

### **3,377 targets associated with RA**

PTPN22

SLC22A4

TNF

CRP

IL6ST

CCR6

FCGR2A

PADI4

HLA-DPB1

HLA-DRB1

IL2RA

IL6R

IL10

IRF5

CIITA

STAT4

TNFAIP3

TRAF1

TRAF6

CD28

CD40

PTPN2

TYK2

RUNX1

PTPRC

AGER

IL2RB

NFKBIL1

AFF3

REL

BLK

CDK6

CD244

MMEL1

ANKRD55

GATA3

NFKBIE

PLD4  
DNASE1L3  
KIF5A  
ARID5B  
RASGRP1  
CSF2  
CTLA4  
ACAN  
RCAN1  
AHR  
SPRED2  
ENO1  
ANXA3  
HLA-DQA2  
IFNG  
CCN1  
IL1B  
IL1RN  
IL6

CXCL8

IL18

MIF

MMP2

MPO

MTHFR

NCF2

TNFRSF11B

FOXP3

IL23A

ABCB1

PON1

PTGS2

CCL21

SLC11A1

STAT1

TLR2

VEGFA

CXCR4

CAT

ADIPOQ

CCN2

TNFSF14

DHFR

TNFRSF14

TAGAP

IRAK1

COL2A1

ALOX5

GC

HOXD13

NCF1

TXNDC5

GRK2

FPGS

IGFBP3

FASLG

ATIC

PRKCQ

PTGS1

CCL8

SOD2

GGH

B3GNT2

CP

PLB1

MMP12

ACKR3

PRDM1

CD83

ADORA2A

CLEC12A

IKZF3

FKBP5

CXCL2

HSD11B1

RBPJ

STS

MMP10

BGN

BMP4

SMS

ABCC5

ABCC4

CTSD

DDX6

GRK6

HCLS1

HOXD10

PXK

BCL2A1

BMP6

NR4A3

GDF5

CAV2

ABCC3

GPRC5A  
CD2  
LHX2  
MAB21L2  
TXNIP  
ABCC2  
HAPLN1  
GSDME  
F2  
LY96  
GART  
RGMB  
NR3C1  
HOXD11  
IRF8  
ITGA6  
LCN2  
MARCKS  
RAB8A



PLEK  
POU3F1  
DDIT4  
GIN1  
BAIAP2L1  
PSG5  
NDUFA4L2  
PTK2  
RAP2A  
BDKRB2  
CXCL6  
TLE3  
TMPO  
TNFAIP2  
ZFP36  
TFPI2  
CALD1  
ST6GALNAC5  
MGARP

B3GNT9  
RUNX2  
SLC25A12  
CD3E  
CD5  
ABCG2  
MMP14  
ZAP70  
DNASE2  
HNRNPA2B1  
CD226  
PADI2  
FCRL3  
HLA-A  
HLA-B  
HLA-C  
HLA-DQA1  
HLA-DQB1  
ISG20

TAP2

DPP4

AIRE

MICA

HLA-DMB

ATG5

AIF1

C5

MECP2

NOTCH4

TNIP1

CCR3

HLA-DOA

HLA-DPA1

PTPN11

CFB

SFTPD

TSBP1

CCL27

PSORS1C1

MICB

APOM

RAD51B

BACH2

PRRC2A

DDX39B

LST1

CDSN

RPP14

ICOSLG

PHF19

UBASH3A

PRKCH

GSDMB

BTNL2

COG6

C2

UBE2L3

NELFE

KIAA1109

CASP10

MAC1R

SYNGR1

CD247

COL4A1

COL11A2

DAXX

ETFA

RTKN2

HSPA1L

ICAM3

SMTNL2

IL12RB2

FADS1

MBP

EMCN

ATP6V1G2

SUPT20H

PSMB8

PSMB9

WDFY4

RARB

GPSM3

CARD9

TNXB

TPD52

MPIG6B

TMEM187

MYO18B

NTN1

SH3PXD2A

ELMO1

NAT2

ZDHHC20P2

TMPOP1

WAKMAR2

HNRNPA1P2  
NONOP2  
UBDP1  
AP4B1-AS1  
CYP4F23P  
PSMB8-AS1  
MUC22  
MSH5-SAPCD1  
ATP6V1G2-DDX39B  
PPT2-EGFL8  
CDH11  
TSPAN5  
TRIM10  
LINC01934  
LNCPRESS1  
LINC00824  
TSBP1-AS1  
C3orf67-AS1  
C2-AS1

HCG9  
LOC102723407  
ASB15-AS1  
LOC102724971  
STAG1  
NEBL  
LINC02356  
LINC02357  
LINC02571  
ETV7-AS1  
LINC01748  
AGPAT1  
CXCL13  
AHSA1  
CDC42EP3  
EHMT2-AS1  
MDC1-AS1  
CELF2  
TNFSF13B



MTCO2P12

PHTF1

LINC02196

HCP5

PAPOLA

EHMT2

OS9

HTD2

TRIM31

CHI3L1

FAM107A

NRM

IL17F

SMIM40

NLRP3

CSMD3

PHACTR3

RPL3P2

IP6K3

CLIC1  
CCR5  
ZPBP2  
RAVER1  
CNTFR  
RBM45  
FLACC1  
TRIM40  
MUCL3  
SGCZ  
ATF6B  
CRH  
CRK  
CRYGD  
ASB15  
MAPK14  
DRAIC  
CSNK2B  
IL34

CSTF3  
IL23R  
LINC01104  
ZNF595  
ERICH1  
CYP21A2  
DGKQ  
MDGA2  
ZNF679  
CLYBL  
DLG2  
EGFR  
C3orf67  
TRIM39-RPP21  
EPHB2  
AKT1  
ESR1  
ALB  
FCGR3A

FCGR3B

JAZF1

NKAPL

FGF2

GPC5

DKK1

ABCF1

PLCL2

PDS5A

FN1

SIRT1

TNPO3

SDF2L1

IL27

HCG27

WDR27

GABBR1

ASF1A

RNF19A

RCHY1  
LY6G6F  
MAGI3  
POLDIP2  
FBXW8  
GCH1  
GEM  
HLA-S  
GFRA1  
DKK3  
IL37  
IL17B  
HPGDS  
GNL1  
GPI  
LINC00294  
CXCR3  
HECTD4  
TMEM235

HCG22

GSTM1

GSTT1

GUCY1B2

HIF1A

HLA-DOB

HLA-DPB2

HLA-DQB2

HLA-DQB3

HLA-DRA

HLA-DRB4

HLA-DRB9

HLA-G

HMGB1

HSPA4

HSPD1

ICAM1

IFNA1

IFNA13

IGF1

FAS

IL1A

IL2

IL4

IL7

IL9

IL13

IL15

IL17A

ILF3

CXCL10

AR

ITPR3

JAK1

JAK2

JAK3

GALNT18

KDR

KIR3DL1  
ZKSCAN4  
TMEM179  
SFTA2  
COL11A2P1  
LEP  
LGALS3  
LINC02649  
LINC02656  
GATA3-AS1  
LMNA  
LINC01185  
LINC00243  
MCCD1  
TRIM26BP  
MTCO3P1  
LTA  
MIR146A  
MIR155



MIR223

DDR1-DT

HCG18

HCG17

MBL2

MEFV

MAP3K4

MMP1

MMP3

MMP9

MMP13

BCL2L15

MYL8P

MSH5

MSI1

COX2

MTF1

MTX1

LRRC18

NFKB1

NM

NOS3

ACR

NUP88

IL20

IL22

SNHG32

PBX2

CPA4

PDCD1

PDE2A

WNT16

RAB14

CYRIB

SERPINA1

PIK3CA

PIK3CB

PIK3CD

PIK3CG

PLCL1

IL17D

PLG

GDAP1

KRT20

CCHCR1

NECAB2

POU5F1

RSBN1

RBFOX1

PPIAP9

VPS37C

ENOX1

KIF26B

PPP1R10

ACOXL

TCP11L1

CDK5RAP2

ZNF302

MAPK1

MAPK8

PRL

PRTN3

TRIM39

RETN

PSMA4

PRDM10

VARs2

MIR499A

PRR12

DENND1A

ANO8

NCOA5

C6orf47

LY6G5B

LY6G6D

IL21

RARA

BCL2

RELA

ACTB

RIT2

RNF5

RPL37A

RPS18

RPS19

S100A8

SAA1

VPS52

CCL2

CCL5

CCL20

CXCL12

PRDM16

SELE

CLSTN2

NOD2  
LINC00452  
HLA-DPA2  
GORASP1  
SKIV2L  
WNK1  
PCDH15  
CASTOR1  
SLC6A11  
SLC19A1  
SOAT1  
SPP1  
STAT3  
SNORA38  
BSG  
SUOX  
SYT1  
TAPBP  
BTF3P11

TCF19

BTK

TRBV20OR9-2

TEC

TGFB1

TIMP1

TLR3

TLR4

TNFRSF1A

TNFRSF1B

TP53

TRPS1

DCDC2C

TYMS

VARs1

VCAM1

VDR

VIM

VIP

TRIM26  
ZNF175  
ZSCAN26  
DDR1  
DDA1  
FTO  
BAG6  
GPANK1  
HSD17B8  
OR2H2  
RNASEH2B  
AIMP2  
AGBL2  
RPP21  
ATAT1  
SPSB1  
ALPK1  
CUL5  
SLC44A4



VWA7  
LY6G6C  
LY6G5C  
ZNRD1ASP  
PRRT1  
EGFL8  
CDR3  
OR5V1  
OR12D3  
CASP3  
UQCC2  
DHX16  
PGBD1  
HAVCR2  
AIFM2  
CEP89  
PPIL4  
TNFSF11  
TNFRSF11A

SYNGAP1

STK19

NAV2

TRIM15

CCNG2

SOCS3

IL33

RABEP1

IL32

CD14

MS4A1

PPT2

GRAP2

FADS2

GABBR2

CLOCK

CD40LG

CD44

MDC1

CD68  
N4BP1  
PRORP  
RIPOR2  
CTIF  
SMG7  
TNFSF15  
EBI3  
CDKN2A  
CNTRL  
CDC42EP1  
COMP  
PARP1  
CX3CR1  
ACE  
FCGR2B  
FOXO3  
FOS  
HAVCR1

HLA-DMA

IL3

JUN

CX3CL1

THBS1

CCR2

LRPPRC

FSTL1

LINC02605

CSF1

CARD8

IL4R

IL7R

MMP8

WG

PRKN

SOST

TREM1

MAPK3

MYDGF

PTX3

RFC1

CXCR5

ADAM17

TPO

C3

ARHGEF5

SYVN1

TNFRSF6B

IL18R1

TIMELESS

PTGES

SEMA3A

ANP32B

CDAN1

CTSK

CBLL2

ETS1

F2RL1

IFNL1

ANGPT2

CD274

ICOS

CFH

IL12B

KIR2DS1

LPA

MIR21

NFE2L2

NOS2

OSM

P2RX7

SERPINE1

MBL3P

PML

PPARG

S100A9

SAA2

CCL3

TRIM21

TAC1

TLR5

C4B

MUL1

CALR

CASP1

TNFSF13

CD19

CD34

CD69

C4B\_2

KLRC4-KLRK1

ADM

HT

DMD

ESR2

KLRK1

TBC1D9

FLT1

FOLR2

IL17RA

GABPA

GCG

GLP1R

ANGPT1

IGHV3-69-1

GZMB

HP

AGBL3

IL16

IRF4

ITGAV

KIR3DL2

LAIR1

LGALS9



LIF

MDK

MYD88

NOTCH1

IL21R

CLEC4A

TLR7

GDE1

TLR9

BANK1

MAP2K7

HAMP

BDNF

CCL7

BRAF

TEK

C4A

SUMO1

BEST1

WNT5A

XRCC1

ZBTB16

CAST

CASP8

TNFRSF25

ADAM15

NR1I2

CD86

ADA

KIR2DS2

CDKN1A

NFAT5

LILRB1

BTG3

CISH

TNFRSF13C

CCR7

CNR2

SLCO6A1

CREB1

CTSL

ADRB2

CYP1A2

OLIG3

DHODH

DNMT1

EGR1

FCGR1A

NLRP1

FOSB

MTOR

ACAD8

B3GAT1

GSTM2

GSTP1

TNC

APOE

IGF1R  
LINC01193  
IGHG3  
IL12A  
ITGAM  
ITGB1  
JUNB  
JUND  
GSTK1  
KLRB1  
RPSA  
LGALS1  
MIR126  
MIR22  
MIR221  
MIR34A  
MCL1  
MDM2  
CXCL9

NFATC1

NR4A2

HSPA14

PLA2G1B

PLAU

PTEN

PTH

CXCL16

RAC1

RARRES2

TNFRSF17

ROS1

S100A4

S100A12

SP1

MAP3K7

TRB

TSPO

TM7SF2

VPS51  
VEGFC  
DHX40  
TSLP  
SOCS1  
TNFSF10  
TNFRSF10A  
CFLAR  
SQSTM1  
CD80  
ADAMTS4  
GDF15  
CD38  
HOTAIR  
ZGLP1  
IL18BP  
NAMPT  
RABEPK  
LANCL1

CDKN2D

NXF1

LOC105379528

KHDRBS1

CXCR6

MALT1

EBNA1BP2

H3P13

H3P28

LRG1

CLU

SERPINA3

CCR4

CR2

CRABP2

CSF1R

CTNNB1

CYBB

DECR1

ATN1

S1PR1

LPAR1

EDNRA

EGF

F3

F9

MMRN1

FOXC1

FLNB

SEC14L2

FPR2

BBC3

GLB1

IGHV3OR16-7

IGHV3-52

TRBV16

TRBV7-9

TRBC1



GPT

GRN

RMC1

IL19

ANXA1

ACACA

HLA-DRB3

HOXD9

APC

HTR2A

ARMH1

IFNB1

IGFBP5

LCE3B

LCE3C

IKBKB

IL5

CXCR2

IL10RA

ITGA1  
KIR2DL2  
KLRC1  
SUMO4  
LOC390714  
LBP  
LOX  
MIR10A  
MIR145  
CD46  
MIP  
MMP19  
PAEP  
ANGPTL4  
PECAM1  
PGF  
PRKCA  
IL26  
PSMD7

MIR451A

CCND1

REG1A

REN

S100A1

S100B

CCL3L1

CXCL5

SELL

SELP

MAP2K4

SFRP1

SHBG

SLC22A5

FSCN1

SOX5

TAP1

TBX5

TPMT

C5AR1

TXN

VWF

STEAP4

EHMT1

CD276

IL1F10

USO1

TP63

CD1C

ARHGEF2

TIMD4

MSC

CD27

ADAM10

DDX39A

SPRY2

SIK1B

KLF2

NOD1

PDPN

TRAF3IP2

HPSE

LILRA3

ADRM1

ADAMTS5

CD160

SLC7A9

POLG2

PRRT2

ACOT7

CTHRC1

H4-16

CCR1

OSCAR

SIK1

CD55

DBP

GADD45A

DNMT3B

DPEP1

E2F2

TYMP

ELAVL2

PRSS55

EPHB1

ERBB2

ERG

EZH2

FCGR1B

FCN1

FHL1

FLG

ACSBG1

FLT3LG

CLEC16A

DICER1

SMUG1

NUP62

SH3BP4

ALOX15

FRZB

AOC1

COPD

MSTN

GDNF

SGSM3

GLS

PYCARD

CXCL1

GTF2H1

GTF2I

GUSB

GZMA

HFE

HLA-DRB5

HMOX1  
HOXC6  
HSP90AA1  
APOB  
IDDM8  
ACTBL2  
H3P44  
IGF2  
IL1R1  
CXCR1  
AQP1  
TNFRSF9  
IRF1  
IRS1  
ITGA4  
ABCC6  
ITGAL  
ITGB2  
KIR2DL1



KLRC2

KLRD1

NPSR1

LRP5

LTB

ARNTL

MIR140

MIR143

MIR20A

MIR23B

MIR27A

MIR17HG

SMAD3

MAP3K5

FOXO4

MPG

MPP1

POTEKP

MIR323A

MIR338

MSRA

MTR

MTRR

MUC1

MYC

GADD45B

NCAM1

NFKBIA

DDR2

OGG1

OLR1

P4HB

PCSK6

PAK3

DCTN4

GP6

TLR8

PDE3A

NCKIPSD

SIRT6

PADI3

SERPINF1

PF4

PFKFB3

PIK3R2

SLCO1C1

ACP5

PPIA

ASPN

SLC52A1

ADI1

MEG3

H4C15

PRKCB

PROC

HTRA1

PSMD12

PTCH1  
PTHLH  
SEMA6A  
SIGIRR  
HRH4  
RHO  
BCR  
RPS6KA3  
BGLAP  
CCL13  
CCL18  
CXCL11  
SDC1  
IFIH1  
POTEM  
ST6GAL1  
BMP2  
RAPH1  
SLC22A1

SLPI

SST

STAT5B

SULT2A1

ABCC8

TACR1

TRA

TFF3

TIE1

TIMP2

TIMP3

ACTG1

TPI1

CRISP2

ACTG2

MUC5B

TNFSF4

TXNRD1

VIL1

VTN

YY1

VTCN1

SCD5

PDCD1LG2

SLC7A5

ADAMTS12

TLR10

CAMP

H4C9

H4C1

H4C4

H4C6

H4C12

H4C11

H4C3

H4C8

H4C2

H4C5

H4C13  
H4C14  
PRAM1  
SPZ1  
FCRLA  
ORAI1  
PIK3R3  
ABCC11  
BECN1  
FADD  
CD84  
HDAC3  
CCK  
APLN  
PER2  
CCRL2  
FCGR2C  
LPAR2  
XPR1

CD6  
ASIC3  
CD163  
KL  
FHL5  
ENTPD1  
BMS1  
CDC42  
SCO2  
MIR760  
SH2B3  
LINC01672  
RPL17-C18orf32  
LINC-ROR  
ADAM8  
CDK2  
CALCRL  
PRG4  
SPRY1



RAMP2  
CCL26  
WARS2  
LINC02210-CRHR1  
SEMA4D  
CEBPD  
KAT5  
IVNS1ABP  
EBP  
CTSC  
CFTR  
CCR9  
CHAT  
PSIP1  
IRAK3  
KLF12  
SAAL1  
TIRAP  
MIR155HG

CHUK  
C1QTNF3  
C1QTNF6  
TADA1  
LTB4R  
CNR1  
PPARGC1B  
COX8A  
CPB1  
CR1  
ATF2  
CREBBP  
CRHR1  
CSF3  
CSK  
CST3  
ADRA1A  
CTSB  
ADRA2B

BTLA  
CYP2D6  
CYP3A5  
CYP17A1  
CYP19A1  
CYP26A1  
DNAJB1P1  
NLRP6  
DHCR7  
AFP  
DNASE1  
DNTT  
DR1  
DRD2  
JAG1  
TSC22D3  
DUSP1  
EDN1  
EFNB1

EIF4EBP1

ELAVL1

ELF3

ELK3

EPAS1

FBL

ETS2

F2R

ALDH1A1

PTK2B

FCER2

FCN2

FGB

FGF1

FGF13

CASC3

COG2

FOXO1

KDM6B

FLT4

BRD4

ALPP

TMEM158

ASPM

GAPDH

ATRNL1

GAS6

HSPB8

GH1

CBLIF

LAMP3

HPLH1

PDLIM3

ABO

CCR10

GPR15

VSTM1

DLL1

TRAV29DV5

GPR42

TRAJ60

TRAC

GPX1

ANPEP

SETD2

GRP

GSK3B

MSH6

SENPI

A1CF

TBX21

SLC40A1

HDAC1

HDGF

ADGRE2

HGF

ANXA6

HIP1  
NR4A1  
HRAS  
HSD11B2  
HSPA8  
BIRC5  
DNAJB1  
ICA1  
ID1  
IFNGR1  
IGFBP1  
IGHA1  
APP  
APRT  
KLK3  
IL1RAP  
IL5RA  
IL9R  
IL10RB

IL11

IDO1

INHBA

INSR

INSRR

AQP9

ITGA2

ITGAE

ITGAX

AREG

KCNMA1

MALAT1

KIR2DL3

KIR2DS5

KLK1

KNG1

ARG1

KPNA1

CCL4L1



LDLR  
LGALS2  
LGALS3BP  
LGALS8  
LIG4  
LRPAP1  
SH2D1A  
MIR132  
MIR152  
MIR17  
MIR192  
MIR210  
MIR214  
MIR222  
MIR29A  
MIR30A  
MIR98  
SMAD7  
MCAM

MET

MFAP1

MFAP4

MKI67

ASIP

MOG

MRC1

MRE11

ZFAS1

MIR346

ASPA

MST1

COX1

MUTYH

MYO9B

ATHS

ATM

NGF

NHS

NME1  
NOS1  
NOTCH3  
NPPA  
NT5E  
ODC1  
OXA1L  
G0S2  
NOX4  
PAK1  
PAM  
PAX5  
ASCC1  
ADIPOR1  
PCNA  
PLEKHO1  
PDC  
TNFRSF12A  
TRPV2

PDE4A

PDE7A

PDGFRA

ENPP2

ADA2

PGR

PITX2

PLA2G4A

TREM2

POU2AF1

ARL15

AHI1

ATG16L1

NAT10

PRELP

CHD7

WDR11

MAP2K1

CCL28

SLC12A9

CEMIP

AICDA

MIR410

KIDINS220

MIB1

PTN

CIP2A

PHRF1

BAK1

RAC2

MOK

RAF1

BCHE

PLAAT4

RB1

UBL5

RBP2

RDX

RNASE2

BCL6

RNF2

IGAN1

RORC

RPL17

SAA3P

SAT1

CCL4

CCL17

CCL19

CCL22

CCL25

SDC2

TINAGL1

SEMA4A

CLEC7A

AGXT2

SLC2A3

SLC6A2

SUMO3

SUMO2

SNCA

SOD1

SOD3

SPARC

SSRP1

SSTR4

STAT5A

STAT6

BRS3

CNTN2

TBCA

GCFC2

TG

TGFA

TGM2

THBD

THOP1

THY1

TIA1

TLR1

TTR

POTEF

TNFRSF4

TYROBP

UQCRFS1

VPREB1

WARS1

WNT3

WNT10B

YWHAZ

CA1

IL1R2

IRX1

ADIPOR2

RHBDF2



ASRGL1

TAM

CAPG

FCRL4

JAM3

LOH19CR1

CASP5

ROPN1L

CASP7

NLRC5

MINDY4

CUL1

IL17RC

SEMA7A

UBASH3B

CAV1

SERPINH1

TNFSF12

TNFRSF10B

IL18RAP

NRP1

CCN6

SPHK1

MBD4

MBD2

PGLYRP1

PSTPIP1

CD1D

PDCD5

INTS4

CD8A

DNER

KLF4

CD22

TNFRSF8

ADAMTS3

TBPL1

CCL4L2

CD48  
IKBKE  
SDC3  
FAM53B  
CD70  
HDAC9  
ADGRE5  
PIEZO1  
KEAP1  
SPATA2  
CDKN2B-AS1  
MIR708  
MIR887  
C20orf181  
HDAC6  
HDAC5  
BCL2L11  
TRAP  
MIR1246

MIR1908  
TMED7-TICAM2  
MIR762  
AAA1  
PARP2  
DNAJB6  
SLC17A4  
GAPLINC  
LOC100505909  
LOC100506023  
CNNM3-DT  
OCLN  
CASP12  
H3P43  
P2RX5-TAX1BP3  
DNM1L  
MIR4701  
MIR4764  
PSC

PTPRU  
MIR5571  
MIR5100  
G3BP1  
CHST4  
CDK4  
CDK7  
GDF11  
RASGRP2  
SLC17A2  
MIR6089  
MIR6716  
MIR6785  
CDK2AP2  
IRX5  
THRIL  
CDKN1B  
FSTL3  
LOC102724334

LOC102725035

LILRB2

DNAJA2

ADAR

CDKN2C

CRISP3

CDKN3

CDR1-AS

CPQ

SPAG11B

YAP1

PRMT5

CFDP1

TMEM147

MERTK

CLEC10A

FST

CREB3

SEMA6B

CEBPB  
SEMA3C  
MYBBP1A  
CIB1  
ZNRD2  
UPK3B  
CERNA3  
BATF  
CECR  
ARPC1A  
IFI44  
NPC2  
LOC106007493  
TRIM3  
CENPE  
POSTN  
DCTN6  
YME1L1  
MAP3K2

MASP2  
LOC107987462  
CYSLTR1  
NEU3  
CEACAM8  
LYVE1  
JTB  
SUB1  
TMED2  
IFI44L  
RAB40B  
ERVK-32  
IL24  
LILRA1  
LILRB3  
LILRA2  
PIM2  
C5-OT1  
TPPP



DNAJB4  
RCAN3  
CHGA  
IL1RAPL1  
KAT7  
ADAMTS7  
TREH  
WIF1  
CHEK2  
CHN2  
CHP1  
TREX1  
B4GALT7  
CHRM3  
CDCA5  
SLC46A1  
VSIG4  
GLCCI1  
CHRNA7

DBA2

UCN3

CIRBP

H3P8

H3P23

H3P19

H3P40

ADCYAP1R1

PRAP1

TPP1

CYP2R1

CLTA

TPH2

CMKLR1

GGT6

PLK3

CNN2

COL1A1

OSCP1

COL1A2  
COL4A5  
COL9A2  
COL12A1  
KLF6  
ADAD1  
ZFP42  
CD109  
CPA1  
CPB2  
CLDN7  
CPOX  
CRABP1  
CRHR2  
CRKL  
ADORA3  
MUC17  
NRSN1  
SIRPA

CSE1L  
PIWIL4  
CSF2RA  
CSF3R  
OR2AG1  
CSNK1E  
PWAR1  
B3GNTL1  
PTPRVP  
CTH  
CTRB1  
COMMD1  
GPBAR1  
RMDN2  
CTSS  
CUX1  
CYB5A  
CREBRF  
CYBA

CYLD

CYP1A1

AMOT

ADRB3

CYP2B6

CYP2C19

CYP2E1

CYP3A4

DCC

DCK

IFNLR1

KANK4

DEFA1

DEFA3

IDO2

AAVS1

NQO1

SARDH

DNAH8

DOCK2

AGT

DSPP

DUSP2

AGTR1

DUSP8

DVL2

DYRK1A

AGTR2

S1PR3

EDNRB

EFNB2

EGR2

AHSG

NLRC3

EIF4E

EIF4G1

ELANE

A2M

ELN

EMD

MARK2

TIGIT

ENG

C9orf72

EPHA1

EPHA3

CLN8

EPO

LVRN

ERBB3

ERCC2

EREG

AKT2

ERV3-1

ESRRB

MECOM

EXT1

ALCAM

F10

ALDH2

FABP5

FAP

FAT1

UNC5B

ALDH1A3

DLEU7

EFEMP1

FCGRT

FGD1

FGF4

FGF7

FGF9

FGFR1

FGFR3

FHL2

VEGFD



IKZF2  
NR1I4  
PUF60  
FOXJ3  
SACM1L  
CD93  
SNW1  
P2RX2  
FOXJ1  
MAST3  
ZNF292  
MON2  
SMG1  
ZNF423  
TAB2  
CIC  
FLNA  
PHLDB1  
FLT3

ARC  
SATB2  
SYNM  
COTL1  
HARS2  
FOLR1  
CABIN1  
SNAPIN  
DDAH2  
LPAR3  
FPR1  
DDAH1  
FAM215A  
AMACR  
CLEC5A  
CD2AP  
HSPBP1  
PPP1R15A  
PLD3

BRD1

ALOX12

ABCA4

ALOX5AP

SPESP1

FTL

FUT4

ZBTB38

EBF3

TAC4

PCSK9

CIZ1

QPCT

PRDX5

PART1

POT1

NCR3

IL4I1

IBTK

LRIG1  
PYDC1  
LRIT1  
KIFBP  
GARS1  
AMD1  
GATA1  
FBXO2  
GATA2  
CLEC4E  
GATA4  
FGF21  
AMD1P2  
GCHFR  
GCK  
KAT2A  
SLC17A5  
GCY  
GDF2

GREM1

AMH

B4GALT1

RNU1-1

GHSR

SMR3A

GJA1

AMPD1

SIGLEC7

LAT

PELP1

DKK2

IL36B

SIGLEC9

GCLC

BMP10

RABGEF1

GLI1

APOBEC3C

GNA12

GNAQ

GNB3

GNS

GPC1

GPLD1

IFNL2

GPR3

ANG

H19

NEAT1

UTS2R

IGHV5-78

IGHV1-69

MIF-AS1

GPB1

CYP4V2

TRBV28

TRBV27

TRBV20-1

TRBV14

TRBV6-7

TRBV3-1

TRBV2

GPR39

TRBC2

TRAV5

GRK5

GRB2

IGKV3D-15

GRIA1

IGKV1D-8

IGKV3-20

IGKV2-29

REM1

LAMTOR2

RGCC

HIPK2

GRIK4  
STXBP6  
UHRF1  
CXCL3  
PDIA3  
GRPR  
GSN  
GTS  
GYS1  
EFEMP2  
GZMM  
ANXA2  
HAGH  
HARS1  
HAS1  
HAS3  
HCRTR1  
HDC  
ANXA4



HEXA

HEXB

ANXA5

KCNIP3

CD209

TAX1BP3

HK1

HK2

HLA-DRB2

HLA-DRB6

HLA-E

HMGCR

HMMR

APAF1

HNRNPC

HOXB2

HOXD4

APCS

HPRT1

HRG

PRMT1

HES1

BIRC2

BIRC3

HSPA1A

HSPA1B

HSPA5

XIAP

HSPB1

HSPB2

NDST1

APOA1

APOA2

IAPP

RSPO2

IDDM7

IDDM13

IFI16

IFI27

IFI35

CYCSP51

IFIT2

IFIT1

IFNGR2

ZNF391

IGFBP4

IGFBP6

IGFBP7

IGH

NMNAT3

IGKC

HLA-P

PADI6

TICAM2

IL2RG

IL11RA

IL12RB1

IL15RA

CYCSP52

INS

INPP5D

IRAK2

IRF3

ISL1

ITGA2B

ITGA5

ITGA9

ITIH1

ITIH4

ITPR2

CD82

KCNA4

MIA3

ENHO

KCNQ1

PICSAR

KIR2DS3

KIR2DS4

KIR3DS1

KIT

KPNA2

ARG2

KRTAP5-9

KRT5

KRT7

KRT8

KRT13

KRT16

THEMIS

RTL1

LAG3

LAIR2

LAMA3

RPS12P4

LBR

LCAT

LCK

LECT2

LIFR

LNPEP

SAPCD1

CRIP3

LOXL2

LERFS

LRP1

LRP2

LRP6

LSP1

LTBR

MIRLET7B

MIR106A

LYZ

MIR125A

MIR137

MIR141

MIR142

MIR147A

MIR150

MIR16-1

MIR18A

MIR182

MIR183

MIR188

MIR193A

MIR196A2

MIR199A1

MIR199A2

MIR19A

MIR19B1

MIR200C

MIR203A

MIR204

MIR212

MIR219A2

MIR23A

MIR26B

MIR27B

MIR29B1

MIR29B2

MIR301A

MIR320A

MIR33A

MIR34B

MIR34C

MIR7-1

MIR7-2

MIR7-3

MIR99B

CAPRIN1

ARRB1

MAA

SMAD1



ARRB2

ASIC1

MAL

MAPT

MARK1

MBNL1

ADAM11

MDM4

MAP3K3

MGAT5

KITLG

ASAH1

MITF

MAP3K11

KMT2A

AFF1

MMP7

MMP15

MMP16

MMP17

MNAT1

MOBP

MOS

MS

CCDC88C

CALHM6

MIR135B

MIR148B

MSD

MSH2

MSH3

TARP

MSMB

PLF

ND1

MTNR1B

MUC2

MUC3A

MUC4  
MUC5AC  
MX1  
MYCN  
SERPINC1  
ATF3  
NBN  
NCF4  
NDUFA7  
NDUFS3  
NEDD9  
ATOH1  
NELL1  
NEU1  
ATP1A1  
NFATC2  
NFIA  
NFIL3  
NFKBIB

NFYA

NNAT

NMT1

NONO

NPAS2

NPPB

NTRK1

NUCB2

OAP

MIR382

OAZ1

ODF1

OPRK1

P2RX1

P2RX3

P2RX4

P2RX5

P2RY1

P2RY2

P2RY11  
PEBP1  
FURIN  
SERPINB2  
DEF6  
PAR6A  
PCBP1  
IBD5  
EXOSC1  
TMED7  
NDUFA13  
RMDN1  
IRAK4  
DBR1  
ZDHHC2  
PCSK1  
CLEC1B  
RASL12  
PCYT1A

ZBTB7A

HOOK1

PDE4D

ISYNA1

NELFCD

ZC3HC1

SCLY

ATP6V1H

PDK1

SF3B6

ENPP1

PDPK1

GHRL

ACP1

PGK1

PGM1

PHEX

PI3

PIGR

PIM1

PIN1

PKD1

PLA2G2A

PLAT

PLAUR

SPA17

PLCG2

PLD1

SERPINF2

PLK1

PLTP

IL20RA

IL20RB

H2BS1

CYCS

POLD1

TERF2IP

SIAE

POMC  
PON2  
SMOX  
ATR  
POU2F1  
POU2F2  
UGT1A10  
UGT1A8  
UGT1A7  
UGT1A6  
EGLN1  
PPARA  
UGT1A4  
UGT1A1  
PPBP  
IL17RD  
SAMD9  
QPCTL  
ZCCHC2



UHRF1BP1

CDKAL1

PPM1A

BANP

MARCHF1

PPP1R1A

TTC38

AKIRIN2

PIWIL2

RMDN3

NADSYN1

THNSL2

KIR2DL5B

IMPACT

MIR448

PRCP

PRF1

SYBU

NLRP2

ZNF334

ATF7IP

DHX32

PAG1

SELENOS

CENPJ

PKN1

PRKCZ

MAPK9

MAPK10

MAPK13

EIF2AK2

ANKH

PROP1

AZGP1

METTL3

PPAN

LTB4R2

PRSS2

MASP1  
CYP26B1  
PSEN1  
SAR1A  
SPHK2  
PSMB5  
ARNTL2  
PSMB6  
DUSP22  
PRDM8  
ADAMTS9  
PCBP4  
PCNP  
PNPLA2  
CD248  
PSMD9  
SLURP1  
PTBP1  
KIR2DL5A

PTGER2  
PTGER4  
MIR363  
ABHD6  
MIR432  
MIR181D  
MIR498  
MIR522  
MIR506  
REXO1  
SRGAP1  
PTMA  
PTMAP4  
EPB41L5  
MAGEE1  
GRHL3  
PTPN14  
MUC3B  
PTPRJ

PTPRK

BAX

RBPJP4

JAM2

RAG1

RAG2

IL22RA1

ACTA2

RAP1A

RARG

HIVEP3

TRPV4

PBOV1

RBP4

OPN1LW

RET

BCL2L1

REV3L

RGS1

RGSI2  
RHCE  
GRK1  
BCL3  
RMRP  
RNASE1  
RNASE3  
EXOC4  
BRD2  
SLC5A7  
PPCDC  
GAS5  
ROBO1  
RORA  
BCS1L  
RPS4X  
MIR486-1  
RRAS  
RRM2

RXRA

RYR1

S100A10

S100A11

SAA4

SCD

SRL

CCL1

CCL11

CCL14

CCL23

CCL24

XCL1

SDC4

MRPL17

ERVK-6

ERAP2

SETMAR

STRA6

ROBO3

SFRP2

SFRP4

SFRP5

MMP25

SGCA

DCLRE1C

CIAO3

SGCG

SH3BP2

ITSN1

SHH

ENGASE

P2RY12

IL25

CDCP1

LINC00273

SLAMF1

SLC2A1



SLC3A2

SLC5A5

UCA1

BMP5

SPAG11A

SLC7A4

SLC8A3

SLC22A2

SLIT3

SNAI2

BMX

CHID1

SMO

SMPD1

SIGLEC1

SNAI1

MIR539

SOX4

DST

SPR

BPI

SRC

AKR1D1

SRF

SRP54

SRY

RO60

SSB

ST2

STATH

STIM1

AURKA

TACR2

TACR3

TAGLN

TAL1

TAT

TBX1

TCEA1

PPAN-P2RY11

TBX3

TCF3

MIR421

MIR551B

MIR573

MIR590

MIR613

MIR633

MIR642A

TCF7L2

TCN2

TRAV6

BTN1A1

TRD

TRG

TRGC1

PPP1R11

TDGF1

TDGF1P3

PRDX2

TEF

TEP1

TERF2

TERT

TF

NR2F1

TFDP1

TFF1

TFF2

TGFB2

TGFB3

TGFBI

TGFBR1

TGIF1

THAS

NKX2-1

TNNC1

TNNI3

TP73

TPSAB1

TPT1

NR2C2

HSP90B1

TRAF3

TRAF5

C3AR1

HSP90B2P

CCT3

TRPC1

TRPC5

TRPM2

MIR650

MIR663A

TTN

SFTPA2

TYRO3

TYRP1

UBE2N

UBTF

UCN

UCP2

UGCG

UNG

UTRN

KDM6A

VAV1

VDAC1

VIPR1

TRPV1

WNT1

XBP1

XBP1P1

XRCC4

CA2

CA3

MIR671

MIR766

CACNA1S

PSS

SCG2

MANF

GGCT

AHNAK

ASPSCR1

TSL

DEK

OPLL

BHLHE41

TFEB

NTT

NKAP

SLC52A2

SPAG16

TNFAIP8L2

NLRX1

LRRC31

SHCBP1

CAMKMT

CCDC134

TNIP3

NAA25

TRPM3

CALM1

ZC3H12A

BRD3

WDR26

EFHC2

FER1L4

PDGFD

TET1

PPP1R2C

CEP70



CSRP3  
CALM2  
FOSL1  
FGF23  
COL18A1  
CALM3  
APOL6  
AAAS  
HMGA2  
SLC38A1  
GDPD5  
LBH  
FIP1L1  
MAP1LC3B  
SLC14A2  
MIA  
NCOA3  
COLQ  
EOMES

ARHGAP24

BCL2L12

FAM167A

PARP9

SESN2

ITCH

PLA2G10

TMPRSS13

ZNF644

RECK

CAVIN2

DOT1L

MAP1LC3A

CASR

ZNF469

GPR65

CILP

MAP4K3

PPM1D

TMEM60  
DNAJC14  
PIR  
DCLK3  
KHSRP  
STC2  
PSMG1  
HSD17B6  
UNC5C  
NCOA1  
NUMB  
MARCO  
HYAL2  
ACTN1  
URI1  
RIPK1  
TNFSF9  
TNFRSF18  
CREG1

HESX1

SOCS2

CCN5

CCN4

PROM1

CDK5R1

ALDH1A2

PER3

IER3

ARHGEF7

KRIT1

MTMR3

CCNB1

KYNU

LMLN

RPS6KA4

HSPB3

UCN2

PKD2L1

GADD45GIP1

CCT

CLDN1

MTA1

SLC16A4

SLC16A3

P2RX6

SLC28A2

EBAG9

MFSD4B

OSMR

DEDD

CD4

MTDH

LRAT

NAF1

RPS6KA5

AIMP1

PDLIM7

PIWIL1

CD9

ADGRG1

S1PR2

SRSF11

MMP20

PPIG

LONP1

ZFYVE9

COX5A

CIAO1

CLEC6A

ORMDL3

CYP7B1

AIM2

IL27RA

CHST3

CD36

ATP6V1G1

GTF2IRD1

PRDX6

AKAP12

CD47

NCOR1

ISG15

CD58

CD59

BMS1P20

LPIN2

MARF1

CD63

RIMS2

CD74

CD79A

HDAC4

PCLAF

CDA

GIT2

CDK1  
TESPA1  
GAB2  
NR1I3  
HNRNPDL  
NDEL1  
LACC1  
LINC00328  
ZMIZ1  
SAG  
PRKAR1A  
ERAP1  
RBP3  
CALCR  
SH2D2A  
DGKZ  
LRBA  
CXADRP1  
SPG7



FBN1

GHR

TRIM13

HMGB1P5

CXADR

ANXA11

ITPA

LPP

MIR149

ARR3

HMGB2

HMGN2

HYAL1

RNPC3

MAS1

LGR6

LUM

MGP

VN1R17P

GPR166P

NT5C1A

FZD4

AKNA

HPP1

SOX13

CD5L

PRC1

SPTA1

SNRPD1

TWIST1

TNP1

XRCC6

EMP1

DES

OXER1

TNFRSF13B

GPRC6A

CD3EAP

MRGPRX3

GPR151

MRGPRX4

APOH

BTBD8

GOLGB1

MRGPRX1

GCA

CFHR1

KCNJ15

PLOD2

RBM47

FAM20A

ACP3

ETNK1

PROS1

ZFAND3

HERPUD2

PGM5

KRAS

MAP2

MSN

RERE

ASAP1

MEX3C

MS4A4A

WWOX

PER1

BTG1

TFPI

ACRBP

AOPEP

MIR22HG

SLC22A16

TNFRSF10C

CD8B

B4GALT5

PCYT1B

UBE3C  
MTSS1  
FCHSD2  
MAML2  
C2orf88  
TNFAIP6  
TUBB2A  
C8B  
UBE2E1  
RNF103  
DYSF  
H2BC8  
SH3BGRL2  
MAD1L1  
RHOTB1  
MYZAP  
DDIT3  
HBEGF  
DUSP4

ZFC3H1  
ELF2  
APOBEC3A  
CTTN  
ETV6  
DAPK1  
CAMSAP1  
PLK2  
WASF3  
FAXDC2  
PACSIN2  
ADCY7  
ANKRD9  
CREM  
BEND2  
CMTM2  
RASGEF1B  
JMJD1C  
R3HDM2

GP1BB

H2AC8

NRG1

HSPA6

TREML1

LILRA5

ITGB5

GNG11

GMPR

TNIK

UHRF1BP1L

AVL9

TTLL5

STAB1

KAT6B

FOSL2

MAFF

TNFAIP8

SIPA1L1

FOXP1  
KRT15  
TIMMDC1  
ATXN2  
ZFP36L1  
PRR5L  
IRF1-AS1  
LINC02341  
RMI2  
PRICKLE2  
ZBTB7C  
TELO2  
COMT  
PPP5C  
PPT1  
SLC6A4  
MTG1  
OPRM1  
FMR1



PRKAA2

GOLPH3

MAOA

GRIN2B

PRKAA1

PRKAB1

SLC6A3

NRXN3

NOL3

PNOC

CES2

MFN2

NPY

OPRD1

KLK4

OPRL1

HTR3B

CNTN3

NPS

SCN9A

TCP1

ZNF77

TP53INP2

TSHR

SNAP25

ABCB6

TRPV3

DRD3

EFNA4

EPHA4

FES

RN7SL263P

PPARGC1A

EMB

DOCK11

C11orf40

MYT1L

IGFALS

L1CAM

LAMC2

MIRLET7D

MAOB

CYTB

PCSK1N

GSR

HTR3A

CPP

APOC1

REEP3

INS-IGF2

C1orf141

ATXN2L

CCDC26

LRRK2

DAG1

LINC01250

CSMD1

NKD1  
LURAP1L  
GPR35  
FNBP1  
FAM169B  
CACNA1I  
LINC00993  
CTTNBP2  
ADGRL2  
IGF2-AS  
NRBF2  
CRB1  
ANKRD30A  
ANGPTL5  
FUT2  
ERAL1  
UNC13D  
PSMA6  
KSR1

C4BPA

EBPL

STXBP2

CARD14

NCR2

FAM177A1

IFN1@

HNF4A

CHIT1

SLC26A2

ZNF395

PRNP

RAB27A

PSMC6

PSMA3

SERPINA2

MME

SOX9

ADAMTS2

CAPS  
GZMK  
ZBTB22  
YWHAE  
WNT2  
WISP3  
WARS  
VARs  
USP14  
URGCP  
UBA7  
TYR  
TSPAN33  
TRIM38  
TRIM31-AS1  
TRIM16  
TRGV3  
TOP2B  
TMPRSS11D

TIPARP

TH

TGM1

TET2

TANK

SYK

ST3GAL5

SSSCA1

SOS1

SLC51B

SLC51A

SLAMF4

SGPL1

SF3B1

SDS

SAA@

S100A6

RUNX1T1

ROCK2

RNU1-4

RBL2

RASGRF1

RARRES3

RAMMET

RAB3GAP1

RA10

RA

PTPRT

PTPN8

PTPN6

PRDX3

PPP3CA

PPARD

PNP

PGAP1

PFF0160c

PERP

PEP



PDLIM4

PDE4B

PAFAH1B1

PADI5

PAD

OCTN1

OA25

NRIP1

NPHS2

NOLC1

NKR2B4

NFKB2

NAIL

MIR7-3HG

MHC2TA

MED27

MCM8

MAPKAPK5

MAPK12

MAPK11

LYP

LY6G6F-LY6G6D

LTC4S

LOC105369230

LOC102723996

LOC100506248

LCP2

KLF15

KDM1A

KCNA3

ITGB7

ITGB3

IL17C

IHH

IFNB2

IBSP

HSF

HSD17B1

HOXD8

HOXD1

HOXA5

HCG23

HCG21

HCG20

HARS

H3F3AP5

GVHDS

GPX2

GFAP

Gene

G6PD

FCAR

FABP3

F13B

F13A1

ESRRA

ERVW-4

ERVW-1  
ERVK-9  
ERVK-8  
ERVK-7  
ERVK-25  
ERVK-24  
ERVK-21  
ERVK-19  
ERVK-18  
ERVK-10  
EIF4EBP2  
EDA  
E2F1  
DUSP6  
DNAJC2  
DDX58  
DDX46  
DDX19A  
CYR61

CTGF

CSRP1

CSIF

COPB2

CHKA

CDK5

CDK10

CCND3

CCNA2

CALB1

CA13

C6orf10

C5orf30

C2TA

BW54

BTG2

BST1

BSF2

BLZF1

BLNK  
BDKRB1  
BCAR1  
ASXL1  
ARSD  
ALS2CR12  
AKR1B10  
AKR1B1  
ABCA1  
BLAUS  
SLE  
PPRD  
SPDA1  
JUVAR  
WNCHRS  
SLEB11  
CELIAC6  
RPEM  
SPENCDI

AIS6  
C5ORF30  
ILDR2  
LAD  
A1ATD  
DGS  
VCFS  
IGES  
PADI1  
PDGFB  
TCF12  
HEXDC  
CACP  
CCAL2  
IL1RL1  
PSORS2  
MONA  
MAP3K14  
MCTO

C2D  
MAPKAPK2  
FRBRL  
MATN1  
CHD4  
EDSCLL  
XLA  
HEMA  
SSOAOD  
WAS  
PIK3R1  
RPL23A  
AD  
IBD14  
CLL  
MAHCF  
VAMAS1  
MS5  
EDSVASC



HD

PD

DA2A

CALJA

SRS5

T1D

FL1

SLEB13

IGAD1

RFH1

AXL

SIGLEC5

TRAT1

TRAPPC2

IRGM

GOLGA8B

CLEC4D

TRNT1

EEF1A1

CCS3, INCLUDED

GP5

TNNI2

BST2

TSPAN8

TNXB1

CYP2C9

FRA2A

SFSWAP

FOXO3A

AIADK

LACH

C8D2

MAN2B2

IMD23

GFI1

FMF

PSORS1

OS1

PSORS13

DIAR5

ADMIO1

HNFI1

AKU

YAO5

PSORS7

PSORS11

VEGFB

IMD67

HIDS

FCAS2

AILJK

OS2

PRAAS3

PSORS3

MATN3

ALPS2A

GHISID1

CFID

MPLPF

PSORS6

EPCAM

HRH

CINCA

GSD1A

GSD7

PRAAS1

PHOAR1

COA

C3D

C6D

ALPS3

IMD36

ALPS5

EDSPD1

MWS

CVT

DFNA34

CIMAH

IMD57

RLSDF

RLS1

PSORS4

NLRP12

PFKM

SAVI

FERLK

ALPS

ALPS1A

CGD5

SPDA2

PLA2G2F

ADGRB1

HJCYS

CCA

MCKD2

IDD

LDD

HFE3

SEMDX

EDAID1

VEXAS

IPEX

IGHD3

BARTS3

GPHYSD1

GSD1B

GSD1C

GSD1D

HFE1

CILD1

HOMG3

DBQD1

HP1

IBD1

ANFH1

AGM2

C1QD

PHOAR2

EDAID2

IMD68

PFITS

MAHCC

SEDТ

APLAID

STLS

AGM7

MMDD

VAIHS

AIFEC

SGMRT2

FLHS

UAQTL1

SEDCJD

MFS

PDB3

JPHT

SVD

STSL1

HFTC1

HFE2A

HFE2

THPM1

CVID8

APRTD

AGM8

IMD53

LPFS3

JRRP

AIEFL

IMD72

PSHB

GPA



SPDA3

DDH2

HSR

T1D7

UOX

C1QC

FFAR2

PTGDR2

SMURF1

PRPS1

MSMO1

COL27A1

RC3H1

CEP250

CANT1

F7

CILP2

PRKCD

C6

RC3H2

IRF2

MOX2

KDM5D

MTATP8

MC5DM2

PTPN12

ARF6

COPA

COPI

CHD3

PSMB4

CYTH2

GOLGA1

LRCH1