

Supplementary file 1: MicroRNAs targets gene

Supplementary Table 1 MicroRNAs targets genes used for enrichment analysis

MicroRNA	Target genes
miR-192-3p	AGO4 ABCB5 ABI2 ACTB AGFG1 AHS2 AKAP6 AKT1 AP3D1 ARL1 ARL10 ARRDC3 ATP6AP1L ATXN1L AZIN1 C17orf105 C1orf56 C4orf50 C5orf15 C6orf223 C6orf47 CAB39 CALCOCO2 CCDC59 CCNB1 CCND2 CD44 CD55 CELF1 CELF2 CERS4 CLMN CNKSR3 CSNK1G3 CSRP1 CTBP1 CYP2U1 DDX19A DPY19L1 DUSP1 DYNLL2 EBF2 EIF4EBP2 ELF5 EMX2 ERN1 EVX2 FAM114A1 FBXO9 FBXW11 FCRLB FGF7 FBNP1L FRS2 FXR1 GALNT1 GOLPH3 GRIN2A GTF2A1 HNRNPR HSPA13 IFFO2 INSL4 INTS6 IST1 JAG1 KANSL1 KARS KCNQ3 KIF6 KLHL2 KYAT3 LCOR LSAMP MAPRE2 MDM2 MLLT10 MOB3B MRAS MSL2 MYLK NACC1 NCEH1 NFAT5 NFKBIZ NOM1 NR1H4 NR2F2 NR3C1 NRIP3 NRXN3 NTRK3 PAQR8 PDE3A PILRB PLA2G5 PLEKHA3 PPDPF PPP1R3G PSMA5 PSTK Q96B67 RAB1A RAB21 RIC8A RNASEL RPS6KA6 SCP2 SEC14L4 SIX1 SLC10A7 SLC39A9 SLC5A7 SLC7A14 SLC9A8 SLCO5A1 SMAD2 SMAD4 SNAP25 SNRK SPRY4 SRSF1 STON2 STX7 SYNGR1 TAB3 TMED7 TMEM117 TNPO1 TOX TRERF1 TRIM56 TRPV2 TSHZ3 UBASH3B UBE2W UBL3 USP14 VHL WDYHV1 YAF2 YES1 ZDHHC7 ZNF510 ZNF546 ZNF91 ZNF99 ZWINT
miR-192-5p	AASDHPPT ABCA8 ABCB10 ABCC3 ABCG2 ABCG5 ABHD2 ABI2 ACADSB ACPP ACSF3 ACSL1 ACTBL2 ACTR1B ACTR2 ACVR2A ACVR2B ADAMTS3 ADCY7 ADGRG6 ADGRL3 AFAP1L1 AFF2 AGL AGO02 AGPAT5 AHS2 AKAP11 AKAP7 AKAP9 AKT1 ALCAM ALDH5A1 ALDH9A1 ALG10 ALG10B ALKBH8 ALX1 AMER1 AMMECR1 ANAPC10 ANAPC15 ANAPC16 ANG ANGEL2 ANKRD13A ANKRD44 ANKRD6 ANKS1A ANLN ANO6 AP1S2 AP1S3 AP3M2 APC APLN APOLD1 APPBP2 APPL1 ARFGEF1 ARHGAP11A ARHGAP19 ARHGAP29 ARHGAP36 ARHGEF10 ARHGEF15 ARHGEF26 ARHGEF39 ARHGEF40 ARIH1 ARL2BP ARL4C ARMC8 ARNTL2 AS3MT ASB6 ASPH ASPM ASRGL1 ASXL2 ATAD1ATAD2 ATAD2B ATAD5 ATF1 ATF3 ATF7 ATG10 ATG2A ATG4A ATM ATP10D ATP1A2 ATP1B1 ATP2C1 ATP5L ATP6V1C2 ATP6V1G1 ATP8B4 ATRNL1 ATXN7 B3GALNT1 B3GALNT2 B3GAT1 B3GNT5 B4GALT2 B4GALT6 BARD1 BBOF1 BBS7 BCAP29 BCAT1 BCL2 BCL2L11 BCL2L13 BCO2 BCOR BCORL1 BGLAP BHLHE22 BICD1 BICRAL BIN2 BIVM BLCAP BLM BLOC1S6 BMI1 BMP2K BMPER BMPR2 BORA BRCA1 BRCA2 BRD3 BRIP1 BRWD1 BTC BTF3L4 BTNL9 BUB1B BYSLC10orf90 C11orf68 C12orf65 C14orf105 C16orf46 C16orf52 C17orf58 C18orf54 C1D C1orf112 C1orf198 C1orf21 C1orf53 C1QTNF3 C21orf91 C2orf49 C2orf71 C3orf14 C4orf46 C5orf30 C5orf34 C6orf106 C6orf132 C6orf62 C8orf46 C9orf163 CA13 CA8 CAB39L CACNA1C CACNA1I CADM1 CADPS2 CALD1 CAMK4 CAMSAP2 CAMTA1 CAND1 CASP7 CAV1 CBL CBLN4 CCDC121 CCDC14 CCDC15 CCDC150 CCDC152 CCDC171 CCDC174 CCDC18 CCDC47 CCL3L1 CCND2 CCNE1 CCNO CCNT2 CCNY CCSAP CCZ1 CCZ1B CD164 CD47 CD83 CDC14A CDC20 CDC25A CDC7 CDCA4 CDK14 CDKN1B CDKN2A CDKN2D CDKN3 CDON CEBPG CENPA CENPBD1 CENPE CENPF CENPI CENPK CEP128 CEP19 CEP295 CEP55 CEP70 CEP78 CEP85L CERS6 CFAP65 CFL2 CGNL1 CHCHD5 CHD7 CHDH CHM CHML CHPT1 CHST12 CHSY3 CIB2 CIT CKAP2L CKAP4 CKLF CLIC1 CLIP3 CLIP4 CLK1 CLK4 CLN6 CLSPN CLSTN1 CLVS1 CMPK1 CMPK2 CMTM6 CNEP1R1 CNGB3 CNOT6L CNTNAP3 COBLL1 COCH COL5A1 COPS7A COQ3 CORO2B CPEB4 CPSF6 CREB5 CREBL2 CREBRF CREBZF CRISP1 CRK CRLF3 CRNKL1 CRTC2 CRX CRYBG3 CSGALNACT2 SMD3 CSNK1G3 CST9 CSTF1 CTCF CTH CTNNBIP1 CTPS2 CTTNBP2NL CUL3 CUL5 CUZD1 CWC25 CXCL2 CXCR5 CXorf57 CYCS CYP24A1 CYP4V2 DBF4B DBT DCAF4L2 DCAF8 DCBLD2 DCC DCK DCP1A DCUN1D4 DCUN1D5 DCX DDHD1 DDOST DDX3X DDX50 DDX54 DDX6 DEAF1 DEGS1 DEK DENND1A DEPDC1 DGCR11 DHCR24 DHFR DHFR2 DHTKD1 DIAPH1 DIAPH2 DICER1 DIEXF DIMT1 DIS3L DIXDC1 DLD DLG5 DLGAP1 DLGAP5 DNAH5 DNAJB4 DNAJB5 DNAJB9 DNAJC19 DNAJC24 DNAJC3 DNAL1 DNM3 DPP10 DPYSL2 DPYSL3 DSN1 DST DSTYK DTL DUSP16 DUSP18 DYNC2H1 DYRK1A DYRK2 DYRK3 E2F5 E2F8 EAF1 EAF2 ECT2 EDRF1 EEA1 EEF1A2

EFCAB11 EFN2 EGR1 EHBP1L1 EIF1 EIF2AK3 EIF2S1 EIF5A2 ELL2 ELOA ELOVL1 ELOVL5 EMB EMC1 EMC7 EME1 EML1 EML6 ENC1 ENDOD1 ENOSF1 ENOX2
ENPP4 ENTPD3 ENTPD7 EOGT EPDR1 EPM2A EPM2AIP1 EPS8 ERCC3 ERCC4 ERCC6L EREG ERFE ERICH5 ERLIN2 ERMP1 ESCO2 ESR1 EXOC4 EXTL2 F13A1 FAAP20
FABP3 FADS1 FAIM FAM110C FAM111B FAM120AOS FAM126A FAM126B FAM129A FAM136A FAM167A FAM171B FAM182B FAM189A2 FAM199X FAM20B FAM210B
FAM222A FAM229B FAM234B FAM241A FAM241B FAM46A FAM71E1 FAM83D FAM98A FANCI FANCM FAXC FBN1 FBXO11 FBXO25 FBXO3 FBXO31 FBXO36 FBXO4
FBXO5 FBXW2 FEN1 FERMT1 FGD5 FGF2 FGF7 FGFR1OP FHDC1 FKBP15 FLVCR1 FNB1FNDCC3B FOS FOXA1 FOXN1 FRMD4B FUBP1 FURIN FUT11 FZD1 FZD4 FZD7
FZD9 G2E3 G6PC GAB2 GABBR2 GABPB1 GABPB2 GAD1 GALNT12 GALNTL6 GAPVD1 GAREM2 GAS2L3 GAS7 GATAD1 GATB GATM GCH1 GCLM GEN1 GID8 GINM1
GLCCI1 GLP1R GLYCTK GMEB1 GNG3 GNRH1 GOLGA6A GOLGA8A GOLGA8B GPC4 GPR137B GPR137C GPR180 GPR19 GPR22 GPR37 GPSM2 GRHL1 GRIA1 GRK3
GULP1 H3F3A H3F3B HACD3 HADH HAS3 HASPIN HAUS3 HBEGF HBS1L HCN3 HCN4 HDAC2 HERC2 HES6 HESX1 HIBADH HIF1AN HIGD1A HINT3 HJURP HMGCS1
HMMR HNF1B HOMER1 HOOK3 HOXA10 HOXA13 HOXB9HRH1 HS3ST3B1 HSP90B1 HSPA2 HSPBAP1 HYLS1 ICAM3 ICK ID1 ID2 ID4 IDI1 IDS IER5 IFFO2 IFNL1
IFRD1 IGDCC3 IGDCC4 IGF1 IGF1R IKZF2 IL15 IL17RB IL1R1 IL1RAP IL6R IL6ST IL7 IMPA1 INAVA INIP INO80D INPP4A INPP5F INSIG1 IQCC IQGAP1 IRAK1 IRAK4
IRX4 ITGA3 ITGAV ITGB1 ITGB3 JADE1 JAGN1 JCHAIN KAT2B KATNAL1 KBTBD11 KCNA7 KCNC3 KCNK1 KCNK3 KCNMB4 KCNQ5 KCNS3 KCTD12 KCTD15 KDELC2
KDM1B KDM4D KHDRBS3 KIAA1143 KIAA1147 KIAA1671 KIAA1841 KIAA1958 KIDINS220 KIF14 KIF15 KIF18A KIF1B KIF20A KIF20B KIF23 KIF24 KIF5B KIF5C KLF10
KLHL15 KLHL23 KLHL42 KLHL8 KMT2A KNL1 KPNA1 KPNA4 KPNA5 KPNA6 KRAS KRBA2 KRT18P8 L2HGDH LAMTOR5 LARP1B LARP4 LARS LCN10 LEAP2 LEFTY2
LEPROTL1 GMN LHFPL4 LHFPL6 LHX6 LIMCH1 LIMS1 LIN9 LINC01554 LIPA LMAN1 LMLN LMNB1 LMNB2 LMTK2 LOXL2 LPAR1 LPAR4 LRCH2 LRIG1 LRP8 LRRC58
LRRC8C LRRC1 LRRFIP1 LRRFIP2 LSM14B LVRN LYPD6 LYRM7 LYSMD3 MACF1 MAD2L1 MAN2A2 MANF MAP1LC3B MAP3K1 MAP6D1 MAPK1 MAPK9 MBNL3
MBTD1 MCAM MCM10 MCM3 MCM6 MCM9 MDM4 MECF2 MED14 MED21 MED22 MED28 MEF2C MEGF10 MEIS2 MELTF METTL9 MEX3B MFAP3 MFSD10 MFSD13A
MFSD14B MGEA5 MIB1 MINDY2 MIPOL1 MIS12 MIS18BP1 MKI67 MKL2 MKNK2 MMAB MMP16 MMP20 MNS1 MOAP1 MPP5 MPZ MPZL1 MRAP MRPL13 MRPL43
MRPL50 MRV11 MS4A1 MSH6 MSN MSRB3 MT1F MT1X MTDH MTERF3 MTMR12 MTMR4 MTMR9 MTSS1 MUM1L1 MXI1 MYB MYH15 MYLK MYO1E MYO5B MYO6
MYO9B MYPN N4BP2 NAA20 NAA50 NAB1 NAV1 NBN NCAM1NCAPH NCBP1 NCBP2 NCEH1 NCOA3 NDE1 NDFIP2 NEDD1 NEFL NEIL3 NEK1 NEK9 NEMP1 NFAT5
NFIB NFKBIZ NFYA NHLRC3 NHSL1 NID1 NIN NIPA1 NIPAL1 NIPBL NKAIN2 NKRF NKX2-5 NKX3-1 NLK NMI NMU NOB1 NOD2 NOL9 NOXO1 NPAS3 NPHP3 NPNT
NPTXR NR6A1 NREP NRG4 NRIP1 NRIP3 NSD1 NSD2 NSD3 NSF NT5M NTRK2 NUCB2 NUCKS1 NUDT15 NUDT3 NUF2 NUFIP1 ODC1 OGFRL1 OLIG3 ONECUT2 OPA1
OPRM1 ORC1 ORC4 OSBPL10 OSBPL6 OSBPL8 OTUB2 OTUD1 OTUD3 OVOL1 OXR1 PABPC4 PAFAH1B1 PAK6 PANX1 PAPD5 PAPD7 PARM1 PARN PARP16 PARP8
PASK PAWR PCDH17 PCDH19 PCDH7 PCDH9 PCDHGB7 PCGF5 PCNP PCOLCE2 PCSK9 PDE2A PDHB PDLIM3 PDP1 PDSS2 PERP PGM3 PHACTR2 PHC2 PHF10 PHF12
PHF19 PHF20 PHF20L1 PHF6 PHTF1 PHTF2 PIF1 PIGM PIGX PIK3R4 PIM1 PIP4K2B PITPNB PITPNC1 PKP4 PLAGL2 PLAU PLCE1 PLEKHA1 PLEKHF2 PLEKHG2 PLK4
PLOD1 PLS3 PLXNB2 PMP2 PNKD PNPT1 PODXL POLA2 POLQ POLR3F POU2F1 PPARG PPAT PPM1A PPP1CA PPP1CB PPP1R12A PPP1R18 PPP1R26 PPP1R3D PPP2CB
PPP2R2D PPP2R3B PRADC1 PRDM10 PRDM4 PRICKLE1 PRIM1 PRIMPOL PRKAA2 PRKACB PRKAR1A PRKCQ PRKD3 PRKG1 PRNP PRPF38A PRPS2 PRRC1 PRRG1
PRRG4 PRSS23 PSMB5 PSMC3IP PSMD5 PSMD6 PSRC1 PTBP2 PTCHD1 PTGER3 PTP4A3 PTPRE PTPRT PTS PURA PXDC1 PXDN Q9Y2K3 RAB11FIP2 RAB1A RAB23
RAB27A RAB2A RAB3B RAB40B RAB6A RAB6C RAB8B RABGAP1 RACGAP1 RAD1 RAD21 RAD51RAD54B RADIL RALB RALGPS1 RANBP3 RAP1GAP RAP1GAP2
RASSF8 RB1 RBL2 RBM26 RBP7 RCBTB2 RCC2 RCOR1 RDM1 RECQL REEP1 REPS2 RET RETREG2 REXO5 RFC4 RFLNB RFWD3 RFX6 RGMB RHCG RHOBTB3 RIC8B
RICTOR RIMKLA RMI1 RNASE4 RNASEL RNF141 RNF219 RNF26 RNF6 RNF8 RNFT1 RNPC3 ROPN1L RP9P RPAP2 RPAP3 RPGRIP1L RPRD1B RPS6KB1 RRM1 RSAD2

	RSBN1 RSN1L RSRC1 RTKN2 RUFY3 RUNX1 RUNX1T1 SAMD13 SAMD3 SAMD4A SAMHD1 SAP30 SARAF SASS6 SATB2 SAYSD1 SBDSP1 SC5D SCD SCMH1 SCN1A SCN3A SCN5A SCRN3 SDE2 SEC23B SEC24D SEC63 SEMA3A SEMA4D SENP1 SEPT10 SERAC1 SERF1A SERF1B SERPINE1 SERTAD2 SERTAD4 SETD4 SFR1 SGCB SGCD SGMS2 SGO2 SGPP1 SH2B3 SH2D1A SH3BP4 SH3RF3 SH3TC2 SHANK2 SIK1 SIRT1 SIX4 SKA1 SLAIN2 SLAMF7 SLC11A2 SLC16A14 SLC16A6 SLC16A7 SLC19A2 SLC1A4 SLC22A15 SLC23A3 SLC24A4 SLC25A30 SLC25A40 SLC25A51 SLC26A2 SLC30A9 SLC35B4 SLC35F3 SLC35G1 SLC39A1 SLC39A6 SLC39A8 SLC39A9 SLC46A3 SLC48A1 SLC5A3 SLC7A11 SLC7A2 SLC7A6 SLC9A5 SLCO3A1 SLF1 SLF2 SLMAP SMARCA2 SMARCA1 SMARCB1 SMC2 SMC4 SMC5 SNRPD1 SNRPG SNTB2 SNX10 SNX13 SNX33 SOAT1 SOCS6 SOD2 SOWAHC SP4 SP8 SPAG9 SPARC SPATA13 SPCS3 SPIN1 SPIN4 SPRED2 SPRY4 SPTBN1 SRD5A1 SREK1IP1 SRGAP3 SRRM4 SRSF3 SRSF6 SS18 SSH2 SSTR2 ST3GAL6 STAG1 STAM STAMBPL1 STIL STK17B STK3 STOX2 STRBP STRIP2 STX7 STXBP4 SYAP1 SYNCRIP SYNGR1 SYNJ2 SYNM SYNPO2 SYT6 TAB2 TAF9B TAOK1 TARDBP TBC1D22B TBC1D31 TBL1X TCAM1P TCF7 TCFL5 TCHP TCTEX1D1 TDG TDP1 TEX30 TFCP2L1 TFG THBD THEM6 THOP1 TICAM2 TICRR TIFA TIGAR TJP2 TMC3 TMED10 TMEFF1 TMEM106A TMEM106B TMEM136 TMEM164 TMEM169 TMEM17 TMEM2 TMEM200A TMEM246 TMEM30A TMEM67 TMPO TMTC2 TMTC3 TMTC4 TNFSF13 TNFSF13B TNRC6B TOP1 TOP1P2 TOPBP1 TOR1AIP1 TOR1B TOR3A TPD52L3 TPGS2 TPM1 TPM4 TRAF3IP3 TRAF4 TRAF5 TRAIP TRAPPC2B TRERF1 TRIB3 TRIM2 TRIM23 TRIM44 TRIM58 TRIM59 TRIM68 TRIP13 TROAP TRPC1 TRPM7 TRPS1 TRPV1 TSHZ2 TTF2 TTK TTPA TTYH2 TUB TUBGCP3 TYMS U2SURP UACA UBA5 UBA6 UBASH3B UBE2D1 UBE2D2 UBE2K UBE2QL1 UBE2V2 UBE2W UBIAD1 UBL3 UCK1 UGT8 UHRF1BP1 UMODL1 UNG UPP1 UQCRC2 USP1 USP12 USP14 USP18 USP34 USP45 USP48 USP54 UVRAG VANG1 VAPB VASH2 VCAN VCIPI1 VGLL3 VPS13C VPS37B VPS53 VSX1 WASHC4 WDCP WDR44 WDR47 WDR76 WFDC13 WNK1 WNT3 WSCD2 WT1 WWC2 WWC3 XIAP XK XPA XPO1 XPO4 YME1L1 YY1 ZADH2 ZBTB10 ZBTB14 ZBTB18 ZBTB24 ZBTB33 ZBTB34 ZBTB38 ZBTB39 ZBTB4 ZBTB6 ZBTB8B ZC3H12B ZC3H12C ZC3H6 ZC3HAV1 ZDHHC2 ZDHHC23 ZEB2 ZFHX3 ZFHX4 ZFP1 ZFP30 ZFYVE26 ZFYVE28 ZIC5 ZMAT3 ZMYM1 ZMYND11 ZNF114 ZNF136 ZNF165 ZNF184 ZNF200 ZNF215 ZNF226 ZNF230 ZNF248 ZNF263 ZNF267 ZNF273 ZNF280C ZNF320 ZNF346 ZNF385B ZNF443 ZNF449 ZNF45 ZNF451 ZNF519 ZNF525 ZNF536 ZNF611 ZNF641 ZNF652 ZNF654 ZNF701 ZNF704 ZNF776 ZNF780A ZNF823 ZNF85 ZNHIT3 ZNRF3 ZPBP2 ZSWIM3 ZXDC
miR-378-3p	AGO1 ACACA ACAP2 ACOD1 ACSL4 ACTB AGK AKT1 ALDOB ARGFX ARID5B ARL10 ARL8B ASB16-AS1 ATG12 B4GALNT3 BCL2L2 BLOC1S3 BMP2 BPTF BRWD3 BYSL C16orf72 C3orf38 CAB39 CACNG8 CASC3 CCND2 CDK6 CELF4 CEP164 CHAMP1 CHCHD4 CHIT1 CMTM6 CPNE1 CPSF7 CPT2 CREBRF CSNK1G2 CSTF3 CTDP1 CYB5R3 CYP19A1 CYP20A1 DACT1 DCAF12 DCBLD2 DCLRE1B DCTN4 DCTPP1 DDX39A DHX15 DPY19L3 DSCAM DVL1 DYNC1LI2 DYRK1A DYRK2 E2F5 ECH1 EDARADD EEF1B2 EIF4G3 EIF4H ENO1 ERFF1 ESYT2 FAM118A FLNA FNDC3B FOXC1 FOXG1 FOXRED2 GALNT7 GLI3 GMEB2 GOLGA8B GOLT1A GRB2 GRSF1 Gzmb HAUS3 HIC2 HIPK3 HIST1H2BD HIST1H3H HSP90AA1 HSPA12A HSPA1B ID2 IGDCC3 IGF1R IGF2BP1 IL6ST IPO9 JADE2 KCNJ6 KDM5C KDSR KIAA1468 KIAA1522 KIF2A KLF10 KLF14 KLHL15 KPNA6 KREMEN1 KSR1 LAMP1 LDHA LENG9 LGSN LMNB2 MAPK1 METTL4 MLF1 MLX MRPL37 MSC MXD4 MYC MYRF NDE1 NDFIP1 NDFIP2 NDST1 NEUROD1 NLGN2 NME4 NOLC1 NPNT OCRL OTUB2 OXSR1 P4HB PAPD5 PCCB PDIA4 PEF1 PGR PHACTR2 PLAGL2 PML PNISR PPARGC1B PRKD2 PSMA3 PTBP1 PTMA QSER1 RAB10 RABEP2 RAP1B RBAK RBMS1 RBMS3 RCC2 RDH11 REST RIT1 RNPS1 RPS7 RTN3 RUNX1 SDAD1 SEC31A SERINC1 SFT2D3 SKP2 SLC22A23 SLC25A2 SLC38A1 SOBP SOD1 SPA17 SREBF1 SRSF10 STARD7 STXBP1 STXBP3 SUFU SULF1 TCP1 TGFB2 TIGD1 TLK2 TMEM199 TMEM245 TOB2 TOGARAM1 TRA2B TRAF1 TRAF3 TRAFD1 TRIB2 TSEN2 TTC28 TUSC2 TXNIP TXNL1 UBA52 UBE2W USMG5 USP6NL VANG1 VEGFA VIM VPS13C VPS37B WDFY3 WDR33 WNK1 WNT10A WTAP WWC2 YWHAZ YY1 ZBTB14 ZFP36L2 ZFPM2 ZNF100 ZNF239 ZNF473 ZNF609 ZNHIT3
miR-378-5p	AGO3 AAK1 AARS2 ABHD15 ABHD18 ABL2 ABRACL ACTC1 ACTN4 ACTR2 ADAT1 ADO AKAP2 AKAP8L ALDOA ALKBH1 ANKRD36 ANKRD62 AP4B1 APOBEC3A APOH ARC AREL1 ARHGEF39 ARIH2OS ARPC2 ASTN1 ASXL2 ATCAY ATM B3GALT5 BACE2 BAG6 BBC3 BCLAF3 BORCS5 BRAF BRIP1 C10orf105 C15orf40 C19orf47

	C1QBP C20orf144 C2orf72 C8orf44-SGK3 C9orf3 CACNB2 CACNG8 CACTIN CCDC30 CCND2 CCR4 CD96 CDK4 CENPBD1 CHCHD5 CHD2 CHST6 CHTF18 CLUAP1 CMBL CMTM6 CMTR2 COX1 CSTF1 CWC25 CYB561A3 CYB5D1 CYCS CYLD CYP2U1 CYP4V2 CYTIP DBT DCP2 DCUN1D2 DDX19B DEGS1 DHODH DHTKD1 DLEU1 DNAJB5 DNAJC14 DSTYK EIF2A EIF2B2 EIF3D EIF4A1 EMP2 ENAH ENPP4 ENSA ENTPD4 ERVMER34-1 ETNK1 ETV6 F2R FAM126B FAM241A FAM46C FAM9B FBLIM1 FBXL2 FEN1 FFAR4 FGF19 FGFR1OP2 FLVCR1 FOXN3 FPR2 FXN FYCO1 GABPA GALNT6 GAN GAS7 GATA6 GATAD1 GBP4 GDE1 GINM1 GP2 GPI GPR156 GPSM2 GTF2H5 GTPBP10 HACD4 HAS2 HAUS2 HCAR1 HES2 HFE HIF1AN HILPDA HM13 HNRNPD1 HOOK3 HRH4 HS6ST2 HSPA1B HSPA4L HSPE1-MOB4 ICA1L IDE IGSF3 IL23R IMPDH2 ING3 IQSEC1 IRF1 IRGQ ISG20L2 ITGAL ITPRIPL2 IVD KBTBD4 KCNMB1 KCNN1 KCNN3 KIF1C KIR3DX1 KLF13 KLHDC8A KLHL7 KXD1 LACTB LAIR1 LARS LBR LCLAT1 LEFTY1 LGALS8 LIAS LIPG LRIG2 LRPAP1 LRRC27 LRRD1 MAN2A2 MANEAL MAPK8IP3 MARVELD1 MCTS1 MEAF6 MELK MFSD11 MICALL1 MMAB MOB4 MOGS MPLKIP MRM3 MRPS10 MTDH MTHFD1 MTRNR2L5 MUC4 MYADM MYO1B MYOZ3 NCOA3 NCR3LG1 NDUFV3 NLN NOA1 NODAL NPHP1 NPHS1 NT5DC3 NUBPL NUP155 NUP62 NWD1 NXPE1 NXPE2 ONECUT1 OPA3 ORAI2 OSTF1 OTOG P2RX7 PAG1 PAICS PALM2-AKAP2 PAN3 PAOX PARP2 PCBD2 PCBP2 PDE6A PDLIM3 PELI1 PHLDA3 PIGG PIGO PIGP PIK3C2A PIP4P2 PLD5 PLSCR1 POLE3 POLM POLR2F POLR3A PPARGC1A PPP1R15B PPP1R3B PRMT1 PRR11 PSMC1 PSMD3 PTOV1 PYGB QRFP RABGAP1L RAD51 RANBP2 RAP2B RBBP4 RIN2 RNF11 RNF41 RPL18A RPL24 RPL37 RPP14 RPS6 RRAD RTL10 RTN2 RUNDC1 S1PR3 SAR1A SART3 SCAMP2 SDF4 SEC24D SERPINH1 SET SGK3 SGTB SH3D19 SHE SIAH2 SIGLEC8 SLC15A2 SLC16A9 SLC1A5 SLC25A25 SLC28A1 SLC35E3 SLC35F5 SLC35F6 SLC4A1 SMURF2 SNX2 SORD SP1 SPIRE2 SPTLC2 SRCAP SSPN SSTR2 STAC2 STARD5 STK25 STOML1 SUFU SWSAP1 SYDE2 TALDO1 TAOK1 TCAF1 TERF2 TESMIN TIMM10 TIMM29 TIMM50 TIMM8A TIRAP TLR6 TM4SF5 TMEM132B TMEM154 TMEM59 TMOD2 TMOD3 TNRC6B TNRC6C TPR TRAPPC2 TRAT1 TRIM25 TRIM65 TRIM72 TRIP11 TRMT10C TSPYL1 TTC31 TTC4 TTPAL TUSC2 TXNL1 UBA5 UBE2W UBN2 UBR4 UEVLD UGT8 UQCRB USP1 VAMP4 VHL VMAC WDR12 WDR31 WDR5B WDR91 WDR92 WISP3 WNT7B XIAP XPOT YEATS2 YIPF4 YPEL1 YTHDF2 YWHAB ZBTB34 ZBTB43 ZBTB8B ZCCHC8 ZFP14 ZMAT3 ZNF101 ZNF207 ZNF217 ZNF264 ZNF321P ZNF34 ZNF37A ZNF43 ZNF430 ZNF431 ZNF439 ZNF485 ZNF517 ZNF519 ZNF554 ZNF573 ZNF576 ZNF584 ZNF646 ZNF669 ZNF699 ZNF708 ZNF724 ZNF786 ZNF84 ZSCAN2
miR-429	AGO1 A1CF AAK1 AASDHPPT ABAT ABCA1 ABCC9 ABCD3 ABHD3 ABI2 ABT1 ACACA ACE2 ACOX2 ACSL4 ACTC1 ACTR1A ACTR3 ACTR8 ACVR1C ACVR2A ACVR2B ADAM10 ADAM12 ADAMTS3 ADCY2 ADCY9 ADCYAP1 ADD3 ADGRL2 ADH1B ADIPOR2 ADRB2 AEBP2 AFF1 AFF2 AFF3 AFF4 AGFG1 AGPS AHNAK AHR AHRR AKAP11 AKAP13 AKAP2 AKAP6 AKAP7 AKT2 ALCAM ALDH1A3 ALG10B ALG2 AMACR AMBRA1 AMER2 AMFR AMMECR1L AMOTL2 ANAPC13 ANGEL2 ANK3 ANKFY1 ANKH ANKRD12 ANKRD13C ANKRD28 ANKRD33B ANKRD44 ANKRD52 ANKRD6 ANLN ANO5 ANO6 ANP32B AP1AR AP1S2 AP4E1 APAF1 APLP2 APOO APPL1 ARF6 ARFGEF3 ARGLU1 ARHGAP19 ARHGAP20 ARHGAP26 ARHGAP6 ARHGDIA ARHGEF1 ARHGEF17 ARHGEF3 ARHGEF7 ARHGEF9 ARID2 ARID4A ARID4B ARID5B ARIH1 ARIH2 ARL15 ARL2BP ARL3 ARL4A ARL5A ARL6IP6 ARL8B ARMC10 ARPC3 ARPP21 ARRDC3 ASAP1 ASB13 ASCC3 ASF1A ASH1L ASPH ASXL1 ASXL3 ATAD2B ATF3 ATF7IP ATL2 ATMIN ATP11B ATP11C ATP2A2 ATP2B1 ATP5B ATP5G3 ATP6V0A2 ATP6V1E1 ATP8A1 ATRX ATXN1 ATXN1L ATXN7 ATXN7L1 AUTS2 AVPR1A B3GALNT1 B3GLCT B3GNT2 B4GALT6 B4GAT1 BACH2 BAG4 BAG5 BAG6 BAP1 BASP1 BAZ2B BBX BCAP29 BCL11B BCL2 BCL2L11 BCL9 BCLAF3 BDP1 BHLHE22 BHLHE41 BICC1 BICD2 BLCAP BLOC1S6 BMI1 BMPER BMT2 BNC2 BOLL BPTF BPY2 BRMS1L BRWD1 BRWD3 BTBD1 BTBD11 BTF3L4 BTN2A1 C11orf87 C11orf95 C14orf39 C16orf52 C16orf72 C18orf63 C21orf91 C2orf15 C2orf73 C4orf46 C5orf24 C6orf120 C6orf47 C6orf62 C7orf43 CA13 CA3 CA5B CAB39 CACHD1 CACNA1C CACNB2 CACNB4 CACNG8 CACUL1 CADM1 CADM2 CALCR CALD1 CALHM1 CALU CAMSAP2 CAND1 CAPRIN2 CARF CASC1 CASC4 CASD1 CASK CASKIN1 CASP2 CASR CAST CASZ1 CBL CBX4 CBX5 CCDC117 CCDC144A CCDC186 CCDC62 CCDC82 CCNA2 CCNE2 CCNJ CCNJL CCNT2 CCNYL1

CCSAP CCSER1 CCSER2 CD59 CD96 CDC14A CDC14B CDC27 CDC42 CDC42EP3 CDC42SE1 CDC73 CDCA4 CDCA7 CDH11 CDH20 CDH6 CDHR1 CDK12 CDK13 CDK16
CDK17 CDK19 CDK2 CDKN1B CDKN2AIP CDKN2B CDON CDR2 CDR2L CDYL CEBPD CECR2CELF1 CELF2 CEP152 CEP350 CEP41 CEP55 CEP85L CEP97 CERS6
CFAP97 CFL2 CGGBP1 CHAC2 CHD1 CHD2 CHD6 CHD7 CHD9 CHM CHMP5 CHN2 CHORDC1 CHRDL1 CHRM2 CHST2 CHST9 CHSY1 CHSY3 CIT CITED2 CKAP4
CKLF CLASP1 CLASP2 CLCC1 CLDND1 CLEC2D CLIC4 CLINT1 CLIP1 CLIP2 CLK4 CLOCK CLPB CNEP1R1 CNKSR3 CNN3 CNOT4 CNOT6 CNOT6L CNOT7 CNOT8
CNOT9 CNST CNTD1 CNTFR CNTN4 CNTNAP2 COL21A1 COL4A1 COL4A3 COL4A3BP COL9A2 COMMD3 COMMD6 COPS2 COPS8 CORO1C COX11 CPD CPEB3
CPED1 CPOX CPT1A CREB1 CREB5 CREBBP CREBL2 CREBZF CREG1 CRH CRHBP CRKL CRLF3 CRTAP CSF3R CSMD3 CSNK1G3 CSRNP3 CSTF3 CTBP2 CTDSPL2
CTNND2 CTSC CUL3 CUL4A CUL5 CUTC CUX1 CXCL9 CXorf57 CYP11B1 CYP1A1 CYP1B1 CYTH1 CYTH3 CYR1 DACH1 DACT1 DAG1 DARS DAZ1 DAZ2 DAZ3
DAZ4 DAZL DCAF10 DCAF17 DCAF5 DCAF7 DCAF8 DCBLD2 DCDC2 DCP2 DCUN1D1 DCUN1D4 DCUN1D5 DCX DDI1 DDIT4 DDIT4L DDX1 DDX3X DDX3Y DDX55
DDX6 DDX60 DENND5A DENND5B DENND6A DESI1 DGKA DHX36 DHX9 DIRAS2 DIXDC1 DLC1 DLGAP2 DMD DMRT2 DNA2 DNAJB14 DNAJB5 DNAJB6 DNAJB9
DNAJC3 DNAJC5 DNAJC8 DNAJC8 DNMT1 DNMT3A DNMT3B DOCK4 DOK5 DOT1L DPH6 DPY19L1 DPY19L3 DR1 DROSHA DRP2 DSC3 DTNA DUSP1 DUSP7
DYNC1I1 DYRK2 DZIP1 E2F3 EDEM3 EDNRA EED EFNA1 EFNA5 EFN2 EGLN1 EGLN3 EGR3 EID1 EIF2B5 EIF2S1 EIF3J EIF4E EIF4E2 EIF4E3 EIF5A2 EIF5B ELAC1
ELAVL4 ELAVL4 ELF2 ELK3 ELK4 ELL ELL2 ELMO2 ELMOD1 ELMOD2 ELOC ELOVL6 EML5 EMP1 ENDOD1 ENOPH1 ENOX2 ENSA EP300 EPB41L4B EPDR1 EPHA7
EPS15 EPS8 ERBB4 ERBIN ERC1 EREG ERG ERI1 ERICH3 ERLIN1 ERMP1 ERFF1 ESM1 ESRP1 ESRRG ETF1 ETNK1 ETS1 ETS2 ETV5 EVI5 EXOC5 EXOSC3 EZH2
FADS1 FAM107B FAM114A2 FAM118B FAM120C FAM126B FAM13B FAM13C FAM160B1 FAM168B FAM169A FAM19A5 FAM216B FAM218A FAM219A FAM227B
FAM3B FAM46C FAM49B FAM60A FAM76B FAM81A FAM8A1 FARP1 FASTKD3 FAT3 FAT4 FBXL16 FBXL17 FBXO22 FBXO30 FBXO33 FBXW11 FBXW2 FBXW7 FECH
FERMT2 FEZ2 FGD1 FGD4 FGD6 FGF18 FGF2 FGF9 FHL1 FHOD1 FIGN FIGNL2 FKBP5 FLI1 FLII FLRT2 FLT1 FMR1 FN1 FBNP4 FNDC3B FOSL2 FOXF1 FOXF2 FOXG1
FOXK1 FOXN2 FOXP1 FPGT FRAS1 FREM1 FREM2 FRMD4A FRMD4B FRMD6 FRS2 FRYL FSCN1 FSD1L FSIP1 FSTL1 FUBP1 FUBP3 FUNDC1 FUT4 FXR1 FXR2 FYN
FYTTD1 G2E3 G6PC GAB1 GABARAPL1 GABARAPL2 GABBR2 GABPA GABPB1 GABPB2 GABRA6 GABRB3 GAL3ST1 GALNT2 GAN GAS2 GATA2 GATA4 GATA6
GATAD2B GBE1 GCOM1 GDA GDAP1 GDF6 GDI2 GDNF GEM GF11 GFPT1 GIGYF1 GIN1 GIT2 GJC1 GLCC1 GLG1 GLI3 GLIS2 GLRA2 GLS GMFB GNA13 GNAI3
GNAQ GNPDA1 GOLGA1 GOLGA7 GOLGA8A GOLGA8B GOLIM4 GOSR2 GOT1 GPATCH8 GPC6 GPM6A GPR107 GPR146 GPR158 GPR173 GPR180 GPR27 GPR85
GPRASP2 GPRIN3 GPX8 GRB10 GREM2 GRID2 GRIN2A GRIP1 GSE1 GSKIP GSTA4 GTF2E1 GTPBP10 GUCY1A3 GULP1 GXYLT1 HAL HAS2 HBS1L HCCS HCFC2
HCN1 HDAC2 HDAC4 HDHD2 HECTD2 HEG1 HERC3 HIC2 HIF1A HIPK1 HIPK2 HIPK3 HLCS HLF HMBOX1 HMGB1 HMGB3 HMGCLL1 HNF1B HNRNPA3 HNRNPD
HNRNPH1 HNRNPH2 HNRNPH3 HNRNPK HNRNPU HOOK1 HOXA5 HOXB5 HPF1 HPS5 HS2ST1 HS3ST1 HS3ST3A1 HS6ST2 HSF5 HSPA13 HSPA9 HTR2C IAH1 ICA1L
ICK ID2 IDS IER5 IFIT5 IFNGR2 IGDCC4 IGF2 IGF2BP3 IGF2R IGSF10 IGSF11 IGSF3 IKBKB IKZF2 IL33 IL4 IL6ST IMMP2L IMPA1 IMPAD1 ING2 INHBA INO80D INPP4A
INSM2 INTS6 INTS6L INTS8 IP6K1 IPO7 IPO8 IQCJ-SCHIP1 IQGAP1 IQSEC1 IQSEC2 IRF4 IRS1 IRS2 IRX5 ITGA1 ITGA10 ITGAV ITM2B ITPR1 ITPR2 ITS1 ITS2
JADE3 JAG2 JAZF1 JCAD JKAMP JMY JUN KANK1 KANK2 KAT2B KATNAL1 KBTBD11 KBTBD6 KBTBD8 KCMF1 KCNA1 KCND2 KCNJ15 KCNJ2 KCNK2 KCNMB1
KCNQ4 KCTD12 KCTD15 KCTD2 KCTD8 KDELC1 KDM1B KDM3B KDM7A KDR KDSR KHDRBS1 KHDRBS2 KIAA0040 KIAA0087 KIAA0355 KIAA0895 KIAA1456
KIAA1468 KIAA1841 KIF13A KIF14 KIF1B KLF10 KLF11 KLF12 KLF13 KLF3 KLF4 KLF6 KLF9 KLHDC1 KLHL14 KLHL20 KLHL29 KLHL3 KLHL31 KLHL42 KLK7
KMT2C KMT2E KPNA3 KRAS KRR1 KRT80 KSR1 KYNU L3MBTL3 LAMC1 LANCL1 LARP1B LATS1 LATS2 LBR LCA5 LCLAT1 LCOR LCORL LDB3 LEMD3 LEPR
LEPROTL1 LFNG LHFP LHFPL2 LHX9 LIFR LIMA1 LIMK1 LIN28B LIN54 LIN7B LIN7C LMAN1 LMNB1 LMO4 LMO7 LONRF2 LOX LPAR1 LPAR4 LPGAT1 LPIN1

LPIN2 LRAT LRCH2 LRIG1 LRP1 LRP1B LRP4 LRPAP1 LRRC40 LRRC58 LRRC8A LRRTM3 LRRTM4 LTN1 LUC7L3 LY75 LYPD6 LYPLA2 LYRM2 LYSMD3 M6PR MAF
MAFG MAGOH MAGOHB MALAT1 MALT1 MAMDC2 MAMLD1 MAP1B MAP2 MAP3K1 MAP3K5 MAP4K3 MAP4K4 MAP4K5 MAPK1IP1L MAPK7 MAPK9 MAPRE1
MARCH6 MARCH8 MARCKS MARF1 MATR3 MBD5 MBLAC2 MBNL1 MBNL2 MBNL3 MBOAT2 MBTD1 MBTPS2 MCC MCFD2 MCM10 MED1 MED13 MEF2D MEGF11
MEST MEX3B MEX3C MEX3D MFAP5 MFHAS1 MGA MGAT2 MGAT3 MGAT4A MGEA5 MIB1 MIEF1 MIER1 MIER3 MINDY2 MKL2 MKLN1 MKNK2 MKRN1 MLH1
MLLT10 MLLT3 MMD MMD2 MMTG1 MMP16 MMS22L MOB4 MOCS1 MON2 MORC3 MORF4L2 MOSPD2 MPC1 MPDZ MPP5 MPPE2D MPRIP MRE11 MREG MRPL19
MRPS25 MSANTD2 MSL2 MSN MSR1 MSTN MTAP MTCP1 MTDH MTERF3 MTF2 MTFR1 MTM1 MTMR1 MTMR10 MTMR12 MTMR9 MTSS1L MTUS1 MXD3 MXD4
MXI1 MYB MYC MYCN MYLK MYNN MYO5A MYO9A MYT1 MYZAP N4BP2 NAA16 NAB1 NAMPT NANOS1 NAP1L2 NAP1L5 NAPB NAV3 NBR1 NCAM1 NCK2
NCOA2 NCOA3 NCOA4 NCOA7 NCOR2 NCS1 NDN NDNF NDST1 NDUFS4 NECTIN1 NECTIN4 NEDD1 NEDD4 NEDD4L NEGR1 NEK10 NEK9 NEO1 NEPRO NF1 NFASC
NFIA NFIB NFYA NGEF NGRN NIN NIPBL NIPSNAP3B NKD1 NLGN4X NLRP11 NOC3L NOG NOTCH1 NOVA1 NPAP1 NPC1 NPHP1 NPM1 NPNT NPR3 NPTX1 NPY1R
NPY2R NR2C2 NR2F2 NR3C1 NR4A2 NR5A2 NRBF2 NRBP1 NRCAM NREP NRG1 NRIP1 NRP2 NRXN1 NSD2 NSMAF NT5DC1 NTF3 NTRK2 NUDT21 NUDT4 NUFIP2
NUMB NUP153 NUP160 NUP35 NXPH1 NYAP1 OCLN ODF2L OLIG3 ONECUT2 OR51E1 ORMDL3 OSBPL11 OSBPL8 OSGIN2 OSMR OSR1 OSTF1 OSTM1 OTOGL OTUD4
OTUD6B OTULIN OXR1 PABPC1 PAG1 PAIP2 PAK2 PAK5 PAK6 PALM2 PALM2-AKAP2 PAM PAN3 PAPD5 PAPOLA PAPOLG PAPSS1 PAQR5 PARD3B PARD6B PARP8
PARPBP PBX3 PCDH10 PCDH11X PCDH11Y PCDH19 PCDH7 PCDH8 PCLAF PCM1 PCMTD1 PCNP PCNX1 PCSK1 PCSK2 PCSK5 PDCD10 PDCD4 PDE4B PDE5A PDE7B
PDIK1L PDLIM5 PDPK1 PDS5B PEAK1 PELI2 PENK PFDN4 PFN2 PGAP1 PGM2L1 PHACTR2 PHACTR3 PHC3 PHF14 PHF21A PHF21B PHF6 PHLDA1 PHLDB1 PHTF2
PI15 PI4K2B PI4KB PIGM PIH1D3 PIK3C2G PIK3CA PIK3CB PIKFYVE PIM2 PIN1 PIP4K2A PIP4K2B PISD PITPNA PITPNM3 PJA2 PKD1 PKD2 PKHD1L1 PKIA PKN2
PKP1 PLAG1 PLCG1 PLCL1 PLCXD3 PLEKHM3PLK2 PLOD2 PLPP3 PLPP6 PLPPR1 PLPPR4 PLS1 PLS3 PLXNA2 PLXNA4 PLXNC1 PM20D2 PMAIP1 PMM1 PMP22
PMPCB PNRC2 POLK POU6F1 PPARA PPFA1 PPFIBP1 PPHLN1 PPIP5K2 PPM1A PPM1B PPM1E PPM1F PPM1H PPP1CB PPP1R10 PPP1R12B PPP1R18 PPP1R2 PPP1R8
PPP1R9A PPP1R9B PPP2CA PPP2R1B PPP2R2C PPP2R5C PPP2R5E PPP4R2 PPP6C PPP6R3 PPWD1 PRDM1 PRDM16 PRKAA2 PRKAB1 PRKAB2 PRKACB PRKAG2
PRKAR1A PRKAR2B PRKCA PRKCB PRKD3 PRKG1 PROK2 PRPF38B PRRC2C PRRG4 PRTG PSAT1 PSD3 PSIP1 PSME4 PSMF1 PSPH PSTPIP2 PTAR1 PTBP1 PTBP2
PTBP3 PTCH1 PTCHD1 PTEN PTGDR PTGER2 PTGER3 PTGER4 PTHLH PTP4A1 PTPN11 PTPN12 PTPN13 PTPN14 PTPN21 PTPN22 PTPN4 PTPRD PTPRZ1 PUM2
PWWP2A QKI R3HDM2 RAB11FIP2 RAB18 RAB21 RAB23 RAB33B RAB37 RAB5A RAB7A RAB8B RABEP1 RABIF RAC1 RAD18 RAG1 RALB RALGAP1 RALGPS2
RALYL RANBP10 RANBP6 RANBP9 RAP1B RAP2A RAP2C RAPGEF1 RAPGEF2 RASA2 RASSF2 RASSF6 RASSF8 RBBP4 RBBP9 RBFOX1 RBFOX2 RBFOX3 RBM12B
RBM20 RBM26 RBM46 RBM47 RBM8A RBMXL2 RBSN RCN1 RDH10 RDX RECK REEP1 RELN RERE RET REV1 REV3L RFC3 RFTN1 RFX7 RGL1 RHOA RHOBTB1
RHOT1 RIC1 RIF1 RIMKLB RIMS2 RIMS3 RIN2 RIPK2 RLF RLIM RND3 RNF11 RNF13 RNF138 RNF145 RNF169 RNF170 RNF19A RNF2 RNF38 RNF5 RNGTT RNMT
ROBO2 ROCK2 ROR2 RPE RPGR RPL22L1 RPRD1A RPRD2 RPS6KA2 RPS6KA3 RPS6KB1 RRAS2 RRP15 RSNB1 RSPRY1 RSRC2 RTF1 RTKN2 RTL8C RUFY2 RUNX1
RUNX1T1 RUSC2 RWDD2A S100BP SACM1L SAMD8 SASH1 SATB2 SBF1 SBNO1 SBSPON SCAF11 SCAMP1 SCD SCHIP1 SCML1 SCML2 SCN1A SCN2A SCN3A
SCN3B SCN5A SCN8A SCN9A SCOC SCP2 SCRT2 SDC2 SDK2 SEC23A SEC24A SEC31A SEC61A2 SEC62 SECISBP2L SEH1L SELENOK SEMA3F SEMA6D SENP5 SENP7
SEPHS1 SEPT7 SEPT8 SERF2 SERINC1 SERPINB13 SERPINH1 SERPINI1 SESN1 SESN3 SETD7 SETX SFXN1 SGCE SGIP1 SGPP1 SH3GL1 SH3PXD2A SHC1 SHC4
SHCBP1 SHISA2 SHOX2 SHPRH SHROOM2 SHROOM4 SIAH1 SIK2 SIKE1 SIN3A SIRPA SIRT1 SIX1 SIX3 SLAIN1 SLC12A2 SLC12A5 SLC14A1 SLC15A5 SLC16A1
SLC16A14 SLC16A2 SLC19A3 SLC1A1 SLC1A2 SLC23A2 SLC24A4 SLC25A24 SLC25A27 SLC25A30 SLC25A36 SLC26A2 SLC26A7 SLC2A3 SLC30A5 SLC30A7 SLC31A1

SLC35A1 SLC35A2 SLC35B4 SLC35D1 SLC35E2 SLC35E2B SLC35F4 SLC35F5 SLC38A2 SLC38A4 SLC39A14 SLC39A8 SLC4A10 SLC4A4 SLC4A7 SLC5A12 SLC5A3
SLC6A1 SLC6A11 SLC6A15 SLC6A6 SLC7A11 SLC9A6 SLF2 SLFN12 SLIT1 SLIT2 SLITRK1 SLK SLMAP SLTM SMAD2 SMAD4 SMAD5 SMAD7 SMAD9 SMARCAD1
SMARCD1 SMC1A SMG8 SMIM5 SMPX SMURF1 SMURF2 SNAI2 SNAP25 SNAPC1 SNRNP27 SNRNP2 SNRPE SNTB2 SNX1 SNX10 SNX13 SNX16 SNX30 SOAT1 SOCS4
SOCS5 SOCS6 SORCS3 SORT1 SOS1 SOWAHC SOX1 SOX2 SOX5 SOX6 SP1 SPAG9 SPART SPAST SPATA2 SPATS2L SPICE1 SPIDR SPIN4 SPRED1 SPRYD4 SPTBN1
SPTLC3 SPTSSA SRF SRGAP1 SRI SRP72 SRSF1 SRSF10 SRSF12 SRSF2 SSFA2 SSH2 SSR1 SSR3 ST3GAL2 ST6GALNAC3 ST6GALNAC5 STAC STAM2 STARD13 STK17A
STK38L STK4 STRN STRN3 STX16 STX17 STX1A STYX SUGT1 SULF1 SUPT20H SURF4 SUSD5 SUV39H2 SUZ12 SWAP70 SWT1 SYDE1 SYNCRIP SYNJ1 SYNJ2BP
SYNM SYNRG SYS1 SYT1 SYT10 SYVN1 TAB3 TACC1 TAF12 TAF1D TAF4 TAF5L TAF9B TAOK1 TAOK3 TAP2 TARDBP TBC1D12 TBC1D15 TBC1D22B TBC1D23
TBK1 TBL1XR1 TBP TBRG1 TBX18 TBX22 TBX4 TBX5 TC2N TCAIM TCF4 TCF7L1 TCF7L2 TCP11L1 TEAD1 TEC TENM1 TENM3 TERF1 TESK2 TET1 TET2 TEX15
TFAP2A TFEC TFPI TGFBR1 TGFBR3 THAP1 THAP2 THRA THRB THSD7A TIA1 TIAL1 TIFA TIGAR TIMM21 TIMP2 TJAP1 TJP1 TLL2 TLN1 TLN2 TM7SF3 TMA16
TMBIM4 TMCC1 TMEFF2 TMEM100 TMEM119 TMEM123 TMEM135 TMEM136 TMEM147 TMEM14A TMEM154 TMEM164 TMEM17 TMEM170A TMEM170B
TMEM178A TMEM189 TMEM189-UBE2V1 TMEM229B TMEM237 TMEM245 TMEM26 TMEM33 TMEM41B TMEM47 TMEM57 TMEM70 TMOD3 TMTC1 TMTC3 TMX1
TMX4 TNFRSF11B TNFSF8 TNKS2 TNNI1 TNRC6A TOB1 TOGARAM1 TOMM70 TOPORS TOR1AIP1 TP53INP1 TP53TG3 TP73 TPCN1 TPD52L1 TRA2B TRAM1L1
TRAPPC6B TRAPPC8 TRAT1 TRHDE TRIL TRIM2 TRIM23 TRIM33 TRIM44 TRIM52 TRIM56 TRIM62 TRIM9 TRIML1 TRIO TRMT1L TROVE2 TRPC3 TSC22D1 TSC22D2
TSPAN13 TSSK1B TSTD2 TTC14 TTC33 TTC5 TTF2 TUBB TUBB2A TUBB3 TWISTNB TXLNG TXNDC16 TYW5 UBA6 UBAC2 UBE2B UBE2D1 UBE2I UBE2J1 UBE2R2
UBE2V1 UBE2W UBN2 UBQLN1 UBR1 UBXN7 UCHL5 UFL1 UFM1 UGCG UHRF1BP1 ULK2 UNC119B UNC50 USF3 USH1G USH2A USP15 USP18 USP25 USP27X USP31
USP43 USP46 USP47 USP6NL USP9X UTY UXS1 VAC14 VAMP3 VAMP4 VAMP7 VAPA VASH1 VASH2 VAT1L VCP1P1 VEGFA VEZF1 VGLL2 VLDLR VMP1 VPS13A
VPS13C VTI1A VTI1B WAPL WASF1 WASF3 WASHC4 WBP1L WDFY2 WDFY3 WDR26 WDR37 WDR45B WDR47 WDR82 WDR91 WIF1 WIPF1 WIPF3 WNK3 WNT16
WNT5A WSB1 WWC1 WWC2 WWC3 XIAP XKR4 XKR6 XKR8 XPO4 XPOT XRN2 YAP1 YEATS4 YES1 YME1L1 YOD1 YPEL1 YPEL2 YTHDF3 YWHAB YWHAG
YWHAQ ZBTB14 ZBTB24 ZBTB34 ZBTB38 ZBTB44 ZBTB5 ZBTB8A ZC3H11A ZC3H12C ZC3H15 ZC3H4 ZC3H6 ZCCHC14 ZCCHC24 ZDHHC17 ZDHHC18 ZDHHC21
ZEB1 ZEB2 ZFAND5 ZFAND6 ZFHX4 ZFPM2 ZFR ZFX ZFY ZIC3 ZKSCAN8 ZMAT3 ZMYM4 ZNF131 ZNF148 ZNF181 ZNF217 ZNF236 ZNF260 ZNF274 ZNF280C
ZNF286A ZNF292 ZNF302 ZNF326 ZNF330 ZNF362 ZNF365 ZNF395 ZNF423 ZNF507 ZNF516 ZNF518A ZNF532 ZNF536 ZNF557 ZNF566 ZNF621 ZNF652 ZNF655 ZNF662
ZNF692 ZNF697 ZNF711 ZRANB2 ZSWIM4

Supplementary file 2: MicroRNA targets and overlap with Crohn's disease or Ulcerative colitis susceptibility genes.

Supplementary Table 2 MicroRNA targets and Crohn's disease or Ulcerative colitis susceptibility genes in overlapping Venn diagram fields (see Figure 2)

Group	Total	Genes
Decreased miRNA	54	PTPN22 PRKCB CCNY IL6R AHR IL23R RDX CPEB4 IL1R1 ITGAL OSMR ZPBP2 ADGRL2 IFNGR2 JAZF1 MYRF FOS NR5A2 NXPE1 ERN1 NDFIP1 NOTCH1 PNKD
CD genes		ADCY7 NKD1 OTUD3 DNMT3B DNMT3A DAG1 PRDM1 UBAC2 TENM3 RSNB1 IFNLR1 PHTF1 RIC8B PRKCQ NOD2 BACH2 FNBP1 PLAUI KSR1 SMAD7 FAM118A
UC genes		INAVA SMURF1 PLCL1 ETS1 SH2B3 FGFR1OP DLD SLC9A8 HIPK1 RPS6KB1
CD genes	328	KRTCAP2 TRAF3IP2-AS1 FGFR1OP2P1 NOS2 AL591122.1 BANK1 LINC00460 AC093278.1 LINC01620 HDAC7 THADA CD6 AC114798.1 AC005697.1 LTBR PTPN2 RGS14
UC genes		YBX1P5 AC116366.3 SKAP2 CARD9 CELSR3 ADCY3 FAM177A1 ASCL2 JAK2 TNFRSF1A ZYXP1 HLA-DRB9 SPATA48 AC067752.1 LINC01185 AC007728.2 IL15RA GATD3A RAVER1 TNFAIP3 HLA-DQA1 IL18RAP ADAD1 KRT18P56 AC005803.1 AC114977.2 HORMAD2 LINC00604 FCGR2A AL160272.2 AF064858.1 TMBIM1 CXCR1 PPP5C IL10 UQCR10 AL391684.1 NKX2-3 AC024598.1 AC009126.1 CD28 RPS6KA4 SP140 RTEL1-TNFRSF6B AF111167.1 LINC02213 AC020595.1 LINC00598 AC008462.1 B3GALT6 SLC9A4 TNIP1 NRAD1 AC114977.1 LCE3A LURAP1L-AS1 AF117829.2 LURAP1L AC116345.1 AC091114.1 AC092723.4 AC006974.2 AC007220.1 RNU6-320P PSMA6 AL133163.1 FUT2 ATXN2L AL121897.1 CRB1 THEMIS ZBTB40 HMGN2P18 ITLN1 IL21-AS1 AL138720.1 RPL23AP12 NFATC1 SMAD3 AC132217.2 AL035530.2 CTIF GRB7 TNFSF15 STMN3 CXCR2 COMMD7 STAT4 CD40 AC138904.2 LPXN ANTXR2 MROH3P INS-IGF2 EIF2S2P3 MAP3K8 AL121845.3 CMC1 CD226 STAT3 AJ009632.2 AC007608.3 KEAP1 MST1 AL035530.1 AL160035.1 LCE3B IL27 AC025594.1 UBASH3A ZNF831 AL031590.1 INTS11 CRTC3-AS1 AC096887.1 RPL35P9 GPR65 MIR4425 LINC02723 GAL3ST2 DENND1B IL1R2 IRGM TMCO4 ZNF300 LINC02098 LINC02694 CORO1A TEX41 AC117440.1 IRF1-AS1 AL031599.1 TLR4 RNF186 LINC02635 AL592295.3 HLA-DRB1 CLEC16A AC068896.3 GBAP1 DAP SLC25A28 ZMIZ1 AC006974.1 KIF21B AC020743.3 ANKRD55 ATG16L1 LINC00581 CDKAL1 RMI2 SUOX EMSY SNRPGP8 PIGCP2 AC019330.1 CCND3P1 KPNA7 CACNA2D1 AL391883.1 BSN RN7SL51P AC093159.2 SBNO2 AC007271.1 AL161651.1 LRRK2 AC079809.1 IKZF3 LINC00993 C1orf141 SNN ASAP2 PARK7 AC104695.2 RNU6-474P ATXN2 UBE2L3 LINC00892 RNU6-144P GPR18 TSPAN14 AL137856.1 LINC00824 CREM RNU6- 925P AC011298.3 PTPRC KIAA1109 AC073065.1 IL19 HNRNCP4 ERAP2 AC011511.4 PKIG AC073332.1 HHEX AL162231.5 CHCHD2P3 BTF3L4P3 IGF2-AS TYK2 CTLA4 AC025682.2 GPR35 GCKR GSDMB TNFRSF14 AL590385.2 SBK1 BTNL2 C1QTNF12 STK11 CCR12P SETD1A BRD2 ANKRD30A RORC IFIH1 RN7SKP113 NFKB1 TNFRSF6B LINC01250 AC133550.2 IL21 GNA12 IL18R1 AL157394.3 AL390879.1 EPHB4 PDE4A KRT18P39 MIR4686 FIBP DELEC1 C17orf67 LINC01147 AC018445.5 AL133163.2 AC005840.2 SLC2A13 AC004882.4 IKZF1 HIF3A AL356234.2 LSM14A AL133412.1 IFNG-AS1 AC108105.1 ERAP1 HLA-DQB1 LITAF AL354714.2 AC020718.1 ATG5 CCR5AS AC007014.1 LINC02863 AL591846.1 AL445471.2 LINC02800 SLC7A10 AL512506.3 AL031767.2 OR5B21 AL356417.3 CCL2 PUS10 NPM1P17 ITGA4 PTPRK CD244 IL2RA FAP AC006348.1 NPEPPS RASGRP1 CYTL1 MHENCR IL2 RN7SKP226 IRF5 FNDC3A LINC01989 MAPK3 RN7SKP211 GLYAT LINC01475 NOTCH4 AP001189.2 CRTC3 CUL2 SLC39A11 PPP2R3C TMEM258 POFUT1 EEF1AKMT2 Z94721.2 ACTA2 PVT1 AC067751.1 LINC02555 TSBP1-AS1 ZGPAT SATB1-AS1 AC008738.6 HNRNPA1P41 AC133134.1 AC093277.1

Decreased miRNA	11	CYTH1 SATB2 CIT MFSD13A RTF1 NFKBIZ SEMA6D ACTR1A INSL4 TET2 DUSP16
UC genes		
CD genes	24	TAB2 ALDH5A1 FAM171B IQCJ-SCHIP1 SBSPON ZBTB38 NRBP1 CXCR5 IRF4 LY75 FEN1 RIT1 CD96 COL5A1 USP1 SLC22A23 SLAIN2 PHACTR2 AKAP11 PTPRD
Decreased miRNA		ZDHHC23 FERMT1 FOXP1 NUDT15
UC genes	111	CPXM2 TNXB PPBP RPLP0P7 CIITA RTEL1 AC006326.1 AL662884.5 AC020549.3 GRAMD1B AC106772.1 AC008691.1 DUPD1 CCT5P2 MYT1L LINC00243 LINC01271 CHP1 AC004080.2 AL662884.2 SFMBT1 HLA-C AL133547.1 AC019117.4 AL158071.3 PROCR RNU6-222P ERGIC1 IL26 AC104989.1 BPIFA2 MAML2 AC020551.1 AL662844.2 KIR3DL2 TOM1 NUP210 CCRL2 AL139246.3 LSP1 PLCG2 IL17REL C5orf66 CAMK2A LINC02009 IL7R IDI1P2 ST7 TRIM15 AL162726.3 AMZ1 AC007389.1 AC133065.1 HLA-DRA AL645933.4 MMP24OS MIR4456 AL354872.1 AC116348.2 FCAR ZFP90 PTGIR LINC02300 CDH3 BPIFB4 FAM238C AL139246.2 MICD LNC-LBCS AC018511.5 AC013724.1 Z84488.2 LINC01958 NXPE2P1 AC018710.1 AL158071.1 AC107396.1 AC080037.2 AC019117.3 HLA-DQB1-AS1 LINC00484 APEH CCDC26 CHORDC1P5 HLA-W AL645922.1 CCHCR1 HDAC9 SNAPC4 TNNI2 BTF3P2 CCL20 AL590080.1 AC027124.2 RPL5P26 COL13A1 AL138702.1 DPH5 RLN2 LAMB1 NXPE4 GRID2IP ABI1 LINC02570 CALM3 NIPA2P5 CXCL5 CFB RN7SL636P AC018685.2 AC093765.3 AC116348.1 AL157371.2
CD genes	213	TUBD1 NCF4 Z94721.1 RUNX3 KLF3-AS1 ST8SIA4 RPL13P2 PARP1P1 LINC02341 NCF4-AS1 PLCXD2 AL645939.6 ACO2 AC005740.2 SCAMP3 AL157402.1 ELF1 NOTCH2 AL080243.3 AL669970.2 KANK4 RNA5SP341 MAGI1 DPH6-DT ADAMTS6 SLC22A5 C10orf55 FOXP2 AL132986.1 IMPG2 GIPC2 RFT1 AC097634.4 ZFP36L1 LINC02128 CDC37 LINC01898 AL442128.2 GRP PPM1G LCAT DOCK7 MTCO3P1 ADAM30 LPP AC006525.1 MDFIC RN7SKP36 PTK2B DUSP22 TAGLN2 AC005699.1 AC012370.2 LINC00448 GSAP AP003715.1 LRRK2-DT NUPR1 CCL7 FADS2 IL1RL1 MAMSTR SLC43A3 PLA2G4A ZBTB16 SLAMF8 RBX1 IPMK MTRNR2L13 AC022858.1 FCHSD2 PER3 LINC02513 IL23R - RNU4ATAC4P LINC00861 LINC02253 AC020743.2 AL035665.2 AL606469.2 TAB2-AS1 CUL1 MUC19 LINC02471 LY75-CD302 C3orf84 AL662789.1 GGNBP1 IL12RB2 SDK1 AC099508.2 LINC02042 AP002075.1 VWA7 AC092999.1 CD200R1L-AS1 TCERG1L AC093159.1 HLA-B CDC42SE2 TRMT112P1 FOXO3 LINC01164 RBM43 RNFT1P2 Z98884.1 TRAP1 SPEF2 CCDC88B DAD1 LINC01876 RBPJ SEC11C AP002761.2 AC138894.1 RARB PLA2R1 MLN PSORS1C3 SORCS2 AL513542.1 AL513303.1 TNF AL365258.2 AC017000.1 LINC02770 LUZP2 AL353600.1 RNU6-326P ADRA1D BTBD8 AP001042.1 AL606469.1 AL355613.1 SYNDIG1L OPCML LACC1 AL356534.1 AC091489.1 SYPL1 NLRP1 AC026884.1 POU5F1 AC073225.1 RSPO3 CBLC LINC01680 HGFAC PHLDB2 AL353600.2 CAPZB AC021506.1 SMNDC1 AL390240.1 RN7SKP181 CDH13 SMIM3 LINC00492 AC107023.1 AC027347.1 RNU6-794P RN7SL802P UQCRHP1 AP004609.1 AC010601.1 MAGI3 CAVIN1 IRF6 XACT AC002378.1 FBLN1 MAGOH3P INKA2 NCR3 AC098680.1 AL445668.1 DMRTA1 AC107057.1 LINC01239 CLCA2 LINC02278 CDHR3 CSMD1 IL3 SNX20 CCND3 PSMD14 AL590560.4 LINC02639 RN7SL18P LINC01485 NELL1 AP005482.2 ZBTB9 LINC00491 AL355512.1 AP003774.2 BOK-AS1 UBE3D AC009299.2 LINC02814 RNASET2 CCDC146 AC015687.1 AC097714.1 AC073143.1 LTA CCDC201 PSMB10 FABP5P10 SCARNA5 AP002428.1 CLN3 CSF2
Decreased miRNA	3437	FSTL1 ELMO2 CD44 SLMAP SAMD4A HAUS2 FARP1 FAM219A C10orf90 CMTR2 RALYL CLK4 IRAK1 ZNF646 SLC10A7 NHLRC3 LMAN1 LCORL LDB3 SLC6A11 NAP1L2 MYO9B EPB41L4B EP300 CRNKL1 RDH10 HS3ST3A1 GSPM2 KLHL14 HIC2 UTY CHORDC1 TRIB3 C2orf49 KBTBD8 CCNB1 ZEB1 CDK14 ERG FAT4 PARN TMX4 SOD2 PNPT1 MIER1 CHD9 KCNK3 MSRB3 XK GDA SLC15A2 SEMA4D MREG MMS22L TOB2 INIP ING3 COPS7A OSBPL8 NR4A2 IGSF3 IPO9 TEAD1 SNX33 NFIA CHD1 ECH1 LHFPL2 ACTR8 TAOK3 STK25 ITGA3 CMPK2 GEN1 BRCA1 ZNF510 LPAR4 SLK TIGAR NOXO1 EIF4G3 SIGLEC8 USP6NL LMNB2 ROCK2 SNX16 PPP1R15B PHF20 EED ATL2 AP1S2 RAB33B C1QTNF3 VGLL3 PDCD4 TRAF5 SRRM4 CEP350 ANO5 ANKRD6 ARHGEF9 STARD5 NOA1 SLFN12 FAM98A STK17A NCOR2 CCNE1 ALX1 TIAL1 ROR2 UFM1 AP3M2 ZNF385B USP14 VAT1L FBXO31 FBXO11 FRS2 EMC1 ALG2 PPP1R3D GRB2 EIF1 LCOR FPGT DESI1 MARF1 TUBB

FAM182B TOR3A C8orf44-SGK3 HS2ST1 PMM1 GCLM PPM1A CPEB3 BCL2 MMP16 TJAP1 CAMTA1 ORC1 ZNF239 WDFY2 MLF1 TAF12 NDUFS4 ID1 PIK3CB PXDN FAXC ATP11C CDCA4 FAM110C XRN2 EMX2 RSRC1 NIPSNAP3B CRHBP THRB TMEM59 B3GALT5 SPTBN1 RICTOR RAG1 IRS1 CDC42EP3 SRP72 SNAPC1 LRRRC8A CYP1A1 PAQR8 FSIP1 THAP1 IGSF11 CHST6 CDK17 SDC2 QKI NCAM1 PDP1 LRRTM3 GLIS2 ATF7 UFL1 UBN2 FUT4 GLG1 L2HGDH ZNF655 KCNQ5 AGPS MED14 PCCB UNG MRM3 KLHL7 DCUN1D5 HDHD2 GMFB IGDCC3 FAM218A RPRD1B LONRF2 PALM2-AKAP2 NFYA NRG4 UBE2W AHNAK KIF14 GFI1 FHL1 DUSP18 PSMD5 MAD2L1 PSMF1 WAPL SH3PXD2A KLF4 LMO4 OPA3 SCHIP1 JADE1 MAGOHB IDS C1orf112 MICALL1 TFEC PPM1H DCX PPARGC1A KCNJ6 AHRR VMP1 CYP19A1 MANF EIF4E2 HOXB5 ARGFX ENTPD7 CASC4 ATP6AP1L FHDC1 GPR158 ITS1 EHBFP1L1 LIN28B TNKS2 GRIP1 C1QBP CADPS2 GRHL1 PSTK R3HDM2 TCP1 TMED7 PAWR ARHGEF26 MTMR12 PI15 ELAVL2 FAM9B FAM160B1 GPATCH8 EIF3D CPD CSMD3 DLGAP1 SERPINB13 SET DNAJB4 TMEM189 HSPA2 SYDE2 EIF2S1 PIGG ZNF264 BICD1 TERF2 RAB5A AKAP2 GTF2H5 PLEKHM3 LRP1B XPO4 ICA1L XIAP BDP1 MKLN1 ATP6V0A2 LAMTOR5 TALDO1 USH2A NF1 IMPAD1 APOBEC3A SEPHS1 PPFIBP1 NEGR1 MCM10 MAP4K3 SCRT2 HOXA5 TRIM56 UBE2J1 HNRNPK TCFL5 CLIP2 FOXN2 CD83 NCK2 SLC16A2 SC5D CEP164 ZNF136 TRPC1 CCDC144A USP43 TRAP MEX3D FKBP5 CHCHD5 MAPK7 NFAT5 TAF1D RTL8C WIF1 STRN3 GCH1 FBXO3 DVL1 TYMS TMOD2 FL11 PEF1 FAM199X PDPF MEGF11 HERC3 SDK2 MELK PTP4A3 HMBX1 CUL3 PODXL CALCOCO2 SPATS2L YPEL1 SLC48A1 ARHGAP26 CDK16 JAGN1 NPNT RBP7 TRHDE PHF12 ZNF536 PTPN4 WSB1 CDKN2B SOCS4 VEGFA NYAP1 DDIT4L ELL CDH11 C17orf105 GRIN2A CCDC14 KCTD2 MYC WDR26 NRXN1 PIH1D3 SPTLC3 CCNA2 OTUB2 NXPE2 ZFP1 LIN7B PCSK9 SLC23A3 MFS14B SLC35A1 COCH RDH11 SRSF3 SP4 SH3GL1 RALB KIF1B VPS37B AMOTL2 C6orf120 PSRC1 MRPL37 KIF5C GPM6A GBP4 CRLF3 PSMA5 WDR82 MAPK1IP1L NPHP3 CDH20 ZNF611 ST6GALNAC3 LRRFIP1 CTDP1 ZSWIM4 WNT16 CRTAP DDX50 SLIT1 ELK4 CCZ1B UBE2QL1 SMURF2 RPS6KA2 SLC25A24 TRPV1 KLHDC1 TDP1 ATG4A FOXG1 SLC25A30 PLXNA4 KIF23 DEPDC1 SEPT7 ZNF165 ZDHHC17 NDE1 ITGA10 HLCS ABCD3 MTF2 CACNA1C FAM20B HES2 DCTN4 CCSER2 AP1S3 LMO7 PAM HNRNPH1 ZNF84 OGRL1 LINC01554 CITED2 SIAH2 ATP11B NLGN4X POLR3A RPE EIF4E EXOC4 ZNF114 TCHP BGLAP MRAS SLC35F5 EMB LMNB1 FAM19A5 SHE KRT80 F13A1 BRCA2 KCNQ4 FMR1 CCDC117 KDM7A FAM8A1 USP15 UNC119B ZDHHC7 PTGER2 SLC5A7 ERCC4 SLC31A1 CNTD1 CBX4 MYO9A TXLNG NTRK2 FOXN3 ADCYAP1 SH3TC2 WDR33 RTN2 IRX4 LCLAT1 CHD7 WDFY3 CLIC4 WDR92 KLK7 LRP1 ANKH TACC1 SLC6A1 SAMHD1 PTBP3 OCLN SERTAD4 DDI1 CDON SERPINI1 NLK MDM2 SDF4 TAP2 CALHM1 THSD7A BIVM KLHL15 CXCL2 AKT2 GALNT6 SESN1 FBXO9 TNPO1 GBE1 MRPL13 CLASP1 SOD1 RAB6A BBOF1 PRKD2 PAPOLG CHML CDK13 PAPD7 DZIP1 TWISTNB ERFK NKX3-1 CHD2 PURA PCNP ATP5G3 CREB1 FANCM NEO1 MELTF DDX3Y CFL2 RASA2 STAG1 NAP1L5 NECTIN4 PIF1 BTBD1 LPIN2 RBSN LRP8 ZNRF3 AGL CCL3L1 FAM71E1 PSMD6 ELAC1 C2orf72 BIN2 RPL18A DEGS1 HM13 TBL1XR1 FAIM ANKRD36 RPRD1A APOLD1 TNFSF8 ARHGAP29 PDE5A EIF3J APOO CAMSAP2 ACSL1 HCFC2 PRDM10 SRGAP1 CCNE2 CALCR MKL2 BTBD11 SWSAP1 MBTD1 DCAF4L2 FUT11 C16orf72 PPP1CB MPLKIP ERBIN LRRCC1 SLC24A4 IER5 MBTPS2 TSPYL1 APLN WDR44 HRH1 C5orf30 MED21 ZBTB10 PKHD1L1 FBXL17 TOMM70 MCC KLHL31 SLC26A2 IST1 KIAA0895 CHST12 TARDBP ID2 ATXN1L PLXNB2 GAS2 CACNB2 NUMB STXBP4 PAN3 CASR LIN9 CDK2 UNC50 ESYT2 SLAMF7 PGR SOX1 ZNF99 PPP2CA ODC1 MBNL3 ZBTB8B SOX6 CCZ1 SYNJ2BP THRA NAB1 ESRP1 DGKA ZNF263 ZMYM4 ZNF532 RAP2A FECH AZIN1 CA8 CKAP2L RSPRY1 VCAN SYDE1 ZDHHC21 BRMS1L ICAM3 FBXL16 DDHD1 PPP6R3 MAFG BICD2 MT1F C1orf53 SHANK2 RBMXL2 CLIP3 ACAP2 SULF1 ELOVL1 PPP4R2 TAB3 C2orf15 KCTD8 TRAF3IP3 MTERF3 CA5B CLEC2D HCN4 MIS12 TBC1D15 QRFPR IMPA1 MGAT3 KLHL42 MAGOH NREP GJC1 GATA2 TBGR1 STAM2 CFAP97 MAF DOK5 CFAP65 SLC46A3 TET1 DMD HILPDA ADAT1 STAMBPL1 CENPI ADCY2 ARHGAP36 HOOK1 TTC14 KLHL20 FPR2 KCNQ3 ANKRD33B NOVA1 OTULIN SOCS5 DLG5 TIMM50 C10orf105 SMARCA1 ATG12 BMI1 TP53TG3 FNDC3B RNMT MTCP1 ASTN1 SARAF RPAP2 CENPK ATRNL1 AREL1 SEMA3F TMEM135 FAM46C NEK9 G6PC OVOL1 RIMKLA TBX22 ASF1A UBE2V1 SNRPB2 CALD1 NIPAL1 NSMAF SLC25A51 HMGCS1 LRRCC27 POLR3F RAB10 TSTD2 TLK2

HIBADH DEK HSF5 ZNF823 CPT1A TERF1 GSE1 ACTBL2 SEC61A2 FOXF2 MLH1 VAMP7 SPRED2 SBDSP1 NRBF2 SLIT2 PITPNC1 HAUS3 NCOA7 LIN7C CEP128
ZSWIM3 COMMD6 KCNMB4 PTCHD1 FZD4 DNAJB14 TPR TTC4 LYRM7 BRD3 BNC2 XKR4 TTC33 PCOLCE2 SLC26A7 C9orf3 SYNM UGT8 BMP2K TBC1D23 FAM13B
WNT7B SETD4 HNRNPU SLC4A4 RHOBTB1 FLII BRAF NEMP1 TRAM1L1 AAK1 DTNA TMOD3 GMEB1 EEA1 UBR4 ARL5A ZNF697 PASK ZNF776 RBAK KMT2C
TMEM147 GULP1 KCNS3 RNASE4 PARD6B TPD52L3 STARD7 TRIM62 RCBTB2 YPEL2 RBMS1 UQCRC2 NCR3LG1 PSD3 SRSF12 RDM1 PIGM ZADH2 RTL10 HMGB1
ACTR2 ZNF519 MEF2C SENP5 FAM216B PSPH LBR AFF3 MYB KLF3 CEP295 CDC25A ESM1 B3GNT5 PTGER3 CHPT1 ERBB4 KANK1 AMER2 ACTR3 UGCG ZNF485
ZNF554 ATRX EIF4EBP2 THEM6 MACF1 WWC2 SEC24D TGFB2 MPPED2 CHRDL1 NUFIP2 ZDHHC2 MBNL2 ADD3 SLTM MALT1 TRIO MEX3B NID1 ATXN7L1
TUBGCP3 ZNF85 ZNF473 MTM1 GPR107 KDM4D SLC15A5 RECQL ENPP4 RNF170 FAM234B AMBRA1 GNAI3 NDST1 IRF1 ZNF248 PTPRE ZNF230 RNF41 C5orf24 MSN
SLC9A5 SH2D1A EPDR1 SMARCD1 SH3RF3 TBC1D31 GTF2E1 PKD1 ST6GALNAC5 ATAD2B DDOST CHSY1 TTF2 KIAA1522 SLC39A14 NGRN DDX19B DIAPH2
PTPN12 ABL2 PTPRZ1 GPR137B MECP2 LAMP1 MAP3K5 BCO2 ALKBH1 ARPP21 CIB2 FUBP3 ACACA SEPT10 CD55 SLC35F6 SCOC YOD1 EML1 CTDSPL2 TBX5
TBC1D12 FBXO22 MRVI1 ZNF669 YIPF4 PTGDR CDK12 PLCG1 SLC16A7 HTR2C CHMP5 NEDD4 ZNF43 MRPL19 DCBLD2 RBBP9 YTHDF3 SYT10 PAFAH1B1
KATNAL1 UBE2I OSTF1 FBLIM1 FYCO1 ZNF321P CNTN4 Gzmb HRH4 MYO6 RAP1GAP2 EZH2 GLRA2 CNKSR3 HSPBAP1 CSTF3 BORA HBEGF GNPDA1 SPRYD4
SAMD13 MIER3 NEIL3 LRRC58 FAM241B TRIM72 RTN3 ARFGEF3 IPO8 SKP2 PTHLH PHC3 PPP1R8 TNFRSF11B GOLPH3 KIAA1143 DCAF12 NKRF ANAPC13 CCSE1
SLCO3A1 ZNF692 KBTBD6 PAG1 SCML2 LARS BCL9 ANKRD28 GRK3 TRAF3 CNGB3 CHD6 RNF145 FGD4 DYNC1LI2 CCDC186 GPRASP2 C9orf163 SPICE1 N4BP2
ETS2 IFFO2 ZNF609 STRIP2 INTS8 ITGA1 ERMP1 HAL BCL2L2 SGIP1 ARL4C ZNF641 PLEKHG2 PRRG4 GPR22 WDR5B NCEH1 ARMC8 MYNN AEBP2 ORMDL3
CORO2B SLC7A14 C18orf63 SMC1A DCLRE1B TP73 TRIM65 COL4A3 TUSC2 RET RUNX1 ENAH SNX10 ATP2C1 RCC2 TSHZ2 MAPK9 EGR1 SLC12A2 RIPK2 ESRRG
STON2 GLP1R STOX2 CDR2 GRSF1 NLGN2 ZNF566 ZFP36L2 SSR3 NAA16 TRAT1 CST9 DYRK2 ARIH2 USP54 RNF2 KLF6 THBD PIK3C2A CYP4V2 ARNTL2 BHLHE22
TMPO ASPH RRAS2 LEPR ABCA8 CDKN2D PITPNA PEAK1 DYNLL2 FABP3 TRPV2 CDC42SE1 MYPN ZFHX4 AP4B1 MORC3 FZD7 TMEM47 PPHLN1 RAPGEF1
MTRNR2L5 RPAP3 NAA20 WWC1 PLEKHA3 TMEM14A PLS1 FRMD6 TCP11L1 EFNA1 RAB23 RIF1 ZNF516 VLDLR DBT SLC1A2 CGGBP1 VIM SAMD8 UQCRB NAA50
ABCC3 HOXA10 ARHGEF3 CSNK1G2 LDHA SCD EGLN1 FAM167A FAM229B PHF19 TTC5 CACUL1 ZNF518A ARHGEF39 PHC2 SLC38A2 PPP2R5C SYNJ2 ST3GAL6
MPZL1 PARPBP SPIN4 APAF1 NEK1 AGK ITPR1 EIF5A2 PKP4 DUSP1 NT5DC3 INSM2 SHPRH STX7 ADO PLD5 RABGAP1 FBXO5 OXR1 TGFB1 CDC42 UACA
ACVR1C DPH6 GALNT12 TMEM169 SLC35G1 SNX2 TICRR COL4A3BP CENPBD1 ATM C5orf34 PRRC2C ODF2L TUB LTN1 KLF12 CNK1 BLOC1S3 EREG NEUROD1
IL17RB CENPA DCAF7 MCAM CDH6 PARP2 NDFIP2 CDCA7 USP45 RIMKLB CLMN DENND5B SMPX RBL2 PPP1R10 CASP7 LCA5 ASRGL1 CCNJL VMAC TMEM106A
CDC20 MRPL50 E2F5 WFDC13 ANG STYX LYPLA2 LHFPL4 SMAD4 ACPP SLC4A7 PPP1R26 EEF1B2 THOP1 CREBZF DAZ1 ARMC10 DNAJB6 ITPR2 PRKAG2 PELI1
MLLT3 UBE2B PLK4 MT1X CCNT2 MUC4 RFC4 BCL2L13 ZNF724 CCDC30 ZBTB39 ELMOD2 BPY2 WASF3 DYNC2H1 GLYCTK MTUS1 RNF5 GABRA6 LEMD3
PLEKHF2 KHDRBS2 B3GLCT RNF138 POLQ DMT1 SOAT1 HCN3 MAP4K5 KPNA5 TCAIM MIEF1 SLC28A1 EGR3 ZNF184 SEH1L IFRD1 ZNF267 ZBTB6 PRR11 B4GAT1
TXNIP PRNP OSGIN2 SKA1 PDIK1L NUDT3 ZRANB2 TRIP13 RAP2B GABPA ZNF260 CPED1 FBXL2 PTBP1 PTAR1 CSRNP3 KRBA2 CDC7 MTMR9 CPT2 SEC31A
TRIM58 IVD TOR1B TMEM154 ARIH2OS TOPORS ZMYM1 TMEM100 PSTPIP2 ARHGEF40 ZCHHC14 FXR1 C4orf50 ZBTB14 CREBL2 FAM120C ELOC FAAP20 YWHAB
CNOT9 LYPD6 DHX9 CNEP1R1 TMEM67 SLC7A2 MRPL43 CLK1 WDR47 PKN2 AGO1 THAP2 WDR31 DDX19A TMA16 PTMA WASHC4 PRKAA2 UHRF1BP1 PIK3R4
NDUFV3 PRKAR2B PPP1R2 DNAJC14 FOSL2 ABCG2 GRB10 TBL1X CLSTN1 RFWD3 SMC2 LATS2 MS4A1 LEAP2 PILRB DSC3 TBX4 PAPD5 HSPE1-MOB4 TTC31 CD59
LRRTM4 DDIT4 UVRAG CACNB4 NCS1 CHM ATP5L ONECUT1 STX1A STX17 IGSF10 PCDH11Y BMPR2 B3GALNT1 C17orf58 MGAT2 LGMN USP31 UBE2R2 RNFT1

NUCB2 CUL5 HACD3 SYT6 NUBPL ID4 SOX5 KIF6 SFT2D3 DSCAM FAM136A SLC16A6 PLA2G5 UBL3 TIMM10 NLN BCORL1 SASS6 STIL FHOD1 ZSCAN2 SP1 NODAL
HSPA9 FFAR4 HCCS CXorf57 BOLL PIK3CA SLC9A6 CKLF TRAPPC8 DCUN1D1 MBNL1 NUP160 TPGS2 DAZL DCUN1D4 ZKSCAN8 HNRNPDL SLC1A1 PSAT1 PTPN21
TDG PMP2 PLAG1 IQGAP1 ZNF226 ENTPD4 CCDC82 TP53INP1 XPO1 KCNN1 DCTPP1 LATS1 SECISBP2L MARCH6 FGF2 MED1 C2orf71 PABPC4 DDX6 ABCB10
ENDOD1 IDI1 DIAPH1 TRAF4 MRE11 COPS8 SACM1L AKAP9 NCBP2 ADGRL3 ASB6 IGF1R CAPRIN2 SNX30 EFN2 IPO7 PCM1 CAV1 NOB1 STRBP PIP4P2 CEBPG
RNASEL ABHD3 FANCI NAV1 IQSEC1 PAQR5 DBF4B PLAGL2 FIGNL2 TMCC1 LRRC40 FAM241A IL6ST PRSS23 DCP2 CASZ1 GIN1 TEC PSMB5 KRR1 CDKN2AIP C1D
EPM2A PAK5 SGMS2 MXD3 MON2 CNTNAP2 OR51E1 RABEP1 USH1G HIF1A COMMD3 WNK3 KIF18A MAP2 LARP1B ZNF34 CBLN4 C21orf91 CYP11B1 CDC73 VSX1
KLF14 DYNC1I1 FLRT2 SERAC1 TNRC6C KMT2A GDI2 SCML1 FGD5 ACSF3 FBXW11 SLC12A5 ARL3 MLLT10 PHF14 NRIP3 TMX1 WDR76 TMC3 SUPT20H OTOGL
MEAF6 PPAT C7orf43 MBLAC2 NIPA1 KIF24 ACTB ANKRD12 PCDH9 SLC30A5 ACVR2B ZNF517 SUFU HMGCLL1 UBQLN1 XKR6 NKAIN2 RANBP10 RBMS3 CCDC15
UBA5 FBXO4 CSNK1G3 DNAJB5 FAM83D NOL9 RNF219 NHL1 ANGEL2 ORAI2 IL33 DEAF1 METTL4 TSSK1B GAS7 FOXN1 SLC38A1 ARHGAP6 SYNJ1 PAICS MMD
PHF20L1 NOG PTBP2 SNX1 ARHGEF17 TCF7L2 SOWAHC ZNF431 ELF5 SETD7 HOXB9 RBM8A ZFR VANG1 QSER1 ULK2 PIGO NRCAM SLC35E3 RADIL HIPK2
ADIPOR2 AKT1 MCM6 INTS6L CASC1 SEC14L4 SHROOM2 RPGR PABPC1 TMEFF1 PPM1F GPRIN3 RP9P ZFH3X PCSK5 CTPS2 RSR2 EGLN3 CUX1 ERCC6L SHISA2
MALAT1 UCHL5 ENC1 KYAT3 ANK3 HPS5 ZBTB44 TIMP2 SIX1 PTP4A1 GPR156 CARF SHC4 TMEM132B DSN1 SGCE DIS3L TCF7 RLIM ARID4B SETX RNF19A SPARC
KCTD12 CBX5 ZNF326 UBE2V2 PPP2R5E TRMT10C ZNF662 TMEM2 MOAP1 MAP4K4 ZNF37A STX16 VTI1B FEZ2 TMEM119 PRICKLE1 KHDRBS1 ZBTB5 TRIM59
PPP1R18 GPC6 DNAJC24 WNK1 SGO2 CDKN2A LPAR1 RFX7 RELN MFHAS1 MEX3C TRPS1 MAMDC2 KPNA6 PDIA4 CASP2 ACOX2 ATCAY PDHB JUN EOGT ATAD5
RFLNB NXPH1 PPP1R3G TRIM25 DDX3X CRKL NUP62 ANP32B GATM AP4E1 CDKN3 ARHGEF10 GAD1 DHX36 E2F3 PHTF2 KLHL3 FGD6 IQCC CHCHD4 APPL1
ADCY9 DPP10 PTPN13 CELF4 STXB3 NPC1 MIB1 ALDH9A1 STK17B PITPNB TMEM106B PISD MBOAT2 LRIG2 NPTXR IL7 ATMIN HCAR1 SCN9A DPYSL3 PAK2
TOB1 ATP2B1 GATA4 PARM1 ELMOD1 CENPF SMAD5 IGF2BP1 MDM4 MAMLD1 ZNF200 NDN RAB7A SGPP1 CNOT6L SLC35B4 TRAPPC6B KCNA7 RRGTT DCAF8
ACTN4 RAB2A PLCE1 EIF2B5 KCNJ2 GSKIP PIGX GOLT1A MUM1L1 MMGT1 RTKN2 SLC4A1 BYSL WASF1 TESMIN RNF38 KLHL2 PRADC1 U2SURP SLC7A6
ADAM12 IGF1 NUP155 NT5DC1 POLK AHSA2 FRAS1 PELI2 DAZ3 DCAF5 CYCS TLN1 NKX2-5 CSTF1 BTN2A1 NEPRO IGF2BP3 TAF9B FBNP1L SH3BP4 ZNF131
TRIM33 USP47 G2E3 NWD1 HCN1 PAPOLA SLC16A14 GOT1 ZNF576 BBC3 PCSK1 RAB40B ZNF181 ARF6 PIKFYVE PI4KB MTMR1 YEATS4 B3GAT1 HOXA13 MNS1
FADS1 CSF3R TSC22D1 RHOT1 DARS ELOVL5 EPS8 SHC1 ARL4A IRX5 HERC2 CACTIN HOOK3 ITM2B CAND1 CLCC1 ENTPD3 CDC14A COL9A2 RWDD2A SDAD1
IMPDH2 ENOX2 KRT18P8 INTS6 PARP16 A1CF GAREM2 TOP1P2 ASB13 CECR2 ZFP14 NT5M DCP1A KPNA3 ANLN KCNA1 SSTR2 TSPAN13 SPIRE2 SPTSSA BMT2
TRA2B BBS7 LAIR1 HS3ST1 ZNF280C DNAJC5 GATA6 MSH6 HECTD2 EMP2 IP6K1 SRSF6 MRAP PPP2R3B PIN1 SLC6A15 POLE3 PRDM16 RIN2 TRIM2 ATAD1 OTUD4
MFSD11 SORT1 YWHAQ YME1L1 RBFOX1 HNRNP1 ENOSF1 MEIS2 TPCN1 STARD13 TICAM2 PCDH7 FZD9 HESX1 SCP2 ABHD2 ALCAM DENND1A FAM76B
RACGAP1 SLC6A6 PSMD3 ERLIN2 PPP1R9A OTUD6B NPM1 TMEM117 PRPS2 CELF1 DHFR2 EDNRA EDRF1 NIPBL TMEM200A SERF1A RAD18 RANBP6 PIP4K2B
GPR19 MAPRE1 PENK SMAD9 RGL1 SENP7 ATG10 MBD5 APPBP2 BACE2 PHLDA1 ACTC1 KIAA0355 INO80D ZNF395 CNTFR SUV39H2 PSMC3IP ABI2 H3F3B
AFAP1L1 WNT3 SLC38A4 ATF1 ZBTB18 PALM2 TMEM33 HINT3 ARIH1 POU6F1 MFAP5 KDELC1 MOB4 VASH1 MIS18BP1 NBR1 ARL2BP KIF2A OCRL ARL6IP6
UBXN7 ZNF320 CCDC18 CNOT6 DHX15 PIGP PRRG1 HLF ITPRIPL2 ARPC3 NPHS1 PJA2 WDR12 SLAIN1 TCF4 NR2C2 FXN FRYL NOC3L RABEP2 C11orf68 FUBP1
RPP14 NDNF PERP FBXO36 FN1 ERICH5 MMP20 DHFR FAM126B ZNF711 ASH1L PPP1R12A VAMP4 BCAP29 SLC35E2 MTSS1L SERTAD2 IQSEC2 EML5 ACVR2A
MEGF10 PGM2L1 YWHAZ ANKRD52 SCN1A OPA1 RPS6KA6 C6orf62 SH3D19 CDHR1 ZC3H6 OSBPL10 HPF1 SCN3A MOGS RRAD ASXL2 RALGPS1 NCOA3 SPCS3

MTHFD1 PHF21B ZFPM2 SEC63 TOR1AIP1 CEBPD CSRP1 TMEM170A RAD1 C12orf65 DDX39A DIXDC1 REXO5 VTI1A ASAP1 CHAMP1 C1orf198 SMG8 ATP8B4
FAM114A2 AMMECR1 NSD1 NEDD4L WDR91 GNRH1 FYN FAM3B AGO2 TRIL CREBBP ITGB1 RBM26 DSTYK SNX13 MAP1LC3B NAPB TRAPPC2 EPHA7 SPAG9
ZNF439 SLC39A9 HASPIN CORO1C RAD54B BARD1 MCFD2 EPS15 GRIA1 C19orf47 EIF2B2 WNT5A LENG9 LHFPL6 SPIDR NEFL GALNT2 ZNF362 ATXN7 STK3 CHN2
REPS2 HAS2 CNOT7 EAF1 RIC8A RUNX1T1 PIK3C2G MSR1 EXOSC3 PSIP1 CHTF18 SLC30A7 USP18 BMP2 NPY1R TOX CHDH ESR1 SURF4 KCNN3 DPY19L3 ACE2
CDK4 OLIG3 PRMT1 DNA2 PLCXD3 FAM107B IRS2 CLN6 SIK2 PTPN14 SNRPG ROPN1L LRIG1 WDCP PRKACB SAYSD1 PDE3A PCDH11X PCBD2 RCN1 UBE2K HIPK3
XPOT CDR2L GAL3ST1 DRP2 TPD52L1 FCRLB LIMS1 ZWINT ABRACL SLC7A11 PPM1E ZXDC DCUN1D2 ABHD18 USMG5 DOCK4 ZIC3 ENOPH1 VPS53 SLC5A3
CHST2 SPATA2 ATP6V1E1 FRMD4A SAR1A BCL11B TMEFF2 KIAA1841 ZC3H12C PLS3 RNPC3 GP2 CHIT1 PLOD2 KLF9 UCK1 FIGN PCSK2 RUNDC1 RPL24
TMEM178A ZFAND6 KIAA0087 YES1 ABT1 FAM120AOS NUF2 PWWP2A ARID2 LFNG GNA13 ZBTB4 FBXO25 CLIC1 NEK10 NUFIP1 ARGLU1 ANAPC10 FBXO30
NME4 TNFSF13 REEP1 LSAMP CWC25 PTGER4 NR2F2 SSFA2 SPAST ZBTB24 CCDC47 PARP8 ZNF215 BBX PDE7B TNRC6B RERE TIMM8A PPP1CA MOCS1 TRIP11
ECT2 GLCCI1 CCR4 EEF1A2 MYO1E ZFX ABCC9 NUP35 WDR45B KLHDC8A PNISR ARHGAP20 GREM2 INPP5F CCDC174 SLC25A40 VASH2 CDC27 UBR1 GPC4
VAC14 SIKE1 HAS3 SRCAP TCF7L1 GFPT1 UBASH3B KPNA4 H3F3A FAM126A MRPS10 NECTIN1 CGNL1 TRPM7 FLT1 RABIF DYRK3 SLC25A2 NUCKS1 HNRNPD
RCOR1 MKNK2 SMAD2 EFNA5 YWHAG EIF5B CENPE ZIC5 PUM2 SASH1 ZNF365 ALG10B CDC14B LSM14B MPZ NAMPT PCDHGB7 C14orf39 TLN2 ELOA HDAC4
NGEF RPS6 HS3ST3B1 GDNF MMD2 SFXN1 PCLAF CTNNBIP1 YAF2 KIDINS220 CRH AMFR LIAS MAPK1 PYGB TMEM70 SBF1 ZNF430 TNRC6A GNG3 USP46 CCNJ
EID1 C8orf46 LVRN ATG2A RPGRIP1L IKBKB FXR2 PIP4K2A MYLK B4GALNT3 PGAP1 FSCN1 TMEM136 AKAP6 MTMR4 POLR2F USF3 SIRPA TRIM52 ZNF786 APOH
LCN10 TSC22D2 TYW5 ARHGEF15 SRD5A1 SLC22A15 SORCS3 IL4 BAZ2B EML6 CPSF6 GCOM1 CEP55 BLCAP SLC25A27 AMMECR1L CEP85L SLC35A2 PLSCR1 LIPG
PAOX DENND6A SYNCRIIP DNAJC8 MED13 NLRP11 F2R JADE2 MTAP ZFYVE28 ANKRD44 EBF2 GRID2 ZNF423 CYTIP MTDH UXS1 PMAIP1 PCMTD1 MYCN ZNF573
TBX18 RALGPS2 NTF3 PPP1R9B SNRK DMRT2 PMPCB HYLS1 EXTL2 SUZ12 PI4K2B CEP19 KCMF1 WWC3 YTHDF2 MPP5 PLPPR1 SPA17 LHFP CAMK4 KBTBD4
TMEM189-UBE2V1 RB1 FKBP15 SLC35D1 LYSMD3 ERLIN1 GPX8 CELF2 FBXW7 CYB5R3 SSR1 TFAP2A RBFOX2 MYOZ3 PDE4B SLC25A36 ZNF507 TMED10 MAPRE2
KIF13A DLGAP5 PCDH17 RFX6 CLIP4 LUC7L3 TFPI SGCD NACC1 CA3 PKIA ESCO2 SEC62 TNNI1 ENO1 GABRB3 GPR85 DDX1 GOSR2 AKAP8L RNPS1 COL4A1
ADAMTS3 MYZAP MKI67 SLC39A8 GLS DCAF10 KANK2 TMEM123 SHROOM4 ALDH1A3 CLSPN ZFAND5 RAPGEF2 NAV3 PPP6C SMIM5 GDE1 GINM1 PRIMPOL
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EIF4H CD47 DLC1 MAPK8IP3 SPRY4 RAP2C NMU ASXL1 WDR37 RAB1A NUDT4 RUFY3 SIRT1 CD164 PCBP2 GABBR2 SP8 KCND2 HIST1H2BD WIPF1 IGF2R INPP4A
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LPIN1 WDYHV1 MKRN1 HACD4 POU2F1 ERFFI1 APC PMP22 CCDC152 ZC3H15 ELK3 FAM111B RRP15 GALNT1 P2RX7 SBNO1 SLC39A1 LIMK1 SEC24A LRAT
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OTOG EDEM3 RUFY2 SLC16A1 PIM2 RANBP9 NUDT21 C4orf46 INSIG1 SYNGR1 TEX15 ACSL4 HSPA12A ARL8B ERC1 SOX2 KAT2B CYP1B1 AMER1 PDLIM5 BRWD1
EFCAB11 AS3MT USP27X AGO3 SYAP1 SLC19A2 B3GNT2 AP1AR ZNF780A DCAF17 S1PR3 CERS4 CKAP4 MYADM TMTC2 ZNF652 TRIM68 MOB3B SCN3B CDYL RLF
PLOD1 MTFR1 C3orf14 ANKS1A COBLL1 CLPB SLC30A9 E2F8 OTUD1 PDE6A DHCR24 MEF2D MYO1B NBN PRTG PANX1 CEP70 RGMB TAF5L SOS1 ARHGAP11A
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TOPBP1 PKP1 ZBTB34 KLF11 GPR180 VCIPI1 PHLDA3 TRIM23 DPYSL2 EXOC5 SSH2 SYNPO2 KCTD15 FLVCR1 DUSP7 KDELC2 C6orf223 LYRM2 RAB8B SAMD3
BTNL9 RFC3 FAM129A NSD2 AKAP7 NOM1 PSMA3 ASCC3 BASP1 STAM TCAF1 ARHGEF7 RNF141 SLC23A2 TBK1 PKD2 LIN54 PHACTR3 ZNF704 CYP2U1 PAIP2
LRRC8C PROK2 MAN2A2 PTOV1 GABPB2 DACH1 CSGALNACT2 PTPN11 ZNF274 KDM5C ATF3 NPHP1 KIAA1958 JADE3 RFTN1 GDF6 DICER1 KLHL23 ZNF148
CNOT4 LPGAT1 SFR1 GPR173 MFAP3 CACHD1 GAN SRI SOCS6 LMLN RAB37 ATP1B1 RIC1 C5orf15 SWAP70 MOSPD2 GSTA4 PM20D2 TCAM1P CDKN1B FOXC1
SEMA3A TFCP2L1 YEATS2 ABCA1 PAK6 MXD4 BCLAF3 REST SMARCB1 SLC2A3 MYO5B STOML1 CADM2 KIF5B POLM NUP153 ATP5B RAP1GAP C1orf56 TLR6 GPI
TMEM237 MARCH8 COL21A1 SGCB PRKD3 SWT1 RAB11FIP2 NRIP1 NRP2 CPSF7 TBC1D22B CASC3 ARID5B KRAS ITSN2 PPARG PPP2R1B CNN3 JAG1 PRDM4
MMAB RHOA EVI5 SLC1A5 CASD1 HSPA4L SMC4 PLXNC1 RPL22L1 FBXW2 SIX3 WIPF3 DNAJC3 C1orf21 ABHD15 RAB21 CUZD1 MYT1 FBXO33 MPC1 ZCCHC24
FGF19 BICRAL GOLGA1 PIM1 TRAPPC2B USP9X ZBTB43 VAPA TIGD1 FAM169A NR3C1 NPAP1 TMEM246 BORCS5 LEFTY1 EMP1 PFN2 AGO4 YY1 ZC3HAV1
C14orf105 AASDHPPT MCM3 SLC19A3 TENM1 WT1 SNRPE STK38L STAC2 CDK6 LIMA1 VAPB ZNF236 SNAP25 MORF4L2 TLL2 TMTC3 MARVELD1 PRKAB2 AFF4
FURIN SLC16A9 ARL10 KIF20B KIR3DX1 GAS2L3 BLM SYNRG RIMS3 COPS2 GATAD1 PPP1R3B SUGT1 HIGD1A GOLGA8A TMEM57 SNRPD1 KCNMB1 ITGAV
CLDND1 GDAP1 RBBP4 PPP2CB REV3L DDX60 RBM20 B4GALT6 PRKAR1A B4GALT2 KIAA1147 SGTB HS6ST2 PDPK1 C11orf95 KYNU ZFP30 CTBP1 KCNC3 KXD1
COX1 LGSN MAP6D1 USP25 ACOD1 SPRED1 KBTBD11 NPR3 FAM168B MYO5A SERF1B ADAM10 REV1 CCSAP LIPA PPP2R2C ZNF217 KANSL1 TPM1 PDS5B DIEXF
DHTKD1 ZNF546 ZNF101 TIMM29 CTH MFS10 CRT2 GABARAPL1 IL15 PLEKHA1 RBM46 NR6A1 SIN3A OSTM1 DIRAS2 NSD3 TXNL1 ABCB5 CRYBG3 GALNT7
CCNYL1 ISG20L2 RND3 CYR1 COQ3 IL1RAP MTMR10 TJP1 PTPRT RBM12B TAF4 ADRB2 RETREG2 TRIM9 GABPB1 ERICH3 TBP JCAD TRERF1 MANEAL TUBB3
GID8 ARHGAP19 GLI3 ERCC3 PTCH1 AMACR NEDD1 RHCG VPS13A PRPF38B OSBPL6 BCOR CMTM6 NTRK3 Q96B67 C16orf52 FBN1 SLC35F3 DCDC2 ZNF621
SLC35E2B MAP3K1 ALDOA GAB2 TXNDC16 PRR1 HNRNP3 CCDC62 ZNF292 FREM2 SPIN1 EMC7 DROSHA BLMR CTCF HEG1 SNTB2 KPNA1 PSMC1 TMEM41B
LAMC1 M6PR DOT1L CLASP2 EIF2AK3 PDCD10 RSN1L ZBTB8A RPRD2 PBX3 PSME4 TROAP TFG ZMAT3 KARS LMTK2 PCNX1 DGCR11 ATF7IP CASKIN1 GMEB2
KDM3B FOXK1 ETF1 ING2 UBE2D1 HSP90AA1 CREB5 ICK RANBP3 FAM227B ADGRG6 SLC4A10 FAM60A SIAH1 BAG6 KIAA0040 BTF3L4 DDX55 GOLGA7 FERMT2
PHLDB1 SEC23A CLOCK MLX JAG2 ASB16-AS1 MCTS1 NCAPH SLC25A25 ZNF45 ARPC2 GAPVD1 WBP1L ZDHHC18 CCNO TMBIM4 SELENOK KCNK2 KDR VEZF1
DNM3 ST3GAL2 SYT1 MSL2 FAM13C SREK1IP1 ASXL3 ZNF701 AARS2 SLC11A2 DENND5A HSPA13 FASTKD3 RMI1 SS18 SHCBP1 IKZF2 PML HIST1H3H SESN3
PPP1R12B PDE2A TUBB2A MARCKS ASPM SERPINH1 AFF2 ZYG11B PPARA PLXNA2 LEFTY2 MYH15 PNRC2 CRX NSF GPR37 PLK2 NFASC SLC5A12 PRIM1 ATP1A2
TPM4 ACADSB BCL2L11 INHBA CEP78 METTL9 GPR137C PXDC1 BTC LOXL2 IGF2 BPTF ATAD2 KNL1 JKAMP PHF6 DNMT1 PCGF5 RAP1B RNF26 PRKG1 BRIP1
GPR27 ELAVL4 ZNF699 PPM1B FOXRED2 CYP20A1 NFIB FGF7 KREMEN1 UMODL1 LRCH2 FNBP4 LIFR CBL CHST9 CACNG8 ZBTB33 MGA EIF4A1 MXI1 SPTLC2
SRSF10 TTC28 TSEN2 CEP97 ANKRD13C PCDH19 JMY UBA6 ZNF451 HES6 CLINT1 LEPROTL1 RAB3B FOXA1 FGF9 ARDC3 NIN IFIT5 SLC1A4 FAM46A HOMER1
GALNTL6 MCM9 VGLL2 C11orf87 ZNF286A ZNF302 OSR1 CALU KIAA1671 ANKFY1 CREG1 LIMCH1 TNFSF13B SYS1 CMPK1 SCN2A TSHZ3 ENSA ZNF449 GNAQ
SAP30 XPA IGDCC4 HADH ANKRD62 SRSF1 TMEM245 CNTNAP3 ACTR1B TROVE2 WNT10A ANAPC16 ELOVL6 RASSF2 ZNF346 IAH1 KHDRBS3 KLHL8 AVPR1A
UBA52 ATP8A1 PLPP6 CXCL9 RECK ABAT RBM47 SIX4 FGF18 EIF2A LHX6 USP34 ZNF584 STK4 APLP2 NCBP1 PCDH10 FGFR1OP2 C20orf144 TMEM164 HDAC2
KIAA1456 FOXF1 GTPBP10 DNAJB9 FGD1 GATB TTYH2 PCDH8 HSP90B1 SLF2 GPR146 SORD VAMP3 SCRIN3 TRIM44 KIF1C PAPSS1 BICC1 TOGARAM1 TRAF1 ELF2
SCAMP1 AP3D1 PTS ATP6V1G1 C16orf46 DDX54 TMEM170B KIF15 ZFYVE26 MINDY2 MED28 GOLIM4 ZNF273 FAT3 DST DR1 BAP1 CAB39 CYLD ZEB2 HIF1AN
ABCG5 WSCD2 WTAP KIAA1468 MGAT4A BUB1B EIF4E3 CHRM2 USP48 NR1H4 RRM1 FAM189A2 RUSC2 CADM1 ZCCHC8 ZNF708 KLHL29 TMEM17 ARHGEF1

HJURP ARID4A OPRM1 NMI CMBL RAB6C ZNF100 SRSF2 XKR8 CEP41 CLVS1 MPDZ OSBPL11 MSTN ZC3H11A FYTDD1 SLF1 HFE SERPINE1 IRGQ SMC5 MAP1B
ARC BRWD3 PPP2R2D PRPF38A EDARADD SEPT8 DTL ROBO2 ATP6V1C2 CREBRF RSAD2 CTBP2 TM7SF3 ZMYND11 CYTH3 LRRFIP2 SRGAP3 ZNF525 AKAP13
SLITRK1 GXYLT1 C6orf132 OXSR1 RAD51 MTSS1 ADH1B MEST DYRK1A PPFA1 HBS1L HMMR TMEM30A CRK WISP3 RPS7 HSPA1B C6orf106 ETV5 ARFGEF1
ARHGDIA CDK19 HNRNPA3 PITPNM3 NOLC1 CCDC150 RHOTB3 COX11 CCND2 CAB39L CUL4A ZNF443 UBIAD1 NPTX1 RIMS2 NPY2R SCAMP2 CCDC171 SART3
UPP1 PDLIM3 ZNHIT3 STAC SCN8A FAM114A1 TJP2 SERINC1 RAB27A CHSY3 PRKAB1 RALGAPA1 KIF20A YAP1 ALG10 CCDC121 LRP4 RAD21 L3MBTL3 TMTC4
DLGAP2 ZNF654 ARL15 TIMM21 ITGB3 SPATA13 CEP152 CLIP1 SYVN1 SMARCA2 P4HB TTPAL ALKBH8 ANAPC15 BLOC1S6 ZNF330 ELL2 CLUAP1 TMEM199 FZD1
LGALS8 FREM1 ALDOB DCC C6orf47 HNRNPH2 PDSS2 RNF13 SNRNP27 ETNK1 KLF10 TEX30 TTPA B3GALNT2 PHF10 MGEA5 CYB561A3 BCAT1 PARD3B C18orf54
ETV6 MED22 CHAC2 GOLGA6A GATAD2B VPS13C GEM SLC14A1 NANOS1 RANBP2 IRAK4 KCNJ15 DHODH ATP2A2 ONECUT2 NRG1 CAST STRN GAB1 TTK UEVLD
ZNF557 FAM81A PGM3 UBE2D2 GABARAPL2 SNAI2 C3orf38 SCAF11 TAOK1 DLEU1 GIT2 CASK RASSF6 FLNA LHX9 TIFA LRRD1 LRPAP1 RPL37 TM4SF5 NCOA4
MSANTD2 CYP24A1 ANO6 FUNDC1 NPAS3 SLC35F4 PRKCA TRIB2 DNAH5 SRF TRPC3 RNF6 SCN5A EVX2 CACNA1I JCHAIN DPY19L1 VHL DAZ4 RPS6KA3 PHF21A
FAM49B LANCL1 DACT1 C15orf40 PPWD1 DNAJC13 CNST EAF2 FRMD4B SPART CRISP1 GOLGA8B DNAJC19 TOP1 RNF169 SLC39A6 CTSC
