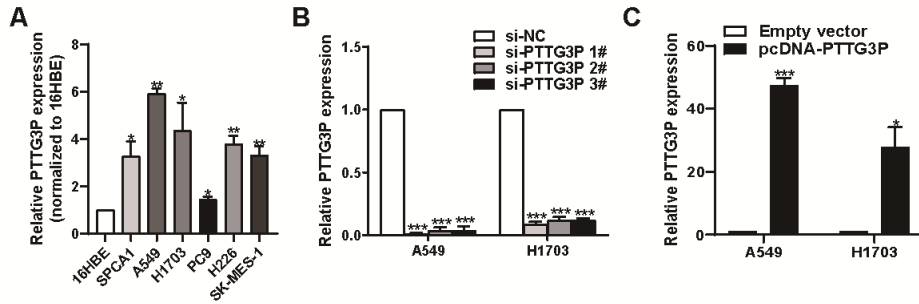


## Supplementary information

Figure S1

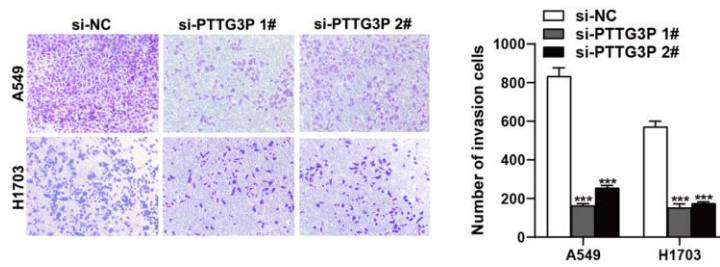


**Figure S1. The expression levels of PTTG3P in NSCLC cells. A.** qRT-PCR analysis of PTTG3P expression in the normal lung bronchial epithelial cell line (16HBE) and six NSCLC cells. **B.** Relative expression levels of PTTG3P in A549 and H1703 cells transfected with si-NC or si-PTTG3P 1#, 2#, 3#. **C.** qRT-PCR analysis of PTTG3P expression levels following the treatment with empty vector or pcDNA-PTTG3P.

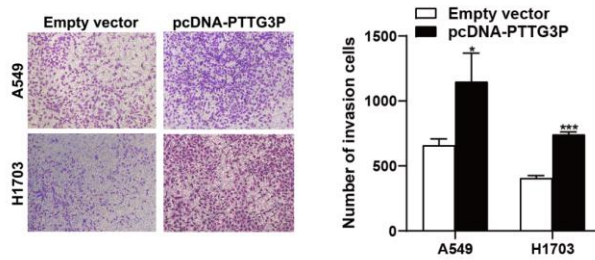
\*:P<0.05, \*\*:P<0.01, \*\*\*:P<0.001.

**Figure S2**

**A**

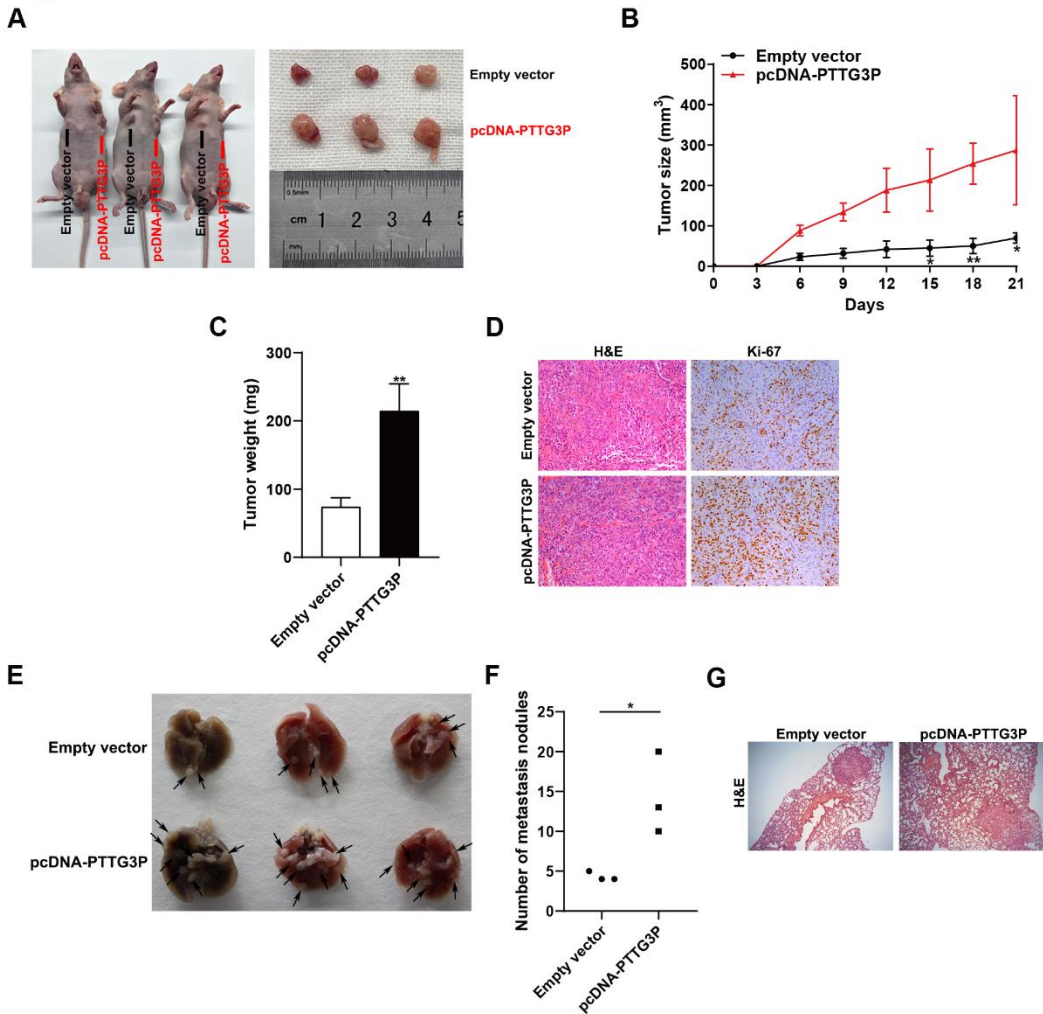


**B**



**Figure S2. Cell invasion assay was used to determine the cell invasive capacity with Matrigel after PTTG3P knockdown or overexpression. A, B.** The number of invasion cells were determined by using Transwell assays with Matrigel matrix (30ug) in PTTG3P-treated A549 and H1703 cells. All experiments were conducted in biologic triplicates with three technical replicates. Data are presented as mean  $\pm$  SD. \* $P < 0.05$ , \*\*\* $P < 0.001$ .

**Figure S3**



**Figure S3. PTTG3P promotes tumorigenesis and metastasis of A549 cells *in vivo*.**

**A.** Empty vector or pcDNA-PTTG3P transfected A549 cells were injected subcutaneously into the nude mice (n = 3), respectively. **B.** Tumor volumes were calculated after injection every three days. Tumor sizes were measured with  $\text{length} \times \text{width}^2 \times 0.5$ . (n = 3). **C.** Tumor weights were represented as means of tumor weights  $\pm$  SD. **D.** The tumor sections were under H&E staining and IHC staining using antibodies against Ki-67. **E, F.** An experimental metastatic animal model was established by injecting empty vector or pcDNA-PTTG3P transfected A549 cells through the tail vein. Lungs from each experimental group of mice (n = 3) showing the

numbers of tumor nodules on the lung surface, were shown. **G.** The lung tissue sections were under H&E staining. Error bars indicate mean  $\pm$  standard errors of the mean.

\*P<0.05, \*\*P<0.01.

**Supplemental Table S1. The clinic-pathological characteristics of NSCLC patients.**

Characteristics	(%) of patients	Expression of PTTG3P		P value <sup>a</sup>
		Low (n=30)	High(n=30)	
<b>Sex</b>				1
Male	48 (80%)	24	24	
Female	12 (20%)	6	6	
<b>Age</b>				0.017*
≤60	23 (38.3%)	7	16	
>60	37 (61.7%)	23	14	
<b>Tumor grade</b>				0.083
Middle to Low	50 (83.3%)	22	28	
High	10 (16.7%)	8	2	
<b>TNM stage</b>				
I and II	35 (58.3%)	27	8	0.001*
III and IV	25 (41.7%)	3	22	
<b>Tumor size</b>				0.017*
≤3 cm	15 (25%)	12	3	
>3 cm	45 (75%)	18	27	
<b>Lymph node metastasis (N)</b>				0.001*
N0	21 (35%)	19	2	
N1 or above	39 (65%)	11	28	
<b>History of smoking</b>				0.573
Ever	18 (30%)	10	8	
Never	42 (70%)	20	22	

<sup>a</sup>: For analysis of correlation between lncRNA PTTG3P levels and clinical features, Pearson's Chi-square tests were used. Fisher's exact tests was used when the expected count of variable was less than 5. \*:P < 0.05.

**Supplemental Table S2. Sequences of primers used in this study.**

<b>Gene</b>	<b>Forward primer (5'-3')</b>	<b>Reverse primer (5'-3')</b>
GAPDH	GGGAGCCAAAAGGGTCAT	GAGTCCTTCCACGATACCAA
PTTG3P	TCTGGTTGAGAGCGGCAATA	TCAGCCCATCCTTTGTAGCC
U1	GGGAGATACCATGATCACGAA GGT	CCACAAATTATGCAGTCGAGTTTC CC
ILF3	AACCATGGAGGCTACATGAAT	CGCTCTAGGAAGACCCAAAATC
E2F1	AGCGGCGCATCTATGACATC	GTC AACCCCTCAAGCCGTC
MAP2K6	TCAATGCTCTCGGTCAAGTG	ATGCCCAGACTCCAAATGTC
PTTG3P Promoter primer 1	GAGAATCACTTGAACCTG	TATAGATGTTGCTCCACTT
PTTG3P Promoter primer 2	AAACCCTGACTCTACTAAA	GTTCAAGTGATTCTCCTG
3'RACE-F1	TGCCCCACCAGCCTTACCTAA AGC	
3'RACE-F2	TGCCAAAAAGATGACTGAGA AGAC	
5'RACE-R1		ATGGTGGAGAGGGCATCTTCACA G
5'RACE-R2		AGGCATCATCTGAGGCAGGAACA G

**Abbreviation:**

GAPDH, glyceraldehyde-3-phosphate dehydrogenase;

PTTG3P, pituitary tumor-transforming 3, pseudogene;

U1, U1 small nuclear RNA;

ILF3, interleukin enhancer binding factor 3;

E2F1, E2F transcription factor 1;

MAP2K6, mitogen-activated protein kinase kinase 6.

RACE, rapid amplification of cDNA end.

**Supplemental Table S3. Sequences used for siRNA construction.**

<b>Target genes</b>	<b>Target sequence (5'-3')</b>
si-PTTG3P 1#	UGGCUACUCUGAUCUAUGUUGAUAA
si-PTTG3P 2#	GGGAGAUCUCAAGUUUCAUAUCAU
si-ILF3	GCCATGTGATGGCAAAGCATT
si-MAP2K6	GGCTACTGATGGATTTGGA
si-E2F1	GACCACCUGAUGAAUAUCUTT
si-NC	UUCUCCGAACGUGUCACGUTT



**Supplemental Table S4. A list of top 10 potential PTTG3P-interacting protein candidates in A549**

**cells based on RNA-protein pull-down assays and mass spectrometry analysis**

<b>Name</b>	<b>PepCount</b>	<b>UniquePepCount</b>	<b>CoverPercent</b>	<b>MW</b>	<b>PI</b>
RRBP1	47	40	32.55%	152470.4	8.69
DHX9	44	36	30.63%	140956.9	6.41
NCL	77	35	37.75%	76613.47	4.6
LRPPRC	37	34	25.18%	157903.2	5.81
ILF3	50	29	43.87%	76049.9	7.62
NF90b	50	29	41.50%	76471.46	8.47
NF110b	48	29	33.41%	95776.73	8.9
HNRNPU	42	29	30.42%	90583.42	5.76
AHNAK	31	28	6.84%	629094.1	5.8
SPT16	30	26	28.75%	119912.4	5.5

**Supplemental Table S5. Differential abundance of mRNAs ((Log2FoldChange >1.5) in si-PTTG3P****A549 cells**

Gene_name	Log2FoldChange	P value	Gene_biotype	Style
PTTG1	-5.143656756	1.13E-302	protein_coding	down
KRT4	-5.068237748	1.03E-05	protein_coding	down
ANKRD2	-4.05432062	3.08E-61	protein_coding	down
PRKCB	-3.915287226	0.002064236	protein_coding	down
KRTAP4-1	-3.213682448	0.000264156	protein_coding	down
HLA-DMB	-3.135806389	6.35E-06	protein_coding	down
MAP2K6	-3.051556427	7.92E-44	protein_coding	down
LBP	-3.034056933	0.009946683	protein_coding	down
SLC8A1	-2.981619665	1.90E-17	protein_coding	down
HSD17B12	-2.91786757	3.84E-164	protein_coding	down
KRT20	-2.738997033	0.00935964	protein_coding	down
CSTA	-2.656059346	0.003800728	protein_coding	down
MAD2L1	-2.609579929	1.09E-176	protein_coding	down
RORC	-2.607473595	0.016154773	protein_coding	down
H2AFV	-2.603629783	0	protein_coding	down
SPDEF	-2.601865833	1.72E-06	protein_coding	down
EFHC2	-2.570821853	0.017982421	protein_coding	down
CMTM6	-2.557342876	4.83E-156	protein_coding	down
TNFSF13B	-2.552349451	0.00457468	protein_coding	down
SELENOI	-2.550330451	0	protein_coding	down
PDE3A	-2.541068431	2.80E-12	protein_coding	down
TEX19	-2.536914651	0.022888767	protein_coding	down
FGF21	-2.534231339	0.000440022	protein_coding	down
NFU1	-2.523114625	1.49E-83	protein_coding	down
BCAS1	-2.511157647	1.91E-07	protein_coding	down
FCGBP	-2.478757157	9.19E-76	protein_coding	down
UGT2B11	-2.472424646	0.01522759	protein_coding	down
KIF5C	-2.448914879	1.01E-11	protein_coding	down
ANGPT1	-2.439557875	0.00786259	protein_coding	down
TNNC1	-2.431551755	0.000702829	protein_coding	down
MPLKIP	-2.404455696	6.23E-102	protein_coding	down
SNAPC1	-2.393187289	3.74E-80	protein_coding	down
RAB18	-2.385290303	2.99E-204	protein_coding	down
ANKRD1	-2.331477611	1.27E-93	protein_coding	down
AC136612.1	-2.300024179	0.013070163	protein_coding	down
CLDN1	-2.299588799	0	protein_coding	down
PRKAR2B	-2.277476766	3.19E-22	protein_coding	down
H3F3B	-2.275288699	0	protein_coding	down
ESCO2	-2.263049627	4.86E-72	protein_coding	down

MUC16	-2.240547662	1.24E-06	protein_coding	down
HS2ST1	-2.239453826	1.62E-116	protein_coding	down
PARP11	-2.227264726	1.83E-11	protein_coding	down
ANKRD30A	-2.216019237	0.00172565	protein_coding	down
SYT11	-2.21228937	8.09E-06	protein_coding	down
MROH2A	-2.194265547	0.00052964	protein_coding	down
YY2	-2.190923451	9.82E-08	protein_coding	down
POLR3G	-2.188611383	9.51E-58	protein_coding	down
TM4SF20	-2.179293189	1.62E-07	protein_coding	down
RASSF9	-2.174712097	2.78E-37	protein_coding	down
HR	-2.168309949	5.21E-134	protein_coding	down
GPR20	-2.166253865	0.000934147	protein_coding	down
CDK2AP1	-2.163729233	1.27E-99	protein_coding	down
FDXACB1	-2.148735235	0.001518501	protein_coding	down
IDI1	-2.147337873	5.32E-51	protein_coding	down
NRGN	-2.141937339	7.87E-26	protein_coding	down
VBP1	-2.140609786	1.03E-124	protein_coding	down
TMEM139	-2.092483663	3.03E-06	protein_coding	down
RNGTT	-2.08538049	1.37E-53	protein_coding	down
OXCT1	-2.077480948	3.00E-06	protein_coding	down
FAT3	-2.074696675	4.77E-14	protein_coding	down
ETV1	-2.069193103	2.61E-39	protein_coding	down
YIPF6	-2.061817003	6.11E-163	protein_coding	down
DENR	-2.015464192	3.26E-227	protein_coding	down
RADIL	-2.014431665	1.45E-38	protein_coding	down
NDC80	-2.01026825	1.83E-45	protein_coding	down
PLAC8	-2.009663346	0.001935627	protein_coding	down
MBNL1	-1.995170745	1.88E-247	protein_coding	down
STAC2	-1.992595924	0.004023766	protein_coding	down
NR1D2	-1.977755736	8.66E-159	protein_coding	down
NCOA7	-1.976778564	3.55E-194	protein_coding	down
HLF	-1.976355895	2.64E-08	protein_coding	down
CCDC3	-1.968357484	1.82E-06	protein_coding	down
SEMA3G	-1.964027137	7.54E-05	protein_coding	down
EIF5A2	-1.953986584	2.09E-38	protein_coding	down
MITF	-1.952171615	1.80E-120	protein_coding	down
NDC1	-1.949116922	4.86E-110	protein_coding	down
DEPDC1	-1.936106138	2.37E-83	protein_coding	down
HHIP	-1.932842081	4.81E-09	protein_coding	down
PTGES3	-1.932748666	0	protein_coding	down
MET	-1.929421497	0	protein_coding	down
C5orf22	-1.923411272	2.62E-62	protein_coding	down
SPAG16	-1.920998279	5.77E-35	protein_coding	down

MRAP2	-1.915719487	0.014646221	protein_coding	down
USP13	-1.912272042	1.35E-57	protein_coding	down
UHMK1	-1.911154948	4.35E-193	protein_coding	down
AK6	-1.904874385	7.21E-53	protein_coding	down
GUCY1A2	-1.900385835	2.88E-05	protein_coding	down
FUT1	-1.899316648	3.64E-24	protein_coding	down
PREPL	-1.89525283	8.36E-136	protein_coding	down
FSIP1	-1.893227698	0.000231793	protein_coding	down
DIRAS3	-1.886929226	7.44E-05	protein_coding	down
P2RX6	-1.876517598	1.18E-07	protein_coding	down
ADAM32	-1.875467701	5.18E-05	protein_coding	down
TERT	-1.874170278	5.36E-48	protein_coding	down
KBTBD6	-1.871286103	3.09E-30	protein_coding	down
YWHAH	-1.868027544	4.00E-183	protein_coding	down
CDC7	-1.867613998	1.88E-30	protein_coding	down
COQ2	-1.864798828	9.41E-63	protein_coding	down
ATP1A3	-1.861364906	1.69E-29	protein_coding	down
NEIL3	-1.855007818	3.98E-88	protein_coding	down
MYT1	-1.854521364	0.013204708	protein_coding	down
SYPL1	-1.852387143	1.86E-126	protein_coding	down
PMAIP1	-1.851018258	4.83E-124	protein_coding	down
USP53	-1.845785562	5.81E-166	protein_coding	down
MGAM	-1.844951452	2.26E-05	protein_coding	down
NDUFA6	-1.842899296	1.21E-101	protein_coding	down
DUSP19	-1.840215257	1.72E-06	protein_coding	down
CAMKV	-1.834492399	0.003269186	protein_coding	down
PM20D2	-1.834338008	4.04E-129	protein_coding	down
CCT8	-1.831791256	2.37E-252	protein_coding	down
AFMID	-1.826371308	2.64E-51	protein_coding	down
RRM2	-1.820091845	7.69E-90	protein_coding	down
ELOVL7	-1.806259897	2.90E-83	protein_coding	down
FAM72B	-1.806195761	2.11E-39	protein_coding	down
CXCL3	-1.803650187	7.49E-136	protein_coding	down
SERTAD4	-1.801472256	5.88E-10	protein_coding	down
MUC5B	-1.792015683	2.36E-17	protein_coding	down
SLC3A1	-1.789017386	4.24E-05	protein_coding	down
GSKIP	-1.775275194	1.88E-56	protein_coding	down
CACNA2D1	-1.762764594	4.41E-57	protein_coding	down
TPSG1	-1.762581374	0.008799695	protein_coding	down
NEK7	-1.760648463	6.08E-72	protein_coding	down
RBM7	-1.755960232	6.74E-21	protein_coding	down
ATP8A1	-1.754353441	0.005403259	protein_coding	down
SLFNL1	-1.748302943	2.97E-52	protein_coding	down

FAM72C	-1.74800644	9.02E-15	protein_coding	down
CYP4F3	-1.738698256	4.56E-50	protein_coding	down
TAF9B	-1.73162008	6.10E-52	protein_coding	down
RAB26	-1.728140174	6.01E-37	protein_coding	down
CTDSPL2	-1.728038268	4.10E-64	protein_coding	down
ATAD2	-1.727873521	1.43E-178	protein_coding	down
SUCNR1	-1.719194336	0.007132501	protein_coding	down
PTPN11	-1.71758286	4.08E-261	protein_coding	down
NT5DC1	-1.716718266	1.06E-44	protein_coding	down
EREG	-1.7133819	0	protein_coding	down
TM4SF4	-1.712120019	1.42E-15	protein_coding	down
KCNQ1	-1.709306754	0.000117194	protein_coding	down
SMIM20	-1.706950299	5.05E-26	protein_coding	down
LMBRD2	-1.706699151	2.34E-42	protein_coding	down
PDIA2	-1.703357773	0.010791887	protein_coding	down
SPOPL	-1.701298513	3.25E-34	protein_coding	down
FAM72A	-1.69783531	5.65E-24	protein_coding	down
STK24	-1.696966404	2.95E-105	protein_coding	down
ANP32E	-1.687835299	1.62E-180	protein_coding	down
PARP2	-1.681573469	2.09E-71	protein_coding	down
ISOC1	-1.674594461	2.30E-44	protein_coding	down
MAP2K6	-1.665948793	1.00E-18	protein_coding	down
PHF6	-1.662488197	2.69E-104	protein_coding	down
KCNK5	-1.653169195	6.31E-09	protein_coding	down
UTP15	-1.650740584	3.14E-52	protein_coding	down
EEF1AKMT2	-1.646651535	7.16E-12	protein_coding	down
VMA21	-1.645941575	9.02E-99	protein_coding	down
SAAL1	-1.641011861	5.79E-67	protein_coding	down
CXCL5	-1.639649284	0	protein_coding	down
CHRNA5	-1.639320328	3.69E-26	protein_coding	down
RAB30	-1.637000147	7.30E-20	protein_coding	down
HTATSF1	-1.635145105	1.63E-87	protein_coding	down
SDE2	-1.621021515	9.12E-79	protein_coding	down
INPP4B	-1.620728572	1.05E-35	protein_coding	down
CLSPN	-1.616493513	2.50E-50	protein_coding	down
IQGAP2	-1.616184975	2.97E-20	protein_coding	down
UBXN2B	-1.612028243	1.76E-58	protein_coding	down
NTRK3	-1.611302516	6.32E-78	protein_coding	down
ANKRD46	-1.605821526	1.54E-17	protein_coding	down
ZFR	-1.604445092	5.16E-154	protein_coding	down
GOLGA4	-1.603681016	1.71E-158	protein_coding	down
C4orf46	-1.600024591	1.21E-40	protein_coding	down
ALDH3A1	-1.594376867	0	protein_coding	down

ATP2B1	-1.59432475	9.76E-216	protein_coding	down
LMO1	-1.593495198	0.000130883	protein_coding	down
RAD54B	-1.590053748	1.16E-11	protein_coding	down
CCDC112	-1.589565687	9.44E-29	protein_coding	down
LGI3	-1.587296869	8.41E-15	protein_coding	down
ASAH2B	-1.585729815	1.23E-13	protein_coding	down
DAW1	-1.583387949	2.37E-07	protein_coding	down
MMGT1	-1.580434016	5.79E-45	protein_coding	down
RNF150	-1.579868146	0.002077133	protein_coding	down
MOSPD3	-1.5764689	1.68E-37	protein_coding	down
RAB27B	-1.570384736	1.04E-131	protein_coding	down
ALDH1A1	-1.568016909	0	protein_coding	down
WDR75	-1.56718908	6.46E-131	protein_coding	down
RNF219	-1.565934826	2.33E-15	protein_coding	down
C10orf88	-1.557577152	1.36E-36	protein_coding	down
HTRA3	-1.554398933	1.73E-05	protein_coding	down
NHLRC2	-1.550661203	7.26E-95	protein_coding	down
COQ7	-1.550090871	1.04E-37	protein_coding	down
PPAT	-1.549239074	1.81E-72	protein_coding	down
ABLIM2	-1.547974958	0.001010141	protein_coding	down
SLC7A2	-1.54574793	1.25E-39	protein_coding	down
CD2AP	-1.545443099	1.89E-113	protein_coding	down
SSX2IP	-1.53934772	5.32E-39	protein_coding	down
ANK3	-1.538778547	0.001780861	protein_coding	down
KCNIP3	-1.538513479	0.007285501	protein_coding	down
NEK2	-1.537334135	3.93E-71	protein_coding	down
SLC39A10	-1.535458103	6.42E-54	protein_coding	down
GNB4	-1.533948651	2.16E-39	protein_coding	down
GAL3ST2	-1.532260147	0.011821569	protein_coding	down
USP33	-1.530972565	5.13E-74	protein_coding	down
MRPL13	-1.528057379	9.51E-53	protein_coding	down
SCD	-1.52626333	1.27E-252	protein_coding	down
SMAD6	-1.525264408	1.71E-161	protein_coding	down
RMI1	-1.523191703	2.26E-43	protein_coding	down
XPOT	-1.519261281	4.19E-249	protein_coding	down
CA13	-1.51832031	0.00656157	protein_coding	down
SLC7A11	-1.514653746	0	protein_coding	down
TMEM37	-1.514388527	7.40E-05	protein_coding	down
CYP4F11	-1.514070485	6.81E-112	protein_coding	down
RAB37	-1.513813776	5.53E-10	protein_coding	down
NEK4	-1.512773097	9.62E-40	protein_coding	down
FGG	-1.510920583	7.67E-05	protein_coding	down
PPP6R3	-1.510347801	1.95E-177	protein_coding	down

MZT2A	-1.50786614	2.59E-112	protein_coding	down
EEF1E1	-1.507560754	2.18E-16	protein_coding	down
FAM72D	-1.503852699	1.29E-23	protein_coding	down
ADSSL1	-1.502605002	1.73E-28	protein_coding	down
EPS8L3	-1.502391965	0.019668413	protein_coding	down
FGL1	-1.502369747	5.90E-08	protein_coding	down
NRAS	-1.501287479	6.04E-88	protein_coding	down
DCDC2C	5.420184	3.28E-05	protein_coding	up
TREM1	4.88522	0.000319565	protein_coding	up
LCPI	4.787601	7.03E-40	protein_coding	up
ALOX15	4.582328	0.001059991	protein_coding	up
PRSS22	4.154726	6.85E-34	protein_coding	up
GPR87	3.853125	7.57E-08	protein_coding	up
CNTFR	3.840772	0.00196189	protein_coding	up
GFRA2	3.59205	1.18E-18	protein_coding	up
NTSR1	3.526288	2.20E-62	protein_coding	up
CCL22	3.500083	2.22E-19	protein_coding	up
WNT7A	3.458637	0.000179216	protein_coding	up
ZP4	3.368856	0.012451262	protein_coding	up
IL36B	3.215263	0.00059773	protein_coding	up
AQP9	3.085714	0.001438405	protein_coding	up
IL6R	3.021747	1.26E-268	protein_coding	up
MARVELD3	2.999119	4.68E-19	protein_coding	up
SEMA7A	2.941403	8.52E-86	protein_coding	up
STC1	2.905013	6.55E-69	protein_coding	up
SHISA9	2.878555	1.24E-06	protein_coding	up
PHF24	2.86691	0.003764707	protein_coding	up
TFF1	2.863764	9.73E-18	protein_coding	up
MMP1	2.856737	0.000124758	protein_coding	up
HAS1	2.78831	0.00532652	protein_coding	up
INHBA	2.750481	4.32E-96	protein_coding	up
CHRD2	2.680028	0.000100023	protein_coding	up
SYT5	2.677258	2.50E-10	protein_coding	up
OVOL2	2.639179	3.19E-06	protein_coding	up
RNF225	2.6199	0.004756762	protein_coding	up
CORO2B	2.608487	3.05E-19	protein_coding	up
TMEM61	2.5889	0.000221179	protein_coding	up
EPPK1	2.588441	2.29E-08	protein_coding	up
SLCO1A2	2.554811	0.018032073	protein_coding	up
FFAR1	2.509693	0.016996876	protein_coding	up
RSAD2	2.508455	2.01E-08	protein_coding	up
COL5A3	2.478773	3.98E-09	protein_coding	up
SCARF1	2.448163	3.08E-12	protein_coding	up

C2orf15	2.435638	1.31E-06	protein_coding	up
KRT6B	2.403636	0.012262866	protein_coding	up
MMP9	2.39019	1.99E-05	protein_coding	up
ANKRD22	2.387084	5.35E-08	protein_coding	up
SOWAHB	2.381208	0.003344322	protein_coding	up
IGFBP5	2.368767	0.003331269	protein_coding	up
CEMIP	2.315757	1.45E-58	protein_coding	up
IFI44L	2.31196	1.38E-39	protein_coding	up
LAMP3	2.310582	6.23E-41	protein_coding	up
GYS2	2.304271	0.008559589	protein_coding	up
SLC16A11	2.294329	1.70E-08	protein_coding	up
MAF	2.285701	1.71E-08	protein_coding	up
HSH2D	2.277163	2.68E-10	protein_coding	up
LUM	2.267762	3.93E-06	protein_coding	up
RASL10A	2.265148	0.001327697	protein_coding	up
CDH3	2.261958	1.06E-13	protein_coding	up
HCAR3	2.241709	0.000223152	protein_coding	up
LIPG	2.213475	1.51E-09	protein_coding	up
ASB2	2.200121	8.72E-11	protein_coding	up
NLRC5	2.198508	1.30E-123	protein_coding	up
BTG2	2.185678	6.42E-203	protein_coding	up
FHDC1	2.183378	4.60E-41	protein_coding	up
IL10RA	2.176225	0.006389727	protein_coding	up
IL1RN	2.167602	0.009695572	protein_coding	up
ARL14	2.165026	5.72E-07	protein_coding	up
LRRC66	2.16321	0.000253777	protein_coding	up
FAM83B	2.162709	0.001640752	protein_coding	up
KISS1	2.16001	0.009149537	protein_coding	up
CLEC2B	2.139635	2.04E-05	protein_coding	up
SYT9	2.136678	3.25E-06	protein_coding	up
SCN3B	2.12997	0.00024658	protein_coding	up
F11R	2.109067	4.14E-204	protein_coding	up
SLC9A3	2.104261	8.24E-44	protein_coding	up
IL1RAP	2.104042	1.60E-89	protein_coding	up
DISP2	2.100769	2.84E-13	protein_coding	up
SPINT1	2.100315	1.11E-19	protein_coding	up
LYPD3	2.088112	3.70E-15	protein_coding	up
FAM160A1	2.087997	9.02E-08	protein_coding	up
FGF11	2.084041	0.001114846	protein_coding	up
SNAI2	2.06168	5.05E-07	protein_coding	up
SLC38A7	2.057317	8.61E-162	protein_coding	up
GLIPR1	2.050965	1.38E-116	protein_coding	up
LAMC2	2.048803	0	protein_coding	up



IRF8	2.046633	0.001449076	protein_coding	up
SOX2	2.04114	2.41E-07	protein_coding	up
STK40	2.038071	2.15E-258	protein_coding	up
C7orf61	2.034318	0.001142644	protein_coding	up
SOWAHA	2.031508	0.011291714	protein_coding	up
IFI27	2.030437	5.41E-13	protein_coding	up
FAM156A	2.020527	0.000238948	protein_coding	up
GPR68	2.016876	1.63E-05	protein_coding	up
KCNE5	2.011066	0.008070202	protein_coding	up
C6orf58	2.007528	2.47E-07	protein_coding	up
RNF223	2.005912	3.62E-27	protein_coding	up
IRX4	1.99536	0.00021855	protein_coding	up
ACSM4	1.993257	0.016207078	protein_coding	up
TMEM88	1.990184	1.57E-06	protein_coding	up
MAPK13	1.989218	1.28E-08	protein_coding	up
ISM2	1.983207	2.62E-09	protein_coding	up
PTPRB	1.97713	8.99E-05	protein_coding	up
RASSF10	1.968884	6.83E-144	protein_coding	up
FAAH2	1.966373	0.008323351	protein_coding	up
TXNIP	1.964492	1.19E-27	protein_coding	up
TLR4	1.956177	0.009655051	protein_coding	up
AMDHD2	1.940597	1.87E-86	protein_coding	up
OLAH	1.935297	0.002391386	protein_coding	up
EPSTI1	1.932083	0.000524245	protein_coding	up
HPX	1.929047	0.000194309	protein_coding	up
SLAMF7	1.929027	7.70E-06	protein_coding	up
DCHS1	1.926478	0.002768089	protein_coding	up
NKX2-1	1.920858	0.020543562	protein_coding	up
CASP1	1.90025	0.003358104	protein_coding	up
MRGPRX3	1.893213	0.005572767	protein_coding	up
ALOXE3	1.879029	3.87E-55	protein_coding	up
BEST4	1.876736	0.010262511	protein_coding	up
TMC8	1.869933	1.76E-08	protein_coding	up
ITGA5	1.865178	0	protein_coding	up
EPCAM	1.86495	3.14E-14	protein_coding	up
CD163L1	1.863811	4.40E-14	protein_coding	up
C17orf107	1.86114	0.000216218	protein_coding	up
NECTIN4	1.856703	3.55E-07	protein_coding	up
SPOCD1	1.85576	4.07E-51	protein_coding	up
PAG1	1.847195	0.000355452	protein_coding	up
HIC2	1.822709	2.31E-104	protein_coding	up
GOLGA8K	1.82054	4.83E-06	protein_coding	up
ANTXR2	1.817563	2.49E-44	protein_coding	up

COL1A1	1.817428	6.46E-86	protein_coding	up
TRIM29	1.816964	3.48E-06	protein_coding	up
ITGA10	1.815326	5.39E-06	protein_coding	up
CLEC4E	1.81089	3.07E-08	protein_coding	up
CDS1	1.798317	7.75E-22	protein_coding	up
VAMP5	1.790842	0.019360447	protein_coding	up
ARHGDI3	1.784217	0.000149246	protein_coding	up
DUSP2	1.778348	0.001866041	protein_coding	up
SLC9C1	1.777764	0.007921002	protein_coding	up
KIAA1161	1.775748	1.16E-82	protein_coding	up
CRB3	1.772044	1.17E-24	protein_coding	up
PTAFR	1.765832	1.02E-33	protein_coding	up
CPLX1	1.76399	1.73E-10	protein_coding	up
ISG15	1.76262	6.93E-14	protein_coding	up
AP3B2	1.753331	0.000230933	protein_coding	up
RUNDC3A	1.747284	3.35E-07	protein_coding	up
ACHE	1.742017	1.69E-30	protein_coding	up
IFI44	1.73786	1.27E-31	protein_coding	up
SCX	1.736889	7.63E-23	protein_coding	up
KLC3	1.733035	6.16E-14	protein_coding	up
GPR157	1.729338	9.10E-97	protein_coding	up
RHCG	1.719683	3.60E-104	protein_coding	up
MDFI	1.719282	0.001495571	protein_coding	up
NPR1	1.716076	1.55E-20	protein_coding	up
GOLGA8R	1.710964	0.005582588	protein_coding	up
KIAA1683	1.709901	5.32E-18	protein_coding	up
DNAJA4	1.697241	0.000390417	protein_coding	up
IL7R	1.695475	0.004607314	protein_coding	up
ZNF165	1.689606	0.000218297	protein_coding	up
SUSD4	1.682734	0.012111721	protein_coding	up
LSR	1.681344	9.68E-89	protein_coding	up
SERPINB7	1.680901	8.48E-19	protein_coding	up
FOXD4	1.677194	1.73E-05	protein_coding	up
VGF	1.675271	1.20E-70	protein_coding	up
CFAP70	1.675269	9.69E-05	protein_coding	up
DCLK1	1.673443	1.35E-28	protein_coding	up
BSPRY	1.671962	0.017577728	protein_coding	up
GPR4	1.667762	0.017976291	protein_coding	up
FBXO10	1.667695	1.32E-27	protein_coding	up
AC025594.2	1.66464	2.97E-05	protein_coding	up
ARID3A	1.660646	5.55E-181	protein_coding	up
SLC15A3	1.657459	2.16E-06	protein_coding	up
OAS2	1.656068	7.83E-06	protein_coding	up

FAM102A	1.654051	4.80E-280	protein_coding	up
ECM1	1.652064	9.00E-17	protein_coding	up
TP53INP2	1.650204	2.62E-45	protein_coding	up
NPHS1	1.645997	1.13E-70	protein_coding	up
ATG9B	1.645015	6.21E-05	protein_coding	up
HCAR2	1.642721	0.00033775	protein_coding	up
EXOC3L2	1.641371	6.34E-32	protein_coding	up
ZFYVE26	1.640533	1.62E-123	protein_coding	up
PTPRR	1.637823	0.000819832	protein_coding	up
ENTPD2	1.636644	7.25E-06	protein_coding	up
SEMA4B	1.634114	2.16E-51	protein_coding	up
CHST2	1.62032	1.04E-16	protein_coding	up
ARVCF	1.611416	4.83E-37	protein_coding	up
SERPINA1	1.609421	0.003141818	protein_coding	up
PLA2G15	1.603787	8.12E-62	protein_coding	up
ARID3B	1.603734	1.32E-89	protein_coding	up
C11orf96	1.603256	3.92E-08	protein_coding	up
NPIPA5	1.602484	0.020844071	protein_coding	up
TMEM178A	1.601656	0.000467112	protein_coding	up
PPP1R3B	1.600693	2.34E-101	protein_coding	up
CCDC154	1.598524	0.00011445	protein_coding	up
DSC2	1.595966	3.55E-30	protein_coding	up
BMF	1.595505	7.58E-21	protein_coding	up
TPPP	1.595014	5.25E-48	protein_coding	up
SLC25A34	1.593424	0.00660146	protein_coding	up
GBP4	1.587856	4.16E-06	protein_coding	up
KCNAB3	1.585502	3.14E-21	protein_coding	up
IFFO1	1.583592	0.000245956	protein_coding	up
SCEL	1.583359	3.39E-06	protein_coding	up
BSN	1.577261	7.16E-13	protein_coding	up
MAPK8IP2	1.576977	1.95E-47	protein_coding	up
WDR81	1.574859	7.49E-163	protein_coding	up
NDRG1	1.574767	2.87E-10	protein_coding	up
UAP1L1	1.57418	3.08E-154	protein_coding	up
ADAM19	1.574173	2.53E-90	protein_coding	up
CXCR4	1.574173	0.003158906	protein_coding	up
WNT9A	1.573998	6.83E-59	protein_coding	up
TRIM22	1.57371	1.07E-10	protein_coding	up
ARHGEF5	1.571726	0.0001719	protein_coding	up
CRY2	1.571181	4.12E-47	protein_coding	up
ATP6V0D1	1.570906	3.12E-123	protein_coding	up
XAF1	1.568717	3.34E-05	protein_coding	up
GOLGA7B	1.568165	5.67E-47	protein_coding	up

ITGA2	1.568085	3.31E-266	protein_coding	up
MICAL2	1.564873	3.24E-295	protein_coding	up
MXD1	1.5647	1.70E-40	protein_coding	up
JARID2	1.561582	8.37E-106	protein_coding	up
LAMB3	1.560775	8.41E-202	protein_coding	up
ZFP92	1.558954	2.91E-07	protein_coding	up
TCAF2	1.558655	0.00757887	protein_coding	up
KMO	1.557976	0.016117254	protein_coding	up
IL24	1.553144	3.03E-06	protein_coding	up
SPNS2	1.553038	9.30E-22	protein_coding	up
VNN1	1.551602	0.000340127	protein_coding	up
PLXNA3	1.549667	1.91E-108	protein_coding	up
FUT4	1.545675	3.51E-32	protein_coding	up
SOX9	1.543255	5.79E-54	protein_coding	up
CCDC188	1.542645	0.003019616	protein_coding	up
CDC42BPG	1.540933	2.93E-33	protein_coding	up
STMN3	1.537856	2.41E-74	protein_coding	up
GDPD5	1.535463	2.88E-57	protein_coding	up
F3	1.53293	8.37E-21	protein_coding	up
NPTX1	1.527404	9.30E-110	protein_coding	up
CEACAM1	1.527171	1.09E-13	protein_coding	up
TYMP	1.520679	3.90E-134	protein_coding	up
SLC5A2	1.517471	0.009003227	protein_coding	up
HYAL1	1.516018	7.68E-11	protein_coding	up
LOX	1.513245	5.59E-10	protein_coding	up
TMEM106A	1.513193	7.57E-17	protein_coding	up
HES4	1.51162	1.63E-95	protein_coding	up
FAM228B	1.506485	5.22E-06	protein_coding	up
ACRBP	1.505354	0.00347861	protein_coding	up
PRDM8	1.504085	2.09E-07	protein_coding	up