

Table S4. Putative oncogenes/tumor suppressor genes derived from 170 probe sets.

A- Putative oncogenes upregulated in NA-P10/TS-MG when compared to NA-P1/mock cells					
Gene symbol	Gene title	Location	Fold change	Reported upregulation in tumors ^{a,b}	Case of upregulation in 31 NPC biopsies ^c
POLQ	polymerase (DNA directed), theta	3q13.33	2.63	BC ¹	
SERPINB2	serpin peptidase inhibitor, clade B (ovalbumin), member 2	18q21.3	2.23	CC ² , EA ³	
ODC1	ornithine decarboxylase 1	2p25	2.15	NB ⁴ , PcC ⁵	
KRT6A	keratin 6A	12q12-q13	2.10	BC ⁶	
CCND2	cyclin D2	12p13	2.03	BL ⁷ , BT ⁸ , GC ⁹ , L ¹⁰ , TGCT ¹¹ , NPC ¹²	24
ZNRF3	zinc and ring finger 3	22q12.1	2.02		25
B - Putative tumor suppressor genes down-regulated in NA-P10/TS-MG when compared to NA-P1/mock cells					
Gene symbol	Gene title	Location	Fold change	Reported downregulation in tumors ^{a,b}	Case of downregulation in 31 NPC biopsies ^c
KYNU	kynureninase	2q22.2	-2.01	AML ¹³	
TIMP2	TIMP metalloproteinase inhibitor 2	17q25	-2.02	CvC ¹⁴ , NHL ¹⁵ , PC ¹⁶	
HISTH2BE	histone cluster 2, H2be	1q21-q23	-2.06	BC ¹⁷	27
ASS1	argininosuccinate synthetase 1	9q34.1	-2.08	HCC ¹⁸ , M ¹⁸ , OC ¹⁹ , OS ²⁰ , PC ²¹	17
PSMB9	Proteasome (prosome, macropain) subunit, beta type, 9	6p21.3	-2.08	AML ²²	
LOXL2	lysyl oxidase-like 2	8p21.3-p21.2	-2.09	LC ²³	
GSTA4	glutathione S-transferase alpha 4	6p12.1	-2.11		
KLF9	Kruppel-like factor 9	9q13	-2.13	CC ²⁴	
PI3	peptidase inhibitor 3, skin-derived	20q12-q13	-2.14	EC ²⁵ , SCC ²⁶ , HNC ²⁷	28
CCNG2	cyclin G2	4q21.1	-2.18	GC ²⁸ , OC ²⁹ , TPC ³⁰	
ATP2B4	ATPase, Ca++ transporting, plasma membrane 4	1q32.1	-2.19	CC ³¹	
HRK	harakiri, BCL2 interacting protein	12q24.22	-2.19	CC and GC ³² , GB ³³ , PC ³⁴ , PCNSL ³⁵	
ZBTB10	zinc finger and BTB domain containing 10	8q13-q21.1	-2.22		
CXXC5	CXXC finger 5	5q31.2	-2.25	AML ³⁶	23
PRSS8	protease, serine, 8	16p11.2	-2.28	BC ³⁷ , Bdc ³⁸ , PC ³⁹	
TSC22D3	TSC22 domain family, member 3	Xq22.3	-2.28	MM ⁴⁰	
PDZD2	PDZ domain containing 2	5p13.3	-2.32		23
IFITM1	interferon induced transmembrane protein 1	11p15.5	-2.36	CvC ⁴¹	
SEPP1	selenoprotein P, plasma 1	5q31	-2.38	GC ⁴² , PC ⁴³	
HPGD	hydroxyprostaglandin dehydrogenase 15-(NAD)	4q34-q35	-2.38	BC ⁴⁴ , CC ⁴⁵ , GC ⁴⁶ , LC ⁴⁷ , NPC ¹²	
GBP1	guanylate binding protein 1	1p22.2	-2.40	BC ⁴⁸ , CC ⁴⁹	
TJP3	tight junction protein 3	19p13.3	-2.43		29
SCNN1A	sodium channel, nonvoltage-gated 1 alpha	12p13	-2.44	NB ⁵⁰	28
FBXO32	F-box protein 32	8q24.13	-2.46	OvC ⁵¹	12
CDKN2B	cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)	9p21	-2.46	ALL ⁵² , NHL ⁵³ , NPC ¹² , TL ⁵⁴	16
SDPR	serum deprivation response	2q32-q33	-2.47	BC, PC, and RC ⁵⁵	
CYP1B1	cytochrome P450, family 1, subfamily B, polypeptide 1	2p21	-2.53	GC ⁵⁶ , OC ⁵⁷	
PDE5A	phosphodiesterase 5A, cGMP-specific	4q25-q27	-2.54	M ⁵⁸	
TGM2	transglutaminase 2	20q12	-2.65	BC ⁵⁹ , G ⁶⁰	
TXNIP	thioredoxin interacting protein	1q21.1	-2.67	BC ⁶¹ , Bdc ⁶² , SCC ⁶³	12
LOXL4	lysyl oxidase-like 4	10q24	-2.73	Bdc ⁶⁴	26
IL7	interleukin 7	8q12-q13	-2.78	PC ⁶⁵	
KLK10	kallikrein-related peptidase 10	19q13.3-q13.4	-2.84	BC ⁶⁶ , HCC ⁶⁷ , HNC ⁶⁸ , LC ⁶⁹	
INSIG1	insulin induced gene 1	7q36	-3.30	GC ⁷⁰	
KLK5	kallikrein-related peptidase 5	19q13.3-q13.4	-3.03	BC ⁷¹ , PC ⁷²	
IRF9	interferon regulatory factor 9	14q11.2	-3.03		
GDF15	growth differentiation factor 15	19p13.11	-3.06	G ⁷³	20
C2 /// CFB	complement component 2 /// complement factor B	6p21.3	-3.11	NPC ⁷⁴	13
IFI27	interferon, alpha-inducible protein 27	14q32	-3.49		
FRMD3	FERM domain containing 3	9q21.32	-3.61	LC ⁷⁵	
KRT13	keratin 13	17q12-q21.2	-3.71	OC ⁷⁶	22
C15orf48	chromosome 15 open reading frame 48	15q21.1	-3.76	CvC ⁷⁷ , EC ⁷⁸	20
CLDN4	claudin 4	7q11.23	-3.78	BC ⁷⁹ , EC ⁸⁰ , PcC ⁸¹	
AKR1B10	aldo-keto reductase family 1, member B10	7q33	-4.00	CC ⁸² , HCC ⁸³ , CgC ⁸⁴	15
AKR1C1	aldo-keto reductase family 1, member C1	10p15-p14	-4.28	BC ^{85,86}	
AKR1C2	aldo-keto reductase family 1, member C2	10p15-p14	-4.35	BC ^{85,86}	18
AGR2	anterior gradient homolog 2 (Xenopus laevis)	7p21.3	-4.41	HCC ⁸⁷ , PC ⁸⁸	21

AKR1C3 aldo-keto reductase family 1, member C3 10p15-p14 -6.58 BC⁸⁶, CNT⁸⁹, EA⁹⁰ 22

C – Putative oncogenes that was down-regulated in NA-P10/TS-MG when compared to NA-P1/mock cells

Gene symbol	Gene title	Location	Fold change	Reported alteration in tumors ^{a,b}	Case of downregulation in 31 NPC biopsies ^c
MGLL	monoglyceride lipase	3q21.3	-2.12	UP CC ⁹¹ , BC, M and OvC ⁹²	31
NEDD9	neural precursor cell expressed, developmentally down-regulated 9	6p25-p24	-2.16	UP BC ⁹³ , CC ⁹⁴ , HNC ⁹⁵	
OSMR	oncostatin M receptor	5p13.1	-2.29	Down NPC ⁹⁶	
ALDH3A1	aldehyde dehydrogenase 3 family, member A1	17p11.2	-2.33	UP CvC ⁹⁷ , EC ⁹⁸ , CC ^{99,100} , PCNSL ¹⁰¹	29
KLK8	kallikrein-related peptidase 8	19q13.3-q13.4	-2.54	UP HNC ¹⁰⁵ , OC ¹⁰⁶	
L1CAM	L1 cell adhesion molecule	Xq28	-2.64	Down OvC ¹⁰⁷	
SERPINB3	serpin peptidase inhibitor, clade B (ovalbumin), member 3	18q21.3	-2.93	UP CC ¹⁰⁸ , OvC ¹⁰⁹ , RC ¹¹⁰	24
PSCA	prostate stem cell antigen	8q24.2	-4.55	Down MPNST ¹¹¹	
H19	H19, imprinted maternally expressed transcript	11p15.5	-4.62	UP BC ¹¹² , HCC ¹¹³	
CCL5	chemokine (C-C motif) ligand 5	17q11.2-q12	-9.14	Down OC ¹¹⁴	30
				UP BdC ¹¹⁵ , PC ^{116,117} , PcC ¹¹⁸	
				Down EC and GC ^{119,120}	
				UP BdC ¹²¹ , EC ¹²²	17
				HNC ¹²³ , LC ¹²⁴ , PC ¹²⁵	
				Down HNC ¹²³ , NPC ¹²	
				UP GC ¹²⁶ , PC ¹²⁷	

^a: ALL: acute lymphoblastic leukemia; AML: acute myeloid leukemia; BC: breast carcinoma; BdC: bladder cancer; BL: B-cell lymphoma; BT: brain tumor; CC: colorectal cancer; CgC: cholangiocarcinoma; CvC: cervical cancer; CNT: central nervous tumors; EA: endometrial adenocarcinoma; EC: esophageal cancer; HCC: hepatocellular carcinoma; G: glioma; GB: glioblastomas; GC: gastric cancer; HNC: head and neck carcinoma; L: lymphoma; LC: lung cancer; M: melanoma; MM: multiple myeloma; NB: neuroblastoma; MPNST: malignant peripheral nerve sheath tumor; NPC: nasopharyngeal carcinoma; NHL: non-Hodgkin's lymphoma; OC: oral cancer; OvC: ovarian cancer; OS: osteosarcoma; PC: prostate cancer; PcC: pancreatic cancer; PCNSL: primary central nervous system lymphoma; RC: renal carcinoma; SCC: squamous cell carcinomas; TL: T-cell lymphoma; TGCT: Testicular germ cell tumors; TPC: thyroid papillary carcinoma.

^b: References listed here were mainly focused on recent reports of clinical biopsy samples. For references listed in these tables, please refer to Document S1.

^c: Upregulation of genes was defined when the expression level of NPC samples are above the 90th percentile of normal tissues; downregulation of genes was defined when the expression level of NPC samples are below the 10th percentile of normal tissues.