

Supplement 1. 446 probe sets differentially expressed between HPV + and HPV – oropharyngeal cancer.

probe ID	gene symbol	NFD	Z score
203409_at	DDB2	0	9.76
218115_at	ASF1B	0	9.80
220358_at	SNFT	0	-11.41
224760_at	SP1	0	10.02
227611_at	FLJ25005	0.00001	-8.57
212127_at	RANGAP1	0.00002	8.45
223274_at	TCF19	0.00002	8.46
225179_at	HIP2	0.00002	8.48
201756_at	RPA2	0.00003	8.23
212435_at		0.00003	8.25
222416_at	ALDH18A1	0.00003	-8.34
215792_s_at	DNAJC11	0.00005	8.07
209797_at	TMEM4	0.00007	-7.98
200893_at	SFRS10	0.00008	7.93
219990_at	FLJ23311	0.00008	7.92
221024_s_at	SLC2A10	0.00008	-7.93
212300_at	DKFZp451J0118	0.0001	7.87
228910_at		0.00012	7.80
230464_at	EDG8	0.00012	7.79
202726_at	LIG1	0.00013	7.76
209111_at	RNF5	0.00013	7.75
222476_at	KIAA1194	0.00013	7.76
226183_at	GSK3B	0.00014	7.73
209680_s_at	KIFC1	0.00024	7.55
224754_at	SP1	0.00027	7.50
210685_s_at	UBE4B	0.00029	7.47
227592_at	MGC10204	0.00029	7.47
224759_s_at	MGC17943	0.00037	-7.39
91617_at	DGCR8	0.00041	7.35
48808_at	DHFR	0.00042	7.34
209549_s_at	DGUOK	0.00045	-7.31
224619_at	H63	0.00045	-7.32
212023_s_at	MKI67	0.00061	7.21
219649_at	ALG6	0.0007	7.16
200972_at	TM4SF8	0.00071	-7.16
202317_s_at	UBE4B	0.00077	7.13
231846_at	FLJ23322	0.00084	7.10
212174_at	AK2	0.00089	7.08
203379_at	RPS6KA1	0.00098	7.05
205034_at	CCNE2	0.00105	7.02
219280_at	C21orf107	0.00118	6.98
222848_at	FKSG14	0.00119	6.98
204510_at	CDC7	0.00128	6.95
213088_s_at	DNAJC9	0.00131	6.94
211763_s_at	UBE2B	0.00139	6.92
217876_at	GTF3C5	0.00141	6.92
214501_s_at	H2AFY	0.00146	6.91
226780_s_at	HSPC268	0.00147	-6.90
208669_s_at	CRI1	0.00152	-6.89
224645_at	EIF4EBP2	0.00165	6.86
222108_at	AMIGO2	0.00177	-6.84
214086_s_at	PARP2	0.00202	6.79
203016_s_at	SSX2IP	0.00216	6.77
209644_x_at	CDKN2A	0.00223	6.76

201202_at	PCNA	0.00224	6.76
215000_s_at	FEZ2	0.00229	-6.75
217791_s_at	ALDH18A1	0.00232	-6.74
212539_at	CHD1L	0.0024	-6.73
212214_at	OPA1	0.00242	6.73
224591_at	HP1-BP74	0.00244	6.73
201903_at	UQCRC1	0.00247	6.72
242890_at	HELLS	0.00303	6.65
202534_x_at	DHFR	0.00306	6.65
216071_x_at	TNRC11	0.00362	6.59
202373_s_at	RAB3-GAP150	0.00378	-6.58
231793_s_at	CAMK2D	0.0038	-6.58
202709_at	FMOD	0.00393	-6.56
212685_s_at	TBL2	0.00442	-6.52
201687_s_at	API5	0.00477	6.50
218313_s_at	GALNT7	0.00502	-6.48
225116_at	HIPK2	0.00519	-6.47
217047_s_at	FAM13A1	0.00557	-6.44
225578_at		0.00557	6.44
218004_at	FLJ10276	0.00585	6.43
212586_at	CAST	0.00613	6.41
235545_at		0.00649	6.39
200943_at	HMGN1	0.00692	6.37
235609_at		0.0071	6.36
208672_s_at	SFRS3	0.00738	6.35
227350_at		0.00795	6.32
202336_s_at	PAM	0.00803	-6.32
235244_at	ENO1	0.00816	6.31
205909_at	POLE2	0.00826	6.31
221952_x_at	KIAA1393	0.0084	6.30
212721_at	SFRS12	0.00862	6.29
225872_at	SLC35F5	0.00917	-6.27
202582_s_at	RANBP9	0.00918	6.27
1569057_s_at	FLJ39207	0.00919	-6.27
202532_s_at	DHFR	0.00937	6.27
231772_x_at	CENPH	0.00972	6.25
204026_s_at	ZWINT	0.01019	6.24
212508_at	MOAP1	0.01023	-6.24
225396_at	SYNCOILIN	0.01047	6.23
1556988_s_at	CHD1L	0.01092	-6.21
203067_at	PDHX	0.01143	6.20
204048_s_at	PHACTR2	0.01201	-6.18
200973_s_at	TM4SF8	0.01229	-6.17
222587_s_at	GALNT7	0.01269	-6.16
226886_at	GFPT1	0.01296	-6.15
218718_at	PDGFC	0.01365	-6.14
203181_x_at	SRPK2	0.01496	-6.11
208686_s_at	BRD2	0.01529	6.10
212958_x_at	PAM	0.01549	-6.09
203525_s_at	APC	0.01569	6.09
218432_at	FBXO3	0.0159	6.09
202097_at	NUP153	0.01622	6.08
204178_s_at	RBM14	0.0165	6.07
221751_at	PANK3	0.01699	6.06
201221_s_at	SNRP70	0.01705	6.06
201170_s_at	BHLHB2	0.01738	6.06
211063_s_at	NCK1	0.01738	6.06
202972_s_at	FAM13A1	0.01822	-6.04

218008_at	FLJ10099	0.01898	-6.03
218328_at	COQ4	0.01904	6.02
208407_s_at	CTNND1	0.01928	6.02
236535_at	SMC6L1	0.01938	6.02
224592_x_at	HP1-BP74	0.01989	6.01
1554057_at		0.02	-6.01
209974_s_at	BUB3	0.02012	6.01
228002_at	IDI2	0.02129	5.99
231832_at	GALNT4	0.02149	-5.98
201519_at	TOMM70A	0.02171	5.98
225523_at	FLJ14397	0.0224	-5.97
213253_at	SMC2L1	0.02315	5.96
241789_at		0.02323	-5.96
222824_at	SEC61A2	0.02424	5.94
209053_s_at	WHSC1	0.02533	5.93
228962_at		0.02571	-5.92
226265_at	FLJ21924	0.02642	5.91
224974_at	SDS3	0.02703	5.91
238317_x_at		0.0275	-5.90
218653_at	SLC25A15	0.02803	5.89
226821_at	Rif1	0.02888	5.88
37652_at	CABIN1	0.02906	5.88
200652_at	SSR2	0.02947	-5.88
225650_at	LOC90378	0.02973	5.87
202973_x_at	FAM13A1	0.02981	-5.87
200041_s_at		0.03067	5.86
225340_s_at		0.03114	5.86
206052_s_at	SLBP	0.03289	5.84
201787_at	FBLN1	0.03375	5.83
216483_s_at	C19orf10	0.0338	-5.83
202780_at	OXCT1	0.03438	5.82
201970_s_at	NASP	0.03779	5.79
227451_s_at		0.03861	5.78
212020_s_at	MKI67	0.03878	5.78
213573_at		0.03937	5.78
209090_s_at	SH3GLB1	0.04092	5.76
204752_x_at	PARP2	0.04154	5.76
224801_at	NDFIP2	0.04437	5.74
227279_at	TCEAL3	0.04459	-5.74
239091_at		0.04506	5.73
227748_at	KAT3	0.04561	5.73
222843_at	FIGNL1	0.04591	5.73
218072_at	COMMD9	0.04606	5.72
205996_s_at	AK2	0.04608	5.72
238447_at	RBMS3	0.0471	-5.72
218694_at	ARMCX1	0.04734	-5.71
214203_s_at	PRODH	0.04926	5.70
227369_at	PAI-RBP1	0.04976	5.70
203655_at	XRCC1	0.05098	5.69
1556059_s_at	SHARP	0.0517	5.69
200980_s_at	PDHA1	0.05221	5.68
218467_at	TNFSF5IP1	0.05248	5.68
228345_at		0.05472	-5.67
200990_at	TRIM28	0.05524	5.66
208854_s_at	STK24	0.05596	5.66
202413_s_at	USP1	0.05651	5.65
218170_at	CGI-111	0.05745	5.65
227818_at	DKFZP434L0117	0.05817	5.65

204047_s_at	PHACTR2	0.05868	-5.64
208668_x_at	HMG2	0.05893	5.64
234995_at	LOC152185	0.05919	5.64
218657_at	RAPGEFL1	0.06023	5.63
213318_s_at	BAT3	0.06044	5.63
224637_at		0.06044	-5.63
230127_at		0.06144	5.63
220094_s_at	C6orf79	0.06181	5.62
243463_s_at		0.06188	-5.62
228336_at	KIAA1935	0.06358	5.62
227455_at	C6orf136	0.06426	5.61
226316_at	C13orf10	0.0671	5.60
52285_f_at	C18orf9	0.06785	5.59
225655_at	UHRF1	0.07027	5.58
218422_s_at	C13orf10	0.07038	5.58
210788_s_at	DHRS7	0.0712	-5.58
203422_at	POLD1	0.07176	5.57
212125_at	RANGAP1	0.07246	5.57
228401_at		0.07396	5.56
211271_x_at	PTBP1	0.07401	5.56
212015_x_at	PTBP1	0.07634	5.55
225017_at	FLJ12892	0.07855	5.54
203017_s_at	SSX2IP	0.07925	5.54
207231_at	DZIP3	0.07983	5.54
201663_s_at	SMC4L1	0.08256	5.53
228380_at		0.0836	5.52
208511_at		0.08411	5.52
228868_x_at		0.0842	5.52
225466_at	FLJ36874	0.08451	5.52
214551_s_at	CD7	0.08481	5.52
242336_at	GSK3B	0.08681	5.51
225019_at	CAMK2D	0.09052	-5.50
213897_s_at	MRPL23	0.09421	5.48
203358_s_at	EZH2	0.09729	5.47
216620_s_at	ARHGEF10	0.09881	-5.47
208158_s_at	OSBPL1A	0.10012	-5.46
213053_at	KIAA0841	0.10085	5.46
226338_at	DKFZp762O076	0.10409	-5.45
222270_at	KIAA1387	0.10425	-5.45
200056_s_at	C1D	0.10476	-5.45
218113_at	TMEM2	0.10953	-5.43
1553535_a_at	RANGAP1	0.11337	5.42
217771_at	GOLPH2	0.11518	-5.41
221677_s_at		0.11626	5.41
228361_at	E2F2	0.11696	5.41
214820_at	C21orf107	0.11867	5.40
205235_s_at	MPHOSPH1	0.1204	5.40
202864_s_at	SP100	0.12257	-5.39
225716_at		0.12263	5.39
225725_at		0.12468	5.39
202308_at	SREBF1	0.12573	5.38
221492_s_at	APG3L	0.1259	5.38
200892_s_at	SFRS10	0.12874	5.38
1569110_x_at	PDCD6	0.1298	-5.37
212625_at	STX10	0.13	5.37
210361_s_at	ELF2	0.13129	5.37
207168_s_at	H2AFY	0.13365	5.36
226921_at	UBR1	0.13753	-5.35

213175_s_at	SNRPB	0.14293	5.34
206665_s_at	BCL2L1	0.14312	5.34
213184_at	SENP5	0.1451	5.34
227326_at	FLJ46603	0.14513	-5.34
226551_at	RIPK1	0.1466	5.33
222201_s_at	CASP8AP2	0.1468	5.33
228396_at		0.14687	-5.33
204725_s_at	NCK1	0.14734	5.33
201477_s_at	RRM1	0.14793	5.33
201544_x_at	PABPN1	0.15066	5.32
219088_s_at	ZNF576	0.15083	5.32
201622_at	SND1	0.15295	-5.32
210371_s_at	RBBP4	0.15493	5.31
215037_s_at	BCL2L1	0.15506	5.31
207480_s_at	MEIS2	0.15565	-5.31
226257_x_at	MRPS22	0.15987	5.30
203018_s_at	SSX2IP	0.16016	5.30
218921_at	SIGIRR	0.16064	5.30
223570_at	MCM10	0.16123	5.30
229138_at	PARP11	0.16453	-5.29
213472_at	HNRPH1	0.16512	5.29
226116_at		0.16803	5.29
214721_x_at	CDC42EP4	0.17089	5.28
238935_at		0.17168	-5.28
201677_at	DC12	0.17201	5.28
201509_at	IDH3B	0.17264	5.28
223028_s_at	SNX9	0.17292	-5.28
224634_at	FLJ20249	0.17522	-5.27
242711_x_at	KIAA1596	0.1771	5.27
225585_at	RAP2A	0.17963	5.26
203554_x_at	PTTG1	0.18233	5.26
226453_at	AYP1	0.18576	-5.25
200775_s_at	HNRPK	0.18637	5.25
225174_at	DNAJC10	0.1873	-5.25
225007_at	G3BP	0.18853	5.25
202334_s_at	UBE2B	0.19069	5.24
222740_at	ATAD2	0.19749	5.23
224784_at	MLLT6	0.19767	5.23
208670_s_at	CRI1	0.20533	-5.22
217970_s_at	KIAA1194	0.21067	5.21
221739_at	C19orf10	0.21121	-5.21
203564_at	FANCG	0.21453	5.20
227545_at		0.21741	5.20
202681_at	USP4	0.22078	5.19
204825_at	MELK	0.22197	5.19
221428_s_at	TBL1XR1	0.23106	5.18
224468_s_at	MGC13170	0.23124	5.18
204564_at	RNF3	0.23281	5.18
223741_s_at	TTYH2	0.2435	-5.16
201423_s_at	CUL4A	0.24504	5.16
203136_at	RABAC1	0.24759	-5.15
219036_at	Cep70	0.24764	5.15
223367_at	WBSCR18	0.24881	-5.15
219004_s_at	C21orf45	0.26426	5.13
206846_s_at	HDAC6	0.26892	5.13
38158_at	ESPL1	0.27069	5.12
212623_at	KIAA0033	0.2715	5.12
204017_at	KDELR3	0.27637	-5.12

230634_x_at	LOC113179	0.27883	5.11
225927_at	MAP3K1	0.2791	5.11
1566557_at		0.28574	-5.11
229433_at	C13orf10	0.28797	5.10
200783_s_at	STMN1	0.29148	5.10
218650_at	DGCR8	0.29634	5.09
212710_at	CAMSAP1	0.30355	5.09
227433_at	KIAA2018	0.3066	5.08
224623_at	THOC3	0.30704	5.08
203624_at	DXYS155E	0.30995	5.08
213100_at	UNC5B	0.3141	5.07
203227_s_at	SAS	0.31458	-5.07
202107_s_at	MCM2	0.3162	5.07
202305_s_at	FEZ2	0.32485	-5.06
225198_at	VAPA	0.32684	5.06
219078_at	GPATC2	0.32753	-5.06
214257_s_at		0.3399	-5.05
212351_at	EIF2B5	0.34157	5.05
218611_at	IER5	0.34531	5.04
213682_at	NUP50	0.34654	5.04
213787_s_at	EBP	0.34662	5.04
202779_s_at	UBE2S	0.35021	5.04
211070_x_at	DBI	0.3535	5.03
228597_at	C21orf45	0.35381	5.03
222492_at	PDXK	0.35923	5.03
218294_s_at	NUP50	0.35996	5.03
217979_at	TM4SF13	0.36046	-5.03
227274_at		0.36799	-5.02
202633_at	TOPBP1	0.37106	5.02
214172_x_at	RYK	0.37277	5.02
213247_at	C9orf13	0.37493	-5.01
242655_at		0.37771	5.01
227349_at		0.38611	5.00
210208_x_at	BAT3	0.38847	5.00
219698_s_at	METTL4	0.39575	5.00
218946_at	HIRIP5	0.40514	-4.99
225064_at	RABEP1	0.41111	-4.98
212175_s_at	AK2	0.41701	4.98
223315_at	NTN4	0.42042	-4.98
209210_s_at	PLEKHC1	0.42093	-4.97
214620_x_at	PAM	0.42701	-4.97
200790_at	ODC1	0.42874	-4.97
201225_s_at	SRRM1	0.42955	4.97
201833_at	HDAC2	0.42963	4.97
226481_at	VprBP	0.43364	4.96
233852_at	POLH	0.43653	4.96
212333_at	DKFZP564F0522	0.44379	-4.96
201036_s_at	HADHSC	0.45111	4.95
221685_s_at	FLJ20364	0.45267	4.95
202060_at	SH2BP1	0.45704	4.95
220409_at	CAMSAP1	0.45808	4.95
1559006_at		0.45812	4.95
227628_at		0.47398	-4.93
216205_s_at	MFN2	0.48056	4.93
228496_s_at		0.48269	-4.93
206095_s_at	FUSIP1	0.48309	4.93
228158_at		0.50003	-4.92
210878_s_at	JMJD1B	0.50194	4.91

203061_s_at	MDC1	0.50775	4.91
224994_at	CAMK2D	0.51561	-4.91
225309_at	PHF5A	0.51705	4.90
1555878_at	RPS24	0.52276	4.90
224160_s_at	ACAD9	0.52307	4.90
236381_s_at	WDR8	0.52594	4.90
233385_x_at	RAB4B	0.52689	4.90
212021_s_at	MKI67	0.52757	4.90
205339_at	SIL	0.52985	4.90
200906_s_at	KIAA0992	0.53465	-4.89
228937_at	FLJ38725	0.53488	4.89
202737_s_at	LSM4	0.54225	4.89
221782_at	DNAJC10	0.54267	-4.89
225887_at	C13orf23	0.5471	4.89
204023_at		0.55178	4.88
212622_at		0.55506	4.88
215732_s_at	DTX2	0.55707	4.88
218951_s_at	PLCXD1	0.55863	4.88
228129_at	PAI-RBP1	0.55873	4.88
213852_at	RBM8A	0.56271	4.88
219373_at	DPM3	0.56307	-4.88
208795_s_at	MCM7	0.56366	4.88
218062_x_at	CDC42EP4	0.56387	4.88
212509_s_at	FLJ46603	0.56478	-4.87
214791_at	LOC93349	0.57219	-4.87
204686_at	IRS1	0.57816	-4.87
213346_at	LOC93081	0.57866	4.87
205542_at	STEAP	0.58341	-4.86
212145_at	MRPS27	0.58451	4.86
202666_s_at	ACTL6A	0.58495	4.86
203335_at	PHYH	0.58687	-4.86
229663_at	LONP	0.58773	-4.86
231810_at	BRI3BP	0.592	4.86
219220_x_at	MRPS22	0.59498	4.86
219826_at	FLJ23233	0.60133	-4.85
231895_at	DKFZp761A078	0.60272	4.85
202375_at	SEC24D	0.60792	-4.85
226584_s_at	C20orf55	0.60893	4.85
201555_at	MCM3	0.61112	4.85
214306_at	OPA1	0.61644	4.85
229551_x_at	ZNF367	0.62096	4.84
225685_at		0.63116	-4.84
205036_at	LSM6	0.63482	4.84
212162_at	KIDINS220	0.63488	-4.84
214662_at	KIAA0007	0.63712	-4.83
221187_s_at	FLJ22688	0.63983	4.83
223934_at	LOC93349	0.65085	-4.83
225355_at	DKFZP761M1511	0.65444	4.82
1556820_a_at	DLEU2	0.65736	4.82
221250_s_at	MXD3	0.6706	4.82
212945_s_at	MGA	0.67695	4.81
200847_s_at	MGC8721	0.67702	-4.81
221781_s_at	DNAJC10	0.67937	-4.81
203690_at	TUBGCP3	0.68661	4.81
227250_at	KREMEN1	0.71115	4.80
202428_x_at	DBI	0.73493	4.79
211698_at	CRI1	0.73983	-4.78
37425_g_at	C6orf18	0.74043	4.78

228284_at	TLE1	0.74339	-4.78
226302_at		0.74731	4.78
209449_at	LSM2	0.75032	4.78
242738_s_at	ATBF1	0.75903	-4.77
220969_s_at		0.77418	4.77
202589_at	TYMS	0.77838	4.77
204252_at	CDK2	0.78227	4.76
229351_at	C6orf49	0.791	4.76
214786_at	MAP3K1	0.80404	4.75
233841_s_at	SDS3	0.80657	4.75
210418_s_at	IDH3B	0.81324	4.75
224715_at	WDR34	0.81658	4.75
216306_x_at	PTBP1	0.81879	4.75
231130_at		0.82282	-4.75
224150_s_at	Cep70	0.82429	4.75
226374_at		0.82674	4.75
201664_at	SMC4L1	0.82997	4.74
210139_s_at	PMP22	0.83415	-4.74
218039_at	NUSAP1	0.83964	4.74
219433_at	BCOR	0.85478	4.73
201930_at	MCM6	0.85789	4.73
213140_s_at	SS18L1	0.87255	4.73
208711_s_at	CCND1	0.8729	-4.73
235531_at	IL17RB	0.87347	4.73
212533_at	WEE1	0.88583	4.72
213617_s_at	C18orf10	0.88635	4.72
217941_s_at	ERBB2IP	0.89193	4.72
214247_s_at	DKK3	0.89398	-4.72
201681_s_at	DLG5	0.89841	4.72
225982_at	UBTF	0.90532	4.71
207076_s_at	ASS	0.90576	4.71
222549_at	CLDN1	0.90775	4.71
227962_at	ACOX1	0.90801	4.71
201255_x_at	BAT3	0.90855	4.71
215739_s_at	TUBGCP3	0.91658	4.71
209389_x_at	DBI	0.93077	4.70
202976_s_at	RHOBTB3	0.93197	-4.70
202412_s_at	USP1	0.93942	4.70
230848_s_at		0.96145	4.69
208724_s_at	RAB1A	0.96648	-4.69
214464_at	CDC42BPA	0.96755	-4.69
233265_at		0.96951	4.69
210269_s_at	DXYS155E	0.97883	4.69
202253_s_at	DNM2	0.98874	4.68

Supplement 2. 299 probe sets differentially expressed between HPV + oropharyngeal cancer and HPV – oropharyngeal control.

Probe Set ID	Gene Symbol	t-stat	p-value
202107_s_at	MCM2	12.106	< 0.001
204023_at	RFC4	11.397	< 0.001
209644_x_at	CDKN2A	10.966	< 0.001
218039_at	NUSAP1	10.194	< 0.001
201202_at	PCNA	10.183	< 0.001
201970_s_at	NASP	10.093	< 0.001
201555_at	MCM3	10.063	< 0.001
204252_at	CDK2 /// BCDO2	10.021	< 0.001
218432_at	FBXO3	-10.003	< 0.001
225655_at	UHRF1	9.951	< 0.001
208795_s_at	MCM7	9.936	< 0.001
204047_s_at	PHACTR2	-9.899	< 0.001
222740_at	ATAD2	9.898	< 0.001
201930_at	MCM6	9.588	< 0.001
212300_at	TXLNA	9.395	< 0.001
221428_s_at	TBL1XR1	9.151	< 0.001
236381_s_at	YIPF1 /// NECAP2 /// WDR8	9.029	< 0.001
202666_s_at	ACTL6A	8.894	< 0.001
229551_x_at	ZNF367	8.884	< 0.001
210371_s_at	RBBP4	8.851	< 0.001
205339_at	STIL	8.821	< 0.001
222843_at	FIGNL1	8.793	< 0.001
204048_s_at	PHACTR2	-8.663	< 0.001
202582_s_at	RANBP9	-8.590	< 0.001
231846_at	FOXRED2	8.561	< 0.001
205909_at	POLE2	8.530	< 0.001
218115_at	ASF1B	8.525	< 0.001
230464_at	EDG8	8.493	< 0.001
223274_at	TCF19	8.488	< 0.001
203379_at	RPS6KA1	8.380	< 0.001
225017_at	CCDC14	8.260	< 0.001
200775_s_at	HNRPK	8.210	< 0.001
200783_s_at	STMN1	8.180	< 0.001
204825_at	MELK	8.144	< 0.001
235609_at	---	8.093	< 0.001
213253_at	SMC2	8.036	< 0.001
222848_at	CENPK	7.915	< 0.001
212945_s_at	MGA	7.860	< 0.001
209053_s_at	WHSC1	7.701	< 0.001
205034_at	CCNE2	7.633	< 0.001
225872_at	SLC35F5	-7.492	< 0.001
223570_at	MCM10	7.478	< 0.001
204026_s_at	ZWINT	7.433	< 0.001
228401_at	ATAD2	7.404	< 0.001
219698_s_at	METTL4	7.362	< 0.001
208672_s_at	SFRS3	7.297	< 0.001
202412_s_at	USP1	7.261	< 0.001
212021_s_at	MKI67	7.224	< 0.001
228868_x_at	CDT1	7.202	< 0.001
202413_s_at	USP1	7.191	< 0.001
227350_at	HELLS	7.133	< 0.001
200893_at	SFRS10	7.105	< 0.001
214172_x_at	RYK	7.080	< 0.001

224468_s_at	C19orf48	7.057	< 0.001
200892_s_at	SFRS10	6.995	< 0.001
218062_x_at	CDC42EP4	6.979	< 0.001
223028_s_at	SNX9	-6.948	< 0.001
218313_s_at	GALNT7	-6.927	< 0.001
214086_s_at	PARP2	6.852	< 0.001
209974_s_at	BUB3	6.791	< 0.001
210685_s_at	UBE4B	6.760	< 0.001
204510_at	CDC7	6.731	< 0.001
201756_at	RPA2	6.648	< 0.001
212020_s_at	MKI67	6.624	< 0.001
214721_x_at	CDC42EP4	6.543	< 0.001
227592_at	ALDH16A1	6.502	< 0.001
201681_s_at	DLG5	6.482	< 0.001
224150_s_at	CEP70	6.481	< 0.001
201477_s_at	RRM1	6.469	< 0.001
201663_s_at	SMC4	6.436	< 0.001
226338_at	TMEM55A	-6.408	< 0.001
228597_at	C21orf45	6.363	< 0.001
208158_s_at	OSBPL1A	-6.332	< 0.001
202726_at	LIG1	6.319	< 0.001
231772_x_at	CENPH	6.270	< 0.001
203016_s_at	SSX2IP	6.255	< 0.001
211063_s_at	NCK1	6.254	< 0.001
242890_at	HELLS	6.206	< 0.001
202779_s_at	UBE2S /// LOC731049	6.174	< 0.001
203564_at	FANCG	6.169	< 0.001
220969_s_at	---	6.161	< 0.001
201544_x_at	PABPN1	6.124	< 0.001
223315_at	NTN4	-6.085	< 0.001
213088_s_at	DNAJC9	6.040	< 0.001
203061_s_at	MDC1	6.024	< 0.001
235545_at	---	5.989	< 0.001
226780_s_at	HSPC268	-5.951	< 0.001
1556820_a_at	DLEU2	5.938	< 0.001
224592_x_at	HP1BP3	5.872	< 0.001
222549_at	CLDN1	5.858	< 0.001
225116_at	HIPK2	-5.852	< 0.001
225578_at	RP11-11C5.2	5.842	< 0.001
203422_at	POLD1	5.815	< 0.001
209449_at	LSM2	5.771	< 0.001
202589_at	TYMS	5.758	< 0.001
222201_s_at	CASP8AP2	5.741	< 0.001
202780_at	OXCT1	-5.710	< 0.001
212023_s_at	MKI67	5.708	< 0.001
38158_at	ESPL1	-5.663	< 0.001
213175_s_at	SNRPB	5.584	< 0.001
235244_at	CCDC58	5.582	< 0.001
200972_at	TSPAN3	-5.567	< 0.001
201664_at	SMC4	5.565	< 0.001
218004_at	BSDC1	5.560	< 0.001
204752_x_at	PARP2	5.553	< 0.001
200973_s_at	TSPAN3	-5.550	< 0.001
225355_at	DKFZP761M1511	5.514	< 0.001
221677_s_at	DONSON	5.512	< 0.001
200041_s_at	BAT1	5.479	< 0.001
229663_at	LONP2	-5.473	< 0.001
202532_s_at	DHFR	5.399	< 0.001

37425_g_at	CCHCR1	5.390	< 0.001
212586_at	CAST	-5.372	< 0.001
209680_s_at	KIFC1	5.370	< 0.001
229351_at	---	5.347	< 0.001
202097_at	NUP153	5.346	< 0.001
201833_at	HDAC2	5.278	< 0.001
207480_s_at	MEIS2	-5.268	< 0.001
202737_s_at	LSM4	5.261	< 0.001
215739_s_at	TUBGCP3	5.240	< 0.001
48808_at	DHFR	5.204	< 0.001
221952_x_at	TRMT5	5.185	< 0.001
227349_at	---	5.145	< 0.001
242336_at	---	5.108	< 0.001
222587_s_at	GALNT7	-5.101	< 0.001
225523_at	MRPL53	-5.097	< 0.001
205235_s_at	MPHOSPH1	5.073	< 0.001
208668_x_at	HMG2	5.055	< 0.001
212127_at	RANGAP1	5.049	< 0.001
214203_s_at	PRODH	5.030	< 0.001
230848_s_at	MGA	5.012	< 0.001
225650_at	SAMD1	4.991	< 0.001
202633_at	TOPBP1	4.989	< 0.001
204725_s_at	NCK1	4.945	< 0.001
213617_s_at	C18orf10	4.938	< 0.001
213346_at	C13orf27	4.909	< 0.001
212125_at	RANGAP1	4.884	< 0.001
224591_at	HP1BP3	4.861	< 0.001
209111_at	RNF5	4.860	< 0.001
208686_s_at	BRD2	4.785	< 0.001
205996_s_at	AK2	4.781	< 0.001
200990_at	TRIM28	4.768	< 0.001
213184_at	SENP5	4.762	< 0.001
211763_s_at	UBE2B	-4.749	< 0.001
203335_at	PHYH	-4.740	< 0.001
213053_at	KIAA0841	4.735	< 0.001
231895_at	SASS6	4.734	< 0.001
221024_s_at	SLC2A10	-4.720	< 0.001
224715_at	WDR34	4.705	< 0.001
227962_at	ACOX1	-4.651	< 0.001
225466_at	FLJ36874	4.591	< 0.001
203018_s_at	SSX2IP	4.579	< 0.001
226821_at	RIF1	4.573	< 0.001
226116_at	---	4.562	< 0.001
221492_s_at	ATG3	4.554	< 0.001
202534_x_at	DHFR	4.507	< 0.001
213472_at	HNRPH1	4.499	< 0.001
218694_at	ARMCX1	-4.468	< 0.001
217979_at	TSPAN13	-4.433	< 0.001
233841_s_at	SUDS3	4.419	< 0.001
234995_at	CCDC52	4.417	< 0.001
213247_at	SVEP1	-4.412	< 0.001
219004_s_at	C21orf45	4.349	< 0.001
206052_s_at	SLBP	4.340	< 0.001
207076_s_at	ASS1	4.332	< 0.001
225340_s_at	GPIAP1	4.326	< 0.001
219036_at	CEP70	4.299	< 0.001
224760_at	SP1	4.292	< 0.001
218653_at	SLC25A15	4.289	< 0.001

236535_at	SMC6	4.275	< 0.001
216306_x_at	PTBP1	4.244	< 0.001
218328_at	COQ4	-4.233	< 0.001
203554_x_at	PTTG1	4.226	< 0.001
204178_s_at	RBM14	4.200	< 0.001
216205_s_at	MFN2	4.169	< 0.001
205036_at	LSM6 /// CHD9	4.149	< 0.001
213897_s_at	MRPL23	-4.144	< 0.001
219088_s_at	ZNF576	4.102	< 0.001
91617_at	DGCR8	4.098	< 0.001
203655_at	XRCC1	4.091	< 0.001
203358_s_at	EZH2	4.018	< 0.001
215000_s_at	FEZ2	-4.011	< 0.001
1553535_a_at	RANGAP1	3.973	< 0.001
203525_s_at	APC	-3.972	< 0.001
218113_at	TMEM2	3.947	< 0.001
226886_at	---	-3.945	< 0.001
226374_at	CXADR	3.902	< 0.001
208670_s_at	EID1	-3.865	< 0.001
227274_at	---	-3.852	< 0.001
241789_at	---	-3.850	< 0.001
225927_at	MAP3K1	-3.813	< 0.001
222492_at	PDXK	3.812	< 0.001
209090_s_at	SH3GLB1	-3.797	< 0.001
205542_at	STEAP1	3.794	< 0.001
225007_at	---	3.743	< 0.001
218294_s_at	NUP50	3.729	< 0.001
218946_at	NFU1	-3.726	< 0.001
212351_at	EIF2B5	3.717	< 0.001
221187_s_at	FUZ	3.675	0.001
214551_s_at	CD7	3.668	0.001
203690_at	TUBGCP3	3.651	0.001
221751_at	SLC2A3P1	3.633	0.001
203227_s_at	TSPAN31	-3.622	0.001
211271_x_at	PTBP1	3.610	0.001
212174_at	AK2	3.584	0.001
1566557_at	FLJ90757	-3.581	0.001
219649_at	ALG6	3.580	0.001
212015_x_at	PTBP1	3.575	0.001
203017_s_at	SSX2IP	3.572	0.001
229433_at	RBM26	3.531	0.001
214306_at	OPA1	3.526	0.001
216620_s_at	ARHGEF10	-3.514	0.001
225396_at	ZBTB8OS	3.502	0.001
212508_at	MOAP1	-3.485	0.001
212333_at	FAM98A	-3.476	0.001
239091_at	CCDC52	3.459	0.001
203409_at	DDB2	3.436	0.001
208407_s_at	CTNND1	-3.388	0.001
208669_s_at	EID1	-3.384	0.001
227748_at	RBMXL1	3.374	0.001
200943_at	HMG1	3.359	0.001
243463_s_at	RIT1	-3.334	0.002
219826_at	ZNF419	-3.330	0.002
210788_s_at	DHRS7	-3.245	0.002
201677_at	C3orf37	3.243	0.002
217876_at	GTF3C5	3.228	0.002
226265_at	QSER1	3.224	0.002

238447_at	RBMS3	-3.222	0.002
230634_x_at	LOC113179	3.189	0.002
213573_at	---	3.173	0.003
212214_at	OPA1	3.161	0.003
227451_s_at	CCDC90A	3.151	0.003
218951_s_at	PLCXD1	3.144	0.003
233852_at	POLH	3.140	0.003
208711_s_at	CCND1	-3.101	0.003
218921_at	SIGIRR	3.083	0.003
217941_s_at	ERBB2IP	3.064	0.003
216483_s_at	C19orf10	3.050	0.004
212145_at	MRPS27	-2.992	0.004
209389_x_at	DBI	-2.983	0.004
212622_at	TMEM41B	-2.925	0.005
213140_s_at	SS18L1	2.924	0.005
228396_at	---	-2.892	0.006
1559006_at	---	2.888	0.006
231832_at	GALNT4	-2.857	0.006
211070_x_at	DBI	-2.849	0.006
218657_at	RAPGEFL1	-2.830	0.007
225725_at	---	2.806	0.007
225716_at	---	2.797	0.007
227818_at	CCDC21	2.787	0.007
227545_at	---	2.766	0.008
202681_at	USP4	-2.754	0.008
215792_s_at	DNAJC11	2.740	0.008
218008_at	C7orf42	2.714	0.009
201225_s_at	SRRM1	2.709	0.009
221739_at	C19orf10	2.680	0.010
202428_x_at	DBI	-2.676	0.010
224634_at	GPATCH4	-2.660	0.010
202373_s_at	RAB3GAP2	-2.599	0.012
201221_s_at	SNRP70	2.593	0.012
228962_at	---	-2.591	0.012
224759_s_at	C12orf23	2.573	0.013
212175_s_at	AK2	2.547	0.014
1556059_s_at	SPEN	2.542	0.014
226584_s_at	C20orf55	2.489	0.016
207231_at	DZIP3	2.487	0.016
201687_s_at	API5	2.479	0.016
225585_at	RAP2A	-2.474	0.017
218170_at	ISOC1	-2.424	0.019
230127_at	---	2.422	0.019
213682_at	NUP50	2.396	0.020
200790_at	ODC1	2.393	0.020
228380_at	---	2.382	0.021
226481_at	VPRBP	2.381	0.021
201170_s_at	BHLHB2	2.368	0.022
228937_at	C13orf31	2.359	0.022
202305_s_at	FEZ2	-2.345	0.023
224637_at	---	-2.333	0.023
208724_s_at	RAB1A	-2.322	0.024
206095_s_at	FUSIP1 /// LOC727922	2.299	0.025
222416_at	ALDH18A1	-2.293	0.026
202973_x_at	FAM13A1	-2.288	0.026
229138_at	PARP11	-2.288	0.026
212162_at	KIDINS220	-2.278	0.027
217047_s_at	FAM13A1	-2.273	0.027

224754_at	SP1	2.273	0.027
227628_at	LOC493869	2.270	0.027
1555878_at	RPS24	2.260	0.028
52285_f_at	CEP76	-2.244	0.029
211698_at	EID1	-2.239	0.029
233385_x_at	RAB4B	2.213	0.031
210878_s_at	JMJD1B	2.198	0.032
219433_at	BCOR	-2.194	0.033
242655_at	---	2.161	0.035
217970_s_at	CNOT6	2.138	0.037
212710_at	CAMSAP1	-2.118	0.039
212533_at	WEE1	2.075	0.043
221685_s_at	CCDC99	2.044	0.046
225309_at	PHF5A	2.011	0.049

Supplement 3. 201 probe sets differentially expressed between HPV – oropharyngeal cancer and HPV – oropharyngeal control.

Probe Set ID	Gene Symbol	t-stat	p-value
211070_x_at	DBI	-13.333	< 0.001
209389_x_at	DBI	-13.246	< 0.001
202428_x_at	DBI	-12.347	< 0.001
218432_at	FBXO3	-11.522	< 0.001
203525_s_at	APC	-10.438	< 0.001
202582_s_at	RANBP9	-9.525	< 0.001
212586_at	CAST	-8.334	< 0.001
38158_at	ESPL1	-7.945	< 0.001
225179_at	---	-7.874	< 0.001
212435_at	TRIM33	-7.609	< 0.001
212622_at	TMEM41B	-7.502	< 0.001
227455_at	C6orf136	-7.269	< 0.001
212145_at	MRPS27	-6.968	< 0.001
218170_at	ISOC1	-6.819	< 0.001
219990_at	E2F8	-6.771	< 0.001
225585_at	RAP2A	-6.764	< 0.001
228910_at	---	-6.716	< 0.001
205542_at	STEAP1	6.512	< 0.001
225927_at	MAP3K1	-6.400	< 0.001
211763_s_at	UBE2B	-6.339	< 0.001
212710_at	CAMSAP1	-6.287	< 0.001
219433_at	BCOR	-6.283	< 0.001
209090_s_at	SH3GLB1	-6.133	< 0.001
202780_at	OXCT1	-6.098	< 0.001
214247_s_at	DKK3	5.866	< 0.001
208407_s_at	CTNND1	-5.788	< 0.001
201519_at	TOMM70A	-5.698	< 0.001
212623_at	TMEM41B	-5.665	< 0.001
218467_at	TNFSF5IP1	-5.515	< 0.001
202681_at	USP4	-5.506	< 0.001
218657_at	RAPGEFL1	-5.410	< 0.001
200980_s_at	PDHA1	-5.403	< 0.001
227433_at	KIAA2018	-5.375	< 0.001
227628_at	LOC493869	5.342	< 0.001
218718_at	PDGFC	5.170	< 0.001
204686_at	IRS1	5.159	< 0.001
223934_at	LOC93349	5.000	< 0.001
225685_at	---	4.959	< 0.001
227962_at	ACOX1	-4.942	< 0.001
207168_s_at	H2AFY	-4.921	< 0.001
218328_at	COQ4	-4.889	< 0.001
214501_s_at	TLR4 /// H2AFY	-4.878	< 0.001
228361_at	E2F2	-4.864	< 0.001
235531_at	IL17RB	-4.854	< 0.001
200790_at	ODC1	4.825	< 0.001
210418_s_at	IDH3B	-4.823	< 0.001
212721_at	SFRS12	-4.804	< 0.001
215732_s_at	DTX2	-4.790	< 0.001
213852_at	RBM8A	-4.753	< 0.001
201903_at	UQCRC1	-4.748	< 0.001
204048_s_at	PHACTR2	-4.747	< 0.001
201036_s_at	HADH	-4.699	< 0.001
226257_x_at	MRPS22	-4.691	< 0.001

224784_at	MLLT6	-4.691	< 0.001
209797_at	TMEM4	4.690	< 0.001
228284_at	TLE1	4.663	< 0.001
208854_s_at	STK24	-4.551	< 0.001
204047_s_at	PHACTR2	-4.548	< 0.001
226316_at	---	-4.544	< 0.001
202375_at	SEC24D	4.527	< 0.001
224801_at	NDFIP2	-4.505	< 0.001
218113_at	TMEM2	4.479	< 0.001
203181_x_at	SRPK2	4.462	< 0.001
213318_s_at	BAT3	-4.403	< 0.001
227369_at	SERBP1	-4.319	< 0.001
214786_at	MAP3K1	-4.311	< 0.001
202864_s_at	SP100	4.268	< 0.001
202253_s_at	DNM2	-4.261	< 0.001
212958_x_at	PAM	4.255	< 0.001
214662_at	WDR43	4.175	< 0.001
202060_at	CTR9	-4.156	< 0.001
218072_at	COMMD9	-4.129	< 0.001
202972_s_at	FAM13A1	4.118	< 0.001
221250_s_at	MXD3	-4.118	< 0.001
225982_at	UBTF	-4.111	< 0.001
238317_x_at	RBMS1	4.068	< 0.001
226921_at	UBR1	4.050	< 0.001
223028_s_at	SNX9	-4.024	< 0.001
202336_s_at	PAM	3.996	< 0.001
203409_at	DDB2	-3.992	< 0.001
224759_s_at	C12orf23	3.992	< 0.001
212539_at	CHD1L	3.986	< 0.001
219220_x_at	MRPS22	-3.964	< 0.001
228158_at	LOC645166	3.962	< 0.001
222824_at	SEC61A2	-3.923	< 0.001
224754_at	SP1	-3.899	< 0.001
1569110_x_at	LOC728613	3.882	< 0.001
227250_at	KREMEN1	-3.820	< 0.001
226183_at	---	-3.815	< 0.001
201509_at	IDH3B	-3.787	0.001
225198_at	VAPA	-3.776	0.001
233265_at	PARD3	-3.744	0.001
1556988_s_at	CHD1L	3.741	0.001
210208_x_at	BAT3	-3.672	0.001
210361_s_at	ELF2	-3.659	0.001
226453_at	RNASEH2C	3.647	0.001
224645_at	EIF4EBP2	-3.611	0.001
202308_at	SREBF1	-3.607	0.001
203067_at	PDHX	-3.597	0.001
213897_s_at	MRPL23	-3.596	0.001
202334_s_at	UBE2B	-3.576	0.001
223741_s_at	TTYH2	3.573	0.001
225887_at	C13orf23	-3.546	0.001
201255_x_at	BAT3	-3.531	0.001
220094_s_at	CCDC90A	-3.477	0.001
202317_s_at	UBE4B	-3.473	0.001
225340_s_at	GPIAP1	-3.416	0.002
238935_at	RPS27L	3.402	0.002
213787_s_at	EBP	-3.397	0.002
216483_s_at	C19orf10	3.393	0.002
228002_at	ID12	-3.390	0.002

204017_at	KDELR3	3.361	0.002
214620_x_at	PAM	3.357	0.002
231793_s_at	CAMK2D	3.315	0.002
215037_s_at	BCL2L1	-3.288	0.002
212685_s_at	TBL2	3.276	0.002
219649_at	ALG6	-3.250	0.002
225655_at	UHRF1	3.234	0.003
226265_at	QSER1	-3.199	0.003
218422_s_at	RBM26	-3.181	0.003
224619_at	CASC4	3.170	0.003
228345_at	---	3.149	0.003
242655_at	---	-3.145	0.003
201687_s_at	API5	-3.111	0.004
200652_at	SSR2	3.078	0.004
218062_x_at	CDC42EP4	3.059	0.004
210788_s_at	DHRS7	3.056	0.004
227611_at	TARSL2	3.055	0.004
203379_at	RPS6KA1	3.043	0.004
221739_at	C19orf10	3.042	0.004
214820_at	BRWD1	-3.031	0.004
213573_at	---	-2.999	0.005
206846_s_at	HDAC6	-2.991	0.005
202107_s_at	MCM2	2.978	0.005
224160_s_at	ACAD9	-2.976	0.005
52285_f_at	CEP76	-2.957	0.005
218008_at	C7orf42	2.940	0.006
216071_x_at	MED12	-2.926	0.006
206665_s_at	BCL2L1	-2.922	0.006
222476_at	CNOT6	-2.921	0.006
203017_s_at	SSX2IP	-2.904	0.006
222270_at	SMEK2	2.892	0.006
225725_at	---	-2.849	0.007
225396_at	ZBTB8OS	-2.833	0.007
222108_at	AMIGO2	2.829	0.007
205339_at	STIL	2.809	0.008
227326_at	MXRA7	2.803	0.008
224974_at	SUDS3	-2.800	0.008
204023_at	RFC4	2.757	0.009
231810_at	BRI3BP	-2.748	0.009
212625_at	STX10	-2.747	0.009
201423_s_at	CUL4A	-2.747	0.009
209549_s_at	DGUOK	2.711	0.010
202666_s_at	ACTL6A	2.672	0.011
242711_x_at	FANCM	-2.670	0.011
225019_at	CAMK2D	2.589	0.014
202709_at	FMOD	2.584	0.014
208795_s_at	MCM7	2.545	0.015
227279_at	TCEAL3	2.532	0.016
1559006_at	---	-2.505	0.017
221781_s_at	DNAJC10	2.436	0.020
227451_s_at	CCDC90A	-2.421	0.020
207231_at	DZIP3	-2.416	0.021
225017_at	CCDC14	2.414	0.021
204564_at	PCGF3	-2.412	0.021
231846_at	FOXRED2	2.404	0.021
200906_s_at	PALLD	2.400	0.021
1554057_at	LOC645676	2.395	0.022
215792_s_at	DNAJC11	-2.391	0.022

224623_at	THOC3 /// LOC728554	-2.388	0.022
221428_s_at	TBL1XR1	2.353	0.024
208511_at	PTTG3	-2.324	0.026
1556820_a_at	DLEU2	2.309	0.026
227545_at	---	-2.276	0.029
223367_at	WBSCR18	2.276	0.029
220409_at	CAMSAP1	-2.256	0.030
214791_at	LOC93349	2.247	0.031
1555878_at	RPS24	-2.243	0.031
202305_s_at	FEZ2	2.239	0.031
217047_s_at	FAM13A1	2.237	0.031
210371_s_at	RBBP4	2.226	0.032
204252_at	CDK2 /// BCDO2	2.215	0.033
211698_at	EID1	2.205	0.034
37652_at	CABIN1	-2.193	0.034
201677_at	C3orf37	-2.173	0.036
212533_at	WEE1	-2.165	0.037
200056_s_at	C1D	2.155	0.038
223570_at	MCM10	2.149	0.038
228496_s_at	CRIM1	2.143	0.039
200847_s_at	TMEM66	2.137	0.039
223315_at	NTN4	-2.116	0.041
201930_at	MCM6	2.115	0.041
207480_s_at	MEIS2	-2.098	0.043
212021_s_at	MKI67	2.095	0.043
219280_at	BRWD1	-2.090	0.043
1569057_s_at	MIA3	2.074	0.045
242336_at	---	2.059	0.046
213140_s_at	SS18L1	-2.048	0.048
210139_s_at	PMP22	2.044	0.048
221782_at	DNAJC10	2.035	0.049
228380_at	---	-2.033	0.049