

Table S1 Top 25 differentially expressed lncRNAs in the p16 positive HNSCC samples compared with normal samples

p16 positive HNSCC samples compared with normal samples							
Top 25 upregulated lncRNAs				Top 25 downregulated lncRNAs			
symbol	logFC	P Value	FDR	symbol	logFC	P Value	FDR
MIAT	2.736849264	1.80E-11	4.77E-10	LINC02487	-4.427123848	0.000165932	0.000605661
TMPO-AS1	2.731133507	3.27E-18	5.22E-16	HCG22	-4.408251413	3.73E-05	0.000165816
LINC01355	2.531242077	4.39E-12	1.41E-10	LINC01697	-3.936820906	3.14E-09	4.65E-08
HAGLR	2.410478902	5.49E-09	7.61E-08	H19	-2.904519408	1.57E-05	7.85E-05
BBOX1-AS1	2.203116064	2.91E-06	1.81E-05	FLG-AS1	-2.636700738	3.86E-06	2.32E-05
U62317.3	2.131927416	3.12E-12	1.02E-10	AL355312.3	-2.485693761	5.86E-06	3.34E-05
LINC01679	2.004859783	2.89E-09	4.33E-08	AL022323.1	-2.477173184	6.83E-08	6.90E-07
LINC01006	1.983498756	7.63E-13	2.96E-11	AC091563.1	-2.36336659	2.27E-07	1.95E-06
AL390719.2	1.915203966	1.33E-07	1.23E-06	LINC02188	-2.356052865	0.001024452	0.002935794
AC026401.3	1.72325719	7.18E-13	2.81E-11	LINC01269	-2.272405779	8.63E-05	0.00034701
AC016876.1	1.702202906	1.40E-13	6.77E-12	AL512274.1	-2.116079333	0.000950548	0.002748685
LINC01089	1.691663317	7.06E-09	9.40E-08	SH3PXD2A-AS1	-2.098914893	0.002637344	0.006620094
RUSC1-AS1	1.638767237	5.51E-12	1.71E-10	LINC02560	-2.064706171	0.000387985	0.00127026
NCK1-AS1	1.610970752	9.50E-14	4.82E-12	MAGI2-AS3	-1.981802384	1.50E-06	1.01E-05
AC020916.1	1.590137216	9.75E-07	6.96E-06	AC092611.2	-1.938385481	1.85E-05	9.06E-05
AC099850.3	1.586460212	1.14E-07	1.07E-06	AC144831.1	-1.858179221	1.65E-08	2.00E-07
LINC00342	1.55181028	3.15E-05	0.000143252	AP002761.4	-1.83799224	7.31E-05	0.000299119
AC083843.2	1.539007539	3.77E-08	4.10E-07	LINC00960	-1.64730121	0.000350002	0.00116072
AC004943.2	1.532985125	1.14E-14	7.40E-13	MIR22HG	-1.623218142	1.02E-10	2.22E-09
AC015813.1	1.501779707	7.00E-08	7.04E-07	MEG3	-1.615094989	0.002912673	0.007224093
AC009120.2	1.490355548	8.41E-10	1.45E-08	PART1	-1.591154331	0.002096225	0.00544647
BLACAT1	1.487918388	0.000585822	0.001818492	AL137782.1	-1.590270896	2.55E-07	2.15E-06
AC092718.4	1.469415656	3.24E-11	8.02E-10	AL357033.4	-1.584014321	1.64E-05	8.13E-05
SNHG12	1.468857246	1.04E-07	9.93E-07	AL139385.1	-1.566346755	0.001907903	0.005027191
HOTAIRM1	1.45633903	0.000116833	0.000449402	LINC00346	-1.508835526	0.001015241	0.00291114

HNSCC: head and neck squamous cell carcinoma; lncRNAs: long noncoding RNAs

Table S2 Top 25 differentially expressed lncRNAs in the p16 negative HNSCC samples compared with normal samples

p16 negative HNSCC samples compared with normal samples							
Top 25 upregulated lncRNAs				Top 25 downregulated lncRNAs			
symbol	logFC	P Value	FDR	symbol	logFC	P Value	FDR
CASC9	4.634681398	9.60E-10	9.17E-09	PART1	-3.65062546	9.41E-20	1.15E-17
AL161431.1	4.222015182	6.23E-11	7.88E-10	C5orf66-AS1	-3.458970523	9.03E-14	2.26E-12
AL358334.2	4.211575704	7.66E-26	8.47E-23	COLCA1	-2.991966544	1.61E-11	2.34E-10
HOXC13-AS	3.673305048	5.75E-12	9.13E-11	AC091563.1	-2.841089195	2.05E-15	7.75E-14
LINC01615	3.519957016	1.35E-16	6.92E-15	MIR99AHG	-2.128170346	3.95E-16	1.81E-14
AL365181.3	2.794484054	1.38E-08	1.03E-07	ZNF710-AS1	-2.05917823	7.47E-16	3.13E-14
U62317.2	2.654107559	1.73E-15	6.68E-14	AC104825.2	-1.998627481	2.07E-24	1.02E-21
GSEC	2.367582893	1.93E-19	2.12E-17	AL357033.4	-1.962525377	5.24E-14	1.37E-12
MIAT	2.281782746	2.15E-10	2.39E-09	WFDC21P	-1.879398386	6.35E-07	3.26E-06
IGFL2-AS1	2.129658582	1.03E-05	4.07E-05	LINC00900	-1.852378162	8.07E-09	6.31E-08
BBOX1-AS1	2.125520489	4.75E-08	3.13E-07	AL512274.1	-1.805504766	1.39E-06	6.63E-06
FOXO2-AS1	2.098780486	4.49E-22	8.83E-20	AC002546.1	-1.795885515	3.59E-14	9.79E-13
LINC01116	2.028312171	1.01E-09	9.55E-09	LINC02188	-1.789669194	0.000217839	0.000639417
HAGLR	1.960894091	3.74E-10	3.93E-09	AL035661.1	-1.782456815	5.99E-12	9.47E-11
NKILA	1.737529085	1.85E-09	1.66E-08	LINC00960	-1.77132684	5.55E-06	2.33E-05
AC099850.3	1.720821762	9.09E-13	1.72E-11	AL022323.1	-1.74307409	6.04E-08	3.88E-07
MSC-AS1	1.6688083	7.72E-08	4.84E-07	LINC02560	-1.739997785	6.81E-06	2.81E-05
MIR9-3HG	1.588453727	5.06E-06	2.14E-05	FLG-AS1	-1.696260023	2.18E-07	1.25E-06
AL078590.2	1.586540093	5.44E-05	0.000184909	AC144831.1	-1.665172496	4.62E-12	7.49E-11
LBX2-AS1	1.486971207	2.01E-12	3.51E-11	ZNF667-AS1	-1.586411005	6.80E-11	8.54E-10
AP003356.1	1.485832475	1.75E-06	8.18E-06	AL691432.2	-1.461430516	6.64E-19	6.24E-17
LINC00174	1.455049101	2.51E-08	1.76E-07	C5orf66	-1.360295194	1.82E-11	2.59E-10
CASC15	1.433787337	1.90E-08	1.36E-07	LINC00665	-1.337847498	0.000114765	0.000357528
LINC00839	1.372144668	0.000276563	0.000792053	MIR4458HG	-1.337729767	3.84E-07	2.07E-06
LINC00958	1.340476628	0.001723064	0.004081628	LINC01133	-1.302809793	3.53E-05	0.00012464

HNSCC: head and neck squamous cell carcinoma; lncRNAs: long noncoding RNAs

Table S3 Top 25 differentially expressed miRNAs in the p16 positive HNSCC samples compared with normal

samples

p16 positive HNSCC samples compared with normal samples

Top 25 upregulated miRNAs				Top 25 downregulated miRNAs			
symbol	logFC	PValue	FDR	symbol	logFC	PValue	FDR
hsa-miR-196a-5p	5.307304187	6.34E-21	1.44E-18	hsa-miR-133b	-6.655457722	3.86E-09	1.68E-08
hsa-miR-9-5p	4.342548504	6.08E-19	5.55E-17	hsa-miR-1-3p	-6.37945097	3.51E-10	2.03E-09
hsa-miR-196b-5p	4.341517865	2.40E-18	1.37E-16	hsa-miR-206	-6.238465127	3.27E-08	1.22E-07
hsa-miR-592	3.455196671	1.01E-17	3.30E-16	hsa-miR-133a-3p	-5.911689439	1.25E-08	5.04E-08
hsa-miR-20b-5p	3.332020842	2.28E-14	3.16E-13	hsa-miR-375	-4.390149369	3.77E-10	2.11E-09
hsa-miR-503-5p	2.942279666	1.44E-13	1.64E-12	hsa-miR-299-5p	-4.002131042	4.62E-13	4.49E-12
hsa-miR-210-3p	2.828873907	3.32E-08	1.23E-07	hsa-miR-381-3p	-3.879243426	1.94E-14	2.76E-13
hsa-miR-4746-5p	2.756081412	9.56E-19	7.26E-17	hsa-miR-1247-3p	-3.807885025	2.89E-12	2.38E-11
hsa-miR-106a-5p	2.692927509	1.64E-12	1.47E-11	hsa-miR-411-5p	-3.706968243	1.41E-16	3.06E-15
hsa-miR-9-3p	2.443919905	1.79E-09	8.53E-09	hsa-miR-136-3p	-3.596249101	3.68E-20	5.59E-18
hsa-miR-301a-5p	2.424777511	2.33E-11	1.72E-10	hsa-miR-410-3p	-3.484687869	2.29E-17	5.80E-16
hsa-miR-301a-3p	2.324913952	8.61E-13	8.02E-12	hsa-miR-654-3p	-3.468197121	1.31E-17	3.52E-16
hsa-miR-1301-3p	2.240423549	4.04E-18	1.53E-16	hsa-miR-337-3p	-3.410868138	3.26E-18	1.49E-16
hsa-miR-130b-5p	2.235096952	1.25E-17	3.52E-16	hsa-miR-379-5p	-3.310499547	1.09E-19	1.24E-17
hsa-miR-93-5p	2.070424098	1.05E-14	1.60E-13	hsa-miR-377-5p	-3.307642386	2.16E-15	3.78E-14
hsa-miR-16-2-3p	1.99898009	3.10E-17	7.43E-16	hsa-miR-139-3p	-3.267368941	3.96E-18	1.53E-16
hsa-miR-93-3p	1.980639038	3.26E-18	1.49E-16	hsa-miR-891a-5p	-3.222739535	2.22E-09	1.03E-08
hsa-miR-363-3p	1.967693992	1.40E-08	5.56E-08	hsa-miR-432-5p	-3.216190232	1.38E-16	3.06E-15
hsa-miR-550a-5p	1.870914786	3.45E-11	2.50E-10	hsa-miR-127-3p	-3.166891721	1.49E-18	9.74E-17
hsa-miR-130b-3p	1.860378531	5.38E-18	1.89E-16	hsa-miR-100-5p	-3.119326753	2.98E-21	1.36E-18
hsa-miR-320b	1.846707317	2.63E-12	2.22E-11	hsa-miR-369-5p	-3.098430778	1.23E-15	2.24E-14
hsa-miR-31-5p	1.840825034	0.001291913	0.002539278	hsa-miR-379-3p	-3.077096641	2.93E-12	2.38E-11
hsa-miR-3607-3p	1.83362341	5.34E-06	1.46E-05	hsa-miR-376c-3p	-3.02102129	1.22E-13	1.42E-12
hsa-miR-96-5p	1.802230745	1.77E-09	8.51E-09	hsa-miR-204-5p	-3.016768695	3.23E-09	1.43E-08
hsa-miR-135b-5p	1.7609015	7.64E-05	0.000184398	hsa-miR-376a-3p	-3.000357315	3.75E-13	3.80E-12

HNSCC: head and neck squamous cell carcinoma; miRNAs: microRNAs

Table S4 Top 25 differentially expressed miRNAs in the p16 negative HNSCC samples compared with normal

samples

p16 negative HNSCC samples compared with normal samples

Top 25 upregulated miRNAs				Top 25 downregulated miRNAs			
symbol	logFC	PValue	FDR	symbol	logFC	PValue	FDR
hsa-miR-196a-5p	3.710696429	3.40E-14	3.71E-13	hsa-miR-375	-4.155136124	2.30E-16	3.63E-15
hsa-miR-4652-5p	3.351684475	3.97E-17	7.28E-16	hsa-miR-204-5p	-3.396189413	1.13E-20	7.37E-19
hsa-miR-196b-5p	3.31773569	1.29E-20	7.37E-19	hsa-miR-1-3p	-2.92915395	5.29E-05	0.000125276
hsa-miR-31-5p	2.712344086	1.27E-09	6.04E-09	hsa-miR-99a-5p	-2.66180627	2.77E-26	6.34E-24
hsa-miR-210-3p	2.702473655	2.21E-13	2.11E-12	hsa-miR-133b	-2.527374704	0.00046423	0.000949185
hsa-miR-503-5p	2.689712839	6.40E-20	2.09E-18	hsa-miR-6510-3p	-2.467720978	4.50E-11	2.78E-10
hsa-miR-455-3p	2.637783288	3.16E-23	4.82E-21	hsa-miR-139-3p	-2.434159085	1.11E-17	2.32E-16
hsa-miR-1293	2.440783681	1.53E-09	7.13E-09	hsa-miR-133a-3p	-2.410507882	0.000897515	0.001719924
hsa-miR-1269a	2.273617932	0.00188597	0.003360989	hsa-miR-30a-3p	-2.403896997	4.70E-20	1.79E-18
hsa-miR-301a-5p	2.173419183	4.32E-12	3.35E-11	hsa-miR-1247-3p	-2.384475991	3.42E-09	1.45E-08
hsa-miR-365a-5p	1.883501061	1.36E-11	1.00E-10	hsa-let-7c-5p	-2.328937274	4.97E-22	4.55E-20
hsa-miR-31-3p	1.877080341	1.86E-05	4.76E-05	hsa-miR-381-3p	-2.297985616	2.91E-12	2.38E-11
hsa-miR-6499-3p	1.856947497	1.42E-07	4.96E-07	hsa-miR-29c-3p	-2.260855853	1.72E-19	4.92E-18
hsa-miR-1301-3p	1.855175893	1.75E-21	1.34E-19	hsa-miR-125b-2-3p	-2.260056783	2.20E-17	4.39E-16
hsa-miR-301a-3p	1.831570414	2.30E-13	2.15E-12	hsa-miR-410-3p	-2.185229219	2.40E-15	3.24E-14
hsa-miR-937-3p	1.783345517	8.92E-10	4.30E-09	hsa-miR-101-3p	-2.165834194	1.31E-28	5.99E-26
hsa-miR-7-5p	1.74991794	1.24E-10	7.02E-10	hsa-miR-411-5p	-2.165363187	2.99E-13	2.74E-12
hsa-miR-671-5p	1.729974362	5.32E-20	1.87E-18	hsa-miR-100-5p	-2.164206345	9.00E-23	1.03E-20
hsa-miR-193b-3p	1.657915576	5.51E-15	7.21E-14	hsa-miR-136-3p	-2.134310929	4.41E-19	1.19E-17
hsa-miR-18a-3p	1.657524968	2.05E-11	1.45E-10	hsa-miR-378c	-2.071874384	2.01E-14	2.36E-13
hsa-miR-224-5p	1.610196509	1.97E-09	8.86E-09	hsa-miR-195-5p	-2.020264538	1.58E-20	8.03E-19
hsa-miR-4326	1.589593858	2.20E-05	5.55E-05	hsa-miR-30c-2-3p	-1.997426396	1.32E-16	2.24E-15
hsa-miR-424-3p	1.549513252	5.52E-10	2.78E-09	hsa-miR-30a-5p	-1.946698328	2.26E-20	9.41E-19
hsa-miR-324-5p	1.492995974	2.06E-14	2.36E-13	hsa-miR-99a-3p	-1.911145084	8.70E-16	1.32E-14
hsa-miR-424-5p	1.492476321	3.16E-14	3.53E-13	hsa-miR-338-5p	-1.838309673	1.79E-14	2.16E-13

HNSCC: head and neck squamous cell carcinoma; miRNAs: microRNAs

Table S5 Top 25 differentially expressed mRNAs in the p16 positive HNSCC samples compared with normal samples

p16 positive HNSCC samples compared with normal samples							
Top 25 upregulated mRNAs				Top 25 downregulated mRNAs			
symbol	logFC	PValue	FDR	symbol	logFC	PValue	FDR
SYCP2	5.216538256	6.08E-17	7.28E-15	CRISP3	-9.151975401	2.14E-08	2.49E-07
CDKN2A	4.910670301	7.57E-15	5.23E-13	ADH1B	-6.756055925	3.13E-11	7.77E-10
STAG3	4.6081083	5.12E-16	4.93E-14	KRT4	-6.726756478	2.14E-07	1.86E-06
KCNS1	4.47514305	3.67E-10	6.81E-09	DES	-6.6970069	0.000546262	0.001708986
MEI1	4.358418787	1.74E-13	8.10E-12	CRNN	-6.419751444	9.22E-06	4.95E-05
CXCL13	4.225887442	1.22E-10	2.61E-09	HMGCS2	-6.399997403	2.06E-13	9.34E-12
NEFH	4.084762825	1.81E-07	1.60E-06	PLA2G2A	-6.086718455	1.83E-10	3.70E-09
ESM1	3.706020414	2.43E-11	6.20E-10	MUC21	-5.721806149	7.83E-05	0.000317485
MMP12	3.67721845	1.17E-12	4.26E-11	ACTC1	-5.477146986	0.000745634	0.002233988
MMP11	3.57801949	3.68E-14	2.08E-12	MYOZ1	-5.475252834	0.000669111	0.002041735
NRIP3	3.497532158	9.48E-22	4.86E-19	TNNC1	-5.417336661	0.002222371	0.005725545
KLHDC7B	3.473456905	3.92E-07	3.13E-06	SCARA5	-5.415954289	5.78E-10	1.04E-08
IDO1	3.366135606	2.29E-07	1.97E-06	KLK13	-5.350460188	3.53E-06	2.14E-05
RIBC2	3.362848118	7.99E-18	1.15E-15	ATP1A2	-5.34116741	0.000123875	0.000472139
AIM2	3.350402233	1.61E-07	1.45E-06	ATP6V0A4	-5.249325364	4.37E-09	6.23E-08
MMP9	3.332436049	1.34E-10	2.82E-09	KLK12	-5.246941596	5.38E-06	3.09E-05
E2F1	3.299196408	8.83E-21	3.09E-18	HSPB6	-5.242833525	1.28E-05	6.57E-05
CXCL10	3.28702358	3.63E-07	2.94E-06	SYNPO2L	-5.194573517	3.12E-05	0.000142317
CELSR3	3.249484621	2.18E-16	2.24E-14	TGM3	-5.185045288	1.80E-05	8.88E-05
ZYG11A	3.245718926	5.27E-14	2.81E-12	MB	-5.147112684	0.000555866	0.001734878
CCL20	3.20101474	1.53E-06	1.03E-05	HSPB7	-5.075126676	0.000449402	0.001442082
COL22A1	3.007864922	2.55E-05	0.000119449	CA3	-5.074190325	0.000216348	0.000764805
FADS2	2.991510833	2.71E-10	5.24E-09	KLK7	-4.950556612	1.27E-06	8.77E-06
SEPT3	2.985537291	1.28E-12	4.65E-11	FMO2	-4.896217947	3.79E-13	1.60E-11
BST2	2.979401102	4.05E-15	3.05E-13	CFTR	-4.878787265	2.82E-09	4.24E-08

HNSCC: head and neck squamous cell carcinoma; mRNAs: messenger RNAs

Table S6 Top 25 differentially expressed mRNAs in the p16 negative HNSCC samples

compared with normal samples

p16 negative HNSCC samples compared with normal samples

Top 25 upregulated mRNAs				Top 25 downregulated mRNAs			
symbol	logFC	PValue	FDR	symbol	logFC	PValue	FDR
MMP1	6.306273628	1.70E-24	9.07E-22	CRISP3	-7.931309789	1.91E-17	1.24E-15
MMP13	6.0592303	4.43E-10	4.59E-09	MUC21	-7.584961051	1.20E-13	2.88E-12
HOXD11	5.912388019	3.52E-21	5.86E-19	CRNN	-7.068116275	1.15E-12	2.13E-11
COL10A1	5.700746251	6.08E-13	1.20E-11	KRT4	-6.328107111	8.39E-12	1.28E-10
CA9	5.272132455	1.27E-13	3.03E-12	MAL	-5.957794134	7.01E-16	2.97E-14
MMP11	5.237165932	4.83E-17	2.86E-15	TMPRSS11B	-5.839528604	1.63E-07	9.55E-07
MMP3	5.069802791	2.16E-12	3.75E-11	CYP4B1	-5.615943501	1.53E-27	2.19E-24
COL11A1	4.982808873	1.08E-08	8.20E-08	FAM3B	-5.494190309	2.14E-22	4.88E-20
HMG2A	4.79109862	3.94E-12	6.48E-11	FAM3D	-5.470843417	6.50E-26	7.79E-23
INHBA	4.703483384	3.55E-21	5.86E-19	LTF	-5.125839562	6.76E-10	6.75E-09
HOXC13	4.542980744	2.83E-13	6.10E-12	CEACAM7	-4.958560884	6.34E-11	8.02E-10
ZIC2	4.525917941	1.49E-18	1.30E-16	FMO2	-4.898180326	2.91E-25	2.46E-22
IL11	4.428272966	1.36E-23	5.16E-21	TGM3	-4.852867379	6.09E-08	3.91E-07
ADAM12	4.355276409	1.41E-18	1.24E-16	PLA2G2A	-4.819621808	5.22E-18	4.03E-16
HOXD10	4.333780117	2.42E-16	1.18E-14	TF	-4.777972452	9.18E-17	4.87E-15
WNT2	4.238249032	8.23E-15	2.65E-13	KRT13	-4.726496713	2.03E-08	1.45E-07
COL1A1	4.1623992	6.85E-22	1.28E-19	ZG16B	-4.684651468	2.80E-06	1.25E-05
MMP9	4.120734678	1.76E-14	5.22E-13	CLCA4	-4.501279962	6.96E-12	1.08E-10
MMP12	4.114187492	2.52E-13	5.49E-12	C7	-4.480610153	4.82E-17	2.86E-15
ADAMTS12	4.079155515	8.45E-17	4.55E-15	CLDN8	-4.465209458	3.83E-16	1.76E-14
SH2D5	4.047024115	1.11E-13	2.70E-12	ATP6V0A4	-4.444895758	1.62E-18	1.40E-16
EN1	3.967654298	3.68E-11	4.90E-10	FUT6	-4.380644688	1.16E-17	8.11E-16
ADAMTS2	3.963350128	1.42E-20	2.01E-18	GPD1	-4.373185724	1.66E-15	6.47E-14
MMP10	3.963169068	1.21E-07	7.26E-07	PI16	-4.304294581	2.44E-14	6.89E-13
PTHLH	3.884632481	1.97E-19	2.13E-17	TRPV6	-4.217058557	2.40E-20	3.26E-18

HNSCC: head and neck squamous cell carcinoma; mRNAs: messenger RNAs