Supplemental Material

Supplemental Methods

Study Samples

Participants for the current analysis were drawn from 5 cohort studies, including the Atherosclerosis Risk in Communities Study (ARIC), the Cardiovascular Health Study (CHS), the Coronary Artery Risk Development in Young Adults Study (CARDIA), the Invecchiare in Chianti Study (InCHIANTI), and the Multi-Ethnic Study of Atherosclerosis (MESA). These groups comprise the CHARGE (Cohorts for Heart and Aging Research in Genome Epidemiology) Consortium. All participants provided informed consent. Local ethical committees at each institution approved the individual study protocols.

Study Samples, Phenotype, and Genotyping in the Participating Cohorts

Please see Supplemental Table 5 for summary of key methodologic features of the participating cohorts. More detailed information are outlined in the text below.

The Atherosclerosis Risk in Communities Study

The ARIC study is a multi-center prospective investigation of atherosclerotic disease in a predominantly bi-racial population [1]. White and African American men and women aged 45-64 years at baseline were recruited from 4 communities: Forsyth County, North Carolina; Jackson, Mississippi; suburban areas of Minneapolis, Minnesota; and Washington County, Maryland. A total of 15,792 individuals participated in the baseline examination in 1987-1989, and only baseline fasting blood from the Minnesota field center were analyzed for plasma fatty acids (n=3793).

ARIC Study samples were genotyped using the Affymetrix Genome-Wide Human SNP Array 6.0 (Santa Clara, California); for the current analysis only white participants were analyzed. Sample exclusion criteria included discordant with previous genotype data (n=83), genotypic and phenotypic sex mismatch (n=32), suspected first-degree relative of an included individual based on genotype data (n=297), genetic outlier as assessed by Identity by State (IBS) using PLINK [2] and >8 SD along any of the first 10 principal components in EIGENSTRAT [3] with 5 iterations (n=322). Autosomal SNPs were used for imputation after exclusion of SNPs with HWE deviation $p<1 \times 10^{-5}$, call rate <95%, or MAF<1%.

Fatty acids were measured in EDTA plasma that had been frozen at -70˚C. Fatty acid assays were performed at the Collaborative Studies Clinical Laboratory at Fairview-University

Medical Center (Minneapolis, MN) as previously described [4]. Lipids were extracted with chloroform/methanol and separated by thin layer chromatography. Fatty acid methyl esters were prepared from the phospholipid fraction and separated by gas chromatography using an HP-5890 gas chromatograph (Hewlett- Packard, Palo Alto, CA) with a 100-m capillary Varian CP7420 column. We identified 29 fatty acids. The concentration of each fatty acid was expressed as to percentage of total fatty acids.

The Cardiovascular Health Study

The CHS is a population-based cohort study of risk factors for CHD and stroke in adults ≥65 years conducted across four field centers (Forsyth County, NC; Sacramento County, CA; Washington County, MD; Pittsburgh, PA) [5]. The original predominantly Caucasian cohort of 5,201 persons was recruited in 1989-1990 from random samples of the Medicare eligibility lists; subsequently, an additional predominantly African-American cohort of 687 persons were enrolled for a total sample of 5,888. DNA was extracted from blood samples drawn on all participants at their baseline examination in 1989-90. In 2007-2008, genotyping was performed at the General Clinical Research Center's Phenotyping/Genotyping Laboratory at Cedars-Sinai using the Illumina 370CNV BeadChip system on 3980 CHS participants who were free of CVD at baseline, consented to genetic testing, and had DNA available for genotyping.

A total of 1908 persons were excluded from the GWAS study sample due to the presence at study baseline of coronary heart disease, congestive heart failure, peripheral vascular disease, valvular heart disease, stroke or transient ischemic attack or lack of available DNA. Because the other cohorts were predominantly white, the African American participants were excluded from this analysis (to reduce the possibility of confounding by population structure). Participants were excluded if they had a call rate<=95%. Genotyping has been attempted to date in 3,397 white participants, and was successful in 3,291 persons. Participants were eligible for the present investigation if their genotyping was complete and they had available phenotype information.

A total of 306,655 autosomal SNPs were used in imputation after filtering out SNPs with HWE deviation $p \leq 1 \times 10^{-5}$, call rate ≤97%, zero heterozygote frequency, >2 duplicate errors or Mendelian inconsistencies (for reference CEPH trios), and SNPs not found in HapMap. Imputation was performed using BIMBAM v0.99 with reference to HapMap CEU using release 22, build 36.

Fatty acids were measured on samples collected in the 3rd year of follow-up. Measurements were performed at the Fred Hutchinson Cancer Research Center, providing quantitative measurement of 42 fatty acids. Blood was drawn after a 12-hour fast and stored at -70°C. Total lipids were extracted from plasma using methods of Folch, and phospholipids separated from neutral lipids by one-dimensional TLC. Fatty-acid-methyl-ester (FAME) samples were prepared by direct transesterification using methods of Lepage and separated using gas chromatography (Agilent5890 gas-chromatograph-FID-detector; Supelco fused-silica 100m capillary column SP-2560; initial 160°C 16 min, ramp 3.0°C/min to 240°C, hold 15 min). Identification, precision, and accuracy were continuously evaluated using model mixtures of known FAMEs and established in-house controls, with identification confirmed by GC-MS at USDA (Peoria, IL). CVs were <3% for most fatty acids.

The Coronary Artery Risk Development in Young Adults (CARDIA) Study

The CARDIA Study is a prospective multicenter study with 5115 adults Caucasian and African American participants of the age group 18-30 years, recruited from four centers. The recruitment was done from the total community in Birmingham, AL, from selected census tracts in Chicago, IL and Minneapolis, MN; and from the Kaiser Permanente health plan membership in Oakland, CA. The details of the study design for the CARDIA study have been published before [6]. Eight examinations have been completed since initiation of the study in 1985–1986, respectively in the years 0, 2, 5, 7, 10, 15, 20, and 25. Written informed consent was obtained from participants at each examination and all study protocols were approved by the institutional review boards of the participating institutions.

CARDIA Study samples from were genotyped using the Affymetrix Genome-Wide Human SNP Array 6.0 (Santa Clara, California); only participants of European descent were included in the GWAS analyses. Genotyping was completed for 1720 individuals with a sample call rate ≥ 98%. A total of 578,568 SNPs passed quality control (MAF ≥ 2%, call rate ≥ 95%, HWE ≥ 10^{-4}) and were used for imputation. For this study, complete genotype and phenotype information were available for 1507 individuals.

We also genotyped selected SNPs for participants of African descent using the TaqMan assay (Applied Biosystems, Foster City, CA) as previously described [7]. Primer and probes are available from the authors upon request. Polymorphism genotyping in the CARDIA study

adheres to a rigorous quality control program, which includes barcode identification of samples, robotic sample handling, and blind replicate genotype assessment on 5% of the total sample (n = 219). The overall genotyping rate with the TapMan assay was 97%, and the concordance rate for blind duplicates was greater than 99%.

Fatty acids were measured in fasted EDTA plasma collected at the year 20 examination and frozen at –70°C, using methods previously described by Cao et al [4]. Lipids are extracted from the plasma using a chloroform/methanol extraction method and the cholesterol esters, triglyceride, phospholipids and free fatty acids are separated by thin layer chromatography. The fatty acid methyl esters are obtained from the phospholipids and are detected by gas chromatography flame ionization. Individual fatty acids are expressed as a percent of total fatty acids. 28 fatty acids were identified.

The Invecchiare in Chianti Study

The InCHIANTI study is a population-based epidemiological study performed in a sample of the population living in the Chianti region of Tuscany, Italy. 1616 residents were selected from the population registry of Greve in Chianti and Bagno a Ripoli. The participation rate was 90% (n=1453), and the subjects age ranged between 21 and 102 years. Overnight fasted blood samples were used for genomic DNA extraction, and measurement of fatty acids. For this studyy, we used data from 1206 subjects with complete phenotype and genotype data.

InCHIANTI Study samples were genotyped using the Illumina 550K. Genotyping was completed for 1210 subjects with a sample call rate $\geq$97%, heterozygosity rates $\geq$ 0.3 and correct sex specification. A total of 495,343 autosomal SNPs that passed quality control (MAF$\geq$1%, completeness $\geq$99%, HWE $\geq 10^{-4}$) were used for imputation.

Fatty acids were measured on aliquots of fasting plasma that had been continuously stored at -80 C as described previously[8]. Fatty acid methyl esters (FAME) were prepared through transesterification using Lepage and Roy's method [9] with modification Rodriguez-Palmero et al [10]. Separation of FAME was carried out on an HP-6890 gas chromatograph (Hewlett- Packard, Palo Alto, CA) with a 30-m fused silica column (HP-225; Hewlett-Packard). FAMEs were identified by comparison with pure standards (NU Chek Prep, Inc., Elysian, MA). We identified 20 fatty acids. For quantitative analysis of fatty acids as methyl esters, calibration curves for FAME (ranging from C14:0 to C24:1) were prepared by adding six increasing

amounts of individual FAME standards to the same amount of internal standard (C17:0; 50xg). The correlation coefficients for the calibration curves of fatty acids were in all cases higher than 0.998 in the range of concentrations studied. Fatty acid concentrations were expressed as a percentage of total fatty acids. The coefficient of variation for all fatty acids was on average 1.6% for intraassay and 3.3% for interassay.

The Multi-Ethnic Study of Atherosclerosis

The MESA Study is a study of the characteristics of subclinical cardiovascular disease (disease detected non-invasively before it has produced clinical signs and symptoms) and the risk factors that predict progression to clinically overt cardiovascular disease or progression of the subclinical disease.[11] MESA researchers study a diverse, population-based sample of 6,814 asymptomatic men and women aged 45-84. Thirty-eight percent of the recruited participants are white, 28 percent African-American, 22 percent Hispanic, and 12 percent Asian, predominantly of Chinese descent, as well as 2,128 additional individuals from 594 families recruited through MESA Family by utilizing the existing MESA framework, yielding 3,026 sibpairs divided between African Americans and Hispanic-Americans. Participants were recruited from six field centers across the United States: Wake Forest University, Columbia University, Johns Hopkins University, University of Minnesota, Northwestern University and University of California - Los Angeles.

MESA and MESA Family samples were genotyped using the Affymetrix Genome-Wide Human SNP Array 6.0 (Santa Clara, California); for the current meta-analysis only self-reported Caucasian participants were analyzed, while MESA Chinese, African American and Hispanic samples are included in the look-up of top SNPs. Sample exclusion criteria included heterozygosity > 53% and individual-level genotyping call rate < 95%. Monomorphic SNPs were removed, and there was no filter on HWE or MAF. IMPUTE version 2.1.0 was used to perform imputation for the MESA SHARe Caucasian participants (chromosomes 1-22) using HapMap Phase I and II - CEU as the reference panel (release #24 - NCBI Build 36 (dbSNP b126)). Relationship inference was performed using KING[7] to identify first- and second- degree relatives, and an unrelated set of individuals was identified for genome-wide association analysis.

Fatty acids were obtained for a subset of 2,767 individuals with genotypes available through MESA SHARe, with approximately equal representation from the four ethnic groups (713 Caucasians, 712 Chinese, 645 African Americans, and 697 Hispanics). The fatty acids were measured in fasting EDTA plasma, frozen at –70°C, using methods previously described by Cao et al [4]. Lipids are extracted from the plasma using a chloroform/methanol extraction method and the cholesterol esters, triglyceride, phospholipids and free fatty acids are separated by thin layer chromatography. The fatty acid methyl esters are obtained from the phospholipids and are detected by gas chromatography flame ionization. Individual fatty acids are expressed as a percent of total fatty acids. 28 fatty acids were identified.

Formula for calculating the proportion of fatty acid variance explained by SNPs

We used a formula which is an approximation to the R^2 in linear regression, i.e.

1) In linear regression of Y on X, $R^2 = [\mathrm{Corr}(Y, \hat{Y})]^2$.
2) For simple linear regression, $\hat{Y} = \alpha\ (\mathrm{hat}) + \beta\ (\mathrm{hat})\ X$
3) Treating the regression coefficients as constant, this yields:

$[\mathrm{Corr}(Y, \hat{Y})]^2 \approx [\mathrm{Corr}(Y, \beta(\mathrm{hat})\ X)]^2$
$= \mathrm{Cov}^2(Y, \beta(\mathrm{hat})\ X))/[\mathrm{Var}(Y)\mathrm{Var}(\beta(\mathrm{hat})X)]$
$\approx \mathrm{Cov}^2(Y, X)/[\mathrm{Var}(Y)\mathrm{Var}(X)]$

Substituting $\beta(\mathrm{hat}) = \mathrm{Cov}(X, Y)/\mathrm{Var}(X)$ and $\mathrm{Var}(X) = 2 * \mathrm{MAF} * (1\text{-}\mathrm{MAF})$ yields

$R^2 = [\mathrm{Corr}(Y, \hat{Y})]^2 \approx 2*\mathrm{MAF}*(1\text{-}\ \mathrm{MAF}) * \beta(\mathrm{hat})^2/\mathrm{Var}(Y)$

Supplemental Tables

1. Key methodologic features of the 5 cohorts

Cohorts	Sample size*, n	Genotyping method	Fatty acid measurement method		
			Sample type	Storage	Number of fatty acids measured
ARIC	3269	Affymetrix Genome-Wide Human SNP Array 6.0	EDTA plasma	-70ºC	29
CHS	2404	Illumia 370CNV BeadChip	EDTA plasma	-70ºC	42
CARDIA	1507	Affymetrix Genome-Wide Human SNP Array 6.0	EDTA plasma	-70ºC	28
InCHIANTI	1075	Illumina 550K	Plasma	-80ºC	20
MESA	706	Affymetrix Genome-Wide Human SNP Array 6.0	EDTA plasma	-70ºC	28

*All subjects were of White European ancestry.

2. Comprehensive results for palmitic acid (16:0) with $P < 5 \times 10^{-6}$

Marker Name	Effect allele	Effect*	P-value	Chr	Position	Nearest Gene**
rs2391388	a	-0.1775	2.72E-11	1	95258413	**ALG14**
rs6675668	t	0.1785	7.50E-11	1	95288225	**ALG14**
rs7537374	a	-0.1733	1.05E-10	1	95258012	**ALG14**
rs7547662	t	0.1724	1.07E-10	1	95229824	**ALG14**
rs7533303	t	-0.1709	1.45E-10	1	95235559	**ALG14**
rs11585462	a	-0.1764	1.58E-10	1	95310380	**ALG14**
rs6687388	t	-0.1735	1.60E-10	1	95287712	**ALG14**
rs4339907	a	-0.177	1.64E-10	1	95306054	**ALG14**
rs2797623	a	0.171	1.66E-10	1	95218056	ALG14
rs10874902	a	0.1781	1.83E-10	1	95278849	**ALG14**
rs10735790	t	-0.1719	2.25E-10	1	95276265	**ALG14**
rs4847220	a	-0.1675	2.57E-10	1	95236573	**ALG14**
rs6671200	a	0.2906	2.70E-10	1	95470117	RWDD3
rs6678964	a	0.2911	2.89E-10	1	95466856	RWDD3
rs259350	c	-0.2917	3.07E-10	1	95497419	RWDD3
rs259357	t	-0.2903	3.16E-10	1	95484066	**RWDD3**
rs4630159	t	-0.171	3.26E-10	1	95316266	ALG14
rs12749053	a	-0.2871	3.82E-10	1	95433144	TMEM56
rs6687450	t	-0.1679	3.84E-10	1	95253164	**ALG14**
rs9437812	a	0.1693	3.93E-10	1	95319653	ALG14
rs6698046	a	-0.1648	4.04E-10	1	95221870	**ALG14**
rs4950058	t	0.1688	4.15E-10	1	95320739	ALG14
rs4949965	a	0.1642	5.53E-10	1	95323825	ALG14
rs12741128	t	-0.1641	5.73E-10	1	95340626	TMEM56
rs11591183	t	0.1631	6.41E-10	1	95334294	TMEM56
rs933107	t	-0.2841	6.53E-10	1	95444817	TMEM56
rs12569207	a	-0.1629	6.54E-10	1	95331590	ALG14
rs11165339	t	0.284	7.06E-10	1	95446652	TMEM56
rs4390223	t	0.1617	8.32E-10	1	95329217	ALG14
rs2766010	t	0.1599	1.05E-09	1	95215130	ALG14
rs12755552	a	-0.2824	1.10E-09	1	95457614	RWDD3
rs2797622	a	0.1601	1.15E-09	1	95216790	ALG14
rs859046	t	-0.1754	1.16E-09	1	95152094	**CNN3**
rs259346	a	0.291	1.17E-09	1	95501334	RWDD3
rs859044	a	-0.1799	1.19E-09	1	95153618	**CNN3**
rs10747468	t	0.281	1.26E-09	1	95458879	RWDD3
rs2391391	a	0.1798	1.31E-09	1	95224514	**ALG14**
rs13375406	c	0.2911	1.39E-09	1	95378893	**TMEM56**
rs7540821	a	-0.2002	2.06E-09	1	95259339	**ALG14**
rs11165297	a	0.2068	2.22E-09	1	95304762	**ALG14**

rs6674604	a	0.2002	2.44E-09	1	95290127	**ALG14**
rs11589700	t	0.2604	2.45E-09	1	95246029	**ALG14**
rs6697256	a	0.2253	2.48E-09	1	95345148	TMEM56
rs6698894	t	-0.2036	2.52E-09	1	95300627	**ALG14**
rs12751633	t	-0.1992	2.56E-09	1	95255256	**ALG14**
rs11586384	a	0.2751	2.89E-09	1	95244329	**ALG14**
rs7528790	a	0.2341	3.15E-09	1	95481662	**RWDD3**
rs3753872	t	0.2339	3.17E-09	1	95471772	RWDD3
rs2147587	a	-0.2336	3.22E-09	1	95487472	RWDD3
rs6671842	t	0.1965	3.41E-09	1	95297091	**ALG14**
rs860873	a	-0.1668	3.58E-09	1	95159796	**CNN3**
rs2296308	t	0.2328	3.60E-09	1	95482527	**RWDD3**
rs12760863	a	0.2032	4.30E-09	1	95306772	**ALG14**
rs12751061	a	-0.2823	4.93E-09	1	95303179	**ALG14**
rs9437689	t	-0.1615	5.07E-09	1	95322124	ALG14
rs1265169	c	-0.1557	5.86E-09	1	95167123	CNN3
rs12092678	t	-0.2094	6.07E-09	1	95199836	ALG14
rs6674467	a	0.2292	6.93E-09	1	95303297	**ALG14**
rs6672045	t	-0.2147	7.09E-09	1	95203147	ALG14
rs6684137	a	0.2268	7.25E-09	1	95311503	ALG14
rs11801110	t	0.2225	7.52E-09	1	95323242	ALG14
rs1146461	a	0.1534	7.67E-09	1	95181080	CNN3
rs859040	t	0.2117	8.00E-09	1	95157258	**CNN3**
rs11165281	t	0.2111	8.07E-09	1	95202368	ALG14
rs12739445	c	0.2858	8.57E-09	1	95245226	**ALG14**
rs4387224	t	-0.2208	8.78E-09	1	95319827	ALG14
rs6678809	c	-0.2224	9.18E-09	1	95315804	ALG14
rs10493880	t	-0.1517	9.23E-09	1	95198835	ALG14
rs3890785	t	-0.2213	9.70E-09	1	95316595	ALG14
rs6680551	a	0.2104	9.96E-09	1	95340442	TMEM56
rs10465759	t	-0.2152	1.00E-08	1	95263849	**ALG14**
rs2298162	t	-0.155	1.11E-08	1	95221621	**ALG14**
rs2766005	a	0.15	1.18E-08	1	95201002	ALG14
rs864553	c	0.2175	1.35E-08	1	95151013	**CNN3**
rs12755096	a	-0.1924	1.52E-08	1	95309303	**ALG14**
rs2797616	t	0.1474	1.61E-08	1	95202503	ALG14
rs4131811	t	0.1806	2.28E-08	1	95272737	**ALG14**
rs4615892	t	0.1965	2.36E-08	1	95319811	ALG14
rs11590106	a	-0.1803	2.55E-08	1	95278423	**ALG14**
rs7417186	t	0.1956	2.58E-08	1	95319018	ALG14
rs1265168	t	-0.2051	2.91E-08	1	95167419	CNN3
rs2040048	a	-0.1496	3.33E-08	1	95185002	CNN3
rs11590093	a	0.227	4.98E-08	1	95194032	ALG14
rs11165305	a	0.1522	7.36E-08	1	95344172	TMEM56

rs6687351	a	0.1999	8.40E-08	1	95312293	ALG14
rs6662345	t	0.1991	9.27E-08	1	95311664	ALG14
rs6679106	a	-0.1993	9.43E-08	1	95312366	ALG14
rs12239887	a	0.1858	1.14E-07	1	95313071	ALG14
rs4619020	t	0.1472	1.35E-07	1	95344382	TMEM56
rs7543042	t	-0.2541	1.50E-07	1	95452270	RWDD3
rs12562716	a	-0.1462	1.59E-07	1	95343288	TMEM56
rs6672436	t	0.1455	1.59E-07	1	95341850	TMEM56
rs4128898	c	0.1465	1.60E-07	1	95346487	TMEM56
rs1132	a	0.1433	1.62E-07	1	95166940	CNN3
rs603424	a	0.1891	1.64E-07	10	102065469	**PKD2L1**
rs1146460	t	0.1363	1.85E-07	1	95181508	CNN3
rs994988	t	-0.1395	2.10E-07	6	103905739	GRIK2
rs6665763	t	0.1413	2.24E-07	1	95339924	TMEM56
rs11807661	a	-0.1972	2.43E-07	1	95173787	CNN3
rs1271952	t	-0.1342	2.75E-07	1	95189936	CNN3
rs6667676	a	0.1468	3.81E-07	1	95193903	ALG14
rs6666037	t	-0.3021	4.44E-07	1	95757953	RWDD3
rs9322714	a	0.1305	8.81E-07	6	103891492	GRIK2
rs767015	t	0.1325	8.90E-07	1	95169520	CNN3
rs10414689	t	0.7818	9.03E-07	19	56488111	FLJ40235
rs10809457	t	-0.1394	9.30E-07	9	11392319	PTPRD
rs6474646	t	0.1332	1.07E-06	9	11391208	PTPRD
rs9499395	a	0.1313	1.21E-06	6	103894965	GRIK2
rs1246351	a	0.1303	1.25E-06	1	95189329	CNN3
rs4950077	a	0.132	1.43E-06	1	95351672	TMEM56
rs10237735	t	-0.7138	1.46E-06	7	32343273	LSM5
rs1023330	t	-0.1308	1.79E-06	1	95359361	**TMEM56**
rs2157552	a	-0.1312	1.79E-06	6	103885057	GRIK2
rs16927656	t	-0.1348	2.38E-06	9	11482959	PTPRD
rs780093	t	0.1261	2.65E-06	2	27596107	**GCKR**
rs7561966	a	-0.6809	3.19E-06	2	129220821	HS6ST1
rs1596341	a	-0.127	3.32E-06	9	11489438	PTPRD
rs1260333	a	0.1252	3.44E-06	2	27602128	GCKR
rs2911711	a	-0.1252	3.51E-06	2	27604050	GCKR
rs1887094	c	-0.1244	4.11E-06	1	95191290	CNN3
rs4946988	a	-0.1242	4.17E-06	6	103893921	GRIK2
rs10234749	t	-0.1788	4.21E-06	7	152018802	XRCC2
rs9390987	a	0.124	4.27E-06	6	103891327	GRIK2
rs1980946	c	-0.298	4.44E-06	20	47777718	B4GALT5
rs9816269	t	0.3667	4.64E-06	3	21693845	**ZNF659**
rs6474664	a	0.1249	4.66E-06	9	11547454	PTPRD
rs780094	t	0.1227	4.67E-06	2	27594741	**GCKR**
rs12297524	t	0.1258	4.82E-06	12	127302475	SLC15A4

rs17009275	t	0.3669	4.82E-06	3	21694893	**ZNF659**
rs11609257	t	0.1251	4.87E-06	12	127303699	SLC15A4

3. Comprehensive results for palmitoleic acid (16:1n-7) with $P < 5 \times 10^{-6}$

Marker Name	Effect allele	Effect*	P-value	Chr	Position	Nearest Gene**
rs603424	a	-0.0326	5.69E-15	10	102065469	**PKD2L1**
rs102275	t	-0.0238	6.60E-13	11	61314379	**C11orf0**
rs174536	a	-0.0233	1.91E-12	11	61308503	**C11orf9**
rs174535	t	-0.0233	1.97E-12	11	61307932	**C11orf9**
rs174545	c	-0.0231	2.29E-12	11	61325882	**FADS1**
rs174546	t	0.0231	2.36E-12	11	61326406	**FADS1**
rs174537	t	0.0232	2.38E-12	11	61309256	**C11orf9**
rs174577	a	0.0235	2.62E-12	11	61361390	**FADS2**
rs174574	a	0.0233	2.73E-12	11	61356918	**FADS2**
rs174550	t	-0.023	2.76E-12	11	61328054	**FADS1**
rs174547	t	-0.023	2.97E-12	11	61327359	**FADS1**
rs174576	a	0.0232	4.84E-12	11	61360086	**FADS2**
rs1535	a	-0.0227	5.80E-12	11	61354548	**FADS2**
rs174548	c	-0.024	6.64E-12	11	61327924	**FADS1**
rs174578	a	0.0231	6.83E-12	11	61362075	**FADS2**
rs174549	a	0.0235	2.31E-11	11	61327958	**FADS1**
rs174555	t	-0.0234	2.45E-11	11	61336336	**FADS1**
rs174556	t	0.0231	3.38E-11	11	61337211	**FADS1**
rs174541	t	-0.0221	4.11E-11	11	61322484	FADS1
rs174583	t	0.0219	7.14E-11	11	61366326	**FADS2**
rs4246215	t	0.0218	7.80E-11	11	61320875	**FEN1**
rs174528	t	-0.0209	4.30E-10	11	61300075	**C11orf9**
rs174601	t	0.0222	6.68E-10	11	61379716	**FADS2**
rs174538	a	0.021	8.23E-10	11	61316657	**C11orf0**
rs780093	t	0.0201	9.80E-10	2	27596107	**GCKR**
rs780094	t	0.0199	1.26E-09	2	27594741	**GCKR**
rs1260326	t	0.0195	3.75E-09	2	27584444	**GCKR**
rs11190604	a	-0.0236	5.69E-09	10	102292447	**HIF1AN**
rs3763695	a	-0.0228	5.90E-09	10	102259196	**SEC31B**
rs7071271	a	0.0229	5.93E-09	10	102254814	**SEC31B**
rs2495759	a	0.0236	5.95E-09	10	102310353	HIF1AN
rs2295772	a	0.0228	6.05E-09	10	102255173	**SEC31B**
rs7080356	a	-0.0228	6.06E-09	10	102256725	**SEC31B**
rs2295773	a	-0.0228	6.12E-09	10	102255805	**SEC31B**
rs3750630	a	-0.023	6.14E-09	10	102265770	**SEC31B**
rs11190589	a	-0.023	6.15E-09	10	102265461	**SEC31B**
rs4244338	a	-0.0229	6.15E-09	10	102262792	**SEC31B**

rs10509744	t	0.0228	6.15E-09	10	102261569	**SEC31B**
rs3750631	a	-0.0229	6.25E-09	10	102269284	**SEC31B**
rs12358187	c	-0.0229	6.33E-09	10	102274439	**NDUFB8**
rs4919468	c	0.0229	6.40E-09	10	102278333	**NDUFB8**
rs1800662	a	0.0229	6.50E-09	10	102279068	**NDUFB8**
rs10883506	c	-0.0229	6.58E-09	10	102279733	NDUFB8
rs2489037	t	0.023	6.60E-09	10	102309908	HIF1AN
rs3750629	t	-0.0229	6.81E-09	10	102265717	**SEC31B**
rs3750627	a	0.0229	6.92E-09	10	102265632	**SEC31B**
rs7477246	t	0.0227	6.95E-09	10	102251528	**SEC31B**
rs7099965	a	-0.0234	6.96E-09	10	102291155	**HIF1AN**
rs2273695	a	-0.0227	7.07E-09	10	102249558	**SEC31B**
rs2489034	t	0.023	7.21E-09	10	102309182	HIF1AN
rs2495751	a	-0.023	7.22E-09	10	102317250	HIF1AN
rs4604805	c	0.0226	7.43E-09	10	102251399	**SEC31B**
rs10883507	t	0.0229	7.47E-09	10	102281265	NDUFB8
rs12219158	t	-0.0234	7.58E-09	10	102292913	**HIF1AN**
rs3793706	a	0.0226	7.65E-09	10	102259075	**SEC31B**
rs7088827	c	-0.0234	7.70E-09	10	102293855	**HIF1AN**
rs11816840	c	0.023	7.89E-09	10	102299210	**HIF1AN**
rs10786597	t	0.0228	8.00E-09	10	102281277	NDUFB8
rs2295780	a	-0.0231	8.08E-09	10	102295955	**HIF1AN**
rs7091356	c	0.0228	8.16E-09	10	102282258	NDUFB8
rs12354411	a	0.0228	8.26E-09	10	102284527	HIF1AN
rs2495744	t	0.0229	8.27E-09	10	102319399	HIF1AN
rs10883512	a	-0.023	8.29E-09	10	102298506	**HIF1AN**
rs11190613	t	-0.0229	8.36E-09	10	102303987	HIF1AN
rs11292	a	-0.0229	8.71E-09	10	102303597	**HIF1AN**
rs10883510	t	0.023	8.94E-09	10	102287008	**HIF1AN**
rs7073586	a	-0.0229	9.07E-09	10	102297661	**HIF1AN**
rs10883509	t	0.0227	9.07E-09	10	102286451	**HIF1AN**
rs2495750	a	-0.0228	9.11E-09	10	102317698	HIF1AN
rs7084810	a	-0.0231	9.27E-09	10	102287536	**HIF1AN**
rs2489039	a	0.0228	9.29E-09	10	102318026	HIF1AN
rs11190602	t	-0.023	9.30E-09	10	102287246	**HIF1AN**
rs4919471	a	-0.0231	9.41E-09	10	102289229	**HIF1AN**
rs2489040	a	0.0228	9.46E-09	10	102321288	HIF1AN
rs2495741	a	-0.0228	9.62E-09	10	102321785	HIF1AN
rs2489043	t	-0.0227	9.63E-09	10	102324317	HIF1AN
rs2495747	t	0.0228	9.76E-09	10	102318237	HIF1AN
rs9420797	t	0.0228	1.01E-08	10	102321137	HIF1AN
rs2273694	t	0.0225	1.01E-08	10	102246486	**SEC31B**
rs4919472	a	0.0241	1.01E-08	10	102305854	HIF1AN
rs2495735	a	0.0227	1.02E-08	10	102328599	HIF1AN

rs2495734	a	0.0227	1.04E-08	10	102328676	HIF1AN
rs2489045	t	0.0227	1.06E-08	10	102334744	HIF1AN
rs2495745	t	-0.0227	1.12E-08	10	102319065	HIF1AN
rs2295779	a	-0.0226	1.13E-08	10	102286051	**HIF1AN**
rs2489046	a	-0.0225	1.27E-08	10	102336272	HIF1AN
rs3750720	t	0.0224	1.58E-08	10	102238874	**SEC31B**
rs2489053	t	-0.0224	1.66E-08	10	102343331	HIF1AN
rs2295774	a	-0.0222	1.90E-08	10	102255837	**SEC31B**
rs10883511	a	-0.0241	2.12E-08	10	102289397	**HIF1AN**
rs3750719	c	-0.0216	2.52E-08	10	102238940	**SEC31B**
rs2911711	a	-0.0183	3.07E-08	2	27604050	GCKR
rs1260333	a	0.0183	3.19E-08	2	27602128	GCKR
rs2295770	a	0.0214	3.31E-08	10	102229819	**WNT8B**
rs11190578	t	0.0214	3.35E-08	10	102228943	**WNT8B**
rs12355721	t	0.0214	3.38E-08	10	102234901	SEC31B
rs2298075	a	0.0214	3.52E-08	10	102237398	**SEC31B**
rs6722456	a	-0.0478	4.12E-08	2	134245561	NAP5
rs3886664	t	0.0472	4.15E-08	2	134235838	NAP5
rs11190573	t	-0.0211	4.86E-08	10	102223162	**WNT8B**
rs2489003	a	-0.0261	4.97E-08	10	102350845	HIF1AN
rs11190568	t	0.0211	5.02E-08	10	102214267	**WNT8B**
rs7900678	t	-0.0211	5.43E-08	10	102219006	**WNT8B**
rs10883497	t	-0.0211	5.44E-08	10	102218509	**WNT8B**
rs3793772	t	-0.021	5.52E-08	10	102212815	**WNT8B**
rs11190569	a	0.021	5.56E-08	10	102217399	**WNT8B**
rs12219789	a	-0.021	5.62E-08	10	102203768	WNT8B
rs3793771	c	0.021	5.75E-08	10	102212947	**WNT8B**
rs11190552	a	0.021	5.89E-08	10	102196597	WNT8B
rs1539089	a	-0.0209	5.91E-08	10	102211414	WNT8B
rs7085439	t	0.0209	6.33E-08	10	102200090	WNT8B
rs1417823	a	-0.0209	6.35E-08	10	102217876	**WNT8B**
rs7085261	a	0.0209	6.64E-08	10	102199801	WNT8B
rs6749899	c	0.0485	6.68E-08	2	134249903	NAP5
rs7559706	a	0.0486	6.92E-08	2	134250532	NAP5
rs10883493	a	-0.0209	6.93E-08	10	102198178	WNT8B
rs11190541	a	-0.0208	7.18E-08	10	102193061	WNT8B
rs10883492	a	0.0209	7.19E-08	10	102196079	WNT8B
rs4665987	a	0.02	7.98E-08	2	27609329	GCKR
rs11190540	t	-0.0207	8.83E-08	10	102192619	WNT8B
rs3829160	a	0.0174	1.02E-07	10	102104997	**SCD**
rs12615694	t	-0.0472	1.06E-07	2	134228832	NAP5
rs4665991	a	0.0192	1.17E-07	2	27619788	GCKR
rs10509742	a	0.0513	1.20E-07	10	102080914	PKD2L1
rs4665382	t	-0.0191	1.37E-07	2	27637305	C2orf16

rs10208529	a	-0.0191	1.40E-07	2	27639692	C2orf16
rs2489041	c	0.0229	1.60E-07	10	102323625	HIF1AN
rs4665383	c	-0.019	1.70E-07	2	27645059	C2orf16
rs108499	t	0.0178	2.19E-07	11	61303813	**C11orf9**
rs174534	a	-0.0177	2.21E-07	11	61306034	**C11orf9**
rs1919128	a	-0.0187	2.27E-07	2	27655263	**C2orf16**
rs12478841	a	-0.0187	2.34E-07	2	27665226	**ZNF512**
rs6760250	a	0.0187	2.39E-07	2	27665756	**ZNF512**
rs13022873	a	-0.0186	2.45E-07	2	27669014	**ZNF512**
rs12360395	a	-0.0201	2.50E-07	10	102184064	WNT8B
rs12467476	t	-0.0186	2.57E-07	2	27679219	**ZNF512**
rs4919458	a	-0.02	2.59E-07	10	102167718	WNT8B
rs10883483	t	-0.02	2.72E-07	10	102164234	WNT8B
rs10509743	t	0.02	2.77E-07	10	102180396	WNT8B
rs1919127	t	-0.0185	2.82E-07	2	27654997	**C2orf16**
rs3750723	t	-0.0199	2.95E-07	10	102162979	SCD
rs2384656	a	-0.0186	2.98E-07	2	27685559	**ZNF512**
rs2366017	a	-0.0938	3.09E-07	17	65362496	KCNJ16
rs3829162	t	-0.0199	3.14E-07	10	102162742	SCD
rs11190513	a	-0.0199	3.16E-07	10	102155228	SCD
rs10786590	t	-0.0198	3.23E-07	10	102154594	SCD
rs2489001	a	-0.0223	3.26E-07	10	102348387	HIF1AN
rs10883479	a	-0.0198	3.31E-07	10	102152850	SCD
rs10883477	a	-0.0198	3.40E-07	10	102151386	SCD
rs10883478	t	0.0198	3.41E-07	10	102152842	SCD
rs17732523	t	0.0198	3.51E-07	10	102151091	SCD
rs4465599	a	0.0276	3.55E-07	16	13062379	FLJ1111
rs4666002	c	0.0185	3.56E-07	2	27694144	**ZNF512**
rs872290	a	0.0198	3.60E-07	10	102188869	WNT8B
rs2118674	a	-0.0498	4.34E-07	2	171027140	**MYO3B**
rs522951	c	-0.0158	5.39E-07	10	102100891	**SCD**
rs13002853	c	-0.0185	8.22E-07	2	27706749	**XAB1**
rs174575	c	-0.0179	1.41E-06	11	61358579	**FADS2**
rs1931575	t	0.0178	1.56E-06	1	94305602	**ABCA4**
rs3749147	a	0.0186	1.70E-06	2	27705422	**XAB1**
rs788076	a	0.0439	1.83E-06	10	29376855	LYZL1
rs509360	a	-0.019	1.93E-06	11	61305135	C11orf9
rs12587252	t	-0.0785	2.17E-06	14	80475675	C14orf45
rs2151849	a	0.0186	2.43E-06	1	94307762	**ABCA4**
rs12599426	t	0.0243	2.50E-06	16	34945632	LOC72935
rs3789412	t	-0.0185	2.72E-06	1	94308655	5
rs4666000	t	-0.0166	2.79E-06	2	27692873	**ABCA4**
rs7534537	t	0.0587	2.85E-06	1	202541142	**ZNF512**
rs2323397	a	0.0357	2.91E-06	13	36660637	**PLEKHA**

rs670213	t	0.0152	3.30E-06	10	102096357	**6**
rs2727270	t	0.0235	3.39E-06	11	61359813	CSNK1A1
rs2068834	t	-0.0164	3.50E-06	2	27693043	L
rs2727271	a	-0.0234	3.63E-06	11	61359934	SCD
rs7084075	t	-0.0145	4.44E-06	10	102050369	**FADS2**
rs7597155	a	0.0149	4.58E-06	2	69838939	**ZNF512**
rs17054925	a	0.05	4.74E-06	13	36586781	**FADS2**
rs1199997	t	-0.0499	4.75E-06	13	36603125	**PKD2L1**
rs2524299	a	-0.0227	4.91E-06	11	61361358	**ANXA4**
rs4852988	t	-0.0147	4.99E-06	2	69831794	CSNK1A1
						L
						CSNK1A1
						L
						FADS2
						ANXA4

4. Comprehensive results for stearic acid (18:0) with $P < 5 \times 10^{-6}$

Marker Name	Effect allele	Effect*	P-value	Chr	Position	Nearest Gene**
rs102275	t	0.1798	1.33E-20	11	61314379	**C11orf10**
rs174537	t	-0.1788	2.17E-20	11	61309256	**C11orf9**
rs174536	a	0.1776	4.32E-20	11	61308503	**C11orf9**
rs174535	t	0.1777	4.33E-20	11	61307932	**C11orf9**
rs174547	t	0.1773	4.42E-20	11	61327359	**FADS1**
rs174545	c	0.1771	4.75E-20	11	61325882	**FADS1**
rs174546	t	-0.1765	5.49E-20	11	61326406	**FADS1**
rs174550	t	0.1755	1.07E-19	11	61328054	**FADS1**
rs174574	a	-0.1733	3.69E-19	11	61356918	**FADS2**
rs1535	a	0.1719	5.04E-19	11	61354548	**FADS2**
rs174549	a	-0.1757	6.57E-19	11	61327958	**FADS1**
rs174576	a	-0.1735	7.82E-19	11	61360086	**FADS2**
rs174577	a	-0.1732	7.99E-19	11	61361390	**FADS2**
rs174583	t	-0.1734	9.91E-19	11	61366326	**FADS2**
rs174578	a	-0.1731	1.17E-18	11	61362075	**FADS2**
rs174541	t	0.1711	1.19E-18	11	61322484	FADS1
rs174548	c	0.1731	1.61E-18	11	61327924	**FADS1**
rs6675668	t	-0.1651	2.16E-18	1	95288225	**ALG14**
rs4246215	t	-0.1697	2.24E-18	11	61320875	**FEN1**
rs174555	t	0.1722	2.36E-18	11	61336336	**FADS1**
rs6687388	t	0.1671	2.88E-18	1	95287712	**ALG14**
rs174556	t	-0.1695	4.19E-18	11	61337211	**FADS1**
rs10874902	a	-0.1704	4.60E-18	1	95278849	**ALG14**
rs2391388	a	0.1592	6.80E-18	1	95258413	**ALG14**

rs10735790	t	0.1646	7.24E-18	1	95276265	**ALG14**
rs11585462	a	0.1673	8.61E-18	1	95310380	**ALG14**
rs4339907	a	0.1675	1.17E-17	1	95306054	**ALG14**
rs7537374	a	0.1578	1.37E-17	1	95258012	**ALG14**
rs174601	t	-0.1832	2.06E-17	11	61379716	**FADS2**
rs11591183	t	-0.1574	2.18E-17	1	95334294	TMEM56
rs12741128	t	0.1581	2.56E-17	1	95340626	TMEM56
rs12569207	a	0.1568	2.64E-17	1	95331590	ALG14
rs4630159	t	0.1621	2.81E-17	1	95316266	ALG14
rs4949965	a	-0.1572	3.07E-17	1	95323825	ALG14
rs6687450	t	0.16	3.10E-17	1	95253164	**ALG14**
rs4390223	t	-0.1561	3.33E-17	1	95329217	ALG14
rs9437812	a	-0.1605	3.86E-17	1	95319653	ALG14
rs4950058	t	-0.1601	4.15E-17	1	95320739	ALG14
rs2797623	a	-0.1542	5.53E-17	1	95218056	ALG14
rs7547662	t	-0.1534	7.12E-17	1	95229824	**ALG14**
rs7533303	t	0.1523	7.98E-17	1	95235559	**ALG14**
rs4847220	a	0.1558	8.00E-17	1	95236573	**ALG14**
rs6698046	a	0.1533	1.61E-16	1	95221870	**ALG14**
rs174528	t	0.1601	2.38E-16	11	61300075	**C11orf9**
rs2797622	a	-0.1518	2.54E-16	1	95216790	ALG14
rs2766010	t	-0.1508	3.02E-16	1	95215130	ALG14
rs174538	a	-0.1669	4.87E-16	11	61316657	**C11orf10**
rs6671200	a	-0.2461	1.76E-15	1	95470117	RWDD3
rs10493880	t	0.1482	1.81E-15	1	95198835	ALG14
rs6678964	a	-0.2441	2.69E-15	1	95466856	RWDD3
rs259357	t	0.2456	2.79E-15	1	95484066	**RWDD3**
rs259350	c	0.2456	3.15E-15	1	95497419	RWDD3
rs9437689	t	0.1529	3.92E-15	1	95322124	ALG14
rs259346	a	-0.2533	4.68E-15	1	95501334	RWDD3
rs12755552	a	0.2401	8.12E-15	1	95457614	RWDD3
rs10747468	t	-0.2389	1.07E-14	1	95458879	RWDD3
rs933107	t	0.2364	1.32E-14	1	95444817	TMEM56
rs12749053	a	0.2361	1.33E-14	1	95433144	TMEM56
rs11165339	t	-0.2368	1.38E-14	1	95446652	TMEM56
rs860873	a	0.1472	2.19E-14	1	95159796	**CNN3**
rs2766005	a	-0.1381	2.45E-14	1	95201002	ALG14
rs2391391	a	-0.1516	1.26E-13	1	95224514	**ALG14**
rs1146461	a	-0.1372	2.98E-13	1	95181080	CNN3
rs2298162	t	0.1358	3.14E-13	1	95221621	**ALG14**
rs1265169	c	0.1382	3.52E-13	1	95167123	CNN3
rs2797616	t	-0.131	9.96E-13	1	95202503	ALG14
rs6674604	a	-0.1646	1.19E-12	1	95290127	**ALG14**
rs6671842	t	-0.1638	1.21E-12	1	95297091	**ALG14**

rs174534	a	0.1444	1.26E-12	11	61306034	**C11orf9**
rs12760863	a	-0.17	1.29E-12	1	95306772	**ALG14**
rs108499	t	-0.1453	1.29E-12	11	61303813	**C11orf9**
rs11165297	a	-0.1694	1.57E-12	1	95304762	**ALG14**
rs6698894	t	0.1665	1.68E-12	1	95300627	**ALG14**
rs7540821	a	0.1632	1.76E-12	1	95259339	**ALG14**
rs12751633	t	0.1629	1.96E-12	1	95255256	**ALG14**
rs859044	a	0.1446	3.04E-12	1	95153618	**CNN3**
rs11165305	a	-0.1362	3.90E-12	1	95344172	TMEM56
rs859046	t	0.1395	4.40E-12	1	95152094	**CNN3**
rs2040048	a	0.1273	4.97E-12	1	95185002	CNN3
rs6672436	t	-0.133	5.13E-12	1	95341850	TMEM56
rs6665763	t	-0.1298	6.02E-12	1	95339924	TMEM56
rs12562716	a	0.1329	6.75E-12	1	95343288	TMEM56
rs4619020	t	-0.1333	6.87E-12	1	95344382	TMEM56
rs6666037	t	0.2604	7.36E-12	1	95757953	RWDD3
rs11165281	t	-0.1678	7.73E-12	1	95202368	ALG14
rs6672045	t	0.1697	8.60E-12	1	95203147	ALG14
rs3753872	t	-0.183	9.15E-12	1	95471772	RWDD3
rs4128898	c	-0.1326	9.43E-12	1	95346487	TMEM56
rs11590106	a	0.1507	9.77E-12	1	95278423	**ALG14**
rs2296308	t	-0.183	9.80E-12	1	95482527	**RWDD3**
rs2147587	a	0.183	9.83E-12	1	95487472	RWDD3
rs7528790	a	-0.1831	1.00E-11	1	95481662	**RWDD3**
rs12092678	t	0.1638	1.30E-11	1	95199836	ALG14
rs4131811	t	-0.1495	1.34E-11	1	95272737	**ALG14**
rs1146460	t	-0.1236	1.83E-11	1	95181508	CNN3
rs12755096	a	0.1549	2.41E-11	1	95309303	**ALG14**
rs1271952	t	0.1215	3.21E-11	1	95189936	CNN3
rs13375406	c	-0.2113	5.86E-11	1	95378893	**TMEM5**
rs2727270	t	-0.1775	7.74E-11	11	61359813	**6**
rs2727271	a	0.1768	8.97E-11	11	61359934	**FADS2**
rs4950077	a	-0.1225	1.75E-10	1	95351672	**FADS2**
rs174575	c	0.1396	2.05E-10	11	61358579	TMEM56
rs2072114	a	0.1672	2.58E-10	11	61361791	**FADS2**
rs1023330	t	0.1213	2.61E-10	1	95359361	**FADS2**
rs2524299	a	0.1671	4.88E-10	11	61361358	**TMEM5**
rs6697256	a	-0.1612	5.95E-10	1	95345148	**6**
rs6680551	a	-0.154	8.61E-10	1	95340442	**FADS2**
rs11589700	t	-0.1781	1.33E-09	1	95246029	TMEM56
rs1132	a	-0.1162	2.23E-09	1	95166940	TMEM56
rs684448	t	-0.1404	2.31E-09	1	95728951	**ALG14**
rs11586384	a	-0.1861	2.33E-09	1	95244329	CNN3
rs859040	t	-0.1498	2.60E-09	1	95157258	RWDD3

rs11119805	a	-0.1678	2.80E-09	1	209984867	**ALG14**
rs174602	t	0.2071	3.25E-09	11	61380990	**CNN3**
rs1803468	a	-0.1703	3.68E-09	1	209986708	LPGAT1
rs174570	t	-0.1622	4.01E-09	11	61353788	**FADS2**
rs11801110	t	-0.1541	4.87E-09	1	95323242	**LPGAT1**
rs12739445	c	-0.1952	5.16E-09	1	95245226	**FADS2**
rs12121773	t	-0.164	5.19E-09	1	210003759	ALG14
rs10783010	a	-0.1395	5.23E-09	1	95725239	**ALG14**
rs864553	c	-0.1545	5.46E-09	1	95151013	**LPGAT1**
rs12751061	a	0.1902	5.83E-09	1	95303179	RWDD3
rs10465759	t	0.1488	5.85E-09	1	95263849	**CNN3**
rs6684137	a	-0.1562	5.86E-09	1	95311503	**ALG14**
rs174591	a	-0.1354	6.02E-09	11	61374252	**ALG14**
rs1415564	t	-0.1394	6.03E-09	1	95719822	ALG14
rs4387224	t	0.1526	6.30E-09	1	95319827	**FADS2**
rs767015	t	-0.1105	6.41E-09	1	95169520	RWDD3
rs12046116	c	-0.1661	7.40E-09	1	210012164	ALG14
rs6674467	a	-0.1562	7.45E-09	1	95303297	CNN3
rs6678809	c	0.153	7.66E-09	1	95315804	**LPGAT1**
rs3890785	t	0.1524	7.72E-09	1	95316595	**ALG14**
rs12023263	t	-0.1646	9.87E-09	1	210010502	ALG14
rs6667676	a	-0.1101	1.53E-08	1	95193903	ALG14
rs11119810	a	-0.1627	1.59E-08	1	210021748	**LPGAT1**
rs12126561	c	0.1627	1.59E-08	1	210023734	ALG14
rs1246351	a	-0.1051	1.77E-08	1	95189329	**LPGAT1**
rs7543042	t	0.1772	3.17E-08	1	95452270	**LPGAT1**
rs17042024	t	0.1689	4.73E-08	1	209980669	CNN3
rs2845573	a	0.1786	5.07E-08	11	61358484	RWDD3
rs2851682	a	0.1718	8.14E-08	11	61372588	LPGAT1
rs2298095	t	-0.1612	8.29E-08	1	209983799	**FADS2**
rs12566620	t	0.1665	9.63E-08	1	209987050	**FADS2**
rs6687351	a	-0.1351	1.09E-07	1	95312293	LPGAT1
rs422249	t	-0.1071	1.09E-07	11	61396064	**LPGAT1**
rs2526678	a	-0.185	1.10E-07	11	61380369	ALG14
rs17018028	t	-0.1726	1.19E-07	1	209997918	FADS3
rs6662345	t	-0.1346	1.20E-07	1	95311664	**FADS2**
rs6679106	a	0.1346	1.24E-07	1	95312366	**LPGAT1**
rs12129315	a	0.164	1.24E-07	1	210052692	ALG14
rs12565318	a	0.1638	1.26E-07	1	210053554	ALG14
rs12565546	a	-0.1637	1.28E-07	1	210053802	**LPGAT1**
rs12145721	t	-0.1587	1.29E-07	1	210067976	**LPGAT1**
rs12138283	a	-0.1652	1.30E-07	1	210045162	**LPGAT1**
rs11119814	a	0.1648	1.31E-07	1	210047786	**LPGAT1**
rs12125042	a	0.1648	1.31E-07	1	210048707	**LPGAT1**

rs11119816	a	0.1597	1.37E-07	1	210066111	**LPGAT1**
rs12564498	t	0.1641	1.39E-07	1	210044282	**LPGAT1**
rs12136792	t	0.16	1.41E-07	1	210063940	**LPGAT1**
rs12123135	a	0.164	1.45E-07	1	210041336	**LPGAT1**
rs12562791	c	0.1586	1.46E-07	1	210066929	**LPGAT1**
rs4132401	c	0.1588	1.46E-07	1	210072332	**LPGAT1**
rs12123889	t	-0.1703	1.48E-07	1	210005613	**LPGAT1**
rs17018048	a	-0.1704	1.48E-07	1	210008607	LPGAT1
rs1065607	t	0.1639	1.51E-07	1	210039398	**LPGAT1**
rs1887094	c	0.0981	1.72E-07	1	95191290	**LPGAT1**
rs4615892	t	-0.1249	1.77E-07	1	95319811	**LPGAT1**
rs1265168	t	0.1333	1.90E-07	1	95167419	CNN3
rs7417186	t	-0.1243	1.92E-07	1	95319018	ALG14
rs1414904	t	-0.1035	3.15E-07	1	95406565	CNN3
rs174449	a	0.0969	3.32E-07	11	61396955	ALG14
rs742614	a	-0.095	3.37E-07	20	31946293	**TMEM5**
rs174448	a	0.0971	3.53E-07	11	61396149	**6**
rs6593594	t	-0.1024	3.65E-07	1	95403352	FADS3
rs11165334	a	0.1011	4.00E-07	1	95411255	CHMP4B
rs12123355	a	0.1635	4.20E-07	1	210119158	FADS3
rs11165336	t	0.1009	4.80E-07	1	95426938	**TMEM5**
rs11165338	t	0.1006	5.34E-07	1	95431358	**6**
rs12239887	a	-0.1176	7.08E-07	1	95313071	**TMEM5**
rs4364936	t	0.1486	8.16E-07	1	210077150	**6**
rs10874924	t	-0.0941	9.18E-07	1	95738749	LPGAT1
rs174579	t	-0.1152	1.23E-06	11	61362189	**TMEM5**
rs736264	t	-0.0886	1.26E-06	20	31946047	**6**
rs11590093	a	-0.1385	1.36E-06	1	95194032	**TMEM5**
rs11120822	c	0.0931	1.44E-06	1	7035699	**6**
rs4436414	a	0.0903	1.85E-06	1	7043502	ALG14
rs11807661	a	0.1254	1.86E-06	1	95173787	LPGAT1
rs7414485	a	0.0901	1.89E-06	1	7043984	RWDD3
rs174532	a	0.1142	2.11E-06	11	61305450	**FADS2**
rs6057930	t	0.086	2.15E-06	20	31941633	CHMP4B
rs6057929	a	-0.0857	2.38E-06	20	31941294	ALG14
rs6057924	t	-0.0852	3.52E-06	20	31938232	**CAMTA**
rs4555772	a	0.0888	3.93E-06	5	74338414	**1**
rs12098564	a	-0.435	4.07E-06	10	86943307	**CAMTA**
rs412334	t	0.1413	4.08E-06	11	61316837	**1**
rs16949516	t	-0.2015	4.12E-06	15	93119771	CNN3
rs12440212	a	-0.2101	4.15E-06	15	93114762	**CAMTA**
rs174585	a	-0.114	4.36E-06	11	61368270	**1**
rs12442726	t	-0.2105	4.37E-06	15	93114079	**C11orf9**
rs16949491	a	0.2101	4.38E-06	15	93114610	CHMP4B

rs12134748	a	0.0868	4.45E-06	1	95754414	CHMP4B
rs7550711	t	0.2743	4.94E-06	1	109884409	CHMP4B
						GCNT4
						GRID1
						FEN1
						MCTP2
						MCTP2
						FADS2
						MCTP2
						MCTP2
						RWDD3
						GPR61

5. Comprehensive results for oleic acid (18:1n-9) with $P < 5 \times 10^{-6}$

Marker Name	Effect allele	Effect*	P-value	Chr	Position	Nearest Gene**
rs102275	t	-0.23	2.19E-32	11	61314379	**C11orf10**
rs174546	t	0.2286	3.78E-32	11	61326406	**FADS1**
rs174535	t	-0.2292	5.16E-32	11	61307932	**C11orf9**
rs174536	a	-0.2291	5.37E-32	11	61308503	**C11orf9**
rs174547	t	-0.2282	5.57E-32	11	61327359	**FADS1**
rs174545	c	-0.2277	7.67E-32	11	61325882	**FADS1**
rs174574	a	0.2299	8.76E-32	11	61356918	**FADS2**
rs174537	t	0.2285	8.89E-32	11	61309256	**C11orf9**
rs174550	t	-0.2272	9.84E-32	11	61328054	**FADS1**
rs174548	c	-0.2381	1.39E-31	11	61327924	**FADS1**
rs174577	a	0.2313	1.46E-31	11	61361390	**FADS2**
rs174576	a	0.2307	2.81E-31	11	61360086	**FADS2**
rs174549	a	0.2373	4.31E-31	11	61327958	**FADS1**
rs174578	a	0.2302	5.42E-31	11	61362075	**FADS2**
rs1535	a	-0.2243	5.63E-31	11	61354548	**FADS2**
rs174555	t	-0.2349	9.22E-31	11	61336336	**FADS1**
rs174556	t	0.2306	3.73E-30	11	61337211	**FADS1**
rs174541	t	-0.2253	3.97E-30	11	61322484	FADS1
rs4246215	t	0.2236	1.14E-29	11	61320875	**FEN1**
rs174583	t	0.2238	1.22E-29	11	61366326	**FADS2**
rs174528	t	-0.2195	3.40E-29	11	61300075	**C11orf9**
rs174538	a	0.2261	1.91E-28	11	61316657	**C11orf10**
rs174601	t	0.2334	1.91E-27	11	61379716	**FADS2**
rs108499	t	0.2121	2.53E-25	11	61303813	**C11orf9**
rs174534	a	-0.2108	2.63E-25	11	61306034	**C11orf9**
rs174570	t	0.2275	2.81E-18	11	61353788	**FADS2**
rs2845573	a	-0.2858	5.47E-18	11	61358484	**FADS2**

rs2851682	a	-0.276	2.70E-17	11	61372588	**FADS2**
rs2727270	t	0.24	6.08E-17	11	61359813	**FADS2**
rs2727271	a	-0.2393	7.08E-17	11	61359934	**FADS2**
rs2526678	a	0.2892	7.73E-17	11	61380369	**FADS2**
rs2524299	a	-0.2294	4.59E-16	11	61361358	**FADS2**
rs2072114	a	-0.2212	1.80E-15	11	61361791	**FADS2**
rs174575	c	-0.1632	5.56E-14	11	61358579	**FADS2**
rs174448	a	-0.1399	3.03E-13	11	61396149	FADS3
rs174449	a	-0.1388	4.27E-13	11	61396955	FADS3
rs422249	t	0.1441	1.27E-12	11	61396064	FADS3
rs174455	a	-0.1357	1.97E-12	11	61412693	**FADS3**
rs174450	t	-0.1275	9.98E-12	11	61398118	**FADS3**
rs174616	a	0.126	1.19E-11	11	61385698	**FADS2**
rs174579	t	0.1535	3.52E-11	11	61362189	**FADS2**
rs174591	a	0.1503	4.87E-11	11	61374252	**FADS2**
rs174626	a	-0.1216	7.07E-11	11	61393633	FADS2
rs509360	a	-0.1498	7.15E-11	11	61305135	**C11orf9**
rs174611	t	-0.1311	2.00E-10	11	61384457	**FADS2**
rs174605	t	0.1308	4.30E-10	11	61383497	**FADS2**
rs174585	a	0.1492	6.62E-10	11	61368270	**FADS2**
rs174589	c	-0.1464	8.22E-10	11	61372379	**FADS2**
rs174532	a	-0.1537	2.96E-09	11	61305450	**C11orf9**
rs7394871	a	0.3445	4.52E-09	11	61409090	**FADS3**
rs174602	t	-0.2031	5.15E-09	11	61380990	**FADS2**
rs174597	c	0.1541	8.57E-09	11	61377616	**FADS2**
rs174593	t	-0.1535	8.64E-09	11	61375407	**FADS2**
rs968567	t	0.1424	1.19E-08	11	61352140	FADS2
rs17764935	a	0.3051	2.55E-08	11	61421333	RAB3IL1
rs174468	a	-0.1212	2.79E-08	11	61420267	RAB3IL1
rs174478	t	0.1172	5.30E-08	11	61435152	**RAB3IL1**
rs174476	t	-0.1168	6.26E-08	11	61430694	**RAB3IL1**
rs666870	a	-0.1168	6.32E-08	11	61434055	**RAB3IL1**
rs12529874	a	-0.4799	2.62E-07	6	98569222	C6orf167
rs149803	c	0.1489	4.14E-07	11	61295596	**C11orf9**
rs412334	t	-0.1641	1.11E-06	11	61316837	**FEN1**
rs17648246	a	-0.275	1.12E-06	13	44391881	NUFIP1
rs3134950	a	-0.0945	1.14E-06	6	32235455	**PPT2**
rs334809	a	0.3286	1.31E-06	3	3105221	**IL5RA**
rs1061808	t	0.0936	1.38E-06	6	32244525	**EGFL8**
rs17762402	a	-0.3286	1.45E-06	11	61309777	**C11orf9**
rs2269423	a	0.0928	1.45E-06	6	32253685	**AGPAT1**
rs12280105	a	-0.7135	2.59E-06	11	123257038	PMP22CD
rs2269928	t	-0.1374	3.68E-06	11	61294105	**C11orf9**
rs4731889	a	-0.0856	4.59E-06	7	131975849	**PLXNA4**

rs6948781	t	0.0855	4.61E-06	7	131976136	**PLXNA4**
rs17774576	c	0.3891	4.83E-06	10	50170465	C10orf71
rs11006464	t	0.3832	4.84E-06	10	60816588	FAM13C1

*Regression coefficient associated with one copy of the effect allele
*Nearest reference is bolded if SNP is within the reference gene

6. Imputation quality of genome-wide significant SNPs

	Imputation quality				
SNP	ARIC	CHS	InCHIANTI	MESA	CARDIA
rs2391388	0.9999	0.878168	0.9788	1	1
rs6675668	0.9965	0.78999	0.9619	1	0.995
rs11119805	0.9847	0.869145	0.9448	0.959184	0.995
rs102275	0.9802	1	0.9995	0.995995	0.981
rs603424	0.9884	1	0.8659	1	0.441
rs11190604	1	0.863035	0.9968	1	1
rs780093	0.9987	0.996663	0.998	0.992724	0.999
rs6722456	0.9984	0.632244	0.9993	0.977739	0.972

*Imputation quality was calculated as the ratio of the observed variance of the allele dosage to the expected binomial variance p(1- p) at Hardy–Weinberg equilibrium,where p is the observed allele frequency from HapMap. Values close to 1 indicate excellent imputation quality

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