SUPPLEMENTAL MATERIALS

Appendix A: Detailed search strategy.

Web of science:

TS=("non-alcoholic fatty liver disease" OR "nonalcoholic fatty liver disease" OR NAFLD OR "non-alcoholic fatty liver" OR "nonalcoholic fatty liver" OR NAFL OR "non-alcoholic steatohepatitis" OR "nonalcoholic steatohepatitis" OR NASH OR "hepatic steatosis") AND TS=(SNP* OR polymorphism* OR variant* OR variation* OR mutation*) AND language: (English OR Chinese) The index=SCI-EXPANDED, CPCI-S, ESCI timescale=1980-2022

Pubmed:

(("non-alcoholic fatty liver disease" OR "nonalcoholic fatty liver disease" OR NAFLD OR "non-alcoholic fatty liver" OR "nonalcoholic fatty liver" OR NAFL OR "non-alcoholic steatohepatitis" OR "nonalcoholic steatohepatitis" OR NASH OR "hepatic steatosis") AND (SNP* OR polymorphism* OR variant* OR variation* OR mutation*)) AND ((humans) AND (chinese OR english) AND (1980:2022))

Embase:

('non-alcoholic fatty liver disease':ab,ti OR 'nonalcoholic fatty liver disease':ab,ti OR nafld:ab,ti OR 'non-alcoholic fatty liver':ab,ti OR 'nonalcoholic fatty liver':ab,ti OR nafl:ab,ti OR 'non-alcoholic steatohepatitis':ab,ti OR 'nonalcoholic steatohepatitis':ab,ti OR nash:ab,ti OR 'hepatic steatosis':ab,ti) AND (snp*:ab,ti OR polymorphism*:ab,ti OR variant*:ab,ti OR variation*:ab,ti OR mutation*:ab,ti) AND (/lim OR /lim) AND /lim AND /lim AND /py

Supplementary Table S1. Genome-wide association studies and whole exome sequencing studies on NAFLD

Study	Country	Ethnicity	Sample	Outcome	Diagnostic methods	Susceptibility gene	SNP	*P* value
Genome-wide association studies								
Romeo et al. 2008	USA	Mixed	2111	Hepatic fat content	H-MRS	*PNPLA3*	rs738409	5.90E-10
Chalasani et al. 2010	USA	Caucasian	236 women	NAFLD activity score	Liver biopsy	*FDFT1*	rs2645424	6.80E-07
						COL13A1	rs1227756	2.00E-07
						LTBP3	rs6591182	8.60E-07
						EFCAB4B	rs887304	7.70E-07
						-	rs343062	2.70E-08
Speliotes et al. 2011	USA	Caucasians	GWAS: 7176 Validation: 592/1405	NAFLD	GWAS: CT Validation: liver biopsy	*PNPLA3*	rs738409	3.60E-43
						GCKR	rs780094	2.59E-08
						NCAN	rs2228603	5.29E-05
						LYPLAL1	rs12137855	4.12E-05
Kawaguchi et al. 2012	Japan	Asians	529/932	NAFLD	Liver biopsy	*PNPLA3*	rs738407	1.00E-07
						PNPLA3	rs738409	1.40E-10
						PNPLA3	rs2076211	1.40E-09
						PNPLA3	rs2896019	1.50E-10
						PNPLA3	rs1010023	1.50E-09
						PNPLA3	rs926633	7.50E-10
						PNPLA3	rs3810622	1.00E-07
Kitamoto et al. 2013	Japan	Asians	GWAS: 372/934 Validation: 544/1012	NAFLD	GWAS: liver biopsy Validation: liver biopsy/ CT/ MRI	*PNPLA3*	rs738409	6.80E-14
						PNPLA3	rs2896019	1.80E-13
						PNPLA3	rs3810622	1.70E-11
						SAMM50	rs738491	2.30E-11
						SAMM50	rs3761472	2.30E-11

						SAMM50	rs2143571	1.80E-10
						PARVB	rs6006473	1.20E-10
						PARVB	rs5764455	1.40E-10
						PARVB	rs6006611	4.20E-11
Feitosa et al. 2013	USA	Caucasians	2705	NAFLD	CT	*ERLIN1*	rs2862954	4.88E-10
						ERLIN1	rs1408579	4.57E-10
						ERLIN1	rs10883451	4.29E-10
						CHUK	rs11597086	1.46E-09
						CHUK	rs11591741	1.84E-09
						CWF19L1	rs17729876	1.82E-09
						CWF19L1	rs17668255	1.82E-09
						CWF19L1	rs17668357	1.65E-09
						CWF19L1	rs12784396	2.47E-09
Kozlitina et al. 2014	USA	Mixed	2736	NAFLD	H-MRS	*PNPLA3*	rs738409	4.00E-16
						PNPLA3	rs2281135	6.90E-12
						TM6SF2	rs58542926	5.70E-08
Chung et al. 2018	Korea	Asians	GWAS: 1593/2816	NAFLD	Ultrasound	*PNPLA3*	rs738409	2.56E-08
			Validation: 744/1137			*PNPLA3*	rs12483959	1.34E-08
						PNPLA3	rs2281135	1.29E-07
						SAMM50	rs3761472	3.28E-07
						SAMM50	rs2143571	5.86E-07
						SAMM50	rs2073080	7.83E-07
						TM6SF2	rs58542926	1.39E-02
Kawaguchi et al. 2018	Japan	Asians	902/7672	NAFLD	Liver biopsy	*PNPLA3*	rs2896019	2.30E-31
						GCKR	rs1260326	9.60E-10
						GATAD2A	rs4808199	2.30E-08
Anstee et al. 2020	Italy	Caucasians	GWAS: 1483/17781	NAFLD	Liver biopsy	*PNPLA3*	rs738409	6.60E-21

			Validation: 559/945			*TM6SF2*	rs58542926	4.63E-05
						HSD17B13	rs72613567	0.025
						PYGO1	rs11852624	0.035
Park et al. 2020	Korea	Asians	1486/25888	NAFLD	Ultrasound	*PNPLA3*	rs738409	5.52E-09
						SAMM50	rs2073080	5.81E-07
						RBFOX2	rs11089778	2.26E-03
						LARGE	rs240072	2.98E-03
						TRIOBP	rs12628603	7.01E-03
Yoshida et al. 2020	Japan	Asians	GWAS: 275/1411	NAFLD	Ultrasound/ CT	*BTNL2*	rs2076529	2.10E-06
			Validation: 4043/5683			*MIR548F3*	rs2189883	6.19E-03
Park et al. 2020	USA	Mixed	506/1023	NAFLD	MRI	*PIP5K1B*	rs386734729	2.78E-07
						-	rs10827317	4.82E-07
						-	rs58778359	5.99E-07
						-	rs77249491	7.39E-07
						-	chr5:130017402	7.59E-07
						PLCB1	rs6086536	7.97E-07
						-	rs78276535	8.71E-07
						-	rs10797551	9.42E-07
						-	rs146418612	9.62E-07
Namjou et al. 2019	USA	Caucasians	1106/8571 adults and children	NAFLD	Liver biopsy/ image	*PNPLA3*	rs738409	1.70E-20
						PNPLA3	rs738408	1.93E-20
						PNPLA3	rs3747207	2.63E-20
						PNPLA3	rs2294915	1.40E-19
						TR1B1	rs2980888	5.98E-07
						TR1B1	rs2954038	8.30E-07
Adams et al. 2013	Australia	Caucasians	126/802 children	NAFLD	Ultrasound	*GC*	rs222054	1.20E-06

						LCP1	rs7324845	2.96E-06
						LPPR4	rs12743824	4.82E-06
						SLC38A8	rs11864146	1.86E-06
Wattacheril et al. 2017	USA	Hispanics	234 children (boys)	NAFLD activity score	Liver biopsy	*TRAPPC9*	rs11166927	8.66E-07
						TRAPPC9	rs11166926	1.40E-06
						TRAPPC9	rs2242181	5.33E-06
						TRAPPC9	rs7836476	7.91E-06
						ACTR5	rs6128907	9.92E-07
						ACTR5	rs6124026	1.02E-06
						ETS1	rs3935794	3.61E-06
						ACTR5	rs6128918	4.69E-06
						SDK1	rs688020	5.68E-06
						IL18RAP	rs11465670	7.52E-06
						RAB37	rs12942311	9.15E-06
Whole exome sequencing studies								
Kleinstein et al. 2018	USA	Caucasians	28/4455 adults	Hepatic fibrosis in NAFLD	Liver biopsy	*PNPLA3*	rs738408	2.09E-09
						PNPLA3	rs738409	2.10E-09
Bale et al. 2019	India	Asians	WESSs: 6/2 adults Validation:33/61 adults	Lean NAFLD	Ultrasound	*PEMT*	rs7946	0.04

Note. ARFI: acoustic pulse radiant force imaging; CT: computerized tomography; MRI: magnetic resonance imaging; H-MRS: Hydrogen proton magnetic resonance spectroscopy.

Supplementary Table S2. Study characteristics of candidate gene association studies on NAFLD

Study	Country	Ethnicity	Sample size: cases/ controls	Study population	Diagnostic method	Genotype method	Candidate gene	Genetic Variants	Significant associations reported	Adjustment for confounders	NOS
George 1998	Australia	Caucasians	51/2375	Adults	Liver biopsy	PCR	*HFE*	rs1800562 rs1799945	Yes	No	7
Bonkovsky 1999	American	Caucasians	36/348	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	Yes	No	5
Mendler 1999	The French	Caucasians	161/254	Adults	Liver biopsy	PCR	*HFE*	rs1800562 rs1799945	Yes	No	5
Chitturi 2002	Australia	Caucasians	59/141	Adults	Liver biopsy	PCR-SSCP	*HFE*	rs1800562 rs1799945	Yes	No	5
Li 2003	China	Asians	45/18	Adults	Ultrasound	PCR-RFLP	*CYP2E1*	rs2031920 rs3813867	Yes	No	4
Valenti 2003	Italy	Caucasians	134/291	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	Yes	No	5
Bugianesi 2004	Italy	Caucasians	210/200	Adults	Liver biopsy	NA	*HFE*	rs1800562 rs1799945	No	No	7
Namikawa 2004	Japan	Asians	63/150	Adults	Liver biopsy	PCR-RFLP	*SOD2* *MTTP*	1183 T/C	Yes	Yes, age, BMI, ALT, TG, TC	8
								rs1800591	No	Yes, age, BMI, ALT, TG, TC	8
Nozaki 2004	Japan	Asians	63/100	Adults	Liver biopsy	PCR-RFLP	*IL1B*	rs16944	Yes	No	5
							ADRB3	rs4994	Yes	No	5
Lin 2005	China	Asians	33/125	Adults	Ultrasound	PCR-RFLP	*HFE*	rs1800562 rs1799945	No	No	5
Shi 2005	China	Asians	107/112	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766	Yes	No	6
Song 2005	American	Caucasians	28/59	Children and adults	Liver biopsy	DNA sequencing	*PEMT*	rs7946	Yes	No	6
Verdi 2005	Turkey	Caucasians	72/119	Adults	Liver biopsy	PCR-RFLP	*PPARA*	rs1800206	No	No	5
Chen 2006	China	Asians	117/63	Adults	Ultrasound	DNA sequencing	*LEPR*	rs1137100	No	No	5

Fan 2006	China	Asians	214/182	Adults	Ultrasound	PCR	*APOE*	rs429358 rs7412	No	No	6
Jiang 2006	China	Asians	117/63	Adults	Ultrasound	DNA sequencing	*LEPR*	rs1137100 rs1137101	No	No	5
Lai 2006	China	Asians	108/115	Adults	Ultrasound	PCR-RFLP	*LEP*	rs7799039	Yes (female)	No	7
Simsek 2006	Turkey	Caucasians	30/2677	Adults	Liver biopsy	PCR	*HFE*	rs1800562 rs1799945	No	No	4
Valenti 2006	Italy	Caucasians	353/114	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	Yes	No	7
							SERPINA1	rs17580 rs28929474	Yes	No	7
Yao 2006	China	Asians	194/189	Adults	Ultrasound	Gene chip	*APOB*	11039 G/A	Yes	No	5
							ADRB3	rs4994	No	No	5
							CYP2E1	rs2031920 rs3813867	No	No	5
Zamin 2006	Brazil	Caucasians	29/20	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	No	No	5
Demirag 2007	Turkey	Caucasians	237/201	Adults	Ultrasound	PCR	*APOE*	rs429358 rs7412	No	No	6
Dhillon 2007	India	Caucasians	59/100	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945 rs1800730	No	No	4
Dong 2007	Japan	Asians	107/150	Adults	Liver biopsy	PCR-RFLP	*PEMT*	rs7946	Yes	No	6
Guo 2007	China	Asians	40/20	Adults	Ultrasound/CT/liver biopsy	PCR-RFLP	*CYP2E1*	rs2031920 rs3813867	Yes	No	4
Ma 2007	Japan	Asians	77/107	Adults	Liver biopsy	PCR-RFLP	*RETN*	rs1862513	Yes	No	6
Serin 2007	Turkey	Caucasians	34/282	Adults	Liver biopsy	PCR	*MTHFR*	rs1801133	No	No	5
Sookoian2007	Argentina	Caucasians	136/64	Adults	Liver biopsy	High-throughput genotyping	*CLOCK*	rs1554483 rs11932595 rs4580704 rs6843722 rs6850524 rs4864548	Yes (rs11932595, rs6843722)	No	7
Tokushige 2007	Japan	Asians	66/100	Adults	Liver biopsy	DNA sequencing	*TNF*	rs1799724 rs361525	No	No	6

								rs1800629 rs1800630 rs1799964			
							LTA	rs909253	No	No	6
Ye 2007	China	Asians	155/141	Adults	Ultrasound	PCR	*PPARG*	rs1801282	No	No	5
Aigner 2008	Australia	Caucasians	140/25	Adults	Liver biopsy	RT-PCR	*HFE*	rs1800562 rs1799945	No	No	5
Bi 2008	China	Asians	398/200	Adults	Ultrasound	PCR-RFLP	*APOE*	rs429358 rs7412	Yes	No	5
Chen 2008	China	Asians	79/63	Adults	Ultrasound	Oligonucleotide microarray	*PPARA*	rs1800234	Yes	No	5
Du 2008	China	Asians	87/79	Adults	Ultrasound	PCR	*PEMT*	rs7946	No	Yes, HOMA-IR, waistline, LDL	5
Huang 2008	China	Asians	51/50	Adults	Ultrasound/Liver biopsy	PCR-RFLP	*PEMT*	rs7946	Yes	Yes, BMI, Blood lipid, blood glucose and insulin levels	8
Li 2008	China	Asians	83/150	Adults	Liver biopsy	PCR-RFLP	*MTHFR*	rs1801133	Yes	No	5
Ma 2008	China	Asians	78/104	Adults	Ultrasound/ CT	PCR-RFLP	*IL6*	rs1800796	Yes	No	6
Musso 2008	Italy	Caucasians	70/70	Adults	Liver biopsy /ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766 rs1501299	Yes	No	7
Nakagawa 2008	Japan	Asians	91/69	Adults	Ultrasound	PCR	*HP*	HP 1/2^	Yes	Yes, age, gender, BMI	6
Neri 2008	Italy	Caucasians	272/430	Adults	Ultrasound	DNA sequencing	*HFE*	rs1800562 rs1799945	No	No	5
Sazci 2008	Turkey	Caucasians	57/245	Adults	Liver biopsy	PCR-RELP	*APOE*	rs429358 rs7412	Yes	No	5
Sazci 2008	Turkey	Caucasians	57/324	Adults	Liver biopsy	PCR-RFLP	*MTHFR*	rs1801131 rs1801133	Yes (rs1801131)	No	7
Sookoia 2008	Argentina	Caucasians	108/55	Adults	Ultrasound/liver biopsy	High-throughput genotyping	*STAT3*	rs2293152 rs6503695 rs9891119	Yes	No	6

Varela 2008	Chile	Hispanics	NASH/ NAFL/ Controls : 17/18/13	Adults	Liver biopsy	PCR-RFLP	*CYP2E1*	rs2031920 rs3813867 rs6413432	No	Yes, age	6
Wang 2008	China	Asians	85/82	Adults	Ultrasound	PCR-RFLP	*LEPR*	rs1137101	No	No	5
Wang 2008	China	Asians	210/248	Adults	Ultrasound	PCR-RFLP	*FABP1*	rs2241883	No	No	6
Wang 2008	China	Asians	165/160	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766 rs1501299	No	No	5
Wang 2008	China	Asians	117/76	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766 rs1501299	No	No	5
Wong 2008	China	Asians	79/40	Adults	Liver biopsy	TaqMan	*ADIPOQ*	rs17300539 rs266729 rs2241766 rs1501299	No	No	7
							TNF	rs361525 rs1800629 rs1800630	No	No	7
Yang H 2008	China	Asians	96/96	Adults	Ultrasound	PCR-RELP	*PPARGC1A*	rs8192678	No	Yes, WHR, HOMA-IR, TG	7
							PPARG	rs3856806	Yes	Yes, WHR, HOMA-IR, TG	7
Yoneda 2008	Japan	Asians	115/441	Adults	Liver biopsy	RT-PCR	*PPARGC1A*	rs3774902 rs2970871 rs2970876 rs2290604 rs3774907 rs3774908 rs2290603 rs2290602 rs2970849 rs2932968 rs3755863 rs3736265 rs3774920 rs768695 rs3774923	Yes (rs2290602, rs3755863, rs3736265, rs3774923)	No	5

Zhuang 2008	China	Asians	50/30	Adults	Liver biopsy	PCR	*SREBF1*	54 G/C^	Yes	No	5
Carulli 2009	Italy	Caucasians	114/79	Adults	Liver biopsy/ultrasound	PCR-RFLP	*IL6*	rs1800795	Yes	Yes, BMI, TG, gender, age, HOMA-IR	6
							MTTP	rs1800591	No	No	6
							ENPP1	rs1044498	No	No	6
Ding 2009	China	Asians	98/99	Adults	Ultrasound	PCR-LDR	*LEP*	rs7799039	Yes	Yes, age, gender, BMI, WHR	7
Hori 2009	Japan	Asians	69/184	Adults	Ultrasound	PCR-RFLP	*GSTM1*	NA	Yes	Yes, age, gender, BMI	7
							GSTT1	NA	No	Yes, age, gender, BMI	7
							GSTP1	rs1695	No	Yes, age, gender, BMI	7
Hu 2009	China	Asians	189/138	Adults	Ultrasound	PCR-RFLP	*TNF*	rs361525 rs1800629	Yes (rs361525)	No	5
Hu 2009	China	Asians	63/52	Adults	Ultrasound	PCR	*MTHFR*	rs1801133	No	Yes, smoking history, BMI, Blood pressure, blood sugar, blood lipids, folate levels	7
Jun 2009	Korea	Asians	113/393	Adults	Ultrasound	TaqMan	*MTTP*	rs1800591	No	Yes, BMI, fasting blood glucose, insulin, blood lipids	8
							PEMT	rs7946	No	Yes, BMI, fasting blood glucose, insulin, blood lipids	8

Lee 2009	Korea	Asians	43/441	Adults	Ultrasound	PCR-RFLP	*HFE*	rs1800562 rs1799945 rs1800730	No	No	5
Lin 2009	China	Asians	28/206	Children	Ultrasound	PCR-RFLP	*UGT1A1*	rs4148323 rs8175347	Yes (rs4148323)	Yes, BMI, WHR, Adiponectin levels	8
Liu 2009	China	Asians	217/222	Adults	Ultrasound	PCR-RFLP	*MTTP*	rs1800804	Yes	Yes, BMI	6
Lu 2009	China	Asians	104/112	Adults	Ultrasound	PCR-RFLP	*LEPR*	rs1805096	No	No	6
Musso 2009	Italy	Caucasians	78/156	Adults	Ultrasound	TapMan	*TCF7L2*	rs7903146	Yes	No	8
							APOE	rs429358 rs7412	No	No	8
Oruc 2009	Turkey	Caucasians	50/44	Adults	Liver biopsy	Direct sequencing	*SPINK1*	rs17107315	No	No	5
Peng 2009	China	Asians	234/476	Adults	Ultrasound	PCR-RFLP	*FABP2*	rs1799883	Yes	Yes, age, gender, BMI, Smoking history, Blood fat	6
Sookoian 2009	Argentina	Caucasians	172/94	Adults	Ultrasound	Direct sequencing	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, HOMA-IR	8
Sookoian 2009	Argentina	Caucasians	109/58	Adults	Ultrasound	DNA sequencing	*ABCC2*	rs17222723 rs8187710 rs7176620 rs2756105 rs2002042 rs3740066	Yes (rs17222723, rs8187710)	No	6
Tokushig 2009	Japan	Asians	119/115	Adults	Liver biopsy	Fluorescent PCR	*ADIPOQ*	rs2241766 rs1501299	No	No	7
Yan 2009	China	Asians	84/80	Adults	Ultrasound	PCR-RFLP	*TNFSF10*	rs1131568 rs1131580	Yes	No	5
Yoneda 2009	Japan	Asians	115/435	Adults	Liver biopsy	Invader	*NOS2*	rs3794756 rs2255929 rs2297510 rs2297511 rs2297512	Yes (rs2297510, rs2297511, rs2297512, rs1060822)	No	6

								rs1060822 rs2297516 rs2248814 rs2297520 rs3794764			
Yoneda 2009	Japan	Asians	167/435	Adults	Liver biopsy	Invader assay	*AGTR1*	rs3772633 rs3772622 rs5182 rs3772627 rs3772630 rs2276736 rs909383 rs1492097 rs3772616 rs388915 rs3772615 rs1800766	Yes (rs3772633, rs3772622, rs5182 , rs3772627, rs3772630, rs2276736)	No	7
Zhuang 2009	China	Asians	82/98	Adults	Ultrasound/liver biopsy	PCR-RFLP	*PEMT*	rs12325817	Yes	No	6
Akyildiz 2010	Turkey	Caucasians	91/104	Adults	Liver biopsy	PCR-RFLP	*MIF*	rs755622	No	No	6
Aller 2010	Spain	Caucasians	66/213	Adults	Liver biopsy	TapMan	*TNF*	rs1800629	No	No	6
Cao 2010	China	Asians	200/206	Adults	Ultrasound	PCR-RFLP	*PTGS2*	rs20417 rs689566	Yes (rs20417, rs689566)	Yes, age, gender	6
Ding 2010	China	Asians	98/100	Adults	Ultrasound/CT	PCR-LDR	*NAMPT*	rs7789066 rs9770242 rs11977021	No	No	5
Dongiovanni 2010	Italy	Caucasians	202/346	Adults	Liver biopsy	Restriction analysis	*PPARA*	rs1800206	No	No	6
							PPARG	rs1801282	No	No	6
Dongiovanni 2010	Italy	Caucasians	240/310	Adults	Liver biopsy	Restriction analysis	*ENPP1/PC1*	rs1044498	No	No	6
							IRS1	rs1801278	No	No	6
Goran 2010	American	Hispanics	71/117	Children	DEXA	TaqMan	*PNPLA3*	rs738409	Yes	No	6
Gupta 2010	India	Asians	98/280	Adults	Ultrasound/ liver biopsy	PCR-RFLP	*PPARG*	rs1801282	Yes	No	5
Hotta 2010	Japan	Asians	253/578	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, gender,	6

										age, BMI	
Huang 2010	China	Asians	185/322	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766	No	Yes, age, gender, WHR, blood pressure, BMI	7
Huang 2010	China	Asians	97/51	Adults	Ultrasound	Gene chip	*APOC3*	rs5128 rs4225	Yes	No	5
Jing 2010	China	Asians	100/100	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766 rs1501299	Yes (rs1501299)	Yes, waistline, WHR, blood lipid, adiponectin level	7
Lee 2010	Korea	Asians	125/221	Adults	Ultrasound	PCR-RFLP	*HFE*	rs1800562 rs1799945 rs1800730	Yes (rs1799945)	Yes, age, sex, obesity, diabetes	5
Liang 2010	Japan	Asians	104/150	Adults	Liver biopsy	PCR-RFLP	*ACE*	rs1799752 I/D	Yes	No	5
							AGTR1	rs5186	No	No	5
Liu 2010	China	Asians	82/98	Adults	Ultrasound	PCR-RFLP	*RETN*	rs1862513	Yes	No	5
Petersen 2010	India	Asians	29/66	Adults	H-MRS	DNA sequencing	*APOC3*	rs2854116 rs2854117	Yes (rs2854116, rs2854117)	No	5
							PNPLA3	rs738409	No	No	5
Rey 2010	Germany	Caucasians	263/259	Adults	Liver biopsy	TaqMan	*PPARG*	rs1801282	No	No	6
Sookoian 2010	Argentin a	Caucasians	188/102	Adults	Ultrasound	High-through put genotyping	*NR1I2*	rs12488820 rs2472671 rs2461823 rs1054191 rs3814055 rs3814057 rs6785049 rs7643645	Yes (rs7643645)	No	5
Speliotes 2010	American	Caucasians	592/1405	Adults	Liver biopsy	Sequenom MassARRAY	*PNPLA3*	rs738409 rs2281135	Yes(rs738409, rs2281135,	Yes, BMI, T2DM, HDL,	8

								rs2294918	rs2294918）	LDL, TG	
							CPN1	rs7068215 rs2862990 rs1597086 rs1591741	No	Same as above	8
							ABO	rs657152	Yes	Same as above	8
							GPLD1	rs9467160	No	Same as above	8
							JMJD1C	rs12355784	No	Same as above	8
							GGT1	rs4820599	No	Same as above	8
							HNF1A	rs2259816	No	Same as above	8
Tang 2010	China	Asians	156/125	Adults	Ultrasound	PCR-RFLP	*MTTP*	rs1800804	Yes	No	4
Valenti 2010	BritainItaly	Caucasians	253/179	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI	8
Valenti 2010	Italy	Caucasians	587/184	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	No	Yes, age, gender, BMI	7
Valenti 2010	Italy	Caucasians	274/179	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	No	No	7
							SERPINA1 (AAT)	rs17580 rs28929474	Yes	No	7
Zhou 2010	China	Asians	96/96	Adults	Ultrasound	PCR-RFLP	*LIPC*	rs1800588	Yes	No	7
							PEMT	rs7946	Yes	No	7
							PPARG	rs3856806	Yes	No	7
							ADIPOQ	rs2241766 rs1501299	Yes	No	7
							TNF	rs361525 rs1800629	Yes (rs361525)	No	7
							PPARGC1A	rs8192678	No	No	7
Zhou 2010	China	Asians	96/96	Adults	Ultrasound	PCR-RFLP	*LEP*	rs7799039	Yes	No	7
Bhatt 2011	India	Asians	162/91	Adults	Ultrasound	PCR-RFLP	*SREBF2*	rs2228314	Yes	No	6
El-Koofy 2011	Egypt	Africans	NASH/NAFL/Control: 7/8/20	Children	Ultrasound/liver biopsy	PCR-RFLP	*MTTP*	rs1800591	Yes	No	6
							SOD2	1183 T/C	Yes	No	6

Espino 2011	Chile	Hispanics	50/71	Adults	Liver biopsy	PCR	*SERPINE1*	rs1799889	No	No	7
Gu 2011	China	Asians	300/300	Adults	Ultrasound	PCR-RFLP	*ADIPOR2*	+33371 Gln/Arg	Yes	No	5
Hashemi 2011	Iran	Asians	83/93	Adults	Ultrasound	ARMS-PCR	*MTTP*	rs3816873 rs61733139	Yes	No	6
							GCLC	rs17883901	No	No	6
Lin 2011	China	Asians	102/418	Children	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, sex, BMI, waist circumferen ce, adiponectin	8
Ono 2011	Japan	Asians	124/150	Adults	Liver biopsy	PCR-RFLP	*AGT*	rs4762 rs699 rs7079	Yes (rs7079)	No	6
Tang 2011	China	Asians	156/188	Adults	Ultrasound	PCR-RFLP	*PEMT*	rs7946 rs12325817	Yes (rs7946, rs12325817)	No	7
Valenti 2011	Italy	Caucasians	437/316	Adults and children	Liver biopsy	Direct sequencing	*APOC3*	rs2854116 rs2854117	No	No	6
Wang 2011	China	Asians	156/723	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender	8
Yang Z 2011	China	Asians	436/467	Adults	Ultrasound	TaqMan	*GCKR*	rs780094	Yes	Yes, age, gender, BMI and TG	8
Zhi 2011	China	Asians	147/93	Adults	Ultrasound	PCR-RFLP	*TGFB1*	rs1800469	No	No	4
Cao CY 2012	China	Asians	169/699	Adults	Ultrasound	PCR-RFLP	*PPARG*	rs10865710 rs1801282 rs7649970	Yes	No	7
De Feo 2012	Italy	Caucasians	310/422	Adults	Liver biopsy	PCR-RFLP	*APOE*	rs429358 rs7412	Yes	Yes, age, gender, alcohol, fruit and vegetable intake	7
Gupta 2012	India	Asians	137/250	Adults	Ultrasound/ liver biopsy	PCR-RFLP	*ADIPOQ*	rs266729 rs2241766	Yes	No	6
Hashemi 2012	Iran	Asians	83/93	Adults	Ultrasound	ARMS-PCR	*GSTM1*	NA	Yes	No	6
							GSTP1	rs1695	Yes	No	6

							GSTT1	NA	No	No	6
Hyysalo 2012	Finland	Caucasians	198/219	Adults	1H-MRS	Taqman PCR	*APOC3*	rs2854116 rs2854117	No	Yes, age, gender	7
Li 2012	China	Asians	400/50	Adults	Ultrasound/ liver biopsy	PCR-RFLP	*TNF*	rs361525 rs1800629	Yes (rs1800629)	No	5
Peng 2012	China	Asians	553/553	Adults	Ultrasound	MALDI-TOF MS	*FABP1*	rs1545224 rs2241883	Yes	Yes, age, gender, income, BMI, ALT, AST	7
Peng 2012	China	Asians	553/553	Adults	Ultrasound	MALDI-TOF MS	*PNPLA3*	rs738409 rs2294918 rs139047 rs139051 rs1883350 rs2076208 rs9625961 rs734561 rs2006943 rs2076212 rs3810622 rs738407	Yes(rs738409, rs139051)	Yes, age, gender, income, marital status, education, BMI	8
Shi 2012	China	Asians	106/106	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766 rs1501299	Yes	No	7
Swellam 2012	Egypt	Africans	90/30	Adults	Liver biopsy	TaqMan	*LEPR*	rs6700986	Yes	No	7
Valenti 2012	Italy	Caucasians	216/271	Adults	Liver biopsy	Sequence allele	*HFE*	rs1800562 rs1799945	No	No	7
						Specific PCR	*TMPRSS6*	rs855791	No	No	7
Valenti 2012	Italy	Caucasians	142/337	Children/Adults	Liver biopsy	TapMan	*LPIN1*	rs13412852	Yes	Yes, age, gender, *PNPLA3* rs738409	6
Valenti 2012	Italy	Caucasians	115/337	Adults	Liver biopsy	TapMan	*LPIN1*	rs13412852	No	Yes, age, gender, *PNPLA3* rs738409	6

Yang Z 2012	China	Asians	436/467	Adults	Ultrasound	TaqMan	*PPARG*	rs1801282	Yes	Yes, age, gender, WHR, BMI, TG,ect.	8
Zain 2012	Malaysia	Asians	144/198	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, Ethnicity	8
Barbieri 2013	Italy	Caucasians	223/231	Adults	Ultrasound	PCR-RFLP	*APPL1*	rs4640525	Yes	Yes, age, BMI, TG, HOMA-IR,ect.	8
							APPL2	rs11112412	Yes	Same as above	8
Bhatt 2013	India	Asians	162/173	Adults	Ultrasound	PCR-RFLP	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, insulin level	8
Bhatt 2013	India	Asians	162/173	Adults	Ultrasound	PCR-RFLP	*PPARG*	rs1801282 rs3856806	Yes	No	6
Brochado 2013	Brazil	Hispanics	134/134	Adults	Liver biopsy	PCR-RFLP	*MTHFR*	rs1801131 rs1801133	No	Yes, age, gender, BMI	8
Cai 2013	China	Asians	400/400	Adults	Ultrasound	SNaPshot	*PNPLA3*	rs738409	Yes	Yes, age, gender, smoking, overweight, family history of chronic diseases, blood lipids	8
							APOC3	rs2854116 rs2854117	No	Same as above	6
							APOA5	rs3135506 rs662799	No	Same as above	6
Chen Yes 2013	China	Asians	97/51	Adults	Ultrasound	Oligonucle-otide microarray	*PPARG*	rs1801282	No	No	5
Corbin 2013	American	Caucasians	361/85	Adults	Liver biopsy	Oligo-specific	*APOC3*	rs2854117	No	Yes, age, gender, BMI,	6

						extension-ligation				etc	
							CHDH	rs4563403 rs881883	No	Same as above	6
							PEMT	rs8068641 rs7214988	No	Same as above	6
							MTHFR	rs7525338 rs868014	No	Same as above	6
							PNPLA3	rs738409 rs2281135	Yes	Same as above	6
							SLC44A1	rs10820799 rs440290 rs328006	No	Same as above	6
Carvalh 2013	Brazil	Hispanics	35/45	Adults	Liver biopsy	PCR-RFLP	*MTHFR*	rs1801131 rs1801133	No	No	6
Di Rosa 2013	Italy	Caucasians	110/100	Adults	Liver biopsy	PCR-RFLP	*CHIT1*	NA	Yes	Yes, age, gender, BMI	6
Domenic 2013	Brazil	Hispanics	103/103	Adults	Liver biopsy	PCR-RFLP	*PPARA*	rs1800206	No	No	5
							PPARG	rs1801282	No	No	5
Gong 2013	China	Asians	255/405	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241766 rs1501299	Yes (rs1501299)	Yes, age, BMI, WHR, adiponectin level, etc	7
Gorden 2013	American	Caucasians	748/344	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	No	6
							NCAN	rs2228603	Yes	No	6
							LYPLAL1	rs12137855	No	No	6
							GCKR	rs780094	No	No	6
							PPP1R3B	rs4240624	No	No	6
Guichelaar 2013	American	Caucasians	132/12	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	No	6
Hashemi 2013	Iran	Asians	83/93	Adults	Ultrasound	ARMS-PCR	*ADIPOQ*	rs266729 rs1501299	Yes (rs266729)	Yes, age, gender	7
Hsiao 2013	China	Asians	607/421	Adults	Ultrasound	TaqMan	*LIPE*	rs34845087	No	Yes, BMI, insulin resistance	6
Li 2013	China	Asians	324/304	Adults	Ultrasound	Gene chip	*APOB*	11039 G/A	Yes	No	6

								rs693			
Lin 2013	China	Asians	182/599	Children	Ultrasound	TaqMan	*PPARGC1A*	rs8192678	Yes	Yes, age, gender, BMI,	6
							PNPLA3	rs738409	Yes	Yes, gender, BMI,	6
Lu 2013	China	Asians	154/40	Adults	Ultrasound	PCR	*CYP2E1*	rs2031920 rs3813867	Yes	No	6
Musso 2013	Italy	Caucasians	51/161	Adults	Ultrasound	Taqman	*PNPLA3*	rs738409	Yes	No	6
							SREBF1	rs11868035	Yes	No	6
							APOE	rs429358 rs7412	No	No	6
Oniki 2013	Japan	Asians	130/566	Adults	Ultrasound	PCR-RFLP	*GSTP1*	rs1695	Yes	Yes, age, gender, BMI, diabetes mellitus, hypertension, dyslipidemia	8
							GSTA1	rs3957356	No	Same as above	8
							GSTM1	NA	No	Same as above	8
							GSTT1	NA	No	Same as above	8
Sazci 2013	Turkey	Caucasians	80/183	Adults	Liver biopsy	PCR-RFLP	*NNMT*	rs694539	Yes	No	6
Sun 2013	China	Asians	160/103	Adults	Ultrasound	MALDI-TOF	*SCAP*	rs2101247 rs2306628 rs4858889 rs17079634	Yes (rs2101247)	Yes, age, gender, BMI, smoking history	6
							SREBF1	rs4925115 rs8066560 rs2282180 rs9902941	No	Yes, age, gender, BMI, smoking history	6
							SREBF2	rs2228314 rs2267438 rs5996080	No	Yes, age, gender, BMI, smoking	6

								rs9607852 rs4822062 rs17379759		history	
Vazquez-Chantada 2013	Spain	Caucasians	451/303	Adults	Liver biopsy	Taqman	*SLC2A1*	rs4658 rs841856	Yes	No	6
Vazquez-Chantada 2013	Spain	Caucasians	451/303	Adults	Liver biopsy	Taqman	*MTR*	rs3754255	No	No	6
							CYP2E1	rs28969387	No	No	6
							STK11	rs7259033	No	No	6
Verrijken 2013	Belgium	Caucasians	79/391	Adults	Ultrasound /liver biopsy	Taqman	*PNPLA3*	rs738409	Yes	No	5
							APOC3	rs2854117	No	No	5
Xiao 2013	China	Asians	76/160	Adults	Ultrasound	PCR-RFLP	*NNMT*	rs694539	Yes	Yes, age, gender,	6
Xu 2013	China	Asians	250/200	Children	Ultrasound	MassARRAY	*UCP3*	rs1726745 rs3781907 rs11235972 rs1800849	No	Yes, BMI, HOMA-IR, ALT, TC	8
Xu 2013	China	Asians	315/336	Adults	Ultrasound	DNA sequencing	*PNPLA3*	rs738409	Yes	No	6
Zain 2013	Malaysia	Asians	144/198	Adults	Liver biopsy	MALDI-TOF MS	*LEPR*	rs1137100 rs1137101	Yes	No	6
Zain 2013	Malaysia	Asians	144/198	Adults	Liver biopsy	TaqMan	*AGTR1*	rs3772627 rs3772630 rs2276736 rs3772622 rs3772633	Yes (rs2276736, rs3772630, rs3772627)	No	7
Zhai 2013	China	Asians	110/100	Adults	Ultrasound	PCR-RFLP	*ESR1*	rs9340799 rs2234693	No	Yes, age, BMI, blood fat	5
							ESR2	rs1256049 rs4986938	Yes (rs4986938)	Same as above	5
Zhang 2013	China	Asians	395/343	Adults	Ultrasound	DNA sequencing	*RETN*	rs3745367	Yes	Yes, age, gender, BMI, transaminase, blood fat	6
Zhang 2013	China	Asians	140/100	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs822393	Yes	No	5

Baclig 2014	Philippines	Asians	32/36	Adults	Liver biopsy	Real-time PCR	*PNPLA3*	rs738409	Yes	No	6
Bohdanowicz 2014	Poland	Caucasians	70/42	Adults	Ultrasound	SNaPshot	*LPL*	rs268 rs328	No	No	5
Cengiz 2014	Turkey	Asians	38/38	Adults	Liver biopsy	PCR-RFLP	*CXCL8* *IL6*	rs4073 rs1800795	No	No	7 7
Chen 2014	China	Asians	212/175	Adults	Ultrasound	Gene chip	*MTHFR*	rs1801133	Yes	Yes, age, gender, , BMI, HOMA-IR	7
Guan 2014	China	Asians	162/865	Children	Ultrasound	ARMS-PCR	*FTO*	rs9939609 rs9930506 rs4783819	No	Yes, age, gender, , BMI	8
							MC4R	rs12970134 rs17782313	No	Same as above	8
Guan 2014	China	Asians	162/865	Children	Ultrasound	ARMS-PCR	*INSIG2*	rs7566605 rs13428113 rs9308762	No	Yes, age, gender, , BMI	8
Huang YS 2014	China	Asians	100/90	Adults	Liver biopsy	PCR-RFLP	*CYP2E1*	rs2031920 rs3813867	No	Yes, age, , BMI, diabetes, highblood fat	8
							SOD2	rs4880	Yes	Same as above	8
Islek 2014	Turkey	Caucasians	80/303	Adults	Liver biopsy	PCR-RFLP	*PNPLA3*	rs738409 rs738407 rs2896019	Yes	No	8
Jiang 2014	China	Asians	65/275	Adults	Ultrasound	MALDI-TOF MS	*FGF21*	rs499765	No	Yes, age, gender	6
							FUT1	rs838133 rs838136 rs2071699	No	Yes, age, gender	6
Kanth 2014	India	Asians	156/150	Adults	Ultrasound	Sequenom	*APOC3*	rs2854116 rs2854117	No	No	7
							FDFT1	rs2645424	No	No	7
							LYPLAL1	rs12137855	No	No	7

							GCKR	rs730084	No	No	7
							PNPLA3	rs738409	Yes	Yes, age, BMI, waistline, TG, HDL	9
							PPP1R3B	rs4240624	No	No	7
							SAMM50	rs2143571	No	Yes, age, BMI, waistline, TG, HDL	9
							COL13A1	rs1227756	No	No	7
							CRACR2A	rs887304	No	No	7
							PARVB	rs2073080	No	Yes, age, BMI, waistline, TG, HDL	9
							PZP	rs6487679	Yes	Yes, age, BMI, waistline, TG, HDL	9
							YIPF1	rs11206226	No	No	7
							ZP4	rs2499604	No	No	7
							EHBP1L1	rs6591182	No	No	7
							PALLD	rs2710833	No	No	7
							-	rs343062	No	No	7
Kitamoto 2014	Japan	Asians	540/1012	Adults	Liver biopsy	Invader assay	*ERLIN1*	rs2862954	No	Yes, age, gender, BMI	8
							FDFT1	rs2645424	No	Same as above	8
							-	rs6834314	No	Same as above	8
							LYPLAL1	rs12137855	No	Same as above	8
							NCAN	rs2228603	No	Same as above	8
							TRIB1	rs2954021	Yes	Same as above	8

							GCKR	rs780094	Yes	Same as above	8
							PPP1R3B	rs4240624 rs2126259	No	Same as above	8
							COL13A1	rs1227756	No	Same as above	8
							CPN1	rs10883437 rs11597390	No	Same as above	8
							CRACR2A	rs887304	No	Same as above	8
							CWF19L1	rs17668255	No	Same as above	8
							PALLD	rs2710833	No	Same as above	8
							PZP	rs6487679	No	Same as above	8
							ZP4	rs2499604	No	Same as above	8
							-	rs343062	No	Same as above	8
Kiziltas 2014	Turkey	Caucasians	119/80	Adults	Ultrasound/liver biopsy	Real-time PCR	*TLR4*	rs4986790 rs4986791	Yes	Yes, gender	6
Lee 2014	Korea	Asians	155/184	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	No	6
Li MR 2014	China	Asians	300/300	Adults	Ultrasound	PCR-RFLP	*APOC3*	rs2854116	Yes	Yes, age, gender, BMI	7
Li 2014	China	Asians	300/300	Adults	Ultrasound	PCR-RFLP	*APOC3*	rs2854117	No	No	6
Lin 2014	China	Asians	191/606	Children	Ultrasound	TaqMan	*GCKR*	rs780094	Yes	Yes, gender, BMI, WHR	6
							PNPLA3	rs738409	Yes	Same as above	6
							NCAN	rs2228603	No	Same as above	6
							LYPLAL1	rs12137855	No	Same as above	6
							PPP1R3B	rs4240624	No	Same as above	6

Niu 2014	China	Asians	390/409	Adults	Ultrasound	DNA sequencing	*APOC3*	rs2854116 rs2854117	No	Yes, age, gender, BMI, waistline, hypertension and T2DM	7
							PNPLA3	rs738409	Yes	Same as above	7
Ma 2014	China	Asians	251/674	Adults	Ultrasound	HRM	*APOE*	rs429358 rs7412	No	Yes, age, gender,	8
Miele 2014	Italy	Caucasians	294/359	Adults	Ultrasound	PCR–RFLP	*SULT1A1*	rs1042028	No	Yes, age, gender, drinking	7
							CYP1A1	rs4646903	No	Same as above	7
							CYP2E1	rs3813867 rs6413432	No	Same as above	7
							GSTM1	NA	No	Same as above	7
							GSTT1	NA	No	Same as above	7
Peng 2014	China	Asians	580/580	Adults	Ultrasound	MALDI-TOF MS	*MTTP*	rs1800591 rs3816873 rs1057613 rs3805335 rs1800804 rs61733139 rs13105033 rs982424	Yes (rs1057613, rs3805335, rs1800804)	Yes, age, gender, degree of education, income, smoking history, tea consumption, BMI	6
Plaksej 2014	Poland	Caucasians	173/125	Adults	Ultrasound	NA	*CNR1*	rs806368 rs12720071 rs1049353 rs806381 rs10485170 rs6454674	No	No	7
Puppala 2014	India	Asians	150/150	Adults	Ultrasound	PCR-RFLP	*APOC3*	rs2854116 rs2854117	Yes (rs2854116)	No	7
Seifi 2014	Iran	Asians	213/252	Adults	Liver biopsy	PCR-RFLP	*MLXIPL*	rs3812316	Yes	No	5

Tan HL 2014	Malaysia	Asians	144/198	Adults	Ultrasound/ liver biopsy	MALDI-TOF MS	*GCKR*	rs780094 rs1260326	Yes	No	5
Wang Y 2014	China	Asians	300/160	Adults	Ultrasound	PCR-RFLP	*SREBF2*	rs2228314	Yes	Yes, BMI, fasting blood-glucose, blood fat, ALT	7
Wong 2014	China	Asians	263/657	Adults	^{1}H-MRS	TaqMan	*TM6SF2*	rs58542926	No	No	6
Wu 2014	China	Asians	85/102	Adults	Liver biopsy/ Ultrasound	PCR	*PNPLA3*	rs738409	Yes	No	7
Ye 2014	China	Asians	130/130	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs266729	No	No	5
Zhang 2014	China	Asians	396/399	Adults	Ultrasound	SNaPshot	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, blood pressure, blood glucose, blood fat	8
Zhang 2014	China	Asians	750/750	Adults	Ultrasound	PCR-RFLP	*ADIPOR2*	+33371 Gln/Arg	Yes	Yes, age, gender, BMI, waistline, hipline	8
							CYP2E1	rs2031920	Yes	Same as above	8
Chan 2015	China	Asians	220/577	Adults	H-MRS	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, smoking history, drinking, obesity, hypertension	8
Chen 2015	China	Asians	340/452	Adults	Ultrasound	iMLDR	*SAMM50*	rs738491 rs2143571 rs3761472	Yes	Yes, age, gender, BMI	9
Cheng 2015	China	Asians	247/304	Adults	Ultrasound	DNA sequencing	*TNF*	rs361525 rs1800629	Yes (rs361525)	No	6

Cheng 2015	China	Asians	338/280	Adults	Ultrasound	PCR	*ADIPOQ*	rs266729 rs2241766	Yes (rs266729)	Yes, age, gender, height, weight, BMI	7
Dong 2015	China	Asians	160/172	Adults	Ultrasound	DNA sequencing	*GCKR*	rs780094	No	Yes, age, BMI	6
Edelman 2015	American	Hispanics	40/24	Adults	Liver biopsy	Direct sequencing	*PNPLA3*	rs738409 rs738408 rs2294919 rs2896019 rs4823173 rs139047 rs2294918 rs139051 rs34879941 rs41278873 rs144730517 rs115043594 rs192841252 rs2294917 rs2076213 rs41278871 rs2072906 rs2076212 rs6006461 rs76510336 rs6006460 rs144821153 rs34179073	Yes (rs738409, rs738408, rs2294919, rs2896019)	No	5
Edelman 2015	American	Hispanics	40/24	Adults	Liver biopsy	Sequenom MassArray	*ENPP1/PC 1*	rs1044498	No	No	5
							ERLIN1	rs2862954	No	No	5
							SAMM50	rs2143571 rs3761472	No	No	5
							CHUK	rs11597086	No	No	5
							ABCC2	rs17222723	No	No	5
Fares 2015	Italy	Caucasians	688/232	Adults	Liver biopsy	TapMan	*PNPLA3*	rs738409	Yes	Yes, age,	6

										gender, BMI, rs695366	
							UCP2	rs695366	No	Same as above	6
Geng 2015	China	Asians	230/330	Adults	Ultrasound	Direct sequencing	*PARVB*	rs5764455	No	Yes, BMI, waistline, hipline, transaminase, blood fat	7
Hsiao 2015	China	Asians	658/525	Adults	Ultrasound	TaqMan	*MTTP*	rs1800591 rs2306985 rs2306986 rs3792683	Yes (rs2306985)	Yes, age, gender, BMI, HOMA-IR	6
Hsieh 2015	China	Asians	350/209	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409 rs12483959	No	No	5
							PPARA	rs1800234	No	No	5
							PPARGC1A	rs3736265 rs2290602 rs3755863	No	No	5
							ADIPOQ	rs1501299 rs266729 rs2241766	Yes	No	5
							LEPR	rs1137100 rs1137101 rs1805096	No	No	5
Kasapoglu 2015	Turkey	Caucasians	150/136	Adults	Ultrasound	DNA sequencing	*MTHFR*	rs1801131 rs1801133	Yes	No	5
Kasturiratne 2015	Sri Lanka	Asians	946/1213	Adults	Ultrasound	Direct sequencing	*APOC3*	rs2854116 rs2854117	No	No	7
							PNPLA3	rs738409	Yes	No	7
							LYPLAL1	rs12137855	No	No	7
							GCKR	rs780094	No	No	7
							PPP1R3B	rs4240624	No	No	7
							NCAN	rs2228603	No	No	7
							ADIPOR2	rs767870	No	No	7

							STAT3	rs6503695 rs9891119	No	No	7
León-Mimila 2015	Mexico	Hispanics	53/77	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI	8
							LYPLAL1	rs12137855	No	Same as above	8
							GCKR	rs1260326	No	Same as above	8
							PPP1R3B	rs4240624	No	Same as above	8
Li 2015	China	Asians	357/357	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs1501299 rs2241767 rs3774261	Yes	Yes, age, gender, BMI, TG, HDL	6
Li 2015	China	Asians	190/183	Adults	Ultrasound	iMLDR	*IFNL3*	rs8099917	No	No	5
							IFNL4	rs12979860	No	No	5
Li 2015	China	Asians	445/421	Adults	Ultrasound	MALDI-TOF MS	*FADS1*	rs174602 rs174545	Yes (rs174602)	Yes, age, gender, BMI, blood pressure, blood glucose	7
							FADS2	rs2072114 rs174616	No	Same as above	7
							ACOX1	rs12430 rs8065144 rs7219716	Yes (rs12430)	Same as above	7
							ACOX2	rs4317122 rs4681689 rs4387990	No	Same as above	7
							ACAA1	rs156265 rs2239621	Yes (rs156265)	Same as above	7
							HSD17B4	rs2075698 rs3756513 rs10064000 rs3797371	No	Same as above	7
							EHHADH	rs4687136 rs2160815	No	Same as above	7

								rs1509501 rs2284994			
Liu 2015	China	Asians	241/205	Adults	Ultrasound	DNA sequencing	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, fasting blood-glucose, blood fat, transaminase	9
							AGTR1	rs3772622	No	Same as above	9
Nishioji 2015	Japan	Asians	272/552	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, weight increase, hypertension	8
							CYP17A1	rs1004467	No	Same as above	8
							LYPLAL1	rs12137855	No	Same as above	8
							NCAN	rs2228603	No	Same as above	8
							GCKR	rs780094	No	Same as above	8
							PPP1R3B	rs4240624	No	Same as above	8
							ADIPOQ	rs6810075	No	Same as above	8
							NT5C2	rs11191548	No	Same as above	8
Oniki 2015	Japan	Asians	119/472	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, diabetes	9
Park 2015	Korea	Asians	602/761	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, central obesity, BMI, insulin resistance	8

Peng 2015	China	Asians	100/70	Children	Ultrasound	DNA sequencing	*ADIPOQ*	rs2241766	No	No	7
Shang 2015	China	Asians	162/865	Children	Ultrasound	MALDI-TOF MS	*GCKR*	rs780094	No	Yes, gender, age, BMI	8
							PDGFA	rs343064	No	Same as above	8
							FDFT1	rs2645424	No	Same as above	8
							COL13A1	rs1227756	No	Same as above	8
							EHBP1L1	rs6591182	No	Same as above	8
							NCAN	rs2228603	No	Same as above	8
							PNPLA3	rs738409	Yes	Same as above	8
Sookoian 2015	Argentina	Caucasians	226/135	Adults	Liver biopsy	TaqMan	*TM6SF2*	rs58542926	Yes	No	7
Tai 2015	China	Asians	152/29	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, gender, BMI, HOMA-IR, TG	7
Wang 2015	China	Asians	174/100	Adults	Liver biopsy	MALDI-TOF MS	*USF1*	rs6427573 rs2516839 rs2774279 rs3737787	Yes (rs6427573, rs2516839)	No	4
Wei 2015	China	Asians	262/649	Adults	H-MRS/ TE	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, blood glucose, blood fat	8
Weng 2015	China	Asians	95/89	Adults	Ultrasound	PCR	*ADIPOQ*	rs2241766 rs1501299	Yes	No	4
Wu 2015	China	Asians	246/341	Adults	Ultrasound	PCR-RFLP	*VEGFA*	rs833061 rs3025039	Yes	Yes, waistline, blood glucose, HDL,	7

										HOMA-IR	
Wu 2015	China	Asians	545/636	Adults	Ultrasound	PCR-RELP	*MMP2*	rs243865	Yes	Yes, waistline, blood glucose, HDL, HOMA-IR and central obesity	7
							MMP9	rs3918242	Yes	Same as above	7
Xie 2015	China	Asians	78/58	Adults	Ultrasound	PCR-PELP	*APOA5*	rs662799	Yes	No	6
Xu 2015	China	Asians	189/184	Adults	Ultrasound	iMLDR	*PPARG*	rs3856806	No	Yes, gender, age, BMI, waistline, hipline	6
Yuan 2015	China	Asians	184/114	Adults	Ultrasound	DNA sequencing	*LYPLAL1*	rs12137855	No	No	6
Zhang 2015	China	Asians	900/900	Adults	Ultrasound	PCR-RFLP	*RETN*	rs1862513	Yes	Yes, gender, age, smoking history	7
							ALDH2	rs671	No	Same as above	7
							GPX1	rs1050450	Yes	Yes, gender, age, smoking history	7
Zhang 2015	China	Asians	1200/1200	Adults	Ultrasound	PCR-RFLP	*RETN*	rs1862513	Yes	Yes, age, gender, smoking history	7
							CYP1A1	rs4646903	Yes	Same as above	7
Zhang 2015	China	Asians	600/600	Adults	Ultrasound	PCR-RFLP	*CCR2*	rs1799864	Yes	Yes, age, gender, smoking	7

										history	
							CYBA	rs4673	Yes	Same as above	7
Zhang 2015	China	Asians	NASH/NAFL/Control: 600/ 600/600	Adults	Ultrasound	PCR-RFLP	*CCL2/MCP1*	rs1024611	Yes	Yes, gender, age	6
							GPX1	rs1050450	Yes	Yes, gender, age	6
Zhang 2015	China	Asians	720/720	Adults	Ultrasound	PCR-RFLP	*ADRB3*	rs4994	Yes	No	5
							SOD2	1183 T/C 9 Ala/Val	Yes	No	5
Zhou 2015	China	Asians	144/552	Adults	Ultrasound	PCR-RFLP	*ADIPOQ*	rs2241767 rs1501299 rs3774261 rs182052 rs16861205 rs822396 rs7627128	Yes (rs2241767, rs1501299, rs3774261)	Yes, age, gender	8
An BQ 2016	China	Asians	554/550	Adults	Ultrasound	DNA sequencing	*LEPR*	rs1137100 rs1137101	Yes	No	7
An BQ 2016	China	Asians	139/165	Adults	Ultrasound	PCR-based method	*PNPLA3*	rs738409	Yes	Yes, gender, age, BMI, blood glucose, blood fat	6
							LEPR	rs1137100	No	Same as above	6
Chen 2016	China	Asians	100/150	Adults	Ultrasound	PCR-RFLP	*NNMT*	rs694539	Yes	Yes, BMI, transaminase, TG, TC, uric acid	8

Donati 2016	Italy	Caucasians	Children 142/100; Adults 1183/264	Children and adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409 rs2294918 rs2076212 rs2076213	Yes	No	6
Du 2016	China	Asians	247/304	Adults	Ultrasound	DNA sequencing	*ADIPOQ*	rs266729 rs2241766	Yes	No	6
Eladawy 2016	Egypt	Africans	50/50	Children	Ultrasound	TapMan	*GCKR*	rs1260326	Yes	No	6
Goffredo 2016	American	Mixed	158/296	Children	MRI	DNA sequencing	*TM6SF2*	rs58542926	Yes	No	6
Honda 2016	Japan	Asians	non-obesity134/782; obesity406/230	Adults	Liver biopsy	Invader	*PNPLA3*	rs738409	Yes	Yes, age, gender	8
Kapil 2016	India	Asians	200/50	Adults	Ultrasound	PCR-RFLP	*TLR4*	rs4986790 rs4986791	No	No	6
							TLR2	rs5743708	No	No	6
							CD14	rs2569190	Yes	No	6
Kohan 2016	Iran	Asians	94/188	Adults	Ultrasound	PCR-RFLP	*ITLN1*	rs2274907	Yes	Yes, BMI	8
							RETN	rs1862513	Yes	Same as above	8
Krawczyk 2016	Germany	Caucasians	143/180	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	No	6
							TM6SF2	rs58542926	Yes	No	6
Liang 2016	China	Asians	186/432	Adults	Ultrasound	ARMS-TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, blood fat	6
Lin 2016	China	Asians	190/642	Children	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, gender, BMI, HOMA-IR	8
							GCKR	rs780094	Yes	Same as above	8
							TM6SF2	rs58542926	Yes	Same as above	8
							IRGM	rs13361189 rs9637876	Yes (rs10065172)	Same as above	8

								rs72553867 rs10065172 rs1000113 rs11747270			
Liu 2016	China	Asians	589/338	Adults	Ultrasound	DNA seq uencing	*AGTR1*	rs3772622	No	No	6
Mai 2016	China	Asians	304/304	Adults	Ultrasound	iMLDR	*FABP1*	rs1545224 rs2241883	Yes	No	7
							FABP2	rs1799883	No	No	7
Mohseni 2016	Iran	Asians	75/76	Adults	Ultrasound	DNA sequencing	*TNF*	rs361525	No	No	6
Peng 2016	China	Asians	593/593	Adults	Ultrasound	PCR	*SREBF1*	rs11868035 rs62064119 rs2297508 rs13306741	No	Yes, age, gender, BMI	6
Petit 2016	Italy	Caucasians	201/107	Adults	Ultrasound	Real-Time PCR	*GCKR*	rs1260326	Yes	Yes, age, gender, BMI, history of statin use	6
Prysyazhnyuk 2016	Ukraine	Caucasians	64/20	Adults	Ultrasound	PCR-RFLP	*GSTP1*	rs1695	Yes	No	6
Qian 2016	China	Asians	106/100	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409 rs2281135	Yes	No	6
Saremi 2016	Iran	Asians	145/145	Adults	Liver biopsy	PCR-RFLP	*HFE*	rs1800562 rs1799945	Yes	No	5
Song 2016	China	Asians	384/384	Adults	Ultrasound	RT-PCR	*PNPLA3*	rs3810622 rs2896019	Yes	No	5
Song 2016	China	Asians	132/252	Adults	Ultrasound	MALDI-TOF MS	*GCKR*	rs3817588 rs780094	Yes (rs3817588)	Yes, age, gender	7
Song 2016	China	Asians	293/324	Adults	Ultrasound	Real-time PCR	*PNPLA3*	rs738409	Yes	No	7
Tai 2016	China	Asians	148/29	Adults	Liver biopsy	TaqMan	*PPARGC1A*	rs8192678	No	No	6
							PNPLA3	rs738409	No	No	6
							GCKR	rs780094	No	No	6
Vespasiani 2016	Italy	Caucasians	60/125	Adults	Ultrasound	Pyrosequencing	*PNPLA3*	rs738409	Yes	No	6

Wang 2016	China	Asians	162/865	Children	Ultrasound	MALDI-TOF MS	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI	8
Wang 2016	China	Asians	367/366	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409 rs2896019	Yes (rs738409)	Yes, age, gender and BMI	7
							NCAN	rs2228603	No	Same as above	7
							GCKR	rs780094	No	Same as above	7
							LYPLAL1	rs12137855	No	Same as above	7
							TM6SF2	rs58542926	Yes	Same as above	7
Wu 2016	China	Asians	384/384	Adults	Ultrasound	TaqMan	*PARVB*	rs5764455 rs6006473	Yes	No	5
Wu 2016	China	Asians	182/195	Adults	Ultrasound	PCR	*NCAN*	rs2228603	No	No	6
Xia 2016	China	Asians	1385/2915	Adults	Ultrasound	MassARRAY	*PNPLA3*	rs738409	Yes	Yes, age, BMI, waistline	8
Xu 2016	China	Asians	153/147	Adults	Ultrasound	Direct sequencing	*NR1I2*	rs2461823 rs7643645	Yes	No	5
Yang 2016	China	Asians	96/98	Adults	Ultrasound	PCR	*LIPC*	rs1800588	Yes	No	7
Zhang 2016	China	Asians	600/600	Adults	Liver biopsy	PCR	*ADIPOQ*	rs17300539	Yes	Yes, gender, age, smoking history	8
							SOD3	rs1799895	Yes	Yes, gender, age, smoking history	8
Zhang 2016	China	Asians	59/72	Adults	Liver biopsy	DNA sequencing	*APOC3*	rs2070666 rs4225 rs4520 rs5128 rs2070667	Yes (rs2070666)	Yes, age, gender, BMI, TG, TC	7
							PNPLA3	rs738409	Yes	Yes, age, gender, BMI,	7

										TG, TC	
Zhang 2016	China	Asians	NASH/NAFL/Control: 200/200/200	Adults	Ultrasound	PCR-RFLP	*GPX1*	rs1050450	Yes	Yes, gender, age, BMI, waistline, hipline, WHR, blood pressure, blood glucose, blood fat, insulin, transaminase, C reactive protein, smoking history	6
							ADIPOQ	rs266729	Yes	Same as above	6
Zhang 2016	China	Asians	59/93	Adults	Ultrasound/ liver biopsy	DNA Sequencing	*PPARGC1A*	rs8192678	Yes	Yes, age, gender, BMI, TC, TG	6
Zhang 2016	China	Asians	302/310	Adults	Liver biopsy	PCR-RFLP	*ADIPOQ*	rs1501299 rs266729 rs822393	Yes (rs266729, rs822393)	Yes, gender, age, smoking history, drinking, BMI, waistline	8
A LD 2017	China	Asians	325/304	Adults	Ultrasound	iMLDR-PCR	*MTHFR*	rs1801131 rs1801133	Yes	Yes, HDL, LDL, TG	7
Alam 2017	Bangladesh	Asians	99/75	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, diabetes, HOMA-IR	7

Asmaa 2017	Egypt	Africans	75/75	Adults	Ultrasound	PCR-PAGE	*IL1A*	rs16347	Yes	No	6
Bale 2017	India	Asians	93/138 (Ancestral South Indians); 163/109 (North-East Indians)	Adults	Ultrasound	TaqMan	*PNPLA3*	rs2281135	Yes	No	5
							TM6SF2	rs58542926	Yes	No	5
Bocsan 2017	Finland	Caucasians	66/30	Adults	Ultrasound	PCR-RFLP	*IL6*	rs1800795	Yes	No	5
							IL10	rs1800896	Yes	No	5
							TNF	rs1800629	No	No	5
Dai 2017	China	Asians	39/61	Children	Ultrasound	The second generation sequencing	*MTTP*	rs2306986	Yes	Yes, BMI, waistline, TG	8
Feldman 2017	Austria	Caucasians	55/71	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, sphingomyelin, phosphatidyl choline	7
							TM6SF2	rs58542926	No	No	6
							PPP1R3B	rs4240624	No	No	6
							NCA	rs2228603	No	No	6
							-	rs6834314	No	No	6
							LYPLAL1	rs12137855	No	No	6
Gouda 2017	Egypt	Africans	174/141	Adults	Ultrasound	PCR-RFLP	*MTTP*	rs1800591	Yes	Yes, gender, age, Ethnicity, occupation and place of residence	8
He 2017	China	Asians	102/100	Adults	Ultrasound	PCR	*VDR*	rs1544410	Yes	Yes, ALT, TG, hypertension history,	7

										HOMA-IR	
							ADIPOQ	rs2241766 rs1501299	Yes	Yes, ALT, TG, hypertension history, HOMA-IR	7
Kurbatova 2017	Russia	Caucasians	116/126	Adults	Liver biopsy	PCR-PDRF	*IL6*	rs1800795	Yes	No	5
Li 2017	China	Asians	100/100	Adults	Ultrasound	PCR-LDR	*PNPLA3*	rs139051	Yes	No	6
Liu 2017	China	Asians	238/240	Adults	Ultrasound	iMLDR	*TFR2*	rs10247962 rs4434553 rs2075672 rs1052897 rs3757859	Yes (rs4434553)	Yes, gender, age, BMI, abdominal obesity, blood fat, transaminase	7
Mahmoudi 2017	Iran	Asians	102/128	Adults	Liver biopsy/ ultrasound	PCR–RFLP	*INSR*	rs1799817	Yes	Yes, age, BMI, gender, blood pressure, smoking history	6
							INS	rs689	No	Same as above	6
Mohseni 2017	Iran	Asians	75/76	Adults	Ultrasound	PCR-RFLP	*UCP2*	rs695366	No	No	6
Mohseni 2017	Iran	Asians	75/76	Adults	Ultrasound	DNA sequencing	*ADIPOQ*	rs1501299	No	Yes, gender, age	6
Musso 2017	Italy	Caucasians	75/230	Adults	Ultrasound	TaqMan	*MERTK*	rs4374383 rs6726639	Yes (rs4374383)	No	7
							PNPLA3	rs738409	Yes	No	7
							APOE	rs429358 rs7412	No	No	7
Song 2017	China	Asians	132/252	Adults	Ultrasound	MALDI-TOF MS	*APOC3*	rs2854116	No	Yes, age, gender, BMI	8
							SIRT1	rs12778366	No	Same as	8

										above	
Uygun 2017	Turkey	Caucasians	216/150	Adults	Liver biopsy	LightSNiP assays	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, diabetes, LDL	8
							PPARA	rs1800234	No	Same as above	8
							PPARG	rs1801282	No	Same as above	8
							SOD2	rs4880	No	Same as above	8
							IFNL3	rs8099917 rs12980275	No	Same as above	8
							IFNL4	rs12979860	No	Same as above	8
Vernekar 2017	India	Asians	107/113	Adults	Ultrasound	PCR-RFLP	*PNPLA3*	rs738409	Yes	Yes, gender, age	7
							FADS1	rs174545	No	Same as above	7
							FADS2	rs3834458 rs66698963	No	Same as above	7
Yi 2017	China	Asians	150/150	Adults	Ultrasound	PCR-RFLP	*TLR4*	rs10759932 rs4986790 rs4986791 rs41426344 rs11536889 rs7873784	Yes (rs41426344,rs11536889)	No	5
Zhang 2017	China	Asians	294/296	Adults	Ultrasound/ liver biopsy	MALDI -TOF MS	*SORT1*	rs646776	No	Yes, gender, age, BMI	6
Zhang 2017	China	Asians	384/384	Adults	Ultrasound	PCR-RFLP	*SIRT3*	rs11246020	Yes	No	5
Abul-Husn 2018	American	Caucasians	GHS Discovery Cohort: 1857/29928; Dallas Liver study: 212/4279	Adults	Liver biopsy	Exome sequencing and Taqman	*HSD17B13*	rs72613567	Yes	Yes, age, gender, Ethnicity, BMI	8
Borai 2018	Egypt	Africans	87/47	Adults	Ultrasound	PCR–RFLP	*ENPP1/PC1*	rs1044498	No	No	5

Chinchilla-López 2018	Mexico	Hispanics	189/201	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI	8
Colak 2018	Turkey	Caucasians	64/60	Adults	Liver biopsy/ultrasound	RT-PCR	*FDFT1*	rs2645424	No	No	5
Di Costanzo 2018	Italy	Caucasians	218/227	Adults	Ultrasound	DNA sequencing	*PNPLA3*	rs738409	Yes	Yes, age, gender, HOMA-IR, BMI, TG	8
Di Costanzo 2018	Italy	Caucasians	218/227	Adults	Ultrasound	DNA sequencing	*GCKR*	rs1260326	Yes	Yes, age, gender, HOMA-IR, BMI, TG	8
							MBOAT7	rs641738	No	Same as above	8
							TM6SF2	rs58542926	No	Same as above	8
Di Sessa 2018	Italy	Caucasians	329/673	Children	Ultrasound	TaqMan	*MBOAT7*	rs641738	No	No	7
Dong 2018	China	Asians	98/273	Adults	Ultrasound	Microarray	*ALDH2*	rs671	No	No	5
Eshraghian 2018	Iran	Asians	58/88	Adults	Ultrasound	TaqMan	*AGTR1*	rs5186	Yes	No	6
Hasan 2018	Egypt	Africans	81/80	Adults	Ultrasound	PCR-RFLP	*NNMT*	rs694539	Yes	No	8
He 2018	China	Asians	200/400	Adults	Ultrasound	HRM	*LEP*	rs7799039	Yes	No	7
Jiang 2018	China	Asians	200/200	Adults	Ultrasound	MALDI-TOF MS	*LIPA*	rs1051338 rs1412444	No	No	7
Koo 2018	Korea	Asians	416/109	Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, metabolic syndrome, HOMA-IR	7
							MBOAT7	rs641738	No	Same as above	7
							TM6SF2	rs58542926	No	Same as above	7
Liao 2018	China	Asians	113/74	Adults	Ultrasound	MALDI-TDF	*MBOAT7*	rs641738	No	Yes, gender,	6

						MS				age, BMI	
Lin 2018	China	Asians	189/642	Children	Ultrasound	TaqMan	*MBOAT7*	rs641738	No	Yes, age, gender, BMI	8
Lv 2018	China	Asians	181/186	Adults	Ultrasound	MALDI-TOF MS	*LCAT*	rs3729639	No	No	7
Mehta 2018	American	Caucasians	103/94	Adults	Liver biopsy	TaqMan	*AGER (RAGE)*	rs184003 rs2070600 rs1800624 rs1800625	Yes (rs1800624)	No	5
Petta 2018	Italy	Caucasians	428/462	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, obesity, low HDL, hypertension	7
							TM6SF2	rs58542926	No	Same as above	7
Purnomo 2018	Indonesia	Asians	80/75	Adults	Liver biopsy	PCR-RFLP	*TNF*	rs361525 rs1800629	No	No	5
Sood 2018	India	Asians	69/30	Children	Ultrasound	NA	*PNPLA3*	rs738409	No	Yes, family history, ALT, TC	7
Sookoian 2018	Argentina	Caucasians	372/262	Adults	Liver biopsy	TaqMan	*MBOAT7*	rs641738	No	No	7
Tokgöz 2018	Turkey	Caucasians	83/123	Children	Ultrasound	RT-PCR	*PLIN1*	rs894160 rs1052700 rs2289487	No	No	5
Topchieva 2018	Russia	Caucasians	52/30	Adults	Ultrasound/ liver biopsy	PCR-RFLP	*IL6R*	rs2228145	Yes	No	5
Topchieva 2018	Karelia	Caucasians	242/151	Adults	Ultrasound/ liver biopsy	PCR-RFLP	*TNFRSF1A*	rs767455	No	No	6
							TNFRSF1B	rs1061622	Yes	No	6
Vespasiani 2018	Italy	Caucasians	93/90	Adults	Ultrasound/ liver biopsy	RT-PCR	*PNPLA3*	rs738409	Yes	No	4
							TM6SF2	rs58542926	No	No	4
							KLF6	rs3750861	No	No	4

							SOD2	rs4880	No	No	4
							LPIN1	rs13412852	No	No	4
Wang 2018	China	Asians	265/126	Adults	Ultrasound	DNA sequencing	*ABCA1*	rs1800977 rs2066714 rs2066715 rs2230808	Yes (rs1800977)	Yes, gender, age and BMI	8
Xu 2018	China	Asians	232/188	Adults	Ultrasound	DNA sequencing	*APOA5*	rs10750097 rs1263173 rs17120035 rs3135507 rs662799	No	Yes, age, gender, BMI, hypertension	7
Yang 2018	China	Asians	193/725	Adults	Ultrasound	PCR-LDR	*ABCA1*	rs4149267	Yes	Yes, gender, age	8
							APOC3	rs2854116	No	Same as above	8
							LPL	rs13702	No	Same as above	8
							PNPLA3	rs738409	No	Same as above	8
							GCKR	rs730084	No	Same as above	8
Yue 2018	China	Asians	268/122	Adults	Ultrasound	MALDI-TOF MS	*TM6SF2*	rs58542926	No	Yes, age, gender, BMI	7
Akbulut 2019	Turkey	Asians	101/85	Children	Ultrasound	PCR-RELP	*IL17A*	rs2275913	Yes	No	8
							ABCA1	rs2066714	No	No	8
							CCL2/MCP1	rs1024611	No	No	8
							CCR2	rs1799864	No	No	8
Cai 2019	China	Asians	317/303	Adults	Ultrasound	PCR-LDR	*GCKR*	rs1260326 rs780094	Yes	No	6
							TRIB1	rs2954021	No	No	6
							NCAN	rs2228603	No	No	6
							TM6SF2	rs58542926	No	No	6
							LYPLAL1	rs12137855	No	No	6

							CPN1	rs10883437	No	No	6
Chen 2019	China	Asians	237/269	Adults	Ultrasound	PCR-RFLP	*FOXC2*	rs34221221	Yes	Yes, gender, age, blood fat, transaminase	7
Chen 2019	China	Asians	512/451	Adults	Ultrasound	DNA sequencing	*PNPLA3*	rs738409	Yes	No	7
							TM6SF2	rs58542926	Yes	No	7
Chen 2019	China	Asians	114/120	Adults	Ultrasound	PCR-RFLP	*LEPR*	rs1137101	Yes	Yes, BMI, TG, glycosylated hemoglobin, leptin	7
Costanzo 2019	Italy	Caucasians	105/125	Children	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI, HOMA-IR, other gene polymorphisms	7
							TM6SF2	rs58542926	Yes	Same as above	7
							GCKR	rs1260326	No	Same as above	7
							MBOAT7	rs641738	No	Same as above	7
Gao 2019	China	Asians	224/152	Adults	Ultrasound	DNA sequencing	*GCKR*	rs780094 rs1260326	No	No	7
Gu 2019	China	Asians	341/341	Adults	Ultrasound	MALDI-TOF MS	*MBOAT7*	rs626283 rs641738	Yes (rs641738)	Yes, gender, age, BMI, smoking history	8
							PNPLA3	rs738409 rs2281135 rs2294918	No	Same as above	8
							APOC3	rs2854116 rs2854117	No	No	6

							LYPLAL1	rs12137855	No	No	6
							TM6SF2	rs58542926	No	No	6
							GCKR	rs780094 rs1260326 rs780093	Yes	Yes, gender, age, BMI, smoking history	8
							FTO	rs9939609 rs9930506 rs8050136 rs1421085 rs6499640 rs3751812	No	No	6
							SOD2	rs4880	No	No	6
							UCP2	rs659366	No	No	6
							KLF6	rs3750861	No	No	6
Habibzadeh 2019	Iran	Asians	27/28	Adults	Ultrasound	Direct sequencing	*CD82*	rs2303861	Yes	Yes, age, gender, BMI	8
Hudert 2019	Germany	Caucasians	70/200	Children/Adults	Liver biopsy	TaqMan	*PNPLA3*	rs738409 rs2294918	Yes (rs738409)	No	5
Hudert 2019	Germany	Caucasians	70/200	Children/Adults	Liver biopsy	TaqMan	*GCKR*	rs1260326 rs780094	Yes (rs780094)	No	5
							TM6SF2	rs58542926	No	No	5
							LPIN1	rs13412852	No	No	5
							SOD2	rs4880	No	No	5
							KLF6	rs3750861	No	No	5
							MBOAT7	rs641738	No	No	5
							UCP2	rs659366	No	No	5
							ENPP1/PC1	rs1044498	Yes	No	5
							IRS1	rs1801278	No	No	5
							IFNL4	rs12979860	No	No	5
							LYPLAL1	rs12137855	No	No	5
Jain 2019	India	Asians	46/78	Children	Ultrasound	PCR	*TNF*	rs361525 rs1799964	No	Yes, BMI, gender	7

								rs1800630			
							PNPLA3	rs738409	No	Same as above	7
							ADIPOQ	rs2241766 rs1501299	No	Same as above	7
							APOC3	rs2854116 rs2854117	No	Same as above	7
Ji 2019	China	Asians	545/1143	Adults	Ultrasound	MALDI-TOF MS	*FUT1*	rs838136	Yes	Yes, age, gender	7
							FGF21	rs499765	No	Same as above	7
							FGFR1	rs4733946	No	Same as above	7
							FGFR2	rs3135761	No	Same as above	7
							KLB	rs7670903 rs2608819 rs7674434 rs12152703	Yes (rs7674434, rs12152703)	Yes, age, gender	7
Kalafati 2019	The Greek	Caucasians	134/217	Adults	Ultrasound	Illumina BeadChip	*PNPLA3*	rs738409	Yes	Yes, gender, age, BMI, smoking history, physical exercise	6
							TM6SF2	rs58542926	No	Same as above	6
							GCKR	rs780094	No	Same as above	6
Karrar 2019	American	Caucasians	85/55	Adults	Liver biopsy	PCR-SSO	*HLA-A*	*25	No	Yes, age, gender, ethnicity, diabetes, hyperlipidemia, hypertension	8

							HLA-B	*27 *51 w65	No	Same as above	8
							HLA-DR	β1*01 β1*07 1 allele	Yes (β1*07)	Same as above	8
							HLA-DP	α1*01 α1*135 β1*05	No	Same as above	8
							HLA-DQ	NA	No	Same as above	8
Kempinska 2019	Poland	Caucasians	138/1000	Adults	Ultrasound	TaqMan	*SOCS1*	rs243330	Yes	No	7
Li 2019	China	Asians	161/861	Children	Ultrasound	MALDI-TOF MS	*PARP1*	rs1136410	No	Yes, gender, age, BMI	6
Li Y 2019	China	Asians	201/239	Adults	Ultrasound	DNA sequencing	*TM6SF2*	rs58542926	Yes	Yes, age, gender, BMI	6
Li 2019	China	Asians	73/47	Adults	TE	DNA sequencing	*ALDH2*	rs671	Yes	Yes, age, gender, BMI, waistline, blood glucose	7
Liu 2019	China	Asians	146/175	Adults	Ultrasound	DNA sequencing	*TRIB1*	rs17321515 rs2954029	Yes	Yes, age, gender, BMI	6
Luo 2019	China	Asians	76/327	Adults	Ultrasound	DNA sequencing	*UGT1A1*	rs4148323 rs8175347	No	Yes, gender, age, ALT, BMI	6
Mahmoud 2019	Egypt	Africans	100/100	Adults	Ultrasound	TaqMan	*ADIPOQ*	rs266729 rs2241766	Yes	No	7
Männistö2019	Finland	Caucasians	46/60	Adults	Liver biopsy	TaqMan	*PEMT*	rs7946	No	No	5
							PNPLA3	rs738409	No	No	5
Mazo 2019	Brazil	Hispanics	248/134	Adults	Liver biopsy	Real-time PCR	*PNPLA3*	rs738409	Yes	Yes, gender, age	7
Miao 2019	China	Asians	145/160	Adults	Ultrasound	PCR	*PNPLA3*	rs738409	Yes	No	7
Milaciu 2019	Italy	Caucasians	81/81	Adults	Ultrasound	PCR-RFLP	*PON1*	rs854560 rs662 rs705379	Yes (rs854560)	Yes, BMI, family history of	8

										cardiovascular disease, hypertension	
Mou 2019	China	Asians	51/60	Adults	Ultrasound	TaqMan	*BCL2*	rs1801018 rs4941195	No	No	5
Niriella 2019	Sri Lanka	Asians	282/283	Adults	Ultrasound	NA	*APOC3*	rs2854116 rs2854117	No	Yes, age, BMI	9
							LYPLAL1	rs12137855	Yes	Same as above	9
							NCAN	rs2228603	No	Same as above	9
							PNPLA3	rs738409	Yes	Same as above	9
							GCKR	rs780094	No	Same as above	9
							PPP1R3B	rs4240624	No	Same as above	9
							ADIPOR2	rs767870	No	Same as above	9
							STAT3	rs6503695 rs9891119	No	Same as above	9
Sakamoto2019	Japan	Asians	119/472	Adults	Ultrasound	ARMS-TaqMan	*ADRB3 (β3AR)*	rs4994	Yes	Yes, age, HOMA-IR, blood fat	7
Saremi 2019	Iran	Asians	145/145	Adults	Liver biopsy/ultrasound	PCR-RFLP	*PPARG*	rs1801282	No	No	7
Saremi 2019	Iran	Asians	145/145	Adults	Liver biopsy/ultrasound	ARMS-PCR	*PPARGC1A*	rs8192678	Yes	Yes, gender, age, TC, LDL, HDL	7
Sun 2019	China	Asians	341/1135	Adults	Ultrasound	MALDI-TOF MS	*APOE*	rs429358 rs7412	Yes	No	6
							PNPLA3	rs738409	No	No	6
							SAMM50	rs2143571	No	No	6
							PARVB	rs6006611	No	No	6
Tang 2019	China	Asians	144/176	Adults	Ultrasound	MALDL-TOF	*PCSK9*	rs505151	No	Yes, gender,	6

						MS				age, BMI	
Wang 2019	China	Asians	243/388	Adults	Ultrasound	PCR-RFLP	*MTHFR*	rs1801133	No	Yes, age, gender, overweight	5
Xiao 2019	China	Asians	120/151	Adults	Ultrasound	DNA sequencing	*DPP4*	rs1558957 rs17848915 rs7608798	Yes (rs7608798)	No	5
Xu 2019	China	Asians	113/149	Adults	Ultrasound	MALDI-TOF MS	*FADS2*	rs3834458	No	No	5
Xu 2019	China	Asians	158/158	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI	8
							TM6SF2	rs58542926	Yes	Yes, age, gender, BMI	8
Yang 2019	China	Asians	40/60	Children	Ultrasound	PCR	*PPARA*	rs1800234	Yes	Yes, weight, waistline, BMI	7
Zhang 2019	China	Asians	750/750	Adults	Ultrasound/ liver biopsy	PCR-RFLP	*PPARG*	rs1801282	Yes	Yes, age, gender, diet, smoking history, infectious status of helicobacter pylori	6
							GPX1	rs1050450	Yes	Same as above	6
Zhu 2019	China	Asians	346/1245	Adults	Ultrasound	TaqMan	*PPARG*	rs12631819 rs2920502 rs3856806 rs13433696 rs1175543 rs9817428 rs2972164	No	No	7
							AGTR1	rs2638360 rs1492100 rs5182 rs2933249 rs275646	No	No	7

Zusi 2019	Italy	Caucasians	347/167	Children	Ultrasound	TaqMan	*TM6SF2*	rs58542926	Yes	Yes, age, gender, BMI	6
							GCKR	rs1260326	Yes	Same as above	6
							PNPLA3	rs738409	Yes	Same as above	6
							ELOVL2	rs2236212	Yes	Same as above	6
							FFAR4	rs116454156	No	Same as above	6
Zusi 2019	Italy	Caucasians	347/167	Children	Ultrasound	TaqMan	*LPIN1*	rs13412852	No	Same as above	6
							FADS2	rs1535	No	Same as above	6
							MBOAT7	rs641738	No	Same as above	6
							MTTP	rs1800591	No	Same as above	6
							KLF6	rs3750861	No	Same as above	6
							SOD2	rs4880	No	Same as above	6
Bhatt 2020	India	Asians	162/173	Adults	Ultrasound	PCR-RFLP	*TCF7L2*	rs7903146	Yes	Yes, BMI, waistline, hipline, blood glucose, blood fat	7
Chen 2020	China	Asians	275/550	Adults	Ultrasound	PCR	*FTO*	rs1121980 rs1477196 rs17817449 rs7195539 rs8050136 rs8061518 rs9921255 rs9939609 rs9940128	Yes (rs1121980, rs9940128)	Yes, BMI, smoking history, drinking, uric acid, metabolism	7

Dabiri 2020	Iran	Asians	151/154	Adults	Liver biopsy	PCR-RFLP	*IRS2*	rs2289046	Yes	Yes, age, gender, BMI, smoking history, blood pressure	6
							IRS1	rs1801278	No	Same as above	6
Delik 2020	Turkey	Caucasians	40/20	Adults	Liver biopsy	RT-PCR	*PNPLA3*	rs738409	No	No	5
Vincentis 2020	Italy	Caucasians	1271/104	Adults	Liver biopsy	TaqMan	*MTHFR*	rs1801131 rs1801133	No	No	7
Vincentis 2020	Finland	Caucasians	233/178	Adults	Liver biopsy	TaqMan	*MTHFR*	rs1801131 rs1801133	No	No	7
Hao 2020	China	Asians	2175/1331	Adults	Ultrasound	Microarray	*ALDH2*	rs671	Yes	No	5
Hu 2020	China	Asians	132/120	Adults	Ultrasound	PCR-RFLP	*VDR*	rs1544410	Yes	No	5
Jiang 2020	China	Asians	80/80	Adults	Ultrasound	MALDI-TOF MS	*FABP1*	rs1545224 rs2241883	Yes	Yes, age, gender, BMI, ALT, AST	8
Kravetz 2020	American	Caucasians	44/29	Children	Ultrasound	PCR	*PNPLA3*	rs738409	Yes	No	5
Lee 2020	Singapore	Asians	72/72	Adults	Liver biopsy/ CT/ MRI/ ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, high TG, BMI	8
							FDFT1	rs2645424	No	Same as above	8
							LYPLAL1	rs12137855	No	Same as above	8
							NCAN	rs2228603	No	Same as above	8
							TM6SF2	rs58542926	No	Same as above	8
							GCKR	rs780094	No	Same as above	8
							PPP1R3B	rs4240624	No	Same as above	8
							COL13A1	rs1227756	No	Same as above	8

							CRACR2A	rs887304	No	Same as above	8
							PZP	rs6487679	No	Same as above	8
Li 2020	China	Asians	327/1836	Adults	MRI/ CT/ TE	PCR-LDR	*PON2*	rs7493	Yes	Yes, gender, dyslipidemia	8
							ADCY3	rs7593130	Yes	Same as above	8
							PCSK9	rs11583680	Yes	Same as above	8
							GCKR	rs1260326	Yes	Same as above	8
Li 2020	China	Asians	143/257	Adults	Ultrasound	MALD-TOF MS	*PEMT*	rs7946 rs729974	No	No	5
Liu 2020	China	Asians	349/58	Adults	Liver biopsy	MALDI-TOF MS	*PNPLA3*	rs738409	No	No	6
Lisboa 2020	Brazil	Hispanics	148/137	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	Yes, age, gender, BMI and diabetes	7
							TM6SF2	rs58542926	No	No	6
Liu 2020	China	Asians	316/200	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	Yes	No	5
Marzuillo 2020	Italy	Caucasians	325/206	Children	Ultrasound	Real-time PCR	*TM6SF2*	rs58542926	No	No	7
Miele 2020	Italy	Caucasians	566/377	Adults	Ultrasound	TaqMan	*PTPN2*	rs2542151	No	No	7
Mohammadi 2020	Iran	Asians	74/72	Adults	Ultrasound	PCR-RFLP	*GCKR*	rs780094	No	No	6
Muto 2020	Japan	Asians	53/299	Adults	Ultrasound	TaqMan	*PNPLA3*	rs738409	No	No	6
Narayanasamy 2020	India	Caucasians	105/102	Adults	Ultrasound	PCR-RFLP	*PNPLA3*	rs738409	Yes	Yes, waistline, blood glucose, blood pressure, serum lipid	7

										level	
Nobakht 2020	Iran	Asians	153/159	Adults	Liver biopsy	PCR-RELP	*INSR*	rs1052371 rs1799817	Yes (rs1799817)	Yes, age, gender, BMI, smoking history, blood pressure	7
							INS	rs689 rs3842752	No	Same as above	7
Prysyazhnyuk 2020	Ukraine	Caucasians	104/45	Adults	Ultrasound	Allelic-specific PCR	*GSTT1*	NA	No	No	5
							GSTM1	NA	No	No	5
Su 2020	China	Asians	467/524	Adults	Ultrasound	MassARRAY	*PPARG*	rs1801282	No	Yes, age, hypertension, BMI, TG, HDL	7
Sun 2020	China	Asians	140/177	Adults	Ultrasound	MALDI-TOF MS	*KCNQ1*	rs2237892 rs151290	No	No	5
Wang 2020	China	Asians	130/130	Adults	Ultrasound/ fibroscan	NA	*PNPLA3*	rs139051	Yes	No	7
Wu 2020	China	Asians	242/266	Adults	Ultrasound	PCR	*PNPLA3*	rs738409	Yes	No	7
Yan 2020	China	Asians	143/212	Adults	Ultrasound	MALDI-TOF MS	*TCF7L2*	rs7903146	No	No	4
Ye 2020	China	Asians	132/213	Adults	Ultrasound	MALDI-TOF MS	*MERTK*	rs4374383	Yes	No	5
Zeng 2020	China	Asians	59/46 (non-obesity15/ 37, obesity 44/9)	Adults	Liver biopsy	Real-time PCR	*PNPLA3*	rs738409 rs738408 rs2072906 rs4823173	Yes	No	6
							APOC3	rs2070666	Yes	No	6
							SIRT1	rs2273773	Yes	No	6
							AGTR1	rs5186 rs440881	Yes (rs5186)	No	6
Zhang 2020	China	Asians	119/213	Adults	Ultrasound	MALDI-TOF MS	*PPARGC1A*	rs8192678	No	No	6

Note. NA: Not available; PCR: Polymerase Chain Reaction; PCR-RFLP: PCR-Restriction Fragment Length Polymorphism; PCR-SSCP: PCR-single strand conformational polymorphism; RT-PCR: Reverse Transcription- PCR; PCR-LDR: PCR-ligase detection reaction; ARMS-PCR: amplification refractor mutation system-PCR; MALDI-TOF MS: Matrix-Assisted Laser Desorption/ Ionization Time of Flight Mass Spectrometry; SNaPshot: Multiple single base extension SNP typing technique; HRM: High resolution solution curve method; iMLDR: improved multiplex ligation detection reaction; PCR-PAGE: PCR-polyacrylamide gel electrophoresis; PCR-SSO: PCR-special sequencing oligonucleotide.

Supplementary Table S3. Summary of genetic variants investigated in candidate gene association studies

Gene	Variant	Allele	Consequence	Frequency	N	Association with NAFLD
Lipid synthesis and metabolism related genes						
ABCA1	rs1800977	G>A	5'UTR	A=0.351	1	N[a]
	rs2066715	C>T	Missense	T=0.066	1	NS[a]
	rs2230808	T>C	Missense	C=0.729	1	NS[a]
	rs4149267	T>C	Intron	C=0.394	1	P[a]
	rs2066714	T>C	Missense	C=0.168	2	NS[a] (N=2)
ACAA1	rs156265	C>G	Missense	G=0.136	1	P[a]
	rs2239621	C>T	Intron	T=0.275	1	NS[a]
ACOX1	rs12430	G>A	3'UTR	A=0.103	1	N[a]
	rs8065144	A>G	Intron	G=0.365	1	P[a]
	rs7219716	C>A	Intron	A=0.146	1	P[a]
ACOX2	rs4317122	C>T	Intron	T=0.271	1	N[a]
	rs4681689	C>A	Intron	A=0.184	1	N[a]
	rs4387990	G>A	Intron	A=0.430	1	N[a]
ADRB3	rs4994	A>G	Missense	G=0.076	4	P[a] (N=1), P (N=2), NS (N=1)
APOA5	rs3135506	G>C	Missense	C=0.054	1	NS[a]
	rs3135507	C>T	Missense	T=0.035	1	NS[a]
	rs10750097	G>A	Upstream	A=0.740	1	NS[a]
	rs1263173	G>A	Unknown	A=0.686	1	NS[a]
	rs17120035	C>T	Upstream	T=0.072	1	NS[a]
	rs662799	G>A	2KB Upstream Variant	A=0.913	3	P (N=1), NS[a] (N=2)
APOB	rs693	G>A	Synonymous	A=0.462	1	P
	11039 G/A	G>A	Unknown	Unknown	2	P (N=2)
APOC3	**rs2854116**	**C>T**	**2KB Upstream Variant**	**T=0.548**	**15**	**N[a] (N=1), N (N=2), NS[a] (N=7), NS (N=5)**
	rs2854117	**T>C**	**2KB Upstream Variant**	**C=0.666**	**15**	**N (N=1), NS[a] (N=6), NS (N=8)**
	rs4520	T>C	Synonymous	C=0.724	1	NS[a]
	rs2070667	G>A	Intron	A=0.023	1	NS[a]
	rs2070666	T>A	Intron	A=0.073	2	P[a] (N=1), P (N=1)
	rs4225	G>T	3'UTR	T=0.479	2	NS[a] (N=1), NS (N=1)
	rs5128	G>C	3'UTR	C=0.882	2	P (N=1), NS[a] (N=1)
APOE	rs7412	C>T	Missense	T=0.083	10	N[a] (N=1), N (N=2), P (N=1), NS[a] (N=1), NS (N=5)
	rs429358	T>C	Missense	C=0.074	10	N[a] (N=1), N (N=2), P (N=1), NS[a] (N=1), NS (N=5)
CHDH	rs4563403	C>T	Non coding transcript	T=0.146	1	NS[a]

	rs881883	A>G	Intron	G=0.243	1	NS[a]
CYP1A1	rs4646903	A>G	Downstream	G=0.137	2	P[a] (N=1), NS[a] (N=1)
CYP17A1	rs1004467	A>G	Intron	G=0.115	1	NS[a]
CYP2E1	rs3813867	G>C	Upstream	C=0.010	7	P (N=3), NS[a] (N=3), NS (N=1)
	rs2031920	C>T	Upstream	T=0.029	7	P[a] (N=1), P (N=3), NS[a] (N=2), NS (N=1)
	rs6413432	T>A	Intron	A=0.094	2	NS[a] (N=2)
EHHADH	rs4687136	G>A	Intron	A=0.064	1	NS[a]
	rs2160815	T>A	Intron	A=0.132	1	NS[a]
	rs1509501	C>T	Intron	T=0.823	1	NS[a]
	rs2284994	C>T	Intron	T=0.020	1	NS[a]
ELOVL2	rs2236212	G>C	Intron	C=0.435	1	P[a]
	rs174602	T>C	Intron	C=0.277	1	N[a]
ERLIN1	rs2862954	T>C	Missense	C=0.439	2	NS[a] (N=1), NS (N=1)
FADS2	rs1535	A>G	Intron	G=0.330	1	NS[a]
	rs2072114	A>G	Intron	G=0.135	1	NS[a]
	rs174616	G>A	Intron	A=0.489	1	NS[a]
	rs66698963	Delins	Intron	=0.273	1	NS[a]
	rs3834458	delT	Intron	=0.180	2	NS[a] (N=1), NS (N=1)
FABP1	rs1545224	A>G	Intron	G=0.224	3	N[a] (N=2), N (N=1)
	rs2241883	T>C	Missense	C=0.315	3	P[a] (N=2), NS (N=1)
FABP2	rs1799883	T>C	Missense	C=0.736	2	P[a] (N=1), NS (N=1)
FADS1	rs174545	C>G	3’UTR	G=0.312	2	NS[a] (N=2)
FDFT1	rs2645424	A>G	Intron	G=0.586	5	NS[a] (N=3), NS (N=2)
HSD17B1	rs72613567	dupA	Splice donor	AA=0.224	1	N[a]
HSD17B4	rs2075698	A>G	Intron	G=0.027	1	NS[a]
	rs3756513	C>G	Intron	G=0.121	1	NS[a]
	rs10064000	G>C	Intron	C=0.212	1	NS[a]
	rs3797371	A>G	Intron	G=0.116	1	NS[a]
INSIG2	rs7566605	C>G	Intron	G=0.703	1	NS[a]
	rs13428113	T>C	Intron	C=0.548	1	NS[a]
	rs9308762	C>T	Intron	T=0.835	1	NS[a]
KLB	rs7670903	A>G	Intron	G=0.597	1	NS[a]
	rs2608819	T>C	Intron	C=0.863	1	NS[a]
	rs7674434	T>G	Intron	G=0.276	1	P[a]
	rs12152703	G>T	Intron	T=0.257	1	P[a]
LCAT	rs3729639	C>T	Upstream	T=0.073	1	NS
LIPA	rs1051338	T>G	Missense	G=0.296	1	NS
	rs1412444	C>T	Intron	T=0.346	1	NS
LIPC	rs1800588	C>T	Intron	T=0.228	1	P
LIPE	rs34845087	G>C	Missense	C=0.056	1	NS[a]
LPL	rs268	A>G	Missense	G=0.016	1	NS
	rs328	C>G	Stop gained	G=0.100	1	NS
	rs13702	T>C	3’UTR	C=0.305	1	NS[a]
LPIN1	rs13412852	C>T	Intron	T=0.292	4	N[a] (N=1), NS[a] (N=1), NS

						(N=2)
LYPLAL1	**rs12137855**	**C>T**	**Intron**	**T=0.200**	**15**	**P[a] (N=1), NS[a] (N=6), NS (N=8)**
MBOAT7	**rs641738**	**T>C**	**500B Downstream Variant**	**C=0.567**	**10**	**N[a] (N=1), NS[a] (N=6), NS (N=3)**
	rs626283	C>G	Downstream	G=0.589	1	NS[a]
MLXIPL	rs3812316	C>G	Missense	G=0.118	1	N
MTTP	**rs1800591**	**G>T**	**Intron**	**T=0.153**	**8**	**P[a] (N=1), P (N=1), NS[a] (N=5), NS (N=1)**
	rs2306985	C>G	Missense	G=0.394	1	N
	rs3792683	A>G	Missense	G=0.048	1	NS[a]
	rs1057613	G>A	Intron	A=0.504	1	P[a]
	rs3805335	C>T	Intron	T=0.021	1	N[a]
	rs13105033	C>A	Intron	A=0.421	1	NS[a]
	rs982424	T>C	Stop gained	C=0.071	1	NS[a]
	rs2306986	G>C	Missense	C=0.046	2	P[a] (N=1), NS[a] (N=1)
	rs3816873	T>C	Missense	C=0.266	2	P (N=1), NS[a] (N=1)
	rs1800804	T>C	Intron	C=0.263	3	P[a] (N=2), P (N=1)
	rs61733139	G>C	Missense	C=0.054	2	NS[a] (N=1), NS (N=1)
PCSK9	rs11583680	C>T	Missense	T=0.122	1	N[a]
	rs505151	G>A	Missense	A=0.953	1	NS[a]
PEMT	**rs7946**	**C>T**	**Missense**	**T=0.694**	**9**	**P[a] (N=1), P (N=4), NS[a] (N=2), NS (N=2)**
	rs8068641	A>G	Intron	G=0.125	1	NS[a]
	rs7214988	C>G	Intron	G=0.115	1	NS[a]
	rs729974	T>C	Intron	C=0.611	1	NS
	rs12325817	C>G	Intron	G=0.243	2	N (N=2)
PLIN1	rs894160	C>T	Intron	T=0.297	1	NS
	rs2289487	C>T	Intron	T=0.622	1	NS
	rs1052700	A>T	3’UTR	T=0.299	1	NS
PNPLA3	**rs738409**	**C>G**	**Missense**	**G=0.215**	**89**	**P[a] (N=51), P (N=26), NS[a] (N=4), NS (N=8)**
	rs1883350	T>C	Intron	C=0.316	1	NS[a]
	rs2076208	G>C	Intron	C=0.797	1	NS[a]
	rs9625961	A>G	Intron	G=0.129	1	NS[a]
	rs734561	C>T	Intron	T=0.226	1	NS[a]
	rs2006943	G>A	Intron	A=0.212	1	NS[a]
	rs2294919	C>T	3’UTR	T=0.226	1	N[a]
	rs34879941	C>T	Intron	T=0.084	1	NS
	rs41278873	T>C	3’UTR	C=0.041	1	NS
	rs144730517	C>G	Missense	G=0.000	1	NS
	rs115043594	T>C	3’UTR	C=0.000	1	NS
	rs192841252	C>T	Intron	T=0.001	1	NS
	rs2294917	T>C	Intron	C=0.310	1	NS
	rs41278871	G>C	3’UTR	C=0.008	1	NS
	rs6006461	C>T	3’UTR	T=0.000	1	NS

	rs76510336	C>G	Missense	G=0.002	1	NS
	rs6006460	G>T	Missense	T=0.004	1	NS
	rs144821153	C>G	5’UTR	G=0.007	1	NS
	rs34179073	C>T	Synonymous	T=0.086	1	NS
	rs2281135	G>A	Intron	A=0.189	5	P[a] (N=2), P (N=1), NS[a] (N=2)
	rs2294918	A>G	Missense	G=0.616	6	P[a] (N=1), P (N=1), NS[a] (N=2), NS (N=2)
	rs139047	G>A	Intron	A=0.390	2	NS[a] (N=1), NS (N=1)
	rs139051	A>G	Intron	G=0.619	4	N[a] (N=1), N (N=2), NS (N=1)
	rs2076212	G>T	Missense	T=0.127	3	NS[a] (N=1), NS (N=2)
	rs3810622	T>C	Intron	C=0.417	2	N (N=1), NS[a] (N=1)
	rs738407	T>C	Intron	C=0.374	2	P (N=1), NS[a] (N=1)
	rs2896019	T>G	Intron	G=0.184	4	P (N=3), NS[a] (N=1)
	rs738408	C>T	Synonymous	T=0.223	2	P (N=2)
	rs2072906	A>G	Intron	G=0.180	2	P (N=1), NS (N=1)
	rs4823173	G>A	Intron	A=0.180	2	P (N=1), NS (N=1)
	rs2076213	T>G	Missense	G=0.087	2	NS (N=2)
PPARA	rs1800206	C>G	Missense	G=0.057	3	NS (N=3)
	rs1800234	T>C	Missense	C=0.003	4	P[a] (N=1), P (N=1), NS (N=1), NS[a] (N=1)
PPARG	**rs1801282**	**C>G**	**Missense**	**G=0.105**	**13**	**P[a] (N=1), P (N=2), N[a] (N=1), NS[a] (N=2), NS (N=7)**
	rs12631819	G>T	Intron	T=0.023	1	NS
	rs2920502	G>C	Intron	C=0.287	1	NS
	rs13433696	G>A	Intron	A=0.278	1	NS
	rs1175543	A>G	Intron	G=0.304	1	NS
	rs9817428	C>A	Intron	A=0.263	1	NS
	rs10865710	C>G	Intron	G=0.173	1	P
	rs7649970	C>T	Intron	T=0.091	1	NS
	rs2972164	T>C	Intron	C=0.502	1	NS
	rs3856806	C>T	Synonymous	T=0.121	5	P[a] (N=1), P (N=2), NS[a] (N=1), NS (N=1)
PPARGC1A	**rs8192678**	**C>T**	**Missense**	**T=0.328**	**7**	**P[a] (N=3), NS[a] (N=1), NS (N=3)**
	rs3774902	G>A	Intron	A=0.069	1	NS
	rs2970871	T>C	Missense	C=0.565	1	NS
	rs2970876	A>G	Intron	G=0.510	1	NS
	rs2290604	A>G	Intron	G=0.076	1	NS
	rs3774907	G>A	Intron	A=0.789	1	NS
	rs3774908	A>G	Intron	G=0.078	1	NS
	rs2290603	A>G	Intron	G=0.811	1	NS
	rs2970849	T>C	Intron	C=0.377	1	NS
	rs2932968	G>A	Intron	A=0.828	1	NS
	rs3774920	T>C	Intron	C=0.071	1	NS
	rs768695	G>A	Intron	A=0.507	1	NS

	rs3774923	C>T	Non coding transcript	T=0.045	1	N
	rs3736265	G>A	Missense	A=0.061	2	N (N=1), NS (N=1)
	rs2290602	T>G	Intron	G=0.447	2	P (N=1), NS (N=1)
	rs3755863	C>T	Synonymous	T=0.389	2	P (N=1), NS (N=1)
SCAP	rs2101247	G>A	Intron	A=0.381	1	N[a]
	rs2306628	C>T	Intron	T=0.018	1	NS[a]
	rs4858889	A>G	Intron	G=0.025	1	NS[a]
	rs17079634	T>C	Intron	C=0.008	1	NS[a]
SLC44A1	rs10820799	A>C	Intron	C=0.086	1	NS[a]
	rs440290	T>C	Non coding transcript	C=0.196	1	NS[a]
	rs328006	G>C	Intron	C=0.049	1	NS[a]
SORT1	rs646776	C>T	Downstream	T=0.782	1	NS[a]
SREBF1	rs4925115	A>G	Intron	G=0.607	1	NS[a]
	rs8066560	A>G	Intron	G=0.635	1	NS[a]
	rs2282180	G>A	Intron	A=0.003	1	NS[a]
	rs9902941	C>T	Intron	T=0.603	1	NS[a]
	54 G/C	G>C	Unknown	Unknown	1	P
	rs62064119	C>G	Upstream	G=0.202	1	NS[a]
	rs2297508	C>G	Non coding transcript	G=0.542	1	NS[a]
	rs13306741	C>A	Non coding transcript	A=0.001	1	NS[a]
	rs11868035	G>A	Intron	A=0.334	2	P (N=1), NS[a] (N=1)
SREBF2	rs2267438	C>T	Intron	T=0.712	1	NS[a]
	rs5996080	T>C	Intron	C=0.083	1	NS[a]
	rs9607852	G>A	Intron	A=0.052	1	NS[a]
	rs4822062	G>A	Intron	A=0.120	1	NS[a]
	rs17379759	A>G	Intron	G=0.147	1	NS[a]
	rs2228314	G>C	Missense	C=0.285	3	P (N=1), N[a] (N=1), NS[a] (N=1)
USF1	rs6427573	G>A	Intron	A=0.117	1	P
	rs2516839	C>T	5'UTR	T=0.530	1	P
	rs2774279	C>T	Upstream	T=0.314	1	NS
	rs3737787	G>A	3'UTR	A=0.268	1	NS
TM6SF2	**rs58542926**	**C>T**	**Missense**	**T=0.068**	**25**	**P[a] (N=6), P (N=5), NS[a] (N=6), NS (N=8)**
Insulin resistance and glucose metabolism related genes						
ENPP1/PC1	rs1044498	A>C	Missense	C=0.163	5	P (N=1), NS (N=4)
FGF21	rs499765	C>G	Unknown	G=0.412	2	NS[a] (N=2)
GCKR	**rs780094**	**T>C**	**Intron**	**C=0.595**	**21**	**N[a] (N=8), N (N=2), NS[a] (N=7), NS (N=4)**
	rs1260326	**T>C**	**Missense**	**C=0.587**	**12**	**N[a] (N=5), N (N=3), NS[a] (N=2), NS (N=2)**
	rs3817588	T>C	Intron	C=0.177	1	N[a]
	rs780093	T>C	Intron	C=0.593	1	N[a]

INS	rs3842752	G>A	3'UTR	A=0.203	1	NS[a]
	rs689	A>T	Intron	T=0.676	2	NS[a] (N=2)
INSR	rs1052371	G>A	3'UTR	A=0.181	1	NS[a]
	rs1799817	G>A	Synonymous	A=0.188	2	N[a] (N=2)
IRS1	rs1801278	C>T	Missense	T=0.062	3	NS[a] (N=1), NS (N=2)
IRS2	rs2289046	T>C	3'UTR	C=0.222	1	N[a]
PPP1R3B	**rs4240624**	**G>A**	**Intron**	**A=0.893**	**10**	**NS[a] (N=6), NS (N=4)**
	rs2126259	T>C	Intron	C=0.903	1	NS[a]
SLC2A1	rs4658	C>G	3'UTR	G=0.137	1	P
	rs841856	G>T	Intron	T=0.176	1	P
TCF7L2	rs7903146	C>T	Intron	T=0.288	3	P[a] (N=1), P (N=1), NS (N=1)
Adipokines/adipokine receptors related genes						
ADIPOQ	**rs1501299**	**G>T**	**Intron**	**T=0.269**	**18**	**N[a] (N=2), N (N=1), P[a] (N=2), P (N=2), NS[a] (N=5), NS (N=6)**
	rs266729	**C>G**	**2KB Upstream Variant**	**G=0.098**	**10**	**P[a] (N=4), P (N=4), NS (N=2)**
	rs2241766	**T>G**	**Synonymous**	**G=0.106**	**20**	**N[a] (N=1), N (N=1), P (N=7), NS[a] (N=5), NS (N=6)**
	rs182052	G>A	Intron	A=0.349	1	NS[a]
	rs16861205	G>A	Intron	A=0.087	1	NS[a]
	rs822396	G>A	Intron	A=0.818	1	NS[a]
	rs7627128	C>A	Intron	A=0.177	1	NS[a]
	rs6810075	T>C	Unknown	C=0.350	1	NS[a]
	rs3774261	A>G	Intron	G=0.585	2	P[a] (N=2)
	rs2241767	A>G	Intron	G=0.106	2	P[a] (N=2)
	rs822393	C>T	Intron	T=0.282	2	P[a] (N=1), P (N=1)
	rs17300539	G>A	Upstream	A=0.075	2	P[a] (N=1), NS (N=1)
ADIPOR2	rs767870	G>A	Intron	A=0.776	2	NS[a] (N=1), NS (N=1)
	+33371 Gln/Arg	NA	Missense	Unknown	2	P[a] (N=1), P (N=1)
LEP	rs7799039	G>A	Upstream	A=0.289	4	P[a] (N=1), P (N=3)
LEPR	rs6700986	G>A	Intron	A=0.536	1	P
	rs1137100	**A>G**	**Missense**	**G=0.266**	**7**	**P (N=2), NS[a] (N=1), NS (N=4)**
	rs1137101	**A>G**	**Missense**	**G=0.457**	**6**	**P (N=3), NS (N=3)**
	rs1805096	G>A	Synonymous	A=0.391	2	NS (N=2)
NAMPT	rs7789066	A>G	None	G=0.070	1	NS
	rs9770242	C>A	Upstream	A=0.769	1	NS
	rs11977021	C>T	None	T=0.249	1	NS
RETN	rs3745367	G>A	Intron	A=0.268	1	P[a]
	rs1862513	C>G	Upstream	G=0.167	5	P[a] (N=3), P (N=2)
Energy metabolism and obesity related genes						
ADCY3	rs7593130	T>C	Intron	C=0.238	1	P[a]

FFAR4	rs116454156	G>A	Missense	A=0.020	1	NS[a]
FTO	rs4783819	G>C	Intron	C=0.573	1	NS[a]
	rs1477196	A>G	Intron	G=0.656	1	NS[a]
	rs1121980	G>A	Intron	A=0.427	1	N[a]
	rs9940128	G>A	Intron	A=0.426	1	N[a]
	rs17817449	T>G	Intron	G=0.390	1	NS[a]
	rs7195539	A>G	Intron	G=0.048	1	NS[a]
	rs8061518	A>G	Intron	G=0.350	1	NS[a]
	rs9921255	T>C	Intron	C=0.200	1	NS[a]
	rs1421085	T>C	Intron	C=0.391	1	NS
	rs6499640	G>A	Intron	A=0.590	1	NS
	rs3751812	G>T	Intron	T=0.384	1	NS
	rs9939609	T>A	Intron	A=0.399	3	NS[a] (N=2), NS (N=1)
	rs9930506	A>G	Intron	G=0.414	2	NS[a] (N=1), NS (N=1)
	rs8050136	C>A	Intron	A=0.397	2	NS[a] (N=1), NS (N=1)
MC4R	rs12970134	G>A	Unknown	A=0.253	1	NS[a]
	rs17782313	T>C	Unknown	C=0.230	1	NS[a]
UCP2	rs659366	C>T	Upstream	T=0.370	4	NS[a] (N=1), NS (N=3)
UCP3	rs1800849	G>A	5’UTR	A=0.218	1	NS[a]
	rs11235972	G>A	Intron	A=0.216	1	NS[a]
	rs1726745	T>C	Intron	C=0.533	1	NS[a]
	rs3781907	A>G	Intron	G=0.275	1	NS[a]
Oxidative stress and antioxidation related genes						
AGER	rs184003	C>A	Intron	A=0.099	1	NS
	rs1800625	A>G	Upstream	G=0.168	1	NS
	rs2070600	C>T	Missense	T=0.048	1	NS
	rs1800624	A>T	Upstream	T=0.103	1	N
ALDH2	rs671	G>A	Missense	A=0.006	4	P[a] (N=1), P (N=1), NS[a] (N=1), NS (N=1)
CYBA	rs4673	A>G	Missense	G=0.658	1	N[a]
GCLC	rs17883901	G>A	Upstream	A=0.071	1	NS
GGT1	rs4820599	A>G	Intron	G=0.428	1	NS[a]
GPX1	rs1050450	G>A	Missense	A=0.322	4	P[a] (N=4)
GSTA1	rs3957356	T>C	Upstream	C=0.621	1	NS[a]
GSTP1	rs1695	A>G	Missense	G=0.327	4	P[a] (N=1), P (N=2), NS[a] (N=1)
HFE	**rs1800562**	**G>A**	**Missense**	**A=0.053**	**19**	**P (N=6), NS[a] (N=2), NS (N=11)**
	rs1799945	**C>G**	**Missense**	**G=0.136**	**19**	**P[a] (N=1), P (N=3), NS[a] (N=1), NS (N=14)**
	rs1800730	A>T	Missense	T=0.014	3	NS[a] (N=1), NS (N=2)
MTHFR	**rs1801131**	**T>G**	**Missense**	**G=0.304**	**7**	**P (N=2), NS[a] (N=2), NS (N=3)**
	rs1801133	**G>A**	**Missense**	**A=0.340**	**12**	**P[a] (N=2), P (N=2), NS[a] (N=3), NS (N=5)**
	rs7525338	C>T	Intron	T=0.007	1	NS[a]
	rs868014	A>G	3’UTR	G=0.984	1	NS[a]

MTR	rs3754255	C>T	Intron	T=0.313	1	NS
NNMT	rs694539	C>T	Intron	T=0.182	4	P[a] (N=2), P (N=2)
PON1	rs854560	A>T	Missense	T=0.349	1	P[a]
	rs662	T>C	Missense	C=0.315	1	NS[a]
	rs705379	G>A	Upstream	A=0.408	1	NS[a]
PON2	rs7493	G>C	Missense	C=0.235	1	N[a]
SAMM50	rs738491	C>T	Intron	T=0.303	1	P[a]
	rs2143571	G>A	Intron	A=0.194	4	P[a] (N=1), NS[a] (N=1), NS (N=2)
	rs3761472	A>G	Missense	G=0.171	2	P[a] (N=1), NS (N=1)
SIRT1	rs12778366	T>C	Upstream	C=0.113	1	NS[a]
	rs2273773	T>C	Synonymous	C=0.069	1	P
SIRT3	rs11246020	C>T	Missense	T=0.210	1	N
SOD2	rs4880	A>G	Missense	G=0.489	6	P[a] (N=1), NS[a] (N=2), NS (N=3)
	1183 T/C	T>C	Missense	Unknown	3	N[a] (N=1), N (N=1), P (N=1)
SOD3	rs1799895	C>G	Missense	G=0.011	1	P[a]
TFR2	rs4434553	A>G	Upstream	G=0.470	1	N[a]
	rs1052897	A>T	Upstream	T=0.812	1	NS[a]
	rs2075672	A>G	Upstream	G=0.641	1	NS[a]
	rs10247962	G>A	Intron	A=0.855	1	NS[a]
	rs3757859	A>C	Upstream	C=0.116	1	NS[a]
TMPRSS6	rs855791	A>G	Missense	G=0.560	1	NS
UGT1A1	rs4148323	G>A	Missense	A=0.007	2	N[a] (N=1), NS[a] (N=1)
	rs8175347	Indel	Intron	=0.168	2	NS[a] (N=2)
Inflammatory and immune response related genes						
BCL2	rs1801018	T>C	Synonymous	C=0.408	1	NS
	rs4941195	C>A	Synonymous	A=0.468	1	NS
CCL2	rs1024611	A>G	Unknown	G=0.280	2	P[a] (N=1), NS[a] (N=1)
CCR2	rs1799864	G>A	Missense	A=0.104	2	N[a] (N=1), NS[a] (N=1)
CD14	rs2569190	A>G	Intron	G=0.516	1	N
	-550 C/T	C>T	Unknown	Unknown	1	NS
CD82	rs2303861	A>G	Intron	G=0.731	1	P[a]
CHUK	rs11597086	A>C	Intron	C=0.386	1	NS
CPN1	rs7068215	A>G	Unknown	G=0.361	1	NS[a]
	rs2862990	C>T	Unknown	T=0.390	1	NS[a]
	rs1597086	G>C	Unknown	C=0.587	1	NS[a]
	rs1591741	A>T	Unknown	T=0.220	1	NS[a]
	rs11597390	G>A	Unknown	A=0.345	1	NS[a]
	rs10883437	T>A	Unknown	A=0.402	2	NS[a] (N=1), NS (N=1)
CRACR2A	rs887304	T>C	Intron	C=0.727	3	NS[a] (N=2), NS (N=1)
CXCL8	rs4073	A>T	Upstream	T=0.492	1	NS
DPP4	rs1558957	T>C	Intron	C=0.648	1	NS
	rs17574	A>G	Synonymous	G=0.320	1	NS
	rs7608798	G>A	Intron	A=0.275	1	N

IFNL3	rs12980275	A>G	Unknown	G=0.315	1	NS[a]
	rs8099917	T>G	Unknown	G=0.192	2	NS[a] (N=1), NS (N=1)
IFNL4	rs12979860	C>T	Intron	T=0.328	3	NS[a] (N=1), NS (N=2)
IL10	rs1800896	T>C	Upstream	C=0.453	1	P
IL17A	rs2275913	G>A	Upstream	A=0.334	1	P[a]
IL1A	rs16347	DupTGAA	3'UTR	=0.695	1	P
IL1B	rs16944	A>G	Upstream	G=0.643	1	N
IL6	rs1800796	G>C	Intron	C=0.071	1	P
	rs1800795	C>G	Intron	G=0.639	4	N[a] (N=1), N (N=1), P (N=1), NS (N=1)
IL6R	rs2228145	A>C	Missense	C=0.393	1	P
IRGM	rs13361189	T>C	Unknown	C=0.125	1	NS[a]
	rs9637876	C>T	5'UTR	T=0.120	1	NS[a]
	rs10065172	C>T	Synonymous	T=0.129	1	P[a]
	rs1000113	C>T	Intron	T=0.103	1	NS[a]
	rs11747270	A>G	Intron	G=0.121	1	NS[a]
	rs72553867	C>A	Missense	A=0.044	1	NS[a]
ITLN1	rs2274907	A>T	Missense	T=0.659	1	P[a]
LTA	rs909253	A>G	Intron	G=0.325	1	NS
MIF	rs755622	G>C	Upstream	C=0.227	1	NS
PTGS2	rs20417	C>G	Upstream	G=0.065	1	N[a]
	rs689566	C>A	Intron	A=0.013	1	P[a]
PTPN2	rs2542151	G>T	Unknown	T=0.843	1	NS
SOCS1	rs243330	C>T	Upstream	T=0.483	1	N
STAT3	rs2293152	G>C	Missense	C=0.587	1	P
	rs6503695	T>C	Intron	C=0.336	3	N (N=1), NS[a] (N=1), NS (N=1)
	rs9891119	A>C	Intron	C=0.357	3	N (N=1), NS[a] (N=1), NS (N=1)
TLR2	rs5743708	G>A	Missense	A=0.026	1	NS
TLR4	rs41426344	G>C	3'UTR	C=0.00016	1	P
	rs11536889	G>C	3'UTR	C=0.120	1	P
	rs10759932	T>C	Upstream	C=0.116	1	NS
	rs7873784	G>C	3'UTR	C=0.057	1	NS
	rs4986790	A>G	Missense	G=0.058	3	P[a] (N=1), NS (N=2)
	rs4986791	C>T	Missense	T=0.057	3	NS[a] (N=1), NS (N=2)
TNF	**rs361525**	**G>A**	**2KB Upstream Variant**	**A=0.053**	**14**	**P (N=6), NS[a] (N=1), NS (N=7)**
	rs1800629	**G>A**	**2KB Upstream Variant**	**A=0.153**	**13**	**P (N=2), NS (N=11)**
	rs1799724	C>T	Upstream	T=0.121	1	NS
	rs1799964	T>C	Upstream	C=0.211	2	NS[a] (N=1), NS (N=1)
	rs1800630	C>A	Upstream	A=0.153	3	NS[a] (N=1), NS (N=2)
TNFRSF1A	rs767455	T>C	Synonymous	C=0.422	1	NS
TNFRSF1B	rs1061622	T>G	Initiator codon	G=0.232	1	P

TNFSF10	rs1131568	T>C	Non coding transcript	C=0.690	1	P
	rs1131580	A>G	Non coding transcript	G=0.684	1	P
Liver fibrosis related genes						
CHIT1	Dup24	Indel	Unknown	Unknown	1	P[a]
	rs6726639	A>C	Intron	C=0.695	1	NS
KLF6	rs3750861	C>T	Intron	T=0.071	4	NS[a] (N=1), NS (N=3)
MERTK	rs4374383	A>G	Intron	G=0.606	2	P (N=2)
MMP2	rs243865	C>T	Upstream	T=0.201	1	N[a]
MMP9	rs3918242	C>T	Upstream	T=0.174	1	P[a]
PDGFA	rs343064	C>T	Unknown	T=0.382	1	NS[a]
SERPINA1	rs17580	T>A	Missense	A=0.034	2	P (N=2)
	rs28929474	C>T	Missense	T=0.015	2	P (N=2)
SERPINE1	rs1799889	A>G	Upstream	G=0.640	1	NS
SPINK1	rs17107315	T>C	Missense	C=0.009	1	NS
TGFB1	rs1800469	A>G	Upstream	G=0.672	1	NS
VEGFA	rs833061	C>T	Upstream	T=0.520	1	N[a]
	rs3025039	C>T	3’UTR	T=0.141	1	P[a]
Other functional genes						
ABCC2	rs8187710	G>A	Missense	A=0.064	1	N
	rs7176620	G>T	Unknown	T=0.180	1	NS
	rs2756105	C>T	Intron	T=0.417	1	NS
	rs2002042	C>T	Intron	T=0.253	1	NS
	rs3740066	C>T	Synonymous	T=0.332	1	NS
	rs17222723	T>A	Missense	A=0.060	2	N (N=1), NS (N=1)
ABO	rs657152	A>C	Intron	C=0.624	1	P[a]
ACE	rs1799752	Indel	Intron	Unknown	1	P
AGT	rs4762	G>A	Missense	A=0.122	1	NS
	rs699	A>G	Missense	G=0.455	1	NS
	rs7079	G>T	3’UTR	T=0.311	1	P
AGTR1	rs909383	C>T	Intron	T=0.241	1	NS
	rs1492097	G>A	Intron	A=0.258	1	NS
	rs3772616	C>T	Intron	T=0.225	1	NS
	rs388915	G>A	Intron	A=0.710	1	NS
	rs3772615	G>A	Intron	A=0.046	1	NS
	rs1800766	T>C	Intron	C=0.164	1	NS
	rs2638360	G>A	Intron	A=0.840	1	NS
	rs1492100	T>A	Intron	A=0.282	1	NS
	rs2933249	G>A	Intron	A=0.153	1	NS
	rs275646	T>C	Unknown	C=0.953	1	NS
	rs5186	A>C	3’UTR	C=0.278	3	P (N=2), NS (N=1)
	rs3772622	T>C	Intron	C=0.384	4	P[a] (N=1), NS[a] (N=1), NS (N=2)
	rs5182	C>T	Synonymous	T=0.451	2	P (N=1), NS (N=1)
	rs3772627	A>G	Intron	G=0.364	2	N (N=2)

	rs3772630	T>C	Intron	C=0.358	2	N (N=2)
	rs3772633	T>C	Intron	C=0.152	2	N (N=1), NS (N=1)
	rs2276736	A>G	Intron	G=0.343	2	N (N=2)
APPL1	rs4640525	G>C	Intron	C=0.383	1	P[a]
APPL2	rs11112412	G>A	Intron	A=0.175	1	P[a]
CLOCK	rs6850524	C>G	Intron	G=0.572	1	NS
	rs6843722	A>C	Intron	C=0.305	1	P
	rs4864548	G>A	Upstream	A=0.359	1	NS
	rs4580704	G>C	Intron	C=0.609	1	NS
	rs11932595	A>G	Intron	G=0.389	1	N
	rs1554483	C>G	Intron	G=0.347	1	NS
CNR1	rs1049353	C>T	Synonymous	T=0.249	1	NS
	rs806368	T>C	3'UTR	C=0.217	1	NS
	rs12720071	T>C	3'UTR	C=0.101	1	NS
	rs6454674	T>G	Intron	G=0.314	1	NS
	rs806381	A>G	Intron	G=0.322	1	NS
	rs10485170	T>C	Unknown	C=0.101	1	NS
COL13A1	rs1227756	G>A	Intron	A=0.524	4	NS[a] (N=3), NS (N=1)
CWF19L1	rs17668255	C>T	Intron	T=0.405	1	NS[a]
EHBP1L1	rs6591182	T>G	Missense	G=0.488	2	NS[a] (N=1), NS (N=1)
	rs838136	T>C	Intron	C=0.372	2	N[a] (N=1), NS[a] (N=1)
ESR1	rs9340799	A>G	Intron	G=0.335	1	NS[a]
	rs2234693	T>C	Intron	C=0.449	1	NS[a]
ESR2	rs1256049	C>T	Synonymous	T=0.040	1	NS[a]
	rs4986938	C>T	Non coding transcript	T=0.368	1	P[a]
FGFR1	rs4733946	G>T	Intron	T=0.089	1	NS[a]
FGFR2	rs3135761	G>A	Intron	A=0.168	1	NS[a]
FOXC2	rs34221221	C>T	Upstream	T=0.559	1	N[a]
FUT1	rs2071699	G>A	Missense	A=0.023	1	NS[a]
	rs838133	A>G	Synonymous	G=0.572	1	NS[a]
GPLD1	rs9467160	G>A	Intron	A=0.264	1	NS[a]
HNF1A	rs2259816	G>T	Intron	T=0.362	1	NS[a]
JMJD1C	rs12355784	C>A	Intron	A=0.471	1	NS[a]
KCNQ1	rs2237892	C>T	Intron	T=0.074	1	NS
	rs151290	A>C	Intron	C=0.655	1	NS
NCAN	**rs2228603**	**C>T**	**Missense**	**T=0.067**	**11**	**P (N=1), NS[a] (N=7), NS (N=4)**
NOS2	rs3794756	C>T	Intron	T=0.015	1	NS
	rs2255929	T>A	Intron	A=0.462	1	NS
	rs2297510	T>C	Intron	C=0.636	1	N
	rs2297511	C>T	Intron	T=0.640	1	N
	rs2297512	G>A	Intron	A=0.646	1	N
	rs1060822	A>G	Synonymous	G=0.637	1	N
	rs2297516	A>C	Intron	C=0.400	1	NS
	rs2248814	A>G	Intron	G=0.591	1	NS

	rs2297520	T>C	Intron	C=0.633	1	NS
	rs3794764	G>A	Intron	A=0.220	1	NS
NR1I2	rs2472671	C>T	Intron	T=0.798	1	NS
	rs1054191	G>A	3’UTR	A=0.142	1	NS
	rs3814055	C>T	5’UTR	T=0.383	1	NS
	rs3814057	A>C	3’UTR	C=0.196	1	NS
	rs6785049	G>A	Intron	A=0.583	1	NS
	rs12488820	T>C	Intron	C=0.554	1	NS
	rs2461823	T>C	Intron	C=0.617	2	N (N=1), NS (N=1)
	rs7643645	A>G	Intron	G=0.349	2	P (N=2)
NT5C2	rs11191548	T>C	Non coding transcript	C=0.093	1	NS[a]
PALLD	rs2710833	T>C	Non coding transcript	C=0.826	2	NS[a] (N=1), NS (N=1)
PARP1	rs1136410	A>G	Missense	G=0.167	1	NS[a]
PARVB	rs2073080	C>T	Upstream	T=0.180	1	NS[a]
	rs6006611	G>A	Intron	A=0.464	1	NS
	rs6006473	C>T	Upstream	T=0.414	1	P
	rs5764455	A>G	Intron	G=0.576	2	N (N=1), NS[a] (N=1)
PZP	rs6487679	C>T	Unknown	T=0.819	3	N[a] (N=1), NS[a] (N=2)
SLC6A2	rs3743788	T>C	Missense	C=0.00013	1	NS[a]
STK11	rs7259033	C>G	Intron	G=0.523	1	NS
SULT1A1	rs1042028	C>T	Missense	T=0.317	1	NS[a]
TRIB1	rs17321515	A>G	Unknown	G=0.475	1	N[a]
	rs2954029	A>T	Unknown	T=0.459	1	N[a]
	rs2954021	A>G	Unknown	G=0.538	2	N[a] (N=1), NS (N=1)
VDR	rs1544410	C>T	Intron	T=0.388	2	P[a] (N=1), P (N=1)
YIPF1	rs11206226	A>G	Intron	G=0.043	1	NS
ZP4	rs2499604	C>T	Unknown	T=0.459	2	NS[a] (N=1), NS (N=1)

Note. NA: Not available; P: Positive association, P[a]: Positive association adjusted for confounders; N: Negative association; N[a]: Negative association adjusted for confounders; NS: Not significant; NS[a]: Not significant adjusted for confounders. The genetic variants included in the meta-analyses were in bold.

Supplemental Table 4. Genes investigated in candidate gene association studies and functions of the encoded proteins

Gene	Location	Function description of encoded protein	N
Lipid synthesis and metabolism related genes (n=49)			
ABCA1	9q31.1	Membrane transporter involved in cholesterol efflux	3
ACAA1	3p22.2	An enzyme operative in beta-oxidation	1
ACOX1	17q25.1	The first enzyme of the fatty acid beta-oxidation pathway	1
ACOX2	3p14.3	An enzyme involved in the oxidation of branched fatty acids	1
ADRB3	8p11.23	A receptor involved in regulation of lipolysis and thermogenesis	4
APOA5	11q23.3	An apolipoprotein regulates the plasma triglyceride levels	3
APOB	2p24.1	The main apolipoprotein of chylomicrons and LDL	2
APOC3	11q23.3	Component of VLDL, HDL and chylomicrons, involved in triglyceride homeostasis	21
APOE	19q13.32	An apolipoprotein involved in lipid transport, production, conversion and clearance	10
CHDH	3p21.1	Choline dehydrogenase	1
CYP17A1	10q24.32	An enzyme involved in corticoid and androgen biosynthesis	1
CYP1A1	15q24.1	An enzyme involved in the metabolism of various endogenous substrates, including fatty acids, steroid hormones etc	2
CYP2E1	10q26.3	An enzyme involved in the metabolism of fatty acids	9
EHHADH	3q27.2	An enzyme involved in the peroxisomal beta-oxidation of fatty acids	1
ELOVL2	6p24.2	An enzyme involved in the long-chain fatty acids elongation	1
ERLIN1	10q24.31	The protein is involved in regulation of cellular cholesterol homeostasis	2
FABP1	2p11.2	The protein plays a role in lipoprotein-mediated cholesterol uptake in hepatocytes	4
FABP2	4q26	The protein plays a role in the intracellular transport of long-chain fatty acids	2
FADS1	11q12.2	Desaturase enzymes regulate unsaturation of fatty acids	2
FADS2	11q12.2	Desaturase enzymes regulate unsaturation of fatty acids	4
FDFT1	8p23.1	The first specific enzyme in cholesterol biosynthesis	5
HSD17B13	4q22.1	An enzyme involved in lipoprotein metabolism	1
HSD17B4	5q23.1	An enzyme involved in the peroxisomal beta-oxidation of fatty acids	1
INSIG2	2q14.1-q14.2	Mediates feedback control of cholesterol synthesis by controlling SCAP and HMGCR	1
KLB	4p14	A transcriptional repressor of cholesterol 7-alpha-hydroxylase (CYP7A1)	1
LCAT	16q22.1	A central enzyme in the extracellular metabolism of plasma lipoproteins	1
LIPA	10q23.31	A lipase catalyzes the hydrolysis of cholesteryl esters and triglycerides	1
LIPC	15q21.3	A lipase catalyzes the hydrolysis of triglycerides and phospho- lipids	2
LIPE	19q13.2	A lipase catalyzes the hydrolysis of triacylglycerols, diacylgly cerols, cholesteryl esters, etc	1
LPIN1	2p25.1	An enzyme involved in triglyceride synthesis	4
LPL	8p21.3	Key enzyme in triglyceride metabolism	2
LYPLAL1	1q41	Lysophospoholipase enzyme activity	15
MBOAT7	19q13.42	An acyltransferase participates in the phospholipid remodeling	12
MLXIPL	7q11.23	Transcriptional repressor of triglyceride synthesis genes	1
MTTP	4q23	Catalyzes the transport of triglyceride, cholesteryl ester, and phospholipid	12
PCSK9	1p32.3	Crucial player in the regulation of plasma cholesterol homeostasis	2
PEMT	17p11.2	A liver enzyme catalyzes production of phosphatidyl choline	11
PLIN1	15q26.1	Modulator of adipocyte lipid metabolism, coats lipid storage droplets to protect them from breakdown by hormone-sensitive lipase (HSL)	1
PNPLA3	22q13.31	A triacylglycerol lipase mediates triacylglycerol hydrolysis in adipocytes.	95
PPARA	22q13.31	Transcription factor, key regulator of lipid metabolism	7
PPARG	3p25.2	Transcription factor regulates adipocyte differentiation and peroxisomal beta-oxidation of fatty acids	17
PPARGC1A	4p15.2	Transcriptional coactivator regulates the genes involved in energy metabolism	9
SCAP	3p21.31	Escort protein required for cholesterol as well as lipid homeostasis	1
SLC44A1	9q31.1-q31.2	Fatty acid transporter	1
SORT1	1p13.3	A sorting receptor required for protein transport from the Golgi apparatus to the cell surface or subcellular compartments	1
SREBF1	17p11.2	Transcriptional activator required for lipid homeostasis	4
SREBF2	22q13.2	Transcriptional activator required for lipid homeostasis.	3
TM6SF2	19p13.11	Regulator of liver fat metabolism influencing triglyceride secretion and hepatic lipid droplet content	25
USF1	1q23.3	Cellular transcription factor, associated with lipid metabolism.	1
Insulin resistance and glucose metabolism related genes (n=10)			
ENPP1/PC1	6q23.2	Transmembrane glycoprotein, modulate insulin sensitivity and function	5
FGF21	19q13.33	Stimulates glucose uptake in differentiated adipocytes	2
GCKR	2p23.3	A regulatory protein that inhibits glucokinase enzyme	30
INS	11p15.5	Insulin decreases blood glucose concentration	2
INSR	19p13.2	Receptor tyrosine kinase which mediates the pleiotropic actions of insulin	2
IRS1	2q36.3	May mediate the control of various cellular processes by insulin	3
IRS2	13q34	May mediate the control of various cellular processes by insulin	1
PPP1R3B	8p23.1	May be involved in glycogen synthesis regulation and insulin resistance	10
SLC2A1	1p34.2	Facilitative glucose transporter	1
TCF7L2	10q25.2-q25.3	A transcription factor implicated in blood glucose homeostasis.	3
Adipokines/adipokine receptors related genes (n=6)			
ADIPOQ	3q27.3	Important adipokine involved in the control of fat metabolism and insulin sensitivity	30
ADIPOR2	12p13.33	ADIPOQ receptor	4
LEP	7q32.1	Adipocytokine, a key player in the regulation of energy balance and body weight control	4
LEPR	1p31.3	Receptor for leptin	10
NAMPT	7q22.3	Acts as a cytokine with immunemodulating properties and an adipokine with anti-diabetic properties	1
RETN	19p13.2	Hormone that seems to suppress insulin ability to stimulate glucose uptake into adipose cells	6
Energy metabolism and obesity related genes (n=6)			
ADCY3	2p23.3	A membrane-associated enzyme plays a role in regulating insulin levels and body fat accumulation	1
FFAR4	10q23.33	G-protein-coupled receptor for long-chain fatty acids with a major role in adipogenesis, energy metabolism and inflammation.	1
FTO	16q12.2	A nuclear protein regulates fat mass, adipogenesis and energy homeostasis	3
MC4R	18q21.32	The receptor plays a central role in energy homeostasis and somatic growth	1
UCP2	11q13.4	Mitochondrial transporter protein participates in thermogenesis and energy balance	4
UCP3	11q13.4	Mitochondrial transporter protein participates in thermogenesis and energy balance	1
Oxidative stress and antioxidation related genes (n=26)			

AGER	6p21.32	Mediates interactions of advanced glycosylation end products (AGE)	1
ALDH2	12q24.12	An enzyme involved in alcohol metabolism.	4
CYBA	16q24.2	Critical component of the membrane-bound oxidase that generates superoxide	1
GCLC	6p12.1	The first rate-limiting enzyme of glutathione synthesis	1
GGT1	22q11.23	An enzyme catalyzes the transfer of the glutamyl moiety of glutathione	1
GPX1	3p21.31	An enzyme protects cells against oxidative damage by glutathione	4
GSTA1	6p12.2	An enzyme plays a role in detoxification and antioxidation	1
GSTP1	11q13.2	An enzyme plays a role in detoxification and antioxidation	4
HFE	6p22.2	Membrane protein has a role regulating iron absorption	19
MTHFR	1p36.22	An enzyme involved in homocysteine remethylation to methionine	13
MTR	1q43	This protein functions in the synthesis of methionine by regenerating methionine synthase to a functional state	1
NNMT	11q23.2	Involved in biotransformation of many drugs and xenobiotic compounds	4
PON1	7q21.3	Antioxidant activity	1
PON2	7q21.3	Antioxidant activity	1
SAMM50	22q13.31	Plays a crucial role in the maintenance of the structure of mitochondrial cristae and the proper assembly of the mitochondrial respiratory chain complexes	4
SIRT1	10q21.3	NAD-dependent protein deacetylase participates in cell cycle, response to DNA damage, metabolism, apoptosis and autophagy	2
SIRT3	11p15.5	NAD-dependent protein deacetylase in mitochondria, eliminates reactive oxygen species, inhibits apoptosis, etc	1
SOD2	6q25.3	Mitochondrial protein, antioxidant enzymes	9
SOD3	4p15.2	Antioxidant enzymes	1
TFR2	7q22.1	A membrane protein mediates cellular uptake of transferrin-bound iron, and may be involved in iron metabolism, hepatocyte function, etc	1
TMPRSS6	22q12.3	Plays a role in iron homeostasis	1
UGT1A1	2q37.1	Metabolic liver enzyme	2
Inflammatory and immune response related genes (n=32)			
BCL2	18q21.33	An integral outer mitochondrial membrane protein suppresses apoptosis and regulates cell death	1
CCL2	17q12	A secreted protein involved in immunoregulatory and inflammatory processes	2
CCR2	3p21.31	A chemokine receptor participates in immune response	2
CD14	5q31.3	A surface antigen mediates the innate immune response	1
CD82	11p11.2	A metastasis suppressor	1
CHUK	10q24.31	Serine kinase involved in NF-kB signalling	1
CPN1	10q24.2	Protects the body from potent vasoactive and inflammatory peptides	3
CRACR2A	12p13.32	Ca(2+)-binding protein that plays a key role in store-operated Ca(2+) entry (SOCE) in T-cells	3
CXCL8	4q13.3	Interleukin-8, proinflammatory chemokine	1
DPP4	2q24.2	Cell surface glycoprotein receptor involved in the costimulatory signal essential for T-cell receptor (TCR)-mediated T-cell activation	1
IFNL3	19q13.2	Proinflammatory cytokine	2
IFNL4	19q13.2	Proinflammatory cytokine	3
IL10	1q32.1	Anti-inflammatory cytokine	1
IL17A	6p12.2	Proinflammatory cytokine	1
IL1A	2q14.1	Proinflammatory cytokine	1
IL1B	2q14.1	Proinflammatory cytokine	1
IL6	7p15.3	Proinflammatory cytokine	5
IL6R	1q21.3	A subunit of the interleukin 6 (IL6) receptor complex	1
IRGM	5q33.1	Functions in innate immune response probably through regulation of autophagy	1
ITLN1	1q23.3	Probably plays a role in the defense system against microorganisms	1
LTA	6p21.33	Proinflammatory cytokine	1
MIF	22q11.23	Proinflammatory cytokine	1
PTGS2	1q31.1	The key enzyme in prostaglandin biosynthesis, involved in inflammation and mitogenesis	1
PTPN2	18p11.21	Involved in regulation of inflammatory response	1
SOCS1	16p13.13	Negative regulators of cytokine signaling	1
STAT3	17q21.2	Transcription activator responds to cytokines and growth factors	3
TLR2	4q31.3	A Toll-like receptor plays a fundamental role in pathogen recognition and activation of innate immunity.	1
TLR4	9q33.1	A Toll-like receptor plays a fundamental role in pathogen recognition and activation of innate immunity.	3
TNF	6p21.33	Proinflammatory cytokine	11
TNFRSF1A	12p13.31	A TNF receptor plays a role in cell survival, apoptosis, and inflammation.	1
TNFRSF1B	1p36.22	A TNF receptor potentiate TNF-induced apoptosis	1
TNFSF10	3q26.31	Cytokine preferentially induces apoptosis	1
Liver fibrosis related genes (n=11)			
CHIT1	1q32.1	Degrades chitin, chitotriose and chitobiose.	1
KLF6	10p15.2	Tumor suppressing transcription factor	4
MERTK	2q13	Receptor tyrosine kinase that transduces signals from the extracellular matrix into the cytoplasm	2
MMP2	16q12.2	Ubiquitinous metalloproteinase involved in remodeling of the vasculature, angiogenesis, tissue repair, etc	1
MMP9	20q13.12	Involved in the breakdown of extracellular matrix	1
PDGFA	7p22.3	Growth factor that plays an essential role in the regulation of embryonic development, cell proliferation, cell migration, etc	1
SERPINA1	14q32.13	A serine protease inhibitor of elastase, plasmin and thrombin	2
SERPINE1	7q22.1	A serine proteinase inhibitor of tissue plasminogen activator (tPA) and urokinase (uPA)	1
SPINK1	5q32	Serine protease inhibitor which exhibits anti-trypsin activity	1
TGFB1	19q13.2	The protein regulates cell proliferation, differentiation and growth	1
VEGFA	6p21.1	Growth factor active in angiogenesis, vasculogenesis and endothelial cell growth	1
Other functional genes (n=37)			
ABCC2	10q24.2	Transporter functions in biliary transport	2
ABO	9q34.2	The basis of the ABO blood group system	1
ACE	17q23.3	An enzyme involved in blood pressure regulation and electrolyte balance.	1
AGT	1q42.2	Essential component of the renin-angiotensin system (RAS), a potent regulator of blood pressure, body fluid and electrolyte homeostasis.	1
AGTR1	3q24	Angiotensin II receptor, major blood pressure regulator	8
APPL1	3p14.3	Multifunctional adapter protein that binds to various membrane receptors, nuclear factors and signaling proteins to regulate many processes	1
APPL2	12q23.3	Multifunctional adapter protein that binds to various membrane receptors, nuclear factors and signaling proteins to regulate many processes	1
CLOCK	4q12	Transcription factor involved in circadian rhythm regulation	1
CNR1	6q15	GPCR in brain mediates CNS effects of cannabis components	1
COL13A1	10q22.1	Nonfibrillar type collagen	4

CWF19L1	10q24.31	Mutations in this gene have been associated with nervous system diseases.	1
EHBP1L1	11q13.1	May act as Rab effector protein and play a role in vesicle trafficking	2
ESR1	6q25.1-q25.2	A nuclear receptor regulates the transcription of many estrogen-inducible genes that play a role in growth, metabolism, sexual development, gestation, and other reproductive functions	1
ESR2	14q23.2-q23.3	A nuclear receptor functions similarly with ESR1	1
FGFR1	8p11.23	Role in the regulation of embryonic development, cell proliferation, differentiation and migration.	1
FGFR2	10q26.13	Role in the regulation of cell proliferation, differentiation, migration and apoptosis, and embryonic development.	1
FOXC2	16q24.1	A transcription factor may play a role in the development of mesenchymal tissues.	1
FUT1	19q13.33	An enzyme catalyzes the transfer of L-fucose and participates in H antigen synthesis	2
GPLD1	6p22.3	This protein hydrolyzes the inositol phosphate linkage in proteins anchored by phosphatidylinositol glycans thus releasing these proteins from the membrane	1
HNF1A	12q24.31	Transcriptional activator that regulates the tissue specific expression of multiple genes	1
JMJD1C	10q21.3	Probable histone demethylase playing a central role in histone code	1
KCNQ1	11p15.5-p15.4	Voltage-gated potassium channel required for repolarization phase of the cardiac action potential	1
NCAN	19p13.11	A chondroitin sulfate proteoglycan involved in the modulation of cell adhesion and migration.	12
NOS2	17q11.2	Produces nitric oxide (NO) which is a messenger molecule with diverse functions	1
NR1I2	3q13.33	A transcription factor activates the transcription of multiple genes involved in the metabolism and secretion of potentially harmful xenobiotics, drugs and endogenous compounds	2
NT5C2	10q24.32-q24.33	A hydrolase involved in cellular purine metabolism	1
PALLD	4q32.3	Cytoskeletal protein required for organization of normal actin cytoskeleton	1
PARP1	1q42.12	An enzyme mediates poly-ADP-ribosylation of proteins and plays a key role in DNA repair	1
PARVB	22q13.31	Role in cytoskeleton and cell adhesion	4
PZP	12p13.31	It inhibits the activity of all four classes of proteinases.	3
SLC6A2	16q12.2	Norepinephrine transporter	1
STK11	19p13.3	Tumor suppressor plays a role in cell metabolism, cell polarity, apoptosis and DNA damage response	1
SULT1A1	16p11.2	Sulfotransferase catalyzes the sulfate conjugation of many hormones, neurotransmitters, drugs, and xenobiotic compounds.	1
TRIB1	8q24.13	Adapter protein interacts with MAPK kinases and regulates activation of MAP kinases	3
VDR	12q13.11	Nuclear receptor for vitamin D3 plays a central role in calcium homeostasis	2
YIPF1	1p32.3	Unknown	1
ZP4	1q43	Extracellular matrix that surrounds the oocyte and early embryo	2

Supplementary Table S5. Characteristics for studies included in meta-analyses of the 25 genetic variants

Table 1. Characteristics for studies included in meta-analyses of *APOC3* rs2854116 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
Cai 2013[1]	China	Asians	396/399Adult	65/78	224/197	107/124	354/353	438/445	0.988	8
Gu 2019[2]	China	Asians	336/338Adult	63/72	164/158	109/108	290/302	382/374	0.318	8
Hyysalo 2012[3]	Finland	Caucasians	202/228Adult	44/51	87/103	71/74	175/205	229/251	0.188	5
Jain 2019[4]	India	Asians	119/75Children	95/49		24/26	-	-	>0.05	6
Kasturiratne 2015[5]	Sri Lanka	Asians	946/1213Adult	238/343	456/597	252/273	932/1283	960/1143	0.666	7
Li 2014[6]	China	Asians	300/300Adult	75/43	131/123	94/134	281/209	319/391	0.093	9
Niriella 2019[7]	Sri Lanka	Asians	282/283Adult	85/77	136/150	61/56	306/304	258/262	0.267	9
Niu 2014[8]	China	Asians	390/409Adult	108/110	180/195	102/104	396/415	384/403	0.350	7
Park 2015[9]	Korea	Asians	594/743Adult	118/148	291/370	185/225	527/666	661/820	0.853	8
Song 2017[10]	China	Asians	130/251Adult	23/46	63/117	44/88	109/209	151/293	0.517	8
Yang 2018[11]	China	Asians	97/362Adult	12/50	46/177	39/135	70/277	124/447	0.506	9

Table 2. Characteristics for studies included in meta-analyses of *APOC3* rs2854116 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				TT	TC	CC	T	C		
Cai 2013[1]	China	Asians	396/399Adult	60/72	211/185	125/142	331/329	461/469	0.388	8
Gu 2019[2]	China	Asians	338/340Adult	69/70	156/158	113/112	294/298	382/382	0.300	8

Jain 2019[4]	India	Asians	78/39Children	57/29	21/10		-	-	>0.05	6
Kasturiratne 2015[5]	Sri Lanka	Asians	946/1213Adult	232/342	459/588	255/283	923/1272	969/1154	0.326	7
Li 2014[6]	China	Asians	300/300Adult	48/47	144/127	108/126	240/221	360/379	0.118	9
Niriella 2019[7]	Sri Lanka	Asians	282/283Adult	85/74	135/149	62/60	305/297	259/269	0.350	9
Niu 2014[8]	China	Asians	390/409Adult	107/102	176/203	107/104	390/407	390/411	0.882	7
Park 2015[9]	Korea	Asians	600/757Adult	129/157	287/381	184/219	545/695	655/819	0.712	8
Verrijken 2013[12]	Belgium	Caucasians	208/79Adult	15/3	77/29	116/47	107/35	309/123	0.567	8

Table 3. Characteristics for studies included in meta-analyses of *LYPLAL1* rs12137855 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
Cai 2019[13]	China	Asians	317/303Adult	223/200	83/96	11/7	529/496	105/110	0.249	6
Gorden 2013[14]	American	Caucasians	683/319Adult	449/208	207/103	27/8	1105/519	261/119	0.253	6
Gu 2019[2]	China	Asians	334/332Adult	293/303	41/27	0/2	627/633	41/31	0.116	7
Hudert 2019[15]	Germany	Caucasians	70/200Children	45/130	20/66	5/4	110/326	30/74	0.182	7
Kasturiratne 2015[16]	Sri Lanka	Asians	946/1213Adult	573/747	326/413	47/53	1472/1907	420/519	0.668	9
Kawaguchi 2012[17]	Japan	Asians	529/932Adult	475/828	54/102	0/2	1004/1758	54/106	0.536	8
Lee 2020[18]	Singapore	Asians	72/72Adult	61/60	11/10	0/2	133/130	11/14	0.076	7
León-Mimila 2015[19]	Mexico	Hispanics	115/15Adult	89/10	21/5	5/0	199/25	31/5	0.439	7
Lin 2014[20]	China	Asians	188/606Children	161/525	27/78	0/3	349/1128	27/84	0.955	8

Niriella 2019[21]	Sri Lanka	Asians	282/283Adult	182/161	92/102	8/20	456/424	108/142	0.489	9
Nishioji 2015[22]	Japan	Asians	272/542Adult	234/482	36/57	2/3	504/1021	40/63	0.359	8
Wang 2016[23]	China	Asians	377/361Adult	333/325	44/35	0/1	710/685	44/37	0.955	8
Yuan 2015[24]	China	Asians	184/114Adult	159/91	25/23	0/0	343/205	25/23	0.231	6

Table 4. Characteristics for studies included in meta-analyses of *MBOAT7* rs641738 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
Di Costanzo 2018[25]	Italy	Caucasians	218/227Adult	61/78	105/111	52/38	227/267	209/187	0.888	8
Di Costanzo 2019[26]	Italy	Caucasians	105/125Children	36/31	40/64	29/30	112/126	98/124	0.788	7
Di Sessa 2018[27]	Italy	Caucasians	329/673Children	92/198	167/327	70/148	351/723	307/623	0.554	6
Gu 2019[2]	China	Asians	336/339Adult	182/210	134/117	20/12	498/537	174/141	0.380	7
Hudert 2019[15]	Germany	Caucasians	70/200Children	25/59	29/108	16/33	79/226	61/174	0.163	6
Kawaguchi 2018[28]	Japan	Asians	901/7671Adult	540/4682	320/2617	41/372	1400/11981	402/3361	0.797	8
Koo 2018[29]	Korea	Asians	365/96Adult	220/59	126/35	19/2	566/153	164/39	0.216	6
Liao 2018[30]	China	Asians	115/76Adult	71/44	41/29	3/3	183/117	47/35	0.505	6
Lin 2018[31]	China	Asians	170/482Children	97/296	65/154	8/32	259/746	81/218	0.056	8
Pelusi 2019[32]	Italy	Caucasians	59/50Adult	20/19	26/23	13/8	66/61	52/39	0.814	8
Sookoian 2018[33]	Argentina	Caucasians	372/262Adult	134/84	178/137	60/41	446/305	298/219	0.226	8
Zusi 2021[34]	Italy	Caucasians	1311/629Children	330/198	452/307	259/124	1202/703	1060/555	0.634	8

Table 5. Characteristics for studies included in meta-analyses of *MTTP* rs180059 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				GG	GT	TT	G	T		
Gambino 2007[35]	Italy	Caucasians	29/27Adult	19/13	10/14		-	-	0.546	7
Carulli 2009[36]	Italy	Caucasians	114/79Adult	43/33	54/36	17/10	140/102	88/56	0.970	9
El-Koofy 2011[37]	Egypt	Africans	15/20Children	11/3	4/17		-	-	0.084	6
Giovanni 2007[38]	Italy	Caucasians	64/74Adult	33/38	24/25	7/11	90/101	38/47	0.058	7
Gouda 2017[39]	Egypt	Africans	174/141Adult	34/60	78/66	62/15	146/186	202/96	0.615	6
Musso 2008[40]	Italy	Caucasians	70/70Adult	40/35	30/35		-	-	>0.05	8
Namikawa 2004[41]	Japan	Asians	63/150Adult	52/91	11/47	0/12	115/229	11/71	0.104	7
Oliveira 2010[42]	Brazil	Hispanics	129/113Adult	74/67	51/35	4/11	199/169	59/57	0.057	6
Peng 2014[43]	China	Asians	577/579Adult	404/431	164/134	9/14	972/996	182/162	0.357	9
Roberto 2007[44]	Italy	Caucasians	29/27Adult	19/13	8/10	2/4	46/36	12/18	0.386	6
Zhang 2015[45]	China	Asians	219/210Adult	154/123	58/69	7/18	366/315	72/105	0.073	6

Table 6. Characteristics for studies included in meta-analyses of *NCAN* rs2228603 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
Cai 2019[13]	China	Asians	317/303Adult	253/242	58/57	6/4	564/541	70/65	0.249	8
Gorden 2013[14]	American	Caucasians	697/326Adult	583/295	114/31		-	-	>0.05	6
Kasturiratne 2015[5]	Sri Lanka	Asians	946/1213Adult	837/1071	108/138	1/4	1782/2280	110/146	0.842	7

Kawaguchi 2012[17]	Japan	Asians	529/932Adult	478/842	47/88	4/2	1003/1772	55/92	0.850	7
Lee 2020[18]	Singapore	Asians	72/72Adult	63/67	9/5	0/0	135/139	9/5	0.760	8
Lin 2014[20]	China	Asians	191/606Children	168/532	23/74	0/0	359/1138	23/74	0.109	9
Niriella 2019[7]	Sri Lanka	Asians	282/283Adult	254/243	28/39	0/1	536/525	28/41	0.668	9
Nishioji 2015[22]	Japan	Asians	272/552Adult	240/499	32/52	0/1	512/1050	32/54	0.769	9
Park 2015[9]	Korea	Asians	601/758Adult	512/626	84/126	5/6	1108/1378	94/138	0.902	8
Shang 2015[46]	China	Asians	162/865Children	131/702	28/156	3/7	290/1560	34/170	0.604	9
Wu2016[47]	China	Asians	182/195Adult	149/154	33/41	0/0	331/349	33/41	0.101	7

Table 7. Characteristics for studies included in meta-analyses of *PEMT* rs7946 polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				GG	GA	AA	G	A		
Dong 2007[48]	Japan	Asians	107/150Adult	90/143	8/7	9/0	188/293	26/7	0.770	5
Du 2008[49]	China	Asians	87/79Adult	55/61	29/17	3/1	139/139	35/19	0.880	8
Govardhan 2019[50]	India	Asians	191/105Adult	55/32	88/49	48/24	198/113	184/97	0.530	6
Huang 2008[51]	China	Asians	51/50Adult	30/39	20/11	1/0	80/89	22/11	0.382	8
Jun 2009[52]	Korea	Asians	112/392Adult	63/209	37/161	12/22	163/579	61/205	0.209	8
Li 2020[53]	China	Asians	262/257Adult	178/167	77/77	7/13	433/411	91/103	0.297	6
Mannisto 2019[54]	Finland	Caucasians	46/60Adult	5/4	21/31	20/25	31/39	61/81	0.169	6
Song 2005[55]	America	Mixed	28/59Adult and Children	2/11	7/24	19/24	11/46	45/72	0.266	6

Tang 2011[56]	China	Asians	156/188Adult	92/143	61/43	3/2	245/329	67/47	0.532	7
Zhou 2010[57]	China	Asians	50/50Adult	29/39	20/11	1/0	78/89	22/11	0.382	8

Table 8. Characteristics for studies included in meta-analyses of *PNPLA3* rs738409 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CG	GG	C	G		
Alam 2017[58]	Bangladesh	Caucasians	99/75Adult	37/45	43/27	19/3	117/117	81/33	0.672	7
An 2016[59]	China	Asians	296/321Adult	55/103	136/162	105/56	246/368	346/274	0.573	8
Cai 2018(1)[60]	China	Asians	203/188Adult	73/89	91/81	39/18	237/259	169/117	0.945	7
Cai 2018(2)[60]	China	Asians	396/399Adult	134/176	189/183	73/40	457/535	335/263	0.449	7
Chan 2015[61]	China	Asians	220/576Adult	63/248	115/265	42/63	241/761	199/391	0.533	8
Chen 2019[62]	China	Asians	512/451Adult	114/196	236/194	162/61	464/586	560/316	0.243	8
Delik 2020[63]	Turkey	Caucasians	40/20Adult	8/9	15/7	17/4	31/25	49/15	0.257	6
Di Costanzo 2019[26]	Italy	Caucasians	105/125Children	32/76	55/45	18/4	119/197	91/53	0.386	7
Edelman 2015[64]	American	Caucasians	40/24Adult	9/16	17/7	14/1	35/39	45/9	0.834	6
Eleanna 2022[65]	The Greek	Caucasians	58/33Children	14/25	18/5	26/3	46/55	70/11	>0.05	8
Feldman 2017[66]	Austria	Caucasians	115/71Adult	51/46	51/19	13/6	153/111	77/31	0.069	8
Goran 2010[67]	American	Caucasians	71/117Children	7/38	30/60	34/19	44/136	98/98	0.560	8
Gorden 2013[14]	American	Caucasians	702/326Adult	411/218	244/103	47/5	1066/539	338/113	0.064	7
Gu 2019[2]	China	Asians	336/338Adult	142/139	152/161	42/38	436/439	236/237	0.397	8

Guichelaar 2013[68]	American	Caucasians	132/12Adult	79/9	41/3	12/0	199/21	65/3	0.620	6
Honda 2016(1)[69]	Japan	Asians	134/782Adult	23/237	47/389	64/156	93/863	175/701	0.874	8
Honda 2016(2)[69]	Japan	Asians	406/230Adult	78/63	180/124	148/43	336/250	476/210	0.190	8
Hotta 2010[70]	Japan	Asians	253/575Adult	45/175	111/296	97/104	201/646	305/504	0.275	7
Hsieh 2015[71]	China	Asians	327/195Adult	114/58	131/82	82/55	359/198	295/192	0.267	6
Hudert 2019[15]	Germany	Caucasians	70Children/200Adult	20/118	31/71	19/11	71/307	69/93	0.941	7
Islek 2014[72]	Turkey	Caucasians	80/303Adult	23/156	43/129	14/18	89/441	71/165	0.196	8
Jain 2019[4]	India	Asians	195Children/70Adult	92/40	103/30		-	-	>0.05	6
Kawaguchi 2012[17]	Japan	Asians	527/932Adult	88/247	236/468	203/217	412/962	642/902	0.871	8
Kitamoto 2013[73]	Japan	Asians	564/1012Adult	96/300	241/513	227/199	433/1113	695/911	0.445	9
Koo 2018[29]	Korea	Asians	365/95Adult	85/34	164/50	116/11	334/118	396/72	0.249	7
Kravetz 2020[74]	American	Caucasians	44/29Children	13/16	12/13	19/0	38/45	50/13	0.120	6
Krawczyk 2016[75]	Poland	Caucasians	143/180Adult	71/117	53/52	19/11	195/286	91/74	0.121	6
Lee 2014[76]	Korea	Asians	155/184Adult	31/55	75/92	49/37	137/202	173/166	0.896	7
Lee 2020[18]	Singapore	Asians	72/72Adult	23/30	26/32	23/10	72/92	72/52	0.755	6
León-Mimila 2015[19]	Mexico	Hispanics	115/15Adult	27/7	59/4	29/4	113/18	117/12	0.085	7
Li 2012[77]	China	Asians	203/202Adult	70/94	84/90	49/18	224/278	182/126	0.589	6
Liang 2016[78]	China	Asians	186/432Adult	60/183	86/196	40/53	206/562	166/302	0.963	7

Lin 2013[79]	China	Asians	182/599Children	54/237	93/288	35/74	201/762	163/436	0.346	8
Lin 2014[20]	China	Asians	191/606Children	58/238	95/293	38/75	211/769	171/443	0.296	8
Lin 2016[80]	China	Asians	189/638Children	55/251	95/305	39/82	205/807	173/469	0.475	8
Lin 2018[31]	China	Asians	174/481Children	51/190	88/229	35/62	190/609	158/353	0.587	8
Liu 2020[81]	China	Asians	331/56Adult	94/24	152/24	85/8	340/72	322/40	0.618	8
Liu 2020[82]	China	Asians	316/200Adult	111/114	149/74	56/12	371/302	261/98	0.998	7
Mantovani 2020[83]	Italy	Caucasians	112/45Adult	60/20	44/22	8/3	164/62	60/28	0.346	6
Mazo 2019[84]	Brazil	Hispanics	248/134Adult	77/66	117/55	54/13	271/187	225/81	0.756	7
Miao 2019[85]	China	Asians	241/359Adult	72/162	121/156	48/41	265/480	217/238	0.711	7
Mondul 2015[86]	American	Caucasians	76/413Adult	21/256	33/137	22/20	75/649	77/177	0.762	7
Muto 2020[87]	Japan	Asians	53/299Adult	9/89	36/158	8/52	54/336	52/262	0.205	6
Niriella 2019[7]	Sri Lanka	Asians	282/283Adult	149/172	114/96	19/15	412/440	152/126	0.738	8
Nishioji 2015[22]	Japan	Asians	272/552Adult	54/170	142/284	76/98	250/624	294/480	0.272	6
Niu 2014[8]	China	Asians	390/409Adult	48/183	153/176	189/50	249/542	531/276	0.447	6
Oniki 2015[88]	Japan	Asians	119/472Adult	23/143	69/249	27/80	115/535	123/409	0.107	9
Park 2015[9]	Korea	Asians	602/761Adult	172/280	293/364	137/117	637/924	567/598	0.942	8
Peng 2012[89]	China	Asians	552/553Adult	183/235	276/259	93/59	642/729	462/377	0.320	7
Qian 2016[90]	China	Asians	106/100Adult	19/44	44/43	43/13	82/131	130/69	0.627	7

Shang 2015(1)[46]	China	Asians	41/690Children	14/259	19/337	8/94	47/855	35/525	0.344	9
Shang 2015(2)[46]	China	Asians	121/175Children	46/79	55/81	20/15	147/239	95/111	0.364	9
Sood 2018[91]	India	Asians	69/30 Children	22/21	23/8	24/1	67/50	71/10	0.827	7
Sun 2019[92]	China	Asians	340/1135Adult	131/460	150/535	59/140	412/1455	268/815	0.416	8
Tai 2015[93]	China	Asians	152/29Adult	66/12	60/15	26/2	192/39	112/19	0.349	7
Valenti 2010[94]	Italyand Britain	Caucasians	574/179Adult	245/118	254/56	75/5	744/292	404/66	0.590	7
Valenti 2012[95]	Italy	Caucasians	144/257Adult	55/146	68/95	21/16	178/387	110/127	0.917	7
Verneka 2017[96]	India	Asians	107/113Adult	50/64	32/37	25/12	132/165	82/61	0.072	6
Verrijke 2013[12]	Belgium	Caucasians	208/79Adult	108/56	83/23	17/0	299/135	117/23	0.130	6
Vespasiani 2016[97]	Italy	Caucasians	121/125Adult	45/83	35/34	41/8	125/200	117/50	0.094	8
Vespasiani 2018[98]	Italy	Caucasians	93/90Adult	30/53	36/30	27/7	96/136	90/44	0.355	8
Wang 2011[99]	China	Asians	156/723Adult	40/269	80/335	36/119	160/873	152/573	0.395	7
Wang 2016[100]	China	Asians	376/382Adult	122/169	191/174	63/39	435/512	317/252	0.553	8
Wei 2015(1)[101]	China	Asians	134/565Adult	29/238	105/327		-	-	>0.05	8
Wei 2015(2)[101]	China	Asians	127/83Adult	51/41	76/42		-	-	>0.05	8
Wood 2017(1)[102]	American	Mixed	292/113Adult	143/76	128/35	21/2	414/187	170/39	0.368	6
Wood 2017(2)[102]	American	Mixed	87/37Adult	45/26	34/9	8/2	124/61	50/13	0.330	6
Wu 2020[103]	China	Asians	431/266Adult	152/106	210/128	69/32	514/340	348/192	0.482	7

Wu 2014[104]	China	Asians	85/102Adult	14/45	35/42	36/15	63/132	107/72	0.320	7
Xia 2016[105]	China	Asians	1385/2915Adult	486/1200	684/1363	215/352	1656/3763	1114/2067	0.243	8
Yu 2006[106]	China	Asians	315/336Adult	45/155	128/139	142/42	218/449	412/223	0.219	7
Zeng 2020(1)[107]	China	Asians	15/37Adult	1/17	14/20		-	-	>0.05	6
Zeng 2020(2)[107]	China	Asians	44/9Adult	12/3	32/6		-	-	>0.05	6
Zhang 2016[108]	China	Asians	59/72Adult	12/32	27/31	20/9	51/95	67/49	0.728	7
Zusi 2021[34]	Italy	Caucasians	1117/624Children	492/341	464/244	161/39	1448/926	786/322	0.634	8

Table 9. Characteristics for studies included in meta-analyses of *PPARG* rs1801282 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CG	GG	C	G		
Ahmet 2017[109]	Turkey	Asians	216/150Adult	181/125	35/25	0/0	397/275	35/25	0.266	7
Cao 2012[110]	China	Asians	169/699Adult	159/656	10/43	0/0	328/1355	10/43	0.401	7
Chen 2013[111]	China	Asians	97/51Adult	86/48	11/3	0/0	183/99	11/3	0.829	5
Domenici 2013[112]	Brazil	Hispanics	103/103Adult	87/77	16/23	0/3	190/177	16/29	0.435	6
Dongiovanni 2010[113]	Italy	Caucasians	202/346Adult	166/295	33/50	3/1	365/640	39/52	0.461	6
Rey 2010[114]	Germany	Caucasians	263/259Adult	206/200	48/55	9/4	460/455	66/63	0.922	6
Yang 2012[115]	China	Asians	436/467Adult	406/409	30/58	0/0	842/876	30/58	0.152	8
Ye 2007[116]	China	Asians	155/141Adult	142/130	13/11	0/0	297/271	13/11	0.630	7
Su 2020[117]	China	Asians	467/524Adult	373/397	90/117	4/10	836/911	98/137	0.688	7

Table 10. Characteristics for studies included in meta-analyses of *PPARGC1A* polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
Lin 2013[118]	China	Asians	182/599Children	44/205	108/296	30/98	196/706	168/492	0.609	7
Saremi 2019[119]	Iran	Caucasians	145/145Adult	0/0	25/40	120/105	25/40	265/250	0.054	7
Tai 2016[120]	China	Asians	148/29Adult	48/11	74/14	26/4	170/36	126/22	0.892	7
Yang 2008[121]	China	Asians	96/96Adult	41/33	46/44	9/19	128/110	64/82	0.534	9
Zhang 2016[122]	China	Asians	59/93Adult	15/40	36/36	8/17	66/116	52/70	0.091	7
Zhou 2010[57]	China	Asians	96/96Adult	41/33	46/44	9/19	128/110	64/82	0.534	9

Table 11. Characteristics for studies included in meta-analyses of *TM6SF2* rs58542926 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
Bale 2017(1)[123]	India	Asians	90/128Adult	61/110	22/18	7/0	144/238	36/18	0.392	5
Bale 2017(2)[123]	India	Asians	160/104Adult	110/80	44/22	6/2	264/182	56/26	0.737	5
Cai 2019[124]	China	Asians	317/303Adult	270/268	44/34	3/1	584/570	50/36	0.943	7
Chen 2019[62]	China	Asians	512/451Adult	426/415	80/35	6/1	932/865	92/37	0.773	7
Di Costanzo 2019[26]	Italy	Caucasians	105/125Children	84/114	20/11	1/0	188/239	22/11	0.607	7
Goffredo 2016(1)[125]	American	Africans	64/119Children	51/104	13/15	0/0	115/223	13/15	0.463	6
Goffredo 2016(2)[125]	American	Africans	18/103Children	16/100	1/3	1/0	33/203	3/3	0.881	6
Goffredo 2016(3)[125]	American	Africans	76/74Children	68/66	8/8	0/0	144/140	8/8	0.623	6

Kawaguchi 2018[28]	Japan	Asians	902/7671Adult	736/6543	153/1090	13/38	1625/ 14176	179/ 1166	0.305	6
Koo 2018[29]	Korea	Asians	365/96Adult	306/87	57/9	2/0	669/183	61/9	0.630	6
Krawczyk 2016[75]	Germany	Caucasians	143/180Adult	110/152	30/28	3/0	250/332	36/28	0.258	7
Lee 2020[18]	Singapore	Asians	72/72Adult	61/62	10/10	1/0	132/134	12/10	0.527	7
Li 2019[126]	China	Asians	201/239Adult	188/234	13/5	0/0	389/473	13/5	0.870	7
Lin 2016[80]	China	Asians	188/637Children	151/568	35/68	2/1	337/ 1204	39/70	0.481	8
Lisboa 2020[127]	Brazil	Hispanics	148/137Adult	125/114	22/22	1/1	272/250	24/24	0.956	7
Liu 2014[128]	Britain	Caucasians	349/379Adult	271/328	70/49	8/2	612/705	86/53	0.908	7
Marzuillo 2020[129]	Italy	Caucasians	325/206Children	295/188	30/18		-	-	>0.05	7
Musso 2019[130]	Italy	Caucasians	81/233Adult	64/200	12/30	5/3	140/430	22/36	0.139	8
Pelusi 2019[32]	Italy	Caucasians	59/50Adult	47/38	12/12	0/0	106/88	12/12	0.335	7
Sookoian 2015[131]	Argentina	Caucasians	226/135Adult	184/120	37/15	5/0	405/255	47/15	0.494	7
Umberto 2018[132]	Italy	Caucasians	200/90Adult	153/79	44/11	3/0	350/169	50/11	0.537	8
Wang 2016[133]	China	Asians	367/366Adult	302/333	65/33	0/0	669/699	65/33	0.366	7
Wong 2014[134]	China	Asians	263/657Adult	222/572	39/83	2/2	483/ 1227	43/87	0.579	8
Yue 2018[135]	China	Asians	268/122Adult	240/114	28/8	0/0	508/236	28/8	0.708	7

Table 12. Characteristics for studies included in meta-analyses of *GCKR* rs780094 polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				TT	TC	CC	T	C		

Cai 2019[124]	China	Asians	317/303Adult	66/46	150/137	101/120	282/229	352/377	0.504	7
Dong 2015[136]	China	Asians	160/172Adult	61/56	67/86	32/30	189/198	131/146	0.759	6
Gao 2019[137]	China	Asians	224/152Adult	70/45	110/81	44/26	250/171	198/133	0.308	7
Gorden 2013[138]	American	Caucasians	728/327Adult	129/49	352/156	247/122	610/254	846/400	0.940	7
Gu 2019[2]	China	Asians	335/332Adult	96/69	176/178	63/85	368/316	302/348	0.173	7
Hudert 2019[139]	Germany	Caucasians	70/200Children	18/27	37/102	15/71	73/156	67/244	0.309	6
Kasturiratne 2015[16]	Sri Lanka	Asians	944/1212Adult	34/44	308/364	602/804	376/452	1512/1972	0.725	8
Kawaguchi 2012[140]	Japan	Asians	529/932Adult	212/321	238/433	79/178	662/1075	396/789	0.139	7
Lee 2020[141]	Singapore	Asians	72/72Adult	16/17	38/35	18/20	70/69	74/75	0.825	7
Lin 2014[20]	China	Asians	190/606Children	58/142	91/290	41/174	207/574	173/638	0.322	8
Lin 2016[142]	China	Asians	188/639Children	57/148	93/305	38/186	207/601	169/677	0.288	8
Lin 2018[143]	China	Asians	174/483Children	53/117	85/224	36/142	191/458	157/508	0.124	8
Lin 2021[144]	China	Asians	85/354Children	30/77	40/170	15/107	100/324	70/384	0.54	8
Mohammadi 2020[145]	Iran	Asians	74/72Adult	24/15	36/34	14/23	84/64	64/80	0.710	6
Niriella 2019[7]	Sri Lanka	Asians	83/461Adult	2/15	25/146	56/300	29/176	137/746	0.588	8
Nishioji 2015[146]	Japan	Asians	272/552Adult	93/171	138/284	41/97	324/626	220/478	0.261	7
Park 2015[9]	Korea	Asians	601/756Adult	175/213	322/383	104/160	672/809	530/703	0.616	8
Shang 2015[46]	China	Asians	162/865Children	28/109	74/418	60/338	130/636	194/1094	0.248	8

Song 2016[147]	China	Asians	132/252Adult	43/69	72/132	17/51	158/270	106/234	0.400	8
Tai 2016[120]	China	Asians	148/29Adult	38/6	72/14	38/9	148/26	148/32	0.897	7
Wang 2016[148]	China	Asians	380/383Adult	68/91	189/182	123/110	325/364	435/402	0.335	7
Yang 2011[149]	China	Asians	436/467Adult	123/ 129	250/238	63/100	496/496	376/438	0.616	8
Yang 2018[150]	China	Asians	97/362Adult	30/118	50/178	17/66	110/ 414	84/310	0.937	9

Table 13. Characteristics for studies included in meta-analyses of *GCKR* rs1260326 polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				TT	TC	CC	T	C		
Cai 2019[124]	China	Asians	317/303Adult	65/43	149/145	103/115	279/231	355/375	0.802	7
Di Costanzo 2018[151]	Italy	Caucasians	218/227Adult	85/55	90/123	43/49	260/233	176/221	0.203	8
Di Costanzo 2019[152]	Italy	Caucasians	105/125Children	33/28	53/69	19/28	119/125	91/125	0.245	7
Gao 2019[137]	China	Asians	224/151Adult	71/46	114/82	39/23	256/174	192/128	0.169	7
Grove 2018[153]	Britain	Caucasians	186/906Adult	43/128	97/401	46/377	183/657	189/1155	0.210	7
Gu 2019[2]	China	Asians	338/340Adult	98/75	180/179	60/86	376/329	300/351	0.319	7
Hudert 2019[139]	Germany	Caucasians	70/200Children	18/29	37/105	15/66	73/163	67/237	0.217	5
León-Mimila 2015[19]	Mexico	Hispanics	53/77Adult	4/11	29/34	20/32	37/56	69/98	0.687	9
Tan 2014[154]	China	Asians	144/198Adult	-	-	-	136/147	54/249	>0.05	8

Table 14 Characteristics for studies included in meta-analyses of *ADIPOQ* rs1501299 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control	Case/Control genotype and allele frequency	*P* for	NOS

			sample size	GG	GT	TT	G	T	HWE	
Fan 2011[155]	China	Asians	100/100Adult	56/33	36/51	8/16	148/117	52/83	0.615	6
Gong 2013[156]	China	Asians	255/405Adult	155/201	75/153	25/51	385/555	125/255	0.243	6
Hashemi 2013[157]	Iran	Asians	83/93Adult	42/53	39/38	2/2	123/144	43/42	0.104	7
He 2017[158]	China	Asians	102/100Adult	49/20	36/39	17/41	134/79	70/121	0.066	8
Hsieh 2015[71]	China	Asians	350/209Adult	175/113	126/79	49/17	476/305	224/113	0.545	6
Li 2015[159]	China	Asians	357/357Adult	113/161	164/165	80/31	390/487	324/227	0.215	7
Mohseni 2017[160]	Iran	Asians	75/76Adult	33/39	32/28	10/9	98/106	52/46	0.268	8
Musso 2008[161]	Italy	Caucasians	70/70Adult	17/38	51/29	2/3	85/105	55/35	0.381	8
Tokushige 2009[162]	Japan	Asians	118/115Adult	67/59	47/47	4/9	181/165	55/65	0.932	7
Wang 2008[163]	China	Asians	248/160Adult	117/74	111/73	20/13	345/221	151/99	0.392	6
Zhang 2016[164]	China	Asians	302/310Adult	161/184	120/112	21/14	442/480	162/140	0.557	8
Zhou 2010[57]	China	Asians	106/106Adult	68/50	29/39	9/17	165/139	47/73	0.057	8
Weng 2015[165]	China	Asians	95/89Adult	42/54	44/32	9/3	128/140	62/38	0.505	7

Table 15. Characteristics for studies included in meta-analyses of *ADIPOQ* rs266729 polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				CC	CG	GG	C	G		
Cheng 2015[166]	China	Asians	338/280Adult	158/164	149/102	31/14	465/430	211/130	0.715	7
Du 2016[167]	China	Asians	493/304Adult	278/219	215/85		-	-	0.069	7

Hashemi 2013[157]	Iran	Asians	83/93Adult	27/49	53/41	3/3	107/139	59/47	0.107	7
Hsieh 2015[71]	China	Asians	350/209Adult	126/109	116/77	108/23	368/295	332/123	0.102	6
Mahmoud 2019[168]	Egypt	Africans	100/100Adult	38/47	44/45	18/8	120/139	80/61	0.539	7
Wong 2008[169]	China	Asians	79/40Adult	51/28	28/12		-	-	>0.05	7
Ye 2014[170]	China	Asians	130/130Adult	77/83	47/40	6/7	201/206	59/54	0.458	7
Zhang 2016[164]	China	Asians	302/310Adult	152/197	126/102	24/11	430/496	174/124	0.619	8

Table 16. Characteristics for studies included in meta-analyses of *ADIPOQ* rs2241766 polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				TT	TG	GG	T	G		
Cheng 2015[166]	China	Asians	338/280Adult	174/139	136/119	28/22	484/397	192/163	0.618	7
Du 2016[167]	China	Asians	493/304Adult	253/185	240/119		-	-	0.069	7
Gupta 2012[171]	India	Asians	137/250Adult	84/175	45/72	8/3	213/422	61/78	0.138	8
Huang 2010[172]	China	Asians	185/322Adult	88/164	84/136	13/22	260/464	110/180	0.383	8
Mahmoud 2019[168]	Egypt	Africans	100/100Adult	38/49	44/41	18/10	120/139	80/61	0.742	7
Musso 2008[161]	Italy	Caucasians	70/70Adult	58/41	11/25	1/4	127/107	13/33	0.941	8
Shi 2012[173]	China	Asians	106/106Adult	68/58	25/41	13/7	161/157	51/55	0.196	8
Tokushige 2009[162]	Japan	Asians	119/115Adult	54/59	52/44	13/12	160/162	78/68	0.383	7
Wang 2008[163]	China	Asians	248/160Adult	125/87	110/60	13/13	360/234	136/86	0.561	6
Zhou 2010[57]	China	Asians	106/106Adult	68/58	25/41	13/7	161/157	51/55	0.946	8

Weng 2015[165]	China	Asians	95/89Adult	42/54	44/32	9/3	128/140	62/38	0.505	7
Peng 2015[174]	China	Asians	100/70Children	46/36	50/28	4/6	142/100	58/40	0.867	7
Ma 2008[175]	China	Asians	90/100Adult	46/46	30/48	14/6	122/140	58/60	0.153	8

Table 17. Characteristics for studies included in meta-analyses of *HFE* C282Y polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CY	YY	C	Y		
Aigner 2008[176]	Austria	Caucasians	140/25Adult	129/22	11/3	0/0	269/47	11/3	0.750	6
Bonkovsky 1999[177]	American	Caucasians	36/348Adult	29/309	6/39	1/0	64/657	8/39	0.268	8
Chitturi 2002[178]	Australia	Caucasians	59/141Adult	46/127	13/13	0/1	105/267	13/15	0.315	7
Dhillon 2007[179]	India	Asians	59/100Adult	59/100	0/0	0/0	118/200	0/0	-	8
Lee 2009[180]	Korea	Asians	43/441Adult	43/441	0/0	0/0	86/882	0/0	-	7
Lee 2010[181]	Korea	Asians	125/221Adult	125/221	0/0	0/0	250/442	0/0	-	7
Lin 2005[182]	China	Asians	33/125Adult	33/125	0/0	0/0	66/250	0/0	-	7
Neri 2008[183]	Italy	Caucasians	272/430Adult	244/379	28/51	0/0	516/809	28/51	0.275	7
Saremi 2016[184]	Iran	Asians	145/145Adult	101/76	42/64	2/5	244/216	46/74	0.052	7
Simsek 2006[185]	Turkey	Caucasians	30/2677Adult	30/2677	0/0	0/0	60/5354	0/0	-	7
Valenti 2003[186]	Italy	Caucasians	134/291Adult	110/285	23/6	1/0	243/576	25/6	0.859	8
Valenti 2006[187]	Italy	Caucasians	353/89Adult	307/87	39/2	7/0	653/176	53/2	0.915	7
Valenti 2010[188]	Italy	Caucasians	587/184Adult	526/174	49/10	12/0	1101/358	73/10	0.705	8

Valenti 2012[189]	Italy	Caucasians	216/271Adult	191/262	25/9	0/0	407/533	25/9	0.805	8
Zamin 2006[190]	Brazil	Hispanics	29/20Adult	18/9	11/11	0/0	47/29	11/11	0.090	6

Table 18. Characteristics for studies included in meta-analyses of *HFE* H63D polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				HH	HD	DD	H	D		
Aigner 2008[176]	Austria	Caucasians	140/25Adult	120/21	20/4	0/0	260/46	20/4	0.664	6
Bonkovsky 1999[177]	American	Caucasians	36/348Adult	18/246	16/92	2/10	52/584	20/112	0.695	8
Chitturi 2002[178]	Australia	Caucasians	42/125Adult	34/92	7/32	1/1	75/216	9/34	0.317	7
Dhillon 2007[179]	India	Asians	59/100Adult	49/88	9/11	1/1	107/187	11/13	0.342	8
George 1998[191]	Australia	Caucasians	51/90Adult	35/68	14/20	2/2	84/156	18/24	0.715	8
Lee 2009[180]	Korea	Asians	43/441Adult	41/402	2/39	0/0	84/843	2/39	0.331	7
Lee 2010[181]	Korea	Asians	125/221Adult	107/205	17/16	1/0	231/426	19/16	0.577	7
Lin 2005[182]	China	Asians	33/125Adult	32/121	1/4	0/0	65/246	1/4	0.856	7
Saremi 2016[184]	Iran	Asians	145/145Adult	85/90	57/53	3/2	227/233	63/57	0.058	7
Valenti 2003[186]	Italy	Caucasians	134/291Adult	95/216	36/67	3/8	226/499	42/83	0.318	8
Valenti 2006[187]	Italy	Caucasians	353/89Adult	216/67	112/20	25/2	544/154	162/24	0.728	7
Valenti 2010[188]	Italy	Caucasians	587/184Adult	401/122	167/55	19/7	969/299	205/69	0.797	8
Valenti 2012[189]	Italy	Caucasians	216/271Adult	143/184	64/78	9/9	350/446	82/96	0.891	8
Zamin 2006[190]	Brazil	Hispanics	29/20Adult	23/17	5/3	1/0	51/37	7/3	0.717	6

Table 19. Characteristics for studies included in meta-analyses of *MTHFR* rs1801131 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				AA	AC	CC	A	C		
A 2017[192]	China	Asians	325/304Adult	159/152	142/122	24/30	460/426	190/182	0.450	6
de Carvalho 2013[193]	Brazil	Hispanics	35/45Adult	20/26	15/17	0/2	55/69	15/21	0.708	6
Vincentis 2020(1) [194]	Italy	Caucasians	1271/104Adult	639/61	473/33	159/10	1751/155	791/53	0.094	7
Vincentis 2020(2) [194]	Finland	Caucasians	233/178Adult	107/80	97/74	29/24	311/234	155/122	0.303	7
Franco 2013[195]	Brazil	Hispanics	134/134Adult	74/65	53/63	7/6	201/193	67/75	0.054	7
Kasapoglu 2015[196]	Turkey	Caucasians	67/68Adult	19/40	31/24	17/4	69/104	65/32	0.874	6
Sazci 2008[197]	Turkey	Caucasians	57/324Adult	13/137	34/154	10/33	60/428	54/220	0.282	8

Table 20. Characteristics for studies included in meta-analyses of *MTHFR* rs1801133 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				CC	CT	TT	C	T		
A 2017[192]	China	Asians	325/304Adult	138/138	145/139	42/27	421/ 415	229/ 193	0.336	6
de Carvalho 2013[193]	Brazil	Hispanics	35/45Adult	12/23	17/20	6/2	41/66	29/24	0.360	6
De Vincentis 2020(1)[194]	Italy	Caucasians	1271/104Adult	415/38	592/43	264/23	1422/ 119	1120/ 89	0.113	7
De Vincentis 2020(2)[194]	Finland	Caucasians	233/178Adult	133/108	86/60	14/10	352/ 276	114/80	0.664	7
Franco 2013[195]	Brazil	Hispanics	134/134Adult	57/50	57/67	20/17	171/ 167	97/101	0.455	8
Hu 2009[198]	China	Asians	63/52Adult	21/26	20/17	22/9	62/69	64/35	0.053	7

Kasapoglu 2015[196]	Turkey	Caucasians	102/108Adult	19/40	54/56	29/12	92/136	112/80	0.245	6
Li 2008[199]	China	Asians	83/150Adult	19/52	39/75	25/23	77/179	89/121	0.634	7
Sazci 2008[197]	Turkey	Caucasians	57/324Adult	32/161	21/139	4/24	85/461	29/187	0.420	8

Table 21. Characteristics for studies included in meta-analyses of *TNF* rs361525 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				GG	GA	AA	G	A		
Cheng 2015[200]	China	Asians	493/304Adult	403/278	90/26	0/0	896/582	90/26	0.436	7
Ding 2008[201]	China	Asians	98/210Adult	88/190	7/20	3/0	183/400	13/20	0.469	6
Hu 2009[202]	China	Asians	189/138Adult	137/116	52/22	0/0	326/254	52/22	0.309	8
Huang 2006[203]	China	Asians	117/120Adult	82/101	35/19	0/0	199/221	35/19	0.346	6
Jain 2019[4]	India	Asians	118/72Children	103/59	15/13		-	-	>0.05	7
Li 2012[204]	China	Asians	400/50Adult	340/50	45/0	15/0	725/100	75/0	-	6
Mohseni 2016[205]	Iran	Asians	75/76Adult	71/68	4/8	0/0	146/144	4/8	0.628	8
Purnomo 2018[206]	Indonesia	Asians	75/75Adult	72/73	3/2	0/0	147/148	3/2	0.907	7
Shao 2007[207]	China	Asians	25/20Adult	21/17	4/3	0/0	46/37	4/3	0.717	6
Tokushige 2007[208]	Japan	Asians	102/100Adult	97/92	5/8	0/0	199/192	5/8	0.677	6
Trujillo-Murillo 2011[209]	Mexico	Hispanics	68/100Adult	48/88	20/12	0/0	116/188	20/12	0.523	7
Valenti 2002[210]	Italy	Caucasians	99/172Adult	68/146	31/23	0/3	167/315	31/29	0.079	8
Wong 2008[211]	China	Asians	79/40Adult	74/36	5/4		-	-	>0.05	7

Zhou 2010[57]	China	Asians	117/117Adult	82/99	35/18	0/0	199/216	35/18	0.367	8

Table 22. Characteristics for studies included in meta-analyses of *TNF* rs1800629 polymorphism and NAFLD

Research	**Country**	**Ethnicity**	**Case/Control sample size**	**Case/Control genotype and allele frequency**					***P* for HWE**	**NOS**
				GG	GA	AA	G	A		
Aller 2010[212]	Spain	Caucasians	66/203Adult	51/154	15/49	0/0	117/357	15/49	0.051	6
Cheng 2015[200]	China	Asians	493/304Adult	445/283	48/21	0/0	938/587	48/21	0.533	7
Fan 2012[213]	China	Asians	346/350Adult	289/298	53/50	4/2	631/646	61/54	0.950	8
Hu 2009[202]	China	Asians	189/138Adult	163/123	26/15	0/0	352/261	26/15	0.500	8
Huang 2006[203]	China	Asians	117/120Adult	106/112	11/8	0/0	223/232	11/8	0.706	8
Li 2012[204]	China	Asians	400/50Adult	226/47	150/3	24/0	602/97	198/3	0.827	6
Purnomo 2018[206]	Indonesia	Asians	75/75Children and Adult	74/72	1/3	0/0	149/147	1/3	0.860	7
Shao 2007[207]	China	Asians	25/20Adult	22/18	3/2	0/0	47/38	3/2	0.814	6
Tokushige 2007[208]	Japan	Asians	102/100Adult	97/95	4/5	1/0	198/195	6/5	0.798	6
Trujillo-Murillo 2011[209]	Mexico	Hispanics	68/100Adult	54/80	14/20	0/0	122/180	14/20	0.267	7
Valenti 2002[210]	Italy	Caucasians	99/172Adult	75/132	23/38	1/2	173/302	25/42	0.688	8
Wong 2008[211]	China	Asians	79/40Adult	66/30	13/10		-	-	>0.05	7
Zhou 2010[57]	China	Asians	117/117Adult	106/110	11/7	0/0	223/227	11/7	0.739	8

Table 23. Characteristics for studies included in meta-analyses of *PPP1R3B* rs4240624 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				GG	GA	AA	G	A		
Gorden 2013[214]	USA	Caucasians	748/344Adult	107/55		575/262	-	-	>0.05	7
Lin 2014[20]	China	Asians	188/603Children	0/0	6/11	182/592	6/11	370/1195	0.821	9
León-Mimila 2015[215]	Mexico	Hispanics	53/77Adult	6/4	15/31	32/42	27/39	79/115	0.572	6
Kasturiratne 2015[5]	Sri Lanka	Asians	946/1213Adult	4/9	79/116	863/1088	87/134	1805/2292	>0.05	8
Nishioji 2015[22]	Japan	Asians	272/522Adult	0/0	7/11	265/541	7/11	537/1093	0.813	8
Lee 2020[141]	Singapore	Asians	72/72Adult	0/0	1/3	71/69	1/3	143/141	0.857	8
Niriella 2019[21]	Sri Lanka	Asians	83/461 Adult	1/2	3/53	80/406	5/57	163/865	0.848	9

Table 24. Characteristics for studies included in meta-analyses of *LEPR* rrs1137100 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				AA	AG	GG	A	G		
An 2016[216]	China	Asians	554/550Adult	20/22	178/157	356/371	218/201	890/899	0.299	8
An 2016[217]	China	Asians	296/321Adult	16/14	93/90	187/217	125/118	467/524	0.240	9
Chen 2006[218]	China	Asians	117/63Adult	1/2	21/12	95/49	23/16	211/110	0.263	3
Hsieh 2015[71]	China	Asians	271/172Adult	271/172	24/22	6/4	566/366	36/30	0.004	4
Zain 2013(1)[219]	Malaysia	Asians	59/80Adult	-	-	-	34/67	84/93	>0.05	8
Zain 2013(2)[219]	China	Asians	54/54Adult	-	-	-	25/24	83/84	>0.05	8

Zain 2013(3)[219]	Indians	Asians	31/64Adult	-	-	-	46/104	16/24	>0.05	8

Table 25. Characteristics for studies included in meta-analyses of *LEPR* rrs1137101 polymorphism and NAFLD

Research	Country	Ethnicity	Case/Control sample size	Case/Control genotype and allele frequency					*P* for HWE	NOS
				AA	AG	GG	A	G		
An 2016[216]	China	Asians	554/550Adult	16/26	129/162	409/362	161/214	947/886	0.299	8
Hsieh 2015[71]	China	Asians	293/187Adult	214/168	53/15	26/4	481/351	105/23	0.240	9
Zain 2013(1)[219]	China	Asians	59/80Adult	-	-	-	18/34	100/126	0.263	3
Zain 2013(2)[219]	China	Asians	54/54Adult	-	-	-	12/17	96/91	0.004	4
Zain 2013(3)[219]	Malaysia	Asians	31/64Adult	-	-	-	22/58	40/70	>0.05	8
Zhang 2014[32]	China	Asians	600/600Adult	124/166	184/307	292/127	432/639	768/561	>0.05	8

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Supplemental Table 6. Results of random effects meta-analyses based on allele contrast, dominant model, recessive model, heterozygous model, and homozygous model

Gene functions	Gene	SNP	N	Cases	Controls	Sample size	Allele model	Dominant model	Recessive model	Heterozygous model	Homozygous model
Lipid synthesis and metabolism related genes	*APOC3*	rs2854116	11	3823	4676	8499	0.988 (0.886-1.101)	0.997 (0.858-1.160)	0.958 (0.818-1.122)	1.012 (0.896-1.142)	0.995 (0.811-1.221)
		rs2854117	9	3538	3819	7357	1.020 (0.951-1.095)	1.081 (0.912-1.269)	1.340 (0.890-2.017)	1.007 (0.879-1.153)	1.354 (0.829-2.211)
	LYPLAL1	rs12137855	13	4441	5350	9791	0.984 (0.889-1.089)	0.979 (0.879-1.090)	1.038 (0.677-1.591)	0.975 (0.869-1.094)	1.008 (0.654-1.553)
	MBOAT7	rs641738	12	4366	11002	15368	1.067 (1.001-1.138)	1.066 (0.969-1.171)	1.133 (0.992-1.294)	1.040 (0.933-1.160)	1.261 (0.920-1.727)
	MTTP	rs1800591	11	1483	1490	2973	0.891 (0.586-1.357)	0.800（0.534-1.201）	0.687 (0.293-1.611)	1.024 (0.732-1.433)	0.697 (0.263-1.848)
	PEMT	rs7946	10	1090	1390	2480	1.514 (1.114-2.058)	1.554 (1.084-2.228)	1.526 (0.960-2.427)	1.368 (0.985-1.900)	1.485 (1.032-2.137)
	PNPLA3	rs738409	75	18193	24710	42903	1.841 (1.691-2.004)	1.948 (1.771-2.143)	2.451(2.159-2.783)	1.565 (1.449-1.689)	3.2463 (2.767-3.807)
	PPARG	rs1801282	9	2108	2740	4848	0.878 (0.700-1.101)	0.857 (0.691-1.061)	1.047 (0.278-3.945)	0.843 (0.697-1.021)	1.012 (0.262-3.915)
	PPARGC1A	rs8192678	6	726	1058	1784	1.052 (0.784-1.412)	1.171 (0.743-1.843)	0.854 (0.524-1.392)	1.310 (0.863-1.988)	0.830 (0.435-1.584)
	TM6SF2	rs58542926	24	5981	13203	19184	1.685 (1.471-1.930)	1.613 (1.417-1.837)	3.512 (2.301-5.361)	1.519 (1.348-1.712)	3.698 (2.422-5.648)
Insulin resistance and glucose metabolism related genes	*GCKR*	rs780094	23	6433	10013	16446	1.181(1.106-1.262)	1.244(1.127-1.374)	1.223(1.111-1.347)	1.204(1.109-1.307)	1.418(1.232-1.632)
		rs1260326	9	1514	2330	3844	1.477 (1.668-1.866)	1.284(1.094-1.507)	1.416(1.154-1.738)	1.261(1.005-1.581)	1.746(1.323-2.303)
	PPP1R3B	rs4240624	7	2362	3322	5684	0.880（0.677-1.144）	0.858（0.701-1.051）	1.277（0.433-3.684）	0.822(0.548-1.233)	1.128(0.438-2.909)
Adipokines/adipokine receptors related genes	*ADIPOQ*	rs1501299	13	2261	2190	4451	0.973 (0.738-1.285)	0.985 (0.715-1.357)	0.954 (0.593-1.533)	0.993 (0.754-1.309)	0.932 (0.522-1.664)
		rs266729	8	1875	1466	3341	1.611 (1.358-1.911)	1.731 (1.502-1.995)	2.241 (1.515-3.315)	1.485 (1.250-1.765)	2.663 (1.841-3.853)
		rs2241766	13	2187	2072	4259	1.086 (0.919-1.283)	1.077(0.875-1.325)	1.359 (0.940-1.965)	0.970 (0.760-1.238)	1.363 (0.947-1.961)
	LEPR	rs1137100	7	1382	1304	2686	1.019(0.825-1.258)	0.891(0.623-1.273)	0.874(0.723-1.058)	0.941(0.644-1.375)	0.967(0.623-1.502)
		rs1137101	6	1591	1535	3126	1.823(1.410-2.539)	1.943(1.179-3.201)	2.639(1.259-5.528)	1.378(0.640-2.969)	2.833(1.847-4.345)
Oxidative stress and antioxidation related genes	*HFE*	rs1800562	15	2261	5508	7769	1.830 (0.990-3.403)	1.772 (0.919-3.417)	2.661 (0.630-11.238)	1.690 (0.889-3.206)	2.844 (0.590-13.714)
		rs1799945	14	1993	2475	4468	1.236 (1.036-1.476)	1.240 (1.022-1.505)	1.401 (0.887-2.212)	1.196 (1.001-1.429)	1.479 (0.933-2.343)
	MTHFR	rs1801131	7	2122	1157	3279	1.240 (0.931-1.651)	1.314 (0.934-1.848)	1.273 (0.796-2.034)	1.255 (0.936-1.683)	1.502 (0.814-2.771)
		rs1801133	9	2303	1399	3702	1.298 (1.059-1.591)	1.000 (0.885-1.130)	1.598 (1.145-2.231)	1.135 (0.940-1.370)	1.778 (1.176-2.690)
Inflammatory and immune response related genes	*TNF*	rs3615525	14	2055	1594	3649	1.824 (1.422-2.339)	1.616 (1.165-2.241)	2.501 (0.236-26.519)	1.841 (1.330-2.548)	2.795 (0.301-25.925)
		rs1800629	13	2176	1789	3965	1.290 (0.985-1.691)	1.242 (0.927-1.664)	2.143 (0.670-6.857)	1.277 (0.962-1.695)	2.332 (0.728-7.471)
Other functional genes	*NCAN*	rs2228603	11	4251	6105	10356	0.965 (0.856-1.087)	0.951 (0.838-1.079)	1.342 (0.722-2.494)	0.942 (0.828-1.071)	1.325 (0.713-2.463)