

Table SI. Enriched genes in the upregulated genes of the recovery group according to the GO Molecular Function terms.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
1	<0.001	266	GO:0019899 enzyme binding	Raf1 Timp1 Tbc1d8 Ube2g2 Ube2z Lonrf3 Tbc1d15 Rnf144a Ube2g1 Shc3 Rgcc Rnf19a Ube2j2 Rnf138 Atg13 Cks1b Ube2j1 Rnf19b Trib1 Trib3 Abtb2 Rnf125 Cdc42ep3 Nploc4 Cdc42ep4 Cdc42ep2 Rab11fip5 Arih2 Brms1 Tmem189 Mef2d Hspb1 Cdk9 Ksr1 Tnfaip3 Net1 Rnf180 Fgr Bhlhe41 Irs2 Ppp1r15a Asb4 Trim72 Zfp36 Sfn Xpo6 Fap Sox9 Mapk7 Itga3 Tubb5 Daxx Klf4 Stat3 Gab2 Myo9b Cstb Hmox1 Por Bcl2l1 Plin5 Chp1 Ube2i Sash1 Sqstm1 Rxra Slpi Sdc4 Tnfaip1 Cd40 Slc12a4 Map2k3 Ywhah Ppp1r12a Cry1 Plek Egfr Tnip1 Npc111 Rock2 Map2k6 Per1 Nfkbia Bdkrb2 Prkch Hif1a Golga5 Ripk1 Map3k1 Glud1 Nufip1 Clu Spry2 Hcls1 Ifnar2 Tuba1b Cdkn1a Sik1 Tmem173 Map3k2 Tnf Riok3 Ptpn2 Cep192 Smad2 Fas Jak2 Ankrd1 Rela Rps6ka4 Ankrd2 Rabgef1 Prkar1b Nop58 Casp8 Cflar Hdac4 Sele Nek2 Optn Nek6 Len2 Stom Traf6 Spred1 Nop56 Src Ccn1 Ptpn22 Il6ra Pip5k1a F3 Bcl10 3110043O21Rik Tnfrsf1b Slc2a1 Sfpq Rpa2 Errfi1 Mad2l2 Tbc1d14 Uchl1 Glmn Scarb2 Ulk1 Ung Rad18 Mef2a Ctsc Ipo5 Mvp Kctd13 Msn Eif4ebp1 Casp3 Smad1 Ubash3b Ets1 Tirap Smad3 Tgfbr2 Ptgs2 Prr5l Micall1 Cnppd1 Map2k4 Tnks1bp1 Ppp1r32 Prdm4 Midn Ibtk Rusc2 Fmnl2 Ptpn23 Sh3bp4 Nop14 Kdm1a Serpine1 Gch1 Inf2 Csf3 Snx10 Txnip Egr1 Ranbp9 Akap12 Rab3gap2 Ddx58 Bcor Rabggta Pik3r1 Pkp2 Usp22 Shc1 Ptpn11 Fzd5 Cxcr4 Plaur Bag5 Maml1 Camk2n2 Taf7 Ywhag Ezr Jun Camk2d Parp4 Nod2 Ptafr Hmga2 Zfp746 Ptk2b Flot1 Tnip2 Exoc5 Sphk1 Flot2 Cttb2nl Tank Ipo7 Ell Ccn1l1 Trim6 Fam83c Casc3 Lgals9 Ccne1 Etv3 Mlk1 Itgb3 Atxn3 Myc Mapk4 Il1r1 Tuba4a Bok Dusp2 Rps6ka3 Tdg Micall2 Mapk6 Dennd1b Cebpb Cry2 Cdkn2d Bbc3 Adamts4 Dio2 Kpna2 Xbp1 Tnfrsf10b Ksr2 Odf2 Zc3hav1 Map1lc3b Hinfp Plscr1 Parp16 Btg1 Hmga1 Tgif1 Serpinc6a Nrg1 Hmga1b Spty2d1 Pea15a
2	<0.001	213	GO:0005102 receptor binding	Wnt9a Ccl3 Il11 Nectin4 Wnt11 Ccl4 Gna13 Ccl11 Ripk1 Shc3 Erbin Ccl20 Il1rn Il1f6 Il1b Gnas Src Ngf Cxcl5 Ereg Mcub Cxcl3 Cxcl1 Cxcl9 Ccl22 Ccl17 Rtp4 Cxcl10 Ccl5 Ccl7 Ccl2 H2- Q4 Inhbb Icam1 Csf3 Gdf15 Irs2 Bmp6

Table SI. Continued.

A, Downregulated genes					
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes	
3	<0.001	204	GO:0042802 identical protein binding	Pvr Cxcl2 Lep Ptk2b Nectin2 Osgin1 Cntf H2-Q2 Lama5 Lbp Il10 Ctgf Tac4 Edn1 Tnf Hbegf Il6 Nppc Chac1 Il1a Cyr61 Fgr Trim24 Calca Lif Il18 Clef1 Asxl1 Il27 Cd300lf Vten1 Osm Nrg1 Fap Pdgfb Itga5 Mmp14 Kctd10 Timp1 Itga3 Tubb5 Daxx Crot Stat3 Gab2 Myo9b Tmbim1 Tgfbr1 Csf1 Actn1 Itga2 Rxra Il19 Ywhah Socs2 Cry1 Egfr Acox1 Nos2 Bdkrb2 Hif1a Anxa7 Ednrb Ets2 Nr4a1 Grp Ptpn2 Smad2 Jak2 Il23a Tspan4 Pdga Casp8 Cflar Il1r1 Ssfa2 Traf6 Hao1 Il6ra Efna1 Vcam1 Tlr2 Fga Cdh17 Sdcbp Hgf Uchl1 Glmn Spp1 Ddx54 Kcnj8 Cd9 Fgf21 Tacc2 Msn Efnb1 Plat Casp3 Il34 Cmtm3 Crtam Tirap Smad3 Tgfbr2 Myd88 Arap1 Fgb Fgg Tnfsf9 Kdm1a Ldlrap1 Serpine1 Cpe Sectm1b Dok4 Ripk2 Pik3r1 Wipi1 Adora1 Shc1 Hilpda Ptpn11 Ccr12 Il1f9 Defb1 S1pr1 Plaur Jaml Taf7 Ywhag Slc39a1 Kdm3a Hmgb2 Rnd1 Tcim Cebpb Fgf18 Flot1 Cd2ap Tac1 Flot2 Dok1 Tigit Gng3 Nup62 Lgals9 Sema6b Il17ra Ihh Arnt2 Traf3ip2 Grb10 Itgb3 Shank3 Bok Nr4a2 Itga6 Spred1 Sema3a Clec4d Lrg1 Sema7a Cdc42ep2 Gja1 Cry2 Acot2 Eci2 Cxadr Plscr1 Hmga1 Saa2 Nrbf2 Hmga1b Icosl Adam8 Nectin4 Asns Pvr Hip1r Stat3 Actn1 Slamf1 Sqstm1 Syt14 Nos2 Nr4a1 Mapk4 Smad2 Bok Wwtr1 Nfkb1 Lrrc41 Nrpb1 Smad1 Smad3 Timeless Ptpre Cebpb Nectin2 Nr6a1 Cebpd Dazap2 Fap Raf1 Pdgfb Gramd3 Angptl4 Hspb1 Hmox1 Bcl2l1 Fhl2 Mgst1 Vps4b Csf1 Aldh1a3 Ager Kctd5 Erbb3 Ddx39b Trip10 Tnfaip3 Apaf1 Plek Egfr Irak3 Tnip1 Nfkbia Mbip Esyt2 Golga5 Nup153 Ripk1 Tert Nufip1 Ripk3 Fam118a Myh9 Bcl6 Muc13 Masp1 Cryaa Xdh Luc7l Tmem173 Tnf Grpel2 Anxa1 Fas Cpt1a Rela Hoga1 Chuk Dctn2 Ksr2 Rassf3 Uap1 Optn Lcn2 Acvr1 Timm10 Traf6 Chmp4c Ptx3 Il6ra Abcd3 Bcl10 Sdcbp Glipr2 Ctps Slc2a1 Gale Phc2 Sfpq Rnf4 Sspl3 Bhlhe40 Rad18 Ctsc Calca Mvp Kctd13 Sult1a1 Fgfr2 Fgfr1 Rbpms Klhl2 Ubash3b Ets1 Acpp Pon2 Nlrp3 Mdfi Slc8b1 Slc16a1 Micall1 Fgg Tdg Ccl5 Sh3bp4 Inhbb Best1 Gch1 Gnpnat1 Prkab2 Chmp4b Stat2 Ddx58 Trim41 Ofd1 Ppp1r13l Ripk2 Hspb8	

Table SI. Continued.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
4	<0.001	100	GO:0008134 transcription factor binding	S100a10 Sun2 Als2cl Sfn Jaml Cited1 Jun Zfp212 Rpia Ier5 Atl2 Irak2 Dgkd Pdgfa Casp8 Nppc Klhl12 Glul Atf3 Casc3 Tnnc1 Gbp5 Eid3 Mef2d Ikzf4 Ube2g2 Plin5 Desi1 Foxp4 Chka Stom Bhlhe41 Ptgs2 Siah1a Msi1 Cldn3 Sgtb Psm4 Rassf1 Ccl4 Itgb3 Atxn3 Cxadr Rcan1 Mnda B4galt1 Hgf Myd88 Dgkh Kctd1 Ifi206 Mthfd11 Nbl1 Ifi209 Camk2d Ifi205 Lepr Ifit3b Pydc3 Ifi204 Ifi207 Ifi213 Ifit3 Cldn7 Cldn5 Cldn4 Cldn23 Sra1 Cdk9 Crtc2 Crtc3 Elmsan1 Taf7 Jun Junb Taf4b Pprc1 Sik1 Bhlhe40 Bhlhe41 Trib1 Nlrp3 Asxl1 Hmgb2 Sox9 Mef2d Klf4 Stat3 Klf5 Psm4 Fhl2 Ube2i Nfe2l2 Rxra Mafk Nfkb1a Hif1a Fos Tert Myc Hcls1 Nr4a1 Pim1 Tmem173 Tcerg1 Smad2 Ankrd1 Rela Ankrd2 Nop58 Hdac4 Nucks1 Exosc9 Nfkb1 Bcl10 Mad2l2 Rest Mef2a Rora Smad3 Nfatc1 Tdg Apex1 Kdm1a Bcor Ppp1r13l Pik3r1 Atf4 Dhx9 Bcl3 Cebpb Nup62 Ikzf4 Id3 Arnt2 Cry1 Xbp1 Per1 Paxbp1 Tle4 Rnf4 Arid5a Zfp516 Trim6 Zfp703 Ddx3x Ifrd1 Eaf1 Tnfrsf10b Mnda Kctd1 Ifi206 Setd1a Bex2 Ifi209 Hmga1 Ifi205 Dot1l Pydc3 Ifi204 Ifi207 Ifi213 Hmga1b Brms1 Arap1 Hesx1 Mybbp1a
5	<0.001	109	GO:0019900 kinase binding	Raf1 Shc3 Rgcc Atg13 Cks1b Trib1 Trib3 Hspb1 Cdk9 Ksr1 Tnfaip3 Fgr Irs2 Sfn Sox9 Mapk7 Daxx Gab2 Bcl2l1 Chp1 Sash1 Sqstm1 Sdc4 Slc12a4 Map2k3 Ppp1r12a Plek Egfr Tnip1 Map2k6 Per1 Hif1a Map3k1 Spry2 Hcls1 Ifnar2 Sik1 Rnf138 Tmem173 Map3k2 Ptpn2 Fas Jak2 Rela Rps6ka4 Ankrd2 Prkar1b Nek6 Traf6 Spred1 Src Ccn1l Ptpn22 Pip5k1a Bcl10 Slc2a1 Errfi1 Mad2l2 Tbc1d14 Mvp Msn Smad1 Tirap Smad3 Tgfbr2 Cnppd1 Map2k4 Midn Ibtik Ptpn23 Gch1 Ppp1r15a Pkp2 Shc1 Ptpn11 Fzd5 Bag5 Maml1 Camk2n2 Ywhag E2f Nod2 Ptafr Ptk2b Tnip2 Ccnyl1 Trim6 Fam83c Ccne1 Stat3 Mlkl Cry1 Mapk4 Hdac4 Dusp2 Mef2a Rps6ka3 Tdg Mapk6 Cebpb Cry2 Cdkn2d Xbp1 Ksr2 Parp16 Zfp36 Tgif1 Nrg1 Pea15a
6	<0.001	133	GO:0044212 transcription regulatory region DNA binding	Ikzf4 Hivep2 Phf21b Arid5b Xbp1 Paxbp1 Nfkb2 Gabpb1 Nfkb1 Barx2 Arid5a Jmjd1c Gmeb2 Elmsan1 Klhl6 Taf7 Jun Nfx1l Gm38394 Tfe3 Bcl6b Sox9 Tcf7 Mef2d Relb Klf4 Elf3 E2f3 Cdk9 Arnt2 Nfe2l2 Rxra Cry1 Per1 Fos Myc Bcl6 E2f2 Fosl1 Rela Bach1 Atf3

Table SI. Continued.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
7	<0.001	87	GO:0050839 cell adhesion molecule binding	Nr4a2 Sp3 Tbl1xr1 Sfpq Gmeb1 Fosl2 Ezh2 Bhlhe40 Ybx3 Etv6 Bhlhe41 Mef2a Smad1 Hinfp Smad3 Klf16 Gadd45a Elf1 Kdm1a Klf10 Egr1 Suv39h1 Bach2 Bcor Mybbp1a Hesx1 Chd7 Mkl1 Atf4 Foxf1 Klf13 Junb Kdm3a Hmgb2 Cebpb Nfil3 Zfp516 Cry2 Cebpd Sox4 Klf6 Mnt Irf9 Stat3 Klf5 Wnt11 E2f3 H3f3b Mafk Rel Klf11 Atxn3 Runx1 Atf1 Tnf Smad2 Irf7 Mybl1 Hdac4 Elk4 Xrn2 Skil Creb3 Rest Trim24 Elf4 Ets1 Rora Nfatc1 Tiparp Gatad2b Tgif1 Cited1 Zfp746 Crem Ctefl Spic Hif1a Foxp4 Prdm4 Nr6a1 Mnda Ifi206 Ifi209 Ifi205 Pydc3 Ifi204 Ifi207 Ifi213 Arap1 Hmga2 Nectin4 Erbin Icam1 Pvr Epcam Lama5 Ctgf Cyr61 Trim25 Cdh1 Fap Itga5 Mmp14 Epn2 Itga3 Emd Chmp2b Rsl1d1 Epha2 Clic1 Mkl2 Actn1 Itga2 Ppifbp1 Myo1b Cldn7 Egfr Rtn4 Bzw2 Lrrc59 Esyt2 Eif5 Cast Anxa7 Myh9 Plec Ptpn2 Anxa1 Tjp2 Csnk1d Adam8 Tspan4 Tagln2 Itga6 Ehd4 Nop56 Src Vcam1 Fga Cdh17 Sdcbp Wasf2 Zc3hav1 Cd9 Vasp Bag3 Msn Micall1 Fgb Fgg Tnks1bp1 Fmnl2 Anln Cpe F11r Chmp4b Efhd2 Ppp1r13l Shtn1 Pkp2 Ptpn11 Gprc5a Sfn Jaml Cdc42ep1 Mb21d2 Bzw1 Ezr Capg Cd2ap Nectin2 Nrg1 Itgb3 Sema7a Ddx3x Slc3a2 Cxadr
8	<0.001	256	GO:0032553 ribonucleotide binding	Stk17b Mlkl Clpx Dyrk3 Irak3 Nos2 Acot12 Sik1 Tmem173 Rit1 Ucp1 Cnbd2 Gnl3 Rhob Slfn4 Mx1 Raf1 Acvr1b Hk2 Ddx3x Mapk7 Tubb6 Tubb5 Rhoc Itpkc Myo9b Mapk13 Ripk4 Por Hipk1 Ube2g2 Cdk9 Vps4b Ube2z Ube2i Stk32c Mapkapk2 Rnd3 Arl5b Pgs1 Dhx58 Rab5a Erbb3 Ksr1 Myo1b Dhx40 Map2k3 Ddx39b Pdk4 Apaf1 Cdk17 Nuak1 Ddx21 Tbk1 Egfr Nav3 Itk Rock2 Gna13 Map2k6 Cmpk2 Rasl10b Tlk2 Map3k3 Ube2g1 Map3k14 Prkch Gtpbp4 Eif5 Ippk Ripk1 Riok1 Cdk20 Naip1 Plk2 Map3k1 Ddx4 Glud1 Ripk3 Tars Csnk1e Myh9 Atp13a3 Chkb Mcm4 Runx1 Tuba1b Ube2j2 Chd1 Pde10a Pim1 Rhoq Map3k8 Map3k2 Riok3 Gnl1 Mapk4 Trpm6 Jak2 Chka Smc5 Rps6ka4 Csnk1d Chuk Cdk2 Prkar1b Map4k4 Tuba4a Glul Abl2 Nek2 Nek6 Pfkfb3 Acvr1 Ifih1 Clp1 Hipk3 Hao1 Ehd4 Gnas Helz2 Src Spata5 Nras Hcn3 Pip5k1a Abcd3 Gem Gbp3 Gbp2

Table SI. Continued.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
9	<0.001	99	GO:0019901 protein kinase binding	Atp6v1b2 Epha2 Tgfbr1 Ube2j1 Pde4b Dyrk2 Ctps Plk3 Gpn2 Map3k6 Gnl2 Fgr Abcf2 Nos3 Nrbp1 Dhx15 Pi4k2b Tec Gbp9 Ulk1 Oasl2 Ddx54 Rasl11a Asns Gars Rab43 Kcnj8 Kras Mark4 Blm Rab30 Sult1a1 Fgfr2 Wee1 Acsl4 Rps6ka3 Rab20 Fgfr1 Rrad Srpr Kif23 Gclc Tgfbr2 Nlrp3 Trib3 Map2k4 Ppip5k1 Ddx19b Dnah17 Atp2c2 Ino80 Bmp2k Dgkh Mast4 Map4k5 Arl4d Slfn8 Prkx Pim3 Tubb4b Rap2b Gch1 Ddx60 Dnah10 Rras Rhou Ddx58 Btaf1 Rad54l2 Mthfd11 Ripk2 Chd7 Oasl1 Papd4 Arl15 Stk40 Mapk6 Dhx9 Tuba1c Tubb2b Ddx28 Csnk2a2 Rhoj Irgm1 Arl4a Entpd1 Nlrp10 Arl4c Rasd1 Prag1 Rap1b Oas1a Ddx10 Camk2d Rnd1 Rras2 Nod2 Rab31 Chd9 Dnah9 Sept11 Ube2e2 Tubb2a Ptk2b Eif4a1 At12 Irak2 Tor3a Stk19 Sphk1 Arf2 Slc22a21 Mocs1 Oas1g Gtf2f2 Ddx3y Dgkd Tuba1a Slfn2 Rhog Peak1 Slfn1 Ifi47 Ttbk2 Gbp5 Hspa14 Raf1 Shc3 Rgcc Atg13 Cks1b Trib1 Trib3 Hspb1 Cdk9 Fgr Irs2 Sfn Sox9 Mapk7 Daxx Gab2 Bcl2l1 Sash1 Sqstm1 Sdc4 Slc12a4 Map2k3 Ppp1r12a Plek Egfr Tnip1 Map2k6 Hif1a Map3k1 Spry2 Hcls1 Ifnar2 Sik1 Rnf138 Tmem173 Map3k2 Ptpn2 Jak2 Rela Rps6ka4 Ankrd2 Prkar1b Nek6 Traf6 Spred1 Src Ccnl1 Ptpn22 Bcl10 Errfi1 Mad2l2 Tbc1d14 Mvp Msn Smad1 Tirap Smad3 Tgfbr2 Cnppd1 Map2k4 Ibtik Ptpn23 Gch1 Ppp1r15a Pkp2 Shc1 Ptpn11 Fzd5 Bag5 Maml1 Camk2n2 Ywhag Ezr Nod2 Ptafr Ptk2b Tnip2 Ccny11 Trim6 Fam83c Ccne1 Stat3 Mlkl Cry1 Mapk4 Hdac4 Dusp2 Mef2a Rps6ka3 Tdg Mapk6 Cry2 Cdkn2d Xbp1 Ksr2 Zfp36 Tgif1 Nrg1 Pea15a
10	<0.001	254	GO:0017076 purine nucleotide binding	Grpel2 Stk17b Mlkl Clpx Dyrk3 Rab5a Irak3 Acot12 Sik1 Tmem173 Rit1 Ucp1 Cnbd2 Gnl3 Rhob Slfn4 Mx1 Raf1 Acvr1b Hk2 Ddx3x Mapk7 Tubb6 Tubb5 Rhoc Itpkc Myo9b Mapk13 Ripk4 Atp6v1b2 Epha2 Tgfbr1 Hipk1 Ube2g2 Cdk9 Vps4b Ube2z Ube2i Stk32c Mapkapk2 Rnd3 Arl5b Pgs1 Dhx58 Erbb3 Ksr1 Myo1b Dhx40 Map2k3 Ddx39b Pdk4 Apaf1 Cdk17 Nuak1 Ddx21 Tbk1 Egfr Nav3 Itk Rock2 Gna13 Map2k6 Cmpk2 Rasl10b Tlk2 Map3k3 Ube2g1 Map3k14 Prkch Gtpbp4 Eif5 Ippk Ripk1 Riok1 Cdk20 Naip1 Plk2 Map3k1 Ddx4 Glud1 Ripk3

Table SI. Continued.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
11	<0.001	252	GO:0032555 purine ribonucleotide binding	Tars Csnk1e Myh9 Atp13a3 Chkb Mcm4 Runx1 Tuba1b Ube2j2 Chd1 Pde10a Pim1 Rhoq Map3k8 Map3k2 Riok3 Gnl1 Mapk4 Trpm6 Jak2 Chka Smc5 Rps6ka4 Csnk1d Chuk Cdk2 Prkar1b Map4k4 Tuba4a Glul Abl2 Nek2 Nek6 Pfkfb3 Acvr1 Ifih1 Clp1 Hipk3 Ehd4 Gnas Helz2 Src Spata5 Nras Hcn3 Pip5k1a Abcd3 Gem Gbp3 Gbp2 Ube2j1 Pde4b Dyrk2 Ctps Plk3 Gpn2 Map3k6 Gnl2 Fgr Abcf2 Nrbp1 Dhx15 Pi4k2b Tec Gbp9 Ulk1 Oasl2 Ddx54 Rasl11a Asns Gars Rab43 Kcnj8 Kras Mark4 Blm Rab30 Sult1a1 Bag3 Fgfr2 Wee1 Acsl4 Rps6ka3 Rab20 Fgfr1 Rrad Srpr Kif23 Gclc Tgfbr2 Nlrp3 Trib3 Map2k4 Ppip5k1 Ddx19b Dnah17 Atp2c2 Ino80 Bmp2k Dgkh Mast4 Map4k5 Arl4d Slfn8 Prkx Pim3 Tubb4b Rap2b Gch1 Ddx60 Dnah10 Rras Rhou Ddx58 Btaf1 Rad54l2 Mthfd11 Ripk2 Chd7 Oasl1 Papd4 Arl15 Stk40 Mapk6 Dhx9 Tuba1c Tubb2b Ddx28 Csnk2a2 Rhoj Irgm1 Arl4a Entpd1 Nlrp10 Arl4c Rasd1 Prag1 Rap1b Oas1a Ddx10 Camk2d Rnd1 Rras2 Nod2 Rab31 Chd9 Dnah9 Sept11 Ube2e2 Tubb2a Ptk2b Eif4a1 At12 Irak2 Tor3a Stk19 Sphk1 Arf2 Slc22a21 Mocs1 Oas1g Gtf2f2 Ddx3y Dgkd Tuba1a Slfn2 Rhog Peak1 Slfn1 Ifi47 Ttbk2 Gbp5 Hspa14 Stk17b Mlkl Clpx Dyrk3 Irak3 Acot12 Sik1 Tmem173 Rit1 Ucp1 Cnbd2 Gnl3 RhoB Slfn4 Mx1 Raf1 Acvr1b Hk2 Ddx3x Mapk7 Tubb6 Tubb5 Rhoc Itpkc Myo9b Mapk13 Ripk4 Atp6v1b2 Epha2 Tgfbr1 Hipk1 Ube2g2 Cdk9 Vps4b Ube2z Ube2i Stk32c Mapkapk2 Rnd3 Arl5b Pgs1 Dhx58 Rab5a Erbb3 Ksr1 Myo1b Dhx40 Map2k3 Ddx39b Pdk4 Apaf1 Cdk17 Nuak1 Ddx21 Tbk1 Egfr Nav3 Itk Rock2 Gna13 Map2k6 Cmpk2 Rasl10b Tlk2 Map3k3 Ube2g1 Map3k14 Prkch Gtpbp4 Eif5 Ippk Ripk1 Riok1 Cdk20 Naip1 Plk2 Map3k1 Ddx4 Glud1 Ripk3 Tars Csnk1e Myh9 Atp13a3 Chkb Mcm4 Runx1 Tuba1b Ube2j2 Chd1 Pde10a Pim1 Rhoq Map3k8 Map3k2 Riok3 Gnl1 Mapk4 Trpm6 Jak2 Chka Smc5 Rps6ka4 Csnk1d Chuk Cdk2 Prkar1b Map4k4 Tuba4a Glul Abl2 Nek2 Nek6 Pfkfb3 Acvr1 Ifih1 Clp1 Hipk3 Ehd4 Gnas Helz2 Src Spata5 Nras Hcn3 Pip5k1a Abcd3 Gem Gbp3 Gbp2

Table SI. Continued.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
12	<0.001	247	GO:0001883 purine nucleoside binding	Ube2j1 Pde4b Dyrk2 Ctps Plk3 Gpn2 Map3k6 Gnl2 Fgr Abcf2 Nrbp1 Dhx15 Pi4k2b Tec Gbp9 Ulk1 Oasl2 Ddx54 Rasl11a Asns Gars Rab43 Kcnj8 Kras Mark4 Blm Rab30 Sult1a1 Fgfr2 Wee1 Acsl4 Rps6ka3 Rab20 Fgfr1 Rrad Srpr Kif23 Gclc Tgfbr2 Nlrp3 Trib3 Map2k4 Ppip5k1 Ddx19b Dnah17 Atp2c2 Ino80 Bmp2k Dgkh Mast4 Map4k5 Arl4d Slfn8 Prkx Pim3 Tubb4b Rap2b Gch1 Ddx60 Dnah10 Rras Rhou Ddx58 Btaf1 Rad54l2 Mthfd11 Ripk2 Chd7 Oasl1 Papd4 Arl15 Stk40 Mapk6 Dhx9 Tuba1c Tubb2b Ddx28 Csnk2a2 Rhoj Irgm1 Arl4a Entpd1 Nlrp10 Arl4c Rasd1 Prag1 Rap1b Oas1a Ddx10 Camk2d Rnd1 Rras2 Nod2 Rab31 Chd9 Dnah9 Sept11 Ube2e2 Tubb2a Ptk2b Eif4a1 At12 Irak2 Tor3a Stk19 Sphk1 Arf2 Slc22a21 Mocs1 Oas1g Gtf2f2 Ddx3y Dgkd Tuba1a Slfn2 Rhog Peak1 Slfn1 Ifi47 Ttbk2 Gbp5 Hspa14 Stk17b Mlkl Clpx Dyrk3 Irak3 Acot12 Sik1 Rit1 Gnl3 Rhob Slfn4 Mx1 Raf1 Acvr1b Hk2 Ddx3x Mapk7 Tubb6 Tubb5 Rhoc Itpkc Myo9b Mapk13 Ripk4 Atp6v1b2 Epha2 Tgfbr1 Hipk1 Ube2g2 Cdk9 Vps4b Ube2z Ube2i Stk32c Mapkapk2 Rnd3 Arl5b Ada Pgs1 Dhx58 Rab5a Erbb3 Ksr1 Myo1b Dhx40 Map2k3 Ddx39b Pdk4 Apaf1 Cdk17 Nuak1 Ddx21 Tbk1 Egfr Nav3 Itk Rock2 Gna13 Map2k6 Cmpk2 Rasl10b Tlk2 Map3k3 Ube2g1 Map3k14 Prkch Gtpbp4 Eif5 Ippk Ripk1 Riok1 Cdk20 Naip1 Plk2 Map3k1 Ddx4 Glud1 Ripk3 Tars Csnk1e Myh9 Atp13a3 Chkb Mcm4 Runx1 Tuba1b Ube2j2 Chd1 Pim1 Rhoq Map3k8 Map3k2 Riok3 Gnl1 Mapk4 Trpm6 Jak2 Chka Smc5 Rps6ka4 Csnk1d Chuk Cdk2 Map4k4 Tuba4a Glul Abl2 Nek2 Nek6 Pfkfb3 Acvr1 Ifih1 Clp1 Hipk3 Ehd4 Gnas Helz2 Src Spata5 Nras Pip5k1a Abcd3 Gem Gbp3 Gbp2 Ube2j1 Dyrk2 Ctps Plk3 Gpn2 Map3k6 Gnl2 Fgr Abcf2 Nrbp1 Dhx15 Pi4k2b Tec Gbp9 Ulk1 Oasl2 Ddx54 Rasl11a Asns Gars Rab43 Kcnj8 Kras Mark4 Blm Rab30 Sult1a1 Fgfr2 Wee1 Acsl4 Rps6ka3 Rab20 Fgfr1 Rrad Srpr Kif23 Gclc Tgfbr2 Nlrp3 Trib3 Map2k4 Ppip5k1 Ddx19b Dnah17 Atp2c2 Ino80 Bmp2k Dgkh Mast4 Map4k5 Arl4d Slfn8 Prkx Pim3 Tubb4b Rap2b Gch1 Ddx60 Dnah10

Table SI. Continued.

A, Downregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
				Rras Rhou Ddx58 Btaf1 Rad54l2 Mthfd1l Ripk2 Chd7 Oasl1 Papd4 Arl15 Adora1 Stk40 Mapk6 Dhx9 Tuba1c Tubb2b Ddx28 Csnk2a2 Rhoj Irgm1 Arl4a Entpd1 Nlrp10 Arl4c Rasd1 Prag1 Rap1b Oas1a Ddx10 Camk2d Rnd1 Rras2 Nod2 Rab31 Chd9 Dnah9 Sept11 Ube2e2 Tubb2a Ptk2b Eif4a1 Atl2 Irak2 Tor3a Stk19 Sphk1 Arf2 Slc22a21 Mocs1 Oas1g Gtf2f2 Ddx3y Dgkd Tuba1a Slfn2 Rhog Peak1 Slfn1 Ifi47 Ttbk2 Gbp5 Hspa14
B, Upregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
13	<0.001	204	GO:0005215 transporter activity	Slc7a7 Slc13a2 Gria3 Aqp1 Abca13 Slc25a11 Slc13a3 Slc25a35 Slc35b4 Slc36a1 Atp6v1c2 Slc25a19 P2rx1 Spns3 Slc6a4 Slc10a1 Slc25a48 Slc22a22 Slc10a2 Abcg1 Slc4a9 Slc18a2 Slc28a1 Atp2b4 Abcb11 Slc43a1 Slc12a6 Slc33a1 Slc6a17 Slc5a9 Slc13a1 Slc6a13 Atp2b2 Slc7a10 Slc5a11 Abcc6 Cnga4 Apoa4 Plscr2 Plscr4 Slc26a2 Scn7a Chrn4 Kcnh4 Abca17 Slc25a21 Slc2a13 Atp13a2 Slc12a9 Slc18b1 Slc2a12 Atp8a1 Slc43a2 Mfsd4b1 Mfsd4b5 Slc7a12 Slc26a7 Slc7a13 Kcnj1 Abca9 Abca8a Svop Trpv3 Kcnj10 Slc38a6 Abca6 Slc25a23 Slc26a1 Kcnj16 Slc22a26 Slc10a5 Atp8b4 Slc22a27 Slc4a5 Slc22a14 Mfsd4b3 Slc22a13 Kcng1 Slc22a29 Slc5a3 Gm4353 Mfsd4b4 Apoe Slc1a2 Slc2a9 Slc1a3 Trpv1 Atp7b Slc4a1 Slc4a3 Trpm2 Rufy1 Slc46a1 Ryr2 Asic1 Atp6v1g2 Slc29a2 Bsnd Atp6v1g3 Slc2a2 Chrn2 Itpr2 Rhcg Disp1 Pkd2 Cnm4 Grin3a Aqp11 Scn4b Mmgt2 Kenn2 Ano9 Grm7 Slc14a1 Cnm2 Slc39a2 Rhbg Gm2a Gabrg1 Kenn1 Cacna1e Atp6v1b1 Slc16a12 Slc47a1 Tmem175 Clc3 Cacnb4 Fabp7 Slc29a3 Slc16a7 Osbp18 Slc5a4a Atp2a3 Slc6a18 Slc15a2 Gabrr2 Clc5 Stard4 Kenk4 Sfxn2 Kcnip2 Slc6a20b Abca2 P2rx3 Slc12a1 Slc52a3 Sec62 Sypl2 Atp6v0d2 Slc35a1 Aqp7 Aqp3 Fabp3 Nipal3 Kcnab2 Rbp7 Abcb9 Slc6a12 Slco1b2 Ttyh1 Slco2b1 Aqp8 Syp Abcd1 Gas6 Abcb10 Slc37a2 Folr2 Sfxn5 Flvcr2 Ano8 Gc Fxyd1 Slc16a9 Sv2a Slc26a10

Table SI. Continued.

B, Upregulated genes

Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
14	<0.001	56	GO:0015291 secondary active transmembrane transporter activity	Slco4c1 Aqp6 Slc16a13 Slc16a5 Nipa1 Kcnk3 Coa6 Trpm3 Fabp1 Slc8a1 Ano5 Bcl2 Kcnc3 Hikeshi Sfxn4 Mup3 Mup14 Mup11 Mup7 Cox7a1 Mup19 Gm6614 Mup12 Mup15 Mup17 Tnfaip8l3 Pgap2 Cpox Slc7a7 Slc25a11 Slc6a4 Slc10a1 Slc22a22 Slc10a2 Slc28a1 Slc12a6 Slc33a1 Slc5a9 Slc13a1 Slc7a10 Slc5a11 Slc26a2 Slc2a13 Slc12a9 Slc2a12 Slc7a12 Slc26a7 Slc7a13 Slc22a26 Slc10a5 Slc22a27 Slc22a14 Slc22a13 Slc22a29 Slc5a3 Slc1a2 Slc1a3 Slc4a3 Slc13a3 Slc36a1 Slc26a1 Slc13a2 Slc4a1 Slc16a12 Slc47a1 Slc16a7 Slc6a18 Slc4a9 Slc6a20b Slc12a1 Slc6a17 Slc35a1 Slc6a13 Slc6a12 Slco2b1 Slc37a2 Slc16a9 Mfsd4b1 Slc26a10 Slc16a13 Slc16a5 Slc8a1 Slc4a5 Mfsd4b3
15	<0.001	78	GO:0022804 active transmembrane transporter activity	Slc7a7 Abca13 Slc25a11 Atp6v1c2 Slc6a4 Slc10a1 Slc22a22 Slc10a2 Abcg1 Slc18a2 Slc28a1 Atp2b4 Slc12a6 Slc33a1 Slc5a9 Slc13a1 Atp2b2 Slc7a10 Slc5a11 Abcc6 Slc26a2 Abca17 Slc2a13 Atp13a2 Slc12a9 Slc2a12 Slc7a12 Slc26a7 Slc7a13 Abca9 Abca8a Abca6 Slc22a26 Slc10a5 Slc22a27 Slc22a14 Slc22a13 Slc22a29 Slc5a3 Slc1a2 Slc1a3 Atp7b Slc4a3 Slc13a3 Slc36a1 Atp6v1g2 Atp6v1g3 Slc26a1 Slc13a2 Atp6v1b1 Slc4a1 Slc16a12 Slc47a1 Slc16a7 Atp2a3 Slc6a18 Slc4a9 Slc6a20b Abcb11 Slc12a1 Slc6a17 Slc35a1 Abcb9 Slc6a13 Slc6a12 Slco2b1 Abcd1 Abcb10 Slc37a2 Slc16a9 Mfsd4b1 Slc26a10 Slc16a13 Slc16a5 Slc8a1 Slc4a5 Mfsd4b3 Cpox
16	<0.001	165	GO:0022857 transmembrane transporter activity	Slc7a7 Gria3 Aqp1 Abca13 Slc25a11 Slc13a3 Slc25a35 Slc35b4 Slc36a1 Atp6v1c2 Slc25a19 P2rx1 Slc6a4 Slc10a1 Slc25a48 Slc22a22 Slc10a2 Abcg1 Slc4a9 Slc18a2 Slc28a1 Atp2b4 Abcb11 Slc43a1 Slc12a6 Slc33a1 Slc6a17 Slc5a9 Slc13a1 Atp2b2 Slc7a10 Slc5a11 Abcc6 Cnga4 Slc26a2 Scn7a Chrnb4 Kcnh4 Abca17 Slc25a21 Slc2a13 Atp13a2 Slc12a9 Slc18b1 Slc2a12 Slc43a2 Mfsd4b1 Mfsd4b5 Slc7a12 Slc26a7 Slc7a13 Kcnj1 Abca9 Abca8a Svop Trpv3 Kcnj10 Slc38a6 Abca6 Slc25a23 Slc26a1 Kcnj16 Slc22a26 Slc10a5 Slc22a27 Slc4a5 Slc22a14 Mfsd4b3 Slc22a13 Kcng1 Slc22a29 Slc5a3 Mfsd4b4 Slc1a2 Slc2a9 Slc1a3 Trpv1 Atp7b Slc4a1

Table SI. Continued.

B, Upregulated genes

Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
17	<0.001	145	GO:0022891 substrate-specific transmembrane transporter activity	Slc4a3 Trpm2 Ryr2 Asic1 Atp6v1g2 Slc29a2 Bsnd Atp6v1g3 Slc2a2 Chrb2 Itr2 Rhec Pkd2 Cnm4 Grin3a Aqp11 Scn4b Mmgt2 Kcnn2 Grm7 Slc14a1 Cnm2 Slc39a2 Rhbg Slc13a2 Gabrg1 Kcnn1 Cacna1e Atp6v1b1 Slc16a12 Slc47a1 Tmem175 Clic3 Cacnb4 Slc29a3 Slc16a7 Atp2a3 Slc46a1 Slc6a18 Gabrr2 Clic5 Kcnk4 Sfxn2 Kcnip2 Slc6a20b P2rx3 Slc12a1 Atp6v0d2 Slc35a1 Aqp7 Aqp3 Nipal3 Kcnab2 Abcb9 Slc6a13 Slc6a12 Slco1b2 Ttyh1 Slco2b1 Abcd1 Gas6 Abcb10 Slc37a2 Sfxn5 Ano8 Fxyd1 Slc16a9 Sv2a Slc26a10 Aqp6 Slc16a13 Slc16a5 Nipa1 Kcnk3 Coa6 Trpm3 Slc8a1 Ano9 Ano5 Bcl2 Kcnc3 Sfxn4 Cox7a1 Aqp8 Slco4c1 CpoX Slc7a7 Gria3 Aqp1 Slc25a11 Slc13a3 Slc35b4 Slc36a1 Atp6v1c2 Slc25a19 P2rx1 Slc6a4 Slc10a1 Slc22a22 Slc10a2 Slc4a9 Slc18a2 Slc28a1 Atp2b4 Abcb11 Slc43a1 Slc12a6 Slc33a1 Slc6a17 Slc5a9 Slc13a1 Atp2b2 Slc7a10 Slc5a11 Cnga4 Slc26a2 Scn7a Chrb4 Kcnh4 Slc25a21 Slc2a13 Atp13a2 Slc12a9 Slc2a12 Slc43a2 Mfsd4b1 Mfsd4b5 Slc7a12 Slc26a7 Slc7a13 Kcnj1 Svop Trpv3 Kcnj10 Slc38a6 Slc25a23 Slc26a1 Kcnj16 Slc22a26 Slc10a5 Slc22a27 Slc4a5 Slc22a14 Mfsd4b3 Slc22a13 Kcng1 Slc22a29 Mfsd4b4 Slc1a2 Slc2a9 Slc1a3 Trpv1 Atp7b Slc4a1 Slc4a3 Trpm2 Ryr2 Asic1 Atp6v1g2 Slc29a2 Bsnd Atp6v1g3 Slc2a2 Chrb2 Itr2 Rhec Pkd2 Cnm4 Grin3a Aqp11 Scn4b Mmgt2 Kcnn2 Grm7 Slc14a1 Cnm2 Slc39a2 Rhbg Gabrg1 Kcnn1 Cacna1e Slc47a1 Tmem175 Clic3 Cacnb4 Slc29a3 Slc16a7 Atp2a3 Slc46a1 Slc6a18 Gabrr2 Clic5 Kcnk4 Sfxn2 Kcnip2 Slc6a20b P2rx3 Slc12a1 Atp6v0d2 Slc35a1 Aqp7 Aqp3 Nipal3 Kcnab2 Abcb9 Slc6a13 Slc6a12 Slco1b2 Ttyh1 Slco2b1 Gas6 Slc37a2 Sfxn5 Ano8 Fxyd1 Slc26a10 Aqp6 Nipa1 Kcnk3 Coa6 Trpm3 Slc8a1 Ano9 Ano5 Kcnc3 Sfxn4 Cox7a1 Atp6v1b1 Aqp8 Slco4c1 CpoX Slc7a7 Gria3 Aqp1 Slc25a11 Slc13a3 Slc35b4 Slc36a1 Atp6v1c2 Slc25a19 P2rx1 Spns3 Slc6a4 Slc10a1 Slc22a22 Slc10a2 Abcg1 Slc4a9 Slc18a2 Slc28a1 Atp2b4 Abcb11 Slc43a1 Slc12a6 Slc33a1 Slc6a17 Slc5a9 Slc13a1 Atp2b2 Slc7a10 Slc5a11 Cnga4 Apo4
18	<0.001	166	GO:0022892 substrate-specific transporter activity	Slc7a7 Gria3 Aqp1 Slc25a11 Slc13a3 Slc35b4 Slc36a1 Atp6v1c2 Slc25a19 P2rx1 Spns3 Slc6a4 Slc10a1 Slc22a22 Slc10a2 Abcg1 Slc4a9 Slc18a2 Slc28a1 Atp2b4 Abcb11 Slc43a1 Slc12a6 Slc33a1 Slc6a17 Slc5a9 Slc13a1 Atp2b2 Slc7a10 Slc5a11 Cnga4 Apo4

Table SI. Continued.

B, Upregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
				Plscr2 Plscr4 Slc26a2 Scn7a Chrb4 Kcnh4 Slc25a21 Slc2a13 Atp13a2 Slc12a9 Slc2a12 Atp8a1 Slc43a2 Mfsd4b1 Mfsd4b5 Slc7a12 Slc26a7 Slc7a13 Kenj1 Svop Trpv3 Kenj10 Slc38a6 Slc25a23 Slc26a1 Kenj16 Slc22a26 Slc10a5 Atp8b4 Slc22a27 Slc4a5 Slc22a14 Mfsd4b3 Slc22a13 Kcng1 Slc22a29 Mfsd4b4 Apoe Slc1a2 Slc2a9 Slc1a3 Trpv1 Atp7b Slc4a1 Slc4a3 Trpm2 Ruffy1 Ryr2 Asic1 Atp6v1g2 Slc29a2 Bsnd Atp6v1g3 Slc2a2 Chrb2 Itpr2 Rhec Disp1 Pkd2 Cnm4 Grin3a Aqp11 Scn4b Mmgt2 Kcnn2 Ano9 Grm7 Slc14a1 Cnm2 Slc39a2 Rhbg Gm2a Gabrg1 Kcnn1 Cacna1e Slc47a1 Tmem175 Clic3 Cacnb4 Slc29a3 Slc16a7 Osbp18 Atp2a3 Slc46a1 Slc6a18 Slc15a2 Gabrr2 Clic5 Stard4 Kenk4 Sfxn2 Kcnp2 Slc6a20b P2rx3 Slc12a1 Sec62 Atp6v0d2 Slc35a1 Aqp7 Aqp3 Fabp3 Nipal3 Kcnab2 Abcb9 Slc6a13 Slc6a12 Slco1b2 Ttyh1 Slco2b1 Abcd1 Gas6 Slc37a2 Sfxn5 Ano8 Fxyd1 Slc26a10 Aqp6 Nipa1 Kcnk3 Coa6 Trpm3 Fabp1 Slc8a1 Ano5 Kcnc3 Hikeshi Sfxn4 Cox7a1 Atp6v1b1 Tnfaip8l3 Aqp8 Slco4c1 Pgap2 Cpox Slc6a4 Slc10a1 Slc10a2 Abcg1 Slc18a2 Abcb11 Slc10a5 Aqp1 Aqp7 Aqp3 Slco1b2 Slco2b1 Slc37a2
19	<0.001	13	GO:1901618 organic hydroxy compound transmembrane transporter activity	
20	<0.001	33	GO:0015293 symporter activity	Slc6a4 Slc10a1 Slc10a2 Slc28a1 Slc12a6 Slc33a1 Slc5a9 Slc13a1 Slc5a11 Slc2a13 Slc12a9 Slc2a12 Slc10a5 Slc5a3 Slc1a2 Slc1a3 Slc13a3 Slc36a1 Slc13a2 Slc16a12 Slc16a7 Slc6a18 Slc6a20b Slc12a1 Slc6a17 Slc35a1 Slc6a13 Slc6a12 Slc16a9 Mfsd4b1 Slc16a13 Slc16a5 Mfsd4b3 Cyp1a2 Cyp1a1 Cyp2c29 Cyp2d26 Cyp2c23 Cyp2u1 Cyp2b9 Cyp2c37 Cyp2f2 Cyp2c50 Cyp3a11 Cyp2a12 Cyp2c70 Cyp2j11 Cyp2c54 Cyp3a57 Cyp2j7 Cyp2d12
21	<0.001	18	GO:0016712 oxidoreductase activity acting on paired donors with incorporation or reduction of molecular oxygen reduced flavin or flavoprotein as one donor and incorporation of one atom of oxygen	
22	<0.001	124	GO:0016491 oxidoreductase activity	Cyp2c29 Prodh Fdxr Mthfd1 Oxnad1 Sqle Cyp2c23 Fmo4 Fmo5 Cyb5r1 Nos1 Nxn1 Dhcr24 P3h2 6430573F11Rik Cyp2b9 Cyp2c37 Cyp2f2 Dhcr7 Cyp2a12 Cyp2c70 Cyp2c67 D2hgdh Mgst2 Cyp2c68 Dhdh Cmah Aldh3a1 P4ha1 Nxn Akr1c6 Cpox Gpd1 Msrb2

Table SI. Continued.

B, Upregulated genes

Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
				Fads2 Loxl4 Idh1 Fam213b Cyp2r1 Ido2 Hpgd Bco2 Cyp1a2 Cyp1a1 Aldh3b3 Kdm1b Tet2 Tet1 Cyp2c50 Cyp3a11 Ero1lb Ppox Ddo Cyp2c54 Rdh1 Gmpr Cyp51 Alkbh7 Cyp4f18 Fads1 Chdh Foxred2 Rtn4ip1 Pah Adi1 Cyp46a1 Srd5a1 Acox2 Enox1 Cyp2d26 Pycr1 Hsd17b6 Snca Pecr Ndufaf5 Hao2 Cyp2u1 Bdh2 Uox Mmachc Kcnab2 Aoc1 Tbxas1 Hsd17b14 Enox2 F8 Nsdhl Dhodh Hsd11b2 Mto1 Dhrs11 Wdr93 Fmo1 Dao Acad12 Rfesd Fads6 Akr1e1 Vat11 Nqo2 Cbr1 Coa6 Akr1c20 Aasdh Ndufs8 Gapdhs Hsd3b3 Hsd3b2 Dhrs3 Cyp2j11 Ecsit Cyp3a57 Ptgr2 Cox7a1 Rdh16f2 Cyp4a12b Phyhd1 Cyp2j7 Gm4450 Hsd3b4 Gm10681 Cyp2d12 Gstm7 Gstp1
23	0.001	27	GO:0005342 organic acid transmembrane transporter activity	Slc7a7 Slc25a11 Slc13a3 Slc10a1 Slc10a2 Abcb11 Slc43a1 Slc6a17 Slc7a10 Slc25a21 Slc43a2 Slc7a12 Slc7a13 Slc38a6 Slc22a26 Slc10a5 Slc22a27 Slc22a29 Slc1a2 Slc1a3 Slc36a1 Slc2a9 Slc16a7 Slc6a13 Slc6a12 Slco1b2 Slco2b1
24	0.001	118	GO:0015075 ion transmembrane transporter activity	Gria3 Aqp1 Slc25a11 Slc13a3 Slc36a1 Atp6v1c2 P2rx1 Slc6a4 Slc10a1 Slc22a22 Slc10a2 Slc4a9 Slc28a1 Atp2b4 Slc12a6 Slc33a1 Slc5a9 Slc13a1 Atp2b2 Slc5a11 Cnga4 Slc26a2 Scn7a Chrn4 Kcnh4 Slc2a13 Atp13a2 Slc12a9 Slc2a12 Slc26a7 Kcnj1 Trpv3 Kcnj10 Slc26a1 Kcnj16 Slc22a26 Slc10a5 Slc22a27 Slc4a5 Slc22a14 Slc22a13 Kcng1 Slc22a29 Slc1a2 Slc1a3 Trpv1 Atp7b Slc4a1 Slc4a3 Trpm2 Ryr2 Asic1 Atp6v1g2 Bsnd Atp6v1g3 Chrn2 Itpr2 Rhcg Pkd2 Cnnm4 Grin3a Scn4b Mmgt2 Kcnn2 Grm7 Cnnm2 Slc39a2 Rhbg Gabrg1 Kcnn1 Cacna1e Slc47a1 Tmem175 Clic3 Cacnb4 Slc16a7 Atp2a3 Slc46a1 Slc6a18 Gabrr2 Clic5 Kcnk4 Sfxn2 Kcnip2 Slc6a20b P2rx3 Slc12a1 Slc6a17 Atp6v0d2 Slc35a1 Nipal3 Kcnab2 Slc6a13 Slc6a12 Ttyh1 Slco2b1 Gas6 Slc37a2 Sfxn5 Ano8 Fxyd1 Mfsd4b5 Slc26a10 Aqp6 Nipa1 Kcnk3 Coa6 Trpm3 Slc8a1 Ano9 Ano5 Kcnc3 Sfxn4 Cox7a1 Atp6v1b1 Slco4c1 Slco1b2 Cpox
25	0.001	24	GO:0015294 solute:cation symporter activity	Slc6a4 Slc10a1 Slc10a2 Slc28a1 Slc12a6 Slc33a1 Slc5a9 Slc13a1 Slc5a11 Slc2a13 Slc12a9 Slc2a12 Slc10a5 Slc1a2 Slc1a3 Slc13a3 Slc36a1 Slc6a18 Slc6a20b Slc12a1 Slc6a17

Table SI. Continued.

B, Upregulated genes				
Rank	Adjusted P-value	Total genes (n)	Molecular Function	Genes
26	0.002	33	GO:0004497 monooxygenase activity	Slc35a1 Slc6a13 Slc6a12 Cyp2c29 Sqle Cyp2c23 Fmo4 Fmo5 Cyp2b9 Cyp2c37 Cyp2f2 Cyp2a12 Cyp2c70 Cyp2c67 Cyp2c68 Cmah Nos1 Cyp1a2 Cyp1a1 Cyp2c50 Cyp3a11 Cyp2c54 Cyp51 Cyp4f18 Pah Cyp46a1 Cyp2d26 Cyp2u1 Tbxas1 Cyp2r1 Fmo1 Cyp2j11 Cyp3a57 Cyp4a12b Cyp2j7 Cyp2d12
27	0.002	37	GO:0016829 lyase activity	Adcy9 Ehdcl1 Adcy1 Adcy5 Gm853 Acmsd Gucy1a1 Nthl1 Gucy1a2 Gucy2f Mgst2 Car4 L3hypdh Hae11 Car5a Npr1 Npr2 Uros Pts Neil1 Npl Ftdc Srr Mvd Hmgcll1 Shmt1 Poll Shmt2 Hacd4 Car7 Car12 Polq Uroc1 Tsen2 Fahd1 Thns12 Ppcdc

GO, Gene Ontology.