

**Table S1** List of primers used for qPCR

Gene	Sense	Antisense	Product length
Rhoa	CTCATAGTCTTCAGCAAGGA	GCAGGCGGTCATAATCTT	145
Shc1	ATCATTGCCAACCATCACA	GCTCTTCTTCCTCCTCATC	280
Vcl	CCACCAGACCTTGAACAG	CTTACCAGCCGAGACATC	278
Cblc	CAGATTCAGGCGACAACCT	TACAGGTGAGGTCCAAGG	263
myh9	GCCAAGACGGTGAAGAAT	AGACAGCAGGTAGTAGAAGA	177
ppp1ca	TCACTGACTGCTTCAACTG	ACGCCTAATCTGCTCCAT	110
prkce	GATGAAGTCTACGCTGTGA	CCGCTGAATCTGGAACAT	210
CDC73	AAGAAGGAGATTGTGGTGAA	CTATACTTGCCGATGTTGAC	283

**Table S2** The enriched KEGG pathway

pathway	pathwayID	Gene In term(20322)	DEGs in term(291)	% of DEGS In Term	genes
Glycan biosynthesis	mmu00510	49	3	1	Ganab, Alg5, Stt3b
Calcium signaling pathway	mmu04020	183	6	2.1	Bdkrb2, Cacna1d, Calm1, Ppp3ca, Ppp3r1, Atp2b4
PKG signaling pathway	mmu04022	168	9	3.1	Rhoa, Bdkrb2, Cacna1d, Calm1, Prkce, Ppp1ca, Ppp3ca, Ppp3r1, Atp2b4
AMP signaling pathway	mmu04024	197	8	2.7	Rhoa, Cacna1d, Calm1, Pik3ca, Ppp1ca, Tnni3, Ffar2, Atp2b4
Oocyte meiosis	mmu04114	116	6	2.1	Btrc, Calm1, Ppp1ca, Ppp3ca, Ppp3r1, Fbxw11
Ubiquitin mediated proteolysis	mmu04120	140	9	3.1	Btrc, Ube2m, Ube3a, Huwe1, Cul7, Ube2r2, Uba7, Cblc, Fbxw11
Protein processing in endoplasmic reticulum	mmu04141	167	9	3.1	Ganab, Hspa5, Ssr4, Xbp1, Rnf5, Ubqln1, Stt3b, Txndc5, Sec63
Endocytosis	mmu04144	286	11	3.8	Arf5, Rhoa, Capza2, Ccr5, Epn1, Ldlr, Arpc1a, Vps35, Arpc4, Cblc, Ap2s1
Cardiac muscle contraction	mmu04260	78	4	1.4	Cacna1d, Tnni3, Uqcrq, Cacng4
Adrenergic signaling in cardiomyocytes	mmu04261	147	6	2.1	Cacna1d, Calm1, Ppp1ca, Tnni3, Cacng4, Atp2b4
Vascular smooth muscle contraction	mmu04270	129	5	1.7	Rhoa, Cacna1d, Calm1, Prkce, Ppp1ca
Wnt signaling pathway	mmu04310	146	6	2.1	Rhoa, Btrc, Ppp3ca, Ppp3r1, Csnk1a1, Fbxw11
Hedgehog signaling pathway	mmu04340	44	3	1	Btrc, Csnk1a1, Fbxw11
T cell receptor signaling pathway	mmu04660	103	5	1.7	Rhoa, Pik3ca, Ppp3ca, Ppp3r1, Cblc
R-mediated phagocytosis	mmu04666	87	4	1.4	Pik3ca, Prkce, Arpc1a, Arpc4
Long-term potentiation	mmu04720	67	4	1.4	Calm1, Ppp1ca, Ppp3ca, Ppp3r1
Glutamatergic synapse	mmu04724	114	6	2.1	Cacna1d, Gnb2, Grik5, Ppp3ca, Ppp3r1, Homer1
Dopaminergic synapse	mmu04728	134	5	1.7	Cacna1d, Calm1, Gnb2, Ppp1ca, Ppp3ca
TRP channels	mmu04750	125	5	1.7	Bdkrb2, Calm1, Pik3ca, Prkce, Ppp1ca
Regulation of actin cytoskeleton	mmu04810	214	9	3.1	Rhoa, Bdkrb2, Myh9, Pik3ca, Ppp1ca, Vcl, Arpc1a, Arpc4, Ssh2
Insulin signaling pathway	mmu04910	141	8	2.7	Calm1, Pik3ca, Pklr, Ppp1ca, Shc1, Exoc7, Tsc1, Cblc
Oxytocin signaling pathway	mmu04921	153	7	2.4	Rhoa, Cacna1d, Calm1, Ppp1ca, Ppp3ca, Ppp3r1, Cacng4
Renin secretion	mmu04924	72	4	1.4	Cacna1d, Calm1, Ppp3ca, Ppp3r1
Aldosterone synthesis and secretion	mmu04925	86	4	1.4	Cacna1d, Calm1, Ldlr, Prkce
Type II diabetes mellitus	mmu04930	48	4	1.4	Cacna1d, Pik3ca, Prkce, Pklr
Alzheimer's disease	mmu05010	175	6	2.1	Apaf1, Cacna1d, Calm1, Ppp3ca, Ppp3r1, Uqcrq
ALS	mmu05014	52	3	1	Apaf1, Ppp3ca, Ppp3r1
Amphetamine addiction	mmu05031	68	5	1.7	Cacna1d, Calm1, Ppp1ca, Ppp3ca, Ppp3r1
Bacterial invasion of epithelial cells	mmu05100	76	7	2.4	Rhoa, Pik3ca, Shc1, Vcl, Arpc1a, Arpc4, Cblc