

Expression Profiling of KLF4

AJCR000006 Supplemental Data

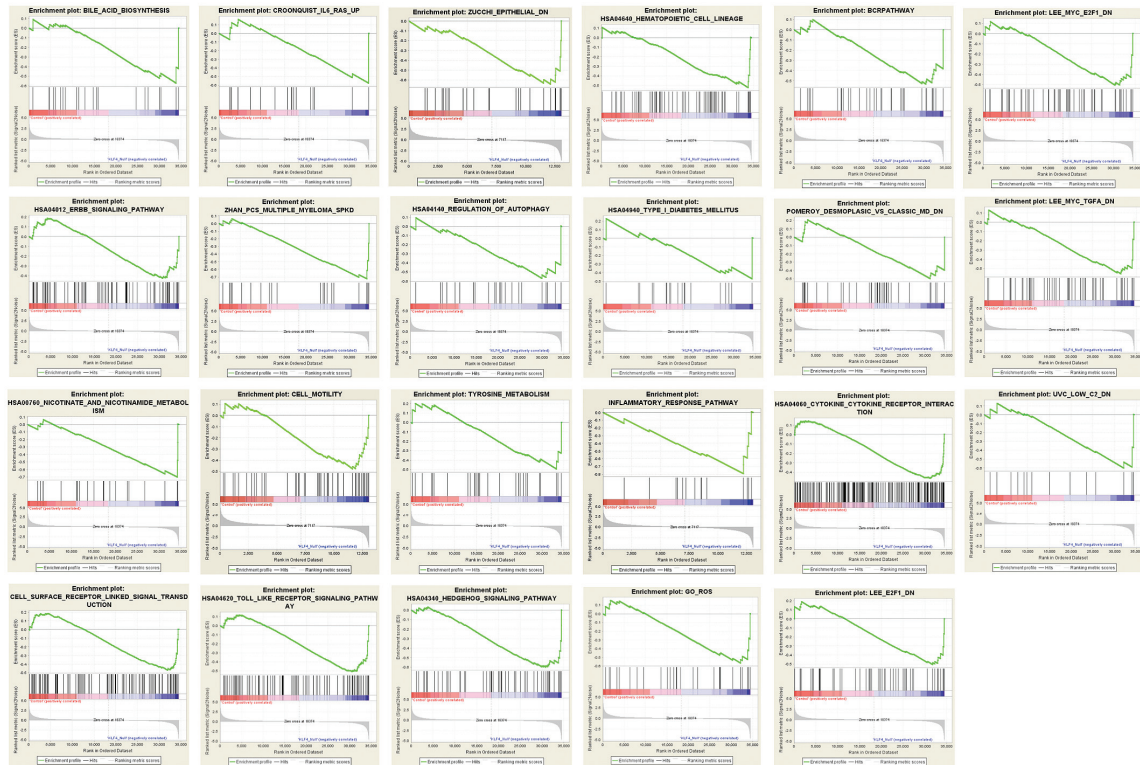


Figure S1. Snapshot of enriched gene sets identified by GSEA in *Klf4*-null MEFs.

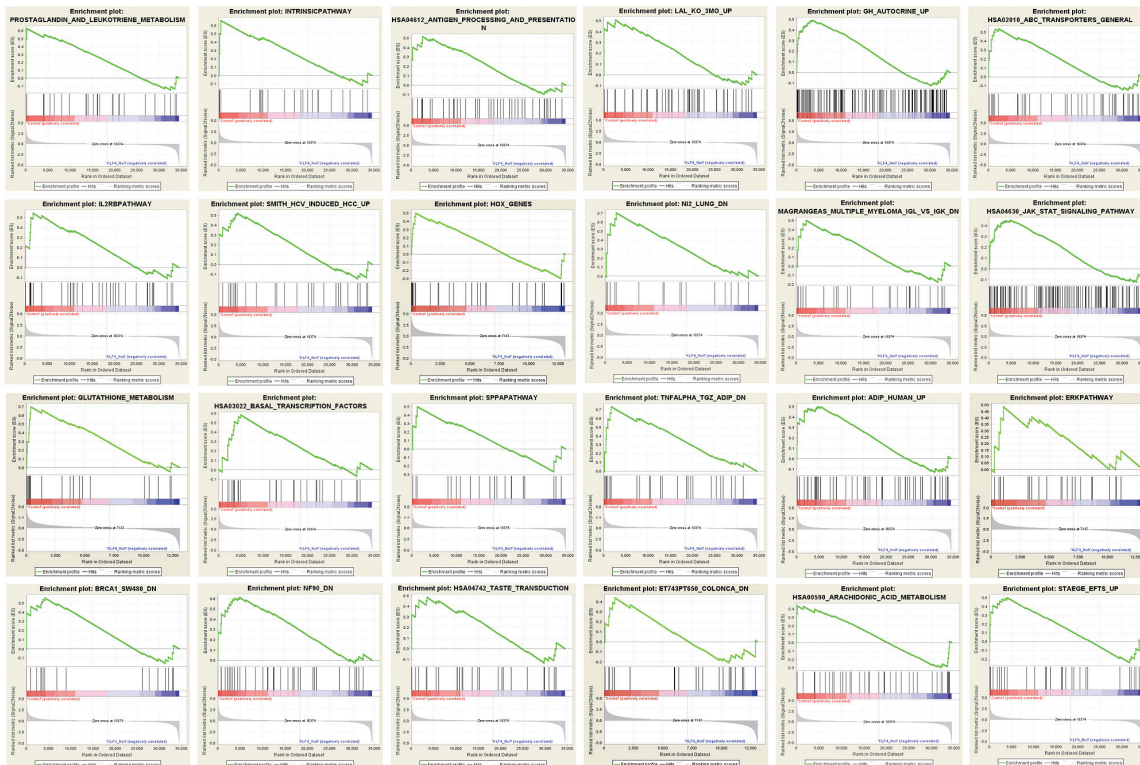


Figure S2. Snapshot of enriched gene sets identified by GSEA in wild type MEFs.

Table S1: Functional Annotation Clustering of Genes Up-Regulated in *Klf4* -Null MEFs

ILLUMINA_ID	Gene Symbol	Gene Name (Description)	P-value	Fold-Change
Cell Cycle			8.00E-03	
ILMN_1217331	Mcm6	MINICHROMOSOME MAINTENANCE DEFICIENT 6		40.36
ILMN_2723931	E2f6	E2F TRANSCRIPTION FACTOR 6		26.8
ILMN_2724570	Mapk12	MITOGEN-ACTIVATED PROTEIN KINASE 12		22.19
ILMN_1218470	Cdk2	CYCLIN-DEPENDENT KINASE 2		9.32
ILMN_1234909	Tipin	TIMELESS INTERACTING PROTEIN		5.3
ILMN_1212692	Mapk13	SAPK/ERK/KINASE 4		4.96
ILMN_2666690	Cul7	CULLIN 7		2.23
ILMN_2681776	Mapk6	MITOGEN ACTIVATED PROTEIN KINASE 4		2.11
ILMN_2652909	Ddit3	DNA-DAMAGE INDUCIBLE TRANSCRIPT 3		2.07
ILMN_2742152	Gadd45a	GROWTH ARREST AND DNA-DAMAGE-INDUCIBLE 45 ALPHA		1.92
ILMN_1212787	Pttg1	PITUITARY TUMOR-TRANSFORMING 1		1.8
ILMN_1216721	Cdk5	CYCLIN-DEPENDENT KINASE 5		1.78
ILMN_1227009	Gas2l1	GROWTH ARREST-SPECIFIC 2 LIKE 1		1.74
ILMN_2663009	Rassf5	RAS ASSOCIATION (RALGDS/AF-6) DOMAIN FAMILY 5		1.64
ILMN_1220454	Anapc13	ANAPHASE PROMOTING COMPLEX SUBUNIT 13		1.61
ILMN_1216213	Incenp	INNER CENTROMERE PROTEIN		1.56
ILMN_1256301	Rcc2	REGULATOR OF CHROMOSOME CONDENSATION 2		1.53
Extracellular Matrix			5.80E-06	
ILMN_2735184	Col18a1	PROCOLLAGEN, TYPE XVIII, ALPHA 1		51.5
ILMN_1223997	Crtap	CARTILAGE ASSOCIATED PROTEIN		32.74
ILMN_2753809	Mmp3	MATRIX METALLOPEPTIDASE 3		31.08
ILMN_2747959	Dcn	DECORIN		21.44
ILMN_2737685	Mmp13	MATRIX METALLOPEPTIDASE 13		13.86
ILMN_1232899	Smoc2	SPARC RELATED MODULAR CALCIUM BINDING 2		6.91
ILMN_2727663	Tgfb1	TRANSFORMING GROWTH FACTOR, BETA INDUCED		6.75
ILMN_1258629	Col3a1	PROCOLLAGEN, TYPE III, ALPHA 1		5.65
ILMN_2619952	Mmp10	MATRIX METALLOPEPTIDASE 10		5.32
ILMN_2668463	Emilin1	ELASTIN MICROFIBRIL INTERFACER 1		3.99
ILMN_1230747	Wnt9a	WINGLESS-TYPE MMTV INTEGRATION SITE 9A		3.8
ILMN_1254546	Col5a2	PROCOLLAGEN, TYPE V, ALPHA 2		3.42
ILMN_2422848	Wnt10b	WINGLESS RELATED MMTV INTEGRATION SITE 10B		2.97

ILMN_2772556	Fbn1	FIBRILLIN 1		2.71
ILMN_2635784	Gpc1	GLYPICAN 1		2.37
ILMN_1238215	Ctgf	CONNECTIVE TISSUE GROWTH FACTOR		2.28
ILMN_2640248	Lama5	LAMININ, ALPHA 5		2.27
ILMN_2687880	Col1a1	PROCOLLAGEN, TYPE I, ALPHA 1		2.06
ILMN_2769917	Timp1	TISSUE INHIBITOR OF METALLOPROTEINASE 1		1.99
ILMN_1225835	Mfap5	MICROFIBRILLAR ASSOCIATED PROTEIN 5		1.97
ILMN_1258759	Col6a2	PROCOLLAGEN, TYPE VI, ALPHA 2		1.77
ILMN_2497957	Epb4.1l1	FIBULIN 1		1.76
ILMN_2678218	Mmp2	MATRIX METALLOPEPTIDASE 2		1.75
ILMN_1217071	Mmp16	MATRIX METALLOPEPTIDASE 16		1.67
ILMN_2774596	Lamc1	LAMININ, GAMMA 1		1.66
ILMN_1238597	Omd	OSTEOMODULIN		1.53
Ubiquitin			1.40E-02	
ILMN_2662401	Sumo3	SMT3 SUPPRESSOR OF MIF TWO 3 HOMOLOG 3 (YEAST)		70.01
ILMN_2763459	Tbcel	LEUCINE RICH REPEAT CONTAINING 35		3.51
ILMN_1225261	Uchl1	UBIQUITIN CARBOXY-TERMINAL HYDROLASE L1		3.02
ILMN_1229019	Fbxo44	F-BOX PROTEIN 44		2.12
ILMN_2749911	Ube2q2	UBIQUITIN-CONJUGATING ENZYME E2Q (PUTATIVE) 2		1.96
ILMN_2417991	Ube2i	UBIQUITIN-CONJUGATING ENZYME E2I		1.79
ILMN_1246522	Uchl3	UBIQUITIN CARBOXYL-TERMINAL ESTERASE L3 (UBIQUITIN THIOLESTERASE)		1.63
ILMN_2495573	Ubqln1	DNA SEGMENT, CHR 13, ERATO DOI 372, EXPRESSED		1.54
ILMN_2486783	Ube2d3	UBIQUITIN-CONJUGATING ENZYME E2D 3 (UBC4/5 HOMOLOG, YEAST)		1.54
ILMN_1227863	Ube2n	UBIQUITIN-CONJUGATING ENZYME E2N		1.53
ILMN_2516699	Ubb	UBIQUITIN B		1.51
Proto-oncogenes			2.70E-03	
ILMN_2655260	Ptp4a3	PROTEIN TYROSINE PHOSPHATASE 4A3		4
ILMN_1233424	Lbcl1	RHO/RAC GUANINE NUCLEOTIDE EXCHANGE FACTOR (GEF) 2		2.03
ILMN_1224526	Lck	LYMPHOCYTE PROTEIN TYROSINE KINASE		2
ILMN_1237241	Araf	V-RAF MURINE SARCOMA 3611 VIRAL ONCOGENE HOMOLOG		1.83
ILMN_1212787	Pttg1	PITUITARY TUMOR-TRANSFORMING 1		1.8
ILMN_2481071	Hras1	HARVEY RAT SARCOMA VIRUS ONCOGENE 1		1.78
ILMN_1251669	Evi2a	ECOTROPIC VIRAL INTEGRATION SITE 2A		1.77

ILMN_2492264	Wisp1	WNT1 INDUCIBLE SIGNALING PATHWAY PROTEIN 1		1.76
ILMN_1221750	Mycl1	LUNG CARCINOMA MYC RELATED ONCOGENE 1		1.66
Growth Factors			2.30E-02	
ILMN_1238547	Areg	AMPHIREGULIN		21.43
ILMN_1215252	Bmp4	BONE MORPHOGENETIC PROTEIN 4		14.31
ILMN_1254114	Artn	ARTEMIN		8.65
ILMN_2763243	Cxcl1	CHEMOKINE (C-X-C MOTIF) LIGAND 1		8.46
ILMN_2745480	Fgf13	FIBROBLAST GROWTH FACTOR 13		6.53
ILMN_2710698	Fgf21	FIBROBLAST GROWTH FACTOR 21		5.51
ILMN_1246073	Lefty1	LEFT RIGHT DETERMINATION FACTOR 1		4.72
ILMN_2659994	Gdnf	GLIAL CELL LINE DERIVED NEUROTROPHIC FACTOR		3.1
ILMN_1236725	Gdf1	GROWTH DIFFERENTIATION FACTOR 1		2.53
ILMN_2698449	Hbegf	HEPARIN-BINDING EGF-LIKE GROWTH FACTOR		2.36
ILMN_2484527	Vegfa	VASCULAR ENDOTHELIAL GROWTH FACTOR A		1.97
ILMN_2697220	Figf	C-FOS INDUCED GROWTH FACTOR		1.74
ILMN_2736496	Fgf10	FIBROBLAST GROWTH FACTOR 10		1.73
Cell Adhesion			1.80E-03	
ILMN_2774764	Cntnap4	CONTACTIN ASSOCIATED PROTEIN 4		7.88
ILMN_2627041	Cx3cl1	CHEMOKINE (C-X3-C MOTIF) LIGAND 1		2.5
ILMN_2670172	Itga5	INTEGRIN ALPHA 5 (FIBRONECTIN RECEPTOR ALPHA)		2.32
ILMN_2640248	Lama5	LAMININ, ALPHA 5		2.27
ILMN_1223697	Cd44	CD44 ANTIGEN		2.1
ILMN_1243254	Adam12	A DISINTEGRIN AND METALLOPEPTIDASE DOMAIN 12 (MELTRIN ALPHA)		1.92
ILMN_2707976	Cdh26	CADHERIN-LIKE 26		1.88
ILMN_2725411	Cd9	CD9 ANTIGEN		1.84
ILMN_1257880	Itga7	INTEGRIN ALPHA 7		1.77
ILMN_2492264	Wisp1	WNT1 INDUCIBLE SIGNALING PATHWAY PROTEIN 1		1.76
ILMN_2663613	Itgb5	INTEGRIN BETA 5		1.74
ILMN_2659503	Cdh13	CADHERIN 13		1.69
ILMN_1241893	Wisp2	WNT1 INDUCIBLE SIGNALING PATHWAY PROTEIN 2		1.69
ILMN_1232768	Vcam1	VASCULAR CELL ADHESION MOLECULE 1		1.56
ILMN_1237629	Cntn2	CONTACTIN 2		1.51

Collagen			2.10E-02	
ILMN_2735184	Col18a1	PROCOLLAGEN, TYPE XVIII, ALPHA 1		19.16
ILMN_1258629	Col3a1	PROCOLLAGEN, TYPE III, ALPHA 1		5.65
ILMN_1254546	Col5a2	PROCOLLAGEN, TYPE V, ALPHA 2		3.04
ILMN_2687880	Col1a1	PROCOLLAGEN, TYPE I, ALPHA 1		2.06
ILMN_2707616	Col22a1	COLLAGEN, TYPE XXII, ALPHA 1		1.87
ILMN_1258759	Col6a2	PROCOLLAGEN, TYPE VI, ALPHA 2		1.77
ILMN_1225073	Cthrc1	COLLAGEN TRIPLE HELIX REPEAT CONTAINING 1		1.53
Inflammatory Response			1.60E-02	
ILMN_1230789	C3	COMPLEMENT COMPONENT 3		8.8
ILMN_2763243	Cxcl1	CHEMOKINE (C-X-C MOTIF) LIGAND 1		8.46
ILMN_2742075	Cd14	CD14 ANTIGEN		2.68
ILMN_1254383	Atrn	ATTRACTIN		1.99
ILMN_1259252	Anxa1	ANNEXIN A1		1.99
ILMN_1255385	Chst1	CARBOHYDRATE (KERATAN SULFATE GAL-6) SULFOTRANSFERASE 1		1.82
Chemotaxis			1.50E-02	
ILMN_1231814	Ccl5	CHEMOKINE (C-C MOTIF) LIGAND 5		13.25
ILMN_2772998	Enpp2	ECTONUCLEOTIDE PYROPHOSPHATASE/PHOSPHODIESTERASE 2		12.7
ILMN_2658910	Cxcl12	CHEMOKINE (C-X-C MOTIF) LIGAND 12		6.78
ILMN_1245710	Ccl2	CHEMOKINE (C-C MOTIF) LIGAND 2		5.47
ILMN_1253797	Slit2	SLIT HOMOLOG 2 (DROSOPHILA)		3.1
ILMN_1214419	Cxcl10	CHEMOKINE (C-X-C MOTIF) LIGAND 10		2.94
ILMN_1235571	Cyr61	CYSTEINE RICH PROTEIN 61		2.9
ILMN_1216285	Creb3	CAMP RESPONSIVE ELEMENT BINDING PROTEIN 3		1.55
Development			3.10E-02	
ILMN_1234990	Gap43	GROWTH ASSOCIATED PROTEIN 43		37.4
ILMN_1226016	Scx	SCLERAXIS		29.89
ILMN_1215252	Bmp4	BONE MORPHOGENETIC PROTEIN 4		14.3
ILMN_2769657	Picalm	PHOSPHATIDYLINOSITOL BINDING CLATHRIN ASSEMBLY PROTEIN		4.98
ILMN_1246073	Lefty1	LEFT RIGHT DETERMINATION FACTOR 1		4.71
ILMN_2684289	Sema3a	SEMA DOMAIN, IMMUNOGLOBULIN DOMAIN (IG), SHORT BASIC DOMAIN, SECRETED,		3.89
ILMN_1230747	Wnt9a	WINGLESS-TYPE MMTV INTEGRATION SITE 9A		3.8

ILMN_2422848	Wnt10b	WINGLESS RELATED MMTV INTEGRATION SITE 10B	2.97
ILMN_2675833	Dlx3	DISTAL-LESS HOMEODOMAIN 3	2.96
ILMN_1245731	Hhex	HEMATOPOIETICALLY EXPRESSED HOMEODOMAIN	2.82
ILMN_1238558	Arid3b	AT RICH INTERACTIVE DOMAIN 3B (BRIGHT LIKE)	2.35
ILMN_1225378	Htatip2	HIV-1 TAT INTERACTIVE PROTEIN 2, HOMOLOG (HUMAN)	1.99
ILMN_1252870	Rorb	RAR-RELATED ORPHAN RECEPTOR BETA	1.89
ILMN_2722938	Myd116	MYELOID DIFFERENTIATION PRIMARY RESPONSE GENE 116	1.84
ILMN_2697220	Figf	C-FOS INDUCED GROWTH FACTOR	1.74
ILMN_1223414	Ptp4a1	PROTEIN TYROSINE PHOSPHATASE 4A1	1.72
ILMN_1215746	Cchcr1	COILED-COIL ALPHA-HELICAL ROD PROTEIN 1	1.65
ILMN_2734034	Prrx2	PAIRED RELATED HOMEODOMAIN 2	1.55
ILMN_2630811	Rere	ARGININE GLUTAMIC ACID DIPEPTIDE (RE) REPEATS	1.54
ILMN_2706755	Foxd1	FORKHEAD BOX D1	1.54
ILMN_1238875	Strbp	SPERMATID PERINUCLEAR RNA BINDING PROTEIN	1.54
ILMN_1253420	Psme4	PROTEASOME (PROSOME, MACROPAIN) ACTIVATOR SUBUNIT 4	1.5
Other Genes			
ILMN_1218967	Kif2c	KINESIN FAMILY MEMBER 2C	37.42
ILMN_2611181	Ccdc3	COILED-COIL DOMAIN CONTAINING 3	36.32
ILMN_1217009	Rab15	RAB15, MEMBER RAS ONCOGENE FAMILY	33.76
ILMN_2621448	Adh7	ALCOHOL DEHYDROGENASE 7 (CLASS IV), MU OR SIGMA POLYPEPTIDE	22.19
ILMN_1245531	Neto2	NEUROPILIN (NRP) AND TOLLOID (TLL)-LIKE 2	21.94
ILMN_1225602	S100a1	S100 CALCIUM BINDING PROTEIN A1	20.27
ILMN_2703267	Nes	NESTIN	18.5
ILMN_1245451	Rab6b	RAB6B, MEMBER RAS ONCOGENE FAMILY	14.71
ILMN_2713285	Fhl1	FOUR AND A HALF LIM DOMAINS 1	14.19
ILMN_2606660	Card10	CASPASE RECRUITMENT DOMAIN FAMILY, MEMBER 10	10.23
ILMN_2646891	Centd1	CENTAURIN, DELTA 1	9.05
ILMN_2686327	Gas6	GROWTH ARREST SPECIFIC 6	8.94
ILMN_2689998	Fjx1	FOUR JOINTED BOX 1 (DROSOPHILA)	8.81
ILMN_1230080	S100a7a	S100 CALCIUM BINDING PROTEIN A15	6.95
ILMN_1247646	H1fx	H1 HISTONE FAMILY, MEMBER X	6.91
ILMN_1217159	Lmo7	LIM DOMAIN ONLY 7	5.51
ILMN_1214327	S100a13	S100 CALCIUM BINDING PROTEIN A13	5.19
ILMN_1242829	Prdx2	PEROXIREDOXIN 2	5.10

ILMN_2868133	Gata6	GATA BINDING PROTEIN 6		4.75
ILMN_2614590	Tmem45a	TRANSMEMBRANE PROTEIN 45A		4.71
ILMN_1224014	Tmem100	TRANSMEMBRANE PROTEIN 100		4.42
ILMN_1230586	Traf1	TNF RECEPTOR-ASSOCIATED FACTOR 1		3.73
ILMN_1215807	Glipr1	GLI PATHOGENESIS-RELATED 1 (GLIOMA)		3.44
ILMN_2633670	Tmem62	TRANSMEMBRANE PROTEIN 62		3.03
ILMN_2773901	Glipr2	GLI PATHOGENESIS-RELATED 2		3.02
ILMN_1227993	Vav3	VAV 3 ONCOGENE		2.67
ILMN_2714361	Cd34	CD34 ANTIGEN		2.32
ILMN_2687880	Col1a1	PROCOLLAGEN, TYPE I, ALPHA 1		2.02
ILMN_1214227	Krt1-10	KERATIN COMPLEX 1, ACIDIC, GENE 1-10		1.84

The criteria for Functional Annotation Clustering of Gene analysis was set at $P < 0.05$ and fold-change less than or equal to 1.5. Shown are functional clusters of genes that were up-regulated in *Klf4* -null MEFs.

Table S2: Functional Annotation Clustering of Genes Down-Regulated in <i>Klf4</i> -Null MEFs				
ILLUMINA_ID	Gene Symbol	Gene Name (Description)	P -Value	Fold-Change
Jak-Stat Signaling Pathway			1.90E-02	
ILMN_1256180	Osmr	ONCOSTATIN M RECEPTOR		-4.000
ILMN_1219155	Jak3	JANUS KINASE 3		-3.448
ILMN_2628178	Socs2	SUPPRESSOR OF CYTOKINE SIGNALING 2		-3.226
ILMN_1243862	Il11	INTERLEUKIN 11		-3.226
ILMN_2698046	Stat3	SIGNAL TRANSDUCER AND ACTIVATOR OF TRANSCRIPTION 3		-2.273
ILMN_2618176	Socs3	SUPPRESSOR OF CYTOKINE SIGNALING 3		-1.538
Homeobox			4.20E-03	
ILMN_2860958	Dlx2	DISTAL-LESS HOMEODOMAIN 2		-14.286
ILMN_3163581	En1	ENGRAILED 1		-7.692
ILMN_1219807	Hoxd4	HOMEO BOX D4		-6.667
ILMN_1242977	Hoxb5	HOMEO BOX B5		-5.263
ILMN_2762935	Rhox5	REPRODUCTIVE HOMEODOMAIN 5		-5.263
ILMN_1218266	Meis1	MYELOID ECOTROPIC VIRAL INTEGRATION SITE 1		-4.348
ILMN_2636480	Hoxa5	HOMEO BOX A5		-4.000
ILMN_2618302	Hoxa2	HOMEO BOX A2		-3.448
ILMN_1229029	Dlx1	DISTAL-LESS HOMEODOMAIN 1		-3.030
ILMN_2621038	Hoxa7	HOMEO BOX A7		-2.564
ILMN_1239460	Onecut2	ONE CUT DOMAIN, FAMILY MEMBER 2		-2.273
ILMN_2678094	Prrx1	PAIRED RELATED HOMEODOMAIN 1		-2.273
ILMN_2774121	Mrg1	MYELOID ECOTROPIC VIRAL INTEGRATION SITE-RELATED GENE 1		-2.128
ILMN_1242943	Mrg2	MYELOID ECOTROPIC VIRAL INTEGRATION SITE-RELATED GENE 2		-2.128
ILMN_2662351	Hoxd3	HOMEO BOX D3		-2.083
Glutathione Metabolism			2.90E-03	
ILMN_2773022	Gsta4	GLUTATHIONE S-TRANSFERASE, ALPHA 4		-9.091
ILMN_2624854	Gstm2	GLUTATHIONE S-TRANSFERASE, MU 2		-5.000
ILMN_2729458	Idh1	ISOCITRATE DEHYDROGENASE 1 (NADP+), SOLUBLE		-2.564
ILMN_1228233	Gstm1	GLUTATHIONE S-TRANSFERASE, MU 1		-2.564
ILMN_2705777	Gstm5	GLUTATHIONE S-TRANSFERASE, MU 5		-2.439
ILMN_2641807	Gstm6	GLUTATHIONE S-TRANSFERASE, MU 6		-2.326
ILMN_1229964	Gstz1	GLUTATHIONE TRANSFERASE ZETA 1 (MALEYLACETOACETATE ISOMERASE)		-2.174

Ephrin			2.60E-02	
ILMN_1257372	Efnb1	EPHRIN B1		-2.041
ILMN_1217493	Efna4	EPHRIN A4		-1.639
ILMN_2716212	Efnb2	EPHRIN B2		-1.515
Developmental protein			3.20E-04	
ILMN_2422615	Ebf3	EARLY B-CELL FACTOR 3		-18.519
ILMN_2860958	Dlx2	DISTAL-LESS HOMEODOMAIN 2		-14.286
ILMN_3163581	En1	ENGRAILED 1		-7.692
ILMN_2630993	Ppap2b	PHOSPHATIDIC ACID PHOSPHATASE TYPE 2B		-7.143
ILMN_1219807	Hoxd4	HOMEODOMAIN D4		-6.667
ILMN_1242977	Hoxb5	HOMEODOMAIN B5		-5.263
ILMN_2703433	Foxc2	FORKHEAD BOX C2		-4.545
ILMN_1218266	Foxc2	MYELOID ECOTROPIC VIRAL INTEGRATION SITE 1		-4.348
ILMN_2636480	Hoxa5	HOMEODOMAIN A5		-4.000
ILMN_2776850	Gas7	GROWTH ARREST SPECIFIC 7		-3.846
ILMN_2618302	Hoxa2	HOMEODOMAIN A2		-3.448
ILMN_1228557	Id2	INHIBITOR OF DNA BINDING 2		-3.030
ILMN_1229029	Dlx1	DISTAL-LESS HOMEODOMAIN 1		-2.941
ILMN_2716389	Smpd3	SPHINGOMYELIN PHOSPHODIESTERASE 3, NEUTRAL		-2.632
ILMN_2621038	Hoxa7	HOMEODOMAIN A7		-2.564
ILMN_2765047	Chrd	CHORDIN		-2.381
ILMN_2624731	Egfl7	EGF-LIKE DOMAIN 7		-2.326
ILMN_2721198	Ggnbp1	GAMETOGENETIN BINDING PROTEIN 1		-2.273
ILMN_2643531	Angptl6	ANGIOPOIETIN-LIKE 6		-2.273
ILMN_1234976	Prrx1	PAIRED RELATED HOMEODOMAIN 1		-2.222
ILMN_1257372	Efnb1	EPHRIN B1		-2.041
ILMN_2662351	Hoxd3	HOMEODOMAIN D3		-2.041
ILMN_2659224	Cspg4	CHONDROITIN SULFATE PROTEOGLYCAN 4		-2.000
ILMN_1232901	Vamp5	VESICLE-ASSOCIATED MEMBRANE PROTEIN 5		-1.961
ILMN_2485120	Vti1a	INHIBITOR OF DNA BINDING 1		-1.961
ILMN_1235053	Mlf1	MYELOID LEUKEMIA FACTOR 1		-1.887
ILMN_1237197	Nrp1	NEUROFILAMIN 1		-1.887

Other Genes				
ILMN_2771738	Dlk1	DELTA-LIKE 1 HOMOLOG (DROSOPHILA)		-307.819
ILMN_2644350	Thy1	THYMUS CELL ANTIGEN 1, THETA		-67.239
ILMN_1244206	Prl2c4	PROLIFERIN 2		-42.157
ILMN_2661576	Bicc1	BICAUDAL C HOMOLOG 1 (DROSOPHILA)		-37.988
ILMN_1256371	Fez1	FASCICULATION AND ELONGATION PROTEIN ZETA 1 (ZYGIN I)		-37.299
ILMN_2724942	Ptgis	PROSTAGLANDIN I2 (PROSTACYCLIN) SYNTHASE		-33.333
ILMN_2661576	Bicc1	BICAUDAL C HOMOLOG 1 (DROSOPHILA)		-33.333
ILMN_2693606	Nr1h5	NUCLEAR RECEPTOR SUBFAMILY 1, GROUP H, MEMBER 5		-21.170
ILMN_2729103	Adamts2	A DISINTEGRIN-LIKE AND METALLOPEPTIDASE (REPROLYSIN TYPE) WITH THROMBO		-15.967
ILMN_1224866	Ptgs1	PROSTAGLANDIN-ENDOPEROXIDE SYNTHASE 1		-12.500
ILMN_1249767	Thbd	THROMBOMODULIN		-10.099
ILMN_1260020	Pcdh1	PROTOCOLADHERIN 1		-8.362
ILMN_1235133	Syn1	SYNAPSIN I		-6.305
ILMN_1232183	Mgmt	O-6-METHYLGUANINE-DNA METHYLTRANSFERASE		-4.859
ILMN_2634538	Peli2	PELLINO 2		-4.575
ILMN_1249776	Insl3	INSULIN-LIKE 3		-4.447
ILMN_2699052	Nrn1	NEURITIN 1		-4.387
ILMN_2674533	Renbp	RENIN BINDING PROTEIN		-4.011
ILMN_2674122	Pkia	PROTEIN KINASE INHIBITOR, ALPHA		-3.780
ILMN_1246282	Tcfap2a	TRANSCRIPTION FACTOR AP-2, ALPHA		-3.658
ILMN_2729197	Hic1	HYPERMETHYLATED IN CANCER 1		-3.587
ILMN_1235499	Pros1	PROTEIN S (ALPHA)		-3.367
ILMN_1240677	Gadd45gip1	GROWTH ARREST AND DNA-DAMAGE-INDUCED GAMMA INTERACTING PROTEIN 1		-3.026
ILMN_1218934	Rdm1	RAD52 MOTIF 1		-3.010
ILMN_2674367	Agrn	AGRIN		-2.932
ILMN_2623578	Nid1	NIDOGEN 1		-2.710
ILMN_2624328	Adamts7	A DISINTEGRIN-LIKE AND METALLOPEPTIDASE (REPROLYSIN TYPE) WITH THROMBO		-2.707
ILMN_2677332	Hic2	HYPERMETHYLATED IN CANCER 2		-2.515
ILMN_2677859	Insl6	INSULIN-LIKE 6		-2.229
ILMN_1230145	Acvr2b	ACTIVIN RECEPTOR IIB		-2.141

The criteria for Functional Annotation Clustering of Gene analysis was set at $P < 0.05$ and fold-change less than or equal to 1.5. Shown are functional clusters of genes that were down-regulated in *Klf4*-null MEFs.

Table S3 Functional annotation identified by Ingenuity global function analysis of genes regulated by Klf4

Functional Annotation	P-value	Name of Genes	Number of Genes
neurological disorder	5.75E-03	ABCC4, ABCC5, ABCC10, ABCD1, ABCD4, ACADM, ACBD3, ACER3, ACP1, ACP2, ACSL1, ACSL4, ACTB, ADA, ADAM12, ADAM15, ADCY7, ADCY8, ADCY9, ADCYAP1R1, ADH7, ADRB2, AEBP1, AEBP2, AEN, AHCY, AHI1, AIG1, AIM1 (includes EG:202), AK5,	1016
tumorigenesis	2.42E-06	ABCA5, ABCC4, ABR, ACTB, ACTR10, ACVR1, ACY1, ADA, ADAM12, ADAM17, ADAMTS1, ADARB1, ADORA2B, ADRB2, AGPAT2, AHCY, AIG1, AIM2, AIM1 (includes EG:202), AK2, AKAP1, AKAP12, AKAP8L, AKR1B10, AKT3, ALAD, ALDH2, ALDH5A1,	802
cell death	3.18E-14	AAK1, ABCC4, ABCC5, ACSL4, ACTB, ACVR1, ACVR1B, ACVR2B, ADA, ADAM12, ADAMTSL4, ADCYAP1R1, ADM, ADORA2B, ADRB2, AFP, AGPAT2, AHS1, AIFM2, AIM2, AKAP1, AKAP12, AKT3, ALCAM, ALDH2, ALDOC, ALOX12, ANGPT2, ANGPTL4, ANKRD1, ANP32A, ANTXR1, ANTXR2, ANXA1, ANXA7	753
neoplasia	2.45E-06	ABCA5, ABCC4, ABR, ACTB, ACTR10, ACY1, ADA, ADAM12, ADAM17, ADAMTS1, ADARB1, ADORA2B, ADRB2, AGPAT2, AHCY, AIG1, AIM2, AIM1 (includes EG:202), AK2, AKAP1, AKAP12, AKAP8L, AKR1B10, AKT3, ALAD, ALDH2, ALDH5A1, ALDOC, AMFR,	751
cancer	5.29E-06	ABCA5, ABCC4, ABR, ACTR10, ACY1, ADA, ADAM12, ADAMTS1, ADARB1, ADORA2B, ADRB2, AGPAT2, AHCY, AIG1, AIM2, AIM1 (includes EG:202), AK2, AKAP1, AKAP12, AKAP8L, AKR1B10, AKT3, ALAD, ALDH2, ALDH5A1, ALDOC, AMFR, ANGPT2,	719
apoptosis	5.53E-15	ACSL4, ACVR1, ACVR1B, ACVR2B, ADA, ADAM12, ADAMTSL4, ADCYAP1R1, ADM, ADRB2, AFP, AGPAT2, AHS1, AIFM2, AIM2, AKAP1, AKAP12, AKT3, ALCAM, ALDH2, ALDOC, ALOX12, ANGPT2, ANGPTL4, ANKRD1, ANP32A, ANXA1, ANXA7, APBB2, APH1B, APPL1, AREG, ARF6, ARL11, ARMC10, A	659
cell death of eukaryotic cells	1.42E-12	AAK1, ABCC4, ACTB, ACVR1B, ACVR2B, ADA, ADAM12, ADCYAP1R1, ADM, ADRB2, AFP, AGPAT2, AHS1, AIM2, AKAP1, AKT3, ALDH2, ALOX12, ANGPT2, ANKRD1, ANP32A, ANTXR1, ANTXR2, ANXA1, APH1B, AREG, ARF6, ARL11, ARMC10, ARRB2,	624
proliferation of cells	6.31E-06	ABCC4, ACP1, ACSL6, ADA, ADAM15, ADAM17, ADAMTS1, ADC, ADCYAP1R1, ADM, ADORA2B, ADRB2, AEBP1, AFP, AGTRAP, AIM2, AKR1B1, AKT3, ALOX12, ANGPT2, ANGPTL4, ANGPTL6, ANP32A, ANXA1, ANXA7, APPL1, APPL2, ARAF, ARD1A, AREG, ARHGAP24, ARHGEF2, ARIH2, ARTN, ASAH2,	614
tumor	5.51E-04	ABCC4, ABR, ACTR10, ACVR1, ACY1, ADA, ADAM12, ADAM17, ADAMTS1, ADARB1, ADORA2B, ADRB2, AGPAT2, AIG1, AIM2, AK2, AKAP1, AKAP12, AKAP8L, AKT3, ALAD, ALDH5A1, ALDOC, ANGPT2, ANGPTL4, ANO6, ANP32A, ANTXR1, ANXA1, ANXA5,	555
apoptosis of eukaryotic cells	7.67E-14	ACVR1B, ACVR2B, ADA, ADAM12, ADCYAP1R1, ADM, ADRB2, AFP, AGPAT2, AHS1, AIM2, AKAP1, AKT3, ALDH2, ALOX12, ANGPT2, ANKRD1, ANP32A, ANXA1, APH1B, AREG, ARF6, ARL11, ARMC10, ARRB2, ASAH2, ASNS, ATF2, ATF3, ATMIN, ATP1A1,	541
growth of cells	4.10E-12	ABCC5, ACP1, ACTB, ACVR1B, ADAM12, ADAM15, ADAM17, ADFP, ADIPOR2, ADM, ADORA2B, AHCY, AHS1, AK2, AKAP12, AKR1B1, AKT3, ALCAM, ALOX12, ANP32A, ANXA1, ANXA7, APBB2, ARAF, AREG, ARL3, ARL11, ARMC10, ARRB2, ATF2, ATF3,	525

primary tumor	1.00E-03	ABCC4, ABR, ACTR10, ACY1, ADA, ADAM12, ADAMTS1, ADARB1, ADORA2B, ADRB2, AGPAT2, AIG1, AIM2, AK2, AKAP1, AKAP12, AKAP8L, AKT3, ALAD, ALDH5A1, ALDOC, ANGPT2, ANO6, ANTXR1, ANXA1, ANXA5, AQP1, AREG, ARFGEF2, ARIH2, ARL11,	518
malignant tumor	9.24E-04	ABCC4, ABR, ACTR10, ACY1, ADA, ADAM12, ADAMTS1, ADARB1, ADORA2B, ADRB2, AGPAT2, AIG1, AIM2, AK2, AKAP1, AKAP12, AKAP8L, AKT3, ALAD, ALDH5A1, ALDOC, ANGPT2, ANO6, ANTXR1, ANXA1, AQP1, AREG, ARFGEF2, ARIH2, ARL11, ARL4D,	504
proliferation of eukaryotic cells	4.71E-05	ABCC4, ACP1, ACSL6, ADA, ADAM15, ADAMTS1, ADC, ADCYAP1R1, ADM, ADRB2, AEBP1, AFP, AGTRAP, AIM2, AKR1B1, AKT3, ANGPT2, ANGPTL4, ANGPTL6, ANXA1, ARD1A, AREG, ARHGAP24, ARIH2, ARTN, ATF4, ATP6V0A2, B4GALT1, BACH2	488
transcription	2.57E-03	ACTR2, ACTR1B (includes EG:10120), ACVR1, ACVR1B, ACVR2B, ADRB2, AEBP1, AEBP2, AFF4, AGRN, AMPH, ANKRD1, ANP32A, AP1G2, APBB2, APOL3 (includes EG:80833), ATF2, ATF3, ATF4, ATF7IP, ATP2C1, AZI2, BACH2 (includes EG:60468),	468
cell death of cell lines	9.67E-15	AAK1, ABCC4, ACTB, ACVR1B, ACVR2B, ADM, AFP, AGPAT2, AHS1, AIM2, AKAP1, AKT3, ALDH2, ALOX12, ANGPT2, ANKRD1, ANTXR1, ANTXR2, APH1B, AREG, ARL11, ARMC10, ARRB2, ASNS, ATF2, ATF3, ATMIN, ATP2A2, BACH2 (includes EG:60468),	467
apoptosis of cell lines	4.63E-13	ACVR1B, ACVR2B, ADM, AFP, AGPAT2, AHS1, AIM2, AKAP1, AKT3, ALDH2, ALOX12, ANGPT2, ANKRD1, APH1B, AREG, ARL11, ARMC10, ARRB2, ASNS, ATF2, ATF3, ATMIN, BACH2 (includes EG:60468), BCAR1, BCL2, BCL10, BCL2L11, BDNF, BHLHE40,	399
differentiation of cells	2.22E-05	ACADM, ACVR1, ACVR1B, ACVR2B, ADA, ADD1, ADORA2B, ADRB2, ALG5, ANXA1, AREG, ATF2, ATF3, ATF4, ATP7A, AXIN2, B4GALNT1, BAIAP2, BCL2, BCL2L11, BDH2, BDNF, BHLHE40, BIN1, BLNK, BMP1, BMP4, BMPER, BSG, BTC, C5ORF13, CAND1,	399
carcinoma	3.96E-05	ABCC4, ACTR10, ACY1, ADAM12, ADAMTS1, ADRB2, AGPAT2, AIG1, AIM2, AKAP1, AKT3, ALDH5A1, ALDOC, ANGPT2, ANO6, ANTXR1, ANXA1, AQP1, AREG, ARL11, ARRB2, ASS1, ATF2, ATP1B1, ATP2C1, AXIN2, BAT1, BCL2, BCL10, BHLHE40, BRCA2,	382
cell death of tumor cell lines	4.67E-11	ABCC4, ACVR1B, ACVR2B, ADM, AFP, AGPAT2, AHS1, AIM2, AKAP1, AKT3, ALOX12, ANGPT2, ANKRD1, AREG, ARL11, ARMC10, ARRB2, ASNS, ATF2, ATF3, ATMIN, ATP2A2, BACH2 (includes EG:60468), BCAR1, BCL2, BCL10, BCL2L11, BDNF,	359
growth of eukaryotic cells	2.56E-06	ABCC5, ACP1, ADAM17, ADM, AHS1, AKAP12, AKR1B1, AKT3, ANP32A, ANXA1, ANXA7, AREG, ARL11, ARMC10, ATF2, ATF3, BCAR1, BCL2, BCL2L11, BDNF, BMP4, BSG, BTC, C3, C8ORF4, CAMK2N1, CASP8, CAST, CBFB, CBX7, CCND1, CCNE1, CD14, CD44, CD82, CD274, CDC7, CDCA4, CDH	350
cell death of normal cells	9.58E-05	ABCC4, ADA, ADAM12, ADCYAP1R1, ADM, ADRB2, ALOX12, ANGPT2, ANP32A, ANXA1, ARF6, ARRB2, ASAH2, ATF2, ATF3, ATP1A1, ATP2C1, B4GALNT1, BACE1, BCL2, BCL10, BCL2L11, BDNF, BID, BLNK, BMP4, BNIP3L, C3, C14ORF153, C8ORF4,	347
development of cells	1.78E-07	ACP1, ACVR1, ADA, ADAM17, ADD1, AFF4, AGFG1 (includes EG:3267), ANGPT2, ANGPTL2, ANTXR1, ANXA5, ANXA7, ARHGDIG, ARHGEF2, ARRB2, ATF3, ATP1B1, ATRN, B4GALT1, BAIAP2, BCAR1, BCL2, BCL10, BCL2L11, BDNF, BLNK, BMP4, CAPG,	342

movement of cells	1.77E-05	ABHD2, ACP1, ACVR1, ADAM9, ADAM12, ADAM15, ADAM17, ADM, ADRB2, AKT3, ALCAM, ALOX12, ANGPT2, ANGPTL4, ANXA1, AOC3, APBB2, AREG, ARF6, ARHGAP24, ARRB2, B4GALT1, BCAR1, BCL2, BDNF, BMP4, BTC, C3, C5ORF13, CAPNS1, CBFB, CCK, CCL5, CCL7, CCL8, CCL9, CCL13, CCL	335
migration of cells	9.54E-06	ABHD2, ACP1, ACVR1, ADAM9, ADAM12, ADAM15, ADAM17, ADM, ADRB2, AKT3, ALCAM, ALOX12, ANGPT2, ANGPTL4, ANXA1, AOC3, APBB2, AREG, ARF6, ARHGAP24, ARRB2, B4GALT1, BCAR1, BCL2, BDNF, BMP4, BTC, C3, C5ORF13, CAPNS1, CBFB, CCK, CCL5, CCL7, CCL8, CCL9, CCL13, CCL	333
cell division process of cells	9.23E-06	ACVR1, ACVR1B, ADM, ADORA2B, AKAP9, AKAP12, ANAPC4, ANGPTL2, APBB2, ARAF, AREG, ATF2, ATF3, AXIN2, BCAR1, BCL2, BCL2L11, BHLHE40, BID, BLNK, BMP4, BRCA2, BRCC3, BTC, BTRC, C13ORF15, CAMK1, CAMK2D, CAMK2N1, CAMKK1, CARD10, CASP2, CAST, CCK, CCNB1IP1, CCND1	320
apoptosis of tumor cell lines	3.54E-11	ACVR1B, ACVR2B, ADM, AFP, AGPAT2, AHS1, AIM2, AKAP1, AKT3, ALOX12, ANGPT2, ANKRD1, AREG, ARL11, ARMC10, ARRB2, ASNS, ATF2, ATF3, ATMIN, BACH2 (includes EG:60468), BCAR1, BCL2, BCL10, BCL2L11, BDNF, BHLHE40, BID, BLNK, BMP4, BNIP3L, C3, C8ORF4, CABLES2, CAMK2D, CAPN1, CAPNS1, CASP2,	315
movement of eukaryotic cells	3.69E-04	ACP1, ACVR1, ADAM9, ADAM12, ADAM15, ADAM17, ADM, ADRB2, AKT3, ALCAM, ALOX12, ANGPT2, ANGPTL4, ANXA1, AOC3, APBB2, ARF6, ARHGAP24, ARRB2, B4GALT1, BCAR1, BDNF, BMP4, BTC, C3, C5ORF13, CAPNS1, CBFB, CCK, CCL5,	302
apoptosis of normal cells	1.80E-06	ADA, ADAM12, ADCYAP1R1, ADM, ADRB2, ANGPT2, ANP32A, ANXA1, ARF6, ARRB2, ASAH2, ATF2, ATF3, ATP1A1, ATP2C1, B4GALNT1, BCL2, BCL10, BCL2L11, BDNF, BID, BLNK, BMP4, BNIP3L, C3, C8ORF4, CABLES2, CAMK2D, CAPN1, CAPNS1, CASP2,	301
migration of eukaryotic cells	2.34E-04	ACP1, ACVR1, ADAM9, ADAM12, ADAM15, ADAM17, ADM, ADRB2, AKT3, ALCAM, ALOX12, ANGPT2, ANGPTL4, ANXA1, AOC3, APBB2, ARF6, ARHGAP24, ARRB2, B4GALT1, BCAR1, BDNF, BMP4, BTC, C3, C5ORF13, CAPNS1, CBFB, CCK, CCL5,	300
developmental process of organism	3.33E-04	ACVR1, ACVR1B, ADA, ADAMTS1, ADD1, ADH5 (includes EG:128), ANGPT2, ANGPTL2, APL1A (includes EG:226548), AQP1, ARIH2, ATF2, ATP1B1, BCL2, BCL2L11, BDNF, BMP1, BMP4, BTC, CBFB, CCDC47, CCND1, CD164, CDH5, CDK6, CDKN1B, CDON, CHD7, CHD8, CHRD, CHST2, CHST11,	288
growth of cell lines	1.83E-07	ABCC5, ACP1, ADAM17, ADM, AHS1, AKAP12, AKT3, ANP32A, ANXA1, ANXA7, AREG, ARL11, ARMC10, ATF2, ATF3, BCAR1, BCL2, BCL2L11, BMP4, BTC, C8ORF4, CAMK2N1, CAST, CBFB, CBX7, CCND1, CCNE1, CD44, CD274, CDCA4, CDH13, CDK2, CDK6, CDKN1A, CDKN1B, CEBPD, CHKA, CLI	287
proliferation of cell lines	1.32E-05	ADC, ADM, AFP, AIM2, AKT3, ANXA1, ARD1A, AREG, ARIH2, ATP6V0A2, BACH2 (includes EG:60468), BCAR1, BCL2, BDNF, BID, BMP4, BRCA2, BTC, BTRC, C5ORF13, CASP2, CASP8, CBFB, CCDC6, CCL13, CCND1, CCNE1, CCNG2, CD9, CD44, CD81,	286
death of animal	9.24E-06	ABCA3, ADA, ADAM12, ADH7, ADH5 (includes EG:128), ADK, ADRB2, AEBP1, AKT3, ALOX12, AMPH, ANGPT2, ANGPTL6, ANXA1, APL1A (includes EG:226548), AQP11, B4GALNT1, BACE1, BCL2, BCL2L11, BID, BLMH, BNIP3L, BRCA2, C3, C1GALT1,	283

developmental process of tissue	2.24E-07	ACVR1, ACVR1B, ACVR2B, ADAM12, ADAM15, ADAMTS1, ADCYAP1R1, ADRB2, AEBP1, ANGPT2, APH1A (includes EG:226548), AREG, ARHGEF10, ATF3, ATP7A, B4GALNT1, B4GALT1, BACE1, BBS1, BCL2, BCL2L11, BDNF, BMP4, CAPNS1, CASP9, CCNF, CD9, CD44, CD81, CDK5, CDK5R1, CDKN1A	280
death of mammalia	7.57E-06	ABCA3, ADA, ADAM12, ADH7, ADH5 (includes EG:128), ADK, ADRB2, AEBP1, AKT3, ALOX12, AMPH, ANGPT2, ANGPTL6, ANXA1, APH1A (includes EG:226548), AQP11, B4GALNT1, BACE1, BCL2, BCL2L11, BID, BLMH, BNIP3L, BRCA2, C3, C1GALT1,	279
developmental process of tumor cell lines	4.38E-07	ADAM17, ADM, AHS1, AKAP12, AKT3, ALG5, ANXA1, ANXA7, AREG, ARL11, ATF2, ATF3, B4GALNT1, BCAR1, BCL2, BCL2L11, BDH2, BDNF, BMP4, BTC, CAMK2N1, CAPN1, CAST, CBX7, CCND1, CCNE1, CD14, CD44, CD82, CD274, CDCA4, CDH13, CDK2, CDK6, CDK5R1, CDKN1A, CDKN1B, CEBP	277
death of rodents	5.72E-06	ABCA3, ADA, ADAM12, ADH7, ADH5 (includes EG:128), ADK, ADRB2, AEBP1, AKT3, ALOX12, AMPH, ANGPT2, ANGPTL6, ANXA1, APH1A (includes EG:226548), AQP11, B4GALNT1, BACE1, BCL2, BCL2L11, BID, BLMH, BNIP3L, BRCA2, C3, C1GALT1,	277
death of mice	6.21E-06	ABCA3, ADA, ADAM12, ADH7, ADH5 (includes EG:128), ADK, ADRB2, AEBP1, AKT3, ALOX12, AMPH, ANGPT2, ANGPTL6, ANXA1, APH1A (includes EG:226548), AQP11, B4GALNT1, BACE1, BCL2, BCL2L11, BID, BLMH, BNIP3L, BRCA2, C3, C1GALT1,	276
survival of cells	5.95E-05	ACVR2B, ADK, ADORA2B, AGRN, AK5, AKAP8L, ALCAM, ALOX12, ANTXR1, ANTXR2, AREG, ARTN, ATF2, ATF4, ATP7A, AURKAIP1, BANF1, BCAR1, BCL2, BCL2L11, BDNF, BHLHE40, BMP4, BRCA2, BTC, C7ORF16, CAMK2D, CAMK2N1, CASP2, CASP6,	256
cell division process of eukaryotic cells	2.15E-05	ADM, ADORA2B, AKAP9, AKAP12, APBB2, ARAF, AREG, ATF2, ATF3, AXIN2, BCAR1, BCL2, BCL2L11, BHLHE40, BID, BLNK, BMP4, BRCA2, BTRC, C13ORF15, CAMK1, CAMK2N1, CAMKK1, CARD10, CASP2, CAST, CCK, CCNB1IP1, CCND1, CCNE1, CCNF, CCNG1, CCNG2, CD44, CD274, CDC7, CDC2	254
cell movement	4.57E-03	ACP1, ACTB, ACTR2, ADM, ALOX12, ALOX5AP, AMFR, ANGPT2, ANXA1, AOC3, ARF6, ARRB2, ARTN, B4GALT1, BCAR1, BDNF, BMP4, BSG, BTN1A1, C3, CALD1, CAMK2N2, CAPN1, CAPZB, CASP8, CAST, CBFB, CCL5, CCL7, CCL8, CCL13, CCL25, CCND1,	253
cell stage	4.52E-05	ACVR1, ACVR1B, ADORA2B, AKAP9, AKAP12, ANAPC4, APBB2, ARAF, AREG, ATF2, ATF3, AXIN2, BCL2, BCL2L11, BHLHE40, BID, BMP4, BRCA2, BRCC3, BTC, BTRC, C13ORF15, CAMK1, CAMK2D, CAMK2N1, CAMKK1, CCK, CCNB1IP1, CCND1, CCNE1, CCNF, CCNG1, CCNG2, CD44, CDC7, CDC16,	250
developmental disorder	1.41E-03	ACSL4, ACTG2 (includes EG:72), ADA, ADAMTS10 (includes EG:81794), ADM, ADRB2, ANGPT2, ANKH, ARAF, ARL6, ARSA, ATF3, ATF4, ATP6AP2, ATP7A, BACE1, BBS1, BBS7, BCL2, BCOR, BDNF, BMP4, BRWD3, BTRC, C3, CACNA1C, CAMK2D, CCL13,	250
modification of protein	1.50E-04	ACP1, ACVR1B, ADAM17, ADM, ALG8, ALG9, ALG12, AMFR, APH1B, ARAF, ARD1A, ARRB2, ATG3, ATG10, ATG12, ATXN10, BCL2, BCL10, BMP4, BSG, CAMK2D, CAND1, CAPN1, CARD10, CAST, CCK, CCL5, CCND1, CCNE1, CCT4, CCT6A, CD9, CD34, CD44,	248

development of tissue	3.37E-07 ACVR1, ACVR1B, ACVR2B, ADAM12, ADAMTS1, ADCYAP1R1, ADRB2, AEBP1, ANGPT2, APH1A (includes EG:226548), AREG, ARHGEF10, ATP7A, B4GALNT1, B4GALT1, BACE1, BBS1, BCL2, BCL2L11, BDNF, BMP4, CAPNS1, CASP9, CCNF, CD9, CD44, CD81, CDK5, CDK5R1, CDON, CHKB, CHST11,	239
development of organ	2.14E-04 ABR, ACADM, ACVR1, ACVR2B, ADA, ADAMTS1, ADAMTS2, ADM, AEBP1, APH1A (includes EG:226548), AQP11, AREG, ARF6, ASL, ATF3, ATP7A, BBS1, BCL2, BCL2L11, BCOR, BDNF, BMP4, BRCA2, C1GALT1, CASP2, CASP7, CASP8, CASP9, CBFB, CCND1, CCNF, CDK5, CDK5R1, CFL1, CHD7,	238
survival of eukaryotic cells	3.50E-05 ACVR2B, ADK, AGRN, AK5, AKAP8L, ALOX12, ANTXR1, ANTXR2, AREG, ARTN, ATF2, ATP7A, AURKAIP1, BCAR1, BCL2, BCL2L11, BDNF, BHLHE40, BMP4, BRCA2, BTC, C7ORF16, CAMK2D, CAMK2N1, CASP2, CASP7, CASP8, CASP9, CBFB, CCL5, CCND1, CCNG1, CCRK, CD44, CD81, CD82, CDH5,	237
infectious disorder of cells	4.84E-04 ACADSB, AEBP2, AFG3L1, AMDHD2, ANAPC2, AP1G2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, ATMIN, ATP6V0C, B4GALNT4, BICD2, BMP1, C3, C6ORF1, CAD, CAMK1D, CAPN6, CCDC51, CCL5, CCT2, CD44, CD93, CD164, CDC42EP3, CHST1, CLNS1A, CLOCK, CLTA, COL5A1, CRYA	236
development of organism	9.75E-04 ACVR1, ACVR1B, ADA, ADD1, ANGPT2, ANGPTL2, APH1A (includes EG:226548), ARIH2, ATF2, ATP1B1, BCL2, BCL2L11, BDNF, BMP1, BMP4, BTC, CBFB, CCDC47, CCND1, CD164, CDH5, CDK6, CDON, CHD7, CHD8, CHRD, CHST2, CHST11, CLPTM1, CNR1, COL18A1, COMMD1 (includes EG:150)	236
infection of cells	3.10E-04 ACADSB, AEBP2, AFG3L1, AMDHD2, ANAPC2, AP1G2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, ATMIN, ATP6V0C, B4GALNT4, BICD2, BMP1, C6ORF1, CAD, CAMK1D, CAPN6, CCDC51, CCL5, CCT2, CD44, CD93, CD164, CDC42EP3, CHST1, CLNS1A, CLOCK, CLTA, COL5A1, CRYAB, C	234
infectious disorder of eukaryotic cells	3.10E-04 ACADSB, AEBP2, AFG3L1, AMDHD2, ANAPC2, AP1G2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, ATMIN, ATP6V0C, B4GALNT4, BICD2, BMP1, C3, C6ORF1, CAD, CAMK1D, CAPN6, CCDC51, CCL5, CCT2, CD44, CD93, CD164, CDC42EP3, CHST1, CLNS1A, CLOCK, CLTA, COL5A1, CRYA	234
infection of eukaryotic cells	1.67E-04 ACADSB, AEBP2, AFG3L1, AMDHD2, ANAPC2, AP1G2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, ATMIN, ATP6V0C, B4GALNT4, BICD2, BMP1, C6ORF1, CAD, CAMK1D, CAPN6, CCDC51, CCL5, CCT2, CD44, CD93, CD164, CDC42EP3, CHST1, CLNS1A, CLOCK, CLTA, COL5A1, CRYAB, C	233
cell stage of cells	6.06E-05 ACVR1, ACVR1B, ADORA2B, AKAP9, AKAP12, ANAPC4, APBB2, ARAF, AREG, ATF2, ATF3, AXIN2, BCL2, BCL2L11, BHLHE40, BID, BMP4, BRCA2, BRCC3, BTC, BTRC, C13ORF15, CAMK1, CAMK2D, CAMK2N1, CAMKK1, CCK, CCNB1IP1, CCND1, CCNE1, CCNF, CCNG1, CCNG2, CD44, CDC7, CDC16,	229
infectious disorder of cell lines	2.08E-04 ACADSB, AEBP2, AFG3L1, AMDHD2, ANAPC2, AP1G2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, ATMIN, ATP6V0C, B4GALNT4, BICD2, BMP1, C3, C6ORF1, CAD, CAMK1D, CAPN6, CCDC51, CCL5, CCT2, CD164, CDC42EP3, CHST1, CLNS1A, CLOCK, CLTA, COL5A1, CRYAB, CSPP1, CT	229

migration of normal cells	1.29E-03	ACP1, ACVR1, ADAM9, ADAM15, ADAM17, ADM, ADRB2, ANGPT2, ANGPTL4, ANXA1, AOC3, APBB2, ARF6, ARHGAP24, ARRB2, B4GALT1, BCAR1, BDNF, BMP4, C3, CAPNS1, CCK, CCL5, CCL7, CCL8, CCL9, CCL13, CCL25, CCND1, CD9, CD34, CD44,	229
infection of cell lines	1.28E-04	ACADSB, AEBP2, AFG3L1, AMDHD2, ANAPC2, AP1G2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, ATMIN, ATP6V0C, B4GALNT4, BICD2, BMP1, C6ORF1, CAD, CAMK1D, CAPN6, CCDC51, CCL5, CCT2, CD164, CDC42EP3, CHST1, CLNS1A, CLOCK, CLTA, COL5A1, CRYAB, CSPP1, CTDP1,	228
developmental process of animal	1.92E-03	ACVR1, ACVR1B, ADA, ADAMTS1, ADD1, ADH5 (includes EG:128), ANGPT2, ANGPTL2, APH1A (includes EG:226548), AQP1, ATP1B1, BCL2, BCL2L11, BDNF, BMP4, BTC, CBFB, CCDC47, CCND1, CDH5, CDK6, CDKN1B, CDON, CHD7, CHD8, CHRD, CHST11, CNR1, COL4A2, COMMD1 (includes E	225
colorectal cancer	2.07E-05	ABCA5, ADAMTS1, AHCY, AIM1 (includes EG:202), AKT3, ANGPTL2, ANK3, ANTXR1, AOC3, ATP2A2, AXIN2, C14ORF143, C15ORF23, C15ORF48, C17ORF81, C9ORF167, CACNA2D1, CALD1, CAMK2N1, CAPG, CCT4, CD9, CD274, CDKN3, CDKN1A, CDKN1B,	212
growth of tumor cell lines	2.28E-05	ADAM17, ADM, AHS1A, AKAP12, AKT3, ANXA1, ANXA7, AREG, ARL11, ATF2, ATF3, BCAR1, BCL2, BCL2L11, BTC, CAMK2N1, CBX7, CCND1, CCNE1, CD44, CD274, CDCA4, CDH13, CDK2, CDK6, CDKN1A, CDKN1B, CEBPD, CLIP1, COL18A1, COL6A3, CRABP2, CREB1, CREG1, CTGF, CTSD, CUL7 (	212
cell cycle progression	1.38E-04	ADORA2B, AKAP9, ANXA1, APBB2, ASNS, ATF3, BCAR1, BCL2, BCL2L11, BLNK, BMP4, BRCA2, BTC, BTRC, CALM2, CAMK2N1, CARD10, CASP2, CAST, CCK, CCNB1IP1, CCNC, CCND1, CCNE1, CCNF, CCNG1, CCNG2, CD44, CD274, CDC7, CDC16, CDC23	212
proliferation of tumor cell lines	5.09E-05	ADC, ADM, AFP, AIM2, AKT3, ANXA1, ARD1A, AREG, ARIH2, BCAR1, BCL2, BDNF, BID, BRCA2, BTC, CASP2, CASP8, CCL13, CCND1, CCNE1, CCNG2, CD44, CD81, CDK5, CDK5R1, CDKN1A, CDKN1B, CHKA, COL1A1, CRK, CTGF, CTSB, CUL4A, CXCL12,	200
Huntington's disease	3.11E-05	ACADM, ACP1, ACTB, ADCY7, AEBP1, AHCY, AIG1, ALDH2, ALDH6A1, AP1S1, AQP1, ARIH2, ARL3, ATP2A2, ATP5C1, ATP5O, ATP6AP2, BAIAP2, BCL2, BCL7A, BDNF, BHLHE40, C3, C14ORF156, C4A, C5ORF13, CA11, CA12, CAPNS1, CASP2, CASP6,	199
cell division process of cell lines	5.53E-05	ADM, AKAP9, AKAP12, APBB2, ARAF, AREG, ATF2, AXIN2, BCAR1, BCL2, BHLHE40, BID, BMP4, BRCA2, BTRC, CAMK1, CAMK2N1, CAMKK1, CARD10, CASP2, CAST, CCK, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CD	199
organogenesis	2.77E-05	ACADM, ACVR1, ACVR2B, ADAMTS1, ADM, ATF4, B4GALT1, BCL2, BCL2L11, BCOR, BDNF, BMP4, BRCA2, CASP7, CASP8, CCND1, CDKN1B, CHD7, COL18A1, COL3A1, COL5A1, COL5A2, COL8A1, CREB1, CRK, CRKL, CRYAB, CUL1, CXADR, CXCL13, DCN, DGCR6, DLC1, DLX1, DLX2, ECE1, ECE2,	179
morphogenesis of cells	6.39E-09	ACP1, ADD1, ANGPT2, ANGPTL2, ANTXR1, ANXA5, ANXA7, ARHGDIG, ARHGEF2, ARRB2, ATRN, BAIAP2, BCAR1, BCL2, BCL10, BDNF, BMP4, CAPG, CAPZB, CASP8, CASP9, CAST, CCL5, CCL7, CCL8, CCL13, CCND1, CCNE1, CD9, CD44, CD47, CD82, CD151, CDC42EP1, CDC42EP2, CDH13, CDK5	178

shape change	1.02E-08	ACP1, ANGPT2, ANGPTL2, ANTXR1, ANXA5, ANXA7, AP2M1, ARF6, ARHGAP17, ARHGDIG, ARRB2, ATRN, BAIAP2, BCAR1, BCL2, BCL10, BDNF, BMP4, CAPG, CASP8, CASP9, CAST, CCL5, CCL7, CCL8, CCL13, CCNE1, CD9, CD44, CD47, CD151, CDC42EP1, CDC42EP2, CDK5, CDK5R1, CDKN1B, C	178
cell stage of eukaryotic cells	1.92E-04	ADORA2B, AKAP9, AKAP12, ARAF, AREG, ATF2, ATF3, AXIN2, BCL2, BCL2L11, BHLHE40, BID, BMP4, BRCA2, BTRC, C13ORF15, CAMK1, CAMK2N1, CAMKK1, CCK, CCNB1IP1, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC7, CDC25A, CDC25C, CDH13, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC7, CDC25A, CDC25C, CDH13, CD151, CD274, CDKN1A, CHST1, CLNS1A, COL18A1, CSPP1, CTDP1, CTSB, CTSZ (includes EG:1522), CXADR, CYR61, DDX3X, D	177
disease of tumor cell lines	5.42E-04	ACADSB, ADAM17, AFG3L1, ANAPC2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATF2, ATF3, ATG12, ATG16L2, BICD2, C6ORF1, CAMK1D, CAPN6, CCND1, CCT2, CD82, CD151, CD274, CDKN1A, CHST1, CLNS1A, COL18A1, CSPP1, CTDP1, CTSB, CTSZ (includes EG:1522), CXADR, CYR61, DDX3X, D	175
reproductive system disorder	4.87E-03	ACTB, ADRB2, AIG1, ANGPT2, ANK3, ANXA5, ATF4, ATP1B1, BCL2, BRCA2, BSG, C13ORF15, CAPN6, CASP8, CBX6, CD14, COL18A1, COL6A2, CREB1, CTGF, CX3CL1, CXADR, CXCL10, CXCL13, CYR61, DBP, DCN, DNMT1, DNMT3B, DST, DUSP1, ECT2, AKAP9, AKAP12, APBB2, ATF2, ATF3, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CD44, CD274, CDC7, CDC25A, CDC25C, CDC2L6, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN3, CDKN1A, CDKN1B, CDKN2C, CDKN2D, CEBPD,	169
arrest in cell division process of cells	2.58E-05	AKAP9, AKAP12, APBB2, ATF2, ATF3, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CD44, CD274, CDC7, CDC25A, CDC25C, CDC2L6, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN3, CDKN1A, CDKN1B, CDKN2C, CDKN2D, CEBPD,	165
survival of cell lines	1.36E-05	ACVR2B, ADK, AK5, AKAP8L, ALOX12, ANTXR1, ANTXR2, ATF2, ATP7A, AURKAIP1, BCL2, BDNF, BHLHE40, BMP4, BRCA2, BTC, C7ORF16, CAMK2D, CAMK2N1, CASP2, CASP9, CCND1, CCRK, CD44, CD81, CD82, CDH13, CDK2, CDK6, CDK8, CDKN1A, CDKN1B, CDKN2D, CHKA, CREB1, CXCL12, CX	162
differentiation of cell lines	1.57E-04	ALG5, AREG, ATF2, B4GALNT1, BCL2, BDH2, BDNF, BHLHE40, BLNK, BMP4, BTC, CBFB, CBR2, CBY1, CCND1, CD9, CD14, CD81, CD164, CDK2, CDK6, CDK5R1, CDKN1A, CDKN1B, CDKN2D, CDON, CEBPD, CHKA, CHRD, CREBBP, CREG1, CRK, CTGF, CTSB, CUL4A, CXCL12, DAB2, DCN, DDIT3,	161
movement of cell lines	3.21E-05	ACP1, ADAM12, ADAM15, ADAM17, AKT3, ALCAM, ALOX12, ARRB2, BCAR1, BTC, C3, C5ORF13, CBFB, CCL5, CCL13, CD44, CD47, CD82, CD151, CDH5, CDKN1A, CDKN1B, CLIC4, CNR1, COL18A1, CRK, CRKL, CTSB, CX3CL1, CXCL2, CXCL10, CXCL12, CYR61, DCBLD2, DDX3X, DICER1, DNAJA3	160
development of blood vessel	8.83E-10	ACP1, ACVR1, ADA, ADAM17, ADAMTS1, ADORA2B, ANGPT2, ANGPTL2, ANGPTL4, APL1A (includes EG:226548), ARHGAP24, ATP7A, B4GALT1, BCL2, BDNF, BMP4, BTC, C1GALT1, CASP8, CCL13, CCND1, CD151, CDH5, CHD7, COL18A1, COL1A1, COL3A1, COL4A2, COL5A1, CRKL, CSPG4, CTGF,	159
migration of cell lines	1.73E-05	ACP1, ADAM12, ADAM15, ADAM17, AKT3, ALCAM, ALOX12, ARRB2, BCAR1, BTC, C3, C5ORF13, CBFB, CCL5, CCL13, CD44, CD47, CD82, CD151, CDH5, CDKN1A, CDKN1B, CLIC4, CNR1, COL18A1, CRK, CRKL, CTSB, CX3CL1, CXCL2, CXCL10, CXCL12, CYR61, DCBLD2, DDX3X, DICER1, DNAJA3	158

digestive organ tumor	4.50E-03	ACY1, ADAM12, ADORA2B, AIM2, AKAP1, AKT3, ANTXR1, ANXA1, BAT1, BCL2, BTRC, C14ORF143, CASP8, CD14, CD59, CD274, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN3, CDKN1A, CDKN1B, CHRNA1, CHRN1B, COBLL1, COL1A1, COL6A3, COPS5, CREB1, CREBBP, CTSC, CTSD, CUGBP1,	151
adhesion of eukaryotic cells	1.77E-03	ACP1, ADAM9, ADAM12, ADAM15, ADAM17, ADRB2, ALOX12, ANGPT2, ANXA1, ANXA5, AOC3, B4GALT1, BMP4, BSG, C3, CASP8, CCL5, CCL13, CCL25, CCNC, CCND1, CD9, CD34, CD44, CD47, CD59, CD81, CD82, CD151, CDK5R1, CERCAM, COL18A1, COL7A1, CORO1A, CTGF, CX3CL1, CXCL2, C	150
developmental process of mammalia	3.03E-03	ACVR1, ADAMTS1, ADH5 (includes EG:128), ANGPT2, ANGPTL2, APH1A (includes EG:226548), AQP1, ATP1B1, BCL2, BCL2L11, BDNF, BMP4, BTC, CBFB, CCND1, CDH5, CDK6, CDKN1B, COL4A2, COMMD1 (includes EG:150684), CREB1, CXCL12, CXXC1,	145
transformation	3.54E-03	ACP1, ADM, AFF4, AKT3, ANGPTL2, ANP32A, ARAF, ARHGEF3, ATF3, BCAR1, BCKDHA, BCL2, BCL10, BIN1, CBFB, CCDC6, CCND1, CCNE1, CDC25A, CDK2, CDK6, CDKN1A, CDKN1B, CLTC, COL1A1, CREBBP, CRK, CYP2D6, CYTH1, DMTF1, DNAJA3,	145
developmental process of rodents	2.79E-03	ACVR1, ADAMTS1, ADH5 (includes EG:128), ANGPT2, ANGPTL2, APH1A (includes EG:226548), AQP1, ATP1B1, BCL2, BCL2L11, BDNF, BMP4, BTC, CBFB, CCND1, CDH5, CDK6, CDKN1B, COL4A2, COMMD1 (includes EG:150684), CREB1, CXCL12, CXXC1,	144
benign tumor	5.55E-03	ADAM12, ADAR1, AIG1, AK2, AKAP8L, ANXA1, ANXA5, ARHGEF2, ARIH2, ARL4D, ATF2, ATP1A1, ATRN, ATRNL1, BCL2, BCL10, BTRC, CAPN6, CCND1, CDC7, CDKN1A, CDKN1B, CDKN2C, CLEC16A, CNR1, COL18A1, COL6A3, COX6A2, CRABP2, CTGF, CTSC, CYP1B1, CYR61, DNMT1, DNMT3B, DO	144
developmental process of mice	3.25E-03	ACVR1, ADAMTS1, ADH5 (includes EG:128), ANGPT2, ANGPTL2, APH1A (includes EG:226548), AQP1, ATP1B1, BCL2, BCL2L11, BDNF, BMP4, BTC, CBFB, CCND1, CDH5, CDK6, CDKN1B, COL4A2, COMMD1 (includes EG:150684), CREB1, CXCL12, CXXC1,	143
transformation of cells	2.33E-03	ACP1, ADM, AFF4, AKT3, ANGPTL2, ANP32A, ARAF, ARHGEF3, ATF3, BCAR1, BCKDHA, BCL2, BCL10, BIN1, CBFB, CCDC6, CCND1, CCNE1, CDC25A, CDK2, CDK6, CDKN1A, CDKN1B, CLTC, COL1A1, CREBBP, CRK, CYTH1, DMTF1, DNAJA3, DNMT1,	141
infection of tumor cell lines	2.75E-03	ACADSB, AFG3L1, ANAPC2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, BICD2, C6ORF1, CAMK1D, CAPN6, CCT2, CHST1, CLNS1A, CSPP1, CTD1P1, CTSZ (includes EG:1522), DDX3X, DLST, DNAJA2, DTX4, DYSF, EDNRA, EGF, EGFR, ETHE1, EXOSC5, FAM76B, FBXO21, FGD6, FHL3	141
interphase of eukaryotic cells	8.35E-05	AKAP12, ARAF, ATF2, ATF3, BCL2, BCL2L11, BHLHE40, BID, BMP4, BTRC, C13ORF15, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, COPS5, CREG1	139
cell stage of cell lines	3.70E-04	AKAP9, AKAP12, ARAF, ATF2, AXIN2, BCL2, BHLHE40, BID, BMP4, BRCA2, BTRC, CAMK1, CAMK2N1, CAMKK1, CCK, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B,	139

cell division process of tumor cell lines	7.03E-04	AKAP9, APBB2, ATF2, AXIN2, BCAR1, BCL2, BHLHE40, BMP4, BRCA2, BTRC, CAMK1, CAMK2N1, CAMKK1, CARD10, CASP2, CCK, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2C, CEBPD, CHKA, C	136
infection of cervical cancer cell lines	2.91E-03	ACADSB, AFG3L1, ANAPC2, AP2M1, ARGLU1, ARHGEF19, ARPC1A, ATG12, ATG16L2, BICD2, C6ORF1, CAMK1D, CAPN6, CCT2, CHST1, CLNS1A, CSPP1, CTDP1, CTSZ (includes EG:1522), DDX3X, DLST, DNAJA2, DTX4, DYSF, EDNRA, EGF, EGFR, ETHE1, EXOSC5, FAM76B, FBXO21, FGD6, FHL3	136
invasion of cells	1.48E-04	ADAM9, ADAM17, ADM, AKT3, ANXA1, AREG, ARF6, ATF3, ATP6V0C, BATF3, BCAR1, BCL2, BMP4, BSG, BTC, CCND1, CD9, CD14, CD44, CD82, CD151, CDKN1B, CHRD, COL18A1, CRK, CSPG4, CTSB, CTSD, CXCL10, CXCL12, DKK3, DLC1, DNMT3B, EGF, EGFR, ENG, ENPP2, ENTPD5, EPHA2, E	135
angiogenesis	2.12E-09	ACP1, ACVR1, ADA, ADAM17, ADAMTS1, ADORA2B, ANGPT2, ANGPTL2, ANGPTL4, APL1A (includes EG:226548), ARHGAP24, ATP7A, B4GALT1, BCL2, BDNF, BMP4, BTC, C1GALT1, CASP8, CCL13, CCND1, CD151, CDH5, COL18A1, COL4A2, CSPG4, CTGF, CTSB, CX3CL1, CXCL12, CYR61, DDAH1,	132
invasion of eukaryotic cells	5.03E-04	ADAM9, ADAM17, ADM, AKT3, ANXA1, AREG, ARF6, ATF3, BATF3, BCAR1, BCL2, BMP4, BSG, BTC, CCND1, CD9, CD14, CD44, CD82, CD151, CDKN1B, CHRD, COL18A1, CRK, CSPG4, CTSB, CTSD, CXCL10, CXCL12, DKK3, DLC1, DNMT3B, EGF, EGFR,	127
arrest in cell division process of eukaryotic cells	2.05E-04	AKAP9, AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2C, CDKN2D, CEBPD, CHKA, CLIP1, COL1A1, COPS5, CREB1, CUL1,	125
survival of tumor cell lines	1.78E-04	ACVR2B, ADK, AK5, AKAP8L, ALOX12, ANTXR1, ANTXR2, ATF2, AURKAIP1, BCL2, BDNF, BHLHE40, BRCA2, C7ORF16, CAMK2D, CAMK2N1, CASP2, CCND1, CCRK, CD44, CD81, CD82, CDK2, CDK6, CDK8, CDKN1A, CDKN1B, CDKN2D, CHKA, CREB1, CXCL12, CXCR7, DGKA, DUSP1, DUSP5, DUSP14,	124
colony formation of cells	5.29E-04	AKAP12, ANKRD1, ANXA1, ANXA7, ATF3, BACH2 (includes EG:60468), BCL2, BCL2L11, BNIP3L, CBFB, CCL13, CCND1, CCNE1, CCNG2, CD9, CD44, CD82, CDA, CDKN1A, CDKN1B, CLTC, CNOT7, CRTC1, CTSD, CXCL12, CYR61, DCK, DCN, DDIT3, DLC1,	124
cell death of neurons	2.05E-03	ADA, ADCYAP1R1, ALOX12, ATF3, ATP2C1, B4GALNT1, BACE1, BCL2, BCL2L11, BDNF, BID, CAPNS1, CASP2, CASP6, CASP7, CASP8, CASP9, CAST, CCL5, CD200, CDK2, CDK5, CDK6, CDK5R1, CDKN1A, CDKN1B, CDKN2D, CREB1, CREBBP, CTSB, CTSD, CX3CL1, CXCL12, DLX1, DLX2, E2F1, E	124
cell division process of normal cells	3.95E-04	ADORA2B, AREG, ATF2, ATF3, BCL2, BCL2L11, BLNK, BMP4, BRCA2, C13ORF15, CCK, CCNB1IP1, CCND1, CCNE1, CCNF, CCNG2, CD44, CD274, CDC7, CDC25C, CDK2, CDK5, CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, COL1A1, CREB1, CXCL10, CYP26B1, DCN, DNMT1L, E2F1, E2F2, E2F3, EGF,	120

shape change of eukaryotic cells	1.01E-07	ACP1, ANGPT2, ANGPTL2, ANTXR1, ANXA5, ARHGDIG, ARRB2, ATRN, BCAR1, BCL2, BCL10, BDNF, CAPG, CAST, CCL5, CCL7, CCL8, CCL13, CCNE1, CD9, CD44, CD47, CD151, CDK5, CDK5R1, CDKN1B, COL18A1, CORO1A, CRK, CRKL, CSPG4, CX3CL1, CXCL12, CYR61, DCN, DICER1, DPYSL2,	119
colony formation of eukaryotic cells	1.34E-04	AKAP12, ANKRD1, ANXA1, ANXA7, ATF3, BACH2 (includes EG:60468), BCL2, BCL2L11, BNIP3L, CBFB, CCL13, CCND1, CCNE1, CCNG2, CD9, CD44, CD82, CDA, CDKN1A, CDKN1B, CLTC, CNOT7, CRTCL1, CTSD, CYR61, DCK, DCN, DDIT3, DLC1, DYNC1H1,	118
interphase of cell lines	1.65E-04	AKAP12, ARAF, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, COPS5, CREG1, CUL4A, CXCL12, CYR61, DCN, DD	117
developmental process of embryonic tissue	5.85E-04	ACVR1, ACVR1B, ACVR2B, ANGPT2, APH1A (includes EG:226548), AREG, BCL2, BDNF, BMP4, CASP9, CD44, CRKL, CUL7 (includes EG:9820), CX3CL1, CXCL12, DAB2, DPPA4, ECE1, ECE2, EDNRA, EGF, EGFR, EGR2, EN1, ENAH, ENPP2, ETS2, EYA1, F2RL1,	113
arrest in cell stage of cells	8.95E-04	AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CD44, CDC7, CDC25A, CDC25C, CDC2L6, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, CLIP1, COPS5, CUL4A, CYP26B1, CYR61, DCN, DDIT3,	113
colon cancer	1.78E-03	ABCA5, ADAMTS1, AHCY, AKT3, ANTXR1, AOC3, ATP2A2, AXIN2, C14ORF143, C15ORF23, C15ORF48, C17ORF81, CALD1, CAMK2N1, CCT4, CD274, CDKN3, CDKN1A, CEP55, CNM2, COG8, COL3A1, COL6A2, CPEB4, CTSB, DGKA, DHDDS, DLGAP5, DNAJB9, DUSP5, EBP, EFNB1, EGFR, EIF4A2, EN	112
cell death of fibroblast cell lines	5.44E-06	ABCC4, ACTB, ATF2, ATF3, BACH2 (includes EG:60468), BCL2, BCL2L11, BID, BNIP3L, BRCA2, CAPNS1, CASP2, CASP8, CASP9, CCND1, CCNE1, CCNG1, CDK6, CDKN1A, CDKN1B, CLIC4, COPS5, COX5A, CTSB, CTSD, CUL7 (includes EG:9820), CYR61,	111
movement of tumor cell lines	2.65E-05	ADAM15, ADAM17, AKT3, ALOX12, ARRB2, BCAR1, C5ORF13, CCL5, CCL13, CD44, CD47, CD82, CD151, CDKN1B, CRK, CRKL, CX3CL1, CXCL2, CXCL10, CXCL12, DCBLD2, DNAJA3, DPYSL2, EFNB1, EGF, EGFR, EGR1, ENPP2, ESR1, ETV5, FGFR1, GAB1, GAS6, GDNF, GFER, GIPC1, GJA1, GOL	110
cell movement of cell lines	9.01E-05	ACP1, ADM, ARRB2, BSG, C3, CAPN1, CASP8, CCL5, CCL7, CCL8, CCL13, CCL25, CD9, CD44, CD47, CD81, CD82, CD151, CDH13, CDKN1B, CNR1, CREB3, CRKL, CTSB, CX3CL1, CXCL10, CXCL12, CXCL13, DGKA, DKK3, DLC1, EGF, EGFR, ENPP2, ESR1, FIGF, FLNA, FOSL2, GAB1, GAS6, G	110
invasion of cell lines	6.82E-04	ADAM9, ADAM17, ADM, AKT3, ANXA1, AREG, ARF6, ATF3, BATF3, BCAR1, BCL2, BMP4, BSG, BTC, CD9, CD44, CD82, CD151, CDKN1B, CHRD, COL18A1, CRK, CSPG4, CTSB, CTSD, CXCL12, DKK3, DLC1, DNMT3B, EGF, EGFR, ENPP2, ENTPD5, EPHA2,	110
migration of tumor cell lines	2.19E-05	ADAM15, ADAM17, AKT3, ALOX12, ARRB2, BCAR1, C5ORF13, CCL5, CCL13, CD44, CD47, CD82, CD151, CDKN1B, CRK, CRKL, CX3CL1, CXCL2, CXCL10, CXCL12, DCBLD2, DNAJA3, DPYSL2, EFNB1, EGF, EGFR, EGR1, ENPP2, ESR1, FGFR1, GAB1, GAS6, GDNF, GFER, GIPC1, GJA1, GOLGA2, H	109

growth of plasma membrane projections	2.92E-04	ADAM17, ADRB2, ANP32A, ARHGAP17, ARTN, BAIAP2, BCAR1, BCL2, BDNF, BMP4, CD9, CD47, CDK2, CDK5, CDK5R1, CDKN1A, CNPY2, CNR1, CNTN2, CREB1, CRK, CXCL12, DNAJA3, DOK4, DPYSL2, E2F1, EFNB1, EFNB2, EGF, EGFR, EIF4EBP1, ELMO2, EPHA2, EPN1, FEZ1, FGFR1, GAB1, GA	108
growth of neurites	2.51E-04	ADAM17, ADRB2, ANP32A, ARHGAP17, ARTN, BAIAP2, BCL2, BDNF, BMP4, CD9, CD47, CDK2, CDK5, CDK5R1, CDKN1A, CNPY2, CNR1, CNTN2, CREB1, CRK, CXCL12, DNAJA3, DOK4, DPYSL2, E2F1, EFNB1, EFNB2, EGF, EGFR, EIF4EBP1, ELMO2,	107
degradation of protein	1.62E-04	ACY1, ADAM17, ADAMTS2, ADAMTS4, ADAMTS7, ALOX12, AMFR, ANAPC2, ANAPC4, ARIH2, AURKAIP1, BACE1, BLMH, BMP1, BTRC, CAPN1, CAPNS1, CASP2, CASP6, CASP7, CASP8, CASP9, CAST, CDC23 (includes EG:8697), CTSB, CTSD, CTSZ (includes EG:1522), DHCR24, DLD, DNAJC1, DP	105
protein kinase cascade	9.45E-04	ADAM9, ADORA2B, ADRB2, AIDA, APOL3 (includes EG:80833), ARAF, ATP2C1, ATP6AP2, AZI2, BCL10, C7ORF16, CRKL, DOK1, DOK4, DUSP4, DUSP22, ECOP, ECT2, EDA2R, EEF1D, EGF, EGFR, F2R, FGF13, FGFR1, FLNA, GJA1, GPS2, HIPK2, HMGA2,	105
cell cycle progression of eukaryotic cells	1.93E-03	AKAP9, APBB2, BCAR1, BCL2, BCL2L11, BLNK, BMP4, BTRC, CAMK2N1, CARD10, CASP2, CAST, CCND1, CCNE1, CCNF, CCNG1, CCNG2, CD44, CDC25C, CDK2, CDK5, CDK6, CDKN1A, CDKN1B, CDKN2C, CDKN2D, COL1A1, CREB1, CRK, CUL1, CUL7 (includes EG:9820), DMTF1, DUSP1, E2F1, E2	104
formation of tissue	2.19E-06	ACVR1, ADAM12, ADAM15, ANGPT2, ANTXR2, APH1A (includes EG:226548), ARHGAP22, ARHGAP24, ATF3, ATF4, BDNF, BMP4, CASP8, CBFB, CD44, CD276, CFL1, CHRD, CHST3, COL18A1, COL4A2, CTGF, CTNNBIP1, CX3CL1, CXCL12, DAG1,	103
cell stage of tumor cell lines	7.24E-04	AKAP9, ATF2, AXIN2, BCL2, BHLHE40, BRCA2, BTRC, CAMK1, CAMK2N1, CAMKK1, CCK, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CEBPD, CHKA, COPS5, CREG1, CYLD, CYR61, DCN, DDIT3, DLGAP5, DUS	103
arrest in cell division process of cell lines	1.25E-03	AKAP9, AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2C, CDKN2D, CEBPD, CHKA, CLIP1, COPS5, CUL1, CUL4A, CYR61, DCN, D	103
development of skeleton	1.71E-05	ACP2, ACVR1, ACVR2B, ADAMTS4, ADRB2, AEBP1, ANKH, ATF2, AXIN2, BCL2, BMP4, CBFB, CD276, CHD7, CHRD, CHST11, COL12A1, COL1A1, COL5A2, CTGF, DLK1, E2F1, EBP, EGFR, EGR2, EIF2AK3, EN1, ENPP1, ERCC2, ESR1, ETS2, EXT2, EYA1, FBN1,	102
uterine cancer	4.42E-03	ADAM12, ADARB1, AGPAT2, AIG1, AK2, AKAP8L, ARFGEF2, ARIH2, ARL4D, ATRN, ATRNL1, BCL10, BTRC, CAPN6, CDC7, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CLEC16A, COL6A3, CRABP2, CTSB, CYP1B1, CYR61, DOK1, DST, EGFR, EIF4EBP1,	101
outgrowth of neurites	2.80E-05	ADAM17, ADRB2, ANP32A, ARHGAP17, BAIAP2, BCL2, BDNF, BMP4, CD9, CD47, CDK2, CDK5, CDK5R1, CDKN1A, CNPY2, CNR1, CREB1, CRK, CXCL12, DNAJA3, DOK4, DPYSL2, E2F1, EFNB1, EFNB2, EGF, EGFR, ELMO2, EPHA2, EPN1, FEZ1,	100

arrest in cell stage of eukaryotic cells	2.89E-04	AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CD44, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, CLIP1, COPS5, CUL4A, CYP26B1, CYR61, DCN, DDIT3, DLGAP5,	100
formation of filaments	1.21E-05	AKAP1, ARF6, ARHGEF2, ARHGEF3, BACE1, BCAR1, CALD1, CAPN1, CDC42EP2, CDKN1A, CDKN1B, CFL1, COL18A1, COL5A1, CRK, CTGF, DAB2, DLC1, DLGAP5, DPYSL2, EDNRA, EGF, EGFR, F2R, FHL1, FMN1, GAP43, GAS7, GNAO1, GNAQ, GNB1, GNG12, GPI, GSN, HGF, HSPA5, HTT, IDE, IN	99
differentiation of tumor cell lines	6.54E-04	ALG5, ATF2, B4GALNT1, BCL2, BDH2, BDNF, BMP4, BTC, CCND1, CD14, CDK2, CDK6, CDK5R1, CDKN1A, CDKN1B, CEBPD, CHKA, CREBBP, CREG1, CRK, CTGF, CUL4A, DAB2, DDIT3, DLK1, DMTF1, DUSP1, E2F1, EGF, EGFR, EGR1, ELAVL2, ERBB2IP	99
development of embryonic tissue	2.41E-03	ACVR1, ACVR1B, ACVR2B, ANGPT2, APH1A (includes EG:226548), AREG, BCL2, BDNF, BMP4, CD44, CRKL, CX3CL1, CXCL12, DAB2, ECE1, ECE2, EDNRA, EGF, EGFR, EGR2, EN1, ENAH, ENPP2, ETS2, EYA1, FGF10, FGFR1, FGFR2, FOSL2, FOXC2, FOXF1, FTO,	99
developmental process of muscle	4.52E-06	ACVR2B, ADAM12, ADRB2, AEBP1, BDNF, BMP4, CDK5, CDKN1A, CDON, CHKB, COL6A3, CRYAB, CXCL10, DUSP1, E2F1, EGR3, ETV1, F2RL1, FEM1C, FGFR1, FHL3, FLNB, FOSL2, FOXC2, FOXF1, FOXO1, FXR1, GAA, GAB1, GATA4, GATA6, GEFT,	97
adhesion of cell lines	9.72E-05	ACP1, ADAM9, ADAM12, ADAM15, ADAM17, ANGPT2, ANXA1, ANXA5, B4GALT1, BSG, C3, CASP8, CCL13, CCNC, CD9, CD44, CD47, CD59, CD81, CD82, CD151, CTGF, CX3CL1, CXCL2, CXCL10, CXCL12, CYR61, CYTH1, CYTIP, DAB2, DCN, DKK3, E2F1,	96
invasion of tumor cell lines	6.00E-04	ADAM9, ADAM17, ADM, AKT3, ANXA1, AREG, ARF6, ATF3, BATF3, BCAR1, BCL2, BMP4, BSG, BTC, CD9, CD44, CD82, CD151, CDKN1B, CHRD, COL18A1, CRK, CSPG4, CTSB, CTSD, CXCL12, DKK3, DLC1, DNMT3B, EGF, EGFR, ENPP2, ENTPD5, EPHA2,	96
disease of kidney cell lines	1.20E-03	AEBP2, AMDHD2, ANAPC2, AP1G2, ATMIN, ATP6V0C, B4GALNT4, BMP1, CAD, CCDC51, CCL5, CD164, CDC42EP3, CHST1, CLOCK, CLTA, COL5A1, CRYAB, CSNK1E, CTDP1, CTSB, DAZAP2 (includes EG:9802), DCP2, EIF2B5, ENC1, ERCC1, ETS2, EXOSC10, FXR1, GATAD2A, GINS4, HBEGF, HMG	96
developmental process of tumor	5.94E-06	ADAM17, ANGPTL4, ARRB2, B4GALNT1, BCL2, CCND1, CD44, CD59, CD274, CDH5, CDKN1A, CDKN1B, CDKN2C, CNR1, COL18A1, CRABP2, CREB1, CREBBP, CRYAB, CTSB, DNMT1, DNMT3B, E2F1, E2F3, EGFR, EGR1, EPHA2, ESR1, ETS2, F2R, FGFR1, FGFR2, GADD45A, GDNF, GJA1, HGF, HRAS,	94
developmental process of fibroblast cell lines	3.42E-04	ACP1, AKAP12, ANP32A, AREG, BCAR1, BMP4, CAST, CBFB, CBR2, CBY1, CCND1, CDH13, CDK2, CDK6, CDKN1A, CDKN1B, COL1A1, CRK, CUL1, CUL7 (includes EG:9820), DDIT3, DDX3X, DLK1, DMTF1, E2F1, E2F2, E2F3, EBF1, EEF1D, EGF, EGFR,	94
disease of embryonic cell lines	6.37E-04	AEBP2, AMDHD2, ANAPC2, AP1G2, ATMIN, ATP6V0C, B4GALNT4, BMP1, CAD, CCDC51, CD44, CD164, CDC42EP3, CHST1, CLOCK, CLTA, COL5A1, CRYAB, CTDP1, DAG1, DAZAP2 (includes EG:9802), DCP2, EGFR, EIF2B5, ENC1, ERCC1, ETS2, EXOSC10, FXR1, GATAD2A, GINS4, HMGCS1, HNRP	94

cell death of breast cancer cell lines	1.83E-06	ABCC4, ADM, AIM2, ATF2, BCAR1, BCL2, BCL10, BCL2L11, BHLHE40, BID, BNIP3L, CASP2, CASP6, CASP7, CASP8, CASP9, CCND1, CD44, CD47, CDKN1A, CRABP2, CTGF, CYB5A, CYLD, CYR61, DAB2, DDIT4, DUSP1, DUSP4, E2F1, EGF, EGFR,	93
colony formation of cell lines	7.22E-05	AKAP12, ANKRD1, ANXA1, ANXA7, ATF3, BACH2 (includes EG:60468), BCL2, BCL2L11, CBFB, CCL13, CCND1, CCNE1, CCNG2, CD44, CD82, CDKN1A, CDKN1B, CLTC, CNOT7, CRTCL1, CTSD, CYR61, DCK, DLC1, DYNC1H1, E2F1, EGF, EGFR, EGLN2, EGR1, ETV6, FBLN1, FOXO3, GADD45A, GJA	93
disease of epithelial cell lines	9.94E-04	AEBP2, AMDHD2, ANAPC2, AP1G2, ATMIN, ATP6V0C, B4GALNT4, BMP1, CAD, CCDC51, CD164, CDC42EP3, CHST1, CLOCK, CLTA, COL5A1, CRYAB, CTDP1, CXCL2, DAZAP2 (includes EG:9802), DCP2, EIF2B5, ENC1, ERCC1, ETS2, EXOSC10, FXR1,	93
infection of kidney cell lines	1.40E-03	AEBP2, AMDHD2, ANAPC2, AP1G2, ATMIN, ATP6V0C, B4GALNT4, BMP1, CAD, CCDC51, CCL5, CD164, CDC42EP3, CHST1, CLOCK, CLTA, COL5A1, CRYAB, CTDP1, CTSB, DAZAP2 (includes EG:9802), DCP2, EIF2B5, ENC1, ERCC1, ETS2, EXOSC10, FXR1, GATAD2A, GINS4, HMGCS1, HNRPDL, ID	93
differentiation of connective tissue cells	1.41E-04	ACVR1, ACVR2B, ADRB2, AREG, ATF4, AXIN2, BCL2, BMP4, CAPNS1, CASP8, CAST, CBY1, CCL9, CCND1, CD200, CD276, CDK6, CHRDL, CREB1, DDIT3, DICER1, DLK1, EBF1, EGFR, ENPP1, FGF10, FGFR1, FIGF, FOSL2, GAS7, GDF5, GDNF, GPX1, IL11,	92
arrest in interphase of eukaryotic cells	4.11E-04	AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CD44, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, COPS5, CUL4A, CYR61, DCN, DDIT3, DUSP1, E2F1, E2F2, E2F3	92
infectious disorder of embryonic cell lines	1.22E-03	AEBP2, AMDHD2, ANAPC2, AP1G2, ATMIN, ATP6V0C, B4GALNT4, BMP1, CAD, CCDC51, CD164, CDC42EP3, CHST1, CLOCK, CLTA, COL5A1, CRYAB, CTDP1, DAG1, DAZAP2 (includes EG:9802), DCP2, EIF2B5, ENC1, ERCC1, ETS2, EXOSC10, FXR1, GATAD2A, GINS4, HMGCS1, HNRPDL, IDH1, IR	92
infectious disorder of epithelial cell lines	1.67E-03	AEBP2, AMDHD2, ANAPC2, AP1G2, ATMIN, ATP6V0C, B4GALNT4, BMP1, CAD, CCDC51, CD164, CDC42EP3, CHST1, CLOCK, CLTA, COL5A1, CRYAB, CTDP1, DAZAP2 (includes EG:9802), DCP2, EIF2B5, ENC1, ERCC1, ETS2, EXOSC10, FXR1, GATAD2A, GINS4, HMGCS1, HNRPDL, IDH1, IRF3, KH	91
cell death of connective tissue cells	5.92E-04	ADAM12, ADM, ARRB2, ATF2, ATF3, BCL2, BCL2L11, BID, CABLES2, CAPNS1, CASP2, CASP7, CASP8, CASP9, CCL9, CCND1, CD44, CDKN1A, CDKN1B, CDKN2C, CLIC4, CREB1, CTSD, CYP1B1, DCN, DDIT3, DHCR24, DUSP1, E2F1, EGF, EGFR, EGR1, ESR1, FLNA, FOXO1, GAB1, GABBR1, GLO1	88
formation of plasma membrane projections	6.92E-05	AKAP12, ARF6, ARHGAP24, BAIAP2, BDNF, CAPNS1, CAST, CCL13, CD44, CD47, CD82, CDC42EP1, CDC42EP2, CDKN1B, CRK, CRKL, CTGF, CXCL12, CYR61, DAG1, DPYSL2, EFN1B1, EGF, ENAH, EXOC7, FGD3, FGD4, GAB1, GAP43, GDNF, HGF, HRAS,	87
arrest in cell stage of cell lines	4.41E-04	AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, CLIP1, COPS5, CUL4A, CYR61, DCN, DDIT3, DLGAP5, DUSP1, E2F1, E	87

formation of cells	3.57E-03	ADAM12, ARHGAP22, BDNF, CASP8, CCL5, CD9, CD44, CD47, CD81, CDKN1A, COL18A1, CREBBP, CXCL12, DLK1, EFNB1, EGF, EGR1, ENAH, ENPP2, EPC1, ERCC1, FGF13, FGFR1, FST, FZD1, GDNF, GGT1, GNAO1, GNAQ, HAS2, HGF, HOPX, HRAS,	86
arrest in cell cycle progression	2.53E-03	AKAP9, APBB2, ATF3, BCL2, BMP4, BTRC, CCND1, CCNE1, CCNG1, CCNG2, CD274, CDC25A, CDK2, CDK6, CDKN3, CDKN1A, CDKN1B, CDKN2C, CDKN2D, COL1A1, COMMD5, CREB1, CREBBP, CUL1, CUL4A, DMTF1, E2F1, E2F2, E2F3, EGFR, EIF4G2, ERN1, FANCA, FANCC, FOXO3, GADD45A, GAS7	85
interphase of tumor cell lines	3.90E-04	ATF2, BCL2, BHLHE40, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CEBPD, CHKA, COPS5, CREG1, CYR61, DCN, DDIT3, DUSP1, E2F1, EGF, EGFR, EPB41L1, FOXO3, GAD	84
apoptosis of neurons	2.21E-03	ADA, ADCYAP1R1, ATF3, ATP2C1, B4GALNT1, BCL2, BCL2L11, BDNF, BID, CASP2, CASP6, CASP9, CCL5, CD200, CDK2, CDK5, CDK5R1, CDKN1A, CDKN2D, CREB1, CREBBP, CTSB, CXCL12, DLX1, DLX2, E2F1, EN1, ETV6, F2R, FBXW7, FOXO3, GDF5,	84
tumorigenesis of cells	2.21E-03	ADAM17, ARHGDIG, ARMC10, ATF2, ATF3, BCL2, C3, CASP2, CASP9, CAST, CCND1, CCNE1, CD44, CD82, CD151, CD274, CDKN1A, CDKN2C, CDKN2D, COL18A1, CSNK1E, CTSB, CXADR, CXCL2, CYLD, CYR61, DLC1, DOK1, E2F1, EGF, EGFR, EGR1, EMP2,	84
formation of eukaryotic cells	2.48E-03	ADAM12, ARHGAP22, BDNF, CASP8, CCL5, CD9, CD44, CD47, CD81, CDKN1A, COL18A1, CREBBP, CXCL12, DLK1, EGF, EGR1, ENAH, ENPP2, EPC1, ERCC1, FGF13, FGFR1, FST, FZD1, GDNF, GGT1, GNAO1, GNAQ, HGF, HOPX, HRAS, ID1, IFNGR1,	84
apoptosis of fibroblast cell lines	1.00E-04	ATF2, ATF3, BACH2 (includes EG:60468), BCL2, BCL2L11, BID, BNIP3L, CAPNS1, CASP2, CASP8, CASP9, CCNE1, CCNG1, CDKN1A, CDKN1B, CLIC4, COPS5, COX5A, CUL7 (includes EG:9820), CYR61, DDIT3, DDX3X, DUSP4, E2F1, E2F2, EGFR, EGR1,	83
adenocarcinoma	2.42E-03	ACY1, AGPAT2, ALDOC, ANXA1, BRCA2, BTRC, CAMK2N1, CBLN1, CCND1, CD14, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1B, CDKN2C, DICER1, DLK1, DYNLRB1, E2F1, EDNRA, EGFR, ENG, ESR1, FGFR1, FOXA3, GJA1, GLG1, GPI,	83
development of muscle	9.43E-05	ADAM12, AEBP1, BDNF, BMP4, CDK5, CDON, CHKB, COL6A3, CRYAB, CXCL10, DUSP1, EGR3, ETV1, F2RL1, FGFR1, FHL3, FLNB, FOSL2, FOXC2, FOXF1, FOXO1, FXR1, GAA, GAB1, GATA4, GATA6, GEFT, GJA1, GJC1, HBEGF, HGF, HLX, HMGA2,	82
arrest in interphase of cell lines	4.09E-04	AKAP12, ATF2, BCL2, BHLHE40, BID, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, CEBPD, CHKA, COPS5, CUL4A, CYR61, DCN, DDIT3, DUSP1, E2F1, EGF, EGFR, EP400	82
cell death of epithelial cell lines	8.30E-07	AAK1, ATF3, BCL2, BCL10, BID, BNIP3L, CASP2, CASP7, CASP8, CASP9, CD44, CDKN1B, CEBPD, CLIC4, CRYAB, CUL7 (includes EG:9820), DAB2, DAP3, DDIT3, DLST, E2F6, ECOP, EGF, EGFR, EMP1, EMP2, EMP3, ESR1, FOXO3, HIPK2, HK1, HRAS,	81
apoptosis of breast cancer cell lines	9.39E-06	ADM, AIM2, ATF2, BCAR1, BCL2, BCL10, BCL2L11, BHLHE40, BID, BNIP3L, CASP2, CASP6, CASP7, CASP8, CASP9, CCND1, CD44, CDKN1A, CRABP2, CTGF, CYB5A, CYLD, CYR61, DDIT4, DUSP1, DUSP4, E2F1, EGF, EGFR, EPHA2, ESR1, ETS2, FBLN1,	81

cell stage of normal cells	1.08E-03	ADORA2B, AREG, ATF2, ATF3, BCL2, BCL2L11, BMP4, BRCA2, C13ORF15, CCK, CCNB1IP1, CCND1, CCNE1, CCNG2, CD44, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, CEBPD, CHKA, CYP26B1, DCN, E2F1, E2F2, E2F3, EGF, EGR1, ERCC1, FANCA,	80
developmental process of connective tissue	2.75E-03	ACVR1, ADAMTS1, ADRB2, ATP7A, BCL2, BCL2L11, BMP4, CD9, CD44, CD81, CHST11, DLX2, E2F1, EGF, EGR1, EGR2, EN1, ENPP1, EXT2, FGF10, FGFR2, FOXC2, GGT1, GHR, GJA1, GPC3, GSN, HIP1, HIP1R, HOXA2, HOXA11, HOXD3, HOXD8, HOXD10,	79
transport of protein	1.47E-05	ADRB2, AP1G2, AP1GBP1, AP2M1, AP3B2, AP3S2, AP4B1, APPBP2, ARF2, ARF6, CASP9, CCHCR1, CDK5, CFL1, COL1A1, CTSA, DNAJA2, DRD1, EIF5A, ERGIC1, ERGIC3, GDI2, GOSR1, GOSR2, HLA-DMA, HSPA9, HTT, IGF2R, IPO9, KDELR2, KIF1B,	76
development of heart	6.19E-05	ACADM, ACVR1, ACVR2B, ADM, BCOR, BDNF, BMP4, CASP7, CASP8, CCND1, CHD7, COL3A1, COL5A1, CRK, CRKL, CXADR, DLC1, ECE1, ECE2, EDNRA, ENG, FBN1, FOXC2, GAA, GATA4, GJA1, GJC1, GNAQ, HAS2, HOPX, ID1, ID2, ID3, INSR, JMJD6,	76
adhesion of tumor cell lines	1.60E-05	ACP1, ADAM9, ADAM12, ADAM15, ADAM17, ANXA1, B4GALT1, BSG, CASP8, CCL13, CD9, CD44, CD47, CD59, CD81, CD82, CD151, CX3CL1, CXCL2, CXCL10, CXCL12, CYR61, CYTH1, CYTIP, DAB2, DCN, DKK3, E2F1, EFN1, EGF, EGFR, EGR1, EMILIN1,	75
arrest in cell division process of tumor cell lines	1.51E-03	ATF2, BCL2, BHLHE40, BMP4, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2C, CEBPD, CHKA, CYR61, DCN, DDIT3, DLGAP5, DUSP1, E2F1, EGF, EGFR, EPB41L1, FOXO3, GADD45A,	75
gonadal tumor	1.94E-03	ADA, AGPAT2, BCL2, BCL10, BTRC, C13ORF15, C4A, CD274, COL18A1, CP, CTNNAL1, DAB2, DHTKD1, DNMT1, DTNA, DYNLRB1, E2F3, EGFR, EPHB6, F2R, FAM171A1, FGFR2, FGFR1OP (includes EG:11116), FLRT2, FOXN2, FZD3, GATA4, GATA6, GSTM1, GSTM5, HDAC11, HIST2H2AA3, HMGA2	75
modification of DNA	2.19E-03	ATF2, ATF7IP, BRCA2, CCNO, CDK2, CDKN1A, CDKN2D, COPS5, CREBBP, CSNK1E, DNMT1, DNMT3B, E2F1, EGF, ERCC1, ERCC2, ERCC4, FANCA, FANCC, FEN1, FTH1, GADD45A, GATAD2A, GTF2H4, GTF3A, HGF, HMGN1, HSPA1B, IGF2, IGF2R, MBD4, MCM4, MCM6, MGMT, MLH1, MNAT1, MPG, MR	75
cell cycle progression of cell lines	3.93E-03	AKAP9, APBB2, BCAR1, BCL2, BMP4, BTRC, CAMK2N1, CARD10, CASP2, CAST, CCND1, CCNE1, CCNG1, CCNG2, CD44, CDC25C, CDK2, CDK6, CDKN1A, CDKN1B, CDKN2C, CRK, CUL1, CUL7 (includes EG:9820), DMTF1, DUSP1, E2F1, E2F2, EGF, EGFR, EGR1, ESR1, EZH2, FANCA, FGFR1, FOX	75
cell death of kidney cell lines	7.49E-04	AAK1, BCL2, BCL10, BID, BNIP3L, BRCA2, CASP2, CASP7, CASP8, CASP9, CCBL1, CD44, DAP3, DDIT3, DLST, DUSP4, E2F6, ECOP, EGF, EGFR, EMP1, EMP2, EMP3, GNB2, HGF, HIPK2, HK1, HRAS, HSPA5, HTT, IER3, IRF1, IRS1, ITPR1, MAP2K6, MCL1,	74
formation of actin filaments	5.78E-06	AKAP1, ARF6, ARHGEF2, ARHGEF3, BCAR1, CALD1, CAPN1, CDC42EP2, CDKN1A, CFL1, COL18A1, CRK, CTGF, DAB2, EDNRA, EGF, EGFR, F2R, FMN1, GAP43, GAS7, GNAO1, GNAQ, GNB1, GNG12, GPI, GSN, HGF, INPP5B, ITGA3, ITGA5, ITGA6, LAT2,	73
cell movement of tumor cell lines	2.33E-03	ARRB2, BSG, C3, CAPN1, CASP8, CCL5, CCL7, CCL8, CCL13, CCL25, CD9, CD44, CD81, CD82, CD151, CDH13, CDKN1B, CREB3, CTSE, CX3CL1, CXCL12, DKK3, DLC1, EGF, EGFR, ESR1, FIGF, FLNA, GAS6, GNB1, GNB2, GPI, HGF, IGF2BP1, ING4, IRS1,	73

proliferation of epithelial cells	2.88E-03	ANGPTL6, B4GALT1, BTRC, CCND1, CCNG2, CD9, CDH13, CDK2, CDK6, CDKN1A, CDKN1B, COL8A1, CRYAB, E2F1, EDNRA, EGF, EGFR, EPHA2, ESR1, FGF10, FGFR1, FGFR2, FOXF1, FOXF2, FST, HGF, HMGN1, HRAS, ID1, ID2, IGFBP4, INSR, ITGA3,	72
apoptosis of connective tissue cells	1.69E-03	ADAM12, ADM, ARRB2, ATF2, ATF3, BCL2, BCL2L11, BID, CABLES2, CAPNS1, CASP2, CASP8, CASP9, CCL9, CCND1, CD44, CDKN1A, CDKN1B, CDKN2C, CLIC4, CREB1, CTSD, DCN, DDIT3, DHCR24, DUSP1, E2F1, EGF, EGFR, ESR1, FOXO1, GAB1, GABBR1, GLO1, HRAS, INSR, MAPK1, MBD4,	71
ovarian tumor	2.79E-03	AGPAT2, BCL2, BCL10, BTRC, C13ORF15, C4A, CD274, COL18A1, CP, CTNNAL1, DAB2, DHTKD1, DNMT1, DTNA, DYNLRB1, E2F3, EGFR, EPHB6, F2R, FAM171A1, FGFR1OP (includes EG:11116), FLRT2, FOXN2, FZD3, GATA4, GATA6, GSTM1, GSTM5,	71
colony formation of tumor cell lines	2.50E-05	ANKRD1, ANXA1, ANXA7, ATF3, BACH2 (includes EG:60468), BCL2, BCL2L11, CCL13, CCNG2, CD44, CD82, CDKN1A, CDKN1B, CNOT7, CTSD, CYR61, DLC1, DYNC1H1, E2F1, EGF, EGFR, EGLN2, EGR1, FBLN1, FOXO3, GADD45A, GJA1, HAS2, HGF,	70
developmental disorder of animal	3.03E-05	ARSA, CCND1, CHRD, CLCN7, CSNK1E, DLK1, DOK1, E2F1, EDNRA, EGF, EGFR, EGR3, ERCC2, ESR1, FGFR1, FMR1, FOSL2, GDNF, GGT1, GNAQ, HIP1, HIP1R, HIPK2, HOXA5, HRAS, HSPG2 (includes EG:3339), HTT, IGF2BP1, INSIG2, INSL3, INSR, ITGA7,	70
G1 phase of cell lines	1.63E-03	AKAP12, BCL2, BHLHE40, BTRC, CAMK1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CDC25A, CDC25C, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, COPS5, CREG1, CYR61, DCN, DDIT3, DUSP1, E2F1, E2F3, EGF, EGFR, EP400, EPB41L1, GHR, GJA1, GPI, GPS2,	70
apoptosis of epithelial cell lines	1.35E-07	ATF3, BCL2, BCL10, BID, BNIP3L, CASP2, CASP8, CASP9, CD44, CEBPD, CLIC4, CRYAB, CUL7 (includes EG:9820), DAB2, DAP3, DDIT3, E2F6, ECOP, EGF, EGFR, ESR1, FOXO3, HIPK2, HRAS, HSPA5, HSPB8, HTT, IER3, INSR, IRF1, IRS1, ITGA5,	69
cell spreading	4.83E-05	ACP1, ANTXR1, ATRN, BCAR1, BCL10, CAST, CCL5, CD44, CD47, CORO1A, CRK, CRKL, CSPG4, CXCL12, CYR61, EFNB1, EGF, EPHA2, FBN1, FHL3, GAP43, HGF, HRAS, IGBP1, ING4, ITGA3, ITGA5, ITGA6, ITGB5, ITGB1BP1, LAMA5, LPAR1, LPP,	69
growth of fibroblast cell lines	9.03E-04	ACP1, AKAP12, ANP32A, AREG, BCAR1, BMP4, CAST, CBFB, CCND1, CDH13, CDK6, CDKN1A, CDKN1B, COL1A1, CRK, CUL1, CUL7 (includes EG:9820), DDX3X, DMTF1, E2F1, E2F2, E2F3, EEF1D, EGF, EGFR, ERRFI1, ETV6, F2R, GADD45GIP1, GAK,	69
shape change of cell lines	2.53E-04	ACP1, ANGPTL2, ANTXR1, ANXA5, ARHGDIG, BCAR1, BCL2, BCL10, CAST, CCNE1, CD151, CDKN1B, CRK, CYR61, DICER1, DPYSL2, EDNRA, EFNA5, EFNB1, EGF, EGFR, EPHA2, FGD4, FHL3, GAP43, GNAQ, GNG12, ING4, INSR, ITGA5, ITGA6, LPAR1,	68
cell death of fibroblasts	1.50E-03	ARRB2, ATF2, ATF3, BCL2, BCL2L11, BID, CABLES2, CAPNS1, CASP2, CASP7, CASP8, CASP9, CCND1, CDKN1A, CDKN1B, CDKN2C, CLIC4, CTSD, CYP1B1, DDIT3, DHCR24, DUSP1, E2F1, EGF, EGFR, FLNA, FOXO1, GAB1, GPX4, HMOX1, HRAS, IGF2, IGF2R,	68
shape change of normal cells	1.46E-05	ANGPT2, ARRB2, ATRN, BCL2, BDNF, CAPG, CAST, CCL5, CCL7, CCL8, CCL13, CD9, CD44, CD47, CDK5, CDK5R1, COL18A1, CORO1A, CRK, CRKL, CX3CL1, CXCL12, CYR61, DCN, EFNB1, EGF, EPHB4, F2R, FBN1, FGFR1, GAP43, GDNF, GSN, HGF,	67

developmental process of muscle cells	8.97E-04	ACADM, ACVR1, AKR1B1, BIN1, BMP4, CBY1, CD9, CD81, CDKN1A, CDON, CEBPD, CXADR, DNAJB6, DUSP1, E2F1, EGFR, EPC1, EPHB4, EZH2, FGF10, FGFR1, FOSL2, FOXO1, GATA4, GNAQ, HGF, HMOX1, HOPX, ID2, ID3, IGF2, ITGA6, ITGA7, KLF4,	66
inhibition of apoptosis	8.97E-04	ADAM17, ADM, ALOX12, ANXA1, ANXA5, BCL2, BDNF, BFAR, BNIP1, BNIP2, CD59, CDKN1A, CDKN2D, CFL1, CIAPIN1, CRYAB, DHCR24, DNAJB9, DUSP1, FOXC2, FOXO1, GDNF, GLO1, GNAQ, GPX1, GSTP1, HBXIP, HGF, HMOX1, HSPA5, HSPA9,	66
cell death of embryonic cell lines	3.88E-05	AAK1, BCL2, BCL10, BID, BNIP3L, CASP2, CASP7, CASP8, CASP9, CD44, COPS5, DAP3, DLST, DPPA4, E2F1, E2F6, ECOP, EGF, EMP1, EMP2, EMP3, HIPK2, HK1, HRAS, HSPA5, HTT, IER3, IRF1, IRS1, MAP2K6, MCL1, PAK2, PEA15, PKN2, PMP22, PPARD,	65
developmental disorder of rodents	1.00E-04	ARSA, CCND1, CHRDL, CLCN7, DLK1, DOK1, E2F1, EDNRA, EGF, EGFR, EGR3, ERCC2, FGFR1, FMR1, FOSL2, GDNF, GGT1, GNAQ, HIP1, HIP1R, HIPK2, HOXA5, HRAS, HSPG2 (includes EG:3339), HTT, IGF2BP1, INSIG2, INSL3, ITGA7, ITGA11, LIF, MAP2K6,	65
arrest in cell stage of tumor cell lines	3.35E-04	ATF2, BCL2, BHLHE40, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CEBPD, CHKA, CYR61, DCN, DDIT3, DLGAP5, DUSP1, EGF, EGFR, EPB41L1, FOXO3, GADD45A, GOLGA2, GPS2, GSPT1	65
migration of endothelial cells	1.52E-05	ACP1, ADAM15, ADM, ANGPT2, ANGPTL4, ARHGAP24, ARRB2, CD9, CD81, CD151, CDH5, CDH13, COL18A1, COL4A2, CXCL12, CYR61, DCN, EFNB2, EGFL7, ENG, EPHB4, FGF13, FGFR1, FIGF, FOXC2, GAB1, GIPC1, HGF, ID1, IGF2, IGF2R, ITGA3,	64
arrest in growth of cells	2.31E-05	AKAP12, AKT3, ALCAM, BCL2L11, BMP4, CBX7, CCND1, CCNE1, CDC7, CDH13, CDK2, CDK6, CDKN1A, CDKN1B, CDKN2C, CDKN2D, DAB2, DDIT3, DMTF1, E2F1, EGF, EGR1, ELAC2, ENG, EZH2, FOXO3, GADD45A, GADD45GIP1, HIPK2, HMOX1, HRAS, ID3, IL6ST, IRF1, ITGB4, KLF4, KRT10, L	64
cell death of muscle cells	7.60E-04	ADAM12, ADM, ADRB2, BCL2, BCL2L11, BMP4, BNIP3L, C14ORF153, CACNB2, CAMK2D, CAPN1, CASP8, CASP9, CDC42EP3, CDKN1A, CDKN1B, COQ6, CXCL12, DAG1, E2F1, EEF1D, GATA4, GATA6, GNAQ, GNPTG, GPX1, HGF, HK1, HLA-B, HLA-DMA, HSPB6, HSPB8, ID2, IL6ST, IRF1, LIF, MAP	63
replication of DNA	4.54E-03	AKAP8L, AREG, BCL2, BRCA2, BTC, C4ORF16, CCNE1, CDC7, CDC25A, CDK2, CDKN1A, CDKN1B, DNAJC2, DUT (includes EG:1854), E2F1, E2F2, EGF, ERCC1, FEN1, GTPBP4, HBEGF, HELB, HMGA2, HMGN1, HRAS, ID1, ID3, INSR, KIAA0101, KRT7,	63
growth of rodents	5.78E-03	ADAMTS1, ADH5 (includes EG:128), AQP1, BDNF, CDKN1B, COL4A2, DLK1, DRD1, E2F1, E2F3, EGF, EGFR, EIF2AK3, EXT2, EZH2, FGFR2, FOSL2, GHR, GNB5, GPC3, GRB10, HIP1, HIP1R, HMOX1, HOXA5, HSPA5, IGF2, IGF2BP1, IGF2R, IRS1, ITPR3, LIF,	63
developmental process of embryonic cells	1.32E-04	ACVR1, ADA, ATP1B1, BAIAP2, BCL2L11, BDNF, BMP4, CDC7, CDKN1B, DAB2, DNMT1, EDNRA, EGF, EIF4G2, ENG, EPHB4, ERF, EZH2, FGFR1, FGFR2, FOXC2, GAS7, GATA4, GATA6, HBEGF, HGF, HHEX, HMGN1, HOPX, HTT, ID1, ID3, IGF2, IL6ST,	62
arrest in interphase of tumor cell lines	1.58E-04	ATF2, BCL2, BHLHE40, BTRC, CAMK1, CAMK2N1, CAMKK1, CCND1, CCNE1, CCNG1, CDC7, CDC25A, CDC25C, CDH13, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CEBPD, CHKA, CYR61, DCN, DDIT3, DUSP1, EGF, EGFR, EPB41L1, FOXO3, GADD45A, GPS2, GSPT1, HAS2, HGF, HRA	62

apoptosis of kidney cell lines	2.25E-04	BCL2, BCL10, BID, BNIP3L, CASP2, CASP8, CASP9, CD44, DAP3, DDIT3, DUSP4, E2F6, ECOP, EGF, EGFR, GNB2, HGF, HIPK2, HRAS, HSPA5, HTT, IER3, IRF1, IRS1, ITPR1, MAP2K6, MCL1, PAK1, PAK2, PEA15, PKN2, PPARD, PPP1R15A (includes EG:23645),	62
developmental disorder of mice	3.18E-04	ARSA, CCND1, CHRD, CLCN7, DLK1, DOK1, E2F1, EGF, EGFR, EGR3, ERCC2, FGFR1, FMR1, FOSL2, GGT1, GNAQ, HIP1, HIP1R, HIPK2, HOXA5, HRAS, HSPG2 (includes EG:3339), HTT, IGF2BP1, INSIG2, INSL3, ITGA7, ITGA11, LIF, MAP2K6, MAP3K4,	62
growth of mice	5.62E-03	ADAMTS1, ADH5 (includes EG:128), AQP1, BDNF, CDKN1B, COL4A2, DLK1, DRD1, E2F1, E2F3, EGF, EGFR, EIF2AK3, EXT2, EZH2, FGFR2, FOSL2, GHR, GNB5, GPC3, GRB10, HIP1, HIP1R, HOXA5, HSPA5, IGF2, IGF2BP1, IGF2R, IRS1, ITPR3, LIF, LMNA,	62
disease of tumor	3.02E-06	ADAM17, ANP32A, ARRB2, ATF2, ATF3, ATP2A2, BCL2, BRCA2, BTRC, CCND1, CD44, CDKN1A, CDKN1B, CDKN2C, CRYAB, CTSB, CYP1B1, DCN, E2F1, E2F2, EGFR, EGR1, EPHA2, ESR1, FOXP3, HGF, HIP1, HMGA2, HRAS, ID2, IFNGR1, IGF2, ITGB5, MAP2K6,	61
cell spreading of eukaryotic cells	3.67E-05	ACP1, ANTXR1, ATRN, BCAR1, BCL10, CAST, CD44, CD47, CORO1A, CRK, CRKL, CSPG4, CXCL12, CYR61, EFNB1, EGF, EPHA2, FBN1, FHL3, GAP43, HGF, HRAS, IGBP1, ING4, ITGA3, ITGA5, ITGA6, ITGB5, ITGB1BP1, LAMA5, LPAR1, LPP, MPRIP,	61
endocrine gland tumor	4.83E-03	ADAMTS1, ANGPT2, ATP1A1, BCL2, CCND1, CD59, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1A, CDKN1B, CDKN2C, COPS5, CTSD, CYR61, E2F3, EFNB2, EGFR, ENG, EPHB4, FGFR1, HBEGF, HDAC11, HLA-G, IFITM1, IL15, ITGA3, ITGA5,	61
S phase of eukaryotic cells	1.01E-03	ARAF, BCL2, BCL2L11, BHLHE40, BID, C13ORF15, CAMK2N1, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDK2, CDK6, CDKN1A, CDKN1B, COPS5, CXCL12, DDX3X, DMTF1, E2F1, E2F2, E2F3, E2F6, EGF, EGFR, FOXO3, GAB1, GADD45A,	60
cell division process of fibroblast cell lines	2.00E-03	ADM, AKAP12, ARAF, AREG, AXIN2, BID, BMP4, CAST, CCND1, CCNE1, CDC25A, CDK2, CDKN1A, CDKN1B, CDKN2D, COPS5, CRK, DDX3X, DMTF1, E2F1, E2F2, E2F3, E2F6, EGF, EGFR, EP400, GADD45A, GATA6, GPI, HRAS, ID1, ID2, ID3, IGF2, INSR,	59
tumorigenesis of tumor	4.77E-06	ADAM17, ANP32A, ARRB2, ATF2, ATF3, ATP2A2, BCL2, BRCA2, BTRC, CCND1, CD44, CDKN1A, CDKN1B, CDKN2C, CTSB, CYP1B1, DCN, E2F1, E2F2, EGFR, EGR1, EPHA2, FOXP3, HGF, HIP1, HMGA2, HRAS, IFNGR1, IGF2, ITGB5, MAP2K6, MMP2, MMP3,	58
development of tumor	7.15E-05	ADAM17, ANGPTL4, BCL2, CCND1, CDH5, CDKN1B, CDKN2C, COL18A1, CTSB, E2F1, E2F3, EGFR, EGR1, EPHA2, ESR1, FGFR2, GDNF, HGF, HRAS, ID1, IER3, IL18, INSR, IRF1, ITGB5, LATS1, LCK, MGAT3, MGMT, MLH1, MMP2, MMP3, MMP14, MYD88,	58
growth of tumor	1.89E-04	ANGPTL4, ARRB2, B4GALNT1, BCL2, CD44, CD59, CD274, CDKN1A, CDKN1B, CNR1, COL18A1, CRABP2, CREB1, CREBBP, CTSB, DNMT1, DNMT3B, EGFR, EPHA2, F2R, FGFR1, FGFR2, GADD45A, GJA1, HGF, HRAS, HSPA4, IGF2, IL18, IRF1, ITGA5, ITGB5,	58
proliferation of muscle cells	2.53E-03	ABCC4, ADM, AGTRAP, AKR1B1, BMP4, CDH13, CDKN1A, CDKN1B, CEBPD, COMT, CTNNBIP1, CXADR, E2F3, EGF, EGFR, ESR1, FGFR2, GATA4, GATA6, GNAQ, GPX1, HBEGF, HGF, HMGA2, ID2, IL15, ITGA5, ITGA6, KLF4, LIF, LRP1, MMP14, MNAT1,	58
cell viability of cell lines	5.43E-03	ANTXR1, ANTXR2, BCL2, BNIP2, CDKN1A, CLNS1A, DAB2, DDIT3, DPP3, E2F1, EGF, ESR1, FTH1, GPC1, GPX1, GSTP1, HGF, HIP1, HMOX1, HRAS, HSPA5, IFNZ, IGFBP7, LCK, LMNA, MCL1, MT1E, MT1F, NFKBIA, P4HB, PLAU, PLAUR, PRNP, PTEN, PTPN6,	57

survival of cervical cancer cell lines	1.71E-03	ACVR2B, ADK, AK5, AKAP8L, AURKAIP1, BCL2, BRCA2, CAMK2D, CAMK2N1, CCRK, CDK6, CDK8, CHKA, DGKA, DUSP5, DUSP14, DUSP22, DYRK3, EIF2AK4, INPP5B, KHK, LCK, MAP3K4, MINPP1, MPG, MTMR7, NEK3, PFKFB2, PFKM, PLK2, PPAP2A, PPM1B,	56
formation of actin stress fibers	2.05E-04	AKAP1, ARHGEF2, ARHGEF3, BCAR1, CALD1, CAPN1, CDKN1A, COL18A1, CRK, CTGF, DAB2, EDNRA, EGF, EGFR, F2R, GNAO1, GNAQ, GNB1, GNG12, GPI, HGF, ITGA3, ITGA5, ITGA6, LIMK1, LPAR1, LPAR4, MAPK11, MPRIP, NET1, NF1, PALLD,	55
apoptosis of muscle cells	6.10E-04	ADM, ADRB2, BCL2, BCL2L11, BMP4, BNIP3L, CAMK2D, CAPN1, CASP8, CASP9, CDC42EP3, CDKN1A, COQ6, CXCL12, DAG1, E2F1, EEF1D, GATA4, GATA6, GNAQ, GNPTG, GPX1, HGF, HLA-B, HLA-DMA, HSPB6, ID2, IL6ST, IRF1, LIF, MAP2K6, MCL1,	55
apoptosis of embryonic cell lines	6.22E-06	BCL2, BCL10, BID, BNIP3L, CASP2, CASP8, CASP9, CD44, COPS5, DAP3, E2F1, E2F6, ECOP, EGF, HIPK2, HRAS, HSPA5, HTT, IER3, IRF1, IRS1, MAP2K6, MCL1, PAK2, PEA15, PKN2, PPAR, PPP1R15A (includes EG:23645), PPP3R1, PRMT2, PTGIS,	54
interphase of normal cells	1.24E-04	ATF2, ATF3, BCL2, BCL2L11, C13ORF15, CCND1, CCNE1, CCNG2, CD44, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, CEBPD, CHKA, DCN, E2F1, E2F2, E2F3, EGF, ERCC1, FANCC, GAB1, GADD45A, GATA6, GPC1, GRB10, HMG1, ID2, ID3, IGFBP7,	54
apoptosis of fibroblasts	3.69E-03	ARRB2, ATF2, ATF3, BCL2, BCL2L11, BID, CABLES2, CAPNS1, CASP2, CASP8, CASP9, CCND1, CDKN1A, CDKN1B, CDKN2C, CLIC4, CTSD, DDIT3, DHCR24, DUSP1, E2F1, EGF, EGFR, FOXO1, GAB1, HRAS, INSR, MBD4, MCL1, MT1E, MT1F, NEK1, NOTCH1, NUPR1, OPA1, PITPNA, POLB, PRMT2	54
metastasis	4.86E-03	ACTB, ADAM17, AKAP12, ARHGDIG, ARRB2, ATF2, ATF3, CD44, CD151, CD274, COL18A1, CXCL2, CYP1B1, EGF, EGFR, ENPP2, EPHA2, F2R, FIGF, FUS, HGF, HMGCR, HTATIP2, IFNAR2, IGF2BP1, ITGB4, LAMA5, LCK, LETMD1, MAPK1, MMP2,	54
arrest in growth of eukaryotic cells	3.59E-04	AKAP12, AKT3, BMP4, CBX7, CCND1, CCNE1, CDC7, CDK2, CDK6, CDKN1A, CDKN1B, CDKN2D, DAB2, DMTF1, E2F1, EGF, EGR1, ELAC2, ENG, EZH2, FOXO3, GADD45GIP1, HMOX1, HRAS, ID3, IL6ST, IRF1, ITGB4, KLF4, KRT10, LIF, LMNA, MAP2K6, MAPK1,	53
G1 phase of tumor cell lines	6.17E-04	BCL2, BHLHE40, BTRC, CAMK1, CAMKK1, CCND1, CCNE1, CCNG1, CCNG2, CDC25A, CDC25C, CDK2, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, COPS5, CREG1, CYR61, DCN, DDIT3, DUSP1, EGF, EGFR, EPB41L1, GJA1, GPS2, GSPT1,	53
development of connective tissue	6.09E-03	ACVR1, ADAMTS1, ADRB2, ATP7A, BCL2, BMP4, CD9, CD81, CHST11, DLX2, E2F1, EGR2, EN1, ENPP1, FGF10, FGFR2, FOXC2, GJA1, GPC3, HIP1, HIP1R, HOXA2, HOXA11, HOXD3, HOXD8, HOXD10, HOXD13, MAPK3, MMP2, MMP13, MMP14, MSX1, NDST1, PDGFC, PDGFRA, PRRX1, PRRX2, PTGE	53
tumorigenesis of cell lines	3.93E-04	ADAM17, ARMC10, ATF2, ATF3, BCL2, CAST, CCND1, CD44, CD82, CD151, CD274, CDKN1A, COL18A1, CSNK1E, CTSB, CXADR, CXCL2, CYR61, DLC1, EGFR, EGR1, ENPP2, ERF, F2R, GPI, HAS2, HGF, HRAS, HTATIP2, IL18, IRF1, LAMA5, LPP, MAD1L1,	52
quantity of cell lines	1.34E-03	BCL2, BHLHE40, CBFB, CCND1, CCNE1, CD63, CDC25A, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, COL18A1, CUL4A, E2F1, EDNRA, EGF, EGFR, ERRFI1, ESR1, FGF13, HMOX1, HRAS, IFNZ, IGFBP6, IGFBP7, IL11, INPL1, JUNB, KLF4, LIF,	52

arrest in G1 phase of cell lines	4.26E-03	AKAP12, BCL2, BHLHE40, BTRC, CAMK1, CAMKK1, CCND1, CCNE1, CCNG1, CDC25A, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CDKN2D, COPS5, CYR61, DCN, DDIT3, DUSP1, E2F1, EGF, EGFR, EP400, EPB41L1, GHR, GPS2, GSPT1, HRAS, ID3, ITGA5, JAK3, KLF4, LMNA, MA	51
neurological process of neurites	8.16E-04	ALCAM, ANK3, APBB2, ARTN, BACE1, BDNF, CDK5, CDK5R1, CXCL12, DPYSL2, EFNA5, EFNB1, EGR2, ENAH, ETV1, FEZ1, FOXD1, GALNS, GAP43, GDNF, GRIA1, HGF, HOXA1, HOXA2, HRAS, KLF7, LAMC1, MAPK1, MAPK3, MAPK8IP3, NCAM1,	50
differentiation of embryonic cells	6.33E-05	ACVR1, ADA, BAIAP2, BCL2L11, BDNF, BMP4, CDKN1B, DAB2, DNMT1, EGF, EIF4G2, EPHB4, ERF, EZH2, FGFR1, FGFR2, GAS7, GATA4, GATA6, HBEGF, HGF, HHEX, HMGN1, HOPX, HTT, ID3, IGF2, IL6ST, JUNB, LIF, MAPK1, MAPK8IP3, METRN, MMP2,	49
neurological process of axons	1.27E-03	ALCAM, ANK3, APBB2, ARTN, BACE1, BDNF, CDK5, CDK5R1, CXCL12, DPYSL2, EFNA5, EFNB1, EGR2, ENAH, ETV1, FEZ1, FOXD1, GALNS, GAP43, GDNF, GRIA1, HGF, HOXA1, HOXA2, HRAS, KLF7, LAMC1, MAPK1, MAPK3, MAPK8IP3, NCAM1,	49
pancreatic tumor	2.86E-03	AKAP1, CD59, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1A, COPS5, CREBBP, CTSB, CTSD, CYR61, EGFR, GATA4, GATA6, HBEGF, HLA-G, HOXA5, IFITM1, IL15, ITGA3, ITGAE, ITGB4, KLF4, KRT7, KRT10, MAPK13, MLL3, MSLN, PALLD,	49
proliferation of breast cancer cell lines	3.86E-03	AIM2, BCAR1, BRCA2, BTC, CCND1, CCNE1, CDKN1A, CHKA, CYR61, DCN, E2F1, EGF, EGFR, EPHA2, ESR1, ETS2, FOXO1, GPER, GPX1, HAS2, HOXA1, HSPB8, ID1, ID2, IER3, IGF2, ITGA5, LATS1, MAGED1, MAPK6, MAPK11, MAPK12, MED1, MMP14,	49
ossification	8.21E-04	ACVR1, ACVR2B, ADRB2, ANKH, ATF2, AXIN2, BCL2, BMP4, CBFB, CD276, COL1A1, CTGF, E2F1, EGFR, EGR2, EIF2AK3, EN1, ENPP1, ERCC2, ESR1, EXT2, FETUB, FGFR2, FOSL2, FOXC2, GJA1, GLA, HSPG2 (includes EG:3339), MEF2C, MMP13,	48
cell death of prostate cancer cell lines	4.92E-03	ALOX12, BCL2, BCL2L11, CASP7, CASP8, CASP9, CDK5, CDK5R1, COX5A, CREB1, DDIT3, DKK3, E2F1, EGF, EGFR, EGR1, ETS2, FOXO1, FOXO3, FST, GADD45A, GLIPR1, HBEGF, HGF, HOXC6, HSPB8, ID1, IGFBP4, IGFBP7, ITGB5, NFKB2, PLAU,	48
organization of filaments	3.43E-04	ADAMTS2, AGFG1 (includes EG:3267), AKAP2, ARHGEF2, ATP7A, BCAR1, BCL2, CDK2AP2, CDKN1B, CFL1, COL1A1, COL3A1, COL5A1, COL5A2, CORO1A, DNAJB6, ENAH, EPB41, EVL, FES, FLNA, FNBP1, FOXC2, GHR, GOLGA2, HAS2, ITGB4, LOX,	47
morphogenesis of tissue	2.52E-03	ACVR2B, AREG, CHST11, CX3CL1, DAG1, DLX2, EGFR, FGF10, FGFR2, FOXC2, FTO, GAA, GAB1, GATA4, GDNF, GREM1, GRSF1, HOXA2, HOXB4, HOXD13, IL11, INSR, IPP, IRX3, IRX5, LAMA5, LIF, LY6E, MEOX2, NDST1, NOTCH1, PTPN11, ROR2, RXRA,	47
cardiovascular process of organism	2.46E-04	ADORA2B, ANGPT2, ANGPTL2, BTC, CCND1, CD14, CDH5, COL18A1, CX3CL1, CXCL12, CYR61, EFNB1, EFNB2, ELK3, EPHB4, ESR1, FIGF, HGF, HRAS, IGF2R, IL15, IL18, KLF5, LAMC1, MED1, MMP2, MMP14, NR2F2, NRP1, NRP2, PGF, PRL2C2, PTEN,	46
S phase of cell lines	5.58E-04	ARAF, BCL2, BHLHE40, BID, CAMK2N1, CCND1, CCNE1, CCNG1, CCNG2, CDC7, CDC25A, CDC25C, CDK6, CDKN1A, CDKN1B, COPS5, CXCL12, DDX3X, DMTF1, E2F1, E2F2, E2F3, E2F6, EGF, EGFR, FOXO3, GADD45A, GATA6, HGF, HMOX1, ID1, IRS1, MCM10, MPG, MTCH2, MXD4, MXI1, MYBL2,	46

neuroepithelial tumor	4.43E-03	AKAP12, AKT3, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1B, CDKN2C, CLK2, CLK4, E2F1, EDNRA, EGFR, ENC1, EPHA3, ESR1, FNTB, GRIA1, GRIA3, HBEGF, HIPK2, HRAS, HSPA5, ID2, IGF2, ITGB5, LPAR1, MGMT, MLH1, MLL3, MMP14, NES,	46
cell division process of connective tissue cells	1.72E-04	ATF2, ATF3, BCL2, BRCA2, CCND1, CCNE1, CCNF, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, EGF, FANCA, FANCC, FIGF, GAB1, GADD45A, GRB10, HBEGF, HMGN1, HRAS, ID2, ID3, IGF2, IGFBP7, IL11, INSR, IRS1, JUNB, MAP2K6,	45
arrest in growth of cell lines	4.08E-04	AKAP12, AKT3, BMP4, CBX7, CCND1, CCNE1, CDK2, CDK6, CDKN1A, CDKN1B, DAB2, DMTF1, E2F1, EGF, ELAC2, ENG, EZH2, GADD45GIP1, HMOX1, HRAS, IL6ST, IRF1, ITGB4, KLF4, KRT10, LIF, LMNA, MAP2K6, MAPK1, MAPK3, NOTCH1, PTEN, RASSF5,	45
formation of cellular protrusions	7.22E-05	ARF6, ARHGAP24, BAIAP2, BDNF, CAPNS1, CAST, CD44, CD82, CDKN1B, CRK, CRKL, CTGF, CYR61, DAG1, EGF, FGD4, GAB1, GDNF, HGF, HRAS, HSP90AA1, IQGAP1, ITGA3, ITGA6, ITGB4, LASP1, LPAR1, MPRIP, NISCH, NRP1, PFN1, PKP1, PLAU,	44
neuroendocrine tumor	2.41E-03	BCL2, CCND1, CD59, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1A, CDKN2C, COPS5, CTSD, CYR61, E2F3, EGFR, HBEGF, HLA-G, IFITM1, IL15, ITGA3, ITGAE, ITGB4, KRT7, KRT10, MLL3, MSLN, NCAM1, PALLD, PDGFRA, PLAT, PLAU, POLE3,	44
apoptosis of prostate cancer cell lines	6.23E-03	ALOX12, BCL2, BCL2L11, CASP7, CASP8, CASP9, CDK5, CDK5R1, COX5A, CREB1, DKK3, E2F1, EGF, EGFR, EGR1, ETS2, FOXO1, FOXO3, FST, GADD45A, GLIPR1, HBEGF, HGF, HOXC6, HSPB8, ID1, IGFBP4, IGFBP7, ITGB5, PLAU, PLAUR, PTEN,	44
cell division process of fibroblasts	1.54E-05	ATF2, ATF3, BCL2, BRCA2, CCND1, CCNE1, CCNF, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, EGF, FANCA, FANCC, FIGF, GAB1, GADD45A, GRB10, HBEGF, HMGN1, HRAS, ID2, ID3, IGF2, IL11, INSR, IRS1, JUNB, MAP2K6, MBD4,	43
arrest in cell division process of normal cells	1.57E-03	ATF2, CCND1, CD44, CDC25C, CDK2, CDKN1A, CDKN1B, CHKA, COL1A1, CREB1, CYP26B1, DCN, E2F1, E2F2, E2F3, ERCC1, FANCA, FANCC, FOXO3, GADD45A, GPC1, HRAS, ID2, IGFBP7, JAK3, LY6C1, MAP2K6, MBD4, MLH1, MNAT1, MYBL2, NFKBIA,	43
tumorigenesis of organ	2.23E-03	AKAP12, AREG, BCL2, BRCA2, CCNE1, CDK2, CDKN1A, CDKN1B, CDKN2C, CUL1, CYP1B1, DNMT1, E2F1, EPHA2, ESR1, GADD45A, GSTP1, HBEGF, HGF, HRAS, KLF9, KRT10, LCK, MMP3, NDRG1, NOTCH1, PPARG, PTEN, PTTG1, RBL1, SIGIRR, SKP2, SPP1, TCIRG1, TGFB2, TIMP1, TSC2, TXN	43
guidance of axons	1.18E-03	ALCAM, ANK3, APBB2, ARTN, BDNF, CDK5, CDK5R1, CXCL12, DPYSL2, EFNA5, EFNB1, EGR2, ENAH, ETV1, FEZ1, FOXD1, GALNS, GAP43, HGF, HOXA1, HOXA2, HRAS, KLF7, MAPK1, MAPK3, MAPK8IP3, NRP1, NRP2, PDIA3, PLXNA2, PTPRF,	42
catabolism of protein	2.92E-03	ACY1, AMFR, ANAPC2, ANAPC4, ARIH2, BTRC, CAST, CDC23 (includes EG:8697), DHCR24, EGLN2, FBXO2, FBXO6, FLNA, GJA1, ITCH, KIAA0368, PJA1, PSENEN, PSMB3, PSMC2, RELA, RNF6, RNF40, SELS, SGSM3, SIAH1, SIAH2, SKP2, SQSTM1,	42
angiogenesis of organism	5.70E-07	ANGPT2, ANGPTL2, BTC, CCND1, CDH5, COL18A1, CX3CL1, CXCL12, CYR61, EFNB2, ELK3, EPHB4, FIGF, HGF, HRAS, IGF2R, IL15, IL18, KLF5, LAMC1, MED1, MMP2, MMP14, NR2F2, NRP1, NRP2, PGF, PRL2C2, PTEN, PTGS2, RELA, SERPINF1, SMOC2,	41
branching morphogenesis	3.45E-06	AREG, B4GALT1, BCL2, BMP4, CD44, CRK, CX3CL1, DICER1, DLX2, EFNA5, EFNB2, EGF, EPHB4, ESR1, EYA1, FGF10, FGFR1, GAB1, GDNF, GPC3, GREM1, GZF1, HGF, HOXA11, HOXD13, IL11, ITGA5, ITGA6, LAMA5, MFGE8, MMP14, NOTCH1, NOTCH4,	41

attachment of cells	1.25E-05	ACP1, ADAM15, BCAR1, BTC, CD44, CDH13, CXCL12, DAB2, DCN, EFNB1, EGF, EGFR, EGR1, ENG, F11R, HRAS, HSPG2 (includes EG:3339), IGF2, ITGA3, ITGA5, ITGA6, ITGB5, LOX, LRP1, LRPAP1, MMP2, PLAU, PLAUR, PLD1, PTEN, PTGER2, PTK2B,	41
morphogenesis of animal	1.30E-03	BMP4, CDON, CHD7, CHST11, CRABP2, CYP26B1, DICER1, ECE1, EN1, FGF10, FGFR1, FMN1, GATA4, GATAD2A, GDF5, GNAQ, GREM1, HOXA9, HOXA11, HOXD10, HOXD13, KIAA1715, LMBR1, LRP4, LRP5, MED1, MSX1, NOTCH1, PBX2, PRRX1, PRRX2, PTCH1, PTHLH, RARG, SLC31A1, SMAD2, SM	41
serous ovarian carcinoma	2.70E-03	AGPAT2, BCL10, C13ORF15, C4A, CP, CTNNAL1, DAB2, DHTKD1, DTNA, E2F3, EPHB6, F2R, FAM171A1, FGFR1OP (includes EG:11116), FLRT2, FOXN2, FZD3, GATA6, GSTM5, HIST2H2AA3, IGFBP4, LRIG1, MFAP5, NOTCH4, PAPSS2, PDGFRA, PPAP2A, RECK, RNF144B, RRAS, SEMA3C, SLIT2,	41
organization of cytoskeleton	6.15E-03	ATP2C1, BCAR1, CCL13, CD44, CD47, CD82, CFL1, CRKL, CXCL12, DLC1, EFNA5, EFNB1, ENG, EPHA2, F2RL1, FLNA, GAS6, GDNF, HGF, LCK, MARCKS (includes EG:4082), MSN, MYH9, NF1, PAK1, PLAU, PLAUR, PLS3, PLXNB2, PTK2B, PTPN1,	41
disease of primary tumor	7.76E-04	ARRB2, ATF2, BRCA2, BTRC, CCND1, CD44, CDKN1A, CDKN1B, CDKN2C, CTSB, CYP1B1, DCN, E2F1, E2F2, EGFR, EGR1, FOXP3, HGF, HIP1, HMGA2, HRAS, ITGB5, MMP3, MMP14, NF1, PRDM2, PTEN, PTGS2, PTPN1, RRM2, SOCS1, SOCS3, STAT3,	40
morphology of tissue	1.72E-03	BDNF, CCND1, CDKN1B, COL18A1, EBF1, FMR1, FOXC2, FOXO1, GJA1, GSN, HGF, HTT, ID2, IL6ST, INSR, KIF3A, KRT10, LDLR, LFNG, LIF, LTBP4, MMP2, NCAM1, OTX1, PDGFRA, PLEC1, PLOD3, PRRX1, PRRX2, PTEN, RARG, RXRA, SERPINH1, SLC31A1,	40
development of limb	4.93E-03	CHD7, CHST11, CRABP2, CYP26B1, DICER1, E2F1, ECE1, EN1, FGF10, FGFR1, FMN1, GDF5, GJA1, GNAQ, GREM1, HGF, HOXA9, HOXA11, HOXD10, HOXD13, KIAA1715, LMBR1, LRP4, LRP5, MED1, MSX1, NOTCH1, PBX2, PGF, PRRX1, PRRX2, PTCH1,	40
neuroendocrine carcinoma	1.69E-04	BCL2, CD59, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1A, CDKN2C, COPS5, CTSD, CYR61, EGFR, HBEGF, HLA-G, IFITM1, IL15, ITGA3, ITGAE, ITGB4, KRT7, KRT10, MLL3, MSLN, NCAM1, PALLD, PDGFRA, PLAT, PLAU, POLE3, PSMB5, PTEN, PTGES, RELA, RRM2, SPP1, TIMP1, TY	39
formation of filopodia	3.50E-04	AKAP12, ARHGAP24, BAIAP2, CAPNS1, CCL13, CD47, CTGF, CYR61, DAG1, ENAH, FGD3, FGD4, GAP43, HGF, HRAS, ITGA3, ITGA6, ITGB4, LAMA5, MARCKS (includes EG:4082), MTSS1, MYD88, MYO10, NEO1, NF1, PAK1, PKP1, PPP1R9A, PTK2B, PVR,	39
migration of endothelial cell lines	4.40E-04	ALCAM, ALOX12, BTC, CBFB, CD151, CDH5, CDKN1B, COL18A1, CTSB, CX3CL1, CXCL12, CYR61, DICER1, EGF, EGFR, FGF13, FIGF, FOXO1, FOXO3, HGF, HHEX, HOXA9, ID1, ID3, IL18, MEOX2, NCL, NRP1, PLAU, PTEN, PTGS2, PTK2B, PTN, SDC2,	39
tumorigenesis of primary tumor	1.28E-03	ARRB2, ATF2, BRCA2, BTRC, CCND1, CD44, CDKN1A, CDKN1B, CDKN2C, CTSB, CYP1B1, DCN, E2F1, E2F2, EGFR, EGR1, FOXP3, HGF, HIP1, HMGA2, HRAS, ITGB5, MMP3, MMP14, NF1, PRDM2, PTEN, PTGS2, PTPN1, RRM2, SOCS1, SOCS3, STAT3, STX2, TGFB2, THBS1, THBS2, WNT10B, XRC	39

morphogenesis of embryo	2.27E-03 BMP4, CDON, CHD7, CHST11, CRABP2, CYP26B1, DICER1, ECE1, EN1, FGF10, FGFR1, FMN1, GATA4, GATAD2A, GDF5, GNAQ, GREM1, HOXA9, HOXA11, HOXD10, HOXD13, KIAA1715, LMBR1, LRP4, LRP5, MED1, MSX1, NOTCH1, PBX2, PRRX1, PRRX2, PTCH1, RARG, SMAD2, SMARCA4, TBX3, TBX	39
arrest in G1 phase of tumor cell lines	3.00E-03 BCL2, BHLHE40, BTRC, CAMK1, CAMKK1, CCND1, CCNE1, CCNG1, CDC25A, CDK2, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CYR61, DCN, DDIT3, DUSP1, EGF, EGFR, EPB41L1, GPS2, GSPT1, ID3, ITGA5, KLF4, MLH1, MNAT1, MTBP, MYBL2,	38
developmental disorder of muscle cells	3.00E-03 ADRB2, ANGPT2, CAMK2D, CDKN1B, DUSP1, EDNRA, EGF, FOXF1, FOXF2, FOXO3, GATA4, GATA6, GNAQ, GPX1, HBEGF, HSPB8, IER3, IGF2, IL11, IL18, LIF, MAP2K5, MAP2K6, MAPK1, MSX1, NFKBIA, PLAUI, PPP3CA, PPP3R1, PTEN, PTGES, PTGS2,	38
disease of malignant tumor	1.01E-03 ARRB2, ATF2, BRCA2, BTRC, CD44, CDKN1A, CDKN1B, CDKN2C, CTSB, CYP1B1, DCN, E2F1, E2F2, EGFR, EGR1, FOXP3, HGF, HIP1, HRAS, ITGB5, MMP3, MMP14, NF1, PRDM2, PTEN, PTGS2, PTPN1, RRM2, SOCS1, SOCS3, STAT3, STX2, TGFB2, THBS1,	37
development of kidney	2.27E-03 ACVR2B, ADAMTS1, APH1A (includes EG:226548), AQP11, AREG, BCL2, BCL2L1, BDNF, BMP4, C1GALT1, CX3CL1, EYA1, FBN1, FGFR1, FGFR2, FOXC2, FOXD1, GDNF, GFRA1, GPC3, GREM1, HOXA11, IL11, INSR, JMJD6, KIF3A, LRP4, MMP14, NF1, OSR1,	37
developmental process of endothelial cell lines	2.08E-04 ALCAM, ALOX12, ATF3, BTC, CCL13, CD151, CDH5, CDKN1B, CLIC4, COL18A1, COL1A1, CXCL12, CYR61, DGKA, ECT2, EGF, EGFR, FES, FOXO1, FOXO3, HGF, ID1, ID3, MMP2, NAB2, NRP1, PTEN, PTN, SLIT2, SMOC2, TFAP2A, THBS1, THBS2, TIMP2,	36
developmental process of adipocytes	4.41E-04 ADRB2, CAST, CBY1, CCND1, CREB1, DDIT3, DLK1, EBF1, ENPP1, FGF10, GPX1, IL11, INSR, IRS1, LIF, MED1, METTL8, MMP3, NOTCH1, PARP2, PPARD, PRG4 (includes EG:10216), RARRES2, RGS2, RUNX1T1, SCAND1, SMAD2, SOCS1, SOD2, TBL1X,	36
ubiquitination of protein	8.82E-04 AMFR, ATG3, BCL10, CAND1, CAPN1, CARD10, CAST, CUL1, FBXO2, FBXW7, G2E3, GSPT1, ITC, MGRN1, MUL1, PCNP, PPARD, PPIL2, RNF144B, SIAH1, SIAH2, SMURF1, STUB1, TPP2, TRAF6, UBA1, UBB, UBE2D3, UBE2E1, UBE2L3, UBE2N,	36
tumorigenesis of malignant tumor	1.67E-03 ARRB2, ATF2, BRCA2, BTRC, CD44, CDKN1A, CDKN1B, CDKN2C, CTSB, CYP1B1, DCN, E2F1, E2F2, EGFR, EGR1, FOXP3, HGF, HIP1, HRAS, ITGB5, MMP3, MMP14, NF1, PRDM2, PTEN, PTGS2, PTPN1, RRM2, SOCS1, SOCS3, STAT3, STX2, TGFB2, THBS1,	36
cell spreading of cell lines	3.01E-03 ACP1, ANTXR1, BCAR1, BCL10, CAST, CYR61, EGF, EPHA2, FHL3, GAP43, ING4, ITGA5, LPAR1, MPRIP, PAK1, PALD, PFN1, PLAUI, PPIA1, PTK2B, PTPN12, PTPN14, PVR, RTN4, SIRPA, SNAI2, SPHK1, SPP1, TESK1, TGFB1, THBS1, TIAM1, TSPAN7,	36
migration of fibroblast cell lines	2.05E-05 ACP1, BCAR1, CDKN1A, CDKN1B, CLIC4, CRKL, CXCL10, DDX3X, EGF, EGFR, FIGF, GNG12, HAS2, HBEGF, IL18, ITGA3, ITGA5, ITGB1BP1, LRPAP1, MEOX2, MMP14, MYLK, PALD, PDGFD, PDGFRA, PLAUI, PLAU, PTEN, PTGS2, PTPN11, PTPN12, PVR,	35
developmental process of kidney cell lines	4.75E-04 ABCC5, CDKN1A, CHKA, CRK, DLGAP5, DLST, EGF, ESR1, F2RL1, FOXC2, GAB1, GAK, GDNF, HAS2, HBEGF, HGF, HRAS, ITGA5, LMNA, LOX, MT1E, MT1F, NFYB, NINL, PKP3, PMP22, PTP4A3, PTPN14, SLC30A1, STEAP2, TPM2, TPP2, TSC2, UNC5B,	35
differentiation of adipocytes	7.64E-04 ADRB2, CAST, CBY1, CCND1, CREB1, DDIT3, DLK1, EBF1, ENPP1, FGF10, GPX1, INSR, IRS1, LIF, MED1, METTL8, MMP3, NOTCH1, PARP2, PPARD, PRG4 (includes EG:10216), RARRES2, RGS2, RUNX1T1, SCAND1, SMAD2, SOCS1, SOD2, TBL1X,	35

migration of connective tissue cells	1.20E-03	BCAR1, CAPNS1, CCND1, CD44, CDKN1B, COL1A1, CYR61, EGF, F2R, FLNB, GRLF1, HBEGF, HGF, IGBP1, ITGA5, ITGB1BP1, LPP, LRP1, LRPAP1, MAPK1, MRC2, PALLD, PLAUR, PLEC1, PRKAR1A, PTN, PTPN2, RAMP2, SDC4, SPP1, STAT3, TGFB2,	35
interphase of fibroblast cell lines	1.48E-03	AKAP12, ARAF, BID, BMP4, CCND1, CCNE1, CDC25A, CDK2, CDKN1A, CDKN1B, CDKN2D, COPS5, DDX3X, DMTF1, E2F1, E2F2, E2F3, E2F6, EGF, EP400, GADD45A, GATA6, GPI, HRAS, IRS1, LATS1, LMNA, MAP2K6, PPAP2C, PTPN11, PTTG1, PVF,	35
development of lung	2.73E-03	ACVR2B, ADA, ADAMTS2, BMP4, DICER1, FGF10, FGFR1, FGFR2, FOXF1, GPC3, GREM1, HOXA5, IGF2, JMJD6, LAMA5, LOX, MMP2, MMP14, NOTCH1, PDGFRA, PDPN, PPP1CA, PPP3R1, PTGES, RBP1, RQCD1, SMAD2, SP1, TBX4, TBX5, TGFB2,	35
cell division process of breast cancer cell lines	4.78E-03	BHLHE40, CAMK1, CAMKK1, CCND1, CCNE1, CCNG1, CDC25A, CDC25C, CDKN1A, CDKN1B, CUL7 (includes EG:9820), DCN, EGF, EGFR, ESR1, EZH2, FOXO3, HAS2, HBEGF, HRAS, LATS1, MLH1, PTEN, PTHLH, RRAD, RXRA, SIAH1, SKP2, SMARCA4,	35
pancreatic carcinoma	5.54E-05	CD59, CDC2L6, CDK2, CDK5, CDK6, CDK8, CDK10, CDKN1A, COPS5, CTSD, CYR61, HBEGF, HLA-G, IFITM1, IL15, ITGA3, ITGAE, ITGB4, KRT7, KRT10, MLL3, MSLN, PALLD, PDGFRA, PLAT, PLAU, POLE3, PTEN, PTGES, RELA, RRM2, SPP1, TIMP1, TYMS	34
attachment of eukaryotic cells	3.08E-04	ACP1, ADAM15, BCAR1, BTC, CD44, CDH13, CXCL12, DCN, EFNB1, EGF, EGFR, EGR1, ENG, HRAS, HSPG2 (includes EG:3339), IGF2, ITGA3, ITGA5, ITGA6, ITGB5, LOX, LRP1, LRPAP1, MMP2, PLAU, PLAUR, PLD1, PTGER2, PTK2B, TGFB1, THBS2,	34
formation of lamellipodia	8.27E-04	ARHGAP24, BAIAP2, BDNF, CD44, CD82, CDKN1B, CRK, CRKL, CTGF, CYR61, EGF, FGD4, GAB1, GDNF, HGF, HRAS, HSP90AA1, ITGA6, ITGB4, LASP1, LPAR1, MPRIP, NISCH, NRP1, PLAU, PVF, PVRL1, PVRL3, SDC4, SEMA3A, SPHK1, SWAP70, TPM1,	34
disease of liver	1.04E-03	ATF4, BCL2, CCND1, CCNE1, CD14, CDKN1B, DNMT3B, E2F1, ENG, FGFR1, FGFR2, GADD45A, HGF, IRS1, LHX2, MED1, MMP13, MT1E, MT1F, MYD88, NDRG1, NFE2L1, PDGFC, PLAU, SCG5, SKP2, SOCS1, SPP1, STAT1, TGFB2, TIMP1, TSC2, VEGFA,	34
quantity of tumor cell lines	1.62E-03	BCL2, BHLHE40, CCND1, CDC25A, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN1B, CUL4A, E2F1, EGF, ESR1, FGF13, HMOX1, IFN2, IGFBP6, IGFBP7, INPPL1, JUNB, KLF4, LIF, MCTS1, MYBL2, PEG3, PTGS2, PTHLH, RBBP4, SKP2, TIMP3, TPP2, TSC2,	34
morphogenesis of limb	3.63E-03	CHD7, CHST11, CRABP2, CYP26B1, DICER1, ECE1, EN1, FGF10, FGFR1, FMN1, GDF5, GNAQ, GREM1, HOXA9, HOXA11, HOXD10, HOXD13, KIAA1715, LMBR1, LRP4, LRP5, MED1, MSX1, NOTCH1, PBX2, PRRX1, PRRX2, PTCH1, RARG, SMARCA4, TBX3, TBX4,	34
migration of fibroblasts	5.51E-04	BCAR1, CAPNS1, CCND1, CDKN1B, COL1A1, CYR61, EGF, F2R, FLNB, GRLF1, HBEGF, HGF, IGBP1, ITGA5, ITGB1BP1, LPP, LRP1, LRPAP1, MAPK1, MRC2, PALLD, PLAUR, PLEC1, PRKAR1A, PTPN2, RAMP2, SDC4, SPP1, STAT3, TGFB2, THBS1,	33
arrest in cell stage of normal cells	8.96E-04	ATF2, CCND1, CD44, CDC25C, CDK2, CDKN1A, CDKN1B, CHKA, CYP26B1, DCN, E2F1, E2F2, E2F3, EGF, ERCC1, FANCC, FOXO3, GADD45A, GPC1, IGFBP7, JAK3, MAP2K6, MBD4, MLH1, MNAT1, MYBL2, PTEN, PTTG1, RELA, RPS6KA2, SP1, TFDP1, XPC	33
developmental process of colon cancer cell lines	1.42E-03	AHSA1, AREG, BCL2, BCL2L11, CAMK2N1, CCND1, CDKN1A, CDKN1B, COL18A1, CTSD, DUSP5, EGF, EGFR, EGR2, ENC1, FDXR, FES, GADD45A, GREM1, IGF2, IGF2R, ITGA5, KLF4, NDRG1, PDLIM4, PTEN, PTPN1, SDC2, STAT3, SUFU, TAX1BP3,	33

formation of extracellular matrix	7.60E-04	ADAMTSL4, ADM, APBB2, ATP7A, B4GALT1, CCDC80, COL18A1, COL4A6, CYR61, DCN, EMILIN1, ERCC2, FBLN1, FOXF1, FOXF2, HSPG2 (includes EG:3339), KAZALD1, NF1, NFKB2, NID1, OLFML2B, PDGFRA, PTX3, RECK, ROR2, SMARCA4, SMOC1,	32
activation of NFkB binding site	9.69E-04	ATF3, BCL2, BTRC, CD14, CREBBP, EGF, F2RL1, HGF, IER3, IL18, LY96, MAP3K14, MAVS, MYD88, NFKB2, NFKBIA, NFKBIB, NFKBID, NFKBIE, PRKRA, PRMT2, RALA, RELA, SMAD1, TLR6, TNFAIP3, TNFRSF25, TNFRSF1A, TRADD, TRAF6, VCAM1,	32
dephosphorylation of amino acids	1.92E-03	BCL2, CDC25C, CTDTP1, DUSP1, DUSP3, DUSP4, DUSP5, DUSP22, EYA1, MTMR7, PDP2, PPAP2A, PPM1B, PPM1F, PPP1CA, PPP1CB, PPP2CB, PPP3CA, PPP3R1, PTEN, PTPN1, PTPN2, PTPN6, PTPN11, PTPN12, PTPN14, PTPN18, PTPN22, PTPRE, PTPRF,	32
developmental process of embryonic stem cells	1.92E-03	BAIAP2, BCL2L11, BMP4, CDC7, DNMT1, EIF4G2, ENG, EPHB4, EZH2, GATA4, GATA6, HHEX, HTT, ID1, ID3, IL6ST, LIF, MAPK1, MAPK8IP3, NMT1, NR4A2, PTEN, PTPN11, PTTG1, RBL1, SOX2, SRF, STAT3, TERF1, TLN1, VEGFA, WWTR1	32
experimentally-induced diabetes	1.92E-03	ALOX12, ANXA1, ANXA5, AQP1, C3, CCNG1, CD200, CEBPD, CNGB1, CP, DDAH1, DUSP1, EXOC7, FGFR1, HLA-C, HMGCL, ID1, IFITM3, IRF1, KLF4, MT1F, PDLIM4, PPAP2B, PPT2, PSMC2, PTPN1, RSAD2, SCARB1, SCN1B, SPP1, TIMP1, VEGFA	32
carcinoma in situ	3.59E-03	ABCC4, ANO6, ASS1, BHLHE40, C3, COL7A1, CX3CL1, ENTPD5, FCGR3A, FGFR2, FLNA, GPC1, GPRC5A, HMG2, HRAS, IER3, IRF1, ITGB4, KRT7, LY6E, MFGE8, MIPPEP, MXRA8, MYL9 (includes EG:10398), PTEN, RBL1, SGK269, SMARCD3, SMS,	32
arrest in developmental process of tumor cell lines	4.37E-03	CBX7, CCND1, CCNE1, CDK2, CDKN1A, CDKN1B, DAB2, E2F1, EZH2, GADD45GIP1, HMOX1, IL6ST, IRF1, KLF4, KRT10, LIF, MAP2K6, MAPK1, MAPK3, NOTCH1, PTEN, RASSF5, RBL1, RUNX1T1, SKP2, SMARCA4, SOCS1, SOCS3, STAT1, STAT3, TGFBR2,	32
cell stage of connective tissue cells	1.57E-04	ATF2, ATF3, BRCA2, CCND1, CCNE1, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, FIGF, GAB1, GADD45A, GRB10, HMGN1, ID2, ID3, IGFBP7, IRS1, JUNB, MAP2K6, MBD4, MYBL2, PLK2, RELA, SKP2, TFDP1, TFE3	31
cell spreading of normal cells	2.60E-03	ATRN, CAST, CD44, CD47, CORO1A, CRK, CRKL, CXCL12, EFN1, EGF, FBN1, HGF, HRAS, IGBP1, ITGA3, ITGA5, ITGA6, ITGB5, ITGB1BP1, LAMA5, LPP, PALLD, PTK2B, SDC4, SEMA3A, SRF, STAT3, THBS1, THBS2, TIAM1, TLN1	31
proliferation of carcinoma cell lines	4.80E-03	AKT3, ANXA1, BID, CASP2, CDK5, CDK5R1, CDKN1A, CXCL12, CYR61, DLC1, E2F1, EGF, EGFR, EGR1, ERCC1, FANCC, GAS6, HGF, HK1, IGF2, IL18, ITPR1, NDUFAF2, NEK2, PLAU, PTGS2, RAP1GAP (includes EG:5909), RELA, SKP2, SLC25A6, TSPO	31
arrest in growth of tumor cell lines	5.82E-03	CBX7, CCND1, CCNE1, CDK2, CDKN1A, CDKN1B, DAB2, E2F1, EZH2, GADD45GIP1, HMOX1, IL6ST, IRF1, KLF4, KRT10, LIF, MAP2K6, MAPK1, MAPK3, NOTCH1, PTEN, RASSF5, RBL1, SKP2, SMARCA4, SOCS1, SOCS3, STAT1, STAT3, TGFBR2, UBE2D3	31
cell stage of fibroblasts	4.34E-05	ATF2, ATF3, BRCA2, CCND1, CCNE1, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, FIGF, GAB1, GADD45A, GRB10, HMGN1, ID2, ID3, IRS1, JUNB, MAP2K6, MBD4, MYBL2, PLK2, RELA, SKP2, TFDP1, TFE3	30
targeting of protein	1.63E-04	AP3M1, CCHCR1, EIF5A, ERBB2IP (includes EG:55914), GIPC1, GPHN, HPS4, HSPA9, LTBP2, MYO6, NUPL2, OPTN, PEX6, PEX7, PEX19, PICK1, PPP1R3C, PTPN11, RAB27A, STXBP4, SYNJ2BP, TIMM9, TIMM44, TOMM22, TRNT1, TSPO, XPO5, XPO6,	30

proliferation of endothelial cell lines	3.95E-04	ATP6V0A2, CBFB, CDH13, CDKN1A, CDKN1B, COL18A1, DAB2, DGKA, DICER1, EGF, EGFR, ENG, F2R, FGF13, FIGF, FOXO1, HGF, HHEX, NCL, NRP1, NRP2, PTEN, PTN, PTPN1, PTX3, SEMA3A, SEMA3F, SKP2, TNFRSF25, VEGFA	30
proliferation of dermal cells	1.44E-03	ANGPTL6, CCNG2, CDH13, CDK2, CDKN1A, EGF, EPHA2, FGF10, FST, HGF, IGFBP4, INSR, JUNB, KLK8, KRT10, LRIG1, PPARD, PTCH1, PTEN, PTGER2, PTGS2, PTHLH, PTPRK, RBL1, RXRA, SGK3, SLC7A11, SNAI2, TOM1L1, VDR	30
ductal carcinoma	3.52E-03	AGPAT2, ANXA1, CCND1, CDKN1A, COX4I1, CP110, CSPP1, DDHD2, DDX19B, EPHA2, EYA1, FAM96B, GSPT1, HSPB8, IER3, ING4, MKI67, MT1E, MT1F, PPFA1, PXDN, RBM4B, SAT2, SERPINF1, STAU2, TNXB, TPD52, TRIM16, WWTR1, ZNF703	30
growth of colon cancer cell lines	5.27E-03	AHSA1, AREG, BCL2, BCL2L11, CAMK2N1, CCND1, CDKN1A, COL18A1, CTSD, DUSP5, EGF, EGFR, EGR2, ENC1, FDXR, FES, GADD45A, IGF2, IGF2R, ITGA5, KLF4, PDLIM4, PTEN, PTPN1, SDC2, STAT3, SUFU, TAX1BP3, TGFB2, TIAM1	30
interphase of connective tissue cells	2.03E-05	ATF2, ATF3, CCND1, CCNE1, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, GAB1, GADD45A, GRB10, HMGN1, ID2, ID3, IGFBP7, IRS1, JUNB, MAP2K6, MBD4, MYBL2, PLK2, RELA, SKP2, TFDP1, TFE3	29
angiogenesis of animal	4.18E-04	ANGPT2, ANGPTL2, BTC, CCND1, CDH5, CXCL12, CYR61, EFNB2, ELK3, HGF, HRAS, KLF5, MED1, MMP2, MMP14, NR2F2, NRP1, NRP2, PGF, PTEN, RELA, SERPINF1, SMOC2, SPHK1, THBS1, TNFRSF1A, VEGFA, VEGFC, WARS	29
ruffling	5.53E-04	ARF6, ARHGAP17, BAIAP2, CAPG, CCL13, CRK, CXCL12, EFNB1, EGF, GSN, HGF, HMOX1, HRAS, INPPL1, INSR, IRS1, MTSS1, MYO1C, PAK1, PLA1, PLAUR, PTEN, PTK2B, SPHK1, SPP1, SWAP70, TIAM1, TSC2, WASF1	29
proliferation of epidermal cells	1.22E-03	ANGPTL6, CCNG2, CDH13, CDK2, CDKN1A, EGF, EPHA2, FGF10, FST, HGF, INSR, JUNB, KLK8, KRT10, LRIG1, PPARD, PTCH1, PTEN, PTGER2, PTGS2, PTHLH, PTPRK, RBL1, RXRA, SGK3, SLC7A11, SNAI2, TOM1L1, VDR	29
assembly of extracellular matrix	3.85E-03	ADAMTSL4, APBB2, ATP7A, B4GALT1, CCDC80, COL18A1, COL4A6, CYR61, DCN, EMILIN1, ERCC2, FBLN1, FOXF1, FOXF2, HSPG2 (includes EG:3339), KAZALD1, NF1, NFKB2, NID1, OLFML2B, PDGFRA, RECK, SMARCA4, SMOC1, SMOC2, TGFB2, TGFB1,	29
developmental process of epithelial cell lines	5.79E-03	ABCC5, AREG, BTC, CCND1, CDK2, CDKN1A, CHKA, CXCL2, DAB2, DLGAP5, DLST, EGF, ENG, ESR1, ETV6, HGF, ID2, NINL, NOTCH1, PTHLH, PTP4A3, RBBP9, RXRA, SPP1, TFE3, TGFB2, TGFB3, TPP2, UNC5B	29
interphase of fibroblasts	1.30E-05	ATF2, ATF3, CCND1, CCNE1, CDC7, CDC25C, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, GAB1, GADD45A, GRB10, HMGN1, ID2, ID3, IRS1, JUNB, MAP2K6, MBD4, MYBL2, PLK2, RELA, SKP2, TFDP1, TFE3	28
Dupuytren contracture	1.31E-03	ADAMTS1, ADAMTS2, ADAMTS4, ADAMTS6, COL12A1, COL16A1, COL17A1, COL18A1, COL1A1, COL22A1, COL3A1, COL4A2, COL4A5, COL4A6, COL5A1, COL5A2, COL6A2, COL6A3, COL7A1, COL8A1, MMP2, MMP3, MMP13, MMP14, MMP16, TIMP1, TIMP2,	28
delay in initiation of cell division process of eukaryotic cells	1.31E-03	BCL2, CASP2, CCND1, CCNE1, CDC25C, CDKN1A, CDKN1B, CREG1, DLGAP5, ECT2, ELAC2, GADD45A, GRB10, IGFBP7, IL15, INSR, JUNB, KLF4, KLF9, LIMK1, MPG, PTEN, PTTG1, RAD21, RASSF5, SOD2, STAT1, TFDP1	28

neoplasia of cells	3.38E-03	ARHGDIG, ATF2, ATF3, CD44, CD151, CD274, COL18A1, CXCL2, EGF, ENPP2, F2R, FIGF, HGF, HRAS, HTATIP2, IGF2BP1, ITGB4, LAMA5, MAD1L1, MAPK1, NFKBIA, NFKBIB, PPARD, SOCS1, TGFB2, TIMP1, TXNIP, WISP1	28
migration of smooth muscle cells	4.21E-03	ADM, CCL5, CD47, CDKN1B, DUSP1, EGF, EGFL7, FGFR1, HBEGF, HGF, IGFBP4, IL18, ITGB5, LDLR, MAPK1, MAPK3, MEOX2, NEO1, PLAT, PLAUR, PTGS2, PTPRF, RAMP2, SDC4, SPP1, THBS1, TIMP1	28
invasion of normal cells	5.19E-03	CCND1, CD151, CXCL10, EGF, ENG, ETV6, EZH2, FST, GAB1, HGF, HRAS, IL18, ITGA5, ITGA6, ITGB4, LRP1, LRPAP1, MMP14, NF1, SPP1, STAT3, THBS2, TIMP1, TIMP2,	28
morphogenesis of eukaryotic cells	6.19E-05	BDNF, CCND1, CD82, COL18A1, CRK, CXCL2, EFNB2, EGF, EPHB4, GAB1, GDNF, HGF, ITGA6, MMP2, NFKB2, NOTCH1, NOTCH4, PTEN, PTK2B, PVRL2, RELA, SLC1A3, SPR, STC1, TFAP2A, TIMP2, VCAM1	27
growth of kidney cell lines	4.62E-04	ABCC5, CDKN1A, CHKA, DLGAP5, DLST, EGF, ESR1, F2RL1, GAK, HAS2, HRAS, ITGA5, LMNA, LOX, MT1E, MT1F, NINL, PKP3, PMP22, PTP4A3, SLC30A1, STEAP2,	27
angiogenesis of mammalia	8.23E-04	ANGPT2, ANGPTL2, BTC, CCND1, CDH5, CXCL12, CYR61, EFNB2, ELK3, HGF, HRAS, KLF5, MED1, MMP2, MMP14, NR2F2, PGF, PTEN, RELA, SERPINF1, SMOC2, SPHK1, THBS1, TNFRSF1A, VEGFA, VEGFC, WARS	27
growth of epithelial cell lines	2.32E-03	ABCC5, AREG, BTC, CCND1, CDK2, CDKN1A, CHKA, CXCL2, DAB2, DLGAP5, DLST, EGF, ENG, ESR1, ETV6, HGF, NINL, NOTCH1, PTHLH, PTP4A3, RBBP9, RXRA, TFE3, TGFB2, TGFB3, TPP2, UNC5B	27
angiogenesis of mice	6.53E-04	ANGPT2, ANGPTL2, BTC, CCND1, CDH5, CXCL12, CYR61, EFNB2, ELK3, HGF, HRAS, KLF5, MED1, MMP2, MMP14, NR2F2, PGF, PTEN, RELA, SMOC2, SPHK1, THBS1, TNFRSF1A, VEGFA, VEGFC, WARS	26
cardiovascular process of tumor	6.53E-04	ADAM17, ANGPTL4, B4GALNT1, BCL2, CDH5, COL18A1, CRYAB, CTSB, EPHA2, FGFR2, HGF, HRAS, IL18, ITGB5, MMP2, MMP3, MMP14, NRP1, PGF, PLAUR, THBS1,	26
closure of tissue	8.72E-04	BCL10, BMP4, CFL1, CREBBP, DLC1, ENAH, FTO, FZD3, FZD6, GRLF1, HIPK2, IRX3, IRX5, ITGA3, ITGA6, PDGFRA, PFN1, PLXNB2, PTGS1, PTGS2, PTK7, RGMA, TRAF6,	26
differentiation of embryonic stem cells	1.15E-03	BAIAP2, BCL2L11, BMP4, DNMT1, EIF4G2, EPHB4, EZH2, GATA4, GATA6, HHEX, HTT, ID3, IL6ST, LIF, MAPK1, MAPK8IP3, NMT1, NR4A2, PTPN11, RBL1, SOX2, SRF, STAT3,	26
arrest in interphase of normal cells	4.02E-03	ATF2, CCND1, CD44, CDC25C, CDK2, CDKN1A, CDKN1B, CHKA, DCN, E2F1, E2F2, E2F3, ERCC1, FANCC, GADD45A, GPC1, IGFBP7, JAK3, MAP2K6, MBD4, MNAT1,	26
dwarfism	3.92E-05	CHST3, COL1A1, E2F1, EBP, EGFR, FGFR1, FGFR2, FLNA, GGT1, GHR, HIP1, HIP1R, HOXA5, HSPG2 (includes EG:3339), ITGA11, LBR, LIF, MAP2K6, MMP13, PAPSS2, PEX7, PTHLH, ROR2, SMPD3, VEGFA	25
proliferation of keratinocytes	1.84E-04	CCNG2, CDH13, CDKN1A, EGF, EPHA2, FGF10, FST, HGF, INSR, JUNB, KLK8, KRT10, LRIG1, PPARD, PTCH1, PTEN, PTGER2, PTGS2, PTHLH, PTPRK, RXRA, SGK3, SNAI2,	25
closure of embryonic tissue	1.23E-03	BCL10, BMP4, CFL1, CREBBP, DLC1, ENAH, FTO, FZD3, FZD6, GRLF1, HIPK2, IRX3, IRX5, ITGA3, ITGA6, PFN1, PLXNB2, PTGS1, PTGS2, PTK7, RGMA, TRAF6, TSC2,	25
cell division process of bone cancer cell lines	2.71E-03	BHLHE40, CCND1, CCNE1, CCNG1, CDC25A, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, CDKN2C, DUSP1, E2F1, EGF, GJA1, GPS2, IGF2, LATS1, MAP2K6, MNAT1, MTBP, MYBL2, PKMYT1, RBL1, RPL23, TOPBP1, TP53BP1	25

morphogenesis of skeleton	3.46E-03	ACVR2B, CHST11, EYA1, FMN1, FOXC2, HOXA2, HOXA5, HOXA7, HOXB4, HOXB5, HOXB6, HOXD3, HOXD4, HOXD8, HOXD10, HSPG2 (includes EG:3339), OSR2, PRKRA, PRRX1, PRRX2, RECQL4, RYK, TBX4, TFAP2A, WNT9A	25
developmental process of breast cell lines	1.30E-03	AREG, BCL2L11, C8ORF4, CCND1, CDK2, CHKA, DAB2, EGF, EGFR, EPHA2, ETS2, GAS6, HAS2, HRAS, HSPB8, IER3, IGF2, NOTCH1, NOTCH4, RELB, SPP1, STAT3,	24
retraction of plasma membrane projections	2.25E-03	BCAR1, BDNF, CRK, F2R, GNAQ, GPI, GSN, HGF, HRAS, IL6ST, ITGA3, LIF, LPAR4, MSN, MYH9, OTX1, RDX, RICS, RRAD, RRAS, RYK, SEMA3A, SEMA3D, TIAM1	24
adenomyosis	3.75E-03	AIG1, CBX6, CD14, DST, ESR1, GPI, GPX1, HBA2, IL15, IQGAP1, LGMN, MFAP3L, MTHFD2, NFIC, NME7, PDS5B, PEG3, PMEPA1, PRDX5, RHOU, STX7, TBL1X, THBS1,	24
metastasis of cells	4.76E-03	ARHGDIG, ATF2, ATF3, CD44, CD151, CD274, COL18A1, CXCL2, EGF, ENPP2, F2R, FIGF, HGF, HTATIP2, IGF2BP1, ITGB4, LAMA5, MAPK1, NFKBIA, NFKBIB, SOCS1,	24
development of extraembryonic tissue	5.99E-03	ACVR1B, ADAMTS1, APH1A (includes EG:226548), BMP4, CCNF, COL18A1, ENPP2, ETV6, FGF13, FOXO1, GATA6, HGF, MMP2, NRP1, NRP2, PTEN, PTPN11, PTX3, SFRS5, SMAD2, TFDP1, THBS1, TIMP3, VEGFA	24
differentiation of tissue	5.99E-03	BMP4, CDKN1A, CUL7 (includes EG:9820), DAB2, DPPA4, EGFR, ETS2, EXT2, FEM1C, FOSL2, HRAS, KLF5, LIF, MEOX2, MSX1, NDRG1, PDK4, PEG3, PRKG2, RARG, SGPL1,	24
nuclear export	5.99E-03	AGFG1 (includes EG:3267), ANP32A, BAT1, CAMK1, CCHCR1, DDX19B, EIF5A, HHEX, HSPA9, KHDRBS1, LSG1, MALT1, NUDT4, NUP50, NUP98, NUP107, NUPL2, PTPN11, RANGRF, SMG6, XPO5, XPO6, XPO7, XPOT	24
re-entry into cell division process of cells	5.99E-03	BCL2, BRCA2, CAST, CCND1, CCNE1, CCNF, CDC25A, CDC25C, CDKN1A, CDKN1B, CDKN2D, E2F1, E2F2, EGF, EGFR, FOXO3, GAS6, HMG20B, ID1, ID2, ID3, RBL1, SKP2,	24
pancreatic adenocarcinoma	4.43E-06	CD59, CDKN1A, COPS5, CTSD, CYR61, HBEGF, HLA-G, IFITM1, ITGA3, ITGAE, ITGB4, KRT7, KRT10, MLL3, MSLN, PLAT, PLAU, PTEN, PTGES, RELA, RRM2, SPP1, TIMP1	23
angiogenesis of tumor	1.83E-04	ADAM17, ANGPTL4, BCL2, CDH5, COL18A1, CTSB, EPHA2, FGFR2, HGF, HRAS, IL18, ITGB5, MMP2, MMP3, MMP14, NRP1, PGF, THBS1, THBS2, TIMP1, VASH1, VEGFA,	23
neurological disorder of tissue	1.83E-03	B4GALNT1, BACE1, BCL2, C3, CCL5, CREB1, CXCL10, DAG1, EIF2AK3, HTT, IL18, ITGB4, LPAR1, MYD88, NDRG1, PITPNA, PLAT, PMP22, SNCA, SPG7, SPHK1, SPP1,	23
infiltrating duct breast carcinoma	2.41E-03	AGPAT2, CCND1, COX4I1, CP110, CSPP1, DDHD2, DDX19B, EPHA2, EYA1, FAM96B, GSPT1, ING4, MT1E, MT1F, PPFIA1, RBM4B, SAT2, SERPINF1, STAU2, TNXB, TPD52,	23
cell death of gonadal cell lines	5.17E-03	ANTXR1, ANTXR2, BTC, CASP8, CCL5, CDKN1A, DDIT3, DUSP1, EGF, GHR, HRAS, ITGA5, MAP3K11, MCL1, MGMT, PAK2, PDIA3, PLD1, PLSCR1, POLB, SGMS1, SGMS2,	23
growth of breast cell lines	3.07E-05	AREG, BCL2L11, C8ORF4, CCND1, CDK2, EGF, EGFR, EPHA2, ETS2, GAS6, HAS2, HRAS, HSPB8, IER3, IGF2, NOTCH1, NOTCH4, RELB, SPP1, STAT3, TGFB3, TIMP2	22
morphogenesis of embryonic tissue	1.06E-03	ACVR2B, AREG, CX3CL1, EGFR, FGF10, FTO, GATA4, GDNF, GREM1, HOXD13, IL11, INSR, IRX3, IRX5, MEOX2, NOTCH1, ROR2, SMAD2, TBX3, TCF7, TGFB2, TIMP2	22
disease of carcinoma	2.57E-03	ARRB2, ATF2, BRCA2, CDKN1B, E2F1, EGR1, HGF, HIP1, HRAS, ITGB5, MMP3, MMP14, PTEN, PTGS2, PTPN1, SOCS1, SOCS3, STAT3, STX2, TGFB2, VEGFA,	22
re-entry into cell division process of eukaryotic cells	2.57E-03	BCL2, BRCA2, CAST, CCND1, CCNE1, CCNF, CDC25A, CDC25C, CDKN1A, CDKN1B, CDKN2D, E2F1, E2F2, EGFR, FOXO3, GAS6, HMG20B, ID1, ID2, ID3, RBL1, SKP2	22

cardiomyopathy of mice	5.61E-03	ACSL1, ANGPT2, BNIP3L, CACNB2, CASP8, CAST, CREB1, DICER1, DYSF, GNAQ, INSR, LMNA, LTBP4, MAP2K5, PPP1CA, PTPN11, RCE1, RXRA, SGCB, SOD2, TNNT2,	22
formation of epithelial tissue	5.61E-03	ADAM15, ANTXR2, ARHGAP22, ARHGAP24, ATF3, BDNF, CBFB, CD44, COL18A1, COL4A2, CX3CL1, CXCL12, FGF13, MMP14, PLAU, PLAUR, PTEN, PTK2B, PTN, SDC2,	22
migration of brain cancer cell lines	1.72E-04	BCAR1, C5ORF13, CRK, CXCL12, EGF, EGR1, ENPP2, GAS6, HGF, LPAR1, MAPK8IP3, MMP14, PLAU, PLAUR, PTEN, PTN, PVR, SEMA3F, SIRPA, VEGFA, VEGFC	21
sprouting of eukaryotic cells	2.59E-04	ANGPT2, ANGPTL2, BCL2, BDNF, CDK5R1, COL18A1, CYR61, DCN, DICER1, EPHB4, GAP43, GDNF, NAB2, NDST1, REM1, RNASEN, RTN4, SPP1, THBS1, VEGFA, VEGFC	21
S phase of fibroblast cell lines	3.82E-04	ARAF, BID, CCND1, CCNE1, CDC25A, CDKN1B, COPS5, DDX3X, DMTF1, E2F1, E2F2, E2F3, E2F6, EGF, GADD45A, GATA6, IRS1, PPAP2C, PTPN11, RBL1, SKP2	21
arrest in cell division process of connective tissue cells	7.84E-04	ATF2, CCND1, CDC25C, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, FANCA, FANCC, GADD45A, HRAS, IGFBP7, MAP2K6, MBD4, MYBL2, PARP2, RELA, SKP2, TFDP1,	21
cell stage of bone cancer cell lines	7.84E-04	BHLHE40, CCND1, CCNE1, CDC25A, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, DUSP1, E2F1, GJA1, GPS2, LATS1, MAP2K6, MNAT1, MTBP, MYBL2, PKMYT1, RBL1, RPL23, TOPBP1, TP53BP1	21
development of endothelial cells	7.84E-04	COL18A1, CXCL2, EFNB2, ENG, EPHB4, FGF13, GPX1, HGF, MEOX2, NOTCH1, NOTCH4, PTK2B, RELA, SEMA3A, STC1, THBS1, TIMP2, VASH1, VCAM1, VEGFA,	21
formation of endothelial tube	1.51E-03	ADAM15, ARHGAP22, ARHGAP24, ATF3, BDNF, CBFB, CD44, COL18A1, COL4A2, CX3CL1, CXCL12, FGF13, MMP14, PLAU, PLAUR, PTEN, PTK2B, PTN, SDC2, TGFB2,	21
skeletal and muscular process of tissue	1.51E-03	ACVR1, ADRB2, BCL2, BMP4, CD9, CD81, E2F1, EGFR, EGR2, ENPP1, FGFR2, FOSL2, GAA, GJA1, MMP13, MMP14, PTK2B, RBL1, RSAD2, SMURF1, STAT1	21
neurological disorder of nervous tissue	2.74E-03	B4GALNT1, BACE1, BCL2, C3, CCL5, CREB1, CXCL10, DAG1, EIF2AK3, HTT, IL18, ITGB4, LPAR1, MYD88, NDRG1, PITPNA, PLAT, PMP22, SPG7, SPP1, TLR2	21
mineralization of bone	3.62E-03	ACVR1, ACVR2B, ADRB2, ANKH, BMP4, CD276, EIF2AK3, EN1, ENPP1, ERCC2, ESR1, FETUB, FGFR2, GLA, MMP13, PHEX, PTHLH, PTN, SOX9, TNFRSF11B, VDR	21
development of hair follicle	4.72E-03	ACVR1B, ATP7A, BCL2, CCND1, E2F1, EGF, EGFR, FOXQ1, FST, GFRA1, HGF, LRP4, NOTCH1, NSDHL, PTGS2, PTHLH, RELA, SGK3, SOX9, TGFB2, TRAF6	21
tumorigenesis of carcinoma	4.72E-03	ARRB2, ATF2, BRCA2, CDKN1B, E2F1, EGR1, HGF, HIP1, HRAS, ITGB5, MMP3, MMP14, PTEN, PTGS2, PTPN1, SOCS1, SOCS3, STAT3, STX2, TGFB2, WNT10B	21
angiogenesis of cells	6.43E-05	CCL13, CD151, COL18A1, CTSB, DGKA, ECT2, FGF13, FIGF, LAMA5, MEOX2, PLAUR, SEMA3A, SMOC2, TGFB2, THBS1, THBS2, TIMP2, VASH1, VEGFA, VEGFC	20
migration of colon cancer cell lines	1.63E-04	BCAR1, CD44, CD82, CRK, CRKL, CXCL10, EFNB1, EGFR, HGF, IGF2, IGFBP4, ING4, ITGA6, ITGB4, KLF4, PPFIA1, PTPN11, PTPN12, ST6GAL1, VEGFA	20
arrest in cell division process of fibroblasts	3.75E-04	ATF2, CCND1, CDC25C, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, FANCA, FANCC, GADD45A, HRAS, MAP2K6, MBD4, MYBL2, PARP2, RELA, SKP2, TFDP1, XRCC6	20
disease of mammary gland	3.75E-04	BRCA2, BTRC, CCND1, CDC25A, CDK2, CDKN1B, EGFR, ESR1, HGF, HRAS, MFGE8, MMP3, MMP14, NOTCH1, PAK1, PTEN, PTGER2, PTGS2, PTPRE, TIMP1	20
cardiovascular process of cornea	1.57E-03	ADAMTS1, ANGPTL4, CCL13, CDH5, COL18A1, CSPG4, CYR61, EGF, EPHA2, FGF13, FIGF, HGF, IGF2, IL18, PRL2C2, SERPINF1, THBS1, VCAM1, VEGFA, VEGFC	20

initiation of cell division process of cells	1.57E-03	BLNK, CCND1, CCNE1, CDK2, CDK6, CDKN1A, CDKN1B, COPS5, CXCL12, E2F1, E2F2, E2F3, E2F6, GAB1, GATA6, IRS1, NOTCH1, PDGFRA, PTPN2, SKP2	20
cell cycle progression of connective tissue cells	2.15E-03	BCL2, CCND1, CCNF, CDC25C, CDKN1A, CDKN1B, E2F1, FANCA, FANCC, GADD45A, HRAS, ID2, IGF2, INSR, JUNB, PARP2, RBL1, SKP2, TFDP1, XRCC6	20
development of metanephros	2.90E-03	APH1A (includes EG:226548), AREG, BCL2, BDNF, BMP4, CX3CL1, EYA1, FGFR1, FGFR2, FOXC2, GDNF, GPC3, GREM1, HOXA11, IL11, INSR, NF1, OSR1, SLIT2, TIMP2	20
closure of neural tube	5.07E-03	BCL10, CFL1, CREBBP, DLC1, ENAH, FTO, FZD3, FZD6, GRLF1, IRX3, IRX5, ITGA3, ITGA6, PFN1, PLXNB2, PTK7, RGMA, TRAF6, TSC2, VANGL2	20
S phase of fibroblasts	1.50E-04	CCND1, CCNE1, CDC7, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, GAB1, GRB10, ID2, ID3, IRS1, JUNB, PLK2, SKP2, TFDP1, TFE3	19
tubulation of endothelial cell lines	1.50E-04	ALCAM, ALOX12, BTC, CDH5, CLIC4, COL1A1, CXCL12, CYR61, EGF, FES, FOXO1, FOXO3, HGF, ID1, ID3, NAB2, PTN, SLIT2, VEGFA	19
interphase of bone cancer cell lines	2.37E-04	BHLHE40, CCND1, CCNE1, CDC25A, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, DUSP1, E2F1, GJA1, GPS2, MAP2K6, MNAT1, MTBP, MYBL2, RBL1, RPL23, TOPBP1,	19
initiation of cell stage of cells	1.15E-03	CCND1, CCNE1, CDK2, CDK6, CDKN1A, CDKN1B, COPS5, CXCL12, E2F1, E2F2, E2F3, E2F6, GAB1, GATA6, IRS1, NOTCH1, PDGFRA, PTPN2, SKP2	19
proliferation of chondrocytes	1.62E-03	CCND1, CDKN1A, CTGF, DICER1, FOSL2, GABBR1, GDF5, GGT1, GHR, IL18, IRS1, NFKB2, PPBP, PRKG2, PTHLH, RBL1, RELA, STAT1, STC1	19
formation of membrane ruffles	2.24E-03	ARHGAP24, ARHGEF2, BCAR1, CCND1, COL18A1, EGF, FLNA, GAS6, ITGA6, ITGB4, LTBP2, PAK1, PIP5K1B, PLEKHA1, RICS, RND1, SNTA1, USP6NL, VAV3	19
cell spreading of tumor cell lines	4.11E-03	BCL10, EGF, GAP43, ING4, ITGA5, MPRIP, PAK1, PFN1, PLAU, PPFA1, PTPN14, PVR, SIRPA, SNAI2, SPHK1, TESK1, THBS1, TIAM1, VCAM1	19
cell movement of endothelial cells	5.44E-03	ANGPT2, CD81, CD151, CSPG4, CXCL12, DGKA, FGFR1, HGF, IGF2R, ITGA3, ITGA5, ITGA6, PDGFRA, PRL2C2, SEMA3A, SEMA3F, THBS1, VEGFA, VEGFC	19
invasion of melanoma cell lines	4.67E-05	BCAR1, BMP4, CD151, CHRDL, CSPG4, CTSB, CXCL12, ENPP2, HGF, LAMA5, MMP2, MMP14, MMP16, PTEN, RHOC, SDCBP, SPP1, STAT3	18
disease of epidermis	3.44E-04	BCL2, CCND1, COL17A1, E2F1, KRT10, NFKBIA, NOTCH1, PPARD, PTEN, PTGS2, RARG, RBL1, RELB, TGFB2, TNFRSF1A, VEGFA, XPA, XPC	18
cell cycle progression of fibroblasts	1.15E-03	BCL2, CCND1, CCNF, CDC25C, CDKN1A, CDKN1B, FANCA, FANCC, GADD45A, HRAS, ID2, IGF2, INSR, JUNB, PARP2, RBL1, SKP2, XRCC6	18
cell death of organ	1.15E-03	AKT3, CD14, FBN1, GSTZ1 (includes EG:2954), MAP2K5, MED1, MT1E, MT1F, NFE2L1, PTPN1, RXRA, SCG5, SIGIRR, SOCS1, SOD2, STAT1, STAT3, TRAF1	18
skeletal and muscular process of bone	3.21E-03	ACVR1, ADRB2, BCL2, BMP4, CD9, CD81, E2F1, EGR2, ENPP1, FGFR2, GJA1, MMP13, MMP14, PTK2B, RBL1, RSAD2, SMURF1, STAT1	18
attachment of cell lines	4.35E-03	ADAM15, BTC, CD44, CDH13, EFNB1, EGF, EGFR, EGR1, IGF2, ITGA3, ITGA5, ITGA6, LOX, LRP1, PLAU, PLAUR, PLD1, PTGER2	18
cell death of sensory neurons	7.68E-04	BCL2, BDNF, CASP9, CDK5, CDKN2D, CREB1, DLX1, DLX2, GJB2, HIPK2, HTT, KLF7, LRP1, LRPAP1, NFKBIA, PRNP, RELA	17
re-entry into cell division process of cell lines	1.67E-03	BRCA2, CAST, CCND1, CCNE1, CDC25A, CDC25C, CDKN1B, E2F1, E2F2, EGFR, FOXO3, GAS6, HMG20B, ID1, ID2, ID3, SKP2	17

sprouting of normal cells	1.67E-03	ANGPT2, BCL2, BDNF, CDK5R1, COL18A1, CYR61, DCN, EPHB4, GAP43, GDNF, NAB2, NDST1, REM1, RTN4, SPP1, VEGFA, VEGFC	17
morphogenesis of normal cells	2.39E-03	BDNF, COL18A1, CXCL2, EFNB2, EPHB4, GAB1, HGF, NFKB2, NOTCH1, NOTCH4, PTK2B, PVRL2, RELA, SLC1A3, SPR, STC1, VCAM1	17
ossification of tissue	6.19E-03	ACVR1, ADRB2, BCL2, BMP4, E2F1, EGFR, EGR2, ENPP1, FGFR2, FOSL2, GJA1, MMP13, MMP14, PTK2B, RBL1, RSAD2, SMURF1	17
attachment of tumor cell lines	4.63E-04	ADAM15, CD44, CDH13, EFNB1, EGF, EGFR, EGR1, IGF2, ITGA3, ITGA5, ITGA6, LRP1, PLAUI, PLAUR, PLD1, PTGER2	16
hyperproliferation of epidermis	7.30E-04	BCL2, CCND1, E2F1, NFKB1A, NOTCH1, PPARG, PTEN, PTGS2, RARG, RBL1, RELB, TFAP2A, TGFB2, TNFRSF1A, XPA, XPC	16
development of metanephric bud	1.12E-03	AREG, BCL2, BDNF, BMP4, CX3CL1, EYA1, FGFR1, FGFR2, FOXC2, GDNF, GPC3, GREM1, HOXA11, IL11, SLIT2, TIMP2	16
moiety attachment of essential amino acids	1.67E-03	ACVR1B, BCL2, CDK5, DUSP1, HK1, MAPK1, MYLK, PLOD3, PRMT3, PRMT7, SBK1, SGK1, SGK3, SUV39H1, TNKS, TTK	16
initiation of cell division process of eukaryotic cells	2.42E-03	BLNK, CCND1, CCNE1, CDK2, CDK6, CDKN1A, CDKN1B, COPS5, E2F1, E2F2, E2F3, E2F6, GAB1, GATA6, IRS1, SKP2	16
G2 phase of normal cells	4.80E-03	ATF2, CCNG2, CDC25C, ERCC1, FANCC, GADD45A, GPC1, GRB10, HMGN1, IRS1, JUNB, MAP2K6, MBD4, MYBL2, RELA, XPC	16
initiation of S phase of eukaryotic cells	7.35E-05	CCND1, CCNE1, CDK2, CDK6, CDKN1A, CDKN1B, COPS5, E2F1, E2F2, E2F3, E2F6, GAB1, GATA6, IRS1, SKP2	15
cell movement of smooth muscle cells	1.07E-03	CCND1, ENPP2, HGF, IL6ST, LDLR, LOX, MMP2, PLAUI, PLAUR, PTPN1, PTPN11, STAT3, THBS1, TRIB1, WISP2	15
hyperplasia of epidermis	1.07E-03	BCL2, CCND1, E2F1, NFKB1A, NOTCH1, PPARG, PTEN, PTGS2, RARG, RBL1, RELB, TGFB2, TNFRSF1A, XPA, XPC	15
shape change of endothelial cells	1.07E-03	ANGPT2, BCL2, COL18A1, CRK, CYR61, DCN, EFNB1, EPHB4, NAB2, NDST1, PTK2B, REM1, SPP1, VEGFA, VEGFC	15
development of endothelial cell lines	1.63E-03	ATF3, CCL13, CD151, CDKN1B, COL18A1, CYR61, DGKA, ECT2, HGF, MMP2, PTEN, SMOC2, TFAP2A, TIMP2, VEGFA	15
branching of normal cells	2.43E-03	BDNF, BMP4, COL18A1, EGF, FGF10, GAS6, GDNF, HGF, HOXA11, NFKB1A, SMAD1, STX2, TIMP1, TIMP2, VEGFA	15
dilated cardiomyopathy of mice	3.52E-03	ACSL1, CASP8, CAST, CREB1, DICER1, GNAQ, INSR, LMNA, MAP2K5, PPP1CA, PTPN11, RCE1, RXRA, TNNT2, ZMPSTE24	15
entry into cell division process	1.03E-04	CCND1, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, ID3, JUNB, PLK2, RBL1, SKP2,	14
dwarfism of mice	9.86E-04	E2F1, EGFR, FGFR1, GGT1, HIP1, HIP1R, HOXA5, ITGA11, LIF, MAP2K6, PTHLH, ROR2, SMPD3, VEGFA	14
entry into cell stage of fibroblast cell lines	9.86E-04	ARAF, CCND1, CCNE1, CDC25A, CDK2, DDX3X, DMTF1, E2F1, E2F3, E2F6, EGF, PPAP2C, PTPN11, SKP2	14
morphology of connective tissue	9.86E-04	CCND1, FMR1, FOXC2, GSN, KIF3A, LTBP4, MMP2, PDGFRA, PRRX1, PRRX2, SMAD1, SOX9, TGFB2, THBS1	14

entry into cell division process of fibroblast cell lines	1.56E-03	ARAF, CCND1, CCNE1, CDC25A, CDK2, DDX3X, DMTF1, E2F1, E2F3, E2F6, EGF, PPAP2C, PTPN11, SKP2	14
arrest in interphase of connective tissue cells	2.39E-03	ATF2, CCND1, CDC25C, CDKN1A, E2F1, E2F2, E2F3, GADD45A, IGFBP7, MAP2K6, MBD4, MYBL2, RELA, TFDP1	14
G1 phase of bone cancer cell lines	3.54E-03	CCND1, CCNE1, CDK6, CDK5RAP3 (includes EG:80279), CDKN1A, DUSP1, GJA1, GPS2, MNAT1, MTBP, MYBL2, RBL1, RPL23, TOPBP1	14
arrest in interphase of bone cancer cell lines	5.11E-03	CCND1, CCNE1, CDK5RAP3 (includes EG:80279), CDKN1A, DUSP1, GPS2, MAP2K6, MNAT1, MTBP, MYBL2, RBL1, RPL23, TOPBP1, TP53BP1	14
developmental process of emigration of leukocytes	5.11E-03	ADA, CDKN1B, EGF, ENG, ERF, FGFR2, HBEGF, HOPX, JUNB, RXRA, SOX2, SP1, SRF,	14
	5.11E-03	ANXA1, CCL13, CD44, CD99L2, CXCL2, CXCL12, CYTIP, F11R, LAMA5, RELA, SIRPA, SPP1, TNFRSF1A, VCAM1	14
binding of tumor cells	2.79E-04	CD14, CD44, CD47, CXCL12, DAG1, GFRA1, ITGA3, ITGA5, PDIA3, PLAUR, SEMA3B,	13
differentiation of embryonic tissue	8.76E-04	BMP4, CUL7 (includes EG:9820), DAB2, DPPA4, ETS2, FOSL2, HRAS, LIF, MEOX2, NDRG1, RARG, SGPL1, SPHK1	13
morphogenesis of cell lines	1.44E-03	CCND1, CD82, COL18A1, CRK, EGF, GAB1, GDNF, HGF, ITGA6, MMP2, PTEN, TFAP2A,	13
vascularization of cornea	1.44E-03	ADAMTS1, CCL13, COL18A1, CYR61, EGF, HGF, IGF2, IL18, PRL2C2, SERPINF1, THBS1, VEGFA, VEGFC	13
developmental process of migration of cervical cancer cell lines	2.29E-03	BDNF, CDK5, CDON, EGR2, ITGA6, LAMC1, MAP2K6, NAB1, NAB2, NF1, NFKBIA,	13
	3.49E-03	CD151, CXCL2, CXCL12, DCBLD2, EGF, ESR1, GFER, HGF, MYO10, PLD1, SLC9A3R1, TFAP2A, WDR44	13
arrest in interphase of fibroblasts	5.17E-03	ATF2, CCND1, CDC25C, CDKN1A, E2F1, E2F2, E2F3, GADD45A, MAP2K6, MBD4, MYBL2, RELA, TFDP1	13
entry into S phase of cell division process of liver	2.00E-04	CCND1, CDK2, CDKN1A, CDKN1B, E2F1, E2F2, E2F3, ID3, JUNB, PLK2, TFDP1, TFE3	12
cell death of liver	3.97E-04	BCL2, CCND1, CCNE1, E2F2, EGF, EGR1, ERCC1, HGF, INSR, PTPRF, SKP2, VEGFA	12
	7.33E-04	CD14, GSTZ1 (includes EG:2954), MED1, MT1E, MT1F, NFE2L1, PTPN1, RXRA, SCG5, SIGIRR, SOCS1, SOD2	12
follicular thyroid carcinoma	7.33E-04	ADAMTS1, ANGPT2, EFNB2, EGFR, ENG, EPHB4, FGFR1, ITGA5, MMP2, PTTG1, SPP1,	12
endochondral ossification	1.28E-03	ATF2, COL1A1, CTGF, E2F1, HSPG2 (includes EG:3339), MEF2C, MMP14, NAB1, NAB2, PEX7, PTHLH, SMURF1	12
organization of collagen fibrils	1.28E-03	ADAMTS2, ATP7A, COL1A1, COL3A1, COL5A1, COL5A2, FOXC2, LOX, NF1, SERPINH1,	12
entry into S phase of fibroblast	2.12E-03	ARAF, CCND1, CDC25A, DDX3X, DMTF1, E2F1, E2F3, E2F6, EGF, PPAP2C, PTPN11,	12
formation of tumor cell lines	2.12E-03	CDKN1A, COL18A1, EGR1, FZD1, GNAO1, GNAQ, HRAS, KIF23, LIMK1, RGS12,	12
necrosis of organ	2.12E-03	CD14, GSTZ1 (includes EG:2954), MED1, MT1E, MT1F, NFE2L1, RXRA, SCG5, SIGIRR, SOCS1, SOD2, TRAF1	12
invasion of pancreatic cancer	3.36E-03	ADM, CTSD, EGF, EPHA2, GDNF, HGF, NRP1, PLAT, PLAU, SEL1L, TIMP1, TIMP2	12
sprouting of endothelial cells	3.36E-03	ANGPT2, BCL2, COL18A1, CYR61, DCN, EPHB4, NAB2, NDST1, REM1, SPP1, VEGFA,	12
phosphorylation of L-threonine	5.13E-03	ACVR1B, BCL2, CDK5, DUSP1, HK1, MAPK1, MYLK, SBK1, SGK1, SGK3, TNKS, TTK	12
shape change of epithelial	1.63E-05	CRK, CRKL, EGF, FBN1, FGFR1, GSN, HGF, ITGA3, LAMA5, STAT3, TIAM1	11
migration of microvascular	2.75E-04	ADM, COL18A1, EFNB2, FOXC2, GAB1, RECK, TGFB2, TIMP1, TIMP2, VAV3, VEGFA	11

G2 phase of connective tissue	5.61E-04 ATF2, CDC25C, GADD45A, GRB10, HMGN1, IRS1, JUNB, MAP2K6, MBD4, MYBL2,	11
apoptosis of sensory neurons	5.61E-04 CASP9, CDKN2D, CREB1, DLX1, DLX2, HIPK2, KLF7, LRP1, LRPAP1, PRNP, RELA	11
binding of cancer cells	5.61E-04 CD44, CXCL12, DAG1, GFRA1, ITGA3, ITGA5, PDIA3, PLAUR, SEMA3B, THBS1, VCAM1	11
necrosis of liver	5.61E-04 CD14, GSTZ1 (includes EG:2954), MED1, MT1E, MT1F, NFE2L1, RXRA, SCG5, SIGIRR,	11
proliferation of neuronal	1.06E-03 BDNF, CDON, CFL1, CNR1, E2F1, E2F3, EGF, GDNF, NCAM1, VEGFA, WNT7B	11
morphogenesis of endothelial	1.87E-03 COL18A1, CXCL2, EFNB2, EPHB4, HGF, NOTCH1, NOTCH4, PTK2B, RELA, STC1,	11
morphology of bone	3.11E-03 CCND1, FMR1, FOXC2, KIF3A, MMP2, PDGFRA, PRRX1, PRRX2, SMAD1, TGFB2,	11
trafficking of leukocytes	3.11E-03 ANXA1, AOC3, CCL5, CCL13, CD44, CXCL10, CXCL13, ENPP2, NEDD9, NT5E,	11
Ehlers-Danlos syndrome	5.64E-05 ADAMTS2, ADAMTS4, ATP7A, COL1A1, COL3A1, COL5A1, COL5A2, TNXB, ZMPSTE24,	10
chemotaxis of neurons	1.57E-04 BDNF, CXCL12, EFNB1, GDNF, GFRA1, NRP2, RGS3, SEMA3A, SEMA3F, SLIT2	10
G2 phase of fibroblasts	7.90E-04 ATF2, CDC25C, GADD45A, GRB10, HMGN1, JUNB, MAP2K6, MBD4, MYBL2, RELA	10
initiation of S phase of cell	7.90E-04 CDK6, CDKN1A, CDKN1B, COPS5, E2F1, E2F2, E2F3, E2F6, GATA6, IRS1	10
cell division process of	1.53E-03 BCL2, CCND1, CCNE1, E2F2, EGF, ERCC1, HGF, INSR, PTPRF, SKP2	10
expression of E2F binding site	2.73E-03 CCND1, E2F1, E2F2, E2F3, E2F6, RBL1, REEP5, SP1, TFDP1, TFDP2	10
gastrulation of mice	2.73E-03 ACVR1, DAB2, EXT2, HTT, LAMA5, NUP98, SCXB, SMAD2, SRF, TJP2	10
hyperactive behavior of mice	2.73E-03 BDNF, CLOCK, DKK3, FGFR1, FMR1, FXR2, GABBR1, HTT, LRP1, TGFB2	10
size of thymus gland	4.59E-03 B4GALNT1, CCND1, CDKN1B, HOXA9, JAK3, MAD1L1, MGMT, MLH1, SOCS1, VCAM1	10
attachment of connective	1.91E-04 BCAR1, HRAS, LRP1, LRPAP1, MMP2, PTK2B, TGFBI, THBS2, TIMP2	9
chemotaxis of axons	1.91E-04 ARTN, BDNF, NRP1, NRP2, PICK1, SEMA3A, SEMA3B, SEMA3F, SLIT2	9
neurological disorder of nerves	2.20E-03 B4GALNT1, BACE1, DAG1, ITGB4, MYD88, NDRG1, PMP22, SPG7, TLR2	9
transcription of E2F binding	2.20E-03 E2F1, E2F2, E2F3, E2F6, RBL1, REEP5, SP1, TFDP1, TFDP2	9
cell spreading of epithelial	2.16E-04 CRK, CRKL, FBN1, HGF, ITGA3, LAMA5, STAT3, TIAM1	8
attachment of fibroblasts	6.33E-04 BCAR1, HRAS, LRP1, LRPAP1, MMP2, TGFBI, THBS2, TIMP2	8
growth of fibrosarcoma cell	6.33E-04 CDKN1A, EGR1, HGF, IL18, PLA2, RELA, SDC2, STAT1	8
maturation of blood vessel	6.33E-04 ANGPT2, CDH5, ENPP2, ETV6, FOXO3, MMP2, RECK, VEGFA	8
chemotaxis of brain cells	1.52E-03 BDNF, CXCL12, EFNB1, NRP2, RGS3, SEMA3A, SEMA3F, SLIT2	8
survival of gonadal cell lines	1.52E-03 ANTXR1, ANTXR2, ATP7A, BCL2, ITGA5, MGMT, RAD51C, XRCC1	8
apoptosis of heart cell lines	5.88E-03 ANKRD1, BCL2, BNIP2, DDIT3, HGF, IL18, SPHK1, TXNIP	8
branching morphogenesis of	5.88E-03 CRK, EFNB2, EGF, EPHB4, GAB1, GDNF, HGF, NOTCH1	8
cell viability of neuroblastoma	5.88E-03 BCL2, DPP3, GPC1, HMOX1, P4HB, PRNP, SNCA, SQSTM1	8
proliferation of skin cancer cell	5.88E-03 CDKN1A, CDKN1B, CRK, EGF, HGF, PTCH1, PTGER2, THBS1	8
cell division process of kidney	7.62E-04 CDKN1A, CDKN1B, CXCL10, EGF, ITGB4, MAPK1, PTGS2	7
developmental process of	7.62E-04 BMP4, CUL7 (includes EG:9820), ETS2, F2RL1, MAPK1, NDRG1, PBRM1	7
activation of E2F binding site	2.04E-03 CDCA4, E2F1, E2F2, E2F3, E2F6, RBL1, TFDP1	7
developmental disorder of	2.04E-03 BTRC, CDKN1B, E2F1, EGFR, ESR1, FGF10, PAK1	7
diabetic retinopathy	2.04E-03 AKR1B1, HGF, PTGS1, PTGS2, SERPINF1, VCAM1, VEGFA	7
initiation of S phase of	2.04E-03 COPS5, E2F1, E2F2, E2F3, E2F6, GATA6, IRS1	7

neurological disorder of sciatic	2.04E-03 DAG1, ITGB4, MYD88, NDRG1, PMP22, SPG7, TLR2	7
quantity of caveolae	2.04E-03 DAB2, EGF, EGFR, HRAS, PIP5K1B, SYNJ2, VEGFA	7
G2/M phase transition of	4.49E-03 ATF2, CDC25C, GADD45A, IRS1, JUNB, MBD4, RELA	7
binding of vesicles	4.49E-03 ACTR1A, DCTN4, DCTN6, GGA2, MYO5A, RBP1, SNCA	7
development of lymphoid	4.49E-03 CXCL13, ID2, MAP3K14, NFKB2, RELA, RELB, TNFRSF1A	7
scattering of tumor cell lines	4.49E-03 CRK, EGF, EGFR, ETV5, GDNF, HGF, MMP14	7
transactivation of E2F binding	1.45E-04 CDCA4, E2F1, E2F2, E2F3, E2F6, TFDP1	6
apoptosis of germ cell tumor	8.13E-04 BCL2, CCNG1, CDKN1B, CXCL12, GATA4, MEF2C	6
cell division process of	8.13E-04 CDKN1B, CXCL10, EGF, ITGB4, MAPK1, PTGS2	6
degradation of Gelatin	8.13E-04 ADAM12, ADAM15, CSPG4, MMP14, MMP16, TIMP3	6
biosynthesis of chondroitin	2.62E-03 B4GALNT1, CHST3, CHST7, CHST11, CHST12, CSGALNACT1	6
cell movement of skin cancer	2.62E-03 CD151, EGF, FIGF, HGF, ITGA6, ITGB4	6
chemorepulsion of neurites	2.62E-03 NRP1, NRP2, SEMA3A, SEMA3B, SEMA3F, SLIT2	6
degeneration of myofiber	2.62E-03 CD9, CD81, CUGBP1, DTNA, PLAU, STRA13	6
initiation of S phase of	2.62E-03 CCND1, CCNE1, CDK2, GAB1, IRS1, SKP2	6
neurological process of brain	2.62E-03 BDNF, DLG4, MYO5A, RBL1, THBS1, THBS2	6
organic aciduria	2.62E-03 BCKDHA, BCKDHB, DBT, DLD, MLYCD, SOD2	6
shape change of dermal cells	2.62E-03 EGF, FBN1, GSN, ITGA3, STAT3, TIAM1	6
termination of cell cycle	2.62E-03 CDKN1A, CDKN1B, CDKN2C, E2F1, ID2, TFDP1	6
termination of cell division	2.62E-03 CDKN1A, CDKN1B, CDKN2C, E2F1, ID2, TFDP1	6
G0 phase of fibroblast cell	6.33E-03 BMP4, CCNE1, CDKN1A, CDKN1B, COPS5, PVR	6
G2/M phase transition of	6.33E-03 ATF2, CDC25C, GADD45A, JUNB, MBD4, RELA	6
adhesion of lung cancer cell	6.33E-03 ADAM9, B4GALT1, CXCL12, SEMA3F, THBS1, VCAM1	6
chemoattraction of neurons	6.31E-04 CXCL12, EFN1, GDNF, GFRA1, RGS3	5
chemotaxis of skin cancer cell	6.31E-04 CD151, EGF, FIGF, ITGA6, ITGB4	5
cell cycle progression of	3.06E-03 CCND1, CCNE1, E2F2, EGF, SKP2	5
demyelination of nerves	3.06E-03 B4GALNT1, DAG1, ITGB4, NDRG1, PMP22	5
quantity of clathrin-coated pits	3.06E-03 DAB2, EGF, EGFR, PIP5K1B, SYNJ2	5
renal lesion	3.06E-03 EGFR, MT1E, MT1F, PLAT, TSC2	5
tubulo-interstitial fibrosis of	3.06E-03 C3, CD59A, MMP2, PTHLH, SKP2	5
assembly of sarcomere	2.76E-03 CAMK2D, GATA4, HBEGF, LIF	4
demyelination of sciatic nerve	2.76E-03 DAG1, ITGB4, NDRG1, PMP22	4
developmental process of	2.76E-03 E2F1, GAB1, SRF, STC1	4
differentiation of glial	2.76E-03 BMP4, EGFR, EIF2B5, NOTCH1	4
differentiation of primitive	2.76E-03 HRAS, RARG, SGPL1, SPHK1	4
differentiation of trophoblast	2.76E-03 BMP4, CUL7 (includes EG:9820), ETS2, NDRG1	4
formation of endodermal cells	2.76E-03 FZD1, GNAO1, GNAQ, SMAD2	4

hypoplasia of exocrine gland	2.76E-03 BTRC, CDKN1B, ESR1, FGF10	4
loss of mesencephalic neurons	2.76E-03 BDNF, CASP8, CASP9, GDNF	4
maple syrup urine disease,	2.76E-03 BCKDHA, BCKDHB, DBT, DLD	4
transformation of embryonic	2.76E-03 FGFR1, FGFR2, HAS2, HRAS	4

© 2000-2009 Ingenuity
Systems, Inc. All rights

P-values are from IPA Tool. The criteria applied for the search of major biological function categories were maximum number of genes and the *P*-value of significance

Table S4: Gene sets Identified by GSEA

Specific genes enriched in *Klf4* -null MEFs

NAME	PROBE	RUNNING ES	CORE ENRICHMENT
BILE_ACID_BIOSYNTHESIS			
row_17	AKR1D1	-0.492	Yes
row_18	SOAT2	-0.471	Yes
row_19	ALDH2	-0.405	Yes
row_20	ADH7	0.001	Yes
ZUCCHI_EPITHELIAL_DN			
row_18	STRN4	-0.597	Yes
row_19	PPM1G	-0.591	Yes
row_20	PDLIM1	-0.550	Yes
row_21	ANXA1	-0.480	Yes
row_22	PICALM	-0.363	Yes
row_23	CXCL1	-0.195	Yes
row_24	AREG	0.001	Yes
CROONQUIST_IL6_RAS_U			
row_17	CCL4	-0.468	Yes
row_18	CCL5	0.001	Yes
HSA04640_HEMATOPOIETIC_CELL_LINEAGE			
row_57	ITGA6	-0.469	Yes
row_58	CSF1	-0.461	Yes
row_59	CD9	-0.459	Yes
row_60	CD44	-0.392	Yes
row_61	CD34	-0.310	Yes
row_62	ITGA5	-0.222	Yes
row_63	CD14	-0.123	Yes
row_64	ITGA3	0.005	Yes
BCRPATHWAY			
row_25	VAV1	-0.508	Yes
row_26	BTK	-0.507	Yes
row_27	RAC1	-0.484	Yes
row_28	MAPK3	-0.476	Yes
row_29	CALM2	-0.433	Yes
row_30	JUN	-0.387	Yes
row_31	PPP3CA	-0.335	Yes
row_32	BLNK	0.001	Yes
LEE_MYC_E2F1_DN			
row_44	ABCD3	-0.489	Yes
row_45	IGF1	-0.479	Yes
row_46	G0S2	-0.481	Yes
row_47	CYP7B1	-0.460	Yes

row_48	MCM10	-0.440	Yes
row_49	PXMP2	-0.421	Yes
row_50	ELOVL5	-0.396	Yes
row_51	RGS16	-0.326	Yes
row_52	EGFR	-0.206	Yes
row_53	NETO2	0.001	Yes

HSA04012_ERBB_SIGNALING_PATHWAY

row_67	EREG	-0.415	Yes
row_68	ERBB2	-0.408	Yes
row_69	CAMK2B	-0.410	Yes
row_70	AKT2	-0.402	Yes
row_71	MAP2K4	-0.386	Yes
row_72	MAPK3	-0.373	Yes
row_73	PAK3	-0.357	Yes
row_74	EIF4EBP1	-0.344	Yes
row_75	JUN	-0.328	Yes
row_76	SRC	-0.310	Yes
row_77	ARAF	-0.304	Yes
row_78	PAK1	-0.269	Yes
row_79	HBEGF	-0.209	Yes
row_80	EGFR	-0.137	Yes
row_81	AREG	0.000	Yes

ZHAN_PCS_MULTIPLE_MYELOMA_SPKD

row_16	IFIT3	-0.671	Yes
row_17	CTGF	-0.614	Yes
row_18	LGALS3BP	-0.484	Yes
row_19	TSPAN7	-0.257	Yes
row_20	AREG	0.000	Yes

HSA04140_REGULATION_OF_AUTOPHAGY

row_18	PRKAA1	-0.532	Yes
row_19	ULK2	-0.509	Yes
row_20	GABARAPL1	-0.463	Yes
row_21	PIK3R4	-0.389	Yes
row_22	ATG3	0.005	Yes

HSA04940_TYPE_I_DIABETES_MELLITUS

row_15	CPE	-0.377	Yes
row_16	FAS	-0.360	Yes
row_17	HSPD1	-0.336	Yes
row_18	ICA1	0.007	Yes

POMEROY_DESMOPLASIC_VS_CLASSIC_MD_DN

row_31	NUCB1	-0.430	Yes
row_32	SFRS2IP	-0.404	Yes
row_33	PSMB5	-0.347	Yes

row_34	CRABP2	0.000	Yes
--------	--------	-------	-----

LEE_MYC_TGFA_DN

row_45	G0S2	-0.535	Yes
row_46	CYP7B1	-0.516	Yes
row_47	MCM10	-0.500	Yes
row_48	PXMP2	-0.484	Yes
row_49	ELOVL5	-0.464	Yes
row_50	RGS16	-0.404	Yes
row_51	EGFR	-0.298	Yes
row_52	PTP4A3	-0.184	Yes
row_53	NETO2	0.001	Yes

HSA00760_NICOTINATE_AND_NICOTINAMIDE_METABOLISM

row_17	NT5C2	-0.620	Yes
row_18	NNMT	-0.478	Yes
row_19	ENPP1	-0.242	Yes
row_20	NT5E	0.007	Yes

CELL_MOTILITY

row_36	FLNA	-0.457	Yes
row_37	BCL9L	-0.451	Yes
row_38	ACTN4	-0.429	Yes
row_39	MSN	-0.411	Yes
row_40	F2R	-0.383	Yes
row_41	THBS1	-0.353	Yes
row_42	F11R	-0.330	Yes
row_43	ANXA1	-0.293	Yes
row_44	CTGF	-0.250	Yes
row_45	CXCL10	-0.194	Yes
row_46	ENPP2	-0.109	Yes
row_47	CCL5	0.002	Yes

TYROSINE_METABOLISM

row_24	ALDH3B1	-0.410	Yes
row_25	FAH	-0.308	Yes
row_26	ADH7	0.001	Yes

INFLAMMATORY_RESPONSE_PATHWAY

row_10	THBS1	-0.678	Yes
row_11	LAMC1	-0.564	Yes
row_12	LCK	-0.436	Yes
row_13	LAMA5	-0.264	Yes
row_14	COL3A1	0.011	Yes

HSA04060_CYTOKINE_CYTOKINE_RECEPTOR_INTERACTION

row_176	ACVR1B	-0.461	Yes
row_177	CCL27	-0.457	Yes

row_178	TSLP	-0.454	Yes
row_179	TNFSF4	-0.452	Yes
row_180	CSF1	-0.450	Yes
row_181	TNFSF11	-0.446	Yes
row_182	LTBR	-0.441	Yes
row_183	IL23A	-0.438	Yes
row_184	CXCR6	-0.433	Yes
row_185	IL17RA	-0.435	Yes
row_186	TGFB2	-0.434	Yes
row_187	EDA2R	-0.429	Yes
row_188	IL18RAP	-0.426	Yes
row_189	TGFB1	-0.420	Yes
row_190	TNFRSF10B	-0.413	Yes
row_191	ACVR1	-0.410	Yes
row_192	IL12RB1	-0.413	Yes
row_193	LIF	-0.401	Yes
row_194	TNFRSF9	-0.392	Yes
row_195	IFNGR1	-0.377	Yes
row_196	HGF	-0.362	Yes
row_197	CCL7	-0.346	Yes
row_198	VEGFA	-0.329	Yes
row_199	CX3CL1	-0.312	Yes
row_200	VEGFC	-0.288	Yes
row_201	EGFR	-0.262	Yes
row_202	CXCL10	-0.234	Yes
row_203	TGFBR2	-0.203	Yes
row_204	CXCL12	-0.168	Yes
row_205	IL6ST	-0.130	Yes
row_206	CCL2	-0.091	Yes
row_207	CXCL1	-0.047	Yes
row_208	CCL5	0.001	Yes

UVC_LOW_C2_DN

row_12	MYO10	-0.534	Yes
row_13	SLIT2	-0.362	Yes
row_14	CXCL12	0.004	Yes

CELL_SURFACE_RECEPTOR_LINKED_SIGNAL_TRANSDUCTION

row_98	ARHGEF2	-0.460	Yes
row_99	ISGF3G	-0.451	Yes
row_100	IL18RAP	-0.454	Yes
row_101	TNFRSF10B	-0.445	Yes
row_102	FLNA	-0.437	Yes
row_103	ECGF1	-0.428	Yes
row_104	IL12RB1	-0.416	Yes
row_105	LIF	-0.397	Yes
row_106	RAMP2	-0.380	Yes
row_107	HGF	-0.355	Yes

row_108	STC2	-0.330	Yes
row_109	STC1	-0.303	Yes
row_110	ANXA1	-0.274	Yes
row_111	CD14	-0.241	Yes
row_112	LY6E	-0.200	Yes
row_113	CXCL10	-0.157	Yes
row_114	ADRB2	-0.113	Yes
row_115	IL6ST	-0.057	Yes
row_116	CCL2	0.003	Yes

HSA04620_TOLL_LIKE_RECEPTOR_SIGNALING_PATHWAY

row_73	RAC1	-0.500	Yes
row_74	CCL4	-0.495	Yes
row_75	NFKB1	-0.497	Yes
row_76	TLR8	-0.489	Yes
row_77	CHUK	-0.491	Yes
row_78	AKT2	-0.487	Yes
row_79	MAP2K4	-0.476	Yes
row_80	MAP2K3	-0.466	Yes
row_81	MAPK3	-0.455	Yes
row_82	IRAK1	-0.448	Yes
row_83	TRAF3	-0.435	Yes
row_84	JUN	-0.426	Yes
row_85	RELA	-0.416	Yes
row_86	CASP8	-0.405	Yes
row_87	TLR2	-0.396	Yes
row_88	SPP1	-0.375	Yes
row_89	NFKBIA	-0.358	Yes
row_90	NFKB2	-0.324	Yes
row_91	CD14	-0.277	Yes
row_92	MAPK12	-0.223	Yes
row_93	CXCL10	-0.166	Yes
row_94	MAPK13	-0.094	Yes
row_95	CCL5	0.001	Yes

HSA04340_HEDGEHOG_SIGNALING_PATHWAY

row_41	CSNK1G1	-0.586	Yes
row_42	STK36	-0.586	Yes
row_43	RAB23	-0.586	Yes
row_44	GLI3	-0.580	Yes
row_45	SUFU	-0.567	Yes
row_46	PTCH1	-0.552	Yes
row_47	WNT3A	-0.532	Yes
row_48	BTRC	-0.530	Yes
row_49	WNT10A	-0.496	Yes
row_50	WNT10B	-0.426	Yes
row_51	WNT9A	-0.321	Yes
row_52	BMP4	-0.164	Yes

row_53	WNT7B	0.002	Yes
GO_ROS			
row_22	LTC4S	-0.524	Yes
row_23	STK25	-0.488	Yes
row_24	PDLIM1	-0.416	Yes
row_25	DUSP1	-0.279	Yes
row_26	CCL5	0.001	Yes
LEE_E2F1_DN			
row_43	MCM10	-0.485	Yes
row_44	PXMP2	-0.473	Yes
row_45	ELOVL5	-0.457	Yes
row_46	ITPR1	-0.424	Yes
row_47	GSTO1	-0.386	Yes
row_48	EGFR	-0.305	Yes
row_49	PPCS	-0.166	Yes
row_50	NETO2	0.001	Yes

Specific genes enriched in wild type MEFs

PROSTAGLANDIN_AND_LEUKOTRIENE_METABOLISM

row_0	PTGIS	0.276	Yes
row_1	CBR3	0.497	Yes
row_2	PTGS1	0.628	Yes

INTRINSICPATHWAY

row_0	PROS1	0.255	Yes
row_1	COL4A6	0.502	Yes
row_2	COL4A5	0.659	Yes

HSA04612_ANTIGEN_PROCESSING_AND_PRESENTATION

row_0	TAP2	0.277	Yes
row_1	LGMN	0.401	Yes
row_2	PSME1	0.432	Yes
row_3	TAP1	0.448	Yes
row_4	CIITA	0.480	Yes
row_5	HSP90AA1	0.514	Yes

LAL_KO_3MO_UP

row_0	PLA2G7	0.221	Yes
row_1	GPNMB	0.426	Yes
row_2	TREM2	0.487	Yes
row_3	FKBP5	0.478	Yes
row_4	SLC40A1	0.507	Yes

GH_AUTOCRINE_UP

row_0	ID3	0.053	Yes
-------	-----	-------	-----

row_1	SCAMP5	0.104	Yes
row_2	ALCAM	0.154	Yes
row_3	IGFBP7	0.193	Yes
row_4	COL4A6	0.232	Yes
row_5	TLE2	0.267	Yes
row_6	BLVRB	0.295	Yes
row_7	GRIA1	0.324	Yes
row_8	SFXN5	0.344	Yes
row_9	ID1	0.368	Yes
row_10	PPA2	0.386	Yes
row_11	VTI1A	0.391	Yes
row_12	UQCR	0.394	Yes
row_13	ADK	0.408	Yes
row_14	MOBK2B	0.420	Yes
row_15	SPATA7	0.429	Yes
row_16	MRPL28	0.431	Yes
row_17	SH3BP1	0.439	Yes
row_18	CFL2	0.442	Yes
row_19	BSG	0.444	Yes
row_20	MOGAT2	0.451	Yes
row_21	SSR4	0.459	Yes
row_22	SAR1B	0.465	Yes
row_23	PIR	0.467	Yes
row_24	AXL	0.469	Yes
row_25	GMPT	0.475	Yes
row_26	PSMB2	0.481	Yes
row_27	SLC43A1	0.485	Yes
row_28	GPR12	0.482	Yes
row_29	G3BP	0.488	Yes

HSA02010_ABC_TRANSPORTERS_GENERAL

row_0	TAP2	0.192	Yes
row_1	ABCD4	0.294	Yes
row_2	ABCA3	0.353	Yes
row_3	ABCC10	0.418	Yes
row_4	ABCC5	0.465	Yes
row_5	ABCC3	0.503	Yes
row_6	ABCA7	0.534	Yes
row_7	TAP1	0.540	Yes

IL2RBPATWAY

row_0	JAK3	0.217	Yes
row_1	SOCS3	0.274	Yes
row_2	MAPK1	0.353	Yes
row_3	SOCS1	0.429	Yes
row_4	IRS1	0.499	Yes
row_5	CRKL	0.545	Yes

SMITH_HCV_INDUCED_HCC_UP

row_0	GSTA4	0.309	Yes
row_1	SDHC	0.378	Yes
row_2	PMVK	0.386	Yes
row_3	PDCD5	0.416	Yes
row_4	PIR	0.450	Yes
row_5	IMPA2	0.469	Yes
row_6	COPS5	0.485	Yes
row_7	ANXA7	0.510	Yes
row_8	NOLA2	0.523	Yes

HOX_GENES

row_0	HOXD4	0.092	Yes
row_1	HOXB5	0.176	Yes
row_2	HOXA5	0.251	Yes
row_3	HOXA2	0.319	Yes
row_4	MEIS1	0.376	Yes
row_5	PRRX1	0.414	Yes
row_6	HOXA7	0.461	Yes
row_7	HOXD3	0.500	Yes

NI2_LUNG_DN

row_0	TRAP1	0.257	Yes
row_1	CEBPD	0.470	Yes
row_2	ABCC3	0.584	Yes
row_3	LGTM	0.639	Yes
row_4	HSP90AA1	0.702	Yes

MAGRANGEAS_MULTIPLE_MYELOMA_IGL_VS_IGK_DN

row_0	GSTM5	0.178	Yes
row_1	TJP2	0.328	Yes
row_2	SMARCA1	0.407	Yes
row_3	CSNK2A2	0.466	Yes
row_4	UBE4A	0.503	Yes

HSA04630_JAK_STAT_SIGNALING_PATHWAY

row_0	JAK3	0.054	Yes
row_1	SOCS2	0.111	Yes
row_2	IL11	0.166	Yes
row_3	OSMR	0.214	Yes
row_4	STAT3	0.253	Yes
row_5	IFNGR2	0.270	Yes
row_6	SOCS3	0.281	Yes
row_7	CCND2	0.300	Yes
row_8	SOCS1	0.319	Yes
row_9	CTF1	0.338	Yes
row_10	SOCS5	0.358	Yes
row_11	GHR	0.369	Yes

row_12	PIK3R2	0.382	Yes
row_13	CISH	0.392	Yes
row_14	SPRY4	0.406	Yes
row_15	IL15	0.398	Yes
row_16	SPRY3	0.408	Yes
row_17	STAT1	0.418	Yes
row_18	CCND1	0.426	Yes
row_19	PIAS4	0.429	Yes
row_20	AKT3	0.435	Yes
row_21	CREBBP	0.441	Yes
row_22	PIK3R5	0.437	Yes
row_23	GRB2	0.442	Yes
row_24	LEPR	0.449	Yes
row_25	IFNAR2	0.440	Yes
row_26	PIAS3	0.438	Yes
row_27	JAK2	0.443	Yes
row_28	EPO	0.448	Yes
row_29	CBLB	0.447	Yes
row_30	TYK2	0.451	Yes

GLUTATHIONE_METABOLISM

row_0	GSTA4	0.165	Yes
row_1	GSTM2	0.297	Yes
row_2	IDH1	0.384	Yes
row_3	GSTM5	0.469	Yes
row_4	GSTM1	0.555	Yes
row_5	GSTZ1	0.625	Yes
row_6	GSTO2	0.699	Yes

HSA03022_BASAL_TRANSCRIPTION_FACTORS

row_0	GTF2H4	0.132	Yes
row_1	GTF2F2	0.182	Yes
row_2	TAF13	0.264	Yes
row_3	TBPL2	0.333	Yes
row_4	GTF2E1	0.375	Yes
row_5	TAF7L	0.420	Yes
row_6	TAF9B	0.466	Yes
row_7	GTF2I	0.511	Yes
row_8	GTF2H3	0.528	Yes
row_9	TAF6L	0.562	Yes
row_10	GTF2A1	0.583	Yes

SPPAPATHWAY

row_0	PTGS1	0.273	Yes
row_1	GNB1	0.391	Yes
row_2	MAPK1	0.500	Yes

TNFAIP3_SIGNALING

row_0	IDH1	0.218	Yes
row_1	ALAD	0.362	Yes
row_2	RGS2	0.495	Yes
row_3	IDH3G	0.591	Yes
row_4	CDKN2C	0.662	Yes

ADIP_HUMAN_UP

row_0	ADORA2B	0.136	Yes
row_1	ALDH6A1	0.247	Yes
row_2	LPL	0.345	Yes
row_3	RXRA	0.383	Yes
row_4	ACSL1	0.381	Yes
row_5	CRYAB	0.410	Yes
row_6	PFKFB3	0.437	Yes
row_7	LYPLA1	0.465	Yes
row_8	RXRB	0.469	Yes
row_9	KCNH2	0.483	Yes
row_10	LBP	0.476	Yes
row_11	CTSG	0.464	Yes
row_12	GPD1	0.475	Yes
row_13	DGAT1	0.482	Yes
row_14	PLCD1	0.490	Yes
row_15	ATP8A2	0.496	Yes
row_16	ABCE1	0.499	Yes
row_17	FABP5	0.493	Yes
row_18	SMARCB1	0.499	Yes

ERKPATHWAY

row_0	STAT3	0.180	Yes
row_1	PDGFRA	0.290	Yes
row_2	GNB1	0.401	Yes

BRCA1_SW480_DN

row_0	GRB10	0.390	Yes
row_1	COL16A1	0.462	Yes
row_2	RXRB	0.475	Yes
row_3	BAX	0.486	Yes
row_4	SEMA3B	0.515	Yes
row_5	GRB2	0.537	Yes
row_6	PIN1	0.555	Yes

NF90_DN

row_0	SLC1A3	0.276	Yes
row_1	CXCR7	0.355	Yes
row_2	IRX5	0.449	Yes
row_3	ASNS	0.485	Yes
row_4	RAD52	0.514	Yes
row_5	CUGBP2	0.545	Yes

row_6	AXL	0.567	Yes
row_7	CREBBP	0.589	Yes
row_8	NMT1	0.606	Yes
row_9	GAL	0.606	Yes
row_10	POLD2	0.612	Yes

HSA04742_TASTE_TRANSDUCTION

row_0	TAS1R2	0.322	Yes
row_1	GNB1	0.410	Yes
row_2	PRKX	0.461	Yes
row_3	TAS1R3	0.452	Yes
row_4	PRKACA	0.485	Yes

ET743PT650_COLONCA_DN

row_0	ALCAM	0.180	Yes
row_1	TIAM1	0.255	Yes
row_2	ID1	0.339	Yes
row_3	COMMD1	0.394	Yes
row_4	ATBF1	0.438	Yes

HSA00590_ARACHIDONIC_ACID_METABOLISM

row_0	PTGIS	0.192	Yes
row_1	CBR3	0.345	Yes
row_2	PTGS1	0.434	Yes

STAEGE_EFTS_UP

row_0	CYP26B1	0.191	Yes
row_1	CCK	0.337	Yes
row_2	KCNAB3	0.410	Yes
row_3	EGR2	0.436	Yes
row_4	TMEM29	0.462	Yes
row_5	CCND1	0.484	Yes
row_6	ZDHHC21	0.492	Yes
row_7	CLEC11A	0.499	Yes

The criteria for the GSEA analysis was $P < 0.05$ and false discovery rate (FDR) <25%.