**Figure S1. This process reveals a lncRNA model for predicting the prognosis of cervical cancer**

**Figure S2. PPI networks reveal protein interactions in cervical cancer.** The protein-protein interaction network of 268 differential genes of CESC was analyzed using string database.

**Figure S3. The overview of clinical information and model lncRNA expression levels for CESC patients.** Clinical information and lncRNA expression heatmap of 293 CESC patients were drawn using ComplexHeatmap and circlize packages in R software.

**Figure S4. Overall mutations in patients with TCGA-CESC.** (A) The maftools package was used to generate chromosome mutation locus maps from 289 CESC patients. (B) The maftools package was used to generate single nucleotide mutation statistics for 289 CESC patients.

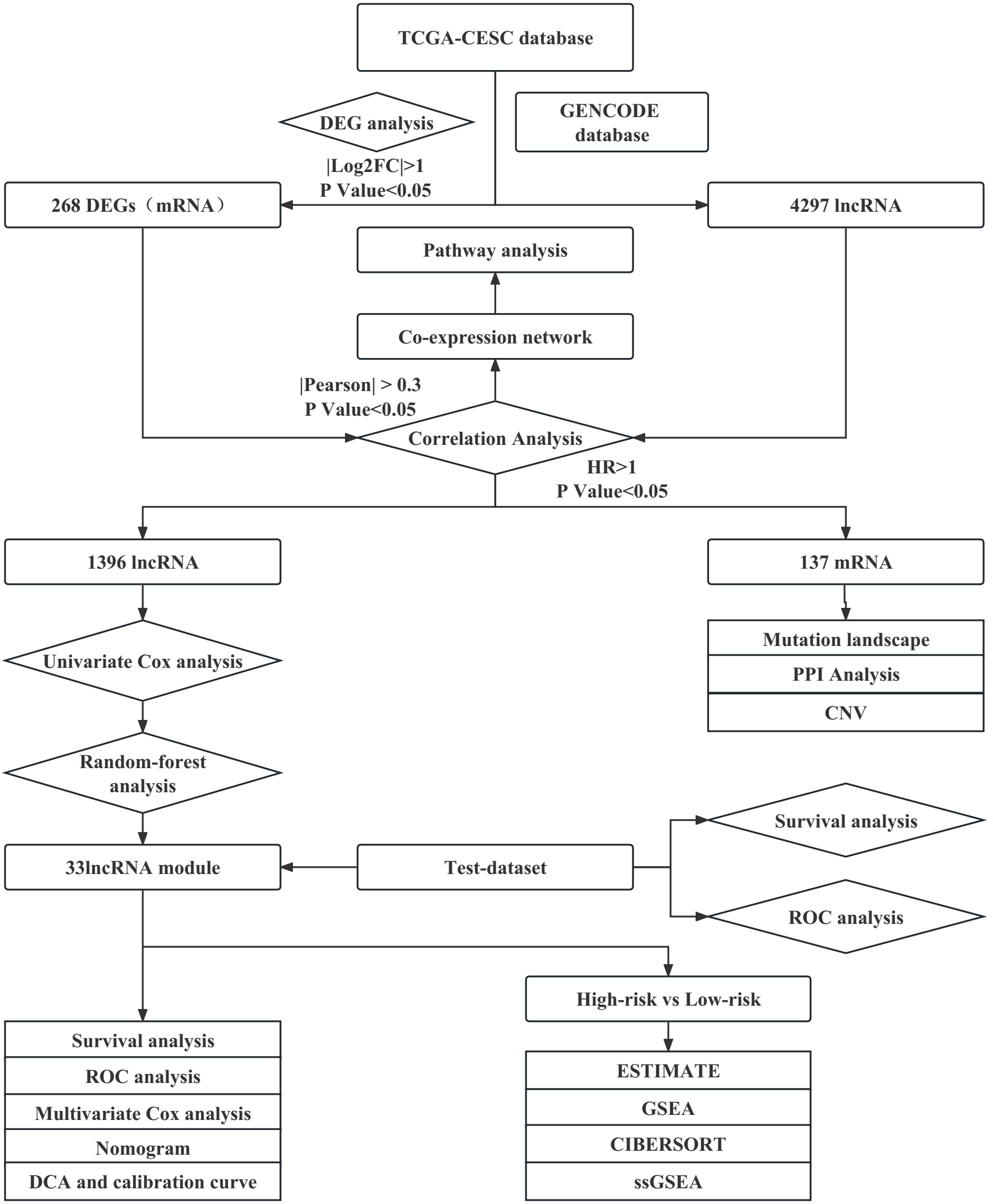
**Figure S5. Top-ranking CNVS and SNPS in patients with TCGA-CESC.** The maftools package was used to generate Mutation landscape of 289 CESC patients. Waterfall plot showing the mutation information of top20 genes with mutations.

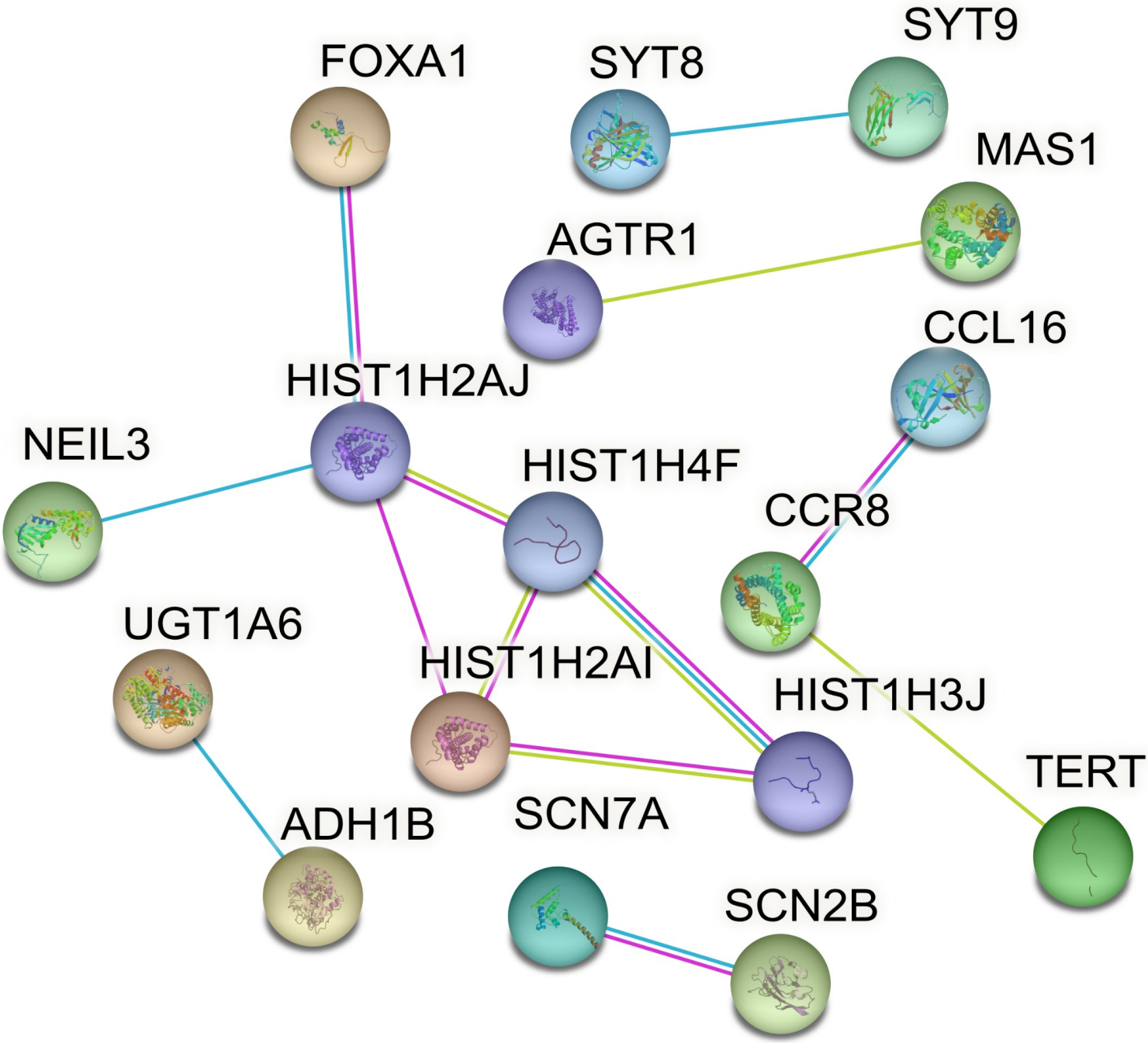
**Figure S6. 14 lncRNAs with significant prognosis were identified in CESC patients.** According to the median expression level of lncRNA, they were divided into high and low groups. Then Kaplan-Meier curves were drawn for 14 lncRNAs with significant prognosis in TCGA-CESC patients using survival package.

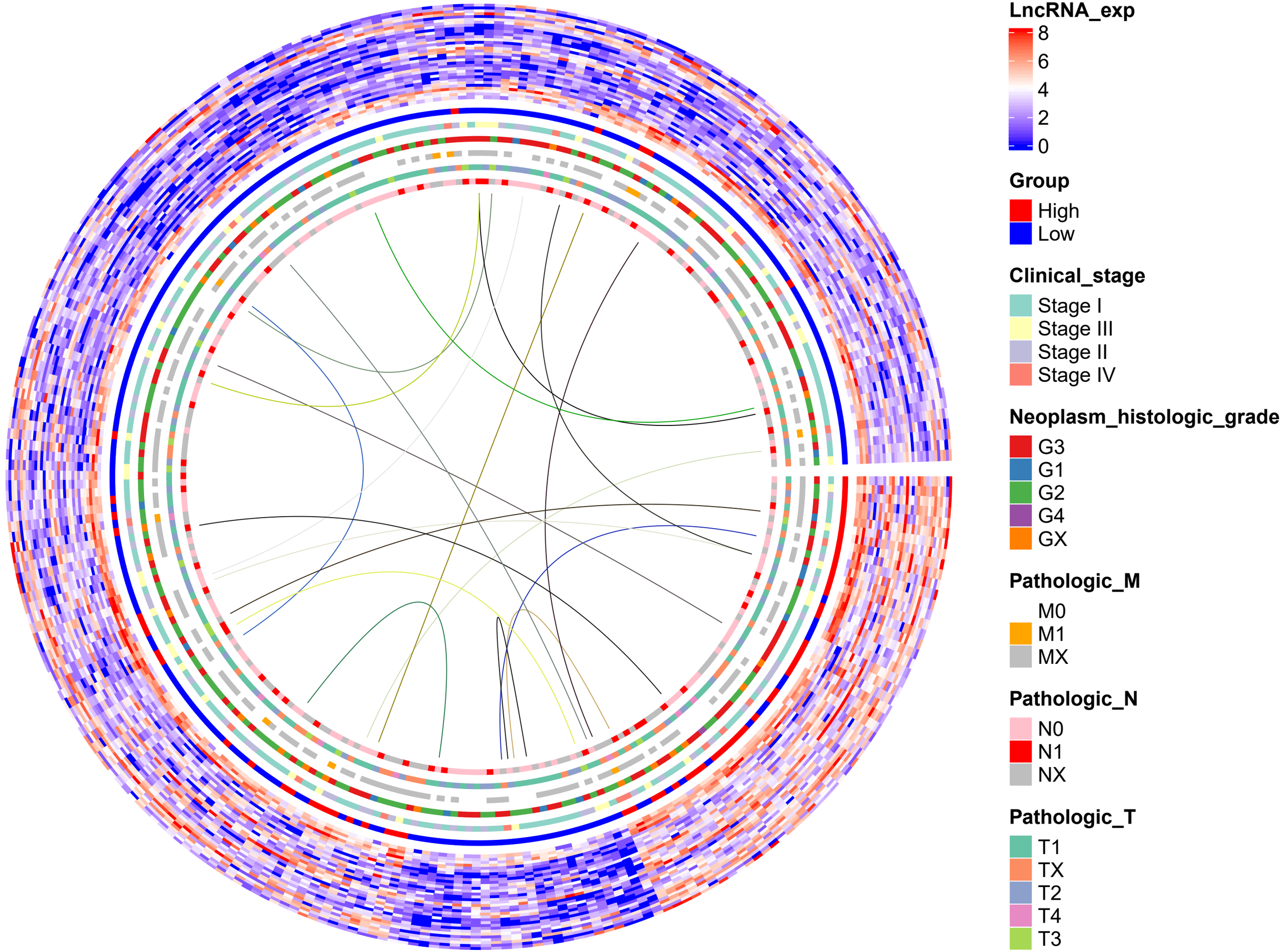
**Figure S7. Gene set enrichment analysis between low-risk group and high-risk group**

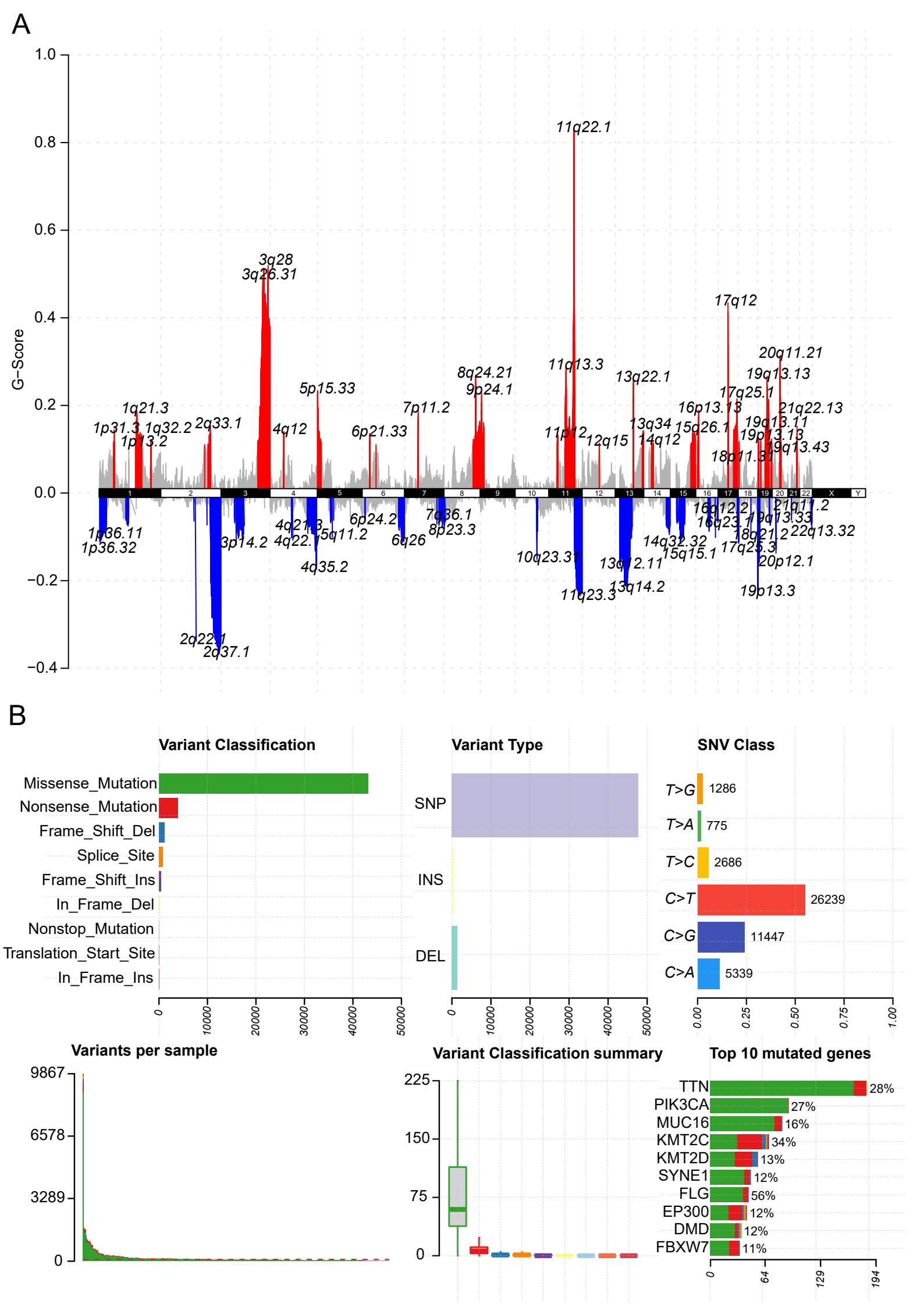
**Figure S8. RIsearch2 analysis indicated potential interactions between FAM83B and EGFR-AS1 at 7 sequence positions.** Each column represents the ID of the query sequence, the start position of the query sequence, the end position of the query sequence, the ID of the target sequence, the start position of the target sequence, the end position of the target sequence, the chain of the interaction, and the free energy of the interaction, respectively (":"between GU," | "between CG and AU pairs).

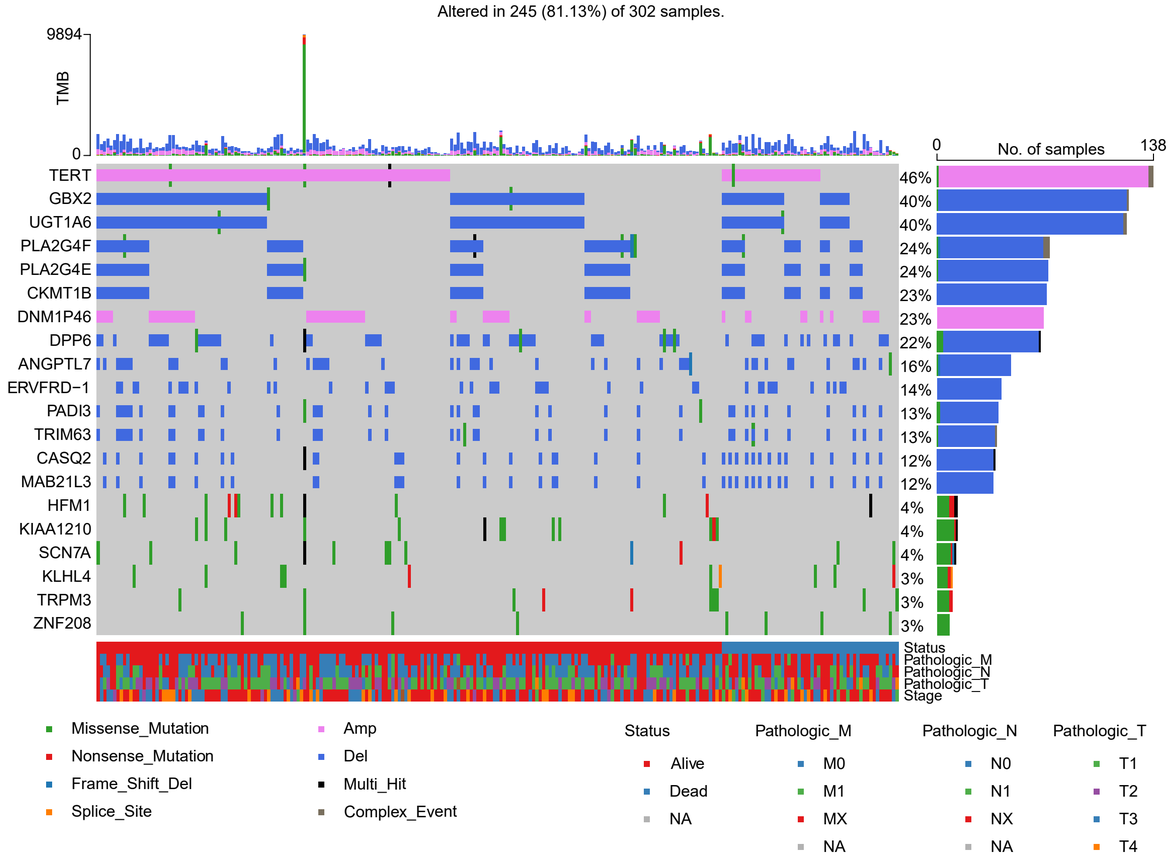
**Figure S9. ROC curves of several models**

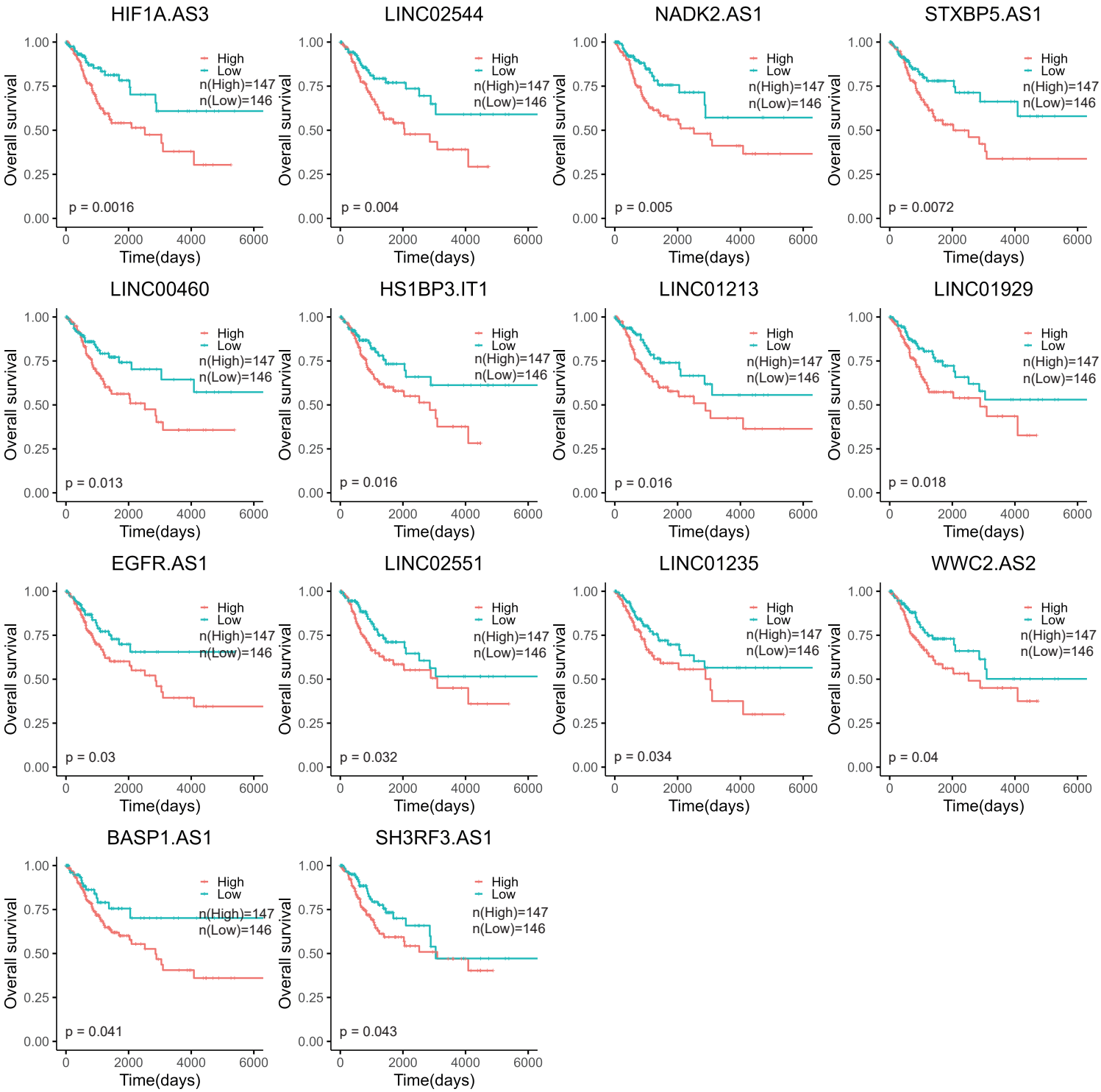

TCGA-CESC database
DEG analysis
|Log2FC|>1
P Value<0.05
GENCODE database
268 DEGs（mRNA）
4297 lncRNA
Pathway analysis
Co-expression network
|Pearson| > 0.3
P Value<0.05
Correlation Analysis
HR>1
P Value<0.05
1396 lncRNA
137 mRNA
Univariate Cox analysis
Mutation landscape
PPI Analysis
CNV
Random-forest analysis
33lncRNA module
Test-dataset
Survival analysis
ROC analysis
High-risk vs Low-risk
Survival analysis
ROC analysis
Multivariate Cox analysis
Nomogram
DCA and calibration curve
ESTIMATE
GSEA
CIBERSORT
ssGSEA


FOXA1
SYT8
SYT9
MAS1
AGTR1
CCL16
HIST1H2AJ
NEIL3
HIST1H4F
CCR8
UGT1A6
HIST1H2AI
HIST1H3J
TERT
ADH1B
SCN7A
SCN2B

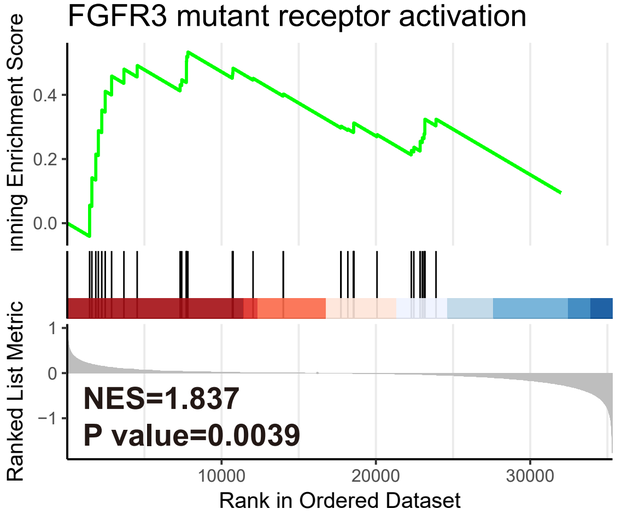

LncRNA_exp
8
6
4
2
0
Group
High
Low
Clinical_stage
Stage I
Stage III
Stage II
Stage IV
Neoplasm_histologic_grade
G3
G1
G2
G4
GX
Pathologic_M
M0
M1
MX
Pathologic_N
N0
N1
NX
Pathologic_T
T1
TX
T2
T4
T3


A
G-Score
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
11q22.1
3q28
3q26.31
17q12
20q11.21
19q13.13
11q13.3
8q24.21
9p24.1
13q22.1
17q25.1
5p15.33
7p11.2
16p13.13
21q22.13
1q21.3
1p31.3
1q32.2
2q33.1
1p13.2
4q12
6p21.33
11p12
12q15
13q34
14q12
15q26.1
19q13.11
19p13.13
19q13.43
18p11.31
1p36.11
1p36.32
3p14.2
4q21.3
4q22.1
5q11.2
4q35.2
6p24.2
6q26
7q36.1
8p23.3
2q22.1
2q37.1
10q23.31
11q23.3
13q12.11
13q14.2
14q32.32
15q15.1
16q12.2
16q23.1
18q21.2
17q25.3
19p13.3
20p12.1
21q11.2
19q13.33
22q13.32
B
Variant Classification
Missense_Mutation
Nonsense_Mutation
Frame_Shift_Del
Splice_Site
Frame_Shift_Ins
In_Frame_Del
Nonstop_Mutation
Translation_Start_Site
In_Frame_Ins
0
10000
20000
30000
40000
50000
Variant Type
SNP
INS
DEL
0
10000
20000
30000
40000
50000
SNV Class
T>G
1286
T>A
775
T>C
2686
C>T
26239
C>G
11447
C>A
5339
0.00
0.25
0.50
0.75
1.00
Variants per sample
9867
6578
3289
0
Variant Classification summary
225
150
75
0
Top 10 mutated genes
TTN
28%
PIK3CA
27%
MUC16
16%
KMT2C
34%
KMT2D
13%
SYNE1
12%
FLG
56%
EP300
12%
DMD
12%
FBXW7
11%
0
64
129
194

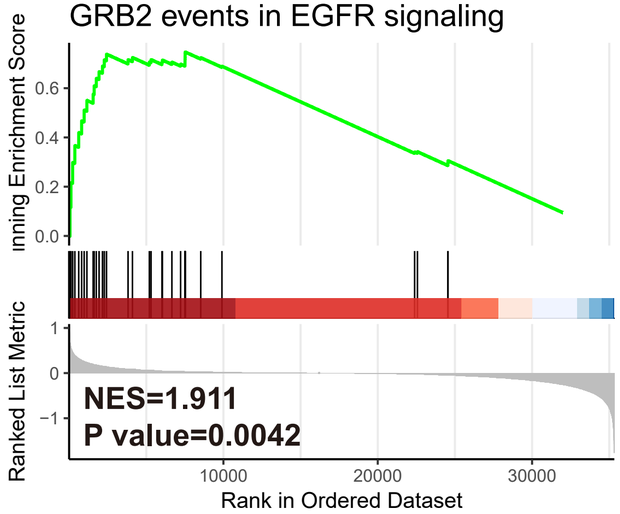

Altered in 245 (81.13%) of 302 samples.
9894
TMB
0
0
No. of samples
138
TERT 46%
GBX2 40%
UGT1A6 40%
PLA2G4F 24%
PLA2G4E 24%
CKMT1B 23%
DNM1P46 23%
DPP6 22%
ANGPTL7 16%
ERVFRD-1 14%
PADI3 13%
TRIM63 13%
CASQ2 12%
MAB21L3 12%
HFM1 4%
KIAA1210 4%
SCN7A 4%
KLHL4 3%
TRPM3 3%
ZNF208 3%
Status
Pathologic_M
Pathologic_N
Pathologic_T
Stage
Missense_Mutation
Nonsense_Mutation
Frame_Shift_Del
Splice_Site
Amp
Del
Multi_Hit
Complex_Event
Status
Alive
Dead
NA
Pathologic_M
M0
M1
MX
NA
Pathologic_N
N0
N1
NX
NA
Pathologic_T
T1
T2
T3
T4


HIF1A.AS3
LINC02544
NADK2.AS1
STXBP5.AS1
LINC00460
HS1BP3.IT1
LINC01213
LINC01929
EGFR.AS1
LINC02551
LINC01235
WWC2.AS2
BASP1.AS1
SH3RF3.AS1
Overall survival
Time(days)
High
Low
n(High)=147
n(Low)=146
p = 0.0016
p = 0.004
p = 0.005
p = 0.0072
p = 0.013
p = 0.016
p = 0.016
p = 0.018
p = 0.03
p = 0.032
p = 0.034
p = 0.04
p = 0.041
p = 0.043

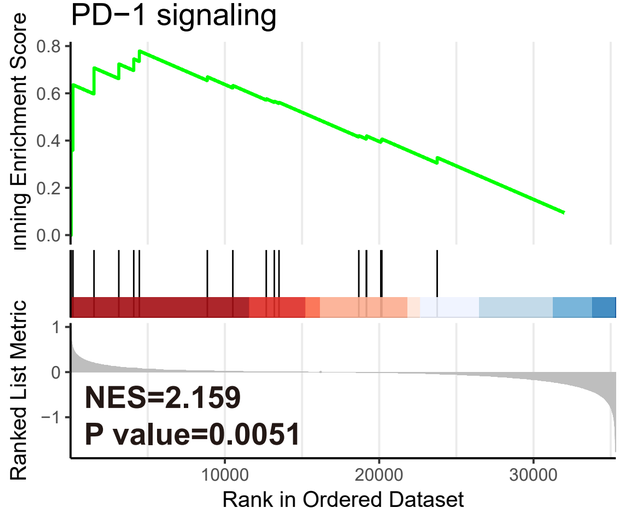
## FGFR3 mutant receptor activation



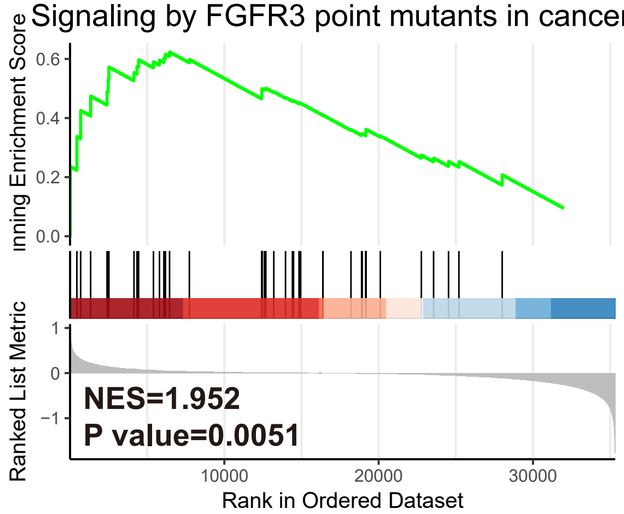

## GRB2 events in EGFR signaling



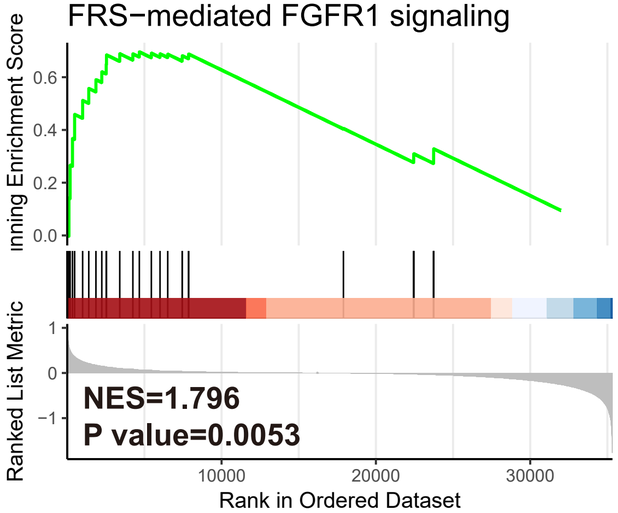

## PD−1 signaling



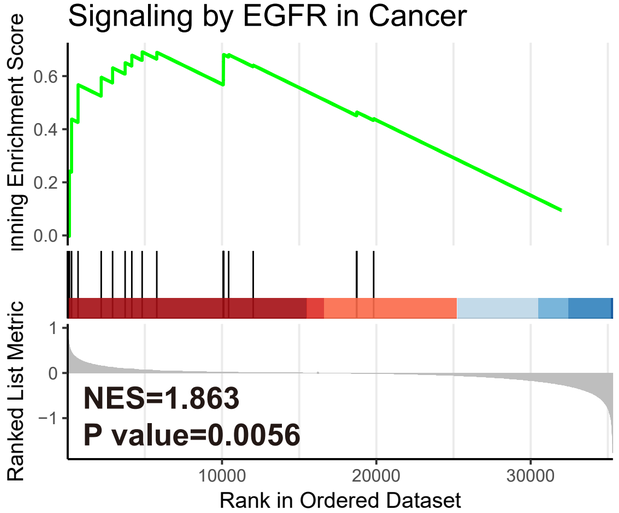

## Signaling by FGFR3 point mutants in cancer



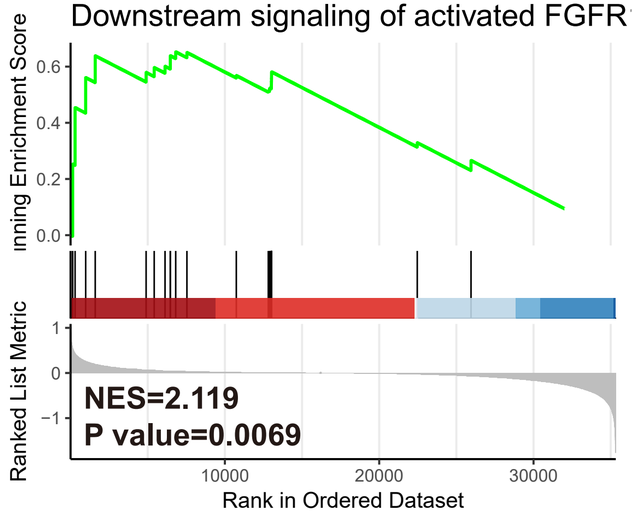

## FRS−mediated FGFR1 signaling



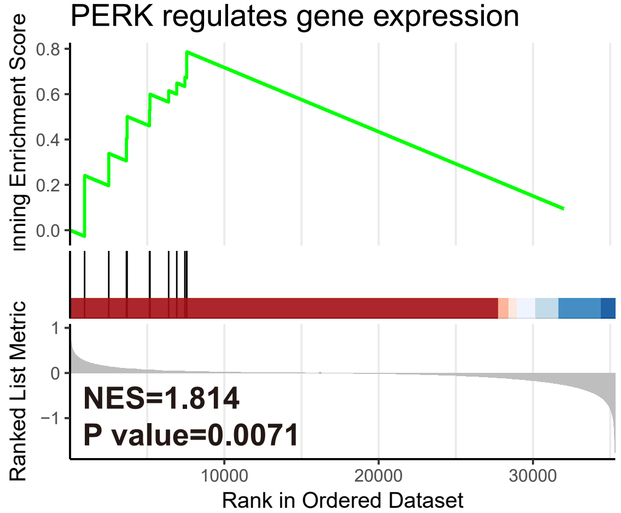

## Signaling by EGFR in Cancer



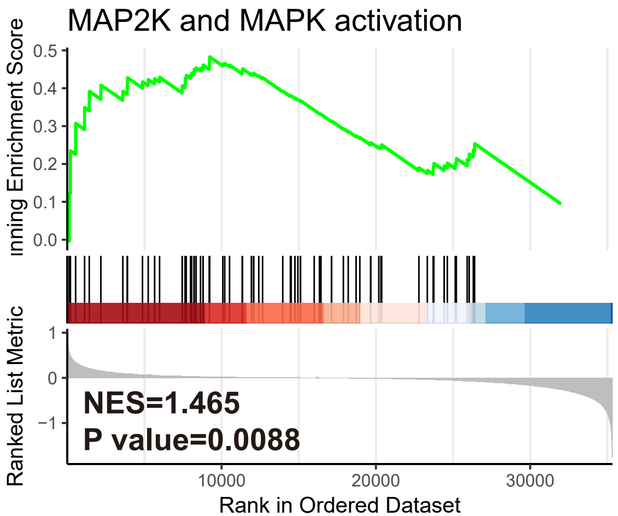

## Downstream signaling of activated FGFR



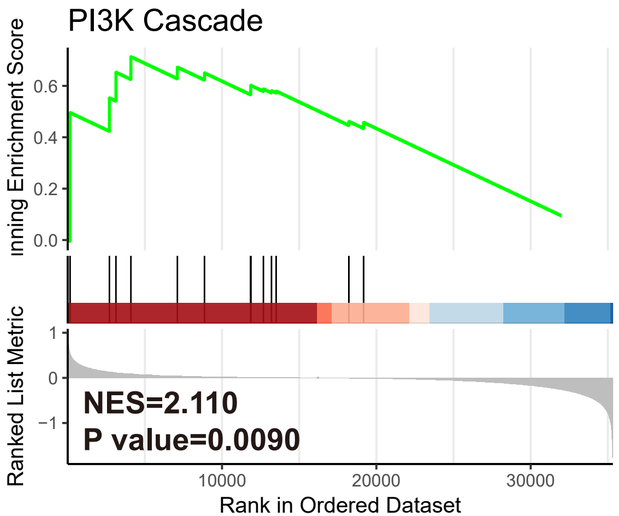

## PERK regulates gene expression



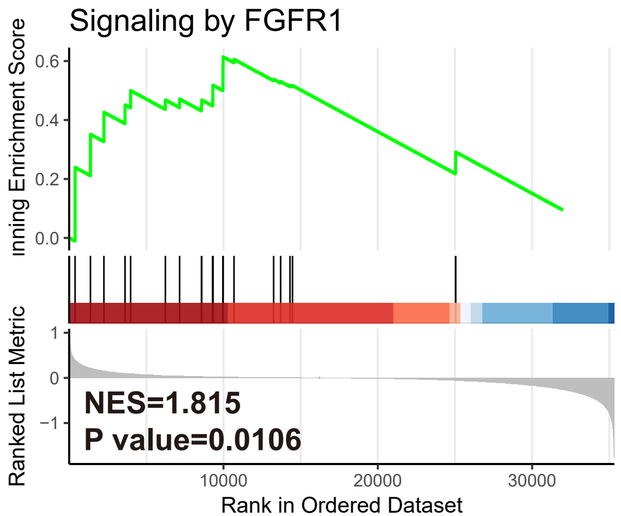

## MAP2K and MAPK activation



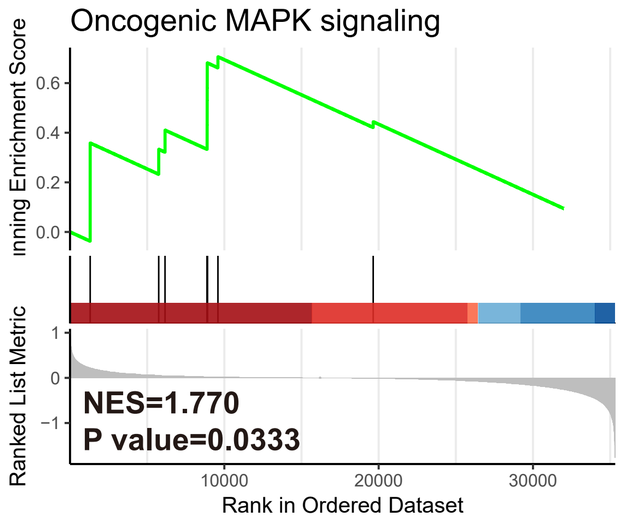

## PI3K Cascade

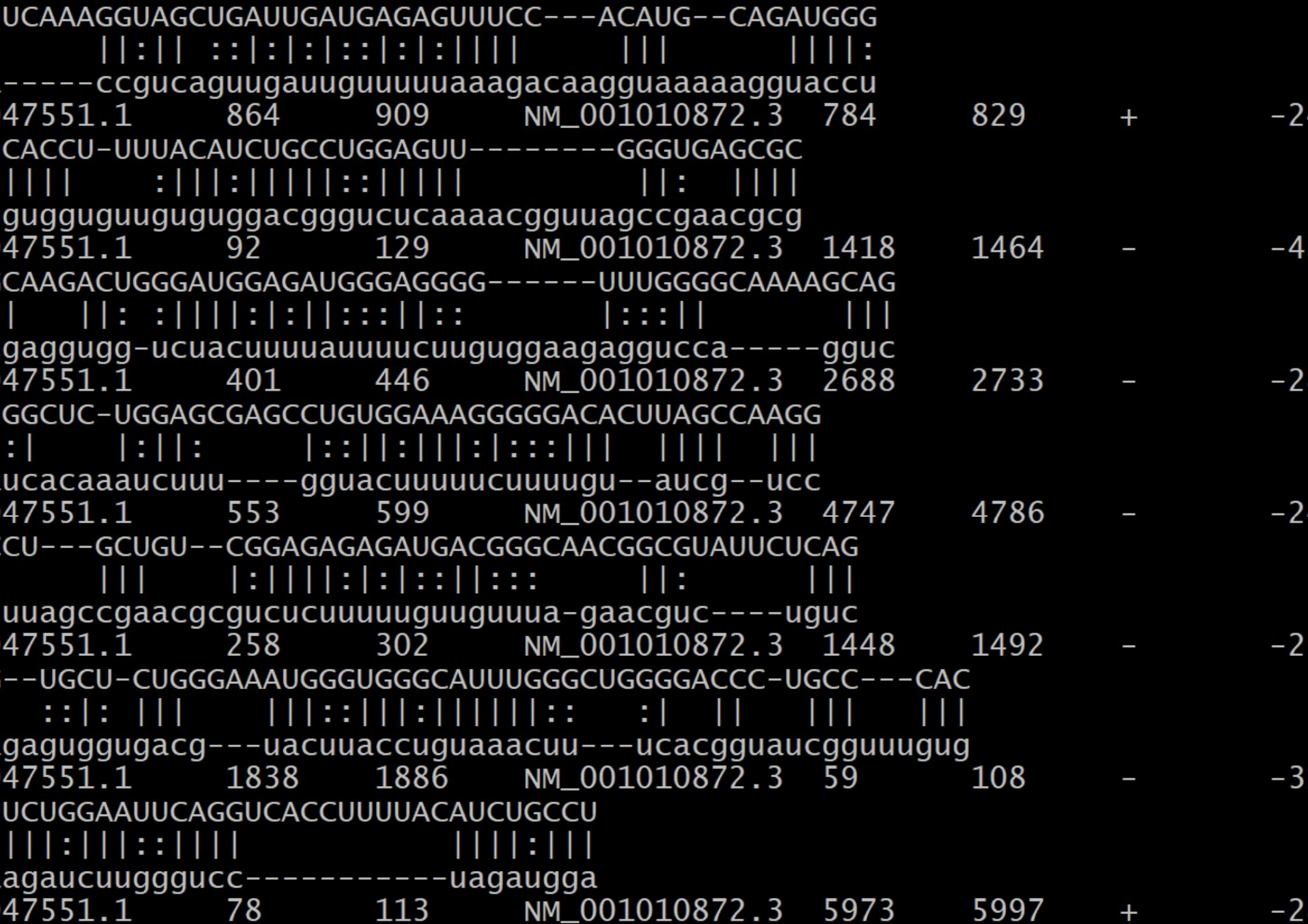


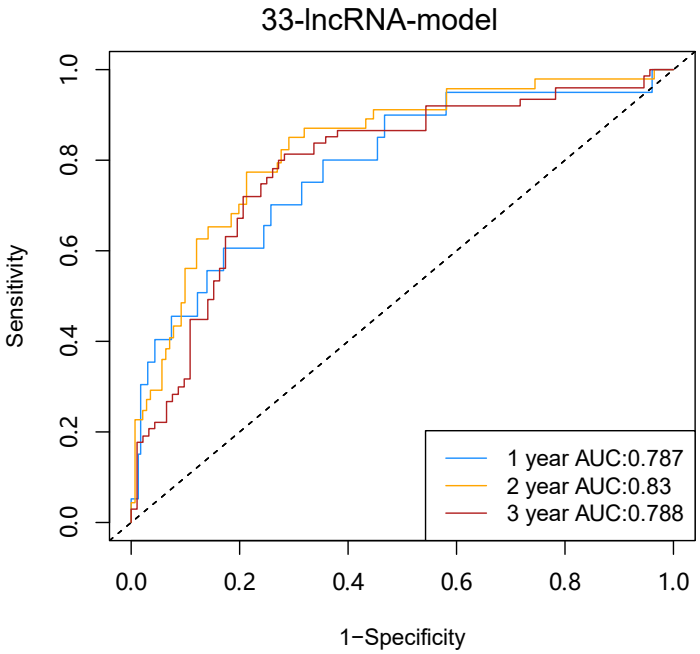

## Signaling by FGFR1

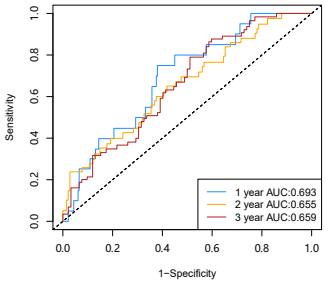


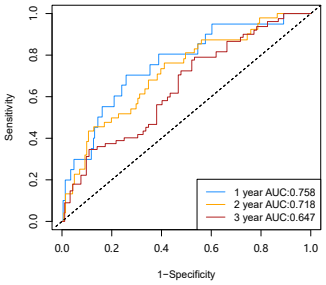

## Oncogenic MAPK signaling

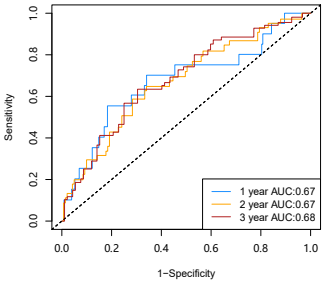



UCAAAGGUAGCUGAUUGAUGAGAGUUUCC---ACAUG--CAGAUGGG
||:|| ::|:|:|::|:|:|||| ||| ||||:
-----ccgucaguugauuguuuuuaaagacaagguaaaaaagguaccu
47551.1 864 909 NM_001010872.3 784 829 +
CACCU-UUUACAUCUGCCUGGAGUU--------GGGUGAGCGC
|||| :|||:|||||::|||||| ||: ||||
gugguguuguguggacgggucucaaaacgguuagccgaacgcg
47551.1 92 129 NM_001010872.3 1418 1464 -
CAAGACUGGGAUGGAGAUGGGAGGGG------UUUGGGGCAAAAGCAG
| || :||||:|:||:::||:: |:::|| |||
gaggugg-ucuacuuuuauuuucuuguggaagaggucca-----gguc
47551.1 401 446 NM_001010872.3 2688 2733 -
GGCUC-UGGAGCGAGCCUGUGGAAAGGGGGACACUUAGCCAAGG
:| |:||: |::||:|||:|:::||| |||| |||
ucacaaaucuuu----gguacuuuuucuuuugu--aucg--ucc
47551.1 553 599 NM_001010872.3 4747 4786 -
CU---GCUGU--CGGAGAGAGAUGACGGGCAACGGCGUAUUCUCAG
||| |:||||:|:|::||::: ||: |||
uuagccgaacgcgucucuuuuuguuguuua-gaacguc----uguc
47551.1 258 302 NM_001010872.3 1448 1492 -
--UGCU-CUGGGAAAUGGGUGGGCAUUUGGGCUGGGGACCC-UGCC---CAC
::|: ||| |||::|||:||||||:: :| || ||| |||
gaguggugacg---uacuuaccuguaaacuu---ucacgguaucgguuugug
47551.1 1838 1886 NM_001010872.3 59 108 -
UCUGGAAUUCAGGUCACCUUUUACAUCUGCCU
|||:|||::|||| ||||:|||
agaucuuggguccuagaugga
47551.1 78 113 NM_001010872.3 5973 5997 +


33-lncRNA-model
Sensitivity
1−Specificity
1 year AUC:0.787
2 year AUC:0.83
3 year AUC:0.788


Sensitivity
1−Specificity
1 year AUC:0.693
2 year AUC:0.655
3 year AUC:0.659


Sensitivity
1−Specificity
1 year AUC:0.758
2 year AUC:0.718
3 year AUC:0.647


Sensitivity
1−Specificity
1 year AUC:0.67
2 year AUC:0.67
3 year AUC:0.68

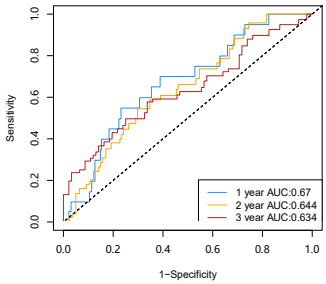

Sensitivity
1−Specificity
1 year AUC:0.67
2 year AUC:0.644
3 year AUC:0.634

**Table S2. Clinical characteristics of patients with TCGA cervical cancer**

| Characteristic | CESC patients (n = 306) |
|---|---|
| **Age, year (mean ± SD)** | 48.24±6.6 |
| **Pathologic stage, n (%)** | |
| not reported | 7(2.26) |
| I | 163(52.75) |
| II | 71(22.98) |
| III | 46(14.89) |
| IV | 22(7.12) |
| **T stage, n (%)** | |
| not reported | 63(20.39) |
| T1 | 141(45.63) |
| T2 | 74(23.95) |
| T3 | 21(6.79) |
| T4 | 10(3.24) |
| **N stage, n (%)** | |
| not reported | 111(35.92) |
| N0 | 136(44.01) |
| N1 | 62(20.07) |
| **M stage, n (%)** | |
| not reported | 182(58.90) |
| M0 | 116(37.54) |
| M1 | 11(3.56) |

| | |
|---|---|
| **Deaths(%)** | 23.95 |

**Table S3. Primers and siRNAs used in this study**

**Primers used for qRT-PCR analyses**

| Gene name | sequences（5' to 3'） |
|---|---|
| GAPDH | F: ACCTGACCTGCCGTCTAGAA |
| | R: TCCACCACCCTGTTGCTGTA |
| FAM83B | F: TCCTCATCACGGGAAGGCTA |
| | R: TGTTTTTCTCTGCGCAAGCC |
| EGFR-AS1 | F: AGTTATGCTGGGGAACAGCC |
| | R: TAGCCTTCCCGTGATGAGGA |

**siRNA sequences**

| Gene name | sequences（5' to 3'） |
|---|---|
| FAM83B siRNA(siFAM83B) | Sense: 5'-*GCAAGAAAGGUCAUUGCUUdTdT*-3'<br>Antisense: 5'- *AAGCAAUGACCUUUCUUGCdTdT*-3' |
| EGFR-AS1 siRNA(siEGFR-AS1) | Sense: 5'-*GAGGAGCACAUUGGAUAAAdTdT*-3'<br>Antisense: 5'- *UUUAUCCAAUGUGCUCCUCdTdT*-3' |

**Table S4. Antibodies used in the present study.**

| Protein name | Manufacture (cat. number) | Applications (working dilution) |
|---|---|---|
| GAPDH | Xianzhi Bio (AB-P-R 001) | WB (1:5000) |
| Akt | Bimake (A5031) | WB (1:1000) |
| p-Akt | Cell Signaling Technology (4060T) | WB (1:1000) |
| ERK | Cell Signaling Technology (4695S) | WB (1:2000) |
| p-ERK | Cell Signaling Technology (4370S) | WB (1:2000) |

**TableS5.Results of differential analysis of transcriptome data from 306 CESC patients**

| gene_name | baseMean | log2FoldChange | lfcSE | stat | pvalue | padj |
|---|---|---|---|---|---|---|
| TERT | 6.130076 | 5.084918 | 1.180335 | 4.308029 | 1.65E-05 | 0.005806 |
| DSG1 | 5.747417 | 4.990857 | 1.362296 | 3.663563 | 0.000249 | 0.028566 |
| MAB21L3 | 5.725228 | 4.988455 | 1.183697 | 4.214299 | 2.51E-05 | 0.007317 |
| H2AC13 | 5.564115 | 4.946846 | 1.180061 | 4.192025 | 2.76E-05 | 0.007696 |
| OR2B6 | 5.416128 | 4.905535 | 1.180518 | 4.15541 | 3.25E-05 | 0.008402 |
| TLX3 | 5.030033 | 4.798825 | 1.356826 | 3.536801 | 0.000405 | 0.037128 |
| UGT1A6 | 4.995696 | 4.790665 | 1.285363 | 3.727091 | 0.000194 | 0.025062 |
| TMPRSS11F | 4.808506 | 4.7344 | 1.358703 | 3.484499 | 0.000493 | 0.040965 |
| KRT31 | 4.781466 | 4.725843 | 1.361449 | 3.471186 | 0.000518 | 0.041896 |
| EPGN | 4.760632 | 4.720134 | 1.253646 | 3.765125 | 0.000166 | 0.023739 |
| EVPLL | 4.705943 | 4.706198 | 1.184231 | 3.974053 | 7.07E-05 | 0.013627 |
| KRT16P1 | 4.640071 | 4.683045 | 1.23696 | 3.785932 | 0.000153 | 0.02285 |
| POU4F1 | 4.469193 | 4.629553 | 1.320167 | 3.506793 | 0.000454 | 0.039454 |
| B4GALNT2 | 4.389988 | 4.602838 | 1.353164 | 3.401536 | 0.00067 | 0.047057 |
| LHX5 | 4.362129 | 4.592105 | 1.265092 | 3.629858 | 0.000284 | 0.030836 |
| KRT3 | 4.319453 | 4.580172 | 1.230526 | 3.722125 | 0.000198 | 0.025241 |
| CYP4F23P | 4.138035 | 4.516721 | 1.248284 | 3.618344 | 0.000296 | 0.031874 |
| GBX2 | 4.099309 | 4.502587 | 1.242647 | 3.623383 | 0.000291 | 0.031451 |
| TPSP2 | 4.088269 | 4.502125 | 1.232738 | 3.652135 | 0.00026 | 0.028738 |
| ATP12A | 4.054873 | 4.487534 | 1.305037 | 3.438625 | 0.000585 | 0.044599 |
| KRTAP4-1 | 3.934737 | 4.446118 | 1.241152 | 3.582251 | 0.000341 | 0.033448 |
| CCR8 | 3.873654 | 4.431396 | 1.185377 | 3.738385 | 0.000185 | 0.024585 |
| SLC34A1 | 3.885153 | 4.430931 | 1.198947 | 3.695687 | 0.000219 | 0.026719 |
| KRT74 | 3.86626 | 4.421851 | 1.200377 | 3.683719 | 0.00023 | 0.027288 |

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|---|---|---|---|---|---|---|
| H4C4 | 3.803528 | 4.398447 | 1.181176 | 3.723788 | 0.000196 | 0.025233 |
| GAST | 3.792302 | 4.39061 | 1.27432 | 3.445454 | 0.00057 | 0.043709 |
| CBY2 | 3.748411 | 4.374787 | 1.261352 | 3.468332 | 0.000524 | 0.041984 |
| RNF225 | 3.701899 | 4.360452 | 1.224958 | 3.559675 | 0.000371 | 0.035617 |
| H2AC14 | 3.633124 | 4.332351 | 1.183217 | 3.6615 | 0.000251 | 0.028636 |
| HAPLN1 | 6.992248 | 4.311539 | 1.180354 | 3.652751 | 0.000259 | 0.028738 |
| H2AC16 | 3.328456 | 4.205937 | 1.182798 | 3.555921 | 0.000377 | 0.035617 |
| H3C12 | 3.290407 | 4.189156 | 1.182607 | 3.542306 | 0.000397 | 0.036691 |
| TTC6 | 6.405166 | 4.187398 | 1.180563 | 3.546949 | 0.00039 | 0.036214 |
| FAM172BP | 3.24068 | 4.170087 | 1.21384 | 3.435452 | 0.000592 | 0.044817 |
| MCIDAS | 6.323285 | 4.16923 | 1.179852 | 3.53369 | 0.00041 | 0.0374 |
| DLL3 | 6.148234 | 4.125442 | 1.180747 | 3.493924 | 0.000476 | 0.040043 |
| LRRC37A9P | 3.105031 | 4.113903 | 1.193651 | 3.446487 | 0.000568 | 0.043709 |
| APOC2 | 3.037195 | 4.073354 | 1.187314 | 3.430728 | 0.000602 | 0.045165 |
| MAJIN | 5.87544 | 4.061175 | 1.186591 | 3.422558 | 0.00062 | 0.045292 |
| PGAM1P7 | 2.898842 | 4.012389 | 1.18407 | 3.388641 | 0.000702 | 0.048151 |
| ZIC5 | 7.856393 | 3.000495 | 0.836545 | 3.586772 | 0.000335 | 0.033064 |
| PLA2G4E | 7.720381 | 2.969276 | 0.868528 | 3.418747 | 0.000629 | 0.045425 |
| IGF2BP3 | 7.668043 | 2.966888 | 0.841867 | 3.524178 | 0.000425 | 0.038256 |
| H3C8 | 7.142535 | 2.861645 | 0.83548 | 3.425151 | 0.000614 | 0.045194 |
| C5orf66-AS1 | 7.61182 | 2.535571 | 0.726206 | 3.491533 | 0.00048 | 0.040237 |
| OTX1 | 9.289717 | 2.503197 | 0.64709 | 3.86839 | 0.00011 | 0.018217 |
| ZIC2 | 8.888024 | 2.440562 | 0.648684 | 3.76233 | 0.000168 | 0.023739 |
| PADI3 | 8.040368 | 2.2995 | 0.676185 | 3.400696 | 0.000672 | 0.047057 |
| LHX2 | 7.742706 | 2.24175 | 0.648522 | 3.456706 | 0.000547 | 0.043161 |
| FOXA1 | 10.75252 | 2.227989 | 0.547468 | 4.069625 | 4.71E-05 | 0.010889 |
| FOXN1 | 9.210165 | 2.225812 | 0.595868 | 3.735414 | 0.000187 | 0.024591 |
| HOXC13 | 7.648936 | 2.219578 | 0.655145 | 3.387917 | 0.000704 | 0.048151 |
| KRT78 | 7.618565 | 2.21459 | 0.654138 | 3.385507 | 0.00071 | 0.048253 |
| KLRG2 | 7.605012 | 2.21414 | 0.649535 | 3.408808 | 0.000652 | 0.046314 |
| DQX1 | 9.117934 | 2.212237 | 0.591301 | 3.741306 | 0.000183 | 0.024502 |
| NMU | 9.796134 | 2.092134 | 0.547674 | 3.820039 | 0.000133 | 0.020822 |
| LGALS7B | 9.784242 | 2.087745 | 0.577881 | 3.612762 | 0.000303 | 0.032098 |
| ZYG11A | 8.259621 | 2.070764 | 0.591935 | 3.498294 | 0.000468 | 0.039906 |
| CALML5 | 10.19575 | 1.951577 | 0.56995 | 3.424117 | 0.000617 | 0.045194 |
| PLA2G4F | 8.642853 | 1.911587 | 0.548929 | 3.482391 | 0.000497 | 0.040965 |
| SYT8 | 9.513144 | 1.855724 | 0.514933 | 3.603818 | 0.000314 | 0.032164 |
| NEIL3 | 8.740412 | 1.736057 | 0.512646 | 3.386466 | 0.000708 | 0.048245 |
| FAM83B | 9.588259 | 1.699323 | 0.483815 | 3.51234 | 0.000444 | 0.039309 |
| FOXE1 | 9.343314 | 1.661493 | 0.492997 | 3.370192 | 0.000751 | 0.049061 |
| KLC3 | 9.174789 | 1.633387 | 0.484103 | 3.37405 | 0.000741 | 0.049004 |
| GSDMC | 10.09023 | 1.61937 | 0.459803 | 3.521881 | 0.000428 | 0.038287 |
| CKMT1B | 9.912149 | 1.591635 | 0.458831 | 3.46889 | 0.000523 | 0.041984 |

| | | | | | | |
|---|---|---|---|---|---|---|
| E2F7 | 10.59918 | 1.55481 | 0.437409 | 3.554587 | 0.000379 | 0.035617 |
| OVOL1 | 10.44745 | 1.530701 | 0.437584 | 3.49807 | 0.000469 | 0.039906 |
| CRYBG2 | 11.35776 | 1.525857 | 0.419028 | 3.64142 | 0.000271 | 0.029641 |
| GPR87 | 10.99125 | 1.480086 | 0.422362 | 3.504304 | 0.000458 | 0.039656 |
| ANXA8 | 10.80972 | 1.454811 | 0.424293 | 3.428792 | 0.000606 | 0.045194 |
| E2F2 | 10.98646 | 1.362024 | 0.402613 | 3.382963 | 0.000717 | 0.048381 |
| PITX1 | 13.41292 | 1.349985 | 0.363047 | 3.718489 | 0.0002 | 0.025448 |
| IQANK1 | 11.51124 | 1.322999 | 0.388033 | 3.4095 | 0.000651 | 0.046314 |
| DLGAP5 | 11.40455 | 1.309587 | 0.38799 | 3.375316 | 0.000737 | 0.049004 |
| ASPM | 11.90738 | 1.272481 | 0.374893 | 3.394255 | 0.000688 | 0.04757 |
| UHRF1 | 11.81723 | 1.261869 | 0.374913 | 3.365762 | 0.000763 | 0.049226 |
| NAP1L3 | 5.13053 | -1.00419 | 0.272249 | -3.68848 | 0.000226 | 0.027129 |
| FGF7 | 6.455067 | -1.00507 | 0.24704 | -4.06844 | 4.73E-05 | 0.010889 |
| ACTG2 | 8.63044 | -1.00615 | 0.208875 | -4.81697 | 1.46E-06 | 0.001192 |
| PIANP | 5.458398 | -1.00886 | 0.263644 | -3.82661 | 0.00013 | 0.020589 |
| BHMT2 | 4.96097 | -1.00918 | 0.289727 | -3.48321 | 0.000495 | 0.040965 |
| HTR2B | 5.575897 | -1.01947 | 0.260433 | -3.91451 | 9.06E-05 | 0.015964 |
| NCAM1 | 6.870682 | -1.02726 | 0.231638 | -4.43477 | 9.22E-06 | 0.003624 |
| HRC | 4.404019 | -1.02983 | 0.289788 | -3.55372 | 0.00038 | 0.035617 |
| PCDHGA2 | 4.06312 | -1.03112 | 0.303208 | -3.40071 | 0.000672 | 0.047057 |
| F10 | 5.713336 | -1.03131 | 0.254912 | -4.04576 | 5.22E-05 | 0.011323 |
| SEC14L6 | 4.556412 | -1.03246 | 0.29934 | -3.44912 | 0.000562 | 0.043709 |
| NECAB1 | 5.341577 | -1.03865 | 0.265964 | -3.90523 | 9.41E-05 | 0.016309 |
| CNN1 | 8.594944 | -1.03964 | 0.206485 | -5.03492 | 4.78E-07 | 0.000698 |
| TCEAL7 | 5.444442 | -1.05554 | 0.258417 | -4.08466 | 4.41E-05 | 0.010743 |
| FREM1 | 5.5676 | -1.06614 | 0.275612 | -3.86828 | 0.00011 | 0.018217 |
| EXTL1 | 3.650034 | -1.07209 | 0.318326 | -3.3679 | 0.000757 | 0.049156 |
| PGR | 6.924796 | -1.08025 | 0.237482 | -4.54878 | 5.40E-06 | 0.00269 |
| PRTG | 4.088531 | -1.0833 | 0.308754 | -3.50862 | 0.00045 | 0.039454 |
| ZNF582-AS1 | 3.904205 | -1.09025 | 0.305243 | -3.57174 | 0.000355 | 0.034521 |
| NRXN3 | 4.684418 | -1.09159 | 0.30282 | -3.60475 | 0.000312 | 0.032164 |
| DIRAS1 | 5.479143 | -1.09367 | 0.26352 | -4.15025 | 3.32E-05 | 0.008487 |
| MGARP | 3.739129 | -1.09404 | 0.30972 | -3.53233 | 0.000412 | 0.037425 |
| MYRIP | 4.969975 | -1.10158 | 0.286763 | -3.84143 | 0.000122 | 0.019689 |
| LRRC2 | 4.776555 | -1.11259 | 0.277959 | -4.00271 | 6.26E-05 | 0.012429 |
| DES | 8.480856 | -1.11476 | 0.206844 | -5.38935 | 7.07E-08 | 0.000161 |
| PTGIS | 6.582658 | -1.12164 | 0.232845 | -4.81709 | 1.46E-06 | 0.001192 |
| PCDHB5 | 4.436679 | -1.12223 | 0.285278 | -3.9338 | 8.36E-05 | 0.015085 |
| CYTL1 | 4.586654 | -1.12588 | 0.279163 | -4.03305 | 5.51E-05 | 0.011485 |
| HSPB7 | 6.088285 | -1.13158 | 0.238757 | -4.73946 | 2.14E-06 | 0.001511 |
| TMEM108 | 3.795778 | -1.13272 | 0.328551 | -3.44762 | 0.000566 | 0.043709 |
| NGF | 4.091699 | -1.13758 | 0.330202 | -3.44509 | 0.000571 | 0.043709 |
| BMPER | 4.243937 | -1.13761 | 0.332617 | -3.42018 | 0.000626 | 0.045425 |
| NOVA1 | 4.679414 | -1.14201 | 0.280754 | -4.06766 | 4.75E-05 | 0.010889 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ALKAL2 | 4.358773 | -1.14783 | 0.307679 | -3.73063 | 0.000191 | 0.02487 |
| GSTM5 | 5.714559 | -1.14829 | 0.24764 | -4.63694 | 3.54E-06 | 0.001954 |
| MAMDC2 | 5.852101 | -1.15068 | 0.250396 | -4.59543 | 4.32E-06 | 0.002264 |
| PCDHB6 | 3.601346 | -1.15091 | 0.338611 | -3.39891 | 0.000677 | 0.047203 |
| THPO | 3.453341 | -1.15123 | 0.333422 | -3.45278 | 0.000555 | 0.043625 |
| C8orf88 | 4.039515 | -1.15226 | 0.334087 | -3.44897 | 0.000563 | 0.043709 |
| STAC2 | 4.339118 | -1.15983 | 0.327555 | -3.54087 | 0.000399 | 0.036724 |
| TACR1 | 4.926418 | -1.16002 | 0.270496 | -4.28847 | 1.80E-05 | 0.005959 |
| HSPB2 | 4.179774 | -1.16041 | 0.286786 | -4.04628 | 5.20E-05 | 0.011323 |
| CSDC2 | 5.817943 | -1.1605 | 0.244623 | -4.74402 | 2.10E-06 | 0.001511 |
| CADM3 | 4.464302 | -1.16563 | 0.317262 | -3.67404 | 0.000239 | 0.027731 |
| ZNF835 | 3.707679 | -1.16706 | 0.305972 | -3.81429 | 0.000137 | 0.020923 |
| TRPC4 | 4.887959 | -1.16926 | 0.263253 | -4.4416 | 8.93E-06 | 0.003579 |
| PKNOX2 | 4.291424 | -1.17229 | 0.310837 | -3.77139 | 0.000162 | 0.023706 |
| ANGPT4 | 3.395626 | -1.17471 | 0.326361 | -3.59941 | 0.000319 | 0.032345 |
| HPSE2 | 4.720921 | -1.17793 | 0.320856 | -3.67123 | 0.000241 | 0.02788 |
| ADAMTS8 | 4.42645 | -1.17871 | 0.282996 | -4.16509 | 3.11E-05 | 0.008157 |
| LINC01197 | 4.114617 | -1.18212 | 0.286316 | -4.12873 | 3.65E-05 | 0.009094 |
| FAM180A | 3.956754 | -1.18461 | 0.299513 | -3.95513 | 7.65E-05 | 0.014346 |
| GFRA1 | 5.275802 | -1.18856 | 0.26549 | -4.47687 | 7.57E-06 | 0.003295 |
| HSD17B13 | 3.628323 | -1.19917 | 0.320048 | -3.74683 | 0.000179 | 0.024502 |
| HIPK4 | 2.899084 | -1.20165 | 0.341417 | -3.5196 | 0.000432 | 0.038414 |
| ADCYAP1R1 | 4.196049 | -1.20674 | 0.322581 | -3.74088 | 0.000183 | 0.024502 |
| KCNMB2 | 3.462301 | -1.20905 | 0.323701 | -3.73508 | 0.000188 | 0.024591 |
| ADRA1D | 3.606079 | -1.20937 | 0.313809 | -3.85383 | 0.000116 | 0.018867 |
| JPH4 | 4.895094 | -1.21243 | 0.25992 | -4.66464 | 3.09E-06 | 0.001846 |
| ABCA8 | 5.004089 | -1.22228 | 0.264905 | -4.61403 | 3.95E-06 | 0.002125 |
| HAND2 | 5.574965 | -1.22233 | 0.24605 | -4.9678 | 6.77E-07 | 0.000706 |
| PTGER3 | 5.544931 | -1.23026 | 0.247758 | -4.96558 | 6.85E-07 | 0.000706 |
| GPR182 | 2.543368 | -1.23321 | 0.366078 | -3.36872 | 0.000755 | 0.049156 |
| ACR | 2.553483 | -1.23409 | 0.366165 | -3.3703 | 0.000751 | 0.049061 |
| CCDC89 | 3.115761 | -1.23454 | 0.335376 | -3.68107 | 0.000232 | 0.027288 |
| MAGEL2 | 3.533966 | -1.23624 | 0.342724 | -3.6071 | 0.00031 | 0.032164 |
| PEG3 | 5.058108 | -1.24748 | 0.255014 | -4.89182 | 9.99E-07 | 0.000973 |
| STUM | 4.076577 | -1.24802 | 0.34149 | -3.65462 | 0.000258 | 0.028738 |
| RBM24 | 4.336407 | -1.2509 | 0.291999 | -4.2839 | 1.84E-05 | 0.005959 |
| GREM2 | 4.198086 | -1.25103 | 0.297197 | -4.20943 | 2.56E-05 | 0.007371 |
| ACTN2 | 2.941951 | -1.25242 | 0.366869 | -3.41382 | 0.000641 | 0.045939 |
| ADGRD1 | 4.758129 | -1.2542 | 0.268353 | -4.67368 | 2.96E-06 | 0.001846 |
| SLC35F1 | 3.353842 | -1.25427 | 0.318628 | -3.93646 | 8.27E-05 | 0.015085 |
| PGM5 | 6.448481 | -1.25461 | 0.227373 | -5.51783 | 3.43E-08 | 0.000161 |
| C1QTNF7 | 4.60847 | -1.25506 | 0.279197 | -4.49524 | 6.95E-06 | 0.003089 |
| SLC1A7 | 3.873101 | -1.27266 | 0.320474 | -3.97119 | 7.15E-05 | 0.013655 |
| PTGFR | 4.55018 | -1.27546 | 0.285578 | -4.46622 | 7.96E-06 | 0.003391 |

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|---|---|---|---|---|---|---|
| NPY1R | 4.130769 | -1.2771 | 0.356608 | -3.58125 | 0.000342 | 0.033448 |
| CCL23 | 3.43716 | -1.28009 | 0.31884 | -4.01485 | 5.95E-05 | 0.01204 |
| CHRDL2 | 5.349648 | -1.28455 | 0.256011 | -5.01757 | 5.23E-07 | 0.000706 |
| PABPC5 | 3.263612 | -1.29102 | 0.317966 | -4.06024 | 4.90E-05 | 0.011013 |
| SGCA | 4.232874 | -1.29124 | 0.277064 | -4.66044 | 3.16E-06 | 0.001846 |
| NUDT10 | 4.067389 | -1.29811 | 0.311509 | -4.16715 | 3.08E-05 | 0.008157 |
| ASPA | 4.062094 | -1.30042 | 0.304755 | -4.2671 | 1.98E-05 | 0.006228 |
| FHL5 | 3.918703 | -1.30384 | 0.288321 | -4.52218 | 6.12E-06 | 0.002895 |
| DUSP26 | 3.109378 | -1.30816 | 0.347705 | -3.76227 | 0.000168 | 0.023739 |
| FXYD1 | 4.323684 | -1.3084 | 0.26993 | -4.84717 | 1.25E-06 | 0.001113 |
| LPAR4 | 2.421984 | -1.30864 | 0.375449 | -3.48553 | 0.000491 | 0.040965 |
| ACTC1 | 4.047769 | -1.31125 | 0.316997 | -4.13649 | 3.53E-05 | 0.0089 |
| GDF10 | 3.344846 | -1.3191 | 0.366532 | -3.59887 | 0.00032 | 0.032345 |
| NAP1L2 | 3.877836 | -1.31932 | 0.293495 | -4.4952 | 6.95E-06 | 0.003089 |
| LONRF2 | 5.215268 | -1.3208 | 0.374558 | -3.5263 | 0.000421 | 0.038119 |
| C1orf229 | 2.676891 | -1.32127 | 0.362716 | -3.64272 | 0.00027 | 0.029641 |
| KCNA5 | 3.046594 | -1.3341 | 0.330122 | -4.04122 | 5.32E-05 | 0.011323 |
| C16orf89 | 3.997328 | -1.33427 | 0.389623 | -3.42452 | 0.000616 | 0.045194 |
| RSPO1 | 4.482161 | -1.33861 | 0.316889 | -4.22421 | 2.40E-05 | 0.007207 |
| NTRK3 | 3.963634 | -1.33862 | 0.301212 | -4.44411 | 8.83E-06 | 0.003579 |
| WT1 | 5.115253 | -1.34742 | 0.289526 | -4.65389 | 3.26E-06 | 0.00185 |
| PLN | 5.37628 | -1.34824 | 0.248497 | -5.42558 | 5.78E-08 | 0.000161 |
| CABCOCO1 | 3.120348 | -1.36207 | 0.401427 | -3.39308 | 0.000691 | 0.04757 |
| KLHL10 | 1.944222 | -1.364 | 0.401601 | -3.3964 | 0.000683 | 0.047476 |
| CDO1 | 4.007192 | -1.36939 | 0.302351 | -4.52914 | 5.92E-06 | 0.002883 |
| SLC5A4 | 2.446411 | -1.37482 | 0.365325 | -3.76329 | 0.000168 | 0.023739 |
| PURG | 2.808391 | -1.38465 | 0.345176 | -4.01141 | 6.04E-05 | 0.012097 |
| CCDC85A | 2.919044 | -1.38615 | 0.402048 | -3.44773 | 0.000565 | 0.043709 |
| OMD | 3.942122 | -1.39182 | 0.360985 | -3.85562 | 0.000115 | 0.018867 |
| C20orf203 | 2.156732 | -1.39707 | 0.38776 | -3.60292 | 0.000315 | 0.032164 |
| WSCD2 | 4.06611 | -1.3975 | 0.39839 | -3.50787 | 0.000452 | 0.039454 |
| ATP1A2 | 3.936846 | -1.39811 | 0.327586 | -4.26793 | 1.97E-05 | 0.006228 |
| PLK5 | 2.915595 | -1.40643 | 0.389355 | -3.61221 | 0.000304 | 0.032098 |
| NKAPL | 2.510801 | -1.41138 | 0.349806 | -4.03475 | 5.47E-05 | 0.011485 |
| RBFOX3 | 3.649416 | -1.41564 | 0.284911 | -4.96873 | 6.74E-07 | 0.000706 |
| MYOCD | 4.480496 | -1.42676 | 0.266433 | -5.35505 | 8.55E-08 | 0.000175 |
| VEGFD | 3.939034 | -1.44299 | 0.275814 | -5.23176 | 1.68E-07 | 0.000264 |
| BCHE | 4.17984 | -1.44467 | 0.370791 | -3.89617 | 9.77E-05 | 0.016788 |
| ART4 | 2.317589 | -1.45334 | 0.428273 | -3.39348 | 0.00069 | 0.04757 |
| PCDHGA3 | 2.303945 | -1.45648 | 0.39855 | -3.65445 | 0.000258 | 0.028738 |
| ZBTB16 | 3.633534 | -1.46853 | 0.311869 | -4.70881 | 2.49E-06 | 0.001698 |
| TPSG1 | 2.427109 | -1.471 | 0.43034 | -3.41823 | 0.00063 | 0.045425 |
| ANGPTL1 | 4.328568 | -1.4769 | 0.273941 | -5.39131 | 6.99E-08 | 0.000161 |
| PTCHD1 | 3.611879 | -1.47861 | 0.422362 | -3.50081 | 0.000464 | 0.039842 |

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|---|---|---|---|---|---|---|
| GPIHBP1 | 3.656123 | -1.50618 | 0.284057 | -5.30241 | 1.14E-07 | 0.000212 |
| AGTR1 | 2.935267 | -1.51161 | 0.413785 | -3.65312 | 0.000259 | 0.028738 |
| AQP8 | 1.764077 | -1.513 | 0.432117 | -3.50137 | 0.000463 | 0.039842 |
| PI16 | 4.340549 | -1.51929 | 0.320528 | -4.73996 | 2.14E-06 | 0.001511 |
| RASA4B | 1.973114 | -1.52573 | 0.39045 | -3.90762 | 9.32E-05 | 0.016286 |
| C7 | 4.891672 | -1.52814 | 0.398794 | -3.8319 | 0.000127 | 0.020308 |
| GALNT17 | 3.47909 | -1.53359 | 0.361917 | -4.2374 | 2.26E-05 | 0.0069 |
| SCRG1 | 3.0063 | -1.5346 | 0.316513 | -4.84846 | 1.24E-06 | 0.001113 |
| DNM1P46 | 2.073193 | -1.53588 | 0.419735 | -3.65915 | 0.000253 | 0.028738 |
| TRPM3 | 2.306905 | -1.54037 | 0.429396 | -3.58729 | 0.000334 | 0.033064 |
| MYL3 | 2.648369 | -1.54305 | 0.35142 | -4.3909 | 1.13E-05 | 0.004271 |
| HFM1 | 2.752038 | -1.5444 | 0.387413 | -3.98644 | 6.71E-05 | 0.013106 |
| ATRNL1 | 3.658026 | -1.54993 | 0.417708 | -3.71055 | 0.000207 | 0.025794 |
| RCVRN | 1.942362 | -1.55042 | 0.451321 | -3.43529 | 0.000592 | 0.044817 |
| RGS22 | 2.947633 | -1.56542 | 0.425592 | -3.67821 | 0.000235 | 0.027437 |
| ERVFRD-1 | 1.65836 | -1.59423 | 0.443833 | -3.59196 | 0.000328 | 0.032729 |
| TCEAL2 | 3.885142 | -1.59564 | 0.465698 | -3.42635 | 0.000612 | 0.045194 |
| OGN | 4.714935 | -1.61107 | 0.293777 | -5.48398 | 4.16E-08 | 0.000161 |
| GPR22 | 2.190893 | -1.61245 | 0.382009 | -4.22098 | 2.43E-05 | 0.007207 |
| WDR17 | 2.407085 | -1.61474 | 0.397187 | -4.06545 | 4.79E-05 | 0.010889 |
| ZCCHC12 | 3.897488 | -1.6335 | 0.299744 | -5.44965 | 5.05E-08 | 0.000161 |
| BPI | 2.496298 | -1.63477 | 0.435085 | -3.75736 | 0.000172 | 0.024043 |
| ZNF208 | 2.485616 | -1.63648 | 0.348674 | -4.69344 | 2.69E-06 | 0.001772 |
| ECRG4 | 3.311323 | -1.65511 | 0.449131 | -3.68514 | 0.000229 | 0.027288 |
| CASQ2 | 3.492739 | -1.66693 | 0.318579 | -5.2324 | 1.67E-07 | 0.000264 |
| PTTG2 | 1.478553 | -1.6691 | 0.439491 | -3.79781 | 0.000146 | 0.022106 |
| MEOX2 | 2.852857 | -1.66923 | 0.393193 | -4.24532 | 2.18E-05 | 0.006761 |
| CRHBP | 2.851469 | -1.72108 | 0.302158 | -5.69596 | 1.23E-08 | 0.000161 |
| CCL14 | 3.366888 | -1.72149 | 0.436167 | -3.94685 | 7.92E-05 | 0.014584 |
| CHRDL1 | 4.27675 | -1.72542 | 0.497094 | -3.47101 | 0.000519 | 0.041896 |
| CA4 | 2.635283 | -1.73531 | 0.471303 | -3.68193 | 0.000231 | 0.027288 |
| NPAS4 | 2.215863 | -1.73834 | 0.442746 | -3.92628 | 8.63E-05 | 0.015336 |
| TCF21 | 3.129499 | -1.7394 | 0.468374 | -3.7137 | 0.000204 | 0.025774 |
| KLHL4 | 2.672891 | -1.75741 | 0.436392 | -4.02715 | 5.65E-05 | 0.011658 |
| KIAA1210 | 1.799782 | -1.75917 | 0.515443 | -3.41292 | 0.000643 | 0.045939 |
| DPP6 | 3.758155 | -1.76762 | 0.355547 | -4.97155 | 6.64E-07 | 0.000706 |
| SCN2B | 2.567386 | -1.76891 | 0.449836 | -3.93235 | 8.41E-05 | 0.015085 |
| TRIM63 | 2.244401 | -1.85307 | 0.476265 | -3.89084 | 9.99E-05 | 0.016878 |
| KCNB1 | 2.881103 | -1.86045 | 0.399227 | -4.66013 | 3.16E-06 | 0.001846 |
| GDAP1L1 | 1.648403 | -1.88078 | 0.421678 | -4.46023 | 8.19E-06 | 0.003416 |
| HNRNPA1P15 | 0.980856 | -1.91197 | 0.517396 | -3.69536 | 0.00022 | 0.026719 |
| CASP12 | 2.025955 | -1.93496 | 0.350784 | -5.5161 | 3.47E-08 | 0.000161 |
| ANGPTL7 | 1.76495 | -1.94015 | 0.536368 | -3.61721 | 0.000298 | 0.031874 |

| | | | | | | |
|---|---|---|---|---|---|---|
| CTNNA3 | 2.107067 | -1.94295 | 0.479758 | -4.04985 | 5.13E-05 | 0.011323 |
| GPM6A | 2.972583 | -1.95171 | 0.410606 | -4.75324 | 2.00E-06 | 0.001511 |
| SCN7A | 2.669686 | -1.97495 | 0.495525 | -3.98558 | 6.73E-05 | 0.013106 |
| RPL21P135 | 1.274836 | -1.98924 | 0.455326 | -4.36882 | 1.25E-05 | 0.00456 |
| PRND | 2.281756 | -1.99782 | 0.490574 | -4.07241 | 4.65E-05 | 0.010889 |
| CD300LG | 2.204106 | -2.05294 | 0.477773 | -4.29688 | 1.73E-05 | 0.005959 |
| CMTM5 | 1.615677 | -2.07011 | 0.492862 | -4.20019 | 2.67E-05 | 0.007572 |
| DGKB | 2.203223 | -2.10734 | 0.600344 | -3.51023 | 0.000448 | 0.039452 |
| FAM180B | 1.335472 | -2.11247 | 0.461226 | -4.58011 | 4.65E-06 | 0.002375 |
| WNT9B | 1.45388 | -2.14997 | 0.62759 | -3.42575 | 0.000613 | 0.045194 |
| MYOC | 1.965233 | -2.16835 | 0.626259 | -3.46238 | 0.000535 | 0.042756 |
| ZNF99 | 1.11681 | -2.18105 | 0.5205 | -4.1903 | 2.79E-05 | 0.007696 |
| CCL16 | 1.409877 | -2.1977 | 0.500953 | -4.38703 | 1.15E-05 | 0.004271 |
| OPCML | 1.771185 | -2.20361 | 0.526871 | -4.18245 | 2.88E-05 | 0.007861 |
| MYOZ2 | 1.472053 | -2.20368 | 0.548019 | -4.02117 | 5.79E-05 | 0.011839 |
| SYT9 | 1.541975 | -2.20988 | 0.611926 | -3.61135 | 0.000305 | 0.032098 |
| ADH1B | 2.79716 | -2.24797 | 0.647013 | -3.47438 | 0.000512 | 0.041703 |
| C1QTNF9 | 1.358568 | -2.2512 | 0.593986 | -3.78999 | 0.000151 | 0.022645 |
| KLHL33 | 1.152495 | -2.31839 | 0.541012 | -4.28527 | 1.83E-05 | 0.005959 |
| CMA1 | 1.699371 | -2.3283 | 0.615787 | -3.78102 | 0.000156 | 0.023137 |
| ZNF676 | 1.307785 | -2.38563 | 0.645865 | -3.6937 | 0.000221 | 0.026735 |
| LCN6 | 1.835611 | -2.38714 | 0.553502 | -4.31279 | 1.61E-05 | 0.005782 |
| LCN10 | 1.551255 | -2.40527 | 0.69214 | -3.47512 | 0.000511 | 0.041703 |
| TCF23 | 2.283826 | -2.51428 | 0.556453 | -4.5184 | 6.23E-06 | 0.002895 |
| MAS1 | 1.295056 | -2.54646 | 0.512987 | -4.96399 | 6.91E-07 | 0.000706 |
| SEL1L2 | 1.068007 | -2.77376 | 0.512327 | -5.41403 | 6.16E-08 | 0.000161 |

**TableS6.co-expression network of mRNA and lncRNA**

| pearson_coef | p_value | mRNA | lncRNA |
|---|---|---|---|
| 0.92 | 0 | KRT16P1 | KRT16P3 |
| 0.92 | 0 | HOXC13 | HOXC13-AS |
| 0.86 | 0 | DSG1 | DSG1-AS1 |
| 0.82 | 0 | CCL14 | CADM3-AS1 |
| 0.78 | 0 | PLA2G4E | PLA2G4E-AS |
| 0.78 | 0 | OVOL1 | OVOL1-AS1 |
| 0.76 | 0 | DSG1 | LINC01527 |
| 0.76 | 0 | TMPRSS11F | DSG1-AS1 |
| 0.75 | 0 | OGN | HAND2-AS1 |
| 0.74 | 0 | FOXN1 | LINC00640 |
| 0.74 | 0 | TCEAL2 | HAND2-AS1 |
| 0.73 | 0 | SLC34A1 | LINC00640 |
| 0.72 | 0 | LCN6 | CADM3-AS1 |
| 0.72 | 0 | TCF21 | ACTA2-AS1 |
| 0.71 | 0 | FOXN1 | CALML3-AS1 |

| | | | |
|---|---|---|---|
| 0.7 | 0 | TMPRSS11F | LINC01527 |
| 0.7 | 0 | FOXN1 | CERS3-AS1 |
| 0.69 | 0 | GSDMC | MIR205HG |
| 0.69 | 0 | AGTR1 | MAGI2-AS3 |
| 0.69 | 0 | KRT31 | LINC00640 |
| 0.69 | 0 | DSG1 | KRT16P3 |
| 0.69 | 0 | GSDMC | IL20RB-AS1 |
| 0.69 | 0 | TMPRSS11F | IL20RB-AS1 |
| 0.69 | 0 | C7 | CADM3-AS1 |
| 0.68 | 0 | TMPRSS11F | SH3PXD2A-A |
| 0.68 | 0 | SLC34A1 | LINC02541 |
| 0.68 | 0 | CCR8 | LINC02099 |
| 0.68 | 0 | FOXN1 | KRT16P3 |
| 0.68 | 0 | CCL14 | HAND2-AS1 |
| 0.68 | 0 | GSDMC | FAM83A-AS1 |
| 0.68 | 0 | AGTR1 | DNM3OS |
| 0.68 | 0 | TMPRSS11F | CALML3-AS1 |
| 0.67 | 0 | CRYBG2 | SH3PXD2A-A |
| 0.67 | 0 | TMPRSS11F | MLIP-IT1 |
| 0.67 | 0 | FOXN1 | MIR205HG |
| 0.67 | 0 | MYL3 | MEG3 |
| 0.67 | 0 | RNF225 | LINC02560 |
| 0.67 | 0 | KRT78 | LINC01527 |
| 0.67 | 0 | KRT16P1 | DSG1-AS1 |
| 0.67 | 0 | TCF21 | CARMN |
| 0.67 | 0 | LCN10 | CADM3-AS1 |
| 0.67 | 0 | FOXN1 | AATBC |
| 0.66 | 0 | TMPRSS11F | SMILR |
| 0.66 | 0 | TCEAL2 | MAGI2-AS3 |
| 0.66 | 0 | TMPRSS11F | KRT16P3 |
| 0.66 | 0 | FOXN1 | IL20RB-AS1 |
| 0.66 | 0 | DPP6 | HAND2-AS1 |
| 0.66 | 0 | KRT78 | DSG1-AS1 |
| 0.66 | 0 | OGN | CARMN |
| 0.66 | 0 | OGN | CADM3-AS1 |
| 0.66 | 0 | SLC34A1 | AATBC |
| 0.65 | 0 | DSG1 | SMILR |
| 0.65 | 0 | OGN | MIR497HG |
| 0.65 | 0 | MYL3 | MAGI2-AS3 |
| 0.65 | 0 | CRYBG2 | LINC02560 |
| 0.65 | 0 | APOC2 | LINC01857 |
| 0.65 | 0 | KRT74 | LINC00640 |
| 0.65 | 0 | KRT3 | DSG1-AS1 |
| 0.65 | 0 | KRT74 | CALML3-AS1 |

| | | | |
|---|---|---|---|
| 0.65 | 0 | SLC34A1 | CALML3-AS1 |
| 0.65 | 0 | TCEAL2 | ADAMTS9-AS2 |
| 0.65 | 0 | OGN | ADAMTS9-AS1 |
| 0.64 | 0 | CRYBG2 | OVOL1-AS1 |
| 0.64 | 0 | DSG1 | MLIP-IT1 |
| 0.64 | 0 | SLC34A1 | MIR205HG |
| 0.64 | 0 | CHRDL1 | MAGI2-AS3 |
| 0.64 | 0 | FAM83B | LINC02541 |
| 0.64 | 0 | GSDMC | LINC02541 |
| 0.64 | 0 | KRT16P1 | LINC01527 |
| 0.64 | 0 | KRT3 | LINC01527 |
| 0.64 | 0 | LGALS7B | LINC00640 |
| 0.64 | 0 | TMPRSS11F | LINC00640 |
| 0.64 | 0 | APOC2 | L3MBTL4-AS |
| 0.64 | 0 | PLA2G4E | KRT16P3 |
| 0.64 | 0 | CRYBG2 | IL20RB-AS1 |
| 0.64 | 0 | FOXN1 | DSG1-AS1 |
| 0.64 | 0 | TMPRSS11F | CERS3-AS1 |
| 0.64 | 0 | SCN7A | ADAMTS9-AS2 |
| 0.64 | 0 | ZNF208 | ADAMTS9-AS2 |
| 0.63 | 0 | DSG1 | SH3PXD2A-A |
| 0.63 | 0 | KRT78 | SH3PXD2A-A |
| 0.63 | 0 | TMPRSS11F | OVOL1-AS1 |
| 0.63 | 0 | GSDMC | MYOSLID |
| 0.63 | 0 | FOXN1 | MLIP-IT1 |
| 0.63 | 0 | SLC34A1 | MIR3659HG |
| 0.63 | 0 | LRRC37A9P | MAP3K14-AS |
| 0.63 | 0 | OGN | MAGI2-AS3 |
| 0.63 | 0 | CRYBG2 | LINC02178 |
| 0.63 | 0 | ECRG4 | LINC01936 |
| 0.63 | 0 | KRT16P1 | LINC01605 |
| 0.63 | 0 | DSG1 | LINC00640 |
| 0.63 | 0 | KLRG2 | LINC00640 |
| 0.63 | 0 | PLA2G4E | IL20RB-AS1 |
| 0.63 | 0 | C7 | HAND2-AS1 |
| 0.63 | 0 | ZCCHC12 | HAND2-AS1 |
| 0.63 | 0 | MYL3 | DNM3OS |
| 0.63 | 0 | TMPRSS11F | CLCA3P |
| 0.63 | 0 | SLC34A1 | CERS3-AS1 |
| 0.63 | 0 | MYL3 | CARMN |
| 0.63 | 0 | GPIHBP1 | CADM3-AS1 |
| 0.63 | 0 | CCL14 | ADAMTS9-AS2 |
| 0.63 | 0 | C7 | ADAMTS9-AS1 |
| 0.63 | 0 | SCN7A | ADAMTS9-AS1 |

| | | | |
|---|---|---|---|
| 0.63 | 0 | MYL3 | ACTA2-AS1 |
| 0.62 | 0 | CRYBG2 | SMILR |
| 0.62 | 0 | KRT78 | SMILR |
| 0.62 | 0 | OVOL1 | SH3PXD2A-A |
| 0.62 | 0 | APOC2 | PCED1B-AS1 |
| 0.62 | 0 | OGN | MRGPRF-AS1 |
| 0.62 | 0 | KLC3 | MIR205HG |
| 0.62 | 0 | KRT16P1 | MIR205HG |
| 0.62 | 0 | TCF21 | MAGI2-AS3 |
| 0.62 | 0 | FOXN1 | LINC02560 |
| 0.62 | 0 | FOXN1 | LINC01679 |
| 0.62 | 0 | CRYBG2 | LINC01527 |
| 0.62 | 0 | FOXN1 | LINC01527 |
| 0.62 | 0 | TMPRSS11F | LINC00519 |
| 0.62 | 0 | GSDMC | KRT16P3 |
| 0.62 | 0 | BPI | HAND2-AS1 |
| 0.62 | 0 | CHRDL1 | HAND2-AS1 |
| 0.62 | 0 | MYL3 | HAND2-AS1 |
| 0.62 | 0 | CRYBG2 | DSG1-AS1 |
| 0.62 | 0 | KRT31 | DSG1-AS1 |
| 0.62 | 0 | TCF21 | DNM3OS |
| 0.62 | 0 | AGTR1 | CARMN |
| 0.62 | 0 | SCN7A | CARMN |
| 0.62 | 0 | CRYBG2 | CALML3-AS1 |
| 0.62 | 0 | GSDMC | CALML3-AS1 |
| 0.62 | 0 | KRT31 | CALML3-AS1 |
| 0.62 | 0 | GSDMC | C10orf55 |
| 0.62 | 0 | CHRDL1 | ADAMTS9-AS1 |
| 0.62 | 0 | GPIHBP1 | ADAMTS9-AS1 |
| 0.62 | 0 | TCEAL2 | ADAMTS9-AS1 |
| 0.62 | 0 | OGN | ACTA2-AS1 |
| 0.61 | 0 | MYL3 | PTPRD-AS1 |
| 0.61 | 0 | LRRC37A9P | PAXIP1-AS2 |
| 0.61 | 0 | FOXN1 | OVOL1-AS1 |
| 0.61 | 0 | TCEAL2 | MRGPRF-AS1 |
| 0.61 | 0 | CRYBG2 | MIR205HG |
| 0.61 | 0 | KRT74 | MIR205HG |
| 0.61 | 0 | KRT78 | LINC02560 |
| 0.61 | 0 | FOXN1 | LINC02541 |
| 0.61 | 0 | CCR8 | LINC02325 |
| 0.61 | 0 | TMPRSS11F | LINC02031 |
| 0.61 | 0 | CCR8 | LINC00861 |
| 0.61 | 0 | KRT16P1 | LINC00640 |
| 0.61 | 0 | KRT16P1 | LINC00520 |

| | | | |
|---|---|---|---|
| 0.61 | 0 | SLC34A1 | LINC00519 |
| 0.61 | 0 | FAM83B | IL20RB-AS1 |
| 0.61 | 0 | KRT16P1 | IL20RB-AS1 |
| 0.61 | 0 | GPR22 | HAND2-AS1 |
| 0.61 | 0 | LCN6 | HAND2-AS1 |
| 0.61 | 0 | E2F7 | EP300-AS1 |
| 0.61 | 0 | CCR8 | EML4-AS1 |
| 0.61 | 0 | OVOL1 | DSG1-AS1 |
| 0.61 | 0 | DSG1 | CERS3-AS1 |
| 0.61 | 0 | C7 | CARMN |
| 0.61 | 0 | GPIHBP1 | CARMN |
| 0.61 | 0 | ZNF208 | CARMN |
| 0.61 | 0 | DSG1 | CALML3-AS1 |
| 0.61 | 0 | APOC2 | APOC1P1 |
| 0.61 | 0 | OGN | ADAMTS9-AS2 |
| 0.61 | 0 | DPP6 | ADAMTS9-AS1 |
| 0.61 | 0 | TCF23 | ADAMTS9-AS1 |
| 0.61 | 0 | TCEAL2 | ACTA2-AS1 |
| 0.61 | 0 | KLRG2 | AATBC |
| 0.6 | 0 | E2F7 | YEATS2-AS1 |
| 0.6 | 0 | TCEAL2 | WT1-AS |
| 0.6 | 0 | PLA2G4E | SH3PXD2A-A |
| 0.6 | 0 | UGT1A6 | NMRAL2P |
| 0.6 | 0 | DPP6 | MRGPRF-AS1 |
| 0.6 | 0 | LCN6 | MRGPRF-AS1 |
| 0.6 | 0 | MYL3 | MRGPRF-AS1 |
| 0.6 | 0 | CRYBG2 | MLIP-IT1 |
| 0.6 | 0 | GPIHBP1 | MIR497HG |
| 0.6 | 0 | FOXN1 | MIR3659HG |
| 0.6 | 0 | CCL14 | MEF2C-AS1 |
| 0.6 | 0 | ZNF208 | MAGI2-AS3 |
| 0.6 | 0 | CRYBG2 | LINC02595 |
| 0.6 | 0 | TMPRSS11F | LINC02595 |
| 0.6 | 0 | TMPRSS11F | LINC02541 |
| 0.6 | 0 | GPIHBP1 | LINC02202 |
| 0.6 | 0 | TCEAL2 | LINC01936 |
| 0.6 | 0 | TCF21 | LINC01614 |
| 0.6 | 0 | DSG1 | LINC01605 |
| 0.6 | 0 | KRT3 | LINC01395 |
| 0.6 | 0 | DSG1 | LINC00520 |
| 0.6 | 0 | PLA2G4E | LINC00520 |
| 0.6 | 0 | FOXN1 | LINC00519 |
| 0.6 | 0 | KRT74 | LINC00519 |
| 0.6 | 0 | CRYBG2 | KRT16P3 |

| | | | |
|---|---|---|---|
| 0.6 | 0 | KRT78 | KRT16P3 |
| 0.6 | 0 | DSG1 | IL20RB-AS1 |
| 0.6 | 0 | OVOL1 | IL20RB-AS1 |
| 0.6 | 0 | SCN7A | HAND2-AS1 |
| 0.6 | 0 | RNF225 | GRHL3-AS1 |
| 0.6 | 0 | TMPRSS11F | GRHL3-AS1 |
| 0.6 | 0 | CRYBG2 | FAM83A-AS1 |
| 0.6 | 0 | BPI | EMX2OS |
| 0.6 | 0 | C5rf66-AS1 | DSG1-AS1 |
| 0.6 | 0 | TCEAL2 | CARMN |
| 0.6 | 0 | BPI | ADAMTS9-AS2 |
| 0.6 | 0 | C7 | ADAMTS9-AS2 |
| 0.6 | 0 | ZNF676 | ADAMTS9-AS2 |
| 0.6 | 0 | CCL14 | ADAMTS9-AS1 |
| 0.6 | 0 | ECRG4 | ADAMTS9-AS1 |
| 0.6 | 0 | MYL3 | ADAMTS9-AS1 |
| 0.6 | 0 | GPIHBP1 | ACTA2-AS1 |
| 0.6 | 0 | SCRG1 | ACTA2-AS1 |
| 0.59 | 0 | CCR8 | TRBV11-2 |
| 0.59 | 0 | GSDMC | SMILR |
| 0.59 | 0 | FOXN1 | SH3PXD2A-A |
| 0.59 | 0 | GSDMC | SH3PXD2A-A |
| 0.59 | 0 | GPIHBP1 | RGS5 |
| 0.59 | 0 | TCF21 | PTPRD-AS1 |
| 0.59 | 0 | DSG1 | OVOL1-AS1 |
| 0.59 | 0 | FAM83B | OVOL1-AS1 |
| 0.59 | 0 | KRT78 | MLIP-IT1 |
| 0.59 | 0 | SLC34A1 | MLIP-IT1 |
| 0.59 | 0 | MAJIN | MIR9-3HG |
| 0.59 | 0 | FOXN1 | MIR4713HG |
| 0.59 | 0 | KLRG2 | MIR205HG |
| 0.59 | 0 | CASP12 | MAGI2-AS3 |
| 0.59 | 0 | OVOL1 | LINC02595 |
| 0.59 | 0 | APOC2 | LINC01943 |
| 0.59 | 0 | MYL3 | LINC01936 |
| 0.59 | 0 | CRYBG2 | LINC01605 |
| 0.59 | 0 | KRT31 | LINC01527 |
| 0.59 | 0 | PLA2G4E | LINC01527 |
| 0.59 | 0 | CCR8 | LINC00426 |
| 0.59 | 0 | SLC34A1 | KRT16P3 |
| 0.59 | 0 | SLC34A1 | IL20RB-AS1 |
| 0.59 | 0 | FAM83B | GRHL3-AS1 |
| 0.59 | 0 | TCEAL2 | EMX2OS |
| 0.59 | 0 | OGN | DNM3OS |

| | | | |
|---|---|---|---|
| 0.59 | 0 | DSG1 | CT69 |
| 0.59 | 0 | GSDMC | CERS3-AS1 |
| 0.59 | 0 | KRT16P1 | CERS3-AS1 |
| 0.59 | 0 | FAM83B | CD44-AS1 |
| 0.59 | 0 | CASP12 | CARMN |
| 0.59 | 0 | CHRDL1 | CARMN |
| 0.59 | 0 | KRT16P1 | CALML3-AS1 |
| 0.59 | 0 | KRT78 | CALML3-AS1 |
| 0.59 | 0 | OVOL1 | CALML3-AS1 |
| 0.59 | 0 | PI16 | CADM3-AS1 |
| 0.59 | 0 | FOXN1 | C5rf34-AS1 |
| 0.59 | 0 | CRYBG2 | C10orf55 |
| 0.59 | 0 | LCN6 | ADAMTS9-AS1 |
| 0.59 | 0 | AGTR1 | ACTA2-AS1 |
| 0.59 | 0 | SCN7A | ACTA2-AS1 |
| 0.58 | 0 | SLC34A1 | STEAP3-AS1 |
| 0.58 | 0 | TMPRSS11F | PLA2G4E-AS |
| 0.58 | 0 | ZIC2 | PCCA-DT |
| 0.58 | 0 | GSDMC | MLIP-IT1 |
| 0.58 | 0 | LGALS7B | MIR205HG |
| 0.58 | 0 | C7 | MEF2C-AS1 |
| 0.58 | 0 | OGN | MEF2C-AS1 |
| 0.58 | 0 | C7 | MAGI2-AS3 |
| 0.58 | 0 | MEOX2 | MAGI2-AS3 |
| 0.58 | 0 | SCN7A | MAGI2-AS3 |
| 0.58 | 0 | APOC2 | LINC02528 |
| 0.58 | 0 | CASP12 | LINC02202 |
| 0.58 | 0 | KRT78 | LINC02031 |
| 0.58 | 0 | SLC34A1 | LINC02031 |
| 0.58 | 0 | GSDMC | LINC01679 |
| 0.58 | 0 | GSDMC | LINC01527 |
| 0.58 | 0 | OVOL1 | LINC01527 |
| 0.58 | 0 | FOXN1 | LINC00964 |
| 0.58 | 0 | KRT3 | LINC00964 |
| 0.58 | 0 | TMPRSS11F | LINC00520 |
| 0.58 | 0 | KRT31 | LINC00519 |
| 0.58 | 0 | FOXE1 | IL20RB-AS1 |
| 0.58 | 0 | MYL3 | IGF2-AS |
| 0.58 | 0 | CASP12 | HAND2-AS1 |
| 0.58 | 0 | GPIHBP1 | HAND2-AS1 |
| 0.58 | 0 | RGS22 | HAND2-AS1 |
| 0.58 | 0 | ZNF208 | HAND2-AS1 |
| 0.58 | 0 | KRTAP4-1 | FMO9P |
| 0.58 | 0 | CCL14 | EMX2OS |

| | | | |
|---|---|---|---|
| 0.58 | 0 | LRRC37A9P | DLEU2L |
| 0.58 | 0 | E2F7 | CD44-AS1 |
| 0.58 | 0 | CCL14 | CARMN |
| 0.58 | 0 | ZCCHC12 | CARMN |
| 0.58 | 0 | KRT3 | CALML3-AS1 |
| 0.58 | 0 | PLA2G4F | CALML3-AS1 |
| 0.58 | 0 | SCN7A | CADM3-AS1 |
| 0.58 | 0 | CHRDL1 | ADAMTS9-AS2 |
| 0.58 | 0 | MYOC | ADAMTS9-AS2 |
| 0.58 | 0 | KLHL4 | ACTA2-AS1 |
| 0.58 | 0 | DSG1 | AATBC |
| 0.58 | 0 | KRT74 | AATBC |
| 0.57 | 0 | SLC34A1 | SH3PXD2A-A |
| 0.57 | 0 | APOC2 | PIK3CD-AS1 |
| 0.57 | 0 | RNF225 | OVOL1-AS1 |
| 0.57 | 0 | CCL14 | MRGPRF-AS1 |
| 0.57 | 0 | TCF23 | MRGPRF-AS1 |
| 0.57 | 0 | APOC2 | MMP2-AS1 |
| 0.57 | 0 | DQX1 | MIR9-3HG |
| 0.57 | 0 | DSG1 | MIR4713HG |
| 0.57 | 0 | TMPRSS11F | MIR205HG |
| 0.57 | 0 | TCEAL2 | MIR100HG |
| 0.57 | 0 | CASP12 | MEF2C-AS1 |
| 0.57 | 0 | CCL14 | MAGI2-AS3 |
| 0.57 | 0 | DPP6 | MAGI2-AS3 |
| 0.57 | 0 | GALNT17 | MAGI2-AS3 |
| 0.57 | 0 | GPIHBP1 | MAGI2-AS3 |
| 0.57 | 0 | KLHL4 | MAGI2-AS3 |
| 0.57 | 0 | KLC3 | LINC02595 |
| 0.57 | 0 | CRYBG2 | LINC02541 |
| 0.57 | 0 | APOC2 | LINC02285 |
| 0.57 | 0 | APOC2 | LINC02099 |
| 0.57 | 0 | FOXN1 | LINC02031 |
| 0.57 | 0 | TCF21 | LINC01936 |
| 0.57 | 0 | ZNF208 | LINC01936 |
| 0.57 | 0 | CCR8 | LINC01684 |
| 0.57 | 0 | TMPRSS11F | LINC01605 |
| 0.57 | 0 | FOXN1 | LINC01503 |
| 0.57 | 0 | CCR8 | LINC01094 |
| 0.57 | 0 | CCR8 | LINC00996 |
| 0.57 | 0 | TMPRSS11F | LINC00964 |
| 0.57 | 0 | TCF21 | LINC00924 |
| 0.57 | 0 | KRT3 | LINC00640 |
| 0.57 | 0 | E2F7 | LINC00630 |

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|---|---|---|---|
| 0.57 | 0 | GAST | LINC00520 |
| 0.57 | 0 | GSDMC | LINC00520 |
| 0.57 | 0 | RNF225 | IL20RB-AS1 |
| 0.57 | 0 | ECRG4 | HAND2-AS1 |
| 0.57 | 0 | MYL3 | EMX2OS |
| 0.57 | 0 | RGS22 | EMX2OS |
| 0.57 | 0 | SLC34A1 | DSG1-AS1 |
| 0.57 | 0 | LCN6 | CARMN |
| 0.57 | 0 | PRND | CARMN |
| 0.57 | 0 | SLC34A1 | C10orf55 |
| 0.57 | 0 | CASP12 | ADAMTS9-AS2 |
| 0.57 | 0 | LCN10 | ADAMTS9-AS2 |
| 0.57 | 0 | LCN6 | ADAMTS9-AS2 |
| 0.57 | 0 | WDR17 | ADAMTS9-AS2 |
| 0.57 | 0 | SCRG1 | ADAMTS9-AS1 |
| 0.57 | 0 | ZCCHC12 | ADAMTS9-AS1 |
| 0.57 | 0 | C7 | ACTA2-AS1 |
| 0.57 | 0 | TMPRSS11F | AATBC |
| 0.56 | 0 | OVOL1 | SMILR |
| 0.56 | 0 | SLC34A1 | SMILR |
| 0.56 | 0 | CASP12 | RGS5 |
| 0.56 | 0 | CRYBG2 | PPP1R14B-A |
| 0.56 | 0 | KRT78 | OVOL1-AS1 |
| 0.56 | 0 | E2F7 | OIP5-AS1 |
| 0.56 | 0 | KLC3 | MYOSLID |
| 0.56 | 0 | LRRC37A9P | MRPS31P5 |
| 0.56 | 0 | SCN7A | MRGPRF-AS1 |
| 0.56 | 0 | KRT3 | MLIP-IT1 |
| 0.56 | 0 | LCN6 | MIR497HG |
| 0.56 | 0 | TMPRSS11F | MIR4713HG |
| 0.56 | 0 | AGTR1 | MEG3 |
| 0.56 | 0 | TCEAL2 | MEG3 |
| 0.56 | 0 | TCF21 | MEG3 |
| 0.56 | 0 | CRHBP | MEF2C-AS1 |
| 0.56 | 0 | GPIHBP1 | MEF2C-AS1 |
| 0.56 | 0 | TCEAL2 | MEF2C-AS1 |
| 0.56 | 0 | RGS22 | MAGI2-AS3 |
| 0.56 | 0 | ZCCHC12 | MAGI2-AS3 |
| 0.56 | 0 | KRT16P1 | LINC02595 |
| 0.56 | 0 | GSDMC | LINC02560 |
| 0.56 | 0 | DSG1 | LINC02031 |
| 0.56 | 0 | CCR8 | LINC01934 |
| 0.56 | 0 | SLC34A1 | LINC01679 |
| 0.56 | 0 | AGTR1 | LINC01614 |

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|---|---|---|---|
| 0.56 | 0 | KRT31 | LINC01605 |
| 0.56 | 0 | CCR8 | LINC01281 |
| 0.56 | 0 | APOC2 | LINC01094 |
| 0.56 | 0 | GPIHBP1 | LINC00924 |
| 0.56 | 0 | CRYBG2 | LINC00640 |
| 0.56 | 0 | GSDMC | LINC00640 |
| 0.56 | 0 | CRYBG2 | LINC00520 |
| 0.56 | 0 | KLC3 | LINC00520 |
| 0.56 | 0 | LCN10 | HAND2-AS1 |
| 0.56 | 0 | TCF23 | HAND2-AS1 |
| 0.56 | 0 | ZNF676 | HAND2-AS1 |
| 0.56 | 0 | FOXN1 | GRHL3-AS1 |
| 0.56 | 0 | DPP6 | EMX2OS |
| 0.56 | 0 | OGN | EMX2OS |
| 0.56 | 0 | ZCCHC12 | EMX2OS |
| 0.56 | 0 | TCEAL2 | DNM3OS |
| 0.56 | 0 | E2F7 | DLEU2L |
| 0.56 | 0 | TMPRSS11F | CT69 |
| 0.56 | 0 | CRYBG2 | CLCA3P |
| 0.56 | 0 | MAB21L3 | CLCA3P |
| 0.56 | 0 | CRYBG2 | CERS3-AS1 |
| 0.56 | 0 | KLHL4 | CARMN |
| 0.56 | 0 | TCF23 | CARMN |
| 0.56 | 0 | CD300LG | CADM3-AS1 |
| 0.56 | 0 | TMPRSS11F | C5rf34-AS1 |
| 0.56 | 0 | GPIHBP1 | ADAMTS9-AS2 |
| 0.56 | 0 | GPR22 | ADAMTS9-AS2 |
| 0.56 | 0 | GALNT17 | ADAMTS9-AS1 |
| 0.56 | 0 | ZNF208 | ADAMTS9-AS1 |
| 0.56 | 0 | ZNF676 | ADAMTS9-AS1 |
| 0.56 | 0 | TCF23 | ACTA2-AS1 |
| 0.56 | 0 | E2F7 | ACAP2-IT1 |
| 0.55 | 0 | RGS22 | ZNF781 |
| 0.55 | 0 | LRRC37A9P | ZNF32-AS2 |
| 0.55 | 0 | CCR8 | TSPOAP1-AS |
| 0.55 | 0 | E2F7 | TMPO-AS1 |
| 0.55 | 0 | CKMT1B | SPINT1-AS1 |
| 0.55 | 0 | LRRC37A9P | SMG7-AS1 |
| 0.55 | 0 | RNF225 | SH3PXD2A-A |
| 0.55 | 0 | OGN | RGS5 |
| 0.55 | 0 | ZIC5 | PCCA-DT |
| 0.55 | 0 | PLA2G4E | OVOL1-AS1 |
| 0.55 | 0 | APOC2 | OTOAP1 |
| 0.55 | 0 | LRRC37A9P | NFYC-AS1 |

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|---|---|---|---|
| 0.55 | 0 | OVOL1 | MLIP-IT1 |
| 0.55 | 0 | CCL14 | MIR497HG |
| 0.55 | 0 | CD300LG | MIR497HG |
| 0.55 | 0 | CRYBG2 | MIR4713HG |
| 0.55 | 0 | PLA2G4E | MIR205HG |
| 0.55 | 0 | ZNF208 | MEG3 |
| 0.55 | 0 | CHRDL1 | MEF2C-AS1 |
| 0.55 | 0 | BPI | MAGI2-AS3 |
| 0.55 | 0 | FOXN1 | LINC02800 |
| 0.55 | 0 | APOC2 | LINC02611 |
| 0.55 | 0 | GSDMC | LINC02595 |
| 0.55 | 0 | KLC3 | LINC02560 |
| 0.55 | 0 | KRT74 | LINC02541 |
| 0.55 | 0 | AGTR1 | LINC02202 |
| 0.55 | 0 | OGN | LINC02202 |
| 0.55 | 0 | KRT31 | LINC02031 |
| 0.55 | 0 | ZCCHC12 | LINC01936 |
| 0.55 | 0 | KRTAP4-1 | LINC01633 |
| 0.55 | 0 | GSDMC | LINC01605 |
| 0.55 | 0 | UGT1A6 | LINC01564 |
| 0.55 | 0 | LGALS7B | LINC01527 |
| 0.55 | 0 | GSDMC | LINC01503 |
| 0.55 | 0 | MYL3 | LINC00924 |
| 0.55 | 0 | PRND | LINC00924 |
| 0.55 | 0 | TCF21 | LINC00578 |
| 0.55 | 0 | FAM83B | LINC00520 |
| 0.55 | 0 | DSG1 | LINC00519 |
| 0.55 | 0 | FOXE1 | LINC00519 |
| 0.55 | 0 | E2F7 | LINC00511 |
| 0.55 | 0 | FOXE1 | KRT42P |
| 0.55 | 0 | FOXE1 | KRT16P3 |
| 0.55 | 0 | LGALS7B | KRT16P3 |
| 0.55 | 0 | KRT78 | IL20RB-AS1 |
| 0.55 | 0 | CCL14 | HID1-AS1 |
| 0.55 | 0 | SCRG1 | HAND2-AS1 |
| 0.55 | 0 | E2F7 | GRHL3-AS1 |
| 0.55 | 0 | MCIDAS | GOLGA2P5 |
| 0.55 | 0 | GSDMC | GBP1P1 |
| 0.55 | 0 | FOXN1 | FMO9P |
| 0.55 | 0 | E2F7 | EBLN3P |
| 0.55 | 0 | GALNT17 | DNM3OS |
| 0.55 | 0 | KRT78 | CLCA3P |
| 0.55 | 0 | APOC2 | CEP250-AS1 |
| 0.55 | 0 | CASQ2 | CARMN |

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|---|---|---|---|
| 0.55 | 0 | DPP6 | CARMN |
| 0.55 | 0 | GALNT17 | CARMN |
| 0.55 | 0 | MEOX2 | CARMN |
| 0.55 | 0 | SCRG1 | CARMN |
| 0.55 | 0 | ZNF676 | CARMN |
| 0.55 | 0 | LGALS7B | CALML3-AS1 |
| 0.55 | 0 | CCL16 | CADM3-AS1 |
| 0.55 | 0 | MEOX2 | CADM3-AS1 |
| 0.55 | 0 | FAM83B | C10orf55 |
| 0.55 | 0 | FAM83B | ATP1B3-AS1 |
| 0.55 | 0 | LRRC37A9P | ANKRD10-IT |
| 0.55 | 0 | DPP6 | ADAMTS9-AS2 |
| 0.55 | 0 | ECRG4 | ADAMTS9-AS2 |
| 0.55 | 0 | KLHL33 | ADAMTS9-AS2 |
| 0.55 | 0 | CASP12 | ACTA2-AS1 |
| 0.55 | 0 | CHRDL1 | ACTA2-AS1 |
| 0.55 | 0 | PRND | ACTA2-AS1 |
| 0.55 | 0 | TCEAL2 | A2M-AS1 |
| 0.54 | 0 | OGN | ZNF781 |
| 0.54 | 0 | CCR8 | TRG-AS1 |
| 0.54 | 0 | FAM83B | SMILR |
| 0.54 | 0 | FOXN1 | SMILR |
| 0.54 | 0 | KRT31 | SMILR |
| 0.54 | 0 | SLC34A1 | SMAD5-AS1 |
| 0.54 | 0 | FAM83B | SH3PXD2A-A |
| 0.54 | 0 | MCIDAS | RAET1K |
| 0.54 | 0 | TCEAL2 | PTPRD-AS1 |
| 0.54 | 0 | FAM83B | PLA2G4E-AS |
| 0.54 | 0 | C7 | MRGPRF-AS1 |
| 0.54 | 0 | CASP12 | MRGPRF-AS1 |
| 0.54 | 0 | FAM83B | MLIP-IT1 |
| 0.54 | 0 | KRT31 | MLIP-IT1 |
| 0.54 | 0 | PLA2G4E | MLIP-IT1 |
| 0.54 | 0 | TCEAL2 | MIR497HG |
| 0.54 | 0 | TCF23 | MIR497HG |
| 0.54 | 0 | KRT16P1 | MIR3659HG |
| 0.54 | 0 | DSG1 | MIR205HG |
| 0.54 | 0 | OGN | MIR100HG |
| 0.54 | 0 | MYL3 | MEG9 |
| 0.54 | 0 | ZCCHC12 | MEF2C-AS1 |
| 0.54 | 0 | ECRG4 | MAGI2-AS3 |
| 0.54 | 0 | ZNF676 | MAGI2-AS3 |
| 0.54 | 0 | FOXN1 | LINC02595 |
| 0.54 | 0 | LGALS7B | LINC02560 |

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|---|---|---|---|
| 0.54 | 0 | OVOL1 | LINC02560 |
| 0.54 | 0 | TMPRSS11F | LINC02560 |
| 0.54 | 0 | DSG1 | LINC02541 |
| 0.54 | 0 | GSDMC | LINC02178 |
| 0.54 | 0 | APOC2 | LINC02073 |
| 0.54 | 0 | CCR8 | LINC01943 |
| 0.54 | 0 | CASQ2 | LINC01936 |
| 0.54 | 0 | CCR8 | LINC01857 |
| 0.54 | 0 | FOXN1 | LINC01752 |
| 0.54 | 0 | E2F7 | LINC01572 |
| 0.54 | 0 | KRT78 | LINC01269 |
| 0.54 | 0 | CCR8 | LINC01215 |
| 0.54 | 0 | DSG1 | LINC00964 |
| 0.54 | 0 | EPGN | LINC00941 |
| 0.54 | 0 | CRYBG2 | LINC00887 |
| 0.54 | 0 | KRT78 | LINC00640 |
| 0.54 | 0 | OVOL1 | LINC00520 |
| 0.54 | 0 | KRT16P1 | LINC00519 |
| 0.54 | 0 | KRT16P1 | KRT42P |
| 0.54 | 0 | OVOL1 | KRT16P3 |
| 0.54 | 0 | CCR8 | IL21-AS1 |
| 0.54 | 0 | KLC3 | HOXC13-AS |
| 0.54 | 0 | HFM1 | HHIP-AS1 |
| 0.54 | 0 | CCR8 | HECW2-AS1 |
| 0.54 | 0 | AGTR1 | HAND2-AS1 |
| 0.54 | 0 | GALNT17 | HAND2-AS1 |
| 0.54 | 0 | CRYBG2 | GRHL3-AS1 |
| 0.54 | 0 | SLC34A1 | GRHL3-AS1 |
| 0.54 | 0 | FAM83B | EGFR-AS1 |
| 0.54 | 0 | KRT74 | DSG1-AS1 |
| 0.54 | 0 | PLA2G4E | DSG1-AS1 |
| 0.54 | 0 | OVOL1 | CLCA3P |
| 0.54 | 0 | TCF21 | CCDC144NL- |
| 0.54 | 0 | LCN10 | CARMN |
| 0.54 | 0 | FAM83B | CALML3-AS1 |
| 0.54 | 0 | ADH1B | CADM3-AS1 |
| 0.54 | 0 | RNF225 | ATP1B3-AS1 |
| 0.54 | 0 | APOC2 | ADPGK-AS1 |
| 0.54 | 0 | CCR8 | ADPGK-AS1 |
| 0.54 | 0 | CRHBP | ADAMTS9-AS2 |
| 0.54 | 0 | RGS22 | ADAMTS9-AS2 |
| 0.54 | 0 | SYT9 | ADAMTS9-AS2 |
| 0.54 | 0 | ZCCHC12 | ADAMTS9-AS2 |
| 0.54 | 0 | ZNF208 | ACTA2-AS1 |

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|---|---|---|---|
| 0.53 | 0 | GPIHBP1 | ZNF781 |
| 0.53 | 0 | MYL3 | ZNF781 |
| 0.53 | 0 | E2F7 | UBE2Q2P2 |
| 0.53 | 0 | APOC2 | TRG-AS1 |
| 0.53 | 0 | E2F7 | TNFRSF10A- |
| 0.53 | 0 | CKMT1B | STRCP1 |
| 0.53 | 0 | FOXN1 | SPATA41 |
| 0.53 | 0 | KRT3 | SMILR |
| 0.53 | 0 | KRT16P1 | SH3PXD2A-A |
| 0.53 | 0 | LRRC37A9P | SAP30L-AS1 |
| 0.53 | 0 | AGTR1 | RGS5 |
| 0.53 | 0 | CCL14 | RGS5 |
| 0.53 | 0 | E2F7 | RAET1K |
| 0.53 | 0 | RNF225 | PLA2G4E-AS |
| 0.53 | 0 | LRRC37A9P | NPTN-IT1 |
| 0.53 | 0 | APOC2 | NCF1B |
| 0.53 | 0 | MYOZ2 | MRGPRF-AS1 |
| 0.53 | 0 | KRT16P1 | MLIP-IT1 |
| 0.53 | 0 | ZCCHC12 | MIR497HG |
| 0.53 | 0 | DSG1 | MIR3659HG |
| 0.53 | 0 | FOXE1 | MIR205HG |
| 0.53 | 0 | KRT3 | MIR205HG |
| 0.53 | 0 | KRT31 | MIR205HG |
| 0.53 | 0 | APOC2 | MIR155HG |
| 0.53 | 0 | AGTR1 | MIR100HG |
| 0.53 | 0 | MYL3 | MIR100HG |
| 0.53 | 0 | MEOX2 | MEF2C-AS1 |
| 0.53 | 0 | LCN6 | MAGI2-AS3 |
| 0.53 | 0 | MYOZ2 | MAGI2-AS3 |
| 0.53 | 0 | PRND | MAGI2-AS3 |
| 0.53 | 0 | KLRG2 | LINC02800 |
| 0.53 | 0 | KRT78 | LINC02595 |
| 0.53 | 0 | SLC34A1 | LINC02595 |
| 0.53 | 0 | DQX1 | LINC02541 |
| 0.53 | 0 | KLC3 | LINC02541 |
| 0.53 | 0 | KRT16P1 | LINC02541 |
| 0.53 | 0 | C7 | LINC02202 |
| 0.53 | 0 | CRYBG2 | LINC02031 |
| 0.53 | 0 | BPI | LINC01936 |
| 0.53 | 0 | CHRDL1 | LINC01936 |
| 0.53 | 0 | OGN | LINC01936 |
| 0.53 | 0 | KRT3 | LINC01605 |
| 0.53 | 0 | SLC34A1 | LINC01605 |
| 0.53 | 0 | RNF225 | LINC01527 |

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|---|---|---|---|
| 0.53 | 0 | SLC34A1 | LINC01527 |
| 0.53 | 0 | C7 | LINC00924 |
| 0.53 | 0 | ZNF676 | LINC00924 |
| 0.53 | 0 | E2F7 | LINC00265 |
| 0.53 | 0 | FOXN1 | KRT42P |
| 0.53 | 0 | FOXN1 | HOXC13-AS |
| 0.53 | 0 | CD300LG | HAND2-AS1 |
| 0.53 | 0 | MYOZ2 | HAND2-AS1 |
| 0.53 | 0 | SYT9 | HAND2-AS1 |
| 0.53 | 0 | DQX1 | GRHL3-AS1 |
| 0.53 | 0 | OVOL1 | GRHL3-AS1 |
| 0.53 | 0 | CRYBG2 | FMO9P |
| 0.53 | 0 | APOC2 | EML4-AS1 |
| 0.53 | 0 | LRRC37A9P | EDRF1-AS1 |
| 0.53 | 0 | FAM83B | DSG1-AS1 |
| 0.53 | 0 | GSDMC | DSG1-AS1 |
| 0.53 | 0 | PLA2G4F | DSG1-AS1 |
| 0.53 | 0 | E2F7 | DLEU2 |
| 0.53 | 0 | LGALS7B | CERS3-AS1 |
| 0.53 | 0 | DQX1 | CDKN2B-AS1 |
| 0.53 | 0 | GPR22 | CARMN |
| 0.53 | 0 | PLA2G4E | CALML3-AS1 |
| 0.53 | 0 | CHRDL1 | CADM3-AS1 |
| 0.53 | 0 | SLC34A1 | C5rf34-AS1 |
| 0.53 | 0 | FAM83B | C2CD4D-AS1 |
| 0.53 | 0 | PADI3 | C10orf55 |
| 0.53 | 0 | LRRC37A9P | AP4B1-AS1 |
| 0.53 | 0 | LRRC37A9P | ALG13-AS1 |
| 0.53 | 0 | CCL16 | ADAMTS9-AS2 |
| 0.53 | 0 | OPCML | ADAMTS9-AS2 |
| 0.53 | 0 | ZNF99 | ADAMTS9-AS2 |
| 0.53 | 0 | CASP12 | ADAMTS9-AS1 |
| 0.53 | 0 | CASQ2 | ADAMTS9-AS1 |
| 0.53 | 0 | LCN10 | ADAMTS9-AS1 |
| 0.53 | 0 | PRND | ADAMTS9-AS1 |
| 0.53 | 0 | RGS22 | ADAMTS9-AS1 |
| 0.53 | 0 | ZCCHC12 | ACTA2-AS1 |
| 0.53 | 0 | CHRDL1 | A2M-AS1 |
| 0.53 | 0 | HFM1 | A2M-AS1 |
| 0.53 | 0 | ZCCHC12 | A2M-AS1 |
| 0.52 | 0 | C7 | ZNF781 |
| 0.52 | 0 | PRND | ZNF781 |
| 0.52 | 0 | ZCCHC12 | ZNF781 |
| 0.52 | 0 | RGS22 | WT1-AS |

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|---|---|---|---|
| 0.52 | 0 | LRRC37A9P | STAG3L5P |
| 0.52 | 0 | KRT16P1 | SMILR |
| 0.52 | 0 | MAB21L3 | SMILR |
| 0.52 | 0 | PADI3 | SMILR |
| 0.52 | 0 | GAST | SH3PXD2A-A |
| 0.52 | 0 | MYL3 | RGS5 |
| 0.52 | 0 | ZCCHC12 | RGS5 |
| 0.52 | 0 | CCR8 | PCED1B-AS1 |
| 0.52 | 0 | E2F7 | OGFRP1 |
| 0.52 | 0 | LRRC37A9P | NDUFA6-DT |
| 0.52 | 0 | CCR8 | NCF1B |
| 0.52 | 0 | LRRC37A9P | NARF-IT1 |
| 0.52 | 0 | CHRDL1 | MRGPRF-AS1 |
| 0.52 | 0 | GPIHBP1 | MRGPRF-AS1 |
| 0.52 | 0 | SCRG1 | MRGPRF-AS1 |
| 0.52 | 0 | ZNF208 | MRGPRF-AS1 |
| 0.52 | 0 | GSDMC | MIR3659HG |
| 0.52 | 0 | GPM6A | MEF2C-AS1 |
| 0.52 | 0 | KLHL33 | MAGI2-AS3 |
| 0.52 | 0 | SCRG1 | MAGI2-AS3 |
| 0.52 | 0 | KRT74 | LINC02800 |
| 0.52 | 0 | SLC34A1 | LINC02784 |
| 0.52 | 0 | DSG1 | LINC02595 |
| 0.52 | 0 | FAM83B | LINC02595 |
| 0.52 | 0 | FOXE1 | LINC02595 |
| 0.52 | 0 | KRT74 | LINC02595 |
| 0.52 | 0 | KRT16P1 | LINC02560 |
| 0.52 | 0 | KRT3 | LINC02560 |
| 0.52 | 0 | CCR8 | LINC02528 |
| 0.52 | 0 | CCR8 | LINC02397 |
| 0.52 | 0 | KLHL4 | LINC02202 |
| 0.52 | 0 | KRT16P1 | LINC02137 |
| 0.52 | 0 | SLC34A1 | LINC02137 |
| 0.52 | 0 | AGTR1 | LINC01936 |
| 0.52 | 0 | GALNT17 | LINC01936 |
| 0.52 | 0 | RGS22 | LINC01936 |
| 0.52 | 0 | SLC34A1 | LINC01752 |
| 0.52 | 0 | NEIL3 | LINC01572 |
| 0.52 | 0 | GPIHBP1 | LINC01352 |
| 0.52 | 0 | APOC2 | LINC01281 |
| 0.52 | 0 | DSG1 | LINC01010 |
| 0.52 | 0 | CRYBG2 | LINC00964 |
| 0.52 | 0 | GSDMC | LINC00964 |
| 0.52 | 0 | KRT16P1 | LINC00964 |

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|---|---|---|---|
| 0.52 | 0 | ZNF208 | LINC00924 |
| 0.52 | 0 | KRT3 | LINC00887 |
| 0.52 | 0 | KLHL4 | LINC00702 |
| 0.52 | 0 | UGT1A6 | LINC00519 |
| 0.52 | 0 | CRYBG2 | LINC00511 |
| 0.52 | 0 | DQX1 | LINC00511 |
| 0.52 | 0 | GAST | KRT42P |
| 0.52 | 0 | GSDMC | KRT42P |
| 0.52 | 0 | KRT3 | KRT16P3 |
| 0.52 | 0 | KRT31 | KRT16P3 |
| 0.52 | 0 | GSDMC | HOXC13-AS |
| 0.52 | 0 | GPIHBP1 | HID1-AS1 |
| 0.52 | 0 | LRRC37A9P | HEXD-IT1 |
| 0.52 | 0 | CRHBP | HAND2-AS1 |
| 0.52 | 0 | GPM6A | HAND2-AS1 |
| 0.52 | 0 | TCF21 | HAND2-AS1 |
| 0.52 | 0 | E2F7 | FMR1-IT1 |
| 0.52 | 0 | PLA2G4E | FAM83A-AS1 |
| 0.52 | 0 | ZNF208 | FAM218A |
| 0.52 | 0 | ECRG4 | EMX2OS |
| 0.52 | 0 | ZNF208 | EMX2OS |
| 0.52 | 0 | RCVRN | DNM3OS |
| 0.52 | 0 | ZNF208 | DNM3OS |
| 0.52 | 0 | LRRC37A9P | CTBP1-DT |
| 0.52 | 0 | PLA2G4E | CT69 |
| 0.52 | 0 | DSG1 | CLCA3P |
| 0.52 | 0 | FOXE1 | CERS3-AS1 |
| 0.52 | 0 | KLRG2 | CERS3-AS1 |
| 0.52 | 0 | PLA2G4E | CERS3-AS1 |
| 0.52 | 0 | PLA2G4F | CERS3-AS1 |
| 0.52 | 0 | OPCML | CARMN |
| 0.52 | 0 | WDR17 | CARMN |
| 0.52 | 0 | KLC3 | CALML3-AS1 |
| 0.52 | 0 | KLRG2 | CALML3-AS1 |
| 0.52 | 0 | GPR22 | CADM3-AS1 |
| 0.52 | 0 | DSG1 | C5rf34-AS1 |
| 0.52 | 0 | KRT74 | C5rf34-AS1 |
| 0.52 | 0 | FOXN1 | C10orf55 |
| 0.52 | 0 | E2F7 | ATP1B3-AS1 |
| 0.52 | 0 | C1QTNF9 | ADAMTS9-AS2 |
| 0.52 | 0 | MYL3 | ADAMTS9-AS2 |
| 0.52 | 0 | TCF23 | ADAMTS9-AS2 |
| 0.52 | 0 | DPP6 | ACTA2-AS1 |
| 0.52 | 0 | GALNT17 | ACTA2-AS1 |

| | | | |
|---|---|---|---|
| 0.52 | 0 | LGALS7B | AATBC |
| 0.52 | 0 | PLA2G4F | AATBC |
| 0.52 | 0 | SYT9 | A2M-AS1 |
| 0.51 | 0 | LRRC37A9P | XIST |
| 0.51 | 0 | CHRDL1 | WT1-AS |
| 0.51 | 0 | ECRG4 | WT1-AS |
| 0.51 | 0 | MYL3 | WT1-AS |
| 0.51 | 0 | TCF23 | WT1-AS |
| 0.51 | 0 | ZCCHC12 | WT1-AS |
| 0.51 | 0 | NMU | UNC5B-AS1 |
| 0.51 | 0 | LRRC37A9P | UGDH-AS1 |
| 0.51 | 0 | LRRC37A9P | STARD4-AS1 |
| 0.51 | 0 | C5rf66-AS1 | SOX21-AS1 |
| 0.51 | 0 | RNF225 | SMILR |
| 0.51 | 0 | KLC3 | SH3PXD2A-A |
| 0.51 | 0 | KRT3 | SH3PXD2A-A |
| 0.51 | 0 | KRT31 | SH3PXD2A-A |
| 0.51 | 0 | AGTR1 | PTPRD-AS1 |
| 0.51 | 0 | OGN | PTPRD-AS1 |
| 0.51 | 0 | SCN7A | PTPRD-AS1 |
| 0.51 | 0 | ZCCHC12 | PTPRD-AS1 |
| 0.51 | 0 | OVOL1 | PLA2G4E-AS |
| 0.51 | 0 | KRT16P1 | OVOL1-AS1 |
| 0.51 | 0 | MAB21L3 | OVOL1-AS1 |
| 0.51 | 0 | LCN10 | MRGPRF-AS1 |
| 0.51 | 0 | KRT74 | MLIP-IT1 |
| 0.51 | 0 | C7 | MIR497HG |
| 0.51 | 0 | MYL3 | MIR497HG |
| 0.51 | 0 | GSDMC | MIR4713HG |
| 0.51 | 0 | KRT3 | MIR4713HG |
| 0.51 | 0 | KRT74 | MIR4713HG |
| 0.51 | 0 | KRTAP4-1 | MIR4713HG |
| 0.51 | 0 | OVOL1 | MIR4713HG |
| 0.51 | 0 | SLC34A1 | MIR4713HG |
| 0.51 | 0 | KRT74 | MIR3659HG |
| 0.51 | 0 | CRYBG2 | MIR222HG |
| 0.51 | 0 | KRT16P1 | MIR222HG |
| 0.51 | 0 | KLHL4 | MIR100HG |
| 0.51 | 0 | GPIHBP1 | MEG3 |
| 0.51 | 0 | OGN | MEG3 |
| 0.51 | 0 | BPI | MEF2C-AS1 |
| 0.51 | 0 | LCN6 | MEF2C-AS1 |
| 0.51 | 0 | PRND | MEF2C-AS1 |
| 0.51 | 0 | SCN7A | MEF2C-AS1 |

| | | | |
|---|---|---|---|
| 0.51 | 0 | SCRG1 | MEF2C-AS1 |
| 0.51 | 0 | NPAS4 | MBNL1-AS1 |
| 0.51 | 0 | CRHBP | MAGI2-AS3 |
| 0.51 | 0 | RCVRN | MAGI2-AS3 |
| 0.51 | 0 | WDR17 | MAGI2-AS3 |
| 0.51 | 0 | APOC2 | MACORIS |
| 0.51 | 0 | KRT31 | LINC02595 |
| 0.51 | 0 | FOXE1 | LINC02560 |
| 0.51 | 0 | PLA2G4E | LINC02560 |
| 0.51 | 0 | LGALS7B | LINC02541 |
| 0.51 | 0 | APOC2 | LINC02391 |
| 0.51 | 0 | MYL3 | LINC02202 |
| 0.51 | 0 | TCF21 | LINC02202 |
| 0.51 | 0 | KLC3 | LINC02178 |
| 0.51 | 0 | DSG1 | LINC02137 |
| 0.51 | 0 | GPIHBP1 | LINC01936 |
| 0.51 | 0 | TCF23 | LINC01936 |
| 0.51 | 0 | APOC2 | LINC01934 |
| 0.51 | 0 | KRT3 | LINC01752 |
| 0.51 | 0 | CRYBG2 | LINC01679 |
| 0.51 | 0 | KLHL4 | LINC01614 |
| 0.51 | 0 | FOXN1 | LINC01605 |
| 0.51 | 0 | FAM83B | LINC01527 |
| 0.51 | 0 | LRRC37A9P | LINC01521 |
| 0.51 | 0 | DSG1 | LINC01395 |
| 0.51 | 0 | APOC2 | LINC01150 |
| 0.51 | 0 | HFM1 | LINC01122 |
| 0.51 | 0 | CASP12 | LINC00987 |
| 0.51 | 0 | APOC2 | LINC00892 |
| 0.51 | 0 | TCF21 | LINC00702 |
| 0.51 | 0 | PLA2G4F | LINC00640 |
| 0.51 | 0 | LRRC37A9P | LINC00624 |
| 0.51 | 0 | APOC2 | LINC00426 |
| 0.51 | 0 | CCR8 | LINC00158 |
| 0.51 | 0 | APOC2 | LCT-AS1 |
| 0.51 | 0 | LRRC37A9P | KIAA1671-A |
| 0.51 | 0 | KRT3 | IL20RB-AS1 |
| 0.51 | 0 | KLC3 | IGFL2-AS1 |
| 0.51 | 0 | OGN | HID1-AS1 |
| 0.51 | 0 | PRND | HAND2-AS1 |
| 0.51 | 0 | LRRC37A9P | GBAP1 |
| 0.51 | 0 | GSDMC | FMO9P |
| 0.51 | 0 | SLC34A1 | FMO9P |
| 0.51 | 0 | MYOC | EMX2OS |

| | | | |
|---|---|---|---|
| 0.51 | 0 | LRRC37A9P | EBLN3P |
| 0.51 | 0 | CALML5 | DSG1-AS1 |
| 0.51 | 0 | MAB21L3 | DSG1-AS1 |
| 0.51 | 0 | KIAA1210 | DNM3OS |
| 0.51 | 0 | KRT16P1 | CT69 |
| 0.51 | 0 | FAM83B | CLCA3P |
| 0.51 | 0 | KRT31 | CLCA3P |
| 0.51 | 0 | KRT3 | CERS3-AS1 |
| 0.51 | 0 | E2F7 | CDKN2B-AS1 |
| 0.51 | 0 | CRYBG2 | CDKN2A-DT |
| 0.51 | 0 | GSDMC | CDKN2A-DT |
| 0.51 | 0 | CCR8 | CCR5AS |
| 0.51 | 0 | CRHBP | CARMN |
| 0.51 | 0 | ECRG4 | CARMN |
| 0.51 | 0 | MYOZ2 | CARMN |
| 0.51 | 0 | KRTAP4-1 | CALML3-AS1 |
| 0.51 | 0 | BPI | CADM3-AS1 |
| 0.51 | 0 | CRHBP | CADM3-AS1 |
| 0.51 | 0 | FAM83B | C5rf34-AS1 |
| 0.51 | 0 | FOXE1 | C5rf34-AS1 |
| 0.51 | 0 | KLRG2 | C5rf34-AS1 |
| 0.51 | 0 | LRRC37A9P | BMS1P1 |
| 0.51 | 0 | BPI | ADAMTS9-AS1 |
| 0.51 | 0 | GPM6A | ADAMTS9-AS1 |
| 0.51 | 0 | GPR22 | ADAMTS9-AS1 |
| 0.51 | 0 | OPCML | ADAMTS9-AS1 |
| 0.51 | 0 | LCN6 | ACTA2-AS1 |
| 0.51 | 0 | OPCML | ACTA2-AS1 |
| 0.5 | 0 | BPI | ZNF781 |
| 0.5 | 0 | CCL14 | ZNF781 |
| 0.5 | 0 | TCEAL2 | ZNF781 |
| 0.5 | 0 | ZNF208 | ZNF781 |
| 0.5 | 0 | ZNF676 | ZNF781 |
| 0.5 | 0 | ECRG4 | ZNF667-AS1 |
| 0.5 | 0 | ZNF208 | ZNF300P1 |
| 0.5 | 0 | BPI | WT1-AS |
| 0.5 | 0 | OGN | WT1-AS |
| 0.5 | 0 | APOC2 | USP30-AS1 |
| 0.5 | 0 | FAM83B | TNFRSF10A- |
| 0.5 | 0 | FOXN1 | STEAP3-AS1 |
| 0.5 | 0 | LGALS7B | STEAP3-AS1 |
| 0.5 | 0 | FOXE1 | SPATA41 |
| 0.5 | 0 | LRRC37A9P | SPAG5-AS1 |
| 0.5 | 0 | CCR8 | SOCAR |

| | | | |
|---|---|---|---|
| 0.5 | 0 | DQX1 | SH3PXD2A-A |
| 0.5 | 0 | KRTAP4-1 | SH3PXD2A-A |
| 0.5 | 0 | MAB21L3 | SH3PXD2A-A |
| 0.5 | 0 | GSDMC | OVOL1-AS1 |
| 0.5 | 0 | LRRC37A9P | OBI1-AS1 |
| 0.5 | 0 | SEL1L2 | MRGPRF-AS1 |
| 0.5 | 0 | ZCCHC12 | MRGPRF-AS1 |
| 0.5 | 0 | CASP12 | MIR497HG |
| 0.5 | 0 | LRRC37A9P | MIR4453HG |
| 0.5 | 0 | KRT74 | MIR222HG |
| 0.5 | 0 | TMPRSS11F | MIR222HG |
| 0.5 | 0 | KRT78 | MIR205HG |
| 0.5 | 0 | CCR8 | MIR155HG |
| 0.5 | 0 | DPP6 | MIR100HG |
| 0.5 | 0 | E2F7 | MFSD14C |
| 0.5 | 0 | RCVRN | MEG3 |
| 0.5 | 0 | LCN10 | MEF2C-AS1 |
| 0.5 | 0 | E2F7 | MCM3AP-AS1 |
| 0.5 | 0 | OGN | MBNL1-AS1 |
| 0.5 | 0 | LCN10 | MAGI2-AS3 |
| 0.5 | 0 | SLC34A1 | LINC02800 |
| 0.5 | 0 | APOC2 | LINC02694 |
| 0.5 | 0 | KRT3 | LINC02595 |
| 0.5 | 0 | DQX1 | LINC02560 |
| 0.5 | 0 | DSG1 | LINC02560 |
| 0.5 | 0 | KLRG2 | LINC02541 |
| 0.5 | 0 | KRT31 | LINC02541 |
| 0.5 | 0 | CCL14 | LINC02202 |
| 0.5 | 0 | CHRDL1 | LINC02202 |
| 0.5 | 0 | LCN10 | LINC02202 |
| 0.5 | 0 | LCN6 | LINC02202 |
| 0.5 | 0 | SCN7A | LINC02202 |
| 0.5 | 0 | KRT78 | LINC02178 |
| 0.5 | 0 | PLA2G4E | LINC02178 |
| 0.5 | 0 | KRT74 | LINC02031 |
| 0.5 | 0 | PADI3 | LINC02031 |
| 0.5 | 0 | SCN7A | LINC01936 |
| 0.5 | 0 | LRRC37A9P | LINC01719 |
| 0.5 | 0 | KRT16P1 | LINC01679 |
| 0.5 | 0 | FAM83B | LINC01605 |
| 0.5 | 0 | KRT78 | LINC01605 |
| 0.5 | 0 | GAST | LINC01527 |
| 0.5 | 0 | KLC3 | LINC01527 |
| 0.5 | 0 | MYL3 | LINC01352 |

| | | | |
|---|---|---|---|
| 0.5 | 0 | PLA2G4E | LINC01010 |
| 0.5 | 0 | CRHBP | LINC00987 |
| 0.5 | 0 | KLRG2 | LINC00964 |
| 0.5 | 0 | KRT78 | LINC00964 |
| 0.5 | 0 | LRRC37A9P | LINC00954 |
| 0.5 | 0 | CCL14 | LINC00924 |
| 0.5 | 0 | KRT78 | LINC00887 |
| 0.5 | 0 | KLRG2 | LINC00885 |
| 0.5 | 0 | AGTR1 | LINC00702 |
| 0.5 | 0 | FAM83B | LINC00640 |
| 0.5 | 0 | FOXE1 | LINC00640 |
| 0.5 | 0 | PADI3 | LINC00640 |
| 0.5 | 0 | RGS22 | LINC00639 |
| 0.5 | 0 | AGTR1 | LINC00578 |
| 0.5 | 0 | KRT78 | LINC00520 |
| 0.5 | 0 | MYL3 | LEF1-AS1 |
| 0.5 | 0 | CRYBG2 | KRT42P |
| 0.5 | 0 | KLC3 | KRT42P |
| 0.5 | 0 | C5rf66-AS1 | KRT16P3 |
| 0.5 | 0 | FAM83B | KRT16P3 |
| 0.5 | 0 | KLC3 | KRT16P3 |
| 0.5 | 0 | DQX1 | IL20RB-AS1 |
| 0.5 | 0 | KRT74 | IL20RB-AS1 |
| 0.5 | 0 | KRT3 | IGFL2-AS1 |
| 0.5 | 0 | DSG1 | GRHL3-AS1 |
| 0.5 | 0 | KRT74 | GRHL3-AS1 |
| 0.5 | 0 | E2F7 | GHET1 |
| 0.5 | 0 | TMPRSS11F | FMO9P |
| 0.5 | 0 | FAM83B | FAM83A-AS1 |
| 0.5 | 0 | RNF225 | FAM157C |
| 0.5 | 0 | LRRC37A9P | EP300-AS1 |
| 0.5 | 0 | GPIHBP1 | DNM3OS |
| 0.5 | 0 | KLHL4 | DNM3OS |
| 0.5 | 0 | PRND | DNM3OS |
| 0.5 | 0 | MCIDAS | DDX11-AS1 |
| 0.5 | 0 | LRRC37A9P | CTBP1-AS |
| 0.5 | 0 | FOXN1 | CLCA3P |
| 0.5 | 0 | KRT31 | CERS3-AS1 |
| 0.5 | 0 | APOC2 | CCR5AS |
| 0.5 | 0 | ADH1B | CARMN |
| 0.5 | 0 | BPI | CARMN |
| 0.5 | 0 | SEL1L2 | CARMN |
| 0.5 | 0 | PADI3 | CALML3-AS1 |
| 0.5 | 0 | RNF225 | CALML3-AS1 |

| | | | |
|---|---|---|---|
| 0.5 | 0 | CASP12 | CADM3-AS1 |
| 0.5 | 0 | CMA1 | CADM3-AS1 |
| 0.5 | 0 | RGS22 | CADM3-AS1 |
| 0.5 | 0 | GSDMC | C2CD4D-AS1 |
| 0.5 | 0 | FOXE1 | C10orf55 |
| 0.5 | 0 | OVOL1 | C10orf55 |
| 0.5 | 0 | TMPRSS11F | C10orf55 |
| 0.5 | 0 | AGTR1 | ADAMTS9-AS2 |
| 0.5 | 0 | GALNT17 | ADAMTS9-AS2 |
| 0.5 | 0 | MAS1 | ADAMTS9-AS2 |
| 0.5 | 0 | MEOX2 | ADAMTS9-AS2 |
| 0.5 | 0 | ADH1B | ADAMTS9-AS1 |
| 0.5 | 0 | TCF21 | ADAMTS9-AS1 |
| 0.5 | 0 | CASQ2 | ACTA2-AS1 |
| 0.5 | 0 | CRHBP | ACTA2-AS1 |
| 0.5 | 0 | MYOZ2 | ACTA2-AS1 |
| 0.5 | 0 | KRT16P1 | AATBC |
| 0.5 | 0 | KRT31 | AATBC |

**TableS7.33-lncRNA-CESC random forest model coefficients**

| symbol | x |
|---|---|
| LINC02783 | 0.03684915 |
| EGFR-AS1 | 0.03595983 |
| SPRY4-AS1 | 0.03434902 |
| DAAM2-AS1 | 0.03007755 |
| APCDD1L-DT | 0.029287 |
| ITGB1-DT | 0.02655513 |
| LINC01929 | 0.02153229 |
| HS1BP3-IT1 | 0.0197866 |
| LINC02015 | 0.01884213 |
| LINC02802 | 0.01725846 |
| BASP1-AS1 | 0.01276879 |
| STXBP5-AS1 | 0.01207628 |
| DDN-AS1 | 0.01200521 |
| NADK2-AS1 | 0.01118599 |
| LINC00460 | 0.01065605 |
| STARD4-AS1 | 0.00991287 |
| LINC02818 | 0.00898744 |
| SH3RF3-AS1 | 0.00835686 |
| LNCOG | 0.00830693 |
| HIF1A-AS3 | 0.00788231 |
| LINC01615 | 0.00747224 |
| PTPRD-AS1 | 0.00645904 |
| FLNB-AS1 | 0.00631845 |

| | |
|---|---|
| INHBA-AS1 | 0.00477924 |
| LINC01213 | 0.00341016 |
| HCG15 | 0.0012277 |
| UBE2Q2P1 | 0.00068536 |
| LINC02551 | -9.75E-05 |
| LINC02544 | -0.0005267 |
| LINC01719 | -0.00096 |
| LINC00882 | -0.0011737 |
| LINC01235 | -0.0013615 |
| WWC2-AS2 | -0.0018596 |

**TableS8.Multivariate Cox regression coefficient**

| | coef | exp(coef) | se(coef) | z | Pr(>\|z\|) | |
|---|---|---|---|---|---|---|
| Score | 1.87E-01 | 1.21E+00 | 2.53E-02 | 7.384 | 1.54E-13 | *** |
| clinical_stagestage II | -2.60E-01 | 7.71E-01 | 4.77E-01 | -0.546 | 0.58538 | |
| clinical_stagestage III | 6.02E-02 | 1.06E+00 | 4.50E-01 | 0.134 | 0.89348 | |
| clinical_stagestage IV | 4.37E-01 | 1.55E+00 | 5.04E-01 | 0.868 | 0.38529 | |
| clinical_stagestage NA | -1.52E+01 | 2.65E-07 | 3.01E+03 | -0.005 | 0.99599 | |
| neoplasm_histologic_gradeG2 | -4.32E-02 | 9.58E-01 | 6.67E-01 | -0.065 | 0.94837 | |
| neoplasm_histologic_gradeG3 | -4.41E-01 | 6.44E-01 | 6.86E-01 | -0.643 | 0.52048 | |
| neoplasm_histologic_gradeG4 | -1.57E+01 | 1.57E-07 | 4.33E+03 | -0.004 | 0.99711 | |
| neoplasm_histologic_gradeGX | -5.45E-01 | 5.80E-01 | 7.82E-01 | -0.697 | 0.48593 | |
| pathologic_MM1 | 2.04E-01 | 1.23E+00 | 6.87E-01 | 0.297 | 0.76664 | |
| pathologic_MMX | 5.94E-01 | 1.81E+00 | 3.45E-01 | 1.724 | 0.08471 | . |
| pathologic_TT2 | -2.23E-01 | 8.00E-01 | 5.01E-01 | -0.444 | 0.65687 | |
| pathologic_TT3 | 8.87E-01 | 2.43E+00 | 5.85E-01 | 1.516 | 0.12947 | |
| pathologic_TT4 | 1.07E+00 | 2.90E+00 | 7.12E-01 | 1.497 | 0.13445 | |
| pathologic_TTX | -4.14E-01 | 6.61E-01 | 5.03E-01 | -0.822 | 0.41097 | |
| pathologic_TTis | -1.66E+01 | 6.31E-08 | 1.19E+04 | -0.001 | 0.99889 | |
| pathologic_NN1 | 9.99E-01 | 2.72E+00 | 3.78E-01 | 2.641 | 0.00825 | ** |
| pathologic_NNX | 6.46E-01 | 1.91E+00 | 5.21E-01 | 1.241 | 0.21453 | |