

Supplementary Table 1

Clinicopathological characteristics of LUAD patients for SE associated lncRNA microarray										
Patient	Age (year)	Gender	Tobacco use	Alcohol use	Postoperative Therapies	Tumor size	Tumor location	N stage	Clinical stage	Prognosis
#1	54	female	No	No	No	1.5×1×1cm	Right; middle	N2	IIIA	N/A
#2	65	female	No	No	No	3×3×3cm	Left; lower	N2	IIIA	Brain metastasis
#3	62	female	No	No	Targeted therapy	3×3×3cm	Right; lower	N2	IIIA	Bone metastasis
#4	66	female	No	No	Radiotherapy+Chemotherapy	3×3×1cm	Right; lower	N2	IIIA	Bone metastasis
#5	61	female	No	No	Radiotherapy+Chemotherapy	3×1.5×1.5cm	Left; lower	N2	IIIA	Recurrent

Supplementary Table 2

Relationship between <i>LINC01977</i> expression levels and clinicopathological parameters of LUAD				
Variable	No. of patients	<i>LINC01977</i> expression		P value
		High expression	Low expression	
Age (yr)				
> 60	53	36	17	0.056
≤ 60	45	22	23	
Sex				
Female	43	28	15	0.291
Male	55	30	25	
Clinical stage				
Early (I)	33	21	12	0.039
Advanced (II-IV)	65	27	38	
pT status				
T1-T2	72	42	30	0.776
T3-T4	26	16	10	
Lymph node metastasis				
No metastasis (N0)	54	29	25	0.221
Metastasis (N1-N3)	44	29	15	

Supplementary Table 3

Band 50-55kDa LC/MS rank TOP100

Rank	Accession	Sum PEP Score	Coverage	Unique peptides	Score Sequest HT
1	<u>P84022</u>	1581.538369	95.17647059	60	4959.066099
2	P05787	1467.599725	94.82401656	66	4697.421585
3	P06733	1022.505164	91.24423963	49	4057.320155
4	P08729	606.6390208	85.5010661	43	1233.621121
5	P05783	771.4372129	84.88372093	40	896.1322623
6	P43686	298.5300061	83.97129187	30	310.8965957
7	P50395	499.7216777	81.57303371	40	482.51165
8	P00352	976.3556712	80.03992016	54	4410.315665
9	Q71U36	465.6282355	77.38359202	1	1196.528094
10	Q9BQE3	422.0409281	77.28285078	3	1319.375438
11	Q07960	151.0121453	75.62642369	24	135.925935
12	P07437	700.7892453	75.45045045	6	2199.131603
13	P68371	675.644767	75.28089888	2	1955.705238
14	P06576	694.2272743	74.48015123	29	1073.580579
15	P04350	514.8481644	71.84684685	4	1477.078957
16	Q9Y230	228.9457727	70.84233261	32	248.3533123
17	P43490	358.3485188	68.83910387	40	448.7293661
18	P26641	195.8826669	68.42105263	31	318.9674957
19	P68104	366.6728514	68.18181818	16	1012.378626
20	Q13885	612.8343401	68.08988764	5	1779.80046
21	Q9BUF5	328.5890574	67.48878924	14	913.1560061
22	Q13509	537.4840734	67.33333333	11	1232.049487
23	Q13561	120.8725664	65.33665835	17	108.7333139
24	P08670	145.9376298	65.02145923	25	158.7312125
25	P67809	270.5204192	64.81481481	15	308.2512472
26	P14618	410.8626275	64.40677966	35	462.6313863
27	P68366	405.7176081	64.28571429	9	1042.744968
28	P25705	409.086521	64.01446655	38	667.2947152
29	P50454	237.6768535	63.87559809	24	205.6634455
30	P11413	213.8892378	63.49514563	32	227.0782813
31	Q9Y265	247.0443594	63.37719298	28	242.6316487
32	P17980	227.3181357	62.87015945	25	213.5278629
33	P00390	259.6424879	62.83524904	21	239.7500737
34	P34897	158.5821594	62.5	20	163.1026411
35	Q96KP4	209.7828911	61.47368421	27	184.2945125
36	P07099	283.0689945	61.0989011	36	328.7398981
37	P05455	298.2244595	60.78431373	33	341.5806321
38	O00232	175.4943917	60.74561404	31	174.4490408
39	P60709	133.9092579	60.26666667	9	133.9913621
40	Q16851	193.1511364	60.03937008	27	212.5914408

41	P07237	167.9285824	59.64566929	30	141.3539716
42	P31943	255.3024444	58.12917595	11	394.2249269
43	P29401	397.350523	58.105939	33	488.8759105
44	P0DPH8	403.8282418	58	1	899.1663804
45	O14745	229.2535312	57.54189944	17	182.6606115
46	P05091	246.5583595	57.05996132	28	587.6586207
47	P51648	164.2247418	56.90721649	25	195.5416422
48	P61158	135.3239151	55.98086124	20	142.0798564
49	Q9HDC9	192.6886156	55.76923077	20	205.2852856
50	Q16401	141.4431492	55.75396825	19	115.6625829
51	Q16658	107.8498187	54.96957404	20	105.1846702
52	P35998	157.0643385	54.27251732	23	177.7481421
53	P28838	118.2976828	54.14258189	23	114.5122209
54	P30838	229.1924475	53.86313466	28	427.0858424
55	P38919	155.7968916	53.77128954	22	161.5511703
56	P36578	263.9550258	53.62997658	31	332.1872935
57	P26196	141.305102	53.00207039	18	115.6942887
58	P52209	313.5134955	52.58799172	29	462.5774032
59	P22570	121.9887003	52.54582485	21	117.7349184
60	P09104	107.1313298	52.07373272	11	183.706032
61	P39656	128.9165862	51.97368421	13	134.9735388
62	Q15084	227.4570122	51.36363636	22	264.0062671
63	P48637	122.5985433	51.05485232	22	129.4728945
64	P49419	120.0953226	50.83487941	21	113.1074994
65	P26599	140.0634251	50.65913371	15	132.7507082
66	P52597	133.6086641	49.87951807	13	179.826232
67	P30101	156.0647737	49.5049505	21	168.5456184
68	P61011	122.008846	49.4047619	22	115.2772222
69	O00303	98.59998454	49.29971989	12	99.94163728
70	O43852	68.34183326	49.20634921	12	69.21605921
71	Q05639	185.1140958	49.02807775	7	621.6798221
72	Q16181	221.5184502	48.51258581	24	192.4682437
73	P00367	238.6284628	48.38709677	10	260.6780126
74	Q9NP81	121.3947004	48.06949807	19	107.2598009
75	P14868	124.6744556	47.50499002	20	107.4988172
76	P06744	143.8662924	47.49103943	18	135.6718684
77	Q9BY77	68.16267214	47.26840855	16	69.08964586
78	P78371	84.10965482	47.10280374	19	73.56762373
79	P63151	102.3007249	46.30872483	12	91.21495628
80	Q9UNH7	90.04749135	46.30541872	16	70.56385732
81	Q8NBS9	79.90121087	46.2962963	15	72.10716057
82	P16989	111.6714183	46.23655914	7	112.079877
83	Q16719	117.645636	46.02150538	14	104.4194913
84	P30837	188.5006967	45.84139265	21	311.6115426

85	P12081	114.1357245	45.77603143	15	104.0805347
86	Q16543	126.0619245	45.23809524	19	99.02100313
87	P55795	129.3096152	44.98886414	7	203.2322404
88	P61201	78.56425251	44.69525959	18	72.91095686
89	P20042	91.33526609	44.14414414	18	77.35656643
90	O60701	108.9941424	44.12955466	19	102.2766018
91	Q96CS3	84.17457461	44.04494382	16	73.67514265
92	P41091	142.7559189	43.43220339	18	138.9869863
93	Q16555	105.1121487	42.83216783	15	92.10396981
94	Q86U42	43.5729608	42.81045752	7	39.725945
95	Q12849	80.34523384	42.70833333	11	67.71130705
96	P55036	94.34220477	42.70557029	12	96.68012142
97	P30566	120.1280722	42.3553719	15	115.1415908
98	Q9NVA2	71.89638486	41.95804196	8	63.50963116
99	P31153	105.0859204	41.7721519	18	131.3928148
100	P23381	55.47472531	41.61358811	13	47.27001011

Band >180kDa LC/MS rank TOP100

Rank	Accession	Sum PEP Score	Coverage	Unique peptides	Score Sequest HT
1	<u>Q92793</u>	1803.856985	60.49140049	291	1812.831102
2	Q15149	1758.483976	62.10503843	288	1639.385664
3	Q14204	1709.319109	55.31640121	240	1617.377473
4	Q09666	1641.43132	73.03904924	260	1376.559812
5	O75369	961.3061178	64.14296695	115	898.7437736
6	Q13813	946.972705	60.67961165	133	790.1794667
7	P78527	945.9886118	43.33817829	173	919.1473345
8	P21333	929.2240149	57.83906309	111	905.261104
9	Q00610	855.6265952	53.97014925	64	916.5940317
10	Q01082	839.1267628	55.24534687	114	657.6525495
11	P46821	749.4049395	46.636953	78	627.3870324
12	P14618	617.6134858	73.06967985	41	1221.2778
13	P49327	611.4623591	45.16129032	85	560.3857783
14	P68104	519.548195	66.45021645	16	1700.154776
15	O75643	491.536421	43.58614232	79	424.2212335
16	Q63HN8	451.6718237	24.65911273	103	379.8824241
17	Q7Z6Z7	444.6999196	31.48148148	89	396.4861609
18	Q5T4S7	433.4121175	21.76345746	74	330.3679854
19	P27708	424.1689803	43.37078652	66	375.6921833
20	P16615	419.9469428	42.61036468	46	445.7852045
21	P35579	398.8981198	42.19387755	60	287.49968
22	P12270	384.5969754	38.46804909	69	305.5215521
23	Q9UPN3	384.4338541	17.74499188	89	300.2841051
24	P33527	382.0963012	43.82756368	52	335.9909056
25	P29401	363.7877843	59.87158909	31	515.9851829
26	Q08211	355.5013404	46.69291339	55	347.4090531
27	Q8IVF2	351.5707354	37.03192407	76	276.8472172
28	Q13085	342.951355	36.53026428	64	291.0387753
29	Q6P2Q9	338.5325621	36.40256959	68	264.9832737
30	P04264	329.2455713	57.91925466	34	285.8656027
31	Q709C8	320.5093516	28.16413536	76	253.4285573
32	P04844	298.1986369	46.27575277	25	276.9590974
33	P39023	296.7105826	58.06451613	28	285.3654655
34	Q9Y490	294.9980488	31.44431326	48	200.4540907
35	P20020	292.9605376	32.70491803	21	270.1534002
36	P53621	291.6058824	54.82026144	53	257.0299079
37	P13645	278.3914675	58.04794521	25	238.8555722
38	P05023	274.9791681	42.71749756	27	235.2273804
39	P02751	269.995107	28.58340319	42	224.844698
40	Q9Y5B9	269.7178979	43.07545368	41	247.6863607
41	Q14789	262.7641224	29.30346732	66	229.7035779

42	Q15393	254.4714414	38.29087921	39	254.3007993
43	P46940	253.5309009	38.8050694	49	205.2569982
44	P49792	241.0372113	25.46526055	44	195.0334867
45	Q05639	240.225189	61.77105832	9	848.1393415
46	Q92616	235.4920469	25.53350805	51	185.7995476
47	Q16719	221.3494651	58.70967742	19	261.9317133
48	Q9HC35	208.7915805	46.78899083	39	180.9755973
49	P00352	208.5533743	61.67664671	25	251.0773394
50	Q16531	192.5504976	35.1754386	35	163.8218123
51	P35606	188.1612872	45.14348786	33	164.8376588
52	P55011	187.8240031	28.71287129	27	162.4606856
53	O15439	186.4102177	30.64150943	31	126.1083587
54	P06748	186.1273361	39.79591837	13	175.9117537
55	P17987	175.6646584	58.09352518	22	154.749806
56	Q01813	174.3137255	42.98469388	28	148.3747308
57	P04406	170.1325714	70.44776119	19	165.8533708
58	P46777	170.1123837	64.30976431	24	208.4349533
59	P46939	168.323027	17.06961841	39	129.9866006
60	Q8TEM1	166.3293766	22.36354001	31	148.9230709
61	P12236	164.8074991	60.40268456	4	265.0807129
62	P08238	163.9660311	37.01657459	13	130.8950449
63	P35908	163.10335	50.23474178	22	158.6334952
64	Q8N766	162.3398586	30.51359517	25	142.2479825
65	O95573	161.1624922	45.97222222	23	124.8825266
66	P35527	160.1516534	44.14125201	19	144.7794143
67	P11413	157.0714877	52.42718447	26	159.6546441
68	Q16881	156.9974777	35.43913713	18	111.4449326
69	Q14839	156.5011974	27.61506276	29	141.7653925
70	P53675	153.0253025	11.15853659	1	166.4952459
71	Q14914	152.8980084	72.6443769	21	145.8187681
72	Q5JPE7	150.3729567	34.17521705	1	111.4677333
73	Q14690	149.1937778	22.7151256	34	127.925053
74	Q15155	148.0211232	35.02454992	1	109.3912809
75	Q92887	144.732706	25.63106796	28	126.2644082
76	Q9UQ35	144.7184182	12.71802326	23	126.1715105
77	P05141	143.6968699	55.03355705	7	247.848453
78	O14975	142.0421688	42.25806452	22	121.6202908
79	O15438	140.7521216	19.05697446	21	106.3919255
80	P60842	140.7368077	51.97044335	16	126.624578
81	P23634	140.5954545	14.74617244	2	133.1459945
82	Q8WXH0	136.934572	8.104575163	42	108.5068802
83	O75083	135.8228682	49.5049505	23	117.1415695
84	O60271	129.7328041	28.91748675	29	115.0455855
85	P15924	128.933626	15.98746082	35	117.8888229

86	P33992	127.9052756	41.55313351	22	106.8069786
87	P12235	127.4048642	46.97986577	2	205.7315415
88	P23141	126.8138527	46.91358025	20	108.6303782
89	Q9NR30	126.7913906	40.74074074	25	114.4817839
90	Q9NR09	126.3635232	10.62384188	34	93.89195669
91	Q93008	125.5239456	16.22568093	36	94.49911678
92	P26038	124.7426353	53.72616984	32	105.6293902
93	Q99460	122.6980175	32.84365163	25	96.68458593
94	Q9NQC3	122.0192493	13.75838926	10	122.6737167
95	P17858	119.1084712	29.74358974	15	94.02234197
96	P14868	118.6864876	49.7005988	24	112.5047536
97	Q14764	118.0773501	33.03471445	20	89.71740127
98	P69905	117.9239084	64.08450704	8	197.5144657
99	Q02952	116.5288145	22.671156	22	81.14891481
100	P07900	113.8727792	31.83060109	11	100.9044868

Supplementary Table 4

RNA-seq differentially genes (LINC01977 vs pcDNA3.1)

Symbol	Ensembl	logFC	P value
LINC01977	ENSG00000262772	13.6774669	0
MUC5B	ENSG00000117983	-4.43109164	3.411E-236
HNRNPH2	ENSG00000126945	5.60782489	5.062E-202
NOTCH3	ENSG00000074181	-3.18389945	1.077E-152
EGR1	ENSG00000120738	3.65163124	1.122E-141
TM4SF20	ENSG00000168955	-3.04477998	5.99E-131
PDK4	ENSG00000004799	-3.17617496	1.313E-122
CDH1	ENSG00000039068	-2.96953903	5.013E-122
MUC5AC	ENSG00000215182	-2.49800964	2.503E-107
FCGBP	ENSG00000275395	-2.60821730	4.121E-101
CPS1	ENSG00000021826	-2.53058230	5.945E-100
FOSL1	ENSG00000175592	2.83177313	2.053E-99
TM4SF4	ENSG00000169903	-2.57134865	4.873E-99
GADD45A	ENSG00000116717	2.91660856	4.2225E-98
ALOXE3	ENSG00000179148	4.52348671	1.0365E-94
CP	ENSG00000047457	-2.48320388	1.7324E-93
STC2	ENSG00000113739	2.55708222	9.9624E-88
LAMC2	ENSG00000058085	2.47223649	1.1252E-85
ASB1	ENSG00000065802	2.75010994	1.4017E-81
CPLX2	ENSG00000145920	-2.16034712	1.6997E-81
CYP24A1	ENSG00000019186	-2.12985504	8.0333E-79
DDIT3	ENSG00000175197	2.60898445	2.4786E-77
NEB	ENSG00000183091	-4.06723195	1.4139E-75
GPX2	ENSG00000176153	-2.29030326	2.073E-74
GREM1	ENSG00000166923	3.02373945	4.4908E-73
ERBB3	ENSG00000065361	-3.20081586	5.0304E-71
RHOV	ENSG00000104140	-3.62603153	8.4655E-71
SAMD11	ENSG00000187634	-3.17262489	1.157E-69
SESN2	ENSG00000130766	2.37309572	8.3989E-68
CFH	ENSG00000000971	-2.41668268	8.8358E-68
SLC45A4	ENSG00000022567	-2.08826382	8.1545E-67
JUP	ENSG00000173801	-1.96955520	2.7916E-64
NTS	ENSG00000133636	-2.26566937	1.1163E-62
PPP1R15A	ENSG00000087074	2.02826209	1.1801E-61
ETS1	ENSG00000134954	2.08924925	2.4076E-61
SLC7A7	ENSG00000155465	-2.18255772	2.419E-61
SLC23A2	ENSG00000089057	-1.90776796	1.216E-60
SPDEF	ENSG00000124664	-3.36025018	1.3338E-60
UBE2F-SCLY	ENSG00000258984	-7.54379110	2.4895E-59
MTUS1	ENSG00000129422	-1.85339371	4.3372E-57
HSPA5	ENSG00000044574	1.8878731	1.1766E-55
CYP1A1	ENSG00000140465	4.29256064	1.3526E-55
RPL36A-HNR1	ENSG00000257529	-3.90017345	1.3808E-55
HSPA6	ENSG00000173110	4.00508562	8.8303E-55
SNAP25	ENSG00000132639	-2.17755767	1.2817E-54
ANXA13	ENSG00000104537	-3.23028166	5.4767E-54
AL163636.2	ENSG00000259171	-4.69542204	2.9048E-53
FN1	ENSG00000115414	-1.80092942	3.9994E-53
ATF3	ENSG00000162772	2.03062987	6.8252E-53
TNFRSF12A	ENSG00000006327	1.87646604	3.1571E-52
TNS4	ENSG00000131746	-1.78361548	1.235E-51
C5	ENSG00000106804	-2.27105492	2.5044E-51

ANKRD1	ENSG00000148677	4.01258798	3.3748E-51
JUN	ENSG00000177606	1.83896711	7.6005E-51
ALDH1A1	ENSG00000165092	-1.63273824	3.0612E-49
SMOC1	ENSG00000198732	-1.94096590	1.5142E-48
BCAM	ENSG00000187244	-2.60032524	1.9071E-48
CELSR2	ENSG00000143126	-2.19763285	2.7054E-48
TOMM6	ENSG00000214736	3.4035577	2.2018E-46
DLX2	ENSG00000115844	4.12570116	5.8642E-46
THRA	ENSG00000126351	-1.95343949	6.8172E-46
KLF6	ENSG00000067082	1.74967663	1.9875E-45
DHCR24	ENSG00000116133	-1.66621532	4.2178E-45
FAM129A	ENSG00000135842	1.98110562	5.0732E-45
VCAN	ENSG00000038427	-1.80081342	7.3043E-45
CLCF1	ENSG00000175505	1.79841786	2.6279E-44
SLC12A2	ENSG00000064651	-1.74099068	3.8445E-44
HK2	ENSG00000159399	3.21074832	5.8525E-44
LINC00473	ENSG00000223414	-2.15307780	1.4726E-43
DOK4	ENSG00000125170	-1.86732465	1.8852E-43
AEN	ENSG00000181026	1.68347355	4.26E-43
MEGF9	ENSG00000106780	-1.61944289	5.3802E-43
MYORG	ENSG00000164976	-1.99620560	5.5264E-43
TJP3	ENSG00000105289	-3.89793867	1.5593E-42
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ZEB1	ENSG00000148516	4.3517946	4.14E-43
FGB	ENSG00000171564	-3.58619579	1.4944E-41
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TRIML2	ENSG00000179046	1.76544189	1.1006E-40
C3	ENSG00000125730	-1.61106194	6.5838E-40
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HNF4A	ENSG00000101076	-1.94973983	1.0992E-37
TBX3	ENSG00000135111	2.0362148	1.1735E-37
DKK1	ENSG00000107984	-1.55376325	2.0136E-37
OAS1	ENSG00000089127	-1.81341674	2.641E-37
DNAL1	ENSG00000119661	2.43422434	5.4325E-37
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PPIF	ENSG00000108179	1.60834777	1.9878E-36
KDM6B	ENSG00000132510	1.59065945	2.2488E-36
DUSP8	ENSG00000184545	2.06671995	2.5407E-36
PLK2	ENSG00000145632	1.60862466	3.164E-36
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LPIN1	ENSG00000134324	1.65274051	6.8519E-36
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TSC22D3	ENSG00000157514	1.92165934	3.3466E-35

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IGFBP4	ENSG00000141753	-1.346578275	7.6945E-34
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MYO18A	ENSG00000196535	-1.432240220	5.0621E-33
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SELENOS	ENSG00000131871	1.4802873	4.1908E-31
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TSC22D2	ENSG00000196428	1.89865368	5.9404E-31
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TUBB4A	ENSG00000104833	-2.270294744	1.639E-28
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DHRS2	ENSG00000100867	2.04543548	3.0508E-28
MANF	ENSG00000145050	1.4270226	3.2109E-28
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USH1C	ENSG00000006611	-2.743710899	3.3756E-28
C10orf91	ENSG00000180066	-3.359616107	4.7307E-28
ASS1	ENSG00000130707	-1.510075487	4.7589E-28
GABRE	ENSG00000102287	-1.377972294	6.7691E-28
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AMPD3	ENSG00000133805	2.77671683	2.892E-27
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SEMA6B	ENSG00000167680	-2.291560666	2.134E-26
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FGFR3	ENSG00000068078	-2.451106653	1.3235E-25
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EREG	ENSG00000124882	1.22630052	2.8848E-25
CYR61	ENSG00000142871	1.44856182	2.9786E-25
EVA1C	ENSG00000166979	-1.887145599	3.1718E-25
DNAH17	ENSG00000187775	1.98507471	3.3038E-25
FAM83G	ENSG00000188522	1.28471719	3.355E-25
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SOWAHC	ENSG00000198142	1.49206772	6.7479E-25
BTG2	ENSG00000159388	1.54092123	7.8607E-25
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PCSK9	ENSG00000169174	-1.34117582	1.1809E-23
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ERGIC1	ENSG00000113719	-1.15205212	9.9436E-23
CTNNAL1	ENSG00000119326	1.27079005	1.0192E-22
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MAPK6	ENSG00000069956	1.18035067	1.2043E-22
IQSEC2	ENSG00000124313	-1.42950589	1.3234E-22
SEC24D	ENSG00000150961	1.28320761	1.3882E-22
ZBTB43	ENSG00000169155	1.96321488	1.4259E-22
SHROOM3	ENSG00000138771	-1.54872681	1.5111E-22
MSANTD3	ENSG00000066697	1.26933778	1.588E-22
GOLGA4	ENSG00000144674	1.24290201	1.6472E-22
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CHAC1	ENSG00000128965	2.32447976	1.8101E-22
ZMYM3	ENSG00000147130	-1.39699655	1.8785E-22
KCNJ6	ENSG00000157542	-2.52636077	2.1365E-22
RAB37	ENSG00000172794	-2.42447721	3.1737E-22
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CIDEC	ENSG00000187288	-2.98802194	4.9935E-22

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GRAMD1B	ENSG00000023171	-1.25582183	8.4103E-22
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TFE3	ENSG00000068323	1.18432183	1.0052E-21
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TBC1D14	ENSG00000132405	-1.15431956	1.2133E-21
GAS5	ENSG00000234741	1.20114417	1.3087E-21
EPC1	ENSG00000120616	1.36439207	1.3272E-21
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NRG1	ENSG00000157168	1.18356357	1.5838E-21
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S100P	ENSG00000163993	-1.34845309	1.1235E-20
IFNL3	ENSG00000197110	-1.65636233	1.1966E-20
CXCL1	ENSG00000163739	-1.09003550	1.1996E-20
NPY4R	ENSG00000204174	-2.05515938	1.2097E-20
LRP1	ENSG00000123384	-1.13506088	1.5148E-20
GALNT4	ENSG00000257594	-2.33626573	1.5868E-20
FAM83A	ENSG00000147689	-2.44499688	1.7506E-20
EIF2AK3	ENSG00000172071	1.24771925	1.8081E-20
GALM	ENSG00000143891	-1.43298630	1.8427E-20
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MGST3	ENSG00000143198	-1.09713114	6.919E-20
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MYRF	ENSG00000124920	-1.42191625	8.4804E-20
FLRT3	ENSG00000125848	-1.61384351	8.7133E-20
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SCAF8	ENSG00000213079	1.20361092	1.0816E-19
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EGFR	ENSG00000146648	1.05177475	2.2938E-19
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C1QTNF6	ENSG00000133466	-2.14173537	4.4194E-19
UFM1	ENSG00000120686	1.15594861	4.6677E-19
YOD1	ENSG00000180667	1.23283308	4.8291E-19
SCD5	ENSG00000145284	-2.02220350	5.1769E-19
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PTHLH	ENSG00000087494	1.7568422	9.9985E-14
PMS2CL	ENSG00000187953	1.22287152	1.0192E-13
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PLEKHM1	ENSG00000225190	1.03237876	6.7475E-13
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PCGF1	ENSG00000115289	1.12570665	1.0264E-12
PEAR1	ENSG00000187800	2.29304399	1.1012E-12
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SPATA2	ENSG00000158480	1.13131291	1.4764E-12
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DUSP7	ENSG00000164086	1.0846991	1.0697E-08
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SAMHD1	ENSG00000101347	-1.062194623	2.2048E-06
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CD37	ENSG00000104894	-2.43361072	4.4633E-06
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COX10-AS1	ENSG00000236088	-1.18349962	4.8066E-06
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FOXD1	ENSG00000251493	1.14367412	9.4866E-06
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IL22RA1	ENSG00000142677	-1.163973780	2.2471E-05
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TFEB	ENSG00000112561	-1.052876225	2.8589E-05
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DEPTOR	ENSG00000155792	-2.05696918	5.7526E-05
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IGFBP1	ENSG00000146678	1.28363298	8.8984E-05
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AC140479.2	ENSG00000230650	-1.22929232	0.00012969

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REEP6	ENSG00000115255	-1.211652033	0.00015665
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LINC-PINT	ENSG00000231721	1.35750726	0.00019169
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BX640514.2	ENSG00000273812	5.07942209	0.00021116
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LINC01719	ENSG00000233396	-1.640590746	0.00026476
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SPNS2	ENSG00000183018	1.09823522	0.00030547
MAFF	ENSG00000185022	1.62285379	0.0003073
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LINC01503	ENSG00000233901	-1.045484154	0.00620799
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RNA-seq differentially genes (LINC01977-ASO vs Scramble)

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PCSK9	ENSG00000169174	-1.220014363	2.4384E-22
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CEP135	ENSG00000174799	1.25246062	7.3846E-16
PIGK	ENSG00000142892	-1.137758943	7.5498E-16
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DCK	ENSG00000156136	-1.143738408	8.3461E-16
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GMCL1	ENSG00000087338	-1.097436283	1.0021E-15
PLA2G4A	ENSG00000116711	-1.081905447	1.1028E-15
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ACSF2	ENSG00000167107	-1.49262051	1.0416E-14
NR2F1	ENSG00000175745	-1.792188875	1.222E-14
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PHACTR2	ENSG00000112419	-1.06306204	7.4507E-14
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DOCK8	ENSG00000107099	-1.46767690	7.7497E-14
TUB	ENSG00000166402	-1.14585082	8.0411E-14
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EHD3	ENSG00000013016	-1.188442370	2.1478E-11
METTL7B	ENSG00000170439	-1.419976560	2.2147E-11
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HUNK	ENSG00000142149	-1.582864018	1.1818E-09
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CACNG6	ENSG00000130433	-1.061725780	1.5115E-09
KRT17	ENSG00000128422	-1.326850624	1.6534E-09
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EOGT	ENSG00000163378	1.0882206	2.2474E-09
PRG4	ENSG00000116690	-1.796135705	2.2795E-09
SIX4	ENSG00000100625	-1.054381327	2.3006E-09
BCL6	ENSG00000113916	-1.312866344	2.3777E-09
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TMEM170B	ENSG00000205269	-1.343521848	7.1762E-08
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NKAIN4	ENSG00000101198	-1.989240447	8.7159E-08
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FMO5	ENSG00000131781	-1.862198457	1.4488E-07
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POU2F1	ENSG00000143190	-1.354021738	2.5684E-07
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ABCC6	ENSG00000091262	-1.776527500	3.7741E-07
DTX4	ENSG00000110042	-1.989157495	3.8212E-07
GALNT9	ENSG00000182870	2.1743885	3.938E-07
TM7SF2	ENSG00000149809	-1.112621580	3.9829E-07
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GRTP1	ENSG00000139835	-1.779956309	4.7101E-07
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PHF21A	ENSG00000135365	-1.004932866	4.9968E-07
HNF1A	ENSG00000135100	-1.465771467	5.2328E-07
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AC099509.1	ENSG00000249746	-4.478912635	6.4923E-07
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ECM1	ENSG00000143369	1.45538597	6.9343E-07
KCNN1	ENSG00000105642	-1.442022950	7.2573E-07
COLCA2	ENSG00000214290	-2.715546318	7.4704E-07

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AC211429.1	ENSG00000242073	3.67210005	0.00051952
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AC073611.1	ENSG00000257605	1.94031835	0.00054681
AC068491.4	ENSG00000279191	1.59410164	0.00056828
FBXO2	ENSG00000116661	-1.116336027	0.00057115
ZEB1	ENSG00000148516	-3.0532996	1.4379E-05
CCL24	ENSG00000106178	-2.945302939	0.00057253
KPNA7	ENSG00000185467	2.03306561	0.00057445
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MEG3	ENSG00000214548	1.06056775	0.00077187
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HAPLN3	ENSG00000140511	-1.205301597	0.00136971
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PRRT1B	ENSG00000283526	-1.967411186	0.00168957
PAOX	ENSG00000148832	-1.161418590	0.00173655
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SLX1A-SULT1	ENSG00000213599	-1.13340936	0.00253709
LGALS2	ENSG00000100079	-3.38312438	0.00256837
TLE6	ENSG00000104953	-1.22890918	0.00257399
CCDC184	ENSG00000177875	-1.05623772	0.00262533
FBXO27	ENSG00000161243	1.14745511	0.00271873
DLG5-AS1	ENSG00000233871	-1.67824330	0.0027191
SMPD1	ENSG00000166311	1.14508133	0.00272486
AC006486.1	ENSG00000268643	5.29866784	0.00279976
HBQ1	ENSG00000086506	-1.09261127	0.00282226
PRPS2	ENSG00000101911	-1.08062661	0.00283251
EGFR-AS1	ENSG00000224057	1.51701069	0.00283531
CHST13	ENSG00000180767	-1.55159688	0.00283722
RGL3	ENSG00000205517	-1.15466923	0.00285936
PSCA	ENSG00000167653	1.37338022	0.00295394
CXXC5	ENSG00000171604	-1.56205021	0.00300943
UGT1A2P	ENSG00000228445	-1.51292058	0.00301896
RAB26	ENSG00000167964	-1.66142163	0.00303734
AL139246.5	ENSG00000272449	-1.62376705	0.00316746
AL732372.3	ENSG00000250575	1.12860782	0.00328434
RCOR2	ENSG00000167771	-1.37693772	0.00335733
RARB	ENSG00000077092	-1.55277790	0.00343633
AC017116.1	ENSG00000239775	-3.32439887	0.00345361
AL356019.2	ENSG00000258768	-1.21381676	0.00348052
AC096887.2	ENSG00000280417	-1.60279915	0.00356358
AC133644.2	ENSG00000273445	-1.72436650	0.00366967
AP002807.1	ENSG00000255031	-1.20367606	0.0037196
AC112220.4	ENSG00000271643	1.2431675	0.00375071
RPL13AP20	ENSG00000234498	1.22098717	0.00404749
ZNF461	ENSG00000197808	1.10590086	0.00409941
AL807757.2	ENSG00000236095	-1.53894170	0.00415806
RTP4	ENSG00000136514	-2.20782445	0.00418934
RASAL2-AS1	ENSG00000224687	1.27252442	0.00423591
MAP1LC3B2	ENSG00000258102	1.07154764	0.00426224
GAPLINC	ENSG00000266835	-2.33201158	0.00428684
TTLL11	ENSG00000175764	1.00576922	0.00455302
MGMT	ENSG00000170430	-1.31149744	0.00456516
AC011676.5	ENSG00000280035	-1.54931581	0.00462774
ZNF223	ENSG00000178386	1.74685871	0.00481843
AC073109.1	ENSG00000235920	-2.06842924	0.00488671
PRR22	ENSG00000212123	1.07160005	0.00500092
GPATCH2L	ENSG00000089916	1.26956965	0.00502135
KCNG3	ENSG00000171126	-1.13180972	0.00507916

AC013444.2	ENSG00000270390	-1.805638360	0.00511882
AC108463.3	ENSG00000271590	1.92379091	0.00515289
AL133367.1	ENSG00000260285	-1.123501522	0.00521242
AC107021.2	ENSG00000261051	1.17906385	0.00558881
S100A9	ENSG00000163220	-1.872080592	0.00565602
DMBX1	ENSG00000197587	-1.169979710	0.00568243
GSEC	ENSG00000280832	-1.033996176	0.00596872
BST2	ENSG00000130303	-1.977927495	0.00597992
LINC01468	ENSG00000231131	-1.919811043	0.00598639
ETNK2	ENSG00000143845	-1.406861857	0.00606266
IDH1-AS1	ENSG00000231908	-1.966636159	0.00616831
GJB3	ENSG00000188910	1.37942019	0.00619157
AL138759.1	ENSG00000244332	-1.162791755	0.00637951
AC073896.1	ENSG00000144785	-1.559357358	0.00640117
AC067930.4	ENSG00000254859	-1.353630103	0.00644069
AC126474.2	ENSG00000280088	-1.064938452	0.006597
AL161668.1	ENSG00000178107	-3.344409367	0.00667972
SOCS2	ENSG00000120833	1.52334551	0.00704603
SLC6A6	ENSG00000131389	1.13169718	0.00742194
TOB1	ENSG00000141232	-1.000094697	0.00767668
TMEM169	ENSG00000163449	-1.458462006	0.00795592
ADM5	ENSG00000224420	1.26246698	0.00802725
AL133355.1	ENSG00000260461	-1.040645023	0.00815493
AC004231.3	ENSG00000265359	-Inf	0.00841165
OSER1-AS1	ENSG00000223891	1.44927845	0.00847864
ZNF181	ENSG00000197841	1.02013238	0.0084958
CCDC96	ENSG00000173013	1.11245177	0.00850062
AC105052.1	ENSG00000205236	1.10389966	0.00859647
AC008537.2	ENSG00000269843	-1.459368894	0.00886824
RGCC	ENSG00000102760	-2.431661652	0.00897983
RCN3	ENSG00000142552	-1.330539076	0.00935683
HOXA2	ENSG00000105996	-1.256966547	0.00937695
LINC01843	ENSG00000251169	-1.058866674	0.00963807
HSPA2	ENSG00000126803	-1.363676917	0.0099745
LTB	ENSG00000227507	-1.015225209	0.01009086
AC026464.3	ENSG00000260371	-3.660168720	0.01018295
FCGRT	ENSG00000104870	-1.076168964	0.01020522
AC073569.2	ENSG00000258048	-1.589532457	0.01024692
DUSP9	ENSG00000130829	-1.297199615	0.01042075
CDKL2	ENSG00000138769	1.05268738	0.01042961
CNFN	ENSG00000105427	-1.156478067	0.01053179
SLC35A5	ENSG00000138459	-1.805028500	0.01061123
DUX4L9	ENSG00000224807	-1.573189037	0.01064809
BDKRB2	ENSG00000168398	-1.012734942	0.0107397
LINC02298	ENSG00000257556	-1.217662232	0.01095472
AL137802.2	ENSG00000261135	-1.998399822	0.01111683
AC087632.1	ENSG00000259316	-1.109195782	0.01114417
AC110285.2	ENSG00000262877	-1.302105495	0.01115803
C20orf141	ENSG00000258713	-1.696640970	0.0112556
PWAR5	ENSG00000279192	-1.080738048	0.01156233
TNPO1P3	ENSG00000229586	1.25879856	0.01156572
AC008105.2	ENSG00000233483	-1.255468210	0.01165155
RRAD	ENSG00000166592	1.19760882	0.01234759
AC023024.2	ENSG00000279970	-1.011730825	0.01248529
MAST4-AS1	ENSG00000229666	-2.038977094	0.01251559
UPK3BL2	ENSG00000284981	5.13237232	0.01278894
P2RY11	ENSG00000244165	1.15633271	0.01301377
EFNA2	ENSG00000099617	-2.198260912	0.013169

AC009283.1	ENSG00000273576	-1.074826746	0.01336757
LINC01474	ENSG00000236849	-1.855540264	0.01350842
AC011466.3	ENSG00000269534	-2.238662267	0.01352024
AC137932.2	ENSG00000261253	1.40100666	0.01372448
SCG5	ENSG00000166922	1.04187735	0.0138613
KRT20	ENSG00000171431	-1.322524838	0.01386452
AL512844.1	ENSG00000232952	1.63726698	0.01402281
RAP1AP	ENSG00000258769	Inf	0.01442475
AC112220.2	ENSG00000271020	1.17482619	0.01447198
RN7SL23P	ENSG00000240823	-Inf	0.01456708
MT1F	ENSG00000198417	1.52505538	0.01458042
AC006538.1	ENSG00000261342	-2.104661139	0.01470407
RN7SL5P	ENSG00000265735	1.09435516	0.01510819
AC027117.1	ENSG00000253671	-1.694219333	0.01559665
AC090587.2	ENSG00000229368	-1.580297545	0.01565483
OVGP1	ENSG00000085465	-1.283034724	0.01700115
NIPSNAP3B	ENSG00000165028	-1.083932107	0.01710129
AC027702.1	ENSG00000260588	1.14626182	0.01774658
HOXD11	ENSG00000128713	-1.324612356	0.01781696
FLVCR1-AS1	ENSG00000198468	-1.032093446	0.01781709
CLDN12	ENSG00000157224	1.11460992	0.01819117
AC011448.1	ENSG00000258674	1.45748492	0.01860489
CX3CL1	ENSG00000006210	-1.697570834	0.01864159
AC005730.2	ENSG00000261033	2.12642028	0.01870496
TSPAN12	ENSG00000106025	-1.059556370	0.01874237
AC002467.1	ENSG00000241764	1.21491302	0.01894269
AC004803.1	ENSG00000250132	-1.147581138	0.01908662
AP001574.1	ENSG00000253217	-1.859214407	0.01912367
AASDHPPT	ENSG00000149313	-1.197370616	0.01951517
RNF103-CHM	ENSG00000249884	2.56304021	0.02018159
BASP1-AS1	ENSG00000215196	-1.049922250	0.02077096
AC018690.1	ENSG00000273306	1.41597461	0.02151948
AC011445.1	ENSG00000268262	-1.418183170	0.02176842
KRT83	ENSG00000170523	-1.211186044	0.02224344
AD000671.1	ENSG00000188223	Inf	0.02240402
AC131212.2	ENSG00000279700	-1.523162650	0.02276161
AC008083.2	ENSG00000258181	-1.550481133	0.02303335
AC012181.2	ENSG00000261270	1.2836998	0.02403276
AC126544.1	ENSG00000280022	-2.610499802	0.02434657
SERPINB3	ENSG00000057149	-1.005549507	0.02487375
AC004918.1	ENSG00000244701	-1.012413403	0.02499296
TRIM74	ENSG00000155428	-1.343219857	0.02520691
AL139289.1	ENSG00000229431	2.35286166	0.02528089
AC113404.3	ENSG00000254893	-1.246584528	0.02552758
MALAT1	ENSG00000251562	-1.381682720	0.02680626
SP2-AS1	ENSG00000234494	-1.283467375	0.02701884
BCRP3	ENSG00000215481	-1.475439653	0.02792913
FRMD6-AS1	ENSG00000273888	1.06236934	0.02797896
RPS10-NUDT	ENSG00000270800	4.40335956	0.02810169
PTGER2	ENSG00000125384	-1.020118932	0.02812332
DGCR10	ENSG00000273164	-3.624256112	0.02874729
VPS33B	ENSG00000184056	-1.340632662	0.02897822
UPK3BL1	ENSG00000267368	-4.794030049	0.02922971
LINC01970	ENSG00000265692	-1.509407748	0.0295659
ZNF830	ENSG00000198783	1.00060339	0.02985294
AL356056.2	ENSG00000231187	-1.181853197	0.03019431
AC010809.2	ENSG00000259408	1.69013432	0.03103661
PCOTH	ENSG00000205861	1.92724929	0.03121287

FAM35BP	ENSG00000165874	-1.343902773	0.03138343
AC026368.1	ENSG00000277840	-1.205789026	0.03165312
DCST1-AS1	ENSG00000232093	-1.155446070	0.03204717
ZNF84	ENSG00000198040	2.08124395	0.0331159
RPL23AP95	ENSG00000236848	-Inf	0.03348931
LINC01220	ENSG00000259687	-2.16964598	0.03401703
AL035563.1	ENSG00000273148	-1.207577613	0.03417483
AC243732.1	ENSG00000274756	-1.280431213	0.034493
AC245033.3	ENSG00000278603	-1.219054097	0.03458549
PPP1R18	ENSG00000146112	1.00583978	0.03520074
AC135279.1	ENSG00000255566	2.13080279	0.03559461
TFRC	ENSG00000072274	-1.252909114	0.03637297
ATP2C2-AS1	ENSG00000261286	1.2320736	0.03660579
ELOCP19	ENSG00000241975	1.76198924	0.03698131
SPANXB1	ENSG00000227234	1.69157768	0.03707248
AL627309.6	ENSG00000268903	1.86603213	0.03710577
CBLL1	ENSG00000105879	1.63820083	0.03759458
AC067838.1	ENSG00000272338	-2.807398705	0.03837697
TTPAL	ENSG00000124120	2.35399307	0.03844685
AC105052.2	ENSG00000213385	1.4525555	0.03873709
AC098487.1	ENSG00000248161	-1.040444016	0.03877655
CHCHD4P3	ENSG00000236156	1.75757669	0.03881974
CLEC11A	ENSG00000105472	-1.33204962	0.03925539
ASB1	ENSG00000065802	1.9721487	0.03932045
TUT1	ENSG00000149016	-1.08660364	0.03995411
AP000695.2	ENSG00000233818	1.14602065	0.04035844
AC017100.1	ENSG00000259985	1.06240854	0.04064011
AD000671.3	ENSG00000267439	1.14403154	0.04112137
AC087269.1	ENSG00000254367	-1.182379847	0.04127544
HIVEP1	ENSG00000095951	1.35474486	0.04130847
KATNBL1P6	ENSG00000228283	1.06418086	0.04139572
LINC01564	ENSG00000235899	1.20967425	0.04152259
PAN3-AS1	ENSG00000261485	-1.267676575	0.04193577
AC233300.1	ENSG00000279155	1.68473217	0.04242816
GCHFR	ENSG00000137880	-1.797638992	0.04274547
AC004231.1	ENSG00000234477	-1.980830726	0.04317504
USP49	ENSG00000164663	-1.031883522	0.04366956
AC132942.1	ENSG00000240898	1.69054137	0.04534162
GATA3	ENSG00000107485	1.11164138	0.04538594
AC027309.2	ENSG00000253683	-1.192462855	0.04595893
AC010323.1	ENSG00000167774	-Inf	0.04596124
AL158163.2	ENSG00000278601	1.51443133	0.04603075
AC133681.1	ENSG00000239620	2.84464934	0.04636847
TMEM250	ENSG00000238227	2.44735616	0.04678088
AL133410.1	ENSG00000227388	1.3616287	0.04692054
CYP2F2P	ENSG00000237118	-1.268165682	0.04789333
PLS3-AS1	ENSG00000271826	-1.122496532	0.04896578
AC040160.1	ENSG00000262691	-1.018119855	0.04918384

Supplementary Table 5

Relationship between LINC01977 expression and clinicopathological parameters of LUAD				
Variable	No. patients	LINC01977 expression		P value
		High expression	Low expression	
Age (yr)				
> 62	109	53	56	0.669
≤62	77	35	42	
Sex				
Female	86	43	43	0.496
Male	100	45	55	
Smoking				
Yes/Ever	98	54	44	0.395
Never	88	43	45	
Clinical stage				
Early (I+IIA)	91	45	46	0.008
Advanced (IIB+III)	95	29	66	
pT status				
T1-T2	174	84	90	0.482
T3-T4	12	4	8	
Lymph node metastasis				
No metastasis (N0)	91	59	32	<0.001
Metastasis (N1+N2)	95	29	66	

Supplementary Table 6

	DNA sequence	Location
E1	ccaccacactcccaccacagtcagctcccagaatcaagctcatcaggtctagctctcct ccctgcaggcagagctcgcaggactgtgccagctagggccacgcccagcctcaagcc ccatgcccagccactctgagctctctgtctgacttacataagccatgctatgatggtttaa atgtctcctgaagttcacgtgtgaaaacttattctgccacaggtatgagaagtgggccta acaaagtaatgaggtcatgagagctgcccctcatgaatagattaatgtagttattgaggagtg ggttcattatcacgagggtgggttg	chr17:79460389-79460729
E2	tacattgaagtcctaacccttagctagtagtgaccgtattggagataggacccttaccag gccatattgggtggcctcatccactctgaccagtgctcttaagagaagaagattaggacac agacatgcacagatcaagggcggccatgtgaggacataaggagaagatgaccatctaca agccaaagagaagcctcaaggaaccaatgtgccaacagcttgatcttagactctggcc tcttgaattttgagaaaattaacctctgtgtgtgagccccaggctgaggggtccaccatggc agcccaagccgaccacacacctccacatctcatgaccacctccattctcaagcgagga cactgcccctgggtctgtgtgagtgagcaggtattcaaacgtgacaaagttctgtgactgac ctgtgtggcctctataaccggcacttctcaaacatctgtgtggaaggattcattggttatttccaat tcattctggacctacattttgtttctttgtttttgagacagggctcactatgctgccagctga tcicaaacaccagggtcaaccaatctccacctcagcctcctgagtagttgaagtgacaa gcccttactttgttttagaaaactataaaaatagaatcactagaaaaatggaataaagaag gcatacaaaacacaaagccagggtcttaacgattagactcatcagacctaaaacgactcct tcaaatgactaaaagattcctaatgcttaattcagcttctgtactcagttgcagggatcaggagc agcacctcacgggctggcaccatccacagacctcatttgagtagctgagatagggtcat	chr17:79472376-79473272
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E4	tgcttaattactccaaccacaacagtgatgtgtgccatcagccagacaggacaaaaaac ggttaggagatccactctgattagcctgagagactgtctctgggacagagtcagatcagg gtggccaggagtggtgagctgtgtctccctgaatccccccaccactggcaccaccag aaattcacacaggagtttaaacagcaacacacaacaataataatctaccagttgttcttt cctaaaatccagtcactggacagagtaccaccccataccgaagaaccgaagagcagaa ccagatcacagagagcccagcaaccccggagcaatgctggggaacatctgccctttca gggaccattggtacagagcccagtgcccactgtgggtgaggagccacttctaatggcaa aagtgaagtaataaggaacagttccatgtagaatgcagccaggaggtggtgggagag ggcct ggggtcagggggcctgg	chr17:79483969-79484486
E5	gggaggtggggcagggtactggggcaggatgggatgtggaaggtggggaggg gtacagaggggtgggaggtggggaaagggtactggggcaggatgggggtcaggaag gtgggaatggaatgcatgggacaggcacaggctacataaagggtggtggggcagaggggtg cagatggaggaggtggggagagggatgacagggtagggcacggggcaggggaggg gtgcagacatccacagctcgggtcaggtgtagggtggcagaaggtggtgggggttaggc ggtgagcggggtggaggttaaggcagaggccctgtggcagggacctgcaggccggg accctgcaggcctccagcctggcacagcctgagcagtgccagcgtggcagatgggaac gtgcagaacatgcagaagcatggcccctggttaataagattaggatgtgaacggccgaca tgttctccgagactggctgtatgccacaatggaggggactgcgacctaatagaatgctgaa cttttgaaagtgagcaaatggagagagtcagagttggggactgagagctcccctctcgg gctggaggcc	chr17:79495539-79496152
E6	gacaggccattcactggcgggctcagccgccctgccacacctccacatgtccagcgga aggtccagaccctcatctcgtggccagagaggctggtgtctgcagccctcaggcccttc tcctgctgtaaaagcctcacagctaccaagaagagatgtccaacagctccaggaaacc tgagtcactgggtgtgggggaggccactttgtccgagctccaccctctgcctcctc	chr17:79501268-79501513

Supplementary Table 7. Cloning primers, RACE primers and lncRNA ASO sequences

Cloning primers	
LINC01977(2791)	Primer-F: AATTTTCCACTGTCTCTCAGTATCC
	Primer-R: TTTTTTTTTTTTTTAGAGGACAAAGCACA
LINC01977(2295)	Primer-F: GCAGAAGGAAGAGAGCCTT
	Primer-R: TTTTTTTTTTTTTTAGAGGACAAAGCACAC
LINC01977(1799)	Primer-F: CGATCTCCTGACCTCGTG
	Primer-R: TTTTTTTTTTTCACAGAGGACAAAGCA
LINC01977(1299)	Primer-F: GGTGGGAGAGTCGGAGT
	Primer-R: TTTTTTTTTTTCACAGAGGACAAAGCA
LINC01977(799)	Primer-F: GCCGTGTCATTTCCGGAGG
	Primer-R: TTTTTTTTTTTCACAGAGGACAAAGCA
LINC01977(299)	Primer-F: ACAGACACGCACACGCA
	Primer-R: TTTTTTTTTTTCACAGAGGACAAAGCA
Enhancer-1	Primer-F: CCACCACACTCCCACCACAG
	Primer-R: CAAACCCACCCTCGTGATAATGA
Enhancer-2	Primer-F: TACATTGAAGTCCTAACCCCTAGTACG
	Primer-R: ATGACCCATATCTCAGCTACTCAAAGT
Enhancer-4	Primer-F: TGCTTAATTTACTCCAACCCAAACAGTGTATGTGTG
	Primer-R: CCCAGGCCCTGCACC
Enhancer-6	Primer-F: GACAGGCCCATTCCTGGGC
	Primer-R: GAGGAGGCAGAGGGTGGGA
ZEB1-P(0-100)	Primer-F: GAGCTGGAAAGTTTTTTTTTTCCTTTCT
	Primer-R: ACCGAATCAGGTCATAGACTATGG
ZEB1-P(300-400)	Primer-F: AGACATAATGTATAGCAAAGAATATTTACAGT
	Primer-R: TTTTCTCTCCCACATTTTCTTGGG
ZEB1-P(1200-1300)	Primer-F: AGGCTGCTGGCAAGCGG
	Primer-R: TGGTTTCCCCCAAGCGAACC
ZEB1-P(1400-1500)	Primer-F: CCTCATCAAGGGAAGTCCCG
	Primer-R: GGCTACCATCAGTCCCACGC
RACE primers	
5' RACE	Primer-R1: CTGCCAACAAGTCTGGGGAGAGAAGAGAGT
	Primer-R2: CGAGCTGAGAAATCCAGGGAAGACGAA
3' RACE	Primer-F1: CCCACCCCAAGAGGCTGTCTAACG
	Primer-F2: GGGAAACAATGAGAAACCAGATACCATGGA
lncRNA ASO sequences	
LINC01977-ASO-1	TCACCCAGATGGAGTTTCAA
LINC01977-ASO-2	GAGCGTAGAGCCGTGTCATT
LINC01977-ASO-3	GCCTTATCCAAACAGTTCAC
sgRNA sequences	
CREBBP sg#1	GCGTCCACAGCAATATCCAA

CREBBP sg#2	AGACCGCACCTGGTTACTAA
CREBBP sg#3	AGCTCTAAAGGATCGCCGCA
EP300 sg#1	GTACGACTAGGTACAGGCGA
EP300 sg#2	ATACGAGGCCCATAGCCCAT
EP300 sg#3	CGACCATCCATCAGATCGCA
SMAD3 sg#1	TGCGGCTCTACTACATCGGA
SMAD3 sg#2	GCTCTACTACATCGGAGGGG
SMAD3 sg#3	GCGGCTCTACTACATCGGAG

The DNA fragments of enhancer-3, -5 and LINC01977 promoter region were synthesized and cloned into the pLG3 plasmid. P refers to promoter region. The sgRNA used in this study was prepared by in vitro transcription from

Supplementary Table 8. qRT-PCR primers used in this study

Genes	Primers sequences
LINC01977	Primer-F: TGACAGTGTAACAGGTATTTCGCC
	Primer-R: GGCTCTACGCTCATTCCCA
GAPDH	Primer-F: CCATGGGGAAGGTGAAGGTC
	Primer-R: GAAGGGGTCATTGATGGCAAC
ACTB	Primer-F: ACCTTCTACAATGAGCTGCG
	Primer-R: CCTGGATAGCAACGTACATGG
U6	Primer-F: ATTGGAACGATACAGAGAAGATT
	Primer-R: GGAACGCTTCACGAATTTG
PAI-1	Primer-F: AATCAGACGGCAGCACTGTCT
	Primer-R: GGCAGTTCCAGGATGTCGTAGT
COL1A1	Primer-F: TCCGACCTCTCTCCTCTGAA
	Primer-R: AGGGGGAAAACTGCTTTGT
Vimentin	Primer-F: TCGCCATCAGTAGAAGGTAGCA
	Primer-R: CTCAATGTCAAGGGCCATCT
E-cadherin	Primer-F: TGGAGAGACACTGCCAACTG
	Primer-R: TTAGGGCTGTGTACGTGCTG
N-cadherin	Primer-F: GGATCAACCCCATACACCAG
	Primer-R: TGGTTTGACCACGGTGACTA
Snail	Primer-F: TTCTCACTGCCATGGAATTCC
	Primer-R: GCAGAGGACACAGAACCAGAAA
WBP2	Primer-F: TCAAGCAGCCCGTATTTGGTG
	Primer-R: GCCGTGAAAGTCAACTTGTAGGA
HSPA9	Primer-F: GGAAGGTAAACAAGCAAAGGTGC
	Primer-R: CCAACAAGTCGCTCACCATCT
CPNE1	Primer-F: CACTGCGTGACCTTGGTTCA
	Primer-R: CTCCCACATCCTGTAAAAGGAC
SYPL1	Primer-F: AAGATTACGTCCTCATAGGCGA
	Primer-R: TCGTGTAGCCAACATAAAGCAG
HAX1	Primer-F: AGCATCTTCAGCGATATGGGG
	Primer-R: CCTCCCGTAGTCTCTCACCA
HMGB1	Primer-F: TATGGCAAAGCGGACAAGG
	Primer-R: CTTGCAACATCACCAATGGA
SMAD3	Primer-F: TGGACGCAGTTCTCCAAAC
	Primer-R: CCGGCTCGCAGTAGGTAAC
ZEB1	Primer-F: GATGATGAATGCGAGTCAGATGC
	Primer-R: ACAGCAGTGTCTTGTTGTTGT
ZEB1-P1(ChIP-qPCR)	Primer-F: TGGTGGGGTGGGGTCAATTCC
	Primer-R: ACGGTGTCCTTGCTTTGCTTGG
ZEB1-P2(ChIP-qPCR)	Primer-F: ACTCCGGTCACGTTTCAGTTT
	Primer-R: TGCTTCCCACCTCCTTCGAA

ZEB1-P3(ChIP-qPCR)	Primer-F: CTGGAAGGGAAGGGAAGGGAGTC
	Primer-R: TGAGGGGAAGGGCAGGTTTGG
ZEB1-P4(ChIP-qPCR)	Primer-F: TCCCTCGCCCCTCAATTCAAATTC
	Primer-R: CCGCACCTGGTTTACGACACTC
LINC01977-P1 (ChIP-qPCR)	Primer-F: TCCAAGGCGTCAAGGGCAATTC
	Primer-R: CAGGTGGTTCTCATGGACAAGGC
LINC01977-P2(ChIP-qPCR)	Primer-F: GAGAGGAGAGTGGAGCCGTCAG
	Primer-R: ACCGTAAAGGAGTAGGGATGGATCG
LINC01977-P3 (ChIP-qPCR)	Primer-F: TCCTGCTTAGGTGGGAGGTTGAC
	Primer-R: TGGGCCATACATCCATTTGGTTCC
E1 (ChIP-qPCR)	Primer-F: CCTGCCACAGGATGTTGAGAAGTG
	Primer-R: AAACCCACCCTCGTGATAATGAACC
E2 (ChIP-qPCR)	Primer-F: CTCCATTCTCAAGCGAGGACACTG
	Primer-R: GCCACACAGGTCAGATCACAGAAC
E3 (ChIP-qPCR)	Primer-F: GTGCAGGAAGGTGGGAATGGAATG
	Primer-R: GCCCTACCCTGTCATACCCTCTC
E4 (ChIP-qPCR)	Primer-F: CCATACCGAAGAACCGAAGAGCAG
	Primer-R: GGCAGATGTTCCCCAGGCATTG
E5 (ChIP-qPCR)	Primer-F: GTGCAGGAAGGTGGGAATGGAATG
	Primer-R: GCCCTACCCTGTCATACCCTCTC
E6 (ChIP-qPCR)	Primer-F: TTCTTCCTGCCTGTAAAAGCCTCAC
	Primer-R: GGTGGGACTCGGGAACAAAAGTG
CREBBP(Crispr/Cas9) sg#1	Primer-F: GACGACGTCTGGCTCATGTT
	Primer-R: AGGTACCACAGGCAGAGAGG
CREBBP(Crispr/Cas9) sg#2	Primer-F: CAACAGCAGATGAAGCAGCA
	Primer-R: AGGGACAGTTCGCTGGACAG
CREBBP(Crispr/Cas9) sg#3	Primer-F: ATTACAAGCGTGAGCCACCG
	Primer-R: CACCAATGTAGCTAATCAAG
EP300(Crispr/Cas9) sg#1	Primer-F: TTAACAGGCACAAATGTCTA
	Primer-R: CTGCTGTGCTCTGCTGTGAG
EP300(Crispr/Cas9) sg#2	Primer-F: CTCCTGTCTTTGGCTTTTCT
	Primer-R: CCCTAAGTCCAAAATTGTTA
EP300(Crispr/Cas9) sg#3	Primer-F: AGCCTGGATGACAGAGCGAG
	Primer-R: CAGGCCTCTATAAAATACGT
SMAD3(Crispr/Cas9) sg#1	Primer-F: CAGTCACTGGGAGCAGCTCT
	Primer-R: ATCCAATCACCTCCAGATTG
SMAD3(Crispr/Cas9) sg#2	Primer-F: TCACTGGGAGCAGCTCTGCT
	Primer-R: AACCTAATCCAATCACCTCC
SAM3(Crispr/Cas9) sg#3	Primer-F: AGTCACTGGGAGCAGCTCTG
	Primer-R: TAATCCAATCACCTCCAGAT

Supplementary Table 9. Antibodies, reagents and kits used in this study

Antibodies	Source	Identifier	Application
anti-Acetyl-Histone H3 (Lys27) (D5E4)	Cell Signaling Technology	Cat#8173S, RRID: AB_10949503	IF(1:200), ChIP(1:50)
anti-CBP (D6C5)	Cell Signaling Technology	Cat#7389S, RRID: AB_2616020	IP(1:200), ChIP(1:100) WB(1:1000)
anti-CD3	Biolegend	Cat#317318, RRID: AB_1937212	Cell sorting
anti-CD4	Biolegend	Cat#317416, RRID: AB_571945	Cell sorting
anti-CD8	Biolegend	Cat#344722, RRID: AB_2075388	Cell sorting
anti-CD206 (E6T5J)	Cell Signaling Technology	Cat#24595S, RRID: AB_2892682	IF(1:150)
anti-CD68 (D4B9C)	Cell Signaling Technology	Cat#76437S, RRID: AB_2799882	IF(1:200)
anti-CBP	Abcam	Cat#ab2832, RRID: AB_303342	IHC(1:200)
anti-GAPDH (14C10)	Cell Signaling Technology	Cat#2118S, RRID: AB_561053	WB(1:1000)
anti-HA-tag (C29F4)	Cell Signaling Technology	Cat#3724T, RRID: AB_1549585	WB(1:1000)
anti-Histone H3 (D1H2)	Cell Signaling Technology	Cat#4499T, RRID: AB_10544537	WB(1:1000)
anti-P300 (D2X6N)	Cell Signaling Technology	Cat#54062S, RRID: AB_2799450	ChIP(1:100), IP(1:150) WB(1:1000)
anti-Phospho-SMAD2 (Ser465/467)(E8F3R)	Cell Signaling Technology	Cat#18338T, RRID: AB_2798798	WB(1:1000)
anti-Phospho-SMAD3 (Ser423/425)(C25A9)	Cell Signaling Technology	Cat#9520S, RRID: AB_2193207	WB(1:1000), IHC(1:150), IF(1:150), IP(1:200)
anti-SMAD2 (D43B4)	Cell Signaling Technology	Cat#5339S, RRID: AB_10626777	WB(1:1000)

anti-SMAD2/3 (D7G7)	Cell Signaling Technology	Cat#8685S, RRID: AB_10889933	WB(1:1000)
anti-SMAD3(phospho S423+425) (EP823Y)	Abcam	Cat#ab52903, RRID: AB_882596	IHC(1:200), IP(1:150)
anti-SMAD3(C67H3)	Cell Signaling Technology	Cat#9523S, RRID: AB_2193182	WB(1:800), ChIP(1:100)
anti-SMAD4 (D3R4N)	Cell Signaling Technology	Cat#46535S, RRID: AB_2736998	WB(1:1000), IP(1:150)
anti-ZEB1	Proteintech	Cat#21544-1-AP, RRID:AB_10734325	WB(1:800), IHC(1:400)
anti-β-Actin (8H10D10)	Cell Signaling Technology	Cat#3700S, RRID: AB_2242334	WB(1:1000)
anti-FLAG-Tag	Thermo Fisher	Cat#MA1-91878, RRID: AB_1957945	WB(1:1000)
anti-cyclinD1	Abcam	Cat#ab134175, RRID: AB_2750906	WB(1:1000)
anti-cyclinE1	Abcam	Cat#ab33911, RRID:AB_731787	WB(1:1000)
anti-E-cadherin	Cell Signaling Technology	Cat#14472S, RRID:AB_2728770	WB(1:1000) IHC(1:400)
anti-N-cadherin	Cell Signaling Technology	Cat#13116S, RRID:AB_2687616	WB(1:1000)
anti-SNAIL	Cell Signaling Technology	Cat#3895S, RRID:AB_2191759	WB(1:1000)
anti-cleaved Caspase3	Cell Signaling Technology	Cat#9664S, RRID:AB_2070042	IHC(1:300)
anti-Ki-67	Cell Signaling Technology	Cat#2586S, RRID:AB_2160343	IHC(1:300)
anti-PCNA	Cell Signaling Technology	Cat#13110S, RRID:AB_1083636	IHC(1:300)
Reagents	Source	Identifier	Application
SGC-CBP30	ApexBio	Cat#A4491	in vitro and in vivo assays

JQ1	ApexBio	Cat#A1910	in vitro assays
SB431542	ApexBio	Cat#A8249	in vitro assays
SIS3	ApexBio	Cat#B6096	in vitro assays
TGF- β	ApexBio	Cat#P1039	in vitro assays
Lipofectamine 3000	Invitrogen	Cat#L3000-075	DNA and lncRNA-ASO transfection
Lipofectamine CRISPRMAX	Invitrogen	Cat#CMAX00008	Crispr/Cas9 system
DMSO	Solarbio	Cat#D8371	<i>in vitro</i> assays
TRIzol	Invitrogen	Cat#15596018	RNA extraction
Mayer's hematoxylin solution	Solarbio	Cat#G1080	RNAScope and IHC assay
PowerUp TM SYBR Green Master Mix	Thermo Fisher	Cat#00775499	qRT-PCR
Pierce IP lysis buffer	Thermo Fisher	Cat#87788	RNA pull-down assay
Cremophor	Selleck Chemicals	Cat#S6828	<i>In vivo</i> assays
Cas9 protein	Thermo Fisher	Cat#A50577	Crispr/Cas9 system
Ambion RNase cocktail	Thermo Fisher	Cat#AM2286	Dependency assay with co-IP
Phanta Max Master Mix (Dye Plus)	Vazyme	CatP525-02	High fidelity PCR amplification
Kits	Source	Identifier	Application
RNAScope 2.5 High Definition Red Reagent Assay Kit	Advanced Cell Diagnostics	Cat#322350	RNAScope assay
EZ-Magna RIP Kit	Merck Millipore	Cat#17-701	RIP assay
EZ-Magna Nuclear RIP Kit (Native)	Merck Millipore	Cat#17-10523	RIP assay
EdU DNA Proliferation Kit	KeyGene	Cat#KGA331-100	EdU assay
RNeasy FFPE Kit	Qiagen	Cat#73504	RNA extraction from FFPE
Primer Script RT reagent Kit	Takara	Cat#RR036A	qRT-PCR
Dual-Luciferase Assay Kit	Promega	Cat#E1910	Dual-luciferase reporter assays
RNAmix-T7 transcription Kit	RiboBio	Cat#C11001-2	In vitro RNA transcription
Pierce RNA 3' End	Thermo	Cat#20163	Biotin-lable RNA

Desthiobiotinylation Kit	Fisher		probes for RNA pull-down assay
Pierce Magnetic RNA-Protein Pull-Down Kit	Thermo Fisher	Cat#20164	RNA Pull-down
ChIP-IT Express Kit	Active Motif	Cat#53008	ChIP assays
PARIS protein and RNA isolation Kit	Invitrogen	Cat#AM1921	Subcellular fractions isolation
PCR Array (Human-EMT)	Wcgene Biotech	Cat#WC-MRNA0053-H	qRT-PCR detection for EMT associated genes
Human TGF-beta1 ELISA Kit	FCMACS Biotech	Cat#FMS-ELH038	ELISA detection for TGF-beta1
Genomic DNA extraction kit	TIANGEN	Cat#DP304	DNA extraction
Pierce Co-Immunoprecipitation Kit	Thermo Fisher	Cat#26149	co-IP assays