Table S3

GENE ONTOLOGY ANALYSIS OF DOWN-REGULATED GENES IN THE PFC OF DA-D2RKO MICE

Items	Items_Details	Support	pvalue	corrected pval	Genes
GO:0006355	regulation of transcription, DNA-dependent (BP)	240	5,50E-51	1,82E-47	Glis2,Cbfa2t3,Ube2l3,Klf3,Rreb1,Myst4,Pias3,Kdm4a,Zfp746,Cnot1,Zfp536,Ercc3,Nkrf,Fubp1,Efemp1,Alx4,Notch2,Ikzf4,Pknox2,Csdc2,Hdac4,Bbx,Tceb3,Zxdc,Phf17,Zfp668,Ncoa2,Dnmt1,Srebf2,Sp4,Tada3,Ell,Zeb2,Hipk2,Mmp14,Insr,Hnrnpul1,Gli3,Zhx1,Crebbp,Foxo3,Tead1,Pou6f2,Lef1,Atf6b,Eif2c2,Taf1d,Purb,Patz1,Notch3,Nr2f2,Trerf1,Pbx1,Cux1,Nfe2l2,Hivep3,Tcf7,Lass4,Hdac11,Rxra,Zfp628,Hey2,Tcfe3,Ncor2,Tet1,Nr2c2,Foxo1,Dpf1,Nr3c2,Pcgf2,Epc1,Lhx2,Med13l,Phf1,Cic,Zbtb20,Mycn,Ctbp2,Arnt,Phf2,Rnf10,Med1,Pou3f4,Prmt5,Lrp6,Csrnp2,Bcl9l,Smad3,Ash1l,Cbfa2t2,Zfp523,Sin3b,Rfxank,Npas2,Max,Sp2,Crtc3,Tcf4,Ino80d,Hip1,Tbx3,Per1,Arid1a,Nr2e1,Zfp618,Pml,Ebf1,Nfatc2,Gatad2a,Ppard,Rbm15b,Nfix,Sap130,Zfp652,Apbb2,Nacc1,Hdac6,Map3k7,Ddit3,Sf1,Zkscan1,Mll1,Mll5,Rere,Ncoa1,Pou2f1,Nfic,Tle1,Gatad2b,Prdm16,Nr1d1,Kdm4c,Pnrc2,Mecp2,Crtc2,Nlk,Rela,Arid5b,Crtc1,Ctbp1,Ern1,Jhdm1d,Med12l,Rxrb,Lbh,Rcor1,Stat3,Sox10,Kcnh3,Chd4,Stat5b,Kat2a,Zfp202,Nfatc3,Sox9,Hexim2,Suv39h1,Mcrs1,Tcf7l1,Zfp827,Kdm3b,Med16,Thra,Crebzf,Phf21a,Tox3,Pura,Tle3,Zic3,Smarca4,Srf,Zbtb33,Nfib,Chd7,Setd1b,Hdac9,Limd1,Foxj2,Atf7ip,Klf13,Jarid2,Eng,Chmp1a,Foxk1,Ets1,Hcfc1,Abcg1,Zfp58,Camta2,Hira,Hr,Mamld1,Sp1,Eif2c1,Nfia,Zfp516,Zfp148,Srebf1,Zfp579,Tcf7l2,Atn1,Cbx4,Med25,Ctnnd2,Zhx2,Tsc22d1,Prdm10,Nsd1,Hivep2,Bcorl1,Pkn1,Spen,Scrt1,Hipk3,Erbb4,Mkl1,Mef2d,Zfp592,Btg2,Ikzf2,Kdm4b,Med24,Epas1,Rfx4,Mll2,Meis2,Foxf2,Foxn3,Tcf3,Nr4a2,Tcf12,Zxdb,Ncoa3,Sox12,Scmh1,Med13,Dnmt3a,Zfp30,Zfp687,Trrap
GO:0006468	protein phosphorylation (BP)	105	5,23E-33	4,33E-30	Nrbp2,Prkca,Mertk,Map4k2,Mast3,Tnk2,Lrrk2,Brsk1,Wnk1,Ercc3,Dyrk1a,Speg,Tesk1,Limk1,Hipk4,Tgfb2,Abl1,Hipk2,Dapk1,Akt1,Csnk1g2,Vrk3,Scyl3,Map3k12,Lyn,Kit,P2rx7,Ddr2,Pdgfra,Dguok,Fyn,Ick,Lmtk2,Pkmyt1,Yes1,Mknk2,Rps6ka2,Prkd3,Tie1,Mtor,Stk11,Jak2,Ilk,Prkx,Pdgfrb,Kalrn,Stk24,Lmtk3,Mapk4,Akt2,Wnt5a,Nek9,Sik2,Map3k7,Stk16,Scyl1,Hus1,Nlk,Raf1,Ulk2,Fgfr2,Ephb4,Ern1,Map3k10,Mast1,Mast2,Gsk3a,Kcnh3,Dyrk1b,Irak2,Snrk,Cdk16,Ulk1,Twf1,Npr2,Alpk1,Taok2,Epha3,Flt1,Axl,Tnik,Brd4,Mink1,Bmpr1a,Tek,Nek6,Ttbk1,Mark4,Map4k4,Pkn1,Egfr,Cdc42bpb,Alk,Sik3,Hipk3,Adrbk2,Erbb4,Pak2,Src,Fgfr1,Aatk,Map3k11,Ddr1,Insr,Wnk2
GO:0006810	transport (BP)	191	5,06E-31	3,35E-28	Rims1,Slc12a5,Syt9,Slc45a1,Cacna1c,Nup62,Kcnd3,Grik2,Slc4a4,Ipo13,Slc4a3,Trpm3,Cacna1e,G3bp1,Panx2,Kcng3,Slc7a1,Slc35f2,Rab5b,Stx17,Synrg,Slc35b1,Sec22c,Kpna6,Sec31a,Stim1,Vps37c,Tcof1,Slc31a2,Fkbp15,Slc25a38,Ano6,Slc7a2,Akt1,Slc2a1,Kcnh4,Grin2c,Itpr2,Cacng7,Slc14a1,Cux1,Slc25a44,Snx18,Mfsd2a,P2rx7,Arrb2,Aldh1l1,Clvs1,Dync1i1,Slc6a6,Gabrb3,Osbp2,Slc29a2,Slc46a1,Slco2b1,Clcn7,Syt3,Scn3b,Syt7,Ano1,Grid1,Slc27a1,Atp6v0a2,Myo1c,Stard3,Kcnip4,Slc6a15,Slc22a8,Pltp,Lrp6,Mfsd10,Fads1,Smad3,Cachd1,Slc6a11,Atp7a,Slc7a10,Abcb1a,Clic4,Arhgap33,Atp2b2,Lyst,Grin2b,Pitpnm2,Fads2,Slc35a4,Akt2,Htr3a,Slc38a3,Slc9a1,Kcnb1,Slc44a1,Cacng4,Sec24b,Cacnb1,Pkd2,Slc6a20a,Agap1,Slc44a2,Ank,Slc2a13,Rlbp1,Slc1a3,Sorbs1,Scyl1,Ipo4,Kcnc1,Slc15a2,Abca1,Tmem38a,Arf6,Atp1b2,Kcnj8,Slc25a23,Slc41a1,Ap3d1,Slc32a1,Slc38a1,Kcnh3,Dopey2,Osbpl9,Slc39a9,Pex26,Scamp5,Ryr2,Snap23,Kcnh6,Slc6a1,Kcng2,Cacna1i,Ranbp2,Pitpnm1,Slc6a13,Nipa1,Slc39a13,Clcn6,Aqp11,Igf2r,Ranbp17,Gulp1,Slc35e1,Slc7a11,Kcnc2,Slc12a4,Ap2a1,Xpo4,Sdhc,Kcnk9,Grik5,Xpo6,Grin1,Slc9a5,Tcn2,Cadps,Atp5g3,Chmp1a,Abcg1,Sec24c,Dync1h1,Abca9,Pllp,Serp1,Kcnt1,Rab11fip5,Slco3a1,Slc12a2,Slc16a13,Slc25a30,Slc7a5,Scn3a,Tnpo1,Ttyh1,Fasn,Slc19a3,Scamp3,Slc23a2,Slc5a2,Slc13a3,Slc16a2,Mfsd7c,Grin2d,Sypl,Cpt1a,Rab11b,Tpcn1,Fabp7,Nup214,Kcng1,Dnajc14,Doc2b,Aqp4
GO:0007399	nervous system development (BP)	60	6,75E-23	2,48E-20	Glis2,Nrbp2,Brsk1,Elavl3,Dock7,Gfra1,Akt1,Robo1,Cyfip1,Dcx,Zic2,Nrp2,Dpf1,Efnb1,Amigo1,Lhx2,Lmtk2,Smarce1,Tpp1,Mtss1,Sema3c,Kalrn,Ntng2,Tcf4,Arid1a,Dscam,Srrm4,Nrg1,Dab1,Arf6,Ulk2,Jhdm1d,Sema4f,Gsk3a,Enah,Kat2a,Nav1,Sema6a,Chrdl1,Pura,Sh2b2,Zic3,Smarca4,Hdac9,Ascl1,A930038C07Rik,Tnik,Gpsm1,Slit3,Mdga1,Slc7a5,Bmpr1a,Mark4,Grip1,Dok4,Erbb4,Mef2d,Tcf3,Nr4a2,Tcf12
GO:0008152	metabolic process (BP)	174	2,08E-22	6,25E-20	Rdh10,Zc3h12c,Papss2,Kl,Dhdh,Mgat5b,Aldh18a1,Ppm1m,G3bp1,Nat6,Pde4d,Oplah,Gxylt1,Zdhhc3,Ppap2b,Bace1,Acot11,A130022J15Rik,Znrf1,Trim9,Pde10a,Ep400,Ube2o,Idua,Hmgcs2,Ddx17,Casp8,Hsdl2,Dnmt1,Pygm,Atp10a,Mmp14,Acox3,B3gat3,Ppapdc1a,Phgdh,Fam108a,Nomo1,Agpat2,Phlpp1,Rnf180,Galnt2,AI464131,Man2a2,Neurl1B,Atp11a,Aldh1l1,1300010F03Rik,Parp6,Dync1i1,Ctdsp1,Vars,Plcd4,Rnf182,Dync2h1,Dhtkd1,Rad54l2,Bmp1,Wscd1,Pld2,Kif26b,Dpagt1,Apeh,Adam15,Ctbp2,Pm20d1,Slc27a1,Chd3,Tpp1,Myo1c,Mtor,Cenpv,Rnf31,Ubr4,Pde4b,Abhd2,Ddx21,Ddah1,Pemt,Rnf125,Bche,Atp7a,Smpdl3a,Rnf144b,Pde5a,Upf1,Galntl1,Dnm2,BC018242,Uxs1,Usp32,B3gat1,Helz,Phlpp2,G6pc3,Mbtps1,Dip2b,Pigq,Ece1,Abhd3,Lpcat4,Mpped2,Casp2,Smarcal1,Entpd1,Abca1,Mmp15,Smpd2,Ube2q1,Rnf123,Ctbp1,Ern1,Anpep,Gne,Naa40,Ilkap,Gcnt1,Chsy1,Gys1,Nav1,Dhx32,Irak2,Zdhhc8,Atp13a2,Nat15,Edem1,Atp13a1,Entpd5,Hsd17b11,Pdxp,Inpp4a,Arsb,Pnkd,Hdac5,Ndst2,Furin,Pla2g4e,Mgrn1,Abat,Asrgl1,Abcg1,Nat8l,Alpl,Dync1h1,Rad9,Fam108c,Capn2,Naa10,Acsf2,Gstm5,Extl1,Zdhhc16,Nmnat1,Fasn,Ptprz1,Alg3,Decr2,Nt5dc3,Uggt1,Alk,St3gal3,Rnf19b,Aco1,Ppm1a,Pak2,Cbs,Man2b2,Rexo1,Tenc1,Ctdsp2,Fktn,Car4,Dusp22,Alad
GO:0030154	cell differentiation (BP)	84	5,37E-20	1,48E-17	Glis2,Cbfa2t3,Vegfb,Scrib,Itgav,Huwe1,Notch2,Speg,Cspg4,Elavl3,Dock7,Sfrp1,Eif2c2,Purb,Lrrc8a,Trappc9,Notch3,Robo1,Egfl7,Cyfip1,Dcx,Diap2,Pbx1,Zic2,Kit,Nr2c2,Nrp2,Efnb1,Amigo1,Bmp6,Ctbp2,Arnt,Npnt,Jak2,Gna12,Prkx,Sema3c,Ntng2,Bmp7,Ptpru,Tcf4,Hip1,Fhl1,Wnt5a,Ppard,Srrm4,Prdm16,Dab1,Arf6,Ctbp1,Anpep,Sema4f,Sox10,Enah,Nav1,Sox9,Suv39h1,Jag2,Sema6a,Notch1,Paqr8,Chrdl1,Cadm1,Nhs,Pura,Tle3,Zic3,Dner,Gna13,Flt1,Axl,Ascl1,Jarid2,Foxk1,Ildr2,Gpsm1,Slit3,Mdga1,Slc7a5,Bmpr1a,Mef2d,Epas1,Tcf3,Tcf12
GO:0007155	cell adhesion (BP)	72	2,48E-19	5,87E-17	Tln2,Igsf11,Fn1,Itgav,Ppap2b,Tmem8,Fbln5,Fermt2,Abl1,Tmem8b,Cyfip2,Pcdhb17,Podxl,Cd164,Ddr2,Tln1,Sorbs3,Nrp2,Celsr1,Clstn3,Ajap1,Amigo1,Ncam1,Cdh19,Megf10,Adam15,Ncan,Npnt,Prkx,Ptpru,Ptprm,Sdc3,Psen1,Cdon,Dscam,Kitl,Cd93,Mllt4,Gpr56,Cntnap5c,Itga4,Atp1b2,Ephb4,Pecam1,Astn1,Pvrl1,Pcdh18,Itgb8,Nrxn3,Cdh5,Fat4,Pcdh20,Nlgn2,Cadm1,Bcan,Ptprs,Esam,Flot2,Eng,Parvb,Pvrl3,Gpld1,Ctnnd2,Ttyh1,Itga6,Src,Parva,Dgcr2,Dchs1,Lpp,Ddr1,Lamb2
GO:0035556	intracellular signal transduction (BP)	48	1,76E-17	3,63E-15	Unc13a,Gab2,Prkca,Plcd3,Asb13,Dvl2,Prex1,Acot11,Arfgef2,Arhgef6,Cspg4,Unc13c,Akt1,Rapgef3,Dcx,Plcg1,Lyn,Plcd4,Itsn1,Adcy1,Def8,Sh2b1,Shc3,Prkd3,Kalrn,Arhgef2,Psen1,Plcb3,Psen2,Plce1,Raf1,Adcy5,Cnih2,Dgkz,Socs7,Sh2b2,Arhgef3,Npr2,Plekhm1,Arhgef12,Plch2,Asb1,Dnmbp,Tulp4,Tek,Cdc42bpb,Inpp5d,Tenc1
GO:0016477	cell migration (BP)	30	2,01E-14	3,03E-12	Gab2,Nup62,Scrib,Itgav,Lrrc16a,Tgfb2,Mmp14,Podxl,Pdgfra,Enpep,Tnfaip1,Cd2ap,Pdgfrb,Dock1,Wnt5a,Nrg1,Itga4,Astn1,Gsk3a,Nck2,Flt1,Limd1,Eng,Apc,Atn1,Srgap1,Cdc42bpb,Erbb4,Src,Tns3
GO:0016311	dephosphorylation (BP)	37	1,49E-13	1,97E-11	Ppm1e,Ppap2b,Phlpp1,Ssh1,Dusp8,Ctdsp1,Ptpru,Ptprm,Cdc14a,BC018242,Phlpp2,Inpp5k,G6pc3,Ptprn,Ptpn13,Ptprg,Ilkap,Sec16a,Nt5c1a,Mtmr11,Pdxp,Dusp10,Sbf1,Inpp4a,Ptprs,Ptprb,Ptprt,Alpl,Mtmr9,Ptprz1,Inpp5d,Ppm1a,Tenc1,Mtmr10,Ctdsp2,Mtmr3,Dusp22
GO:0050790	regulation of catalytic activity (BP)	36	4,39E-12	4,84E-10	Map4k2,Prex1,Arfgef2,Arhgef6,Dock7,Rapgef3,Arhgef10l,Itsn1,D10Bwg1379e,Arhgef10,Arhgef9,Dock6,Arhgef17,Kalrn,Arhgef2,Dock1,Rgl2,Sos2,Plce1,Fgd1,Rapgef2,Arhgef3,Psd,Arhgef12,Iqsec2,Tnik,Gpsm1,Mink1,Dnmbp,Ralgps1,Cyth3,Map4k4,Cdc42bpb,Iqsec1,Gbf1,Rasgrf2
GO:2001141	regulation of RNA biosynthetic process (BP)	21	2,32E-11	2,40E-09	Ncoa2,Tada3,Crebbp,Rad54l2,Lhx2,Med1,0610031J06Rik,Calcoco1,Pml,Sap130,Ncoa1,Rxrb,Kat2a,Dcc,Hcfc1,Atn1,Nsd1,Pkn1,Ldb1,Ncoa3,Trrap
GO:0001843	neural tube closure (BP)	19	3,38E-11	3,29E-09	Scrib,Dvl2,Dlc1,Ptch1,Zeb2,Sfrp1,Zic2,Tsc2,Ski,Celsr1,Lhx2,Setd2,Lrp6,Wnt5a,Vangl2,Fzd3,Enah,Kat2a,Sufu
GO:0006915	apoptotic process (BP)	59	3,05E-10	2,59E-08	Unc5c,Bag3,Casp8,Phf17,Abl1,Hipk2,Foxo3,Dapk1,Purb,Cyfip2,Akt1,Phlpp1,Mknk2,Htt,Stk11,Jak2,Mfsd10,Csrnp2,Dock1,Stk24,Rnf144b,Hip1,Akt2,Psen1,Pml,Bnip3,Mtap1s,Ppard,Pacs2,Map3k7,Gramd4,Ece1,Casp2,Cul7,Arf6,Psen2,Rbm25,Raf1,Fgfr2,Ern1,Irak2,Cecr2,Sema6a,Tox3,Cadm1,Pura,Cideb,Gulp1,Dido1,Trp53bp2,Elmo2,Nek6,Zdhhc16,Inpp5d,Hipk3,Erbb4,Mef2d,Pak2,Aatk
GO:0035019	somatic stem cell maintenance (BP)	14	4,54E-10	3,66E-08	Lrp5,Sfrp1,Kit,Ski,Nr2e1,Vangl2,Prdm16,Sox9,Tcf7l1,Myst3,Apc,Tcf7l2,Zhx2,Ldb1

GO:0048167	regulation of synaptic plasticity (BP)	12	1,27E-09	9,74E-08	Sipa1l1,Htt,Atp2b2,Grin2b,Psen1,Syngap1,Mecp2,Psen2,Gipc1,Rapgef2,Grin1,Ctnnd2
GO:0007050	cell cycle arrest (BP)	20	1,68E-09	1,21E-07	Sesn2,Notch2,Tgfb2,Pkd1,Pcbp4,Stk11,Ilk,Smad3,Pml,Pkd2,Apbb2,Ddit3,Mll5,Wdr6,Ern1,Gas2l1,Macf1,Apc,Tcf7l2,Cdkn1b
GO:0030036	actin cytoskeleton organization (BP)	22	3,02E-09	2,13E-07	Epb4,1l2,Daam2,Dlc1,Abl1,Diap1,Sfrp1,Diap2,Fmnl1,Ssh1,Wasf2,Arhgef17,Csrp1,Epb4,1l5,Enah,Fgd1,Cttnbp2,Sh2b2,Srf,Taok2,Cdc42bpb,Fmn1,Parva
GO:0007389	pattern specification process (BP)	20	5,01E-09	3,31E-07	Alx4,Ptch1,Gli3,Foxo3,C2cd3,Hey2,Foxo1,Bmp7,Syngap1,Disp1,Smo,Eya1,Zic3,Foxj2,Ascl1,Foxk1,Apc,Bmpr1a,Foxf2,Foxn3
GO:0001666	response to hypoxia (BP)	20	1,67E-08	9,37E-07	Pygm,Tgfb2,Itpr2,Tsc2,Pld2,Arnt,Smad3,Tgfb3,Pml,Ece1,Mecp2,Raf1,Egln1,Scap,Flt1,Ednra,Eng,Abat,Epas1,Nr4a2
GO:0016485	protein processing (BP)	13	6,44E-08	3,13E-06	Ptch1,Gli3,C2cd3,P2rx7,Dync2h1,Psen1,Aph1a,Ece1,Casp2,Pcsk6,Psen2,Furin,Adamts3
GO:0001755	neural crest cell migration (BP)	11	1,52E-07	6,88E-06	Zeb2,Lef1,Nrp2,Efnb1,Sema3c,Kitl,Edn3,Sox10,Smo,Sema3f,Erbb4
GO:0090090	negative regulation of canonical Wnt receptor signaling pathway (BP)	15	2,13E-07	9,52E-06	Dab2ip,Apc2,Gli3,Sfrp1,Lef1,Mcc,Dab2,Wnt5a,Ddit3,Sox10,Sox9,Notch1,Apc,Tcf7l2,Lrp4
GO:0043085	positive regulation of catalytic activity (BP)	11	2,18E-07	9,60E-06	P2rx7,Stk11,Atp7a,Psen1,Aph1a,Ppard,Psen2,Agt,Igf2,Sod1,Nr4a2
GO:0043966	histone H3 acetylation (BP)	12	2,28E-07	9,91E-06	Myst4,Phf17,Tada3,Lef1,Sap130,Map3k7,Kat2a,Brd1,Myst3,Smarca4,Brpf3,Tcf3
GO:0006897	endocytosis (BP)	22	2,49E-07	1,07E-05	Tnk2,Lrp5,Epn1,Synrg,Abl1,Fkbp15,Snx18,Arrb2,Itsn1,Lrp10,Wasf2,Lrp8,Lrp6,Usp20,Hip1,Dnm2,Ston2,Npc1,Lrp1,Ap2a1,1700021K19Rik,Lrp4
GO:0007411	axon guidance (BP)	19	2,52E-07	1,07E-05	Plxna3,Tgfb2,Gli3,Robo1,Nrp2,Efnb1,Lhx2,Lmtk2,Bmp7,Wnt5a,Apbb2,L1cam,Pvrl1,Sema4f,Enah,Sema6a,Dcc,Sema3f,Slit3
GO:0008286	insulin receptor signaling pathway (BP)	12	3,08E-07	1,27E-05	Foxo3,Akt1,Foxo1,Akt2,Sik2,Sorbs1,Gsk3a,Zfp106,Socs7,Sh2b2,Srebf1,Insr
GO:0031175	neuron projection development (BP)	16	5,16E-07	2,08E-05	Dock7,Diap1,Phgdh,Lyn,Pld2,Ngf,Ptprm,Mecp2,L1cam,Ulk1,Srf,Apc,Ncdn,Fgfr1,Btg2,Lamb2
GO:0021915	neural tube development (BP)	10	5,43E-07	2,17E-05	Gli3,Sfrp1,Phgdh,C2cd3,Tcf7,Plod3,Lrp6,Wnt5a,Notch1,Tcf7l2
GO:0042593	glucose homeostasis (BP)	15	6,17E-07	2,40E-05	Cacna1c,Cacna1e,Ptch1,Foxo3,Akt1,Ncor2,Stk11,Adra2a,Inpp5k,Crtc2,Igfbp5,Stat3,Sh2b2,Tcf7l2,Insr
GO:0035264	multicellular organism growth (BP)	14	7,02E-07	2,67E-05	Slc12a5,Ccm2,Wdtc1,Ankrd11,Bbs1,Arid5b,Fgfr2,Kat2a,Smo,Apba1,Slc12a2,Tenc1,Ncoa3,Heg1
GO:0009887	organ morphogenesis (BP)	18	1,02E-06	3,63E-05	Rdh10,Notch2,Ptch1,Pbx1,Pdgfra,Med1,Bmp7,Tgfb3,Tbx3,Gdf11,Wnt5a,Rela,Fgfr2,Thra,Eya1,Slit3,Igf2,Insr
GO:0001764	neuron migration (BP)	17	1,16E-06	4,05E-05	Nr2f2,Dcx,Fyn,Celsr1,Psen1,Apbb2,Dab1,Fzd3,Nav1,Dcc,Srf,Axl,Ascl1,A930038C07Rik,Mdga1,Nr4a2,Fktn
GO:0007626	locomotory behavior (BP)	15	2,31E-06	7,50E-05	Gng7,Cacna1e,Dlg4,Celsr1,Htt,Atp7a,Atp2b2,Dscam,Nrg1,Adcy5,Astn1,Chd7,Apba1,Abat,Sod1
GO:0008360	regulation of cell shape (BP)	16	2,50E-06	7,94E-05	Epb4,1l2,Cdc42ep3,Dlc1,Fermt2,Diap1,Cyfip1,Fmnl1,Fyn,Plxnb1,Gna12,Palmd,Fgd1,Cdc42ep4,Gna13,Taok2,Limd1
GO:0006812	cation transport (BP)	18	2,47E-06	7,95E-05	Trpm3,Atp10a,Stim1,Grin2c,P2rx7,Atp11a,Slc41a3,Atp7a,Atp2b2,Grin2b,Htr3a,Slc9a1,Slc41a1,Atp13a2,Atp13a1,Grin1,Slc12a2,Grin2d
GO:0021987	cerebral cortex development (BP)	10	2,86E-06	8,67E-05	Mkks,Bbs1,Lrp6,Nr2e1,Psen1,Cdon,Ptprs,Grin1,Ascl1,Emx2
GO:0007611	learning or memory (BP)	10	2,86E-06	8,67E-05	Prkca,Gm2a,Ncam1,Htt,Shc3,Grin2b,Psen1,Psen2,Thra,Grin1
GO:0030308	negative regulation of cell growth (BP)	18	3,75E-06	0,00011185	Dab2ip,Tgfb2,Sfrp1,Stk11,Adipor2,Smad3,Dab2,Fhl1,Pml,Ppard,Apbb2,Gas2l1,Agt,Smarca4,Adipor1,Foxk1,Slit3,Cdkn1b
GO:0043401	steroid hormone mediated signaling(BP)	12	3,96E-06	0,000117001	Lef1,Nr2f2,Rxra,Nr2c2,Nr3c2,Bmp7,Nr2e1,Ppard,Nr1d1,Rxrb,Thra,Nr4a2
GO:0035335	peptidyl-tyrosine dephosphorylation (BP)	16	4,01E-06	0,000117395	Ssh1,Dusp8,Ptpru,Ptprm,Cdc14a,Ptprn,Ptpn21,Ptpn13,Ptprg,Eya1,Dusp10,Ptprs,Ptprb,Ptprt,Mtmr3,Dusp22
GO:0001756	somitogenesis (BP)	11	5,30E-06	0,000149869	Zeb2,Sfrp1,Lef1,Lrp6,Smad3,Psen1,Wnt5a,Psen2,Epb4,1l5,Kat2a,Bmpr1a
GO:0006461	protein complex assembly (BP)	12	6,09E-06	0,000169306	Rims1,Dlg4,Llgl1,Max,Pml,Mll1,Sox9,Snap23,Dlgap3,Apc,Zfp148,Tgfbr3
GO:0007268	synaptic transmission (BP)	18	6,37E-06	0,000175685	Slc12a5,Grm4,Cacna1c,Grik2,Unc13c,Lrp6,Nrxn2,Grin2b,Ston2,Mecp2,Gipc1,Agrn,Nrxn3,Grik5,Grin1,Apba1,Mink1,Grm2
GO:0007605	sensory perception of sound (BP)	17	6,92E-06	0,000187668	Tprn,Nipbl,Fzd4,Diap1,Gabrb3,Gjc3,Pou3f4,Atp2b2,Slc1a3,Chd7,Otof,Gjb6,Sod1,Cdkn1b,Fgfr1,Mtap1a,Aqp4
GO:0000902	cell morphogenesis (BP)	12	1,12E-05	0,000279594	Shroom4,Idua,Tgfb2,Shroom1,Ssh1,P2rx7,Med1,Arhgef2,Atp2b2,Nrg1,Smarca4,Egfr
GO:0008104	protein localization (BP)	13	1,80E-05	0,000405984	Ercc3,Grin2c,Tsc2,Plod3,Akap2,Mecp2,Macf1,Ulk1,Akap10,Grip1,Lrba,Doc2b,Lrp4
GO:0006874	cellular calcium ion homeostasis (BP)	13	2,13E-05	0,000468846	Stc1,Cacna1c,Prkca,Grik2,Itgav,Pygm,Atp2b2,Psen1,Pkd2,Trdn,Grin1,Cherp,Gpr12
GO:0042493	response to drug (BP)	18	2,39E-05	0,000520718	Slc12a5,Hdac4,Sfrp1,P2rx7,Pemt,Bche,Lyst,Ptprm,Nfatc2,Slc1a3,Npc1,Abat,Emx2,Igf2,Sod1,Tcf3,Dgcr2,Alad
GO:0070588	calcium ion transmembrane transport (BP)	13	2,92E-05	0,000582578	Cacna1c,Cacna1e,Itpr2,Cacng7,Atp2b2,Psen1,Cacng4,Cacnb1,Cacnb3,Ryr2,Cacna1i,Grin1,Tpcn1
GO:0030336	negative regulation of cell migration (BP)	12	3,31E-05	0,000647386	Podn,Cx3cr1,Dlc1,Sfrp1,Egfl7,Tie1,Abhd2,Ptpru,Stk24,Clic4,Igfbp5,Srf
GO:0009790	embryo development (BP)	16	3,57E-05	0,000690647	Fzd4,Foxo3,Foxo1,Htt,Tgfb3,Grin2b,Psen1,Wnt5a,Mecp2,Hus1,Psen2,Notch1,Foxj2,Foxk1,Foxn3,Tgfbr3
GO:0030182	neuron differentiation (BP)	13	3,97E-05	0,000746299	Brsk1,Hipk2,Lhx2,Pigt,Atp2b2,Psen1,Mecp2,Edn3,Notch1,Ascl1,Emx2,Btg2,Nr4a2
GO:0030198	extracellular matrix organization (BP)	14	5,01E-05	0,000920981	Fn1,Fbln5,Tgfb2,Pdgfra,Npnt,Atp7a,Nr2e1,Apbb2,Sox9,Agt,Gfod2,Smarca4,A930038C07Rik,Foxf2
GO:0007409	axonogenesis (BP)	14	6,52E-05	0,00114792	Brsk1,Dock7,Adcy1,Amigo1,Stk11,Kalrn,Ntng2,Ulk2,Fgfr2,Slitrk2,Notch1,Ulk1,Apc,Ptprz1
GO:0016567	protein ubiquitination (BP)	19	6,85E-05	0,00119934	Ube2l3,Tnk2,Cdc34,Trim9,Ube2o,Akt1,Arrb2,Tnfaip1,Rnf182,Rnf31,Ubr4,Ube2q1,Wwp2,Smurf2,Klhl13,Socs7,Mgrn1,Klhl20,Herc2
GO:0006916	anti-apoptosis (BP)	18	7,60E-05	0,00129628	Vegfb,Fn1,Bag3,Dapk1,Foxo1,Htt,Tbx3,Psen1,Nrg1,Rela,Psen2,Tgfa,Axl,Tcf7l2,Tek,Sod1,Hipk3,Mkl1
GO:0010976	positive regulation of neuron projection development (BP)	11	8,49E-05	0,00144025	Grn,Lyn,Cbfa2t2,Wnt5a,Ppp2r5b,Sec16a,Dcc,Epha3,A930038C07Rik,Ppp2r5d,Fgfr1
GO:0008283	cell proliferation (BP)	20	8,73E-05	0,00147378	Ube2l3,Scrib,Cspg4,Crebbp,Purb,Enpep,Csf1,Gm606,Ppard,Nrg1,Stat3,Lrp1,Kat2a,Pura,Entpd5,Furin,Tcf7l2,Egfr,Src,Map3k11
GO:0006629	lipid metabolic process (BP)	25	0,000102	0,00168612	Plcd3,Srebf2,Acox3,Gm2a,Plcg1,Cpt1c,Plcd4,Lrp10,Slc27a1,Adipor2,Fads1,Fads2,Ppard,Plcb3,Mbtps1,Plce1,Scap,Naaa,Adipor1,Plch2,Srebf1,Acsf2,Cpt1a,Lcat,Serinc5
GO:0006914	autophagy (BP)	10	0,000157	0,00236813	Abl1,5430411K18Rik,Stk11,Psen1,Npc1,Ulk2,Ulk1,Arsb,Wipi1,1700021K19Rik
GO:0006200	ATP catabolic process (BP)	26	0,000167	0,00245209	Ercc3,Ddx17,Atp10a,Atp11a,1300010F03Rik,Dync2h1,Myo1c,Ddx21,Atp7a,Abcb1a,0610007P08Rik,Atp2b2,Upf1,Snrnp200,Smarcal1,Entpd1,Abca1,Atp1b2,Chd4,Abca2,Atp13a2,Atp13a1,Smarca4,Lonrf3,Abcg1,Dync1h1
GO:0006974	response to DNA damage stimulus (BP)	30	0,000206	0,00292442	Brsk1,Ercc3,Nipbl,Ints3,Huwe1,Abl1,Hipk2,Ncoa6,Lyn,Stra13,Foxo1,Stk11,Dclre1b,Ubr5,0610007P08Rik,Obfc2b,Ino80d,Psen1,Nfatc2,Hus1,Mcrs1,Alkbh3,Taok2,Apc,Gnl1,Rad9,Herc2,Zfyve26,Btg2,H2afx
GO:0008203	cholesterol metabolic process (BP)	10	0,000398	0,0049909	Lrp5,Srebf2,Cln6,Mbtps1,Abca1,Abca2,Scap,Abcg1,Srebf1,Lcat
GO:0007049	cell cycle (BP)	43	0,000682	0,00744729	Urgcp,Cdc34,Brsk1,Nipbl,Usp2,Clasp1,Ick,Pkmyt1,Cd2ap,Stk11,Cenpv,Anln,Arhgef2,Upf1,Cdc14a,Mapk4,Gm606,Nek9,Ddit3,Mll5,Wdr6,Cul7,Ppm1d,Pard6g,Suv39h1,Klhl13,Cdk16,Trp53bp2,Stard13,Chmp1a,Pard3,Hcfc1,Anapc1,Nek6,Rassf2,Rab11b,Cdc26,Cdkn1b,Zfyve26,Src,Ncapd3,H2afx,Foxn3
GO:0055114	oxidation-reduction process (BP)	48	0,000763	0,00820224	Rdh10,Mtrr,Dhdh,Kdm4a,Aldh18a1,Alkbh5,Hsdl2,Sqrdl,Acox3,Phgdh,Fmo1,Aldh1l1,Tet1,Dhtkd1,Dio2,Moxd1,Txndc12,Glud1,Ctbp2,Plod3,Phf2,Smox,Pcyox1l,Cyp2j9,Cryz,Fads1,Vat1,Cyb5r3,Fads2,Gpx8,Kdm4c,Ctbp1,Jhdm1d,Egln1,Kdm3b,Alkbh3,Gfod2,Hsd17b11,Cyp2d22,Gldc,5730469M10Rik,Fasn,Sod1,Decr2,Ppox,Suox,Cyp4f16,Kdm4b
GO:0006417	regulation of translation (BP)	12	0,000999	0,00998364	Tnrc6a,Eif2c2,Akt1,Eif4g3,Zfp36l1,Mknk2,Mif4gd,Pum1,Akt2,Tnrc6c,Eif2c1,Aco1

GO:0006887	exocytosis (BP)	10	0,002007	0,0161596	Rims1,Unc13a,Arfgef2,Sytl2,Unc13c,Llgl1,Scamp5,Snap23,Cadps,Srcin1
GO:0016042	lipid catabolic process (BP)	11	0,002223	0,0175101	Plcd3,Plcg1,Plcd4,Pla2g5,Pld2,Abhd4,Plcb3,Plce1,Pla2g16,Pla2g4e,Plch2
GO:0051291	protein heterooligomerization (BP)	10	0,002478	0,0179404	Casp8,Tsc2,Stk11,Ilk,Akap2,Kcnh6,Hr,Lims1,Med24,Parva
GO:0006508	proteolysis (BP)	42	0,002965	0,0206579	Sec11a,Josd1,Immp1l,Bace1,Adamts1,Casp8,Usp2,Mmp14,Tinagl1,Adam11,Dpp9,Enpep,Bmp1,Adam15,Pm20d1,Tpp1,Bap1,Adamts10,Usp20,Psen1,Usp32, Mbtps1,Adamts9,Ece1,Casp2,3110056O03Rik,Pcsk6,Mmp15,Psen2,Anpep,H13,Ctsa,Otud7a,Lonrf3,Furin,Rhbdl1,Capn2,Usp31,Senp1,Qpct,Usp30,Adamts3
GO:0005975	carbohydrate metabolic process (BP)	17	0,004368	0,0276916	Kl,Idua,Pygm,Akt1,B4galt2,AI464131,Man2a2,Akt2,Gne,Gsk3a,Mlec,Gbe1,Chst1,Igf2,Phkb,Man2b2,Chi3l1
GO:0007010	cytoskeleton organization (BP)	10	0,006865	0,0356599	Zmym3,Dlc1,Diap1,Svil,Raf1,Mast1,Fgd1,Limd1,Tnik,Pdzd8
GO:0032259	methylation (BP)	15	0,009204	0,0447889	Dnmt1,Aldh1l1,Prmt5,Setd2,Pemt,Ash1l,Tyms,Mll1,Mll5,Nsun3,Suv39h1,Setd1b,Nsd1,Mll2,Dnmt3a

Table S3

KEGG PATHWAY ANALYSIS OF DOWN-REGULATED GENES IN THE PFC OF DA-D2RKO MICE

Items	Items_Details	Support	pvalue	corrected pvalue	Genes
Kegg:04010	MAPK signaling pathway	48	1,32E-15	1,24E-13	Rela,Pdgfra,Taok2,Gna12,Cacna1c,Arrb2,Ngf,Gng12,Fgfr2,Dusp22,Srf,Ddit3,Cacnb1,Cacna1i,Dusp10,Sos2,Mapk8ip2,Cacng4,Rapgef2,Max,Map3k7,Pla2g4e,Raf1,Prkca,Rps6ka2,Egfr,Cacng7,Nlk,Tab2,Map4k2,Nfatc2,Mknk2,Tgfb3,Dusp8,Map4k4,Cacna1e,Map3k11,Cacnb3,Prkx,Akt2,Pdgfrb,Fgfr1,Akt1,Pla2g5,Tgfb2,Map3k12,Ppm1a,Pak2
Kegg:04520	Adherens junction	23	1,60E-13	1,00E-11	Wasf2,Lef1,Ptprm,Crebbp,Insr,Pvrl1,Tjp1,Smad3,Map3k7,Tcf7,Ptprb,Yes1,Pvrl3,Src,Egfr,Nlk,Pard3,Sorbs1,Fyn,Tcf7l2,Fgfr1,Mllt4,Tcf7l1
Kegg:04310	Wnt signaling pathway	31	4,80E-12	2,26E-10	Fzd4,Lef1,Ppp2r5d,Crebbp,Ppp2r5b,Plcb3,Apc,Smad3,Fzd3,Sfrp1,Map3k7,Tcf7,Ppard,Apc2,Lrp5,Prkca,Nfatc3,Ctbp1,Nlk,Dvl3,Nfatc2,Vangl2,Ctbp2,Prkx,Wnt5a,Tcf7l2,Lrp6,Dvl2,Psen1,Daam2,Tcf7l1
Kegg:04360	Axon guidance	28	1,80E-11	6,78E-10	Unc5c,Srgap3,Rgs3,Arhgef12,Ephb4,Efnb1,Sema4f,Slit3,Nck2,Sema3c,Plxnb2,Plxnb1,Limk1,Plxnb3,Sema3f,Nfatc3,Srgap1,Sema6a,L1cam,Nfatc2,Epha3,Plxna3,Plxna1,Abl1,Robo1,Fyn,Dcc,Pak2
Kegg:04724	Glutamatergic synapse	27	2,58E-11	8,09E-10	Pld2,Itpr2,Cacna1c,Slc38a3,Pld1,Gng12,Gng7,Plcb3,Shank3,Adcy5,Grin2c,Pla2g4e,Slc1a3,Prkca,Grm2,Grik5,Homer2,Adcy1,Slc38a1,Prkx,Grin2b,Grik2,Grm4,Pla2g5,Grin2d,Dlg4,Grin1
Kegg:04810	Regulation of actin cytoskeleton	35	1,64E-10	4,39E-09	Pdgfra,Arhgef12,Fgd1,Wasf2,Gna12,Gng12,Fgfr2,Cyfip1,Itgb8,Apc,Sos2,Cyfip2,Tiam1,Limk1,Apc2,Dock1,Raf1,Chrm1,Enah,Egfr,Pip4k2b,Msn,Slc9a1,Arhgef6,Itga6,Diap1,Fn1,Gna13,Pdgfrb,Diap2,Ssh1,Fgfr1,Itgav,Itga4,Pak2
Kegg:04330	Notch signaling pathway	15	5,18E-09	1,22E-07	Ncor2,Crebbp,Notch1,Notch3,Jag2,Aph1a,Kat2a,Maml3,Ctbp1,Dvl3,Psen2,Ctbp2,Notch2,Dvl2,Psen1
Kegg:04510	Focal adhesion	31	7,47E-09	1,56E-07	Pdgfra,Parva,Lamb2,Parvb,Itgb8,Lama3,Capn2,Sos2,Vegfb,Flt1,Tln2,Dock1,Raf1,Prkca,Src,Egfr,Itga6,Rapgef1,Diap1,Tln1,Fn1,Lama2,Akt2,Pdgfrb,Fyn,Ilk,Itgav,Akt1,Itga4,Shc3,Pak2
Kegg:04144	Endocytosis	32	1,06E-08	2,00E-07	Pdgfra,Pld2,Erbb4,Arrb2,Pld1,Fgfr2,Psd,Arf6,Agap1,Rab11fip5,Rab5b,Dab2,Flt1,Smad3,Chmp1a,Kit,Vps37c,Src,Ap2a1,Pard6g,Egfr,Pard3,Rab11b,Dnm2,Epn1,Tgfb3,Acap2,Iqsec1,Iqsec2,Smurf2,Tgfb2,Pml
Kegg:04012	ErbB signaling pathway	19	2,41E-08	4,13E-07	Erbb4,Nrg1,Sos2,Cdkn1b,Nck2,Plcg1,Stat5b,Raf1,Mtor,Prkca,Src,Egfr,Tgfa,Gab1,Akt2,Abl1,Akt1,Shc3,Pak2
Kegg:04666	Fc gamma R-mediated phagocytosis	18	1,35E-07	1,59E-06	Pld2,Myo10,Lyn,Wasf2,Pld1,Arf6,Ppap2b,Fcgr2b,Pla2g4e,Limk1,Plcg1,Raf1,Prkca,Dnm2,Akt2,Gab2,Inpp5d,Akt1
Kegg:04020	Calcium signaling pathway	26	2,74E-07	3,03E-06	Pdgfra,Itpr2,Erbb4,Cacna1c,Atp2b2,Cacna1i,Plcb3,Plcd3,Itpkb,Grin2c,Ednra,Plcg1,Chrm1,Phkb,Prkca,Egfr,P2rx7,Adcy1,Ryr2,Cacna1e,Prkx,Pdgfrb,Plce1,Plcd4,Grin2d,Grin1
Kegg:04910	Insulin signaling pathway	22	4,89E-07	5,11E-06	Foxo1,Insr,Sos2,Flot2,Srebf1,Inpp5k,Raf1,Phkb,Mtor,Mknk2,Sh2b2,Rapgef1,Gys1,Sorbs1,Prkx,Fasn,Akt2,Inpp5d,Akt1,Tsc2,Shc3,Pygm
Kegg:04722	Neurotrophin signaling pathway	20	2,43E-06	1,83E-05	Rela,Ngf,Ywhaq,Sos2,Plcg1,Raf1,Rps6ka2,Sh2b1,Irak2,Nfkbib,Sh2b2,Rapgef1,Gab1,Foxo3,Psen2,Akt2,Abl1,Akt1,Psen1,Shc3
Kegg:04062	Chemokine signaling pathway	24	4,48E-06	3,12E-05	Rela,Lyn,Arrb2,Gng12,Gng7,Plcb3,Sos2,Adcy5,Tiam1,Stat5b,Raf1,Jak2,Nfkbib,Pard3,Cx3cr1,Adcy1,Foxo3,Prkx,Prex1,Akt2,Akt1,Stat3,Shc3,Gsk3a
Kegg:04514	Cell adhesion molecules (CAMs)	21	4,92E-06	3,30E-05	Sdc4,Nlgn2,Ptprm,Itgb8,Esam,Pvrl1,Cadm1,Vcan,Nrxn2,Pvrl3,L1cam,Sdc3,Itga6,Glg1,Nrxn3,Jam2,Pecam1,Itgav,Itga4,Cdh5,Ncam1
Kegg:04912	GnRH signaling pathway	16	1,11E-05	6,75E-05	Pld2,Itpr2,Cacna1c,Mmp14,Pld1,Plcb3,Sos2,Adcy5,Pla2g4e,Raf1,Prkca,Src,Egfr,Adcy1,Prkx,Pla2g5
Kegg:04070	Phosphatidylinositol signaling system	14	1,16E-05	6,80E-05	Itpr2,Plcb3,Plcd3,Dgkz,Itpkb,Inpp5k,Plcg1,Inpp4a,Prkca,Pip4k2b,Dgki,Plce1,Plcd4,Inpp5d
Kegg:00564	Glycerophospholipid metabolism	14	2,49E-05	0,000141685	Pld2,Lcat,Pld1,Agpat2,Ppap2b,Taz,Dgkz,Pcyt1a,Pla2g4e,Lpcat4,Dgki,Pemt,Ptdss2,Pla2g5
Kegg:04120	Ubiquitin mediated proteolysis	19	2,80E-05	0,000150419	Ube4a,Wwp2,Ubr5,Ube2r2,Huwe1,Cul7,Herc2,Anapc1,Ube2q1,Klhl13,Cdc34,Mgrn1,Ube2o,Cdc26,Pias3,Ube3b,Smurf2,Pml,Ube2l3
Kegg:04540	Gap junction	14	5,72E-05	0,000268955	Pdgfra,Itpr2,Plcb3,Sos2,Tjp1,Adcy5,Prkg2,Raf1,Prkca,Src,Egfr,Adcy1,Prkx,Pdgfrb
Kegg:03320	PPAR signaling pathway	13	9,30E-05	0,000426388	Cpt1a,Rxra,Rxrb,Fads2,Ppard,Acox3,Sorbs1,Pltp,Hmgcs2,Ilk,Fabp7,Slc27a1,Cpt1c
Kegg:04530	Tight junction	17	0,000199893	0,00087395	Tjp2,Epb4.1l3,Tjp1,Llgl1,Epb4.1l1,Yes1,Prkca,Src,Epb4.1l2,Pard6g,Pard3,Jam2,Magi1,Akt2,Ash1l,Akt1,Mllt4
Kegg:04340	Hedgehog signaling pathway	10	0,000217309	0,000928502	Smo,Bmp6,Csnk1g2,Sufu,Bmp7,Ptch1,Prkx,Gli3,Wnt5a,Zic2
Kegg:04320	Dorso-ventral axis formation	6	0,000463107	0,0018927	Notch1,Notch3,Sos2,Egfr,Notch2,Ets1
Kegg:04512	ECM-receptor interaction	12	0,000811741	0,00311444	Sdc4,Lamb2,Itgb8,Lama3,Npnt,Agrn,Sdc3,Itga6,Fn1,Lama2,Itgav,Itga4
Kegg:04150	mTOR signaling pathway	9	0,000862236	0,00324201	Vegfb,Stk11,Mtor,Rps6ka2,Ulk1,Akt2,Ulk2,Akt1,Tsc2
Kegg:00534	Glycosaminoglycan biosynthesis - heparan sulfate	6	0,00121214	0,00429968	B3gat3,B3gat1,Extl1,Ndst2,Hs6st3,Hs6st2
Kegg:00562	Inositol phosphate metabolism	9	0,00147455	0,00513361	Plcb3,Plcd3,Itpkb,Inpp5k,Plcg1,Inpp4a,Pip4k2b,Plce1,Plcd4
Kegg:04730	Long-term depression	10	0,00180047	0,00615435	Itpr2,Lyn,Gna12,Plcb3,Prkg2,Pla2g4e,Raf1,Prkca,Gna13,Pla2g5
Kegg:00310	Lysine degradation	8	0,00214458	0,00707335	Mll1,Mll5,Nsd1,Setd2,Mll2,Plod3,Suv39h1,Ash1l
Kegg:03015	mRNA surveillance pathway	11	0,00244438	0,00778886	Msi1,Cpsf7,Ppp2r5d,Ppp2r5b,Srrm1,Cpsf4,Pabpc6,Msi2,Upf1,Cpsf6,Smg5
Kegg:05010	Alzheimer's disease	17	0,0028668	0,00898264	Bace1,Casp8,Itpr2,Cacna1c,Lrp1,Capn2,Plcb3,Grin2c,Aph1a,Atp5g3,Sdhc,Psen2,Ern1,Grin2b,Grin2d,Psen1,Grin1
Kegg:04370	VEGF signaling pathway	10	0,00303282	0,00934707	Pla2g4e,Plcg1,Raf1,Prkca,Src,Nfatc3,Nfatc2,Akt2,Akt1,Pla2g5
Kegg:00565	Ether lipid metabolism	6	0,00510557	0,0145431	Pld2,Pld1,Ppap2b,Pla2g4e,Lpcat4,Pla2g5
Kegg:04350	TGF-beta signaling pathway	10	0,00686473	0,0187039	Bmp6,Crebbp,Smad3,Sp1,Bmpr1a,Bmp7,Ltbp1,Tgfb3,Smurf2,Tgfb2
Kegg:00510	N-Glycan biosynthesis	7	0,00945798	0,0243575	B4galt2,Mgat5b,Man2a2,Alg3,Dpagt1,Alg1,Alg12
Kegg:00592	alpha-Linolenic acid metabolism	4	0,0114589	0,0291118	Fads2,Acox3,Pla2g4e,Pla2g5
Kegg:00514	Other types of O-glycan biosynthesis	6	0,0144013	0,0351617	B4galt2,Mgat5b,Gxylt1,Plod3,St3gal3,Pomt2
Kegg:04142	Lysosome	12	0,0143662	0,0355375	Ctsa,Atp6v0a2,Npc2,Arsb,Ap3d1,Npc1,Idua,Cd164,Abca2,Gm2a,Igf2r,Tpp1
Kegg:04621	NOD-like receptor signaling pathway	7	0,0171588	0,0408336	Rela,Casp8,Erbb2ip,Map3k7,Nfkbib,Tab2,Card6
Kegg:00532	Glycosaminoglycan biosynthesis - chondroitin sulfate	4	0,0193002	0,0447956	B3gat3,Ust,B3gat1,Chsy1

Kegg:02010	ABC transporters	6	0,0198174	0,0454351	Abcg4,Abca9,Abcb1a,Abca1,Abca2,Abcg1
Kegg:04210	Apoptosis	9	0,0205786	0,0466117	Rela,Casp8,Myd88,Ngf,Capn2,Irak2,Prkx,Akt2,Akt1