Table S23: GO function analysis of ranked signals from YRI population using the T_2 test statistic.

Description	p-value	Enrichment	Genes
Metal ion binding	3.3×10^{-11}	1.5	*ABO*, *ADARB2*, *ADCY5*, *ADCY8*, *ADD2*, *AGMAT*, *AGMO*, *ALPL*, *ANGPT2*, *APIP*, *APOA1BP*, *ARSB*, *ARSG*, *ARSJ*, *ATP10A*, *ATP10B*, *ATP10D*, *ATP13A5*, *ATP1A2*, *ATP2C2*, *ATP8A1*, *ATP8A2*, *BMPR1B*, *BNIP2*, *C1GALT1*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CADPS*, *CALN1*, *CAPN14*, *CAPN3*, *CAPN9*, *CARS2*, *CASQ2*, *CCBE1*, *CDC42BPA*, *CDH10*, *CDH12*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CDKAL1*, *CELSR2*, *CHN2*, *CLSTN2*, *COL11A1*, *COL27A1*, *COL2A1*, *COL5A1*, *COLEC12*, *CPQ*, *CRTAC1*, *CUBN*, *CYB5A*, *CYBRD1*, *CYP2E1*, *CYP2U1*, *CYP39A1*, *CYP3A43*, *CYP4F11*, *CYP4F12*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DCHS2*, *DGKB*, *DGKH*, *DGKI*, *DMRT1*, *DNER*, *DOHH*, *DSC1*, *DSC3*, *DSG1*, *DSG3*, *DTNA*, *EFCAB11*, *ELAC2*, *ELTD1*, *EMR1*, *EMR2*, *ENOSF1*, *ENPP1*, *EXO1*, *EYA2*, *EYA4*, *EYS*, *F13A1*, *F5*, *FAHD1*, *FAM188A*, *FARS2*, *FAT2*, *FAT3*, *FBLN1*, *FBP2*, *FCER2*, *FGD4*, *FGD5*, *FHIT*, *FOLH1B*, *FRAS1*, *FSTL4*, *FSTL5*, *FTO*, *FXN*, *GALNT10*, *GALNT2*, *GALNTL6*, *GPR39*, *GRM7*, *GUCA1A*, *GUCA1B*, *HDAC9*, *HMGCLL1*, *IDO2*, *IMPA2*, *INPP1*, *ITGA1*, *ITGA11*, *ITGA2*, *ITGA6*, *ITGA8*, *ITGA9*, *ITGAE*, *KALRN*, *KCND3*, *KCNIP1*, *KCNIP4*, *KSR2*, *LCN2*, *LEPREL1*, *LHPP*, *LOXL2*, *LRP1B*, *LRP8*, *LTBP1*, *MARC1*, *MARC2*, *MAST4*, *MCTP2*, *ME3*, *MGAT1*, *MGMT*, *MLPH*, *MMP20*, *MOB2*, *MOB3B*, *MRE11A*, *MYO5A*, *MYO9B*, *NCALD*, *NELL1*, *NELL2*, *NID2*, *NME7*, *NOTCH2*, *NOTCH4*, *NQO2*, *NRXN1*, *NRXN3*, *NUBPL*, *NUDT7*, *OC90*, *OMA1*, *P4HA1*, *PADI1*, *PADI2*, *PADI4*, *PADI6*, *PAPD4*, *PCCA*, *PCDH15*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCLO*, *PDE11A*, *PDE1A*, *PDE1C*, *PDE3A*, *PDE4D*, *PDE6C*, *PDSS1*, *PDZD8*, *PFKP*, *PGS1*, *PKD1L2*, *PKDREJ*, *PLA2G4E*, *PLCB1*, *PLCB4*, *PLCH1*, *PLOD2*, *PLSCR1*, *POLD1*, *PON3*, *PPEF2*, *PPP2CA*, *PRIM2*, *PRKCE*, *PRKD1*, *PRLR*, *PRUNE2*, *PTGS1*, *PXDN*, *PXDNL*, *RASEF*, *RCN3*, *RELN*, *RIMS1*, *RIMS2*, *RNPEP*, *RPS6KA2*, *RYR2*, *RYR3*, *SCD5*, *SCN1A*, *SCN9A*, *SCUBE1*, *SDF4*, *SDHC*, *SLC25A25*, *SLIT3*, *SMOC2*, *SPARCL1*, *STAC*, *STK32A*, *STK32B*, *SWAP70*, *SYT1*, *SYT10*, *SYT5*, *SYT6*, *SYT9*, *TESC*, *TET1*, *THBS2*, *TKT*, *TLL1*, *TPD52*, *TYW1*, *UNC13C*, *USP32*, *UTRN*, *VAV1*, *VAV2*, *VAV3*, *ZFYVE28*
MHC class II receptor activity	8.6×10^{-9}	16.2	*HLA-DOB*, *HLA-DPA1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*
Calcium ion binding	7.2×10^{-8}	1.8	*BNIP2*, *CADPS*, *CALN1*, *CAPN14*, *CAPN3*, *CAPN9*, *CASQ2*, *CCBE1*, *CDH10*, *CDH12*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CELSR2*, *CLSTN2*, *CRTAC1*, *CUBN*, *DCHS2*, *DGKB*, *DNER*, *DSC1*, *DSC3*, *DSG1*, *DTNA*, *EFCAB11*, *ELTD1*, *EMR1*, *EMR2*, *EYS*, *FAM188A*, *FAT2*, *FAT3*, *FBLN1*, *FSTL4*, *FSTL5*, *GRM7*, *GUCA1A*, *GUCA1B*, *KCNIP1*, *KCNIP4*, *LRP1B*, *LRP8*, *LTBP1*, *MCTP2*, *MGMT*, *MMP20*, *MYO5A*, *NCALD*, *NELL1*, *NELL2*, *NID2*, *NOTCH2*, *NOTCH4*, *OC90*, *PADI1*, *PADI2*, *PADI4*, *PADI6*, *PCDH15*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCLO*, *PGS1*, *PKD1L2*, *PKDREJ*, *PLCB1*, *PLCB4*, *PLCH1*, *PLSCR1*, *RASEF*, *RCN3*, *RYR2*, *RYR3*, *SCUBE1*, *SDF4*, *SLC25A25*, *SLIT3*, *SMOC2*, *SPARCL1*, *SWAP70*, *SYT1*, *THBS2*, *TLL1*, *TPD52*, *USP32*, *UTRN*

GO categories in which false discovery rate is less than 0.01.

Table S23 continued.

Description	p-value	Enrichment	Genes
Cation binding	9.6×10^{-8}	1.3	*ABLIM1*, *ABLIM3*, *ABO*, *ACPP*, *ADAM12*, *ADAM28*, *ADAM29*, *ADAM32*, *ADAMDEC1*, *ADAMTS12*, *ADAMTS16*, *ADAMTS2*, *ADAMTSL2*, *ADAMTSL3*, *ADARB2*, *ADAT2*, *ADCY5*, *ADCY8*, *ADD2*, *ADH1C*, *ADH4*, *AGAP1*, *AGBL1*, *AGBL3*, *AGBL4*, *AGMAT*, *AGMO*, *AGTPBP1*, *ALPL*, *AMZ1*, *ANGPT2*, *APIP*, *APOA1BP*, *APOBEC3H*, *APOBEC4*, *ARSB*, *ARSG*, *ARSJ*, *ASAP1*, *ATP10A*, *ATP10B*, *ATP10D*, *ATP13A5*, *ATP1A2*, *ATP2C2*, *ATP8A1*, *ATP8A2*, *BARD1*, *BAZ2B*, *BMPR1B*, *BNC2*, *BNIP2*, *BSPRY*, *C1GALT1*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CADPS*, *CALN1*, *CAPN14*, *CAPN3*, *CAPN9*, *CARS2*, *CASQ2*, *CBFA2T3*, *CCBE1*, *CDC42BPA*, *CDH10*, *CDH12*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CDKAL1*, *CELSR2*, *CHIA*, *CHN2*, *CHRNB3*, *CLSTN2*, *COL11A1*, *COL27A1*, *COL2A1*, *COL5A1*, *COLEC12*, *CPA3*, *CPB2*, *CPE*, *CPQ*, *CREB5*, *CRTAC1*, *CUBN*, *CYB5A*, *CYBRD1*, *CYP2E1*, *CYP2U1*, *CYP39A1*, *CYP3A43*, *CYP4F11*, *CYP4F12*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DCHS2*, *DCTD*, *DGKB*, *DGKH*, *DGKI*, *DMRT1*, *DNER*, *DOHH*, *DPYD*, *DSC1*, *DSC3*, *DSG1*, *DSG3*, *DTNA*, *DYTN*, *EFCAB11*, *ELAC2*, *ELTD1*, *EMR1*, *EMR2*, *ENOSF1*, *ENPP1*, *ERAP1*, *ERAP2*, *ESR1*, *ESRRB*, *ESRRG*, *EXO1*, *EYA2*, *EYA4*, *EYS*, *F13A1*, *F5*, *FAHD1*, *FAM170A*, *FAM188A*, *FARS2*, *FAT2*, *FAT3*, *FBLN1*, *FBP2*, *FCER2*, *FGD4*, *FGD5*, *FHIT*, *FOLH1B*, *FRAS1*, *FRRS1*, *FSTL4*, *FSTL5*, *FTO*, *FXN*, *GALC*, *GALNT10*, *GALNT2*, *GALNTL6*, *GBA3*, *GCM1*, *GDA*, *GLB1*, *GLIS1*, *GLIS3*, *GLRA3*, *GPR39*, *GRIN2A*, *GRM7*, *GUCA1A*, *GUCA1B*, *HAGH*, *HDAC9*, *HMGCLL1*, *HPSE2*, *IDO2*, *IKZF1*, *IKZF3*, *IMPA2*, *INPP1*, *ITGA1*, *ITGA11*, *ITGA2*, *ITGA6*, *ITGA8*, *ITGA9*, *ITGAE*, *KALRN*, *KCND3*, *KCNIP1*, *KCNIP4*, *KDM1B*, *KDM4C*, *KL*, *KLF12*, *KNG1*, *KSR2*, *L3MBTL2*, *L3MBTL4*, *LCN2*, *LCT*, *LDB3*, *LEPREL1*, *LHPP*, *LIMD1*, *LMCD1*, *LOXL2*, *LPP*, *LRP1B*, *LRP8*, *LTBP1*, *MANBA*, *MARC1*, *MARC2*, *MARCH1*, *MARCH4*, *MAST4*, *MCTP2*, *ME3*, *MECOM*, *MGAT1*, *MGAT5B*, *MGMT*, *MLL3*, *MLPH*, *MMP20*, *MOB2*, *MOB3B*, *MRE11A*, *MYO5A*, *MYO9B*, *MYRIP*, *MYT1L*, *NCALD*, *NELL1*, *NELL2*, *NEURL1B*, *NID2*, *NME7*, *NOTCH2*, *NOTCH4*, *NPEPPS*, *NQO2*, *NR1H2*, *NR3C1*, *NRAP*, *NRXN1*, *NRXN3*, *NUBPL*, *NUDT7*, *OC90*, *OMA1*, *P4HA1*, *PADI1*, *PADI2*, *PADI4*, *PADI6*, *PAPD4*, *PARK2*, *PCCA*, *PCDH15*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCLO*, *PDE11A*, *PDE1A*, *PDE1C*, *PDE3A*, *PDE4D*, *PDE6C*, *PDLIM1*, *PDLIM5*, *PDSS1*, *PDZD8*, *PDZRN4*, *PFKP*, *PGLYRP4*, *PGS1*, *PHF11*, *PHF17*, *PIKFYVE*, *PKD1L2*, *PKDREJ*, *PLA2G4E*, *PLCB1*, *PLCB4*, *PLCH1*, *PLOD2*, *PLSCR1*, *POLD1*, *PON3*, *PPEF2*, *PPP2CA*, *PRICKLE1*, *PRIM2*, *PRKCA*, *PRKCB*, *PRKCE*, *PRKD1*, *PRLR*, *PRUNE2*, *PTGS1*, *PXDN*, *PXDNL*, *RASEF*, *RCN3*, *RELN*, *RIMS1*, *RIMS2*, *RNF144B*, *RNF150*, *RNF212*, *RNFT2*, *RNPEP*, *RORA*, *RPS6KA2*, *RTN4IP1*, *RYR2*, *RYR3*, *SCD5*, *SCN1A*, *SCN9A*, *SCUBE1*, *SDF4*, *SDHC*, *SH3RF3*, *SLC25A25*, *SLIT3*, *SMOC2*, *SMYD1*, *SMYD3*, *SORBS2*, *SORD*, *SP110*, *SP140L*, *SPARCL1*, *SREK1IP1*, *ST18*, *STAC*, *STK32A*, *STK32B*, *SWAP70*, *SYT1*, *SYT10*, *SYT5*, *SYT6*, *SYT9*, *TCF19*, *TESC*, *TET1*, *THBS2*, *TKT*, *TLL1*, *TMEM163*, *TPD52*, *TRHDE*, *TRIM10*, *TRIM40*, *TRIM5*, *TRIM9*, *TRIML1*, *TSHZ2*, *TTC3*, *TYW1*, *UBR2*, *UNC13C*, *USP20*, *USP32*, *UTRN*, *VAV1*, *VAV2*, *VAV3*, *VPS8*, *YAF2*, *ZBTB16*, *ZBTB49*, *ZBTB7C*, *ZBTB8A*, *ZC3H12C*, *ZC3H6*, *ZCCHC4*, *ZDHHC14*, *ZDHHC7*, *ZFP57*, *ZFP64*, *ZFYVE28*, *ZNF107*, *ZNF155*, *ZNF160*, *ZNF18*, *ZNF195*, *ZNF211*, *ZNF257*, *ZNF280A*, *ZNF283*, *ZNF323*, *ZNF331*, *ZNF33B*, *ZNF354B*, *ZNF365*, *ZNF366*, *ZNF37A*, *ZNF385D*, *ZNF391*, *ZNF423*, *ZNF425*, *ZNF441*, *ZNF443*, *ZNF45*, *ZNF473*, *ZNF492*, *ZNF510*, *ZNF543*, *ZNF568*, *ZNF578*, *ZNF675*, *ZNF677*, *ZNF716*, *ZNF717*, *ZNF727*, *ZNF729*, *ZNF761*, *ZNF766*, *ZNF773*, *ZNF808*, *ZNF83*, *ZNF835*, *ZNF85*, *ZNF879*, *ZNF90*, *ZSCAN18*, *ZSWIM2*, *ZSWIM4*

GO categories in which false discovery rate is less than 0.01.

Table S23 continued.

Description	p-value	Enrichment	Genes
Ion binding	2.8×10^{-7}	1.2	*ABCA1*, *ABCA12*, *ABCA13*, *ABCA4*, *ABCB11*, *ABCB5*, *ABCC4*, *ABCC8*, *ABCD4*, *ABI3BP*, *ABLIM1*, *ABLIM3*, *ABO*, *ACBD5*, *ACPP*, *ACSBG2*, *ACSF3*, *ADAM12*, *ADAM28*, *ADAM29*, *ADAM32*, *ADAMDEC1*, *ADAMTS12*, *ADAMTS16*, *ADAMTS2*, *ADAMTSL2*, *ADAMTSL3*, *ADARB2*, *ADAT2*, *ADCY5*, *ADCY8*, *ADD2*, *ADH1C*, *ADH4*, *AGAP1*, *AGBL1*, *AGBL3*, *AGBL4*, *AGMAT*, *AGMO*, *AGTPBP1*, *AK3*, *AK5*, *ALK*, *ALPL*, *AMZ1*, *ANGPT2*, *APIP*, *APOA1BP*, *APOBEC3H*, *APOBEC4*, *ARL15*, *ARSB*, *ARSG*, *ARSJ*, *ASAP1*, *ASCC3*, *ATP10A*, *ATP10B*, *ATP10D*, *ATP13A5*, *ATP1A2*, *ATP2C2*, *ATP8A1*, *ATP8A2*, *BARD1*, *BAZ2B*, *BCR*, *BLK*, *BLM*, *BMP2K*, *BMPR1B*, *BNC2*, *BNIP2*, *BSPRY*, *C1GALT1*, *CACNA1A*, *CACNA1C*, *CACNA2D3*, *CADPS*, *CALN1*, *CAMK2D*, *CAPN14*, *CAPN3*, *CAPN9*, *CARS2*, *CASQ2*, *CBFA2T3*, *CCBE1*, *CCBL2*, *CCT5*, *CDC42BPA*, *CDH10*, *CDH12*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CDKAL1*, *CELSR2*, *CHIA*, *CHN2*, *CHRNB3*, *CLSTN2*, *CNGA3*, *COL11A1*, *COL23A1*, *COL25A1*, *COL27A1*, *COL2A1*, *COL5A1*, *COLEC12*, *CPA3*, *CPB2*, *CPE*, *CPQ*, *CREB5*, *CRTAC1*, *CUBN*, *CYB5A*, *CYBRD1*, *CYP2E1*, *CYP2U1*, *CYP39A1*, *CYP3A43*, *CYP4F11*, *CYP4F12*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DCHS2*, *DCTD*, *DDC*, *DDR2*, *DGKB*, *DGKH*, *DGKI*, *DHX37*, *DMGDH*, *DMRT1*, *DNAH11*, *DNAH17*, *DNAH5*, *DNAH8*, *DNAH9*, *DNER*, *DNM3*, *DOHH*, *DPYSL3*, *DSC1*, *DSC3*, *DSG1*, *DSG3*, *DTNA*, *DYNC2H1*, *DYTN*, *EFCAB11*, *EGFR*, *EIF2AK4*, *ELAC2*, *ELTD1*, *EMR1*, *EMR2*, *ENOSF1*, *ENPP1*, *EPHA3*, *EPHA6*, *EPRS*, *ERAP1*, *ERAP2*, *ERBB4*, *ERO1LB*, *ESR1*, *ESRRB*, *ESRRG*, *EXO1*, *EYA2*, *EYA4*, *EYS*, *F13A1*, *F5*, *FABP2*, *FAHD1*, *FAM170A*, *FAM188A*, *FARS2*, *FAT2*, *FAT3*, *FBLN1*, *FBP2*, *FCER2*, *FER*, *FGD4*, *FGD5*, *FGF1*, *FGF12*, *FGF14*, *FGF2*, *FHIT*, *FLT3*, *FMO2*, *FMO4*, *FMO5*, *FOLH1B*, *FRAS1*, *FSTL4*, *FSTL5*, *FTO*, *FXN*, *GADL1*, *GALC*, *GALNT10*, *GALNT2*, *GALNTL6*, *GBA3*, *GCM1*, *GDA*, *GLB1*, *GLIS1*, *GLIS3*, *GLRA3*, *GMDS*, *GPC5*, *GPC6*, *GPNMB*, *GPR39*, *GRIK1*, *GRIN2A*, *GRM7*, *GUCA1A*, *GUCA1B*, *HADHB*, *HAGH*, *HDAC9*, *HHAT*, *HK1*, *HLCS*, *HMGCLL1*, *HPSE2*, *HSPA12A*, *IDO2*, *IKZF3*, *IMPA2*, *INPP1*, *IQCA1*, *ITGA1*, *ITGA11*, *ITGA2*, *ITGA6*, *ITGA8*, *ITGA9*, *ITGAE*, *KALRN*, *KCND3*, *KCNIP1*, *KCNIP4*, *KDM1B*, *KDM4C*, *KIAA0564*, *KIAA1804*, *KIF13A*, *KIF16B*, *KIF21B*, *KL*, *KLF12*, *KNG1*, *KSR2*, *L3MBTL2*, *L3MBTL4*, *LAMC2*, *LCN2*, *LCT*, *LDB3*, *LEPREL1*, *LHPP*, *LIMD1*, *LMCD1*, *LOXL2*, *LPP*, *LRGUK*, *LRP1B*, *LRP8*, *LTBP1*, *MAGI1*, *MANBA*, *MAP2K3*, *MARC1*, *MARC2*, *MARCH1*, *MARCH4*, *MAST4*, *MCM9*, *MCTP2*, *ME3*, *MECOM*, *MGAT1*, *MGMT*, *MLL3*, *MLPH*, *MMP20*, *MOB2*, *MOB3B*, *MRE11A*, *MSH3*, *MTHFD1*, *MTHFD1L*, *MX1*, *MYH13*, *MYH9*, *MYLK4*, *MYO10*, *MYO16*, *MYO18B*, *MYO1B*, *MYO3A*, *MYO5A*, *MYO5B*, *MYO9B*, *MYRIP*, *MYT1L*, *NADSYN1*, *NAV2*, *NCALD*, *NEDD4*, *NELL1*, *NELL2*, *NEURL1B*, *NID2*, *NLRP1*, *NLRP11*, *NLRP2*, *NLRP5*, *NME7*, *NMNAT2*, *NOTCH2*, *NOTCH4*, *NPEPPS*, *NR1H2*, *NR3C1*, *NRAP*, *NRXN1*, *NRXN3*, *NTRK2*, *NTRK3*, *NUBPL*, *NUDT7*, *OC90*, *OMA1*, *ORC5*, *P4HA1*, *PADI1*, *PADI2*, *PADI4*, *PADI6*, *PANK1*, *PAPD4*, *PAPSS2*, *PARD3*, *PARK2*, *PCCA*, *PCDH15*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCLO*, *PDE11A*, *PDE1A*, *PDE1C*, *PDE3A*, *PDE4D*, *PDE6C*, *PDIK1L*, *PDLIM1*, *PDSS1*, *PDZD8*, *PDZRN4*, *PFKFB2*, *PFKP*, *PGLYRP4*, *PGS1*, *PHF11*, *PHF17*, *PIK3C2G*, *PIKFYVE*, *PKD1L2*, *PKDREJ*, *PLA2G4E*, *PLCB1*, *PLCB4*, *PLCH1*, *PLOD2*, *PLSCR1*, *POLD1*, *PON3*, *PPEF2*, *PPP2CA*, *PRICKLE1*, *PRIM2*, *PRKAG2*, *PRKCA*, *PRKCB*, *PRKCE*, *PRKD1*, *PRKG1*, *PRKG2*, *PRLR*, *PRUNE2*, *PSMC1*, *PTCH1*, *PTGS1*, *PXDNL*, *RAB27A*, *RAB36*, *RAD51B*, *RAD54L*, *RAPGEF4*, *RASEF*, *RCN3*, *RELN*, *RIMS1*, *RIMS2*, *RNF144B*, *RNF150*, *RNF212*, *RNFT2*, *RNGTT*, *RNPEP*, *ROR1*, *RORA*, *RPS6KA2*, *RTN4IP1*, *RYR2*, *RYR3*, *SCARB1*, *SCD5*, *SCLY*, *SCN1A*, *SCN9A*, *SCP2*, *SCUBE1*, *SDF4*, *SDHA*, *SDHC*, *SEPT11*, *SERPINE2*, *SH3RF3*, *SLC19A3*, *SLC25A25*, *SLC27A2*, *SLIT3*, *SMC2*, *SMOC2*, *SMYD1*, *SMYD3*, *SORBS2*, *SORD*, *SP110*, *SP140L*, *SPARCL1*, *SPEF2*, *SPTLC3*, *SRD5A1*, *SREK1IP1*, *ST18*, *STAC*, *STK32A*, *STK32B*, *STK39*, *STYK1*, *SUCLG2*, *SWAP70*, *SYK*, *SYN3*, *SYT1*, *SYT10*, *SYT5*, *SYT6*, *SYT9*, *TAP2*, *TEK*, *TET1*, *THBS2*, *TKT*, *TLK1*, *TLL1*, *TMEM163*, *TPD52*, *TPK1*, *TRHDE*, *TRIM10*, *TRIM40*, *TRIM5*, *TRIM9*, *TRIML1*, *TRPC4*, *TRPC6*, *TSHZ2*, *TTC3*, *TTLL2*, *TUBB*, *TULP3*, *TXNRD2*, *TYMS*, *TYW1*, *UBE2E3*, *UBR2*, *UGT1A7*, *UGT1A8*, *UGT1A9*, *ULK4*, *UNC13C*, *USP20*, *USP32*, *UTRN*, *VAV1*, *VAV2*, *VAV3*, *VPS8*, *VRK3*, *XYLB*, *YAF2*, *ZBTB16*, *ZBTB49*, *ZBTB7C*, *ZBTB8A*, *ZC3H12C*, *ZC3H6*, *ZCCHC4*, *ZDHHC14*, *ZDHHC7*, *ZFP57*, *ZFP64*, *ZFYVE28*, *ZNF107*, *ZNF155*, *ZNF160*, *ZNF18*, *ZNF195*, *ZNF211*, *ZNF257*, *ZNF280A*, *ZNF283*, *ZNF323*, *ZNF331*, *ZNF33B*, *ZNF354B*, *ZNF365*, *ZNF366*, *ZNF37A*, *ZNF385D*, *ZNF391*, *ZNF423*, *ZNF425*, *ZNF441*, *ZNF443*, *ZNF45*, *ZNF473*, *ZNF492*, *ZNF510*, *ZNF543*, *ZNF568*, *ZNF578*, *ZNF675*, *ZNF677*, *ZNF717*, *ZNF727*, *ZNF729*, *ZNF761*, *ZNF766*, *ZNF773*, *ZNF83*, *ZNF835*, *ZNF85*, *ZNF879*, *ZNF90*, *ZSCAN18*, *ZSWIM2*, *ZSWIM4*
Phospholipid binding	5.1×10^{-7}	1.8	*ABCA1*, *AFAP1*, *AGAP1*, *ALS2*, *ANXA4*, *APBB1IP*, *ARAP1*, *ARHGAP15*, *ARHGAP22*, *ARHGAP24*, *ARHGAP25*, *ARHGAP26*, *ARHGAP42*, *ARHGEF18*, *ASAP1*, *BCR*, *CADPS*, *CADPS2*, *CCDC88A*, *CDC42BPA*, *CIT*, *DGKH*, *DNM3*, *DOCK10*, *DOK5*, *DOK6*, *DYSF*, *ELMO1*, *FGD4*, *FGD5*, *GRB10*, *GRK5*, *HS1BP3*, *IQSEC1*, *KALRN*, *KIF16B*, *MCF2L2*, *MYO10*, *MYO1B*, *MYOF*, *OSBPL5*, *PARD3*, *PCLO*, *PHLDB2*, *PIK3C2G*, *PLA2G4C*, *PLCB1*, *PLCG2*, *PLCH1*, *PLD1*, *PLEKHA6*, *PLEKHA7*, *PLEKHG1*, *PLEKHG4B*, *PLEKHH2*, *PLEKHM3*, *PREX2*, *PRKD1*, *PSD3*, *PXK*, *RGNEF*, *SBF2*, *SCARB1*, *SGIP1*, *SKAP2*, *SNTB1*, *SNTG1*, *SNTG2*, *SNX19*, *SNX29*, *SNX31*, *SNX7*, *SPATA13*, *SWAP70*, *SYT1*, *TEX2*, *TIAM1*, *TIAM2*, *TULP3*, *VAV1*, *VAV2*, *VAV3*, *VEPH1*, *VNN1*, *VPS36*, *ZFYVE28*
Glutamate receptor activity	5.4×10^{-7}	10.8	*GRIA1*, *GRID1*, *GRID2*, *GRIK2*, *GRIN2A*, *GRM1*, *GRM5*, *GRM7*, *GRM8*
Actin binding	2.0×10^{-6}	1.9	*ABLIM1*, *ABLIM3*, *ADD2*, *AFAP1*, *ARPC5*, *CAP1*, *CAP2*, *CCDC88A*, *CLMN*, *COBLL1*, *CORO2B*, *COTL1*, *DAAM2*, *EGFR*, *FBXO25*, *FER*, *FGD4*, *FHOD3*, *FLNB*, *FMN1*, *FMN2*, *GAS7*, *IQGAP2*, *KLHL1*, *KLHL3*, *KLHL5*, *MAEA*, *MLPH*, *MTSS1*, *MYH13*, *MYH14*, *MYH9*, *MYO10*, *MYO16*, *MYO18B*, *MYO1B*, *MYO1F*, *MYO1H*, *MYO3A*, *MYO5A*, *MYO5B*, *MYO9B*, *MYPN*, *MYRIP*, *NCALD*, *NRAP*, *PALLD*, *PARVA*, *PDLIM5*, *PHACTR1*, *PHACTR3*, *PKNOX2*, *PRKCE*, *PXK*, *RCSD1*, *SHROOM3*, *SNTB1*, *SNTG1*, *SNTG2*, *SPTB*, *SVIL*, *SYNE1*, *TNS1*, *UTRN*, *XIRP2*
Ion gated channel activity	2.3×10^{-6}	2.2	*ANO2*, *ANO6*, *ASIC2*, *CACNA1A*, *CACNA1C*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *FGF2*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNC2*, *KCND3*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB3*, *KCNQ5*, *NALCN*, *PEX5L*, *RYR2*, *RYR3*, *SCN11A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *TRPC4*, *TRPC6*

GO categories in which false discovery rate is less than 0.01.

Table S23 continued.

Description	p-value	Enrichment	Genes
Gated channel activity	2.3×10^{-6}	2.2	*ANO2*, *ANO6*, *ASIC2*, *CACNA1A*, *CACNA1C*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *FGF2*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNC2*, *KCND3*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB3*, *KCNQ5*, *NALCN*, *PEX5L*, *RYR2*, *RYR3*, *SCN11A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *TRPC4*, *TRPC6*
Ion channel activity	2.7×10^{-6}	1.9	*ABCC8*, *ANO2*, *ANO6*, *ASIC2*, *BEST3*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *FGF2*, *FXYD6*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GPM6A*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNC2*, *KCND3*, *KCNE1*, *KCNH5*, *KCNH7*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB2*, *KCNMB3*, *KCNQ5*, *KCNV2*, *LRRC52*, *MCOLN2*, *NALCN*, *PDE2A*, *PEX5L*, *PIEZO2*, *PKD1L2*, *PKDREJ*, *RYR2*, *RYR3*, *SCN11A*, *SCN1A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *SLC26A7*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*
Substrate-specific channel activity	6.1×10^{-6}	1.8	*ABCC8*, *ANO2*, *ANO6*, *ASIC2*, *BEST3*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *FGF2*, *FXYD6*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GPM6A*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNC2*, *KCND3*, *KCNE1*, *KCNH5*, *KCNH7*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB2*, *KCNMB3*, *KCNQ5*, *KCNV2*, *LRRC52*, *MCOLN2*, *NALCN*, *PDE2A*, *PEX5L*, *PIEZO2*, *PKD1L2*, *PKDREJ*, *RYR2*, *RYR3*, *SCN11A*, *SCN1A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *SLC26A7*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*
Passive transmembrane transporter activity	2.3×10^{-5}	1.7	*ABCC8*, *ANO2*, *ANO6*, *ASIC2*, *BEST3*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *FGF2*, *FXYD6*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GPM6A*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNC2*, *KCND3*, *KCNE1*, *KCNH5*, *KCNH7*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB2*, *KCNMB3*, *KCNQ5*, *KCNV2*, *LRRC52*, *MCOLN2*, *NALCN*, *PDE2A*, *PEX5L*, *PIEZO2*, *PKD1L2*, *PKDREJ*, *RYR2*, *RYR3*, *SCN11A*, *SCN1A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *SLC26A7*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*
Channel activity	2.3×10^{-5}	1.7	*ABCC8*, *ANO2*, *ANO6*, *ASIC2*, *BEST3*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *FGF2*, *FXYD6*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GPM6A*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNC2*, *KCND3*, *KCNE1*, *KCNH5*, *KCNH7*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB2*, *KCNMB3*, *KCNQ5*, *KCNV2*, *LRRC52*, *MCOLN2*, *NALCN*, *PDE2A*, *PEX5L*, *PIEZO2*, *PKD1L2*, *PKDREJ*, *RYR2*, *RYR3*, *SCN11A*, *SCN1A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *SLC26A7*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*
Transmembrane transporter activity	3.2×10^{-5}	1.5	*ABCA1*, *ABCA4*, *ABCB11*, *ABCB5*, *ABCC12*, *ABCC4*, *ABCC6*, *ABCC8*, *ABCD4*, *ANKH*, *ANO2*, *ANO6*, *ASIC2*, *ATP10A*, *ATP10B*, *ATP10D*, *ATP12A*, *ATP13A5*, *ATP1A2*, *ATP2C2*, *ATP6V0A4*, *ATP6V0E2*, *ATP8A1*, *ATP8A2*, *BEST3*, *CACNA1A*, *CACNA1C*, *CACNA2D1*, *CACNA2D3*, *CHRNB3*, *CLCA2*, *CLCNKB*, *CNGA3*, *CTNS*, *CYB5A*, *FGF2*, *FXYD6*, *GABRB3*, *GABRG3*, *GABRR1*, *GLRA3*, *GPM6A*, *GRIA1*, *GRID1*, *GRID2*, *GRIK1*, *GRIK2*, *GRIK4*, *GRIN2A*, *GRM7*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNC2*, *KCND3*, *KCNE1*, *KCNH5*, *KCNH7*, *KCNH8*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ6*, *KCNK10*, *KCNK18*, *KCNK2*, *KCNMB2*, *KCNMB3*, *KCNQ5*, *KCNV2*, *LRRC52*, *MCOLN2*, *NALCN*, *OCA2*, *PDE2A*, *PEX5L*, *PIEZO2*, *PKD1L2*, *PKDREJ*, *PQLC2*, *RYR2*, *RYR3*, *SCN11A*, *SCN1A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *SLC12A3*, *SLC12A6*, *SLC12A8*, *SLC14A2*, *SLC15A2*, *SLC15A5*, *SLC16A14*, *SLC16A9*, *SLC17A5*, *SLC19A3*, *SLC1A2*, *SLC1A6*, *SLC1A7*, *SLC22A16*, *SLC22A23*, *SLC24A3*, *SLC24A4*, *SLC26A7*, *SLC28A3*, *SLC2A9*, *SLC36A2*, *SLC39A11*, *SLC39A12*, *SLC39A14*, *SLC5A12*, *SLC6A15*, *SLC7A1*, *SLC7A13*, *SLC9A4*, *SLC9A9*, *SLC9C1*, *SLCO1B3*, *SV2B*, *SV2C*, *TAP2*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*

GO categories in which false discovery rate is less than 0.01.