

IMBS Patient Cohort Gene Overlap Report

Number of medium and high risk genes found in a small group of IMBS patients: 1251

Number of medium and high risk genes found at least 2 times in IMBS patients cohort: 924

Number of genes with intestinal or liver and no brain expression: 59

Scored Genes:

ACSM2B	ACSM5	ACSM2A	MYLK
ATP10B	AGXT2	SLC28A1	SLC23A1
SLC17A4	SLC10A2	PNPLA3	HPD
GSTA2	GLYAT	CYP4F11	CP
CHAT	ADH4	ADH1B	VNN1
PLA2G4F	MTMR2	HGD	GYS2
GPAM	FBP2	DMGDH	CYP3A43
CYP2C8	CYP2A7	CPS1	ALDH3A1
XDH	UPB1	UGP2	SLCO1B1
SLC2A2	SLC28A2	RGN	PDE10A
PAH	MAN2B2	HSD11B1	HPX
HAAO	GYG2	GK	EPHX1
DPYD	CYP4F12	CYP3A4	CYP2A13
CHSY1	AVPR2	AQP8	AMDHD1
ALPI	ACSL1	ABCB11	

Gene details

Gene: ACSM2B

ACS2B_HUMAN Acyl-coenzyme A synthetase ACSM2B, mitochondrial

UnitprotID: Q68CK6

Unitprot link: <https://www.uniprot.org/uniprot/Q68CK6>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: ACSM5

ACSM5_HUMAN Acyl-coenzyme A synthetase ACSM5, mitochondrial

UnitprotID: Q6NUN0

Unitprot link: <https://www.uniprot.org/uniprot/Q6NUN0>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: ACSM2A

ACS2A_HUMAN Acyl-coenzyme A synthetase ACSM2A, mitochondrial

UnitprotID: Q08AH3

Unitprot link: <https://www.uniprot.org/uniprot/Q08AH3>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: MYLK

MYLK_HUMAN Myosin light chain kinase, smooth muscle

UnitprotID: Q15746

Unitprot link: <https://www.uniprot.org/uniprot/Q15746>

Number of IMBS patients with matches: 5

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: MEDIUM

LUNG: NONE

SEX: MEDIUM

Gene: ATP10B

AT10B_HUMAN Phospholipid-transporting ATPase VB

UnitprotID: O94823

Unitprot link: <https://www.uniprot.org/uniprot/O94823>

Number of IMBS patients with matches: 5

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: MEDIUM

LUNG: NONE

SEX: NONE

Gene: AGXT2

AGT2_HUMAN Alanine--glyoxylate aminotransferase 2, mitochondrial

UnitprotID: Q9BYV1

Unitprot link: <https://www.uniprot.org/uniprot/Q9BYV1>

Number of IMBS patients with matches: 5

Expression:

BRAIN: NONE

LIVER: MEDIUM

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: SLC28A1

S28A1_HUMAN Sodium/nucleoside cotransporter 1

UnitprotID: O00337

Unitprot link: <https://www.uniprot.org/uniprot/O00337>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: HIGH

LUNG: NONE

SEX: NONE

Gene: SLC23A1

S23A1_HUMAN Solute carrier family 23 member 1

UnitprotID: Q9UHI7

Unitprot link: <https://www.uniprot.org/uniprot/Q9UHI7>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: HIGH

LUNG: NONE

SEX: NONE

Gene: SLC17A4

S17A4_HUMAN Probable small intestine urate exporter

UnitprotID: Q9Y2C5

Unitprot link: <https://www.uniprot.org/uniprot/Q9Y2C5>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: MEDIUM
LUNG: LOW
SEX: LOW

Gene: SLC10A2

NTCP2_HUMAN Ileal sodium/bile acid cotransporter

UnitprotID: Q12908

Unitprot link: <https://www.uniprot.org/uniprot/Q12908>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: NONE
ENDOCRINE: NONE

INTESTINAL: HIGH
LUNG: NONE
SEX: NONE

Gene: PNPLA3

PLPL3_HUMAN 1-acylglycerol-3-phosphate O-acyltransferase PNPLA3

UnitprotID: Q9NST1

Unitprot link: <https://www.uniprot.org/uniprot/Q9NST1>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: LOW
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: HPD

HPPD_HUMAN 4-hydroxyphenylpyruvate dioxygenase

UnitprotID: P32754

Unitprot link: <https://www.uniprot.org/uniprot/P32754>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: GSTA2

GSTA2_HUMAN Glutathione S-transferase A2

UnitprotID: P09210

Unitprot link: <https://www.uniprot.org/uniprot/P09210>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: MEDIUM

INTESTINAL: MEDIUM
LUNG: LOW
SEX: MEDIUM

Gene: GLYAT

GLYAT_HUMAN Glycine N-acyltransferase

UnitprotID: Q6IB77

Unitprot link: <https://www.uniprot.org/uniprot/Q6IB77>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: CYP4F11

CP4FB_HUMAN Cytochrome P450 4F11

UnitprotID: Q9HBI6

Unitprot link: <https://www.uniprot.org/uniprot/Q9HBI6>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: HIGH

LUNG: NONE

SEX: LOW

Gene: CP

CERU_HUMAN Ceruloplasmin

UnitprotID: P00450

Unitprot link: <https://www.uniprot.org/uniprot/P00450>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE

LIVER: MEDIUM

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: CHAT

CLAT_HUMAN Choline O-acetyltransferase

UnitprotID: P28329

Unitprot link: <https://www.uniprot.org/uniprot/P28329>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: MEDIUM

LUNG: NONE

SEX: NONE

Gene: ADH4

ADH4_HUMAN All-trans-retinol dehydrogenase [NAD(+)] ADH4

UnitprotID: P08319

Unitprot link: <https://www.uniprot.org/uniprot/P08319>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: MEDIUM
LUNG: NONE
SEX: NONE

Gene: ADH1B

ADH1B_HUMAN All-trans-retinol dehydrogenase [NAD(+)] ADH1B

UnitprotID: P00325

Unitprot link: <https://www.uniprot.org/uniprot/P00325>

Number of IMBS patients with matches: 4

Expression:

BRAIN: NONE
LIVER: MEDIUM
ENDOCRINE: NONE

INTESTINAL: LOW
LUNG: NONE
SEX: NONE

Gene: VNN1

VNN1_HUMAN Pantetheinase

UnitprotID: O95497

Unitprot link: <https://www.uniprot.org/uniprot/O95497>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: LOW
ENDOCRINE: NONE

INTESTINAL: MEDIUM
LUNG: NONE
SEX: NONE

Gene: PLA2G4F

PA24F_HUMAN Cytosolic phospholipase A2 zeta

UnitprotID: Q68DD2

Unitprot link: <https://www.uniprot.org/uniprot/Q68DD2>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: NONE
ENDOCRINE: NONE

INTESTINAL: MEDIUM
LUNG: LOW
SEX: NONE

Gene: MTMR2

MTMR2_HUMAN Myotubularin-related protein 2

UnitprotID: Q13614

Unitprot link: <https://www.uniprot.org/uniprot/Q13614>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: LOW
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: HIGH
SEX: HIGH

Gene: HGD

HGD_HUMAN Homogentisate 1,2-dioxygenase

UnitprotID: Q93099

Unitprot link: <https://www.uniprot.org/uniprot/Q93099>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: MEDIUM

INTESTINAL: MEDIUM

LUNG: NONE

SEX: MEDIUM

Gene: GYS2

GYS2_HUMAN Glycogen [starch] synthase, liver

UnitprotID: P54840

Unitprot link: <https://www.uniprot.org/uniprot/P54840>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: GPAM

GPAT1_HUMAN Glycerol-3-phosphate acyltransferase 1, mitochondrial

UnitprotID: Q9HCL2

Unitprot link: <https://www.uniprot.org/uniprot/Q9HCL2>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE

LIVER: LOW

ENDOCRINE: LOW

INTESTINAL: NONE

LUNG: NONE

SEX: MEDIUM

Gene: FBP2

F16P2_HUMAN Fructose-1,6-bisphosphatase isozyme 2

UnitprotID: O00757

Unitprot link: <https://www.uniprot.org/uniprot/O00757>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: LOW

LUNG: NONE

SEX: LOW

Gene: DMGDH

M2GD_HUMAN Dimethylglycine dehydrogenase, mitochondrial

UnitprotID: Q9UI17

Unitprot link: <https://www.uniprot.org/uniprot/Q9UI17>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: CYP3A43

CP343_HUMAN Cytochrome P450 3A43

UnitprotID: Q9HB55

Unitprot link: <https://www.uniprot.org/uniprot/Q9HB55>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: MEDIUM
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: CYP2C8

CP2C8_HUMAN Cytochrome P450 2C8

UnitprotID: P10632

Unitprot link: <https://www.uniprot.org/uniprot/P10632>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: CYP2A7

CP2A7_HUMAN Cytochrome P450 2A7

UnitprotID: P20853

Unitprot link: <https://www.uniprot.org/uniprot/P20853>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: CPS1

CPSM_HUMAN Carbamoyl-phosphate synthase [ammonia], mitochondrial

UnitprotID: P31327

Unitprot link: <https://www.uniprot.org/uniprot/P31327>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: HIGH
LUNG: NONE
SEX: NONE

Gene: ALDH3A1

AL3A1_HUMAN Aldehyde dehydrogenase, dimeric NADP-preferring

UnitprotID: P30838

Unitprot link: <https://www.uniprot.org/uniprot/P30838>

Number of IMBS patients with matches: 3

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: MEDIUM

LUNG: MEDIUM

SEX: MEDIUM

Gene: XDH

XDH_HUMAN Xanthine dehydrogenase/oxidase

UnitprotID: P47989

Unitprot link: <https://www.uniprot.org/uniprot/P47989>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: NONE

INTESTINAL: LOW

LUNG: NONE

SEX: NONE

Gene: UPB1

BUP1_HUMAN Beta-ureidopropionase

UnitprotID: Q9UBR1

Unitprot link: <https://www.uniprot.org/uniprot/Q9UBR1>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: MEDIUM

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: LOW

SEX: NONE

Gene: UGP2

UGPA_HUMAN UTP--glucose-1-phosphate uridylyltransferase

UnitprotID: Q16851

Unitprot link: <https://www.uniprot.org/uniprot/Q16851>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: LOW

INTESTINAL: MEDIUM

LUNG: LOW

SEX: LOW

Gene: SLCO1B1

SO1B1_HUMAN Solute carrier organic anion transporter family member 1B1

UnitprotID: Q9Y6L6

Unitprot link: <https://www.uniprot.org/uniprot/Q9Y6L6>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: MEDIUM
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: SLC2A2

GTR2_HUMAN Solute carrier family 2, facilitated glucose transporter member 2

UnitprotID: P11168

Unitprot link: <https://www.uniprot.org/uniprot/P11168>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: MEDIUM
LUNG: NONE
SEX: NONE

Gene: SLC28A2

S28A2_HUMAN Sodium/nucleoside cotransporter 2

UnitprotID: O43868

Unitprot link: <https://www.uniprot.org/uniprot/O43868>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: NONE
ENDOCRINE: NONE

INTESTINAL: HIGH
LUNG: NONE
SEX: NONE

Gene: RGN

RGN_HUMAN Regucalcin

UnitprotID: Q15493

Unitprot link: <https://www.uniprot.org/uniprot/Q15493>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: HIGH

INTESTINAL: NONE
LUNG: NONE
SEX: LOW

Gene: PDE10A

PDE10_HUMAN cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A

UnitprotID: Q9Y233

Unitprot link: <https://www.uniprot.org/uniprot/Q9Y233>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: LOW
ENDOCRINE: LOW

INTESTINAL: LOW
LUNG: NONE
SEX: LOW

Gene: PAH

PH4H_HUMAN Phenylalanine-4-hydroxylase

UnitprotID: P00439

Unitprot link: <https://www.uniprot.org/uniprot/P00439>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: MEDIUM

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: MAN2B2

MA2B2_HUMAN Epididymis-specific alpha-mannosidase

UnitprotID: Q9Y2E5

Unitprot link: <https://www.uniprot.org/uniprot/Q9Y2E5>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: MEDIUM

INTESTINAL: LOW

LUNG: NONE

SEX: LOW

Gene: HSD11B1

DH11_HUMAN Corticosteroid 11-beta-dehydrogenase isozyme 1

UnitprotID: P28845

Unitprot link: <https://www.uniprot.org/uniprot/P28845>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: HPX

HEMO_HUMAN Hemopexin

UnitprotID: P02790

Unitprot link: <https://www.uniprot.org/uniprot/P02790>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: LOW

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: HAAO

3HAO_HUMAN 3-hydroxyanthranilate 3,4-dioxygenase

UnitprotID: P46952

Unitprot link: <https://www.uniprot.org/uniprot/P46952>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: NONE

INTESTINAL: LOW
LUNG: NONE
SEX: NONE

Gene: GYG2

GLYG2_HUMAN Glycogenin-2

UnitprotID: O15488

Unitprot link: <https://www.uniprot.org/uniprot/O15488>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: LOW
ENDOCRINE: NONE

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: GK

GLPK_HUMAN Glycerol kinase

UnitprotID: P32189

Unitprot link: <https://www.uniprot.org/uniprot/P32189>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: MEDIUM

INTESTINAL: MEDIUM
LUNG: LOW
SEX: MEDIUM

Gene: EPHX1

HYEP_HUMAN Epoxide hydrolase 1

UnitprotID: P07099

Unitprot link: <https://www.uniprot.org/uniprot/P07099>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: HIGH

INTESTINAL: NONE
LUNG: LOW
SEX: HIGH

Gene: DPYD

DPYD_HUMAN Dihydropyrimidine dehydrogenase [NADP(+)]

UnitprotID: Q12882

Unitprot link: <https://www.uniprot.org/uniprot/Q12882>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: LOW
ENDOCRINE: MEDIUM

INTESTINAL: LOW
LUNG: NONE
SEX: LOW

Gene: CYP4F12

CP4FC_HUMAN Cytochrome P450 4F12

UnitprotID: Q9HCS2

Unitprot link: <https://www.uniprot.org/uniprot/Q9HCS2>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: LOW

ENDOCRINE: LOW

INTESTINAL: MEDIUM

LUNG: LOW

SEX: LOW

Gene: CYP3A4

CP3A4_HUMAN Cytochrome P450 3A4

UnitprotID: P08684

Unitprot link: <https://www.uniprot.org/uniprot/P08684>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: HIGH

LUNG: NONE

SEX: NONE

Gene: CYP2A13

CP2AD_HUMAN Cytochrome P450 2A13

UnitprotID: Q16696

Unitprot link: <https://www.uniprot.org/uniprot/Q16696>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: NONE

Gene: CHSY1

CHSS1_HUMAN Chondroitin sulfate synthase 1

UnitprotID: Q86X52

Unitprot link: <https://www.uniprot.org/uniprot/Q86X52>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: NONE

ENDOCRINE: MEDIUM

INTESTINAL: LOW

LUNG: MEDIUM

SEX: MEDIUM

Gene: AVPR2

V2R_HUMAN Vasopressin V2 receptor

UnitprotID: P30518

Unitprot link: <https://www.uniprot.org/uniprot/P30518>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: NONE
ENDOCRINE: LOW

INTESTINAL: LOW
LUNG: LOW
SEX: MEDIUM

Gene: AQP8

AQP8_HUMAN Aquaporin-8

UnitprotID: O94778

Unitprot link: <https://www.uniprot.org/uniprot/O94778>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: NONE
ENDOCRINE: NONE

INTESTINAL: MEDIUM
LUNG: NONE
SEX: NONE

Gene: AMDHD1

HUTI_HUMAN Probable imidazolonepropionase

UnitprotID: Q96NU7

Unitprot link: <https://www.uniprot.org/uniprot/Q96NU7>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: HIGH

INTESTINAL: NONE
LUNG: NONE
SEX: NONE

Gene: ALPI

PPBI_HUMAN Intestinal-type alkaline phosphatase

UnitprotID: P09923

Unitprot link: <https://www.uniprot.org/uniprot/P09923>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: NONE
ENDOCRINE: NONE

INTESTINAL: HIGH
LUNG: NONE
SEX: NONE

Gene: ACSL1

ACSL1_HUMAN Long-chain-fatty-acid--CoA ligase 1

UnitprotID: P33121

Unitprot link: <https://www.uniprot.org/uniprot/P33121>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE
LIVER: HIGH
ENDOCRINE: HIGH

INTESTINAL: MEDIUM
LUNG: HIGH
SEX: MEDIUM

Gene: ABCB11

ABCBB_HUMAN Bile salt export pump

UnitprotID: O95342

Unitprot link: <https://www.uniprot.org/uniprot/O95342>

Number of IMBS patients with matches: 2

Expression:

BRAIN: NONE

LIVER: HIGH

ENDOCRINE: NONE

INTESTINAL: NONE

LUNG: NONE

SEX: LOW

Accumulated Genes of IMBS patient cohort

High and medium risk genes

ABCA4(1)	ABCA8(1)	ABCC11(1)	ACACB(1)
ACER1(1)	ACKR1(1)	ACKR2(1)	ACOT2(1)
ACOX3(1)	ACSM6(1)	ACVR1C(1)	ACYP1(1)
ADCY10(1)	ADGRA1(1)	ADGRA3(1)	ADGRB3(1)
ADGRE1(1)	ADGRE2(1)	ADGRE3(1)	ADGRF2(1)
ADGRF3(1)	ADGRF4(1)	ADGRF5(1)	ADGRG4(1)
ADGRG6(1)	ADH1C(1)	ADRB2(1)	AGMAT(1)
AK9(1)	AKR1E2(1)	ALDH1A2(1)	ANKK1(1)
APRT(1)	AQP1(1)	ARSA(1)	ARSB(1)
ART3(1)	ART4(1)	ASPG(1)	ATP11B(1)
ATP7B(1)	AWAT2(1)	BAAT(1)	BAI3(1)
BCO1(1)	BHMT2(1)	BMPR1A(1)	BPI(1)
BRIP1(1)	BTK(1)	BUB1B(1)	CBR1(1)
CDC42BPG(1)	CDKL1(1)	CDKL5(1)	CDYL(1)
CES5A(1)	CHD3(1)	CIT(1)	CLIC2(1)
COMT(1)	COQ5(1)	CPT2(1)	CSGALNACT2(1)
CXCR6(1)	CYB5R3(1)	CYBRD1(1)	CYP11B1(1)
CYP19A1(1)	CYP21A2(1)	CYP27B1(1)	DARC(1)
DARS2(1)	DDX11(1)	DDX4(1)	DDX43(1)
DDX51(1)	DGKK(1)	DHDH(1)	DHX29(1)
DHX58(1)	DOT1L(1)	DRD4(1)	DSE(1)
DUOX1(1)	DUSP11(1)	DUSP15(1)	DUSP21(1)
ENOSF1(1)	ENPP7(1)	ENTPD2(1)	EPHA3(1)
EPHA8(1)	ERBB3(1)	ERCC6L(1)	EXTL1(1)
EYA4(1)	F13A1(1)	F2RL3(1)	FAAH(1)
FADS2(1)	FDPS(1)	FES(1)	FGFR2(1)
FGFR4(1)	FLT4(1)	FTCD(1)	FUT2(1)
FZD6(1)	GAD1(1)	GALNT14(1)	GATM(1)
GBA(1)	GCAT(1)	GFER(1)	GGT6(1)
GJA4(1)	GLO1(1)	GLP2R(1)	GMPR(1)
GNAT3(1)	GPD2(1)	GPR101(1)	GPR110(1)
GPR123(1)	GPR128(1)	GPR39(1)	GPR56(1)
GPR64(1)	GPR88(1)	GPT(1)	GRM1(1)
GRM7(1)	GSTM1(1)	GSTM3(1)	GSTO2(1)
GSTZ1(1)	GUCY2D(1)	H6PD(1)	HACD1(1)
HACD4(1)	HIBCH(1)	HK2(1)	HRH3(1)
HTR2C(1)	HUNK(1)	INPP5J(1)	INPPL1(1)
ISPD(1)	KARS(1)	KCNJ13(1)	KMT2C(1)
KMT5B(1)	L3HYPDH(1)	LETM1(1)	LHCGR(1)
LIPG(1)	LMTK2(1)	LMTK3(1)	LPCAT3(1)
MAN2A2(1)	MAN2B1(1)	MAP2K5(1)	MAP3K5(1)
MAPK10(1)	MCEE(1)	METTL1(1)	MGAT4B(1)
MICAL1(1)	MINK1(1)	MOGAT2(1)	MOGS(1)
MOK(1)	MOV10L(1)	MRGPRE(1)	MRGPRF(1)
MTAP(1)	MTHFD1L(1)	MTHFS(1)	MTNR1B(1)
MTRR(1)	MVD(1)	MYLK3(1)	MYO3A(1)
NAT8B(1)	NDUFS8(1)	NEK9(1)	NEU4(1)
NOX5(1)	NPSR1(1)	NQO1(1)	OAS3(1)
OCA2(1)	ODGH(1)	OPA1(1)	OPLAH(1)
OPN1LW(1)	OPN1MW(1)	OPRK1(1)	OSGEP(1)
OXCT2(1)	P2RY11(1)	PADI1(1)	PADI3(1)
PADI4(1)	PANK4(1)	PAPSS1(1)	PARP14(1)
PCMT1(1)	PEAK1(1)	PEMT(1)	PFKFB2(1)
PHYH(1)	PIK3C2A(1)	PIK3C2G(1)	PIM3(1)
PIP4K2B(1)	PLA2G2C(1)	PLA2G2E(1)	PLA2G4B(1)
PLA2G4D(1)	PLCB4(1)	PLCG1(1)	PLCH2(1)
PLD2(1)	PLD4(1)	PLOD1(1)	PNKP(1)
PNLIPRP2(1)	PNP(1)	PNPLA6(1)	PNPT1(1)
PPA2(1)	PPIAL4E(1)	PPIG(1)	PRDM6(1)
PRDM9(1)	PRKACG(1)	PRKCB(1)	PRMT7(1)
PTPN21(1)	PTPN3(1)	PTPRT(1)	PTRH1(1)
PUDP(1)	PYGB(1)	QRSL1(1)	RFNG(1)
RHBG(1)	RHCE(1)	RIOK2(1)	RNLS(1)
ROS1(1)	RPS6KL1(1)	RRM2(1)	RUVBL2(1)
RYR1(1)	S1PR5(1)	SCLY(1)	SCNN1B(1)
SDC4(1)	SDHA(1)	SDS(1)	SETD2(1)
SGSH(1)	SIAE(1)	SLC11A1(1)	SLC25A13(1)
SLC25A15(1)	SLC25A22(1)	SLC27A5(1)	SLC29A1(1)
SLC35C1(1)	SLC4A2(1)	SMPD1(1)	SMPD3(1)
SOAT2(1)	SOD2(1)	SPEG(1)	SPTLC2(1)
SRMS(1)	ST3GAL4(1)	STK31(1)	STK35(1)
STK36(1)	STYK1(1)	TAAR2(1)	TARSL2(1)

TAS2R19(1)	TAS2R4(1)	TAS2R5(1)	TBK1(1)
TDRD12(1)	TKFC(1)	TM7SF2(1)	TPST2(1)
TRPA1(1)	TRPM4(1)	TRPM6(1)	TRPV2(1)
TSSK2(1)	TTBK2(1)	TYW1B(1)	UCK1(1)
UGT1A5(1)	UGT1A8(1)	UGT2A3(1)	UGT2B11(1)
UGT2B4(1)	UROS(1)	USP10(1)	USP13(1)
USP16(1)	USP30(1)	USP32(1)	USP48(1)
USP9Y(1)	VARS(1)	WARS(1)	WDYHV1(1)
WNK2(1)	WRN(1)	XYLB(1)	XYLT2(1)
ZDHHC19(1)	ZDHHC23(1)	ZDHHC4(1)	AATK(2)
ABCB1(2)	ABCB11(2)	ABCC3(2)	ABCC5(2)
ABCC8(2)	ABCG2(2)	ABHD6(2)	ABO(2)
ACACA(2)	ACAT1(2)	ACAT2(2)	ACER2(2)
ACSBG1(2)	ACSBG2(2)	ACSL1(2)	ACSL3(2)
ACSM2A(2)	ACSM5(2)	ACVRL1(2)	ACY3(2)
ADAT1(2)	ADCY9(2)	ADRA1A(2)	ADRA1B(2)
ADRA1D(2)	ADRA2C(2)	ADRB1(2)	ADSSL1(2)
AGMO(2)	AGPAT4(2)	AHCY(2)	ALDH5A1(2)
ALG6(2)	ALG9(2)	ALOX15B(2)	ALOXE3(2)
ALPI(2)	AMACR(2)	AMDHD1(2)	AMHR2(2)
AOAH(2)	AQP2(2)	AQP8(2)	ATP10D(2)
ATP1A1(2)	ATP1A4(2)	ATP5B(2)	ATP6V0A1(2)
ATP6V1A(2)	ATP8B3(2)	ATP9B(2)	ATRX(2)
AVPR1A(2)	AVPR2(2)	B3GALT6(2)	B4GALNT4(2)
B4GALT6(2)	BCKDHB(2)	BDH1(2)	BDKRB2(2)
BLVRA(2)	BMPR1B(2)	C8A(2)	CA3(2)
CACNA11(2)	CALCR(2)	CAMK1G(2)	CANT1(2)
CASK(2)	CBS(2)	CCRL2(2)	CD38(2)
CDIPT(2)	CDK16(2)	CDK17(2)	CDK8(2)
CDK9(2)	CERS5(2)	CFTR(2)	CHD2(2)
CHIT1(2)	CHRM1(2)	CHST13(2)	CHST7(2)
CHSY1(2)	CKM(2)	CLCN4(2)	CLCN7(2)
CLDN19(2)	CNDP2(2)	COASY(2)	COX7C(2)
CPT1B(2)	CRYZ(2)	CSNK1A1(2)	CSNK1A1L(2)
CSNK1G1(2)	CSNK2A1(2)	CSTB(2)	CTDP1(2)
CXCR3(2)	CYP24A1(2)	CYP27A1(2)	CYP2A13(2)
CYP3A4(2)	CYP4A22(2)	CYP4F12(2)	CYP4Z1(2)
DAO(2)	DAPK1(2)	DCLK2(2)	DCXR(2)
DDX18(2)	DDX27(2)	DDX28(2)	DDX39B(2)
DDX52(2)	DGKI(2)	DGKZ(2)	DHCR24(2)
DHCR7(2)	DHODH(2)	DHRS3(2)	DHX40(2)
DHX9(2)	DLAT(2)	DNA2(2)	DOHH(2)
DPH1(2)	DPYD(2)	DTYMK(2)	DUSP12(2)
DUSP27(2)	DUSP3(2)	DUSP9(2)	EBP(2)
ECI2(2)	EDNRA(2)	ELOVL6(2)	ENTPD3(2)
EPHA10(2)	EPHA4(2)	EPHB3(2)	EPHB6(2)
EPHX1(2)	ERBB2(2)	ERCC2(2)	ERN1(2)
ETNPPL(2)	EYA2(2)	FAAH2(2)	FASN(2)
FGFR3(2)	FLT3(2)	FMO1(2)	FMO2(2)
FMO4(2)	FPR1(2)	FSHR(2)	FUCA2(2)
FXD5(2)	FZD2(2)	FZD3(2)	FZD7(2)
G6PC2(2)	GAA(2)	GABBR2(2)	GAD2(2)
GADL1(2)	GALNT4(2)	GALNT5(2)	GALNT8(2)
GBA3(2)	GFPT1(2)	GJB1(2)	GK(2)
GLP1R(2)	GLRA1(2)	GLRA3(2)	GMPPA(2)
GNPDA1(2)	GPER1(2)	GPR111(2)	GPR113(2)
GPR116(2)	GPR125(2)	GPR135(2)	GPR173(2)
GPR35(2)	GPR45(2)	GPR97(2)	GPRC5B(2)
GPRC5C(2)	GPX7(2)	GSTA4(2)	GSTM4(2)
GYG2(2)	HAAO(2)	HADHB(2)	HAL(2)
HCRTR1(2)	HELB(2)	HEPH(2)	HIBADH(2)
HK3(2)	HMGCLL1(2)	HNMT(2)	HPGD(2)
HPRT1(2)	HPX(2)	HS3ST3A1(2)	HSD11B1(2)
HSD17B1(2)	HSD3B1(2)	HTR1B(2)	HYAL2(2)
IDO1(2)	IDS(2)	IGHMBP2(2)	INMT(2)
INPP4A(2)	IRAK2(2)	IRAK3(2)	ISYNA1(2)
IVD(2)	IYD(2)	JAK1(2)	JOSD2(2)
KAT6B(2)	KCND2(2)	KCNK3(2)	KCNQ2(2)
KCNS1(2)	KDM8(2)	KL(2)	KMT2B(2)
KSR2(2)	LAP3(2)	LARS2(2)	LATS2(2)
LDHA(2)	LDHAL6B(2)	LDHD(2)	LFNG(2)
LGR6(2)	LHPP(2)	LIMK2(2)	LIPF(2)
LPCAT1(2)	LPHN2(2)	LPIN2(2)	LSS(2)
LTA4H(2)	MAN2B2(2)	MAOA(2)	MAP2K3(2)
MAP3K1(2)	MAP3K15(2)	MAP3K19(2)	MAP3K8(2)
MAP4K3(2)	MAPK4(2)	MAST2(2)	MAST3(2)
MCAT(2)	MCHR1(2)	MDH2(2)	ME1(2)
ME2(2)	MFN2(2)	MGST1(2)	MGST3(2)

MICAL3(2)	MMAB(2)	MOGAT3(2)	MTCH1(2)
MTHFR(2)	MTMR1(2)	MTMR8(2)	MTOR(2)
MYBBP1A(2)	NANS(2)	NARS(2)	NAT8(2)
NDUFS7(2)	NEU2(2)	NME3(2)	NMT2(2)
NNT(2)	NPC1(2)	NPL(2)	NSD1(2)
NT5E(2)	NUAK1(2)	NUDT12(2)	NUDT14(2)
OAS1(2)	OAS2(2)	OPN4(2)	OTUD3(2)
OXER1(2)	OXSR1(2)	P2RY1(2)	P2RY2(2)
P2RY6(2)	PAH(2)	PANX1(2)	PAPD7(2)
PAPOLB(2)	PAPOLG(2)	PARP10(2)	PARP9(2)
PARS2(2)	PCBD1(2)	PDE10A(2)	PDE4B(2)
PDE5A(2)	PDE7B(2)	PDGFRB(2)	PDHA1(2)
PDK3(2)	PDP2(2)	PEX6(2)	PFAS(2)
PFKFB3(2)	PGP(2)	PHYKPL(2)	PI4K2B(2)
PIGA(2)	PIP5K1C(2)	PKN1(2)	PLA2G2D(2)
PLB1(2)	PLCG2(2)	PLK4(2)	PNPLA2(2)
POFUT1(2)	POLI(2)	POMT1(2)	POMT2(2)
PON1(2)	PPIE(2)	PPIF(2)	PPM1G(2)
PPP1CB(2)	PPT2(2)	PRDM7(2)	PRKAA1(2)
PRKCD(2)	PRKCQ(2)	PRKD1(2)	PRKG2(2)
PRPS1(2)	PSEN2(2)	PTEN(2)	PTGER1(2)
PTGES(2)	PTGES3(2)	PTP4A2(2)	PTP4A3(2)
PTPN18(2)	PTPN22(2)	PTPRB(2)	PTPRC(2)
PTPRH(2)	PTPRJ(2)	PTPRK(2)	PTPRZ1(2)
PXDN(2)	QDPR(2)	RET(2)	REV3L(2)
RGN(2)	RHD(2)	RHO(2)	ROCK2(2)
RPEL1(2)	RPS6KA3(2)	RPS6KB2(2)	RTCB(2)
RYR2(2)	S1PR4(2)	SARS(2)	SBK3(2)
SCD5(2)	SETD7(2)	SIK1(2)	SLC12A2(2)
SLC25A10(2)	SLC25A14(2)	SLC27A2(2)	SLC28A2(2)
SLC2A2(2)	SLC2A5(2)	SLC30A3(2)	SLC35D1(2)
SLC38A3(2)	SLC39A2(2)	SLC43A1(2)	SLC6A1(2)
SLC9A7(2)	SLCO1B1(2)	SMARCAD1(2)	SMS(2)
SPTLC1(2)	SRC(2)	SRP72(2)	SSTR4(2)
ST3GAL6(2)	ST6GAL2(2)	ST6GALNAC1(2)	STARD3(2)
STK17A(2)	STK32B(2)	TAAR3(2)	TACR3(2)
TAS1R2(2)	TAS2R16(2)	TAS2R20(2)	TAS2R30(2)
TAS2R38(2)	TAS2R43(2)	TAS2R46(2)	TAS2R50(2)
TDRD9(2)	TGM4(2)	TGM5(2)	TGM7(2)
TRIO(2)	TRMT12(2)	TRPC5(2)	TRPM5(2)
TTK(2)	TTYH3(2)	UCP1(2)	UGP2(2)
UGT2B15(2)	UGT2B17(2)	UPB1(2)	UROC1(2)
USP11(2)	USP15(2)	USP17L2(2)	USP18(2)
USP36(2)	USP44(2)	USP47(2)	USP9X(2)
UXS1(2)	VCIPI1(2)	WEE1(2)	XCR1(2)
XDH(2)	YTHDC2(2)	ZDHHC11B(2)	ZDHHC7(2)
ZDHHC9(2)	AACS(3)	AADAC(3)	ACADM(3)
ACOX1(3)	ACP6(3)	ACSM2B(3)	ACSS1(3)
ADCY3(3)	AKR1B10(3)	AKR1C3(3)	ALDH3A1(3)
ALOX12(3)	ALPP(3)	ALPPL2(3)	ANPEP(3)
ANXA6(3)	ART5(3)	ASNS(3)	ATP11A(3)
ATP1A3(3)	ATP6V0A4(3)	ATP8B4(3)	ATR(3)
AURKB(3)	B3GNT3(3)	B4GALNT1(3)	BRSK2(3)
CACNA1C(3)	CACNA1H(3)	CASR(3)	CBR3(3)
CDC42BPA(3)	CDYL2(3)	CELSR1(3)	CERS4(3)
CHDH(3)	CHEK1(3)	CHSY3(3)	CHUK(3)
CLC(3)	CLDN7(3)	CMTR2(3)	COQ2(3)
CPS1(3)	CSGALNACT1(3)	CSNK2A3(3)	CX3CR1(3)
CYB5R2(3)	CYP11B2(3)	CYP1B1(3)	CYP2A7(3)
CYP2C8(3)	CYP2F1(3)	CYP3A43(3)	CYSLTR1(3)
DBT(3)	DDX31(3)	DECR2(3)	DEFA1(3)
DGKA(3)	DGKG(3)	DMGDH(3)	DRD3(3)
DSTYK(3)	DUSP13(3)	DUSP5(3)	EARS2(3)
ECHS1(3)	EIF2AK1(3)	EIF2AK3(3)	EMR1(3)
EMR2(3)	EMR3(3)	ENO3(3)	ENPP1(3)
EPHA6(3)	ETFDH(3)	FARSB(3)	FBP2(3)
FUT3(3)	FUT5(3)	FUT6(3)	FUT9(3)
GALC(3)	GALNTL5(3)	GALNTL6(3)	GBE1(3)
GHRHR(3)	GJA3(3)	GK5(3)	GLCE(3)
GNA15(3)	GOT2(3)	GPAM(3)	GPLD1(3)
GPR112(3)	GPR126(3)	GPR144(3)	GPR153(3)
GPR156(3)	GPR158(3)	GPR19(3)	GPR20(3)
GPR37L1(3)	GPR50(3)	GPR78(3)	GPR98(3)
GPRC6A(3)	GPX8(3)	GYS2(3)	HADH(3)
HAS1(3)	HCAR3(3)	HEXA(3)	HEXB(3)
HGD(3)	HSD17B12(3)	HSD17B4(3)	HTR2A(3)
IDNK(3)	IP6K3(3)	IRAK1(3)	KCNK17(3)
KCNMB3(3)	KISS1R(3)	L2HGDH(3)	LCT(3)

LPCAT2(3)	LPIN1(3)	LRRK1(3)	LRRK2(3)
MANBA(3)	MCCC1(3)	MECR(3)	MERTK(3)
MTMR2(3)	MUT(3)	MYO3B(3)	NAGLU(3)
NAV2(3)	NDUFV2(3)	NME4(3)	NQO2(3)
NRK(3)	NT5C3B(3)	OPRM1(3)	OTUD7A(3)
PAFAH1B2(3)	PAOX(3)	PARP8(3)	PCYT1A(3)
PDE3A(3)	PDE6C(3)	PFKM(3)	PGM1(3)
PGM2L1(3)	PIN4(3)	PKD1(3)	PLA2G3(3)
PLA2G4C(3)	PLA2G4F(3)	PLA2G7(3)	PPCDC(3)
PRDM2(3)	PRDX5(3)	PRKCG(3)	PRKX(3)
PRPF4B(3)	PRPS1L1(3)	PSTK(3)	PTGR1(3)
PTH2R(3)	PTPN12(3)	PTPRQ(3)	PTPRR(3)
RARS(3)	RECQL5(3)	RIPK4(3)	RPS6KA2(3)
RTEL1(3)	SAG(3)	SARDH(3)	SCN1A(3)
SCN5A(3)	SCNN1A(3)	SEC63(3)	SI(3)
SLC11A2(3)	SLC16A1(3)	SLC18A1(3)	SLC19A1(3)
SLC25A5(3)	SLC34A3(3)	SLC37A1(3)	SLC4A11(3)
SLC6A3(3)	SPHK1(3)	SRP14(3)	SUCLA2(3)
SULT1A1(3)	TAOK3(3)	TAS1R3(3)	TAS2R10(3)
TAS2R13(3)	TAS2R31(3)	TAS2R42(3)	TAS2R8(3)
TAS2R9(3)	TGM6(3)	TMEM86B(3)	TPO(3)
TRPM2(3)	TRPV6(3)	UCP2(3)	UGT1A4(3)
UGT2B28(3)	ULK2(3)	USP24(3)	USP29(3)
USP40(3)	USP42(3)	USP6(3)	VNN1(3)
ZC3HAV1(3)	AAK1(4)	AARS2(4)	ABCA2(4)
ABCC2(4)	ABCC6(4)	ABCG8(4)	ACLY(4)
ADH1B(4)	ADH4(4)	ADH6(4)	AHNAK(4)
AK5(4)	AKR1C1(4)	AKR1C4(4)	ALDH3B2(4)
ALG10B(4)	ALK(4)	ASAH1(4)	ATM(4)
ATP2C2(4)	ATP4A(4)	ATP4B(4)	ATP7A(4)
AURKA(4)	AXL(4)	B3GNT4(4)	BCO2(4)
BCR(4)	C5AR1(4)	CALCRL(4)	CATSPER1(4)
CDK11A(4)	CERS3(4)	CHAT(4)	CHD1L(4)
CHD9(4)	CHIA(4)	CHPF(4)	CLCN1(4)
CLIC6(4)	CNDP1(4)	COQ3(4)	COX4I1(4)
CP(4)	CRAT(4)	CTDSP1(4)	CTNS(4)
CYP3A7(4)	CYP4A11(4)	CYP4F11(4)	CYP8B1(4)
D2HGDH(4)	DCP2(4)	DDC(4)	DDR2(4)
DDX60L(4)	DEGS2(4)	DHTKD1(4)	DHX37(4)
DNTT(4)	DUOX2(4)	DUSP6(4)	EIF2AK4(4)
ENPP2(4)	ENTPD8(4)	EPHA1(4)	EPRS(4)
F2RL1(4)	FBP1(4)	FFAR1(4)	FPGS(4)
GALR1(4)	GANC(4)	GARS(4)	GART(4)
GCNT2(4)	GDPGP1(4)	GLB1(4)	GLYAT(4)
GMPPB(4)	GNS(4)	GPR142(4)	GPR148(4)
GPR174(4)	GPR31(4)	GPR62(4)	GSTA2(4)
GSTA5(4)	GUCY2C(4)	GUCY2F(4)	HAO2(4)
HCAR1(4)	HCRTR2(4)	HELQ(4)	HFM1(4)
HK1(4)	HKDC1(4)	HPD(4)	HPSE(4)
HSD17B2(4)	HYI(4)	IDUA(4)	IFIH1(4)
INPP1(4)	INPP5B(4)	KAT7(4)	KCNJ5(4)
LARS(4)	LIPC(4)	LIPT2(4)	MAPK11(4)
MARK3(4)	MAST4(4)	MB21D1(4)	MCM4(4)
MCM9(4)	MFN1(4)	MGAM(4)	MGAT1(4)
MKNK1(4)	MOCOS(4)	MRGPRX3(4)	MRGPRX4(4)
MST1R(4)	MTHFD1(4)	MTMR7(4)	N6AMT1(4)
NAALADL2(4)	NADSYN1(4)	NARS2(4)	NAT2(4)
NEK11(4)	NMUR2(4)	NTSR2(4)	OBSCN(4)
OPRD1(4)	P2RX7(4)	P2RY13(4)	PANK2(4)
PARP1(4)	PARP3(4)	PARP4(4)	PCK2(4)
PDE11A(4)	PDE1C(4)	PDE2A(4)	PDE6B(4)
PEX16(4)	PIKFYVE(4)	PKD2(4)	PLA2G4A(4)
PNLIPRP3(4)	PNPLA3(4)	PNPLA7(4)	POLQ(4)
POLR1A(4)	PPEF2(4)	PPM1J(4)	PRKCA(4)
PRKD2(4)	PRLHR(4)	PRMT3(4)	PTGDR2(4)
PTGER3(4)	PTGS1(4)	PTPRF(4)	PTPRN2(4)
PTPRS(4)	QPRT(4)	RECQL4(4)	ROR2(4)
RXFP4(4)	SBK2(4)	SCN4A(4)	SCN9A(4)
SETDB2(4)	SHPK(4)	SIRT6(4)	SLC10A2(4)
SLC12A3(4)	SLC17A4(4)	SLC18A3(4)	SLC23A1(4)
SLC26A2(4)	SLC28A1(4)	SLC2A9(4)	SLC39A14(4)
SORD(4)	SPTLC3(4)	TACR2(4)	TAS1R1(4)
TBXA2R(4)	TBXAS1(4)	TEK(4)	TGM3(4)
TNK1(4)	TREH(4)	TRMT5(4)	TRNT1(4)
TRPV3(4)	TSHR(4)	TTN(4)	UGT2A1(4)
UGT2B7(4)	UGT8(4)	UQCRFS1(4)	USP2(4)
USP34(4)	USP35(4)	USP37(4)	USP45(4)
WNK1(4)	ZDHHC12(4)	ZDHHC13(4)	AGA(5)

AGXT2(5)
ASCC3(5)
ATP8B1(5)
ITPKB(5)
NOX4(5)
TXNRD2(5)
ZDHHC11(5)

AK7(5)
ASH1L(5)
CA6(5)
MAN1B1(5)
PCK1(5)
ULK1(5)
CNR2(6)

ALDH1B1(5)
ATP10B(5)
ENTPD6(5)
MAP3K4(5)
PLCE1(5)
ULK4(5)
MTMR6(6)

AOC1(5)
ATP11C(5)
INSR(5)
MYLK(5)
SULT1A2(5)
VNN2(5)