

**Table S1 The merged iron metabolism related gene set**

Gene symbol
YPEL5
XPO7
XK
XDH
VEZF1
USP15
UROS
UROD
UGT1A4
UGT1A1
UCP2
UBC
UBB
UBAC1
UBA52
TYW5
TYR
TTYH1
TTC7A
TTC37
TSPO2
TSPO
TSPAN5
TRNT1
TRIM58
TRIM10
TRAK2
TPH2
TPH1
TOP1
TNS1
TNRC6B
TMPRSS6
TMLHE
TMEM9B
TMEM199
TMEM14C
TMCC2
TH
TFRC
TFR2
TFF1
TFDP2
TFAP2A

TF  
TET2  
TET1  
TENT5C  
TCIRG1  
TCEA1  
TBXAS1  
TAL1  
SYNJ1  
STEAP4  
STEAP3  
STEAP2  
STEAP1  
SRRD  
SRI  
SPTB  
SPTA1  
SOD1  
SNCA  
SMOX  
SMAD4  
SLC7A11  
SLC6A9  
SLC6A8  
SLC6A3  
SLC66A2  
SLC4A1  
SLC48A1  
SLC46A1  
SLC40A1  
SLC39A8  
SLC39A14  
SLC30A10  
SLC30A1  
SLC2A1  
SLC25A39  
SLC25A38  
SLC25A37  
SLC25A28  
SLC22A4  
SLC22A17  
SLC11A2  
SLC11A1  
SLC10A3  
SKP1  
SKIV2L  
SIDT2

SELENBP1  
SEC14L1  
SDCBP  
SCD5  
SCD  
SCARA5  
SC5D  
RPS27A  
RNF19A  
RNF123  
RIOX1  
RIOK3  
RHD  
RHCE  
RHAG  
REP15  
RCL1  
RBM5  
RBM38  
RAP1GAP  
RANBP10  
RAD23A  
RAB11B  
PTGIS  
PSMD9  
PRDX2  
PPP2R5B  
PPOX  
PPEF2  
PPEF1  
PLOD3  
PLOD2  
PLOD1  
PKLR  
PIGQ  
PICALM  
PHYH  
PHF8  
PHF2  
PGRMC2  
PGRMC1  
PGLS  
PDZK1IP1  
PDX1  
PC  
PAH  
P4HTM

P4HA3  
P4HA2  
P4HA1  
P3H3  
P3H2  
P3H1  
OSBP2  
OPTN  
OGFOD3  
OGFOD2  
OGFOD1  
NUDT4  
NUBPL  
NUBP2  
NUBP1  
NR3C1  
NOX5  
NNT  
NFU1  
NFS1  
NFE2L1  
NFE2  
NEO1  
NEK7  
NEDD8  
NECTIN1  
NDOR1  
NDFIP1  
NCOA4  
NARF  
MYL4  
MYC  
MXI1  
MSMO1  
MPP1  
MOSPD1  
MOCOS  
MMS19  
MMGT1  
MKRN1  
MIR210  
MIOX  
MINPP1  
MGST3  
MFHAS1  
MELTF  
MCOLN1

MBOAT2  
MARK3  
MARCHF8  
MARCHF2  
MAP2K3  
MAP1LC3A  
LYRM4  
LTF  
LRP10  
LPIN2  
LMTK2  
LMO2  
LCN2  
LAMP2  
KLF3  
KLF1  
KIF23  
KHNYN  
KEL  
KDM7A  
KDM3A  
KAT2B  
JMJD6  
ISCU  
ISCA2  
ISCA1  
IREB2  
IGSF3  
IFNG  
ICAM4  
IBA57  
HYAL2  
HTRA2  
HTATIP2  
HSPA9  
HSCB  
HRG  
HPX  
HMOX2  
HMOX1  
HMBS  
HJV  
HIF1AN  
HIF1A  
HFE  
HEPHL1  
HEPH

HEBP1  
HDGF  
HBZ  
HBQ1  
HBD  
HBBP1  
HBB  
HBA2  
HBA1  
HAMP  
HAGH  
HAAO  
H4C3  
H1-0  
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GYPC  
GYPB  
GYPA  
GMPS  
GLRX5  
GLRX3  
GDF2  
GDE1  
GCLM  
GCLC  
GATA1  
GAPVD1  
G6PD  
FXN  
FTO  
FTMT  
FTL  
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FTH1P19  
FTH1  
FTCD  
FOXP1  
FOXO3  
FOXJ2  
FN3K  
FLVCR2  
FLVCR1  
FECH  
FDX1  
FBXO9  
FBXO7  
FBXO34

FBXL5  
FAXDC2  
FA2H  
EZH1  
ETHE1  
ERMAP  
ERFE  
EPOR  
EPB42  
EPB41  
EPAS1  
ENDOD1  
ELL2  
EIF2AK1  
EGLN3  
EGLN2  
EGLN1  
E2F2  
DRD2  
DOHH  
DNM2  
DNAJC24  
DMTN  
DCUN1D1  
DCAF11  
DCAF10  
DAAM1  
CYP8B1  
CYP7B1  
CYP7A1  
CYP51A1  
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CYP4Z1  
CYP4X1  
CYP4V2  
CYP4F8  
CYP4F3  
CYP4F22  
CYP4F2  
CYP4F12  
CYP4F11  
CYP4B1  
CYP4A22  
CYP4A11  
CYP46A1  
CYP3A7  
CYP3A5

CYP3A43  
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CYP2U1  
CYP2S1  
CYP2R1  
CYP2J2  
CYP2G1P  
CYP2F1  
CYP2E1  
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CYP2C8  
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CYP2C18  
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CYP27B1  
CYP27A1  
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CYP26B1  
CYP26A1  
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CYP20A1  
CYP1B1  
CYP1A2  
CYP1A1  
CYP19A1  
CYP17A1  
CYP11B2  
CYP11B1  
CYP11A1  
CYGB  
CYBRD1  
CUL1  
CTSE  
CTSB  
CTNS  
CROCCP2  
CPOX  
CP



COX15  
COX10  
COL7A1  
CLTC  
CLIC2  
CLCN3  
CIR1  
CIAPIN1  
CIAO3  
CIAO2B  
CIAO2A  
CIAO1  
CH25H  
CDR2  
CDO1  
CDC27  
CCND3  
CCND1  
CCNB1  
CCDC28A  
CCDC115  
CAT  
CAST  
CARD9  
CAND1  
CALR  
CA2  
CA1  
C3  
C1QA  
C1orf194  
BTRC  
BTG2  
BTBD9  
BSG  
BPGM  
BOLA2B  
BOLA2  
BNIP3L  
BMP6  
BMP2K  
BMP2  
BLVRB  
BLVRA  
BECN1  
BDH2  
BCS1L

BCL2  
BCAM  
BBOX1  
BACH1  
B2M  
ATP7A  
ATP6V1H  
ATP6V1G3  
ATP6V1G2  
ATP6V1G1  
ATP6V1F  
ATP6V1E2  
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ATP6V1D  
ATP6V1C2  
ATP6V1C1  
ATP6V1B2  
ATP6V1B1  
ATP6V1A  
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ATP6V0C  
ATP6V0B  
ATP6V0A4  
ATP6V0A2  
ATP6V0A1  
ATP6AP1  
ATP5IF1  
ATP13A2  
ATG4A  
ASNS  
ASIC3  
ARL2BP  
ARHGEF12  
ARHGAP1  
AQP3  
AOX1  
ANK1  
AMBP  
ALOXE3  
ALOX5  
ALOX15B  
ALOX15  
ALOX12B  
ALOX12

ALKBH8  
ALKBH3  
ALKBH2  
ALKBH1  
ALDH6A1  
ALDH1L1  
ALAS2  
ALAS1  
ALAD  
AHSP  
AGPAT4  
AGMO  
ADIPOR1  
ADI1  
ADD2  
ADD1  
ACSL6  
ACP5  
ACO2  
ACO1  
ACKR1  
ABCG2  
ABCE1  
ABCB7  
ABCB6  
RPL8  
ATP5MC3  
CS  
EMC2  
ACSF2  
NOX1  
CYBB  
NOX3  
NOX4  
DUOX1  
DUOX2  
PGD  
VDAC2  
PIK3CA  
FLT3  
SCP2  
TP53  
ACSL4  
LPCAT3  
NRAS  
KRAS  
HRAS

SLC38A1  
SLC1A5  
GLS2  
GOT1  
CARS1  
KEAP1  
ATG5  
ATG7  
PHKG2  
G6PDX  
ULK1  
ATG3  
ATG4D  
GABARAPL2  
GABARAPL1  
ATG16L1  
WIP1  
WIP2  
SNX4  
ATG13  
ULK2  
SAT1  
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MAPK3  
MAPK1  
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ZEB1  
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CDKN2A  
PEBP1  
SOCS1  
MYB  
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MAPK9  
CHAC1  
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ELAVL1  
BAP1  
ABCC1  
MIR6852  
ACVR1B  
TGFB1  
HILPDA  
ANO6

LPIN1  
HMGB1  
TNFAIP3  
TLR4  
ATF3  
ATM  
YY1AP1  
TAZ  
MTDH  
IDH1  
SIRT1  
FBXW7  
PANX1  
DNAJB6  
LONP1  
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DUSP1  
NOS2  
NCF2  
MT3  
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SRXN1  
GPX2  
BNIP3  
OXSRI  
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PSAT1  
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SLC7A5  
HERPUD1  
XBP1  
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ATF4

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KLHL24  
TRIB3  
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VEGFA  
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TUBE1  
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SETD1B  
MAFG  
IL33  
GPX4  
HSPB1  
NFE2L2  
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DRD4  
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SLC2A8  
SLC2A12  
GLUT13  
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TFAP2C  
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NNMT  
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HIC1  
STMN1  
RRM2  
CAPG  
HNF4A  
NGB  
YWHAЕ

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PRDX1  
MIR30B  
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AKR1C3  
RB1  
HSF1  
SQSTM1  
NQO1  
MUC1  
MT1G  
CISD1  
FANCD2  
HSPA5  
HELLS  
FADS2  
SRC  
STAT3  
PML  
MTOR  
TP63  
CDKN1A  
MIR137  
ENPP2  
FH  
CISD2  
MIR9-1  
MIR9-2  
MIR9-3  
ACSL3  
OTUB1  
CD44  
LINC00336  
BRD4  
PRDX6  
MIR17  
NF2  
ARNTL  
JUN  
CA9  
TMBIM4  
PLIN2  
MIR212

Fer1HCH

AIFM2

ZFP36

PROM2

CHMP5

CHMP6

CAV1

GCH1

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