Table S24: GO component analysis of ranked signals from CEU population using the T_1 test statistic.

Description	p-value	Enrichment	Genes
Integral to lumenal side of endoplasmic reticulum membrane	1.7×10^{-17}	273.3	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
ER to Golgi transport vesicle membrane	1.1×10^{-16}	227.7	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Transport vesicle membrane	1.5×10^{-16}	139.8	*CPE*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
MHC protein complex	3.9×10^{-16}	200.9	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Endocytic vesicle membrane	7.7×10^{-15}	96.1	*DMBT1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
MHC class II protein complex	3.3×10^{-13}	71.9	*HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*
Integral to endoplasmic reticulum membrane	6.2×10^{-13}	80.4	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Plasma membrane	9.0×10^{-13}	1.5	*ABCA1*, *ABCA4*, *ABCB5*, *ABCC4*, *ABCG8*, *ACPP*, *ADAM12*, *ADAM28*, *ADCY3*, *ADCY5*, *ADD2*, *ADRA1A*, *ALPL*, *ANGPT1*, *ANGPT2*, *ANK2*, *ANK3*, *ANKS1B*, *ANO2*, *APBB1IP*, *ARHGAP24*, *ARHGEF18*, *ATP10D*, *ATP12A*, *ATP1A4*, *ATP8A1*, *ATP8B1*, *BAI3*, *BBS9*, *BLNK*, *BMPR1B*, *BNC2*, *BTN3A2*, *CACNA1A*, *CADM2*, *CAMK2D*, *CAP1*, *CDH10*, *CDH13*, *CDH4*, *CHD1L*, *CHL1*, *CHRNB3*, *CLDN10*, *CLDN14*, *CLSTN2*, *CNGA3*, *CNR2*, *CNTN1*, *CNTN4*, *CNTN5*, *COL13A1*, *CPE*, *CSMD2*, *CSMD3*, *CUBN*, *CXADR*, *CYBRD1*, *DAAM1*, *DAPP1*, *DCC*, *DCHS2*, *DGKH*, *DIO1*, *DISC1*, *DLG2*, *DLGAP1*, *DNAAF1*, *DNER*, *DSC1*, *DSCAM*, *DSG1*, *DTNA*, *DYM*, *DYNC2H1*, *DYSF*, *DYTN*, *ELTD1*, *EMID2*, *ENDOU*, *ERBB4*, *ESYT2*, *EXOC2*, *F2RL2*, *F5*, *FABP2*, *FAS*, *FAT2*, *FAT4*, *FHIT*, *FLVCR1*, *FMN1*, *FNDC1*, *FRAS1*, *FRMPD1*, *FSHR*, *GABRR1*, *GPC5*, *GPC6*, *GPR111*, *GPR139*, *GPR158*, *GPR39*, *GPR78*, *GRB10*, *GRIA1*, *GRIK2*, *GRIK3*, *GRIN2A*, *GRIP1*, *GRM5*, *GRM7*, *GRM8*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DOA*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *HLA-F*, *HLA-G*, *HPSE2*, *IGSF5*, *INADL*, *INPP5D*, *ITGA1*, *ITGA2*, *ITGA9*, *ITGB5*, *IYD*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNIP4*, *KCNJ12*, *KCNJ16*, *KCNK2*, *KCNMB2*, *KCNMB3*, *KCNQ4*, *KCNQ5*, *KIRREL3*, *KL*, *KLRB1*, *KNG1*, *LAMA2*, *LDLRAD3*, *LHCGR*, *LRRC52*, *LRRC7*, *LRRTM4*, *LYPD6B*, *MAGI2*, *MAPT*, *MCC*, *MDGA2*, *MTUS1*, *MYO10*, *MYO16*, *MYO1B*, *MYOF*, *NEDD4*, *NETO1*, *NFASC*, *NGEF*, *NKAIN3*, *NOTCH4*, *NPSR1*, *NRCAM*, *NRP1*, *NRXN1*, *NSL1*, *NTM*, *NTN4*, *OPCML*, *OPRK1*, *OR10AG1*, *OR10C1*, *OR12D2*, *OR13C5*, *OR14A16*, *OR1L8*, *OR1N2*, *OR1S1*, *OR2AK2*, *OR2L13*, *OR2T4*, *OR2W3*, *OR4C3*, *OR4C45*, *OR51B2*, *OR51B6*, *OR51E1*, *OR51F1*, *OR51I2*, *OR51M1*, *OR51Q1*, *OR52E2*, *OR52E6*, *OR52J3*, *OR52N2*, *OR52N4*, *OR52R1*, *OR5AC2*, *OR5F1*, *OR5I1*, *OR5P2*, *OR5W2*, *OR8G1*, *OR8G5*, *OR8H3*, *OR8I2*, *OR8U8*, *OR9G1*, *OR9G9*, *PALM2*, *PCDH15*, *PCDHA12*, *PCDHA13*, *PCDHA9*, *PDIA6*, *PHLDB2*, *PKP1*, *PLA2R1*, *PLCG2*, *PLSCR1*, *PLXNA4*, *PPFIBP1*, *PPYR1*, *PRKCE*, *PRKG1*, *PROKR2*, *PSD3*, *PTGER3*, *PTPN13*, *PXK*, *RAB31*, *RAB3C*, *RAMP3*, *RAPGEF4*, *RFTN1*, *RGS6*, *RIMBP2*, *RIMS1*, *RIMS2*, *RNPEP*, *ROR1*, *RPSA*, *RYR2*, *SCARB1*, *SEMA5A*, *SEMA6D*, *SGCG*, *SGCZ*, *SGIP1*, *SH3GL2*, *SIRPA*, *SKAP2*, *SLC12A6*, *SLC15A2*, *SLC16A14*, *SLC19A3*, *SLC1A2*, *SLC1A6*, *SLC22A16*, *SLC22A5*, *SLC24A4*, *SLC27A6*, *SLC28A1*, *SLC2A9*, *SLC9A4*, *SLCO1B1*, *SLCO1B3*, *SLCO5A1*, *SNCA*, *SNTB1*, *SNTG2*, *SPRED1*, *SVIL*, *SWAP70*, *SYK*, *TANC1*, *TAP1*, *TAP2*, *TEC*, *TEK*, *TES*, *TESC*, *THSD7A*, *TIAM1*, *TJP2*, *TPO*, *TRPC4*, *TRPC6*, *TSHR*, *TULP3*, *UNC13C*, *VAV3*, *VNN1*, *WWOX*
Cytoplasmic vesicle membrane	1.9×10^{-12}	29.7	*CPE*, *DMBT1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Intrinsic to endoplasmic reticulum membrane	2.7×10^{-12}	67.6	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Vesicle membrane	3.1×10^{-12}	28.5	*CPE*, *DMBT1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*

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

Table S24 continued.

Description	p-value	Enrichment	Genes
Membrane part	3.6×10^{-12}	1.2	*AADAC*, *AADACL2*, *ABCA1*, *ABCA13*, *ABCA4*, *ABCB5*, *ABCC11*, *ABCC4*, *ABCG8*, *ABO*, *ACER1*, *ACPP*, *ADAM12*, *ADAM28*, *ADAM29*, *ADCY3*, *ADCY5*, *ADCY8*, *ADRA1A*, *AIFM2*, *AJAP1*, *AKAP6*, *ALK*, *ALPL*, *ANGPT1*, *ANK2*, *ANK3*, *ANO1*, *ANO2*, *ANO3*, *ANXA6*, *AP1S3*, *AP3B1*, *APP*, *AQP8*, *AQP9*, *AQPEP*, *ART3*, *ASAH2*, *ASGR2*, *ASIC2*, *ASTN2*, *ATP10B*, *ATP10D*, *ATP12A*, *ATP1A4*, *ATP1B3*, *ATP2C2*, *ATP5C1*, *ATP6V0E2*, *ATP6V1C2*, *ATP6V1G2*, *ATP8A1*, *ATP8A2*, *ATP8B1*, *ATP9A*, *ATP9B*, *ATRNL1*, *AVL9*, *B4GALT1*, *BAI3*, *BBS9*, *BEST3*, *BMPR1B*, *BRI3BP*, *BTBD11*, *BTN3A1*, *BTN3A2*, *BTNL2*, *C1GALT1*, *C7*, *C8A*, *CACNA1A*, *CACNA2D1*, *CACNA2D3*, *CADM2*, *CAMK2D*, *CASQ2*, *CASR*, *CATSPERB*, *CD151*, *CD207*, *CDH10*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CDHR2*, *CDKAL1*, *CDON*, *CHL1*, *CHRM2*, *CHRNA9*, *CHRNB3*, *CHST11*, *CHST9*, *CLCA2*, *CLCNKB*, *CLDN1*, *CLDN10*, *CLDN14*, *CLDN20*, *CLEC12A*, *CLEC1A*, *CLEC1B*, *CLEC6A*, *CLECL1*, *CLIC5*, *CLSTN2*, *CMTM7*, *CMTM8*, *CNGA1*, *CNGA3*, *CNIH3*, *CNR2*, *CNTN1*, *CNTN4*, *CNTN5*, *CNTNAP2*, *CNTNAP4*, *CNTNAP5*, *COL13A1*, *COL25A1*, *COLEC12*, *CORIN*, *COX16*, *COX7B2*, *CPLX1*, *CSMD1*, *CSMD2*, *CSMD3*, *CUBN*, *CUX1*, *CXADR*, *CXCL12*, *CYBRD1*, *CYP2C8*, *CYP2E1*, *CYP4F11*, *CYP4F12*, *CYP4F2*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DAB2*, *DAD1*, *DBH*, *DCC*, *DCHS2*, *DDOST*, *DDR1*, *DERL3*, *DIO1*, *DLC1*, *DMBT1*, *DNER*, *DPP6*, *DPY19L4*, *DRAM1*, *DSC1*, *DSCAM*, *DSG1*, *DYSF*, *ELFN2*, *ELOVL2*, *ELOVL6*, *ELTD1*, *EMCN*, *EMR1*, *EMR2*, *ENPP1*, *ENTPD1*, *EPB41L4A*, *EPHA7*, *EPHB1*, *ERAP1*, *ERAP2*, *ERBB4*, *ERO1LB*, *ERVFRD-1*, *ESYT2*, *EVC*, *EVC2*, *EXOC4*, *F2RL2*, *FAM155A*, *FAM163A*, *FAM173B*, *FAM189A1*, *FAM189A2*, *FARP1*, *FAS*, *FAT2*, *FAT3*, *FAT4*, *FCER2*, *FER*, *FER1L6*, *FGD5*, *FLT3*, *FLVCR1*, *FMO2*, *FMO5*, *FRAS1*, *FRMD3*, *FSHR*, *FUT9*, *FZD6*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GALNT10*, *GALNT13*, *GALNT2*, *GALNTL4*, *GALNTL5*, *GALNTL6*, *GLDN*, *GLIPR1L2*, *GLRA3*, *GNB5*, *GOLM1*, *GPC5*, *GPC6*, *GPR111*, *GPR139*, *GPR158*, *GPR39*, *GPR65*, *GPR78*, *GRAMD1A*, *GRIA1*, *GRIA4*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRM4*, *GRM5*, *GRM7*, *GRM8*, *HHAT*, *HHLA2*, *HK1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DOA*, *HLA-DOB*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *HLA-F*, *HLA-G*, *HMGCLL1*, *HPSE*, *HS3ST4*, *HS6ST3*, *IFI27L1*, *IGSF5*, *IL12RB2*, *IL1RL1*, *IL1RL2*, *INADL*, *INSR*, *ITGA1*, *ITGA11*, *ITGA2*, *ITGA9*, *ITGB3*, *ITGB5*, *ITGBL1*, *ITPR1*, *ITPR2*, *IYD*, *JKAMP*, *KANK1*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNH7*, *KCNJ12*, *KCNJ16*, *KCNK10*, *KCNK2*, *KCNMB1*, *KCNMB2*, *KCNMB3*, *KCNQ3*, *KCNQ4*, *KCNQ5*, *KIAA1024*, *KIAA1324L*, *KIAA1549*, *KIRREL3*, *KL*, *KLHL14*, *KLRB1*, *LAMP3*, *LAPTM4B*, *LARGE*, *LDLRAD3*, *LEMD2*, *LEPR*, *LGR5*, *LHCGR*, *LHFP*, *LHFPL2*, *LHFPL3*, *LINGO2*, *LOC100507421*, *LPGAT1*, *LPPR5*, *LRFN2*, *LRFN5*, *LRP1B*, *LRRC52*, *LRRK2*, *LRRTM4*, *LSAMP*, *LYN*, *LYPD6B*, *MAN1A1*, *MAN2A1*, *MARCH4*, *MCOLN2*, *MDGA2*, *MEGF10*, *MEGF11*, *MEP1B*, *MGAT1*, *MGAT5B*, *MGST3*, *MOXD1*, *MRS2*, *MS4A6E*, *MTCH1*, *MUC12*, *MUC22*, *MYO10*, *MYO1D*, *MYOF*, *NAALADL2*, *NALCN*, *NAV3*, *NCALD*, *NCAM2*, *NDST3*, *NDST4*, *NDUFA12*, *NDUFB1*, *NDUFB10*, *NDUFB4*, *NEDD4*, *NETO1*, *NFASC*, *NINJ2*, *NIPAL1*, *NIPAL3*, *NKAIN1*, *NKAIN3*, *NMUR1*, *NMUR2*, *NOTCH2*, *NOTCH4*, *NPHS2*, *NPSR1*, *NRCAM*, *NRG1*, *NRG3*, *NRP1*, *NRXN1*, *NRXN3*, *NTM*, *NTRK2*, *NTSR1*, *NUP210*, *NUP35*, *NUP88*, *OCA2*, *ODZ3*, *ODZ4*, *OMA1*, *OPCML*, *OPN4*, *OPRK1*, *OR10AG1*, *OR10C1*, *OR12D2*, *OR13C2*, *OR13C5*, *OR14A16*, *OR1L8*, *OR1N2*, *OR1S1*, *OR2AK2*, *OR2B11*, *OR2J2*, *OR2L13*, *OR2T4*, *OR2W3*, *OR4C3*, *OR4C45*, *OR51B2*, *OR51B6*, *OR51D1*, *OR51E1*, *OR51F1*, *OR51I2*, *OR51M1*, *OR51Q1*, *OR51V1*, *OR52B6*, *OR52E2*, *OR52E4*, *OR52E6*, *OR52E8*, *OR52J3*, *OR52N2*, *OR52N4*, *OR52R1*, *OR5AC2*, *OR5F1*, *OR5I1*, *OR5P2*, *OR5W2*, *OR6N1*, *OR8G1*, *OR8G5*, *OR8H3*, *OR8I2*, *OR8U8*, *OR9G1*, *OR9G9*, *OTOP1*, *PCDH15*, *PCDH17*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCNXL2*, *PCSK5*, *PCSK9*, *PDE3A*, *PDIA6*, *PEX5L*, *PGBD5*, *PI16*, *PIEZO1*, *PIEZO2*, *PIGG*, *PIGN*, *PIGP*, *PINK1*, *PKD1L1*, *PKD1L2*, *PKHD1*, *PKP2*, *PLA2G4A*, *PLA2G4C*, *PLA2R1*, *PLAUR*, *PLD1*, *PLD5*, *PLEK*, *PLEKHH2*, *PLOD2*, *PLSCR1*, *PLXDC2*, *PLXNA4*, *PLXNC1*, *PNPLA3*, *PNPLA6*, *PPYR1*, *PRICKLE2*, *PRKAB2*, *PRKCA*, *PROKR2*, *PRPH2*, *PTCHD3*, *PTGER3*, *PTPRB*, *PTPRD*, *PTPRF*, *PTPRG*, *PTPRM*, *PTPRQ*, *PTPRT*, *PTPRU*, *QRFPR*, *RAB27A*, *RAMP3*, *RAPGEF4*, *RASGRF2*, *RECK*, *RFTN1*, *RGS6*, *RGS7*, *RNF144B*, *RNF150*, *RNPEP*, *ROBO2*, *ROR1*, *ROR2*, *RYR1*, *RYR2*, *RYR3*, *SCARA5*, *SCARB1*, *SCD5*, *SCN10A*, *SCN1A*, *SCN3A*, *SCN3B*, *SCN9A*, *SCNN1G*, *SDC2*, *SDHA*, *SDK1*, *SEC11C*, *SEC24D*, *SEMA5A*, *SEMA6D*, *SERINC5*, *SGCG*, *SGCZ*, *SGIP1*, *SGMS1*, *SHISA2*, *SHISA6*, *SHISA9*, *SHROOM3*, *SIRPA*, *SLC10A2*, *SLC12A6*, *SLC12A8*, *SLC14A1*, *SLC14A2*, *SLC15A2*, *SLC15A5*, *SLC16A14*, *SLC17A5*, *SLC19A3*, *SLC1A2*, *SLC1A6*, *SLC22A16*, *SLC22A4*, *SLC22A5*, *SLC22A9*, *SLC24A4*, *SLC25A21*, *SLC25A25*, *SLC25A37*, *SLC25A38*, *SLC27A6*, *SLC28A1*, *SLC2A1*, *SLC2A14*, *SLC2A9*, *SLC30A9*, *SLC31A2*, *SLC35B3*, *SLC35D2*, *SLC35F3*, *SLC35F4*, *SLC37A1*, *SLC37A2*, *SLC38A4*, *SLC38A8*, *SLC38A9*, *SLC39A11*, *SLC39A14*, *SLC39A8*, *SLC41A3*, *SLC4A7*, *SLC5A12*, *SLC6A5*, *SLC7A7*, *SLC8A1*, *SLC8A3*, *SLC9A4*, *SLC9A8*, *SLC9A9*, *SLC9C1*, *SLCO1B1*, *SLCO1B3*, *SLCO1C1*, *SLCO5A1*, *SLCO6A1*, *SNTB1*, *SNTG2*, *SNX16*, *SNX5*, *SOAT1*, *SORBS1*, *SORCS1*, *SORCS2*, *SORCS3*, *SPATA13*, *SPCS3*, *SPINK5*, *SPNS3*, *SPPL2C*, *SPRED1*, *SPTB*, *SPTLC3*, *SSR1*, *ST6GALNAC3*, *ST8SIA1*, *ST8SIA6*, *STEAP1B*, *STK39*, *STON2*, *STT3A*, *STX2*, *STXBP6*, *STYK1*, *SV2B*, *SV2C*, *SYK*, *SYNE1*, *SYNJ2*, *SYNJ2BP*, *SYNPR*, *SYT6*, *SYT9*, *TACSTD2*, *TAP1*, *TAP2*, *TAS1R2*, *TAS2R19*, *TAS2R20*, *TAS2R30*, *TEK*, *TESC*, *TGFBR3*, *THSD7A*, *THSD7B*, *TKT*, *TM4SF4*, *TMC2*, *TMCC3*, *TMCO4*, *TMEM106B*, *TMEM108*, *TMEM117*, *TMEM128*, *TMEM132B*, *TMEM132C*, *TMEM132D*, *TMEM156*, *TMEM163*, *TMEM17*, *TMEM176A*, *TMEM176B*, *TMEM2*, *TMEM220*, *TMEM229B*, *TMEM244*, *TMEM44*, *TMEM51*, *TMEM63C*, *TMEM8A*, *TMPRSS15*, *TMPRSS9*, *TMTC1*, *TMTC2*, *TNFRSF11A*, *TNR*, *TOMM7*, *TPO*, *TRAM2*, *TRDN*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*, *TSHR*, *TSPAN15*, *TSPAN18*, *TSPAN2*, *TSPAN8*, *TSPAN9*, *UBR3*, *UGT1A10*, *UGT1A7*, *UGT1A8*, *UGT1A9*, *UGT2B7*, *UGT3A2*, *UNC5C*, *UNC93A*, *USH2A*, *UST*, *VNN1*, *VOPP1*, *VSTM4*, *VWF*, *WBSCR17*, *WDR11*, *WLS*, *WWC1*, *XKR6*, *XXYLT1*, *XYLT1*, *XYLT2*, *YIPF1*, *ZDHHC13*, *ZDHHC14*, *ZDHHC7*
Coated vesicle membrane	4.3×10^{-12}	63.9	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Trans-Golgi network membrane	2.2×10^{-11}	26.0	*HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *KIF13A*

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

Table S24 continued.

Description	p-value	Enrichment	Genes
Integral to membrane	2.9×10^{-11}	1.3	*AADAC*, *AADACL2*, *ABCA1*, *ABCA13*, *ABCA4*, *ABCB5*, *ABCC11*, *ABCC4*, *ABCG8*, *ABO*, *ACER1*, *ACPP*, *ADAM12*, *ADAM28*, *ADAM29*, *ADCY3*, *ADCY5*, *ADCY8*, *ADRA1A*, *AIFM2*, *AJAP1*, *ALK*, *ALPL*, *ANK2*, *APP*, *AQP8*, *AQP9*, *AQPEP*, *ART3*, *ASAH2*, *ASGR2*, *ASIC2*, *ASTN2*, *ATP10B*, *ATP10D*, *ATP1A4*, *ATP2C2*, *ATP6V0E2*, *ATP8A1*, *ATP8A2*, *ATP8B1*, *ATP9A*, *ATP9B*, *ATRNL1*, *AVL9*, *B4GALT1*, *BAI3*, *BMPR1B*, *BRI3BP*, *BTBD11*, *BTN3A1*, *BTN3A2*, *BTNL2*, *C1GALT1*, *CACNA1A*, *CACNA2D3*, *CADM2*, *CASR*, *CD151*, *CD207*, *CDH10*, *CDH23*, *CDH4*, *CDH9*, *CDHR2*, *CDKAL1*, *CDON*, *CHL1*, *CHRM2*, *CHRNB3*, *CHST11*, *CHST9*, *CLCA2*, *CLCNKB*, *CLDN1*, *CLDN10*, *CLDN14*, *CLDN20*, *CLEC12A*, *CLEC1A*, *CLEC1B*, *CLEC6A*, *CLECL1*, *CLSTN2*, *CMTM7*, *CMTM8*, *CNGA1*, *CNGA3*, *CNR2*, *CNTNAP2*, *CNTNAP4*, *CNTNAP5*, *COL13A1*, *COL25A1*, *COLEC12*, *CORIN*, *COX16*, *COX7B2*, *CSMD1*, *CSMD2*, *CSMD3*, *CUX1*, *CXADR*, *CYBRD1*, *CYP4F11*, *CYP4F12*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DAD1*, *DBH*, *DCC*, *DCHS2*, *DDOST*, *DDR1*, *DERL3*, *DIO1*, *DNER*, *DPP6*, *DPY19L4*, *DRAM1*, *DSC1*, *DSCAM*, *DSG1*, *DYSF*, *ELFN2*, *ELOVL2*, *ELOVL6*, *ELTD1*, *EMCN*, *EMR1*, *EMR2*, *ENPP1*, *ENTPD1*, *EPHA7*, *EPHB1*, *ERAP1*, *ERAP2*, *ERBB4*, *ERVFRD-1*, *ESYT2*, *EVC*, *EVC2*, *F2RL2*, *FAM155A*, *FAM163A*, *FAM173B*, *FAM189A1*, *FAM189A2*, *FAS*, *FAT2*, *FAT3*, *FAT4*, *FCER2*, *FER1L6*, *FLT3*, *FLVCR1*, *FMO2*, *FMO5*, *FRAS1*, *FRMD3*, *FSHR*, *FUT9*, *FZD6*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GALNT10*, *GALNT13*, *GALNT2*, *GALNTL4*, *GALNTL5*, *GALNTL6*, *GLDN*, *GLIPR1L2*, *GLRA3*, *GOLM1*, *GPC5*, *GPC6*, *GPR111*, *GPR139*, *GPR158*, *GPR39*, *GPR65*, *GPR78*, *GRAMD1A*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRM4*, *GRM5*, *GRM7*, *GRM8*, *HHAT*, *HHLA2*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DOA*, *HLA-DOB*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *HLA-F*, *HLA-G*, *HS3ST4*, *HS6ST3*, *IFI27L1*, *IGSF5*, *IL12RB2*, *IL1RL1*, *IL1RL2*, *INSR*, *ITGB3*, *ITPR1*, *ITPR2*, *IYD*, *JKAMP*, *KCNAB1*, *KCNH7*, *KCNJ12*, *KCNK10*, *KCNMB2*, *KCNMB3*, *KIAA1024*, *KIAA1324L*, *KIAA1549*, *KIRREL3*, *KL*, *KLRB1*, *LAMP3*, *LAPTM4B*, *LARGE*, *LDLRAD3*, *LEMD2*, *LEPR*, *LGR5*, *LHCGR*, *LHFP*, *LHFPL2*, *LHFPL3*, *LINGO2*, *LOC100507421*, *LPGAT1*, *LPPR5*, *LRFN2*, *LRFN5*, *LRP1B*, *LRRC52*, *LRRTM4*, *MAN1A1*, *MAN2A1*, *MARCH4*, *MCOLN2*, *MEGF10*, *MEGF11*, *MEP1B*, *MGAT1*, *MGAT5B*, *MGST3*, *MOXD1*, *MRS2*, *MS4A6E*, *MTCH1*, *MUC12*, *MUC22*, *MYOF*, *NAALADL2*, *NALCN*, *NCAM2*, *NDST3*, *NDST4*, *NDUFB1*, *NDUFB4*, *NETO1*, *NFASC*, *NINJ2*, *NIPAL1*, *NIPAL3*, *NKAIN1*, *NKAIN3*, *NMUR1*, *NMUR2*, *NOTCH2*, *NOTCH4*, *NPHS2*, *NPSR1*, *NRCAM*, *NRG1*, *NRG3*, *NRP1*, *NRXN1*, *NRXN3*, *NTRK2*, *NTSR1*, *OCA2*, *ODZ3*, *ODZ4*, *OMA1*, *OPCML*, *OPN4*, *OPRK1*, *OR10AG1*, *OR10C1*, *OR12D2*, *OR13C2*, *OR13C5*, *OR14A16*, *OR1L8*, *OR1N2*, *OR1S1*, *OR2AK2*, *OR2B11*, *OR2J2*, *OR2L13*, *OR2T4*, *OR2W3*, *OR4C3*, *OR4C45*, *OR51B2*, *OR51B6*, *OR51D1*, *OR51E1*, *OR51F1*, *OR51I2*, *OR51M1*, *OR51Q1*, *OR51V1*, *OR52B6*, *OR52E2*, *OR52E4*, *OR52E6*, *OR52E8*, *OR52J3*, *OR52N2*, *OR52N4*, *OR52R1*, *OR5AC2*, *OR5F1*, *OR5I1*, *OR5P2*, *OR5W2*, *OR6N1*, *OR8G1*, *OR8G5*, *OR8H3*, *OR8I2*, *OR8U8*, *OR9G1*, *OR9G9*, *OTOP1*, *PCDH15*, *PCDH17*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCNXL2*, *PCSK5*, *PDE3A*, *PGBD5*, *PI16*, *PIEZO1*, *PIEZO2*, *PIGG*, *PIGN*, *PIGP*, *PINK1*, *PKD1L1*, *PKD1L2*, *PKHD1*, *PKP2*, *PLA2R1*, *PLAUR*, *PLD5*, *PLEKHH2*, *PLSCR1*, *PLXDC2*, *PLXNA4*, *PLXNC1*, *PNPLA3*, *PNPLA6*, *PPYR1*, *PROKR2*, *PRPH2*, *PTCHD3*, *PTGER3*, *PTPRB*, *PTPRD*, *PTPRF*, *PTPRG*, *PTPRM*, *PTPRQ*, *PTPRT*, *PTPRU*, *QRFPR*, *RAMP3*, *RNF144B*, *RNF150*, *ROBO2*, *ROR1*, *ROR2*, *RYR1*, *RYR3*, *SCARA5*, *SCARB1*, *SCD5*, *SCN1A*, *SCN3B*, *SCNN1G*, *SDC2*, *SDK1*, *SEC11C*, *SEMA5A*, *SEMA6D*, *SERINC5*, *SGCG*, *SGCZ*, *SGMS1*, *SHISA2*, *SHISA6*, *SIRPA*, *SLC10A2*, *SLC12A6*, *SLC12A8*, *SLC14A1*, *SLC14A2*, *SLC15A2*, *SLC15A5*, *SLC16A14*, *SLC17A5*, *SLC19A3*, *SLC1A2*, *SLC1A6*, *SLC22A16*, *SLC22A4*, *SLC22A5*, *SLC22A9*, *SLC24A4*, *SLC25A21*, *SLC25A25*, *SLC25A37*, *SLC25A38*, *SLC27A6*, *SLC28A1*, *SLC2A1*, *SLC2A14*, *SLC2A9*, *SLC30A9*, *SLC31A2*, *SLC35B3*, *SLC35D2*, *SLC35F3*, *SLC35F4*, *SLC37A1*, *SLC37A2*, *SLC38A4*, *SLC38A8*, *SLC38A9*, *SLC39A11*, *SLC39A14*, *SLC39A8*, *SLC41A3*, *SLC4A7*, *SLC5A12*, *SLC6A5*, *SLC7A7*, *SLC8A1*, *SLC8A3*, *SLC9A4*, *SLC9A8*, *SLC9A9*, *SLC9C1*, *SLCO1B1*, *SLCO1B3*, *SLCO1C1*, *SLCO5A1*, *SLCO6A1*, *SOAT1*, *SORCS1*, *SORCS2*, *SORCS3*, *SPCS3*, *SPNS3*, *SPPL2C*, *SPTLC3*, *SSR1*, *ST6GALNAC3*, *ST8SIA1*, *ST8SIA6*, *STEAP1B*, *STT3A*, *STX2*, *STXBP6*, *STYK1*, *SV2B*, *SV2C*, *SYNE1*, *SYNJ2BP*, *SYNPR*, *SYT6*, *SYT9*, *TACSTD2*, *TAP1*, *TAP2*, *TAS1R2*, *TAS2R19*, *TAS2R20*, *TAS2R30*, *TEK*, *TGFBR3*, *THSD7A*, *THSD7B*, *TM4SF4*, *TMC2*, *TMCC3*, *TMCO4*, *TMEM106B*, *TMEM108*, *TMEM117*, *TMEM128*, *TMEM132B*, *TMEM132C*, *TMEM132D*, *TMEM156*, *TMEM163*, *TMEM17*, *TMEM176A*, *TMEM176B*, *TMEM2*, *TMEM220*, *TMEM229B*, *TMEM244*, *TMEM44*, *TMEM51*, *TMEM63C*, *TMEM8A*, *TMPRSS15*, *TMPRSS9*, *TMTC1*, *TMTC2*, *TNFRSF11A*, *TOMM7*, *TPO*, *TRAM2*, *TRDN*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*, *TSHR*, *TSPAN15*, *TSPAN18*, *TSPAN2*, *TSPAN8*, *TSPAN9*, *UBR3*, *UGT1A10*, *UGT1A7*, *UGT1A8*, *UGT1A9*, *UGT2B7*, *UGT3A2*, *UNC5C*, *UNC93A*, *USH2A*, *UST*, *VNN1*, *VOPP1*, *VSTM4*, *WBSCR17*, *WDR11*, *WLS*, *XKR6*, *XXYLT1*, *XYLT1*, *XYLT2*, *YIPF1*, *ZDHHC13*, *ZDHHC14*, *ZDHHC7*
Cytoplasmic vesicle part	3.0×10^{-11}	22.9	*CPE*, *DMBT1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*

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

Table S24 continued.

Description	p-value	Enrichment	Genes
Membrane	3.3×10^{-11}	1.3	*AADAC*, *ABCA1*, *ABCA4*, *ABCB5*, *ABCC4*, *ABCG8*, *ABO*, *ACPP*, *ACTN1*, *ADAM12*, *ADAM28*, *ADCY3*, *ADCY5*, *ADCY8*, *ADD2*, *ADRA1A*, *AIFM2*, *AKAP12*, *AKAP13*, *AKAP6*, *ALDH18A1*, *ALPL*, *ALS2*, *AMPH*, *ANGPT1*, *ANGPT2*, *ANK2*, *ANK3*, *ANKS1B*, *ANO2*, *AP1S3*, *AP3B1*, *APBB1IP*, *APBB2*, *AQP8*, *ARHGAP24*, *ARHGEF18*, *ASAH2*, *ASAP1*, *ATP10D*, *ATP12A*, *ATP1A4*, *ATP2C2*, *ATP5C1*, *ATP6V0E2*, *ATP8A1*, *ATP8B1*, *ATP9A*, *AVEN*, *B4GALT1*, *BAI3*, *BBS9*, *BCL2L14*, *BCR*, *BEST3*, *BICD1*, *BLNK*, *BMPR1B*, *BNC2*, *BSPRY*, *BTN3A1*, *BTN3A2*, *C1GALT1*, *C3*, *C8A*, *CABS1*, *CACNA1A*, *CADM2*, *CADPS*, *CADPS2*, *CAMK2D*, *CAP1*, *CASQ2*, *CBFA2T3*, *CCDC88A*, *CCDC91*, *CD207*, *CDH10*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CDKAL1*, *CHD1L*, *CHL1*, *CHRM2*, *CHRNA9*, *CHRNB3*, *CHST11*, *CHST9*, *CLDN10*, *CLDN14*, *CLEC12A*, *CLECL1*, *CLSTN2*, *CNGA3*, *CNIH3*, *CNR2*, *CNTN1*, *CNTN4*, *CNTN5*, *CNTNAP2*, *COG6*, *COL13A1*, *CORIN*, *CORO2B*, *CPE*, *CSMD2*, *CSMD3*, *CUBN*, *CUX1*, *CXADR*, *CYB5R2*, *CYBRD1*, *CYP2C8*, *CYP2E1*, *CYP4F11*, *CYP4F12*, *CYP4F2*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DAAM1*, *DAB2*, *DAD1*, *DAPP1*, *DCC*, *DCHS2*, *DGKB*, *DGKH*, *DIO1*, *DISC1*, *DLG2*, *DLGAP1*, *DMBT1*, *DNAAF1*, *DNER*, *DNM1L*, *DOCK1*, *DOCK4*, *DOPEY2*, *DRAM1*, *DSC1*, *DSCAM*, *DSG1*, *DTNA*, *DYM*, *DYNC2H1*, *DYSF*, *DYTN*, *ELMO1*, *ELOVL2*, *ELOVL6*, *ELTD1*, *EMID2*, *EMR2*, *ENDOU*, *ENPP1*, *EPHA7*, *EPHB1*, *ERAP1*, *ERAP2*, *ERBB4*, *ERC2*, *ERO1LB*, *ERVFRD-1*, *ESYT2*, *EXOC2*, *EXOC4*, *F2RL2*, *F5*, *FABP2*, *FAS*, *FAT2*, *FAT3*, *FAT4*, *FHIT*, *FLVCR1*, *FMN1*, *FMO2*, *FNDC1*, *FRAS1*, *FRMPD1*, *FSHR*, *FUT9*, *FZD6*, *GABBR2*, *GABRB2*, *GABRR1*, *GALNT10*, *GALNT13*, *GALNT2*, *GALNTL4*, *GALNTL5*, *GAS2*, *GLDN*, *GPC5*, *GPC6*, *GPR111*, *GPR139*, *GPR158*, *GPR39*, *GPR65*, *GPR78*, *GRB10*, *GRIA1*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRIP2*, *GRM5*, *GRM7*, *GRM8*, *GUCA1A*, *HAAO*, *HHAT*, *HIP1*, *HK1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DOA*, *HLA-DOB*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *HLA-F*, *HLA-G*, *HMGCLL1*, *HPSE2*, *HS3ST4*, *IGSF5*, *INADL*, *INPP5D*, *ITGA1*, *ITGA2*, *ITGA9*, *ITGB3*, *ITGB5*, *ITPR2*, *IYD*, *JKAMP*, *KAZN*, *KCNA6*, *KCNAB1*, *KCNB2*, *KCNH7*, *KCNIP1*, *KCNIP4*, *KCNJ12*, *KCNJ16*, *KCNK10*, *KCNK2*, *KCNMB1*, *KCNMB2*, *KCNMB3*, *KCNQ3*, *KCNQ4*, *KCNQ5*, *KIF13A*, *KIRREL3*, *KL*, *KLHL14*, *KLRB1*, *KNG1*, *KSR2*, *LAMA2*, *LDLRAD3*, *LHCGR*, *LOXL2*, *LRRC52*, *LRRC7*, *LRRK2*, *LRRTM4*, *LYPD6B*, *MAGI1*, *MAGI2*, *MAN1A1*, *MAN2A1*, *MAPT*, *MARCH4*, *MBP*, *MCC*, *MDGA2*, *MGAT1*, *MGAT5B*, *MGST3*, *MLXIP*, *MRS2*, *MRTO4*, *MTCH1*, *MTHFS*, *MTUS1*, *MYO10*, *MYO16*, *MYO1B*, *MYO5B*, *MYOF*, *NAV3*, *NCAM2*, *NCK2*, *NDST3*, *NDST4*, *NDUFA12*, *NDUFB1*, *NDUFB10*, *NDUFB4*, *NEDD4*, *NETO1*, *NFASC*, *NGEF*, *NKAIN3*, *NMUR1*, *NMUR2*, *NOTCH4*, *NPHS2*, *NPSR1*, *NRCAM*, *NRG1*, *NRP1*, *NRXN1*, *NSL1*, *NTM*, *NTN4*, *NUP210*, *NUP35*, *OCA2*, *ODZ3*, *OPCML*, *OPRK1*, *OR10AG1*, *OR10C1*, *OR12D2*, *OR13C2*, *OR13C5*, *OR14A16*, *OR1L8*, *OR1N2*, *OR1S1*, *OR2AK2*, *OR2B11*, *OR2J2*, *OR2L13*, *OR2T4*, *OR2W3*, *OR4C3*, *OR4C45*, *OR51B2*, *OR51B6*, *OR51D1*, *OR51E1*, *OR51F1*, *OR51I2*, *OR51M1*, *OR51Q1*, *OR52B6*, *OR52E2*, *OR52E6*, *OR52E8*, *OR52J3*, *OR52N2*, *OR52N4*, *OR52R1*, *OR5AC2*, *OR5F1*, *OR5I1*, *OR5P2*, *OR5W2*, *OR8G1*, *OR8G5*, *OR8H3*, *OR8I2*, *OR8U8*, *OR9G1*, *OR9G9*, *PALM2*, *PARD3B*, *PCDH15*, *PCDH17*, *PCDHA12*, *PCDHA13*, *PCDHA9*, *PCLO*, *PCM1*, *PDE4D*, *PDGFD*, *PDIA6*, *PEX5L*, *PGLYRP4*, *PHLDB2*, *PIGG*, *PIGN*, *PIGP*, *PINK1*, *PKD1L1*, *PKP1*, *PKP2*, *PLA2G4A*, *PLA2G4C*, *PLA2G4E*, *PLA2G6*, *PLA2R1*, *PLAUR*, *PLCB1*, *PLCG2*, *PLCH1*, *PLD1*, *PLOD2*, *PLSCR1*, *PLXNA4*, *PNPLA3*, *PNPLA6*, *PPFIBP1*, *PPP1R14C*, *PPYR1*, *PRICKLE1*, *PRICKLE2*, *PRKCA*, *PRKCE*, *PRKG1*, *PROKR2*, *PSD3*, *PSTPIP2*, *PTGER3*, *PTPN13*, *PXK*, *QRFPR*, *RAB27A*, *RAB31*, *RAB3C*, *RAC2*, *RAMP3*, *RAPGEF4*, *RASGRF1*, *RFTN1*, *RGS6*, *RGS7*, *RIMBP2*, *RIMS1*, *RIMS2*, *RNF144B*, *RNPEP*, *ROR1*, *RPSA*, *RYR2*, *RYR3*, *SBF2*, *SCARB1*, *SCD5*, *SDHA*, *SEC24D*, *SEMA3A*, *SEMA3E*, *SEMA5A*, *SEMA6D*, *SERINC5*, *SGCG*, *SGCZ*, *SGIP1*, *SGMS1*, *SH3GL2*, *SIRPA*, *SKAP2*, *SLC10A2*, *SLC12A6*, *SLC14A2*, *SLC15A2*, *SLC16A14*, *SLC17A5*, *SLC19A3*, *SLC1A2*, *SLC1A6*, *SLC22A16*, *SLC22A5*, *SLC24A4*, *SLC25A21*, *SLC25A25*, *SLC25A37*, *SLC25A38*, *SLC27A6*, *SLC28A1*, *SLC2A1*, *SLC2A9*, *SLC35B3*, *SLC35D2*, *SLC39A14*, *SLC39A8*, *SLC6A5*, *SLC7A7*, *SLC9A4*, *SLC9A8*, *SLC9A9*, *SLC9C1*, *SLCO1B1*, *SLCO1B3*, *SLCO5A1*, *SLCO6A1*, *SNCA*, *SNTB1*, *SNTG2*, *SNX16*, *SNX19*, *SNX24*, *SNX7*, *SOAT1*, *SORBS1*, *SORCS1*, *SORCS2*, *SORCS3*, *SPCS3*, *SPINK5*, *SPPL2C*, *SPRED1*, *SPTLC3*, *SQRDL*, *SSC5D*, *SSR1*, *ST8SIA6*, *STARD13*, *STT3A*, *STYK1*, *SV2C*, *SVEP1*, *SVIL*, *SWAP70*, *SYK*, *SYN3*, *SYNE1*, *SYNPR*, *SYT6*, *SYT9*, *TANC1*, *TAP1*, *TAP2*, *TAS1R2*, *TEC*, *TEK*, *TES*, *TESC*, *THSD7A*, *TIAM1*, *TJP2*, *TKT*, *TMEM106B*, *TMEM163*, *TMEM176B*, *TPO*, *TRDN*, *TRPC4*, *TRPC6*, *TSHR*, *TSPAN15*, *TSPAN9*, *TULP3*, *UGT1A10*, *UGT1A7*, *UGT1A8*, *UGT1A9*, *UGT2B7*, *UNC13C*, *UNC5C*, *UNC93A*, *UST*, *VAV3*, *VNN1*, *VOPP1*, *VPS37C*, *WBSCR17*, *WLS*, *WWOX*, *XXYLT1*, *XYLT1*, *XYLT2*, *ZDHHC13*, *ZFYVE28*
Clathrin-coated endocytic vesicle membrane	3.3×10^{-11}	74.8	*HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*

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

Table S24 continued.

Description	p-value	Enrichment	Genes
Intrinsic to membrane	5.7×10^{-11}	1.3	*AADAC*, *AADACL2*, *ABCA1*, *ABCA13*, *ABCA4*, *ABCB5*, *ABCC11*, *ABCC4*, *ABCG8*, *ABO*, *ACER1*, *ACPP*, *ADAM12*, *ADAM28*, *ADAM29*, *ADCY3*, *ADCY5*, *ADCY8*, *ADRA1A*, *AIFM2*, *AJAP1*, *ALK*, *ALPL*, *ANK2*, *APP*, *AQP8*, *AQP9*, *AQPEP*, *ART3*, *ASAH2*, *ASGR2*, *ASIC2*, *ASTN2*, *ATP10B*, *ATP10D*, *ATP1A4*, *ATP2C2*, *ATP6V0E2*, *ATP8A1*, *ATP8A2*, *ATP8B1*, *ATP9A*, *ATP9B*, *ATRNL1*, *AVL9*, *B4GALT1*, *BAI3*, *BMPR1B*, *BRI3BP*, *BTBD11*, *BTN3A1*, *BTN3A2*, *BTNL2*, *C1GALT1*, *CACNA1A*, *CACNA2D3*, *CADM2*, *CASR*, *CD151*, *CD207*, *CDH10*, *CDH13*, *CDH23*, *CDH4*, *CDH9*, *CDHR2*, *CDKAL1*, *CDON*, *CHL1*, *CHRM2*, *CHRNB3*, *CHST11*, *CHST9*, *CLCA2*, *CLCNKB*, *CLDN1*, *CLDN10*, *CLDN14*, *CLDN20*, *CLEC12A*, *CLEC1A*, *CLEC1B*, *CLEC6A*, *CLECL1*, *CLSTN2*, *CMTM7*, *CMTM8*, *CNGA1*, *CNGA3*, *CNR2*, *CNTN1*, *CNTN4*, *CNTN5*, *CNTNAP2*, *CNTNAP4*, *CNTNAP5*, *COL13A1*, *COL25A1*, *COLEC12*, *CORIN*, *COX16*, *COX7B2*, *CSMD1*, *CSMD2*, *CSMD3*, *CUX1*, *CXADR*, *CYBRD1*, *CYP2E1*, *CYP4F11*, *CYP4F12*, *CYP4F3*, *CYP4F8*, *CYP4Z1*, *DAD1*, *DBH*, *DCC*, *DCHS2*, *DDOST*, *DDR1*, *DERL3*, *DIO1*, *DNER*, *DPP6*, *DPY19L4*, *DRAM1*, *DSC1*, *DSCAM*, *DSG1*, *DYSF*, *ELFN2*, *ELOVL2*, *ELOVL6*, *ELTD1*, *EMCN*, *EMR1*, *EMR2*, *ENPP1*, *ENTPD1*, *EPHA7*, *EPHB1*, *ERAP1*, *ERAP2*, *ERBB4*, *ERVFRD-1*, *ESYT2*, *EVC*, *EVC2*, *F2RL2*, *FAM155A*, *FAM163A*, *FAM173B*, *FAM189A1*, *FAM189A2*, *FAS*, *FAT2*, *FAT3*, *FAT4*, *FCER2*, *FER1L6*, *FLT3*, *FLVCR1*, *FMO2*, *FMO5*, *FRAS1*, *FRMD3*, *FSHR*, *FUT9*, *FZD6*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GALNT10*, *GALNT13*, *GALNT2*, *GALNTL4*, *GALNTL5*, *GALNTL6*, *GLDN*, *GLIPR1L2*, *GLRA3*, *GOLM1*, *GPC5*, *GPC6*, *GPR111*, *GPR139*, *GPR158*, *GPR39*, *GPR65*, *GPR78*, *GRAMD1A*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRM4*, *GRM5*, *GRM7*, *GRM8*, *HHAT*, *HHLA2*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DOA*, *HLA-DOB*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *HLA-F*, *HLA-G*, *HS3ST4*, *HS6ST3*, *IFI27L1*, *IGSF5*, *IL12RB2*, *IL1RL1*, *IL1RL2*, *INSR*, *ITGB3*, *ITPR1*, *ITPR2*, *IYD*, *JKAMP*, *KCNAB1*, *KCNH7*, *KCNJ12*, *KCNK10*, *KCNMB2*, *KCNMB3*, *KIAA1024*, *KIAA1324L*, *KIAA1549*, *KIRREL3*, *KL*, *KLRB1*, *LAMP3*, *LAPTM4B*, *LARGE*, *LDLRAD3*, *LEMD2*, *LEPR*, *LGR5*, *LHCGR*, *LHFP*, *LHFPL2*, *LHFPL3*, *LINGO2*, *LOC100507421*, *LPGAT1*, *LPPR5*, *LRFN2*, *LRFN5*, *LRP1B*, *LRRC52*, *LRRTM4*, *LSAMP*, *LYPD6B*, *MAN1A1*, *MAN2A1*, *MARCH4*, *MCOLN2*, *MDGA2*, *MEGF10*, *MEGF11*, *MEP1B*, *MGAT1*, *MGAT5B*, *MGST3*, *MOXD1*, *MRS2*, *MS4A6E*, *MTCH1*, *MUC12*, *MUC22*, *MYOF*, *NAALADL2*, *NALCN*, *NCAM2*, *NDST3*, *NDST4*, *NDUFB1*, *NDUFB4*, *NETO1*, *NFASC*, *NINJ2*, *NIPAL1*, *NIPAL3*, *NKAIN1*, *NKAIN3*, *NMUR1*, *NMUR2*, *NOTCH2*, *NOTCH4*, *NPHS2*, *NPSR1*, *NRCAM*, *NRG1*, *NRG3*, *NRP1*, *NRXN1*, *NRXN3*, *NTM*, *NTRK2*, *NTSR1*, *OCA2*, *ODZ3*, *ODZ4*, *OMA1*, *OPCML*, *OPN4*, *OPRK1*, *OR10AG1*, *OR10C1*, *OR12D2*, *OR13C2*, *OR13C5*, *OR14A16*, *OR1L8*, *OR1N2*, *OR1S1*, *OR2AK2*, *OR2B11*, *OR2J2*, *OR2L13*, *OR2T4*, *OR2W3*, *OR4C3*, *OR4C45*, *OR51B2*, *OR51B6*, *OR51D1*, *OR51E1*, *OR51F1*, *OR51I2*, *OR51M1*, *OR51Q1*, *OR51V1*, *OR52B6*, *OR52E2*, *OR52E4*, *OR52E6*, *OR52E8*, *OR52J3*, *OR52N2*, *OR52N4*, *OR52R1*, *OR5AC2*, *OR5F1*, *OR5I1*, *OR5P2*, *OR5W2*, *OR6N1*, *OR8G1*, *OR8G5*, *OR8H3*, *OR8I2*, *OR8U8*, *OR9G1*, *OR9G9*, *OTOP1*, *PCDH15*, *PCDH17*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA12*, *PCDHA13*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHA9*, *PCDHAC1*, *PCNXL2*, *PCSK5*, *PDE3A*, *PGBD5*, *PI16*, *PIEZO1*, *PIEZO2*, *PIGG*, *PIGN*, *PIGP*, *PINK1*, *PKD1L1*, *PKD1L2*, *PKHD1*, *PKP2*, *PLA2R1*, *PLAUR*, *PLD5*, *PLEKHH2*, *PLSCR1*, *PLXDC2*, *PLXNA4*, *PLXNC1*, *PNPLA3*, *PNPLA6*, *PPYR1*, *PROKR2*, *PRPH2*, *PTCHD3*, *PTGER3*, *PTPRB*, *PTPRD*, *PTPRF*, *PTPRG*, *PTPRM*, *PTPRQ*, *PTPRT*, *PTPRU*, *QRFPR*, *RAMP3*, *RECK*, *RNF144B*, *RNF150*, *ROBO2*, *ROR1*, *ROR2*, *RYR1*, *RYR3*, *SCARA5*, *SCARB1*, *SCD5*, *SCN1A*, *SCN3B*, *SCNN1G*, *SDC2*, *SDK1*, *SEC11C*, *SEMA5A*, *SEMA6D*, *SERINC5*, *SGCG*, *SGCZ*, *SGMS1*, *SHISA2*, *SHISA6*, *SIRPA*, *SLC10A2*, *SLC12A6*, *SLC12A8*, *SLC14A1*, *SLC14A2*, *SLC15A2*, *SLC15A5*, *SLC16A14*, *SLC17A5*, *SLC19A3*, *SLC1A2*, *SLC1A6*, *SLC22A16*, *SLC22A4*, *SLC22A5*, *SLC22A9*, *SLC24A4*, *SLC25A21*, *SLC25A25*, *SLC25A37*, *SLC25A38*, *SLC27A6*, *SLC28A1*, *SLC2A1*, *SLC2A14*, *SLC2A9*, *SLC30A9*, *SLC31A2*, *SLC35B3*, *SLC35D2*, *SLC35F3*, *SLC35F4*, *SLC37A1*, *SLC37A2*, *SLC38A4*, *SLC38A8*, *SLC38A9*, *SLC39A11*, *SLC39A14*, *SLC39A8*, *SLC41A3*, *SLC4A7*, *SLC5A12*, *SLC6A5*, *SLC7A7*, *SLC8A1*, *SLC8A3*, *SLC9A4*, *SLC9A8*, *SLC9A9*, *SLC9C1*, *SLCO1B1*, *SLCO1B3*, *SLCO1C1*, *SLCO5A1*, *SLCO6A1*, *SOAT1*, *SORCS1*, *SORCS2*, *SORCS3*, *SPCS3*, *SPNS3*, *SPPL2C*, *SPTB*, *SPTLC3*, *SSR1*, *ST6GALNAC3*, *ST8SIA1*, *ST8SIA6*, *STEAP1B*, *STT3A*, *STX2*, *STXBP6*, *STYK1*, *SV2B*, *SV2C*, *SYNE1*, *SYNJ2BP*, *SYNPR*, *SYT6*, *SYT9*, *TACSTD2*, *TAP1*, *TAP2*, *TAS1R2*, *TAS2R19*, *TAS2R20*, *TAS2R30*, *TEK*, *TGFBR3*, *THSD7A*, *THSD7B*, *TM4SF4*, *TMC2*, *TMCC3*, *TMCO4*, *TMEM106B*, *TMEM108*, *TMEM117*, *TMEM128*, *TMEM132B*, *TMEM132C*, *TMEM132D*, *TMEM156*, *TMEM163*, *TMEM17*, *TMEM176A*, *TMEM176B*, *TMEM2*, *TMEM220*, *TMEM229B*, *TMEM244*, *TMEM44*, *TMEM51*, *TMEM63C*, *TMEM8A*, *TMPRSS15*, *TMPRSS9*, *TMTC1*, *TMTC2*, *TNFRSF11A*, *TOMM7*, *TPO*, *TRAM2*, *TRDN*, *TRPA1*, *TRPC4*, *TRPC6*, *TRPM3*, *TSHR*, *TSPAN15*, *TSPAN18*, *TSPAN2*, *TSPAN8*, *TSPAN9*, *UBR3*, *UGT1A10*, *UGT1A7*, *UGT1A8*, *UGT1A9*, *UGT2B7*, *UGT3A2*, *UNC5C*, *UNC93A*, *USH2A*, *UST*, *VNN1*, *VOPP1*, *VSTM4*, *WBSCR17*, *WDR11*, *WLS*, *XKR6*, *XXYLT1*, *XYLT1*, *XYLT2*, *YIPF1*, *ZDHHC13*, *ZDHHC14*, *ZDHHC7*
Integral to organelle membrane	7.9×10^{-11}	38.8	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Intrinsic to organelle membrane	2.3×10^{-10}	34.7	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Cell junction	5.6×10^{-10}	1.8	*ABCB5*, *ABI1*, *ACTN1*, *ACTN2*, *AFAP1*, *AJAP1*, *AMPH*, *AMTN*, *ANK2*, *ANK3*, *ANKS1B*, *APBB1IP*, *ARHGAP24*, *ARHGEF18*, *B4GALT1*, *BSPRY*, *CADM2*, *CADPS*, *CADPS2*, *CCDC85C*, *CDC42BPA*, *CDHR2*, *CDSN*, *CGNL1*, *CHRM2*, *CHRNA9*, *CHRNB3*, *CLCA2*, *CLDN1*, *CLDN10*, *CLDN14*, *CLDN20*, *CNIH3*, *COL13A1*, *CTNNA3*, *CXADR*, *DISC1*, *DLC1*, *DLG2*, *DLGAP1*, *DSC1*, *DSG1*, *DTNA*, *EGFLAM*, *ERC2*, *FAT2*, *FER*, *FMN1*, *FNDC1*, *FRMD4A*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GLRA3*, *GRIA1*, *GRIA4*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRIP1*, *IGSF5*, *INADL*, *IQSEC1*, *ITGB5*, *KAZN*, *KIFC3*, *LAMA1*, *LPP*, *LRFN2*, *LRRC7*, *LRRTM4*, *MAGI1*, *MAGI2*, *NCS1*, *NETO1*, *NFASC*, *NFIA*, *NPHS2*, *NRXN1*, *PALLD*, *PARD3*, *PARD3B*, *PARVB*, *PCLO*, *PDZD2*, *PHACTR1*, *PKP1*, *PKP2*, *PLEKHA7*, *POLR1E*, *PSD3*, *PTPRM*, *PTPRU*, *RIMBP2*, *RIMS1*, *RIMS2*, *SCN1A*, *SEPT11*, *SHISA9*, *SHROOM3*, *SLC2A1*, *SLC8A1*, *SNCA*, *SNTB1*, *SORBS1*, *STX2*, *SV2B*, *SV2C*, *SVIL*, *SYN3*, *SYNPR*, *SYT6*, *SYT9*, *TANC1*, *TEK*, *TES*, *TIAM1*, *TJP2*, *TMEM163*, *TNS1*, *TRIM9*, *TRPC4*, *TRPC6*, *UNC13A*, *UNC13C*

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

Table S24 continued.

Description	p-value	Enrichment	Genes
Plasma membrane part	2.5×10^{-9}	1.7	*ABCA1*, *ABCA4*, *ABCB5*, *ABCG8*, *ADCY3*, *ADRA1A*, *ALK*, *ANK2*, *ANK3*, *ART3*, *ASIC2*, *BMPR1B*, *CACNA1A*, *CASQ2*, *CATSPERB*, *CDH13*, *CDH4*, *CHRNB3*, *CLCNKB*, *CLEC1A*, *CLEC1B*, *CNR2*, *CNTNAP2*, *CUBN*, *CYBRD1*, *CYP4F12*, *DAB2*, *DCC*, *DLC1*, *DSCAM*, *DSG1*, *DYSF*, *EMR1*, *ERBB4*, *EVC*, *EVC2*, *FAS*, *FCER2*, *FGD5*, *FLVCR1*, *GABRR1*, *GPC5*, *GPC6*, *GRIA1*, *GRIK2*, *GRIK3*, *GRIN2A*, *GRM5*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DOA*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *HLA-F*, *HLA-G*, *IL1RL2*, *INADL*, *ITGA1*, *ITGBL1*, *KANK1*, *KCNK2*, *KCNMB3*, *KCNQ5*, *KL*, *LHCGR*, *MEGF11*, *MUC12*, *MYO10*, *MYOF*, *NEDD4*, *NOTCH4*, *NRCAM*, *NRG1*, *NRG3*, *NRXN1*, *NRXN3*, *OPCML*, *OPRK1*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHAC1*, *PCSK9*, *PKHD1*, *PLEK*, *PLSCR1*, *PPYR1*, *PRKAB2*, *PTGER3*, *PTPRB*, *PTPRD*, *PTPRM*, *RAMP3*, *RAPGEF4*, *RGS6*, *ROBO2*, *ROR1*, *SCARB1*, *SCN1A*, *SCNN1G*, *SGCG*, *SGCZ*, *SLC12A6*, *SLC15A2*, *SLC17A5*, *SLC1A2*, *SLC2A9*, *SLC5A12*, *SLC9C1*, *SLCO1B1*, *SLCO1B3*, *SNTB1*, *SNTG2*, *SPATA13*, *SPRED1*, *SPTB*, *STK39*, *SYK*, *TEK*, *TMEM17*, *TNFRSF11A*, *TPO*, *TRPC4*, *TSHR*, *TSPAN9*, *VWF*
Cell projection part	3.2×10^{-9}	1.9	*ABI1*, *ACTN2*, *ALS2*, *AMPH*, *ANK3*, *ANKS1B*, *APBB2*, *ATP8B1*, *BBS9*, *CDH23*, *CHRM2*, *CNIH3*, *CNTNAP2*, *CUBN*, *CXADR*, *CYBRD1*, *DCC*, *DISC1*, *DLG2*, *DLGAP1*, *DNAAF1*, *DNAH11*, *DNAH12*, *DNAH17*, *DNAH3*, *DNAH5*, *DNAH8*, *DSCAM*, *DYNC2H1*, *EMR2*, *ERBB4*, *ERC2*, *EVC*, *EVC2*, *EXOC4*, *FGD5*, *FOPNL*, *FSCB*, *FZD6*, *GRIA1*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRM5*, *GRM7*, *IFT57*, *KANK1*, *KCNQ3*, *KIRREL3*, *LRRC7*, *LRRK2*, *MAGI2*, *MAP2*, *MAPT*, *MBP*, *MYO10*, *MYO5A*, *MYO5B*, *NETO1*, *NFASC*, *NGEF*, *NRCAM*, *NRP1*, *NRXN1*, *ODF1*, *PACRG*, *PKD1L1*, *PKHD1*, *PLCB4*, *PLEK*, *PSD3*, *RAPGEF4*, *ROBO2*, *SCARB1*, *SCN1A*, *SEPT11*, *SLC1A2*, *SLC22A5*, *SLC9C1*, *SNCA*, *SPAG16*, *SPATA13*, *SYNJ2*, *TANC1*, *TEKT4*, *TESC*, *TIAM2*, *TMEM17*, *TTLL11*, *USH2A*, *WWC1*
Endosome membrane	4.2×10^{-9}	24.1	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Endosomal part	5.9×10^{-9}	23.0	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Cell projection	1.7×10^{-8}	1.7	*ABI1*, *ACPP*, *ACTN1*, *ACTN2*, *ACTR2*, *ADCY5*, *ALS2*, *ANGPT1*, *ANGPT2*, *APBB1IP*, *APBB2*, *APOA1BP*, *APP*, *ARHGAP24*, *ARPC5*, *BMPR1B*, *CABS1*, *CACNA1A*, *CADM2*, *CATSPERB*, *CCDC40*, *CCDC88A*, *CDH13*, *CDH23*, *CHL1*, *CHRM2*, *CLIC5*, *CNGA3*, *CNR2*, *CNTN4*, *CNTNAP2*, *CPLX1*, *CTNNA3*, *CXADR*, *DBH*, *DCC*, *DDC*, *DNAH8*, *DNER*, *DNM3*, *DOCK4*, *DSCAM*, *DYNC2H1*, *EPHA7*, *EPHB1*, *EVC*, *EVC2*, *FABP2*, *FAM65B*, *FER*, *FGD4*, *FGD5*, *FOPNL*, *FRMD4B*, *FSCB*, *GABBR2*, *GAS7*, *GRIA1*, *GRID2*, *GRIK3*, *GRIK4*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRM7*, *GRM8*, *IFT57*, *IQCB1*, *IQGAP2*, *ITGA1*, *KALRN*, *KCNIP1*, *KCNIP4*, *KCNQ4*, *KIRREL3*, *KLHL1*, *KLHL14*, *KLHL24*, *LDB3*, *LDHC*, *LRRC16A*, *LRRK2*, *MAGI1*, *MAPT*, *MEGF10*, *MTSS1*, *MYO10*, *MYO1B*, *MYO3A*, *MYO5A*, *MYO5B*, *MYRIP*, *NCAM2*, *NCS1*, *NOV*, *NRCAM*, *NTM*, *ODZ4*, *PACRG*, *PALLD*, *PCDH15*, *PEX5L*, *PKHD1*, *PLD1*, *PRKCA*, *PTPN13*, *PTPRM*, *RAB27A*, *RAPGEF4*, *RASGRF1*, *RELN*, *RPTOR*, *SCN10A*, *SEMA3A*, *SEPT11*, *SLC1A2*, *SLC39A14*, *SLC8A1*, *SLC9C1*, *SNCA*, *SPATA13*, *SVIL*, *SWAP70*, *SYNPR*, *TEK*, *TESC*, *TIAM2*, *TMPRSS15*, *TP63*, *TRIM9*, *TTLL11*, *TULP3*, *WWOX*
MHC class I protein complex	6.0×10^{-8}	608.5	*HLA-A*, *HLA-B*, *HLA-C*
Phagocytic vesicle membrane	8.8×10^{-8}	159.9	*DMBT1*, *HLA-A*, *HLA-B*, *HLA-C*
Golgi membrane	2.4×10^{-7}	18.6	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*
Clathrin-coated vesicle membrane	5.6×10^{-7}	50.2	*HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DRB1*
Integral to plasma membrane	6.8×10^{-7}	2.0	*ABCA1*, *ABCA4*, *ABCB5*, *ALK*, *ANK2*, *ART3*, *BMPR1B*, *CDH4*, *CLCNKB*, *CNR2*, *DSCAM*, *EMR1*, *FCER2*, *FLVCR1*, *GABRR1*, *GPC5*, *GPC6*, *GRIK2*, *GRIN2A*, *GRM5*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DRA*, *HLA-DRB1*, *IL1RL2*, *KCNMB3*, *KL*, *LHCGR*, *MUC12*, *NOTCH4*, *NRG3*, *NRXN1*, *NRXN3*, *OPCML*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHAC1*, *PLSCR1*, *PPYR1*, *PTPRB*, *PTPRD*, *PTPRM*, *RAMP3*, *SCARB1*, *SCNN1G*, *SLC15A2*, *SLC17A5*, *SLC2A9*, *SLCO1B1*, *SLCO1B3*, *TEK*
Intrinsic to plasma membrane	7.4×10^{-7}	1.9	*ABCA1*, *ABCA4*, *ABCB5*, *ALK*, *ANK2*, *ART3*, *ASIC2*, *BMPR1B*, *CDH4*, *CLCNKB*, *CLEC1A*, *CNR2*, *DSCAM*, *EMR1*, *FCER2*, *FLVCR1*, *GABRR1*, *GPC5*, *GPC6*, *GRIK2*, *GRIN2A*, *GRM5*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DQA1*, *HLA-DQA2*, *HLA-DRA*, *HLA-DRB1*, *IL1RL2*, *KCNMB3*, *KL*, *LHCGR*, *MUC12*, *NOTCH4*, *NRG3*, *NRXN1*, *NRXN3*, *OPCML*, *OPRK1*, *PCDHA1*, *PCDHA10*, *PCDHA11*, *PCDHA2*, *PCDHA3*, *PCDHA4*, *PCDHA5*, *PCDHA6*, *PCDHA7*, *PCDHA8*, *PCDHAC1*, *PKHD1*, *PLSCR1*, *PPYR1*, *PTGER3*, *PTPRB*, *PTPRD*, *PTPRM*, *RAMP3*, *ROR1*, *SCARB1*, *SCNN1G*, *SLC15A2*, *SLC17A5*, *SLC2A9*, *SLCO1B1*, *SLCO1B3*, *SPTB*, *TEK*, *TSPAN9*
Lysosomal membrane	9.8×10^{-7}	10.1	*CUBN*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *SLC17A5*
Synapse part	1.2×10^{-6}	1.9	*ALS2*, *AMPH*, *ANK2*, *ANK3*, *ANKS1B*, *CADPS2*, *CHRM2*, *CHRNA9*, *CHRNB3*, *CLSTN2*, *CNIH3*, *DBH*, *DDC*, *DISC1*, *DLG2*, *DLGAP1*, *DNM3*, *DPYSL2*, *EPHA7*, *ERBB4*, *ERC2*, *EXOC4*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GLRA3*, *GRIA1*, *GRIA4*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRM5*, *GRM7*, *GRM8*, *LRFN2*, *LRRC7*, *LRRK2*, *LRRTM4*, *LYN*, *MAGI2*, *NCS1*, *NETO1*, *NRXN1*, *NTRK2*, *PCLO*, *PLCB4*, *PSD3*, *RAB3C*, *RIMS1*, *RIMS2*, *SLC1A2*, *STON2*, *SV2B*, *SV2C*, *SYN3*, *SYNE1*, *SYNPR*, *SYT6*, *SYT9*, *TANC1*, *TMEM163*, *TRIM9*, *UNC13A*, *UNC13C*
Vacuolar membrane	1.5×10^{-6}	8.5	*CUBN*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *SLC17A5*
Golgi apparatus part	1.6×10^{-6}	14.3	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*
Extracellular matrix part	2.8×10^{-6}	2.3	*ADAMTS1*, *AMTN*, *CCBE1*, *COL13A1*, *COL21A1*, *COL24A1*, *COL27A1*, *COL4A1*, *COL4A2*, *COL4A3*, *COL5A2*, *COL9A1*, *COLEC12*, *CTHRC1*, *EGFLAM*, *EMID1*, *EMID2*, *FBN2*, *GLDN*, *GRIN2B*, *LAMA1*, *LAMA2*, *LAMC1*, *LAMC2*, *LEPREL1*, *LOXL2*, *MATN2*, *NID2*, *NTN1*, *NTN4*, *SMOC1*, *SMOC2*, *SNCA*, *THBS2*, *THSD4*, *TIMP2*, *TNR*, *USH2A*

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

Table S24 continued.

Description	p-value	Enrichment	Genes
Early endosome membrane	5.0×10^{-6}	160.1	*HLA-A*, *HLA-B*, *HLA-C*
Organelle membrane	9.7×10^{-6}	5.7	*CPE*, *DMBT1*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *RNF144B*
Synaptic membrane	1.0×10^{-5}	2.1	*ANK2*, *ANK3*, *ANKS1B*, *CADPS2*, *CHRM2*, *CHRNA9*, *CHRNB3*, *CLSTN2*, *CNIH3*, *DISC1*, *DLG2*, *DLGAP1*, *EPHA7*, *ERC2*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GLRA3*, *GRIA1*, *GRIA4*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRM7*, *GRM8*, *LRFN2*, *LRRC7*, *LRRTM4*, *NCS1*, *NETO1*, *NRXN1*, *PSD3*, *RIMS1*, *RIMS2*, *SLC1A2*, *SYNE1*, *TANC1*, *UNC13A*, *UNC13C*
Vacuolar part	1.3×10^{-5}	6.0	*CUBN*, *GPC5*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *HLA-DQB2*, *HLA-DRA*, *HLA-DRB1*, *HLA-DRB5*, *SLC17A5*
Endoplasmic reticulum part	1.5×10^{-5}	10.3	*HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*
Neuron projection	3.3×10^{-5}	1.7	*ACTN2*, *ALS2*, *APP*, *BMPR1B*, *CACNA1A*, *CADM2*, *CDH13*, *CHL1*, *CHRM2*, *CNR2*, *CNTN4*, *CNTNAP2*, *CPLX1*, *CXADR*, *DBH*, *DCC*, *DDC*, *DNER*, *DNM3*, *DSCAM*, *EPHA7*, *EPHB1*, *GABBR2*, *GRIA1*, *GRID2*, *GRIK3*, *GRIK4*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRM7*, *GRM8*, *ITGA1*, *KALRN*, *KCNIP1*, *KCNIP4*, *KCNQ4*, *KIRREL3*, *KLHL1*, *KLHL14*, *KLHL24*, *LRRK2*, *MAPT*, *MYO10*, *MYO5A*, *MYO5B*, *NCAM2*, *NCS1*, *NOV*, *NRCAM*, *NTM*, *ODZ4*, *PEX5L*, *PRKCA*, *PTPN13*, *RAB27A*, *RAPGEF4*, *RASGRF1*, *RELN*, *RPTOR*, *SCN10A*, *SEMA3A*, *SEPT11*, *SLC1A2*, *SLC8A1*, *SNCA*, *SYNPR*, *TP63*, *TRIM9*
Synapse	7.2×10^{-5}	2.1	*ABI1*, *APBB2*, *APP*, *CADM2*, *CADPS*, *CAMK2D*, *CDH23*, *CHRM2*, *CPLX1*, *CXADR*, *EGFLAM*, *EPHA7*, *GRID2*, *GRIN3A*, *GRM7*, *MAGI2*, *MYRIP*, *NETO1*, *NRCAM*, *NRG1*, *NRXN1*, *NTM*, *NTRK2*, *PCDH15*, *PCLO*, *PHACTR1*, *PTPRF*, *RAPGEF4*, *RIMBP2*, *SDC2*, *SEPT11*, *SHISA9*, *SNCA*, *SNTB1*
Extracellular matrix	1.1×10^{-4}	1.8	*ABI3BP*, *ADAMTS12*, *ADAMTS14*, *ADAMTS16*, *ADAMTS18*, *ADAMTS2*, *ADAMTS20*, *ADAMTSL1*, *ADAMTSL2*, *AMTN*, *CDON*, *CHL1*, *COL21A1*, *COL4A1*, *COL4A2*, *COL5A2*, *CPXM2*, *DMBT1*, *DPT*, *EFEMP1*, *EGFLAM*, *FBN2*, *FGF1*, *FRAS1*, *GPC5*, *GPC6*, *GPLD1*, *HPSE2*, *IGFBP7*, *LAMA1*, *LAMA2*, *LAMC1*, *LMCD1*, *LTBP1*, *MATN2*, *MEPE*, *MMP20*, *NAV2*, *NID2*, *NOV*, *PLSCR1*, *PXDN*, *RELN*, *SMOC2*, *SPARCL1*, *TNN*, *TNR*, *VIT*, *VWF*
Protein complex	1.4×10^{-4}	4.1	*ARPC5*, *HLA-A*, *HLA-B*, *HLA-C*, *HLA-DPA1*, *HLA-DPB1*, *HLA-DQA1*, *HLA-DQB1*, *RNF144B*, *TEKT4*
Postsynaptic membrane	2.0×10^{-4}	2.0	*ANK2*, *ANK3*, *ANKS1B*, *CADPS2*, *CHRM2*, *CHRNA9*, *CHRNB3*, *CLSTN2*, *CNIH3*, *DISC1*, *DLG2*, *DLGAP1*, *EPHA7*, *GABBR2*, *GABRB2*, *GABRG3*, *GABRR1*, *GLRA3*, *GRIA1*, *GRIA4*, *GRID2*, *GRIK2*, *GRIK3*, *GRIK4*, *GRIN2A*, *GRIN2B*, *GRIN3A*, *GRIP1*, *GRM7*, *LRFN2*, *LRRC7*, *LRRTM4*, *NCS1*, *NETO1*, *PSD3*, *SYNE1*, *TANC1*
Cell-cell junction	2.1×10^{-4}	1.8	*ABCB5*, *ACTN1*, *AMTN*, *ANK2*, *ANK3*, *B4GALT1*, *CCDC85C*, *CDC42BPA*, *CDSN*, *CGNL1*, *CLDN1*, *CLDN10*, *CLDN14*, *CLDN20*, *COL13A1*, *CTNNA3*, *CXADR*, *DSC1*, *DSG1*, *FAT2*, *FNDC1*, *FRMD4A*, *IGSF5*, *INADL*, *KAZN*, *KIFC3*, *LAMA1*, *MAGI1*, *MAGI2*, *NFASC*, *NPHS2*, *PARD3*, *PARD3B*, *PDZD2*, *PKP1*, *PKP2*, *PLEKHA7*, *PTPRM*, *PTPRU*, *SCN1A*, *SHROOM3*, *SLC2A1*, *SLC8A1*, *SORBS1*, *STX2*, *TEK*, *TIAM1*, *TJP2*, *TRPC4*, *TRPC6*
Ion channel complex	2.5×10^{-4}	2.1	*AKAP6*, *ANO2*, *ANO3*, *BEST3*, *CACNA1A*, *CACNA2D1*, *CASQ2*, *CATSPERB*, *CHRNA9*, *CHRNB3*, *CLCNKB*, *CNTNAP2*, *GABRB2*, *GABRR1*, *KCNA6*, *KCNB2*, *KCNJ16*, *KCNK2*, *KCNMB1*, *KCNMB2*, *KCNMB3*, *KCNQ4*, *KCNQ5*, *PEX5L*, *RYR2*, *SCN10A*, *SCN1A*, *SCN3A*, *SCNN1G*, *TRDN*, *TRPC4*
Flagellum part	2.7×10^{-4}	19.5	*PACRG*, *SLC9C1*, *SPAG16*, *TEKT4*
Microtubule-based flagellum part	2.7×10^{-4}	19.5	*PACRG*, *SLC9C1*, *SPAG16*, *TEKT4*
Collagen type IV	3.3×10^{-4}	24.1	*COL4A1*, *COL4A2*, *COL4A3*
Proteinaceous extracellular matrix	3.9×10^{-4}	1.9	*ABI3BP*, *ADAMTS12*, *ADAMTS14*, *ADAMTS16*, *ADAMTS18*, *ADAMTS2*, *ADAMTS20*, *ADAMTSL1*, *ADAMTSL2*, *AMTN*, *CHL1*, *DMBT1*, *DPT*, *EFEMP1*, *EGFLAM*, *FBN2*, *FGF1*, *GPC5*, *GPC6*, *GPLD1*, *HPSE2*, *LAMA1*, *LTBP1*, *MATN2*, *MEPE*, *MMP20*, *NAV2*, *PXDN*, *RELN*, *SMOC2*, *SPARCL1*, *TNN*, *TNR*, *VIT*, *VWF*

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