

Supplemental table 1 . List of common ZBRK1-mediated gene profiling. The global profiling was performed by Agilent human whole genome oligo 4X 44K array. Among over five hundred genes, fold>1.5; p< 0.05 was considered significant, responded to the stably expressing ZBRK1 in HeLa or U2OS cells, the common candidates, 36 downregulated genes and 23 upregulated genes, were further analyzed by using a feature extraction software (Agilent) for the identification of potential cellular function.

Gene symbol	Genes name	fold		Gene symbol	Genes name	fold	
		HeLa	U2OS			HeLa	U2OS
A2BP1	ataxin 2-binding protein 1	-2.57	-1.61	SNAP25	synaptosomal-associated protein, 25kDa	-2.73	-2.50
AF131762	Homo sapiens clone 25218 mRNA sequence	-1.82	-1.92	STEAP1	Six transmembrane epithelial antigen of the prostate 1	-2.19	-1.66
AK001903	Homo sapiens cDNA FLJ11041 fis	-2.16	-1.72	TAF15	TATA box binding protein (TBP)-associated factor	-1.55	-1.61
BG686022	Homo sapiens cDNA clone	-3.41	-1.52	TCOF1	Treacher Collins-Franceschetti syndrome 1	-1.59	-1.59
C11orf46	chromosome 11 open reading frame 46	-1.61	-1.59	TNPO1	transportin 1	-1.88	-1.54
CEBPE	CCAAT/enhancer binding protein, epsilon	-1.52	-1.79	XBP1	X-box binding protein 1	-1.89	-2.11
CHMP4B	chromatin modifying protein 4B	-3.28	-1.84	AMDHD2	amidohydrolase domain containing 2	1.51	1.54
CHST2	carbohydrate sulfotransferase 2	-1.7	-2.17	ANK1	ankyrin 1	2.19	4.77
DLG4	discs, large homolog 4	-1.77	-1.85	BTBD14A	BTB (POZ) domain containing 14A	1.9	1.87
EGR1	early growth response 1	-1.65	-2.22	C9orf5	chromosome 9 open reading frame 5	1.51	1.74
ERO1L	ERO1-like	-1.52	-1.52	C9orf86	chromosome 9 open reading frame 86	1.88	1.57
HMGA2	high mobility group AT-hook 2	-1.54	-2.50	CAP2	adenylate cyclase-associated protein, 2	1.56	1.63
KCNAB2	potassium voltage-gated channel, beta member 2	-4.03	-253.64	CDH7	cadherin 7	1.57	1.64
LOC399956	similar to Keratin	-1.85	-1.69	CFL2	cofilin 2	1.82	1.52
METTL3	methyltransferase like 3	-1.62	-1.54	CRYAB	crystallin, alpha B	2.06	2.33
MMP9	matrix metalloproteinase 9	-1.82	-2.06	CTSA	cathepsin A	1.52	1.56
MTAP	methylthioadenosine phosphorylase	-1.54	-1.61	DLGAP4	discs, large homolog-associated protein 4	1.51	2.09
NFE2L1	nuclear factor (erythroid-derived 2)-like 1	-1.65	-1.73	DQX1	DEAQ box RNA-dependent ATPase 1	1.51	1.62
NMT1	N-myristoyltransferase 1	-1.7	-1.61	HSPB2	heat shock protein 2	1.56	3.76
ODC1	ornithine decarboxylase 1	-1.51	-1.52	IKZF2	IKAROS family zinc finger 2	5.17	2.16
PAQR3	progesterin and adipoQ receptor family member III	-1.86	-1.61	LOC554175		1.56	1.66
PLCB2	phospholipase C, beta 2	-1.5	-1.69	LY6K	lymphocyte antigen 6 complex, locus K	2.32	1.77
PLOD2	procollagen-lysine, 2-oxoglutarate 5-dioxygenase 2	-1.77	-2.00	MXD4	MAX dimerization protein 4	1.54	1.81
PPM1F	protein phosphatase 1F	-1.68	-1.67	MYBL1	v-myb myeloblastosis viral oncogene homolog like 1	1.52	1.67
RAB38	RAB38	-4.08	-2.17	NCAM1	neural cell adhesion molecule 1	1.57	1.71
RORA	RAR-related orphan receptor A	-2.16	-1.67	SH3GLB2	SH3-domain GRB2-like endophilin B2	1.5	1.63
RPA4	replication protein A4	-1.71	-2.38	VIM	vimentin	1.85	1.52
SCARNA17	small Cajal body-specific RNA 17	-2.08	-1.72	ZNF364	ring finger protein 115	1.69	1.55
SEPP1	selenoprotein P, plasma, 1	-13.7	-4.00	ZNF467	zinc finger protein 467	1.64	1.60
SLC20A1	solute carrier family 20, member 1	-1.81	-1.62				

Supplemental table 2. List of common ZBRK1-mediated functional profiling. 36 downregulated genes and 23 upregulated genes responded to the increase of ZBRK1 were uploaded into Ingenuity's software [Ingenuity Pathway Analysis (IPA); <http://www.injenuity.com>] and divided into groups according to their known biological function.

Category	Genes
Cellular Movement	CEBPE, CHST2, ICAM1, MMP9, NCAM1, ODC1, PLCB2, SH3GLB2, VIM
Cellular Growth and Proliferation	EGR1, HMGA2, HSPB2, METTL3, MTAP, MYBL1, NCAM1, SH3GLB2, TCOF1
Cell Morphology	ANK1, CAP2, CEBPE, DLG4, EGR1, HSPB2, IKZF2, MMP9, NCAM1, ODC1, PPM1F, SLC20A1, TAF15, VIM1, XBP1
Cell Death	CRYAB, HMGA2, NFE2L1, XBP1
Cell Cycle	CRYAB, EGR1, MMP9, MYBL1, MXD4, VIM, XBP1
Gene Expression	CEBPE, EGR1, HMGA2, NCAM1, NFE2L1, RORA, SLC20A1, TAF15, TCOF1, XBP1, ZNF467
Cellular Development	ANK1, CEBPE, CRYAB, EGR1, HMGA2, MMP9, MYBL1, NCAM1, NMT1, ODC1, PAQR3, RORA, XBP1
Cellular Function and Maintenance	CEBPE, EGR1, ERO1L, HSPB2, NCAM1, SNAP25, VIM, XBP1
Cancer	CEBPE, EGR1, HMGA2, HSPB2, IKZF2, MMP9, MTAP, MYBL1, NCAM1, NFE2L1, ODC1, PAQR3, PPM1F, SH3GLB2, VIM, XBP1
Carbohydrate Metabolism	CHST2, SEPP1
Cell-To-Cell Signaling and Interaction	CEBPE, DLG4, EGR1, HSPB2, KCNAB2, MMP9, NCAM1, VIM,
Cellular Assembly and Organization	ANK1, CFL2, CRYAB, DLG4, HMGA2, NCAM1, SNAP25, XBP1, VIM
Connective Tissue Disorders	EGR1, MMP9, PLOD2, SLC20A1, TAF15
Lipid Metabolism	SEPP1