

Table S1 Main clusters of 58 kinase candidates

Cluster	count	Cluster	count
Adenyl ribonucleotide binding	44	Cell cycle	16
Nucleotide binding	44	Regulation of phosphorylation	13
Transferase	42	Enzyme binding	8
Atp-binding	41	MAPKinase signaling pathway	7
Phosphorylation	36	Regulation of MAPKKK cascade	6
Phosphorus metabolic process	36	Interphase	5

plate 1

position	symbol	gene description
A2	Pick1	protein interacting with PRKCA 1
A3	Ror2	receptor tyrosine kinase-like orphan receptor 2
A4	Prkab1	protein kinase, AMP-activated, beta 1 non-catalytic subunit
A5	Khk	ketoheokinase
A6	Hk2	hexokinase 2
A7	Pfkfb1	phosphofructokinase, platelet
A8	Mapk13	mitogen activated protein kinase 13
A9	Map2k3	mitogen activated protein kinase kinase 3
A10	Sephs1	selenophosphate synthetase 1
A11	Camk4	calcium/calmodulin-dependent protein kinase IV
B2	Tesk1	testis-specific kinase 1
B3	Ntrk2	neurotrophic tyrosine kinase, receptor, type 2
B4	Prkag2	protein kinase, AMP-activated, gamma 2 non-catalytic subunit
B5	Pfk1	phosphofructokinase, liver
B6	Gal1	galactokinase 1
B7	Gne	glucosamine (UDP-N-acetyl)-2-epimerase/N-acetylmannosamine kinase
B8	Eif2ak3	eukaryotic translation initiation factor 2 alpha kinase 3
B9	Prkcq	protein kinase C, theta
B10	Mos	Moloney sarcoma oncogene
B11	Ccnb1	cyclin B1
C2	Spa17	sperm autoantigenic protein 17
C3	Prg-3	plasticity-related gene 3
C4	Prkaa1	protein kinase, AMP-activated, alpha 1 catalytic subunit
C5	Pfkfb1	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 1
C6	Itpka	inositol 1,4,5-trisphosphate 3-kinase A
C7	Pgk2	phosphoglycerate kinase 2
C8	Frap1	FK506 binding protein 12-rapamycin associated protein 1
C9	Syk	spleen tyrosine kinase
C10	Prkar2b	protein kinase, cAMP dependent regulatory, type II beta
C11	Akt2	v-akt murine thymoma viral oncogene homolog 2
D2	RGD13104	similar to Protein Njmu-R1
D3	Uck2	uridine-cytidine kinase 2
D4	Map3k1	mitogen activated protein kinase kinase kinase 1
D5	Pfkfb2	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 2
D6	Rbks	ribokinase
D7	Pfkm	phosphofructokinase, muscle
D8	Mknk2	MAP kinase-interacting serine/threonine kinase 2
D9	Gadd45g	growth arrest and DNA-damage-inducible, gamma
D10	Prkcq	protein kinase C, gamma
D11	Acvr11	activin A receptor type II-like 1
E2	Pdgfra	platelet derived growth factor receptor, alpha polypeptide
E3	Uck1	uridine-cytidine kinase 1
E4	Fgfr3	fibroblast growth factor receptor 3
E5	Pfkfb4	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 4
E6	Pgk1	phosphoglycerate kinase 1
E7	Pfkfb3	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3
E8	Prkir	protein-kinase, interferon-inducible double stranded RNA dependent inhibitor, repressor of (P58 repressor)
E9	Eef2k	eukaryotic elongation factor-2 kinase
E10	Raf1	v-raf-leukemia viral oncogene 1
E11	Adrbk1	adrenergic, beta, receptor kinase 1
F2	Pdlim5	PDZ and LIM domain 5
F3	Uck1l	uridine-cytidine kinase 1-like 1
F4	Tnk2	tyrosine kinase, non-receptor, 2
F5	Pdk2	pyruvate dehydrogenase kinase, isozyme 2
F6	Hk1	hexokinase 1
F7	Mpp6	membrane protein, palmitoylated 6 (MAGUK p55 subfamily member 6)
F8		
F9	RGD15618	similar to Traf2 and NCK interacting kinase, splice variant 4
F10	Ret	ret proto-oncogene
F11	Rosl	c-ros oncogene 1, receptor tyrosine kinase
G2	Bmpr1b	bone morphogenetic protein receptor, type IB
G3	Prkag1	protein kinase, AMP-activated, gamma 1 non-catalytic subunit
G4	Aurkb	aurora kinase B
G5	Pdk4	pyruvate dehydrogenase kinase, isozyme 4
G6	Hk3	hexokinase 3 (white cell)
G7	Pip5k3	phosphatidylinositol-3-phosphate/phosphatidylinositol 5-kinase, type III
G8	Eif2ak1	eukaryotic translation initiation factor 2 alpha kinase 1
G9	Mknk1	MAP kinase-interacting serine/threonine kinase 1
G10	Fgfr2	fibroblast growth factor receptor 2
G11	Acvr2b	activin A receptor, type IIB
H2	Flt1	fms-related tyrosine kinase 1
H3	Prkab2	protein kinase, AMP-activated, beta 2 non-catalytic subunit
H4	Shpk	sedoheptulokinase
H5	Pdk1	pyruvate dehydrogenase kinase, isozyme 1
H6	Pkm2	pyruvate kinase, muscle
H7	Rps6kb2	ribosomal protein S6 kinase, polypeptide 2
H8	S100b	S100 calcium binding protein B
H9	Hspb8	heat shock protein 8
H10	Prkcb	protein kinase C, beta
H11	Adrbk2	adrenergic, beta, receptor kinase 2

plate 2

position	symbol	gene description
A2	Prkar1b	protein kinase, cAMP dependent regulatory, type I, beta
A3	Hck	hemopoietic cell kinase

A4	Pak3	p21 protein (Cdc42/Rac)-activated kinase 3
A5	Slk	STE20-like kinase (yeast)
A6	Grk4	G protein-coupled receptor kinase 4
A7	Csnk1g3	casein kinase 1, gamma 3
A8	Frk	fyn-related kinase
A9	Src	v-src sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog (avian)
A10	Cdc42bpb	CDC42 binding protein kinase beta (DMPK-like)
A11	Flt3	fms-related tyrosine kinase 3
B2	Prkg2	protein kinase, cGMP-dependent, type II
B3	Epha3	Eph receptor A3
B4	Sgk1	serum/glucocorticoid regulated kinase 1
B5	Stk39	serine/threonine kinase 39, STE20/SPS1 homolog (yeast)
B6	Mark2	MAP/microtubule affinity-regulating kinase 2
B7	Mertk	c-mer proto-oncogene tyrosine kinase
B8	Gak	cyclin G associated kinase
B9	Dcl1	doublecortin-like kinase 1
B10	Cdc42bpa	CDC42 binding protein kinase alpha
B11	Ikbkap	inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase complex-associated protein
C2	Rock2	Rho-associated coiled-coil containing protein kinase 2
C3	Acvr2a	activin A receptor, type IIA
C 4	Limk2	LIM domain kinase 2
C5	Csnk1e	casein kinase 1, epsilon
C6	Camkk1	calcium/calmodulin-dependent protein kinase kinase 1, alpha
C7	Pik3c3	phosphoinositide-3-kinase, class 3
C8	Pctk1	PCTAIRE protein kinase 1
C9	Prkci	protein kinase C, iota
C10	Wnk1	WNK lysine deficient protein kinase 1
C11	Mark3	MAP/microtubule affinity-regulating kinase 3
D2	Ptk2	PTK2 protein tyrosine kinase 2
D3	Acvr1b	activin A receptor, type IB
D4	Amhr2	anti-Mullerian hormone receptor, type II
D5	Mapk6	mitogen-activated protein kinase 6
D6	Matk	megakaryocyte-associated tyrosine kinase
D 7	Csnk1g2	casein kinase 1, gamma 2
D8	Pdpk1	3-phosphoinositide dependent protein kinase-1
D9	Ick	intestinal cell kinase
D10	Csnk2a1	casein kinase 2, alpha 1 polypeptide
D11	Snrk	SNF related kinase
E2	Krt8	keratin 8
E3	Stk10	serine/threonine kinase 10
E4	Map2k5	mitogen activated protein kinase kinase 5
E5	Ccnd1	cyclin D1
E6	Epha8	Eph receptor A8
E7	Prkaa2	protein kinase, AMP-activated, alpha 2 catalytic subunit
E8	Prkch	protein kinase C, eta
E9	Tec	tec protein tyrosine kinase
E10	Map3k8	mitogen-activated protein kinase kinase kinase 8
E11	Map2k1	mitogen activated protein kinase kinase 1
F2	Prkaca	protein kinase, cAMP-dependent, catalytic, alpha
F3	Akt3	v-akt murine thymoma viral oncogene homolog 3 (protein kinase B, gamma)
F4	Pnck	pregnancy upregulated non-ubiquitously expressed CaM kinase
F5	Map2k2	mitogen activated protein kinase kinase 2
F6	Araf	v-raf murine sarcoma 3611 viral oncogene homolog
F7	Camkv	CaM kinase-like vesicle-associated
F8	Stc1	stanniocalcin 1
F9	Cdk4	cyclin-dependent kinase 4
F10	Mark1	MAP/microtubule affinity-regulating kinase 1
F11	Tesk2	testis-specific kinase 2
G2	Mak	male germ cell-associated kinase
G3	Pak1	p21 protein (Cdc42/Rac)-activated kinase 1
G4	Ptk2b	PTK2B protein tyrosine kinase 2 beta
G5	Grk5	G protein-coupled receptor kinase 5
G6	Csnk1d	casein kinase 1, delta
G7	Fgr	Gardner-Rasheed feline sarcoma viral (v-fgr) oncogene homolog
G8	Tgfbr2	transforming growth factor, beta receptor II
G9	Csnk1a1	casein kinase 1, alpha 1
G10	Rps6ka2	ribosomal protein S6 kinase polypeptide 2
G11	Map4k3	mitogen-activated protein kinase kinase kinase kinase 3
H2	Ddr1	discoidin domain receptor tyrosine kinase 1
H3	Pak2	p21 protein (Cdc42/Rac)-activated kinase 2
H4	Mapk4	mitogen-activated protein kinase 4
H5	Grk6	G protein-coupled receptor kinase 6
H6	Taok2	TAO kinase 2
H7	Epha5	EphA5
H8	Hipk3	homeodomain interacting protein kinase 3
H9	Gmfg	glia maturation factor, gamma
H10	Mylk2	myosin light chain kinase 2
H11	Camk1g	calcium/calmodulin-dependent protein kinase 1G

plate 3

position	symbol	gene description
A2	Sgk2	serum/glucocorticoid regulated kinase 2
A3	Pkmyt1	protein kinase, membrane associated tyrosine/threonine 1
A4	Pctk3	PCTAIRE protein kinase 3
A5	Brsk2	brain serine/threonine kinase 2
A6	Pdk3	pyruvate dehydrogenase kinase, isozyme 3
A7	Lrrk2	leucine-rich repeat kinase 2
A8	Tlk2	tousled-like kinase 2
A9	Nek3	NIMA (never in mitosis gene a)-related kinase 3
A10	Lrrk1	leucine-rich repeat kinase 1
A11	Stk35	serine/threonine kinase 35

B2	Camk1	calcium/calmodulin-dependent protein kinase I
B3	Nek8	NIMA (never in mitosis gene a)- related kinase 8
B4	Tssk4	testis-specific serine kinase 4
B5	Cdc42bpg	CDC42 binding protein kinase gamma (DMPK-like)
B6	Dguk	deoxyguanosine kinase
B7	Dapk2	death-associated kinase 2
B8	Lyk5	protein kinase LYK5
B9	RGD130721	similar to protein kinase, lysine deficient 1; kinase deficient protein
B10	Bcr	breakpoint cluster region
B11	Ephb6	Eph receptor B6
C2	Bub1b	budding uninhibited by benzimidazoles 1 homolog, beta (S. cerevisiae)
C3	Tex14	testis expressed 14
C4	Prpf4b	PRP4 pre-mRNA processing factor 4 homolog B (yeast)
C5	Map4k2	mitogen activated protein kinase kinase kinase kinase 2
C6	Tssk3	testis-specific serine kinase 3
C7	Map4k4	mitogen-activated protein kinase kinase kinase kinase 4
C8	Tssk2	testis-specific serine kinase 2
C9	Cdc215	cell division cycle 2-like 5 (cholinesterase-related cell division controller)
C10	Cdc216	cell division cycle 2-like 6 (CDK8-like)
C11	Pdik11	PDLIM1 interacting kinase 1 like
D2	Crkrs	Cdc2-related kinase, arginine/serine-rich
D3	Mylk	myosin light chain kinase
D4	Mylk3	myosin light chain kinase 3
D5	Tnni3k	TNNI3 interacting kinase
D6	Pink1	PTEN induced putative kinase 1
D7	Als2cr7	amyotrophic lateral sclerosis 2 (juvenile) chromosome region, candidate 7
D8	Ab12	v-abl Abelson murine leukemia viral oncogene homolog 2 (arg, Abelson-related gene)
D9	RGD15606	similar to calcium/calmodulin-dependent protein kinase 1D
D10	Plk4	polo-like kinase 4 (Drosophila)
D11	Ephb2	Eph receptor B2
E2	Pkn2	protein kinase N2
E3	Hunk	hormonally upregulated Neu-associated kinase
E4	Aurkc	aurora kinase C
E5	Pak6	p21 protein (Cdc42/Rac)-activated kinase 6
E6		
E7	Stk36	serine/threonine kinase 36 (fused homolog, Drosophila)
E8	Txk	TXK tyrosine kinase
E9	Mast1	microtubule associated serine/threonine kinase-like
E10	Pmk	phosphomevalonate kinase
E11	Mast2	microtubule associated serine/threonine kinase 2
F2	Rapgef4	Rap guanine nucleotide exchange factor (GEF) 4
F3	Tssk1	testis-specific serine kinase 1
F4	Prkd2	protein kinase D2
F5	Srms	src-related kinase lacking C-terminal regulatory tyrosine and N-terminal myristylation sites
F6	Tle2	transducin-like enhancer of split 2 (E(spl) homolog, Drosophila)
F7	Pask	PAS domain containing serine/threonine kinase
F8	Stk32b	serine/threonine kinase 32B
F9	Csnk2a2	casein kinase 2, alpha prime polypeptide
F10	Dclk2	doublecortin-like kinase 2
F11	Prkd3	protein kinase D3
G2	Aurka	aurora kinase A
G3	RGD15626	similar to kinase suppressor of ras 2
G4	Pak4	p21 protein (Cdc42/Rac)-activated kinase 4
G5	Pkn3	protein kinase N3
G6	Nuak1	NUAK family, SNF1-like kinase, 1
G7	Fert2	fer (fms/fps related) protein kinase, testis specific 2
G8	Pxk	PX domain containing serine/threonine kinase
G9	Dmpk	dystrophia myotonica-protein kinase
G10	Prkra	protein kinase, interferon inducible double stranded RNA dependent activator
G11	Cdk11	cyclin-dependent kinase-like 1 (CDC2-related kinase)
H2	Taok1	TAO kinase 1
H3	Mapkapk2	mitogen-activated protein kinase-activated protein kinase 2
H4	Prkacb	protein kinase, cAMP dependent, catalytic, beta
H5	Srpk2	SFRS protein kinase 2
H6	Tbk1	TANK-binding kinase 1
H7	Ulk2	Unc-51 like kinase 2 (C. elegans)
H8	Nek4	NIMA (never in mitosis gene a)-related kinase 4
H9	Hipk4	homeodomain interacting protein kinase 4
H10	Ltk	leukocyte receptor tyrosine kinase
H11	Rps6ka5	ribosomal protein S6 kinase, polypeptide 5

plate 4

position	symbol	gene description
A2	Stk11	serine/threonine kinase 11
A3	RGD15595	similar to RP3-330M21.4
A4	Ulk1	Unc-51 like kinase 1 (C. elegans)
A5	Pftk1	PFTAIRE protein kinase 1
A6	Ikbke	inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase epsilon
A7	Ankk1	ankyrin repeat and kinase domain containing 1
A8	Rps6ka3	ribosomal protein S6 kinase polypeptide 3
A9	Chuk	conserved helix-loop-helix ubiquitous kinase
A10	Stk19	serine/threonine kinase 19
A11	Ab11	c-abl oncogene 1, receptor tyrosine kinase
B2	Pctk2	PCTAIRE protein kinase 2
B3	Epha4	Eph receptor A4
B4	Nek7	NIMA (never in mitosis gene a)-related kinase 7
B5	Irak2	interleukin-1 receptor-associated kinase 2
B6	Cork	cell cycle related kinase
B7	Bmx	BMX non-receptor tyrosine kinase
B8	Prkx	protein kinase, X-linked

B9	Map3k7	mitogen activated protein kinase kinase 7
B10	Dyrk1a	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 1A
B11	Clk2	CDC-like kinase 2
C2	Dyrk2	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 2
C3	Rps6ka6	ribosomal protein S6 kinase polypeptide 6
C4		
C5	Melk	maternal embryonic leucine zipper kinase
C6		
C7	Mapkapk5	mitogen-activated protein kinase-activated protein kinase 5
C8	Cdk14	cyclin-dependent kinase-like 4
C9	Mapk8ip1	mitogen-activated protein kinase 8 interacting protein 1
C10	Kit	v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog
C11	Btk	Bruton agammaglobulinemia tyrosine kinase
D2	Irak3	interleukin-1 receptor-associated kinase 3
D3	Mst4	serine/threonine protein kinase MST4
D4	Rio3	RIO kinase 3 (yeast)
D5	Ror1	receptor tyrosine kinase-like orphan receptor 1
D6	Ern2	endoplasmic reticulum to nucleus signaling 2
D7	Bmp2k	BMP-2 inducible kinase
D8	Prkca	protein kinase C, alpha
D9	Map3k12	mitogen activated protein kinase kinase kinase 12
D10	Lyn	v-yes-1 Yamaguchi sarcoma viral related oncogene homolog
D11	Camk2b	calcium/calmodulin-dependent protein kinase II beta
E2	Snf1lk2	SNF1-like kinase 2
E3	MAST1	microtubule associated serine/threonine kinase 1
E4	Vrk3	vaccinia related kinase 3
E5	Rage	renal tumor antigen
E6	Stk32c	serine/threonine kinase 32C
E7	Stk31	serine threonine kinase 31
E8	Ibtk	inhibitor of Bruton agammaglobulinemia tyrosine kinase
E9	Pim3	pim-3 oncogene
E10	Jak1	Janus kinase 1
E11	Camk2d	calcium/calmodulin-dependent protein kinase II delta
F2	Csk	c-src tyrosine kinase
F3	Nek6	NIMA (never in mitosis gene a)-related kinase 6
F4	Fes	feline sarcoma oncogene
F5	Cdk2	cyclin dependent kinase 2
F6	Ptk6	PTK6 protein tyrosine kinase 6
F7	Aak1	AP2 associated kinase 1
F8	Mapk12	mitogen-activated protein kinase 12
F9	Sbk1	SH3-binding domain kinase 1
F10	Clk3	CDC-like kinase 3
F11	Met	met proto-oncogene
G2	Nek11	NIMA (never in mitosis gene a)- related kinase 11
G3	Map3k14	mitogen-activated protein kinase kinase kinase 14
G4	Stk38	serine/threonine kinase 38
G5	Pik3r4	phosphoinositide-3-kinase, regulatory subunit 4, p150
G6	Pik3cd	phosphatidylinositol 3-kinase catalytic delta polypeptide
G7	Styk1	serine/threonine/tyrosine kinase 1
G8	Map2k6	mitogen-activated protein kinase kinase 6
G9	Pbk	PDZ binding kinase
G10	Clk4	CDC like kinase 4
G11	Yes1	Yamaguchi sarcoma viral (v-yes) oncogene homolog 1
H2	Oxsr1	oxidative-stress responsive 1
H3	Cdk2ap1	cyclin-dependent kinase 2-associated protein 1
H4	Trp53rk	TP53 regulating kinase
H5	Map2k7	mitogen activated protein kinase kinase 7
H6	Adek1	aarF domain containing kinase 1
H7	Ais2cr2	amyotrophic lateral sclerosis 2 (juvenile) chromosome region, candidate 2 (human)
H8	Ikbkb	inhibitor of kappa light polypeptide gene enhancer in B-cells, kinase beta
H9	Ttbk2	tau tubulin kinase 2
H10	Dyrk3	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 3
H11	Camk2g	calcium/calmodulin-dependent protein kinase II gamma

plate 5

position	symbol	gene description
A2	Mapk15	mitogen-activated protein kinase 15
A3	Ptprt	protein tyrosine phosphatase, receptor type, T
A4	Prss7	protease, serine, 7 (enterokinase)
A5	Lcp2	lymphocyte cytosolic protein 2
A6	Fyn	FYN oncogene related to SRC, FGR, YES
A7	Gsk3a	glycogen synthase kinase 3 alpha
A8	Ntrk1	neurotrophic tyrosine kinase, receptor, type 1
A9	Calml	calmodulin 1
A10	Dgki	diacylglycerol kinase, iota
A11	Dgka	diacylglycerol kinase, alpha
B2	Tnk1	tyrosine kinase, non-receptor, 1
B3	Ptpn3	protein tyrosine phosphatase, non-receptor type 3
B4	Cit	citron (rho-interacting, serine/threonine kinase 21)
B5	Itk	IL2-inducible T-cell kinase
B6	Akap9	A kinase (PRKA) anchor protein (yotiao) 9
B7	Itpkb	inositol 1,4,5-trisphosphate 3-kinase B
B8	Cnksr1	connector enhancer of kinase suppressor of Ras 1
B9	Calm3	calmodulin 3
B10	Sorcs3	sortilin-related VPS10 domain containing receptor 3
B11	Pebp2	phosphatidylethanolamine binding protein 2
C2	Map3k3	mitogen activated protein kinase kinase kinase 3
C3	Alk	anaplastic lymphoma kinase
C4	ROD15640	similar to LATS homolog 1
C5	Lck	lymphocyte-specific protein tyrosine kinase

C6	Camk2n2	calcium/calmodulin-dependent protein kinase II inhibitor 2
C7	Pi4kb	phosphatidylinositol 4-kinase, catalytic, beta
C8	Pik3r3	phosphoinositide-3-kinase, regulatory subunit 3 (gamma)
C9	Calm2	calmodulin 2
C10	Git1	G protein-coupled receptor kinase interacting ArfGAP 1
C11	Pik3c2b	phosphoinositide-3-kinase, class 2, beta polypeptide
D2	LOC30382	similar to mitogen-activated protein kinase kinase kinase 13; leucine zipper-bearing kinase
D3	Vcpi1	valosin containing protein (p97)/p47 complex interacting protein 1
D4	Egfr	epidermal growth factor receptor
D5	Rhoh	ras homolog gene family, member H
D6	Plk3	polo-like kinase 3 (Drosophila)
D7	Pkig	protein kinase inhibitor, gamma
D8	Epha7	Eph receptor A7
D9	Ednra	endothelin receptor type A
D10	Git2	G protein-coupled receptor kinase interacting ArfGAP 2
D11	Rps6kc1	ribosomal protein S6 kinase, polypeptide 1
E2	Taok3	TAO kinase 3
E3	Skp2	S-phase kinase-associated protein 2 (p45)
E4	Pdgfrb	platelet derived growth factor receptor, beta polypeptide
E5	Cd2	Cd2 molecule
E6	Akap13	A kinase (PRKA) anchor protein 13
E7	Cdk12	cyclin-dependent kinase-like 2 (CDC2-related kinase)
E8	Bmpr2	bone morphogenetic protein receptor, type II (serine/threonine kinase)
E9	Ednrb	endothelin receptor type B
E10	Csnk1g1	casein kinase 1, gamma 1
E11		
F2	Vrk2	vaccinia related kinase 2
F3	Zc3hc1	zinc finger, C3HC-type containing 1
F4	Prkce	protein kinase C, epsilon
F5	Zap70	zeta-chain (TCR) associated protein kinase
F6	Akap7	A kinase (PRKA) anchor protein 7
F7	Mapkapk3	mitogen-activated protein kinase-activated protein kinase 3
F8	Bmpr1a	bone morphogenetic protein receptor, type IA
F9	Gkap1	G kinase anchoring protein 1
F10	Prkd1	protein kinase D1
F11	Ksr1	kinase suppressor of ras 1
G2	Vrk1	vaccinia related kinase 1
G3	Skp1	S-phase kinase-associated protein 1
G4	Cbp	Csk binding protein
G5	Tek	TEK tyrosine kinase, endothelial
G6	Camk2a	calcium/calmodulin-dependent protein kinase II alpha
G7	Akap10	A kinase (PRKA) anchor protein 10
G8	Tgfbri	transforming growth factor, beta receptor 1
G9	Dgkg	diacylglycerol kinase, gamma
G10	Magi2	membrane associated guanylate kinase, WW and PDZ domain containing 2
G11	Tyrobp	Tyro protein tyrosine kinase binding protein
H2	Ptprj	protein tyrosine phosphatase, receptor type, J
H3	Plau	plasminogen activator, urokinase
H4	Irak4	interleukin-1 receptor-associated kinase 4
H5	ErbB2	v-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)
H6	Tyro3	TYRO3 protein tyrosine kinase
H7	Itpk1	inositol 1,3,4-triphosphate 5/6 kinase
H8	Trio	triple functional domain (PTPRF interacting)
H9	Dgkz	diacylglycerol kinase zeta
H10	Pik3c2g	phosphoinositide-3-kinase, class 2, gamma polypeptide
H11	Nrgn	neurogranin

plate 6

position	symbol	gene description
A2	Wipf3	WAS/WASL interacting protein family, member 3
A3	Map4k1	mitogen activated protein kinase kinase kinase kinase 1
A4	Mapk1	mitogen activated protein kinase 1
A5	Tnip2	TNFAIP3 interacting protein 2
A6	Epha2	Eph receptor A2
A7	Kalrn	kalirin, RhoGEF kinase
A8	Plk2	polo-like kinase 2 (Drosophila)
A9	Trim13	tripartite motif-containing 13
A10	Etnk2	ethanolamine kinase 2
A11	Paccin3	protein kinase C and casein kinase substrate in neurons 3
B2	Itgblbp1	integrin beta 1 binding protein 1
B3	RGD13060	similar to Mixed lineage kinase 4
B4	Mapk10	mitogen activated protein kinase 10
B5	Azi2	5-azacytidine induced 2
B6	Cdk5rap2	CDK5 regulatory subunit associated protein 2
B7	Ryk	receptor-like tyrosine kinase
B8	Sectmb	secreted and transmembrane 1B
B9	Ticam2	toll-like receptor adaptor molecule 2
B10	Chka	choline kinase alpha
B11	Ssr4	signal sequence receptor, delta
C2	Blk	B lymphoid tyrosine kinase
C3	Map3k11	mitogen-activated protein kinase kinase kinase 11
C4	Mapk9	mitogen-activated protein kinase 9
C5	Card10	caspase recruitment domain family, member 10
C6	Kdr	kinase insert domain protein receptor
C7	Ntrk3	neurotrophic tyrosine kinase, receptor, type 3
C8	Sectma	secreted and transmembrane 1A
C9	Zdhhc13	zinc finger, DHHC-type containing 13
C10	Rab38	RAB38, member RAS oncogene family
C11	Hgs	hepatocyte growth factor-regulated tyrosine kinase substrate
D2	Akap11	A kinase (PRKA) anchor protein 11

D3	Map3k6	mitogen-activated protein kinase kinase kinase 6
D4	Sh3bp5	SH3-domain binding protein 5 (BTK-associated)
D5	Jak2	Janus kinase 2
D6	ErbB4	v-erb-a erythroblastic leukemia viral oncogene homolog 4 (avian)
D7	Cnksr3	Cnksr family member 3
D8	Ndfip1	Nedd4 family interacting protein 1
D9	Prkar2a	protein kinase, cAMP dependent regulatory, type II alpha
D10	Nkiras1	NFKB inhibitor interacting Ras-like 1
D11	Akap6	A kinase (PRKA) anchor protein 6
E2	Dok1	docking protein 1
E3	RGD13065	similar to apoptosis signal-regulating kinase 1
E4	Map2k4	mitogen activated protein kinase kinase 4
E5	Rapgef3	Rap guanine nucleotide exchange factor (GEF) 3
E6	Rps6kb1	ribosomal protein S6 kinase, 70kDa, polypeptide 1
E7	Mapk8ip3	mitogen-activated protein kinase 8 interacting protein 3
E8	Ripk1	receptor (TNFRSF)-interacting serine-threonine kinase 1
E9	Insr	insulin receptor-related receptor
E10	Cpne3	copine III
E11	Akap12	A kinase (PRKA) anchor protein 12
F2	Map3k4	mitogen activated protein kinase kinase kinase 4
F3	Map3k9	mitogen-activated protein kinase kinase kinase 9
F4	Mapkbp1	mitogen activated protein kinase binding protein 1
F5	Baiap2	BAl1-associated protein 2
F6	Stk22s1	serine/threonine kinase 22 substrate 1
F7	Csnk2b	casein kinase 2, beta subunit
F8	Map3k7ip1	mitogen-activated protein kinase kinase kinase 7 interacting protein 2
F9	EphA1	Eph receptor A1
F10	P14k2b	phosphatidylinositol 4-kinase type 2 beta
F11	Mfap3l1	microfibrillar-associated protein 3-like
G2	Pik3cb	phosphoinositide-3-kinase, catalytic, beta polypeptide
G3	Map4k5	mitogen-activated protein kinase kinase kinase kinase 5
G4	Nkiras2	NFKB inhibitor interacting Ras-like 2
G5	Fgfr4	fibroblast growth factor receptor 4
G6	ErbB3	v-erb-b2 erythroblastic leukemia viral oncogene homolog 3 (avian)
G7	Lgals9	lectin, galactoside-binding, soluble, 9
G8	ApoL3	apolipoprotein L, 3
G9	Dgkb	diacylglycerol kinase, beta
G10	Pacsin1	protein kinase C and casein kinase substrate in neurons 1
G11	Ikkbg	inhibitor of kappaB kinase gamma
H2	Pkn1	protein kinase N1
H3	Mapk3	mitogen activated protein kinase 3
H4	Irak1bpl	interleukin-1 receptor-associated kinase 1 binding protein 1
H5	Fgfr1	Fibroblast growth factor receptor 1
H6	Pard3	par-3 (partitioning defective 3) homolog (C. elegans)
H7	Vapa	VAMP (vesicle-associated membrane protein)-associated protein A
H8	Trf	Trk-fused gene
H9	Ipk2	inositol hexakisphosphate kinase 2
H10	Pacsin2	protein kinase C and casein kinase substrate in neurons 2
H11	Srp72l	signal recognition particle 72-like

Plate 7

position	symbol	gene description
A2	Uhmk1	U2AF homology motif (UHM) kinase 1
A3	Limk1	LIM domain kinase 1
A4	Madd	MAP-kinase activating death domain
A5	Stk17b	serine/threonine kinase 17b
A6	Pim1	pim-1 oncogene
A7	Pak7	p21 protein (Cdc42/Rac)-activated kinase 7
A8	Mvd	mevalonate (diphospho) decarboxylase
A9	Xylb	xylulokinase homolog (H. influenzae)
A10	Dtymk	deoxythymidylate kinase (thymidylate kinase)
A11	Pax8	paired box 8
B2	Lrba	LPS-responsive vesicle trafficking, beach and anchor containing
B3	Tie1	tyrosine kinase with immunoglobulin-like and EGF-like domains 1
B4	Stk3	serine/threonine kinase 3 (STE20 homolog, yeast)
B5	Ripk3	receptor-interacting serine-threonine kinase 3
B6	Pik3cg	phosphoinositide-3-kinase, catalytic, gamma polypeptide
B7	Pik3r2	phosphoinositide-3-kinase, regulatory subunit 2 (beta)
B8	Mvk	mevalonate kinase
B9	Phkg1	phosphorylase kinase gamma 1
B10	Tk1	thymidine kinase 1, soluble
B11	Kidins220	kinase D-interacting substrate 220
C2	LOC29444	similar to Myristoylated alanine-rich C-kinase substrate (MARCKS) (ACAMP-81)
C3	Akap4	A kinase (PRKA) anchor protein 4
C4	Stk4	serine/threonine kinase 4
C5	Ripk5	receptor interacting protein kinase 5
C6	Prkcz	protein kinase C, zeta
C7	Mapk8ip2	mitogen-activated protein kinase 8 interacting protein 2
C8	Gk2	glycerol kinase 2
C9	Ppp3r2	protein phosphatase 3, regulatory subunit B, alpha isoform (calcineurin B, type II)
C10	Ogg1	8-oxoguanine DNA glycosylase
C11	Kcnh5	potassium voltage-gated channel, subfamily H (eag-related), member 5
D2	Axl	Axl receptor tyrosine kinase
D3	Akap3	A kinase (PRKA) anchor protein 3
D4	Ripk2	receptor-interacting serine-threonine kinase 2
D5	Ernl	endoplasmic reticulum to nucleus signaling 1
D6	Igflr	insulin-like growth factor 1 receptor
D7	Rock1	Rho-associated coiled-coil containing protein kinase 1
D8	Gk5	glycerol kinase 5 (putative)
D9	Phkg2	phosphorylase kinase, gamma 2 (testis)
D10	Cib1	calcium and integrin binding 1 (calmyrin)

D11	Trib3	tribbles homolog 3 (Drosophila)
E2	Acvr1	activin A receptor, type I
E3	Rgc32	response gene to complement 32
E4	Dapk3	death-associated protein kinase 3
E5	Fastk	Fas-activated serine/threonine kinase
E6	Braf	v-raf murine sarcoma viral oncogene homolog B1
E7	Arhgap26	Rho GTPase activating protein 26
E8	Pck1	phosphoenolpyruvate carboxykinase 1 (soluble)
E9	Akt1	v-akt murine thymoma viral oncogene homolog 1
E10	Prkdc	protein kinase, DNA activated, catalytic polypeptide
E11	Wnk4	WNK lysine deficient protein kinase 4
F2	Ephb1	Eph receptor B1
F3	Akap8	A kinase (PRKA) anchor protein 8
F4	Nell1	NEL-like 1 (chicken)
F5	Dapk1	death associated protein kinase 1
F6	Faim	Fas apoptotic inhibitory molecule
F7	Akap5	A kinase (PRKA) anchor protein 5
F8	Ak3	adenylate kinase 3
F9	Prkag3	protein kinase, AMP-activated, gamma 3 non-catalytic subunit
F10	Dyrk4	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 4
F11	Ugp2	UDP-glucose pyrophosphorylase 2
G2	Fez1	fasciculation and elongation protein zeta 1 (zygin I)
G3	Magi3	membrane associated guanylate kinase, WW and PDZ domain containing 3
G4	Nme3	non-metastatic cells 3, protein expressed in
G5	Atm	ataxia telangiectasia mutated homolog (human)
G6	Pik3ca	phosphatidylinositol 3-kinase, catalytic, alpha polypeptide
G7	Brdt	bromodomain, testis-specific
G8	Seps2	selenophosphate synthetase 2
G9	Phka1	phosphorylase kinase alpha 1
G10	Cdkn2b	cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)
G11	Prkcbp1	protein kinase C binding protein 1
H2	Ephb3	Eph receptor B3
H3	Sh3kbp1	SH3-domain kinase binding protein 1
H4	Prkcd	protein kinase C, delta
H5	Cdk5	cyclin-dependent kinase 5
H6	Nuak2	NUAK family, SNF1-like kinase, 2
H7	Tstk6	testis-specific serine kinase 6
H8	Bckdk	branched chain ketoacid dehydrogenase kinase
H9	Ak311	adenylate kinase 3-like 1
H10	Cdkn2c	cyclin-dependent kinase inhibitor 2C (p18, inhibits CDK4)
H11	Carf	calcium response factor

plate 8

position	Symbol	Gene description
A2	Ripk4	receptor-interacting serine-threonine kinase 4
A3	Cdkn1c	cyclin-dependent kinase inhibitor 1C (P57)
A4	Cdk7	cyclin-dependent kinase 7
A5	Ak2	adenylate kinase 2
A6	Srpk1	SFRS protein kinase 1
A7	Mapk8	mitogen-activated protein kinase 8
A8	Gucy2d	guanylate cyclase 2d
A9	Ckmt1	creatine kinase, mitochondrial 1, ubiquitous
A10	LOC49797	similar to diacylglycerol kinase epsilon
A11	Pank2	pantothenate kinase 2 (Hallervorden-Spatz syndrome)
B2	Ccdc88b	coiled-coil domain containing 88B
B3	Hipk2	homeodomain interacting protein kinase 2
B4	Dyrk1b	dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 1b
B5	Nme6	non-metastatic cells 6, protein expressed in (nucleoside-diphosphate kinase)
B6	Ckb	creatine kinase, brain
B7	Nagk	N-acetylglucosamine kinase
B8	Npr2	natriuretic peptide receptor B/guanylate cyclase B (atrionatriuretic peptide receptor B)
B9	Pip4k2a	phosphatidylinositol-5-phosphate 4-kinase, type II, alpha
B10	Etnk1	ethanolamine kinase 1
B11	Pank3	pantothenate kinase 3
C2	Hipk1	homeodomain interacting protein kinase 1
C3	Jak3	Janus kinase 3
C4	Aes	amino-terminal enhancer of split
C5	Nme2	non-metastatic cells 2, protein (NM23B) expressed in
C6	Dgkk	diacylglycerol kinase kappa
C7	Fn3k	fructosamine 3 kinase
C8	LOC36598	similar to adenylate kinase 5 isoform 1
C9	Pip4k2b	phosphatidylinositol-5-phosphate 4-kinase, type II, beta
C10	Sgms1	sphingomyelin synthase 1
C11	Gap43	growth associated protein 43
D2	Nlk	nemo like kinase
D3	Cask	calcium/calmodulin-dependent serine protein kinase (MAGUK family)
D4	Psmc5	proteasome (prosome, macropain) 26S subunit, ATPase, 5
D5	Nme7	non-metastatic cells 7, protein expressed in (nucleoside-diphosphate kinase)
D6	RGD15633	similar to diacylglycerol kinase, delta 130kDa isoform 1
D7	Srm	spermidine synthase
D8	Prps2	phosphoribosyl pyrophosphate synthetase 2
D9	Pip5k1b	phosphatidylinositol-4-phosphate 5-kinase, type I, beta
D10	Sphk2	sphingosine kinase 2
D11	Prkdbp	protein kinase C, delta binding protein
E2	Prkar1a	protein kinase, cAMP dependent regulatory, type I, alpha
E3	Mapk14	mitogen activated protein kinase 14
E4	Map3k10	mitogen activated protein kinase kinase kinase 10
E5	Dck	deoxycytidine kinase
E6	RGD15609	similar to RIKEN cDNA 0610038L10 gene
E7	Aurkaip1	aurora kinase A interacting protein 1

E8	Adk	adenosine kinase
E9	Pi4ka	phosphatidylinositol 4-kinase, catalytic, alpha
E10	Cerk	ceramide kinase
E11	Rasgrp2	RAS guanyl releasing protein 2 (calcium and DAG-regulated)
F2	Cdk9	cyclin-dependent kinase 9
F3	Stk16	serine/threonine kinase 16
F4	Rps6ka1	ribosomal protein S6 kinase polypeptide 1
F5	Paps1	3'-phosphoadenosine 5'-phosphosulfate synthase 1
F6	Pdxk	pyridoxal (pyridoxine, vitamin B6) kinase
F7	Prpsap1	phosphoribosyl pyrophosphate synthetase-associated protein 1
F8	Prps11	phosphoribosyl pyrophosphate synthetase 1-like 1
F9	Pip4k2c	phosphatidylinositol-5-phosphate 4-kinase, type II, gamma
F10	Ipk1	inositol hexakisphosphate kinase 1
F11	Musk	muscle, skeletal, receptor tyrosine kinase
G2	Tarbp2	TAR (HIV-1) RNA binding protein 2
G3	Ptk7	PTK7 protein tyrosine kinase 7
G4	Camkk2	calcium/calmodulin-dependent protein kinase kinase 2, beta
G5	Guk1	guanylate kinase 1
G6	Srpk3	SFRS protein kinase 3
G7	Cmpk2	cytidine monophosphate (UMP-CMP) kinase 2, mitochondrial
G8	Cmpk1	cytidine monophosphate (UMP-CMP) kinase 1, cytosolic
G9	Pik3c2a	phosphoinositide-3-kinase, class 2, alpha polypeptide
G10	Pank4	pantothenate kinase 4
G11	Tlk1	tousled-like kinase 1
H2	Snf1lk	SNF1-like kinase
H3	Gsk3b	glycogen synthase kinase 3 beta
H4	Irak1	interleukin-1 receptor-associated kinase 1
H5	Tk2	thymidine kinase 2, mitochondrial
H6	Fuk	fucokinase
H7	Gucy2e	guanylate cyclase 2E
H8	Ckm	creatine kinase, muscle
H9	Pik3r1	phosphoinositide-3-kinase, regulatory subunit 1 (alpha)
H10	Pank1	pantothenate kinase 1
H11	Cdkn1b	cyclin-dependent kinase inhibitor 1B

plate 9

position	symbol	gene description
A2	Ilk	integrin linked kinase
A3	Cdk13	cyclin-dependent kinase-like 3
A4	Cenj	cyclin J
A5	Bub1	budding uninhibited by benzimidazoles 1 homolog (S. cerevisiae)
A6	Nek1	NIMA (never in mitosis gene a)-related expressed kinase 1
A7	Plcb4	phospholipase C, beta 4
A8	Begain	brain-enriched guanylate kinase-associated
A9	Tpd52l3	tumor protein D52-like 3
A10	Fn3krp	fructosamine-3-kinase-related protein
A11	Alpk1	alpha-kinase 1
B2	Mst1r	macrophage stimulating 1 receptor (c-met-related tyrosine kinase)
B3	Akl1	adenylate kinase 1
B4	Clk1	CDC-like kinase 1
B5	Ttk	Ttk protein kinase
B6	Chek2	CHK2 checkpoint homolog (S. pombe)
B7	Stk25	serine/threonine kinase 25 (STE20 homolog, yeast)
B8	Sharpin	SHANK-associated RH domain interactor
B9	Pik3ap1	phosphoinositide-3-kinase adaptor protein 1
B10	Baiap2l1	BAL1-associated protein 2-like 1
B11	Znf512b	zinc finger protein 512B
C2	Cdkn1a	cyclin-dependent kinase inhibitor 1A (p21, Cip1)
C3	Cdkn2a	cyclin-dependent kinase inhibitor 2A
C4	Wee1	wee 1 homolog (S. pombe)
C5	Cdc2	cell division cycle 2, G1 to S and G2 to M
C6	Chek1	CHK1 checkpoint homolog (S. pombe)
C7	Gck	glucokinase
C8	Akap1	A kinase (PRKA) anchor protein 1
C9	Mapkap1	mitogen-activated protein kinase associated protein 1
C10	Lmtk2	lemur tyrosine kinase 2
C11	Adck2	aarF domain containing kinase 2
D2	Flt4	fms-related tyrosine kinase 4
D3	Lats2	large tumor suppressor 2
D4	Cdk5rap3	CDK5 regulatory subunit associated protein 3
D5	Dbf4	DBF4 homolog (S. cerevisiae)
D6	Brsk1	BR serine/threonine kinase 1
D7	Chkb	choline kinase beta
D8	Pi4k2a	phosphatidylinositol 4-kinase type 2 alpha
D9	Nek9	NIMA (never in mitosis gene a)-related kinase 9
D10	Jakmip1	Janus kinase and microtubule interacting protein 1
D11	Mobk12c	MOB1, Mps One Binder kinase activator-like 2C (yeast)
E2	Sphk1	sphingosine kinase 1
E3	Plk1	polo-like kinase 1 (Drosophila)
E4	Cdc37	cell division cycle 37 homolog (S. cerevisiae)
E5	Cdk10	cyclin-dependent kinase 10
E6	Dnajc3	DnaJ (Hsp40) homolog, subfamily C, member 3
E7	Eif2ak2	eukaryotic translation initiation factor 2-alpha kinase 2
E8	Tjp2	tight junction protein 2
E9	Cinp	cyclin-dependent kinase 2-interacting protein
E10	Riok2	RIO kinase 2 (yeast)
E11	Ak7	adenylate kinase 7
F2	Nme1	non-metastatic cells 1, protein (NM23A) expressed in
F3	Nucks1	nuclear casein kinase and cyclin-dependent kinase substrate 1
F4	Cdk5r2	cyclin-dependent kinase 5, regulatory subunit 2 (p39)

F5	Nell2	NEL-like 2 (chicken)
F6	Pklr	pyruvate kinase, liver and RBC
F7	Akap14	A kinase (PRKA) anchor protein 14
F8	Lrrc7	leucine rich repeat containing 7
F9	Akap81	A kinase (PRKA) anchor protein 8-like
F10	Itpkc	inositol 1,4,5-trisphosphate 3-kinase C
F11	Pip5k1c	phosphatidylinositol-4-phosphate 5-kinase, type I, gamma
G2	Npr1	natriuretic peptide receptor A/guanylate cyclase A (atrionatriuretic peptide receptor A)
G3	Cdk6	cyclin-dependent kinase 6
G4	Nek2	NIMA (never in mitosis gene a)-related expressed kinase 2
G5	Pk1b	protein kinase (cAMP-dependent, catalytic) inhibitor beta
G6	Myo9a	myosin IXA
G7	Rapgef1	Rap guanine nucleotide exchange factor (GEF) 1
G8	Camk2n1	calcium/calmodulin-dependent protein kinase II inhibitor 1
G9	Cib2	calcium and integrin binding family member 2
G10	Adek4	aarF domain containing kinase 4
G11	Twf1	twinfilin, actin-binding protein, homolog 1 (Drosophila)
H2	Btg1	B-cell translocation gene 1, anti-proliferative
H3	Ccni	cyclin I
H4	Cdc211	cell division cycle 2 homolog (S.pombe)-like 1
H5	Pkia	protein kinase (cAMP-dependent, catalytic) inhibitor alpha
H6	Grk1	G protein-coupled receptor kinase 1
H7	Agap2	ArFGAP with GTPase domain, ankyrin repeat and PH domain 2
H8	Rio1	RIO kinase 1 (yeast)
H9	Stk11ip	serine/threonine kinase 11 interacting protein
H10	Mypn	myopalladin
H11	Spryd3	SPRY domain containing 3

plate 10

position	symbol	gene description
A2	Nrk	Nik related kinase
A3	Ndfip2	Nedd4 family interacting protein 2
A4	RGD15635	similar to PI-3-kinase-related kinase SMG-1 isoform 2
B2	Sphkap	SPHK1 interactor, AKAP domain containing
B3	Eps811	EPS8-like 1
B4	Cdc42se2	CDC42 small effector 2
C2	Cdc6	cell division cycle 6 homolog (S. cerevisiae)
C3	Map2k1ip	mitogen-activated protein kinase kinase 1 interacting protein 1
D2	Traf3ip3	TRAF3 interacting protein 3
D3	Wdsub1	WD repeat, sterile alpha motif and U-box domain containing 1
E2	Tbrg4	transforming growth factor beta regulator 4
E3	Adek5	aarF domain containing kinase 5
F2	Pck2	phosphoenolpyruvate carboxykinase 2 (mitochondrial)
F3	Stk32a	serine/threonine kinase 32A
G2	Cdadcl	cytidine and dCMP deaminase domain containing 1
G3	Pik3r5	phosphoinositide-3-kinase, regulatory subunit 5
H2	RGD15619	similar to diacylglycerol kinase eta
H3	Alpk2	alpha-kinase 2