

Tables A1 and A2 summarize the main results obtained from the GO enrichment on underexpressed and overexpressed genes, respectively. GO terms relating to a similar biological process have been grouped together, indicating the name of the genes involved in each process. As often similar GO terms share genes, duplicated genes have been removed.

Table A1: Underexpressed Genes

Biological processes	Pro-	GOBPID terms	n genes	Genes included ¹
Cell surface receptors pathways		GO:0007166	29	ACTR2, LILRB1, CYLD, ATP6V0E2, EFNB2, CCNY, PEG10, NPB, ADGRD1, TMEM145, IFNGR1, ITGB8, KRAS, NCK1, PDPK1, PRKACB, BIRC6, CEACAM1, RGS18, BMP2, TIAM1, CA2, CPEB4, DYRK2, CBL, KAT2B, ACVR1B, USP34, P2RY14
Negative regulation of cell cycle, proliferation & apoptosis		GO:0051726, GO:0008285, GO:0097190	23	TMOD3, FABP7, LILRB1, TOM1L1, CD33, PRPF40A, DYRK2, NCK1, PRKACB, CYLD, EFNB2, PDPK1, NACC2, ARL6IP5, BIRC6, RBL2, CCNY, TIAM1, SF1, KAT2B, CTBP1, ACVR1B, BMP2
Immune response & Cell Adhesion		GO:0045088, GO:0051249, GO:0002684, GO:0006955, GO:1903037, GO:0034110	15	PDPK1, CYLD, SUS4, TLR5, CA2, ACTR2, SPPL2A, LST1, HAMP, LILRB1, PRKACB, IFNGR1, ACVR1B, SASH3, NCK
Regulation of hydrolase activity		GO:0051336	14	ARL6IP5, CST3, ITSN2, ASAP1, PDPK1, SERPINB6, PRKACB, BIRC6, ARHGAP9, RGS18, BMP2, WNK1, TIAM1, DENND1C
RNA processing		GO:0006396	9	SRRM1, PAPD4, DHX36, HNRNPA2B1, PRPF40A, RP9, SF1, SLBP, SCAF11
Axon Guidance		GO:0007411	7	ACTR2, EFNB2, KIF5C, KRAS, NCK1, TIAM1, ZIC2
Negative regulation of protein transport		GO:0051224	5	LYPLA1, LILRB1, CYLD, RHBDF2, DYRK2
Activation of protein kinase activity		GO:0032147	5	TOM1L1, KRAS, PDPK1, PRKACB, BMP2

Table A2: **Overexpressed Genes**

Biological cesses	Pro-	GOBPID terms	n genes	Genes included ²
Metabolic cesses	Pro-	GO:1903050 GO:0042180 GO:0045862 GO:0034655 GO:0005996 GO:0006066 GO:0044265 GO:0043085, GO:0043170	82	RPP30, ASB1, RTCB, ZNF397, NRBP1, U2AF1, PIGC, CYR61, FUCA1, CFH, FBXW7, PCMTD1, PSMD4, CCL5, MAN1B1, PRMT1, MYDGF, COL12A1, SEC31A, PSMC1, DRG1, RPL27A, ATG10, ZNF554, PSMD3, APOL2, TRAPPC2, GSTP1, CYR61, PMVK, WDR46, FUCA1, CCNB1IP1, BAX, DIS3, STX12, ZNF426, APOL3, SLC35D2, PTGER3, SLC35B4, CTNNB1, RETSAT, RPS9, POLR3GL, RGS4, FBXW7, SAMD4B, NPY1R, EIF6, USP7, USP7 , INPPL1, TRIP6, PPAP2A, SEC31A, LIG4, POLR3C, ZCCHC11, ATF5, MFAP4, TOB2, OGT, PDE10A, TIMM17A, OSR2, ZBTB26, CCS, ZNF791, PIN1, NUDT4, CTSD, DPH5, COPS6, CCL8, RPE65, SNF8, ZNF496, MAN1B1, OBFC1, APOBEC3F, RPA2
		GO:0043062, GO:0044419, GO:0051234, GO:0051640	54	APOL2, NUDT4, CALU, SLC39A7, CCL8, COL12A1, USP7, EIF6, TMED9, ECM2, BAX, CYR61, ABI3BP, ATG10, CCS, APOL3, SEC31A, ANTXR2, TRAPPC2, CCL5, TRIP6, HNMT, SLC35B4, INPPL1, TIMM17A, TMEM63A, NRBP1, COPS6, PSMC1, SNF8, FBXW7, HOMER3, MCOLN2, STX12, PTGER3, SYTL5, PSMD3, SNCAIP, PSMD4, RPL27A, CTNNB1, CTSD, RPS9, PEX16, RIMS4, WDR46, U2AF1, SLC26A7, ARF5, LIG4, SLC35D2, MFAP4, APOBEC3F
Transport Homeostasis	and	GO:0006887, GO:0016482, GO:0006816, GO:0072511, GO:0060249, GO:0051650, GO:0044765 GO:1903322, GO:0032259, GO:0031400, GO:0006605, GO:0032446, GO:0051338	40	SLC35B4, TMEM63A, U2AF1, HOMER3, SLC39A7, MCOLN2, WDR46, OBFC1, SLC26A7, CCS , TMED9, EIF6, COPA, NRBP1, TIMM17A, APOL2, CALU, SYTL5, NUDT4, SLC35D2, SNCAIP, SNF8, SEC31A, RPL27A, BAX, SYTL5 TIMM17A, STX12, RPS9, CCL5, APOL3, HNMT, CTNNB1, CCL8, TRAPPC2, TRIP6, RPA2, RPE65, RIMS4, PEX16, PTGER3
DNA & Protein Modification		GO:0002478, GO:0019882, GO:0016032, GO:0001817, GO:0006954 GO:0030111, GO:0060548, GO:0043066	30	ATG10, SNF8, RPS9, BAX, TIMM17A, PRMT1, PIN1, OGT, PSMD4, FBXW7, PSMC1, HNMT, RPL27A, DPH5, CYR61, GSTP1, PCMTD1, PSMD3, CTNNB1, ASB1, PEX16, SEC31A, PIN1, RGS4, MYDGF, TRIP6, HOMER3, CCL5 , WDR46, CCNB1IP1
Immune Response & Inflammation		GO:0002478, GO:0019882, GO:0016032, GO:0001817, GO:0006954	27	CFH, PSMD3, GSTP1, FBXW7, RPS9, COPS6, PSMC1, POLR3GL, APOL2, ASB1, SNF8, APOBEC3F, PSMD4, CTSD, BAX, ZCCHC11, RPL27A, POLR3C, LIG4, PTGER3, APOL3, USP7, PIN1, SEC31A, CTNNB1, CCL8, CCL5
Negative regulation of apoptosis & cell death		GO:0030111, GO:0060548, GO:0043066	13	MYDGF, CYR61, WIF1, CCL5, PSMC1, ATF5, BAX, PSMD3, CTNNB1, GSTP1, PSMD4, LIG4, ATF5