

Article

# Exploring mechanism of Fuling Gancao decoction against functional dyspepsia using network pharmacology, molecular docking, and molecular dynamics simulation

## Supplementary material 1

**Table S1.** The potential constituents of FGD.

No.	Compound name	OB (%)	DL	Source
C1	Peroxyergosterol	44.39	0.82	GZ
C2	Dihydrocapsaicin	47.07	0.19	SJ
C3	6-methylgingediacetate2	48.73	0.32	SJ
C4	Dehydroglyasperins C	53.82	0.37	GC
C5	Xambioona	54.85	0.87	GC
C6	Phaseol	78.77	0.58	GC
C7	Odoratin	49.95	0.3	GC
C8	18 $\alpha$ -Hydroxyglycyrrhetic acid	41.16	0.71	GC
C9	Licoagroisoflavone	57.28	0.49	GC
C10	Glycyrrhiza flavonol A	41.28	0.6	GC
C11	Glyasperins M	72.67	0.59	GC
C12	Licoagrocarpin	58.81	0.58	GC
C13	Gancaonin H	50.1	0.78	GC
C14	Gancaonin G	60.44	0.39	GC
C15	Gadelaidic acid	30.7	0.2	GC
C16	8-Prenylated eriodictyol	53.79	0.4	GC
C17	7-Acetoxy-2-methylisoflavone	38.92	0.26	GC
C18	7, 2', 4'-Trihydroxy-5-methoxy-3-aryl coumarin	83.71	0.27	GC
C19	6-Prenylated eriodictyol	39.22	0.41	GC
C20	Kanzonol F	32.47	0.89	GC
C21	Icos-5-enoic acid	30.7	0.2	GC
C22	Inflacoumarin A	39.71	0.33	GC
C23	4'-Methoxyglabridin	36.21	0.52	GC
C24	3'-Methoxyglabridin	46.16	0.57	GC
C25	3'-Hydroxy-4'-O-Methylglabridin	43.71	0.57	GC
C26	Quercetin 3, 3'-dimethyl ether	46.45	0.33	GC
C27	1-Methoxyphaseollidin	69.98	0.64	GC
C28	Isoformononetin	38.37	0.21	GC
C29	Isolicoflavonol	45.17	0.42	GC
C30	Isoglycyrol	44.7	0.84	GC
C31	Isobavachin	36.57	0.32	GC
C32	(2R)-7-hydroxy-2-(4-hydroxyphenyl) chroman-4-one	71.12	0.18	GC
C33	Sigmoidin-B	34.88	0.41	GC

**Table S1.** (Continued).

No.	Compound name	OB (%)	DL	Source
C34	(-)-Medicocarpin	40.99	0.95	GC
C35	Glycyroside	37.25	0.79	GC
C36	Eurycarpin A	43.28	0.37	GC
C37	1, 3-Dihydroxy-8,9-dimethoxy-6-benzofurano [3, 2-c] chromenone	62.9	0.53	GC
C38	1, 3-Dihydroxy-9-methoxy-6-benzofurano [3, 2-c] chromenone	48.14	0.43	GC
C39	Glabrone	52.51	0.5	GC
C40	Glabrene	46.27	0.44	GC
C41	Glabranin	52.9	0.31	GC
C42	Glabridin	53.25	0.47	GC
C43	Glyzaglabrin	61.07	0.35	GC
C44	3, 22-Dihydroxy-11-oxo-delta (12)-oleanene-27-alpha-methoxycarbonyl-29-oic acid	34.32	0.55	GC
C45	Licopyranocoumarin	80.36	0.65	GC
C46	Liquiritin	65.69	0.74	GC
C47	(E)-3-[3,4-dihydroxy-5-(3-methylbut-2-enyl) phenyl]-1-(2, 4-dihydroxyphenyl) prop-2-en-1-one	46.27	0.31	GC
C48	Shinpterocarpin	80.3	0.73	GC
C49	Licoisoflavanone	52.47	0.54	GC
C50	Licoisoflavone B	38.93	0.55	GC
C51	Licoisoflavone A	41.61	0.42	GC
C52	Licocoumarone	33.21	0.36	GC
C53	Glycyrin	52.61	0.47	GC
C54	Gancaonin O	44.15	0.41	GC
C55	5, 7-Dihydroxy-3-(4-methoxyphenyl)-8-(3-methylbut-2-enyl) chromone	30.49	0.41	GC
C56	Gancaonin L	66.37	0.41	GC
C57	Licorice glycoside E	32.89	0.27	GC
C58	Gancaonin B	48.79	0.45	GC
C59	Gancaonin A	51.08	0.4	GC
C60	Licoricone	63.58	0.47	GC
C61	Licoarylcoumarin	59.62	0.43	GC
C62	Licochalcone G	49.25	0.32	GC
C63	Licochalcone B	76.76	0.19	GC
C64	Kanzonol U	58.44	0.38	GC
C65	Glypallichalcone	61.6	0.19	GC
C66	Phaseolinisoflavan	32.01	0.45	GC
C67	Glepidotin B	64.46	0.34	GC
C68	Glepidotin A	44.72	0.35	GC
C69	Semilicoisoflavone B	48.78	0.55	GC
C70	(2S)-6-(2, 4-dihydroxyphenyl)-2-(2-hydroxypropan-2-yl)-4-methoxy-2, 3-dihydrofuro [3, 2-g] chromen-7-one	60.25	0.63	GC
C71	Kanzonols W	50.48	0.52	GC
C72	Kanzonol B	39.62	0.35	GC

**Table S1.** (Continued).

No.	Compound name	OB (%)	DL	Source
C73	Isotrifoliol	31.94	0.42	GC
C74	Glyasperin C	45.56	0.4	GC
C75	Glyasperin F	75.84	0.54	GC
C76	Glyasperin B	65.22	0.44	GC
C77	Euchrenone	30.29	0.57	GC
C78	(2S)-2-[4-hydroxy-3-(3-methylbut-2-enyl) phenyl]-8, 8-dimethyl-2, 3-dihydropyrano [2, 3-f] chromen-4-one	31.79	0.72	GC
C79	Taxifolin	57.84	0.27	GZ
C80	Naringenin	59.29	0.21	GC
C81	7-Methoxy-2-methyl isoflavone	42.56	0.2	GC
C82	Lupiwighteone	51.64	0.37	GC
C83	Pinocembrin	64.72	0.18	GC
C84	Medicarpin	49.22	0.34	GC
C85	Glycyrol	90.78	0.67	GC
C86	Liquiritigenin	32.76	0.18	GC
C87	Poriferast-5-en-3beta-ol	36.91	0.75	SJ
C88	(-)-taxifolin	60.51	0.27	GZ
C89	Inermine	75.18	0.54	GC
C90	Vestitol	74.66	0.21	GC
C91	Licochalcone A	40.79	0.29	GC
C92	(+)-catechin	54.83	0.24	GZ
C93	Stigmasterol	43.83	0.76	SJ
C94	Kaempferol	41.88	0.24	GC
C95	Calycosin	47.75	0.24	GC
C96	Formononetin	69.67	0.21	GC
C97	Sitosterol	36.91	0.75	GC, GZ
C98	Beta-sitosterol	36.91	0.75	GZ, SJ
C99	Isorhamnetin	49.6	0.31	GC
C100	Dehydroeburicoic acid	44.17	0.83	FL
C101	Hederagenin	36.91	0.75	FL
C102	Poricoic acid C	38.15	0.75	FL
C103	Poricoic acid B	30.52	0.75	FL
C104	Poricoic acid A	30.61	0.76	FL
C105	Pachymic acid	33.63	0.81	FL
C106	Eburicoic acid	38.7	0.81	FL
C107	(2R)-2-[(5R, 10S, 13R, 14R, 16R, 17R)-16-hydroxy-3-keto-4, 4, 10, 13, 14-pentamethyl-1, 2, 5, 6, 12, 15, 16, 17-octahydrocyclopenta[a]phenanthren-17-yl]-5-isopropyl-hex-5-enoic acid	38.26	0.82	FL
C108	Ergosterol peroxide	40.36	0.81	FL
C109	Ergosta-7, 22E-dien-3beta-ol	43.51	0.72	FL
C110	Dehydrotumulosic acid	31.07	0.82	FL
C111	Cerevisterol	37.96	0.77	FL

**Table S1.** (Continued).

No.	Compound name	OB (%)	DL	Source
C112	Dehydropachymic acid	35.11	0.81	FL
C113	Trametenolic acid	38.71	0.8	FL
C114	(2R)-2-[(3S, 5R, 10S, 13R, 14R, 16R, 17R)-3,16-dihydroxy-4, 4, 10, 13, 14-pentamethyl-2, 3, 5, 6, 12, 15, 16, 17-octahydro-1H-cyclopenta[a]phenanthren-17-yl]-6-methylhept-5-enoic acid	30.93	0.81	FL
C115	Jaranol	50.83	0.29	GC
C116	Mairin	55.38	0.78	GC
C117	Quercetin	46.43	0.28	GC
C118	Ent-Epicatechin	48.96	0.24	GZ

**Table S2.** The details of compound targets.

Common name	Source	Common name	Source
ABCB1	Swiss targetprediction	HMGCR	Swiss targetprediction, PharmMapper
ABCC1	Swiss targetprediction	HMOX1	PharmMapper
ABCD2	PharmMapper	HNF4G	PharmMapper
ABCG2	Swiss targetprediction	HNMT	PharmMapper
ABL1	PharmMapper	HPGDS	PharmMapper
ABO	PharmMapper	HPN	PharmMapper
ACADM	PharmMapper	HPRT1	PharmMapper
ACAT1	PharmMapper	HRAS	PharmMapper
ACHE	Swiss targetprediction	HSD11B1	Swiss targetprediction, PharmMapper
ACPP	PharmMapper	HSD17B1	Swiss targetprediction, PharmMapper
ADAM17	PharmMapper	HSD17B2	Swiss targetprediction
ADAM33	PharmMapper	HSP90AA1	PharmMapper
ADH1C	PharmMapper	HSP90AB1	PharmMapper
ADH5	PharmMapper	HSPA8	PharmMapper
ADK	PharmMapper	IGF1	PharmMapper
ADORA1	Swiss targetprediction	IGF1R	Swiss targetprediction, PharmMapper
ADORA2A	Swiss targetprediction	IL2	Swiss targetprediction, PharmMapper
ADORA3	Swiss targetprediction	IMPA1	PharmMapper
AHR	Swiss targetprediction	INSR	Swiss targetprediction, PharmMapper
AKR1A1	Swiss targetprediction	ITGAL	PharmMapper
AKR1B1	Swiss targetprediction	ITK	PharmMapper
AKR1B10	Swiss targetprediction	ITPKA	PharmMapper
AKR1C1	Swiss targetprediction, PharmMapper	JAK2	PharmMapper
AKR1C2	Swiss targetprediction	JAK3	PharmMapper
AKR1C3	Swiss targetprediction, PharmMapper	KAT2B	PharmMapper
AKR1C4	Swiss targetprediction	KDM4E	Swiss targetprediction
AKT1	Swiss targetprediction	KDR	Swiss targetprediction, PharmMapper
ALB	PharmMapper	KIF11	PharmMapper
ALDH2	PharmMapper	KIF5B	PharmMapper

**Table S2.** (Continued).

Common name	Source	Common name	Source
ALDOA	PharmMapper	KIT	PharmMapper
ALK	Swiss targetprediction	LCK	PharmMapper
ALOX12	Swiss targetprediction	LCN2	PharmMapper
ALOX15	Swiss targetprediction	LGALS2	PharmMapper
ALOX5	Swiss targetprediction	LGALS3	PharmMapper
AMD1	PharmMapper	LGALS7	PharmMapper
AMY1A	PharmMapper	LSS	PharmMapper
AMY2A	PharmMapper	LTA4H	PharmMapper
ANG	PharmMapper	MAOA	Swiss targetprediction, PharmMapper
ANXA5	PharmMapper	MAOB	Swiss targetprediction, PharmMapper
APEX1	Swiss targetprediction	MAP2K1	PharmMapper
AR	Swiss targetprediction, PharmMapper	MAPK10	PharmMapper
ARG1	Swiss targetprediction	MAPK14	PharmMapper
ARHGAP1	PharmMapper	MAPK8	PharmMapper
ARL5B	PharmMapper	MAPKAPK2	PharmMapper
ATIC	PharmMapper	MAPT	Swiss targetprediction
AURKA	PharmMapper	MDM2	PharmMapper
AURKB	Swiss targetprediction	MET	Swiss targetprediction, PharmMapper
AVPR2	Swiss targetprediction	METAP2	PharmMapper
AXL	Swiss targetprediction	MME	PharmMapper
B3GAT1	PharmMapper	MMP12	PharmMapper
BACE1	Swiss targetprediction, PharmMapper	MMP13	Swiss targetprediction, PharmMapper
BCHE	PharmMapper	MMP2	Swiss targetprediction, PharmMapper
BCL2L1	PharmMapper	MMP3	Swiss targetprediction, PharmMapper
BHMT	PharmMapper	MMP8	PharmMapper
BIRC7	PharmMapper	MMP9	Swiss targetprediction
BLVRB	PharmMapper	MPG	Swiss targetprediction
BMP2	PharmMapper	MPO	Swiss targetprediction
BRAF	PharmMapper	MTAP	PharmMapper
BST1	PharmMapper	MYLK	Swiss targetprediction
BTK	PharmMapper	NEK2	Swiss targetprediction
CA1	Swiss targetprediction, PharmMapper	NEK6	Swiss targetprediction
CA12	Swiss targetprediction	NMNAT1	PharmMapper
CA13	Swiss targetprediction	NOS2	Swiss targetprediction, PharmMapper
CA14	Swiss targetprediction	NOX4	Swiss targetprediction
CA2	Swiss targetprediction, PharmMapper	NPC1L1	Swiss targetprediction
CA3	Swiss targetprediction	NPPA	PharmMapper
CA4	Swiss targetprediction	NQO1	PharmMapper
CA5A	Swiss targetprediction	NQO2	PharmMapper
CA6	Swiss targetprediction	NR1H2	PharmMapper
CA7	Swiss targetprediction	NR1H3	Swiss targetprediction, PharmMapper

**Table S2.** (Continued).

Common name	Source	Common name	Source
CA9	Swiss targetprediction	NR1H4	PharmMapper
CALM1	PharmMapper	NR1I2	PharmMapper
CAMK2B	Swiss targetprediction	NR1I3	PharmMapper
CASP1	PharmMapper	NR3C1	PharmMapper
CASP3	PharmMapper	NR3C2	PharmMapper
CASP7	PharmMapper	NT5M	PharmMapper
CBR1	Swiss targetprediction, PharmMapper	NUAK1	Swiss targetprediction
CBS	PharmMapper	OAT	PharmMapper
CCL5	PharmMapper	ODC1	Swiss targetprediction
CCNA2	PharmMapper	OTC	PharmMapper
CCNB1	Swiss targetprediction	PADI4	PharmMapper
CCNB2	Swiss targetprediction	PAH	PharmMapper
CCNB3	Swiss targetprediction	PAK5	PharmMapper
CCNT1	PharmMapper	PAPSS1	PharmMapper
CD1A	PharmMapper	PARP1	PharmMapper
CD209	PharmMapper	PCK1	PharmMapper
CD81	Swiss targetprediction	PCTP	PharmMapper
CDK1	Swiss targetprediction	PDE3B	PharmMapper
CDK2	Swiss targetprediction, PharmMapper	PDE4B	PharmMapper
CDK5	Swiss targetprediction	PDE4D	PharmMapper
CDK5R1	Swiss targetprediction	PDE5A	PharmMapper
CDK6	Swiss targetprediction, PharmMapper	PDK2	PharmMapper
CDK7	PharmMapper	PDPK1	PharmMapper
CES1	PharmMapper	PGF	PharmMapper
CFB	PharmMapper	PGR	PharmMapper
CHEK1	PharmMapper	PIK3CG	Swiss targetprediction
CHIT1	PharmMapper	PIK3R1	Swiss targetprediction, PharmMapper
CLK1	PharmMapper	PIM1	Swiss targetprediction, PharmMapper
CRABP2	PharmMapper	PITPNA	PharmMapper
CSNK1G2	PharmMapper	PKN1	Swiss targetprediction
CSNK2A1	Swiss targetprediction	PLA2G10	PharmMapper
CTNNA1	PharmMapper	PLA2G1B	Swiss targetprediction
CTSB	PharmMapper	PLA2G2A	PharmMapper
CTSF	PharmMapper	PLAU	PharmMapper
CXCR1	Swiss targetprediction	PLK1	Swiss targetprediction, PharmMapper
CYP19A1	Swiss targetprediction	PNMT	PharmMapper
CYP1B1	Swiss targetprediction	POLB	Swiss targetprediction
CYP2C8	PharmMapper	PPARA	PharmMapper
CYP2C9	PharmMapper	PPARD	PharmMapper
CYP51A1	Swiss targetprediction	PPARG	PharmMapper
DAPK1	Swiss targetprediction	PPP1CC	PharmMapper

**Table S2.** (Continued).

Common name	Source	Common name	Source
DCK	PharmMapper	PPP5C	PharmMapper
DDX6	PharmMapper	PRKACA	PharmMapper
DHFR	PharmMapper	PROCR	PharmMapper
DHODH	PharmMapper	PTGES	Swiss targetprediction
DPEP1	PharmMapper	PTK2	Swiss targetprediction, PharmMapper
DPP4	PharmMapper	PTPN1	Swiss targetprediction, PharmMapper
DRD4	Swiss targetprediction	PTPN11	PharmMapper
EGFR	Swiss targetprediction, PharmMapper	PTPRS	Swiss targetprediction
EIF4E	PharmMapper	PYGL	Swiss targetprediction, PharmMapper
ELANE	PharmMapper	RAB5A	PharmMapper
EPHA2	PharmMapper	RAB9A	PharmMapper
EPHX2	PharmMapper	RARA	PharmMapper
ERBB4	PharmMapper	RARB	PharmMapper
ERI1	PharmMapper	RARG	PharmMapper
ESR1	Swiss targetprediction, PharmMapper	RBP4	PharmMapper
ESR2	Swiss targetprediction, PharmMapper	REN	PharmMapper
ESRRA	Swiss targetprediction, PharmMapper	RHOA	PharmMapper
ESRRG	PharmMapper	RNASE3	PharmMapper
ETFDH	PharmMapper	RNASE4	PharmMapper
F10	PharmMapper	RORA	PharmMapper
F11	PharmMapper	RXRA	PharmMapper
F2	Swiss targetprediction, PharmMapper	S100A9	PharmMapper
F7	PharmMapper	SAE1	Swiss targetprediction
FABP3	PharmMapper	SDS	PharmMapper
FABP4	PharmMapper	SEC14L2	PharmMapper
FABP6	PharmMapper	SELE	PharmMapper
FABP7	PharmMapper	SERPINA1	PharmMapper
FECH	PharmMapper	SETD7	PharmMapper
FGFR1	PharmMapper	SHBG	Swiss targetprediction, PharmMapper
FGFR2	PharmMapper	SHMT1	PharmMapper
FGG	PharmMapper	SLC22A12	Swiss targetprediction
FHIT	PharmMapper	SOD2	PharmMapper
FKBP1A	PharmMapper	SORD	PharmMapper
FKBP1B	PharmMapper	SPR	PharmMapper
FKBP3	PharmMapper	SRC	Swiss targetprediction, PharmMapper
FLT3	Swiss targetprediction	SULT1E1	PharmMapper
FOLH1	PharmMapper	SULT2A1	PharmMapper
GALE	PharmMapper	SULT2B1	PharmMapper
GALK1	PharmMapper	SYK	Swiss targetprediction, PharmMapper
GART	PharmMapper	TEK	PharmMapper
GC	PharmMapper	TGFB2	PharmMapper

**Table S2.** (Continued).

Common name	Source	Common name	Source
GCDH	PharmMapper	TGFBR1	PharmMapper
GCK	PharmMapper	TGM3	PharmMapper
GLO1	Swiss targetprediction, PharmMapper	THRA	PharmMapper
GM2A	PharmMapper	THRB	PharmMapper
GMPR	PharmMapper	TK1	PharmMapper
GMPR2	PharmMapper	TNK2	PharmMapper
GNPDA1	PharmMapper	TNNC1	PharmMapper
GP1BA	PharmMapper	TOP2A	Swiss targetprediction
GPI	PharmMapper	TPI1	PharmMapper
GPR35	Swiss targetprediction	TPSB2	PharmMapper
GRB2	PharmMapper	TRAPPC3	PharmMapper
GSK3B	Swiss targetprediction, PharmMapper	TREM1	PharmMapper
GSR	PharmMapper	TRPV1	Swiss targetprediction
GSTA1	PharmMapper	TTPA	PharmMapper
GSTA3	PharmMapper	TTR	PharmMapper
GSTM1	PharmMapper	TYMS	PharmMapper
GSTM2	PharmMapper	TYR	Swiss targetprediction
GSTP1	PharmMapper	UBA2	Swiss targetprediction
GSTT2	PharmMapper	UCK2	PharmMapper
GSTT2B	PharmMapper	UMPS	PharmMapper
GSTZ1	PharmMapper	VDR	PharmMapper
HADH	PharmMapper	WAS	PharmMapper
HAGH	PharmMapper	XDH	Swiss targetprediction
HCK	PharmMapper	XIAP	PharmMapper
HDAC8	PharmMapper	YARS	PharmMapper
HEXB	PharmMapper	ZAP70	PharmMapper
HK1	PharmMapper		

**Table S3.** The detailed information of disease targets.

Gene Name	Source	Gene Name	Source	Gene Name	Source
ZNRD1ASP	GeneCards	NDUFS1	GeneCards	GH2	GeneCards
ZNF451	GeneCards	NDUFB9	GeneCards	GH1	GeneCards
ZMAT1	GeneCards	NDUFA13	GeneCards	GGTLC3	GeneCards
ZFX	GeneCards	NCRUPAR	GeneCards	GGT2	GeneCards
ZFAS1	GeneCards	NCAM1	GeneCards	GGT1	GeneCards
ZEB2	GeneCards	NAT2	GeneCards	GET1	GeneCards
ZEB1	GeneCards	NAT1	GeneCards	GDNF	GeneCards
ZC4H2	GeneCards	NAGS	GeneCards	GDF15	GeneCards
YAP1	GeneCards	NAGPA	GeneCards	GCKR	GeneCards
XRCC1	GeneCards	NAA10	GeneCards	GCK	GeneCards
XPO1	GeneCards	MYO9B	GeneCards	GCG	GeneCards



**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
XIST	GeneCards	MYC	GeneCards	GBD3	GeneCards
XIAP	GeneCards	MUTYH	GeneCards	GBD2	GeneCards
XDH	GeneCards	MUC6	GeneCards	GATA4	GeneCards
XAF1	GeneCards	MUC5B	GeneCards	GATA3	GeneCards
WWOX	GeneCards	MUC5AC	GeneCards	GATA1	GeneCards
WSPAR	GeneCards	MUC4	GeneCards	GAST	GeneCards
WRN	GeneCards	MUC2	GeneCards	GAS5	GeneCards
WRAP53	GeneCards	MUC16	GeneCards	GAPLINC	GeneCards
WNT9A	GeneCards	MUC12	GeneCards	GANAB	GeneCards
WNT6	GeneCards	MUC1	GeneCards	GALNT12	GeneCards
WNT5A	GeneCards	MTUS1	GeneCards	GAL	GeneCards
WNT3A	GeneCards	MTTP	GeneCards	GADD45A	GeneCards
WNT2B	GeneCards	MTRR	GeneCards	GACAT3	GeneCards
WNT2	GeneCards	MTOR	GeneCards	GACAT2	GeneCards
WNT1	GeneCards	MTHFR	GeneCards	FZD7	GeneCards
WIF1	GeneCards	MTAP	GeneCards	FZD10	GeneCards
WEE2	GeneCards	MTA1	GeneCards	FXN	GeneCards
WDTC1	GeneCards	MT1DP	GeneCards	FUT2	GeneCards
VWF	GeneCards	MSTO2P	GeneCards	FTX	GeneCards
VPS37A	GeneCards	MSLN	GeneCards	FTL	GeneCards
VMP1	GeneCards	MSH6	GeneCards	FTH1	GeneCards
VIP	GeneCards	MSH3	GeneCards	FSCN1	GeneCards
VEGFD	GeneCards	MSH2	GeneCards	FRGCA	GeneCards
VEGFC	GeneCards	MRPS27	GeneCards	FREM2	GeneCards
VEGFA	GeneCards	MROCK1	GeneCards	FPGS	GeneCards
VDR	GeneCards	MR1	GeneCards	FOXP3	GeneCards
VAV1	GeneCards	MPO	GeneCards	FOXP2	GeneCards
UTS2	GeneCards	MMP9	GeneCards	FOXO1	GeneCards
UROS	GeneCards	MMP7	GeneCards	FOS	GeneCards
UROD	GeneCards	MMP3	GeneCards	FNDC5	GeneCards
URGCP	GeneCards	MMP2	GeneCards	FN1	GeneCards
URB2	GeneCards	MMP14	GeneCards	FMO3	GeneCards
UPK2	GeneCards	MMP11	GeneCards	FLT4	GeneCards
UMPS	GeneCards	MMP1	GeneCards	FLT1	GeneCards
UHRF1	GeneCards	MME	GeneCards	FLNA	GeneCards
UGT1A8	GeneCards	MLNR	GeneCards	FLG2	GeneCards
UGT1A6	GeneCards	MLN	GeneCards	FLCN	GeneCards
UGT1A1	GeneCards	MLH3	GeneCards	FIP1L1	GeneCards
UFC1	GeneCards	MLH1	GeneCards	FHIT	GeneCards
UCN	GeneCards	MKI67	GeneCards	FH	GeneCards
UCHL1	GeneCards	MIR99B	GeneCards	FGL2	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
UCA1	GeneCards	MIR99A	GeneCards	FGL1	GeneCards
UBE4A	GeneCards	MIR96	GeneCards	FGFR3	GeneCards
UBE2D1	GeneCards	MIR95	GeneCards	FGFR2	GeneCards
UBD	GeneCards	MIR93	GeneCards	FGFR1OP	GeneCards
TYMS	GeneCards	MIR92A2	GeneCards	FGFR1	GeneCards
TYMP	GeneCards	MIR92A1	GeneCards	FGF7	GeneCards
TWNK	GeneCards	MIR675	GeneCards	FGF4	GeneCards
TUSC8	GeneCards	MIR6086	GeneCards	FGF3	GeneCards
TUSC7	GeneCards	MIR500A	GeneCards	FGF2	GeneCards
TUG1	GeneCards	MIR499A	GeneCards	FGF13	GeneCards
TTR	GeneCards	MIR497	GeneCards	FER1L4	GeneCards
TTF2	GeneCards	MIR490	GeneCards	FENDRR	GeneCards
TTC39B	GeneCards	MIR483	GeneCards	FECH	GeneCards
TSLP	GeneCards	MIR454	GeneCards	FCGRT	GeneCards
TRPV4	GeneCards	MIR451A	GeneCards	FCGR2A	GeneCards
TRPV1	GeneCards	MIR424	GeneCards	FCER2	GeneCards
TRPM6	GeneCards	MIR423	GeneCards	FCER1G	GeneCards
TRERNA1	GeneCards	MIR422A	GeneCards	FCER1A	GeneCards
TREH	GeneCards	MIR412	GeneCards	FBXW7	GeneCards
TPX2	GeneCards	MIR376A1	GeneCards	FASLG	GeneCards
TPT1	GeneCards	MIR375	GeneCards	FAS	GeneCards
TPO	GeneCards	MIR374A	GeneCards	FARSB	GeneCards
TPMT	GeneCards	MIR373	GeneCards	FAM98A	GeneCards
TPH2	GeneCards	MIR372	GeneCards	FAM30A	GeneCards
TPH1	GeneCards	MIR370	GeneCards	FAM136A	GeneCards
TP53TG1	GeneCards	MIR34C	GeneCards	FALEC	GeneCards
TP53COR1	GeneCards	MIR34B	GeneCards	FAH	GeneCards
TP53	GeneCards	MIR34A	GeneCards	FABP2	GeneCards
TOX	GeneCards	MIR345	GeneCards	FABP1	GeneCards
TOR1A	GeneCards	MIR342	GeneCards	FAAH	GeneCards
TOP2A	GeneCards	MIR339	GeneCards	F8	GeneCards
TOP1	GeneCards	MIR338	GeneCards	F3	GeneCards
TNFSF15	GeneCards	MIR335	GeneCards	F2RL1	GeneCards
TNFSF10	GeneCards	MIR328	GeneCards	F2R	GeneCards
TNFRSF8	GeneCards	MIR325	GeneCards	F2	GeneCards
TNFRSF6B	GeneCards	MIR324	GeneCards	F12	GeneCards
TNFRSF25	GeneCards	MIR320A	GeneCards	EXT2	GeneCards
TNFRSF1B	GeneCards	MIR32	GeneCards	EXO1	GeneCards
TNFRSF1A	GeneCards	MIR31HG	GeneCards	EVL	GeneCards
TNFRSF10B	GeneCards	MIR31	GeneCards	ESR2	GeneCards
TNFRSF10A	GeneCards	MIR30E	GeneCards	ESR1	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
TNF	GeneCards	MIR30C1	GeneCards	ESD	GeneCards
TMPRSS6	GeneCards	MIR30A	GeneCards	ERF	GeneCards
TMPRSS15	GeneCards	MIR301A	GeneCards	EREG	GeneCards
TMPRSS11A	GeneCards	MIR29B2	GeneCards	ERCC6	GeneCards
TMPO	GeneCards	MIR29A	GeneCards	ERCC4	GeneCards
TMEM67	GeneCards	MIR296	GeneCards	ERCC1	GeneCards
TMEM238L	GeneCards	MIR27B	GeneCards	ERBB3	GeneCards
TMEFF2	GeneCards	MIR27A	GeneCards	ERBB2	GeneCards
TLR9	GeneCards	MIR26B	GeneCards	EPX	GeneCards
TLR4	GeneCards	MIR26A2	GeneCards	EPOR	GeneCards
TLR2	GeneCards	MIR26A1	GeneCards	EPO	GeneCards
TLR10	GeneCards	MIR25	GeneCards	EPHB2	GeneCards
TLR1	GeneCards	MIR23B	GeneCards	EPHA3	GeneCards
TJP1	GeneCards	MIR23A	GeneCards	EPHA2	GeneCards
TINCR	GeneCards	MIR22HG	GeneCards	EPCAM	GeneCards
TIMP3	GeneCards	MIR224	GeneCards	EP300	GeneCards
TIMP2	GeneCards	MIR223	GeneCards	ENPP7	GeneCards
TIMP1	GeneCards	MIR222	GeneCards	ENO2	GeneCards
TICAM1	GeneCards	MIR221	GeneCards	ENO1	GeneCards
TIAM1	GeneCards	MIR22	GeneCards	ENG	GeneCards
TIA1	GeneCards	MIR219A1	GeneCards	EME2	GeneCards
THPO	GeneCards	MIR216A	GeneCards	ELAVL1	GeneCards
THBS1	GeneCards	MIR215	GeneCards	ELANE	GeneCards
THBD	GeneCards	MIR214	GeneCards	EIF4E	GeneCards
TGM6	GeneCards	MIR212	GeneCards	EGR1	GeneCards
TGM2	GeneCards	MIR210	GeneCards	EGOT	GeneCards
TGFBR2	GeneCards	MIR21	GeneCards	EGFR	GeneCards
TGFBR1	GeneCards	MIR20A	GeneCards	EGF	GeneCards
TGFB2	GeneCards	MIR205	GeneCards	EDNRB	GeneCards
TGFB1	GeneCards	MIR204	GeneCards	EDN3	GeneCards
TGFA	GeneCards	MIR203A	GeneCards	EDN1	GeneCards
TG	GeneCards	MIR200C	GeneCards	ECRG4	GeneCards
TFRC	GeneCards	MIR200B	GeneCards	E2F4	GeneCards
TFR2	GeneCards	MIR200A	GeneCards	E2F1	GeneCards
TFF3	GeneCards	MIR19A	GeneCards	DUXAP9	GeneCards
TFF2	GeneCards	MIR199B	GeneCards	DUXAP8	GeneCards
TFF1	GeneCards	MIR199A2	GeneCards	DUXAP10	GeneCards
TFDP1	GeneCards	MIR199A1	GeneCards	DUOX2	GeneCards
TF	GeneCards	MIR196B	GeneCards	DRD2	GeneCards
TERT	GeneCards	MIR196A2	GeneCards	DRAIC	GeneCards
TEF	GeneCards	MIR196A1	GeneCards	DPYD	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
TDRG1	GeneCards	MIR195	GeneCards	DPP4	GeneCards
TDO2	GeneCards	MIR192	GeneCards	DPAGT1	GeneCards
TDGF1	GeneCards	MIR191	GeneCards	DOCK4	GeneCards
TCFL5	GeneCards	MIR18A	GeneCards	DNMT3B	GeneCards
TCF7L2	GeneCards	MIR186	GeneCards	DNMT1	GeneCards
TCF7	GeneCards	MIR185	GeneCards	DNAJB11	GeneCards
TCF4	GeneCards	MIR183	GeneCards	DNAH8	GeneCards
TCF3	GeneCards	MIR182	GeneCards	DMTF1	GeneCards
TANC1	GeneCards	MIR181D	GeneCards	DLEU2	GeneCards
TAGLN	GeneCards	MIR181C	GeneCards	DLEU1	GeneCards
TAGAP	GeneCards	MIR181B2	GeneCards	DLEC1	GeneCards
TACR2	GeneCards	MIR181B1	GeneCards	DLC1	GeneCards
TACR1	GeneCards	MIR181A2	GeneCards	DLAT	GeneCards
TACO1	GeneCards	MIR181A1	GeneCards	DHODH	GeneCards
TACC1	GeneCards	MIR17	GeneCards	DGCR5	GeneCards
TAC1	GeneCards	MIR15B	GeneCards	DEPDC5	GeneCards
SYP	GeneCards	MIR15A	GeneCards	DEFB4A	GeneCards
SYNE1	GeneCards	MIR155	GeneCards	DEFB1	GeneCards
SYK	GeneCards	MIR152	GeneCards	DEFA5	GeneCards
SUMO1P3	GeneCards	MIR151A	GeneCards	1-Dec	GeneCards
SULF1	GeneCards	MIR150	GeneCards	DDX6P1	GeneCards
STK11	GeneCards	MIR149	GeneCards	DDX58	GeneCards
STEAP4	GeneCards	MIR148B	GeneCards	DDX53	GeneCards
STAT3	GeneCards	MIR148A	GeneCards	DDX41	GeneCards
STAT1	GeneCards	MIR146A	GeneCards	DDX3X	GeneCards
STARD13	GeneCards	MIR145	GeneCards	DDX21	GeneCards
ST6GAL1	GeneCards	MIR144	GeneCards	DDIT3	GeneCards
ST3GAL4	GeneCards	MIR143	GeneCards	DDB1	GeneCards
SSTR3	GeneCards	MIR142	GeneCards	DCXR	GeneCards
SSTR2	GeneCards	MIR141	GeneCards	DCK	GeneCards
SST	GeneCards	MIR140	GeneCards	DCC	GeneCards
SRP9P1	GeneCards	MIR139	GeneCards	DBH	GeneCards
SREBF1	GeneCards	MIR137	GeneCards	DAPK1	GeneCards
SRC	GeneCards	MIR136	GeneCards	DANCR	GeneCards
SRA1	GeneCards	MIR135B	GeneCards	DACOR1	GeneCards
SQSTM1	GeneCards	MIR133B	GeneCards	CYTOR	GeneCards
SPRR3	GeneCards	MIR132	GeneCards	CYP8B1	GeneCards
SPP1	GeneCards	MIR130B	GeneCards	CYP7A1	GeneCards
SPINK7	GeneCards	MIR130A	GeneCards	CYP4F22	GeneCards
SPINK5	GeneCards	MIR127	GeneCards	CYP3A4	GeneCards
SPINK1	GeneCards	MIR126	GeneCards	CYP2E1	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
SP140	GeneCards	MIR125B2	GeneCards	CYP2D6	GeneCards
SP1	GeneCards	MIR125B1	GeneCards	CYP2C9	GeneCards
SOX5	GeneCards	MIR125A	GeneCards	CYP2C19	GeneCards
SOX2-OT	GeneCards	MIR122	GeneCards	CYP1A2	GeneCards
SOX2	GeneCards	MIR10B	GeneCards	CYP1A1	GeneCards
SOX10	GeneCards	MIR10A	GeneCards	CYP19A1	GeneCards
SON	GeneCards	MIR107	GeneCards	CYP17A1	GeneCards
SOCS1	GeneCards	MIR106B	GeneCards	CYCS	GeneCards
SOAT1	GeneCards	MIR106A	GeneCards	CYBRD1	GeneCards
SNORD1C	GeneCards	MIR103A2	GeneCards	CYBA	GeneCards
SNHG8	GeneCards	MIR100HG	GeneCards	CXCR4	GeneCards
SNHG7	GeneCards	MIR100	GeneCards	CXCL8	GeneCards
SNHG6	GeneCards	MINCR	GeneCards	CXCL5	GeneCards
SNHG5	GeneCards	MIF	GeneCards	CXCL12	GeneCards
SNHG3	GeneCards	MICB	GeneCards	CXCL1	GeneCards
SNHG20	GeneCards	MICA	GeneCards	CUBN	GeneCards
SNHG17	GeneCards	MIB2	GeneCards	CTTN	GeneCards
SNHG16	GeneCards	MIAT	GeneCards	CTSF	GeneCards
SNHG15	GeneCards	MGMT	GeneCards	CTSE	GeneCards
SNHG14	GeneCards	MGAM	GeneCards	CTSD	GeneCards
SNHG12	GeneCards	MFGE8	GeneCards	CTSB	GeneCards
SNHG1	GeneCards	METTL9	GeneCards	CTRC	GeneCards
SNAI2	GeneCards	MET	GeneCards	CTNNB1	GeneCards
SNAI1	GeneCards	MEN1	GeneCards	CTNNA1	GeneCards
SMIM31	GeneCards	MEGF10	GeneCards	CTLA4	GeneCards
SMARCA4	GeneCards	MEG3	GeneCards	CTH	GeneCards
SMAD7	GeneCards	MECP2	GeneCards	CTAG1B	GeneCards
SMAD4	GeneCards	MECOM	GeneCards	CT45A5	GeneCards
SMAD3	GeneCards	MDM2	GeneCards	CT45A3	GeneCards
SMAD2	GeneCards	MDH2	GeneCards	CSNK1G1	GeneCards
SLIT2	GeneCards	MDC1	GeneCards	CSN1S1	GeneCards
SLCO1A2	GeneCards	MCU	GeneCards	CSF2	GeneCards
SLC7A6	GeneCards	MCM6	GeneCards	CSE1L	GeneCards
SLC6A4	GeneCards	MCM5	GeneCards	CRP	GeneCards
SLC6A3	GeneCards	MCM4	GeneCards	CRNDE	GeneCards
SLC5A4	GeneCards	MCL1	GeneCards	CRHR2	GeneCards
SLC5A2	GeneCards	MCC	GeneCards	CRHR1	GeneCards
SLC5A1	GeneCards	MBP	GeneCards	CRH	GeneCards
SLC52A3	GeneCards	MBL2	GeneCards	CREB3L3	GeneCards
SLC51B	GeneCards	MBD6	GeneCards	CPOX	GeneCards
SLC40A1	GeneCards	MAVS	GeneCards	CPN1	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
SLC39A1	GeneCards	MAT2A	GeneCards	CPD	GeneCards
SLC31A1	GeneCards	MAT1A	GeneCards	CPB1	GeneCards
SLC2A1	GeneCards	MARS1	GeneCards	CPA1	GeneCards
SLC29A1	GeneCards	MAPK8	GeneCards	CP	GeneCards
SLC25A27	GeneCards	MAPK3	GeneCards	COX5A	GeneCards
SLC25A13	GeneCards	MAPK14	GeneCards	COX15	GeneCards
SLC22A5	GeneCards	MAPK1	GeneCards	COX10	GeneCards
SLC22A4	GeneCards	MAP4K4	GeneCards	COMT	GeneCards
SLC17A5	GeneCards	MAP3K9	GeneCards	COMMD1	GeneCards
SLC11A2	GeneCards	MAP3K6	GeneCards	COLCA2	GeneCards
SLC11A1	GeneCards	MAP3K20	GeneCards	COLCA1	GeneCards
SLC10A2	GeneCards	MAP2K4	GeneCards	COG2	GeneCards
SLC10A1	GeneCards	MAP2K2	GeneCards	CNTNAP2	GeneCards
SINHCAF	GeneCards	MAP2K1	GeneCards	CNR1	GeneCards
SIL1	GeneCards	MAP1LC3A	GeneCards	CNN1	GeneCards
SIGLEC12	GeneCards	MALAT1	GeneCards	CNDP2	GeneCards
SI	GeneCards	MAL	GeneCards	CMA1	GeneCards
SHH	GeneCards	MAGED1	GeneCards	CLPX	GeneCards
SHC1	GeneCards	MAGEC2	GeneCards	CLEC1B	GeneCards
SH2B3	GeneCards	MAGEA4	GeneCards	CLDN9	GeneCards
SGO1	GeneCards	MAGEA3	GeneCards	CLDN7	GeneCards
SGK1	GeneCards	MAGEA1	GeneCards	CLDN6	GeneCards
SGCB	GeneCards	MADCAM1	GeneCards	CLDN4	GeneCards
SFTPD	GeneCards	LZTS1	GeneCards	CLDN3	GeneCards
SFTA1P	GeneCards	LUCAT1	GeneCards	CLDN10	GeneCards
SFRP2	GeneCards	LTF	GeneCards	CLDN1	GeneCards
SERPINF2	GeneCards	LTC4S	GeneCards	CLASP2	GeneCards
SERPINE1	GeneCards	LRP5	GeneCards	CIITA	GeneCards
SERPINC1	GeneCards	LRATD2	GeneCards	CHUK	GeneCards
SERPINB5	GeneCards	LPXN	GeneCards	CHST8	GeneCards
SERPINB3	GeneCards	LPP	GeneCards	CHRM3	GeneCards
SERPINB2	GeneCards	LPL	GeneCards	CHP2	GeneCards
SERPINA3	GeneCards	LOX	GeneCards	CHL1	GeneCards
SERPINA1	GeneCards	LMF1	GeneCards	CHGA	GeneCards
SERHL	GeneCards	LMBRD1	GeneCards	CHEK2	GeneCards
SEPSECS	GeneCards	LGR5	GeneCards	CHEK1	GeneCards
SELE	GeneCards	LGALS4	GeneCards	CHD3	GeneCards
SEC63	GeneCards	LGALS3BP	GeneCards	CHAT	GeneCards
SCT	GeneCards	LGALS3	GeneCards	CFTR	GeneCards
SCN10A	GeneCards	LEPR	GeneCards	CFLAR	GeneCards
SCHIP1	GeneCards	LEP	GeneCards	CETP	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
SCARB1	GeneCards	LEF1	GeneCards	CERNA2	GeneCards
SBDSP1	GeneCards	LDLR	GeneCards	CENPB	GeneCards
SAR1B	GeneCards	LDC1P	GeneCards	CELA3B	GeneCards
SALL1	GeneCards	LCT	GeneCards	CELA1	GeneCards
S100A9	GeneCards	LCOR	GeneCards	CECR7	GeneCards
S100A8	GeneCards	LBP	GeneCards	CEACAM7	GeneCards
S100A6	GeneCards	LAPTM4B	GeneCards	CEACAM6	GeneCards
S100A4	GeneCards	LAMTOR5	GeneCards	CEACAM5	GeneCards
S100A12	GeneCards	LAMA5	GeneCards	CEACAM3	GeneCards
RXRA	GeneCards	LALBA	GeneCards	CEACAM1	GeneCards
RUNX3	GeneCards	LACTB	GeneCards	CDX2	GeneCards
RUFY3	GeneCards	LACC1	GeneCards	CDX1	GeneCards
RUBCN	GeneCards	KRT9	GeneCards	CDR1	GeneCards
RSF1	GeneCards	KRT8	GeneCards	CDO1	GeneCards
RRP1B	GeneCards	KRT7	GeneCards	CDKN3	GeneCards
RRM1	GeneCards	KRT5	GeneCards	CDKN2B	GeneCards
RPS6KB1	GeneCards	KRT20	GeneCards	CDKN2A	GeneCards
RPL12P1	GeneCards	KRT19	GeneCards	CDKN1B	GeneCards
ROS1	GeneCards	KRT18	GeneCards	CDKN1A	GeneCards
RNY3	GeneCards	KRT10	GeneCards	CDK6	GeneCards
RNY1	GeneCards	KRT1	GeneCards	CDK4	GeneCards
RNR2	GeneCards	KRAS	GeneCards	CDK2	GeneCards
RNF6	GeneCards	KNG1	GeneCards	CDK1	GeneCards
RNF43	GeneCards	KLRK1	GeneCards	CDH4	GeneCards
RNASE3	GeneCards	KLKB1	GeneCards	CDH3	GeneCards
RN7SK	GeneCards	KLK3	GeneCards	CDH17	GeneCards
RMRP	GeneCards	KLF6	GeneCards	CDH1	GeneCards
RIOX2	GeneCards	KLF5	GeneCards	CDC42	GeneCards
RHOA	GeneCards	KLF4	GeneCards	CD8B	GeneCards
RHO	GeneCards	KLF10	GeneCards	CD8A	GeneCards
RHBDF2	GeneCards	KITLG	GeneCards	CD81	GeneCards
RGS1	GeneCards	KIT	GeneCards	CD79A	GeneCards
RETN	GeneCards	KIDINS220	GeneCards	CD69	GeneCards
RET	GeneCards	KIAA1217	GeneCards	CD55	GeneCards
REN	GeneCards	KIAA0087	GeneCards	CD44	GeneCards
REG4	GeneCards	KEAP1	GeneCards	CD40LG	GeneCards
REG3A	GeneCards	KDR	GeneCards	CD4	GeneCards
REG1B	GeneCards	KCTD13	GeneCards	CD36	GeneCards
REG1A	GeneCards	KCNQ10T1	GeneCards	CD34	GeneCards
RECK	GeneCards	KCNJ11	GeneCards	CD28	GeneCards
RCC1	GeneCards	JUN	GeneCards	CD274	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
RBP5	GeneCards	JPX	GeneCards	CD27	GeneCards
RBM39	GeneCards	JAK1	GeneCards	CD1D	GeneCards
RBBP6	GeneCards	ITPA	GeneCards	CD14	GeneCards
RB1	GeneCards	ITGB1	GeneCards	CCR9	GeneCards
RASSF1	GeneCards	ITGAE	GeneCards	CCR6	GeneCards
RASGEF1A	GeneCards	ITGA6	GeneCards	CCND2	GeneCards
RARB	GeneCards	ITGA4	GeneCards	CCND1	GeneCards
RALB	GeneCards	ITGA2	GeneCards	CCNB1	GeneCards
RALA	GeneCards	IRGM	GeneCards	CCNA2	GeneCards
RAF1	GeneCards	IRF5	GeneCards	CCN2	GeneCards
RAD54B	GeneCards	IRF1	GeneCards	CCL5	GeneCards
RAD51	GeneCards	IREB2	GeneCards	CCL26	GeneCards
RAC1	GeneCards	IRAIN	GeneCards	CCL2	GeneCards
PYY	GeneCards	IQGAP1	GeneCards	CCL17	GeneCards
PXN	GeneCards	INTS7	GeneCards	CCL11	GeneCards
PWRN1	GeneCards	INSRR	GeneCards	CCKBR	GeneCards
PVT1	GeneCards	INS	GeneCards	CCKAR	GeneCards
PUS10	GeneCards	INAVA	GeneCards	CCK	GeneCards
PTTG1	GeneCards	IL7	GeneCards	CCEPR	GeneCards
PTPRJ	GeneCards	IL6R	GeneCards	CCDC85B	GeneCards
PTPRC	GeneCards	IL6	GeneCards	CCDC57	GeneCards
PTPN3	GeneCards	IL5	GeneCards	CCDC26	GeneCards
PTPN22	GeneCards	IL4	GeneCards	CCDC136	GeneCards
PTPN12	GeneCards	IL32	GeneCards	CCAT2	GeneCards
PTPN11	GeneCards	IL3	GeneCards	CCAT1	GeneCards
PTMA	GeneCards	IL2RA	GeneCards	CBS	GeneCards
PTK2B	GeneCards	IL26	GeneCards	CBLIF	GeneCards
PTK2	GeneCards	IL24	GeneCards	CAV1	GeneCards
PTGS2	GeneCards	IL23R	GeneCards	CAT	GeneCards
PTGS1	GeneCards	IL23A	GeneCards	CASR	GeneCards
PTGIR	GeneCards	IL2	GeneCards	CASP9	GeneCards
PTGER4	GeneCards	IL1RN	GeneCards	CASP8	GeneCards
PTENP1	GeneCards	IL1R1	GeneCards	CASP7	GeneCards
PTEN	GeneCards	IL1B	GeneCards	CASP3	GeneCards
PSMD10	GeneCards	IL18RAP	GeneCards	CASP10	GeneCards
PSMA7	GeneCards	IL18R1	GeneCards	CASP1	GeneCards
PSMA6	GeneCards	IL18BP	GeneCards	CASC9	GeneCards
PSG2	GeneCards	IL18	GeneCards	CASC8	GeneCards
PSCA	GeneCards	IL17F	GeneCards	CASC2	GeneCards
PRUNE1	GeneCards	IL17A	GeneCards	CASC19	GeneCards
PRTN3	GeneCards	IL15	GeneCards	CASC15	GeneCards



**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
PRSS58	GeneCards	IL13	GeneCards	CASC11	GeneCards
PRSS21	GeneCards	IL12RB2	GeneCards	CARTPT	GeneCards
PRSS2	GeneCards	IL12RB1	GeneCards	CAPN9	GeneCards
PRSS1	GeneCards	IL11	GeneCards	CAMTA1	GeneCards
PRRT2	GeneCards	IL10RB	GeneCards	CALR	GeneCards
PRR26	GeneCards	IL10RA	GeneCards	CALCA	GeneCards
PRPSAP1	GeneCards	IL10	GeneCards	CAGE1	GeneCards
PROM1	GeneCards	IKBKG	GeneCards	CACYBP	GeneCards
PRNCR1	GeneCards	IKBKB	GeneCards	CACNA1G	GeneCards
PRL	GeneCards	IGHE	GeneCards	CACNA1E	GeneCards
PRKCSH	GeneCards	IGFBP7	GeneCards	CA2	GeneCards
PRKCQ	GeneCards	IGFBP3	GeneCards	C1S	GeneCards
PRKCB	GeneCards	IGFBP2	GeneCards	C14orf132	GeneCards
PRKCA	GeneCards	IGF2R	GeneCards	C10orf143	GeneCards
PRG2	GeneCards	IGF2BP3	GeneCards	BUB1B	GeneCards
PREP	GeneCards	IGF2BP2	GeneCards	BUB1	GeneCards
PRAL	GeneCards	IGF2	GeneCards	BTNL2	GeneCards
PPY	GeneCards	IGF1R	GeneCards	BTD	GeneCards
PPP2R1B	GeneCards	IGF1	GeneCards	BTC	GeneCards
PPOX	GeneCards	IGES	GeneCards	BRIP1	GeneCards
PPL	GeneCards	IFNL4	GeneCards	BRCA2	GeneCards
PPFIBP2	GeneCards	IFNGR1	GeneCards	BRCA1	GeneCards
PPARG	GeneCards	IFNG	GeneCards	BRAF	GeneCards
PPARD	GeneCards	IFNAR2	GeneCards	BPI	GeneCards
PPARA	GeneCards	IFNA2	GeneCards	BMP6	GeneCards
POU5F1P4	GeneCards	IFNA1	GeneCards	BMP2	GeneCards
POU3F3	GeneCards	IFITM1	GeneCards	BMI1	GeneCards
POMC	GeneCards	IFI27	GeneCards	BLVRB	GeneCards
POLR2F	GeneCards	IDH2	GeneCards	BLACAT1	GeneCards
POLR2E	GeneCards	IDH1	GeneCards	BIRC5	GeneCards
POLE	GeneCards	ICOSLG	GeneCards	BID	GeneCards
POLD1	GeneCards	ICAM1	GeneCards	BECN1	GeneCards
POLB	GeneCards	IATPR	GeneCards	BCYRN1	GeneCards
PNPLA3	GeneCards	IAPP	GeneCards	BCL2L11	GeneCards
PNLIP	GeneCards	HVBS8	GeneCards	BCL2L1	GeneCards
PMS2	GeneCards	HULC	GeneCards	BCL2	GeneCards
PMS1	GeneCards	HTR7	GeneCards	BCL10	GeneCards
PLK1	GeneCards	HTR4	GeneCards	BCAR4	GeneCards
PLCG2	GeneCards	HTR3E	GeneCards	BAX	GeneCards
PLCG1	GeneCards	HTR3D	GeneCards	BARX1	GeneCards
PLCE1	GeneCards	HTR3C	GeneCards	BAP1	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
PLCB4	GeneCards	HTR3A	GeneCards	BANCR	GeneCards
PLAUR	GeneCards	HTR2C	GeneCards	BAK1	GeneCards
PLAU	GeneCards	HTR2B	GeneCards	B3GAT1	GeneCards
PLAT	GeneCards	HTR2A	GeneCards	B2M	GeneCards
PLA2G5	GeneCards	HTR1A	GeneCards	AXIN2	GeneCards
PLA2G4A	GeneCards	HTATIP2	GeneCards	AXIN1	GeneCards
PLA2G2A	GeneCards	HSPB1	GeneCards	AVP	GeneCards
PKHD1	GeneCards	HSPA6	GeneCards	AURKA	GeneCards
PKD2	GeneCards	HSPA5	GeneCards	ATP8B1	GeneCards
PKD1	GeneCards	HSPA2	GeneCards	ATP7B	GeneCards
PITX2	GeneCards	HSPA1L	GeneCards	ATP7A	GeneCards
PIP	GeneCards	HSP90AA1	GeneCards	ATP6AP1	GeneCards
PINX1	GeneCards	HSD3B7	GeneCards	ATP4A	GeneCards
PINCR	GeneCards	HRH2	GeneCards	ATP12A	GeneCards
PIK3R1	GeneCards	HRH1	GeneCards	ATOX1	GeneCards
PIK3CA	GeneCards	HRAS	GeneCards	ATM	GeneCards
PIK3C2A	GeneCards	HPSE	GeneCards	ATG16L1	GeneCards
PHYH	GeneCards	HPGD	GeneCards	ASPH	GeneCards
PHOX2B	GeneCards	HP	GeneCards	ASGR2	GeneCards
PHLPP2	GeneCards	HOXA13	GeneCards	ASGR1	GeneCards
PHLPP1	GeneCards	HOXA11	GeneCards	ARID2	GeneCards
PHF20	GeneCards	HOTTIP	GeneCards	ARID1B	GeneCards
PHBP1	GeneCards	HOTAIRM1	GeneCards	ARID1A	GeneCards
PGR	GeneCards	HOTAIR	GeneCards	AREG	GeneCards
PGC	GeneCards	HOGA1	GeneCards	ARC	GeneCards
PGA5	GeneCards	HNMT	GeneCards	AQP2	GeneCards
PGA4	GeneCards	HNF4A	GeneCards	AQP1	GeneCards
PGA3	GeneCards	HNF1A	GeneCards	APTR	GeneCards
PFKFB1	GeneCards	HMOX1	GeneCards	APOLD1	GeneCards
PES1	GeneCards	HMGCR	GeneCards	APOH	GeneCards
PENK	GeneCards	HMGB1	GeneCards	APOE	GeneCards
PEG10	GeneCards	HMBS	GeneCards	APOC2	GeneCards
PDX1	GeneCards	HLTF	GeneCards	APOBEC3G	GeneCards
PDPR	GeneCards	HLA-DRB1	GeneCards	APOB	GeneCards
PDPN	GeneCards	HLA-DQB1	GeneCards	APOA5	GeneCards
PDIA3P1	GeneCards	HLA-DQA1	GeneCards	APOA1	GeneCards
PDHX	GeneCards	HJV	GeneCards	APC	GeneCards
PDGFRL	GeneCards	HIF1A	GeneCards	AP4M1	GeneCards
PDGFRB	GeneCards	HGF	GeneCards	AP4E1	GeneCards
PDGFRA	GeneCards	HFE	GeneCards	AOC4P	GeneCards
PDGFB	GeneCards	HEPH	GeneCards	AOC1	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
PDE7A	GeneCards	HEIH	GeneCards	ANXA5	GeneCards
PDE5A	GeneCards	HDGF	GeneCards	ANXA2P2	GeneCards
PDE4A	GeneCards	HDC	GeneCards	ANXA2	GeneCards
PDE2A	GeneCards	HDAC1	GeneCards	ANPEP	GeneCards
PDCD4	GeneCards	HCK	GeneCards	AMY2A	GeneCards
PCSK9	GeneCards	HBEGF	GeneCards	AMIGO2	GeneCards
PCNA	GeneCards	HBB	GeneCards	AMBRA1	GeneCards
PCAT29	GeneCards	HBA2	GeneCards	AMACR	GeneCards
PCAT1	GeneCards	HBA1	GeneCards	ALPP	GeneCards
PAX6	GeneCards	HAVCR2	GeneCards	ALOX5	GeneCards
PARP1	GeneCards	HAVCR1	GeneCards	ALG8	GeneCards
PANTR1	GeneCards	HAMP	GeneCards	ALDH7A1	GeneCards
PANK1	GeneCards	HAGLROS	GeneCards	ALDH2	GeneCards
PANDAR	GeneCards	HAGLR	GeneCards	ALDH18A1	GeneCards
PALLD	GeneCards	H2AFY2	GeneCards	ALB	GeneCards
PALB2	GeneCards	H2AC18	GeneCards	ALAS2	GeneCards
PAK1	GeneCards	H19	GeneCards	ALAS1	GeneCards
PABPN1	GeneCards	GZMB	GeneCards	ALAD	GeneCards
PABPC1	GeneCards	GUCY2C	GeneCards	AKT2	GeneCards
OXAIL	GeneCards	GUCA2A	GeneCards	AKT1	GeneCards
OR3A4P	GeneCards	GSTT1	GeneCards	AKR7L	GeneCards
OPRM1	GeneCards	GSTP1	GeneCards	AKR1B10	GeneCards
OPRK1	GeneCards	GSTM1	GeneCards	AKR1A1	GeneCards
OLFM4	GeneCards	GSTA1	GeneCards	AIP	GeneCards
OGG1	GeneCards	GSK3B	GeneCards	AGTR1	GeneCards
ODC1	GeneCards	GSEC	GeneCards	AGO2	GeneCards
OCLN	GeneCards	GRPR	GeneCards	AFP	GeneCards
NUTF2P3	GeneCards	GRP	GeneCards	AFDN-DT	GeneCards
NUPR1	GeneCards	GRB7	GeneCards	ADRB2	GeneCards
NTS	GeneCards	GRB2	GeneCards	ADRA2C	GeneCards
NTN1	GeneCards	GPX7	GeneCards	ADRA2A	GeneCards
NSUN2	GeneCards	GPX2	GeneCards	ADM	GeneCards
NRTN	GeneCards	GPT	GeneCards	ADIPOR2	GeneCards
NRAS	GeneCards	GPR65	GeneCards	ADIPOQ	GeneCards
NR5A2	GeneCards	GPR34	GeneCards	ADH7	GeneCards
NR3C1	GeneCards	GPR182	GeneCards	ADH1C	GeneCards
NR1I2	GeneCards	GPC3	GeneCards	ADH1B	GeneCards
NR1H4	GeneCards	GPBAR1	GeneCards	ADGRE2	GeneCards
NR0B2	GeneCards	GP6	GeneCards	ADAM17	GeneCards
NQO1	GeneCards	GP5	GeneCards	ADAM10	GeneCards
NPY	GeneCards	GOLM1	GeneCards	ACVRL1	GeneCards

**Table S3.** (Continued).

Gene Name	Source	Gene Name	Source	Gene Name	Source
NPS	GeneCards	GNRH1	GeneCards	ACVR1B	GeneCards
NPPA	GeneCards	GNPTG	GeneCards	ACTB	GeneCards
NOX1	GeneCards	GNPTAB	GeneCards	ACOT7	GeneCards
NOTCH1	GeneCards	GNMT	GeneCards	ACO1	GeneCards
NOS3	GeneCards	GNB3	GeneCards	ACHE	GeneCards
NOS2	GeneCards	GNAS	GeneCards	ACE	GeneCards
NOS1	GeneCards	GMPR2	GeneCards	ABL1	GeneCards
NORAD	GeneCards	GLUL	GeneCards	ABCG8	GeneCards
NOD2	GeneCards	GLT1D1	GeneCards	ABCG5	GeneCards
NOD1	GeneCards	GLP1R	GeneCards	ABCG2	GeneCards
NMT1	GeneCards	GLI1	GeneCards	ABCC8	GeneCards
NME1	GeneCards	GKN2	GeneCards	ABCC4	GeneCards
NLRP3	GeneCards	GKN1	GeneCards	ABCC3	GeneCards
NKILA	GeneCards	GIP	GeneCards	ABCC2	GeneCards
NFKBIA	GeneCards	GIHCG	GeneCards	ABCC1	GeneCards
NFKB1	GeneCards	GHSR	GeneCards	ABCB7	GeneCards
NFE2L2	GeneCards	GHRL	GeneCards	ABCB4	GeneCards
NF1	GeneCards	GHRH	GeneCards	ABCB11	GeneCards
NEAT1	GeneCards	GHET1	GeneCards	ABCB1	GeneCards
AAAS	GeneCards				

**Table S4.** The potential target of FGD in the treatment of FD.

No.	Gene Name	Target Name
1	GMPR2	GMP reductase 2
2	MMP2	72 kDa type IV collagenase
3	XDH	Xanthine dehydrogenase
4	GSTA1	Glutathione S-transferase A1
5	IGF1	Insulin-like growth factor IA
6	TGFB2	Transforming growth factor beta-2
7	PLAU	Urokinase-type plasminogen activator
8	NOS2	Nitric oxide synthase, inducible
9	DCK	Deoxycytidine kinase
10	CCNB1	G2/mitotic-specific cyclin-B1
11	FGFR1	Basic fibroblast growth factor receptor 1
12	MET	Hepatocyte growth factor receptor
13	B3GAT1	Galactosylgalactosylxylosylprotein3-beta-glucuronosyltransferase 1
14	ALOX5	Arachidonate 5-lipoxygenase
15	AKR1B10	Aldo-keto reductase family 1 member B10
16	HNMT	Histamine N-methyltransferase
17	RXRA	Retinoic acid receptor RXR-alpha
18	EPHA2	Ephrin type-A receptor 2

**Table S4.** (Continued).

No.	Gene Name	Target Name
19	ELANE	Leukocyte elastase
20	PTPN11	Tyrosine-protein phosphatase non-receptor type 11
21	PLK1	Serine/threonine-protein kinase PLK1
22	DPP4	Dipeptidyl peptidase 4
23	PLA2G2A	Phospholipase A2, membrane associated
24	ALDH2	Aldehyde dehydrogenase, mitochondrial
25	GRB2	Growth factor receptor-bound protein 2
26	CDK1	Cyclin-dependent kinase 1
27	PTK2	Focal adhesion kinase 1
28	CHEK1	Serine/threonine-protein kinase Chk1
29	GCK	Glucokinase
30	PPARG	Peroxisome proliferator-activated receptor gamma
31	RHOA	Transforming protein RhoA
32	RARB	Retinoic acid receptor beta
33	SERPINA1	Alpha-1-antitrypsin
34	GSTP1	Glutathione S-transferase P
35	AURKA	Serine/threonine-protein kinase 6
36	SELE	Selectin E
37	ABCB1	P-glycoprotein 1
38	NR3C1	Glucocorticoid receptor
39	HCK	Tyrosine-protein kinase HCK
40	CYP19A1	Cytochrome P450 19A1
41	MAPK14	Mitogen-activated protein kinase 14
42	CDK6	Cell division protein kinase 6
43	CTSB	Cathepsin B
44	UMPS	Uridine 5-monophosphate synthase
45	MPO	Myeloperoxidase
46	FGFR2	Fibroblast growth factor receptor 2
47	AMY2A	Pancreatic alpha-amylase
48	KIT	Mast/stem cell growth factor receptor
49	FHIT	Bis(5-adenosyl)-triphosphatase
50	CASP1	Caspase-1
51	F2	Prothrombin
52	XIAP	Baculoviral IAP repeat-containing protein 4
53	CBS	Cystathionine beta-synthase
54	ADH1C	Alcohol dehydrogenase 1C
55	TGFBR1	TGF-beta receptor type-1
56	CYP2C9	Cytochrome P450 2C9
57	BMP2	Bone morphogenetic protein 2
58	ESR1	Estrogen receptor alpha
59	TYMS	Thymidylate synthase

**Table S4.** (Continued).

No.	Gene Name	Target Name
60	CASP7	Caspase-7
61	HRAS	GTPase HRas
62	MME	Neprilysin
63	CCNA2	Cyclin-A2
64	ACHE	Acetylcholinesterase
65	CTSF	Cathepsin F
66	GSK3B	Glycogen synthase kinase-3 beta
67	POLB	DNA polymerase beta
68	ANXA5	Annexin A5
69	BLVRB	Flavin reductase
70	TRPV1	Vanilloid receptor
71	CASP3	Caspase-3
72	HSP90AA1	Heat shock protein HSP 90-alpha
73	PARP1	Poly [ADP-ribose] polymerase 1
74	VDR	Vitamin D3 receptor
75	HMGCR	3-Hydroxy-3-methylglutaryl-coenzyme A reductase
76	PPARD	Peroxisome proliferator-activated receptor delta
77	KDR	Vascular endothelial growth factor receptor 2
78	ABCG2	ATP-binding cassette sub-family G member 2
79	HMOX1	Heme oxygenase 1
80	EIF4E	Eukaryotic translation initiation factor 4E
81	MMP3	Stromelysin-1
82	PPARA	Peroxisome proliferator-activated receptor alpha
83	TTR	Transthyretin
84	CTNNA1	Catenin alpha-1
85	GSTM1	Glutathione S-transferase Mu 1
86	RNASE3	Eosinophil cationic protein
87	MDM2	E3 ubiquitin-protein ligase Mdm2
88	EGFR	Epidermal growth factor receptor
89	NQO1	NAD(P)H dehydrogenase [quinone] 1
90	IL2	Interleukin-2
91	SYK	Tyrosine-protein kinase SYK
92	LGALS3	Galectin-3
93	PDE5A	cGMP-specific 3,5-cyclic phosphodiesterase
94	TOP2A	DNA topoisomerase II alpha
95	MAPK8	Mitogen-activated protein kinase 8
96	IGF1R	Insulin-like growth factor 1 receptor
97	MTAP	S-methyl-5-thioadenosine phosphorylase
98	BCL2L1	Bcl-2-like protein 1
99	ABL1	Proto-oncogene tyrosine-protein kinase ABL1
100	CA2	Carbonic anhydrase II

**Table S4.** (Continued).

No.	Gene Name	Target Name
101	CD81	Carbonyl reductase [NADPH] 1
102	SRC	Proto-oncogene tyrosine-protein kinase Src
103	CDK2	Cell division protein kinase 2
104	PGR	Progesterone receptor
105	NR1H4	Bile acid receptor
106	ODC1	Ornithine decarboxylase
107	FECH	Ferrochelatase, mitochondrial
108	CCL5	C-C motif chemokine 5
109	ADAM17	Disintegrin and metalloproteinase domain-containing protein 17
110	AKT1	Serine/threonine-protein kinase AKT
111	PIK3R1	Phosphatidylinositol 3-kinase regulatory subunit alpha
112	MAP2K1	Dual specificity mitogen-activated protein kinase kinase 1
113	ABCC1	Multidrug resistance-associated protein 1
114	REN	Renin
115	ALB	Serum albumin
116	NR1I2	Nuclear receptor subfamily 1 group I member 2
117	AKR1A1	Aldehyde reductase
118	DHODH	Dihydroorotate dehydrogenase, mitochondrial
119	ESR2	Estrogen receptor beta
120	BRAF	B-Raf proto-oncogene serine/threonine-protein kinase
121	DAPK1	Death-associated protein kinase 1
122	S100A9	Protein S100-A9
123	MMP9	Matrix metalloproteinase 9

**Table S5.** The interactions between compounds and its corresponding FD-related targets of FGD.

Compound	Target	Compound	Target	Compound	Target
C118	CDK6	C83	NR1I2	C41	CDK6
C118	ESR1	C83	PLA2G2A	C41	CTNNA1
C118	FECH	C83	VDR	C41	CYP19A1
C118	NR1H4	C82	ESR2	C41	ESR1
C118	NR3C1	C82	HCK	C41	ESR2
C118	SRC	C82	HMOX1	C41	MME
C117	ABCB1	C82	MET	C41	NR1I2
C117	ABCC1	C82	MME	C41	PGR
C117	ABCG2	C82	NR1I2	C41	SYK
C117	ACHE	C82	PGR	C40	ABL1
C117	AKR1A1	C82	PGR	C40	EGFR
C117	AKT1	C82	SERPINA1	C40	LGALS3
C117	ALOX5	C81	CCNA2	C40	VDR
C117	CA2	C81	CDK2	C39	GCK
C117	CCNB1	C81	CYP2C9	C39	KDR

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C117	CDK1	C81	ESR1	C39	MET
C117	CDK2	C81	ESR2	C39	NR3C1
C117	CDK6	C81	MMP3	C39	SYK
C117	CYP19A1	C81	NQO1	C39	UMPS
C117	DAPK1	C81	NR3C1	C39	VDR
C117	EGFR	C81	PGR	C39	ESR2
C117	ESR2	C81	TGFBR1	C39	LGALS3
C117	F2	C81	TTR	C38	CDK2
C117	FGFR1	C80	ABCC1	C38	CTNNA1
C117	GSK3B	C80	CDK6	C38	DHODH
C117	IGF1R	C80	CYP19A1	C38	ESR1
C117	KDR	C80	DCK	C38	ESR2
C117	MET	C80	ESR1	C38	MTAP
C117	MMP2	C80	ESR2	C38	NR1H4
C117	MMP3	C80	FGFR1	C38	NR1I2
C117	MMP9	C80	NOS2	C38	PGR
C117	MPO	C80	NR1I2	C37	CHEK1
C117	PDE5A	C80	PDE5A	C37	CTNNA1
C117	PIK3R1	C80	PLA2G2A	C37	ESR2
C117	PLK1	C80	SRC	C37	GSTA1
C117	PTK2	C80	VDR	C37	MME
C117	SELE	C79	ABL1	C37	NR1I2
C117	SRC	C79	CDK6	C37	PGR
C117	SYK	C79	EPHA2	C36	ABL1
C117	TOP2A	C79	HRAS	C36	CYP2C9
C117	TYMS	C79	KIT	C36	EGFR
C117	XDH	C79	PDE5A	C36	ELANE
C116	ADH1C	C79	PIK3R1	C36	LGALS3
C116	AKR1B10	C79	SERPINA1	C36	MTAP
C116	CDK2	C78	ADH1C	C36	PIK3R1
C116	GSK3B	C78	CDK2	C36	UMPS
C116	GSTA1	C78	DPP4	C36	VDR
C116	HMGCR	C78	ESR2	C35	CTSB
C116	IL2	C78	FGFR1	C35	DPP4
C116	POLB	C78	GSTP1	C35	EIF4E
C115	CDK6	C78	NQO1	C35	GMPR2
C115	DCK	C78	PPARA	C35	KIT
C115	DHODH	C78	SERPINA1	C35	LGALS3
C115	ESR2	C77	HMGCR	C35	NOS2
C115	FGFR1	C77	IGF1R	C35	RHOA
C115	GMPR2	C77	KIT	C35	RNASE3



**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C115	HCK	C77	NR3C1	C35	ALDH2
C115	NQO1	C77	PDE5A	C34	ALDH2
C115	NR1H4	C77	SYK	C34	DHODH
C115	NR1I2	C77	VDR	C34	EIF4E
C115	PDE5A	C77	XIAP	C34	ESR1
C115	SELE	C76	ABL1	C34	ESR2
C114	ABL1	C76	ADH1C	C34	MAPK8
C114	ANXA5	C76	CASP7	C34	NR1H4
C114	FECH	C76	CTNNA1	C34	NR1I2
C114	HNMT	C76	CYP2C9	C34	PGR
C114	IGF1	C76	ELANE	C34	GSTA1
C114	IL2	C76	MAPK14	C33	ANXA5
C114	MET	C76	NR1H4	C33	CDK6
C114	NR1H4	C76	PGR	C33	CTSF
C114	PGR	C76	SERPINA1	C33	EIF4E
C113	ABL1	C76	VDR	C33	ELANE
C113	CHEK1	C76	XIAP	C33	KDR
C113	FECH	C75	ABL1	C33	PLA2G2A
C113	HSP90AA1	C75	CYP2C9	C33	TGFBR1
C113	NR1H4	C75	EGFR	C33	VDR
C113	PGR	C75	GSK3B	C32	AMY2A
C113	REN	C75	NR1H4	C32	CDK6
C112	ABL1	C75	NR3C1	C32	CYP19A1
C112	ADAM17	C75	PIK3R1	C32	DCK
C112	EIF4E	C75	RARB	C32	ESR1
C112	GSTA1	C75	VDR	C32	ESR2
C112	MET	C74	CDK6	C32	FGFR1
C112	NR1H4	C74	CYP2C9	C32	HMGCR
C112	PGR	C74	FECH	C32	MAPK14
C112	REN	C74	GSK3B	C32	PDE5A
C112	RXRA	C74	HSP90AA1	C31	ABCG2
C111	DPP4	C74	LGALS3	C31	ABL1
C111	F2	C74	REN	C31	CCNA2
C111	FECH	C73	ALOX5	C31	CYP19A1
C111	GSTA1	C73	CDK2	C31	ESR1
C111	MMP2	C73	CHEK1	C31	ESR2
C111	NR1H4	C73	CTNNA1	C31	HCK
C111	PGR	C73	DCK	C31	NQO1
C111	PLA2G2A	C73	ESR2	C31	NR1I2
C111	PPARG	C73	GCK	C31	NR3C1
C111	PTPN11	C73	HRAS	C31	S100A9

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C111	RARB	C73	KIT	C31	SYK
C110	ABL1	C73	MTAP	C31	VDR
C110	CYP2C9	C73	NR1I2	C31	CDK6
C110	DPP4	C72	ABL1	C31	PGR
C110	FECH	C72	CDK6	C30	ADAM17
C110	GSTA1	C72	DHODH	C30	CTNNA1
C110	IGF1	C72	FECH	C30	DHODH
C110	NQO1	C72	HSP90AA1	C30	HSP90AA1
C110	SRC	C72	MAPK14	C30	IGF1
C109	DPP4	C72	ODC1	C30	MAPK14
C109	GSTA1	C72	SRC	C30	PTPN11
C109	NR1H4	C72	VDR	C29	ABL1
C109	PGR	C72	XIAP	C29	ADH1C
C109	PIK3R1	C71	DCK	C29	AMY2A
C108	ADH1C	C71	HSP90AA1	C29	CDK2
C108	BLVRB	C71	IL2	C29	CTSF
C108	GSTA1	C71	KDR	C29	CYP19A1
C108	HNMT	C71	NR1I2	C29	IGF1
C108	NOS2	C71	NR3C1	C29	PGR
C108	RXRA	C71	PPARD	C29	SERPINA1
C107	ABL1	C71	SERPINA1	C29	CDK6
C107	CDK2	C70	CYP2C9	C28	ALDH2
C107	FECH	C70	EIF4E	C28	DHODH
C107	IGF1	C70	IL2	C28	EIF4E
C107	MAPK14	C70	NOS2	C28	ESR1
C107	NQO1	C70	NR3C1	C28	ESR2
C107	PGR	C70	TGFB2	C28	MAPK8
C107	REN	C70	XIAP	C28	NR1H4
C106	ABL1	C69	CDK6	C28	NR1I2
C106	FECH	C69	CHEK1	C28	PGR
C106	IGF1	C69	EIF4E	C28	GSTA1
C106	MMP2	C69	ELANE	C27	CCNA2
C106	PGR	C69	ESR2	C27	CTNNA1
C106	PIK3R1	C69	GSTA1	C27	CYP2C9
C106	RARB	C69	PLA2G2A	C27	ESR2
C105	ABL1	C69	PTPN11	C27	FECH
C105	ADH1C	C69	SELE	C27	IL2
C105	CYP2C9	C68	ABCB1	C27	NR1I2
C105	GSTA1	C68	CBS	C27	PPARG
C105	MET	C68	CDK6	C26	CASP1
C105	MMP2	C68	CTSF	C26	CDK6

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C105	RARB	C68	IGF1R	C26	DHODH
C105	REN	C68	MME	C26	FGFR1
C105	RXRA	C68	MTAP	C26	PDE5A
C104	ABL1	C68	PGR	C26	SELE
C104	BLVRB	C68	RXRA	C25	CHEK1
C104	CYP2C9	C68	SYK	C25	LGALS3
C104	DPP4	C68	VDR	C25	MAPK14
C104	MAPK8	C67	CBS	C25	PPARD
C104	MME	C67	CDK6	C25	HCK
C104	PLA2G2A	C67	GSTA1	C24	DCK
C104	PLAU	C67	PGR	C24	HCK
C104	PPARG	C67	RXRA	C24	IGF1
C104	RNASE3	C67	SYK	C24	KDR
C104	SRC	C66	EGFR	C24	LGALS3
C104	TYMS	C66	EIF4E	C24	MAPK14
C103	BCL2L1	C66	HSP90AA1	C24	MMP2
C103	EIF4E	C66	NR3C1	C24	PPARD
C103	GRB2	C66	PPARD	C24	VDR
C103	GSK3B	C66	PTPN11	C23	CYP2C9
C103	IGF1	C66	SYK	C23	HCK
C103	MME	C66	VDR	C23	HSP90AA1
C103	PIK3R1	C65	ALDH2	C23	LGALS3
C103	PTK2	C65	CA2	C23	MTAP
C103	SRC	C65	CDK2	C23	NR1I2
C102	ABL1	C65	CDK6	C23	PPARD
C102	CHEK1	C65	DCK	C23	VDR
C102	GSK3B	C65	DHODH	C22	ANXA5
C102	HMGCR	C65	ESR1	C22	AURKA
C102	MME	C65	REN	C22	CTSF
C102	NR1H4	C65	TGFB2	C22	FECH
C102	PIK3R1	C65	XIAP	C22	NR1I2
C102	PLA2G2A	C64	ABL1	C22	NR3C1
C102	PLAU	C64	ESR2	C22	PTPN11
C102	PPARG	C64	GRB2	C22	CDK6
C102	SRC	C64	GSTA1	C22	GSTP1
C102	TYMS	C64	GSTP1	C21	ADAM17
C101	ADH1C	C64	VDR	C21	CYP2C9
C101	CD81	C63	CDK6	C21	ESR1
C101	IGF1	C63	CYP2C9	C21	FECH
C101	IL2	C63	DCK	C21	IGF1
C101	MAP2K1	C63	ELANE	C21	KDR

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C101	MME	C63	IGF1R	C21	NR1H4
C101	PARP1	C63	PPARA	C21	PTPN11
C101	RARB	C63	SRC	C21	REN
C101	REN	C62	GSK3B	C20	BLVRB
C101	RXRA	C62	IL2	C20	CYP2C9
C100	ABL1	C62	VDR	C20	FECH
C100	DHODH	C62	XIAP	C20	GSK3B
C100	FECH	C61	DCK	C20	IL2
C100	IGF1	C61	ELANE	C20	KDR
C100	MAPK14	C61	FHIT	C20	PGR
C100	MMP2	C61	GSK3B	C20	PTPN11
C100	PGR	C61	HSP90AA1	C20	PPARG
C100	RARB	C61	KIT	C19	ADH1C
C100	REN	C61	MAPK14	C19	EIF4E
C99	CA2	C61	REN	C19	IL2
C99	CASP1	C61	NQO1	C19	KIT
C99	CDK2	C60	ABL1	C19	PGR
C99	CDK6	C60	CTNNA1	C19	PLA2G2A
C99	CTSF	C60	EGFR	C19	PPARA
C99	EPHA2	C60	ELANE	C19	CDK6
C99	FGFR1	C60	HCK	C19	CHEK1
C99	PDE5A	C60	HMGCR	C18	CTNNA1
C99	SELE	C60	PARP1	C18	CYP2C9
C99	TYMS	C60	SERPINA1	C18	FECH
C99	UMPS	C59	ADH1C	C18	NR1H4
C99	XDH	C59	CASP1	C18	NR1H2
C98	CASP3	C59	CDK6	C18	PDE5A
C98	CDK2	C59	CYP2C9	C18	TGFB2
C98	CYP19A1	C59	DCK	C18	ESR2
C98	FECH	C59	ELANE	C17	CCL5
C98	HMGCR	C59	HMGCR	C17	CDK2
C98	NR1H4	C59	HSP90AA1	C17	CYP2C9
C98	PGR	C59	MDM2	C17	ESR1
C98	PIK3R1	C59	NQO1	C17	ESR2
C97	CYP19A1	C58	ADH1C	C17	GSTA1
C97	FECH	C58	ELANE	C17	MMP3
C97	HMGCR	C58	ESR2	C17	NQO1
C97	IGF1	C58	IL2	C17	TTR
C97	IL2	C58	PGR	C17	NR3C1
C97	NR1H4	C58	SERPINA1	C16	ABCG2
C97	PGR	C57	ALDH2	C16	ABL1

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C97	SERPINA1	C57	B3GAT1	C16	CTSF
C96	ALDH2	C57	GSK3B	C16	EGFR
C96	DCK	C57	LGALS3	C16	ESR1
C96	DHODH	C57	SELE	C16	GSTM1
C96	ESR1	C57	SERPINA1	C16	KIT
C96	ESR2	C57	XIAP	C16	MTAP
C96	GCK	C56	HCK	C16	PGR
C96	HSP90AA1	C56	MME	C16	CDK6
C96	IL2	C56	NR1I2	C16	FGFR1
C96	NR1H4	C56	PGR	C15	IL2
C96	PGR	C56	SERPINA1	C15	MET
C95	ADAM17	C55	ADH1C	C15	MMP3
C95	CDK6	C55	CTNNA1	C15	PIK3R1
C95	CYP2C9	C55	HCK	C15	PPARA
C95	ELANE	C55	HMOX1	C15	PTPN11
C95	GSTA1	C55	MET	C14	ABL1
C95	KIT	C55	MME	C14	ACHE
C95	MME	C55	NR1I2	C14	CASP1
C95	NR1H4	C55	PGR	C14	CTNNA1
C95	SELE	C55	SERPINA1	C14	DCK
C95	SRC	C54	ABL1	C14	EIF4E
C94	ABCB1	C54	ADH1C	C14	ELANE
C94	ABCC1	C54	AKT1	C14	GSTP1
C94	ABCG2	C54	CDK6	C14	HSP90AA1
C94	ACHE	C54	CTNNA1	C14	KIT
C94	ALOX5	C54	CTSF	C14	NR1H4
C94	CA2	C54	KIT	C14	PGR
C94	CCNB1	C54	PGR	C14	ADH1C
C94	CDK1	C54	PLA2G2A	C14	ESR2
C94	CDK2	C54	PPARA	C13	ADH1C
C94	CDK6	C53	CCL5	C13	BLVRB
C94	DAPK1	C53	CHEK1	C13	CYP2C9
C94	DCK	C53	DHODH	C13	ELANE
C94	ESR2	C53	ESR2	C13	HMGCR
C94	GSK3B	C53	HSP90AA1	C13	PGR
C94	KDR	C53	MET	C13	VDR
C94	MMP2	C53	MMP2	C13	SERPINA1
C94	MMP9	C53	NOS2	C12	ESR1
C94	PDE5A	C53	NR1I2	C12	ESR2
C94	SYK	C53	SERPINA1	C12	FECH
C94	XDH	C53	VDR	C12	HNMT

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C93	CYP19A1	C52	ABL1	C12	MDM2
C93	FECH	C52	ADAM17	C12	VDR
C93	GSTA1	C52	CHEK1	C11	CASP7
C93	HMGCR	C52	CTSF	C11	EGFR
C93	NR1H4	C52	CYP2C9	C11	FECH
C93	PGR	C52	ESR2	C11	GSTA1
C93	PIK3R1	C52	MET	C11	HNMT
C93	VDR	C52	NQO1	C11	NR3C1
C92	ABL1	C52	PLK1	C11	RXRA
C92	CDK6	C52	SRC	C11	NR1H2
C92	GSTM1	C52	VDR	C10	ADAM17
C92	MME	C51	ADH1C	C10	CHEK1
C92	NR1H4	C51	DCK	C10	EIF4E
C92	NR3C1	C51	EGFR	C10	ESR2
C92	SRC	C51	ELANE	C10	GSK3B
C91	CDK2	C51	NR1H4	C10	GSTP1
C91	CDK6	C51	PIK3R1	C10	IGF1
C91	CYP2C9	C51	SERPINA1	C10	NR1H2
C91	DCK	C51	SYK	C10	PARP1
C91	EGFR	C51	XIAP	C10	PDE5A
C91	IL2	C50	CYP2C9	C10	DHODH
C91	TGFBR1	C50	DHODH	C10	PLA2G2A
C91	VDR	C50	EGFR	C9	CBS
C90	EIF4E	C50	ELANE	C9	CHEK1
C90	ESR1	C50	LGALS3	C9	DCK
C90	ESR2	C50	SYK	C9	DHODH
C90	FECH	C50	VDR	C9	ELANE
C90	HCK	C49	ESR2	C9	GSK3B
C90	LGALS3	C49	GCK	C9	MMP3
C90	MAPK14	C49	KDR	C7	CCL5
C90	MET	C49	LGALS3	C7	CDK6
C90	MME	C49	MET	C7	CHEK1
C90	NR3C1	C49	NR3C1	C7	KIT
C90	PDE5A	C49	SYK	C7	MME
C89	ALB	C49	UMPS	C7	NR1H4
C89	BMP2	C49	VDR	C7	NR3C1
C89	CTNNA1	C48	ABL1	C7	SELE
C89	DCK	C48	HSP90AA1	C6	ADH1C
C89	DHODH	C48	MET	C6	CCNA2
C89	HNMT	C48	NR3C1	C6	CYP2C9
C89	IGF1R	C48	PPARG	C6	DPP4

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C89	MME	C48	VDR	C6	GSK3B
C88	CDK6	C47	CDK6	C6	GSTP1
C88	FGFR1	C47	CTSF	C6	PTPN11
C88	HRAS	C47	DHODH	C6	SERPINA1
C88	KIT	C47	EIF4E	C5	BLVRB
C88	MME	C47	EPHA2	C5	FECH
C88	NR3C1	C47	MMP2	C5	GRB2
C88	SERPINA1	C47	NR3C1	C5	KDR
C87	CASP3	C47	PGR	C5	NR3C1
C87	CDK2	C47	SERPINA1	C5	PLA2G2A
C87	CYP19A1	C47	VDR	C5	PTPN11
C87	F2	C46	ALDH2	C5	VDR
C87	HMGCR	C46	B3GAT1	C4	CYP2C9
C87	NR1H4	C46	CDK6	C4	GSK3B
C87	PGR	C46	LGALS3	C4	HSP90AA1
C86	AMY2A	C45	CCL5	C4	NQO1
C86	CDK6	C45	DCK	C4	PGR
C86	CYP19A1	C45	GSTM1	C4	REN
C86	ELANE	C45	NR1I2	C3	ANXA5
C86	ESR1	C45	PLA2G2A	C3	CDK2
C86	ESR2	C44	CA2	C3	CDK6
C86	GCK	C44	EGFR	C3	CTNNA1
C86	MAPK14	C44	FGFR2	C3	DPP4
C86	NR1I2	C44	GSTA1	C3	FECH
C86	PDE5A	C44	IL2	C3	GSTA1
C85	CTNNA1	C44	KIT	C3	HSP90AA1
C85	GSK3B	C44	PIK3R1	C3	MAPK14
C85	GSTP1	C44	PPARD	C3	NQO1
C85	PTPN11	C44	PPARG	C3	SERPINA1
C85	SERPINA1	C44	SRC	C2	ABL1
C85	VDR	C44	TTR	C2	ADAM17
C84	DCK	C43	AMY2A	C2	BLVRB
C84	DHODH	C43	CDK6	C2	CYP2C9
C84	ESR1	C43	CYP2C9	C2	IGF1
C84	GSK3B	C43	HCK	C2	MMP2
C84	HNMT	C43	MTAP	C2	PARP1
C84	MME	C43	NR1H4	C2	SERPINA1
C84	NR1H4	C43	UMPS	C2	TRPV1
C84	PPARD	C42	ABL1	C2	XIAP
C83	BRAF	C42	CYP2C9	C1	ADH1C
C83	CA2	C42	LGALS3	C1	BLVRB

**Table S5.** (Continued).

Compound	Target	Compound	Target	Compound	Target
C83	CYP19A1	C42	PPARD	C1	GSTA1
C83	DCK	C42	VDR	C1	HNMT
C83	FGFR1	C41	ABCG2	C1	NOS2
C83	GCK	C41	ABL1	C1	RXRA
C83	HCK	C41	ADH1C		

**Table S6.** The degree value of compound-target network.

Name	Degree	Name	Degree	Name	Degree
C117	36	C107	8	KDR	10
C94	20	C110	8	FGFR1	10
C31	15	C116	8	XIAP	9
C14	14	C9	7	CTSF	9
C80	13	C30	7	PPARD	8
C10	12	C37	7	DPP4	8
C41	12	C43	7	RXRA	8
C76	12	C50	7	SELE	8
C99	12	C57	7	MTAP	7
C102	12	C63	7	GSTP1	7
C104	12	C70	7	ALDH2	7
C115	12	C74	7	BLVRB	7
C3	11	C87	7	PPARG	7
C16	11	C88	7	ADAM17	7
C44	11	C92	7	HNMT	7
C52	11	C106	7	GCK	6
C53	11	C113	7	NOS2	6
C68	11	C1	6	RARB	6
C73	11	C4	6	CA2	6
C81	11	C12	6	PPARA	5
C90	11	C15	6	UMPS	5
C111	11	C26	6	MMP3	5
C2	10	C48	6	IGF1R	5
C17	10	C58	6	ABCG2	5
C28	10	C64	6	CCL5	4
C29	10	C67	6	CCNA2	4
C32	10	C85	6	AMY2A	4
C34	10	C108	6	CASP1	4
C35	10	C118	6	PARP1	4
C47	10	C25	5	ANXA5	4
C54	10	C42	5	TYMS	4
C59	10	C45	5	CBS	3
C65	10	C56	5	TGFB2	3



**Table S6.** (Continued).

Name	Degree	Name	Degree	Name	Degree
C72	10	C109	5	TTR	3
C83	10	C40	4	HRAS	3
C86	10	C46	4	TGFBR1	3
C95	10	C62	4	GSTM1	3
C96	10	PGR	37	EPHA2	3
C101	10	CDK6	35	GRB2	3
C19	9	ESR2	31	MAPK8	3
C20	9	VDR	30	XDH	3
C21	9	ABL1	29	F2	3
C22	9	CYP2C9	27	ALOX5	3
C24	9	NR1H4	27	ACHE	3
C33	9	NR1I2	23	ABCC1	3
C36	9	FECH	23	ABCB1	3
C38	9	SERPINA1	21	B3GAT1	2
C39	9	DCK	20	MDM2	2
C49	9	GSTA1	20	CASP7	2
C51	9	NR3C1	20	HMOX1	2
C55	9	ADH1C	18	CASP3	2
C61	9	ESR1	18	RNASE3	2
C69	9	MME	17	PLAU	2
C75	9	DHODH	17	GMPR2	2
C78	9	GSK3B	17	PTK2	2
C82	9	ELANE	16	PLK1	2
C100	9	CDK2	16	MMP9	2
C103	9	CTNNA1	15	DAPK1	2
C105	9	HSP90AA1	15	CDK1	2
C112	9	IL2	15	CCNB1	2
C114	9	LGALS3	14	AKT1	2
C5	8	EIF4E	14	TRPV1	1
C6	8	IGF1	14	AURKA	1
C7	8	KIT	13	S100A9	1
C11	8	PIK3R1	13	RHOA	1
C13	8	PDE5A	13	CTSB	1
C18	8	MET	13	FGFR2	1
C23	8	SRC	13	FHIT	1
C27	8	MAPK14	12	ODC1	1
C60	8	PLA2G2A	12	BRAF	1
C66	8	CHEK1	12	BMP2	1
C71	8	NQO1	12	ALB	1
C77	8	HCK	12	MAP2K1	1
C79	8	SYK	12	CD81	1

**Table S6.** (Continued).

Name	Degree	Name	Degree	Name	Degree
C84	8	EGFR	12	BCL2L1	1
C89	8	CYP19A1	12	POLB	1
C91	8	PTPN11	11	AKR1B10	1
C93	8	REN	11	TOP2A	1
C97	8	HMGCR	11	MPO	1
C98	8	MMP2	10	AKR1A1	1

**Table S7.** Protein-protein interactions.

Node1	Node2	Node1	Node2	Node1	Node2
PLK1	CCNB1	MAPK8	SRC	XIAP	BCL2L1
IGF1	IGF1R	SYK	IL2	CTNNA1	CA2
CDK1	CCNA2	SRC	MET	HRAS	SYK
CDK1	CCNB1	MMP3	EGFR	PTK2	IGF1R
AKT1	GSK3B	CHEK1	CCNB1	AKT1	HMOX1
GRB2	EGFR	GSK3B	AURKA	AKT1	MMP9
CCNA2	CDK6	NR1H4	ALB	BMP2	TGFBR1
CDK1	AURKA	CHEK1	CCNA2	CHEK1	HSP90AA1
CDK2	CCNB1	SYK	SRC	IGF1	EGFR
MAP2K1	BRAF	FGFR2	SRC	AKT1	ANXA5
CCNA2	CDK2	SRC	MAP2K1	MAPK8	PGR
XIAP	CASP3	SRC	IGF1R	PIK3R1	GSK3B
HRAS	EGFR	RHOA	EPHA2	EGFR	MDM2
CDK1	PLK1	GRB2	ABL1	BCL2L1	CDK2
CCNA2	CCNB1	TGFBR1	XIAP	HCK	POLB
AKT1	HSP90AA1	HRAS	PTK2	MET	IGF1
PLK1	AURKA	NQO1	HMOX1	GSTP1	MAPK8
HRAS	BRAF	PLAU	F2	CYP19A1	PGR
RXRA	PPARG	PIK3R1	MET	PTK2	MAPK14
PTPN11	EGFR	RHOA	KDR	CYP19A1	ESR2
TOP2A	CDK1	TGFB2	IGF1	MAPK8	ESR2
XIAP	CASP7	PLAU	EGFR	ABL1	EPHA2
ELANE	MPO	PTK2	CASP3	PIK3R1	PGR
PIK3R1	EGFR	SYK	PTK2	ADAM17	EGFR
HRAS	MAP2K1	TOP2A	PLK1	IGF1	KDR
CDK1	CDK2	TOP2A	CHEK1	CHEK1	AURKA
PLK1	CCNA2	PIK3R1	EPHA2	PGR	MAPK14
RHOA	MAPK8	RHOA	SYK	CDK1	BCL2L1
AKT1	BCL2L1	HCK	PTPN11	ABCB1	NR1H2
NR1H4	RXRA	ADH1C	ALDH2	PLA2G2A	ALOX5
AKT1	ESR1	RHOA	CDK2	AKT1	KIT
HRAS	SRC	PIK3R1	PTK2	BCL2L1	ANXA5

**Table S7.** (Continued).

<b>Node1</b>	<b>Node2</b>	<b>Node1</b>	<b>Node2</b>	<b>Node1</b>	<b>Node2</b>
AKT1	MDM2	EIF4E	CASP3	AKT1	MMP2
CCNB1	AURKA	HSP90AA1	AURKA	GSTM1	CYP2C9
AKT1	PIK3R1	ELANE	SERPINA1	CASP3	ALB
ESR1	SRC	GRB2	IL2	MAPK8	MMP9
PARP1	CASP3	PIK3R1	IGF1	MAPK8	HSP90AA1
UMPS	DHODH	PTPN11	IGF1	CHEK1	PARP1
HRAS	GRB2	RHOA	CTNNA1	ESR2	MAPK14
GRB2	PTPN11	SRC	PLAU	TYMS	CCNB1
CASP3	MAPK14	MAPK8	MAPK14	MMP9	EGFR
ESR1	IGF1R	SRC	ABL1	AKT1	ESR2
HSP90AA1	EGFR	ABCC1	ABCG2	AKR1B10	GCK
FGFR2	GRB2	SYK	PTPN11	TYMS	CDK2
AKT1	GRB2	ESR1	EGFR	GSTP1	CYP2C9
AKT1	RHOA	TOP2A	TYMS	AKT1	CCNB1
RXRA	RARB	GSK3B	NR3C1	NOS2	HMOX1
PIK3R1	HRAS	MAPK14	IL2	MAPK8	PPARG
CDK1	TYMS	HCK	SYK	ABL1	BCL2L1
PARP1	POLB	SRC	MAPK14	MAPK8	MMP2
CCNA2	AURKA	ESR1	ESR2	EGFR	IL2
MAPK8	BCL2L1	CHEK1	TYMS	PGR	EGFR
TOP2A	CCNB1	PIK3R1	MAP2K1	EGFR	MAPK14
RNASE3	MPO	HCK	ABL1	ANXA5	ALB
PIK3R1	SRC	HCK	HRAS	ELANE	MMP9
HSP90AA1	PGR	HSP90AA1	IL2	SRC	BCL2L1
CDK6	CCNB1	HCK	SRC	ALB	REN
SRC	IGF1	CDK1	SRC	GSTA1	CYP2C9
TOP2A	CCNA2	PTK2	HSP90AA1	EGFR	LGALS3
TGFBR1	TGFB2	CASP3	BCL2L1	MTAP	ODC1
HSP90AA1	NR3C1	F2	IGF1	CCL5	MMP9
SERPINA1	ALB	AKT1	AURKA	MAPK8	HMOX1
PTK2	PTPN11	CDK1	MAP2K1	BCL2L1	MAPK14
GRB2	SYK	RHOA	HSP90AA1	CASP7	BCL2L1
HRAS	PTPN11	DAPK1	CASP3	ADH1C	GSTM1
ABL1	MDM2	ABCB1	MAPK8	CCL5	IL2
PTPN11	MAP2K1	CASP7	CASP3	LGALS3	MMP2
SRC	HSP90AA1	NR3C1	MAPK14	B3GAT1	IL2
CASP7	PARP1	HRAS	RHOA	AKT1	PARP1
PIK3R1	KIT	HRAS	F2	FGFR1	IGF1
PIK3R1	FGFR1	HCK	GRB2	PPARG	EGFR
HSP90AA1	KDR	EIF4E	MAPK14	FGFR2	IGF1
RHOA	SRC	CDK2	AURKA	TYMS	DCK

**Table S7.** (Continued).

<b>Node1</b>	<b>Node2</b>	<b>Node1</b>	<b>Node2</b>	<b>Node1</b>	<b>Node2</b>
MAP2K1	MAPK14	CDK1	CDK6	AKT1	EIF4E
PIK3R1	IGF1R	RHOA	IL2	AKT1	CCNA2
ESR1	HSP90AA1	AKT1	MAPK14	AKT1	BMP2
SRC	MMP9	AKR1A1	ALDH2	HRAS	BCL2L1
AKT1	SRC	PIK3R1	KDR	ALB	KDR
GRB2	PTK2	PTK2	MET	MAPK8	BMP2
AKT1	IL2	PTK2	KDR	KIT	ABCG2
GRB2	MAP2K1	AKT1	RXRA	MAPK8	IGF1
CDK1	HSP90AA1	ABL1	CCNA2	CASP1	BCL2L1
PIK3R1	FGFR2	ALB	TTR	AKT1	ALB
ELANE	RNASE3	SYK	MAPK14	SERPINA1	TTR
TOP2A	AURKA	ABL1	CDK6	ALB	EGFR
HRAS	KIT	CHEK1	CDK1	CASP3	CCNB1
AKT1	PTPN11	ABL1	CDK2	MET	CASP3
MAPK8	IL2	CASP1	CASP3	EPHA2	PTPN11
PIK3R1	GRB2	NQO1	ODC1	AKT1	ABCG2
HCK	EGFR	MME	DPP4	EPHA2	IGF1
HRAS	FGFR1	HCK	PIK3R1	ALB	MPO
GRB2	MET	SERPINA1	IGF1	ESR1	PARP1
HRAS	MET	HCK	MAPK14	MMP9	HMOX1
PTPN11	KIT	CASP1	RHOA	ADH1C	GSTA1
IGF1	ALB	PTK2	EGFR	GSTA1	GSTM1
SRC	NOS2	HCK	F2	CASP3	CDK2
GRB2	KDR	SRC	BRAF	ABCB1	EGFR
SRC	MMP2	ALOX5	CYP2C9	CASP3	EGFR
FGFR2	HRAS	MAPK8	MAP2K1	HSP90AA1	BRAF
CDK2	CDK6	ESR1	NR3C1	MMP9	LGALS3
RHOA	PTK2	TYMS	UMPS	ESR2	EGFR
SRC	PGR	MAPK8	ABL1	CTSB	BCL2L1
HRAS	IGF1R	ABL1	MAPK14	XIAP	MDM2
PIK3R1	PTPN11	RXRA	MAPK8	FGFR2	MDM2
MAPK14	HMOX1	EIF4E	CASP7	NR1I2	CYP2C9
HRAS	LGALS3	MAPK8	MET	PARP1	ANXA5
PTPN11	MET	RXRA	NR3C1	HRAS	PLK1
GRB2	SRC	CASP3	ANXA5	NQO1	GSTM1
SRC	PTK2	PIK3R1	RHOA	ADH1C	GSTP1
ESR1	IGF1	MMP3	MMP2	ALB	IL2
BLVRB	HMOX1	MAPK8	KIT	ANXA5	EGFR
RHOA	PTPN11	SRC	EPHA2	MMP9	ALB
RHOA	TGFBR1	PIK3R1	ESR2	HSP90AA1	CDK2
AKT1	CASP3	PIK3R1	NR3C1	AKT1	ADAM17

**Table S7.** (Continued).

<b>Node1</b>	<b>Node2</b>	<b>Node1</b>	<b>Node2</b>	<b>Node1</b>	<b>Node2</b>
HSP90AA1	PLK1	TGFB2	ALB	MAPK8	PARP1
FECH	HMOX1	PPARA	NOS2	PPARG	HMOX1
PTPN11	KDR	GSK3B	CDK6	EGFR	CCNB1
CDK2	MDM2	IGF1R	MDM2	PLAU	MMP2
RHOA	EGFR	PIK3R1	HSP90AA1	CASP7	ANXA5
CHEK1	MDM2	TTR	MPO	PPARG	REN
SRC	PTPN11	HSP90AA1	MMP2	PGR	IGF1
PTPN11	IL2	KDR	MAPK14	CASP1	SYK
PTPN11	IGF1R	AKT1	RARB	HRAS	MMP9
GRB2	KIT	SRC	CTNNA1	RHOA	MMP9
MAPK8	NR3C1	PIK3R1	IL2	BCL2L1	MDM2
HRAS	MAPK8	ELANE	TTR	AKT1	NR3C1
FGFR2	PTPN11	CASP1	EIF4E	HRAS	KDR
GRB2	IGF1R	CASP7	PTK2	GSTP1	GSTA1
HRAS	IL2	RXRA	NR1I2	CASP3	HMOX1
SRC	ESR2	RXRA	ALB	ABL1	HSP90AA1
ESR1	PGR	FGFR1	CTNNA1	TYMS	PLK1
HRAS	HSP90AA1	F2	MAP2K1	PLAU	MMP9
SRC	EGFR	MET	CTNNA1	AKR1B10	ALDH2
PIK3R1	ESR1	AKT1	XIAP	CASP1	CTSB
FGFR1	GRB2	CHEK1	KIT	ESR1	MDM2
ESR1	CYP19A1	PIK3R1	CTNNA1	MMP9	CASP3
SRC	MDM2	PGR	NR3C1	GSTP1	NQO1
ESR1	MAPK14	PTPN11	CTNNA1	ELANE	CASP3
CTNNA1	EGFR	EPHA2	CTNNA1	HRAS	AURKA
CHEK1	CDK2	ABL1	CTNNA1	PLAU	CTSB
GRB2	EPHA2	RXRA	NOS2	GSTP1	GSTM1
CCNA2	MDM2	VDR	RARB	ESR2	IGF1
AKT1	IGF1	AKT1	NOS2	ESR1	CDK2
F2	ALB	CTNNA1	IGF1	XIAP	CTSB
MAP2K1	IL2	PPARA	F2	MET	EGFR
IGF1	MMP2	ESR1	MAPK8	MMP9	MPO
SRC	KDR	IGF1	KIT	MAPK8	ANXA5
SRC	F2	MMP9	MMP2	MME	KIT
MMP9	MMP3	TYMS	CCNA2	MMP9	PPARG
HCK	PTK2	HCK	EPHA2	HSP90AA1	NOS2
ESR2	HSP90AA1	CTNNA1	KDR	EPHA2	HSP90AA1
HRAS	IGF1	SERPINA1	TGFB2	ALB	KIT
RXRA	PPARA	RARB	MAPK14	HSP90AA1	MDM2
EPHA2	PTK2	BMP2	XIAP	MMP9	MAP2K1
RHOA	GRB2	CTNNA1	MMP3	HRAS	CCNB1

**Table S7.** (Continued).

Node1	Node2	Node1	Node2	Node1	Node2
ESR1	GRB2	CTNNA1	IGF1R	ACHE	ALB
PIK3R1	SYK	RNASE3	TTR	HSP90AA1	MET
PPARA	HSP90AA1	TYMS	AURKA	GMMPR2	PDE5A
GRB2	IGF1	PIK3R1	F2	CCL5	MMP3
VDR	RXRA	CTNNA1	MAPK14	ESR1	ABL1
RHOA	CASP3	CASP3	MDM2	CHEK1	PLK1
RXRA	PPARD	RXRA	CDK1	ANXA5	KDR
RHOA	MET	AKT1	HRAS	DAPK1	GSTP1
CDK1	MDM2	MAPK8	CASP3	XIAP	ANXA5
				ESR1	ALB

**Table S8.** The degree value of PPI network.

Name	Degree	Name	Degree	Name	Degree
AKT1	35	PGR	10	GSTA1	4
SRC	34	HMOX1	10	CTSB	4
EGFR	29	ESR2	10	RNASE3	3
HRAS	29	ANXA5	10	CYP19A1	3
PIK3R1	28	PLK1	9	ALDH2	3
HSP90AA1	27	XIAP	9	ABCG2	3
MAPK8	27	NR3C1	9	ABCB1	3
IGF1	24	MMP2	9	NR1I2	3
GRB2	22	F2	9	CCL5	3
CASP3	22	PARP1	8	NR1H4	2
RHOA	21	TOP2A	7	UMPS	2
MAPK14	21	CASP7	7	POLB	2
PTPN11	20	FGFR2	7	VDR	2
ESR1	19	GSTP1	7	DAPK1	2
ALB	19	CDK6	6	ODC1	2
MMP9	18	PPARG	6	MME	2
PTK2	17	ELANE	6	ALOX5	2
CDK1	15	NOS2	6	ADAM17	2
BCL2L1	15	PLAU	6	AKR1B10	2
MDM2	15	CASP1	6	REN	2
IL2	15	GSK3B	5	DHODH	1
CTNNA1	15	MPO	5	BLVRB	1
CDK2	14	SERPINA1	5	FECH	1
ABL1	14	FGFR1	5	PPARD	1
CCNB1	13	MMP3	5	ABCC1	1
RXRA	13	EIF4E	5	AKR1A1	1
KDR	13	TTR	5	DPP4	1
HCK	13	CYP2C9	5	CA2	1

**Table S8.** (Continued).

Name	Degree	Name	Degree	Name	Degree
MET	13	GSTM1	5	PLA2G2A	1
CCNA2	12	BRAF	4	GCK	1
AURKA	12	RARB	4	MTAP	1
MAP2K1	12	TGFBR1	4	B3GAT1	1
CHEK1	12	TGFB2	4	DCK	1
SYK	11	LGALS3	4	ACHE	1
KIT	11	PPARA	4	GMPR2	1
EPHA2	11	NQO1	4	PDE5A	1
IGF1R	10	ADH1C	4		
TYMS	10	BMP2	4		

**Table S9.** The GO terms.

Category	GO terms	Count	PValue
BP	Positive Regulation of Nitric Oxide Biosynthetic Process	4	6.97E-06
BP	Positive Regulation of Map Kinase Activity	3	0.001237418
BP	Positive Regulation of Smooth Muscle Cell Proliferation	3	0.001279427
BP	Positive Regulation of Epithelial Cell Proliferation	3	0.001279427
BP	Cellular Response to Insulin Stimulus	3	0.002096572
BP	Insulin Receptor Signaling Pathway	3	0.002150636
BP	Cellular Response to Lipopolysaccharide	3	0.004450872
BP	Peptidyl-Tyrosine Phosphorylation	3	0.008011962
BP	Protein Autophosphorylation	3	0.010034193
BP	MAPK cascade	3	0.022274742
BP	Viral Process	3	0.028478227
BP	Positive Regulation of Apoptotic Process	3	0.028654655
BP	Intracellular Signal Transduction	3	0.049093253
BP	Epidermal Growth Factor Receptor Signaling Pathway	6	1.01E-09
BP	Positive Regulation of Transcription From Rna Polymerase Ii Promoter	7	1.24E-04
BP	Peptidyl-Serine Phosphorylation	4	1.72E-04
BP	Positive Regulation of Protein Phosphorylation	4	1.80E-04
BP	Positive Regulation of Glucose Import	4	2.31E-06
BP	Regulation of Nitric-Oxide Synthase Activity	3	2.39E-04
BP	Cell proliferation	5	2.51E-04
BP	Phosphatidylinositol-mediated signaling	7	2.62E-10
BP	Platelet activation	5	2.69E-06
BP	Ras protein signal transduction	4	3.05E-05
BP	Vascular endothelial growth factor receptor signaling pathway	5	4.09E-07
BP	ErbB2 signaling pathway	7	4.38E-13
BP	Positive regulation of ERK1 and ERK2 cascade	4	4.62E-04
BP	Fc-epsilon receptor signaling pathway	4	4.85E-04
BP	Leukocyte migration	6	5.28E-08

**Table S9.** (Continued).

Category	GO terms	Count	PValue
BP	Positive regulation of cell migration	4	5.34E-04
BP	Regulation of phosphatidylinositol 3-kinase signaling	5	5.66E-07
BP	T cell costimulation	5	5.66E-07
BP	Positive regulation of dna replication	3	6.28E-04
BP	Insulin-like growth factor receptor signaling pathway	3	6.74E-05
BP	Phosphatidylinositol phosphorylation	4	7.36E-05
BP	Ephrin receptor signaling pathway	5	8.38E-07
BP	Phosphatidylinositol-3-phosphate biosynthetic process	3	8.55E-04
CC	Cell-cell junction	3	0.008577958
CC	Perinuclear region of cytoplasm	4	0.013192769
CC	Mitochondrion	5	0.020163219
CC	Plasma membrane	11	3.32E-04
MF	SH3/SH2 adaptor activity	3	0.001103904
MF	Kinase activity	4	0.001151638
MF	Protein kinase activity	4	0.003588521
MF	Protein tyrosine kinase activity	3	0.006048723
MF	ATP binding	6	0.007635054
MF	Protein serine/threonine kinase activity	3	0.042909834
MF	Phosphatidylinositol-4,5-bisphosphate 3-kinase activity	4	2.08E-05
MF	Protein phosphatase binding	5	2.33E-07
MF	Insulin receptor binding	4	2.51E-06
MF	Identical protein binding	7	2.65E-05
MF	Nitric-oxide synthase regulator activity	4	3.17E-08
MF	Insulin receptor substrate binding	3	4.03E-05
MF	Enzyme binding	6	7.40E-06

**Table S10.** The details of KEGG pathways.

ID	Term	Count	%	PValue
hsa04915	Estrogen signaling pathway	9	56.25	3.87E-12
hsa04917	Prolactin signaling pathway	8	50	2.99E-11
hsa05200	Pathways in cancer	11	68.75	2.70E-10
hsa04722	Neurotrophin signaling pathway	8	50	1.28E-09
hsa04510	Focal adhesion	9	56.25	1.45E-09
hsa04068	FoxO signaling pathway	8	50	2.79E-09
hsa04014	Ras signaling pathway	9	56.25	3.04E-09
hsa05161	Hepatitis B	8	50	4.85E-09
hsa04012	ERBB signaling pathway	7	43.75	9.52E-09
hsa05215	Prostate cancer	7	43.75	1.02E-08
hsa04015	Rap1 signaling pathway	8	50	6.40E-08
hsa05214	Glioma	6	37.5	1.21E-07
hsa05160	Hepatitis C	7	43.75	1.23E-07



**Table S10.** (Continued).

<b>ID</b>	<b>Term</b>	<b>Count</b>	<b>%</b>	<b>PValue</b>
hsa05120	Epithelial cell signaling in Helicobacter pylori infection	6	37.5	1.41E-07
hsa04664	Fc epsilon RI signaling pathway	6	37.5	1.52E-07
hsa04914	Progesterone-mediated oocyte maturation	6	37.5	5.28E-07
hsa04660	T cell receptor signaling pathway	6	37.5	1.06E-06
hsa05231	Choline metabolism in cancer	6	37.5	1.11E-06
hsa04668	TNF signaling pathway	6	37.5	1.48E-06
hsa04071	Sphingolipid signaling pathway	6	37.5	2.62E-06
hsa05213	Endometrial cancer	5	31.25	2.75E-06
hsa05223	Non-small cell lung cancer	5	31.25	3.71E-06
hsa04370	VEGF signaling pathway	5	31.25	5.24E-06
hsa04010	MAPK signaling pathway	7	43.75	5.47E-06
hsa05210	Colorectal cancer	5	31.25	5.60E-06
hsa04550	Signaling pathways regulating pluripotency of stem cells	6	37.5	5.61E-06
hsa05211	Renal cell carcinoma	5	31.25	7.20E-06
hsa05218	Melanoma	5	31.25	9.65E-06
hsa05220	Chronic myeloid leukemia	5	31.25	1.02E-05
hsa05152	Tuberculosis	6	37.5	1.77E-05
hsa04062	Chemokine signaling pathway	6	37.5	2.25E-05
hsa04151	PI3K-Akt signaling pathway	7	43.75	3.25E-05
hsa04750	Inflammatory mediator regulation of TRP channels	5	31.25	3.48E-05
hsa05203	Viral carcinogenesis	6	37.5	3.60E-05
hsa04919	Thyroid hormone signaling pathway	5	31.25	6.52E-05
hsa05219	Bladder cancer	4	25	6.84E-05
hsa04650	Natural killer cell mediated cytotoxicity	5	31.25	8.22E-05
hsa04611	Platelet activation	5	31.25	0.000105259
hsa04380	Osteoclast differentiation	5	31.25	0.000108447
hsa04910	Insulin signaling pathway	5	31.25	0.00013277
hsa05221	Acute myeloid leukemia	4	25	0.000174582
hsa05206	MicroRNAs in cancer	6	37.5	0.000176222
hsa05230	Central carbon metabolism in cancer	4	25	0.000259889
hsa05212	Pancreatic cancer	4	25	0.000272137
hsa04662	B cell receptor signaling pathway	4	25	0.00032486
hsa05133	Pertussis	4	25	0.000415665
hsa04810	Regulation of actin cytoskeleton	5	31.25	0.000664018
hsa04540	Gap junction	4	25	0.000665015
hsa04066	HIF-1 signaling pathway	4	25	0.000857571
hsa05142	Chagas disease (American trypanosomiasis)	4	25	0.001082513
hsa04620	Toll-like receptor signaling pathway	4	25	0.001144049
hsa04931	Insulin resistance	4	25	0.001207767

**Table S10.** (Continued).

<b>ID</b>	<b>Term</b>	<b>Count</b>	<b>%</b>	<b>PValue</b>
hsa05145	Toxoplasmosis	4	25	0.001273697
hsa05169	Epstein-Barr virus infection	4	25	0.00171739
hsa04630	Jak-STAT signaling pathway	4	25	0.00281556
hsa04921	Oxytocin signaling pathway	4	25	0.003100402
hsa04932	Non-alcoholic fatty liver disease (NAFLD)	4	25	0.003159434
hsa05164	Influenza A	4	25	0.004714372
hsa04150	mTOR signaling pathway	3	18.75	0.005957691
hsa04024	cAMP signaling pathway	4	25	0.006762389
hsa04210	Apoptosis	3	18.75	0.006783896
hsa05131	Shigellosis	3	18.75	0.007215552
hsa04920	Adipocytokine signaling pathway	3	18.75	0.008583626
hsa04520	Adherens junction	3	18.75	0.00882218
hsa05100	Bacterial invasion of epithelial cells	3	18.75	0.010574903
hsa04144	Endocytosis	4	25	0.011608223
hsa04725	Cholinergic synapse	3	18.75	0.020691272
hsa04152	AMPK signaling pathway	3	18.75	0.025078364
hsa04728	Dopaminergic synapse	3	18.75	0.02701055