5	MROH7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MRPL21	MRPS30	MRPS35	MSH3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MT-ATP6	MT-ND6	MTHFD1	MTL5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MTMR11	MTSS1L	MTTP	MTUS1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MUC12	MUC2	MUC20	MUC4
##	0.012396182	0.012396182	0.012396182	0.012396182

##	MUC6	MUT	MX1	MYB
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MYBPC3	MYEOV	MYLK4	MYO18A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MYO1A	MYO1B	MYO9B	MYRIP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	MZB1	MZF1	N4BP3	NAA50
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NAALADL2	NACA	NAE1	NANOS2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NANP	NAP1L4	NAPSA	NARFL
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NAV3	NBEAL2	NBN	NCAM1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NCAM2	NCAPD3	NCKAP5	NCKAP5L
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NCOR2	NCR1	NCR3	NDUFA10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NDUFA8	NDUFAF3	NDUFAF6	NDUFS1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NDUFS3	NEFM	NEURL2	NF2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NFAM1	NFATC4	NFIA	NFIB
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NFKB2	NFX1	NFYC	NGEF
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NHLRC1	NINL	NIPAL3	NIPBL
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NKTR	NLRP10	NLRP2	NLRP6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NLRP7	NME7	NNT	NOB1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NOBOX	NOC3L	NOL8	NOLC1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NOS1AP	NOX3	NPAS2	NPC1L1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NPFFR1	NPHP1	NPHS1	NPR2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NPSR1	NPTX1	NQO2	NROB1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NR1I2	NR2E1	NR5A2	NRAS
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NRXN2	NT5DC1	NT5E	NTHL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NTM	NTRK1	NTRK2	NUDT1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NUP133	NUP188	NUP210	NUP85
##	0.012396182	0.012396182	0.012396182	0.012396182
##	NUP93	NUPL1	NXF3	NYNRIN
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OCLN	OCRL	ODF2	OFD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OGFOD1	OMG	OPCML	OPLAH
##	0.012396182	0.012396182	0.012396182	0.012396182

##	OPN5	OPRM1	OR10P1	OR2B6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OR2T1	OR2Z1	OR3A1	OR4A15
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OR4C11	OR4C16	OR4C6	OR52B2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OR56B1	OR56B3P	OR5AK4P	OR5D16
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OR5J2	OR5K3	OR5V1	OR6C70
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OR6K6	OR7E5P	OR8H3	OR8K5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ORC6	ORMDL3	OSBPL10	OSBPL11
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OSBPL3	OSGEPL1	OSMR	OSR1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	OTOA	OTOP3	OTUD4	OXCT1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	P2RX7	PABPC1	PABPC4	PACS1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PALM	PAN2	PANK4	PAPPA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PARD3B	PARP14	PARP8	PATL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PAX1	PAX8	PAX9	PBX4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PCDH20	PCDH9	PCDHA1	PCDHA12
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PCDHA13	PCDHA3	PCDHA7	PCDHB5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PCDHB7	PCDHGA12	PCDHGB1	PCDHGB3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PCDHGB6	PCK2	PCNXL3	PCOLCE2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PCSK9	PCTP	PCYOX1	PDCD5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PDCD6IP	PDE11A	PDE3A	PDE8B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PDGFD	PDGFRA	PDILT	PDP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PDS5A	PDS5B	PDZRN4	PEAR1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PEG10	PER3	PEX1	PEX19
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PFKFB2	PFKP	PGAP3	PGK1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PHF11	PHF20L1	PHIP	PHLPP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PI15	PIGK	PIGT	PIK3R2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PIK3R3	PIP5K1C	PITPNM3	PITX2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PIWIL2	PKLR	PLA2G4A	PLA2G7
##	0.012396182	0.012396182	0.012396182	0.012396182

##	PLCB2	PLCB4	PLCD1	PLCG2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PLCH1	PLCL1	PLCL2	PLEKHG3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PLEKHG5	PLEKHH2	PLEKH01	PLEKH02
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PLK5	PLOD2	PLOD3	PLVAP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PLXNA1	PLXNA2	PLXNC1	PNLIP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PNN	PNPT1	POC5	POGZ
##	0.012396182	0.012396182	0.012396182	0.012396182
##	POLA1	POLA2	POLDIP3	POLE
##	0.012396182	0.012396182	0.012396182	0.012396182
##	POLK	POLM	POLR2A	POLR3C
##	0.012396182	0.012396182	0.012396182	0.012396182
##	POLRMT	POMC	POP5	POU3F2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	POU3F4	POU6F2	PPARG	PPEF1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PPFIA1	PPFIBP1	PPID	PPM1E
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PPM1F	PPM1L	PPP1R10	PPP1R12C
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PPP1R3A	PPP2R2B	PPP2R5C	PPP4R1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PQBP1	PQLC2	PRDM1	PRDM14
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRDM2	PRDM9	PRF1	PRG4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRICKLE1	PRICKLE4	PRIM1	PRIM2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRKAA2	PRKCB	PRKD1	PRKD2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRKD3	PRL	PRMT10	PRMT3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRMT7	PROKR1	PROSER2	PRPF4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRR12	PRRC2A	PRRC2C	PRSS16
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PRSS58	PRUNE2	PSAP	PSAT1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PSD2	PSEN1	PSEN2	PSMB10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PSMC4	PSMD1	PSMD3	PSMG4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PSTPIP2	PTCD1	PTCH1	PTCH2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PTCHD4	PTF1A	PTGS1	PTK2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PTK2B	PTPN12	PTPN22	PTPN23
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PTPN3	PTPN5	PTPN9	PTPRF
##	0.012396182	0.012396182	0.012396182	0.012396182

##	PTPRG	PTPRH	PTPRO	PVRL4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	PXDNL	PXT1	QRICH2	QSOX2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	R3HDM1	R3HDM2	RAB11FIP1	RAB28
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RABEP1	RABL6	RAD23B	RAD50
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RAD54B	RAG1	RAI1	RAI2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RALB	RALGAPA2	RALGAPB	RANBP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RAP1GDS1	RAP2C	RAPGEF6	RARS2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RASGEF1C	RASGRP4	RASSF5	RASSF6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RB1CC1	RBBP6	RBM12B	RBM3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RBMS1	RBMXL3	RCOR2	RCOR3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RECQL4	RECQL5	REEP1	REG1B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	REPIN1	REPS2	RFX4	RGAG4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RGCC	RIF1	RIMS1	RIN2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RINL	RIPPLY2	RMDN3	RNASE13
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RNF128	RNF175	RNF41	RNF8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RNH1	ROCK2	ROM1	ROS1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RP1-153P14.8	RP1-171K16.5	RP1-274L7.1	RP11-1070N10.3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RP11-127H5.1	RP11-503N18.3	RP11-67H2.1	RP11-72304.6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RP11-862L9.3	RP1L1	RP5-1047A19.4	RPAP1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RPAP2	RPGR	RPGRIP1	RPL13A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RPL18	RPL19	RPRD2	RPS24
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RPS26	RPS27	RPS6	RPS8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RRAGA	RRAGB	RSP01	RSP04
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RTN1	RTN3	RTN4RL2	RUFY2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	RUNX1T1	RXFP2	RXFP3	RYBP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	S100A2	S1PR3	SAE1	SAFB
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SAFB2	SAMD7	SAMD9L	SAP30BP
##	0.012396182	0.012396182	0.012396182	0.012396182

##	SARDH	SBF2	SCAND3	SCAPER
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SCEL	SCFD2	SCMH1	SCN5A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SEC14L4	SEC16A	SEC23B	SEC24B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SEC63	SECISBP2	SEL1L2	SELP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SEMA3B-AS1	SEMA3C	SEMA4G	SERINC2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SERINC5	SERPINA4	SERPINB8	SETD5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SF3B1	SFMBT2	SFRP1	SGCA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SGCG	SGIP1	SGPP1	SGSM1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SGTA	SH2D3A	SH3BP2	SH3D21
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SH3KBP1	SH3PXD2B	SHARPIN	SHBG
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SHH	SHKBP1	SIDT1	SIGLEC1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SIM2	SIN3B	SIPA1L3	SIRPD
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SIRPG	SIX3	SLAMF1	SLAMF7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC13A2	SLC16A1	SLC17A9	SLC18A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC18A3	SLC1A2	SLC1A5	SLC20A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC22A24	SLC24A5	SLC25A12	SLC25A33
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC26A5	SLC27A4	SLC27A5	SLC2A13
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC2A5	SLC30A10	SLC30A6	SLC32A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC35A2	SLC35E1	SLC35G2	SLC36A4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC37A2	SLC38A1	SLC38A10	SLC38A3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC38A6	SLC3A1	SLC3A2	SLC41A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC41A2	SLC44A2	SLC44A3	SLC46A3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC47A2	SLC4A11	SLC5A3	SLC5A4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC5A5	SLC6A12	SLC6A15	SLC6A17
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLC9A3	SLC9C1	SLC9C2	SLC01A2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLFN12L	SLITRK1	SLITRK2	SLITRK5
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SLK	SLURP1	SLX4	SMARCD2
##	0.012396182	0.012396182	0.012396182	0.012396182

##	SMC2	SMC5	SMC6	SMCHD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SMEK1	SMEK2	SMOC2	SMURF2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SMYD1	SNAPC4	SNIP1	SNORA73B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SNRPN	SNTA1	SNTG1	SNX10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SOGA1	SORCS1	SORL1	SOX10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SOX11	SOX6	SP110	SPAG1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SPAG5	SPAG7	SPARC	SPATA13
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SPATA17	SPATC1	SPATS2	SPDYA
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SPECC1	SPECC1L	SPEF2	SPHKAP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SPICE1	SPINK5	SPINT3	SP011
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SPOCD1	SPON1	SPTBN1	SPTBN4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SPTBN5	SQSTM1	SRBD1	SRL
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SRP54	SRP68	SRP72	SRRM2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SRRT	SSH3	SSP0	SSTR3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SSTR4	SSX2IP	ST14	ST18
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ST6GALNAC1	ST8SIA2	ST8SIA5	STAB1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	STAC	STAG3	STAM2	STAT2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	STEAP4	STK11	STK11IP	STK31
##	0.012396182	0.012396182	0.012396182	0.012396182
##	STK39	STMN2	STOX1	STRA6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	STS	STXBP2	STXBP5L	SUCLG1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SUFU	SUGP2	SVIL	SYCP2L
##	0.012396182	0.012396182	0.012396182	0.012396182
##	SYN1	SYNJ2	SYT9	SYTL1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TADA2A	TAF1	TAF1D	TAF1L
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TAF4B	TANG02	TAPBP	TARS2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TAS2R3	TBC1D13	TBC1D16	TBC1D17
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TBC1D19	TBC1D25	TBC1D8	TBC1D9B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TBCE	TBPL2	TBX10	TBX18
##	0.012396182	0.012396182	0.012396182	0.012396182

##	TBXA2R	TC2N	TCEA3	TCF21
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TCF23	TCF7L2	TCL1B	TCN1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TDP1	TDRD1	TDRD10	TDRD12
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TDRD3	TDRD6	TDRKH	TEAD1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TEFM	TENM1	TENM2	TESC
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TEX14	TEX9	TFAP2A	TGM1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TGM2	TGM3	TGM5	THAP3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	THEM6	THOC6	THRAP3	TIMELESS
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TIMM17A	TINF2	TIPARP	TJP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TK1	TLE1	TLL1	TLR8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TM7SF3	TM9SF4	TMC1	TMC7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMC8	TMCC1	TMC03	TMC05A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMEM104	TMEM132A	TMEM132E	TMEM134
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMEM136	TMEM145	TMEM150C	TMEM156
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMEM161A	TMEM189	TMEM200C	TMEM214
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMEM59L	TMEM63B	TMEM64	TMEM67
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMEM74	TMF1	TMLHE	TMPO
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TMPRSS15	TMTC2	TMTC3	TNF
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TNFAIP3	TNFRSF19	TNFRSF4	TNIK
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TNIP2	TNIP3	TNMD	TNNT2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TNPO2	TNRC6A	TNRC6B	TNS3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TOM1	TOR1AIP1	TOX3	TP73
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TPD52	TPH2	TPI1	TPMT
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TPST1	TRABD2B	TRAF7	TRAM1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TRANK1	TRDMT1	TRHDE	TRIM10
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TRIM13	TRIM17	TRIM29	TRIM37
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TRIM41	TRIM46	TRIM68	TRIM7
##	0.012396182	0.012396182	0.012396182	0.012396182

##	TRIP12	TRIP6	TRMT11	TRMT12
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TRMT2A	TRMU	TROVE2	TRPA1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TRPC3	TRPC6	TRPV1	TSC1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TSHR	TSHZ1	TSHZ3	TSNARE1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TSSK2	TTBK1	TTC13	TTC14
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TTC18	TTC21B	TTC23	TTC3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TTC34	TTC39A	TTC7A	TTC7B
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TTL4	TTL5	TTL9	TUB
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TUBB4B	TUBGCP6	TUFT1	TWSG1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	TXNRD1	TXNRD2	TYK2	UBAP1L
##	0.012396182	0.012396182	0.012396182	0.012396182
##	UBE2S	UBE2U	UBE3A	UBL7
##	0.012396182	0.012396182	0.012396182	0.012396182
##	UBQLN1	UBR1	UBR4	UBTF
##	0.012396182	0.012396182	0.012396182	0.012396182
##	UCHL5	UGGT1	UGT2B10	UGT3A1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	UHRF1BP1	ULK1	UMOD	UNC13D
##	0.012396182	0.012396182	0.012396182	0.012396182
##	UNK	UNKL	UPK1A	UPRT
##	0.012396182	0.012396182	0.012396182	0.012396182
##	USHBP1	USP11	USP15	USP2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	USP25	USP29	USP31	USP35
##	0.012396182	0.012396182	0.012396182	0.012396182
##	USP36	USP45	USP6NL	UVRAG
##	0.012396182	0.012396182	0.012396182	0.012396182
##	VANGL2	VAT1L	VAV2	VAX1
##	0.012396182	0.012396182	0.012396182	0.012396182
##	VCAM1	VCL	VDR	VN1R2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	VPS41	VPS52	VPS54	VSTM4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	VWA3A	VWDE	WBSCR27	WDPCP
##	0.012396182	0.012396182	0.012396182	0.012396182
##	WDR1	WDR11	WDR12	WDR18
##	0.012396182	0.012396182	0.012396182	0.012396182
##	WDR27	WDR33	WDR4	WDR49
##	0.012396182	0.012396182	0.012396182	0.012396182
##	WDR63	WDR66	WDR7	WDR93
##	0.012396182	0.012396182	0.012396182	0.012396182
##	WFIKK1	WIPF2	WISP3	WNT10A
##	0.012396182	0.012396182	0.012396182	0.012396182
##	WSCD2	XPR1	XRR1A	YIPF1
##	0.012396182	0.012396182	0.012396182	0.012396182

##	YWHAZ	ZBBX	ZBTB10	ZBTB17
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZBTB18	ZBTB20	ZBTB26	ZBTB3
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZBTB38	ZBTB4	ZBTB48	ZC2HC1C
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZC3H12A	ZC3H3	ZC3H7B	ZCCHC14
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZDHHC13	ZDHHC15	ZDHHC9	ZFAND6
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZFC3H1	ZFP14	ZFP36L1	ZFP36L2
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZFP37	ZFP62	ZFP91	ZFR
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZFX	ZFYVE19	ZFYVE21	ZFYVE27
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZIC5	ZKSCAN1	ZMAT1	ZMAT4
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZMYM1	ZMYM2	ZMYND15	ZMYND8
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF12	ZNF17	ZNF18	ZNF195
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF217	ZNF225	ZNF232	ZNF235
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF254	ZNF264	ZNF28	ZNF282
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF283	ZNF333	ZNF335	ZNF34
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF346	ZNF347	ZNF365	ZNF385D
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF407	ZNF441	ZNF445	ZNF461
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF512B	ZNF516	ZNF521	ZNF536
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF552	ZNF560	ZNF566	ZNF569
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF572	ZNF584	ZNF585B	ZNF599
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF644	ZNF645	ZNF680	ZNF703
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF710	ZNF746	ZNF777	ZNF778
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF782	ZNF783	ZNF81	ZNF816
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNF831	ZNF836	ZNF845	ZNF880
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZNFX1	ZPLD1	ZSWIM2	ZWILCH
##	0.012396182	0.012396182	0.012396182	0.012396182
##	ZXDC	ZYG11A	37500	38231
##	0.012396182	0.012396182	0.006198091	0.006198091
##	38777	39142	39692	40238
##	0.006198091	0.006198091	0.006198091	0.006198091
##	A2M	AACS	AADACL3	AADACL4
##	0.006198091	0.006198091	0.006198091	0.006198091

##	AADAT	AATF	ABCA3	ABCA7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ABCB6	ABCB7	ABCC12	ABCC6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ABCD3	ABCD4	ABCE1	ABCF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ABCF2	ABCF3	ABCG2	ABCG5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ABHD10	ABHD15	ABHD16A	ABHD5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ABI3	ABL1	ABL2	ABTB1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ABTB2	AC002365.1	AC003101.1	AC005013.5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AC005544.1	AC006026.10	AC007401.2	AC009403.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AC011366.3	AC011897.1	AC012123.1	AC016582.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AC022431.2	AC064874.1	AC068058.1	AC074091.13
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AC079210.1	AC079341.1	AC092675.3	AC104809.3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AC105020.1	AC116366.6	AC118278.1	AC126323.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AC138647.1	ACAD11	ACAD9	ACADSB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACADVL	ACER3	ACMSD	ACOT11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACOT12	ACOT2	ACOT8	ACOX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACOXL	ACP1	ACPL2	ACR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACSBG2	ACSF3	ACSL1	ACSL4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACSL6	ACSM2A	ACSM3	ACTG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACTG2	ACTL6B	ACTL8	ACTL9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACTN4	ACTRT1	ACVR1B	ACVR1C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ACY3	ADA	ADAD2	ADAM17
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADAM18	ADAM19	ADAM21P1	ADAM23
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADAM32	ADAMDEC1	ADAMTS15	ADAMTS17
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADAMTS19	ADAMTS7	ADAMTS9	ADAMTSL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADAMTSL2	ADAP1	ADAP2	ADCK3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADCY10P1	ADCY3	ADCY7	ADCY9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADH1B	ADH5	ADH6	ADHFE1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	ADIPOQ	ADIPOR2	ADORA3	ADPGK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADPRH	ADPRHL1	ADPRM	ADRA1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ADRA1B	ADRM1	ADSL	ADTRP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AEBP1	AEBP2	AF121898.3	AFAP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AFF4	AFP	AGAP2-AS1	AGBL3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AGBL4	AGBL5	AGFG1	AGFG2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AGGF1	AGO2	AGPAT1	AGPAT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AGPAT4	AGPAT6	AGPAT9	AGTPBP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AGTR2	AGTRAP	AHCYL2	AHR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AHRR	AHSA1	AHSA2	AHSG
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AHSP	AIDA	AIF1L	AIM1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AIP	AIPL1	AJAP1	AK5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AKAP12	AKIRIN2	AKNAD1	AKR1C4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AKR1E2	AKT2	AKT3	AL049840.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AL078585.1	AL132709.5	AL354898.1	AL646016.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ALAS2	ALDH1A2	ALDH1A3	ALDH3A2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ALDH4A1	ALDH8A1	ALG14	ALG2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ALKBH2	ALKBH6	ALKBH8	ALOX12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ALOX12B	ALOX15B	ALPI	ALPK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ALPK2	ALPL	ALS2CL	ALX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ALYREF	AMBN	AMBP	AMDHD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AMELX	AMFR	AMHR2	AMIG01
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AMMECR1	AMOT	AMOTL2	AMPD2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AMPD3	ANAPC10	ANGEL2	ANGPTL7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANHX	ANKDD1B	ANKEF1	ANKH
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANKHD1	ANKIB1	ANKLE2	ANKMY1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANKMY2	ANKRA2	ANKRD1	ANKRD13B
##	0.006198091	0.006198091	0.006198091	0.006198091

##	ANKRD24	ANKRD26	ANKRD26P1	ANKRD27
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANKRD28	ANKRD33B	ANKRD39	ANKRD40
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANKRD45	ANKRD52	ANKRD55	ANKRD61
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AN01	AN010	AN09	ANP32A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANP32D	ANP32E	ANPEP	ANTXR2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANXA1	ANXA10	ANXA2	ANXA6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ANXA9	AOC2	AP000350.4	AP000654.5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AP000889.3	AP1S3	AP3B1	AP3B2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AP3M2	AP4B1	AP4E1	AP4M1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AP5Z1	APBA1	APBA2	APCDD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	APEX1	APH1A	API5	APLP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	APOA5	APOBEC1	APOBEC3G	APOBEC4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	APOC4	APOL4	APOO	APOPT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	APPBP2	APRT	AQP11	AQP6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AQP7	ARAF	ARAP2	ARC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARCN1	AREL1	ARFGAP2	ARFGAP3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARFIP1	ARHGAP1	ARHGAP17	ARHGAP21
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARHGAP25	ARHGAP26	ARHGAP27	ARHGAP28
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARHGAP29	ARHGAP36	ARHGAP44	ARHGAP6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARHGDIB	ARHGEF10L	ARHGEF11	ARHGEF18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARHGEF2	ARHGEF28	ARHGEF39	ARHGEF40
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARHGEF5	ARID5A	ARIH1	ARL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARL10	ARL13B	ARL15	ARL4C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARL5A	ARL5B	ARL6	ARL6IP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARL6IP4	ARL8A	ARMC2	ARMC9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARMCX6	ARNTL	ARNTL2	ARPC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ARPC5L	ARPP21	ARRB2	ARRDC1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	ARSI	ARSJ	ARSK	ASAP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ASB11	ASB18	ASCC2	ASCL4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ASF1A	ASGR1	ASIC4	ASPG
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ASPHD2	ASPN	ASS1	ASTE1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ASTL	ASTN2	ASXL2	ATAD2B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATCAY	ATF1	ATF4	ATF6B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATG10	ATG12	ATG13	ATG14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATG2A	ATG5	ATHL1	ATL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATL2	ATL3	ATMIN	ATP10A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATP11A	ATP11C	ATP13A1	ATP1B4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATP2A1	ATP2A2	ATP2A3	ATP2C1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATP5A1	ATP5B	ATP5F1	ATP5G1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATP5S	ATP6AP1	ATP6AP1L	ATP6AP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATP8A1	ATP8B3	ATP9B	ATPIF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ATRN	ATXN1L	ATXN7	AUH
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AURKB	AVIL	AVPR1B	AVPR2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	AXDND1	AXIN1	AZI1	B3GALNT2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	B3GALT2	B3GALT4	B3GAT1	B3GAT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	B3GNT3	B3GNT8	B3GNTL1	B4GALT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	B4GALT4	B4GALT5	B4GALT7	B9D2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BAAT	BACH1	BACH2	BAP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BARD1	BATF	BAX	BAZ2A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BBS9	BCAN	BCAP29	BCAT2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BCL2L10	BCL6	BCL7B	BDH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BEND2	BEND4	BEND6	BEST4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BET1L	BEX2	BFAR	BFSP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BGN	BHMT2	BICD2	BID
##	0.006198091	0.006198091	0.006198091	0.006198091

##	BIRC2	BIRC8	BLNK	BLOC1S5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BMP1	BMP15	BMS1	BMX
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BNC2	BNIP1	BOLL	BPHL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BPI	BRAP	BRD1	BRD2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BRD3	BRD9	BRE	BRF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BRF2	BRICD5	BRINP2	BRMS1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BRMS1L	BRPF3	BRSK1	BRSK2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BRWD1	BSCL2	BSG	BSPH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BST1	BTBD1	BTBD17	BTBD18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BTBD19	BTBD2	BTG1	BTNL10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BTNL2	BTNL8	BUB1	BUB3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	BZW1	BZW2	C10orf115	C10orf118
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C10orf128	C10orf131	C10orf53	C10orf54
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C10orf67	C10ORF68	C10orf76	C10orf82
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C10orf90	C10orf99	C11orf30	C11orf35
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C11orf48	C11orf49	C11orf52	C11orf70
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C11orf71	C11orf74	C11orf84	C11orf85
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C11orf87	C12orf39	C12orf4	C12orf40
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C12orf5	C12orf50	C12orf54	C12orf56
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C12orf57	C12orf75	C12orf79	C12orf80
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C14orf166	C14orf182	C14orf183	C14orf64
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C15orf26	C15orf39	C15orf40	C15orf56
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C16orf45	C16orf47	C16orf62	C16orf71
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C16orf72	C16orf96	C17orf103	C17orf107
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C17orf53	C17orf64	C17orf66	C17orf72
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C17orf75	C17orf82	C17orf97	C17orf99
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C18orf56	C18orf63	C19orf38	C19orf44
##	0.006198091	0.006198091	0.006198091	0.006198091

##	C19orf55	C19orf59	C19orf60	C19orf70
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C1orf123	C1orf127	C1orf132	C1orf189
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C1orf227	C1orf228	C1orf35	C1orf51
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C1orf53	C1orf54	C1orf61	C1orf86
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C1QA	C1QTNF5	C20orf112	C20orf166
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C20orf173	C20orf96	C21orf54	C21orf58
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C21orf88	C22orf15	C22orf29	C22orf34
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C22orf39	C2CD2	C2CD2L	C2CD4C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C2CD5	C2orf42	C2orf43	C2orf53
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C2orf57	C2orf68	C3AR1	C3orf18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C3orf33	C3orf58	C4BPA	C4BPB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C4orf21	C4orf45	C4orf51	C5orf22
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C5orf28	C5orf34	C5orf42	C5orf49
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C6orf141	C6orf203	C6orf222	C6orf229
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C6orf57	C7orf33	C7orf61	C7orf63
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C7orf69	C7orf72	C8A	C8orf87
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C9	C9orf114	C9orf131	C9orf135
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C9orf139	C9orf170	C9orf3	C9orf50
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C9orf64	C9orf66	C9orf72	C9orf78
##	0.006198091	0.006198091	0.006198091	0.006198091
##	C9orf89	C9orf96	CA12	CA13
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CA2	CA4	CA5BP1	CA9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CAB39	CABLES2	CABP2	CABP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CABP5	CACHD1	CACNA2D4	CACNB2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CACNG2	CACNG4	CACNG6	CACNG8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CACTIN	CACUL1	CADM1	CADPS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CADPS2	CAGE1	CALB2	CALCRL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CALD1	CALHM2	CALN1	CALR
##	0.006198091	0.006198091	0.006198091	0.006198091

##	CALR3	CALY	CAMLG	CAMSAP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CAMTA1	CAMTA2	CAND2	CANX
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CAPN10	CAPN12	CAPN14	CAPN5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CAPN6	CAPN8	CAPNS2	CAPZA2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CAPZB	CARD10	CARD14	CARD6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CARKD	CASC1	CASC3	CASC4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CASD1	CASKIN1	CASP1	CASP14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CASP2	CASP4	CASP5	CASP7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CASP8	CASQ1	CASS4	CASZ1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CAT	CATSPER2	CBFA2T2	CBL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CBR4	CBX6	CBY3	CCBL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC101	CCDC105	CCDC108	CCDC112
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC120	CCDC125	CCDC127	CCDC129
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC130	CCDC132	CCDC135	CCDC136
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC146	CCDC148	CCDC15	CCDC151
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC154	CCDC157	CCDC166	CCDC174
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC175	CCDC176	CCDC183	CCDC24
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC30	CCDC41	CCDC42	CCDC47
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC53	CCDC57	CCDC58	CCDC62
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC63	CCDC7	CCDC73	CCDC81
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC82	CCDC84	CCDC87	CCDC91
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCDC92	CCDC93	CCIN	CCKBR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCL2	CCL20	CCL24	CCL5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCNB1IP1	CCND1	CCND3	CCNE2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCNK	CCNL1	CCNL2	CCNT2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCNY	CCNYL3	CCP110	CCR4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CCT3	CCT6B	CCT8L2	CCZ1B
##	0.006198091	0.006198091	0.006198091	0.006198091

##	CD109	CD160	CD163	CD163L1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD177	CD1B	CD200	CD200R1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD22	CD27	CD274	CD276
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD2AP	CD2BP2	CD300C	CD300LF
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD36	CD38	CD3D	CD47
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD53	CD6	CD63	CD72
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD80	CD86	CD8A	CD9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CD97	CDA	CDADC1	CDC123
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDC14A	CDC14B	CDC23	CDC34
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDC37	CDC40	CDC42EP2	CDC42EP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDC7	CDC73	CDCA3	CDCA7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDH11	CDH15	CDH18	CDH2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDH20	CDH6	CDHR4	CDHR5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDK12	CDK13	CDK16	CDK17
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDK18	CDK2	CDK5	CDK5R1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDKL1	CDKL2	CDKN1B	CDKN2C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CDKN3	CDNF	CDPF1	CDYL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CEACAM1	CEACAM20	CEACAM6	CEBPE
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CELA1	CELF1	CELF2	CELSR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CELSR2	CEMP1	CENPB	CENPE
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CENPH	CENPJ	CENPW	CEP170B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CEP350	CEP57L1	CEP78	CEP85
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CEP97	CERKL	CERS2	CES4A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CETN2	CETP	CFD	CFHR4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CFL1	CGA	CGN	CGREF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHAF1B	CHAT	CHCHD2	CHCHD6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHD1L	CHD2	CHD4	CHD9
##	0.006198091	0.006198091	0.006198091	0.006198091

##	CHDC2	CHGB	CHIA	CHIC2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHID1	CHKB	CHM	CHML
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHMP1B	CHMP2A	CHMP4B	CHORDC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHP2	CHRD2	CHRM2	CHRM3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHRM5	CHRNA2	CHRN2	CHRNE
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHST1	CHST13	CHST15	CHST3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CHST7	CHST9	CHTOP	CHURC1-FNTB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CIA01	CIITA	CILP	CIR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CIRBP	CIRH1A	CISD2	CIZ1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CKMT1B	CKMT2	CLASRP	CLCN6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLDN11	CLDN14	CLDN19	CLDN20
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLEC10A	CLEC2B	CLEC3B	CLEC4E
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLEC4F	CLHC1	CLIC5	CLIP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLK2	CLK3	CLN6	CLNK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLNS1A	CLPB	CLPSL2	CLPTM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLPTM1L	CLSTN1	CLSTN2	CLTA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CLUAP1	CLUH	CLVS1	CLVS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CMTM8	CMTR1	CNGA1	CNGA4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CNIH1	CNKSR1	CNKSR2	CNN3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CNOT1	CNOT10	CNPY1	CNPY3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CNRIP1	CNTD1	CNTD2	CNTLN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CNTN3	CNTN5	CNTRL	COG3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COG6	COG8	COL10A1	COL13A1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COL16A1	COL20A1	COL23A1	COL26A1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COL2A1	COL8A1	COLEC10	COMMD2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COMMD3	COMMD9	COMT	COPG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COPS2	COPS4	COPS6	COPS7A
##	0.006198091	0.006198091	0.006198091	0.006198091

##	COPS8	COR01A	COR01C	COR06
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COX10	COX16	COX18	COX5B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	COX7A2	CPA1	CPA2	CPA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CPA4	CPA5	CPEB3	CPLX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CPNE2	CPNE6	CPNE9	CPPED1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CPQ	CPSF2	CPSF3	CPSF4L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CPSF7	CPT1A	CPVL	CPXM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CPZ	CR1L	CRADD	CRAMP1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CRAT	CREB3	CREB3L2	CREBRF
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CRELD1	CRELD2	CREM	CRHBP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CRISP2	CRISPLD1	CRMP1	CRNN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CROT	CRTAM	CRY1	CRY2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CRYBA1	CRYBA2	CRYBB1	CRYBG3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CRYGN	CS	CSDE1	CSE1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CSF3	CSGALNACT2	CSN2	CSNK1A1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CSNK1A1L	CSNK1E	CSNK1G2	CSNK2A3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CSNK2B-LY6G5B-1181	CSPG5	CST1	CST11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CST3	CST9LP1	CSTF2	CT47B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTA-299D3.8	CTAG2	CTBP1	CTBP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTC-497E21.3	CTCF	CTD-2008L17.2	CTD-2267D19.3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTD-2368P22.1	CTD-3049M7.1	CTD-3051D23.1	CTD-3064M3.7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTD-307407.2	CTD-3105H18.14	CTD-3187F8.14	CTGF
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTIF	CTNNA1	CTNNA2	CTNNAL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTNNB1	CTNND1	CTNS	CTR9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTRC	CTSC	CTSE	CTSF
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTSH	CTSS	CTSW	CTTNBP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CTTNBP2NL	CTU1	CUEDC1	CUEDC2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	CUL1	CWC22	CWH43	CXCL3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CXorf30	CXorf38	CXorf65	CXorf66
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CXXC4	CYB561A3	CYB561D1	CYB561D2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CYCTP	CYFIP1	CYLC2	CYP11B2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CYP1A1	CYP1B1	CYP26B1	CYP27B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CYP2C18	CYP2C19	CYP2R1	CYP2W1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CYP3A5	CYP3A7	CYP46A1	CYP4B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CYP4F11	CYP4F22	CYP51A1	CYP7B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	CYP8B1	CYTH1	CYTH2	DAAM2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DAB2	DAB2IP	DACH1	DACT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DACT3	DAGLA	DAO	DARC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DAZAP1	DBF4B	DBI	DBN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DBX1	DCAF12L2	DCAF13	DCAF15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DCAF4	DCAF7	DCBLD1	DCD
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DCDC2	DCDC2B	DCDC2C	DCLK3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DCLRE1B	DCN	DCST1	DCSTAMP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DCTN2	DDHD2	DDN	DDOST
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DDR2	DDR GK1	DDTL	DDX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DDX21	DDX24	DDX27	DDX28
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DDX31	DDX39B	DDX41	DDX43
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DDX47	DDX52	DDX53	DDX60L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DEAF1	DEF8	DEFB115	DEFB118
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DEFB125	DEFB128	DEFB132	DEK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DENND2C	DENND2D	DENND3	DERA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DERL2	DES	DESI2	DET1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DFNA5	DFNB31	DGAT2L6	DGCR14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DGCR8	DGKB	DHCR24	DHFR
##	0.006198091	0.006198091	0.006198091	0.006198091

##	DHRS12	DHRS2	DHRS7B	DHX16
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DHX29	DHX30	DHX37	DIAPH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DIAPH2	DI03	DIP2A	DIRAS1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DIRAS2	DIS3L2	DKFZP761J1410	DKK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DKK3	DKK4	DLD	DLEC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DLG4	DLGAP2	DLGAP3	DLGAP5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DLK1	DLL4	DLX6	DMBX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DMGDH	DMRTA2	DMRTC2	DMWD
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DMXL2	DNA2	DNAJA2	DNAJA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DNAJB12	DNAJB14	DNAJB5	DNAJB6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DNAJB7	DNAJC1	DNAJC11	DNAJC14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DNAJC17	DNAJC21	DNAJC24	DNAJC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DNAJC5B	DNAJC7	DNASE1L1	DNM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DNMT3L	DNTT	DNTTIP1	DNTTIP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DOK5	DOLK	DOPEY1	DPAGT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DPEP1	DPEP2	DPH6	DPP10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DPP6	DPP7	DPP9	DPPA4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DPPA5	DPT	DPY19L4	DPY30
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DPYSL2	DR1	DRD2	DRD5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DRG2	DRP2	DSC1	DSCAM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DSCR8	DSE	DSEL	DSG3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DSN1	DTHD1	DTNB	DTWD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DTWD2	DUOXA2	DUSP11	DUSP22
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DUSP26	DUSP5	DUSP9	DUT
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DVL3	DYNC1I2	DYNLT3	DYRK1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	DYRK3	DYRK4	E2F7	E2F8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	E4F1	EAFF2	EBF4	EBNA1BP2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	ECD	ECH1	ECHDC2	ECI1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ECM2	ECSIT	EDA2R	EDARADD
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EDC4	EDDM3B	EDIL3	EDN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EDNRA	EDNRB	EEF1A2	EEF1G
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EEFSEC	EEPD1	EFCAB14	EFCAB3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EFCAB6	EFCAB8	EFCC1	EFNA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EFS	EFTUD2	EGFLAM	EGLN3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EGR1	EGR2	EGR3	EHD4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EIF1AD	EIF2AK1	EIF2AK2	EIF2AK3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EIF2S3	EIF2S3L	EIF3B	EIF3K
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EIF4A3	EIF4E1B	EIF4E2	EIF4E3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EIF5	ELAC1	ELAVL1	ELAVL4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ELF3	ELF4	ELF5	ELFN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ELN	ELOF1	ELOVL5	ELP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ELP6	EMB	EMC3	EMC9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EMCN	EME1	EMILIN2	EML5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EMR3	EMX1	ENAH	ENC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ENG	ENGASE	ENKD1	ENO1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ENO3	ENOX1	ENPEP	ENPP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ENPP4	ENPP6	ENTHD1	ENTPD2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ENTPD4	ENTPD6	EOMES	EP400
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EP400NL	EPB41L2	EPB41L3	EPB41L4A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EPCAM	EPG5	EPGN	EPHA4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EPHA6	EPHB2	EPHB4	EPHX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EPHX2	EPHX4	EPM2AIP1	EPN3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EPO	EPS8	EPS8L1	EPS8L3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EPX	ERCC3	ERCC6	ERCC6L2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	ERG	ERH	ERLEC1	ERMAP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ERMARD	ERRFI1	ERVFRD-1	ERVV-1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ERVW-1	ESAM	ESC01	ESC02
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ESD	ESPN	ESR2	ESRP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ESRRB	ESX1	ESYT2	ETAA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ETFA	ETHE1	ETV1	ETV7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EVX1	EXD3	EXOC1	EXOC2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EXOC3	EXOC3L2	EXOC5	EXOSC2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EXOSC4	EXOSC5	EXOSC8	EXT2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EXTL1	EYA1	EYA3	EZH2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	EZR	F10	F11R	F12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	F13B	F2RL3	FA2H	FAAH
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FABP4	FABP7	FABP9	FADS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FADS3	FAF1	FAIM3	FAM102A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM102B	FAM104B	FAM105A	FAM109A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM110C	FAM114A1	FAM120C	FAM122A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM122B	FAM124A	FAM129A	FAM129C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM131B	FAM133A	FAM133B	FAM136A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM13B	FAM13C	FAM149A	FAM151A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM155A	FAM155B	FAM160A1	FAM160A2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM160B1	FAM162A	FAM162B	FAM163A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM169A	FAM170B	FAM171B	FAM173B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM174A	FAM179A	FAM179B	FAM183B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM187A	FAM188A	FAM189A2	FAM193A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM194A	FAM195A	FAM19A1	FAM19A4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM19A5	FAM208A	FAM209A	FAM209B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM20C	FAM217B	FAM219B	FAM21C
##	0.006198091	0.006198091	0.006198091	0.006198091

##	FAM222A	FAM228B	FAM26D	FAM32A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM3B	FAM43B	FAM46C	FAM46D
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM47A	FAM49A	FAM50A	FAM53B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM53C	FAM57B	FAM58A	FAM60A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM69A	FAM69B	FAM71A	FAM71C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM73B	FAM83B	FAM83C	FAM83G
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM83H	FAM83H-AS1	FAM90A27P	FAM98A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAM98B	FAM9B	FAN1	FANK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FAP	FAR1	FARSA	FAS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FASTKD5	FAXC	FBL	FBLN5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FBN3	FBP2	FBXL13	FBXL14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FBXL19	FBXL4	FBXL7	FBXL8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FBX010	FBX011	FBX028	FBX03
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FBX030	FBX032	FBX036	FBX038
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FBX041	FBX07	FBX09	FBXW11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FBXW12	FBXW4	FBXW8	FCAMR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FCER1G	FCGRT	FCHSD2	FCN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FCN2	FCN3	FCRL2	FCRL4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FCRLB	FDXACB1	FEM1B	FER1L4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FER1L5	FERD3L	FETUB	FEZ1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FEZ2	FEZF1	FGB	FGD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FGD4	FGD6	FGF11	FGF14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FGF18	FGF21	FGF22	FGF23
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FGF3	FGFR1	FGFR10P	FGFR4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FGL1	FH	FHAD1	FHL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FHL5	FHOD1	FIBCD1	FIBP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FIGLA	FIGNL1	FILIP1	FIP1L1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	FKBP10	FKBP15	FKBP1B	FKBP5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FKBPL	FLAD1	FLCN	FLI1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FLII	FLJ27365	FLOT2	FLT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FLT3LG	FLT4	FLVCR2	FLYWCH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FMNL2	FMO2	FMO4	FM05
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FMOD	FMR1	FMR1NB	FNDC3A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FNDC3B	FNDC8	FNDC9	FNIP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FNIP2	FNTA	FNTB	FOLR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FOSB	FOXA1	FOXA2	FOXDI
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FOXDI	FOXDI	FOXDI	FOXDI
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FOXJ1	FOXN2	FOXN4	FOXO1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FOXO3	FOXO4	FOXP4	FOXRI
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FPGS	FPGT	FPGT-TNNI3K	FRA10AC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FREM3	FRMD1	FRMD6	FRMPD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FRS3	FSCN2	FSCN3	FSD1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FSTL4	FSTL5	FTHL17	FTSJ3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FUBP1	FUBP3	FUCA1	FUS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FUT2	FUT7	FUZ	FXN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FXDI	FXDI	FXDI	FXDI
##	0.006198091	0.006198091	0.006198091	0.006198091
##	FYTD1	FZDI	FZDI	FZDI
##	0.006198091	0.006198091	0.006198091	0.006198091
##	G6PC	GAA	GAB3	GAB4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GABBR1	GABRA4	GABRA5	GABRA6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GABRB2	GABRR3	GAD2	GADL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GAGE10	GAL3ST2	GAL3ST4	GALM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GALNT1	GALNT15	GALNT18	GALNT5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GALNT7	GALNT9	GALNTL6	GALR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GALR2	GAN	GANAB	GANC
##	0.006198091	0.006198091	0.006198091	0.006198091

##	GAPDHS	GAREM	GARNL3	GARS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GATA1	GATA4	GATA6	GATAD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GATAD2B	GATC	GATS	GATSL3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GBAS	GBP1	GBP4	GBP6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GBP7	GC	GCCR	GCH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GDA	GDAP1	GDE1	GDF10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GDI2	GDPD1	GDPD5	GEM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GFI1	GFI1B	GFM1	GFM2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GFOD1	GFOD2	GFPT2	GFRA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GFRA4	GFRAL	GFY	GGA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GGA1	GGT5	GGT6	GIMAP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GIMAP8	GINM1	GIPC1	GIPC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GIPR	GIT1	GJA10	GJA8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GK2	GK5	GKN2	GLA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GLB1	GLCE	GLIS1	GL01
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GLP2R	GLRA3	GLRX5	GLT8D2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GLTSCR1L	GLUD1	GLYAT	GMCL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GMDS	GMIP	GMPPA	GMPR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GMPR2	GNA11	GNA12	GNA14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GNA15	GNAQ	GNAS	GNAT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GNAZ	GNB1	GNB1L	GNB3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GNB4	GNE	GNL1	GNLY
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GNPTAB	GNPTG	GOLGA3	GOLGA4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GOLT1B	GOT1L1	GP2	GP5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPAA1	GPATCH3	GPATCH8	GPC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPC3	GPC4	GPC5	GPD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPFR1	GPHA2	GPHB5	GPI
##	0.006198091	0.006198091	0.006198091	0.006198091

##	GPKOW	GPLD1	GPM6A	GPM6B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPN1	GPN3	GPR1	GPR101
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPR108	GPR110	GPR111	GPR113
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPR123-AS1	GPR125	GPR126	GPR137B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPR144	GPR148	GPR149	GPR15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPR156	GPR161	GPR19	GPR22
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPR34	GPR37	GPR50	GPR55
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPR6	GPR61	GPR63	GPR85
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPRC5B	GPRC6A	GPRIN1	GPRIN3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GPSM2	GPT	GPT2	GRAMD1C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GRB10	GRB14	GRB2	GREB1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GREM2	GRHL3	GRIA2	GRIA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GRIA4	GRIK1	GRIK4	GRIN2C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GRIN2D	GRIN3A	GRIP2	GRK4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GRK5	GRM1	GRM2	GRM4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GRM5	GRTF1	GRXCR1	GSAP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GSC	GSC2	GSDMB	GSDMC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GSE1	GSG1	GSG1L	GSPT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GSR	GSS	GSTM2	GSTM2P1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GSTM4	GSTZ1	GTF2B	GTF2E1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GTF2H1	GTF2H4	GTF3C4	GTF3C5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GTPBP4	GTPBP8	GUCA1A	GUCY1A3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GUF1	GULP1	GUSBP1	GYS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	GZMB	H2AFV	H2BFWT	H3F3A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	H6PD	HABP2	HABP4	HADHB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HAGHL	HAMP	HAND1	HA01
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HAPLN2	HARBI1	HAS1	HAS2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	HAUS5	HAVCR2	HBG2	HBQ1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HBS1L	HCLS1	HDAC1	HDAC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HDC	HDGFL1	HDGFRP2	HDGFRP3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HDLBP	HDX	HEATR1	HEATR2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HEATR5A	HEATR5B	HEBP1	HEBP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HEG1	HELB	HELLS	HERC6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HERPUD2	HES6	HEXIM1	HEY1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HFE	HFE2	HGS	HHLA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HIAT1	HIATL1	HIATL2	HIF1AN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HILPDA	HIST1H1B	HIST1H1D	HIST1H1E
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HIST1H2AA	HIST1H2BA	HIST1H2BC	HIST1H2BE
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HIST1H2BG	HIST1H2BH	HIST1H2BK	HIST1H2BO
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HIST1H3A	HIST1H3J	HIST1H4F	HIST1H4L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HIST3H2BB	HIVEP2	HK2	HLA-DMA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HLA-DPB2	HLA-DQA1	HLA-DQB2	HLA-DRA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HLCS	HM13	HMBS	HMG20A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HMG20B	HMGA2	HMGB4	HMGCL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HMGCLL1	HMGCS1	HMGN1	HMGN2P46
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HMGXB3	HMOX1	HNF1B	HNF4A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HNRNPA0	HNRNPDL	HNRNPF	HNRNPH3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HNRNPK	HNRNPLL	HNRNPM	HNRNPR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HNRNPU	HNRNPUL1	HNRNPUL2	HOOK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HOOK3	HOPX	HOXA11	HOXA2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HOXA4	HOXC12	HOXC13	HOXC5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HOXD1	HOXD3	HOXD8	HPCA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HPCAL1	HPGDS	HPS1	HPSE
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HPSE2	HPX	HR	HRG
##	0.006198091	0.006198091	0.006198091	0.006198091

##	HRH1	HRH2	HRH3	HRNR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HS2ST1	hsa-mir-5195	HSBP1L1	HSD11B2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HSD17B10	HSD17B12	HSD17B7P2	HSD3B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HSD3B2	HSD3BP2	HSF2BP	HSF5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HSH2D	HSP90AB1	HSPA14	HSPB3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HSPB7	HSPB8	HTATSF1	HTR1D
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HTR3A	HTR7	HTRA1	HUNK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	HUS1	HYAL3	HYDIN	IAH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ICA1	ICA1L	ICAM2	ICAM3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ICOSLG	ID3	IDE	IDH3A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IDH3G	IER2	IER3IP1	IER5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IFFO2	IFI27	IFI27L1	IFI35
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IFI44	IFIH1	IFIT1	IFIT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IFITM5	IFNA4	IFNGR1	IFNGR2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IFT172	IFT43	IFT57	IFT74
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IFT80	IGDCC3	IGF1	IGF2BP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGF2BP2	IGF2BP3	IGF2R	IGFBPL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGFLR1	IGHD3-16	IGHJ4	IGHJ6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGHM	IGHV1-45	IGHV10R15-4	IGHV3-73
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGHV5-51	IGKV1-39	IGKV5-2	IGLC7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGLL5	IGLV1-44	IGLV1-47	IGLV3-1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGLV3-19	IGLV5-45	IGSF1	IGSF11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IGSF6	IGSF9	IKBKAP	IKZF2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IL10RB	IL11RA	IL12RB1	IL12RB2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IL17D	IL17F	IL17RD	IL18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IL1A	IL1R1	IL1RAPL1	IL1RAPL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IL27RA	IL2RA	IL36G	IL4I1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	IL6R	IL7R	ILK	ILKAP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ILVBL	IMPA1	IMPDH1	IMPG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	INADL	INF2	ING2	ING3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ING5	INHBA	INHBE	INMT
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IN080B	INPP5D	INPP5E	INPP5J
##	0.006198091	0.006198091	0.006198091	0.006198091
##	INPP5K	INS-IGF2	INSM2	INSR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	INTS12	INTS4	INTS5	INTU
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IP6K1	IP011	IP07	IP08
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IP09	IQCB1	IQCE	IQCF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IQCF6	IQGAP2	IQUB	IRF2BPL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	IRF4	IRF8	IRS1	IRS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ISG20	ISL1	ISL2	ISM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ISY1-RAB43	ISYNA1	ITFG3	ITGA4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ITGAE	ITGB2	ITGB3	ITGB5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ITGB7	ITIH3	ITIH6	ITK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ITLN2	ITM2C	ITPA	ITPKC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	JADE3	JAG1	JAK1	JAKMIP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	JAM3	JMJD4	JMJD6	JPH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	JRK	KANK1	KANK3	KANSL1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KAT2A	KAT2B	KAT6A	KAT7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KAT8	KATNAL2	KATNB1	KAZN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KB-1507C5.2	KBTBD4	KBTBD8	KCNA4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KCNC3	KCNC4	KCNF1	KCNG2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KCNH5	KCNIP2	KCNIP4	KCNJ10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KCNJ11	KCNJ13	KCNJ14	KCNJ3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KCNJ5	KCNJ6	KCNJ8	KCNJ9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KCNK10	KCNK13	KCNK18	KCNN2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	KCNQ4	KCNQ5	KCNS2	KCNS3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KCTD13	KCTD19	KCTD5	KCTD8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KDELC2	KDELR1	KDM1B	KDM4A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KDM4D	KDM4E	KDM5A	KDM5B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KDM7A	KHDRBS1	KHDRBS3	KIAA0226
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIAA0232	KIAA0408	KIAA0754	KIAA0907
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIAA0922	KIAA0930	KIAA0947	KIAA1239
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIAA1257	KIAA1407	KIAA1430	KIAA1432
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIAA1467	KIAA1586	KIAA1671	KIAA1683
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIAA1715	KIAA1841	KIAA1958	KIDINS220
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIF12	KIF13A	KIF14	KIF15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIF20B	KIF21B	KIF22	KIF23
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIF3A	KIF4A	KIF5B	KIF7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KIFC1	KIR3DL1	KIRREL2	KISS1R
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KITLG	KL	KLC1	KLF12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KLF14	KLF15	KLF2	KLHDC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KLHDC4	KLHDC7A	KLHDC8A	KLHL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KLHL14	KLHL18	KLHL2	KLHL24
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KLHL25	KLHL30	KLHL34	KLHL36
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KLHL38	KLHL5	KLK1	KLK15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KLK2	KLK3	KLK7	KNCN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KNOP1	KPNA2	KPNA7	KPNB1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRBOX4	KREMEN2	KRT10	KRT18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRT20	KRT23	KRT25	KRT26
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRT35	KRT38	KRT39	KRT40
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRT5	KRT6B	KRT7	KRT71
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRT73	KRT76	KRT77	KRT79
##	0.006198091	0.006198091	0.006198091	0.006198091

##	KRT82	KRT83	KRT85	KRT86
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRTAP10-12	KRTAP10-3	KRTAP15-1	KRTAP20-1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRTAP26-1	KRTAP3-1	KRTAP4-3	KRTAP4-4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	KRTAP9-9	KRTDAP	L2HGDH	L34079.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	L3HYPDH	L3MBTL2	L3MBTL3	LACC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LACRT	LACTB2	LAG3	LAMP3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LAMTOR2	LARGE	LARP4B	LARP7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LASP1	LAT	LBX1	LBX2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LCA10	LCE2D	LCE4A	LCMT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LCORL	LCP1	LCP2	LDLR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LDLRAD1	LDLRAD2	LDOC1	LDOC1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LEAP2	LEF1	LEKR1	LELP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LEPRE1	LEPREL1	LEPREL2	LETMD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LFNG	LGALS16	LGALS3BP	LGALS4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LGALS9	LGALSL	LGI2	LGI4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LGMN	LGSN	LHX8	LHX9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LIFR	LIG3	LILRA4	LILRB3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LILRB4	LILRB5	LIM2	LIMCH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LIMK2	LIMS1	LIN37	LIN54
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LIN7A	LINC00452	LINC00469	LINC00470
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LINC00636	LINC00868	LINC00905	LINC00922
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LINC00967	LINC00998	LINC01124	LING03
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LIPC	LIPE	LIPF	LIPJ
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LIX1	LIX1L	LL22NC03-63E9.3	LMBR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LMBR1L	LMBRD2	LMF1	LMLN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LMO1	LMO7	LMTK3	LMX1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LMX1B	LNK2	LONP1	LOXHD1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	LOXL3	LOXL4	LPAL2	LPAR3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LPAR5	LPCAT4	LPHN1	LPIN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LPIN3	LPPR3	LPPR4	LPXN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRFN5	LRGUK	LRIG2	LRP3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRP5L	LRP8	LRPPRC	LRRC10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRC24	LRRC27	LRRC28	LRRC29
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRC3	LRRC30	LRRC32	LRRC34
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRC38	LRRC3B	LRRC40	LRRC49
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRC52	LRRC53	LRRC55	LRRC6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRC66	LRRC70	LRRC8C	LRRC9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRC1	LRRIQ3	LRRN1	LRRN4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LRRTM3	LSG1	LSM14A	LSM2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LSM3	LSM7	LSS	LST1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LTN1	LTV1	LUC7L3	LUM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LUZP1	LY75-CD302	LY9	LY96
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LYG2	LYNX1	LYPD6B	LYPLA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	LYPLAL1	LZIC	LZTR1	LZTS1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	M6PR	MAATS1	MACC1	MAD1L1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAD2L1	MAD2L2	MAEA	MAEL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAFF	MAG	MAGEA10	MAGEB17
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAGEB3	MAGEB4	MAGEC1	MAGED2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAGEE1	MAGOH	MAGOHB	MAML3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAMLD1	MAN1C1	MANEA	MAP2K1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAP2K2	MAP2K5	MAP3K13	MAP3K19
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAP3K2	MAP3K3	MAP3K5	MAP3K6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAP3K7	MAP3K7CL	MAP4K1	MAP4K3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAP4K4	MAP4K5	MAP6	MAP7D1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	MAP7D3	MAPK14	MAPK3	MAPK9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MAPKAPK2	MAPKAPK3	MAPRE2	MAPT
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MARVELD2	MAST2	MAST4	MATR3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MB21D1	MB21D2	MBD6	MBTD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MBTPS1	MC2R	MC3R	MCAT
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MCC	MCCC2	MCEE	MCF2L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MCM10	MCM2	MCM8	MCOLN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MCOLN3	MCTP2	MCTS1	MDH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MDH1B	MDM4	MECOM	MECP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MECR	MED12L	MED16	MED18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MED22	MED9	MEF2A	MEF2D
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MEGF11	MEGT1	MEIG1	MEMO1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MEN1	MEOX2	MERTK	MESP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MESP2	METRNL	METTL11B	METTL12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	METTL21B	METTL6	MEX3A	MEX3B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MEX3C	MFF	MFGE8	MFNG
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MFSD1	MFSD12	MFSD2A	MFSD3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MFSD9	MGAM	MGAT4A	MGAT5B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MGLL	MGP	MGST2	MICAL3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MICALCL	MICALL2	MICU2	MIEN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MIER3	MIF4GD	MIPEP	MIPOL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MIR1468	MIR329-1	MIR517C	MIR587
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MIR7-3HG	MIR873	MIR892B	MIS18A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MIS18BP1	MITF	MIXL1	MKNK2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MKRN2	MKRN3	MLLT3	MLXIPL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MMAB	MMGT1	MMP1	MMP10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MMP14	MMP2	MMP20	MMP3
##	0.006198091	0.006198091	0.006198091	0.006198091

##	MMP7	MMRN2	MMS22L	MN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MNT	MOB1B	MOB3C	MOCS1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MOGAT3	MOK	MON1A	MORC4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MOS	MOSPD2	MOSPD3	MOXD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MPDU1	MPHOSPH8	MPI	MPLKIP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MPND	MP0	MPP1	MPP3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MPP4	MPP5	MPP6	MPP7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MPPED2	MPRIP	MPZL2	MRFAP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MRGPRE	MRGPRG	MRGPRX3	MRM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MROH2A	MROH8	MROH9	MRP63
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MRPL13	MRPL17	MRPL19	MRPL24
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MRPL32	MRPL39	MRPL43	MRPL44
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MRPL48	MRPS16	MRPS17	MRPS18A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MRPS18B	MRPS28	MRPS34	MRPS5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MRPS7	MRRF	MRVI1	MS4A15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MS4A3	MS4A4A	MSH2	MSI1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MSL2	MSL3	MSLN	MSLNL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MSN	MSRB1	MSRB3	MSS51
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MST4	MT1E	MT1F	MT2A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MTBP	MTCH1	MTERF	MTERFD2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MTF2	MTFR1	MTHFD1L	MTHFSD
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MTMR1	MTMR14	MTMR3	MTMR6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MTMR9	MTRR	MTUS2	MTX2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MUC15	MUC5B	MUC7	MUM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MUM1L1	MXD3	MXI1	MXRA5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MXRA8	MYBBP1A	MYCN	MYCT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MYF6	MYH15	MYL12A	MYL2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	MYL5	MYL6B	MYNN	MY019
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MY01E	MY01G	MY01H	MY05C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MYOCD	MYOM1	MYPN	MYRF
##	0.006198091	0.006198091	0.006198091	0.006198091
##	MYZAP	MZT1	MZT2A	NAA15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NAA16	NAA25	NAA30	NAALADL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NAGA	NAGS	NAP1L3	NAP1L5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NAPA	NAPRT1	NAPSB	NARS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NASP	NAT10	NAT2	NAV1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NBEA	NCAPG2	NCAPH2	NCBP2L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NCEH1	NCF2	NCF4	NCK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NCKAP1	NCLN	NCOA1	NCOA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NCOA5	NCOA7	NCR2	NCR3LG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NDC1	NDC80	NDN	NDOR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NDRG2	NDRG4	NDST4	NDUFA4L2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NDUFA5	NDUFA9	NDUFB5	NDUFB7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NDUFB9	NDUFS6	NECAB2	NECAB3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NEDD4L	NEDD9	NEFH	NEGR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NEK1	NEK2	NEK4	NEK7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NEK8	NEK9	NELFB	NELFCD
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NELL1	NELL2	NES	NETO1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NETO2	NEU2	NEURL1	NEURL4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NEUROD1	NEUROD2	NFAT5	NFATC2IP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NFIC	NFKBID	NFRKB	NFXL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NFYA	NFYB	NGDN	NGRN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NHLRC2	NHLRC3	NHP2	NHS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NHSL1	NID1	NIM1K	NIN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NINJ1	NIPSNAP3A	NKAIN2	NKAP
##	0.006198091	0.006198091	0.006198091	0.006198091

##	NKD2	NKRF	NKX6-3	NLGN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NLN	NLRC3	NLRC5	NLRP11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NLRP12	NLRP13	NLRP14	NLRP8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NLRX1	NMI	NMNAT2	NMS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NMT1	NMT2	NMUR2	NOA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NOC2L	NOC4L	NOD1	NOD2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NOL10	NOL11	NOL9	NOM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NOP14	NOP56	NOP58	NOP9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NOS2	NOSIP	NOSTRIN	NOTUM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NOX1	NOX4	NOX5	NOXA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NPAP1	NPAS3	NPAT	NPBWR1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NPC1	NPEPL1	NPL	NPM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NPNT	NPRL2	NPS	NPY2R
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NR1D2	NR1H2	NR1H3	NR1H4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NR1I3	NR2C1	NR3C1	NR3C2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NR4A2	NR5A1	NR6A1	NRAP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NRD1	NRDE2	NRF1	NRG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NRG2	NRG4	NRN1L	NRP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NRROS	NRSN1	NSD1	NSF
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NSMAF	NSMCE1	NSRP1	NSUN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NSUN5	NSUN6	NSUN7	NT5C1B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NT5DC3	NTAN1	NTNG1	NTNG2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NTSR1	NUAK1	NUBP1	NUCB1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NUCB2	NUDC	NUDCD1	NUDT8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NUF2	NUMBL	NUP107	NUP210P1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NUS1	NXF1	NXN	NXPH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	NXPH3	NYAP1	NYAP2	OAS3
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##	OFCC1	OGFOD3	OGFRL1	OGN
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##	OLIG3	OLR1	OMA1	OPN1LW
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##	OR10R2	OR10V1	OR10W1	OR11H6
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##	OR13C3	OR13C4	OR13C8	OR13D1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR13G1	OR13H1	OR14A16	OR14C36
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR1A1	OR1A2	OR1B1	OR1I1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR1J1	OR1J2	OR1K1	OR1L3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR2A14	OR2A25	OR2A5	OR2AG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR2AJ1	OR2AP1	OR2AT4	OR2B11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR2G2	OR2G3	OR2K2	OR2L3
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##	OR2M4	OR2M5	OR2T10	OR2T12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR2T2	OR2T34	OR2T4	OR2V1
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##	OR2V2	OR2W3	OR2Y1	OR4C15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR4D1	OR4D2	OR4D9	OR4E2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR4K1	OR4K14	OR4K17	OR4K2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	OR4N5	OR4Q3	OR4S1	OR4S2
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##	OR51A7	OR51F5P	OR51L1	OR51T1
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##	OR52W1	OR56A3	OR5AN1	OR5AP2
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##	OR7A5	OR7D4	OR8B4	OR8D2
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##	OR8G1	OR8G2P	OR8H1	OR9G1
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##	OR9G4	OR9Q1	ORAI1	ORAI2
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##	ORC3	ORMDL2	OS9	OSBP
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##	OSBP2	OSBPL1A	OSCAR	OST4
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##	0.006198091	0.006198091	0.006198091	0.006198091
##	PAK3	PAK4	PAK7	PALD1
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##	PAM	PAMR1	PAN3	PANX2
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##	PAPD7	PAPL	PAPPA-AS1	PAPSS1
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##	PAPSS2	PAQR3	PAQR4	PAQR5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PAQR9	PARD6A	PARD6B	PARL
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##	PARP11	PARP15	PARP6	PARP9
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##	PARPBP	PASK	PATZ1	PAX2
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##	PCDHA4	PCDHA9	PCDHAC2	PCDHB1
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##	PCDHB11	PCDHB12	PCDHB13	PCDHB14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PCDHB16	PCDHB17	PCDHB18	PCDHB2
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##	PCDHB4	PCDHB6	PCDHGA10	PCDHGA11
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##	PCDHGA2	PCDHGA4	PCDHGA5	PCDHGA7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PCDHGB4	PCDHGB7	PCDHGC3	PCED1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PCF11	PCID2	PCM1	PCNX
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##	PCNXL4	PCP2	PCP4	PCSK1
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##	PCSK2	PCSK6	PCSK7	PCYT1A
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##	PCYT2	PDCD11	PDCD7	PDCL3
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##	PDE10A	PDE12	PDE1B	PDE1C
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##	PDE6D	PDE6G	PDE7A	PDE7B
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##	PDE8A	PDHA2	PDIA2	PDIA5
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##	PDIA6	PKD4	PDLIM3	PDLIM4
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##	PDX1	PDXDC1	PDXK	PDZD2
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##	PDZD3	PDZD4	PDZD8	PDZD9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PDZRN3	PEA15	PEAK1	PEBP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PEF1	PEG3	PELI1	PELO
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PER1	PEX11B	PEX12	PEX16
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##	PEX2	PEX5	PEX6	PFDN5
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##	PFDN6	PFKFB3	PFKFB4	PGAP1
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##	PGAP2	PGBD4	PGBD5	PGC
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##	PGD	PGK2	PGLYRP2	PGLYRP3
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##	PGLYRP4	PGM1	PGR	PHACTR2
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##	PHACTR3	PHAX	PHB2	PHC1
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##	PHC2	PHC3	PHF1	PHF12
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##	PHF19	PHF21B	PHF7	PHF8
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##	PHGR1	PHKG2	PHLDB2	PHLDB3
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##	PHLPP1	PHRF1	PHYHIP	PHYKPL
##	0.006198091	0.006198091	0.006198091	0.006198091

##	PI4KB	PIAS1	PIAS2	PID1
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##	PIDD	PIGA	PIGG	PIGN
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##	PIGP	PIGS	PIGW	PIH1D1
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##	PIK3AP1	PIK3C2A	PIK3C2G	PIK3CB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PIK3CD	PIK3R4	PIK3R6	PILRA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PIM1	PIN1	PIN4	PIP4K2A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PIP4K2B	PIP4K2C	PIP5K1B	PIR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PITPNM1	PITRM1	PITX1	PITX3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PIWIL3	PJA1	PKD1L1	PKD1L2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PKD1L3	PKD2L1	PKIG	PKM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PKN1	PKP1	PKP2	PKP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PLA2G4B	PLA2G4F	PLA2R1	PLAA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PLAGL1	PLBD1	PLBD2	PLCB1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PLCB3	PLCD4	PLCG1	PLCH2
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##	PLCZ1	PLD2	PLD5	PLEK
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##	PLEKHA1	PLEKHA2	PLEKHA4	PLEKHD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PLEKHG1	PLEKHG6	PLEKHS1	PLG
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PLIN4	PLN	PLSCR1	PLSCR4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PLTP	PLXDC1	PLXNB1	PLXNB2
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##	PLXNB3	PLXND1	PM20D2	PML
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PMM2	PMPCA	PMS1	PNCK
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##	PNISR	PNKD	PNMA3	PNMA5
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##	PNMT	PNPLA1	PNPLA2	PNPLA3
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##	POC1B	POC1B-GALNT4	PODXL2	POF1B
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##	POLR3G	POMGNT1	POMK	POP1
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##	PPA2	PPAN-P2RY11	PPAPDC1B	PPARGC1A
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##	PPARGC1B	PPAT	PPFIBP2	PPIB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	PPIC	PPIG	PPIL1	PPIL2
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##	PPIL4	PPIL6	PPL	PPM1B
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##	PPM1D	PPM1M	PPME1	PPP1R12A
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##	PPP1R12B	PPP1R13B	PPP1R14B	PPP1R14D
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##	RBFOX1	RBFOX3	RBM10	RBM14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RBM15	RBM15B	RBM17	RBM22
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RBM27	RBM28	RBM38	RBM41
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RBM44	RBM46	RBM47	RBM48
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RBM7	RBMS2	RBP2	RBP3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RBP7	RBPJL	RBPMS2	RC3H2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RCC2	RCE1	RCHY1	RCSD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RCVRN	RDH16	RDX	RECK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RECQL	REEP2	REEP5	RELT
##	0.006198091	0.006198091	0.006198091	0.006198091
##	REM1	REM2	REN	RERGL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RETSAT	REV1	REXO2	RFC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RFC4	RFFL	RFPL4AL1	RFPL4B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RFX1	RFX2	RFX3	RFX5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RFX6	RFX7	RFXANK	RGAG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RGMA	RGMB	RGS12	RGS16
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RGS17	RGS18	RGS2	RGS20
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RGS21	RGS3	RGS4	RGS5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RGS6	RHBDF1	RHBDL1	RHBG
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RHEBL1	RHO	RHOT2	RHPN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RIBC1	RIC8A	RIC8B	RICTOR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RIN3	RIOK1	RIOK2	RIOK3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RIPK2	RIPK4	RIT1	RLBP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RLTPR	RMND5B	RNASE10	RNASE6
##	0.006198091	0.006198091	0.006198091	0.006198091

##	RND3	RNF11	RNF112	RNF121
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RNF123	RNF133	RNF144B	RNF145
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RNF168	RNF183	RNF20	RNF207
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RNF208	RNF214	RNF219	RNF224
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RNF31	RNF38	RNF4	RNF5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RNF5P1	RNFT2	RNLS	RNPEPL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ROB01	ROB04	RP1-130H16.18	RP1-170019.20
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-108K14.8	RP11-1134I14.8	RP11-1220K2.2	RP11-1407015.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-141J13.5	RP11-180P8.1	RP11-200A13.3	RP11-210M15.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-244H3.1	RP11-266L9.4	RP11-2E11.9	RP11-307C19.3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-320N21.2	RP11-321F6.1	RP11-35J10.5	RP11-383H13.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-407N17.3	RP11-422N16.3	RP11-429E11.3	RP11-430N14.4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-431M7.3	RP11-433C9.2	RP11-452N4.1	RP11-463J10.4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-480I12.4	RP11-480I12.7	RP11-503C24.6	RP11-503N18.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-521M14.2	RP11-551L14.1	RP11-596D21.1	RP11-597K23.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-599B13.3	RP11-625H11.1	RP11-664D7.4	RP11-672A2.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-672A2.3	RP11-682N22.1	RP11-744N12.3	RP11-766F14.2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP11-770J1.4	RP11-798K3.2	RP2	RP3-510D11.1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RP4-539M6.19	RP4-800G7.2	RPA2	RPA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPGRIP1L	RP3AL	RPIA	RPL10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPL10A	RPL11	RPL12	RPL14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPL18A	RPL26L1	RPL27	RPL32
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPL34	RPL35	RPL36	RPL4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPL5	RPL7A	RPL8	RPLP0
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPLP2	RPN1	RPP14	RPP30
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPRD1A	RPRD1B	RPS11	RPS12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RPS27A	RPS4XP21	RPS6KA1	RPS6KA2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	RPS6KA4	RPS6KB1	RPS6KB2	RPS9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RRAD	RRBP1	RRM1	RRNAD1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RRP1B	RS1	RSC1A1	RSF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RSG1	RSPH3	RSP02	RSP03
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RSPRY1	RSU1	RTBDN	RTCA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RTF1	RTP2	RTTN	RUNX2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RUSC2	RWDD2B	RXFP1	RXFP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	RYK	S100A5	S1PR1	SACM1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SAG	SAGE1	SALL1	SALL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SALL4	SAMD1	SAMD10	SAMD11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SAP130	SAPCD2	SASH1	SASH3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SASS6	SATL1	SAYSD1	SBF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SBN02	SBSN	SC5D	SCAF8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SCARA3	SCARB1	SCD5	SCG2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SCG5	SCGB2A2	SCGN	SCHIP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SCN2B	SCN3B	SCN4B	SCN9A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SCNN1A	SC01	SCP2	SCPEP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SCRT2	SCTR	SCUBE2	SCUBE3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SCYL2	SCYL3	SDAD1	SDCBP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SDHC	SDIM1	SDR16C5	SDR39U1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SDR42E1	SEC14L1	SEC14L5	SEC14L6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SEC16B	SEC22A	SEC23IP	SEC24D
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SEH1L	SEL1L	SEL1L3	SELK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SEMA4C	SEMA5B	SEMA6A	SEMA6B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SEMA6C	SEMG2	SENP3	SENP7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SEPHS1	SEPN1	SEPW1	SERP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SERPINA13P	SERPINA6	SERPINA7	SERPINB12
##	0.006198091	0.006198091	0.006198091	0.006198091

##	SERPINB13	SERPINB3	SERPINB6	SERPINB7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SERPINE2	SERPINF1	SERPINF2	SERPINH1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SETD1A	SETD3	SETDB2	SETMAR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SEZ6	SF3B14	SFMBT1	SFXN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SFXN4	SGCD	SGK1	SGK2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SGK223	SGK3	SGMS2	SGPL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SGSH	SH2B3	SH2D2A	SH2D3C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SH2D4B	SH3BGRL	SH3BGRL2	SH3BGRL3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SH3BP5	SH3D19	SH3GL1	SH3GL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SH3GLB1	SH3PXD2A	SH3RF3	SHANK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SHC1	SHC2	SHC3	SHD
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SHISA3	SHISA4	SHMT1	SHMT2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SHOC2	SHOX2	SHPK	SHPRH
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SHQ1	SHROOM1	SHROOM3	SIGIRR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SIGLEC11	SIGLEC12	SIGLEC14	SIGLECL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SIK1	SIK3	SIKE1	SIM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SIPA1	SIRPB2	SIRT3	SIRT4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SIX4	SIX5	SIX6	SKA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SKI	SKIL	SKIV2L	SKP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLAIN2	SLAMF9	SLC10A2	SLC10A4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC10A5	SLC11A2	SLC12A8	SLC12A9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC13A5	SLC14A2	SLC15A2	SLC15A3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC15A4	SLC16A12	SLC16A13	SLC16A4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC16A6	SLC16A8	SLC17A1	SLC17A3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC17A4	SLC17A7	SLC17A8	SLC18A2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC19A3	SLC20A2	SLC22A10	SLC22A13
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC22A15	SLC22A16	SLC22A17	SLC22A2
##	0.006198091	0.006198091	0.006198091	0.006198091

##	SLC22A23	SLC22A3	SLC22A7	SLC22A9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC24A2	SLC25A10	SLC25A15	SLC25A16
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC25A21	SLC25A23	SLC25A24	SLC25A25
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC25A26	SLC25A4	SLC25A43	SLC25A44
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC25A45	SLC25A5	SLC26A6	SLC26A8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC27A3	SLC28A1	SLC29A3	SLC2A12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC2A4	SLC2A6	SLC30A3	SLC30A5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC30A7	SLC34A1	SLC34A3	SLC35A1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC35C2	SLC35E3	SLC35F6	SLC35G6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC36A1	SLC36A2	SLC37A4	SLC38A4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC38A7	SLC38A8	SLC38A9	SLC39A11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC39A12	SLC39A2	SLC39A3	SLC39A6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC39A8	SLC43A1	SLC43A2	SLC44A4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC44A5	SLC45A2	SLC45A3	SLC46A1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC4A10	SLC4A3	SLC4A7	SLC4A8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC50A1	SLC52A3	SLC5A1	SLC5A11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC5A2	SLC5A8	SLC5A9	SLC6A1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC6A13	SLC6A14	SLC6A2	SLC6A4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC6A5	SLC6A6	SLC7A10	SLC7A11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC7A8	SLC7A9	SLC8A2	SLC8B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC9A5	SLC9A7	SLC01B1	SLC01B3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLC01C1	SLC03A1	SLFN14	SLIT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLITRK4	SLMAP	SLMO2	SLN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SLTM	SMAD1	SMAD3	SMAD4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SMARCA1	SMARCC1	SMARCE1	SMC1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SMC1B	SMC3	SMC4	SMC03
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SMCR8	SMEK3P	SMG5	SMG6
##	0.006198091	0.006198091	0.006198091	0.006198091

##	SMG7	SMG9	SMIM21	SMIM4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SMO	SMPD3	SMPDL3A	SMPX
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SMTN	SMU1	SMYD4	SMYD5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SNAI1	SNAI2	SNAP25	SNAPC2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SNCAIP	SNORA3	SNORD112	SNORD114-26
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SNORD114-29	SNORD116-7	SNPH	SNRK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SNRPEP2	SNTB1	SNTB2	SNW1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SNX14	SNX25	SNX29	SNX8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SNX9	SOAT1	SOAT2	SOBP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SOCS1	SOCS2	SOD3	SOGA3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SOHLH1	SORBS3	SORCS3	SOS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SOWAHA	SOWAHB	SOWAHC	SOX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SOX13	SOX14	SOX17	SOX18
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SOX4	SOX7	SOX8	SOX9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SP1	SP140	SP140L	SP4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPA17	SPACA3	SPAG6	SPAM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPANXN1	SPAST	SPATA12	SPATA16
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPATA18	SPATA2	SPATA21	SPATA24
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPATA31C2	SPATA31E1	SPATA32	SPATA5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPATA6L	SPATC1L	SPATS1	SPATS2L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPCS3	SPDL1	SPERT	SPIDR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPINK8	SPINK9	SPINT2	SPIRE2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPN	SPNS2	SPOCK1	SPOCK3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPON2	SPOP	SPP2	SPR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPRED3	SPRR2A	SPRR3	SPSB1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SPSB2	SPSB3	SPTLC3	SPTY2D1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SQRDL	SRA1	SRC	SRCIN1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	SRCRB4D	SREBF1	SRFBP1	SRGAP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SRGAP2B	SRM	SRPK1	SRPK3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SRPR	SRPX	SRPX2	SRRM1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SRSF3	SRSF5	SRSF6	SS18L2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SSB	SSBP2	SSBP4	SSC5D
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SSMEM1	SSR4	SSRP1	SSSCA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SSTR1	SSTR2	SSTR5	SSTR5-AS1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ST3GAL3	ST3GAL4	ST3GAL5	ST6GALNAC2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ST6GALNAC3	ST8SIA1	STAG1	STAMBPL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STAP2	STAR	STARD10	STARD13
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STARD8	STAT4	STAT5B	STAU1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STC2	STEAP3	STIL	STIM2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STIP1	STK10	STK16	STK19
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STK32A	STK38L	STK4	STMN4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STOML2	STOML3	STON2	STRA8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STRIP1	STRIP2	STT3A	STX10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STX11	STX12	STX17	STX1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	STXBP1	STXBP6	STYK1	STYXL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SUCLA2	SUC0	SUDS3	SUGCT
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SULT1E1	SUMF2	SUN1	SUN3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SUOX	SUPT16H	SUPT3H	SUPT4H1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SURF1	SURF2	SURF4	SURF6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SUSD4	SUSD5	SUV39H1	SUV39H2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SUV420H1	SUZ12	SVILP1	SVOP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SWSAP1	SYBU	SYCE1	SYCE2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SYCP1	SYCP2	SYDE1	SYMPK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SYN2	SYNC	SYNDIG1	SYNGAP1
##	0.006198091	0.006198091	0.006198091	0.006198091

##	SYNP0	SYNP02	SYNRG	SYPL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SYT12	SYT16	SYT17	SYT4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SYT5	SYT7	SYT8	SYTL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	SYTL5	T	TAAR2	TAAR8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TACC3	TAC01	TACSTD2	TADA2B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TAF13	TAF1A	TAF1B	TAF5L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TAF8	TAF9	TAMM41	TANC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TAOK2	TAP1	TAP2	TAPBPL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TARDBP	TARM1	TAS1R1	TAS1R2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TAS1R3	TAS2R1	TAS2R10	TAS2R31
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TAS2R39	TAS2R42	TAS2R7	TAS2R9
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TAX1BP3	TAZ	TBC1D10C	TBC1D12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TBC1D14	TBC1D15	TBC1D20	TBC1D23
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TBC1D31	TBC1D5	TBC1D8B	TBCK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TBRG1	TBRG4	TBX1	TBX21
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TBX4	TCAIM	TCERG1L	TCF12
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TCF7L1	TCHHL1	TCHP	TCIRG1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TCN2	TCP1	TCP10L	TCP11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TCP11L2	TDG	TD02	TDRD5
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TDRD7	TDRD9	TEAD2	TEC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TECPR2	TECR	TECTA	TEKT1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TEKT2	TEKT4	TEP1	TEX10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TEX101	TEX15	TEX2	TEX29
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TEX35	TEX37	TF	TFAM
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TFB1M	TFB2M	TFCP2	TFCP2L1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TFEC	TFF1	TFF2	TFRC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TGFBR1	TGFBRAP1	TGIF1	TGM4
##	0.006198091	0.006198091	0.006198091	0.006198091

##	TGS1	TH	THADA	THAP10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	THAP5	THBS1	THBS2	THBS4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	THEM5	THEMIS	THNSL1	THOC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	THOC5	THOP1	THPO	THRB
##	0.006198091	0.006198091	0.006198091	0.006198091
##	THSD1	THUMPD1	THUMPD2	TIAF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TIAM1	TICAM1	TIGD5	TIMM44
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TIMM50	TIMP2	TIMP4	TIPIN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TJAP1	TJP1	TLCD1	TLDC2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TLE2	TLE3	TLE4	TLE6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TLR1	TLR4	TLR7	TLX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TM7SF2	TM9SF2	TMC2	TMCC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMC01	TMC04	TMED10	TMEFF2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM102	TMEM106C	TMEM109	TMEM11
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM129	TMEM130	TMEM135	TMEM139
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM140	TMEM143	TMEM151B	TMEM155
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM165	TMEM170B	TMEM173	TMEM174
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM176B	TMEM179B	TMEM180	TMEM182
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM192	TMEM199	TMEM200A	TMEM201
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM207	TMEM208	TMEM235	TMEM237
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM241	TMEM246	TMEM247	TMEM255A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM259	TMEM260	TMEM262	TMEM27
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM33	TMEM42	TMEM43	TMEM45A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM47	TMEM52B	TMEM53	TMEM55B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM69	TMEM79	TMEM86A	TMEM87A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMEM8A	TMIGD1	TMOD2	TMPRSS11B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMPRSS2	TMPRSS3	TMPRSS4	TMPRSS7
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TMTC1	TMUB2	TMX2	TNFRSF10B
##	0.006198091	0.006198091	0.006198091	0.006198091

##	TNFRSF11A	TNFRSF14	TNFRSF1A	TNFRSF6B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TNFRSF9	TNFSF10	TNFSF12-TNFSF13	TNFSF13B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TNFSF18	TNFSF8	TNFSF9	TNK1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TNK2	TNKS	TNKS1BP1	TNKS2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TNNC1	TNNC2	TNNT1	TNNT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TNP1	TNP01	TNP03	TNR
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TNRC6C	TNS1	TOB1	TOE1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TOMM22	TOMM40	TOMM40L	TOMM70A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TONSL	TOP2B	TOP3B	TOR1A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TOR1AIP2	TOR1B	TOX2	TP53BP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TP53BP2	TP53I3	TP63	TPCN1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TPD52L1	TPH1	TPM1	TPM3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TPRG1	TPRN	TPRX2P	TRAC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRADD	TRAF2	TRAF3IP1	TRAF3IP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRAFD1	TRAJ2	TRAJ46	TRAJ58
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRAPPC10	TRAPPC11	TRAPPC12	TRAPPC2L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRAPPC3	TRAPPC4	TRAPPC6B	TRAPPC8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRAT1	TRAV10	TRAV13-2	TRAV17
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRAV2	TRAV22	TRAV23DV6	TRAV24
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRAV26-1	TRAV36DV7	TRAV39	TRAV8-4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRBC2	TRBV5-6	TRBV9	TRDC
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TREM2	TREML2	TRIB3	TRIM21
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRIM24	TRIM25	TRIM26	TRIM28
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRIM35	TRIM38	TRIM39	TRIM42
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRIM44	TRIM47	TRIM5	TRIM58
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRIP10	TRIP13	TRMT2B	TRMT6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRNAU1AP	TRNT1	TRPC1	TRPC4
##	0.006198091	0.006198091	0.006198091	0.006198091

##	TRPM4	TRPM5	TRPM7	TRPM8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TRPV3	TRPV5	TRPV6	TRUB2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TSEN2	TSEN34	TSEN54	TSGA10
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TSIX	TSN	TSPAN14	TSPAN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TSPAN31	TSPAN32	TSPAN4	TSPAN8
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TSPAN9	TSP02	TSR2	TSSK1B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TSSK3	TSTA3	TTC16	TTC19
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TTC22	TTC24	TTC38	TTC39B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TTC4	TTF1	TTLL12	TTLL2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TTLL6	TTR	TTYH1	TTYH3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TUBA1B	TUBB1	TUBB6	TUBGCP2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TUBGCP5	TULP4	TUSC3	TWF1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TWIST2	TXN	TXNDC11	TYMS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	TYR	TYW5	U2AF1	U2AF2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	U2SURP	UACA	UAP1L1	UBA1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBA2	UBA3	UBA6	UBAC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBALD1	UBAP2	UBAP2L	UBE2D4
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBE2E2	UBE2I	UBE2J2	UBE2L6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBE2M	UBE2Z	UBE3C	UBE4A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBE4B	UBN1	UBP1	UBQLN2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBR3	UBR7	UBXN10	UBXN2A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UBXN2B	UBXN4	UCK1	UFC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UFD1L	UFL1	UFSP1	UGCG
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UGT1A5	UGT1A6	UGT2A1	UGT2A3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UGT2B4	UGT3A2	UHRF1BP1L	UHRF2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UIMC1	ULK2	ULK4	UMPS
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UNC119	UNC119B	UNC5A	UNC5C
##	0.006198091	0.006198091	0.006198091	0.006198091

##	UNC93B1	UPF1	UPF3B	UPK2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UPP1	UQCRB	UQCRFS1	URGCP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	URM1	USE1	USH1C	USH1G
##	0.006198091	0.006198091	0.006198091	0.006198091
##	USP10	USP16	USP17L2	USP19
##	0.006198091	0.006198091	0.006198091	0.006198091
##	USP20	USP22	USP26	USP28
##	0.006198091	0.006198091	0.006198091	0.006198091
##	USP30	USP4	USP44	USP47
##	0.006198091	0.006198091	0.006198091	0.006198091
##	USP51	USP7	USP8	UTP14A
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UTP6	UTS2	UTS2B	UVSSA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	UXT	VAC14	VAMP2	VANGL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VAPB	VARS	VASN	VAV3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VBP1	VEGFB	VEZT	VGLL1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VIL1	VILL	VIP	VIPAS39
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VIPR2	VMP1	VN1R10P	VPRBP
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VPS11	VPS18	VPS26A	VPS35
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VPS36	VPS4A	VPS4B	VPS9D1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VRK1	VRK3	VSIG1	VSIG10L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VSIG2	VSTM1	VSTM2A	VSX1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VSX2	VTN	VWA5A	VWA5B1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	VWC2L	VWCE	WAC	WAPAL
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WARS	WASF1	WASF3	WASF4P
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WBP2NL	WBSCR17	WBSCR22	WDFY1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WDFY2	WDR13	WDR16	WDR19
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WDR24	WDR26	WDR3	WDR43
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WDR5	WDR54	WDR5B	WDR6
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WDR61	WDR74	WDR76	WDR78
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WFDC8	WIBG	WIPI1	WIPI2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WNK2	WNT10B	WNT11	WNT2B
##	0.006198091	0.006198091	0.006198091	0.006198091

##	WNT3	WRAP73	WRB	WRN
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WRNIP1	WSB1	WSCD1	WWC1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	WWC2	WWP2	XCR1	XK
##	0.006198091	0.006198091	0.006198091	0.006198091
##	XPNPEP3	XP06	XP07	XRCC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	XRCC4	XRCC6	XRN2	Y_RNA
##	0.006198091	0.006198091	0.006198091	0.006198091
##	YBX1	YEATS2	YIPF5	YLP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	YOD1	YTHDC2	YTHDF2	YWHAE
##	0.006198091	0.006198091	0.006198091	0.006198091
##	YWHAH	YY1	YY1AP1	YY2
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZBED6	ZBTB14	ZBTB34	ZBTB40
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZBTB41	ZBTB44	ZBTB46	ZBTB47
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZBTB49	ZBTB6	ZBTB7B	ZBTB7C
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZBTB8B	ZC3H12C	ZC3H14	ZC3H15
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZC3H4	ZC3H7A	ZC3HAV1	ZC3HAV1L
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZC3HC1	ZC4H2	ZCCHC16	ZCCHC17
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZCCHC6	ZDBF2	ZDHHC1	ZDHHC14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZDHHC17	ZDHHC20	ZDHHC21	ZDHHC23
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZDHHC3	ZEB1	ZFHX2	ZFP1
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZFP42	ZFP64	ZFP69B	ZFP82
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZFPM1	ZFYVE16	ZHX2	ZIC3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZIM2	ZIM3	ZMAT2	ZMAT3
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZMYM4	ZMYM6	ZMYM6NB	ZNF112
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF117	ZNF132	ZNF134	ZNF14
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF142	ZNF143	ZNF157	ZNF16
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF165	ZNF169	ZNF182	ZNF184
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF185	ZNF204P	ZNF208	ZNF211
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF214	ZNF224	ZNF229	ZNF23
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF233	ZNF236	ZNF248	ZNF251
##	0.006198091	0.006198091	0.006198091	0.006198091

##	ZNF253	ZNF260	ZNF263	ZNF267
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF268	ZNF271	ZNF277	ZNF280B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF280D	ZNF281	ZNF3	ZNF30
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF311	ZNF319	ZNF324B	ZNF334
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF354A	ZNF354B	ZNF354C	ZNF358
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF366	ZNF367	ZNF382	ZNF385B
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF395	ZNF397	ZNF408	ZNF415
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF416	ZNF420	ZNF428	ZNF430
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF438	ZNF439	ZNF44	ZNF442
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF449	ZNF451	ZNF469	ZNF471
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF474	ZNF488	ZNF490	ZNF491
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF496	ZNF502	ZNF510	ZNF511
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF513	ZNF517	ZNF519	ZNF525
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF526	ZNF534	ZNF541	ZNF546
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF547	ZNF555	ZNF557	ZNF564
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF567	ZNF568	ZNF581	ZNF583
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF585A	ZNF589	ZNF594	ZNF597
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF598	ZNF600	ZNF607	ZNF608
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF616	ZNF623	ZNF625	ZNF626
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF628	ZNF630	ZNF646	ZNF648
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF649	ZNF664	ZNF670	ZNF678
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF683	ZNF691	ZNF692	ZNF695
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF697	ZNF699	ZNF70	ZNF700
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF704	ZNF707	ZNF709	ZNF711
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF713	ZNF714	ZNF718	ZNF721
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF733P	ZNF747	ZNF749	ZNF766
##	0.006198091	0.006198091	0.006198091	0.006198091
##	ZNF767	ZNF774	ZNF775	ZNF776
##	0.006198091	0.006198091	0.006198091	0.006198091

```
##           ZNF781           ZNF786           ZNF788           ZNF789
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZNF79           ZNF8           ZNF80           ZNF800
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZNF821           ZNF827           ZNF841           ZNF846
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZNF85           ZNF850           ZNF860           ZNF878
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZNF92           ZNHIT1           ZNRD1           ZNRF2P3
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZNRF4           ZP4           ZPBP           ZRANB2
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZRANB3           ZSCAN16           ZSCAN22           ZSCAN25
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZSCAN29           ZSCAN5C           ZSWIM1           ZSWIM3
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZSWIM4           ZSWIM5           ZSWIM6           ZYX
## 0.006198091 0.006198091 0.006198091 0.006198091
##           ZZZ3
## 0.006198091
```

```
# Print the percentages of top 5 genes frequencies
top5_genes_percent <- head(gene_freq_percent_sorted, 5)
print(top5_genes_percent)
```

```
##
##           TP53           TTN           PIK3CA           SYNE1           HMCN1
## 0.6198091 0.3594893 0.2913103 0.1797446 0.1487542
```

The five driver genes with the most frequent mutations were obtained: TP53 TTN PIK3CA SYNE1 HMCN1 MT-ND5

```
# Gene list
genes_of_interest <- c("TP53", "TTN", "PIK3CA", "SYNE1", "HMCN1")

# Extract whether each sample contains TP53 TTN PIK3CA SYNE1 HMCN1
mut_status <- mut_df %>%
  filter(Hugo_Symbol %in% c("TP53", "TTN", "PIK3CA", "SYNE1", "HMCN1")) %>%
  select(Donor.ID, Hugo_Symbol) %>%
  distinct() %>%
  mutate(has_mut = 1) %>%
  pivot_wider(names_from = Hugo_Symbol, values_from = has_mut, values_fill = 0)

# View the sample
head(mut_status)
```

```
## # A tibble: 6 x 6
##   Donor.ID HMCN1 TP53 SYNE1 TTN PIK3CA
##   <chr>     <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 T001         1     1     1     0     0
## 2 T004         0     1     0     1     0
## 3 T005         0     1     0     0     0
## 4 T006         0     0     0     0     1
```

```
## 5 T007      0      1      0      0      0
## 6 T009      0      1      1      1      1
```

```
# Check which gene sequences are missing
missing_genes <- setdiff(genes_of_interest, colnames(mut_status))
# Add a value of 0 to the missing gene sequence
for (gene in missing_genes) {
  mut_status[[gene]] <- 0
}
# Combine mutation information with clinical information
merged_df <- clin_df %>%
  left_join(mut_status, by = "Donor.ID") %>%
  mutate(
    TP53 = ifelse(is.na(TP53), 0, TP53),
    TTN = ifelse(is.na(TTN), 0, TTN),
    PIK3CA = ifelse(is.na(PIK3CA), 0, PIK3CA),
    SYNE1 = ifelse(is.na(SYNE1), 0, SYNE1),
    HMCN1 = ifelse(is.na(HMCN1), 0, HMCN1),
    pCR = ifelse(pCR.RD == "pCR", 1, 0) # Convert to a 0/1 variable
  )
# use logistic regression to judge if the genes have effect on pCR
# TP53 and pCR
model_tp53 <- glm(pCR ~ TP53, data = merged_df, family = binomial)
summary(model_tp53)
```

```
##
## Call:
## glm(formula = pCR ~ TP53, family = binomial, data = merged_df)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.91195  -0.91195  -0.52066  -0.02338   2.03246
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -1.9299     0.3567  -5.410 6.29e-08 ***
## TP53          1.2675     0.4161   3.046 0.00232 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 188.94  on 167  degrees of freedom
## Residual deviance: 178.37  on 166  degrees of freedom
## AIC: 182.37
##
## Number of Fisher Scoring iterations: 4
```

```
exp(cbind(OR = coef(model_tp53), confint(model_tp53))) # OR + CI
```

```
## Waiting for profiling to be done...
```

```
##              OR      2.5 %    97.5 %
```

```
## (Intercept) 0.1451613 0.06726545 0.2769577
## TP53        3.5520833 1.62740844 8.4500340
```

```
# TTN and pCR
```

```
model_ttn <- glm(pCR ~ TTN, data = merged_df, family = binomial)
summary(model_ttn)
```

```
##
## Call:
## glm(formula = pCR ~ TTN, family = binomial, data = merged_df)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.8446  -0.7308  -0.7308  -0.1602   1.7034
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -1.1838     0.2087  -5.673  1.4e-08 ***
## TTN           0.3365     0.4032   0.834   0.404
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 188.94  on 167  degrees of freedom
## Residual deviance: 188.26  on 166  degrees of freedom
## AIC: 192.26
##
## Number of Fisher Scoring iterations: 4
```

```
exp(cbind(OR = coef(model_ttn), confint(model_ttn))) # OR + CI
```

```
## Waiting for profiling to be done...
```

```
##              OR      2.5 %    97.5 %
## (Intercept) 0.3061224 0.2000540 0.4546945
## TTN         1.4000000 0.6198942 3.0448948
```

```
# PIK3CA and pCR
```

```
model_pik3ca <- glm(pCR ~ PIK3CA, data = merged_df, family = binomial)
summary(model_pik3ca)
```

```
##
## Call:
## glm(formula = pCR ~ PIK3CA, family = binomial, data = merged_df)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.82818  -0.82818  -0.82818  -0.01293   1.99621
##
## Coefficients:
```

```

##           Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -0.8938      0.1978  -4.518 6.25e-06 ***
## PIK3CA        -0.9520      0.4818  -1.976  0.0482 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 188.94  on 167  degrees of freedom
## Residual deviance: 184.46  on 166  degrees of freedom
## AIC: 188.46
##
## Number of Fisher Scoring iterations: 4

exp(cbind(OR = coef(model_pik3ca), confint(model_pik3ca))) # OR + CI

## Waiting for profiling to be done...

##           OR      2.5 %    97.5 %
## (Intercept) 0.4090909 0.2743282 0.5973064
## PIK3CA      0.3859649 0.1371997 0.9347251

# SYNE1 and pCR
model_syne1 <- glm(pCR ~ SYNE1, data = merged_df, family = binomial)
summary(model_syne1)

##
## Call:
## glm(formula = pCR ~ SYNE1, family = binomial, data = merged_df)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.7775  -0.7555  -0.7555  -0.1568   1.6693
##
## Coefficients:
##           Estimate Std. Error z value Pr(>|z|)
## (Intercept) -1.10783     0.19223  -5.763 8.26e-09 ***
## SYNE1        0.06638     0.51229   0.130  0.897
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 188.94  on 167  degrees of freedom
## Residual deviance: 188.93  on 166  degrees of freedom
## AIC: 192.93
##
## Number of Fisher Scoring iterations: 4

exp(cbind(OR = coef(model_syne1), confint(model_syne1))) # OR + CI

## Waiting for profiling to be done...

```

```
##              OR      2.5 %    97.5 %
## (Intercept) 0.3302752 0.2236294 0.4762467
## SYNE1       1.0686275 0.3629448 2.7931617
```

```
# HMCN1 and pCR
```

```
model_hmcn1 <- glm(pCR ~ HMCN1, data = merged_df, family = binomial)
summary(model_hmcn1)
```

```
##
## Call:
## glm(formula = pCR ~ HMCN1, family = binomial, data = merged_df)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.7707  -0.7707  -0.7707  -0.1005   1.7712
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -1.0619     0.1907  -5.568 2.58e-08 ***
## HMCN1         -0.2731     0.5376  -0.508   0.611
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 188.94  on 167  degrees of freedom
## Residual deviance: 188.68  on 166  degrees of freedom
## AIC: 192.68
##
## Number of Fisher Scoring iterations: 4
```

```
exp(cbind(OR = coef(model_hmcn1), confint(model_hmcn1))) # OR + CI
```

```
## Waiting for profiling to be done...
```

```
##              OR      2.5 %    97.5 %
## (Intercept) 0.3457944 0.2349799 0.4974266
## HMCN1       0.7610242 0.2389911 2.0494183
```

```
# Extract the model information function
```

```
extract_or_ci <- function(model, gene) {
  est <- summary(model)$coefficients[2, ]
  ci <- confint(model)[2, ]
  data.frame(
    Gene = gene,
    OR = exp(est["Estimate"]),
    CI_lower = exp(ci[1]),
    CI_upper = exp(ci[2]),
    p_value = est["Pr(>|z|)"]
  )
}
```



```
# Construct the statistical result table
```

```
results_df <- bind_rows(
  extract_or_ci(model_tp53, "TP53"),
  extract_or_ci(model_ttn, "TTN"),
  extract_or_ci(model_pik3ca, "PIK3CA"),
  extract_or_ci(model_syne1, "SYNE1"),
  extract_or_ci(model_hmcn1, "HMCN1")
)
```

```
## Waiting for profiling to be done...
## Waiting for profiling to be done...
## Waiting for profiling to be done...
## Waiting for profiling to be done...
## Waiting for profiling to be done...
```

```
# View
```

```
print(results_df)
```

```
##           Gene      OR  CI_lower  CI_upper  p_value
## Estimate...1  TP53 3.5520833 1.6274084 8.4500340 0.002319254
## Estimate...2   TTN 1.4000000 0.6198942 3.0448948 0.404017844
## Estimate...3 PIK3CA 0.3859649 0.1371997 0.9347251 0.048157674
## Estimate...4 SYNE1 1.0686275 0.3629448 2.7931617 0.896910419
## Estimate...5 HMCN1 0.7610242 0.2389911 2.0494183 0.611461315
```

```
# Drawing
```

```
# Add group colors (red for >1, blue for <1)
```

```
results_df <- results_df %>%
  mutate(
    label = paste0("OR = ", round(OR, 2),
                  "\nCI: [", round(CI_lower, 2), ", ", round(CI_upper, 2), "]",
                  "\nP = ", signif(p_value, 2)),
    color = case_when(
      p_value > 0.05 ~ "nonsignificant",
      OR >= 1 ~ "risk",
      OR < 1 ~ "protective"
    )
  )
```

```
ggplot(results_df, aes(x = reorder(Gene, OR), y = OR)) +
  geom_point(aes(color = color), size = 4) +
  geom_errorbar(aes(ymin = CI_lower, ymax = CI_upper, color = color), width = 0.2, size = 1) +
  geom_hline(yintercept = 1, linetype = "dashed", color = "gray40") +
  coord_flip() +
  scale_color_manual(
    values = c(
      "risk" = "#E64B35FF",      # red
      "protective" = "#4DBBD5FF", # blue
      "nonsignificant" = "gray60" # gray
    )
  ) +
```

```

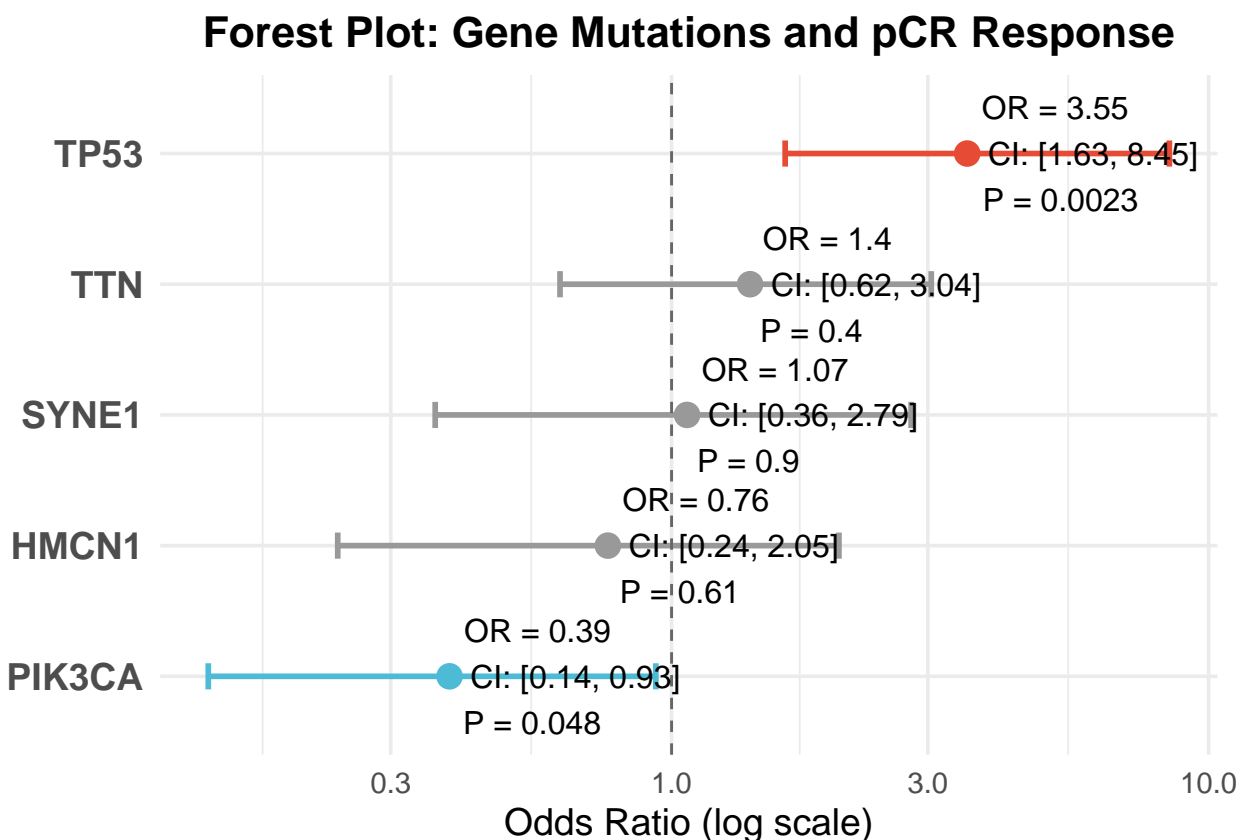
scale_y_log10() +
geom_text(aes(label = label), hjust = -0.1, size = 4.2) +
theme_minimal(base_size = 14) +
theme(
  legend.position = "none",
  axis.title.y = element_blank(),
  axis.text.y = element_text(size = 14, face = "bold"),
  plot.title = element_text(hjust = 0.5, size = 16, face = "bold")
) +
labs(
  y = "Odds Ratio (log scale)",
  title = "Forest Plot: Gene Mutations and pCR Response"
)

```

```

## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.

```



Use logistic regression to judge if the genes have effect on pCR.
 According to the forest plot, TP53 mutation was significantly associated with a higher likelihood of achieving pCR, represented in red, indicating that it may have a positive affect on therapy response.
 PIK3CA mutation was also significantly associated with pCR, but in a negative way.
 The genes with gray color were not significantly have relationship the pCR.

1 Analyze and visualize the relationship between TMB (Tumor Mutation Burden) and pCR (pathological complete response) in breast cancer samples, and investigate the influence of HER2 status on this relationship.

```
# Mutation number per sample (can be used as a simplified version of TMB)
tmb_df <- mut_df %>%
  group_by(Donor.ID) %>%
  summarise(TMB = n()) # If each variation is one locus, then n() is approximately the total number of
head(tmb_df)
```

```
## # A tibble: 6 x 2
##   Donor.ID   TMB
##   <chr>     <int>
## 1 T001       170
## 2 T002       146
## 3 T003        97
## 4 T004       124
## 5 T005       116
## 6 T006        24
```

```
# Combine TMB with clinical data
merged_df <- merged_df %>%
  left_join(tmb_df, by = "Donor.ID")
merged_df <- merged_df %>%
  mutate(
    pCR_binary = ifelse(pCR == 1, "pCR", "RD"),
    HER2.status = toupper(HER2.status), # Convert all to capital letters
    HER2_group = case_when(
      HER2.status == "POS" ~ "HER2+",
      HER2.status == "NEG" ~ "HER2-",
      TRUE ~ NA_character_
    )
  )
head(merged_df)
```

```
## # A tibble: 6 x 38
##   Donor.ID   Age T.stage LN.status.at.diagnosis Histology ER.Allred ER.status
##   <chr>     <dbl> <chr>   <chr>                                <chr>         <dbl> <chr>
## 1 T001       51 T2      NEG                                IDC           8 POS
## 2 T002       42 T4      POS                                IDC           7 POS
## 3 T003       36 T2      NEG                                IDC           8 POS
## 4 T004       33 T3      NEG                                IDC           4 POS
## 5 T005       49 T3      POS                                IDC           8 POS
## 6 T006       46 T2      POS                                IDC           7 POS
## # i 31 more variables: HER2.status <chr>, Grade.pre.NAT <dbl>,
## #   NAT.regimen <chr>, Chemo.cycles <dbl>, aHER2.cycles <chr>,
## #   Surgery.type <chr>, LVI <chr>, Tumour.dimension.surgery.1 <chr>,
## #   Tumour.dimension.surgery.2 <chr>, Percent.cellularity <chr>,
```

```
## # Percent.CIS <chr>, Number.of.LN.removed <chr>, Number.of.positive.LN <chr>,
## # Max.LN.met.size <chr>, RCB.score <chr>, RCB.category <chr>, pCR.RD <chr>,
## # PAM50 <chr>, iC10 <dbl>, DNA.sequenced <chr>, RNA.sequenced <chr>, ...
```

```
# Overall comparison of TMB (median + test)
library(ggpubr)
```

```
# View the median
merged_df %>%
  group_by(pCR_binary) %>%
  summarise(median_TMB = median(TMB, na.rm = TRUE))
```

```
## # A tibble: 2 x 2
##   pCR_binary median_TMB
##   <chr>          <dbl>
## 1 RD              66
## 2 pCR            104
```

```
# Wilcoxon test
wilcox.test(TMB ~ pCR_binary, data = merged_df)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: TMB by pCR_binary
## W = 3506, p-value = 0.001162
## alternative hypothesis: true location shift is not equal to 0
```

```
# HER2- group
wilcox.test(TMB ~ pCR_binary, data = merged_df %>% filter(HER2_group == "HER2-"))
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: TMB by pCR_binary
## W = 1438.5, p-value = 1.073e-05
## alternative hypothesis: true location shift is not equal to 0
```

```
# HER2+ group
wilcox.test(TMB ~ pCR_binary, data = merged_df %>% filter(HER2_group == "HER2+"))
```

```
## Warning in wilcox.test.default(x = DATA[[1L]], y = DATA[[2L]], ...): cannot
## compute exact p-value with ties
```

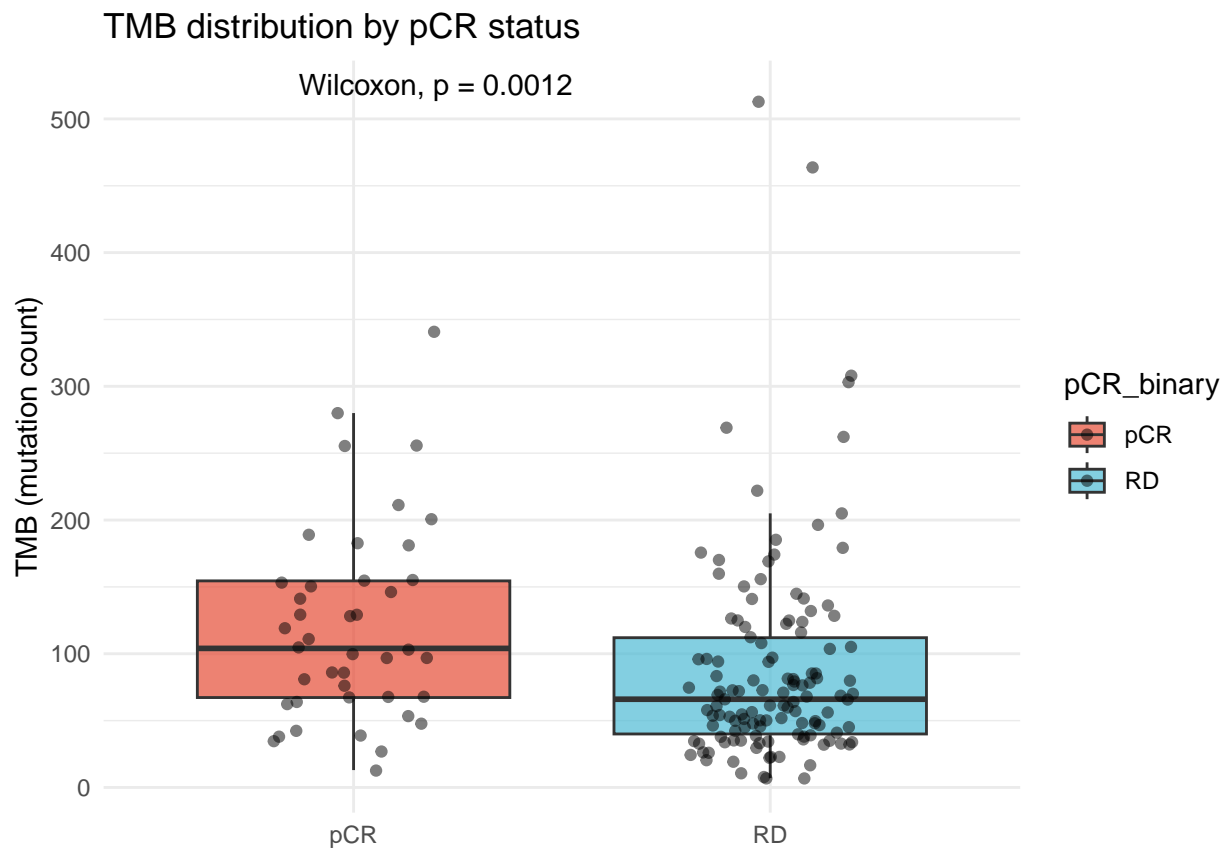
```
##
## Wilcoxon rank sum test with continuity correction
##
## data: TMB by pCR_binary
## W = 432.5, p-value = 0.9192
## alternative hypothesis: true location shift is not equal to 0
```

```
# Drawing
ggplot(merged_df, aes(x = pCR_binary, y = TMB, fill = pCR_binary)) +
  geom_boxplot(outlier.shape = NA, alpha = 0.7) +
  geom_jitter(width = 0.2, alpha = 0.5, color = "black") +
  stat_compare_means(method = "wilcox.test", label.y = max(merged_df$TMB, na.rm = TRUE) + 5) +
  labs(title = "TMB distribution by pCR status", y = "TMB (mutation count)", x = NULL) +
  theme_minimal() +
  scale_fill_manual(values = c("pCR" = "#E64B35", "RD" = "#4DBBD5"))

## Warning: Removed 1 row containing non-finite outside the scale range
## (`stat_boxplot()`).

## Warning: Removed 1 row containing non-finite outside the scale range
## (`stat_compare_means()`).

## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
```



Tumour mutation burden (TMB) was significantly higher in patients who achieved pathological complete response (pCR) compared to those with residual disease (RD) (Wilcoxon test, $p = 0.0012$). This suggests that higher TMB may be associated with improved response to neoadjuvant therapy.

```
ggplot(merged_df, aes(x = pCR_binary, y = TMB, fill = pCR_binary)) +
  geom_boxplot(outlier.shape = NA, alpha = 0.7) +
```

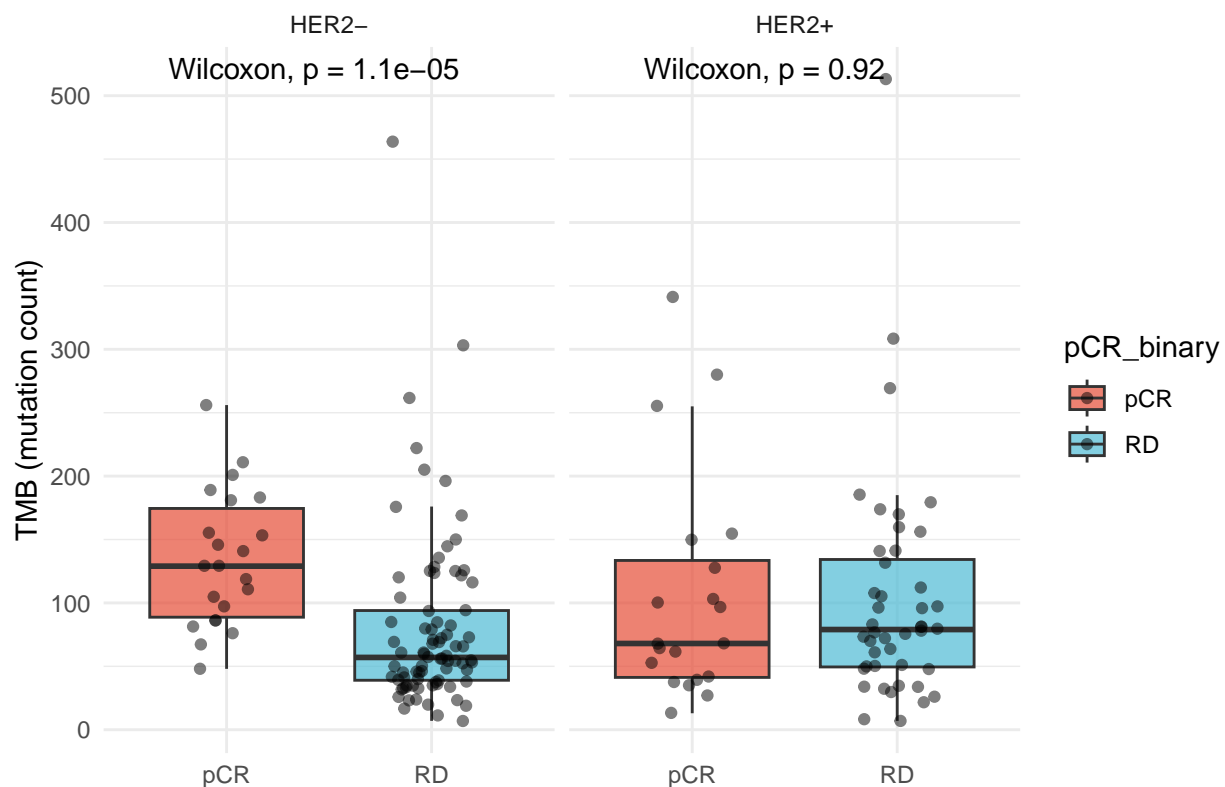
```
geom_jitter(width = 0.2, alpha = 0.5, color = "black") +
stat_compare_means(method = "wilcox.test") +
facet_wrap(~ HER2_group) +
labs(title = "TMB by pCR and HER2 status", y = "TMB (mutation count)", x = NULL) +
theme_minimal() +
scale_fill_manual(values = c("pCR" = "#E64B35", "RD" = "#4DBBD5"))
```

```
## Warning: Removed 1 row containing non-finite outside the scale range
## (`stat_boxplot()`).
```

```
## Warning: Removed 1 row containing non-finite outside the scale range
## (`stat_compare_means()`).
```

```
## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
```

TMB by pCR and HER2 status



When stratified by HER2 status, a significant association between higher TMB and pCR was observed in HER2-negative patients ($p = 1.1e-05$), but not in HER2-positive patients ($p = 0.92$). This indicates that TMB may serve as a predictive biomarker for treatment response particularly in HER2–breast cancers.

#To investigate whether the HRD (Homologous Recombination Deficiency) score is related to the neoadjuvant therapy response (pCR), and to consider the stratified effect of HER2 status at the same time.

```

# Import HRD data
hrd_df <- read_tsv("transneo-diagnosis-HRD.tsv")

## Rows: 168 Columns: 5
## -- Column specification -----
## Delimiter: "\t"
## chr (1): Trial.ID
## dbl (4): HRD, Telomeric.AI, LST, HRD.sum
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

# Create pCR binarization variables & HER2 groups (HER2- / HER2+)
clin_df <- clin_df %>%
  mutate(
    pCR_binary = ifelse(pCR.RD == "pCR", 1, 0),
    HER2_group = ifelse(HER2.status == "POS", "HER2+", "HER2-")
  )

# Combine HRD with clinical data
merged <- clin_df %>%
  inner_join(hrd_df, by = c("Donor.ID" = "Trial.ID"))

# Association analysis of HRD and pCR in the whole cohort: Logistic regression
model_hrd <- glm(pCR_binary ~ HRD.sum, data = merged, family = binomial)
summary(model_hrd)

##
## Call:
## glm(formula = pCR_binary ~ HRD.sum, family = binomial, data = merged)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.3496  -0.7406  -0.6058  -0.1609   1.9613
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -2.25476    0.38659  -5.832 5.46e-09 ***
## HRD.sum      0.04078    0.01133   3.600 0.000319 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 188.94  on 167  degrees of freedom
## Residual deviance: 174.90  on 166  degrees of freedom
## AIC: 178.9
##
## Number of Fisher Scoring iterations: 3

exp(cbind(OR = coef(model_hrd), confint(model_hrd))) # OR + CI

```

```
## Waiting for profiling to be done...
```

```
##              OR      2.5 %    97.5 %  
## (Intercept) 0.1048987 0.04719719 0.2164179  
## HRD.sum      1.0416252 1.01939976 1.0660526
```

```
# HRD.sum non-parametric test in pCR vs non-PCR  
wilcox.test(HRD.sum ~ pCR_binary, data = merged)
```

```
##  
## Wilcoxon rank sum test with continuity correction  
##  
## data: HRD.sum by pCR_binary  
## W = 1669.5, p-value = 0.0003483  
## alternative hypothesis: true location shift is not equal to 0
```

```
# HER2 subtype stratified analysis
```

```
# HER2- group  
wilcox.test(HRD.sum ~ pCR_binary, data = merged %>% filter(HER2_group == "HER2-"))
```

```
##  
## Wilcoxon rank sum test with continuity correction  
##  
## data: HRD.sum by pCR_binary  
## W = 310, p-value = 2.973e-06  
## alternative hypothesis: true location shift is not equal to 0
```

```
# HER2+ group  
wilcox.test(HRD.sum ~ pCR_binary, data = merged %>% filter(HER2_group == "HER2+"))
```

```
## Warning in wilcox.test.default(x = DATA[[1L]], y = DATA[[2L]], ...): cannot  
## compute exact p-value with ties
```

```
##  
## Wilcoxon rank sum test with continuity correction  
##  
## data: HRD.sum by pCR_binary  
## W = 483.5, p-value = 0.6387  
## alternative hypothesis: true location shift is not equal to 0
```

```
# Visualization of HRD vs pCR (full cohort)
```

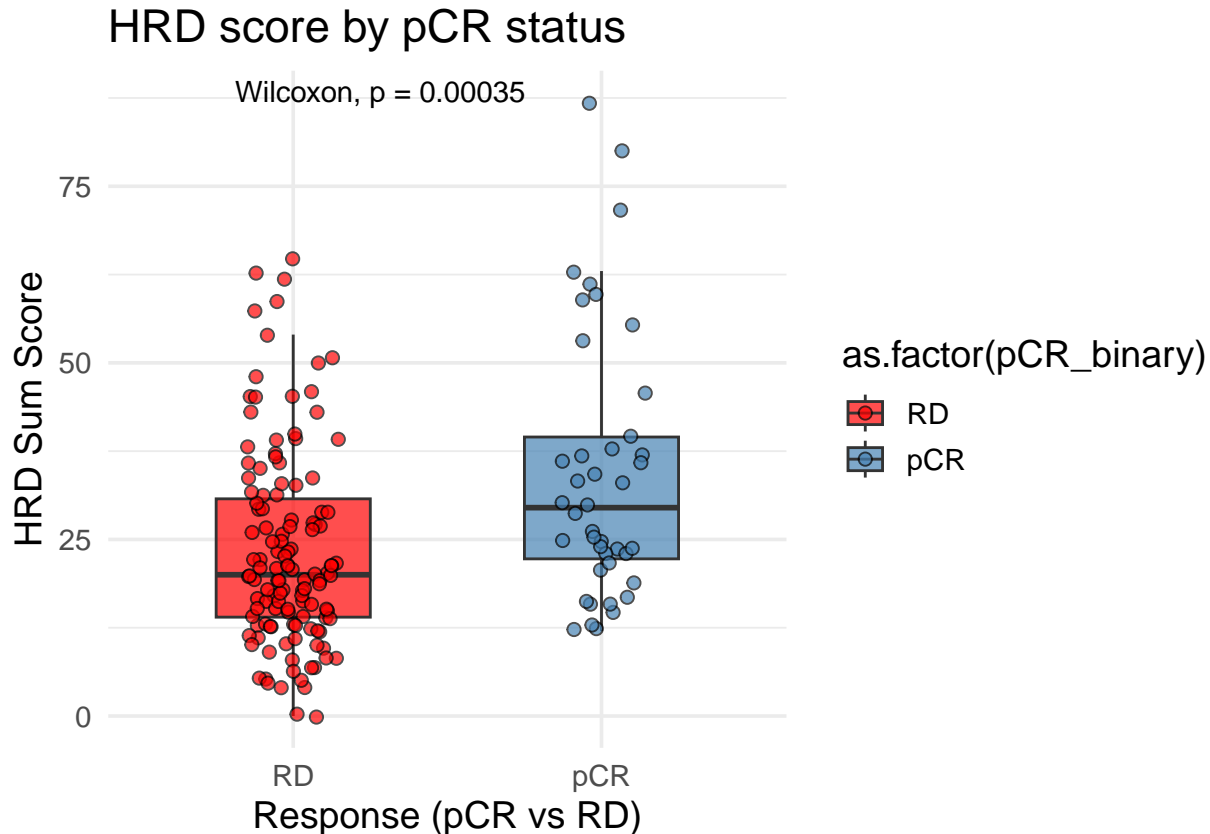
```
ggplot(merged, aes(x = as.factor(pCR_binary), y = HRD.sum, fill = as.factor(pCR_binary))) +  
  geom_boxplot(alpha = 0.7, outlier.shape = NA, width = 0.5) +  
  geom_jitter(width = 0.15, shape = 21, size = 2, alpha = 0.7, color = "black") +  
  stat_compare_means(method = "wilcox.test") +  
  scale_fill_manual(values = c("red", "steelblue"), labels = c("RD", "pCR")) +  
  scale_x_discrete(labels = c("RD", "pCR")) +  
  labs(  
    x = "Response (pCR vs RD)",
```



```

y = "HRD Sum Score",
title = "HRD score by pCR status"
) +
theme_minimal(base_size = 14)

```



The total HRD score of the patients in the pCR group was significantly higher than that in the RD group (with a higher median and a more right-skewed distribution).

A high HRD score may be associated with a better response to neoadjuvant therapy (that is, it is easier to achieve pCR).

The p value of 0.00035 in the Wilcoxon test indicates a highly significant difference.

Compared to RD patients, those who achieved pCR exhibited significantly higher HRD scores (Wilcoxon $p = 0.00035$), suggesting that increased genomic instability may be associated with better neoadjuvant treatment response.

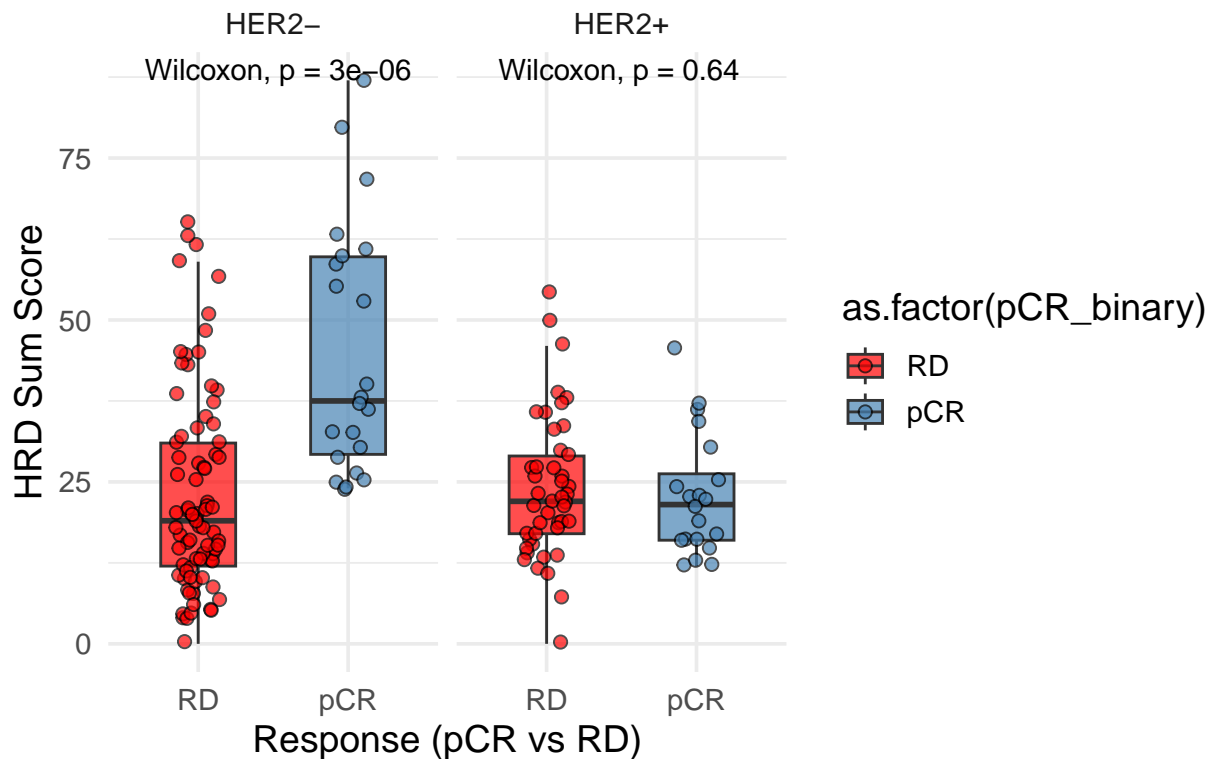
```

ggplot(merged, aes(x = as.factor(pCR_binary), y = HRD.sum, fill = as.factor(pCR_binary))) +
  geom_boxplot(alpha = 0.7, outlier.shape = NA, width = 0.5) +
  geom_jitter(width = 0.15, shape = 21, size = 2, alpha = 0.7, color = "black") +
  stat_compare_means(method = "wilcox.test") +
  facet_wrap(~ HER2_group) +
  scale_fill_manual(values = c("red", "steelblue"), labels = c("RD", "pCR")) +
  scale_x_discrete(labels = c("RD", "pCR")) +
  labs(
    x = "Response (pCR vs RD)",
    y = "HRD Sum Score",
    title = "HRD score by pCR status and HER2 group"
  )

```

```
) +  
theme_minimal(base_size = 14)
```

HRD score by pCR status and HER2 group



In the overall cohort, higher HRD scores were significantly associated with pCR ($p = 0.00035$). Stratified analysis revealed that this association was driven by HER2- patients ($p = 3e-06$), whereas no significant difference was observed in the HER2+ subgroup ($p = 0.64$), suggesting a subtype-specific role of HRD in predicting response to neoadjuvant therapy.

#To analyze the relationship between CIN (Chromosomal Instability) and neoadjuvant therapy response (RCB classification and pCR)

```
# read CIN data  
cin_df <- read_tsv("transneo-diagnosis-ASCAT-CIN.tsv")
```

```
## Rows: 166 Columns: 2  
## -- Column specification -----  
## Delimiter: "\t"  
## chr (1): Trial.ID  
## dbl (1): cin  
##  
## i Use `spec()` to retrieve the full column specification for this data.  
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
colnames(cin_df) <- c("Trial.ID", "CIN")
```

```

# Data cleaning and merging
merged_df <- clin_df %>%
  rename(Trial.ID = Donor.ID) %>%
  inner_join(cin_df, by = "Trial.ID") %>%
  mutate(
    pCR_binary = ifelse(pCR.RD == "pCR", 1, 0),
    RCB_class = factor(RCB.category, levels = c("RCB-I", "RCB-II", "RCB-III", "pCR"))
  )

# Test whether CIN is correlated with the monotony of the RCB class
kruskal_test <- kruskal.test(CIN ~ RCB.category, data = merged_df)
print(kruskal_test)

##
## Kruskal-Wallis rank sum test
##
## data: CIN by RCB.category
## Kruskal-Wallis chi-squared = 17.968, df = 4, p-value = 0.001252

# Compare the differences in CIN between pCR and RD
wilcox_test <- wilcox.test(CIN ~ pCR_binary, data = merged_df)
print(wilcox_test)

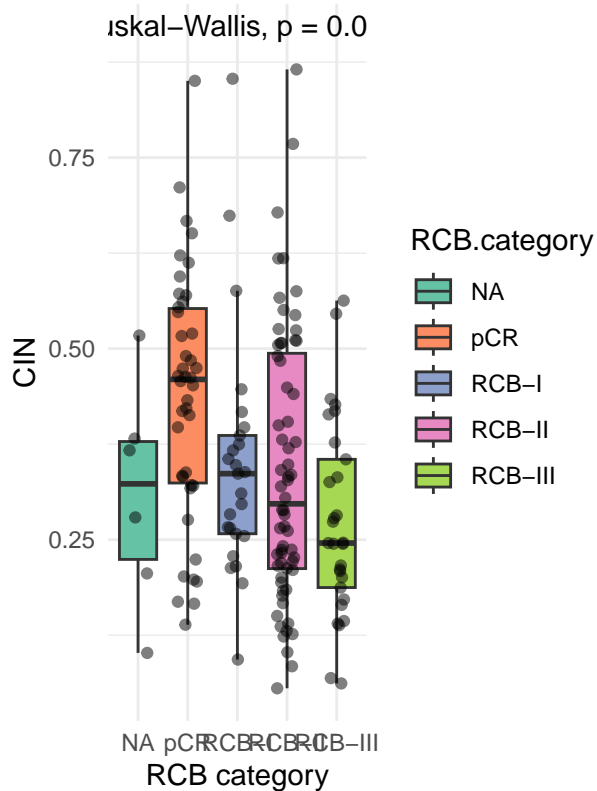
##
## Wilcoxon rank sum test with continuity correction
##
## data: CIN by pCR_binary
## W = 1583, p-value = 0.0001503
## alternative hypothesis: true location shift is not equal to 0

# Visualize CIN and RCB classes
p1 <- ggplot(merged_df, aes(x = RCB.category, y = CIN)) +
  geom_boxplot(aes(fill = RCB.category), outlier.shape = NA) +
  geom_jitter(width = 0.2, alpha = 0.5) +
  scale_fill_brewer(palette = "Set2") +
  theme_minimal() +
  labs(title = "CIN vs RCB category", x = "RCB category", y = "CIN") +
  stat_compare_means(method = "kruskal.test", label.y = max(merged_df$CIN) * 1.05)

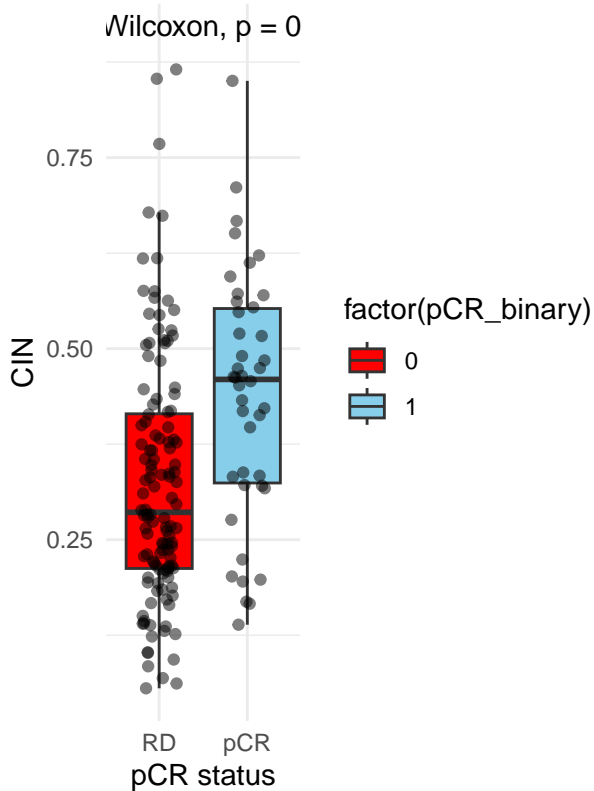
# Visualize the distribution of CIN in pCR vs RD
p2 <- ggplot(merged_df, aes(x = factor(pCR_binary, labels = c("RD", "pCR")), y = CIN)) +
  geom_boxplot(aes(fill = factor(pCR_binary)), outlier.shape = NA) +
  geom_jitter(width = 0.2, alpha = 0.5) +
  scale_fill_manual(values = c("red", "skyblue")) +
  theme_minimal() +
  labs(title = "CIN vs pCR status", x = "pCR status", y = "CIN") +
  stat_compare_means(method = "wilcox.test", label.y = max(merged_df$CIN) * 1.05)
# Display graphics
ggarrange(p1, p2, ncol = 2, labels = c("A", "B"))

```

A CIN vs RCB category



B CIN vs pCR status



#To investigate whether the iC10 molecular subtype (breast cancer classification) is related to the neoadjuvant therapy response (pCR)

```
# cleaning data
clin_clean <- clin_df %>%
  mutate(
    iC10 = as.factor(iC10),
    pCR_binary = ifelse(pCR.RD == "pCR", 1, 0) # 1 represents pCR 0 represents RD
  )

# Descriptive statistics: pCR rates were calculated by iC10 grouping
pCR_summary <- clin_clean %>%
  group_by(iC10) %>%
  summarise(
    n = n(),
    pCR_count = sum(pCR_binary, na.rm = TRUE),
    pCR_rate = round(mean(pCR_binary, na.rm = TRUE), 2)
  ) %>%
  arrange(desc(pCR_rate))

print(pCR_summary)
```

```
## # A tibble: 10 x 4
##   iC10      n pCR_count pCR_rate
##   <fct> <int>   <dbl>   <dbl>
## 1 10      27      16      0.59
```

```
## 2 5      41      16      0.39
## 3 9      19       5      0.26
## 4 4      13       3      0.23
## 5 1      11       1      0.09
## 6 2      11       1      0.09
## 7 3       9       0       0
## 8 6      15       0       0
## 9 7       8       0       0
## 10 8     14       0       0
```

```
# Chi-square test: Whether iC10 and pCR.RD are independent
table_ic_pcr <- table(clin_clean$iC10, clin_clean$pCR.RD)
chisq_result <- chisq.test(table_ic_pcr)
```

```
## Warning in chisq.test(table_ic_pcr): Chi-squared approximation may be incorrect
```

```
print(chisq_result)
```

```
##
## Pearson's Chi-squared test
##
## data:  table_ic_pcr
## X-squared = 50.644, df = 18, p-value = 6.028e-05
```

```
# Logistic regression model: pCR ~ iC10 (iC1 for the reference group)
model <- glm(pCR_binary ~ iC10, data = clin_clean, family = binomial)
summary(model)
```

```
##
## Call:
## glm(formula = pCR_binary ~ iC10, family = binomial, data = clin_clean)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -1.34011  -0.78151  -0.00013   0.25565   2.18993
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -2.303e+00  1.049e+00  -2.195  0.0281 *
## iC102        3.269e-15  1.483e+00   0.000  1.0000
## iC103       -1.626e+01  2.174e+03  -0.007  0.9940
## iC104        1.099e+00  1.238e+00   0.887  0.3750
## iC105        1.856e+00  1.097e+00   1.693  0.0905 .
## iC106       -1.626e+01  1.684e+03  -0.010  0.9923
## iC107       -1.626e+01  2.306e+03  -0.007  0.9944
## iC108       -1.626e+01  1.743e+03  -0.009  0.9926
## iC109        1.273e+00  1.171e+00   1.087  0.2770
## iC1010       2.677e+00  1.120e+00   2.391  0.0168 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
```

```

##
## Null deviance: 188.94 on 167 degrees of freedom
## Residual deviance: 140.69 on 158 degrees of freedom
## AIC: 160.69
##
## Number of Fisher Scoring iterations: 17

# Show the OR (Odds Ratio) and confidence interval of the regression results
exp_coef <- broom::tidy(model, exponentiate = TRUE, conf.int = TRUE)

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: algorithm did not converge
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

```

[illegible]

[illegible]

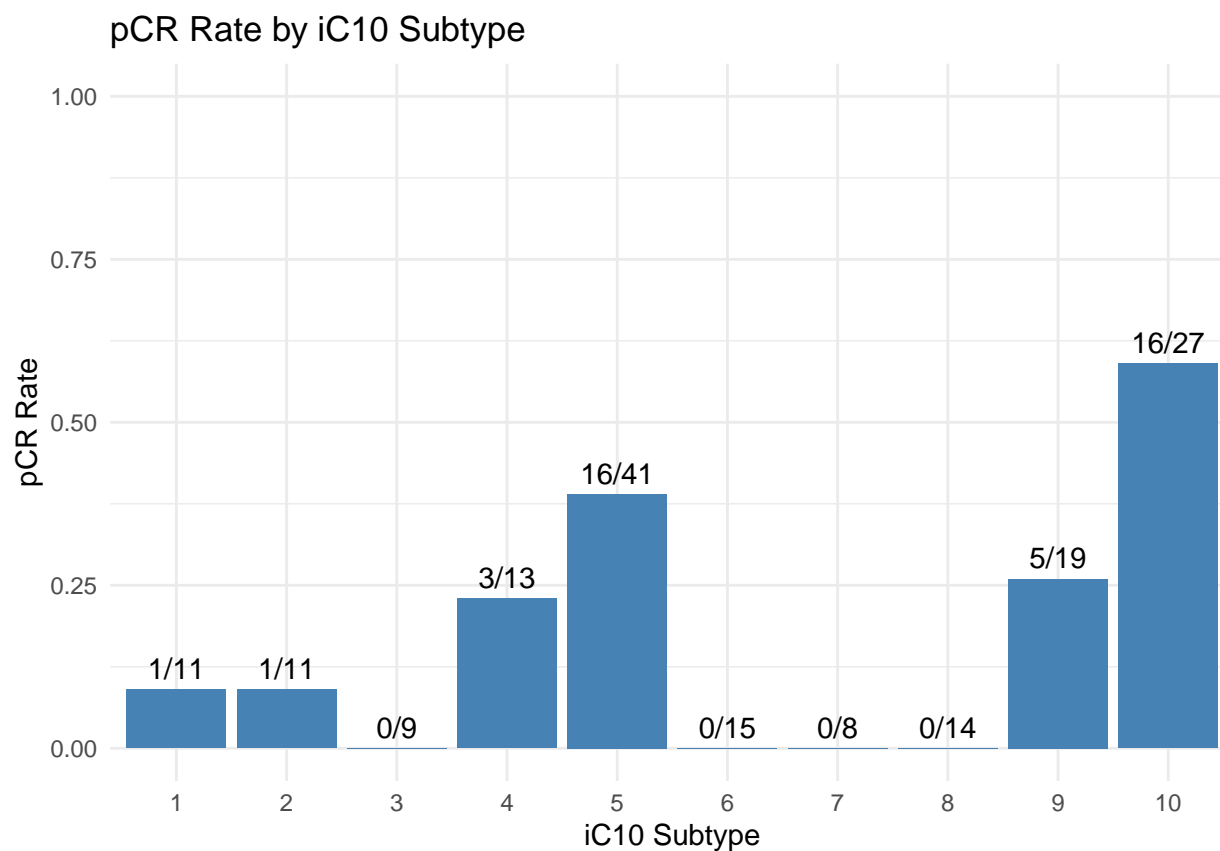

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
print(exp_coef)
```

```
## # A tibble: 10 x 7
##   term                estimate std.error statistic p.value  conf.low conf.high
##   <chr>                <dbl>    <dbl>    <dbl>   <dbl>    <dbl>    <dbl>
## 1 (Intercept)    0.100        1.05 -2.20e+ 0  0.0281  5.45e- 3  5.22e- 1
## 2 iC102          1.00         1.48  2.20e-15  1.00    3.61e- 2  2.77e+ 1
## 3 iC103          0.0000000865  2174.  -7.48e- 3  0.994   4.54e-316  6.31e+33
## 4 iC104          3.00         1.24  8.87e- 1  0.375   3.20e- 1  6.66e+ 1
## 5 iC105          6.40         1.10  1.69e+ 0  0.0905  1.07e+ 0  1.23e+ 2
## 6 iC106          0.0000000865  1684.  -9.66e- 3  0.992   1.39e-246  3.88e+24
## 7 iC107          0.0000000865  2306.  -7.05e- 3  0.994   2.67e-314  1.03e+40
## 8 iC108          0.0000000865  1743.  -9.33e- 3  0.993   1.72e-239  3.34e+28
## 9 iC109          3.57         1.17  1.09e+ 0  0.277   4.75e- 1  7.41e+ 1
## 10 iC1010       14.5         1.12  2.39e+ 0  0.0168  2.30e+ 0  2.87e+ 2
```

```
# Visualization: Bar chart of pCR rates for different iC10 subtypes
```

```
ggplot(pcr_summary, aes(x = iC10, y = pCR_rate)) +
  geom_col(fill = "steelblue") +
  geom_text(aes(label = paste0(pCR_count, "/", n)), vjust = -0.5) +
  ylim(0, 1) +
  labs(
    title = "pCR Rate by iC10 Subtype",
    x = "iC10 Subtype",
    y = "pCR Rate"
  ) +
  theme_minimal()
```



The pathological complete response (pCR) rates varied substantially across iC10 molecular subtypes. The highest pCR rate was observed in subtype 10 (59.3%), followed by subtype 5 (39.0%) and subtype 9 (26.3%). In contrast, subtypes 3, 6, 7, and 8 showed no pCR cases, indicating potentially poor response to neoadjuvant therapy in these groups. Subtypes 1 and 2 also exhibited low pCR rates (9.1%). These findings suggest that iC10 subtypes may be associated with differential therapeutic response.