LCL_Imprintedgene

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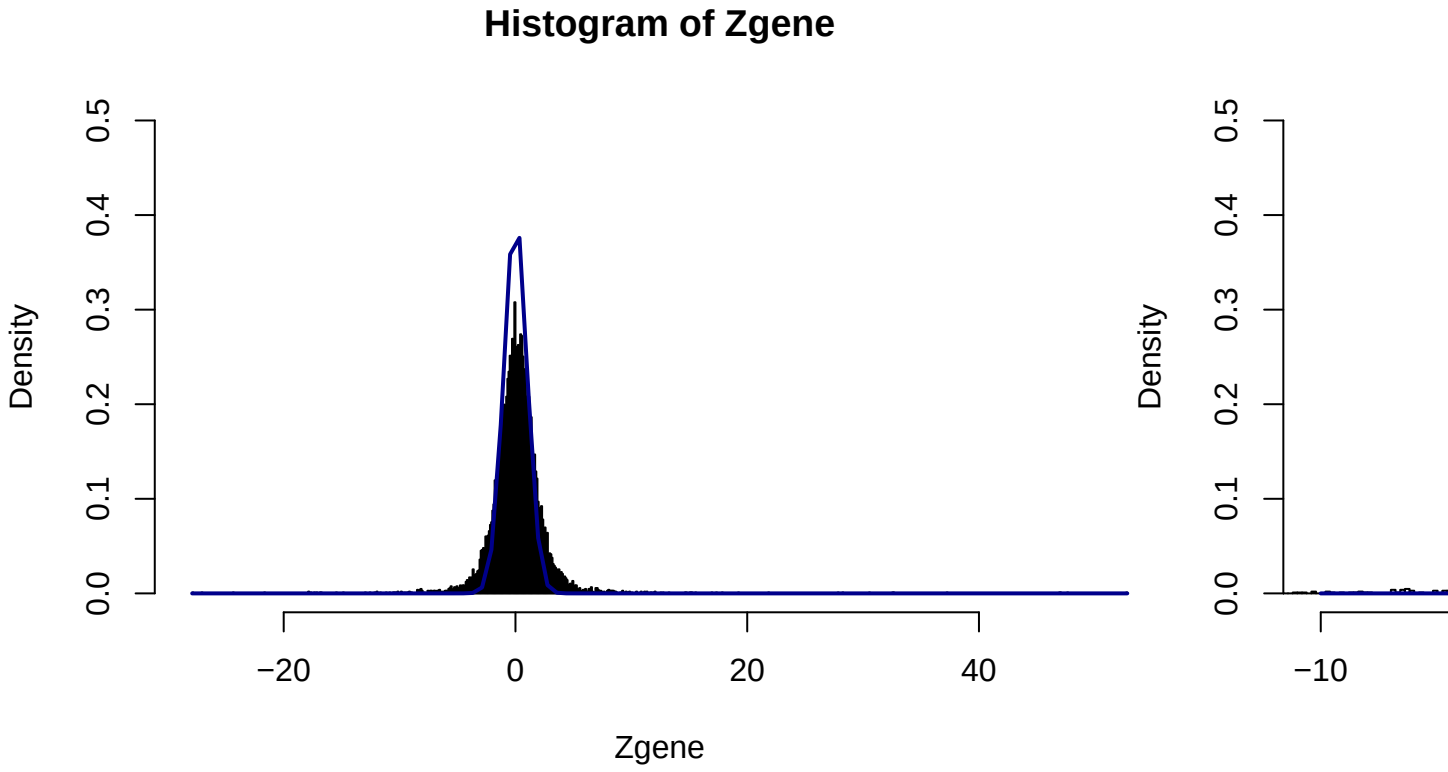
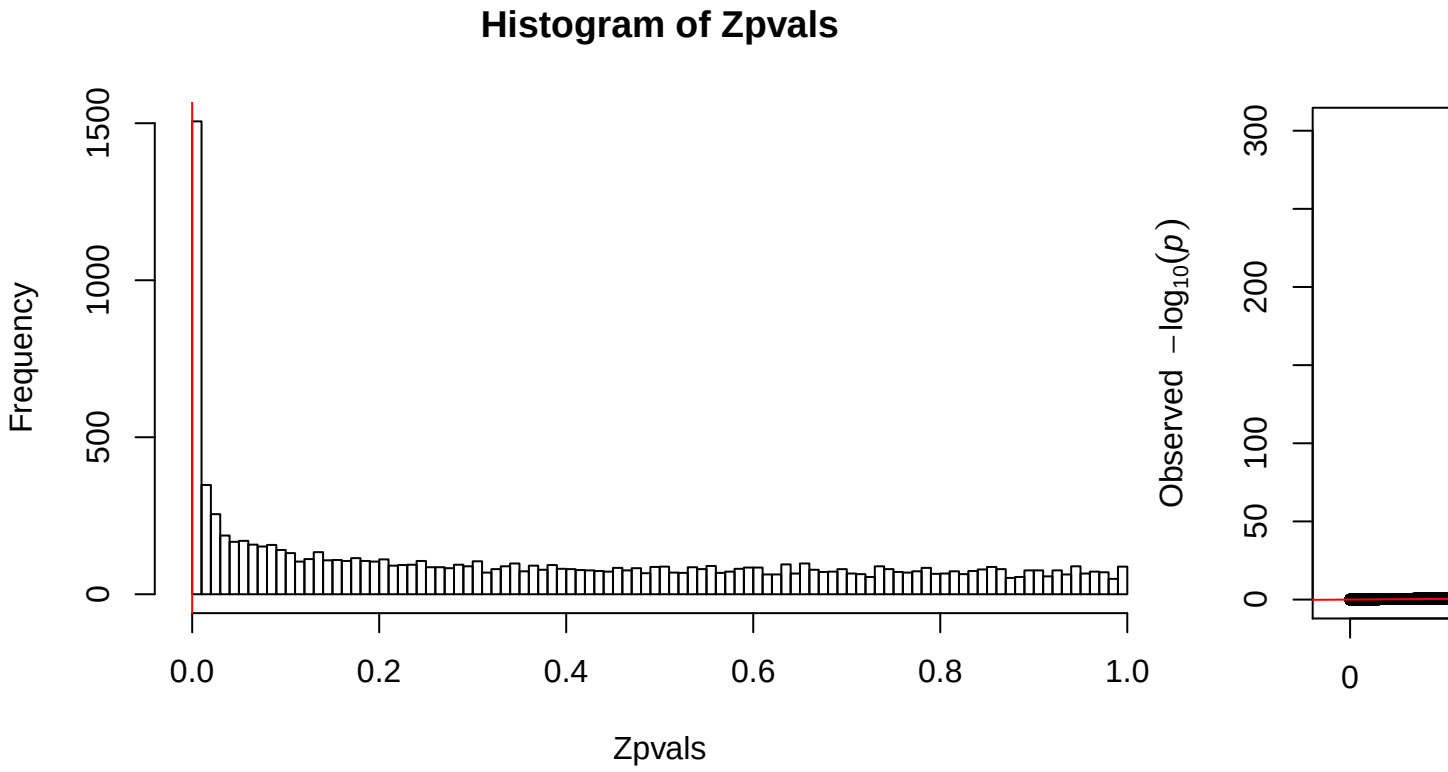
Testing for significant difference between maternal and paternal expression for genes across all individuals.

Read in not normalized maternal and paternal expression matrixes. Remove genes that are not expressed in maternal or paternal, and remove those genes expressed in less than 100 reads summed over all maternal and paternal for that gene.




```
## [1] 10622
```



Genes, ordered by p-value then by Z score, top 50 each.

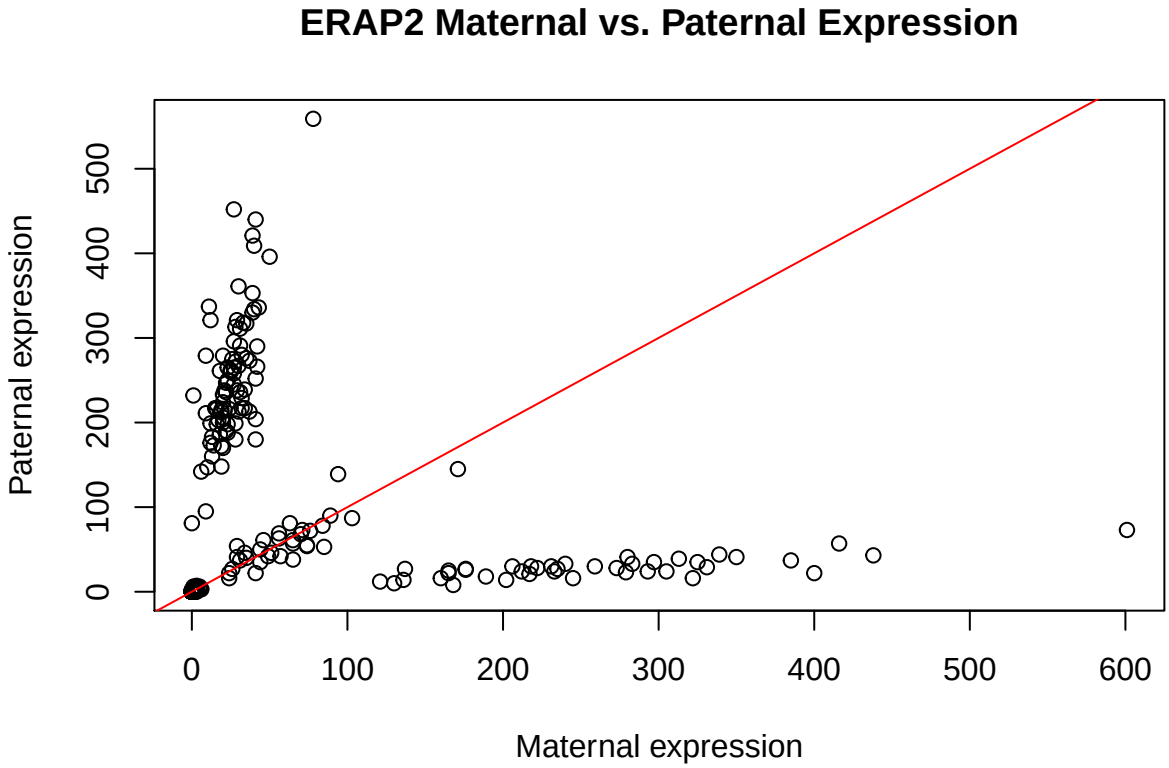
	genes	Z	pvals	genename
6449	ENSG00000164308	47.63936	0.000000e+00	ERAP2
9118	ENSG00000204186	47.04830	0.000000e+00	ZDBF2
9484	ENSG00000224078	46.94308	0.000000e+00	SNHG14
9896	ENSG00000242265	52.76394	0.000000e+00	PEG10
8372	ENSG00000185513	37.22587	2.604154e-303	L3MBTL1
4663	ENSG00000139679	32.65781	6.208827e-234	LPAR6
3776	ENSG00000130844	32.55643	1.698212e-232	ZNF331
5183	ENSG00000145945	30.58323	2.045815e-205	FAM50B
10182	ENSG00000257151	28.21688	3.630556e-175	PWAR6
436	ENSG00000053918	-27.86800	6.520211e-171	KCNQ1
9262	ENSG00000211899	27.84785	1.143608e-170	IGHM
700	ENSG00000070756	-27.07161	2.126469e-161	PABPC1
880	ENSG00000077809	-24.37488	3.158948e-131	GTF2I
7799	ENSG00000177432	21.80343	2.152548e-105	NAP1L5
9270	ENSG00000211945	-21.62902	9.580316e-104	IGHV1-18
1366	ENSG00000100138	19.25939	1.177630e-82	NHP2L1
9246	ENSG00000211659	-17.88356	1.583836e-71	IGLV3-25
8463	ENSG00000186470	17.82862	4.237320e-71	BTN3A2
9682	ENSG00000232216	-17.80766	6.163774e-71	IGHV3-43
10084	ENSG00000253234	-17.65465	9.371312e-70	IGLV2-5
9363	ENSG00000214078	-17.38358	1.098700e-67	CPNE1
9245	ENSG00000211650	17.37489	1.278519e-67	IGLV5-45
2552	ENSG00000112679	-17.11602	1.127174e-65	DUSP22
313	ENSG00000034152	16.99883	8.377625e-65	MAP2K3
4404	ENSG00000137265	-16.83492	1.353774e-63	IRF4
9264	ENSG00000211934	-16.79625	2.599607e-63	IGHV1-2
7046	ENSG00000168994	15.57188	1.130346e-54	PXDC1

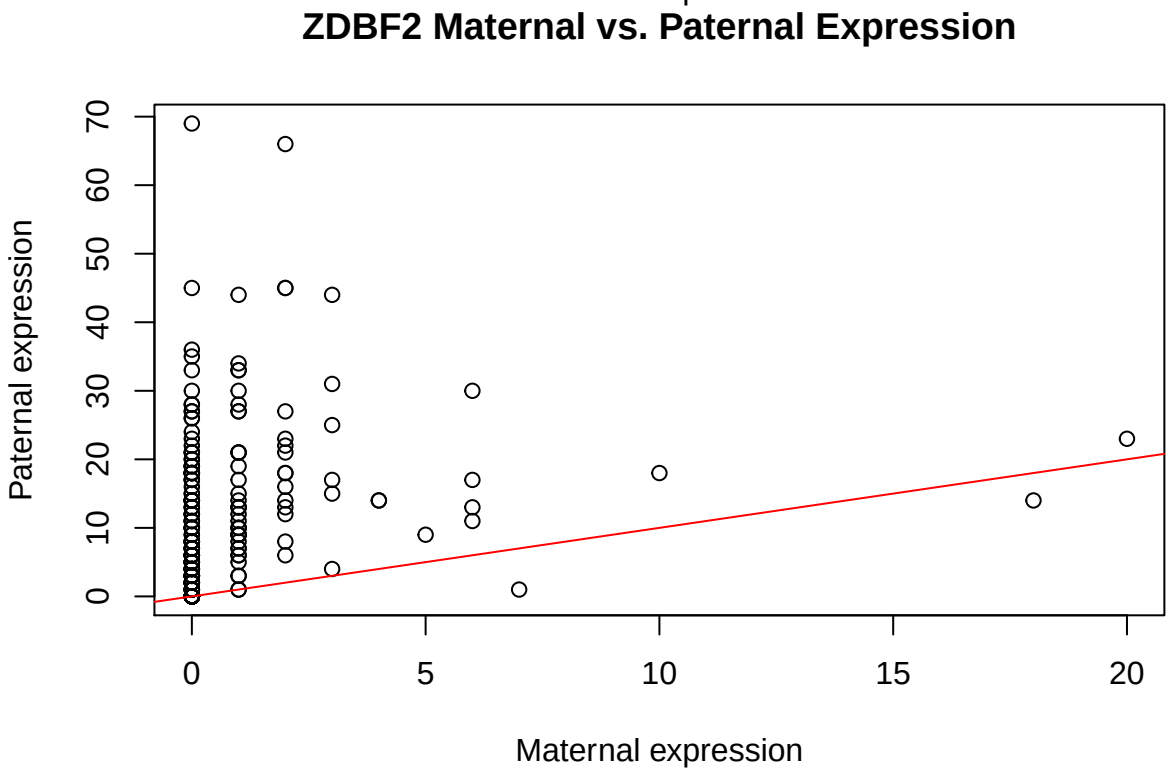
```
## 10107 ENSG00000253954 -15.44493  8.161354e-54    HMGN1P38
## 5864  ENSG00000157456  15.28015  1.037013e-52       CCNB2
## 9276  ENSG00000211973  15.11611  1.268185e-51    IGHV1-69
## 6692  ENSG00000166295  15.00985  6.329130e-51     ANAPC16
## 9900  ENSG00000242550 -14.80289  1.403152e-49   SERPINB10
## 10493 ENSG00000269821  14.79086  1.678019e-49    KCNQ1OT1
## 9273  ENSG00000211955  14.61354  2.302367e-48    IGHV3-33
## 6623  ENSG00000165810  13.24157  5.048353e-40       BTNL9
## 3744  ENSG00000130590 -12.99361  1.330034e-38      SAMD10
## 1126  ENSG00000089009  12.74949  3.137984e-37        RPL6
## 10154 ENSG00000255733 -12.58206  2.650171e-36    IFNG-AS1
## 5198  ENSG00000146143  12.51287  6.348714e-36       PRIM2
## 9259  ENSG00000211896 -12.18053  3.947033e-34       IGHG1
## 9915  ENSG00000243466  12.09676  1.098659e-33     IGKV1-5
## 9258  ENSG00000211895  12.08424  1.279480e-33       IGHA1
## 9244  ENSG00000211648  11.96116  5.676456e-33    IGLV1-47
## 9862  ENSG00000240344 -11.91981  9.331657e-33       PPIL3
## 9268  ENSG00000211942 -11.91857  9.472447e-33    IGHV3-13
## 2497  ENSG00000112081  11.75516  6.643097e-32       SRSF3
## 9287  ENSG00000213058 -11.65673  2.120253e-31 RP4-765C7.2
## 6307  ENSG00000163565  11.60868  3.723030e-31       IFI16
## 8097  ENSG00000182013  11.34453  7.895222e-30      PNMAL1
## 1430  ENSG00000100376  11.30127  1.293321e-29     FAM118A
```

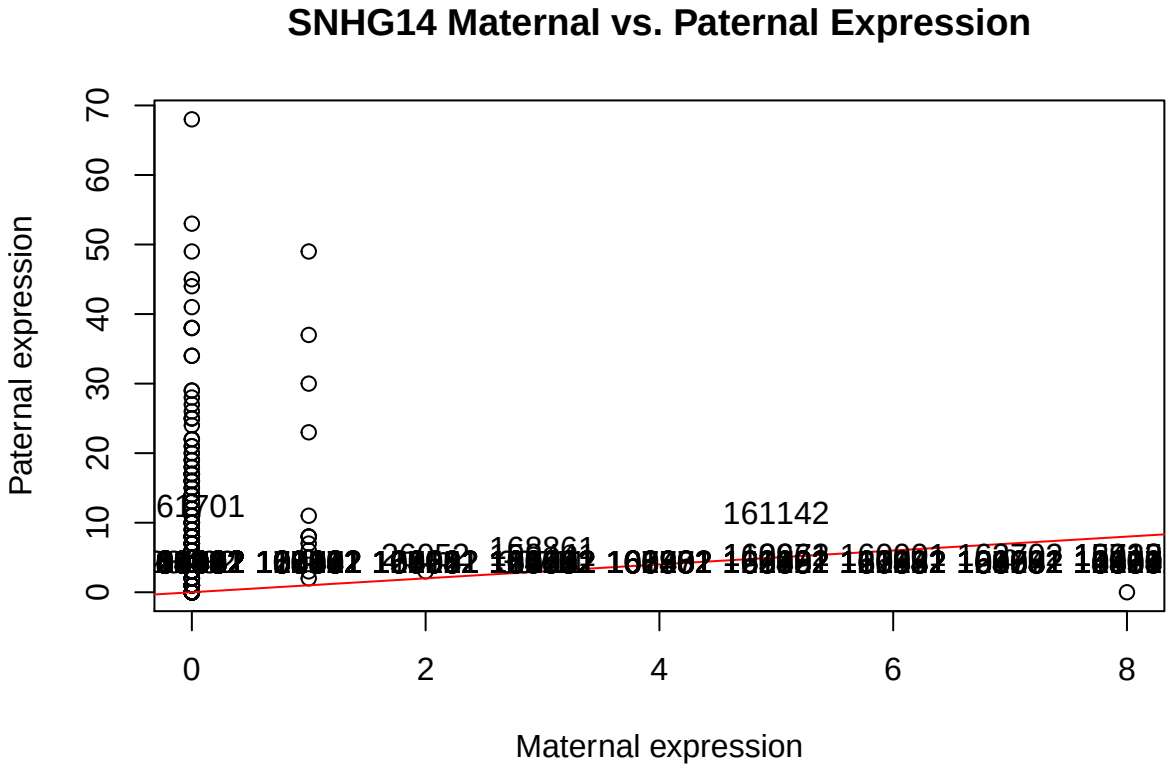
```
##                genes          Z         pvals     genename
## 436   ENSG00000053918 -27.867996 6.520211e-171        KCNQ1
## 700   ENSG00000070756 -27.071612 2.126469e-161       PABPC1
## 880   ENSG00000077809 -24.374880 3.158948e-131        GTF2I
## 9270  ENSG00000211945 -21.629017 9.580316e-104     IGHV1-18
## 9246  ENSG00000211659 -17.883563  1.583836e-71     IGLV3-25
## 9682  ENSG00000232216 -17.807656  6.163774e-71     IGHV3-43
## 10084 ENSG00000253234 -17.654650  9.371312e-70      IGLV2-5
## 9363  ENSG00000214078 -17.383583  1.098700e-67        CPNE1
## 2552  ENSG00000112679 -17.116023  1.127174e-65       DUSP22
## 4404  ENSG00000137265 -16.834917  1.353774e-63         IRF4
## 9264  ENSG00000211934 -16.796252  2.599607e-63      IGHV1-2
## 10107 ENSG00000253954 -15.444932  8.161354e-54     HMGN1P38
## 9900  ENSG00000242550 -14.802893  1.403152e-49    SERPINB10
## 3744  ENSG00000130590 -12.993609  1.330034e-38       SAMD10
## 10154 ENSG00000255733 -12.582063  2.650171e-36     IFNG-AS1
## 9259  ENSG00000211896 -12.180531  3.947033e-34        IGHG1
## 9862  ENSG00000240344 -11.919814  9.331657e-33        PPIL3
## 9268  ENSG00000211942 -11.918566  9.472447e-33     IGHV3-13
## 9287  ENSG00000213058 -11.656732  2.120253e-31  RP4-765C7.2
## 8662  ENSG00000196126 -11.178810  5.177950e-29     HLA-DRB1
## 8675  ENSG00000196205 -10.829546  2.493883e-27     EEF1A1P5
## 8762  ENSG00000196756 -10.528297  6.398129e-26       SNHG17
## 242   ENSG00000022840 -10.452012  1.434491e-25        RNF10
## 2883  ENSG00000117289 -10.350983  4.142092e-25        TXNIP
## 9791  ENSG00000236496 -10.174520  2.576676e-24 RP11-255J3.2
## 3855  ENSG00000131966 -10.123955  4.325764e-24       ACTR10
## 194   ENSG00000013364  -9.845194  7.190028e-23          MVP
## 5877  ENSG00000157680  -9.805347  1.067798e-22         DGKI
## 9152  ENSG00000204628  -9.701464  2.972020e-22       GNB2L1
```

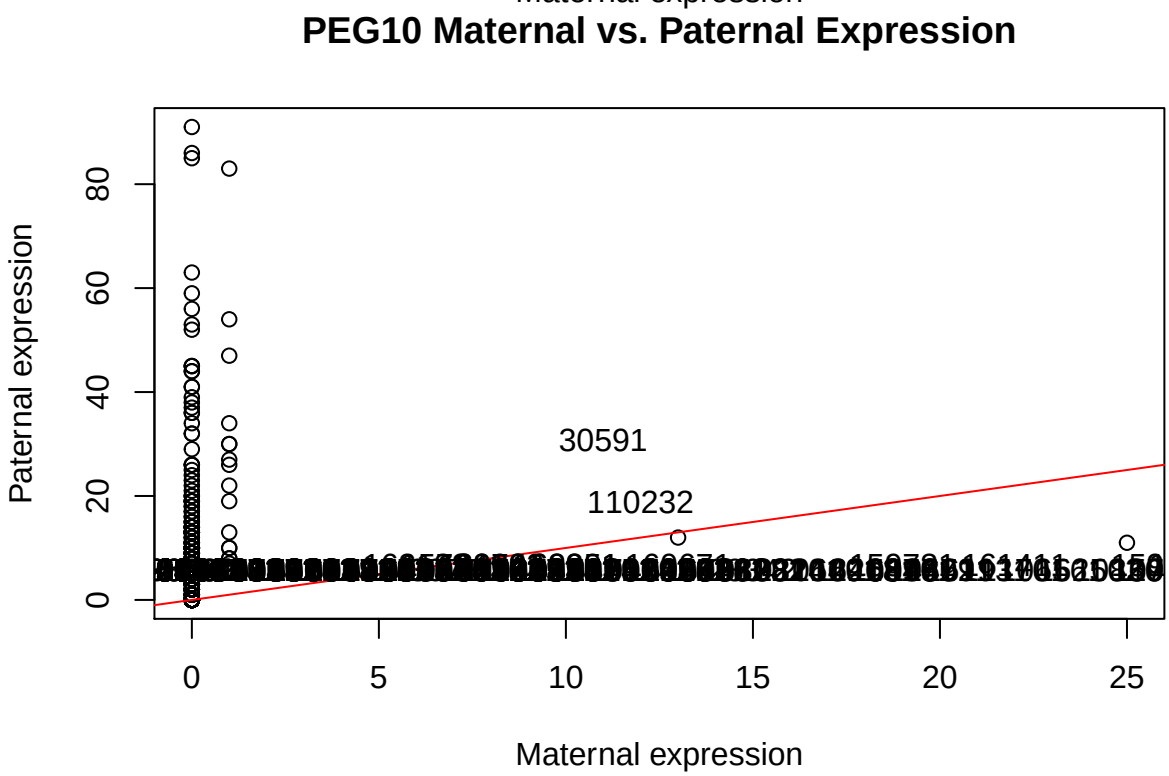
```
## 7987  ENSG00000180185  -9.586751  9.090239e-22        FAHD1
## 9274  ENSG00000211966  -9.379654  6.618928e-21     IGHV5-51
## 4711  ENSG00000140379  -9.260784  2.029367e-20       BCL2A1
## 1734  ENSG00000103512  -9.161459  5.120033e-20        NOMO1
## 6448  ENSG00000164307  -9.142285  6.114665e-20        ERAP1
## 168   ENSG00000011304  -9.053715  1.381852e-19        PTBP1
## 5191  ENSG00000146063  -8.908778  5.159825e-19       TRIM41
## 6835  ENSG00000167460  -8.471462  2.423327e-17         TPM4
## 4256  ENSG00000136111  -8.462541  2.616131e-17       TBC1D4
## 5360  ENSG00000148925  -8.461286  2.644444e-17       BTBD10
## 10161 ENSG00000256128  -8.447749  2.969728e-17    LINC00944
## 5585  ENSG00000152492  -8.320442  8.763600e-17       CCDC50
## 9178  ENSG00000205181  -8.287144  1.160003e-16    LINC00654
## 9594  ENSG00000228300  -8.251196  1.568167e-16     C19orf24
## 5928  ENSG00000158769  -8.218246  2.065006e-16         F11R
## 466   ENSG00000056736  -8.205597  2.294479e-16       IL17RB
## 4510  ENSG00000138185  -8.154348  3.510695e-16       ENTPD1
## 3106  ENSG00000120875  -8.121676  4.597882e-16        DUSP4
## 9261  ENSG00000211898  -8.105988  5.231873e-16         IGHD
## 6709  ENSG00000166435  -8.104559  5.293722e-16        XRRA1
## 9665  ENSG00000231345  -8.101977  5.407298e-16 RP11-564C4.6
```

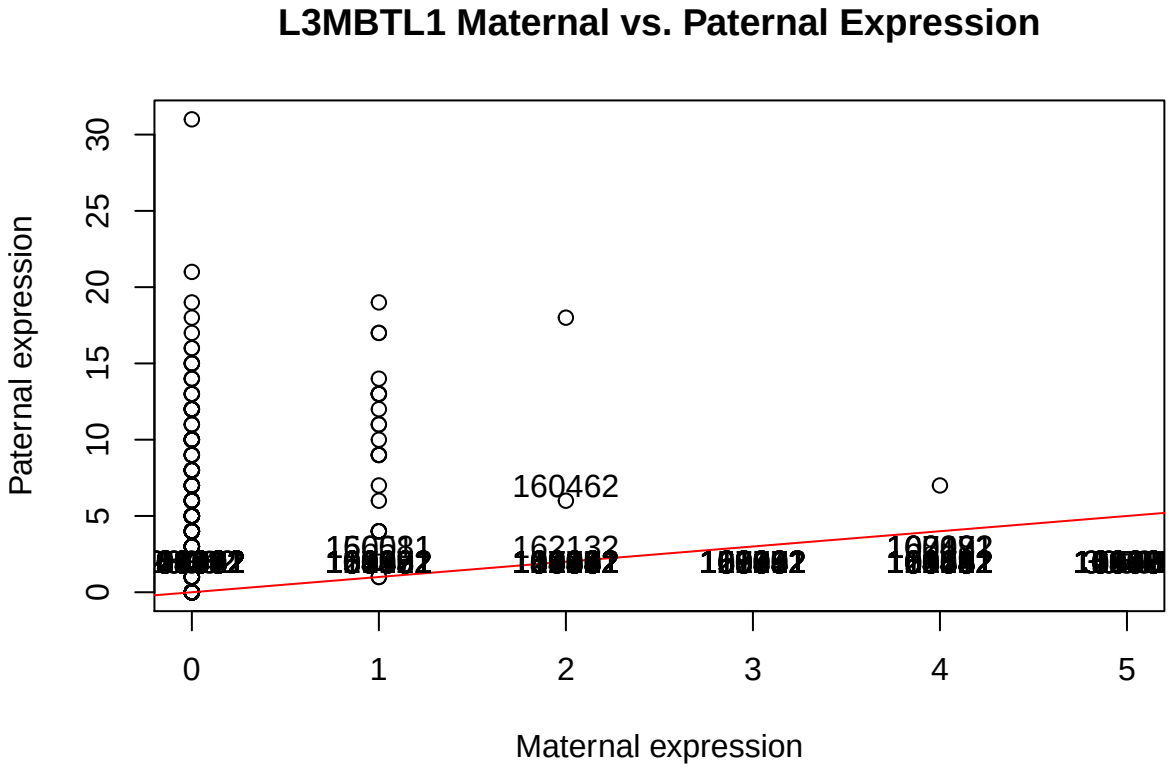
There are 384 significant genes.

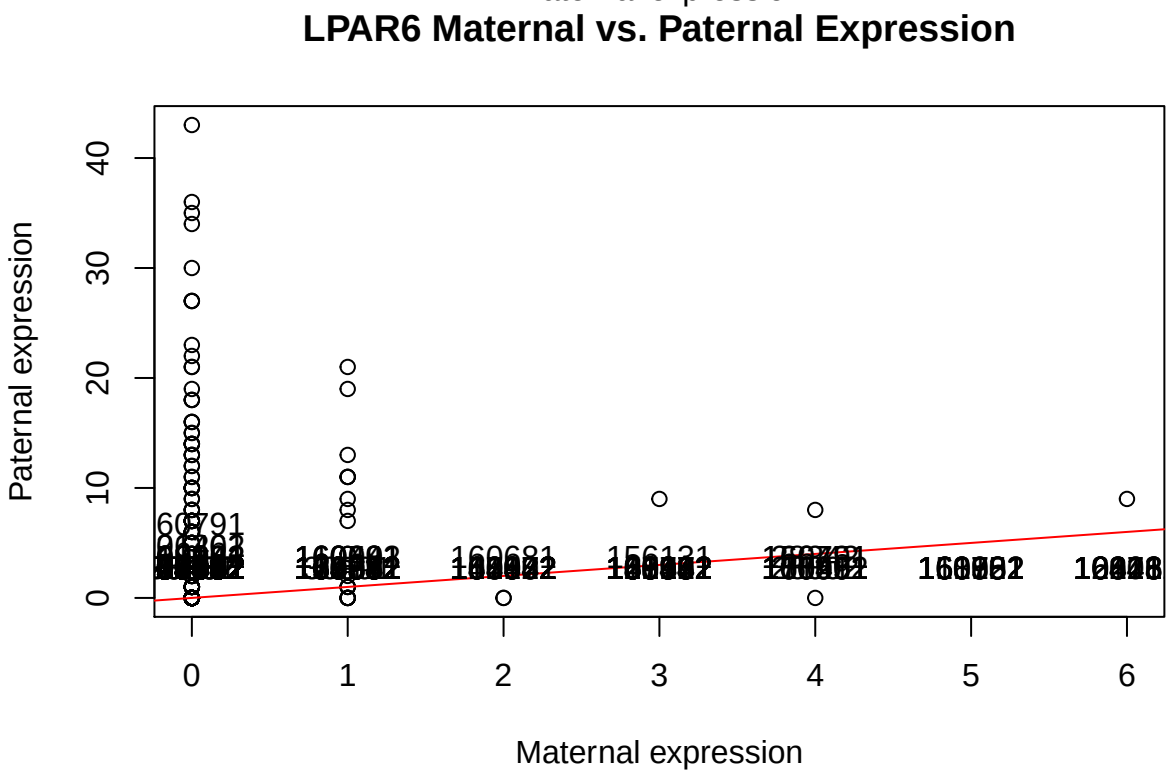


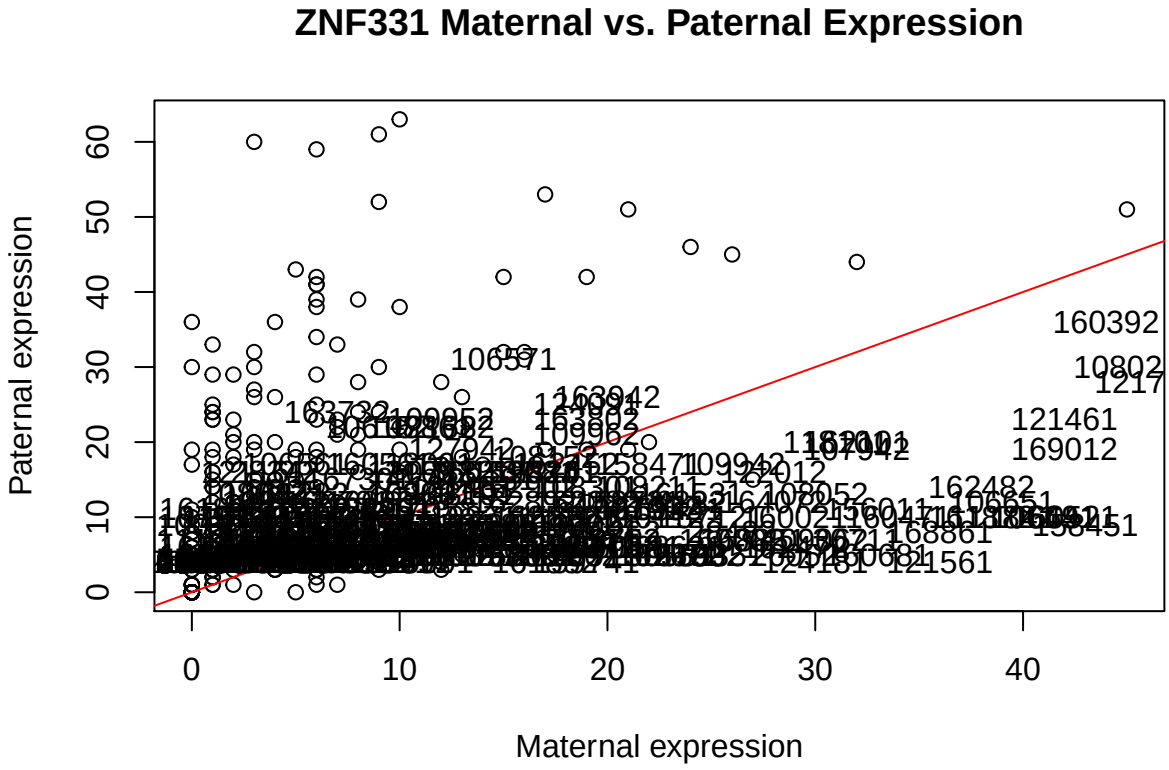


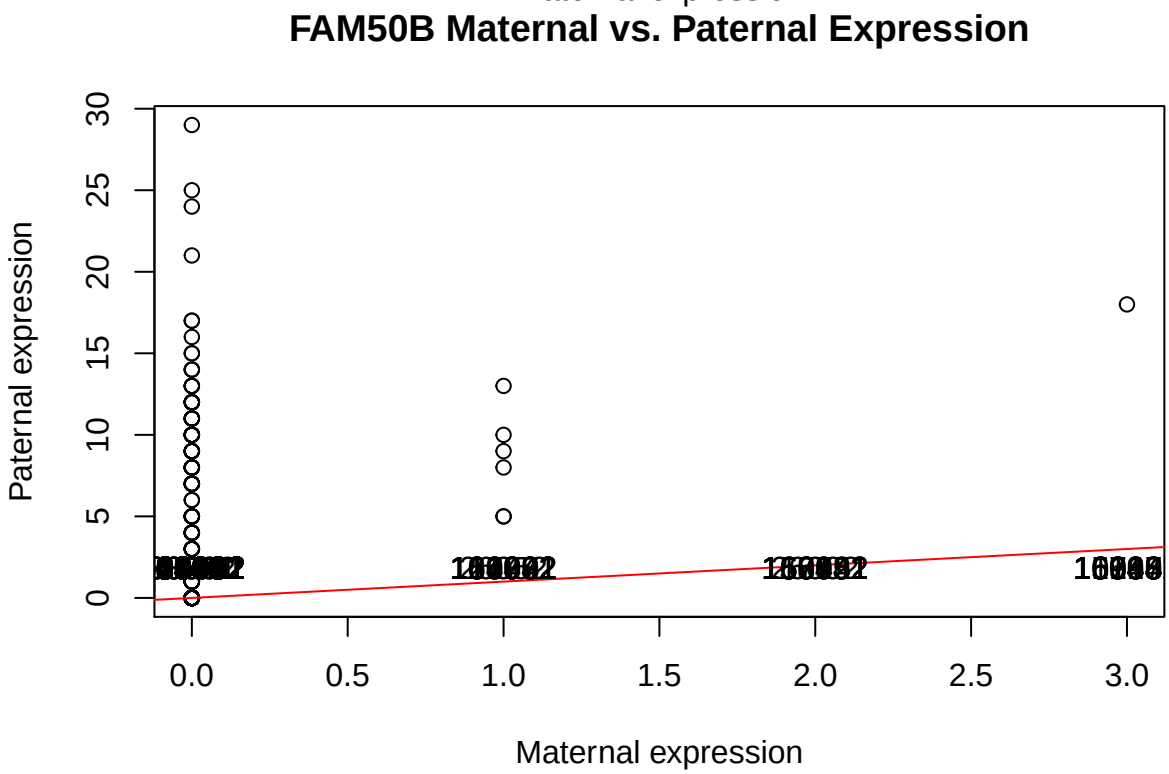

SNHG14 Maternal vs. Paternal Expression
Paternal expression
Maternal expression
0
10
20
30
40
50
60
70
0
2
4
6
8
61701
161142
168861

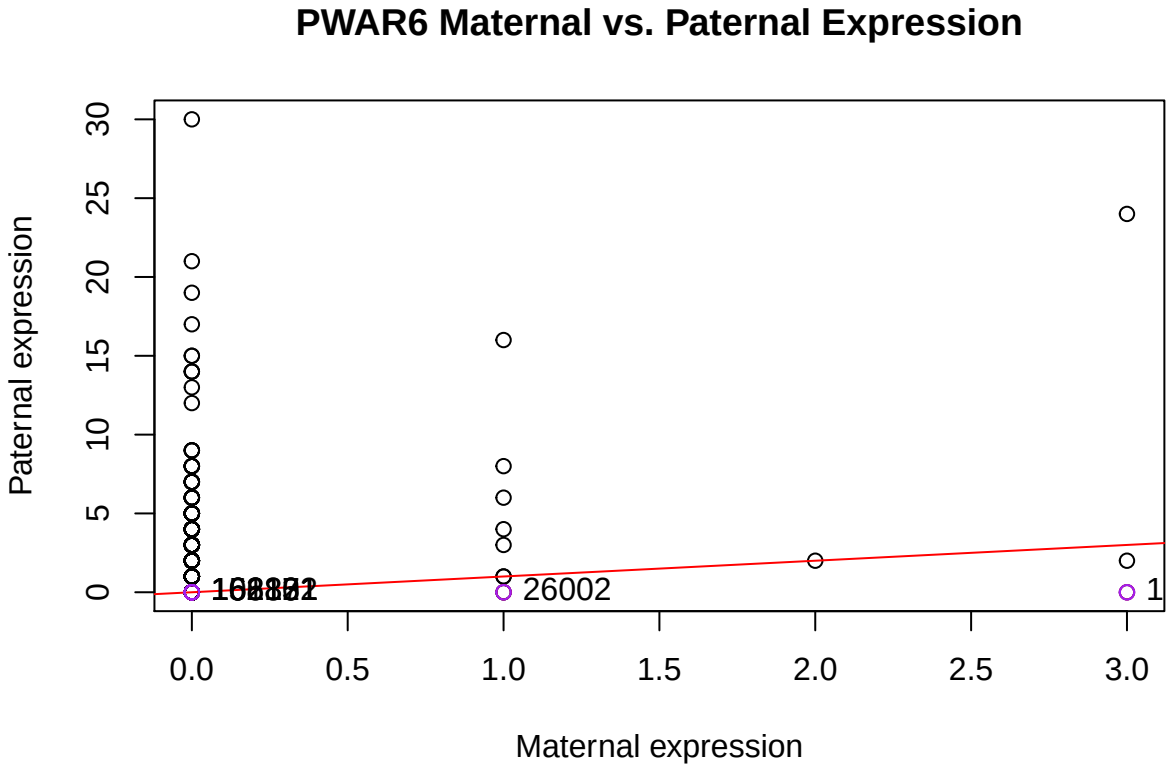

PEG10 Maternal vs. Paternal Expression
Paternal expression
Maternal expression
0
20
40
60
80
0
5
10
15
20
25
30591
110232

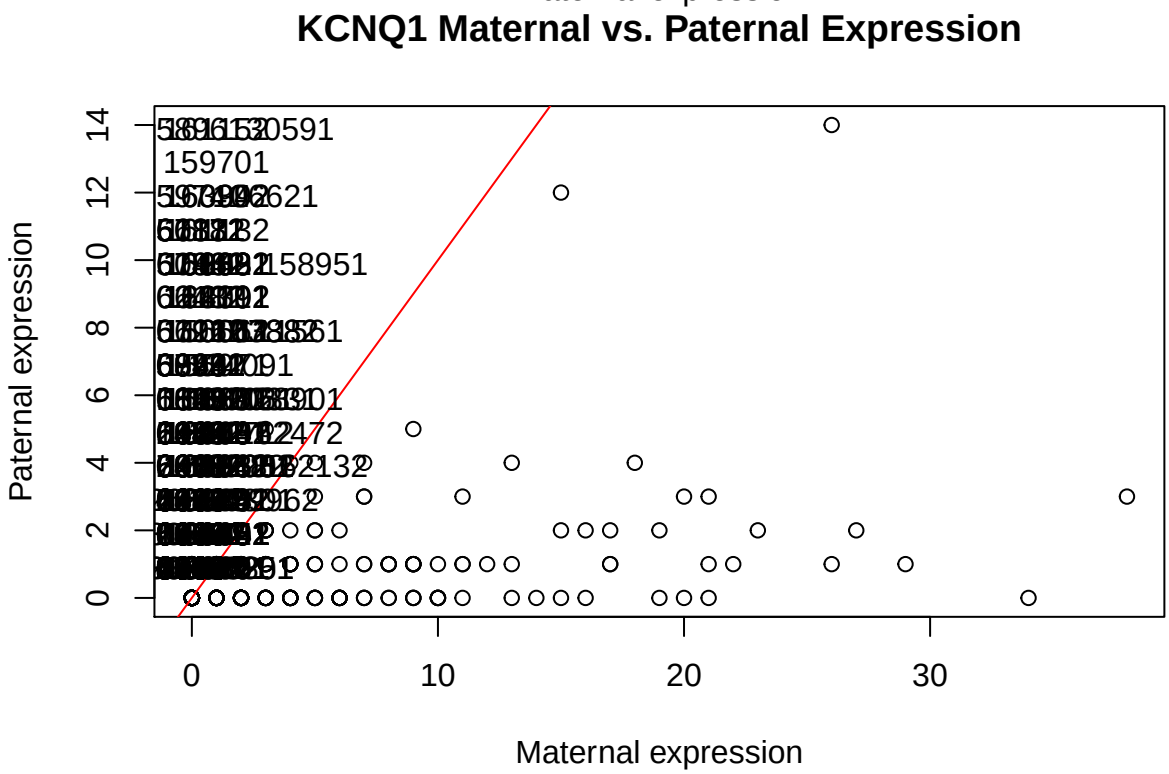

L3MBTL1 Maternal vs. Paternal Expression
Paternal expression
Maternal expression
0
5
10
15
20
25
30
0
1
2
3
4
5
160462
156681
162132


LPAR6 Maternal vs. Paternal Expression
Paternal expression
Maternal expression
0
10
20
30
40
0
1
2
3
4
5
6
160681
156131


ZNF331 Maternal vs. Paternal Expression
Paternal expression
Maternal expression
0
10
20
30
40
50
60
160392
10802
121461
169012
162482
121561


FAM50B Maternal vs. Paternal Expression
Paternal expression
Maternal expression
0
5
10
15
20
25
30
0.0
0.5
1.0
1.5
2.0
2.5
3.0





Check how many of the significant ones are known imprinted genes:

```
##                 genes          Z         pvals genename
## 9118  ENSG00000204186  47.048302  0.000000e+00    ZDBF2
```

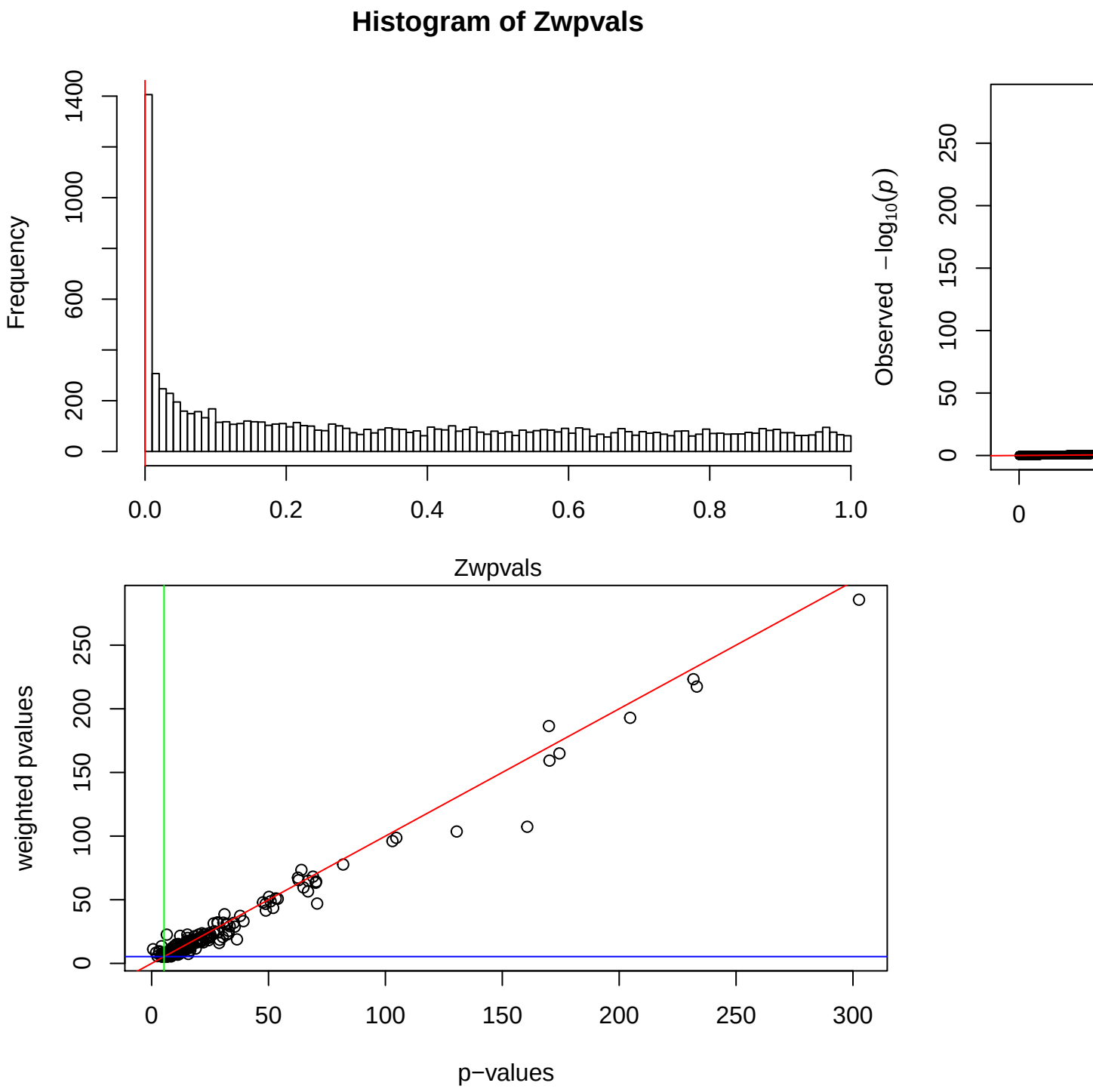
```
## 9896  ENSG00000242265  52.763940  0.000000e+00    PEG10
## 8372  ENSG00000185513  37.225869 2.604154e-303  L3MBTL1
## 5183  ENSG00000145945  30.583225 2.045815e-205   FAM50B
## 436   ENSG00000053918 -27.867996 6.520211e-171    KCNQ1
## 7799  ENSG00000177432  21.803432 2.152548e-105   NAP1L5
## 1366  ENSG00000100138  19.259388  1.177630e-82   NHP2L1
## 10493 ENSG00000269821  14.790858  1.678019e-49 KCNQ1OT1
## 4489  ENSG00000138061   9.246611  2.317224e-20   CYP1B1
## 1572  ENSG00000101294   7.052744  1.754232e-12     HM13
## 240   ENSG00000022556   7.042247  1.891638e-12    NLRP2
## 3191  ENSG00000122390  -5.979695  2.235553e-09    NAA60
## 1228  ENSG00000092758  -5.256003  1.472196e-07   COL9A3
```

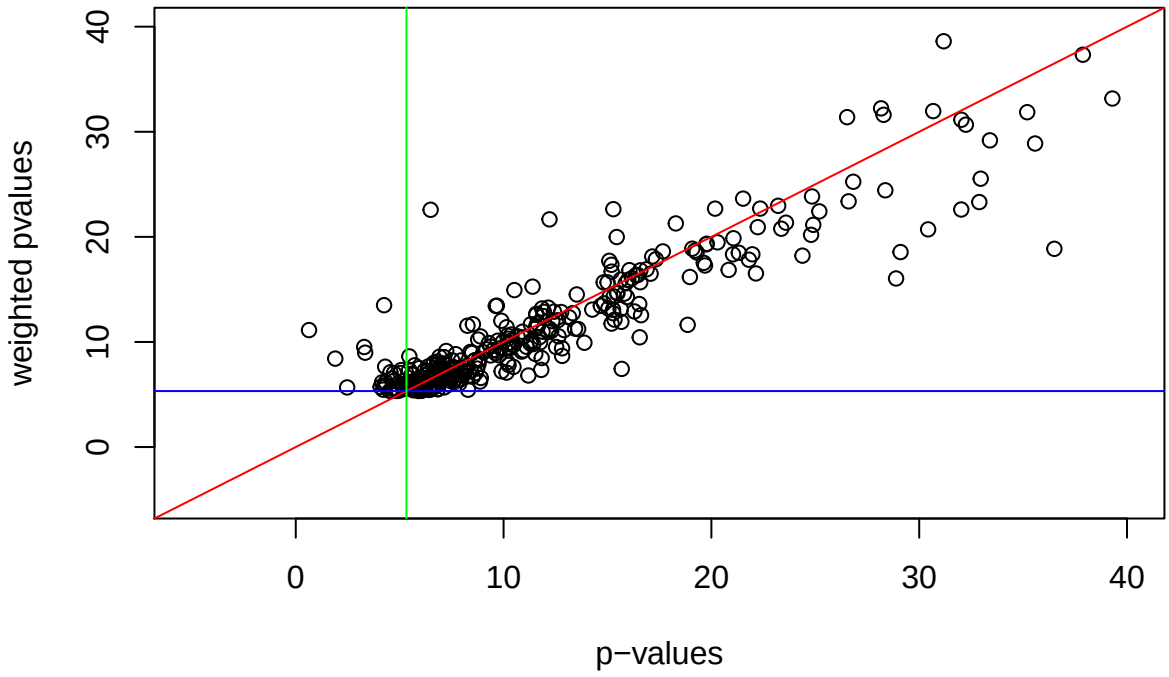
```
##         Gene                 Position  X.Hg38.
## 37    COL9A3  chr20:62817062-62841159 Maternal
## 43    CYP1B1   chr2:38067603-38076181 Paternal
## 62    FAM50B     chr6:3849398-3851317 Paternal
## 92      HM13  chr20:31514410-31569569 Maternal
## 120    KCNQ1    chr11:2444991-2849110 Maternal
## 122 KCNQ1OT1    chr11:2608328-2699998 Paternal
## 125  L3MBTL1  chr20:43507680-43541895 Paternal
## 166    NAA60    chr16:3443649-3486963 Maternal
## 168   NAP1L5   chr4:88695915-88697872 Paternal
## 172   NHP2L1  chr22:41673933-41690449        -
## 175    NLRP2  chr19:54965284-55001142 Maternal
## 188    PEG10   chr7:94656325-94669695 Paternal
## 273    ZDBF2 chr2:206274641-206314438        -
## 274    ZDBF2 chr2:206274641-206314438 Paternal
```

‘$dim(supp)[1]$‘/‘$length(which(supp$Gene%in%Zgenenames$genename))$‘ (overlap of ‘$length(which(supp$Gene%in%Zgenenames$g
with genes tested in our dataset (e.g. expressed in LCLs, etc.)).

Comparing old p-value with weighted p-values

```
##    100092    100172    100182    100202    100372    100582
## 0.4059143 0.3332846 0.4658065 0.4161760 0.4753587 0.4283458
```


Histogram of Zwpvals
Frequency
0
200
600
1000
1400
0.0
0.2
0.4
0.6
0.8
1.0
Observed $-\log_{10}(p)$
0
50
100
150
200
250
0
Zwpvals
weighted pvalues
0
50
100
150
200
250
0
50
100
150
200
250
300
p−values



1. most significant by weighted p-value: (50)

2. smallest Zscore (50)

3. largest Zscore (50)

```
## Warning in qvalue(as.numeric(as.character(Zall3$signpval))): NAs introduced
## by coercion
```

```
## [1] 361  10
```

```
##                 genes less0 greater0   signpvalue         Z         pvals
## 6449  ENSG00000164308    63      103  0.002368608  47.63936  0.000000e+00
## 9118  ENSG00000204186     2      148 1.587111e-41  47.04830  0.000000e+00
## 9484  ENSG00000224078     2      131 1.636876e-36  46.94308  0.000000e+00
## 9896  ENSG00000242265     2      136 5.505538e-38  52.76394  0.000000e+00
## 8372  ENSG00000185513     1      107 6.717644e-31  37.22587 2.604154e-303
## 3776  ENSG00000130844    36      184 4.052682e-25  32.55643 1.698212e-232
## 4663  ENSG00000139679     0       76 2.646978e-23  32.65781 6.208827e-234
## 5183  ENSG00000145945     0       75 5.293956e-23  30.58323 2.045815e-205
## 9262  ENSG00000211899     7       10    0.6290588  27.84785 1.143608e-170
## 10182 ENSG00000257151     0       43 2.273737e-13  28.21688 3.630556e-175
## 436   ENSG00000053918    79        1 1.340033e-22 -27.86800 6.520211e-171
## 700   ENSG00000070756    45       48    0.8358461 -27.07161 2.126469e-161
## 880   ENSG00000077809    30        8 0.0004719867 -24.37488 3.158948e-131
## 7799  ENSG00000177432     0       29  3.72529e-09  21.80343 2.152548e-105
## 9270  ENSG00000211945    14        2  0.004180908 -21.62902 9.580316e-104
## 1366  ENSG00000100138    23      189 1.241325e-33  19.25939  1.177630e-82
## 313   ENSG00000034152    55      100 0.0003756046  16.99883  8.377625e-65
## 10084 ENSG00000253234     7        7            1 -17.65465  9.371312e-70
```

```
## 9264  ENSG00000211934    36       23    0.1174774 -16.79625  2.599607e-63
## 4404  ENSG00000137265    73       72            1 -16.83492  1.353774e-63
##       genename         weightedZ          weightedpval      signFDR
## 6449     ERAP2  49.6849752702735                     0 2.886435e-01
## 9118     ZDBF2  45.7028149512822                     0 1.682655e-37
## 9484    SNHG14  45.4053378771055                     0 5.784719e-33
## 9896     PEG10  51.0422905503546                     0 2.918486e-34
## 8372   L3MBTL1  36.1666884261196  2.0339258639358e-286 1.424409e-27
## 3776    ZNF331  31.9475476395497  5.8433051215679e-224 7.161088e-22
## 4663     LPAR6  31.5275779600671 3.63935592411504e-218 4.009037e-20
## 5183    FAM50B  29.6840450207269 1.23383328374396e-193 7.015815e-20
## 9262      IGHM  29.1795523667311 3.52487025925567e-187 1.000000e+00
## 10182    PWAR6  27.4322872095642 1.13033389153923e-165 2.191469e-10
## 436      KCNQ1 -26.9549129680353 4.99591090124135e-160 1.578558e-19
## 700     PABPC1 -22.0814205613321 4.76860893635005e-108 1.000000e+00
## 880      GTF2I -21.6914804479676 2.46912194125076e-104 1.471766e-01
## 7799    NAP1L5  21.1571315707425  2.37221943906679e-99 3.291294e-06
## 9270  IGHV1-18 -20.8789036990305  8.32807743828986e-97 4.066604e-01
## 1366    NHP2L1  18.7470691219856  2.04558286690202e-78 3.290132e-30
## 313     MAP2K3  18.2170683465618  3.77864714162752e-74 1.327387e-01
## 10084  IGLV2-5 -17.5383238215462  7.30504618679652e-69 1.000000e+00
## 9264   IGHV1-2 -17.4341380268734  4.54358782104119e-68 9.277681e-01
## 4404      IRF4 -17.1731344750769   4.2200298701047e-66 1.000000e+00
```

```
## Warning in order(as.numeric(as.character(Zall3$signpval))): NAs introduced
## by coercion
```

```
##                 genes less0 greater0     signpvalue          Z
## 9118  ENSG00000204186     2      148   1.587111e-41  47.048302
## 9896  ENSG00000242265     2      136   5.505538e-38  52.763940
## 9484  ENSG00000224078     2      131   1.636876e-36  46.943079
## 1366  ENSG00000100138    23      189   1.241325e-33  19.259388
## 8372  ENSG00000185513     1      107   6.717644e-31  37.225869
## 3776  ENSG00000130844    36      184   4.052682e-25  32.556427
## 4663  ENSG00000139679     0       76   2.646978e-23  32.657805
## 5183  ENSG00000145945     0       75   5.293956e-23  30.583225
## 436   ENSG00000053918    79        1   1.340033e-22 -27.867996
## 7046  ENSG00000168994    12       81    9.82875e-14  15.571881
## 10182 ENSG00000257151     0       43   2.273737e-13  28.216876
## 7799  ENSG00000177432     0       29    3.72529e-09  21.803432
## 8762  ENSG00000196756   113       45   6.204067e-08 -10.528297
## 8970  ENSG00000198346    63      132 0.000000869597   6.995052
## 4722  ENSG00000140443    14       49  0.00001112302   9.592122
## 1475  ENSG00000100592    66      126  0.00001780704   8.055976
## 10526 ENSG00000271122    52      106  0.00002086984   3.595695
## 10107 ENSG00000253954    32        6  0.00002434256 -15.444932
## 3612  ENSG00000128654     0       16  0.00003051758   5.394370
## 7957  ENSG00000179632    17       51  0.00004453449   5.707762
##              pvals      genename         weightedZ
## 9118   0.000000e+00         ZDBF2  45.7028149512822
## 9896   0.000000e+00         PEG10  51.0422905503546
## 9484   0.000000e+00        SNHG14  45.4053378771055
## 1366   1.177630e-82        NHP2L1  18.7470691219856
## 8372  2.604154e-303       L3MBTL1  36.1666884261196
## 3776  1.698212e-232        ZNF331  31.9475476395497
```

```
## 4663  6.208827e-234         LPAR6  31.5275779600671
## 5183  2.045815e-205        FAM50B  29.6840450207269
## 436   6.520211e-171         KCNQ1 -26.9549129680353
## 7046   1.130346e-54         PXDC1  15.0907815822496
## 10182 3.630556e-175         PWAR6  27.4322872095642
## 7799  2.152548e-105        NAP1L5  21.1571315707425
## 8762   6.398129e-26        SNHG17 -9.90995214461733
## 8970   2.651604e-12        ZNF813  6.97769023559539
## 4722   8.629144e-22         IGF1R  9.30384284404683
## 1475   7.884699e-16         DAAM1  7.82808075774818
## 10526  3.235264e-04 RP11-379H18.1  3.59593079810946
## 10107  8.161354e-54      HMGN1P38 -15.1327587262073
## 3612   6.876449e-08          MTX2  5.16384076845647
## 7957   1.144714e-08          MAF1  5.29390258676958
##                  weightedpval      signFDR
## 9118                        0 1.682655e-37
## 9896                        0 2.918486e-34
## 9484                        0 5.784719e-33
## 1366     2.04558286690202e-78 3.290132e-30
## 8372     2.0339258639358e-286 1.424409e-27
## 3776     5.8433051215679e-224 7.161088e-22
## 4663    3.63935592411504e-218 4.009037e-20
## 5183    1.23383328374396e-193 7.015815e-20
## 436     4.99591090124135e-160 1.578558e-19
## 7046     1.86223243574424e-51 1.042044e-10
## 10182   1.13033389153923e-165 2.191469e-10
## 7799     2.37221943906679e-99 3.291294e-06
## 8762     3.76826624301705e-23 5.059656e-05
## 8970     3.00072356928205e-12 6.585334e-04
## 4722     1.35459257428802e-20 7.861753e-03
## 1475     4.95373718181582e-15 1.179939e-02
## 10526     0.00032323372579773 1.301542e-02
## 10107    9.84789942089042e-52 1.433777e-02
## 3612  0.000000241933523426841 1.702881e-02
## 7957  0.000001119733230300994 2.327011e-02
```

```
## Warning in order(as.numeric(as.character(Zall3$signpval))): NAs introduced
## by coercion
```

```
##                 genes less0 greater0 signpvalue          Z        pvals
## 228   ENSG00000019485    NA       NA         NA  0.5573864 5.772634e-01
## 535   ENSG00000063660    NA       NA         NA -1.0690450 2.850494e-01
## 4161  ENSG00000135424    NA       NA         NA  0.0000000 1.000000e+00
## 4738  ENSG00000140543    NA       NA         NA  0.4453993 6.560312e-01
## 6504  ENSG00000164776    NA       NA         NA -0.7537076 4.510248e-01
## 7440  ENSG00000172965    NA       NA         NA  1.1147728 2.649478e-01
## 7637  ENSG00000175305    NA       NA         NA -0.3735437 7.087438e-01
## 7955  ENSG00000179627    NA       NA         NA  0.4708710 6.377329e-01
## 8143  ENSG00000182575    NA       NA         NA  0.6412234 5.213775e-01
## 9431  ENSG00000218227    NA       NA         NA  4.3419292 1.412371e-05
## 9526  ENSG00000225806    NA       NA         NA  9.8656107 5.867627e-23
## 9543  ENSG00000226312    NA       NA         NA  0.4160251 6.773916e-01
## 9563  ENSG00000226800    NA       NA         NA  0.1886084 8.503998e-01
## 9968  ENSG00000246250    NA       NA         NA -0.3991141 6.898092e-01
## 10166 ENSG00000256383    NA       NA         NA  1.0787198 2.807127e-01
```

```
## 10236 ENSG00000259520    NA       NA         NA  0.9309493 3.518798e-01
## 10315 ENSG00000261126    NA       NA         NA -0.1924501 8.473897e-01
## 10482 ENSG00000269388    NA       NA         NA  2.0641874 3.899995e-02
## 10552 ENSG00000272047    NA       NA         NA  0.4585852 6.465320e-01
## 10600 ENSG00000273033    NA       NA         NA  0.2696799 7.874065e-01
##            genename          weightedZ         weightedpval signFDR
## 228          PRDM11  0.170700581537176    0.864459205539844      NA
## 535            GPC1  -1.05444691911097    0.291678350713749      NA
## 4161          ITGA7 -0.112438284189582    0.910475901379378      NA
## 4738           DET1   0.17561698341126    0.860594858890061      NA
## 6504          PHKG1 -0.638295738471428     0.52328118554409      NA
## 7440    MIR4435-1HG   1.06146619390356    0.288478088458279      NA
## 7637          CCNE2 -0.770146294441692    0.441213117245003      NA
## 7955         ZBTB42  -0.13498453598768    0.892624100916853      NA
## 8143          NXPH3   1.10499991864406    0.269159624381068      NA
## 9431   RP11-889L3.1   4.22920846181383 0.000023451496677534      NA
## 9526   RP1-309F20.3    9.5588293223001 1.19096201490934e-21      NA
## 9543      CFLAR-AS1  0.151324746491436    0.879719549183086      NA
## 9563     CACTIN-AS1  0.610916904089019    0.541254593288677      NA
## 9968  RP11-613D13.5 -0.642918982035147    0.520276671749593      NA
## 10166    AC020910.2  0.987685125194579    0.323306881637597      NA
## 10236 CTD-2651B20.3  0.706381832778027    0.479950715582257      NA
## 10315        RBFADN  -0.65336969495752    0.513517971066703      NA
## 10482   AC018755.16    1.4838074215459    0.137860017661307      NA
## 10552        GTF2H5  0.310446259501262     0.75622162059282      NA
## 10600   RP11-67L2.2  0.719454495489564    0.471860930011137      NA
```

```
## Warning in order(as.numeric(as.character(Zall3$signpvalue))): NAs
## introduced by coercion
```

```
##        genename       genes             less0  greater0
##   [1,] "ABCC9"        NA                "NULL" "NULL"
##   [2,] "ABCG8"        NA                "NULL" "NULL"
##   [3,] "ACD"          "ENSG00000102977" "71"   "56"
##   [4,] "ADAM23"       NA                "NULL" "NULL"
##   [5,] "ADAMTS16"     "ENSG00000145536" "9"    "12"
##   [6,] "AGO2"         "ENSG00000123908" "101"  "112"
##   [7,] "AIM1"         "ENSG00000112297" "124"  "121"
##   [8,] "AIRN"         NA                "NULL" "NULL"
##   [9,] "ALDH1L1"      NA                "NULL" "NULL"
##  [10,] "AMPD3"        "ENSG00000133805" "111"  "108"
##  [11,] "ANO1"         NA                "NULL" "NULL"
##  [12,] "APBA1"        NA                "NULL" "NULL"
##  [13,] "ASB4"         NA                "NULL" "NULL"
##  [14,] "ASCL2"        NA                "NULL" "NULL"
##  [15,] "ATP10A"       NA                "NULL" "NULL"
##  [16,] "B4GALNT4"     NA                "NULL" "NULL"
##  [17,] "BCL2L1"       NA                "NULL" "NULL"
##  [18,] "BEGAIN"       NA                "NULL" "NULL"
##  [19,] "BLCAP"        NA                "NULL" "NULL"
##  [20,] "BMP8B"        NA                "NULL" "NULL"
##  [21,] "BTNL2"        NA                "NULL" "NULL"
##  [22,] "C10orf91"     NA                "NULL" "NULL"
##  [23,] "C9orf116"     NA                "NULL" "NULL"
##  [24,] "C9orf85"      "ENSG00000155621" "34"   "34"
```

```
##  [25,] "CALCR"        NA                 "NULL" "NULL"
##  [26,] "CCDC40"       NA                 "NULL" "NULL"
##  [27,] "CCDC85A"      NA                 "NULL" "NULL"
##  [28,] "CD81"         "ENSG00000110651" "36"   "46"
##  [29,] "CDH15"        NA                 "NULL" "NULL"
##  [30,] "CDH18"        NA                 "NULL" "NULL"
##  [31,] "CDK4"         "ENSG00000135446" "11"   "6"
##  [32,] "CDKN1C"       NA                 "NULL" "NULL"
##  [33,] "CELF4"        NA                 "NULL" "NULL"
##  [34,] "CHMP2A"       "ENSG00000130724" "15"   "13"
##  [35,] "CHST8"        NA                 "NULL" "NULL"
##  [36,] "COL9A3"       "ENSG00000092758" "17"   "3"
##  [37,] "COMMD1"       "ENSG00000173163" "34"   "40"
##  [38,] "COPG2"        "ENSG00000158623" "15"   "11"
##  [39,] "CPA4"         "ENSG00000128510" "9"    "10"
##  [40,] "CSF2"         NA                 "NULL" "NULL"
##  [41,] "CYP1B1"       "ENSG00000138061" "94"   "121"
##  [42,] "DACT2"        NA                 "NULL" "NULL"
##  [43,] "DCN"          NA                 "NULL" "NULL"
##  [44,] "DDC"          NA                 "NULL" "NULL"
##  [45,] "DDC"          NA                 "NULL" "NULL"
##  [46,] "DGCR6"        NA                 "NULL" "NULL"
##  [47,] "DGCR6L"       "ENSG00000128185" "35"   "39"
##  [48,] "DHFR"         NA                 "NULL" "NULL"
##  [49,] "DIO3"         NA                 "NULL" "NULL"
##  [50,] "DIRAS3"       NA                 "NULL" "NULL"
##  [51,] "DLGAP2"       NA                 "NULL" "NULL"
##  [52,] "DLK1"         NA                 "NULL" "NULL"
##  [53,] "DLX5"         NA                 "NULL" "NULL"
##  [54,] "DNMT1"        "ENSG00000130816" "88"   "87"
##  [55,] "DVL1"         NA                 "NULL" "NULL"
##  [56,] "E2F7"         "ENSG00000165891" "87"   "83"
##  [57,] "EDN3"         NA                 "NULL" "NULL"
##  [58,] "EGFL7"        NA                 "NULL" "NULL"
##  [59,] "EVX1"         NA                 "NULL" "NULL"
##  [60,] "FAM50B"       "ENSG00000145945" "0"    "75"
##  [61,] "FASTK"        "ENSG00000164896" "61"   "68"
##  [62,] "FBRSL1"       "ENSG00000112787" "106"  "75"
##  [63,] "FERMT2"       "ENSG00000073712" "33"   "51"
##  [64,] "FGFRL1"       "ENSG00000127418" "9"    "8"
##  [65,] "FOXF1"        NA                 "NULL" "NULL"
##  [66,] "FOXG1"        NA                 "NULL" "NULL"
##  [67,] "FRAT2"        NA                 "NULL" "NULL"
##  [68,] "FRG1"         "ENSG00000109536" "65"   "52"
##  [69,] "FUCA1"        NA                 "NULL" "NULL"
##  [70,] "GAB1"         "ENSG00000109458" "7"    "10"
##  [71,] "GABRB3"       NA                 "NULL" "NULL"
##  [72,] "GAREM"        NA                 "NULL" "NULL"
##  [73,] "GATA3"        "ENSG00000107485" "78"   "58"
##  [74,] "GATM"         "ENSG00000171766" "98"   "89"
##  [75,] "GDAP1L1"      NA                 "NULL" "NULL"
##  [76,] "GFI1"         NA                 "NULL" "NULL"
##  [77,] "GLI3"         NA                 "NULL" "NULL"
##  [78,] "GLIS3"        "ENSG00000107249" "16"   "14"
```

```
##  [79,] "GNAS"         "ENSG00000087460" "116"  "126"
##  [80,] "GNAS-AS1"     NA                "NULL" "NULL"
##  [81,] "GNG7"         "ENSG00000176533" "139"  "113"
##  [82,] "GPR1"         NA                "NULL" "NULL"
##  [83,] "GPT"          "ENSG00000167701" "1"    "0"
##  [84,] "GRB10"        NA                "NULL" "NULL"
##  [85,] "H19"          NA                "NULL" "NULL"
##  [86,] "HERC3"        "ENSG00000138641" "40"   "59"
##  [87,] "HES1"         NA                "NULL" "NULL"
##  [88,] "HIST3H2BB"    NA                "NULL" "NULL"
##  [89,] "HM13"         "ENSG00000101294" "11"   "35"
##  [90,] "HOXA11"       NA                "NULL" "NULL"
##  [91,] "HOXA2"        NA                "NULL" "NULL"
##  [92,] "HOXA3"        NA                "NULL" "NULL"
##  [93,] "HOXA4"        NA                "NULL" "NULL"
##  [94,] "HOXA5"        NA                "NULL" "NULL"
##  [95,] "HOXB2"        "ENSG00000173917" "66"   "81"
##  [96,] "HOXB3"        "ENSG00000120093" "27"   "24"
##  [97,] "HOXC4"        NA                "NULL" "NULL"
##  [98,] "HOXC9"        NA                "NULL" "NULL"
##  [99,] "HSPA6"        "ENSG00000173110" "14"   "28"
## [100,] "HTR2A"        NA                "NULL" "NULL"
## [101,] "IFITM1"       NA                "NULL" "NULL"
## [102,] "IGF2"         NA                "NULL" "NULL"
## [103,] "IGF2-AS"      NA                "NULL" "NULL"
## [104,] "IGF2R"        "ENSG00000197081" "132"  "122"
## [105,] "IL18BP"       "ENSG00000137496" "27"   "31"
## [106,] "IMPACT"       "ENSG00000154059" "45"   "58"
## [107,] "INPP5F"       "ENSG00000198825" "20"   "23"
## [108,] "INS"          NA                "NULL" "NULL"
## [109,] "INTS4"        "ENSG00000149262" "7"    "13"
## [110,] "ISM1"         NA                "NULL" "NULL"
## [111,] "JADE1"        "ENSG00000077684" "29"   "24"
## [112,] "KBTBD3"       "ENSG00000182359" "11"   "15"
## [113,] "KCNK9"        NA                "NULL" "NULL"
## [114,] "KCNQ1"        "ENSG00000053918" "79"   "1"
## [115,] "KCNQ1DN"      NA                "NULL" "NULL"
## [116,] "KCNQ1OT1"     "ENSG00000269821" "0"    "7"
## [117,] "KLF14"        NA                "NULL" "NULL"
## [118,] "KLHDC10"      "ENSG00000128607" "94"   "93"
## [119,] "L3MBTL1"      "ENSG00000185513" "1"    "107"
## [120,] "LDB1"         "ENSG00000198728" "36"   "18"
## [121,] "LILRB4"       "ENSG00000186818" "81"   "101"
## [122,] "LIN28B"       NA                "NULL" "NULL"
## [123,] "LMX1B"        NA                "NULL" "NULL"
## [124,] "LRRTM1"       NA                "NULL" "NULL"
## [125,] "LY6D"         NA                "NULL" "NULL"
## [126,] "MAGEL2"       NA                "NULL" "NULL"
## [127,] "MAGI2"        NA                "NULL" "NULL"
## [128,] "MAPT"         NA                "NULL" "NULL"
## [129,] "MDH2"         "ENSG00000146701" "62"   "75"
## [130,] "MEG3"         NA                "NULL" "NULL"
## [131,] "MEG8"         NA                "NULL" "NULL"
## [132,] "MEIG1"        NA                "NULL" "NULL"
```

```
## [133,] "MEST"         "ENSG00000106484" "2"    "9"
## [134,] "MIMT1"        NA                "NULL" "NULL"
## [135,] "MIR127"       NA                "NULL" "NULL"
## [136,] "MIR134"       NA                "NULL" "NULL"
## [137,] "MIR136"       NA                "NULL" "NULL"
## [138,] "MIR154"       NA                "NULL" "NULL"
## [139,] "MIR296"       NA                "NULL" "NULL"
## [140,] "MIR298"       NA                "NULL" "NULL"
## [141,] "MIR337"       NA                "NULL" "NULL"
## [142,] "MIR370"       NA                "NULL" "NULL"
## [143,] "MIR371A"      NA                "NULL" "NULL"
## [144,] "MIR380"       NA                "NULL" "NULL"
## [145,] "MIR410"       NA                "NULL" "NULL"
## [146,] "MIR411"       NA                "NULL" "NULL"
## [147,] "MIR431"       NA                "NULL" "NULL"
## [148,] "MIR433"       NA                "NULL" "NULL"
## [149,] "MKRN3"        NA                "NULL" "NULL"
## [150,] "MPC1"         "ENSG00000060762" "81"   "82"
## [151,] "MRAP2"        NA                "NULL" "NULL"
## [152,] "MRGBP"        "ENSG00000101189" "96"   "81"
## [153,] "MYEOV2"       NA                "NULL" "NULL"
## [154,] "MYO1D"        "ENSG00000176658" "102"  "82"
## [155,] "MZF1"         "ENSG00000099326" "36"   "33"
## [156,] "NAA60"        "ENSG00000122390" "15"   "4"
## [157,] "NAP1L4"       "ENSG00000205531" "82"   "83"
## [158,] "NAP1L5"       "ENSG00000177432" "0"    "29"
## [159,] "NAPRT1"       "ENSG00000147813" "72"   "59"
## [160,] "NDN"          NA                "NULL" "NULL"
## [161,] "NDUFA4"       NA                "NULL" "NULL"
## [162,] "NHP2L1"       "ENSG00000100138" "23"   "189"
## [163,] "NKAIN3"       NA                "NULL" "NULL"
## [164,] "NLRP2"        "ENSG00000022556" "68"   "78"
## [165,] "NNAT"         NA                "NULL" "NULL"
## [166,] "NPAP1"        NA                "NULL" "NULL"
## [167,] "NTM"          NA                "NULL" "NULL"
## [168,] "OBSCN"        "ENSG00000154358" "33"   "32"
## [169,] "OR11L1"       NA                "NULL" "NULL"
## [170,] "OSBPL5"       NA                "NULL" "NULL"
## [171,] "OTX1"         NA                "NULL" "NULL"
## [172,] "PAOX"         "ENSG00000148832" "33"   "33"
## [173,] "PAX8"         "ENSG00000125618" "26"   "31"
## [174,] "PAX8-AS1"     "ENSG00000189223" "47"   "49"
## [175,] "PDE4D"        "ENSG00000113448" "25"   "19"
## [176,] "PDK4"         NA                "NULL" "NULL"
## [177,] "PEG10"        "ENSG00000242265" "2"    "136"
## [178,] "PEG3"         NA                "NULL" "NULL"
## [179,] "PEX10"        NA                "NULL" "NULL"
## [180,] "PHLDA2"       "ENSG00000181649" "10"   "11"
## [181,] "PHPT1"        "ENSG00000054148" "40"   "30"
## [182,] "PID1"         NA                "NULL" "NULL"
## [183,] "PKP3"         NA                "NULL" "NULL"
## [184,] "PLAGL1"       "ENSG00000118495" "24"   "19"
## [185,] "PMF1"         NA                "NULL" "NULL"
## [186,] "PON2"         "ENSG00000105854" "21"   "29"
```

```
## [187,] "PON3"         NA                 "NULL" "NULL"
## [188,] "PPAP2C"       NA                 "NULL" "NULL"
## [189,] "PPIEL"        NA                 "NULL" "NULL"
## [190,] "PPP1R9A"      NA                 "NULL" "NULL"
## [191,] "PPP1R9B"      "ENSG00000108819" "77"   "76"
## [192,] "PRDM16"       NA                 "NULL" "NULL"
## [193,] "PRR20A"       NA                 "NULL" "NULL"
## [194,] "PRSS3"        NA                 "NULL" "NULL"
## [195,] "PTPN14"       "ENSG00000152104" "8"    "14"
## [196,] "PURG"         NA                 "NULL" "NULL"
## [197,] "PYY2"         NA                 "NULL" "NULL"
## [198,] "RAB1B"        "ENSG00000174903" "56"   "73"
## [199,] "RASGRF1"      "ENSG00000058335" "18"   "14"
## [200,] "RB1"          NA                 "NULL" "NULL"
## [201,] "RBP5"         "ENSG00000139194" "29"   "35"
## [202,] "RDM1"         NA                 "NULL" "NULL"
## [203,] "RPL22"        NA                 "NULL" "NULL"
## [204,] "RTL1"         NA                 "NULL" "NULL"
## [205,] "SALL1"        NA                 "NULL" "NULL"
## [206,] "SFMBT2"       "ENSG00000198879" "84"   "92"
## [207,] "SGCE"         NA                 "NULL" "NULL"
## [208,] "SGK2"         NA                 "NULL" "NULL"
## [209,] "SIM2"         NA                 "NULL" "NULL"
## [210,] "SLC22A18"     "ENSG00000110628" "95"   "87"
## [211,] "SLC22A2"      NA                 "NULL" "NULL"
## [212,] "SLC22A3"      NA                 "NULL" "NULL"
## [213,] "SLC26A10"     NA                 "NULL" "NULL"
## [214,] "SLC38A4"      NA                 "NULL" "NULL"
## [215,] "SLC4A2"       "ENSG00000164889" "121"  "118"
## [216,] "SNORD108"     NA                 "NULL" "NULL"
## [217,] "SNORD109A"    NA                 "NULL" "NULL"
## [218,] "SNORD109B"    NA                 "NULL" "NULL"
## [219,] "SNORD115"     NA                 "NULL" "NULL"
## [220,] "SNORD64"      NA                 "NULL" "NULL"
## [221,] "SNRPN"        NA                 "NULL" "NULL"
## [222,] "SNURF"        NA                 "NULL" "NULL"
## [223,] "SOX8"         NA                 "NULL" "NULL"
## [224,] "SPATA31D1"    NA                 "NULL" "NULL"
## [225,] "SPON2"        "ENSG00000159674" "15"   "8"
## [226,] "TBC1D12"      "ENSG00000108239" "34"   "39"
## [227,] "TCEB3C"       NA                 "NULL" "NULL"
## [228,] "TFPI2"        "ENSG00000105825" "5"    "12"
## [229,] "TFPI2"        "ENSG00000105825" "5"    "12"
## [230,] "TIGD1"        "ENSG00000221944" "28"   "15"
## [231,] "TMEM106A"     "ENSG00000184988" "62"   "56"
## [232,] "TMEM255B"     NA                 "NULL" "NULL"
## [233,] "TMEM52"       NA                 "NULL" "NULL"
## [234,] "TMEM60"       "ENSG00000135211" "108"  "81"
## [235,] "TMEM88"       NA                 "NULL" "NULL"
## [236,] "TNK1"         NA                 "NULL" "NULL"
## [237,] "TP73"         NA                 "NULL" "NULL"
## [238,] "TRAPPC9"      "ENSG00000167632" "118"  "116"
## [239,] "TREM1"        "ENSG00000124731" "7"    "1"
## [240,] "TSHZ3"        NA                 "NULL" "NULL"
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## [241,] "TSPAN32"      NA                "NULL" "NULL"
## [242,] "TSSC4"        "ENSG00000184281" "69"   "77"
## [243,] "UBE2NL"       NA                "NULL" "NULL"
## [244,] "UBE3A"        "ENSG00000114062" "26"   "15"
## [245,] "USB1"         "ENSG00000103005" "70"   "69"
## [246,] "USP29"        NA                "NULL" "NULL"
## [247,] "UVSSA"        "ENSG00000163945" "90"   "92"
## [248,] "VAX2"         NA                "NULL" "NULL"
## [249,] "VENTX"        NA                "NULL" "NULL"
## [250,] "WARS"         "ENSG00000140105" "64"   "70"
## [251,] "WRAP73"       NA                "NULL" "NULL"
## [252,] "WT1"          NA                "NULL" "NULL"
## [253,] "XIST"         NA                "NULL" "NULL"
## [254,] "ZACN"         NA                "NULL" "NULL"
## [255,] "ZC3H12C"      "ENSG00000149289" "73"   "77"
## [256,] "ZDBF2"        "ENSG00000204186" "2"    "148"
## [257,] "ZDBF2"        "ENSG00000204186" "2"    "148"
## [258,] "ZFAT"         "ENSG00000066827" "114"  "101"
## [259,] "ZFP36L2"      "ENSG00000152518" "79"   "81"
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## [261,] "ZIM2"         NA                "NULL" "NULL"
## [262,] "ZIM3"         NA                "NULL" "NULL"
## [263,] "ZNF225"       NA                "NULL" "NULL"
## [264,] "ZNF229"       "ENSG00000167383" "31"   "42"
## [265,] "ZNF595"       NA                "NULL" "NULL"
## [266,] "ZNF597"       NA                "NULL" "NULL"
## [267,] "ZRSR1"        NA                "NULL" "NULL"
## [268,] "CFAP46"       NA                "NULL" "NULL"
## [269,] "COPG2IT1"     NA                "NULL" "NULL"
## [270,] "FLJ20464"     NA                "NULL" "NULL"
## [271,] "HYMAI"        NA                "NULL" "NULL"
## [272,] "IPW"          NA                "NULL" "NULL"
## [273,] "IRAIN"        NA                "NULL" "NULL"
## [274,] "LOC100131170" NA                "NULL" "NULL"
## [275,] "MCTS2P"       NA                "NULL" "NULL"
## [276,] "MESTIT1"      NA                "NULL" "NULL"
## [277,] "MIR376B"      NA                "NULL" "NULL"
## [278,] "NKX6"         NA                "NULL" "NULL"
## [279,] "PEG13"        NA                "NULL" "NULL"
## [280,] "RNU5D"        NA                "NULL" "NULL"
## [281,] "SNORD107"     NA                "NULL" "NULL"
## [282,] "SNORD115@"    NA                "NULL" "NULL"
## [283,] "SNORD116@"    NA                "NULL" "NULL"
## [284,] "SNORD116@"    NA                "NULL" "NULL"
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##   [1,] "NULL"                 "NA"
##   [2,] "NULL"                 "NA"
##   [3,] "0.213965154035421"    "-1.86100171152638"
##   [4,] "NULL"                 "NA"
##   [5,] "0.663623809814453"    "0.446321842677452"
##   [6,] "0.49331573862992"     "0.176715346450335"
##   [7,] "0.898360820931232"    "-2.13752509953959"
##   [8,] "NULL"                 "NA"
##   [9,] "NULL"                 "NA"
```

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##  [10,] "0.892535455560517"    "1.22956193704111"
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##  [12,] "NULL"                 "NA"
##  [13,] "NULL"                 "NA"
##  [14,] "NULL"                 "NA"
##  [15,] "NULL"                 "NA"
##  [16,] "NULL"                 "NA"
##  [17,] "NULL"                 "NA"
##  [18,] "NULL"                 "NA"
##  [19,] "NULL"                 "NA"
##  [20,] "NULL"                 "NA"
##  [21,] "NULL"                 "NA"
##  [22,] "NULL"                 "NA"
##  [23,] "NULL"                 "NA"
##  [24,] "1"                    "-0.202834655729911"
##  [25,] "NULL"                 "NA"
##  [26,] "NULL"                 "NA"
##  [27,] "NULL"                 "NA"
##  [28,] "0.320293363638014"    "1.76671455534844"
##  [29,] "NULL"                 "NA"
##  [30,] "NULL"                 "NA"
##  [31,] "0.332305908203125"    "-1.45133834054069"
##  [32,] "NULL"                 "NA"
##  [33,] "NULL"                 "NA"
##  [34,] "0.850554019212723"    "3.51917822575319"
##  [35,] "NULL"                 "NA"
##  [36,] "0.00257682800292969"  "-5.25600330824246"
##  [37,] "0.561380744298984"    "1.09497464846308"
##  [38,] "0.557197093963623"    "-2.03198719548545"
##  [39,] "1"                    "-0.427617987059879"
##  [40,] "NULL"                 "NA"
##  [41,] "0.0759534872030176"   "9.24661141576064"
##  [42,] "NULL"                 "NA"
##  [43,] "NULL"                 "NA"
##  [44,] "NULL"                 "NA"
##  [45,] "NULL"                 "NA"
##  [46,] "NULL"                 "NA"
##  [47,] "0.727547083489473"    "2.22256428675472"
##  [48,] "NULL"                 "NA"
##  [49,] "NULL"                 "NA"
##  [50,] "NULL"                 "NA"
##  [51,] "NULL"                 "NA"
##  [52,] "NULL"                 "NA"
##  [53,] "NULL"                 "NA"
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##  [55,] "NULL"                 "NA"
##  [56,] "0.818105967902944"    "-0.653737767329279"
##  [57,] "NULL"                 "NA"
##  [58,] "NULL"                 "NA"
##  [59,] "NULL"                 "NA"
##  [60,] "5.29395592033941e-23" "30.5832254123407"
##  [61,] "0.597484999305873"    "-0.294231946196439"
##  [62,] "0.0254832924348297"   "-2.71911852083577"
##  [63,] "0.0629722570361699"   "1.83342460524902"
```

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##  [64,] "1"                    "0.988851379630823"
##  [65,] "NULL"                 "NA"
##  [66,] "NULL"                 "NA"
##  [67,] "NULL"                 "NA"
##  [68,] "0.267182304990396"    "-1.42678617647717"
##  [69,] "NULL"                 "NA"
##  [70,] "0.629058837890625"    "1.0154748070832"
##  [71,] "NULL"                 "NA"
##  [72,] "NULL"                 "NA"
##  [73,] "0.102913184997432"    "-1.82370782079364"
##  [74,] "0.558652331741766"    "1.50572714554268"
##  [75,] "NULL"                 "NA"
##  [76,] "NULL"                 "NA"
##  [77,] "NULL"                 "NA"
##  [78,] "0.855535551905632"    "1.43217888674438"
##  [79,] "0.562988581024381"    "-0.645283345580828"
##  [80,] "NULL"                 "NA"
##  [81,] "0.11511266182112"     "-1.33438477528629"
##  [82,] "NULL"                 "NA"
##  [83,] "1"                    "0.899228803025897"
##  [84,] "NULL"                 "NA"
##  [85,] "NULL"                 "NA"
##  [86,] "0.0699005736949464"   "1.84102908841967"
##  [87,] "NULL"                 "NA"
##  [88,] "NULL"                 "NA"
##  [89,] "0.000535585072100278" "7.052744205496"
##  [90,] "NULL"                 "NA"
##  [91,] "NULL"                 "NA"
##  [92,] "NULL"                 "NA"
##  [93,] "NULL"                 "NA"
##  [94,] "NULL"                 "NA"
##  [95,] "0.248125725753793"    "1.38853151616853"
##  [96,] "0.779767930553075"    "-1.17873791697861"
##  [97,] "NULL"                 "NA"
##  [98,] "NULL"                 "NA"
##  [99,] "0.043558521923842"    "2.12447412631698"
## [100,] "NULL"                 "NA"
## [101,] "NULL"                 "NA"
## [102,] "NULL"                 "NA"
## [103,] "NULL"                 "NA"
## [104,] "0.572357452324395"    "0.268271987249637"
## [105,] "0.694004094076131"    "-0.557152496542793"
## [106,] "0.236901877780293"    "2.42056913340178"
## [107,] "0.760791642561346"    "1.2061655282818"
## [108,] "NULL"                 "NA"
## [109,] "0.263175964355469"    "1.29562444966543"
## [110,] "NULL"                 "NA"
## [111,] "0.583132154261177"    "-0.600469300032641"
## [112,] "0.557197093963623"    "1.7458797760398"
## [113,] "NULL"                 "NA"
## [114,] "1.3400325923359e-22"  "-27.8679956383169"
## [115,] "NULL"                 "NA"
## [116,] "0.015625"             "14.7908576629276"
## [117,] "NULL"                 "NA"
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## [118,] "1"                     "-0.33035170207414"
## [119,] "6.71764364602269e-31" "37.2258689546172"
## [120,] "0.0198343267280683"   "-1.53094634507866"
## [121,] "0.15883333227242"     "2.85065943851339"
## [122,] "NULL"                 "NA"
## [123,] "NULL"                 "NA"
## [124,] "NULL"                 "NA"
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## [126,] "NULL"                 "NA"
## [127,] "NULL"                 "NA"
## [128,] "NULL"                 "NA"
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## [130,] "NULL"                 "NA"
## [131,] "NULL"                 "NA"
## [132,] "NULL"                 "NA"
## [133,] "0.0654296875"         "3.45864125238724"
## [134,] "NULL"                 "NA"
## [135,] "NULL"                 "NA"
## [136,] "NULL"                 "NA"
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## [150,] "1"                    "1.38494647180694"
## [151,] "NULL"                 "NA"
## [152,] "0.29263710818803"     "-2.74429837920953"
## [153,] "NULL"                 "NA"
## [154,] "0.16112227096098"     "-1.63004091071027"
## [155,] "0.809949052918925"    "-0.348155311911396"
## [156,] "0.0192108154296875"   "-5.97969537324074"
## [157,] "1"                    "-2.0815122461607"
## [158,] "3.72529029846191e-09" "21.803432345111"
## [159,] "0.294406156523514"    "2.45880871544627"
## [160,] "NULL"                 "NA"
## [161,] "NULL"                 "NA"
## [162,] "1.24132502395267e-33" "19.2593876304441"
## [163,] "NULL"                 "NA"
## [164,] "0.456482234965126"    "7.04224719761045"
## [165,] "NULL"                 "NA"
## [166,] "NULL"                 "NA"
## [167,] "NULL"                 "NA"
## [168,] "1"                    "1.86786689733689"
## [169,] "NULL"                 "NA"
## [170,] "NULL"                 "NA"
## [171,] "NULL"                 "NA"
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## [172,] "1"                     "1.22777567254009"
## [173,] "0.596641760373082"     "-1.20833418957952"
## [174,] "0.918778035364538"     "0.220647890820344"
## [175,] "0.451380832396126"     "-1.14891252930761"
## [176,] "NULL"                  "NA"
## [177,] "5.50553799467154e-38" "52.763939706331"
## [178,] "NULL"                  "NA"
## [179,] "NULL"                  "NA"
## [180,] "1"                     "-0.842927230423525"
## [181,] "0.281978921793657"     "-0.807232648457966"
## [182,] "NULL"                  "NA"
## [183,] "NULL"                  "NA"
## [184,] "0.542384011856486"     "0.356688187503211"
## [185,] "NULL"                  "NA"
## [186,] "0.322236320357547"     "3.10445600046506"
## [187,] "NULL"                  "NA"
## [188,] "NULL"                  "NA"
## [189,] "NULL"                  "NA"
## [190,] "NULL"                  "NA"
## [191,] "1"                     "0.487495828207836"
## [192,] "NULL"                  "NA"
## [193,] "NULL"                  "NA"
## [194,] "NULL"                  "NA"
## [195,] "0.28627872467041"      "-0.409661407498122"
## [196,] "NULL"                  "NA"
## [197,] "NULL"                  "NA"
## [198,] "0.158653714192323"     "2.21306329064904"
## [199,] "0.596614895854146"     "-0.752807409162811"
## [200,] "NULL"                  "NA"
## [201,] "0.532308776027845"     "1.10735099504458"
## [202,] "NULL"                  "NA"
## [203,] "NULL"                  "NA"
## [204,] "NULL"                  "NA"
## [205,] "NULL"                  "NA"
## [206,] "0.597872449055666"     "2.36453289434102"
## [207,] "NULL"                  "NA"
## [208,] "NULL"                  "NA"
## [209,] "NULL"                  "NA"
## [210,] "0.603970659729229"     "-2.91507995150273"
## [211,] "NULL"                  "NA"
## [212,] "NULL"                  "NA"
## [213,] "NULL"                  "NA"
## [214,] "NULL"                  "NA"
## [215,] "0.897100788341281"     "-1.87906080341657"
## [216,] "NULL"                  "NA"
## [217,] "NULL"                  "NA"
## [218,] "NULL"                  "NA"
## [219,] "NULL"                  "NA"
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## [222,] "NULL"                  "NA"
## [223,] "NULL"                  "NA"
## [224,] "NULL"                  "NA"
## [225,] "0.210039615631104"     "-2.53859103528797"
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## [226,] "0.639972931753945"    "0.385873915177091"
## [227,] "NULL"                 "NA"
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## [229,] "0.143463134765625"    "1.15433691042554"
## [230,] "0.0659940344557982"   "-1.02934985720436"
## [231,] "0.645496763557822"    "-1.50991142759783"
## [232,] "NULL"                 "NA"
## [233,] "NULL"                 "NA"
## [234,] "0.0583072639497706"   "-2.32201289664057"
## [235,] "NULL"                 "NA"
## [236,] "NULL"                 "NA"
## [237,] "NULL"                 "NA"
## [238,] "0.94789635041917"     "-2.12278733123218"
## [239,] "0.0703125"            "-0.650944554904119"
## [240,] "NULL"                 "NA"
## [241,] "NULL"                 "NA"
## [242,] "0.56252094230485"     "-1.84872151288511"
## [243,] "NULL"                 "NA"
## [244,] "0.117275205957413"    "-1.29783873499746"
## [245,] "1"                    "-1.92355203682794"
## [246,] "NULL"                 "NA"
## [247,] "0.940938045848218"    "-1.26911160175261"
## [248,] "NULL"                 "NA"
## [249,] "NULL"                 "NA"
## [250,] "0.665950163901232"    "0.194543542784739"
## [251,] "NULL"                 "NA"
## [252,] "NULL"                 "NA"
## [253,] "NULL"                 "NA"
## [254,] "NULL"                 "NA"
## [255,] "0.806595996397849"    "-0.341126715630207"
## [256,] "1.58711064069431e-41" "47.0483021799141"
## [257,] "1.58711064069431e-41" "47.0483021799141"
## [258,] "0.413193694518876"    "-2.46778794547552"
## [259,] "0.9370201692132"      "0.455783117069122"
## [260,] "NULL"                 "NA"
## [261,] "NULL"                 "NA"
## [262,] "NULL"                 "NA"
## [263,] "NULL"                 "NA"
## [264,] "0.241644723140753"    "1.63266963670877"
## [265,] "NULL"                 "NA"
## [266,] "NULL"                 "NA"
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## [276,] "NULL"                 "NA"
## [277,] "NULL"                 "NA"
## [278,] "NULL"                 "NA"
## [279,] "NULL"                 "NA"
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## [282,] "NULL"                "NA"
## [283,] "NULL"                "NA"
## [284,] "NULL"                "NA"
##        pvals                   weightedZ
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##   [2,] "NA"                    NA
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##   [4,] "NA"                    NA
##   [5,] "0.655364780454141"     "1.33803915164623"
##   [6,] "0.859731985868724"     "-0.0552718446115551"
##   [7,] "0.032555306476712"     "-2.35270911169224"
##   [8,] "NA"                    NA
##   [9,] "NA"                    NA
##  [10,] "0.21886119085095"      "0.592744941998139"
##  [11,] "NA"                    NA
##  [12,] "NA"                    NA
##  [13,] "NA"                    NA
##  [14,] "NA"                    NA
##  [15,] "NA"                    NA
##  [16,] "NA"                    NA
##  [17,] "NA"                    NA
##  [18,] "NA"                    NA
##  [19,] "NA"                    NA
##  [20,] "NA"                    NA
##  [21,] "NA"                    NA
##  [22,] "NA"                    NA
##  [23,] "NA"                    NA
##  [24,] "0.839264269571478"     "-0.07267361629183"
##  [25,] "NA"                    NA
##  [26,] "NA"                    NA
##  [27,] "NA"                    NA
##  [28,] "0.0772760445008914"    "1.52727619691415"
##  [29,] "NA"                    NA
##  [30,] "NA"                    NA
##  [31,] "0.146685670062673"     "-1.37427390892727"
##  [32,] "NA"                    NA
##  [33,] "NA"                    NA
##  [34,] "0.000432885795720958"  "1.17914627519513"
##  [35,] "NA"                    NA
##  [36,] "0.00000014721964257115" "-4.663604913016"
##  [37,] "0.273527743191272"     "0.555990313789027"
##  [38,] "0.0421549522380875"    "-2.12510257507365"
##  [39,] "0.668929268252767"     "1.06842861742268"
##  [40,] "NA"                    NA
##  [41,] "2.31722381136205e-20"  "8.7128173009129"
##  [42,] "NA"                    NA
##  [43,] "NA"                    NA
##  [44,] "NA"                    NA
##  [45,] "NA"                    NA
##  [46,] "NA"                    NA
##  [47,] "0.026245194625724"     "1.74075889540106"
##  [48,] "NA"                    NA
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##  [49,] "NA"                     NA
##  [50,] "NA"                     NA
##  [51,] "NA"                     NA
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##  [53,] "NA"                     NA
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##  [55,] "NA"                     NA
##  [56,] "0.51328076672152"       "-0.58028710834948"
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## [239,] "0.766302601013501"     "0.819312098568937"
## [240,] NA                      "NA"
## [241,] NA                      "NA"
## [242,] "0.139767766640146"     "1"
## [243,] NA                      "NA"
## [244,] "0.15687046168125"      "0.927768102615962"
## [245,] "0.105283395198172"     "1"
## [246,] NA                      "NA"
## [247,] "0.241188078232572"     "1"
## [248,] NA                      "NA"
## [249,] NA                      "NA"
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## [250,] "0.873618725196671"      "1"
## [251,] NA                       "NA"
## [252,] NA                       "NA"
## [253,] NA                       "NA"
## [254,] NA                       "NA"
## [255,] "0.900408877471737"      "1"
## [256,] "0"                      "1.68265470126411e-37"
## [257,] "0"                      "1.68265470126411e-37"
## [258,] "0.00539824001314263"    "1"
## [259,] "0.738726229572134"      "1"
## [260,] NA                       "NA"
## [261,] NA                       "NA"
## [262,] NA                       "NA"
## [263,] NA                       "NA"
## [264,] "0.153882629840531"      "1"
## [265,] NA                       "NA"
## [266,] NA                       "NA"
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## [268,] NA                       "NA"
## [269,] NA                       "NA"
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## [271,] NA                       "NA"
## [272,] NA                       "NA"
## [273,] NA                       "NA"
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## [275,] NA                       "NA"
## [276,] NA                       "NA"
## [277,] NA                       "NA"
## [278,] NA                       "NA"
## [279,] NA                       "NA"
## [280,] NA                       "NA"
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##   [2,] "chr2:43838964-43878808"    "Maternal"
##   [3,] "chr16:67657512-67660815"   "Maternal"
##   [4,] "chr2:206443544-206621130"  "Paternal"
##   [5,] "chr5:5140330-5320299"      "Maternal"
##   [6,] "chr8:140531165-140635547"  "Maternal"
##   [7,] "chr6:106360808-106570460"  "Paternal"
##   [8,] "chr6:160003291-160007664"  "Paternal"
##   [9,] "chr3:126103561-126181186"  "Maternal"
##  [10,] "chr11:10450321-10507579"   "-"
##  [11,] "chr11:69985875-70189545"   "Maternal"
##  [12,] "chr9:69427532-69672359"    "Paternal"
##  [13,] "chr7:95485901-95540231"    "Maternal"
##  [14,] "chr11:2268498-2270952"     "Maternal"
##  [15,] "chr15:25678712-25865170"   "Maternal"
##  [16,] "chr11:369795-382117"       "Maternal"
##  [17,] "chr20:31664452-31723955"   "Paternal"
##  [18,] "chr14:100537147-100569794" "-"
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##  [19,] "chr20:37517417-37527931"   "Isoform"
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##  [21,] "chr6:32394736-32407123"    "Maternal"
##  [22,] "chr10:132445210-132448321" "Maternal"
##  [23,] "chr9:135495180-135499915"  "Paternal"
##  [24,] "chr9:71911507-71973457"    "Paternal"
##  [25,] "chr7:93424487-93574730"    "Maternal"
##  [26,] "chr17:80036632-80100613"   "Paternal"
##  [27,] "chr2:56184123-56386174"    "Paternal"
##  [28,] "chr11:2376161-2397419"     "Maternal"
##  [29,] "chr16:89171755-89195492"   "-"
##  [30,] "chr5:19473031-20575863"    "Paternal"
##  [31,] "chr12:57747727-57752447"   "Maternal"
##  [32,] "chr11:2883218-2885832"     "Maternal"
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##  [34,] "chr19:58551566-58555128"   "Maternal"
##  [35,] "chr19:33621955-33773509"   "Maternal"
##  [36,] "chr20:62817062-62841159"   "Maternal"
##  [37,] "chr2:61888835-62136070"    "Maternal"
##  [38,] "chr7:130506238-130668758"  "Maternal"
##  [39,] "chr7:130293134-130324180"  "Maternal"
##  [40,] "chr5:132073792-132076170"  "Maternal"
##  [41,] "chr2:38067603-38076181"    "Paternal"
##  [42,] "chr6:168292830-168319754"  "Maternal"
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##  [45,] "chr7:50458436-50565457"    "-"
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##  [47,] "chr22:20314238-20320105"   "Random"
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##  [68,] "chr4:189940819-189963205"  "-"
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##  [70,] "chr4:143336527-143474565"  "Paternal"
##  [71,] "chr15:26543546-26773788"   "-"
##  [72,] "chr18:32263521-32470484"   "Paternal"
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##  [73,] "chr10:8045473-8075201"     "Paternal"
##  [74,] "chr15:45361124-45378782"   "Maternal"
##  [75,] "chr20:44247099-44280917"   "Paternal"
##  [76,] "chr1:92474761-92486876"    "Paternal"
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##  [79,] "chr20:58839740-58911195"   "Isoform"
##  [80,] "chr20:58818918-58850903"   "Paternal"
##  [81,] "chr19:2511220-2702748"     "-"
##  [82,] "chr2:206175316-206218047"  "Paternal"
##  [83,] "chr8:144504082-144507172"  "Maternal"
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## [132,] "chr10:14954383-14972857"   "Maternal"
## [133,] "chr7:130486175-130506297"  "Paternal"
## [134,] "chr19:56840902-56848554"   "Paternal"
## [135,] "chr14:100882965-100883075" "Maternal"
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## [140,] "chr20:58818226-58818313"   "Paternal"
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## [172,] "chr10:133379237-133391696" "Maternal"
## [173,] "chr2:113215997-113278921"  "-"
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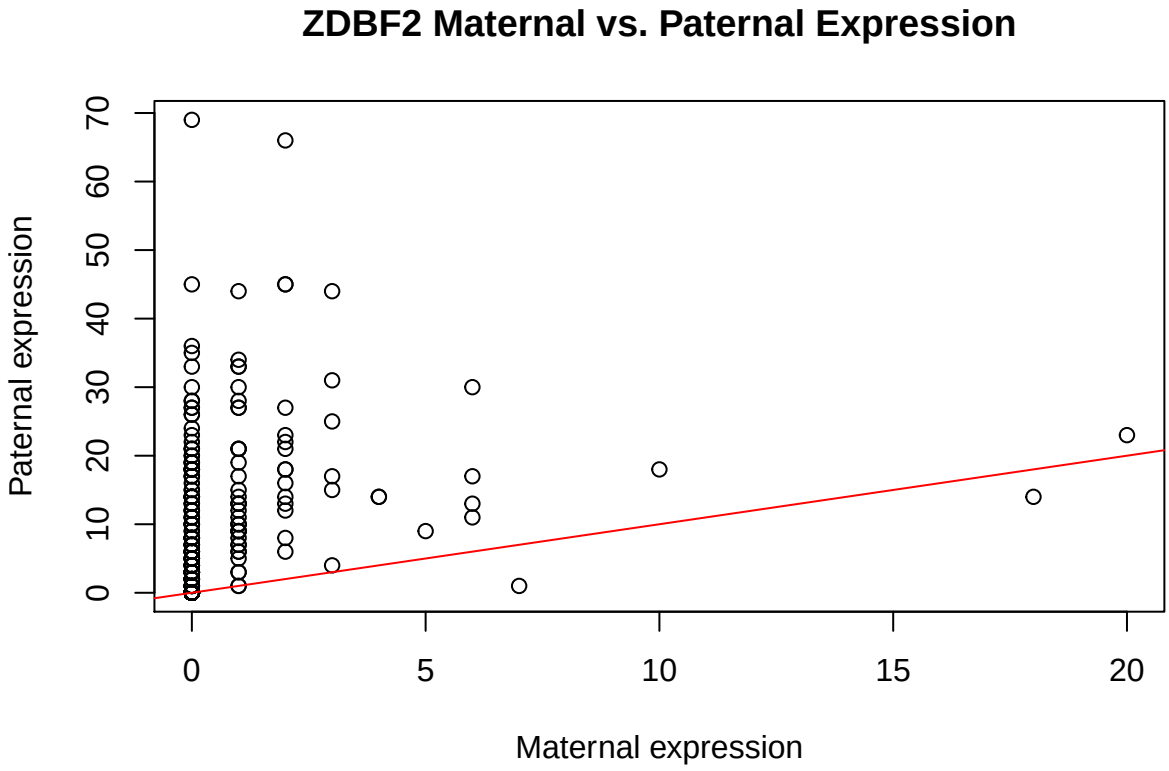
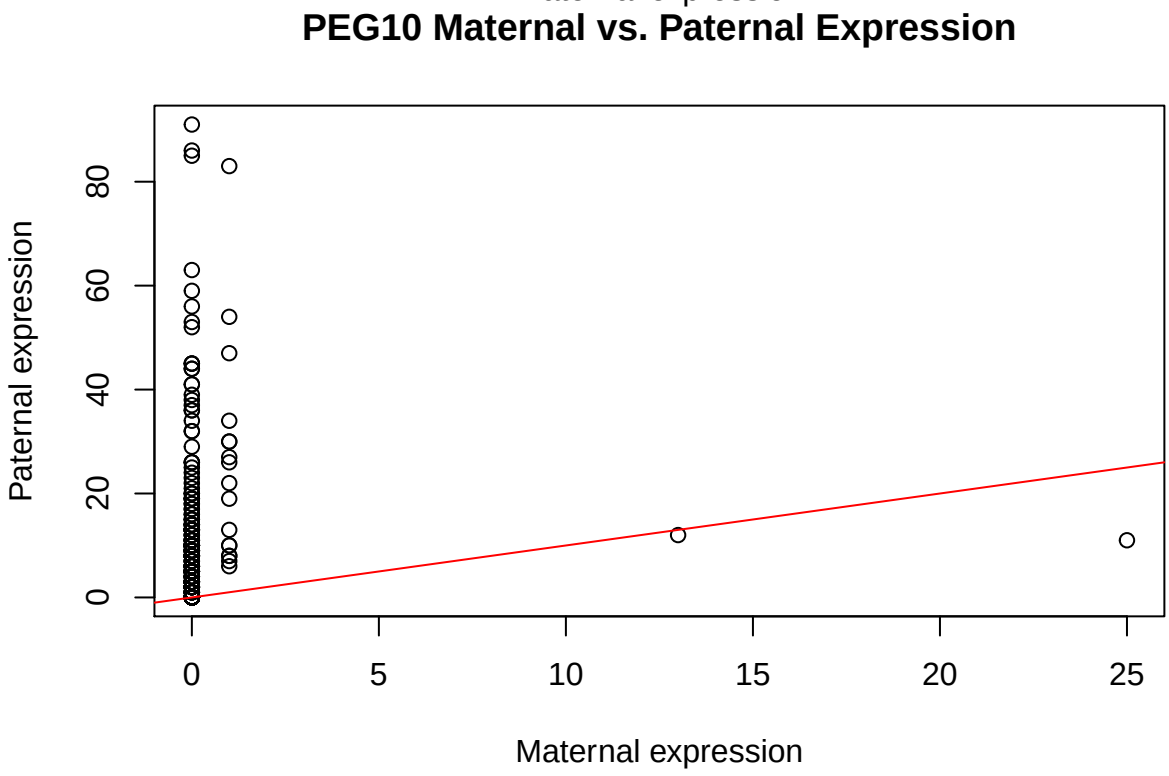
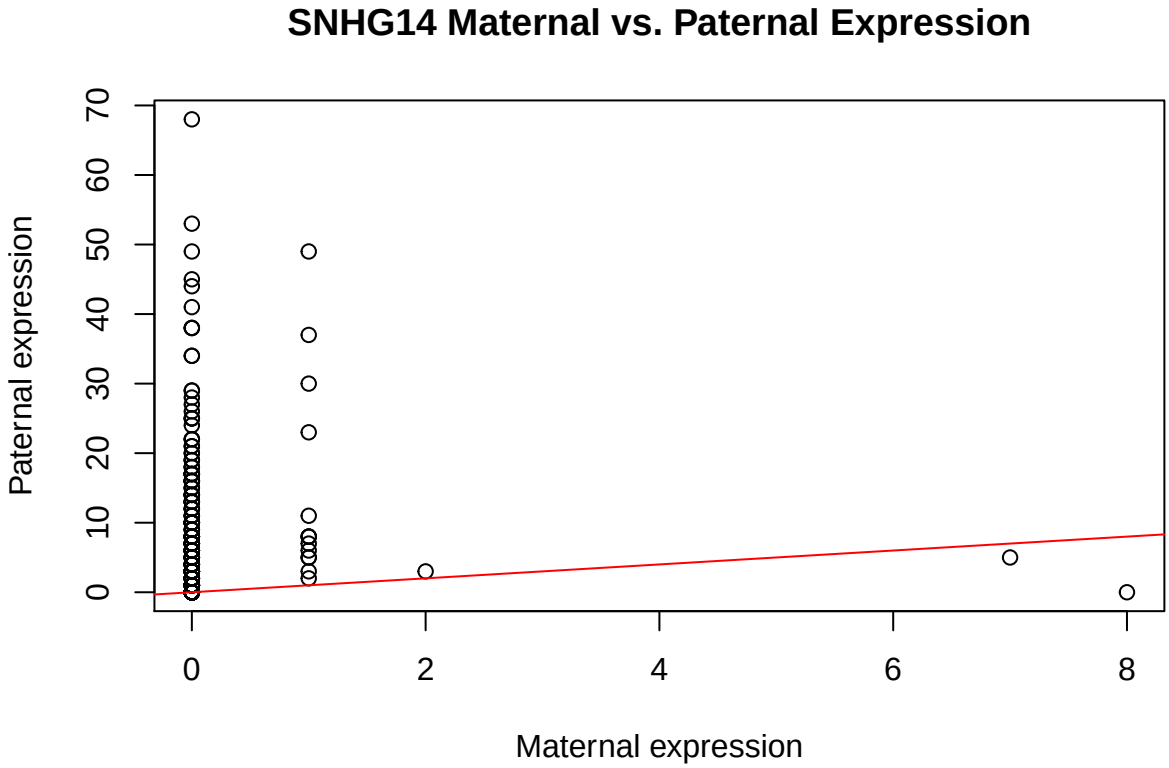
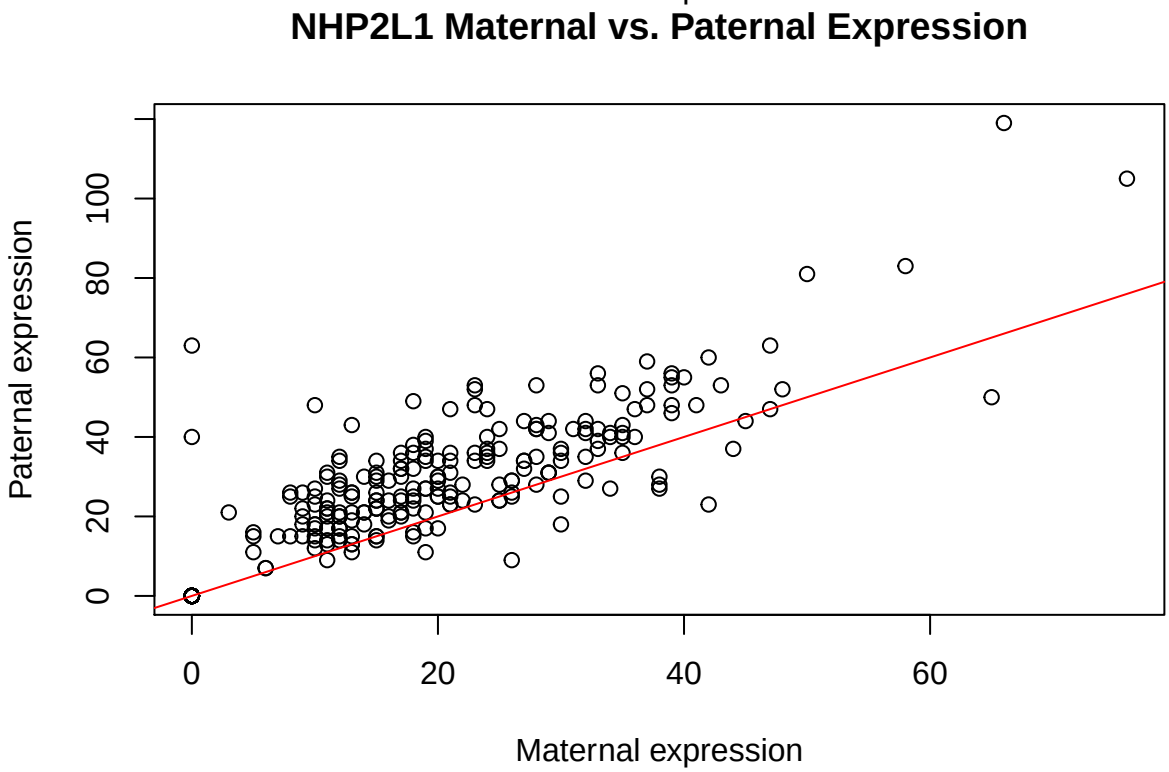
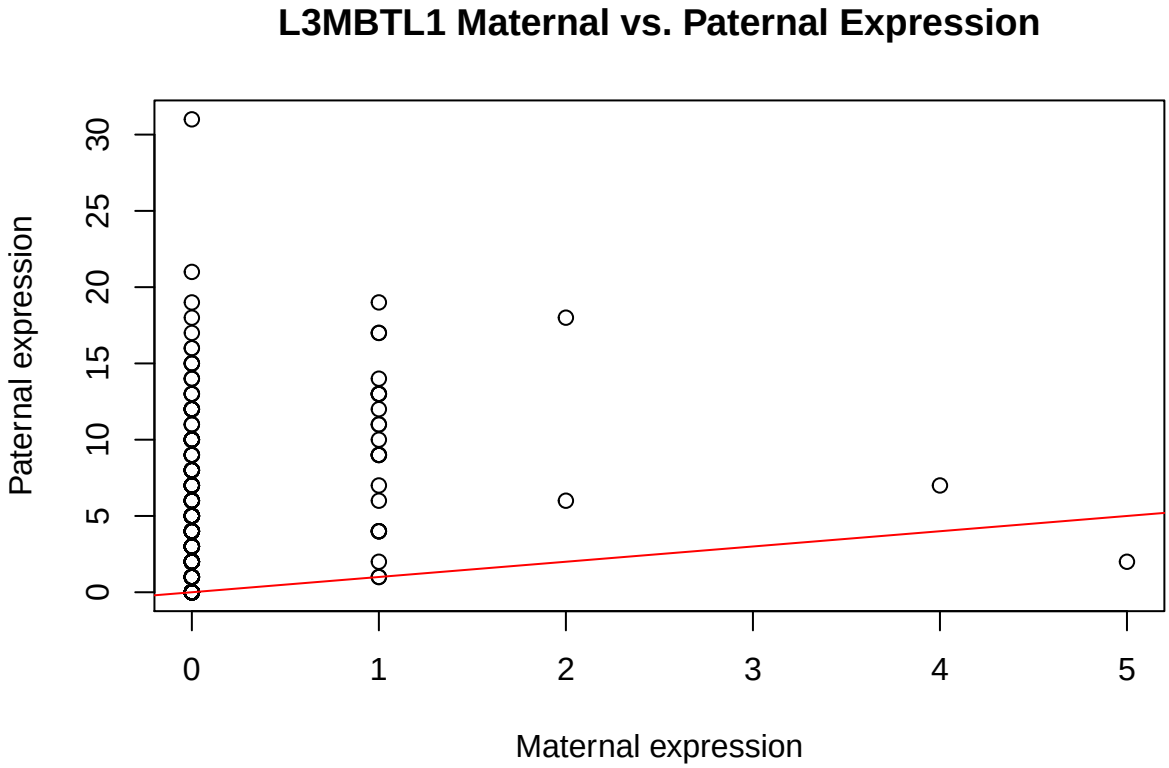
Plots for the 10 most significant from weighted Zscore

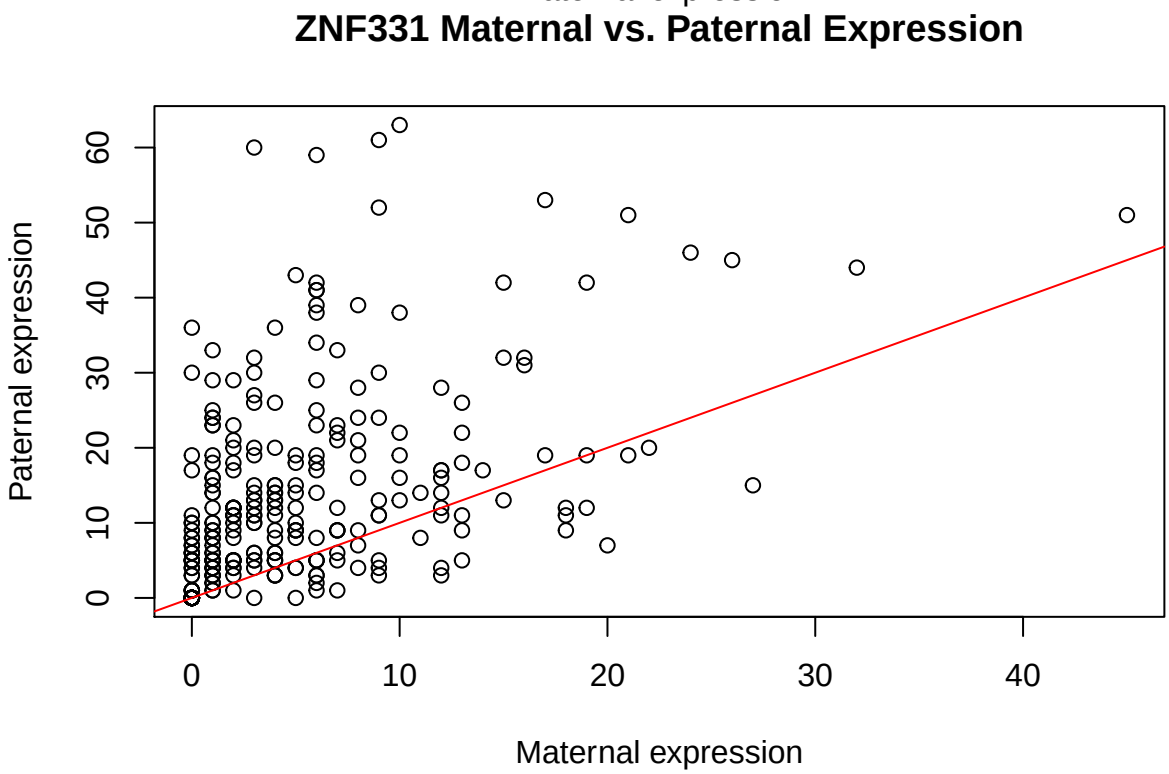


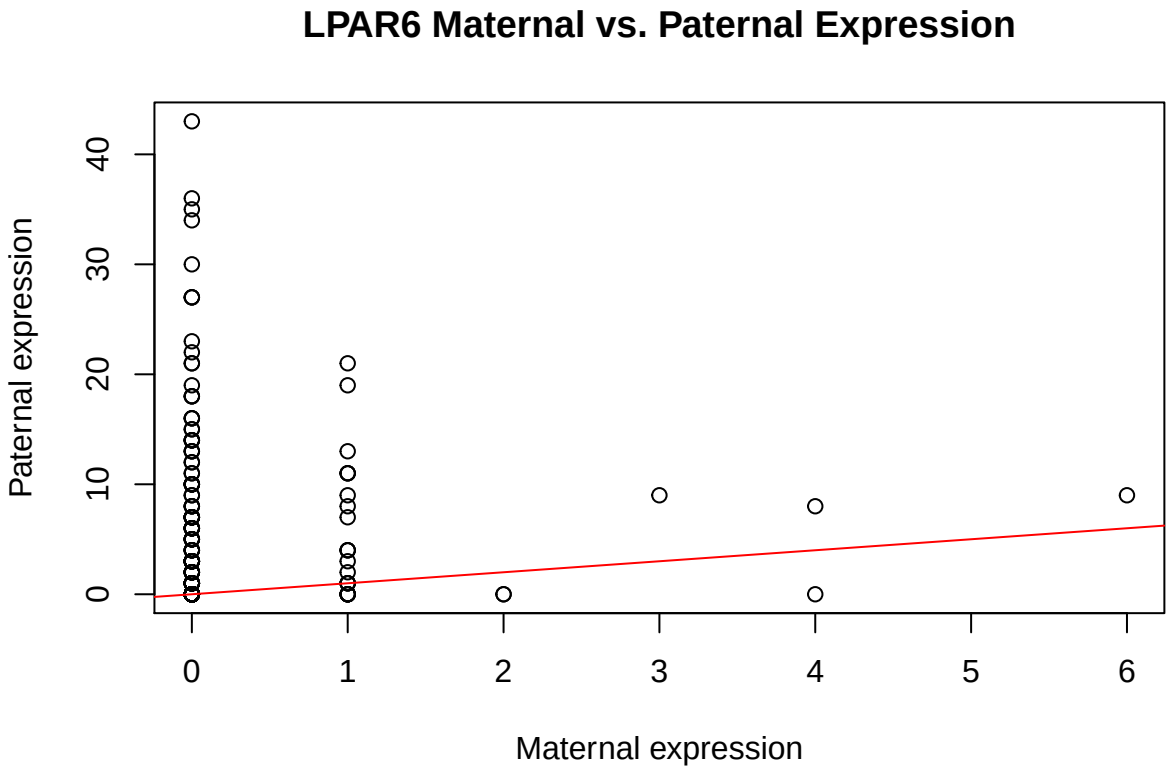


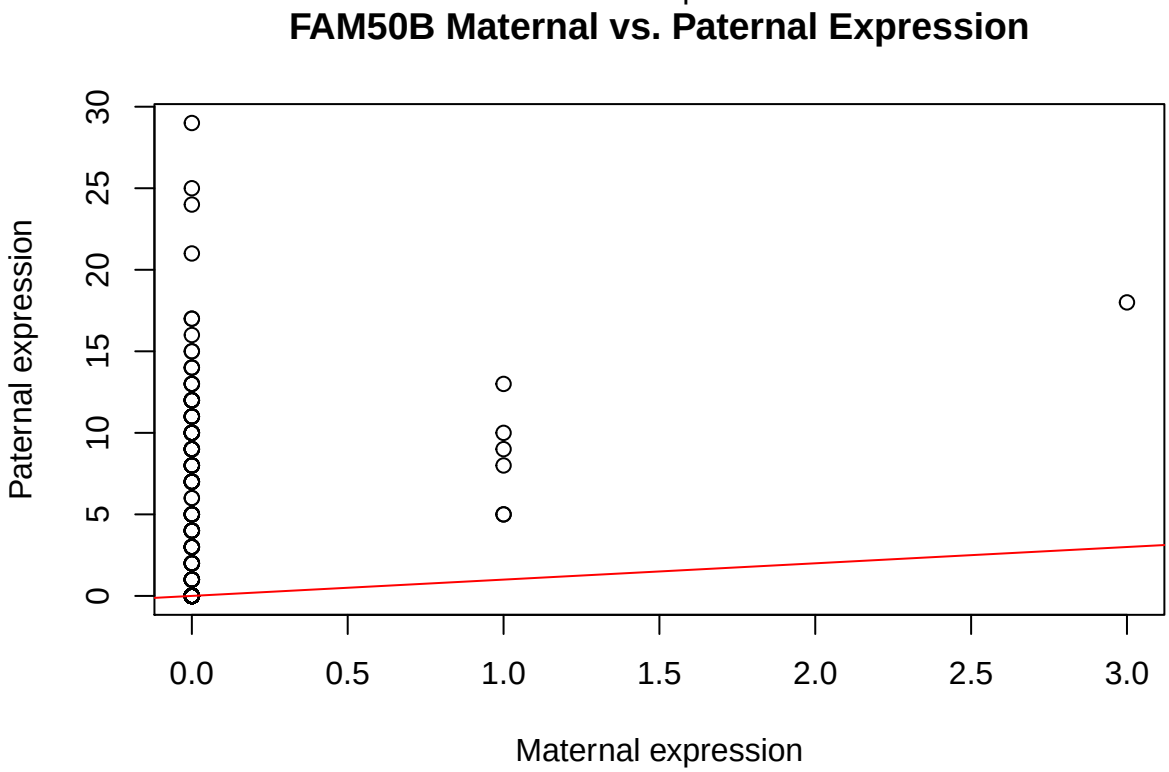

SNHG14 Maternal vs. Paternal Expression
Paternal expression
0
10
20
30
40
50
60
70
0
2
4
6
8
Maternal expression

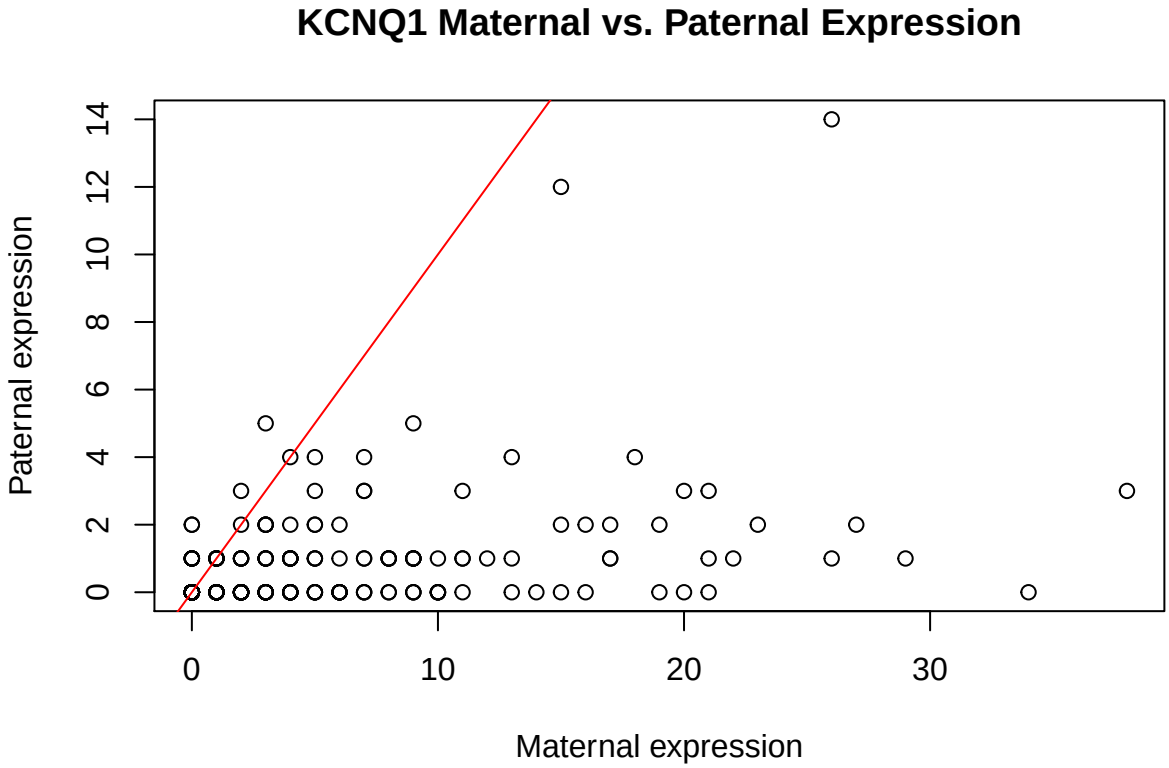

NHP2L1 Maternal vs. Paternal Expression
Paternal expression
0
20
40
60
80
100
0
20
40
60
Maternal expression

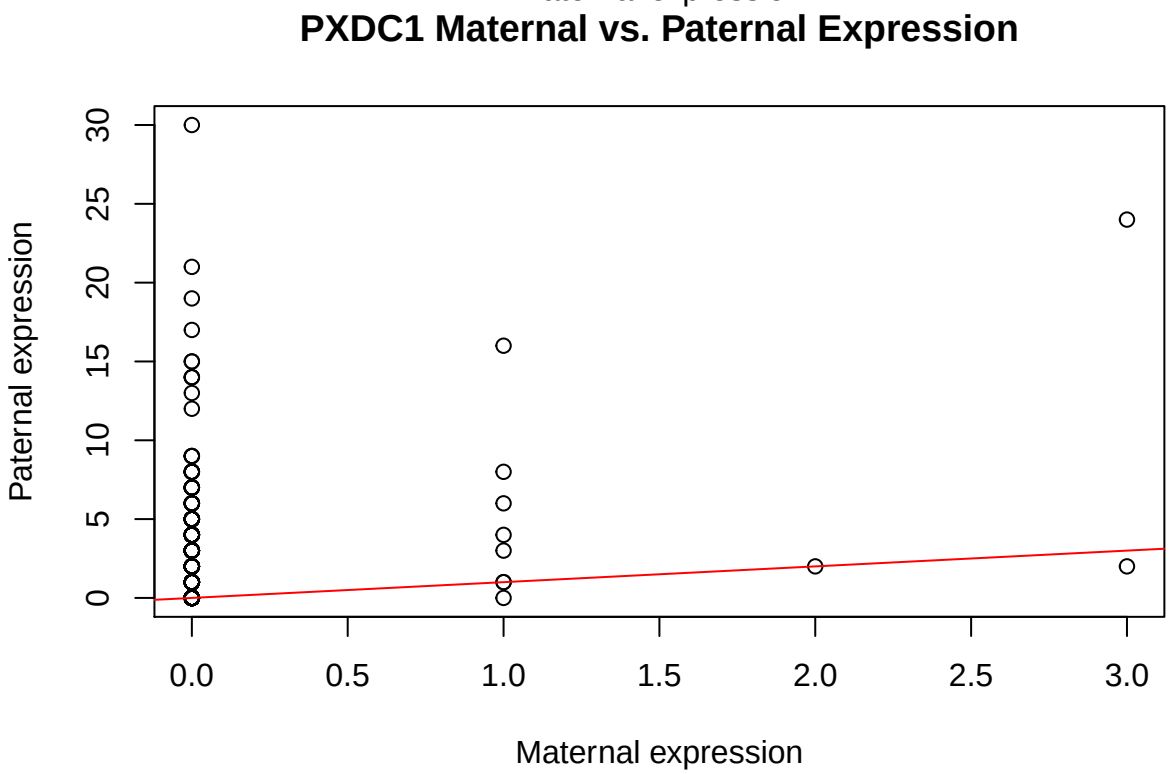

L3MBTL1 Maternal vs. Paternal Expression
Paternal expression
0
5
10
15
20
25
30
0
1
2
3
4
5
Maternal expression


ZNF331 Maternal vs. Paternal Expression
Paternal expression
0
10
20
30
40
50
60
0
10
20
30
40
Maternal expression


LPAR6 Maternal vs. Paternal Expression
Paternal expression
0
10
20
30
40
0
1
2
3
4
5
6
Maternal expression

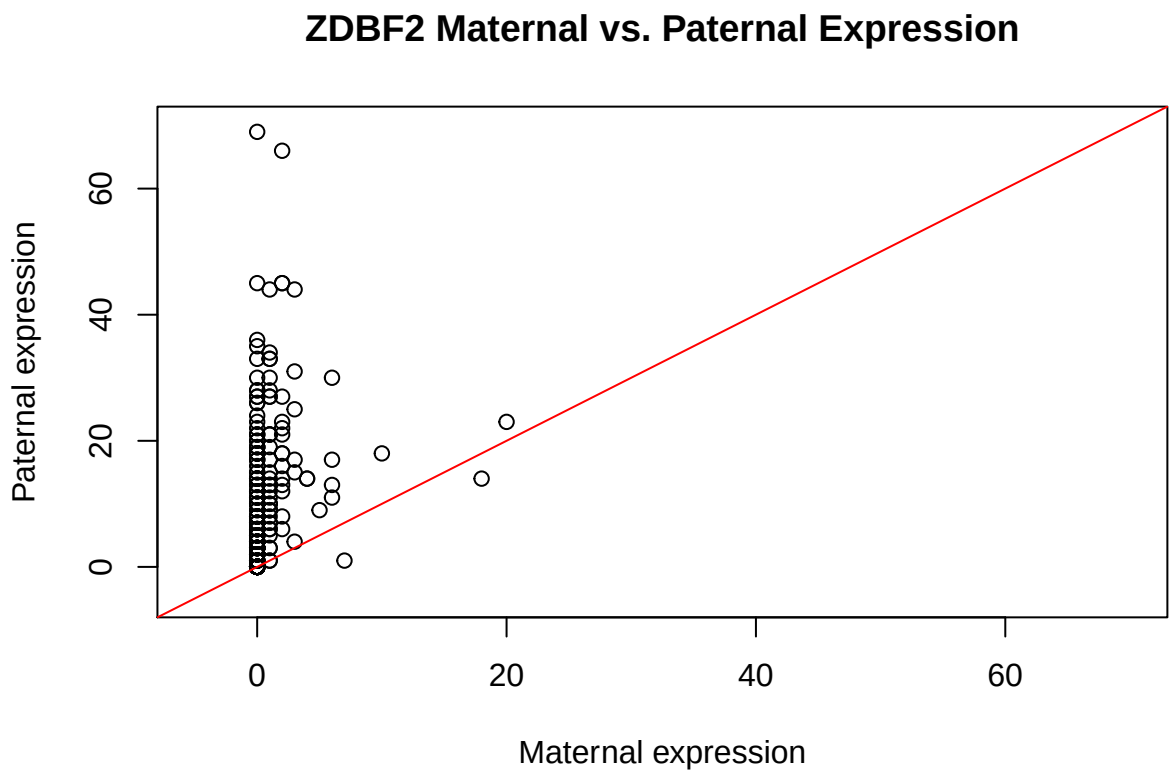

FAM50B Maternal vs. Paternal Expression
Paternal expression
0
5
10
15
20
25
30
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Maternal expression



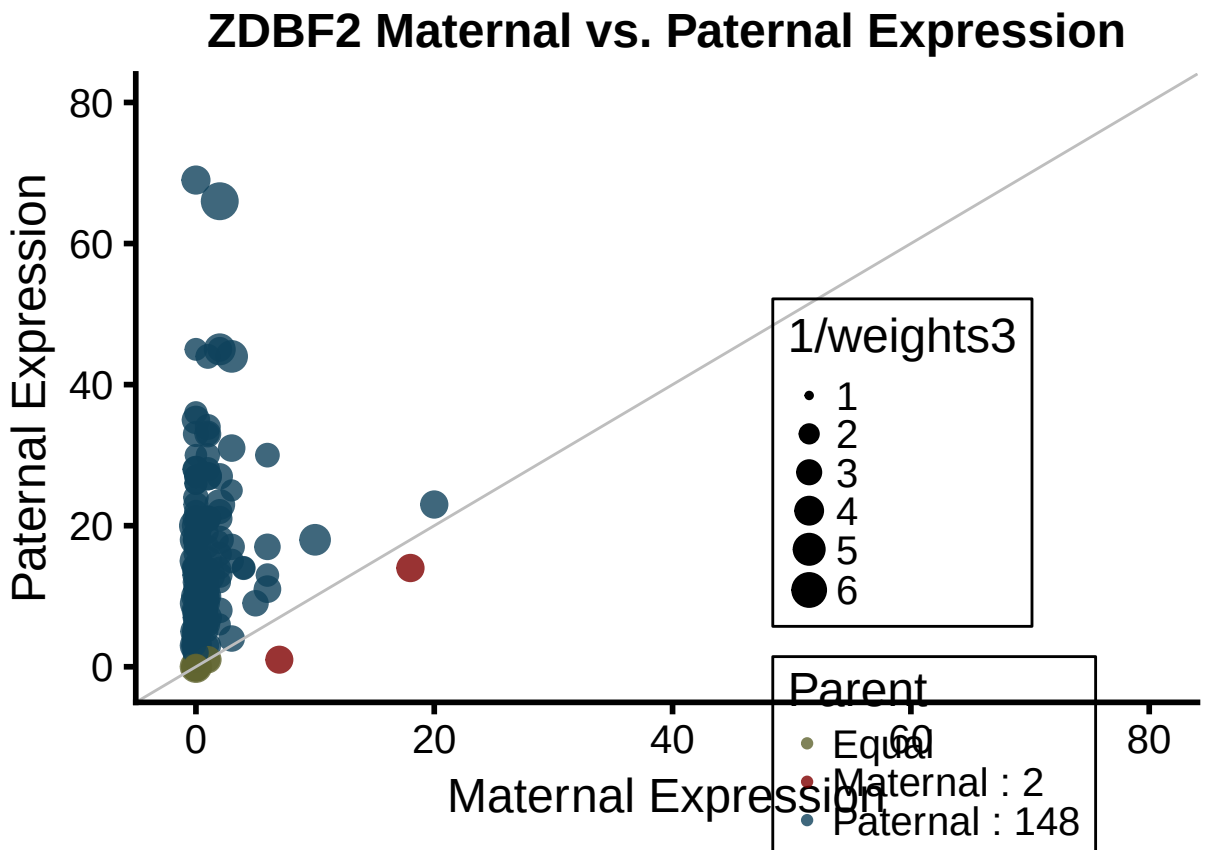



```
weights2 <- weights[which(names(weights)%in%colnames(newmat4))]
weights3 <- weights2[match(names(weights2), colnames(newmat4))]
i <- 1
n <- sigsign$genes[i]
  v <- grep(n, rownames(newmat4))
```

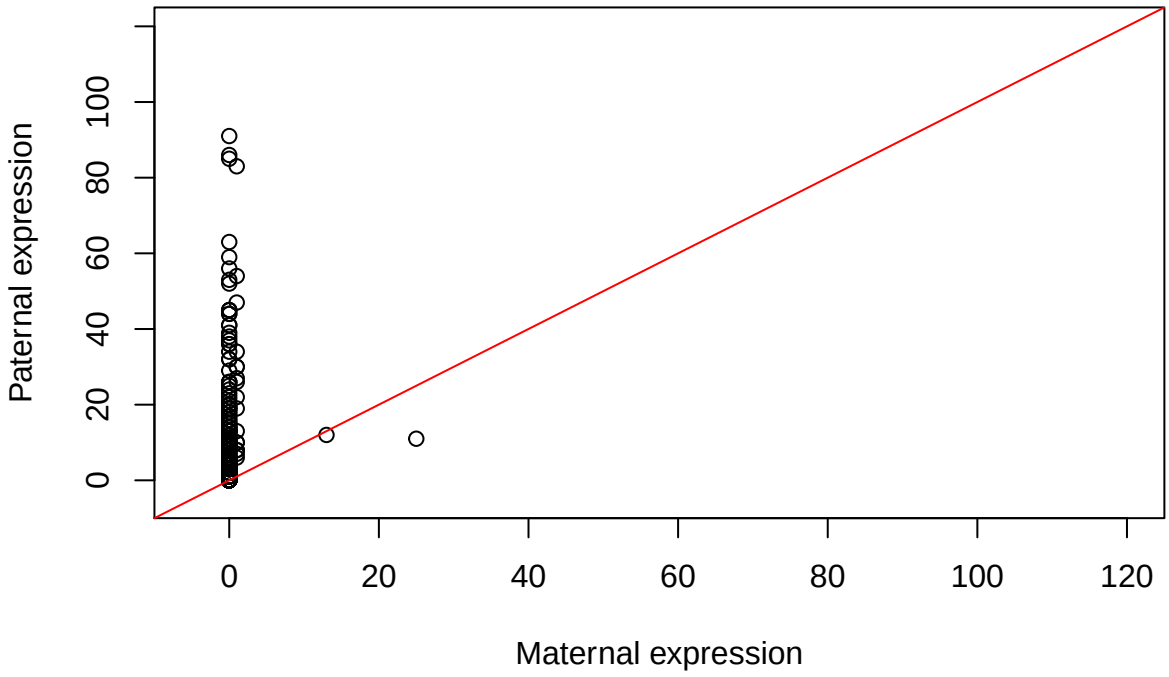
```
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



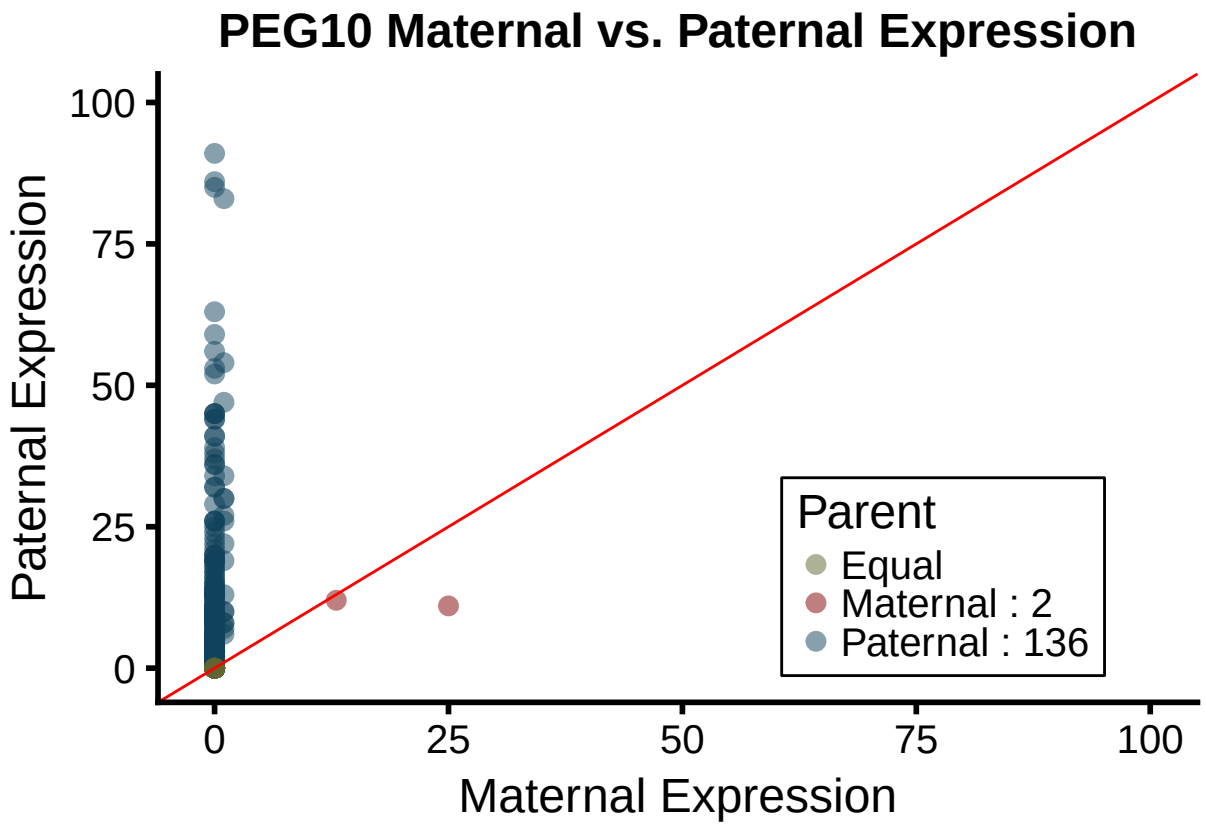

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent),alpha=0.2)+
  geom_point(aes(size=1/weights3))+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,80), ylim=c(-1,80))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



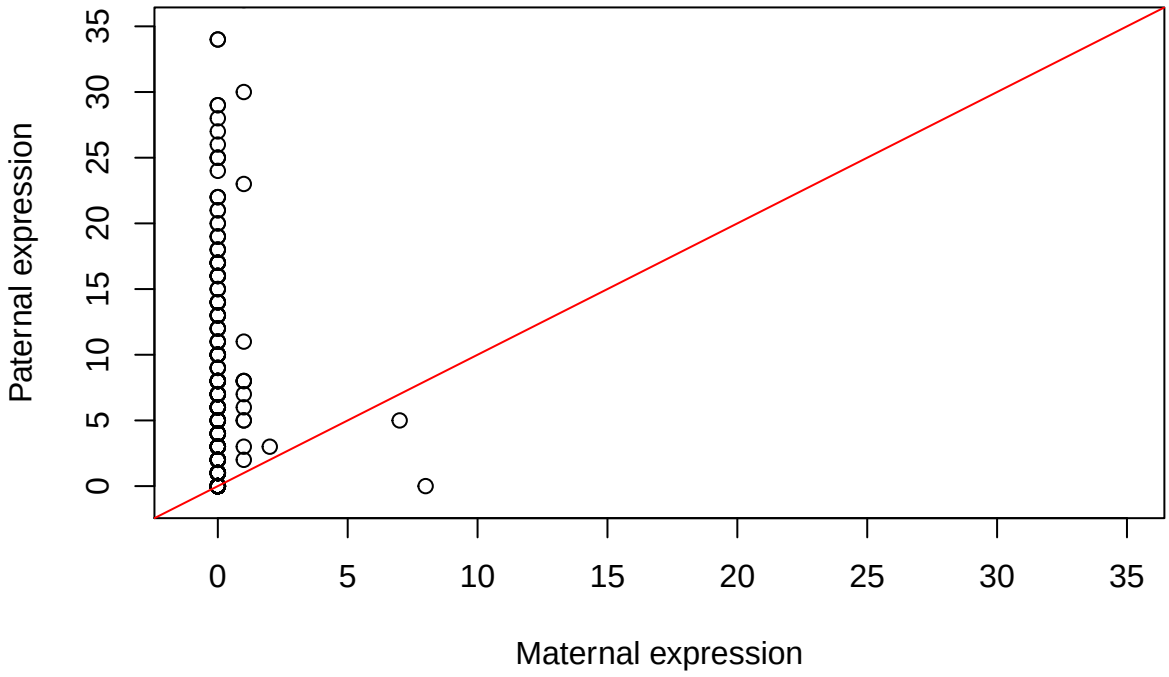

```
i <- 2
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



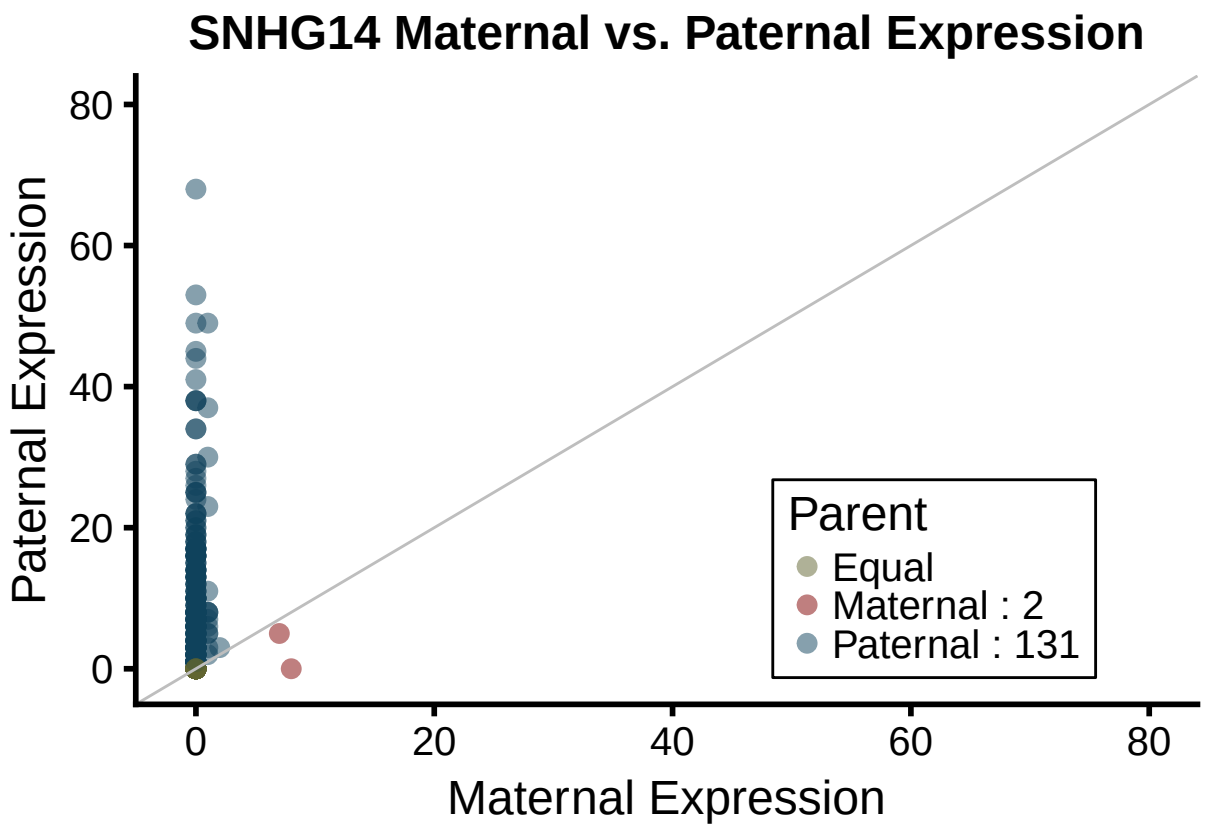

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="red")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,100), ylim=c(-1,100))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



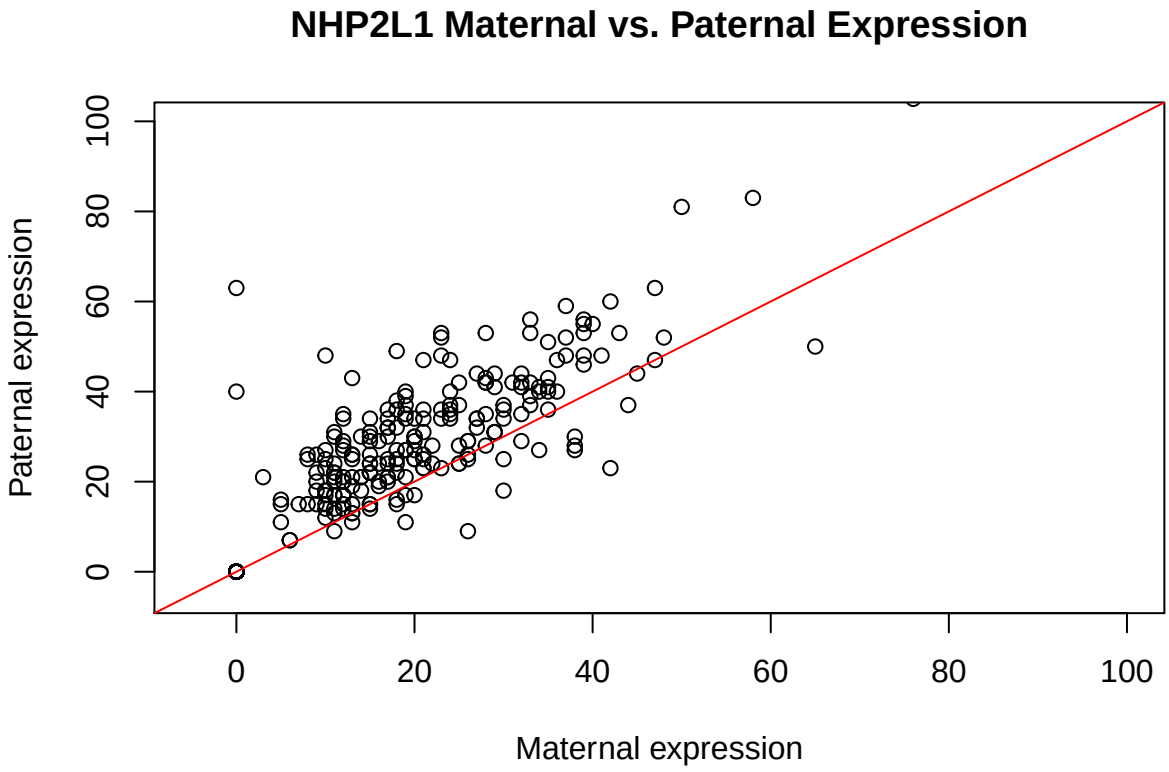

```
i <- 3
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



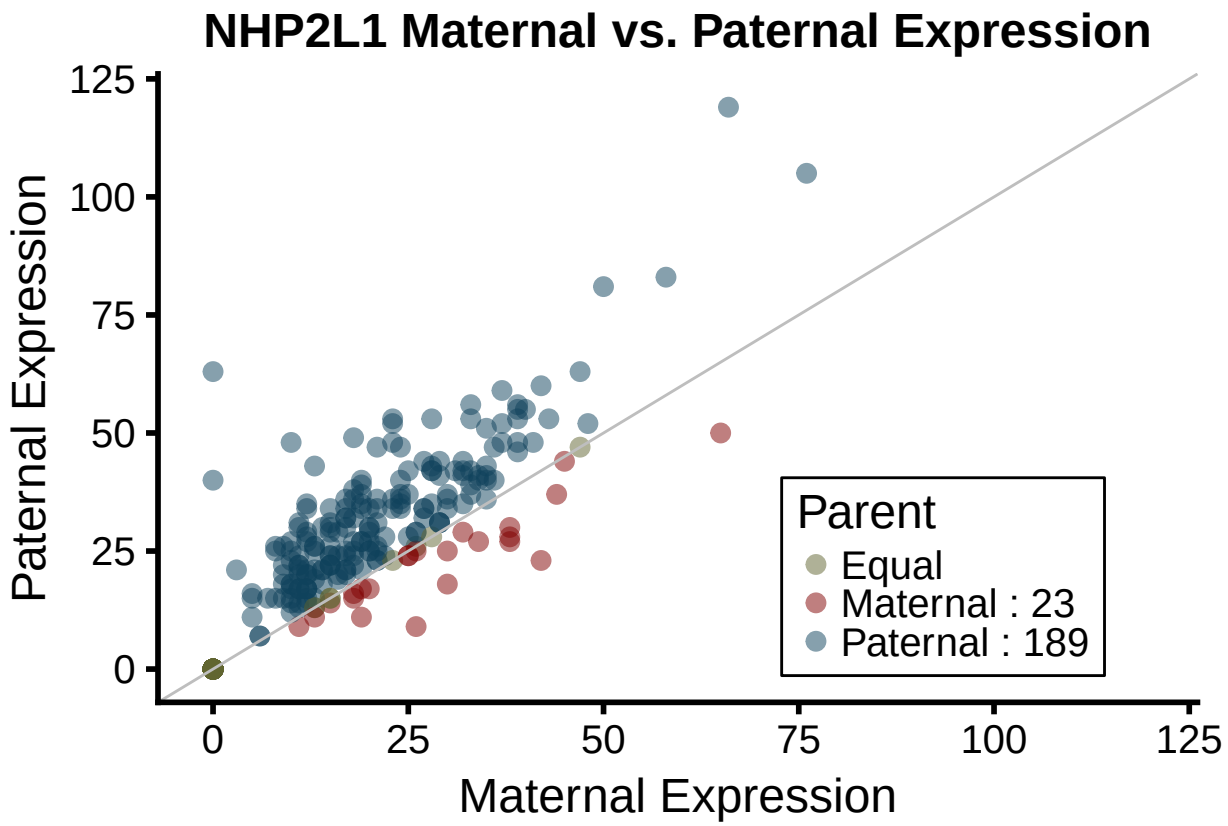

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,80), ylim=c(-1,80))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



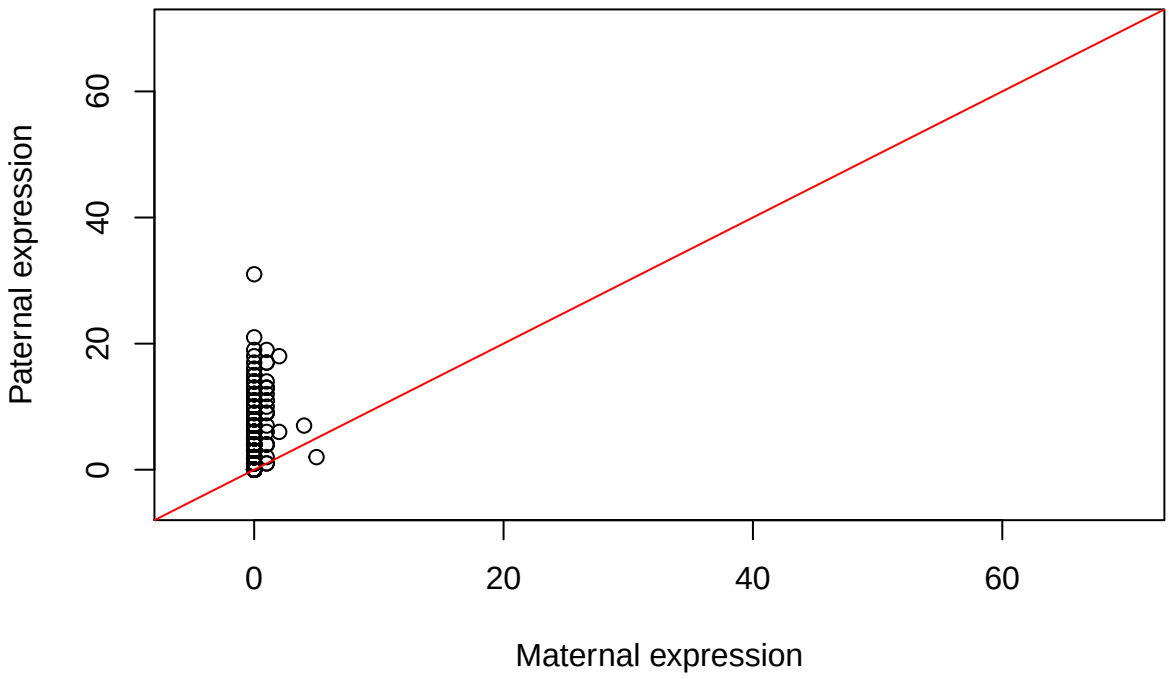

```
i <- 4
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



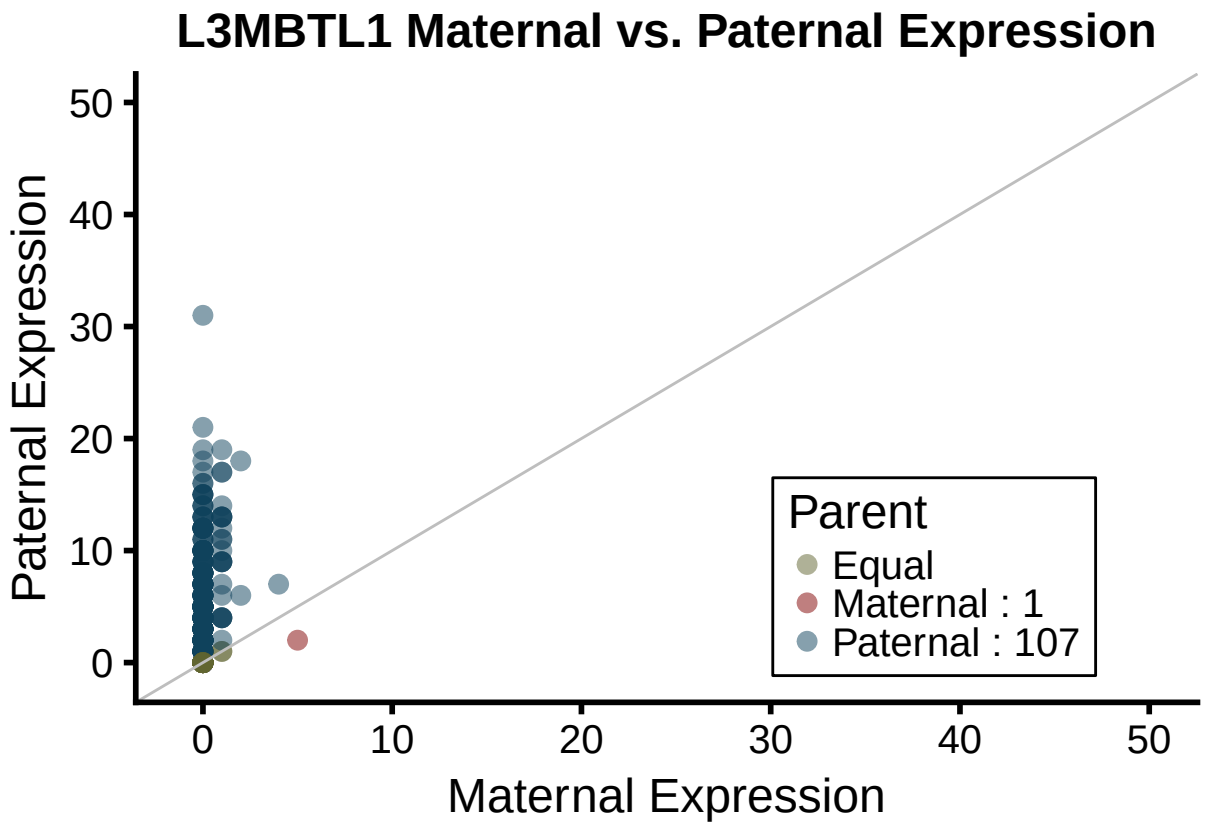

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,120), ylim=c(-1,120))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



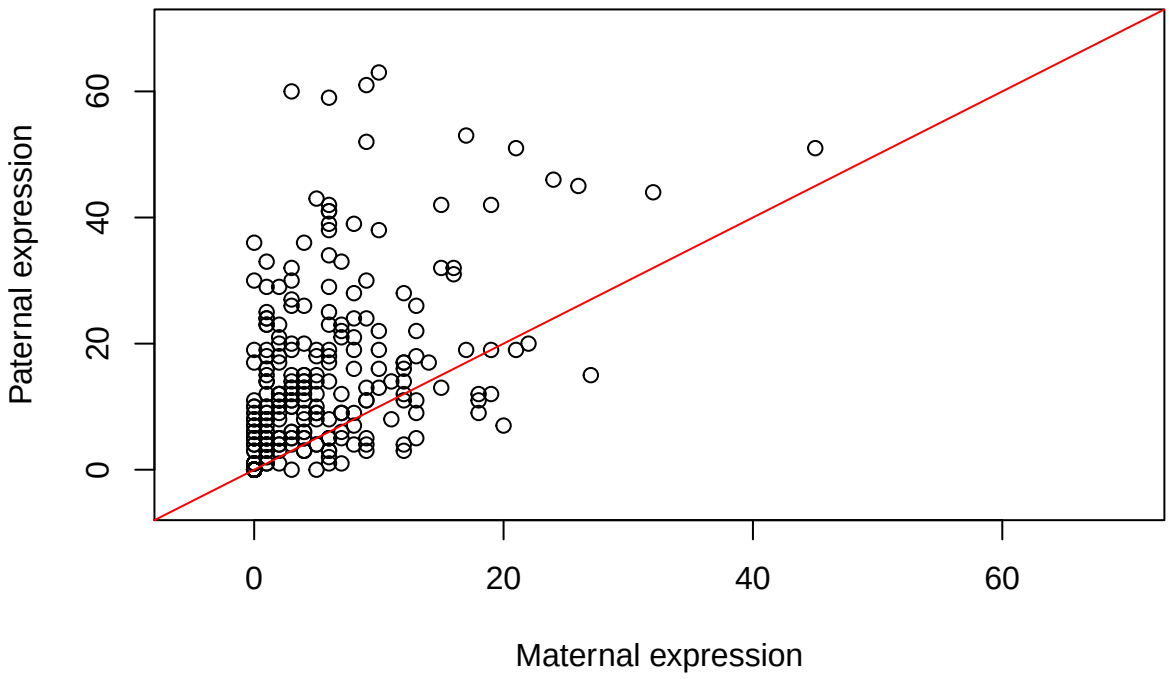

```
i <- 5
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



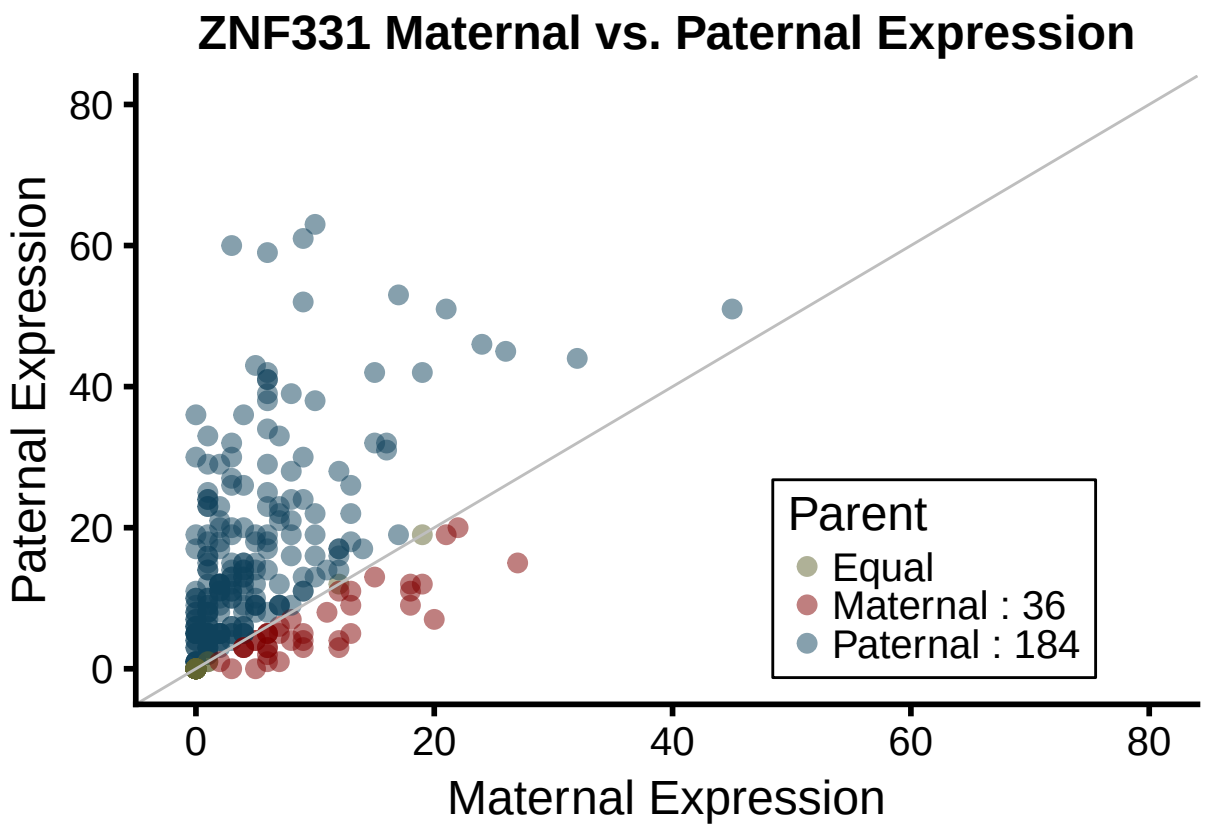

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,50), ylim=c(-1,50))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



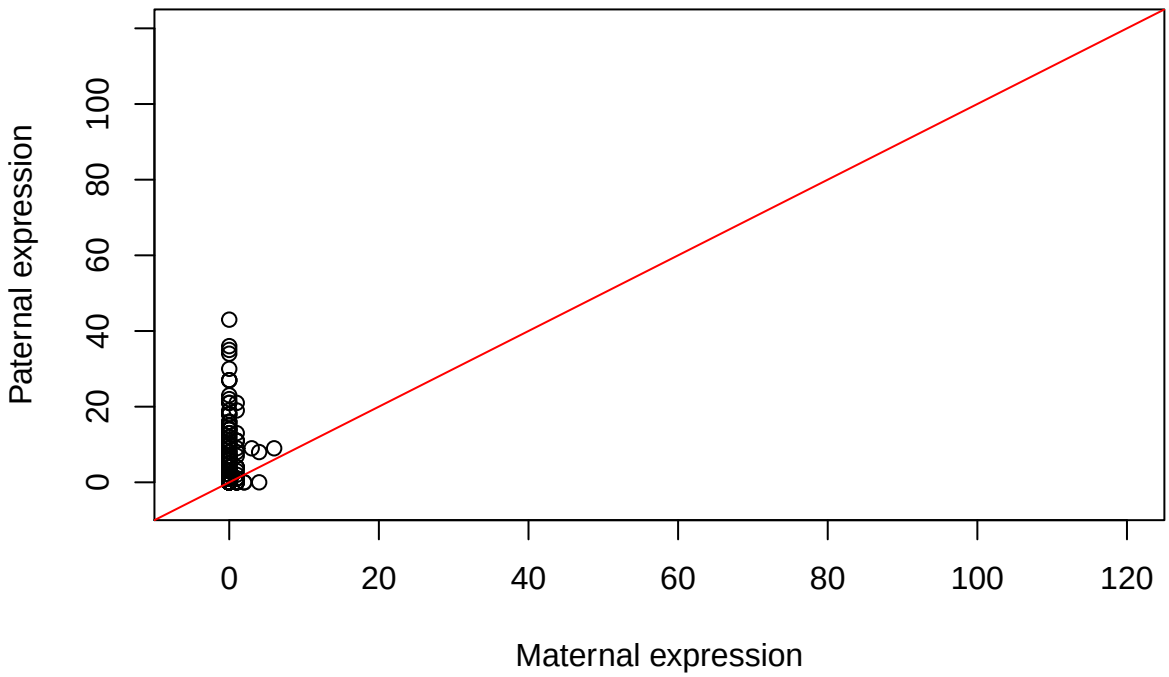

```
i <- 6
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal exp
abline(a=0, b=1, col="red")
```



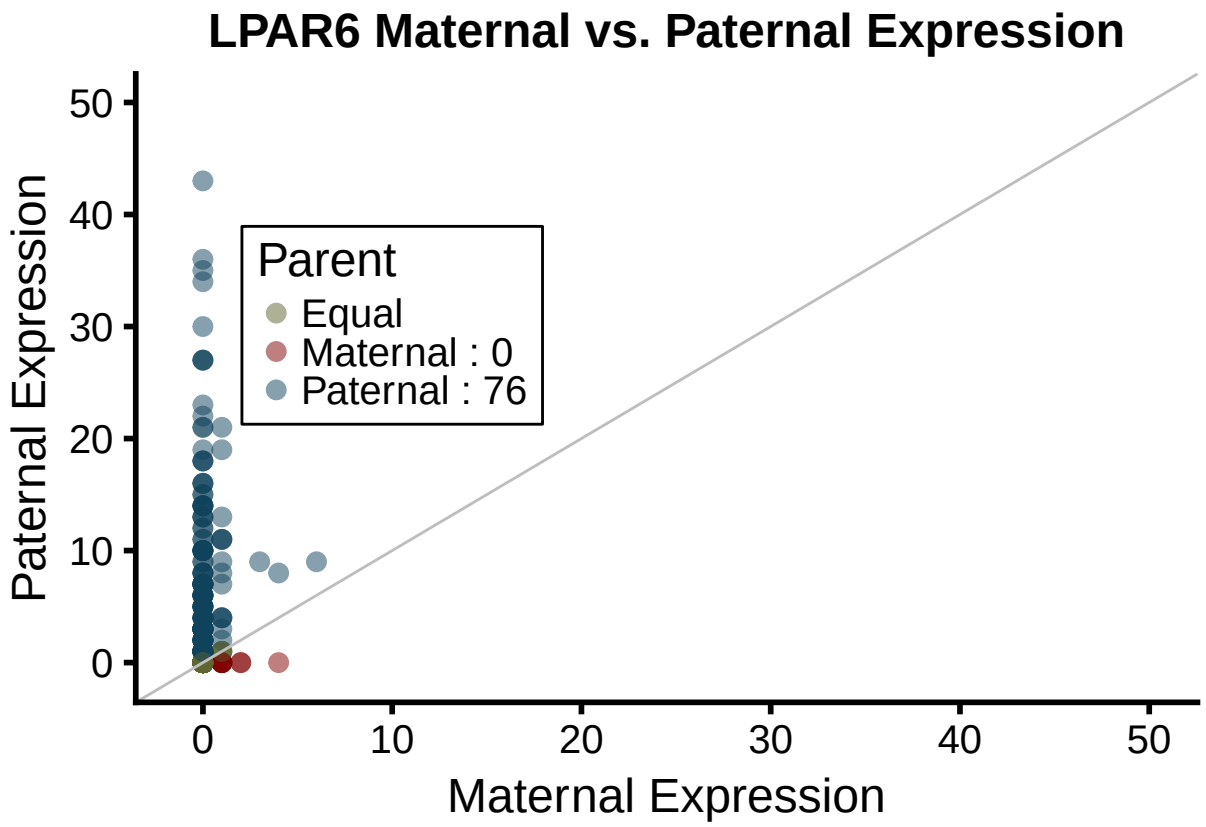

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,80), ylim=c(-1,80))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



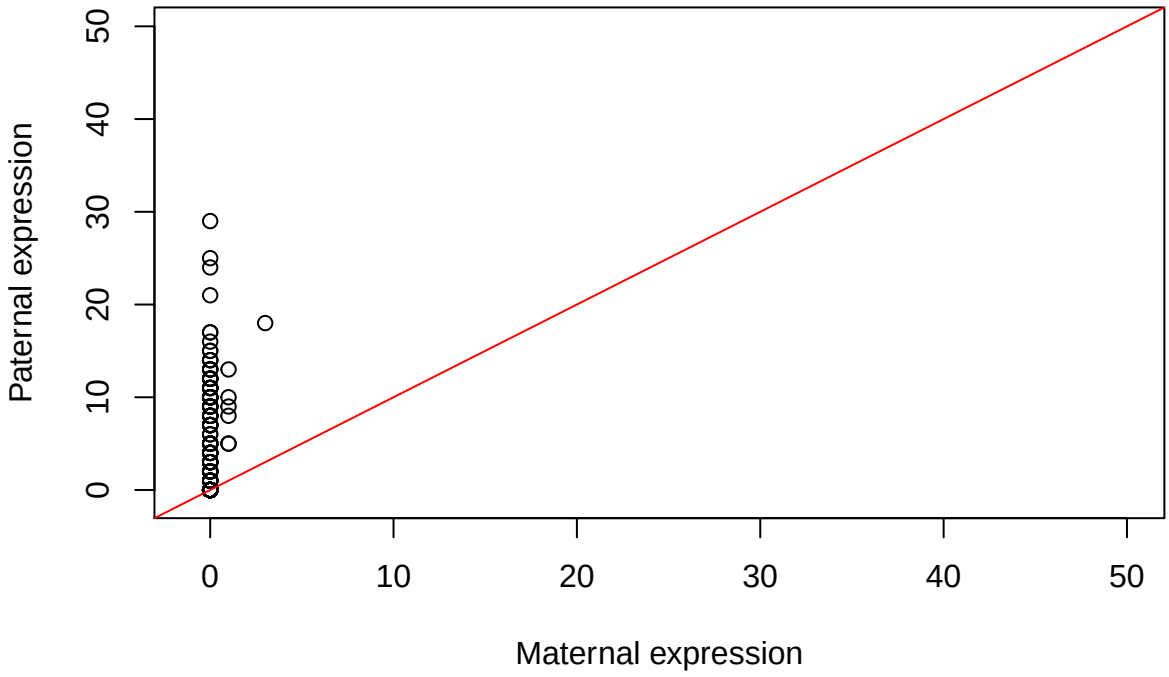

```
i <- 7
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



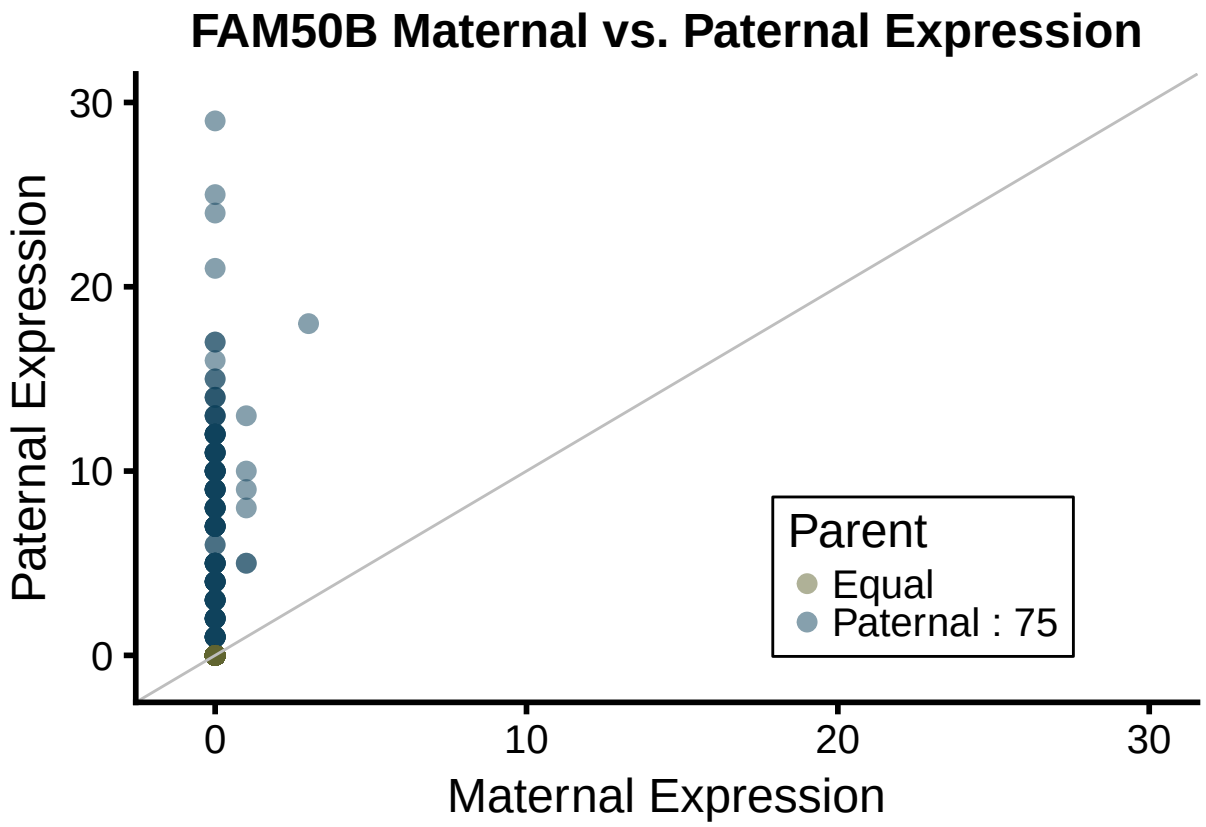

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,50), ylim=c(-1,50))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.1, 0.6),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



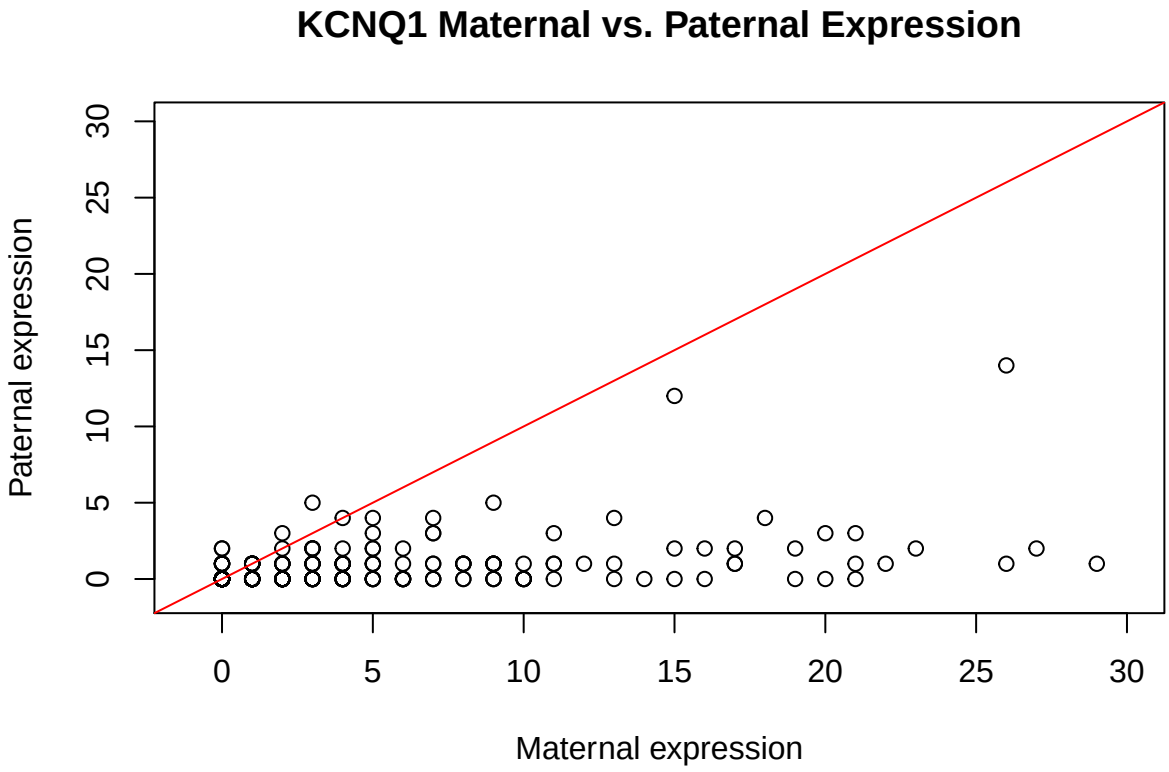

```
i <- 8
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



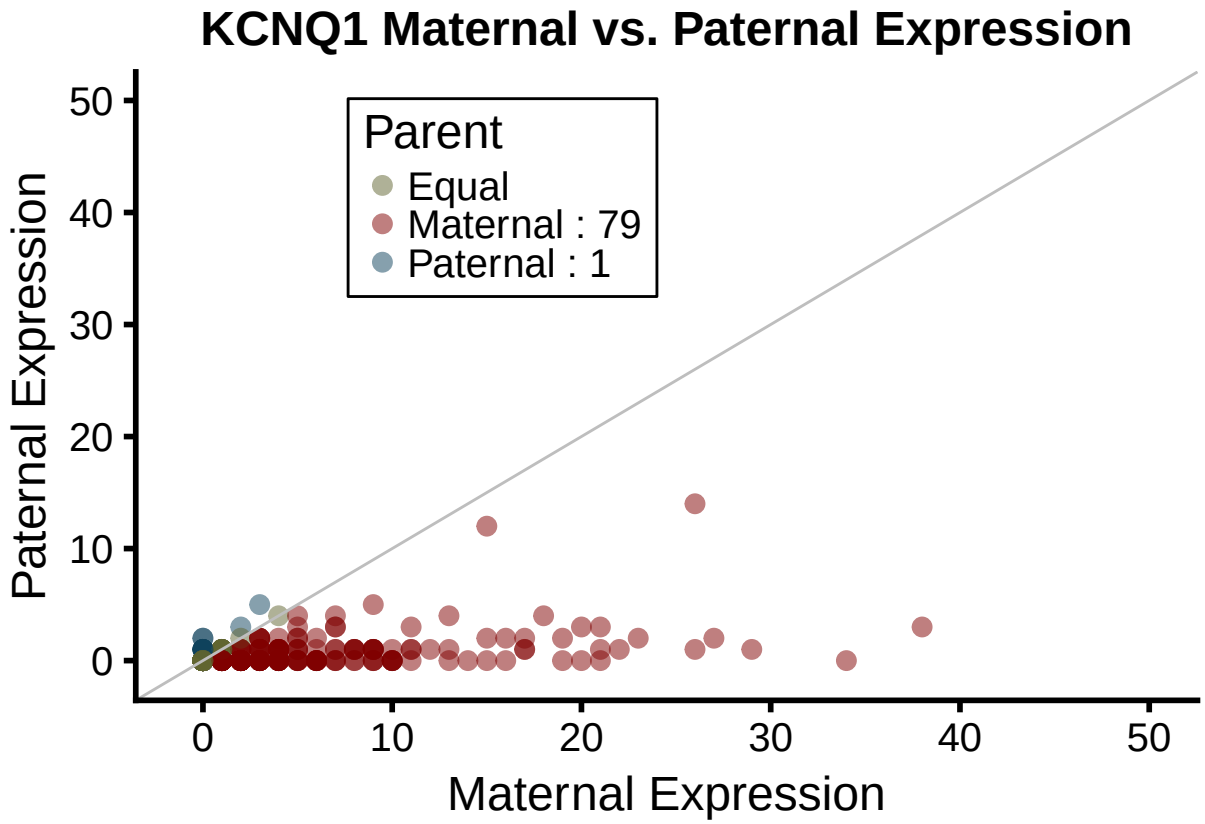

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,30), ylim=c(-1,30))+
 scale_color_manual(values=c("#616530CC" ,  "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



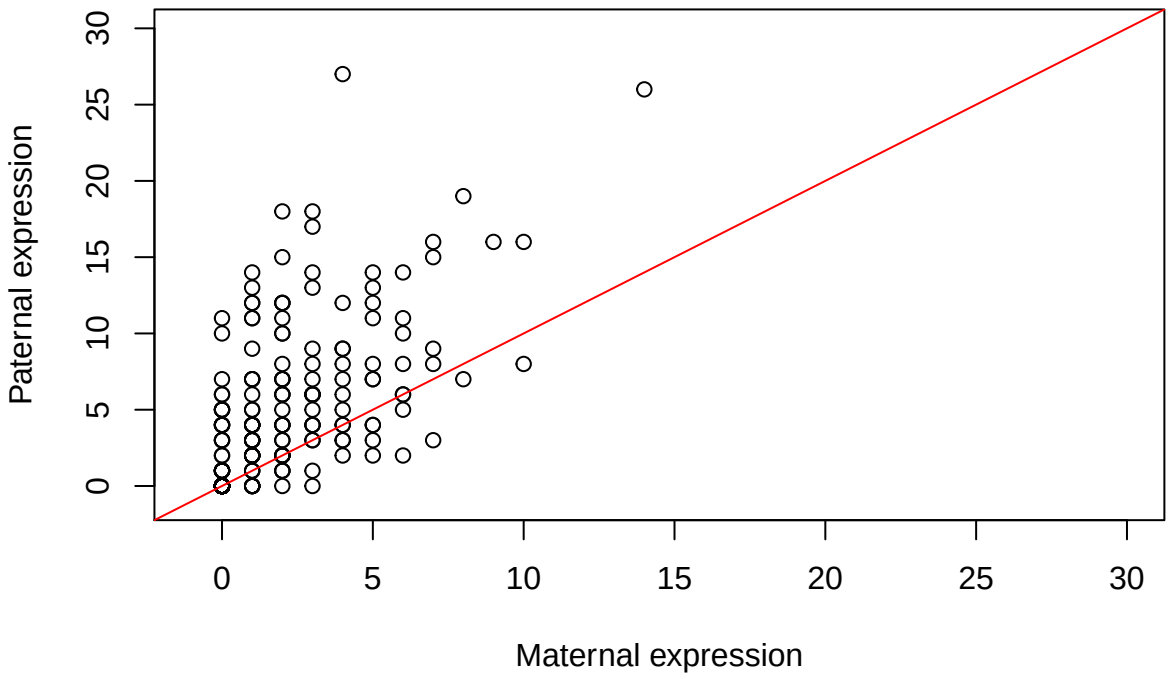

```
i <- 9
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal exp
abline(a=0, b=1, col="red")
```



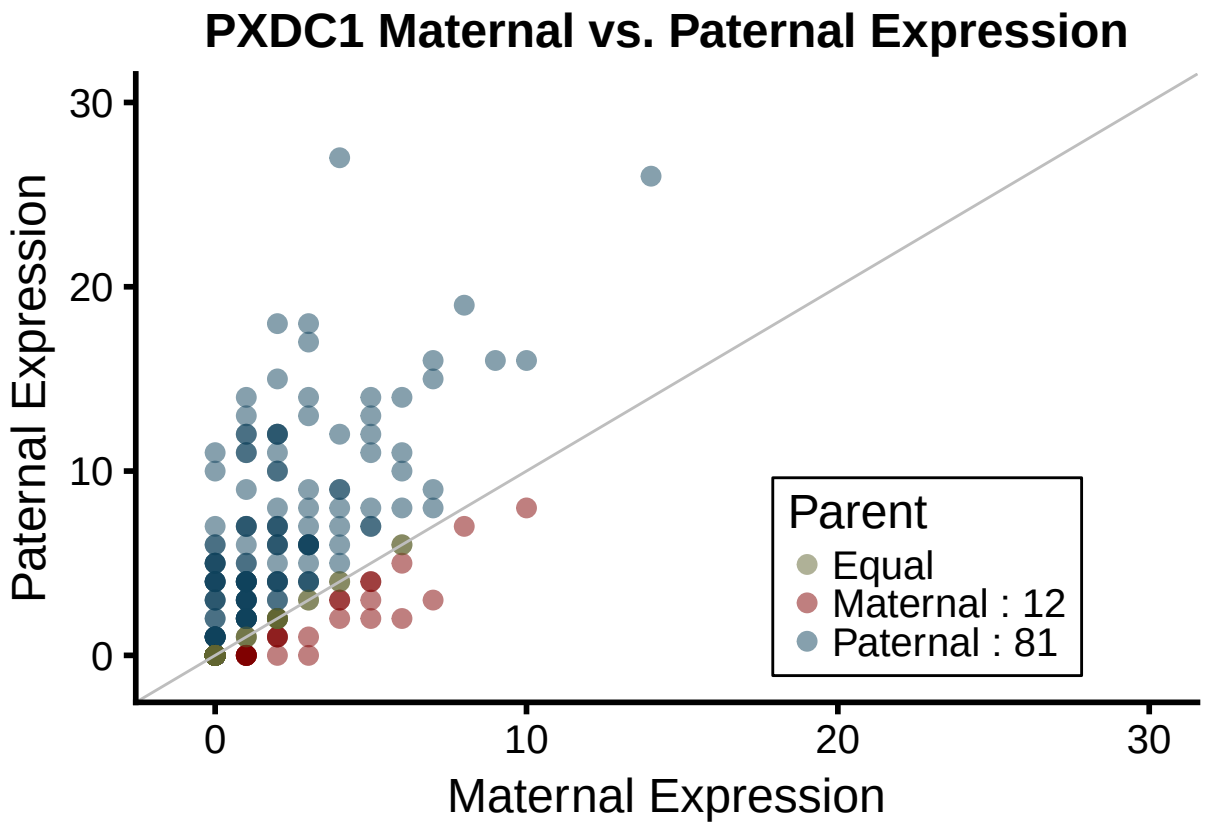

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,50), ylim=c(-1,50))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.2, 0.8),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



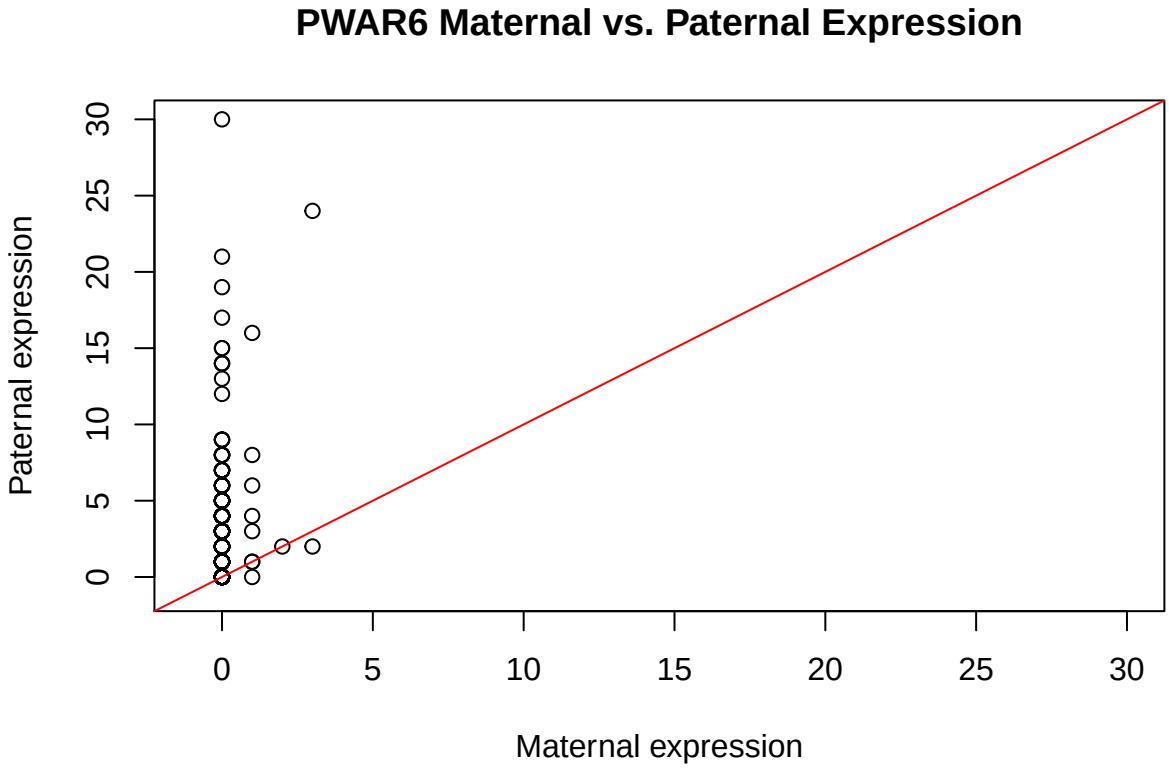

```
i <- 10
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



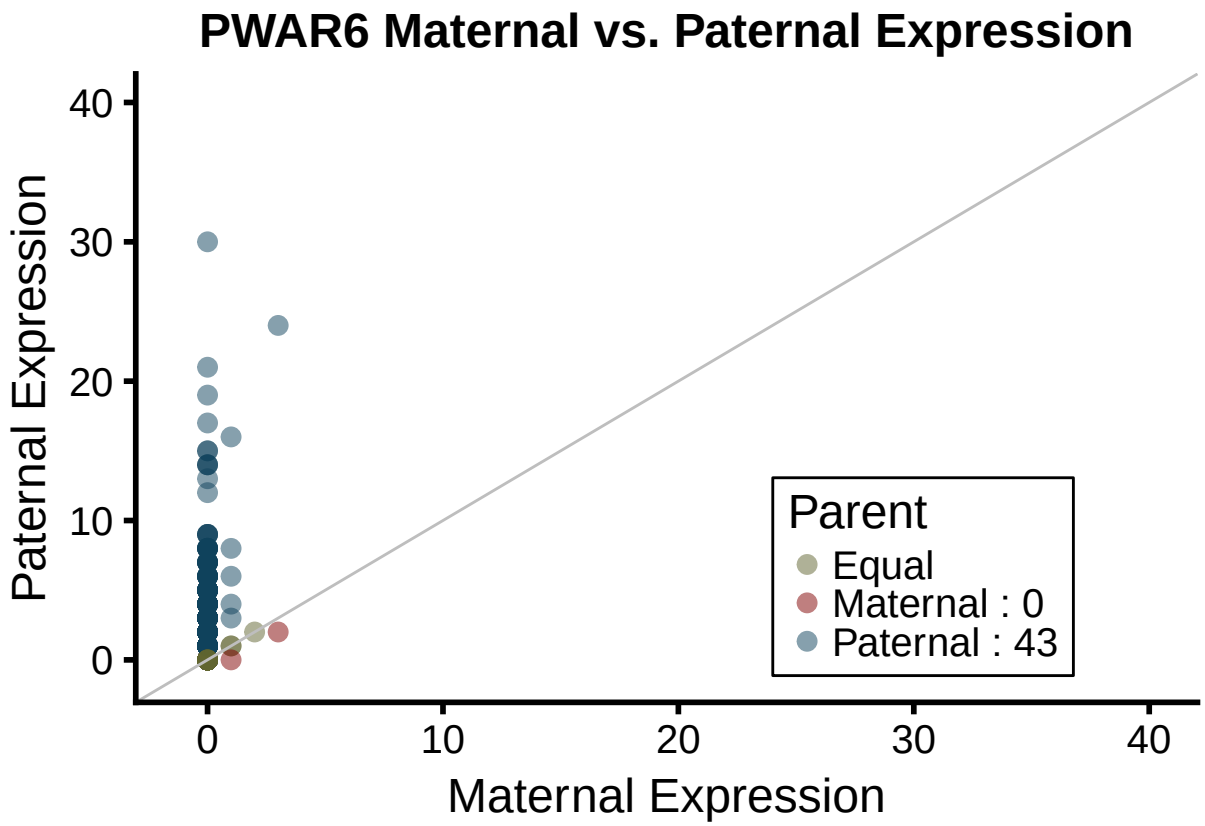

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,30), ylim=c(-1,30))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



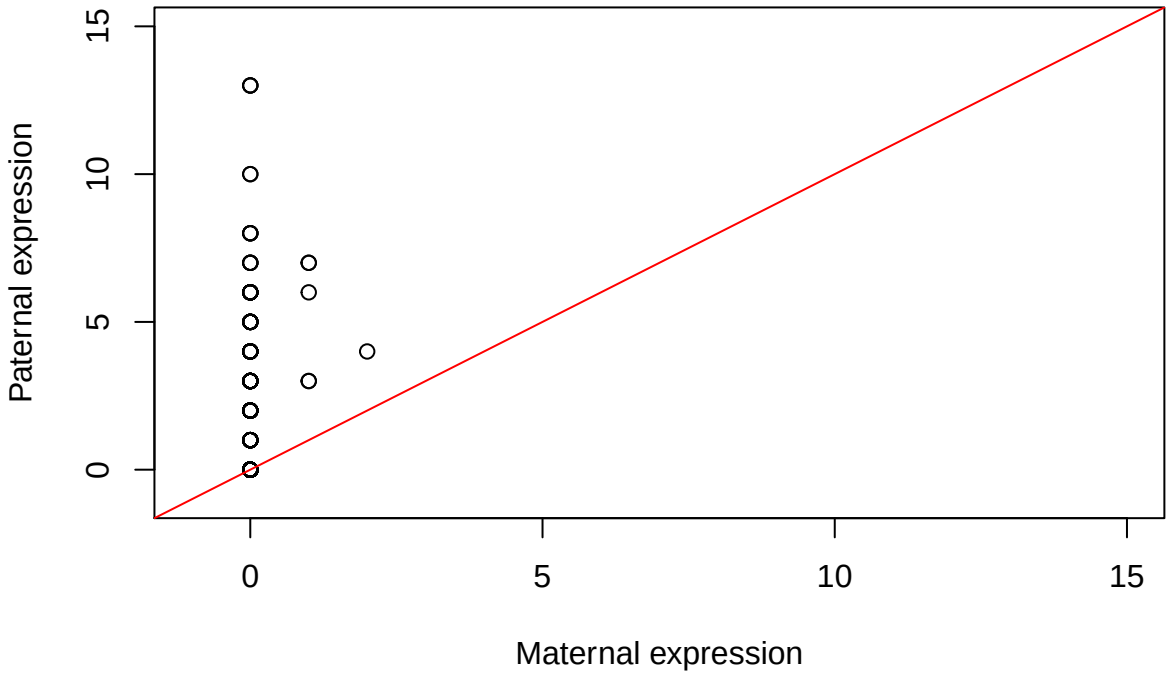

```
i <- 11
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



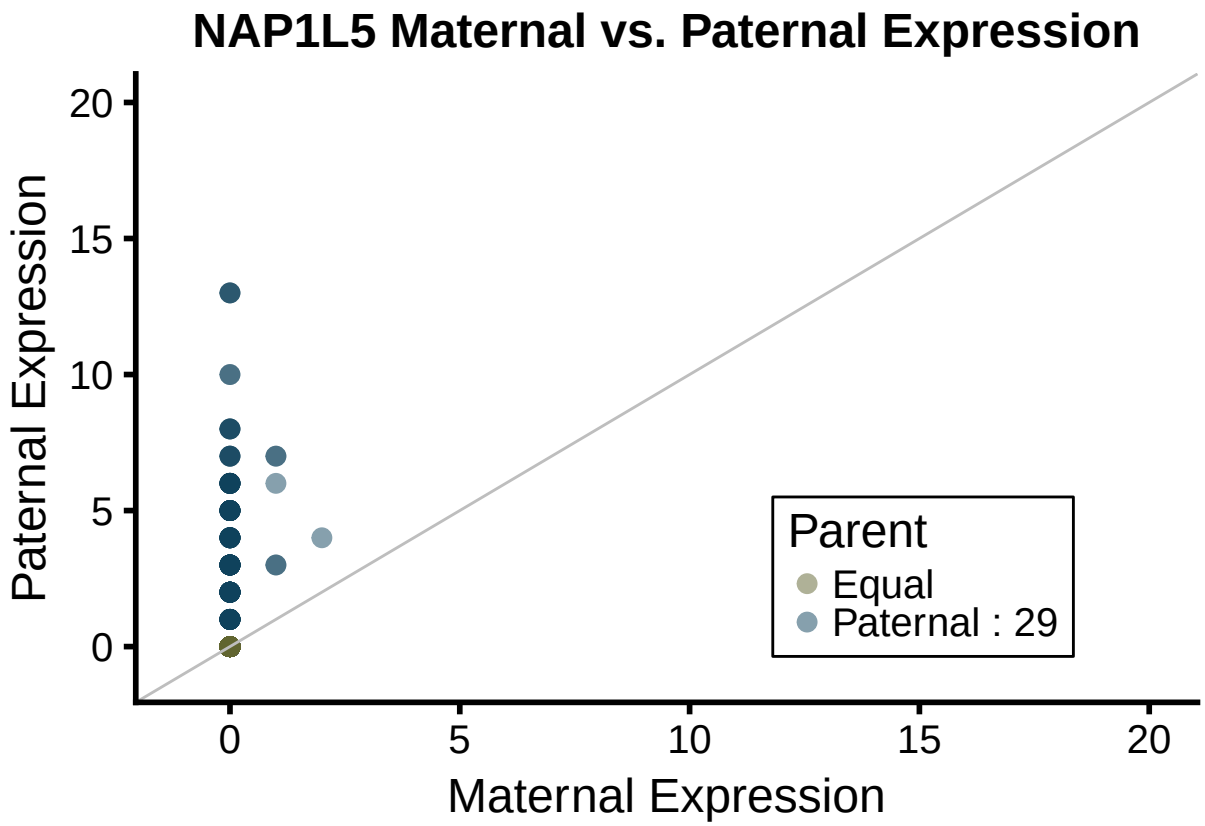

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,40), ylim=c(-1,40))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



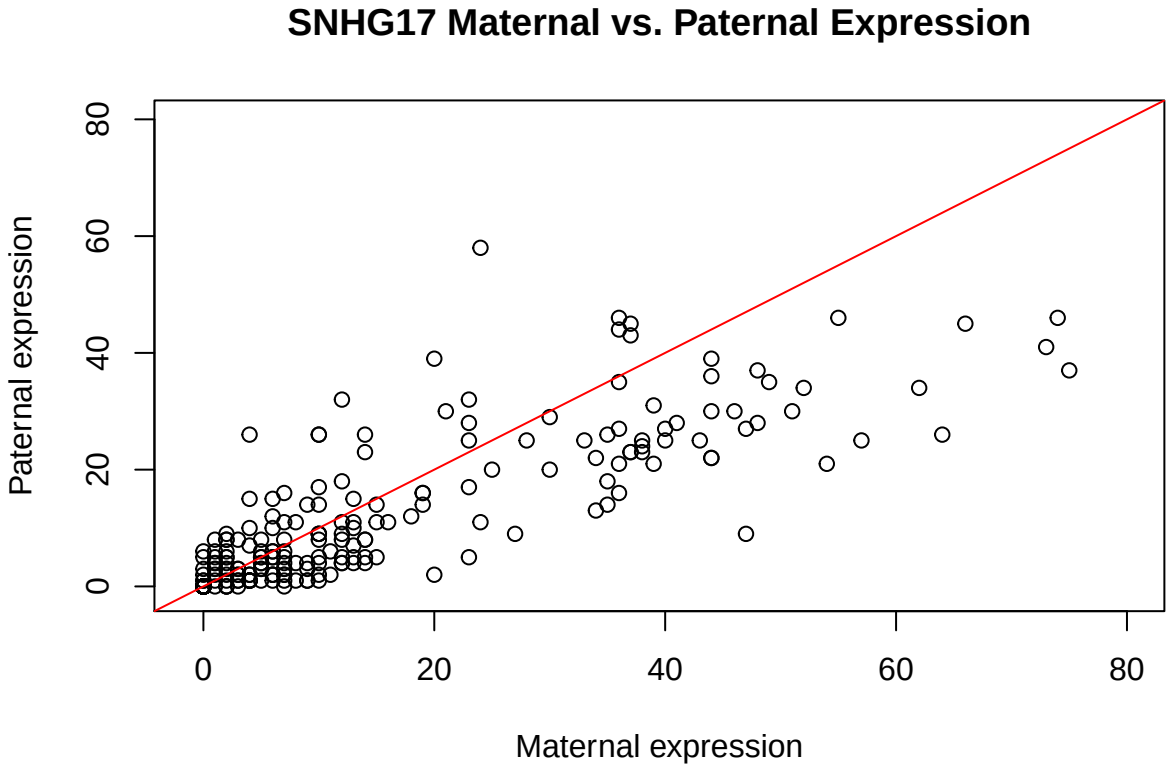

```
i <- 12
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



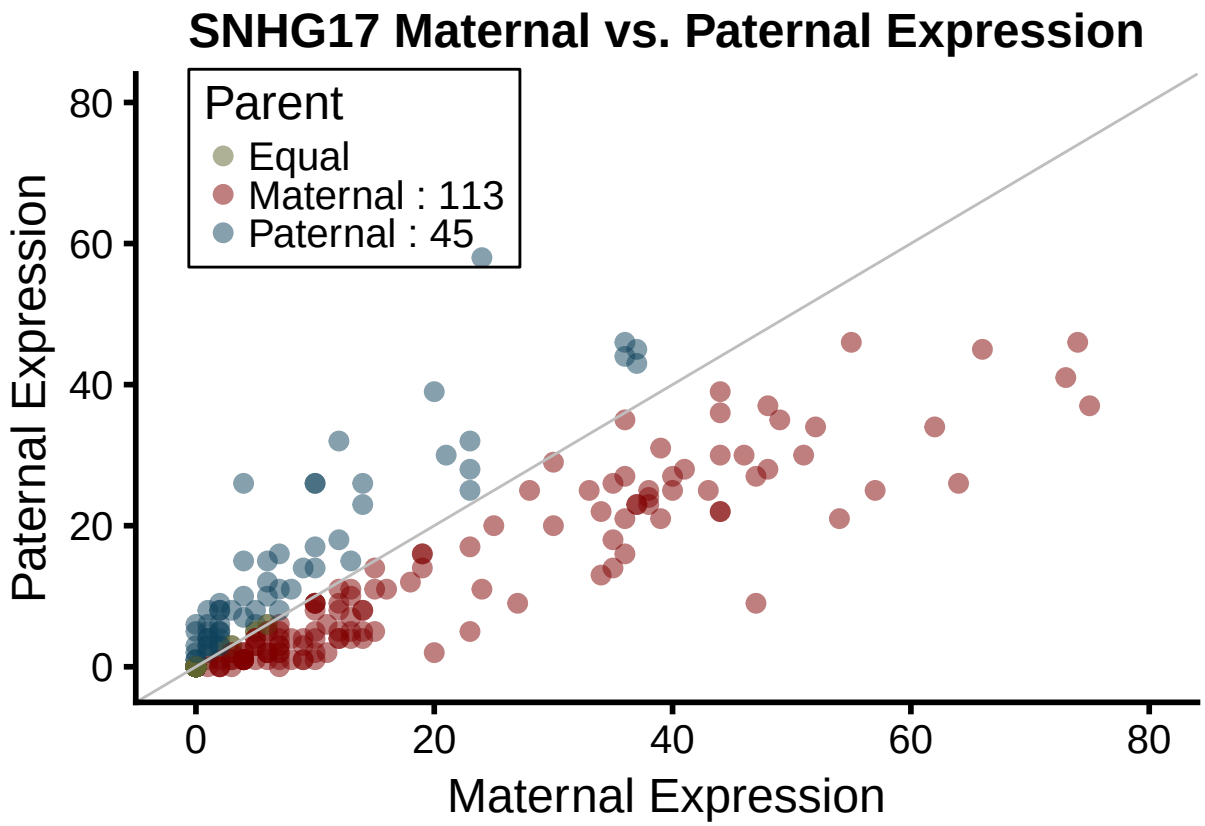

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,20), ylim=c(-1,20))+
 scale_color_manual(values=c("#616530CC" ,  "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



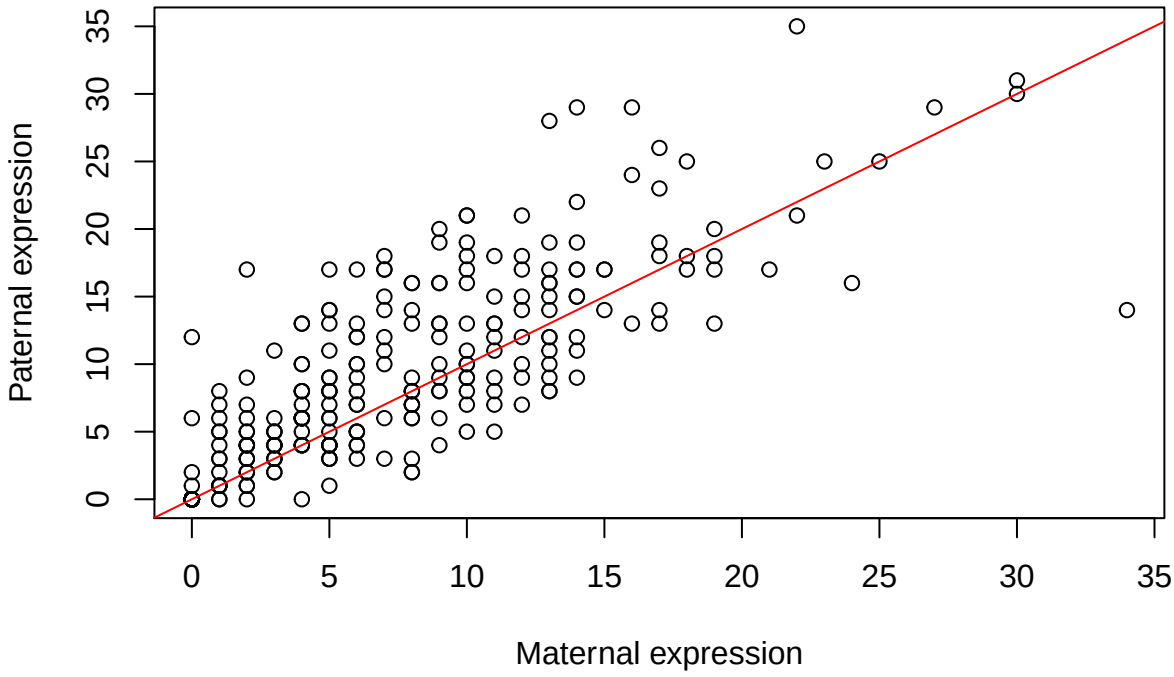

```
i <- 13
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



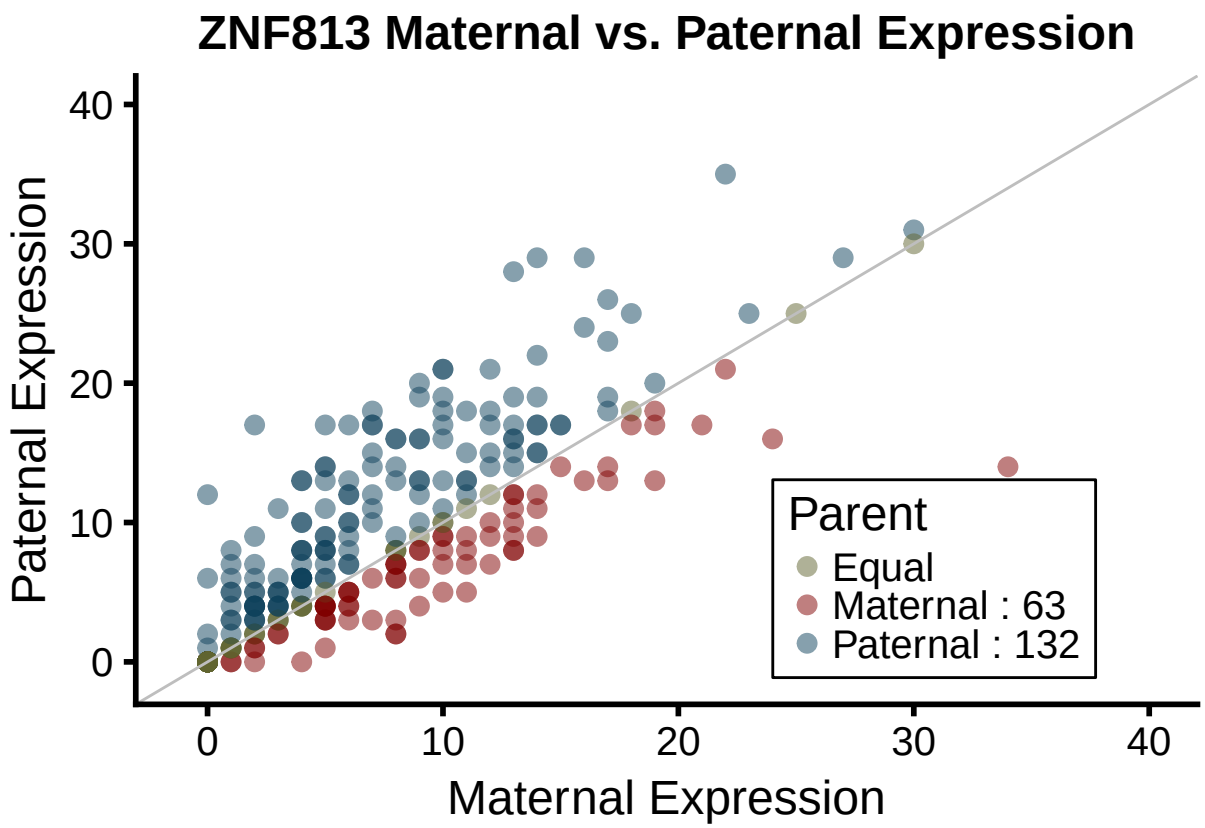

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,80), ylim=c(-1,80))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.05, 0.85),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



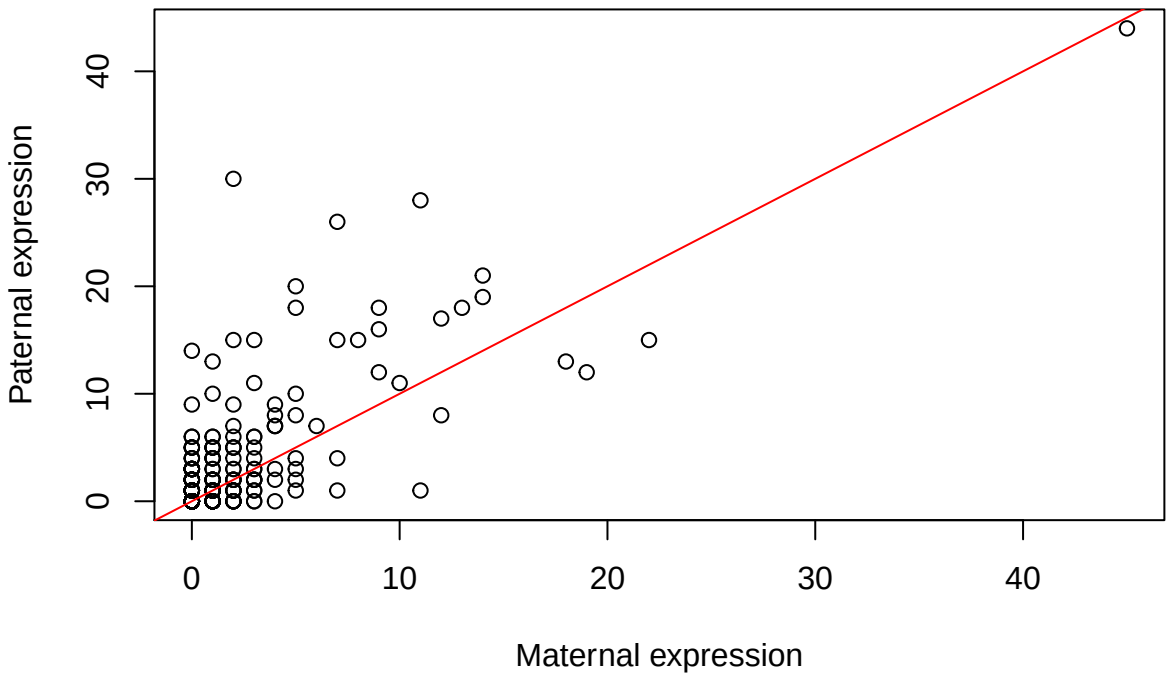

```
i <- 14
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



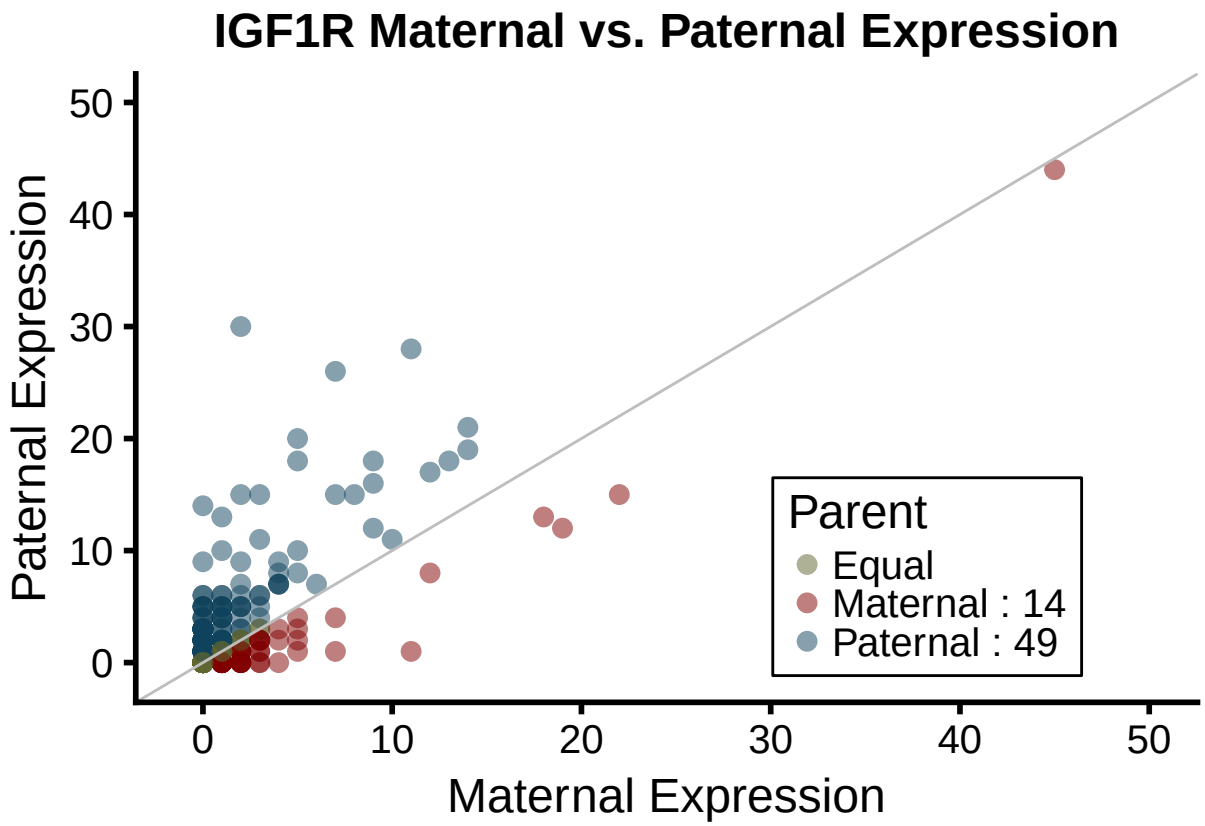

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,40), ylim=c(-1,40))+
 scale_color_manual(values=c("#616530CC" ,  "#800000CC","#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



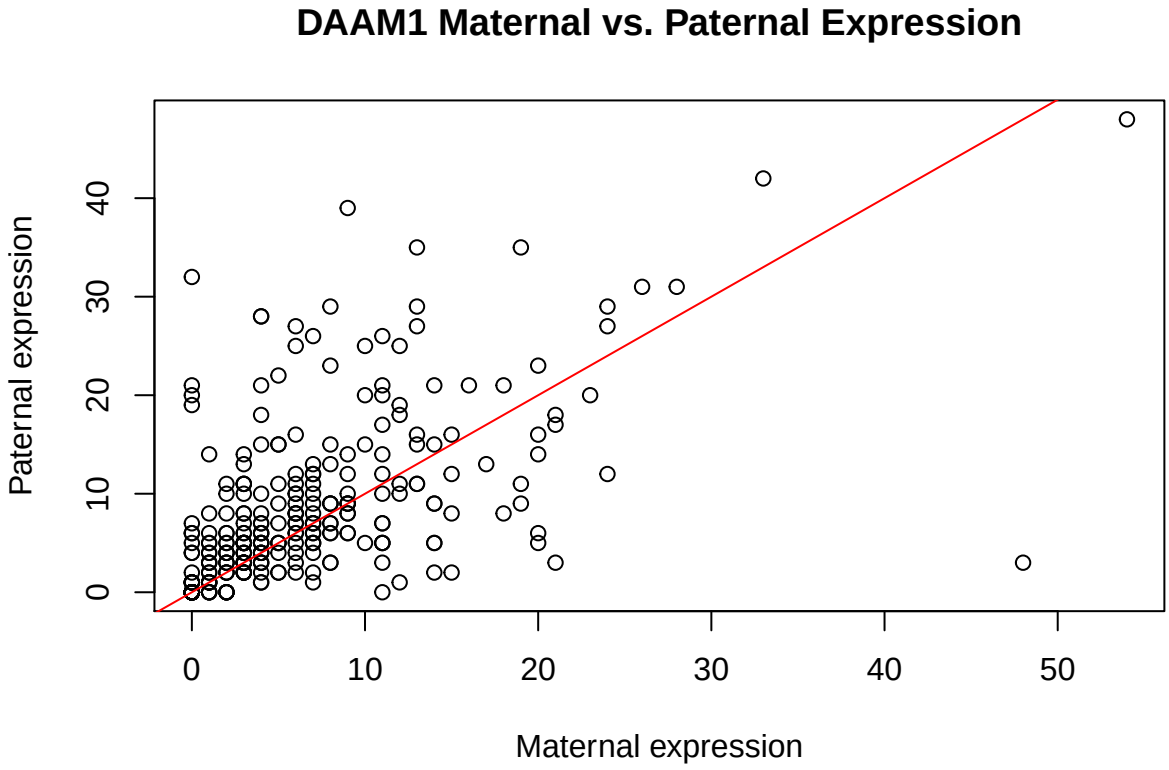

```
i <- 15
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



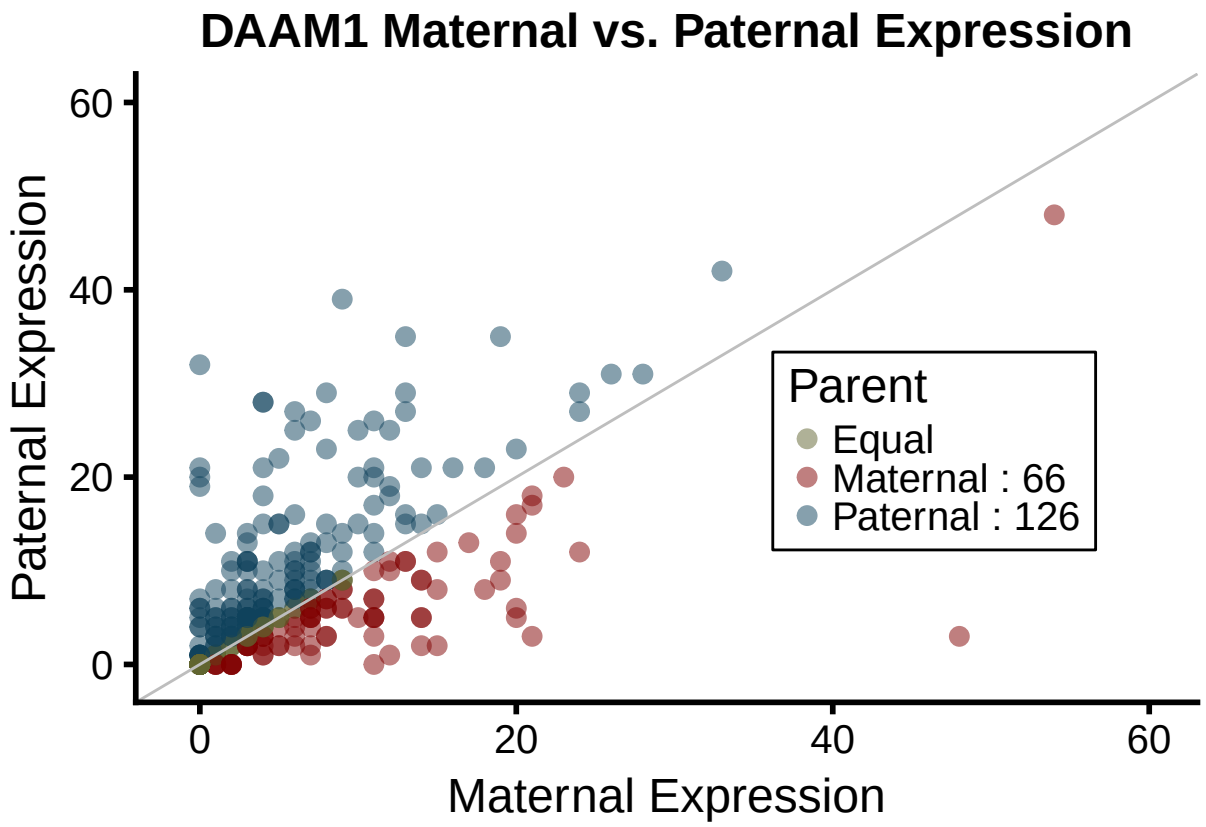

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,50), ylim=c(-1,50))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



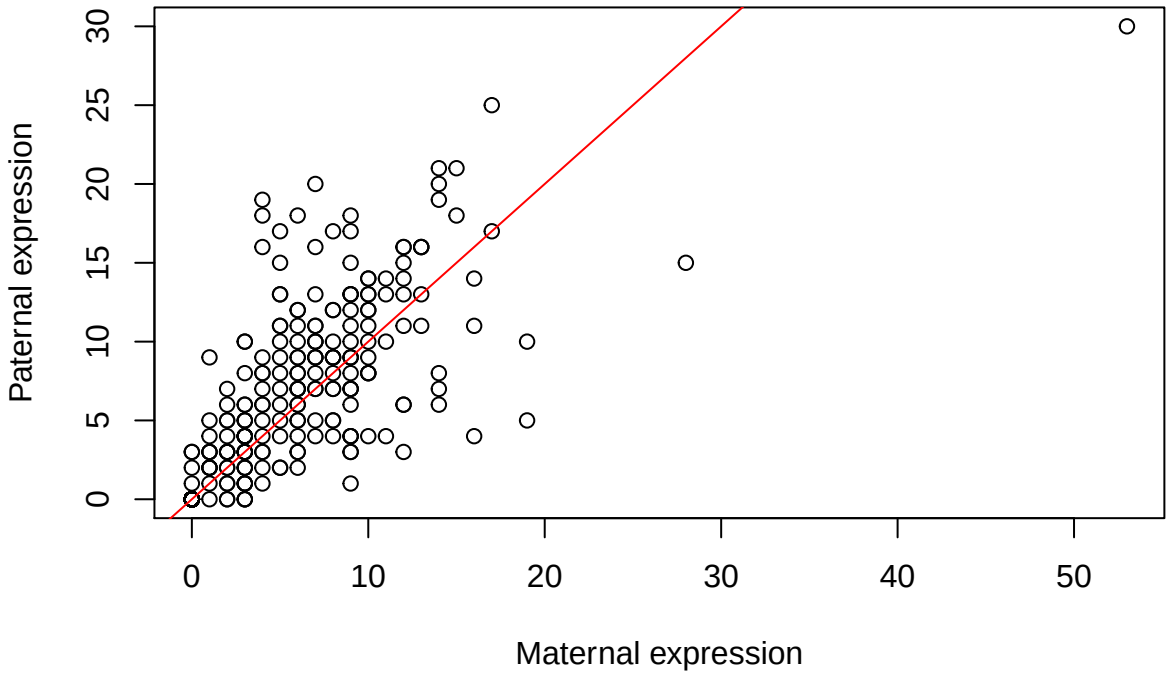

```
i <- 16
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal exp
abline(a=0, b=1, col="red")
```



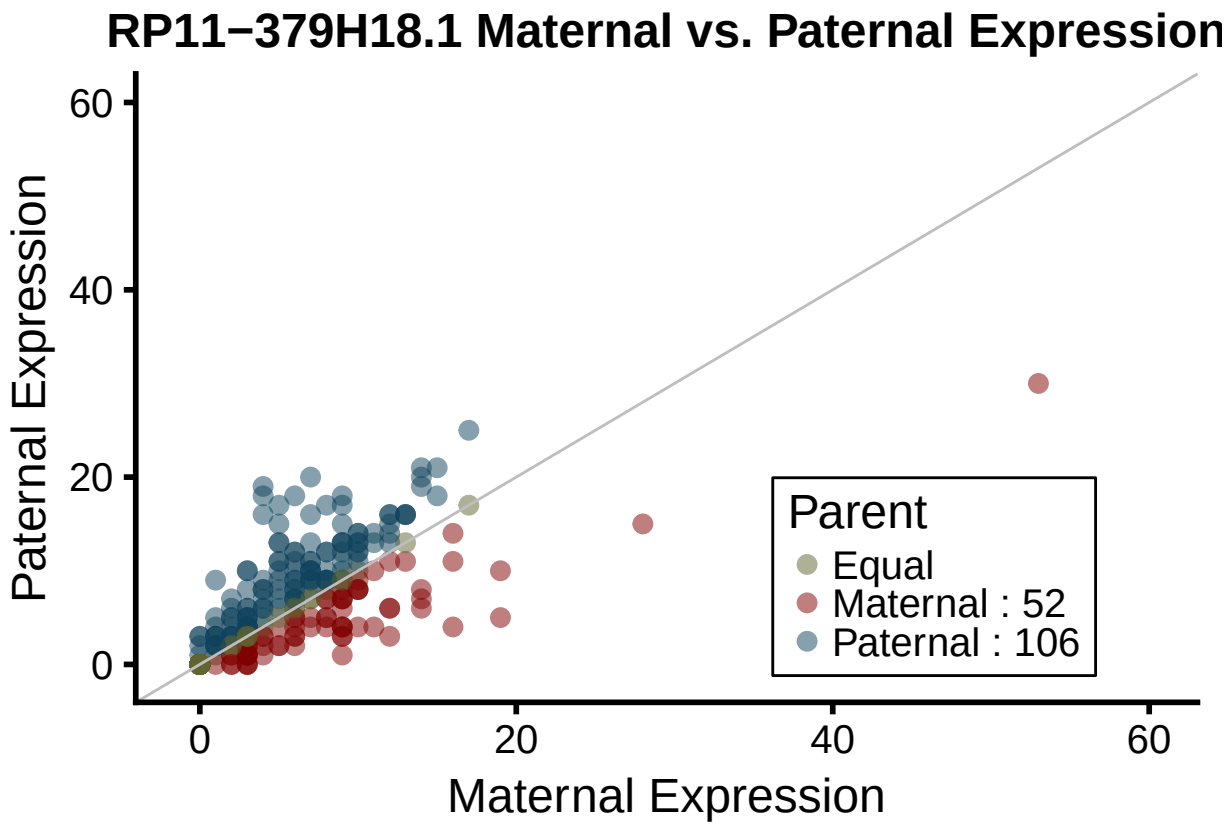

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,60), ylim=c(-1,60))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.4),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



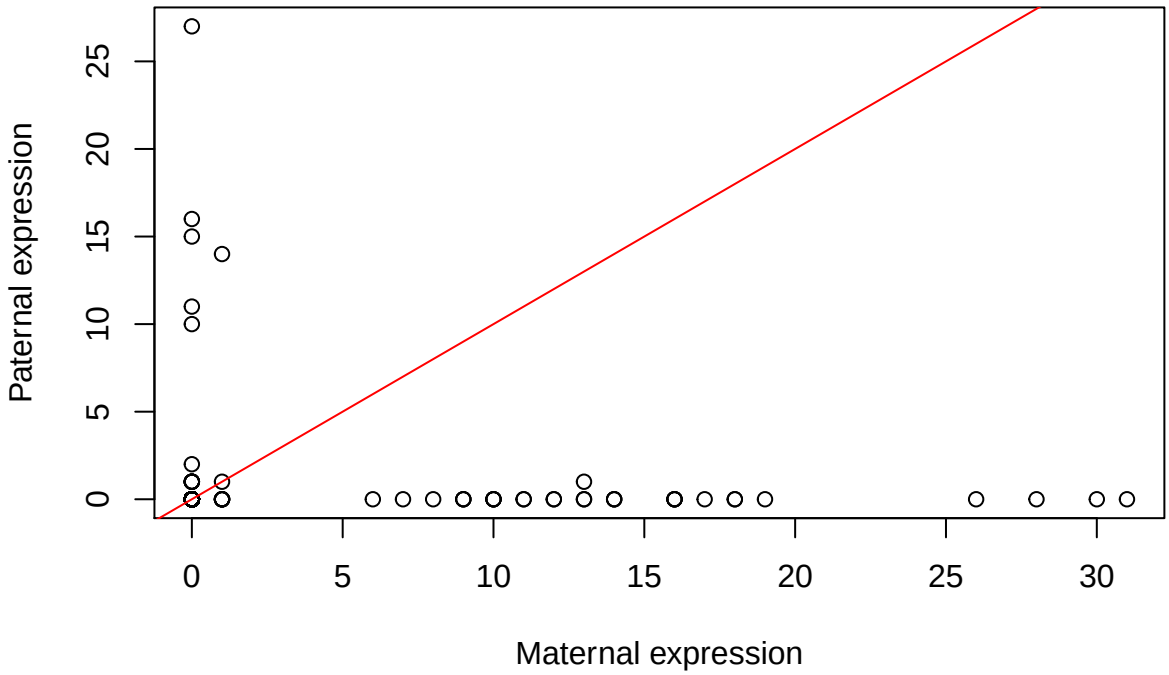

```
i <- 17
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



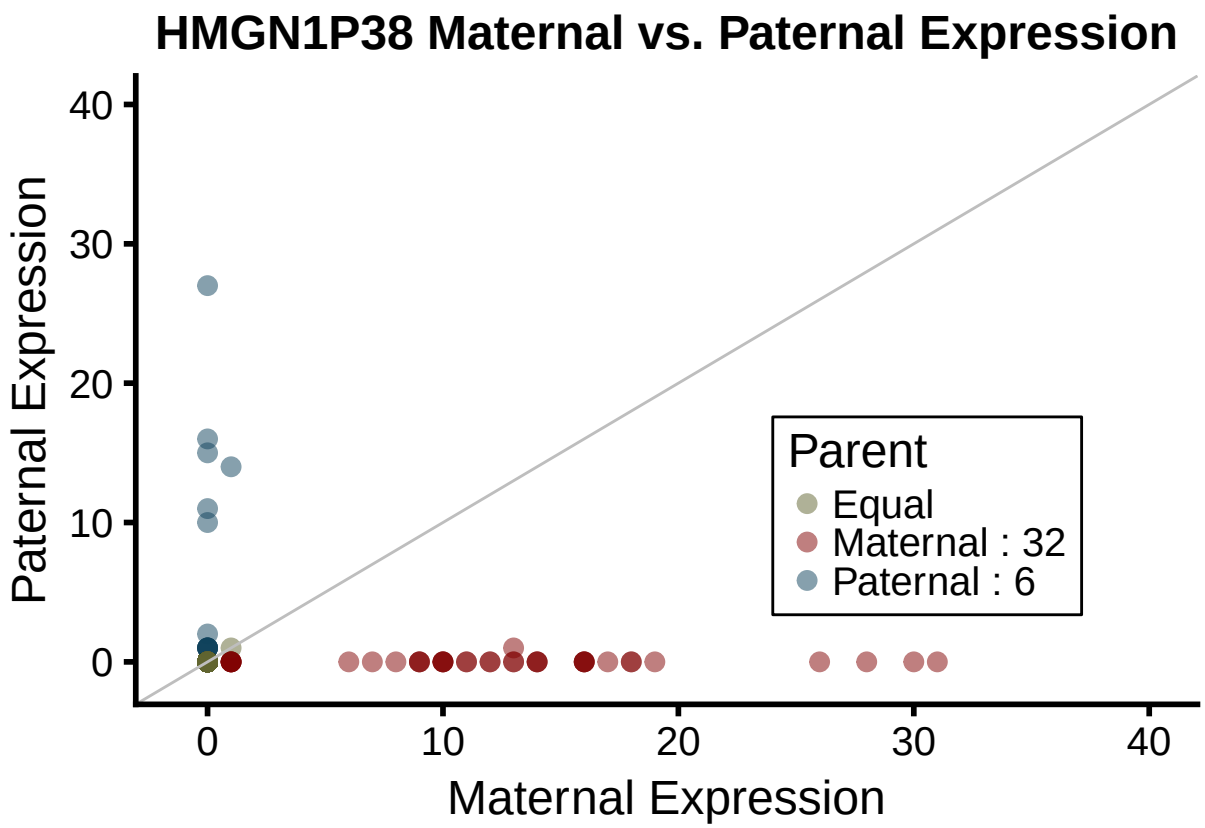

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,60), ylim=c(-1,60))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



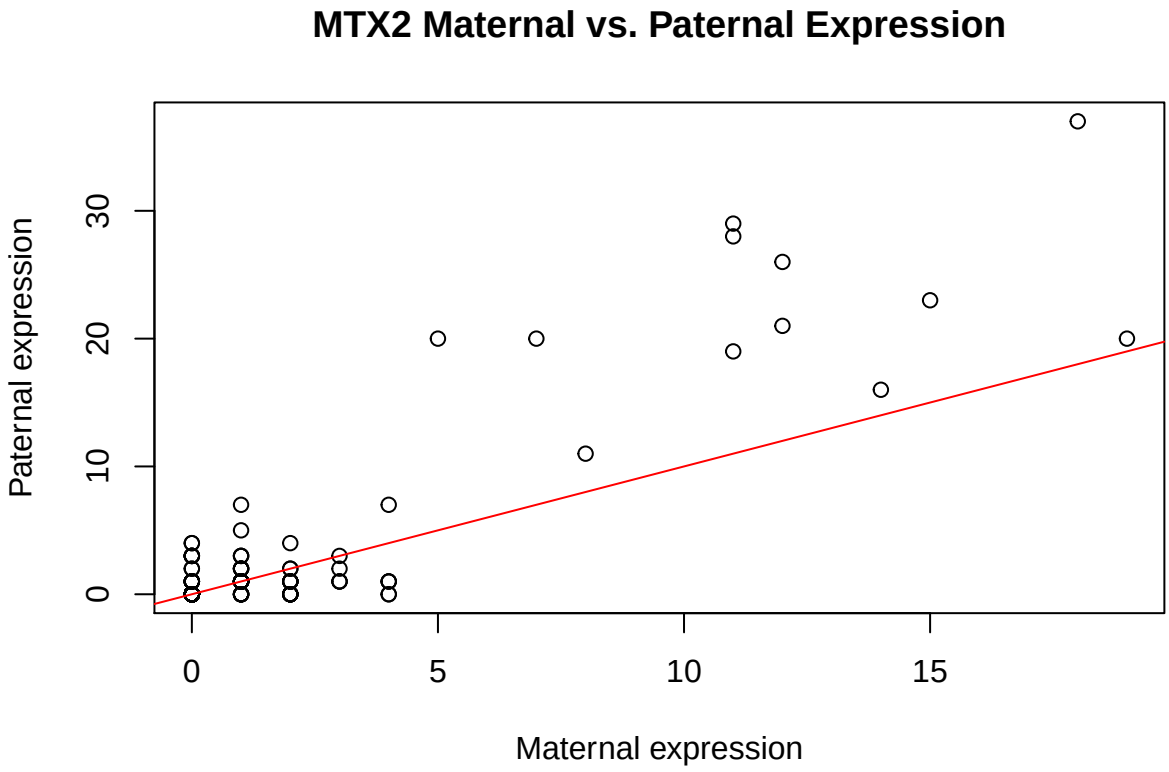

```
i <- 18
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



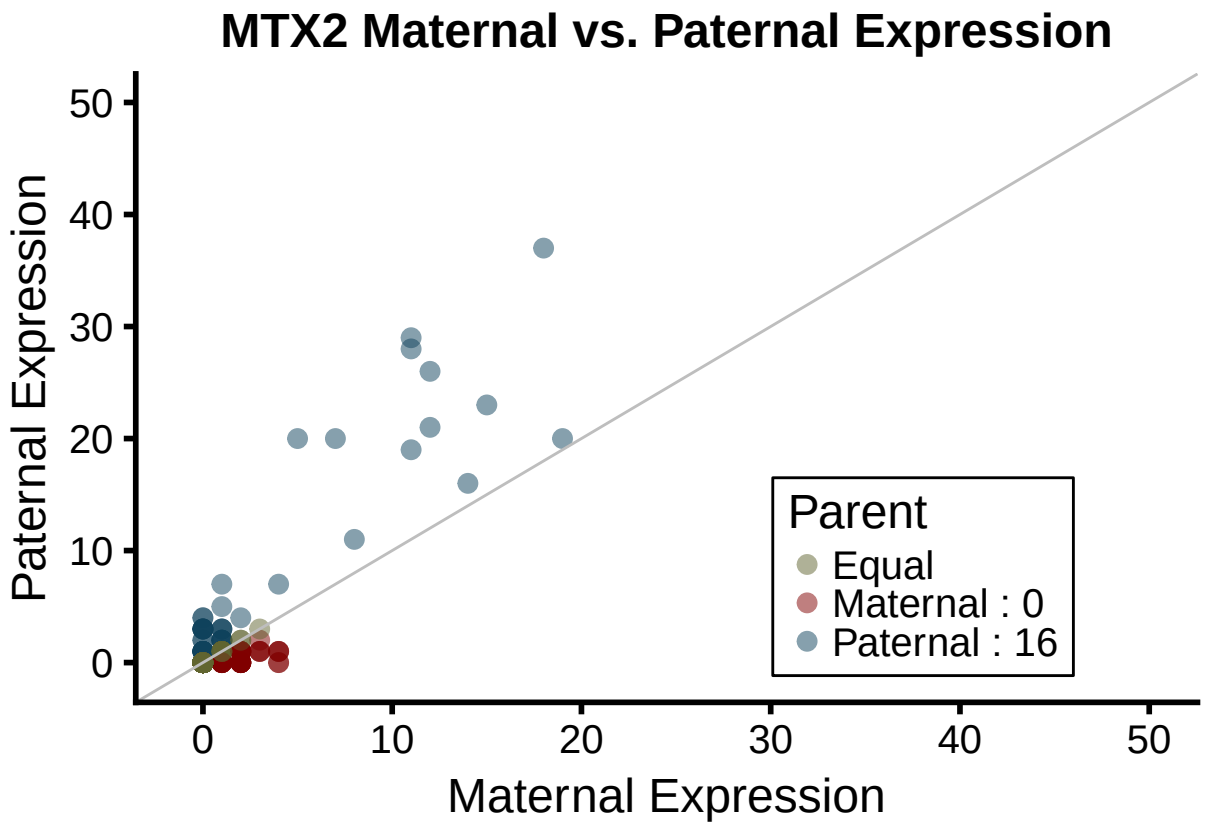

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,40), ylim=c(-1,40))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.3),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



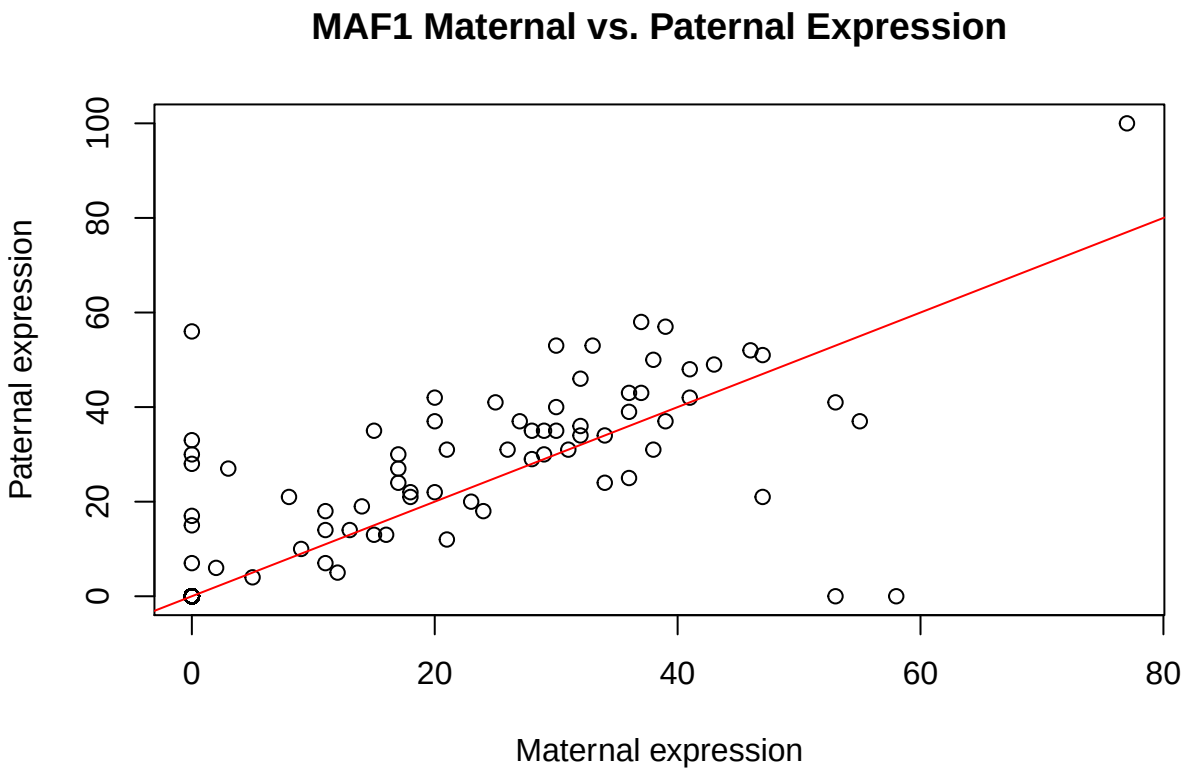

```
i <- 19
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



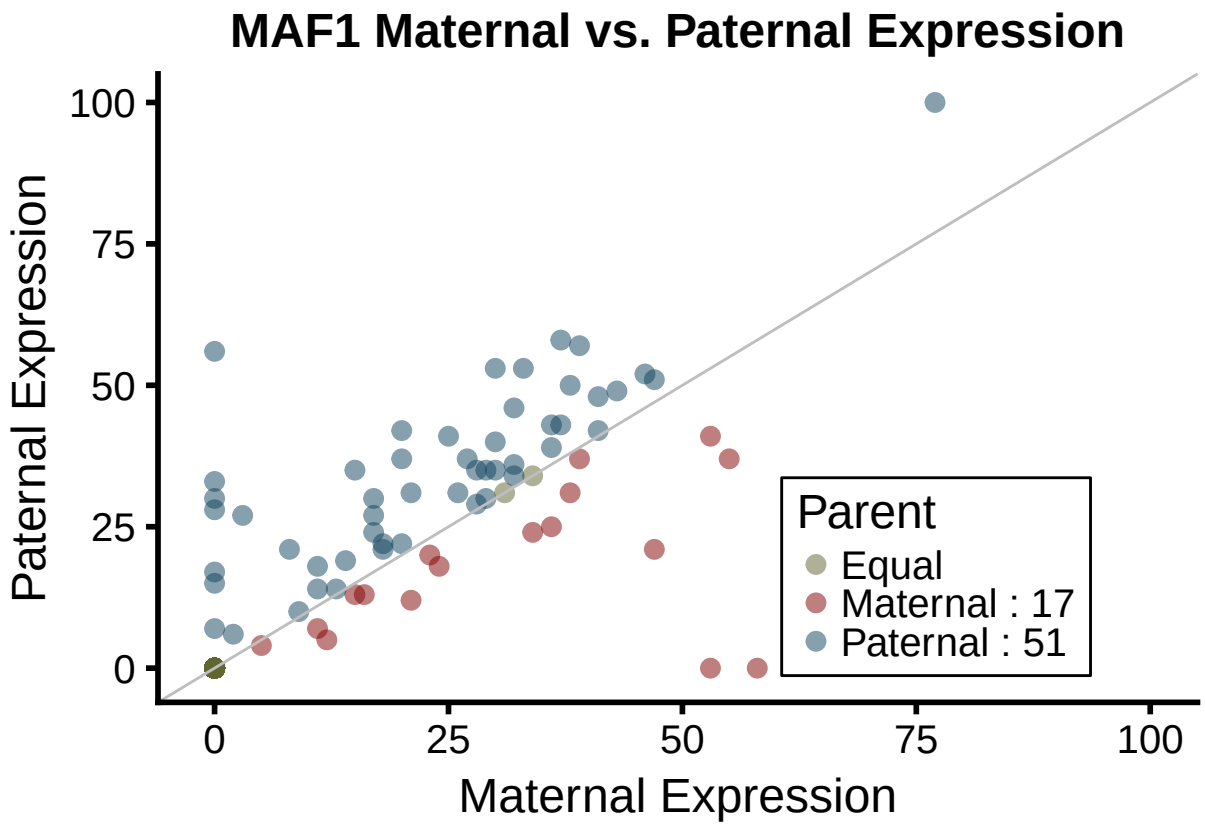

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,50), ylim=c(-1,50))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



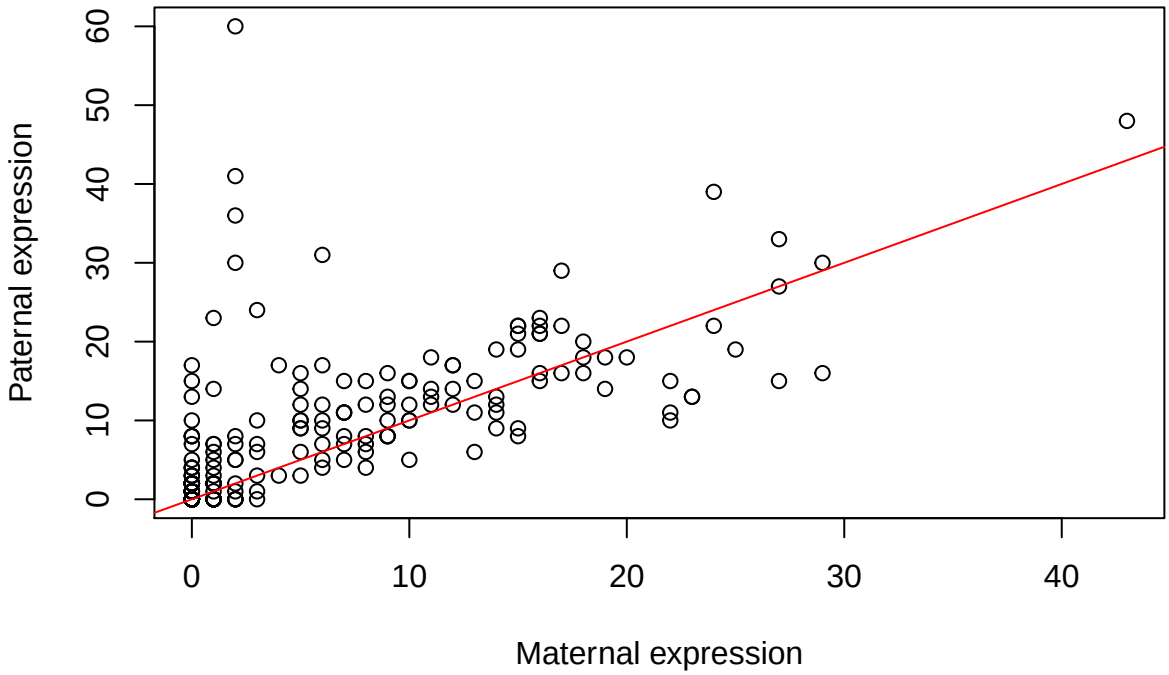

```
i <- 20
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



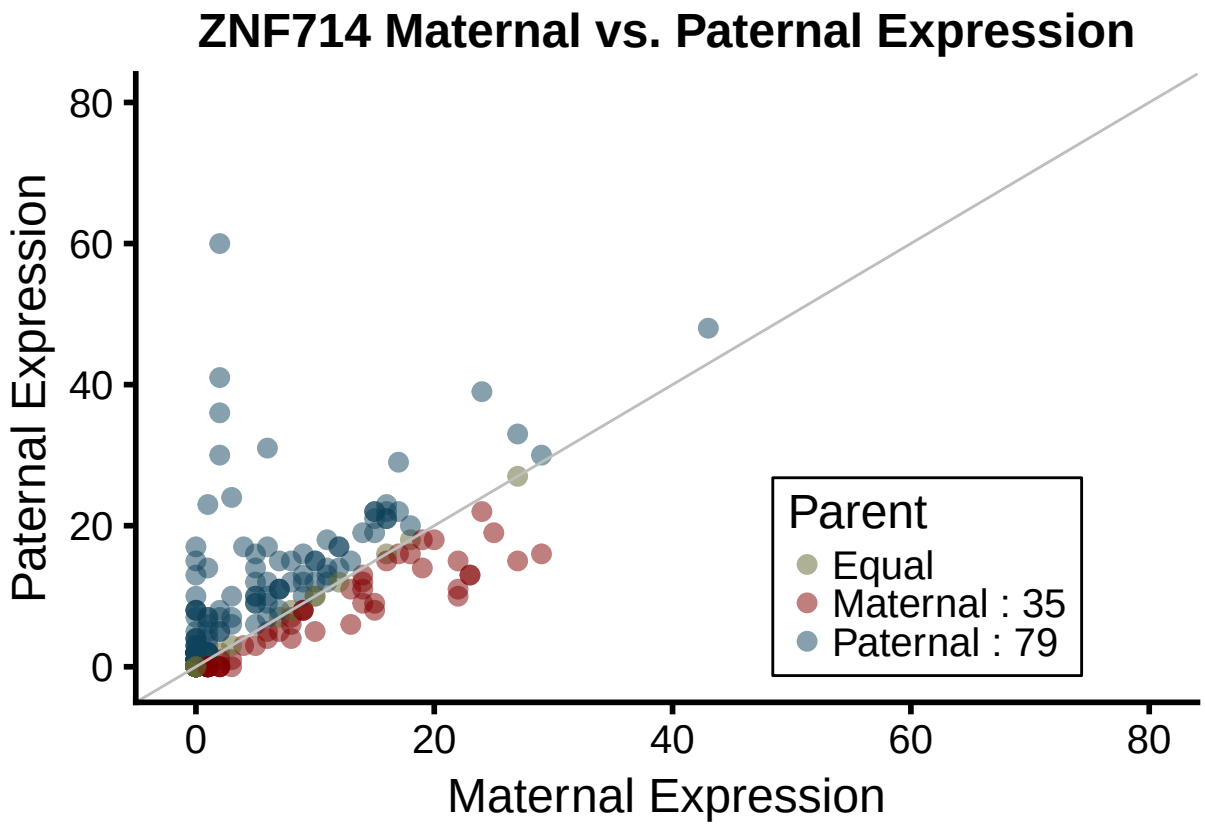

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,100), ylim=c(-1,100))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



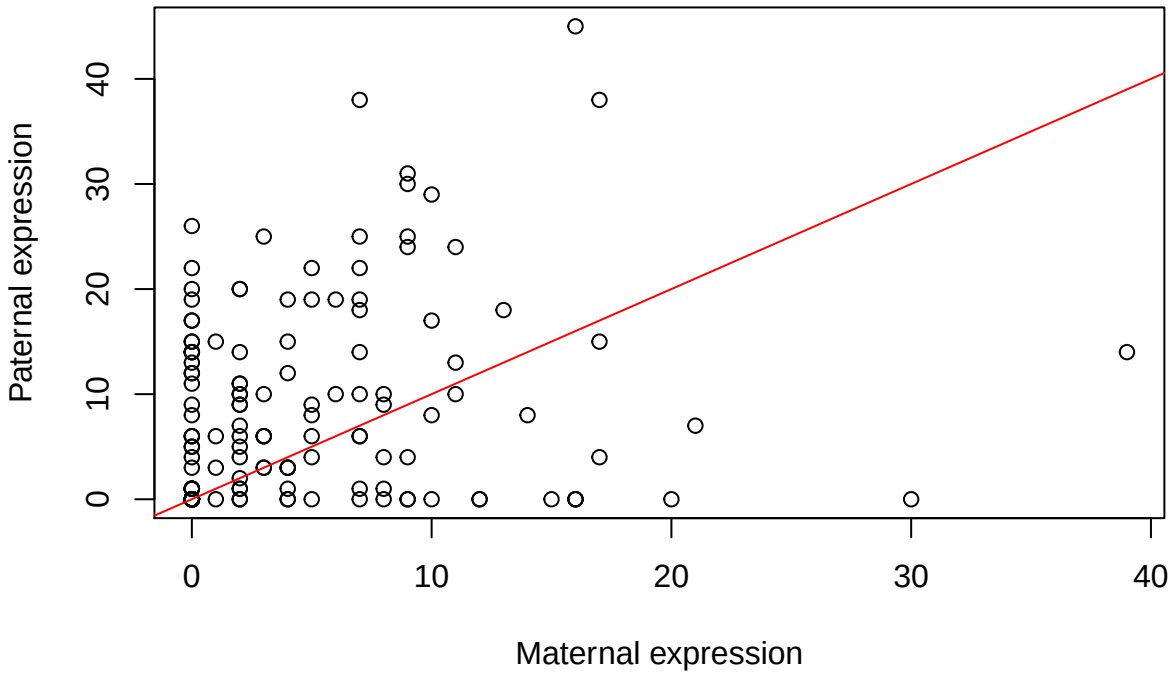

```
i <- 21
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



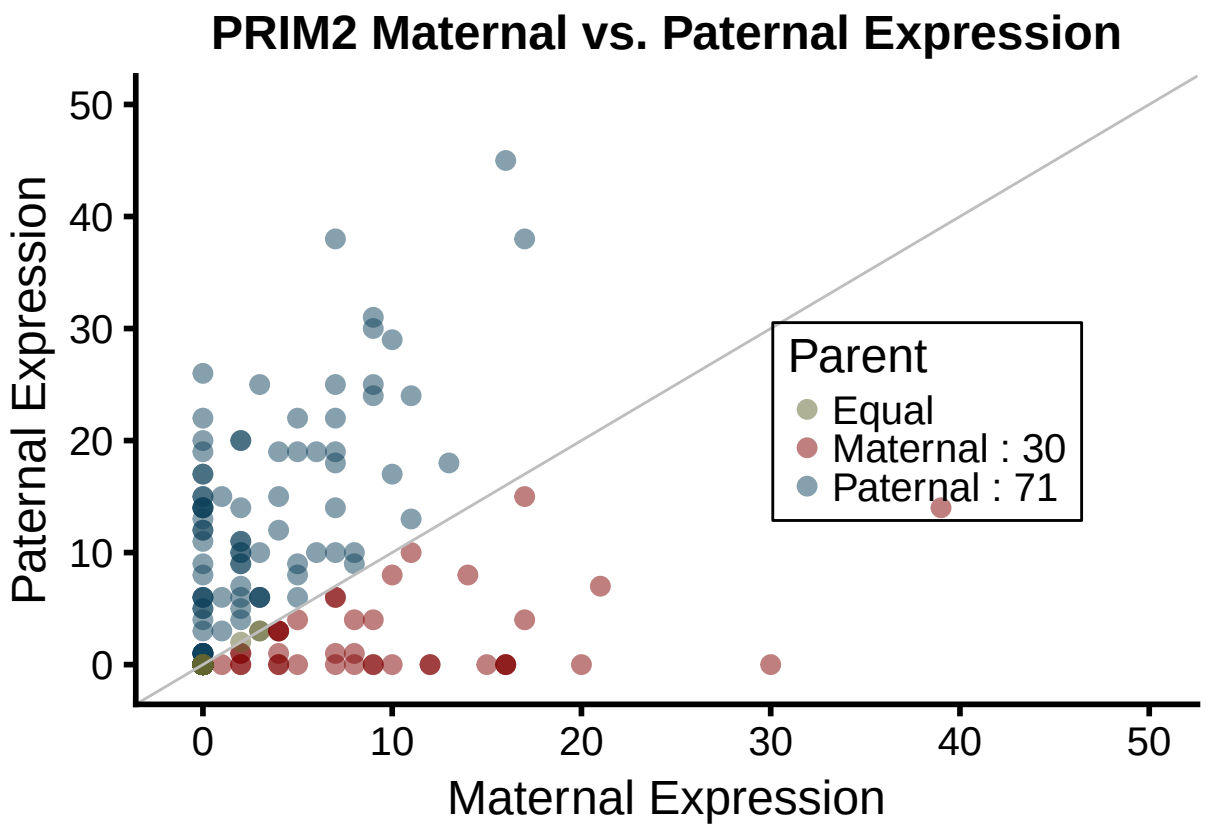

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,80), ylim=c(-1,80))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



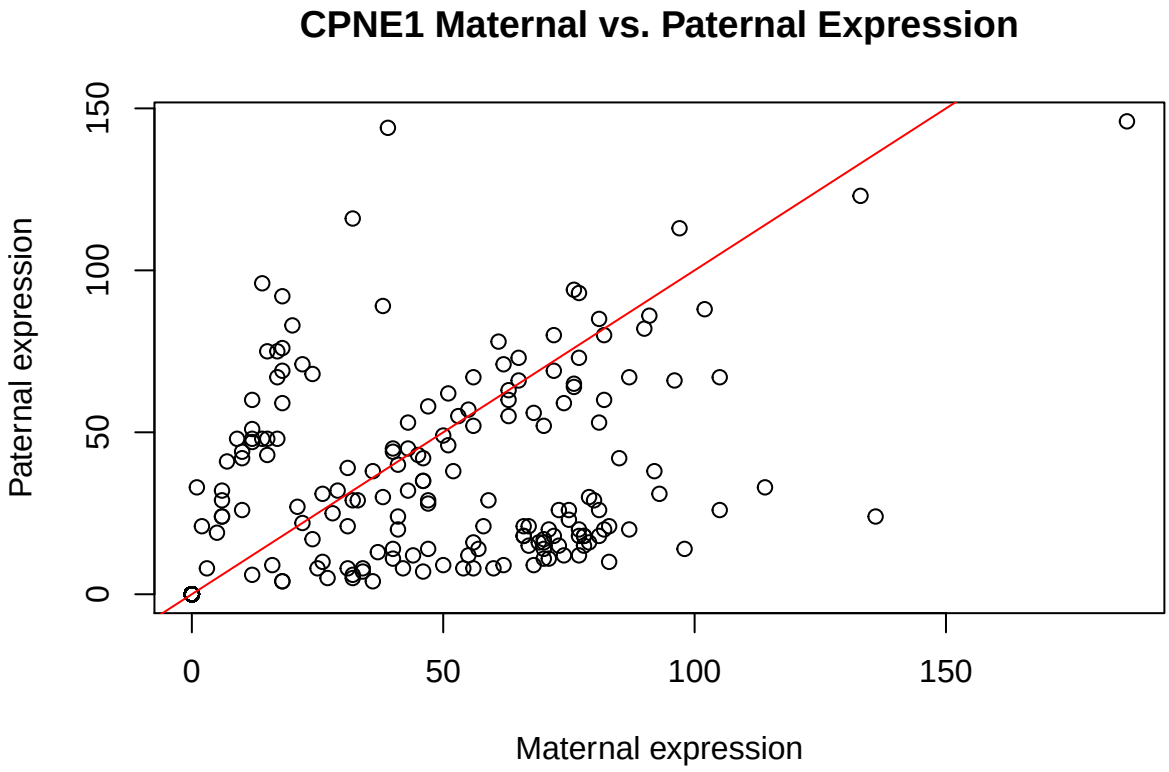

```
i <- 22
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal exp
abline(a=0, b=1, col="red")
```



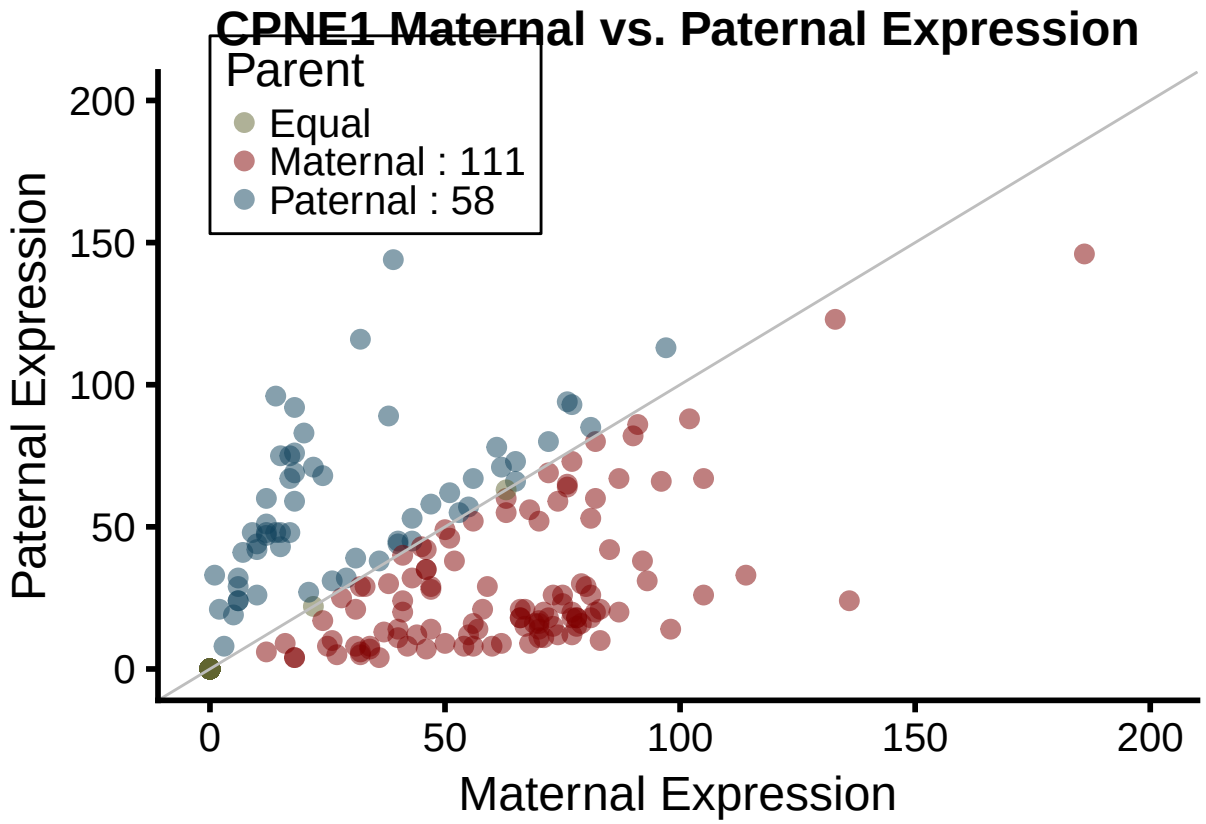

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,50), ylim=c(-1,50))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.45),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



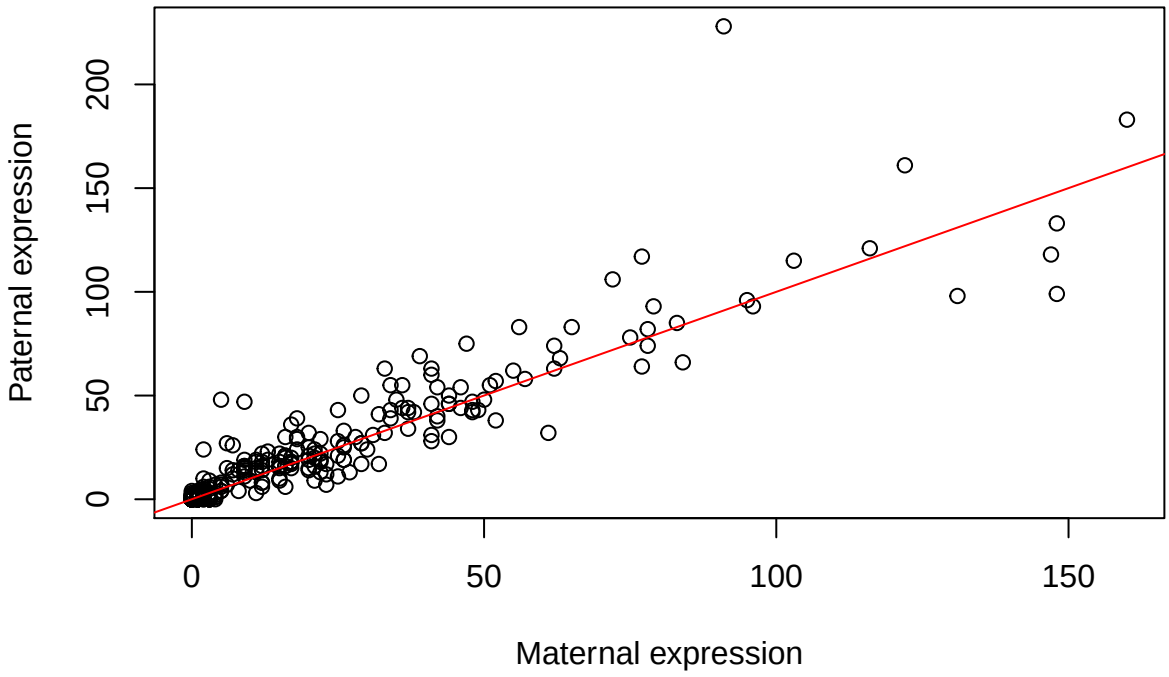

```
i <- 23
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



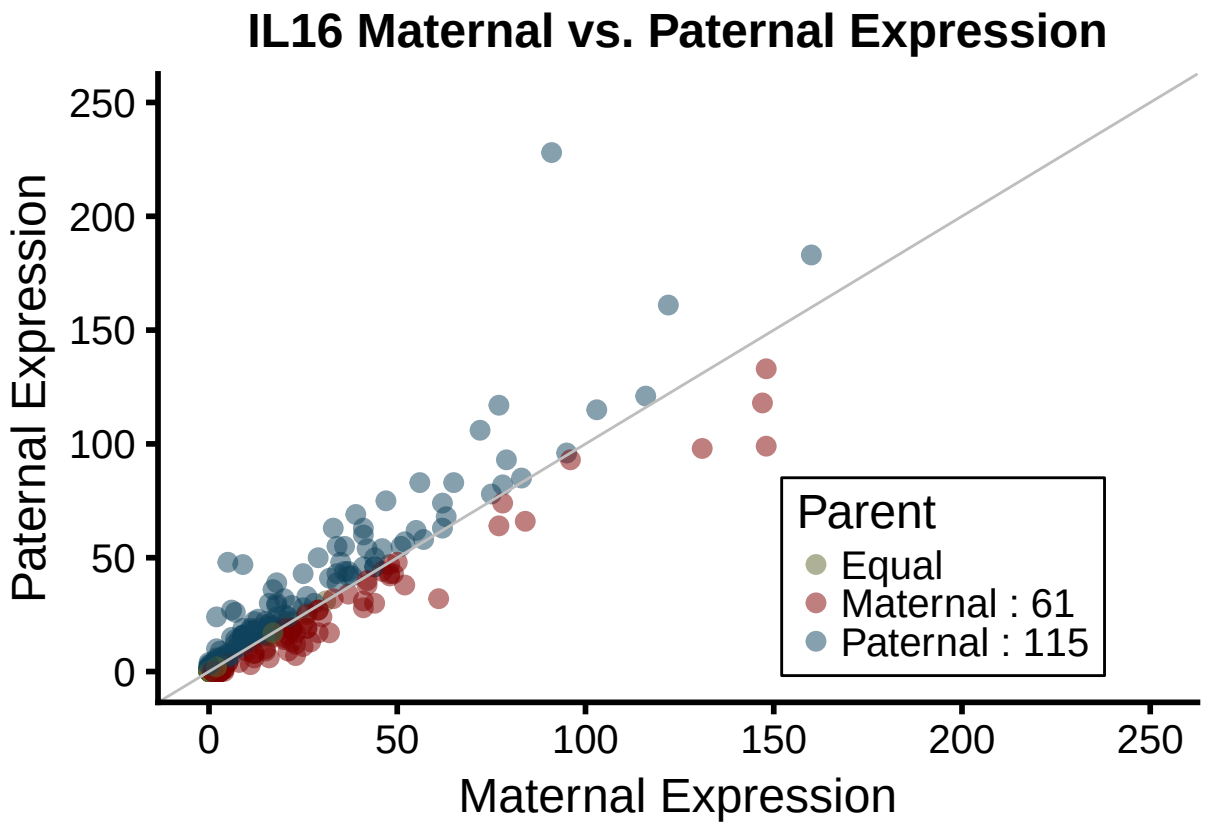

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,200), ylim=c(-1,200))+
 scale_color_manual(values=c("#616530CC" , "#800000CC", "#0F425CCC"))+
  theme(legend.position = c(0.05, 0.9),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



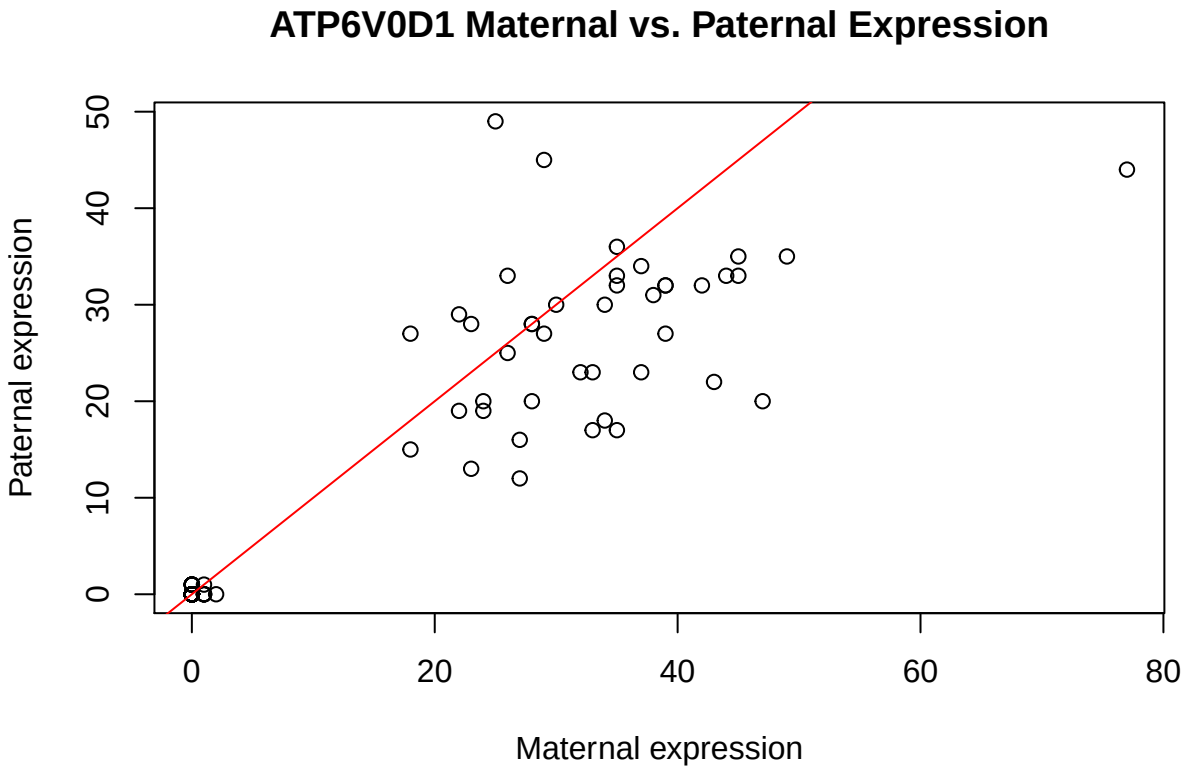

```
i <- 24
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



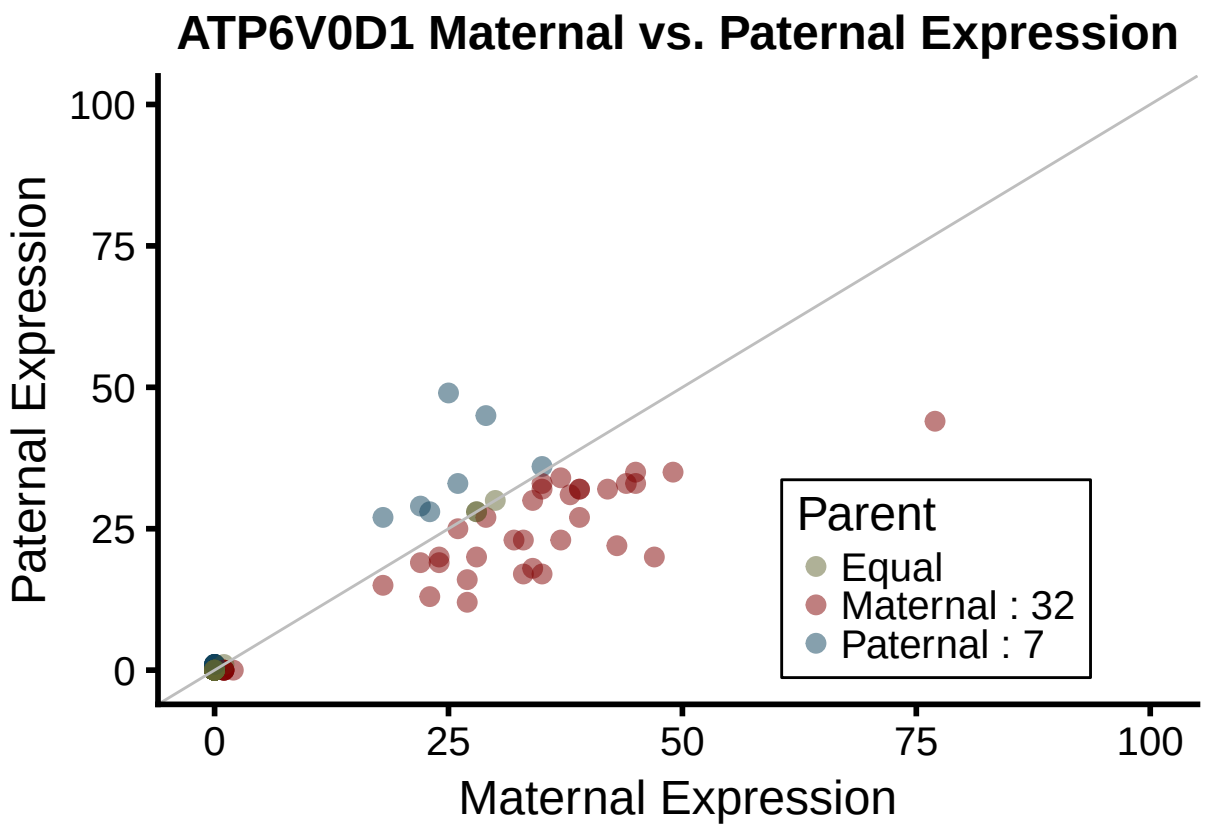

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,250), ylim=c(-1,250))+
 scale_color_manual(values=c("#616530CC" , "#800000CC",  "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



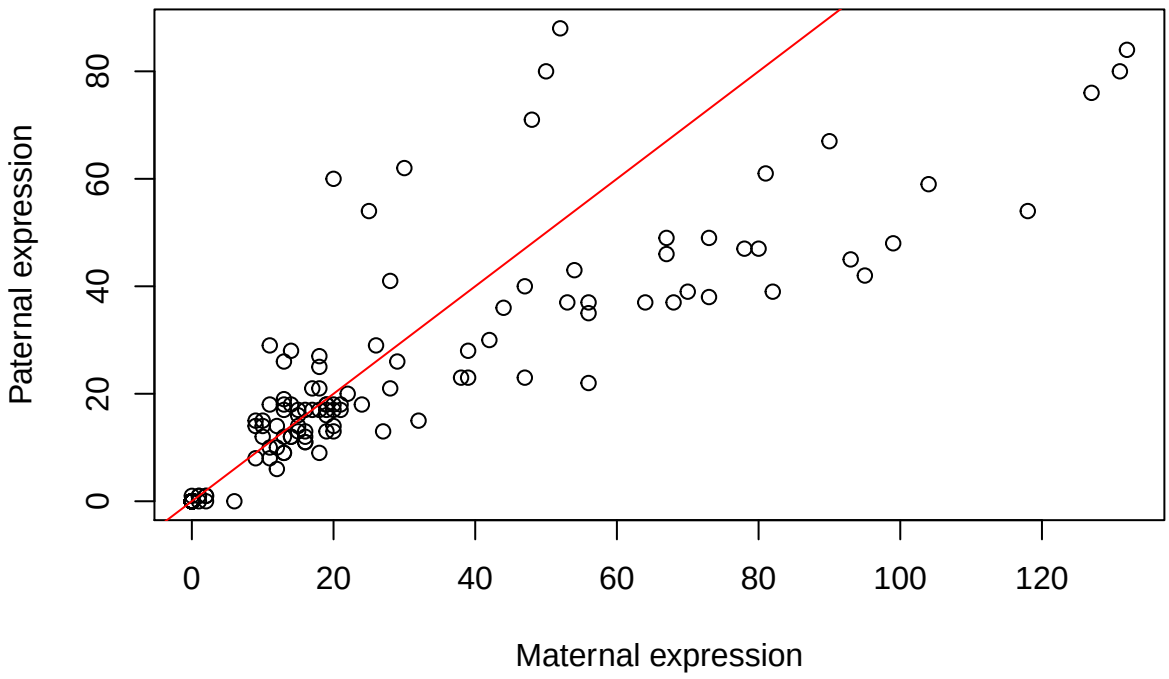

```
i <- 25
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal exp
abline(a=0, b=1, col="red")
```



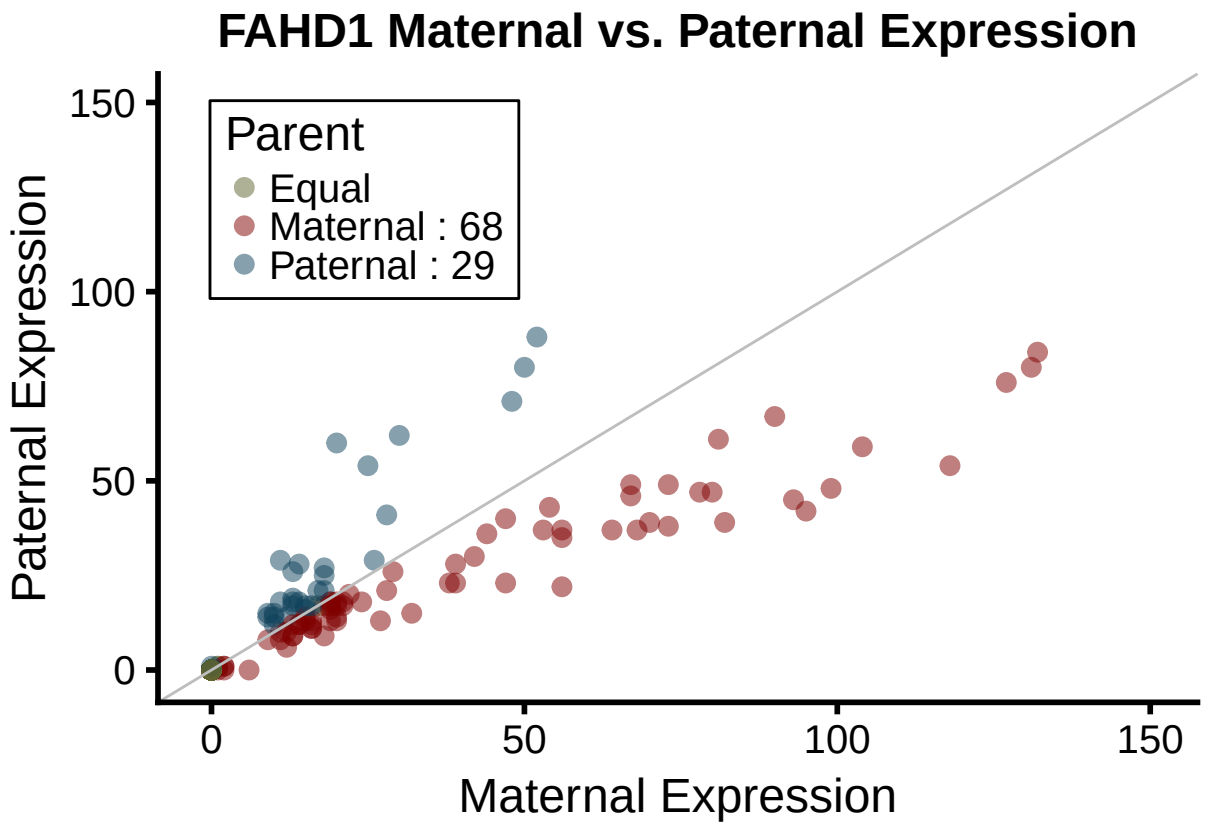

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,100), ylim=c(-1,100))+
 scale_color_manual(values=c("#616530CC" , "#800000CC" ,  "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



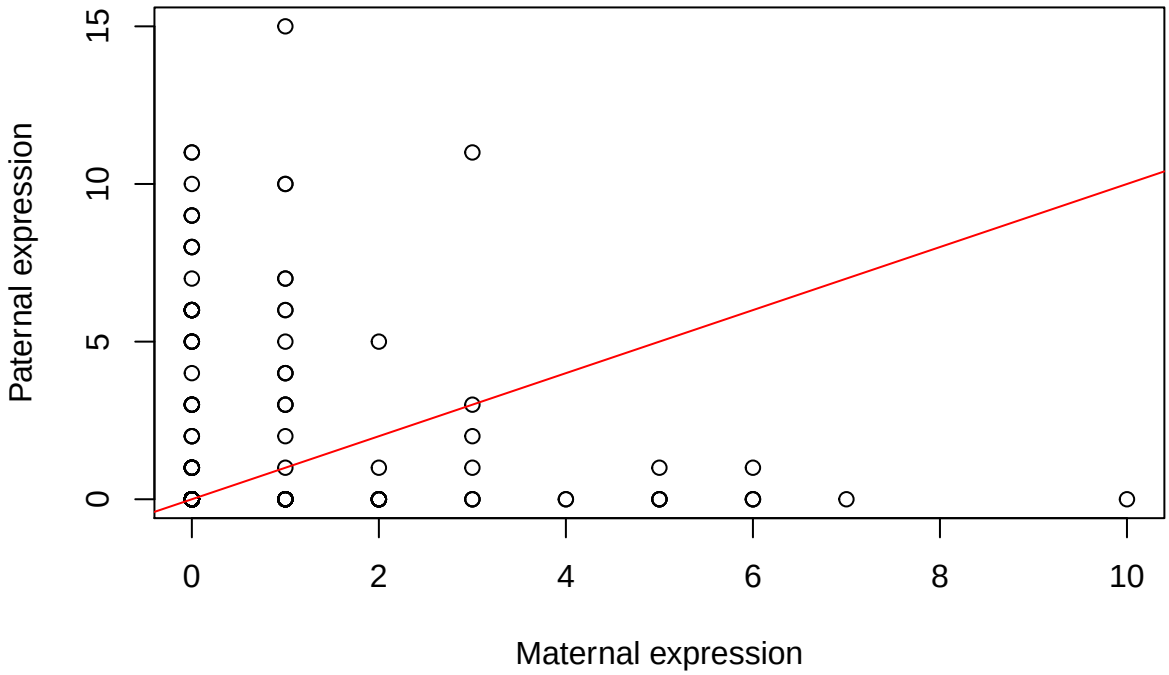

```
i <- 26
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



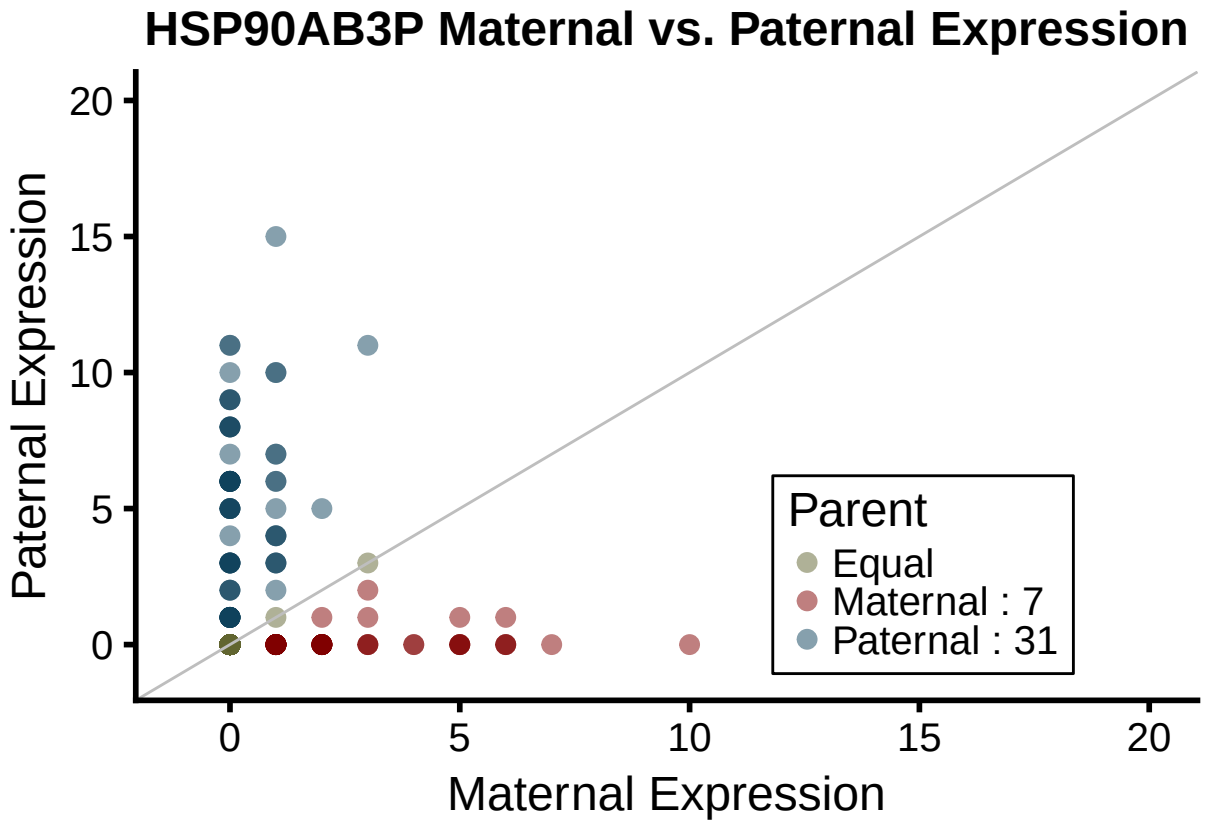

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,150), ylim=c(-1,150))+
 scale_color_manual(values=c("#616530CC" , "#800000CC" , "#0F425CCC"))+
  theme(legend.position = c(0.05, 0.8),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```



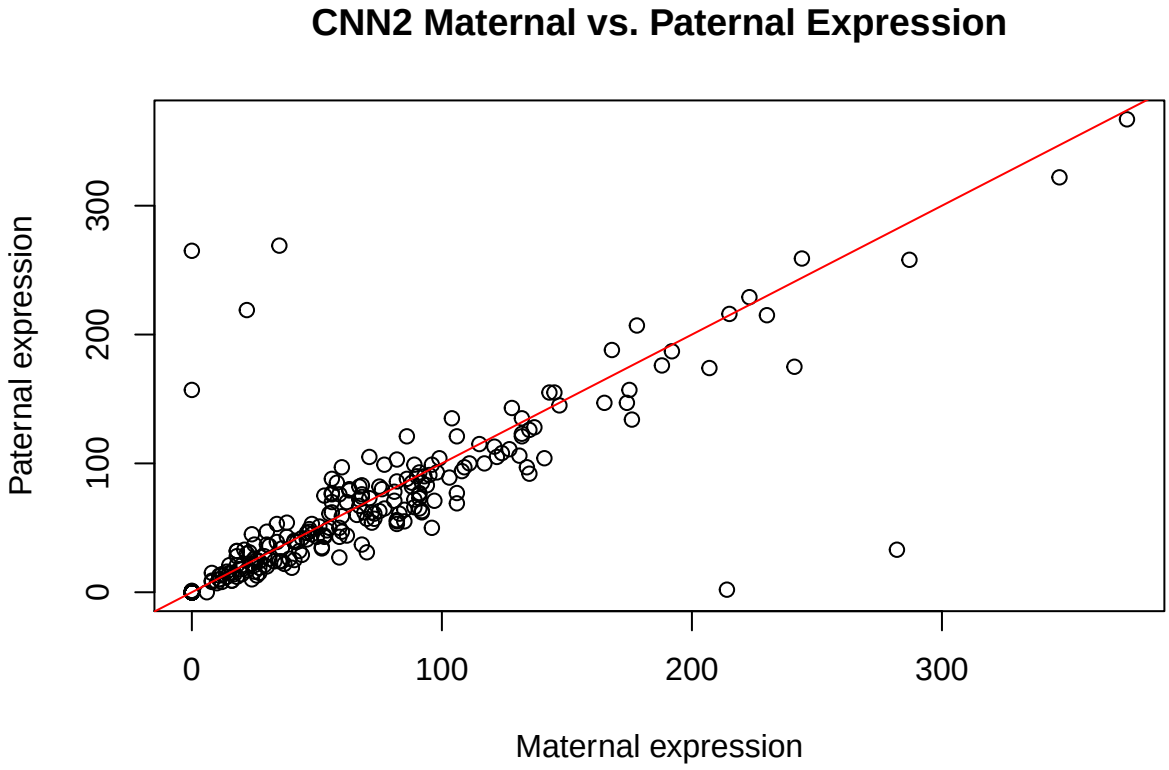

```
i <- 27
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal ex
abline(a=0, b=1, col="red")
```



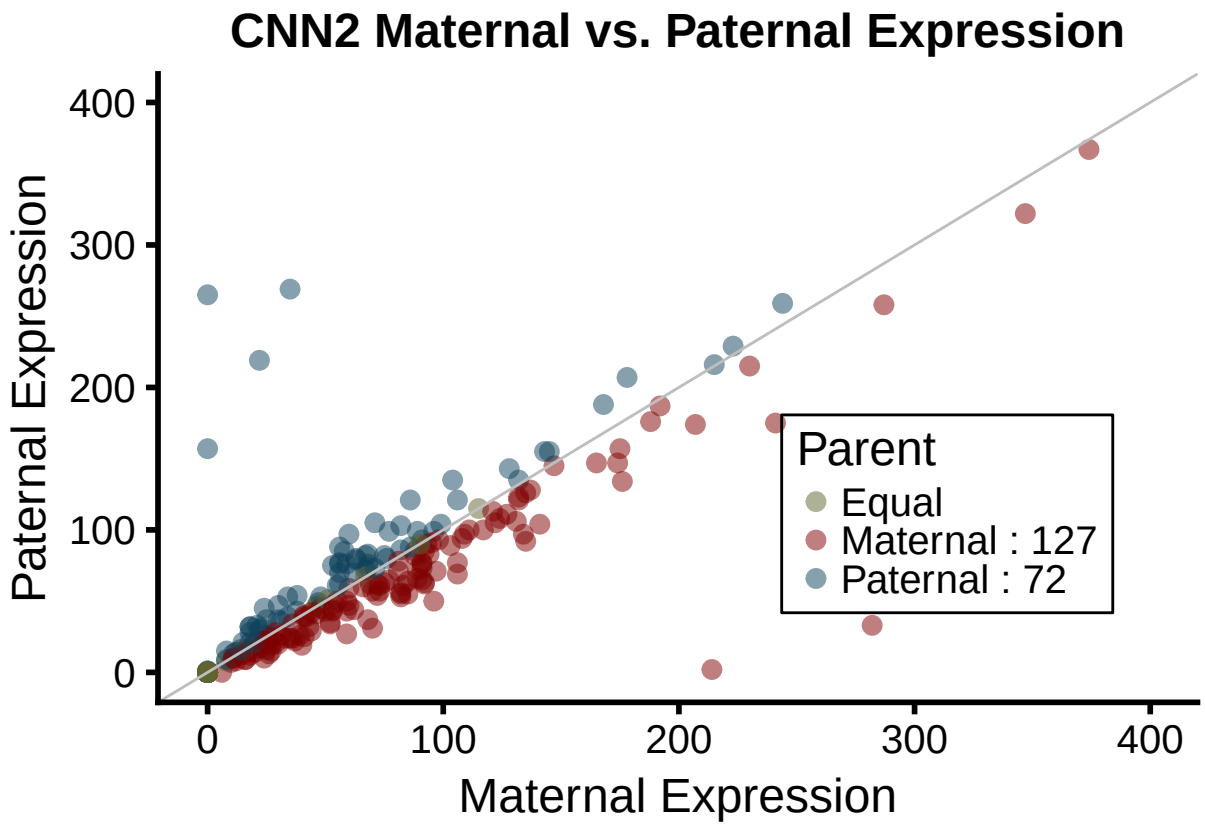

```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,20), ylim=c(-1,20))+
 scale_color_manual(values=c("#616530CC" , "#800000CC" , "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.2),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```




```
i <- 28
n <- sigsign$genes[i]
  v <- grep(n, genes)
  plot(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,])), xlab= "Maternal exp
abline(a=0, b=1, col="red")
```




```
gg <- as.data.frame(cbind(as.numeric(as.character(newmat4[v,])), as.numeric(as.character(newpat4[v,]))))
gg$V3 <- gg$V2-gg$V1
gg$Parent =gg$V3>0
gg$Parent[gg$V3>0] <- paste("Paternal", ":", sigsign$greater0[i])
gg$Parent[gg$V3<0] <- paste("Maternal", ":", sigsign$less0[i])
gg$Parent[gg$V3==0] <- "Equal"
ggplot(gg, aes(V1, V2, color=Parent,alpha=0.2))+
  geom_point(size=3, alpha=0.5)+
  geom_abline(slope=1, color="grey")+
  labs(title=paste(sigsign$genename[i], "Maternal vs. Paternal Expression"),
       x="Maternal Expression",
       y="Paternal Expression")+
  coord_cartesian(xlim=c(-1,400), ylim=c(-1,400))+
 scale_color_manual(values=c("#616530CC" , "#800000CC" , "#0F425CCC"))+
  theme(legend.position = c(0.6, 0.3),
        legend.background = element_rect(color = "black", size = 0.5, linetype = 1))
```




```
##    100092    100172    100182    100202    100372    100582
## 0.4059143 0.3332846 0.4658065 0.4161760 0.4753587 0.4283458
```

```
## Warning in qvalue(as.numeric(as.character(Zall5dfm$signpvaluew))): NAs
## introduced by coercion
```

```
## Warning in order(as.numeric(as.character(Zall5dfm$signpvaluew))): NAs
## introduced by coercion
```

```
##                 genes less0w greater0w    signpvaluew less0 greater0
## 1366  ENSG00000100138     23       189   6.167892e-19    23       189
## 8372  ENSG00000185513      1       107   2.577914e-18     1       107
## 9118  ENSG00000204186      2       148    2.66463e-17     2       148
## 9484  ENSG00000224078      2       131   1.628914e-16     2       131
## 3776  ENSG00000130844     36       184    1.56099e-15    36       184
## 9896  ENSG00000242265      2       136   1.560573e-13     2       136
## 4663  ENSG00000139679      0        76   3.511316e-12     0        76
## 436   ENSG00000053918     79         1   5.301042e-12    79         1
## 5183  ENSG00000145945      0        75   7.522029e-12     0        75
## 7046  ENSG00000168994     12        81   4.591968e-11    12        81
## 8762  ENSG00000196756    113        45 0.000000116084   113        45
## 10182 ENSG00000257151      0        43 0.000000182201     0        43
## 7799  ENSG00000177432      0        29 0.000002561545     0        29
## 478   ENSG00000058262    118        69 0.000007875759   118        69
## 8970  ENSG00000198346     63       132  0.00001403134    63       132
## 7987  ENSG00000180185     68        29  0.00003615146    68        29
## 1051  ENSG00000086232    113        69  0.00005962227   113        69
## 2753  ENSG00000115350     70       113   0.0001272201    70       113
## 8189  ENSG00000183199      7        31   0.0001562448     7        31
```

```
## 7957  ENSG00000179632     17        51   0.0001650784    17       51
##           signpvalue          Z          pvals  genename         weightedZ
## 1366    1.241325e-33  19.259388  1.177630e-82    NHP2L1  18.7470691219856
## 8372    6.717644e-31  37.225869 2.604154e-303   L3MBTL1  36.1666884261196
## 9118    1.587111e-41  47.048302  0.000000e+00     ZDBF2  45.7028149512822
## 9484    1.636876e-36  46.943079  0.000000e+00    SNHG14  45.4053378771055
## 3776    4.052682e-25  32.556427 1.698212e-232    ZNF331  31.9475476395497
## 9896    5.505538e-38  52.763940  0.000000e+00     PEG10  51.0422905503546
## 4663    2.646978e-23  32.657805 6.208827e-234     LPAR6  31.5275779600671
## 436     1.340033e-22 -27.867996 6.520211e-171     KCNQ1 -26.9549129680353
## 5183    5.293956e-23  30.583225 2.045815e-205    FAM50B  29.6840450207269
## 7046     9.82875e-14  15.571881  1.130346e-54     PXDC1  15.0907815822496
## 8762    6.204067e-08 -10.528297  6.398129e-26    SNHG17 -9.90995214461733
## 10182   2.273737e-13  28.216876 3.630556e-175     PWAR6  27.4322872095642
## 7799     3.72529e-09  21.803432 2.152548e-105    NAP1L5  21.1571315707425
## 478     0.0004183179  -6.764167  1.340784e-11   SEC61A1 -6.13953378618269
## 8970  0.000000869597   6.995052  2.651604e-12    ZNF813  6.97769023559539
## 7987   0.00009340687  -9.586751  9.090239e-22     FAHD1  -8.9217390112543
## 1051     0.001369453  -7.540441  4.683843e-14   EIF2AK1 -7.36200453714164
## 2753     0.001825909   4.493949  6.991444e-06     POLE4  3.88909526936906
## 8189     0.000116167   8.205194  2.302195e-16 HSP90AB3P   7.4798570623662
## 7957   0.00004453449   5.707762  1.144714e-08      MAF1  5.29390258676958
##                  weightedpval      signFDR     signFDRw
## 1366     2.04558286690202e-78 3.290132e-30 5.708031e-15
## 8372     2.0339258639358e-286 1.424409e-27 1.192856e-14
## 9118                        0 1.682655e-37 8.219877e-14
## 9484                        0 5.784719e-33 3.768667e-13
## 3776     5.8433051215679e-224 7.161088e-22 2.889214e-12
## 9896                        0 2.918486e-34 2.407035e-10
## 4663    3.63935592411504e-218 4.009037e-20 4.642174e-09
## 436     4.99591090124135e-160 1.578558e-19 6.132264e-09
## 5183    1.23383328374396e-193 7.015815e-20 7.734675e-09
## 7046     1.86223243574424e-51 1.042044e-10 4.249604e-08
## 8762     3.76826624301705e-23 5.059656e-05 9.766283e-05
## 10182   1.13033389153923e-165 2.191469e-10 1.405139e-04
## 7799     2.37221943906679e-99 3.291294e-06 1.823510e-03
## 478      8.27640205306931e-10 1.385939e-01 5.206117e-03
## 8970     3.00072356928205e-12 6.585334e-04 8.656801e-03
## 7987     4.59022903756226e-19 3.808845e-02 2.091006e-02
## 1051      1.8116881259193e-13 2.319895e-01 3.245706e-02
## 2753     0.000100618616944145 2.589178e-01 6.540831e-02
## 8189     7.44034917877821e-14 4.464273e-02 7.610297e-02
## 7957  0.000000119733230300994 2.327011e-02 7.638532e-02
```

```
## Warning in order(as.numeric(as.character(Zall5dfm$signpvaluew))): NAs
## introduced by coercion
```

```
##                 genes less0w greater0w signpvaluew less0 greater0
## 228   ENSG00000019485     NA        NA          NA    NA       NA
## 535   ENSG00000063660     NA        NA          NA    NA       NA
## 4161  ENSG00000135424     NA        NA          NA    NA       NA
## 4738  ENSG00000140543     NA        NA          NA    NA       NA
## 6504  ENSG00000164776     NA        NA          NA    NA       NA
## 7440  ENSG00000172965     NA        NA          NA    NA       NA
## 7637  ENSG00000175305     NA        NA          NA    NA       NA
```

```
## 7955  ENSG00000179627     NA        NA          NA    NA       NA
## 8143  ENSG00000182575     NA        NA          NA    NA       NA
## 9431  ENSG00000218227     NA        NA          NA    NA       NA
## 9526  ENSG00000225806     NA        NA          NA    NA       NA
## 9543  ENSG00000226312     NA        NA          NA    NA       NA
## 9563  ENSG00000226800     NA        NA          NA    NA       NA
## 9968  ENSG00000246250     NA        NA          NA    NA       NA
## 10166 ENSG00000256383     NA        NA          NA    NA       NA
## 10236 ENSG00000259520     NA        NA          NA    NA       NA
## 10315 ENSG00000261126     NA        NA          NA    NA       NA
## 10482 ENSG00000269388     NA        NA          NA    NA       NA
## 10552 ENSG00000272047     NA        NA          NA    NA       NA
## 10600 ENSG00000273033     NA        NA          NA    NA       NA
##       signpvalue          Z        pvals      genename          weightedZ
## 228           NA  0.5573864 5.772634e-01        PRDM11  0.170700581537176
## 535           NA -1.0690450 2.850494e-01          GPC1  -1.05444691911097
## 4161          NA  0.0000000 1.000000e+00         ITGA7 -0.112438284189582
## 4738          NA  0.4453993 6.560312e-01          DET1   0.17561698341126
## 6504          NA -0.7537076 4.510248e-01         PHKG1 -0.638295738471428
## 7440          NA  1.1147728 2.649478e-01   MIR4435-1HG   1.06146619390356
## 7637          NA -0.3735437 7.087438e-01         CCNE2 -0.770146294441692
## 7955          NA  0.4708710 6.377329e-01        ZBTB42  -0.13498453598768
## 8143          NA  0.6412234 5.213775e-01         NXPH3   1.10499991864406
## 9431          NA  4.3419292 1.412371e-05  RP11-889L3.1   4.22920846181383
## 9526          NA  9.8656107 5.867627e-23  RP1-309F20.3    9.5588293223001
## 9543          NA  0.4160251 6.773916e-01     CFLAR-AS1  0.151324746491436
## 9563          NA  0.1886084 8.503998e-01    CACTIN-AS1  0.610916904089019
## 9968          NA -0.3991141 6.898092e-01 RP11-613D13.5 -0.642918982035147
## 10166         NA  1.0787198 2.807127e-01    AC020910.2  0.987685125194579
## 10236         NA  0.9309493 3.518798e-01 CTD-2651B20.3  0.706381832778027
## 10315         NA -0.1924501 8.473897e-01        RBFADN  -0.65336969495752
## 10482         NA  2.0641874 3.899995e-02   AC018755.16    1.4838074215459
## 10552         NA  0.4585852 6.465320e-01        GTF2H5  0.310446259501262
## 10600         NA  0.2696799 7.874065e-01   RP11-67L2.2  0.719454495489564
##               weightedpval signFDR signFDRw
## 228      0.864459205539844      NA       NA
## 535      0.291678350713749      NA       NA
## 4161     0.910475901379378      NA       NA
## 4738     0.860594858890061      NA       NA
## 6504      0.52328118554409      NA       NA
## 7440     0.288478088458279      NA       NA
## 7637     0.441213117245003      NA       NA
## 7955     0.892624100916853      NA       NA
## 8143     0.269159624381068      NA       NA
## 9431  0.000023451496677534      NA       NA
## 9526  1.19096201490934e-21      NA       NA
## 9543     0.879719549183086      NA       NA
## 9563     0.541254593288677      NA       NA
## 9968     0.520276671749593      NA       NA
## 10166    0.323306881637597      NA       NA
## 10236    0.479950715582257      NA       NA
## 10315    0.513517971066703      NA       NA
## 10482    0.137860017661307      NA       NA
## 10552     0.75622162059282      NA       NA
```

```
## 10600    0.471860930011137      NA       NA
```

```
## Warning in order(as.numeric(as.character(Zall5dfm$signpvaluew))): NAs
## introduced by coercion
```

```
##        genename       genes             less0  greater0
##   [1,] "ABCC9"        NA                "NULL" "NULL"
##   [2,] "ABCG8"        NA                "NULL" "NULL"
##   [3,] "ACD"          "ENSG00000102977" "71"   "56"
##   [4,] "ADAM23"       NA                "NULL" "NULL"
##   [5,] "ADAMTS16"     "ENSG00000145536" "9"    "12"
##   [6,] "AGO2"         "ENSG00000123908" "101"  "112"
##   [7,] "AIM1"         "ENSG00000112297" "124"  "121"
##   [8,] "AIRN"         NA                "NULL" "NULL"
##   [9,] "ALDH1L1"      NA                "NULL" "NULL"
##  [10,] "AMPD3"        "ENSG00000133805" "111"  "108"
##  [11,] "ANO1"         NA                "NULL" "NULL"
##  [12,] "APBA1"        NA                "NULL" "NULL"
##  [13,] "ASB4"         NA                "NULL" "NULL"
##  [14,] "ASCL2"        NA                "NULL" "NULL"
##  [15,] "ATP10A"       NA                "NULL" "NULL"
##  [16,] "B4GALNT4"     NA                "NULL" "NULL"
##  [17,] "BCL2L1"       NA                "NULL" "NULL"
##  [18,] "BEGAIN"       NA                "NULL" "NULL"
##  [19,] "BLCAP"        NA                "NULL" "NULL"
##  [20,] "BMP8B"        NA                "NULL" "NULL"
##  [21,] "BTNL2"        NA                "NULL" "NULL"
##  [22,] "C10orf91"     NA                "NULL" "NULL"
##  [23,] "C9orf116"     NA                "NULL" "NULL"
##  [24,] "C9orf85"      "ENSG00000155621" "34"   "34"
##  [25,] "CALCR"        NA                "NULL" "NULL"
##  [26,] "CCDC40"       NA                "NULL" "NULL"
##  [27,] "CCDC85A"      NA                "NULL" "NULL"
##  [28,] "CD81"         "ENSG00000110651" "36"   "46"
##  [29,] "CDH15"        NA                "NULL" "NULL"
##  [30,] "CDH18"        NA                "NULL" "NULL"
##  [31,] "CDK4"         "ENSG00000135446" "11"   "6"
##  [32,] "CDKN1C"       NA                "NULL" "NULL"
##  [33,] "CELF4"        NA                "NULL" "NULL"
##  [34,] "CHMP2A"       "ENSG00000130724" "15"   "13"
##  [35,] "CHST8"        NA                "NULL" "NULL"
##  [36,] "COL9A3"       "ENSG00000092758" "17"   "3"
##  [37,] "COMMD1"       "ENSG00000173163" "34"   "40"
##  [38,] "COPG2"        "ENSG00000158623" "15"   "11"
##  [39,] "CPA4"         "ENSG00000128510" "9"    "10"
##  [40,] "CSF2"         NA                "NULL" "NULL"
##  [41,] "CYP1B1"       "ENSG00000138061" "94"   "121"
##  [42,] "DACT2"        NA                "NULL" "NULL"
##  [43,] "DCN"          NA                "NULL" "NULL"
##  [44,] "DDC"          NA                "NULL" "NULL"
##  [45,] "DDC"          NA                "NULL" "NULL"
##  [46,] "DGCR6"        NA                "NULL" "NULL"
##  [47,] "DGCR6L"       "ENSG00000128185" "35"   "39"
##  [48,] "DHFR"         NA                "NULL" "NULL"
##  [49,] "DIO3"         NA                "NULL" "NULL"
```

```
##  [50,] "DIRAS3"       NA                "NULL" "NULL"
##  [51,] "DLGAP2"       NA                "NULL" "NULL"
##  [52,] "DLK1"         NA                "NULL" "NULL"
##  [53,] "DLX5"         NA                "NULL" "NULL"
##  [54,] "DNMT1"        "ENSG00000130816" "88"   "87"
##  [55,] "DVL1"         NA                "NULL" "NULL"
##  [56,] "E2F7"         "ENSG00000165891" "87"   "83"
##  [57,] "EDN3"         NA                "NULL" "NULL"
##  [58,] "EGFL7"        NA                "NULL" "NULL"
##  [59,] "EVX1"         NA                "NULL" "NULL"
##  [60,] "FAM50B"       "ENSG00000145945" "0"    "75"
##  [61,] "FASTK"        "ENSG00000164896" "61"   "68"
##  [62,] "FBRSL1"       "ENSG00000112787" "106"  "75"
##  [63,] "FERMT2"       "ENSG00000073712" "33"   "51"
##  [64,] "FGFRL1"       "ENSG00000127418" "9"    "8"
##  [65,] "FOXF1"        NA                "NULL" "NULL"
##  [66,] "FOXG1"        NA                "NULL" "NULL"
##  [67,] "FRAT2"        NA                "NULL" "NULL"
##  [68,] "FRG1"         "ENSG00000109536" "65"   "52"
##  [69,] "FUCA1"        NA                "NULL" "NULL"
##  [70,] "GAB1"         "ENSG00000109458" "7"    "10"
##  [71,] "GABRB3"       NA                "NULL" "NULL"
##  [72,] "GAREM"        NA                "NULL" "NULL"
##  [73,] "GATA3"        "ENSG00000107485" "78"   "58"
##  [74,] "GATM"         "ENSG00000171766" "98"   "89"
##  [75,] "GDAP1L1"      NA                "NULL" "NULL"
##  [76,] "GFI1"         NA                "NULL" "NULL"
##  [77,] "GLI3"         NA                "NULL" "NULL"
##  [78,] "GLIS3"        "ENSG00000107249" "16"   "14"
##  [79,] "GNAS"         "ENSG00000087460" "116"  "126"
##  [80,] "GNAS-AS1"     NA                "NULL" "NULL"
##  [81,] "GNG7"         "ENSG00000176533" "139"  "113"
##  [82,] "GPR1"         NA                "NULL" "NULL"
##  [83,] "GPT"          "ENSG00000167701" "1"    "0"
##  [84,] "GRB10"        NA                "NULL" "NULL"
##  [85,] "H19"          NA                "NULL" "NULL"
##  [86,] "HERC3"        "ENSG00000138641" "40"   "59"
##  [87,] "HES1"         NA                "NULL" "NULL"
##  [88,] "HIST3H2BB"    NA                "NULL" "NULL"
##  [89,] "HM13"         "ENSG00000101294" "11"   "35"
##  [90,] "HOXA11"       NA                "NULL" "NULL"
##  [91,] "HOXA2"        NA                "NULL" "NULL"
##  [92,] "HOXA3"        NA                "NULL" "NULL"
##  [93,] "HOXA4"        NA                "NULL" "NULL"
##  [94,] "HOXA5"        NA                "NULL" "NULL"
##  [95,] "HOXB2"        "ENSG00000173917" "66"   "81"
##  [96,] "HOXB3"        "ENSG00000120093" "27"   "24"
##  [97,] "HOXC4"        NA                "NULL" "NULL"
##  [98,] "HOXC9"        NA                "NULL" "NULL"
##  [99,] "HSPA6"        "ENSG00000173110" "14"   "28"
## [100,] "HTR2A"        NA                "NULL" "NULL"
## [101,] "IFITM1"       NA                "NULL" "NULL"
## [102,] "IGF2"         NA                "NULL" "NULL"
## [103,] "IGF2-AS"      NA                "NULL" "NULL"
```

```
## [104,] "IGF2R"        "ENSG00000197081" "132"  "122"
## [105,] "IL18BP"       "ENSG00000137496" "27"   "31"
## [106,] "IMPACT"       "ENSG00000154059" "45"   "58"
## [107,] "INPP5F"       "ENSG00000198825" "20"   "23"
## [108,] "INS"          NA                "NULL" "NULL"
## [109,] "INTS4"        "ENSG00000149262" "7"    "13"
## [110,] "ISM1"         NA                "NULL" "NULL"
## [111,] "JADE1"        "ENSG00000077684" "29"   "24"
## [112,] "KBTBD3"       "ENSG00000182359" "11"   "15"
## [113,] "KCNK9"        NA                "NULL" "NULL"
## [114,] "KCNQ1"        "ENSG00000053918" "79"   "1"
## [115,] "KCNQ1DN"      NA                "NULL" "NULL"
## [116,] "KCNQ1OT1"     "ENSG00000269821" "0"    "7"
## [117,] "KLF14"        NA                "NULL" "NULL"
## [118,] "KLHDC10"      "ENSG00000128607" "94"   "93"
## [119,] "L3MBTL1"      "ENSG00000185513" "1"    "107"
## [120,] "LDB1"         "ENSG00000198728" "36"   "18"
## [121,] "LILRB4"       "ENSG00000186818" "81"   "101"
## [122,] "LIN28B"       NA                "NULL" "NULL"
## [123,] "LMX1B"        NA                "NULL" "NULL"
## [124,] "LRRTM1"       NA                "NULL" "NULL"
## [125,] "LY6D"         NA                "NULL" "NULL"
## [126,] "MAGEL2"       NA                "NULL" "NULL"
## [127,] "MAGI2"        NA                "NULL" "NULL"
## [128,] "MAPT"         NA                "NULL" "NULL"
## [129,] "MDH2"         "ENSG00000146701" "62"   "75"
## [130,] "MEG3"         NA                "NULL" "NULL"
## [131,] "MEG8"         NA                "NULL" "NULL"
## [132,] "MEIG1"        NA                "NULL" "NULL"
## [133,] "MEST"         "ENSG00000106484" "2"    "9"
## [134,] "MIMT1"        NA                "NULL" "NULL"
## [135,] "MIR127"       NA                "NULL" "NULL"
## [136,] "MIR134"       NA                "NULL" "NULL"
## [137,] "MIR136"       NA                "NULL" "NULL"
## [138,] "MIR154"       NA                "NULL" "NULL"
## [139,] "MIR296"       NA                "NULL" "NULL"
## [140,] "MIR298"       NA                "NULL" "NULL"
## [141,] "MIR337"       NA                "NULL" "NULL"
## [142,] "MIR370"       NA                "NULL" "NULL"
## [143,] "MIR371A"      NA                "NULL" "NULL"
## [144,] "MIR380"       NA                "NULL" "NULL"
## [145,] "MIR410"       NA                "NULL" "NULL"
## [146,] "MIR411"       NA                "NULL" "NULL"
## [147,] "MIR431"       NA                "NULL" "NULL"
## [148,] "MIR433"       NA                "NULL" "NULL"
## [149,] "MKRN3"        NA                "NULL" "NULL"
## [150,] "MPC1"         "ENSG00000060762" "81"   "82"
## [151,] "MRAP2"        NA                "NULL" "NULL"
## [152,] "MRGBP"        "ENSG00000101189" "96"   "81"
## [153,] "MYEOV2"       NA                "NULL" "NULL"
## [154,] "MYO1D"        "ENSG00000176658" "102"  "82"
## [155,] "MZF1"         "ENSG00000099326" "36"   "33"
## [156,] "NAA60"        "ENSG00000122390" "15"   "4"
## [157,] "NAP1L4"       "ENSG00000205531" "82"   "83"
```

```
## [158,] "NAP1L5"       "ENSG00000177432" "0"    "29"
## [159,] "NAPRT1"       "ENSG00000147813" "72"   "59"
## [160,] "NDN"          NA                "NULL" "NULL"
## [161,] "NDUFA4"       NA                "NULL" "NULL"
## [162,] "NHP2L1"       "ENSG00000100138" "23"   "189"
## [163,] "NKAIN3"       NA                "NULL" "NULL"
## [164,] "NLRP2"        "ENSG00000022556" "68"   "78"
## [165,] "NNAT"         NA                "NULL" "NULL"
## [166,] "NPAP1"        NA                "NULL" "NULL"
## [167,] "NTM"          NA                "NULL" "NULL"
## [168,] "OBSCN"        "ENSG00000154358" "33"   "32"
## [169,] "OR11L1"       NA                "NULL" "NULL"
## [170,] "OSBPL5"       NA                "NULL" "NULL"
## [171,] "OTX1"         NA                "NULL" "NULL"
## [172,] "PAOX"         "ENSG00000148832" "33"   "33"
## [173,] "PAX8"         "ENSG00000125618" "26"   "31"
## [174,] "PAX8-AS1"     "ENSG00000189223" "47"   "49"
## [175,] "PDE4D"        "ENSG00000113448" "25"   "19"
## [176,] "PDK4"         NA                "NULL" "NULL"
## [177,] "PEG10"        "ENSG00000242265" "2"    "136"
## [178,] "PEG3"         NA                "NULL" "NULL"
## [179,] "PEX10"        NA                "NULL" "NULL"
## [180,] "PHLDA2"       "ENSG00000181649" "10"   "11"
## [181,] "PHPT1"        "ENSG00000054148" "40"   "30"
## [182,] "PID1"         NA                "NULL" "NULL"
## [183,] "PKP3"         NA                "NULL" "NULL"
## [184,] "PLAGL1"       "ENSG00000118495" "24"   "19"
## [185,] "PMF1"         NA                "NULL" "NULL"
## [186,] "PON2"         "ENSG00000105854" "21"   "29"
## [187,] "PON3"         NA                "NULL" "NULL"
## [188,] "PPAP2C"       NA                "NULL" "NULL"
## [189,] "PPIEL"        NA                "NULL" "NULL"
## [190,] "PPP1R9A"      NA                "NULL" "NULL"
## [191,] "PPP1R9B"      "ENSG00000108819" "77"   "76"
## [192,] "PRDM16"       NA                "NULL" "NULL"
## [193,] "PRR20A"       NA                "NULL" "NULL"
## [194,] "PRSS3"        NA                "NULL" "NULL"
## [195,] "PTPN14"       "ENSG00000152104" "8"    "14"
## [196,] "PURG"         NA                "NULL" "NULL"
## [197,] "PYY2"         NA                "NULL" "NULL"
## [198,] "RAB1B"        "ENSG00000174903" "56"   "73"
## [199,] "RASGRF1"      "ENSG00000058335" "18"   "14"
## [200,] "RB1"          NA                "NULL" "NULL"
## [201,] "RBP5"         "ENSG00000139194" "29"   "35"
## [202,] "RDM1"         NA                "NULL" "NULL"
## [203,] "RPL22"        NA                "NULL" "NULL"
## [204,] "RTL1"         NA                "NULL" "NULL"
## [205,] "SALL1"        NA                "NULL" "NULL"
## [206,] "SFMBT2"       "ENSG00000198879" "84"   "92"
## [207,] "SGCE"         NA                "NULL" "NULL"
## [208,] "SGK2"         NA                "NULL" "NULL"
## [209,] "SIM2"         NA                "NULL" "NULL"
## [210,] "SLC22A18"     "ENSG00000110628" "95"   "87"
## [211,] "SLC22A2"      NA                "NULL" "NULL"
```

```
## [212,] "SLC22A3"      NA                "NULL" "NULL"
## [213,] "SLC26A10"     NA                "NULL" "NULL"
## [214,] "SLC38A4"      NA                "NULL" "NULL"
## [215,] "SLC4A2"       "ENSG00000164889" "121"  "118"
## [216,] "SNORD108"     NA                "NULL" "NULL"
## [217,] "SNORD109A"    NA                "NULL" "NULL"
## [218,] "SNORD109B"    NA                "NULL" "NULL"
## [219,] "SNORD115"     NA                "NULL" "NULL"
## [220,] "SNORD64"      NA                "NULL" "NULL"
## [221,] "SNRPN"        NA                "NULL" "NULL"
## [222,] "SNURF"        NA                "NULL" "NULL"
## [223,] "SOX8"         NA                "NULL" "NULL"
## [224,] "SPATA31D1"    NA                "NULL" "NULL"
## [225,] "SPON2"        "ENSG00000159674" "15"   "8"
## [226,] "TBC1D12"      "ENSG00000108239" "34"   "39"
## [227,] "TCEB3C"       NA                "NULL" "NULL"
## [228,] "TFPI2"        "ENSG00000105825" "5"    "12"
## [229,] "TFPI2"        "ENSG00000105825" "5"    "12"
## [230,] "TIGD1"        "ENSG00000221944" "28"   "15"
## [231,] "TMEM106A"     "ENSG00000184988" "62"   "56"
## [232,] "TMEM255B"     NA                "NULL" "NULL"
## [233,] "TMEM52"       NA                "NULL" "NULL"
## [234,] "TMEM60"       "ENSG00000135211" "108"  "81"
## [235,] "TMEM88"       NA                "NULL" "NULL"
## [236,] "TNK1"         NA                "NULL" "NULL"
## [237,] "TP73"         NA                "NULL" "NULL"
## [238,] "TRAPPC9"      "ENSG00000167632" "118"  "116"
## [239,] "TREM1"        "ENSG00000124731" "7"    "1"
## [240,] "TSHZ3"        NA                "NULL" "NULL"
## [241,] "TSPAN32"      NA                "NULL" "NULL"
## [242,] "TSSC4"        "ENSG00000184281" "69"   "77"
## [243,] "UBE2NL"       NA                "NULL" "NULL"
## [244,] "UBE3A"        "ENSG00000114062" "26"   "15"
## [245,] "USB1"         "ENSG00000103005" "70"   "69"
## [246,] "USP29"        NA                "NULL" "NULL"
## [247,] "UVSSA"        "ENSG00000163945" "90"   "92"
## [248,] "VAX2"         NA                "NULL" "NULL"
## [249,] "VENTX"        NA                "NULL" "NULL"
## [250,] "WARS"         "ENSG00000140105" "64"   "70"
## [251,] "WRAP73"       NA                "NULL" "NULL"
## [252,] "WT1"          NA                "NULL" "NULL"
## [253,] "XIST"         NA                "NULL" "NULL"
## [254,] "ZACN"         NA                "NULL" "NULL"
## [255,] "ZC3H12C"      "ENSG00000149289" "73"   "77"
## [256,] "ZDBF2"        "ENSG00000204186" "2"    "148"
## [257,] "ZDBF2"        "ENSG00000204186" "2"    "148"
## [258,] "ZFAT"         "ENSG00000066827" "114"  "101"
## [259,] "ZFP36L2"      "ENSG00000152518" "79"   "81"
## [260,] "ZIC1"         NA                "NULL" "NULL"
## [261,] "ZIM2"         NA                "NULL" "NULL"
## [262,] "ZIM3"         NA                "NULL" "NULL"
## [263,] "ZNF225"       NA                "NULL" "NULL"
## [264,] "ZNF229"       "ENSG00000167383" "31"   "42"
## [265,] "ZNF595"       NA                "NULL" "NULL"
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## [266,] "ZNF597"       NA               "NULL" "NULL"
## [267,] "ZRSR1"        NA               "NULL" "NULL"
## [268,] "CFAP46"       NA               "NULL" "NULL"
## [269,] "COPG2IT1"     NA               "NULL" "NULL"
## [270,] "FLJ20464"     NA               "NULL" "NULL"
## [271,] "HYMAI"        NA               "NULL" "NULL"
## [272,] "IPW"          NA               "NULL" "NULL"
## [273,] "IRAIN"        NA               "NULL" "NULL"
## [274,] "LOC100131170" NA               "NULL" "NULL"
## [275,] "MCTS2P"       NA               "NULL" "NULL"
## [276,] "MESTIT1"      NA               "NULL" "NULL"
## [277,] "MIR376B"      NA               "NULL" "NULL"
## [278,] "NKX6"         NA               "NULL" "NULL"
## [279,] "PEG13"        NA               "NULL" "NULL"
## [280,] "RNU5D"        NA               "NULL" "NULL"
## [281,] "SNORD107"     NA               "NULL" "NULL"
## [282,] "SNORD115@"    NA               "NULL" "NULL"
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## [284,] "SNORD116@"    NA               "NULL" "NULL"
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##   [4,] "NULL"                 "NA"
##   [5,] "0.663623809814453"    "0.446321842677452"
##   [6,] "0.49331573862992"     "0.176715346450335"
##   [7,] "0.898360820931232"    "-2.13752509953959"
##   [8,] "NULL"                 "NA"
##   [9,] "NULL"                 "NA"
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##  [12,] "NULL"                 "NA"
##  [13,] "NULL"                 "NA"
##  [14,] "NULL"                 "NA"
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##  [16,] "NULL"                 "NA"
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##  [18,] "NULL"                 "NA"
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##  [21,] "NULL"                 "NA"
##  [22,] "NULL"                 "NA"
##  [23,] "NULL"                 "NA"
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##  [25,] "NULL"                 "NA"
##  [26,] "NULL"                 "NA"
##  [27,] "NULL"                 "NA"
##  [28,] "0.320293363638014"    "1.76671455534844"
##  [29,] "NULL"                 "NA"
##  [30,] "NULL"                 "NA"
##  [31,] "0.332305908203125"    "-1.45133834054069"
##  [32,] "NULL"                 "NA"
##  [33,] "NULL"                 "NA"
##  [34,] "0.850554019212723"    "3.51917822575319"
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##  [37,] "0.561380744298984"     "1.09497464846308"
##  [38,] "0.557197093963623"     "-2.03198719548545"
##  [39,] "1"                     "-0.427617987059879"
##  [40,] "NULL"                  "NA"
##  [41,] "0.0759534872030176"    "9.24661141576064"
##  [42,] "NULL"                  "NA"
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##  [44,] "NULL"                  "NA"
##  [45,] "NULL"                  "NA"
##  [46,] "NULL"                  "NA"
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##  [55,] "NULL"                  "NA"
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##  [57,] "NULL"                  "NA"
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##  [59,] "NULL"                  "NA"
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##  [61,] "0.597484999305873"     "-0.294231946196439"
##  [62,] "0.0254832924348297"    "-2.71911852083577"
##  [63,] "0.0629722570361699"    "1.83342460524902"
##  [64,] "1"                     "0.988851379630823"
##  [65,] "NULL"                  "NA"
##  [66,] "NULL"                  "NA"
##  [67,] "NULL"                  "NA"
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##  [69,] "NULL"                  "NA"
##  [70,] "0.629058837890625"     "1.0154748070832"
##  [71,] "NULL"                  "NA"
##  [72,] "NULL"                  "NA"
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##  [74,] "0.558652331741766"     "1.50572714554268"
##  [75,] "NULL"                  "NA"
##  [76,] "NULL"                  "NA"
##  [77,] "NULL"                  "NA"
##  [78,] "0.855535551905632"     "1.43217888674438"
##  [79,] "0.562988581024381"     "-0.645283345580828"
##  [80,] "NULL"                  "NA"
##  [81,] "0.11511266182112"      "-1.33438477528629"
##  [82,] "NULL"                  "NA"
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##  [84,] "NULL"                  "NA"
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##  [86,] "0.0699005736949464"    "1.84102908841967"
##  [87,] "NULL"                  "NA"
##  [88,] "NULL"                  "NA"
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##  [92,] "NULL"                 "NA"
##  [93,] "NULL"                 "NA"
##  [94,] "NULL"                 "NA"
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##  [96,] "0.779767930553075"    "-1.17873791697861"
##  [97,] "NULL"                 "NA"
##  [98,] "NULL"                 "NA"
##  [99,] "0.043558521923842"    "2.12447412631698"
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## [101,] "NULL"                 "NA"
## [102,] "NULL"                 "NA"
## [103,] "NULL"                 "NA"
## [104,] "0.572357452324395"    "0.268271987249637"
## [105,] "0.694004094076131"    "-0.557152496542793"
## [106,] "0.236901877780293"    "2.42056913340178"
## [107,] "0.760791642561346"    "1.2061655282818"
## [108,] "NULL"                 "NA"
## [109,] "0.263175964355469"    "1.29562444966543"
## [110,] "NULL"                 "NA"
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## [112,] "0.557197093963623"    "1.7458797760398"
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## [115,] "NULL"                 "NA"
## [116,] "0.015625"             "14.7908576629276"
## [117,] "NULL"                 "NA"
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## [119,] "6.71764364602269e-31" "37.2258689546172"
## [120,] "0.0198343267280683"   "-1.53094634507866"
## [121,] "0.15883333227242"     "2.85065943851339"
## [122,] "NULL"                 "NA"
## [123,] "NULL"                 "NA"
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## [132,] "NULL"                 "NA"
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## [134,] "NULL"                 "NA"
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## [142,] "NULL"                 "NA"
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## [151,] "NULL"                 "NA"
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## [153,] "NULL"                 "NA"
## [154,] "0.16112227096098"     "-1.63004091071027"
## [155,] "0.809949052918925"    "-0.348155311911396"
## [156,] "0.0192108154296875"   "-5.97969537324074"
## [157,] "1"                    "-2.0815122461607"
## [158,] "3.72529029846191e-09" "21.803432345111"
## [159,] "0.294406156523514"    "2.45880871544627"
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## [163,] "NULL"                 "NA"
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## [165,] "NULL"                 "NA"
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## [168,] "1"                    "1.86786689733689"
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## [172,] "1"                    "1.22777567254009"
## [173,] "0.596641760373082"    "-1.20833418957952"
## [174,] "0.918778035364538"    "0.220647890820344"
## [175,] "0.451380832396126"    "-1.14891252930761"
## [176,] "NULL"                 "NA"
## [177,] "5.50553799467154e-38" "52.763939706331"
## [178,] "NULL"                 "NA"
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## [181,] "0.281978921793657"    "-0.807232648457966"
## [182,] "NULL"                 "NA"
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## [184,] "0.542384011856486"    "0.356688187503211"
## [185,] "NULL"                 "NA"
## [186,] "0.322236320357547"    "3.10445600046506"
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## [196,] "NULL"                 "NA"
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## [201,] "0.532308776027845"   "1.10735099504458"
## [202,] "NULL"                "NA"
## [203,] "NULL"                "NA"
## [204,] "NULL"                "NA"
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## [206,] "0.597872449055666"   "2.36453289434102"
## [207,] "NULL"                "NA"
## [208,] "NULL"                "NA"
## [209,] "NULL"                "NA"
## [210,] "0.603970659729229"   "-2.91507995150273"
## [211,] "NULL"                "NA"
## [212,] "NULL"                "NA"
## [213,] "NULL"                "NA"
## [214,] "NULL"                "NA"
## [215,] "0.897100788341281"   "-1.87906080341657"
## [216,] "NULL"                "NA"
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## [218,] "NULL"                "NA"
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## [222,] "NULL"                "NA"
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## [224,] "NULL"                "NA"
## [225,] "0.210039615631104"   "-2.53859103528797"
## [226,] "0.639972931753945"   "0.385873915177091"
## [227,] "NULL"                "NA"
## [228,] "0.143463134765625"   "1.15433691042554"
## [229,] "0.143463134765625"   "1.15433691042554"
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## [231,] "0.645496763557822"   "-1.50991142759783"
## [232,] "NULL"                "NA"
## [233,] "NULL"                "NA"
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## [235,] "NULL"                "NA"
## [236,] "NULL"                "NA"
## [237,] "NULL"                "NA"
## [238,] "0.94789635041917"    "-2.12278733123218"
## [239,] "0.0703125"           "-0.650944554904119"
## [240,] "NULL"                "NA"
## [241,] "NULL"                "NA"
## [242,] "0.56252094230485"    "-1.84872151288511"
## [243,] "NULL"                "NA"
## [244,] "0.117275205957413"   "-1.29783873499746"
## [245,] "1"                   "-1.92355203682794"
## [246,] "NULL"                "NA"
## [247,] "0.940938045848218"   "-1.26911160175261"
## [248,] "NULL"                "NA"
## [249,] "NULL"                "NA"
## [250,] "0.665950163901232"   "0.194543542784739"
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## [253,] "NULL"                 "NA"
## [254,] "NULL"                 "NA"
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## [256,] "1.58711064069431e-41" "47.0483021799141"
## [257,] "1.58711064069431e-41" "47.0483021799141"
## [258,] "0.413193694518876"    "-2.46778794547552"
## [259,] "0.9370201692132"      "0.455783117069122"
## [260,] "NULL"                 "NA"
## [261,] "NULL"                 "NA"
## [262,] "NULL"                 "NA"
## [263,] "NULL"                 "NA"
## [264,] "0.241644723140753"    "1.63266963670877"
## [265,] "NULL"                 "NA"
## [266,] "NULL"                 "NA"
## [267,] "NULL"                 "NA"
## [268,] "NULL"                 "NA"
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## [270,] "NULL"                 "NA"
## [271,] "NULL"                 "NA"
## [272,] "NULL"                 "NA"
## [273,] "NULL"                 "NA"
## [274,] "NULL"                 "NA"
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## [276,] "NULL"                 "NA"
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##   [2,] "NA"                     NA
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##   [4,] "NA"                     NA
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##   [6,] "0.859731985868724"      "-0.0552718446115551"
##   [7,] "0.032555306476712"      "-2.35270911169224"
##   [8,] "NA"                     NA
##   [9,] "NA"                     NA
##  [10,] "0.21886119085095"       "0.592744941998139"
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##  [12,] "NA"                     NA
##  [13,] "NA"                     NA
##  [14,] "NA"                     NA
##  [15,] "NA"                     NA
##  [16,] "NA"                     NA
##  [17,] "NA"                     NA
##  [18,] "NA"                     NA
##  [19,] "NA"                     NA
```

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##  [22,] "NA"                     NA
##  [23,] "NA"                     NA
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##  [25,] "NA"                     NA
##  [26,] "NA"                     NA
##  [27,] "NA"                     NA
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##  [30,] "NA"                     NA
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##  [34,] "0.00043285795720958"    "1.17914627519513"
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##  [38,] "0.0421549522380875"     "-2.12510257507365"
##  [39,] "0.668929268252767"      "1.06842861742268"
##  [40,] "NA"                     NA
##  [41,] "2.31722381136205e-20"   "8.7128173009129"
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##  [43,] "NA"                     NA
##  [44,] "NA"                     NA
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##  [46,] "NA"                     NA
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##  [48,] "NA"                     NA
##  [49,] "NA"                     NA
##  [50,] "NA"                     NA
##  [51,] "NA"                     NA
##  [52,] "NA"                     NA
##  [53,] "NA"                     NA
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##  [55,] "NA"                     NA
##  [56,] "0.51328076672152"       "-0.58028710834948"
##  [57,] "NA"                     NA
##  [58,] "NA"                     NA
##  [59,] "NA"                     NA
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##  [61,] "0.768580670952226"      "-0.712173373631301"
##  [62,] "0.00654561494124149"    "-2.25173619663357"
##  [63,] "0.0667394512600119"     "2.32536833076259"
##  [64,] "0.322735861696203"      "1.4618020909616"
##  [65,] "NA"                     NA
##  [66,] "NA"                     NA
##  [67,] "NA"                     NA
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##  [69,] "NA"                     NA
##  [70,] "0.309879549639773"      "1.12994093328442"
##  [71,] "NA"                     NA
##  [72,] "NA"                     NA
##  [73,] "0.0681962558729351"     "-1.42302460243903"
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##  [76,] "NA"                     NA
##  [77,] "NA"                     NA
##  [78,] "0.15209263248158"       "0.944719579489197"
##  [79,] "0.518743583402691"      "-0.670668956028735"
##  [80,] "NA"                     NA
##  [81,] "0.18207778701329"       "-1.4638027235011"
##  [82,] "NA"                     NA
##  [83,] "0.368530801392455"      "0.904341289767652"
##  [84,] "NA"                     NA
##  [85,] "NA"                     NA
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##  [87,] "NA"                     NA
##  [88,] "NA"                     NA
##  [89,] "1.75423161929994e-12"   "6.45038481348352"
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##  [91,] "NA"                     NA
##  [92,] "NA"                     NA
##  [93,] "NA"                     NA
##  [94,] "NA"                     NA
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##  [96,] "0.238502552272325"      "-1.12565880369667"
##  [97,] "NA"                     NA
##  [98,] "NA"                     NA
##  [99,] "0.0336305173578705"     "2.11281591775129"
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## [101,] "NA"                     NA
## [102,] "NA"                     NA
## [103,] "NA"                     NA
## [104,] "0.788489967082591"      "0.623485004362797"
## [105,] "0.577423242582296"      "-0.740610793187358"
## [106,] "0.0154962323957308"     "2.16732039796132"
## [107,] "0.227753672582359"      "1.22351587110929"
## [108,] "NA"                     NA
## [109,] "0.195104901470061"      "1.05238818961135"
## [110,] "NA"                     NA
## [111,] "0.548193514907601"      "-0.34664875049286"
## [112,] "0.0808318447928937"     "2.27142088047781"
## [113,] "NA"                     NA
## [114,] "6.52021060285597e-171"  "-26.9549129680353"
## [115,] "NA"                     NA
## [116,] "1.6780187971172e-49"    "14.4802539009127"
## [117,] "NA"                     NA
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## [119,] "2.60415400449315e-303"  "36.1666884261196"
## [120,] "0.125782653849817"      "-1.70003197725247"
## [121,] "0.00436286708880389"    "3.06540307058641"
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## [153,] "NA"                      NA
## [154,] "0.103092850803691"       "-1.88991584758209"
## [155,] "0.72772354666955"        "-0.522011545319224"
## [156,] "2.2355528860781e-09"     "-5.33885717030128"
## [157,] "0.0373870443697035"      "-2.42700398538266"
## [158,] "2.15254831900686e-105"   "21.1571315707425"
## [159,] "0.0139398868746475"      "2.32464954858493"
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## [161,] "NA"                      NA
## [162,] "1.17762968364605e-82"    "18.7470691219856"
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## [171,] "NA"                      NA
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## [173,] "0.226918742515793"       "-1.18996910443909"
## [174,] "0.82536660845621"        "-0.142999385068696"
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## [198,] "0.0268932825099152"    "1.39182615357478"
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## [229,] "0.248362069579454"     "1.4275739752787"
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## [235,] "NA"                    NA
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## [237,] "NA"                    NA
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## [247,] "0.204401262974371"     "-1.17202236203434"
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## [256,] "0"                     "45.7028149512822"
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## [258,] "0.0135950830073893"    "-2.7822562405503"
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## [121,] "0.00217376824867573"    "0.979387723469217"
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## [155,] "0.60166229207 4817"      "1"
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## [229,] "0.153414518753068"     "0.954799846067267"
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##   [2,] "chr2:43838964-43878808"    "Maternal"
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##   [4,] "chr2:206443544-206621130"  "Paternal"
##   [5,] "chr5:5140330-5320299"      "Maternal"
##   [6,] "chr8:140531165-140635547"  "Maternal"
##   [7,] "chr6:106360808-106570460"  "Paternal"
##   [8,] "chr6:160003291-160007664"  "Paternal"
##   [9,] "chr3:126103561-126181186"  "Maternal"
##  [10,] "chr11:10450321-10507579"   "-"
##  [11,] "chr11:69985875-70189545"   "Maternal"
##  [12,] "chr9:69427532-69672359"    "Paternal"
##  [13,] "chr7:95485901-95540231"    "Maternal"
##  [14,] "chr11:2268498-2270952"     "Maternal"
##  [15,] "chr15:25678712-25865170"   "Maternal"
##  [16,] "chr11:369795-382117"       "Maternal"
##  [17,] "chr20:31664452-31723955"   "Paternal"
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## R version 3.4.2 (2017-09-28)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS High Sierra 10.13.3
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.4/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.4/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] parallel  stats     graphics  grDevices utils     datasets  methods
## [8] base
##
## other attached packages:
## [1] doParallel_1.0.11  iterators_1.0.9    foreach_1.4.4
## [4] cowplot_0.9.2      qvalue_2.10.0      ggplot2_2.2.1.9000
## [7] ggsci_2.8          qqman_0.1.4
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.14      knitr_1.18        magrittr_1.5
##  [4] splines_3.4.2     munsell_0.4.3     colorspace_1.3-2
##  [7] rlang_0.1.6       stringr_1.2.0     plyr_1.8.4
## [10] tools_3.4.2       grid_3.4.2        gtable_0.2.0
## [13] calibrate_1.7.2   htmltools_0.3.6   yaml_2.1.16
## [16] lazyeval_0.2.1    rprojroot_1.3-1   digest_0.6.13
## [19] tibble_1.4.1      reshape2_1.4.3    codetools_0.2-15
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## [22] evaluate_0.10.1   rmarkdown_1.8     labeling_0.3
## [25] stringi_1.1.6     pillar_1.0.1      compiler_3.4.2
## [28] scales_0.5.0.9000 backports_1.1.2
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