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, and ethics committees at each institution approved the individual study protocols.

Study Samples, Phenotype, and Genotyping in the Participating Cohorts

Please see Supplemental Table 1 for summary of key methodological features of the participating cohorts. More detailed information is 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 discordance 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 was enrolled for a total sample of 5,888 individuals. 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

MESA 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 its progression or the presentation of clinically overt cardiovascular 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. 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 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 baseline 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 with a total of 28 fatty acids identified.

Supplemental Tables

Supplementary Table 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	707	Affymetrix Genome-Wide Human SNP Array 6.0	EDTA plasma	-70ºC	28

*All subjects were of White European ancestry.

Supplementary Table 2. Comprehensive results for Linoleic acid (LA; 18:2,n6) with *P* < 5 x 10^{-6}

Marker Name	Effect Allele	Allele Frequency	Effect[$]	P-value	Chr	Position	Nearest Gene
rs7517847	t	0.578	0.19	4.42E-06	1	67454257	IL23R*
rs17009617	a	0.055	-0.45	4.65E-06	10	50123939	C10orf71
rs7073746	a	0.511	0.23	1.04E-07	10	64574077	NRBF2*
rs1935	c	0.512	0.22	7.42E-08	10	64597829	JMJD1C*
rs4379723	t	0.512	0.22	8.05E-08	10	64633455	JMJD1C*
rs4454603	t	0.491	-0.23	4.25E-08	10	64682756	JMJD1C*
rs10761731	a	0.565	0.25	9.10E-09	10	64697616	JMJD1C*
rs7080386	a	0.433	-0.25	6.80E-09	10	64718312	JMJD1C*
rs7075195	a	0.568	0.25	9.02E-09	10	64720665	JMJD1C*
rs10761739	c	0.434	-0.25	9.78E-09	10	64732014	JMJD1C*
rs10761741	t	0.436	-0.25	8.77E-09	10	64736192	JMJD1C*
rs7070296	a	0.536	-0.25	7.01E-08	10	64740444	JMJD1C*
rs10761742	a	0.51	0.24	4.98E-08	10	64755054	JMJD1C*
rs10740118	c	0.44	-0.25	8.08E-09	10	64771213	JMJD1C*
rs7896518	a	0.56	0.25	1.07E-08	10	64774506	JMJD1C*
rs12355784	a	0.491	-0.23	4.84E-08	10	64791571	JMJD1C*
rs10822163	c	0.501	0.24	3.91E-08	10	64794104	JMJD1C*
rs6479896	t	0.508	0.23	5.98E-08	10	64796838	JMJD1C*
rs2393967	a	0.668	0.22	4.53E-06	10	64803162	JMJD1C*
rs7923609	a	0.511	0.22	8.38E-08	10	64803828	JMJD1C*
rs2893919	a	0.487	-0.22	7.83E-08	10	64804784	JMJD1C*
rs2393966	t	0.513	0.22	7.85E-08	10	64804820	JMJD1C*
rs7076310	a	0.487	-0.22	7.69E-08	10	64805678	JMJD1C*
rs7910927	t	0.512	0.22	9.09E-08	10	64808916	JMJD1C*
rs2393969	a	0.513	0.22	1.17E-07	10	64810446	JMJD1C*
rs7095571	t	0.515	0.22	8.57E-08	10	64820965	JMJD1C*
rs10761752	t	0.512	0.22	8.61E-08	10	64830327	JMJD1C*
rs7912893	a	0.486	-0.22	7.50E-08	10	64832006	JMJD1C*
rs7896783	a	0.486	-0.22	7.89E-08	10	64832159	JMJD1C*
rs10761756	t	0.487	-0.23	5.76E-08	10	64842334	JMJD1C*
rs7923544	t	0.513	0.23	5.70E-08	10	64852262	JMJD1C*
rs10761762	t	0.513	0.22	6.52E-08	10	64854723	JMJD1C*
rs10761766	a	0.487	-0.22	5.65E-08	10	64860333	JMJD1C*
rs3740331	a	0.488	-0.22	7.03E-08	10	64862294	JMJD1C*
rs3999089	a	0.513	0.22	8.72E-08	10	64873814	JMJD1C*
rs10509186	t	0.488	-0.22	6.64E-08	10	64877024	JMJD1C*
rs7085621	t	0.517	0.23	6.32E-08	10	64878932	JMJD1C*
rs10740125	t	0.517	0.22	7.22E-08	10	64879615	JMJD1C*

rs10740126	a	0.518	0.23	6.94E-08	10	64880941	JMJD1C*
rs7092784	t	0.48	-0.23	5.82E-08	10	64884755	JMJD1C*
rs10761771	t	0.519	0.23	3.69E-08	10	64900170	JMJD1C
rs7909960	a	0.483	-0.24	4.07E-08	10	64909183	JMJD1C
rs7915779	c	0.494	-0.24	3.43E-08	10	64914250	JMJD1C
rs2393977	a	0.513	0.24	4.04E-08	10	64917615	JMJD1C
rs10740129	a	0.482	-0.24	4.65E-08	10	64920814	JMJD1C
rs2893923	t	0.333	-0.21	3.70E-06	10	64931190	REEP3
rs10509189	t	0.525	0.23	4.69E-08	10	64934132	REEP3
rs4486511	t	0.475	-0.23	4.68E-08	10	64934272	REEP3
rs9971352	a	0.526	0.23	4.70E-08	10	64935114	REEP3
rs10761779	a	0.527	0.23	4.67E-08	10	64944933	REEP3
rs7082470	a	0.464	-0.23	1.15E-07	10	64947032	REEP3
rs7085018	t	0.528	0.24	3.16E-08	10	64956673	REEP3*
rs7920036	t	0.529	0.24	3.59E-08	10	64963866	REEP3*
rs7897379	t	0.537	0.26	9.67E-09	10	64971731	REEP3*
rs10761784	a	0.525	0.25	3.01E-08	10	64978756	REEP3*
rs2163188	c	0.491	0.23	2.25E-07	10	64984717	REEP3*
rs6479905	a	0.51	-0.23	2.23E-07	10	64985237	REEP3*
rs10740134	t	0.522	0.25	2.87E-08	10	64985439	REEP3*
rs7919685	t	0.486	0.23	2.06E-07	10	64985806	REEP3*
rs12247907	c	0.486	0.23	2.15E-07	10	64987051	REEP3*
rs7070761	a	0.513	-0.23	2.03E-07	10	64987062	REEP3*
rs10761785	t	0.499	-0.23	3.02E-07	10	64988772	REEP3*
rs2393986	a	0.52	0.25	2.67E-08	10	64990012	REEP3*
rs10733793	t	0.501	0.21	1.03E-06	10	64993815	REEP3*
rs4746203	t	0.46	0.2	4.23E-06	10	64994003	REEP3*
rs10822181	a	0.47	0.19	3.66E-06	10	64995132	REEP3*
rs10822182	a	0.499	-0.21	5.80E-07	10	64995484	REEP3*
rs3847326	a	0.529	-0.19	3.77E-06	10	65001865	REEP3*
rs10761786	t	0.494	0.21	1.21E-06	10	65006213	REEP3*
rs10822186	a	0.494	0.2	1.77E-06	10	65020389	REEP3*
rs10761787	a	0.495	0.2	1.76E-06	10	65023761	REEP3*
rs11230751	a	0.302	-0.26	1.79E-07	11	61137480	SYT7
rs10897169	a	0.319	-0.27	1.52E-08	11	61153899	SYT7
rs1692126	c	0.359	-0.26	2.87E-08	11	61156065	DAGLA
rs12806760	a	0.319	-0.27	1.54E-08	11	61156214	DAGLA
rs17626916	a	0.318	-0.26	1.44E-08	11	61160912	DAGLA
rs12281961	t	0.684	0.27	8.50E-09	11	61161680	DAGLA
rs2453710	a	0.545	0.31	1.35E-12	11	61163118	DAGLA
rs962371	t	0.684	0.26	1.17E-08	11	61164861	DAGLA
rs1812458	t	0.684	0.26	1.12E-08	11	61165025	DAGLA
rs12284414	a	0.309	-0.27	1.23E-08	11	61166038	DAGLA

rs4335555	c	0.683	0.26	9.42E-09	11	61166755	DAGLA
rs1692120	a	0.471	-0.33	1.12E-14	11	61174048	DAGLA
rs11230766	a	0.626	0.28	9.91E-11	11	61183158	DAGLA
rs11230767	a	0.373	-0.28	7.59E-11	11	61183508	DAGLA
rs12794220	t	0.358	-0.27	5.14E-10	11	61218988	DAGLA*
rs3931642	a	0.225	0.25	9.47E-07	11	61219000	DAGLA*
rs198456	a	0.38	-0.26	1.41E-09	11	61219964	DAGLA*
rs17827918	a	0.106	0.4	3.51E-06	11	61224741	DAGLA*
rs198436	t	0.618	0.28	3.71E-10	11	61238622	DAGLA*
rs198428	a	0.415	-0.31	1.79E-12	11	61246281	DAGLA*
rs198426	t	0.367	-0.39	2.43E-19	11	61247062	DAGLA*
rs12285167	a	0.202	0.3	6.30E-08	11	61248615	DAGLA*
rs198446	a	0.245	0.24	1.88E-06	11	61259957	DAGLA*
rs198444	a	0.423	0.21	3.04E-06	11	61261744	DAGLA*
rs569258	t	0.645	0.4	9.01E-21	11	61277244	C11orf9
rs198464	a	0.5	-0.44	5.05E-26	11	61278197	C11orf9
rs2238003	t	0.247	0.27	1.46E-07	11	61280311	C11orf9*
rs198462	a	0.504	-0.44	3.97E-26	11	61280695	C11orf9*
rs198476	a	0.503	-0.44	2.94E-26	11	61282306	C11orf9*
rs198475	t	0.251	0.38	1.14E-13	11	61282647	C11orf9*
rs198473	a	0.751	-0.39	8.31E-14	11	61283132	C11orf9*
rs650436	t	0.453	-0.52	9.68E-29	11	61293006	C11orf9*
rs579383	a	0.539	0.49	2.81E-26	11	61293159	C11orf9*
rs2269928	t	0.789	-1.15	3.65E-62	11	61294105	C11orf9*
rs149803	c	0.736	1.13	1.46E-80	11	61295596	C11orf9*
rs174528	t	0.637	-1.43	3.05E-249	11	61300075	C11orf9*
rs108499	t	0.331	1.38	2.36E-208	11	61303813	C11orf9*
rs509360	a	0.326	-0.93	9.52E-82	11	61305135	C11orf9*
rs174532	a	0.312	-1.05	1.08E-89	11	61305450	C11orf9*
rs174534	a	0.67	-1.37	1.89E-208	11	61306034	C11orf9*
rs174535	t	0.675	-1.48	1.04E-273	11	61307932	C11orf9*
rs174536	a	0.675	-1.48	1.09E-273	11	61308503	C11orf9*
rs174537	t	0.323	1.47	1.18E-271	11	61309256	C11orf9*
rs102275	t	0.674	-1.46	3.01E-271	11	61314379	C11orf10*
rs174538	a	0.291	1.43	4.21E-228	11	61316657	C11orf10*
rs412334	t	0.164	-0.98	6.24E-47	11	61316837	FEN1*
rs695867	a	0.963	-1.05	5.73E-20	11	61317864	FEN1*
rs4246215	t	0.344	1.45	1.19E-257	11	61320875	FEN1*
rs174541	t	0.655	-1.45	4.90E-258	11	61322484	FADS1
rs174545	c	0.677	-1.47	4.37E-273	11	61325882	FADS1*
rs174546	t	0.323	1.47	2.13E-273	11	61326406	FADS1*
rs174547	t	0.677	-1.47	4.98E-274	11	61327359	FADS1*
rs174548	c	0.713	-1.42	2.14E-232	11	61327924	FADS1*

rs174549	a	0.285	1.43	3.88E-232	11	61327958	FADS1*
rs174550	t	0.676	-1.47	4.37E-274	11	61328054	FADS1*
rs174555	t	0.713	-1.42	1.57E-231	11	61336336	FADS1*
rs174556	t	0.287	1.39	2.43E-227	11	61337211	FADS1*
rs968567	t	0.163	0.76	7.59E-43	11	61352140	FADS2
rs174570	t	0.128	1.56	9.98E-149	11	61353788	FADS2*
rs1535	a	0.674	-1.46	4.47E-272	11	61354548	FADS2*
rs174574	a	0.329	1.46	1.90E-267	11	61356918	FADS2*
rs2845573	a	0.922	-1.74	1.92E-116	11	61358484	FADS2*
rs174575	c	0.747	-1.09	4.07E-114	11	61358579	FADS2*
rs2727270	t	0.113	1.62	1.79E-142	11	61359813	FADS2*
rs2727271	a	0.887	-1.61	3.93E-142	11	61359934	FADS2*
rs174576	a	0.336	1.47	6.83E-266	11	61360086	FADS2*
rs2524299	a	0.885	-1.58	1.80E-138	11	61361358	FADS2*
rs174577	a	0.336	1.46	1.73E-262	11	61361390	FADS2*
rs2072114	a	0.881	-1.56	6.13E-141	11	61361791	FADS2*
rs174578	a	0.338	1.47	2.61E-263	11	61362075	FADS2*
rs174579	t	0.221	0.93	4.34E-72	11	61362189	FADS2*
rs17156426	a	0.955	-1.32	2.96E-31	11	61365899	FADS2*
rs174583	t	0.341	1.47	2.63E-263	11	61366326	FADS2*
rs174585	a	0.223	0.96	1.51E-71	11	61368270	FADS2*
rs17156442	t	0.051	1.18	1.94E-21	11	61370599	FADS2*
rs7935946	t	0.052	1.18	8.16E-24	11	61372118	FADS2*
rs174589	c	0.783	-0.94	1.76E-69	11	61372379	FADS2*
rs2851682	a	0.917	-1.61	3.67E-103	11	61372588	FADS2*
rs174591	a	0.279	1	2.31E-86	11	61374252	FADS2*
rs174593	t	0.795	-1.05	1.58E-69	11	61375407	FADS2*
rs174597	c	0.205	1.06	1.77E-69	11	61377616	FADS2*
rs174601	t	0.37	1.57	2.82E-253	11	61379716	FADS2*
rs2526678	a	0.078	1.77	9.18E-106	11	61380369	FADS2*
rs526126	c	0.793	-1.05	5.34E-55	11	61381461	FADS2*
rs174605	t	0.279	0.92	2.07E-86	11	61383497	FADS2*
rs174611	t	0.709	-0.93	1.51E-89	11	61384457	FADS2*
rs174616	a	0.461	0.79	1.24E-79	11	61385698	FADS2*
rs482548	t	0.101	-0.46	3.26E-11	11	61389758	FADS2*
rs17764324	t	0.101	0.9	3.83E-32	11	61391664	FADS2
rs17831757	t	0.899	-0.9	5.33E-32	11	61391776	FADS2
rs11230815	c	0.899	-0.9	7.03E-32	11	61392702	FADS2
rs174626	a	0.548	-0.74	7.59E-71	11	61393633	FADS2
rs174627	a	0.163	0.7	2.04E-33	11	61394042	FADS2
rs7104849	a	0.899	-0.89	1.28E-31	11	61394620	FADS3
rs472031	a	0.1	-0.48	9.57E-12	11	61394996	FADS3
rs422249	t	0.329	0.98	1.94E-103	11	61396064	FADS3

rs174448	a	0.642	-0.97	1.15E-111	11	61396149	FADS3
rs7482316	a	0.899	-0.86	6.41E-30	11	61396774	FADS3
rs174449	a	0.641	-0.96	3.37E-110	11	61396955	FADS3
rs174450	t	0.532	-0.76	1.12E-74	11	61398118	FADS3*
rs174634	c	0.744	-0.74	3.83E-52	11	61403963	FADS3*
rs7394871	a	0.047	1.58	2.94E-31	11	61409090	FADS3*
rs1000778	a	0.257	0.72	3.10E-50	11	61411881	FADS3*
rs174455	a	0.642	-0.93	1.17E-98	11	61412693	FADS3*
rs174456	a	0.745	-0.73	2.41E-51	11	61412758	FADS3*
rs174464	a	0.253	0.74	2.41E-51	11	61414502	FADS3*
rs174468	a	0.431	-0.79	9.81E-64	11	61420267	RAB3IL1
rs17764935	a	0.054	1.49	1.23E-31	11	61421333	RAB3IL1
rs13966	t	0.475	-0.33	6.35E-12	11	61421568	RAB3IL1*
rs2235093	a	0.47	-0.35	3.60E-12	11	61421698	RAB3IL1*
rs174472	a	0.576	-0.39	2.11E-14	11	61428532	RAB3IL1*
rs174476	t	0.426	-0.76	2.34E-60	11	61430694	RAB3IL1*
rs666870	a	0.426	-0.76	2.71E-60	11	61434055	RAB3IL1*
rs174478	t	0.575	0.76	2.84E-60	11	61435152	RAB3IL1*
rs174479	c	0.816	-0.89	5.39E-41	11	61435330	RAB3IL1*
rs2524287	a	0.311	0.26	1.05E-06	11	61441126	RAB3IL1*
rs2521568	c	0.074	0.72	7.39E-17	11	61457509	RAB3IL1
rs2727266	a	0.926	-0.72	7.31E-17	11	61460910	BEST1
rs2727269	a	0.53	0.24	1.71E-07	11	61467398	BEST1
rs2521572	t	0.054	0.86	7.49E-12	11	61468051	BEST1
rs2727261	t	0.086	0.74	2.21E-13	11	61468707	BEST1
rs1109748	a	0.059	0.72	6.47E-12	11	61479221	BEST1*
rs195165	a	0.927	-0.43	3.42E-07	11	61479414	BEST1*
rs760306	t	0.243	0.28	1.46E-08	11	61480868	BEST1*
rs195162	t	0.928	-0.43	3.14E-07	11	61481090	BEST1*
rs741886	t	0.073	0.44	1.68E-07	11	61481363	BEST1*
rs2668898	a	0.744	-0.28	2.74E-08	11	61482074	BEST1*
rs195160	t	0.086	0.41	6.75E-07	11	61482673	BEST1*
rs195157	a	0.915	-0.43	6.20E-07	11	61484367	BEST1*
rs195156	t	0.923	-0.46	2.13E-06	11	61485639	BEST1*
rs1800009	t	0.644	-0.34	1.63E-14	11	61486810	BEST1*
rs17156609	a	0.03	0.82	4.09E-08	11	61488553	BEST1;FTH1*
rs3758977	t	0.649	-0.34	3.81E-14	11	61493820	FTH1
rs195446	t	0.323	-0.24	1.04E-06	11	61499542	FTH1
rs17156618	a	0.971	-0.82	4.61E-08	11	61501248	FTH1
rs2028062	a	0.35	0.33	9.27E-14	11	61502529	FTH1
rs10792320	a	0.648	-0.33	1.44E-13	11	61502867	FTH1
rs4963444	a	0.034	0.69	2.47E-07	11	61529918	FTH1
rs10897208	a	0.968	-0.79	4.58E-09	11	61548463	FTH1

rs11230874	t	0.956	-0.82	1.07E-09	11	61552162	FTH1
rs2446738	t	0.593	0.23	2.42E-06	11	61583398	INCENP
rs10897213	t	0.597	0.22	1.96E-06	11	61584324	INCENP
rs7112985	c	0.403	-0.22	1.97E-06	11	61584491	INCENP
rs7946441	c	0.403	-0.22	1.96E-06	11	61585551	INCENP
rs449397	a	0.403	-0.22	1.82E-06	11	61586371	INCENP
rs429416	t	0.403	-0.22	1.78E-06	11	61586505	INCENP
rs387137	c	0.403	0.23	6.92E-07	11	61586745	INCENP
rs11230896	t	0.183	-0.33	1.04E-08	11	61607780	INCENP
rs12365974	t	0.297	-0.26	1.00E-06	11	61613343	INCENP
rs11230906	a	0.234	-0.25	6.56E-07	11	61636265	INCENP
rs3899187	a	0.954	-0.46	4.33E-06	11	61640453	INCENP
rs4963466	c	0.718	-0.3	6.02E-10	11	61658702	INCENP*
rs3781974	a	0.284	0.29	6.65E-10	11	61663440	INCENP*
rs3781973	c	0.758	-0.23	4.11E-06	11	61663521	INCENP*
rs12795611	t	0.242	0.24	3.29E-06	11	61664545	INCENP*
rs2903922	a	0.271	0.27	9.25E-09	11	61685874	INCENP
rs11230941	a	0.27	0.27	8.17E-09	11	61687373	INCENP
rs1460027	a	0.274	0.28	4.50E-09	11	61688511	INCENP
rs10897221	t	0.259	0.26	7.81E-08	11	61695695	INCENP
rs1675102	t	0.259	0.26	4.29E-08	11	61710585	SCGB1D1
rs2298823	c	0.735	-0.27	3.03E-08	11	61716395	SCGB1D1*
rs1675105	a	0.275	0.26	1.06E-07	11	61720191	SCGB1D1
rs1792876	a	0.275	0.26	1.00E-07	11	61720208	SCGB1D1
rs1729372	a	0.724	-0.26	7.46E-08	11	61725587	SCGB2A1
rs1729374	a	0.276	0.26	7.49E-08	11	61726006	SCGB2A1
rs12420642	a	0.276	0.26	7.01E-08	11	61728427	SCGB2A1
rs12806663	a	0.202	0.27	2.59E-06	11	61757990	SCGB1D2
rs4985167	t	0.275	0.4	1.26E-14	16	14990366	PDXDC1*
rs7192552	a	0.554	-0.35	1.36E-11	16	15029696	PDXDC1*
rs4985124	t	0.688	-0.34	1.33E-14	16	15032942	PDXDC1*
rs12926897	t	0.149	0.33	1.45E-07	16	15034391	PDXDC1*
rs4985155	a	0.649	-0.34	2.85E-15	16	15036960	PDXDC1*
rs3198697	t	0.405	-0.35	3.27E-15	16	15037441	PDXDC1*
rs7200543	a	0.69	-0.35	1.42E-15	16	15037471	PDXDC1*
rs1741	c	0.309	0.35	1.00E-15	16	15037852	PDXDC1*
rs6498540	a	0.691	-0.35	9.97E-16	16	15038095	PDXDC1*
rs1121	a	0.309	0.35	1.02E-15	16	15038577	PDXDC1*
rs1135999	a	0.691	-0.35	1.06E-15	16	15039463	NTAN1;PDXDC1*
rs1136001	t	0.309	0.35	9.86E-16	16	15039475	NTAN1;PDXDC1*
rs2740	a	0.691	-0.35	1.10E-15	16	15039609	NTAN1;PDXDC1*
rs16966952	a	0.309	0.35	1.23E-15	16	15043444	NTAN1*
rs3803573	t	0.309	0.35	1.39E-15	16	15045914	NTAN1*

rs4500751	t	0.32	0.34	1.47E-14	16	15047712	NTAN1*
rs4985148	a	0.681	-0.34	1.21E-14	16	15055289	NTAN1*
rs3751877	t	0.882	-0.3	2.68E-06	16	15062399	RRN3*
rs34792	c	0.38	0.21	3.30E-06	16	15494998	C16orf45*

Supplementary Table 3. Comprehensive results for Gamma linolenic acid (GLA; 18:3,n6) with $P < 5 \times 10^{-6}$

Marker Name	Effect Allele	Allele Frequency	Effect[$]	P-value	Chr	Position	Nearest Gene
rs411654	a	0.881	0.01	5.64E-06	1	8197394	SLC45A1
rs385137	t	0.882	0.01	4.35E-06	1	8197550	SLC45A1
rs421490	a	0.882	0.01	3.13E-06	1	8197871	SLC45A1
rs6680582	a	0.072	-0.01	4.69E-07	1	203724786	PCTK3
rs2659703	a	0.4	0	3.41E-06	3	129652552	DNAJB8
rs10097215	t	0.122	-0.01	2.44E-06	8	2494306	CSMD1
rs7826834	t	0.015	-0.02	3.19E-06	8	62564516	RLBP1L1*
rs12555018	a	0.051	-0.01	2.31E-06	9	81232297	TLE4
rs12554999	a	0.05	-0.01	2.18E-06	9	81232311	TLE4
rs7848623	t	0.952	0.01	3.10E-06	9	81265112	TLE4
rs7899730	t	0.244	0	8.60E-06	10	16140133	C10orf97
rs4748242	a	0.237	0	1.35E-05	10	16141253	C10orf97
rs4307622	t	0.755	0	1.02E-05	10	16142109	C10orf97
rs11253760	t	0.245	0	9.37E-06	10	16149244	C10orf97
rs11253762	t	0.244	0	1E-05	10	16152939	C10orf97
rs10795344	a	0.756	0	9.92E-06	10	16153889	C10orf97
rs2069036	t	0.245	0	8.21E-06	10	16156753	C10orf97
rs4747260	t	0.766	0	1.18E-05	10	16197880	C10orf97
rs7342092	t	0.767	0	1.23E-05	10	16198318	C10orf97
rs11253799	a	0.766	0	1.16E-05	10	16198686	C10orf97
rs198426	t	0.365	0	5.29E-06	11	61247062	DAGLA*
rs569258	t	0.647	0	1.97E-06	11	61277244	C11orf9
rs198464	a	0.499	0.01	2.40E-10	11	61278197	C11orf9
rs198462	a	0.503	0.01	1.10E-10	11	61280695	C11orf9*
rs198476	a	0.502	0.01	1.74E-10	11	61282306	C11orf9*
rs650436	t	0.451	0.01	4.84E-08	11	61293006	C11orf9*
rs579383	a	0.54	0	2.15E-07	11	61293159	C11orf9*
rs2269928	t	0.789	0.01	1.42E-25	11	61294105	C11orf9*
rs149803	c	0.739	-0.01	3.73E-22	11	61295596	C11orf9*
rs174528	t	0.636	0.02	2.81E-65	11	61300075	C11orf9*
rs108499	t	0.332	-0.01	1.04E-54	11	61303813	C11orf9*
rs509360	a	0.328	0.01	6.27E-21	11	61305135	C11orf9*
rs174532	a	0.31	0.01	3.53E-25	11	61305450	C11orf9*
rs174534	a	0.668	0.01	1.34E-54	11	61306034	C11orf9*
rs174535	t	0.672	0.02	3.51E-72	11	61307932	C11orf9*
rs174536	a	0.672	0.02	3.65E-72	11	61308503	C11orf9*
rs174537	t	0.326	-0.02	1.02E-71	11	61309256	C11orf9*
rs102275	t	0.671	0.02	4.37E-71	11	61314379	C11orf10*
rs174538	a	0.294	-0.01	5.21E-59	11	61316657	C11orf10*

rs412334	t	0.166	0.01	4.06E-11	11	61316837	FEN1*
rs695867	a	0.962	0.01	3.93E-07	11	61317864	FEN1*
rs4246215	t	0.347	-0.02	4.81E-68	11	61320875	FEN1*
rs174541	t	0.652	0.02	2.20E-68	11	61322484	FADS1
rs174545	c	0.674	0.02	3.49E-72	11	61325882	FADS1*
rs174546	t	0.326	-0.02	2.37E-72	11	61326406	FADS1*
rs174547	t	0.674	0.02	2.29E-72	11	61327359	FADS1*
rs174548	c	0.71	0.01	1.01E-61	11	61327924	FADS1*
rs174549	a	0.288	-0.02	3.98E-62	11	61327958	FADS1*
rs174550	t	0.674	0.02	5.95E-72	11	61328054	FADS1*
rs174555	t	0.711	0.01	1.46E-61	11	61336336	FADS1*
rs174556	t	0.289	-0.01	2.71E-61	11	61337211	FADS1*
rs968567	t	0.164	-0.01	1.52E-16	11	61352140	FADS2
rs174570	t	0.13	-0.01	4.77E-28	11	61353788	FADS2*
rs1535	a	0.671	0.02	3.36E-71	11	61354548	FADS2*
rs174574	a	0.332	-0.02	9.35E-72	11	61356918	FADS2*
rs2845573	a	0.922	0.01	1.47E-17	11	61358484	FADS2*
rs174575	c	0.746	0.01	2.77E-41	11	61358579	FADS2*
rs2727270	t	0.116	-0.02	1.03E-30	11	61359813	FADS2*
rs2727271	a	0.884	0.02	1.08E-30	11	61359934	FADS2*
rs174576	a	0.339	-0.02	6.12E-72	11	61360086	FADS2*
rs2524299	a	0.882	0.02	3.53E-30	11	61361358	FADS2*
rs174577	a	0.34	-0.02	1.11E-71	11	61361390	FADS2*
rs2072114	a	0.88	0.02	2.34E-31	11	61361791	FADS2*
rs174578	a	0.342	-0.02	3.18E-72	11	61362075	FADS2*
rs174579	t	0.222	-0.01	3.28E-25	11	61362189	FADS2*
rs17156426	a	0.955	0.02	2.45E-17	11	61365899	FADS2*
rs174583	t	0.344	-0.02	6.48E-71	11	61366326	FADS2*
rs174585	a	0.224	-0.01	2.83E-23	11	61368270	FADS2*
rs17156442	t	0.051	-0.02	1.14E-12	11	61370599	FADS2*
rs7935946	t	0.053	-0.02	2.81E-14	11	61372118	FADS2*
rs174589	c	0.782	0.01	2.23E-23	11	61372379	FADS2*
rs2851682	a	0.917	0.01	8.93E-17	11	61372588	FADS2*
rs174591	a	0.281	-0.01	5.06E-36	11	61374252	FADS2*
rs174593	t	0.795	0.01	1.41E-23	11	61375407	FADS2*
rs174597	c	0.205	-0.01	1.25E-23	11	61377616	FADS2*
rs174601	t	0.373	-0.02	6.06E-67	11	61379716	FADS2*
rs2526678	a	0.08	-0.01	2.87E-16	11	61380369	FADS2*
rs526126	c	0.791	0.01	4.07E-22	11	61381461	FADS2*
rs174605	t	0.281	-0.01	5.34E-26	11	61383497	FADS2*
rs174611	t	0.707	0.01	1.11E-26	11	61384457	FADS2*
rs174616	a	0.464	-0.01	1.62E-21	11	61385698	FADS2*
rs482548	t	0.1	0.01	3.72E-06	11	61389758	FADS2*

rs17764324	t	0.104	-0.01	2.83E-07	11	61391664	FADS2
rs17831757	t	0.896	0.01	3.20E-07	11	61391776	FADS2
rs11230815	c	0.896	0.01	3.32E-07	11	61392702	FADS2
rs174626	a	0.545	0.01	5.80E-19	11	61393633	FADS2
rs174627	a	0.166	-0.01	8.69E-13	11	61394042	FADS2
rs7104849	a	0.896	0.01	3.73E-07	11	61394620	FADS3
rs472031	a	0.099	0.01	2.63E-06	11	61394996	FADS3
rs422249	t	0.328	-0.01	3.33E-30	11	61396064	FADS3
rs174448	a	0.643	0.01	6.64E-34	11	61396149	FADS3
rs7482316	a	0.896	0.01	7.56E-07	11	61396774	FADS3
rs174449	a	0.643	0.01	2.12E-33	11	61396955	FADS3
rs174450	t	0.533	0.01	3.85E-20	11	61398118	FADS3*
rs174634	c	0.747	0.01	6.99E-21	11	61403963	FADS3*
rs1000778	a	0.254	-0.01	1.86E-20	11	61411881	FADS3*
rs174455	a	0.644	0.01	7.22E-27	11	61412693	FADS3*
rs174456	a	0.747	0.01	5.99E-21	11	61412758	FADS3*
rs174464	a	0.251	-0.01	9.82E-21	11	61414502	FADS3*
rs174468	a	0.43	0.01	6.50E-16	11	61420267	RAB3IL1
rs174476	t	0.424	0.01	3.90E-14	11	61430694	RAB3IL1*
rs666870	a	0.424	0.01	4.09E-14	11	61434055	RAB3IL1*
rs174478	t	0.576	-0.01	5.89E-14	11	61435152	RAB3IL1*
rs174479	c	0.818	0.01	7.84E-17	11	61435330	RAB3IL1*
rs741886	t	0.075	-0.01	7.26E-06	11	61481363	BEST1*
rs4963444	a	0.034	-0.01	1.91E-06	11	61529918	FTH1
rs10897208	a	0.967	0.01	3.08E-06	11	61548463	FTH1
rs11230874	t	0.953	0.01	9.96E-07	11	61552162	FTH1
rs17121276	a	0.962	0.01	1.59E-06	12	57342770	LRIG3
rs7968324	t	0.958	0.01	7.92E-07	12	57352847	LRIG3
rs4985167	t	0.277	-0.01	4.03E-11	16	14990366	PDXDC1*
rs7192552	a	0.552	0.01	1.97E-08	16	15029696	PDXDC1*
rs4985124	t	0.686	0.01	1.23E-10	16	15032942	PDXDC1*
rs12926897	t	0.152	-0.01	1.01E-06	16	15034391	PDXDC1*
rs4985155	a	0.647	0.01	1.97E-12	16	15036960	PDXDC1*
rs3198697	t	0.401	0.01	7.27E-11	16	15037441	PDXDC1*
rs7200543	a	0.688	0.01	4.33E-11	16	15037471	PDXDC1*
rs1741	c	0.311	-0.01	3.09E-11	16	15037852	PDXDC1*
rs6498540	a	0.689	0.01	3.03E-11	16	15038095	PDXDC1*
rs1121	a	0.311	-0.01	3.00E-11	16	15038577	PDXDC1*
rs1135999	a	0.689	0.01	2.92E-11	16	15039463	NTAN1;PDXDC1*
rs1136001	t	0.311	-0.01	2.88E-11	16	15039475	NTAN1;PDXDC1*
rs2740	a	0.689	0.01	3.18E-11	16	15039609	NTAN1;PDXDC1*
rs16966952	a	0.311	-0.01	5.05E-11	16	15043444	NTAN1*
rs3803573	t	0.311	-0.01	5.00E-11	16	15045914	NTAN1*

Supplementary Table 4. Comprehensive results for Dihomo-gamma-linolenic acid (DGLA; 20:3,n6) with $P < 5 \times 10^{-6}$

Marker Name	Effect Allele	Allele Frequency	Effect[$]	P-value	Chr	Position	Nearest Gene
rs4604732	t	0.82	-0.08	1.83E-06	1	245690495	OR2B11
rs6663238	t	0.817	-0.08	2.70E-06	1	245691594	OR2B11
rs12637047	t	0.386	-0.06	2.02E-06	3	105772405	ALCAM
rs9870668	t	0.386	-0.06	2.11E-06	3	105773070	ALCAM
rs2961214	a	0.615	0.06	3.03E-06	3	105779324	ALCAM
rs4414882	a	0.385	-0.06	3.07E-06	3	105782965	ALCAM
rs9835784	t	0.385	-0.06	3.29E-06	3	105785913	ALCAM
rs2961330	t	0.385	-0.06	3.42E-06	3	105786197	ALCAM
rs9834974	a	0.384	-0.06	3.50E-06	3	105788993	ALCAM
rs9476059	a	0.147	-0.09	3.94E-06	6	57488962	PRIM2*
rs9476082	a	0.167	-0.09	3.68E-06	6	57509017	PRIM2*
rs1252041	a	0.116	0.09	2.03E-06	9	119484618	TLR4
rs5030717	a	0.887	-0.1	1.46E-06	9	119513655	TLR4*
rs2453710	a	0.548	0.08	1.61E-09	11	61163118	DAGLA
rs1692120	a	0.467	-0.09	1.45E-11	11	61174048	DAGLA
rs2132390	t	0.098	-0.1	4.18E-06	11	61181571	DAGLA
rs6591657	t	0.097	-0.11	2.37E-06	11	61191108	DAGLA
rs1791785	t	0.261	0.11	3.32E-13	11	61199389	DAGLA
rs4963308	a	0.145	-0.08	2.81E-06	11	61213002	DAGLA*
rs883724	t	0.145	-0.08	2.87E-06	11	61214433	DAGLA*
rs11827215	a	0.145	-0.08	2.68E-06	11	61215171	DAGLA*
rs198456	a	0.376	-0.06	3.30E-06	11	61219964	DAGLA*
rs198453	t	0.253	0.1	3.67E-12	11	61221126	DAGLA*
rs879486	t	0.337	0.07	4.84E-08	11	61231809	DAGLA*
rs12274157	a	0.822	0.09	1.14E-06	11	61234223	DAGLA*
rs198436	t	0.622	0.06	2.73E-06	11	61238622	DAGLA*
rs198435	c	0.102	-0.13	1.77E-08	11	61239900	DAGLA*
rs198432	a	0.256	0.11	9.70E-14	11	61241557	DAGLA*
rs198430	a	0.242	0.12	1.18E-14	11	61244266	DAGLA*
rs81658	a	0.241	0.12	1.01E-14	11	61244520	DAGLA*
rs198428	a	0.411	-0.07	3.66E-07	11	61246281	DAGLA*
rs198426	t	0.364	-0.07	4.83E-07	11	61247062	DAGLA*
rs9735635	a	0.147	-0.08	1.39E-06	11	61247456	DAGLA*
rs198425	a	0.759	-0.12	1.06E-14	11	61248007	DAGLA*
rs4963243	a	0.147	-0.08	1.50E-06	11	61250903	DAGLA*
rs198418	a	0.76	-0.12	1.14E-14	11	61252848	DAGLA*
rs198446	a	0.244	0.12	2.64E-15	11	61259957	DAGLA*
rs2240287	a	0.146	-0.09	1.02E-06	11	61262159	DAGLA*
rs3825036	a	0.145	-0.09	9.82E-07	11	61273052	DAGLA

rs569258	t	0.648	0.07	3.23E-07	11	61277244	C11orf9
rs198464	a	0.498	-0.1	3.48E-16	11	61278197	C11orf9
rs198462	a	0.501	-0.1	2.46E-17	11	61280695	C11orf9*
rs198476	a	0.501	-0.1	6.84E-17	11	61282306	C11orf9*
rs198475	t	0.248	0.13	2.27E-17	11	61282647	C11orf9*
rs198473	a	0.754	-0.13	1.31E-17	11	61283132	C11orf9*
rs2071212	c	0.332	-0.07	3.50E-07	11	61287413	C11orf9*
rs2071213	t	0.324	-0.07	1.14E-06	11	61290586	C11orf9*
rs650436	t	0.452	-0.1	6.56E-12	11	61293006	C11orf9*
rs579383	a	0.54	0.09	2.76E-11	11	61293159	C11orf9*
rs2269928	t	0.788	-0.37	1.88E-66	11	61294105	C11orf9*
rs149803	c	0.739	0.24	1.15E-41	11	61295596	C11orf9*
rs174528	t	0.637	-0.34	5.54E-134	11	61300075	C11orf9*
rs108499	t	0.331	0.35	3.68E-135	11	61303813	C11orf9*
rs509360	a	0.326	-0.25	6.76E-65	11	61305135	C11orf9*
rs174532	a	0.31	-0.23	1.60E-45	11	61305450	C11orf9*
rs174534	a	0.669	-0.35	8.89E-135	11	61306034	C11orf9*
rs174535	t	0.672	-0.36	3.96E-151	11	61307932	C11orf9*
rs174536	a	0.672	-0.36	2.12E-151	11	61308503	C11orf9*
rs174537	t	0.326	0.36	5.10E-151	11	61309256	C11orf9*
rs102275	t	0.671	-0.35	1.52E-151	11	61314379	C11orf10*
rs174538	a	0.293	0.38	1.47E-154	11	61316657	C11orf10*
rs412334	t	0.166	-0.21	2.05E-23	11	61316837	FEN1*
rs4246215	t	0.346	0.35	2.23E-142	11	61320875	FEN1*
rs174541	t	0.653	-0.35	4.90E-143	11	61322484	FADS1
rs174545	c	0.674	-0.35	2.30E-151	11	61325882	FADS1*
rs174546	t	0.326	0.35	1.80E-151	11	61326406	FADS1*
rs174547	t	0.674	-0.35	2.63E-151	11	61327359	FADS1*
rs174548	c	0.71	-0.39	3.01E-167	11	61327924	FADS1*
rs174549	a	0.288	0.39	4.79E-168	11	61327958	FADS1*
rs174550	t	0.673	-0.36	7.44E-152	11	61328054	FADS1*
rs174555	t	0.71	-0.39	4.57E-168	11	61336336	FADS1*
rs174556	t	0.29	0.39	6.41E-168	11	61337211	FADS1*
rs968567	t	0.164	0.47	2.02E-161	11	61352140	FADS2
rs174570	t	0.13	0.12	4.37E-10	11	61353788	FADS2*
rs1535	a	0.671	-0.35	2.01E-152	11	61354548	FADS2*
rs174574	a	0.332	0.36	7.39E-153	11	61356918	FADS2*
rs2845573	a	0.921	-0.16	1.60E-11	11	61358484	FADS2*
rs174575	c	0.746	-0.37	1.58E-134	11	61358579	FADS2*
rs2727270	t	0.115	0.15	1.77E-13	11	61359813	FADS2*
rs2727271	a	0.885	-0.15	1.89E-13	11	61359934	FADS2*
rs174576	a	0.338	0.36	8.34E-153	11	61360086	FADS2*
rs2524299	a	0.883	-0.15	3.04E-13	11	61361358	FADS2*

rs174577	a	0.339	0.36	3.37E-152	11	61361390	FADS2*
rs2072114	a	0.879	-0.15	5.95E-15	11	61361791	FADS2*
rs174578	a	0.34	0.36	3.93E-152	11	61362075	FADS2*
rs174579	t	0.222	0.39	1.23E-127	11	61362189	FADS2*
rs174583	t	0.343	0.35	9.96E-149	11	61366326	FADS2*
rs174585	a	0.224	0.4	2.71E-122	11	61368270	FADS2*
rs174589	c	0.782	-0.39	2.81E-119	11	61372379	FADS2*
rs2851682	a	0.916	-0.16	2.12E-11	11	61372588	FADS2*
rs174591	a	0.28	0.37	6.36E-120	11	61374252	FADS2*
rs174593	t	0.795	-0.41	3.48E-104	11	61375407	FADS2*
rs174597	c	0.205	0.41	3.59E-104	11	61377616	FADS2*
rs174601	t	0.372	0.37	1.80E-139	11	61379716	FADS2*
rs2526678	a	0.079	0.16	1.40E-10	11	61380369	FADS2*
rs526126	c	0.791	-0.43	5.96E-90	11	61381461	FADS2*
rs174605	t	0.281	0.27	4.64E-76	11	61383497	FADS2*
rs174611	t	0.707	-0.26	3.12E-75	11	61384457	FADS2*
rs174616	a	0.463	0.19	2.09E-53	11	61385698	FADS2*
rs482548	t	0.1	-0.12	1.89E-09	11	61389758	FADS2*
rs174626	a	0.546	-0.18	2.20E-47	11	61393633	FADS2
rs174627	a	0.166	0.36	5.80E-83	11	61394042	FADS2
rs472031	a	0.098	-0.12	2.30E-09	11	61394996	FADS3
rs422249	t	0.328	0.26	4.87E-74	11	61396064	FADS3
rs174448	a	0.643	-0.24	1.26E-72	11	61396149	FADS3
rs174449	a	0.643	-0.24	2.72E-72	11	61396955	FADS3
rs174450	t	0.534	-0.18	2.86E-46	11	61398118	FADS3*
rs174634	c	0.747	-0.25	3.57E-61	11	61403963	FADS3*
rs1000778	a	0.254	0.24	3.81E-60	11	61411881	FADS3*
rs174455	a	0.644	-0.22	7.23E-61	11	61412693	FADS3*
rs174456	a	0.747	-0.24	5.83E-60	11	61412758	FADS3*
rs174464	a	0.251	0.25	6.61E-61	11	61414502	FADS3*
rs174468	a	0.429	-0.16	4.40E-28	11	61420267	RAB3IL1
rs13966	t	0.47	-0.11	1.34E-14	11	61421568	RAB3IL1*
rs2235093	a	0.465	-0.12	6.10E-15	11	61421698	RAB3IL1*
rs174472	a	0.571	-0.12	7.04E-15	11	61428532	RAB3IL1*
rs174476	t	0.424	-0.15	1.48E-26	11	61430694	RAB3IL1*
rs666870	a	0.424	-0.15	1.55E-26	11	61434055	RAB3IL1*
rs174478	t	0.576	0.15	2.78E-26	11	61435152	RAB3IL1*
rs174479	c	0.817	-0.36	1.10E-65	11	61435330	RAB3IL1*
rs540613	t	0.178	-0.12	4.35E-09	11	61437446	RAB3IL1*
rs2521568	c	0.072	0.19	2.38E-12	11	61457509	RAB3IL1
rs2727266	a	0.927	-0.19	2.06E-12	11	61460910	BEST1
rs2521572	t	0.054	0.25	9.65E-11	11	61468051	BEST1
rs2727261	t	0.085	0.18	1.29E-09	11	61468707	BEST1

rs1109748	a	0.058	0.19	2.98E-09	11	61479221	BEST1*
rs1800009	t	0.644	-0.1	9.60E-15	11	61486810	BEST1*
rs3758977	t	0.649	-0.1	8.42E-14	11	61493820	FTH1
rs195445	t	0.693	0.08	3.13E-07	11	61500918	FTH1
rs17633020	a	0.241	0.1	6.66E-12	11	61501457	FTH1
rs17185574	t	0.76	-0.1	7.02E-12	11	61502270	FTH1
rs2028062	a	0.35	0.1	2.59E-13	11	61502529	FTH1
rs10792320	a	0.649	-0.1	2.88E-13	11	61502867	FTH1
rs7105652	a	0.315	-0.07	1.96E-06	11	61505910	FTH1
rs10736716	c	0.341	0.07	8.59E-08	11	61521709	FTH1
rs4423188	a	0.285	0.08	2.67E-08	11	61522994	FTH1
rs4313591	t	0.618	-0.06	6.46E-07	11	61523145	FTH1
rs4963441	c	0.614	-0.07	3.21E-07	11	61525215	FTH1
rs4963442	t	0.614	-0.07	3.15E-07	11	61525282	FTH1
rs7937198	a	0.614	-0.07	2.95E-07	11	61525549	FTH1
rs499974	a	0.172	-0.07	4.58E-06	11	75132669	MOGAT2
rs600626	a	0.827	0.07	4.51E-06	11	75132957	MOGAT2
rs6498509	t	0.272	0.08	1.01E-06	16	14382663	PARN
rs6498513	a	0.677	-0.08	2.51E-08	16	14395631	PARN
rs6498514	c	0.323	0.07	2.79E-08	16	14395803	PARN
rs11075239	a	0.67	-0.08	1.56E-08	16	14407840	PARN
rs1810125	a	0.67	-0.08	1.50E-08	16	14415086	PARN
rs1810124	c	0.329	0.08	1.09E-08	16	14415273	PARN
rs12325343	a	0.265	0.09	1.43E-10	16	14428185	PARN
rs3923839	a	0.778	-0.11	3.50E-12	16	14484544	PARN*
rs12445167	t	0.222	0.11	3.86E-12	16	14485652	PARN*
rs12445002	a	0.221	0.1	4.86E-12	16	14485797	PARN*
rs12446481	a	0.222	0.1	7.21E-12	16	14494322	PARN*
rs4395094	t	0.779	-0.11	4.20E-12	16	14516760	PARN*
rs12448574	t	0.769	-0.11	8.26E-13	16	14525812	PARN*
rs12444801	c	0.223	0.11	2.64E-12	16	14525835	PARN*
rs732459	t	0.266	0.09	1.12E-10	16	14535195	PARN*
rs11645411	a	0.618	0.13	3.35E-21	16	14536956	PARN*
rs12446921	a	0.734	-0.09	8.21E-11	16	14536989	PARN*
rs12386021	a	0.23	0.11	5.24E-13	16	14540443	PARN*
rs8052315	t	0.709	-0.07	2.69E-08	16	14541194	PARN*
rs8061748	t	0.71	-0.07	3.40E-08	16	14556292	PARN*
rs10500392	a	0.23	0.11	5.45E-13	16	14562095	PARN*
rs8062293	a	0.229	0.11	5.13E-13	16	14565117	PARN*
rs17201300	a	0.734	-0.08	2.30E-08	16	14572845	PARN*
rs7200272	t	0.291	0.07	6.23E-08	16	14572980	PARN*
rs12447215	t	0.745	-0.09	7.00E-10	16	14579010	PARN*
rs12447905	t	0.71	-0.08	2.66E-08	16	14579752	PARN*

rs17260976	c	0.824	0.16	2.96E-12	16	14586528	PARN*
rs17261004	t	0.254	0.09	5.02E-10	16	14604858	PARN*
rs12928399	c	0.382	-0.14	7.96E-23	16	14612502	PARN*
rs4985167	t	0.277	-0.26	7.02E-64	16	14990366	PDXDC1*
rs7192552	a	0.552	0.23	2.37E-49	16	15029696	PDXDC1*
rs4985124	t	0.687	0.22	3.11E-64	16	15032942	PDXDC1*
rs12926897	t	0.148	-0.21	6.81E-31	16	15034391	PDXDC1*
rs4985155	a	0.648	0.22	1.56E-67	16	15036960	PDXDC1*
rs3198697	t	0.402	0.21	1.72E-56	16	15037441	PDXDC1*
rs7200543	a	0.689	0.22	1.13E-64	16	15037471	PDXDC1*
rs1741	c	0.311	-0.22	5.17E-65	16	15037852	PDXDC1*
rs6498540	a	0.689	0.22	5.47E-65	16	15038095	PDXDC1*
rs1121	a	0.311	-0.22	5.72E-65	16	15038577	PDXDC1*
rs1135999	a	0.689	0.22	3.48E-65	16	15039463	NTAN1;PDXDC1*
rs1136001	t	0.311	-0.22	3.66E-65	16	15039475	NTAN1;PDXDC1*
rs2740	a	0.689	0.22	5.46E-65	16	15039609	NTAN1;PDXDC1*
rs16966952	a	0.311	-0.22	7.55E-65	16	15043444	NTAN1*
rs3803573	t	0.31	-0.22	7.56E-65	16	15045914	NTAN1*
rs4500751	t	0.322	-0.22	2.16E-63	16	15047712	NTAN1*
rs4985148	a	0.68	0.22	3.08E-63	16	15055289	NTAN1*
rs3751877	t	0.882	0.19	2.09E-24	16	15062399	RRN3*
rs11075260	t	0.572	0.12	4.31E-15	16	15192528	RRN3
rs1629212	a	0.561	-0.15	4.45E-20	16	15286198	MPV17L
rs111671	c	0.421	0.1	2.60E-14	16	15436812	C16orf45*
rs153799	t	0.783	0.1	9.25E-09	16	15442572	C16orf45*
rs222135	t	0.456	-0.1	4.25E-14	16	15446828	C16orf45*
rs153795	a	0.581	-0.09	9.49E-14	16	15448077	C16orf45*
rs153793	a	0.516	0.09	4.67E-14	16	15449700	C16orf45*
rs222133	t	0.395	0.09	7.17E-12	16	15452523	C16orf45*
rs222130	a	0.484	-0.09	8.04E-14	16	15455811	C16orf45*
rs153800	a	0.484	-0.09	6.66E-14	16	15457258	C16orf45*
rs153801	t	0.484	-0.09	5.42E-14	16	15457513	C16orf45*
rs153803	a	0.516	0.09	4.51E-14	16	15459661	C16orf45*
rs153804	a	0.484	-0.09	5.15E-14	16	15460555	C16orf45*
rs153806	a	0.489	-0.1	1.08E-14	16	15463897	C16orf45*
rs153807	t	0.39	-0.13	1.52E-24	16	15464004	C16orf45*
rs1684546	c	0.606	0.13	4.38E-25	16	15467926	C16orf45*
rs2450356	t	0.68	0.1	2.89E-14	16	15478845	C16orf45*
rs12148985	t	0.309	-0.11	2.20E-15	16	15494410	C16orf45*
rs34792	c	0.381	-0.14	3.07E-24	16	15494998	C16orf45*
rs153785	a	0.712	0.08	2.47E-09	16	15500793	C16orf45*
rs153786	t	0.288	-0.08	2.11E-09	16	15501215	C16orf45*
rs153787	a	0.288	-0.08	2.17E-09	16	15501274	C16orf45*

rs153788	a	0.289	-0.08	2.53E-09	16	15501704	C16orf45*
rs13339072	a	0.289	-0.08	3.31E-09	16	15505448	C16orf45*
rs170168	c	0.711	0.08	2.61E-09	16	15508496	C16orf45*
rs153782	t	0.289	-0.08	2.35E-09	16	15509121	C16orf45*
rs2445475	a	0.633	0.12	6.00E-19	16	15509605	C16orf45*
rs153783	a	0.711	0.08	1.83E-09	16	15509867	C16orf45*
rs12923446	a	0.254	-0.07	6.88E-07	16	15511081	C16orf45*
rs1125972	a	0.916	0.11	9.72E-07	16	15514488	C16orf45*
rs2067063	a	0.268	-0.07	7.79E-08	16	15516464	C16orf45*
rs4597346	c	0.269	-0.07	8.61E-08	16	15531247	C16orf45*
rs9922431	t	0.527	-0.07	8.03E-07	16	15566149	C16orf45*
rs7185019	t	0.521	-0.06	1.06E-06	16	15591095	C16orf45
rs1107142	t	0.911	0.11	2.54E-06	16	15593846	KIAA0430
rs11866131	t	0.088	-0.11	2.78E-06	16	15594147	KIAA0430
rs2071330	t	0.476	0.06	1.55E-06	16	15605296	KIAA0430*
rs7191720	t	0.462	-0.06	4.08E-07	16	15615073	KIAA0430*
rs11649126	a	0.242	0.11	4.86E-12	16	15627748	KIAA0430*
rs4781677	a	0.244	0.1	3.58E-11	16	15637746	KIAA0430*
rs4781678	a	0.571	0.06	1.09E-06	16	15654613	NDE1*
rs3784859	t	0.481	-0.07	2.66E-08	16	15672904	NDE1*
rs11649278	c	0.527	0.07	8.03E-09	16	15682283	NDE1*
rs11647544	t	0.525	0.07	8.76E-09	16	15704069	NDE1*
rs881803	t	0.661	0.07	8.82E-09	16	15709835	MYH11;NDE1*
rs10521101	t	0.664	0.08	8.06E-11	16	15715178	MYH11;NDE1*
rs1050163	t	0.504	0.08	1.83E-09	16	15718524	MYH11;NDE1*
rs1050162	t	0.504	0.08	1.74E-09	16	15718563	MYH11;NDE1*
rs2075512	t	0.572	0.06	1.73E-06	16	15721446	MYH11;NDE1*
rs2075511	a	0.475	-0.07	9.23E-08	16	15725642	MYH11;NDE1*
rs16967494	t	0.281	-0.07	7.85E-07	16	15728364	MYH11*
rs2272555	a	0.385	-0.1	6.81E-14	16	15738713	MYH11*
rs1050113	a	0.333	-0.09	1.23E-11	16	15746535	MYH11*
rs6498570	a	0.9	-0.12	9.31E-08	16	15751400	MYH11*
rs4781685	c	0.408	-0.11	1.75E-17	16	15752601	MYH11*
rs2272554	a	0.584	0.1	1.52E-16	16	15757705	MYH11*
rs2280764	c	0.629	0.1	2.72E-14	16	15761097	MYH11*
rs12922040	t	0.36	0.08	4.25E-09	16	15776967	MYH11*
rs2075516	t	0.639	-0.08	5.78E-09	16	15777026	MYH11*
rs11075280	a	0.206	0.1	6.83E-10	16	15777988	MYH11*
rs4541094	t	0.205	0.1	7.34E-10	16	15778236	MYH11*
rs1569300	a	0.205	0.1	7.69E-10	16	15778249	MYH11*
rs4262965	a	0.205	0.1	7.90E-10	16	15778259	MYH11*
rs4482303	t	0.205	0.1	8.15E-10	16	15778378	MYH11*
rs10852376	a	0.204	0.09	8.67E-10	16	15779574	MYH11*

rs2075515	a	0.204	0.1	8.50E-10	16	15779820	MYH11*
rs2075514	a	0.795	-0.09	1.06E-09	16	15780110	MYH11*
rs2075513	t	0.778	-0.09	4.69E-09	16	15783972	MYH11*
rs8045778	t	0.219	0.09	2.30E-09	16	15785753	MYH11*
rs17213965	t	0.134	-0.1	4.08E-06	16	15789468	MYH11*
rs3898632	c	0.133	-0.1	4.39E-06	16	15790742	MYH11*
rs17214007	t	0.817	-0.13	1.76E-12	16	15790991	MYH11*

Supplementary Table 5. Comprehensive results for Arachidonic acid (AA; 20:4,n6) with $P < 5 \times 10^{-6}$

Marker Name	Effect Allele	Allele Frequency	Effect[$]	P-value	Chr	Position	Nearest Gene
rs12467779	a	0.085	-0.25	4.84E-06	2	76050082	C2orf3
rs4853182	t	0.085	-0.25	4.66E-06	2	76051295	C2orf3
rs12471016	t	0.086	-0.25	3.84E-06	2	76058497	C2orf3
rs1441654	a	0.082	-0.25	4.14E-06	2	76073782	C2orf3
rs4853189	t	0.087	-0.25	5.06E-06	2	76085834	C2orf3
rs16829840	t	0.014	0.46	2.53E-08	3	120630648	TMEM39A
rs274559	a	0.6	0.14	3.81E-06	5	131747969	SLC22A5*
rs274558	a	0.599	0.14	3.66E-06	5	131749073	SLC22A5*
rs274557	t	0.599	0.14	3.51E-06	5	131749103	SLC22A5*
rs685096	c	0.585	0.16	2.80E-06	6	42953756	RPL7L1
rs9394931	t	0.41	-0.15	2.30E-06	6	42981223	PTCRA
rs1571444	t	0.622	0.14	4.47E-06	6	47988579	C6orf138*
rs9357565	a	0.374	-0.15	3.89E-06	6	47989627	C6orf138*
rs12209011	t	0.39	-0.15	2.79E-06	6	47990299	C6orf138*
rs12209128	t	0.379	-0.15	2.64E-06	6	47990507	C6orf138*
rs12209190	a	0.621	0.15	3.77E-06	6	47990609	C6orf138*
rs10807382	t	0.379	-0.15	3.60E-06	6	47990696	C6orf138*
rs10807383	a	0.379	-0.15	3.53E-06	6	47990767	C6orf138*
rs10807385	a	0.623	0.15	3.44E-06	6	47990895	C6orf138*
rs1328969	a	0.382	-0.15	5.01E-06	6	47991341	C6orf138*
rs7750802	a	0.623	0.15	3.49E-06	6	47991615	C6orf138*
rs3741259	t	0.104	-0.31	4.50E-08	11	61038926	SYT7
rs11230751	a	0.305	0.22	7.27E-10	11	61137480	SYT7
rs1495941	t	0.172	-0.23	3.94E-07	11	61146944	SYT7
rs10897169	a	0.32	0.24	6.88E-13	11	61153899	SYT7
rs1692126	c	0.361	0.22	7.15E-12	11	61156065	DAGLA
rs12806760	a	0.32	0.24	6.52E-13	11	61156214	DAGLA
rs1791786	t	0.227	-0.19	4.75E-07	11	61156541	DAGLA
rs17626916	a	0.32	0.24	2.74E-13	11	61160912	DAGLA
rs12281961	t	0.683	-0.24	1.66E-13	11	61161680	DAGLA
rs2453710	a	0.543	-0.35	1.08E-28	11	61163118	DAGLA
rs962371	t	0.682	-0.24	1.98E-13	11	61164861	DAGLA
rs1812458	t	0.682	-0.24	1.57E-13	11	61165025	DAGLA
rs1692116	a	0.14	0.28	2.34E-10	11	61165823	DAGLA
rs12284414	a	0.311	0.24	2.17E-13	11	61166038	DAGLA
rs4335555	c	0.682	-0.24	1.08E-13	11	61166755	DAGLA
rs2453712	t	0.1	0.39	7.69E-14	11	61169904	DAGLA
rs1692120	a	0.474	0.38	2.26E-35	11	61174048	DAGLA
rs2132390	t	0.099	0.39	5.78E-14	11	61181571	DAGLA

rs11230766	a	0.624	-0.27	1.86E-18	11	61183158	DAGLA
rs11230767	a	0.375	0.27	9.50E-19	11	61183508	DAGLA
rs6591657	t	0.099	0.4	8.04E-15	11	61191108	DAGLA
rs1791785	t	0.262	-0.28	9.24E-16	11	61199389	DAGLA
rs4963308	a	0.144	0.25	2.67E-09	11	61213002	DAGLA*
rs883724	t	0.144	0.25	2.43E-09	11	61214433	DAGLA*
rs11827215	a	0.144	0.25	2.54E-09	11	61215171	DAGLA*
rs12794220	t	0.362	0.25	8.20E-15	11	61218988	DAGLA*
rs3931642	a	0.221	-0.25	2.22E-11	11	61219000	DAGLA*
rs198456	a	0.383	0.24	5.81E-15	11	61219964	DAGLA*
rs198453	t	0.255	-0.24	1.04E-11	11	61221126	DAGLA*
rs17827918	a	0.103	-0.42	1.63E-11	11	61224741	DAGLA*
rs879486	t	0.338	-0.18	2.77E-09	11	61231809	DAGLA*
rs12274157	a	0.824	-0.28	7.11E-11	11	61234223	DAGLA*
rs198436	t	0.615	-0.25	2.10E-15	11	61238622	DAGLA*
rs198435	c	0.103	0.44	3.03E-15	11	61239900	DAGLA*
rs198432	a	0.257	-0.26	3.31E-14	11	61241557	DAGLA*
rs198430	a	0.245	-0.31	8.71E-19	11	61244266	DAGLA*
rs81658	a	0.243	-0.32	3.82E-19	11	61244520	DAGLA*
rs198428	a	0.417	0.29	1.11E-19	11	61246281	DAGLA*
rs198426	t	0.368	0.36	1.38E-30	11	61247062	DAGLA*
rs9735635	a	0.145	0.28	5.64E-11	11	61247456	DAGLA*
rs198425	a	0.757	0.32	2.80E-19	11	61248007	DAGLA*
rs12285167	a	0.199	-0.28	1.05E-12	11	61248615	DAGLA*
rs4963243	a	0.145	0.28	5.58E-11	11	61250903	DAGLA*
rs198418	a	0.757	0.32	2.01E-19	11	61252848	DAGLA*
rs198446	a	0.246	-0.34	6.48E-21	11	61259957	DAGLA*
rs198444	a	0.424	-0.19	2.15E-09	11	61261744	DAGLA*
rs2240287	a	0.144	0.29	2.30E-11	11	61262159	DAGLA*
rs3825036	a	0.144	0.29	1.81E-11	11	61273052	DAGLA
rs569258	t	0.642	-0.38	3.27E-34	11	61277244	C11orf9
rs198464	a	0.502	0.48	5.47E-59	11	61278197	C11orf9
rs2238003	t	0.242	-0.25	3.78E-11	11	61280311	C11orf9*
rs198462	a	0.506	0.49	1.16E-60	11	61280695	C11orf9*
rs2238001	t	0.879	-0.29	1.32E-08	11	61281083	C11orf9*
rs198476	a	0.505	0.49	1.94E-60	11	61282306	C11orf9*
rs198475	t	0.254	-0.48	1.74E-40	11	61282647	C11orf9*
rs198473	a	0.748	0.49	8.18E-41	11	61283132	C11orf9*
rs650436	t	0.454	0.54	1.75E-57	11	61293006	C11orf9*
rs579383	a	0.538	-0.51	7.42E-52	11	61293159	C11orf9*
rs2269928	t	0.788	1.42	3.13E-211	11	61294105	C11orf9*
rs149803	c	0.733	-1.16	4.36E-171	11	61295596	C11orf9*
rs174528	t	0.638	1.63	0	11	61300075	C11orf9*

rs108499	t	0.33	-1.58	0	11	61303813	C11orf9*
rs509360	a	0.326	1.12	7.08E-251	11	61305135	C11orf9*
rs174532	a	0.314	1.06	1.23E-184	11	61305450	C11orf9*
rs174534	a	0.672	1.57	0	11	61306034	C11orf9*
rs174535	t	0.677	1.69	0	11	61307932	C11orf9*
rs174536	a	0.678	1.69	0	11	61308503	C11orf9*
rs174537	t	0.321	-1.69	0	11	61309256	C11orf9*
rs102275	t	0.676	1.68	0	11	61314379	C11orf10*
rs174538	a	0.288	-1.66	0	11	61316657	C11orf10*
rs412334	t	0.163	0.99	2.28E-89	11	61316837	FEN1*
rs695867	a	0.963	0.9	2.85E-37	11	61317864	FEN1*
rs4246215	t	0.343	-1.66	0	11	61320875	FEN1*
rs174541	t	0.657	1.67	0	11	61322484	FADS1
rs174545	c	0.679	1.69	0	11	61325882	FADS1*
rs174546	t	0.321	-1.69	0	11	61326406	FADS1*
rs174547	t	0.68	1.69	0	11	61327359	FADS1*
rs174548	c	0.716	1.69	0	11	61327924	FADS1*
rs174549	a	0.283	-1.69	0	11	61327958	FADS1*
rs174550	t	0.679	1.69	0	11	61328054	FADS1*
rs174555	t	0.716	1.68	0	11	61336336	FADS1*
rs174556	t	0.284	-1.65	0	11	61337211	FADS1*
rs968567	t	0.162	-1.14	1.16E-226	11	61352140	FADS2
rs174570	t	0.126	-1.54	0	11	61353788	FADS2*
rs1535	a	0.676	1.68	0	11	61354548	FADS2*
rs174574	a	0.326	-1.68	0	11	61356918	FADS2*
rs2845573	a	0.924	1.73	1.12E-306	11	61358484	FADS2*
rs174575	c	0.748	1.34	0	11	61358579	FADS2*
rs2727270	t	0.112	-1.62	0	11	61359813	FADS2*
rs2727271	a	0.887	1.62	0	11	61359934	FADS2*
rs174576	a	0.333	-1.69	0	11	61360086	FADS2*
rs2524299	a	0.885	1.58	0	11	61361358	FADS2*
rs174577	a	0.334	-1.68	0	11	61361390	FADS2*
rs2072114	a	0.882	1.56	0	11	61361791	FADS2*
rs174578	a	0.335	-1.69	0	11	61362075	FADS2*
rs174579	t	0.219	-1.22	4.95E-301	11	61362189	FADS2*
rs17156426	a	0.955	1.27	7.41E-71	11	61365899	FADS2*
rs174583	t	0.338	-1.68	0	11	61366326	FADS2*
rs174585	a	0.221	-1.24	3.96E-286	11	61368270	FADS2*
rs17156442	t	0.051	-1.16	7.09E-53	11	61370599	FADS2*
rs7935946	t	0.052	-1.16	6.62E-56	11	61372118	FADS2*
rs174589	c	0.785	1.23	6.13E-281	11	61372379	FADS2*
rs2851682	a	0.92	1.63	1.02E-280	11	61372588	FADS2*
rs174591	a	0.278	-1.33	0	11	61374252	FADS2*

rs174593	t	0.797	1.34	3.87E-268	11	61375407	FADS2*
rs174597	c	0.203	-1.35	5.45E-268	11	61377616	FADS2*
rs174601	t	0.367	-1.79	0	11	61379716	FADS2*
rs2526678	a	0.076	-1.77	5.29E-280	11	61380369	FADS2*
rs526126	c	0.794	1.36	2.47E-207	11	61381461	FADS2*
rs174605	t	0.277	-1.08	2.60E-256	11	61383497	FADS2*
rs174611	t	0.711	1.09	1.31E-264	11	61384457	FADS2*
rs174616	a	0.459	-0.89	1.46E-208	11	61385698	FADS2*
rs482548	t	0.101	0.49	2.53E-26	11	61389758	FADS2*
rs17764324	t	0.1	-0.83	3.09E-58	11	61391664	FADS2
rs17831757	t	0.9	0.82	6.28E-58	11	61391776	FADS2
rs11230815	c	0.9	0.82	1.01E-57	11	61392702	FADS2
rs174626	a	0.55	0.84	9.57E-184	11	61393633	FADS2
rs174627	a	0.161	-0.96	3.04E-127	11	61394042	FADS2
rs7104849	a	0.9	0.82	3.13E-57	11	61394620	FADS3
rs472031	a	0.099	0.51	2.34E-27	11	61394996	FADS3
rs422249	t	0.329	-1.12	9.09E-286	11	61396064	FADS3
rs174448	a	0.641	1.08	2.03E-292	11	61396149	FADS3
rs7482316	a	0.9	0.78	8.58E-54	11	61396774	FADS3
rs174449	a	0.64	1.07	2.20E-288	11	61396955	FADS3
rs174450	t	0.53	0.84	1.58E-186	11	61398118	FADS3*
rs174634	c	0.741	0.87	3.60E-152	11	61403963	FADS3*
rs7394871	a	0.046	-1.53	9.42E-73	11	61409090	FADS3*
rs1000778	a	0.259	-0.86	1.33E-148	11	61411881	FADS3*
rs174455	a	0.64	1.03	7.51E-255	11	61412693	FADS3*
rs174456	a	0.742	0.87	1.56E-150	11	61412758	FADS3*
rs174464	a	0.256	-0.88	5.80E-152	11	61414502	FADS3*
rs174468	a	0.432	0.8	1.96E-129	11	61420267	RAB3IL1
rs17764935	a	0.053	-1.43	2.22E-70	11	61421333	RAB3IL1
rs13966	t	0.479	0.35	5.36E-24	11	61421568	RAB3IL1*
rs2235093	a	0.475	0.36	1.28E-24	11	61421698	RAB3IL1*
rs174472	a	0.576	0.4	1.48E-28	11	61428532	RAB3IL1*
rs174476	t	0.427	0.78	2.56E-121	11	61430694	RAB3IL1*
rs666870	a	0.427	0.78	3.11E-121	11	61434055	RAB3IL1*
rs174478	t	0.573	-0.78	7.24E-121	11	61435152	RAB3IL1*
rs174479	c	0.812	1.06	3.16E-121	11	61435330	RAB3IL1*
rs540613	t	0.176	0.4	1.19E-15	11	61437446	RAB3IL1*
rs2524287	a	0.306	-0.23	8.49E-10	11	61441126	RAB3IL1*
rs882169	t	0.411	-0.16	2.69E-07	11	61448706	RAB3IL1
rs2521567	a	0.412	-0.16	1.23E-07	11	61455631	RAB3IL1
rs2521568	c	0.075	-0.76	1.40E-37	11	61457509	RAB3IL1
rs2727266	a	0.925	0.76	1.20E-37	11	61460910	BEST1
rs2727269	a	0.527	-0.2	8.27E-10	11	61467398	BEST1

rs2521572	t	0.054	-0.9	2.00E-29	11	61468051	BEST1
rs2727261	t	0.086	-0.71	7.88E-28	11	61468707	BEST1
rs972355	c	0.305	-0.18	3.56E-08	11	61473913	BEST1
rs1800007	t	0.695	0.18	3.69E-08	11	61475963	BEST1*
rs1109748	a	0.06	-0.71	7.40E-27	11	61479221	BEST1*
rs195165	a	0.928	0.44	5.74E-13	11	61479414	BEST1*
rs760306	t	0.24	-0.28	2.42E-15	11	61480868	BEST1*
rs195162	t	0.928	0.44	4.97E-13	11	61481090	BEST1*
rs741886	t	0.073	-0.45	1.32E-13	11	61481363	BEST1*
rs2668898	a	0.747	0.26	1.84E-13	11	61482074	BEST1*
rs195160	t	0.086	-0.4	5.92E-12	11	61482673	BEST1*
rs195157	a	0.916	0.4	2.34E-11	11	61484367	BEST1*
rs195156	t	0.923	0.41	1.10E-09	11	61485639	BEST1*
rs1800009	t	0.644	0.37	2.86E-32	11	61486810	BEST1*
rs17156609	a	0.03	-0.73	4.97E-12	11	61488553	BEST1;FTH1*
rs3758977	t	0.649	0.37	3.56E-32	11	61493820	FTH1
rs195446	t	0.325	0.2	2.83E-09	11	61499542	FTH1
rs195445	t	0.696	-0.26	5.33E-13	11	61500918	FTH1
rs17156618	a	0.971	0.72	1.61E-11	11	61501248	FTH1
rs17633020	a	0.247	-0.3	1.70E-17	11	61501457	FTH1
rs17185574	t	0.754	0.29	2.12E-17	11	61502270	FTH1
rs2028062	a	0.351	-0.37	1.55E-31	11	61502529	FTH1
rs10792320	a	0.647	0.37	1.59E-31	11	61502867	FTH1
rs7105652	a	0.313	0.24	4.32E-12	11	61505910	FTH1
rs10736716	c	0.35	-0.18	1.32E-08	11	61521709	FTH1
rs4423188	a	0.298	-0.2	1.61E-09	11	61522994	FTH1
rs4313591	t	0.615	0.23	3.83E-13	11	61523145	FTH1
rs4963441	c	0.611	0.23	4.01E-13	11	61525215	FTH1
rs4963442	t	0.611	0.23	4.04E-13	11	61525282	FTH1
rs7937198	a	0.611	0.23	4.14E-13	11	61525549	FTH1
rs11605994	t	0.238	0.24	1.18E-10	11	61527415	FTH1
rs4963444	a	0.033	-0.56	6.31E-10	11	61529918	FTH1
rs12789285	c	0.765	-0.25	3.52E-11	11	61536564	FTH1
rs6591687	t	0.229	0.24	1.48E-10	11	61539224	FTH1
rs7951604	a	0.228	0.24	1.14E-10	11	61541403	FTH1
rs10897208	a	0.969	0.59	9.06E-11	11	61548463	FTH1
rs11230874	t	0.956	0.63	3.85E-12	11	61552162	FTH1
rs3019626	t	0.233	0.18	1.73E-06	11	61564848	FTH1
rs11230889	a	0.825	0.29	9.31E-10	11	61579962	INCENP
rs2446738	t	0.594	-0.22	6.82E-11	11	61583398	INCENP
rs10897213	t	0.598	-0.21	5.56E-11	11	61584324	INCENP
rs7112985	c	0.402	0.21	5.69E-11	11	61584491	INCENP
rs7946441	c	0.402	0.21	6.22E-11	11	61585551	INCENP

rs449397	a	0.402	0.21	8.09E-11	11	61586371	INCENP
rs429416	t	0.402	0.21	8.19E-11	11	61586505	INCENP
rs387137	c	0.4	-0.26	1.66E-14	11	61586745	INCENP
rs11230896	t	0.183	0.36	1.69E-17	11	61607780	INCENP
rs12365974	t	0.296	0.24	5.71E-10	11	61613343	INCENP
rs11230906	a	0.235	0.19	9.62E-08	11	61636265	INCENP
rs3899187	a	0.955	0.43	3.76E-09	11	61640453	INCENP
rs17707648	a	0.047	-0.4	9.88E-09	11	61647388	INCENP
rs4144907	c	0.047	-0.39	1.71E-08	11	61647926	INCENP
rs4963466	c	0.716	0.23	2.49E-11	11	61658702	INCENP*
rs3741250	c	0.757	0.17	1.77E-06	11	61662170	INCENP*
rs3781974	a	0.286	-0.23	2.06E-11	11	61663440	INCENP*
rs3781973	c	0.756	0.18	1.09E-06	11	61663521	INCENP*
rs12795611	t	0.245	-0.18	7.48E-07	11	61664545	INCENP*
rs7129085	t	0.638	0.16	3.42E-07	11	61669772	INCENP*
rs3781969	t	0.777	0.18	8.24E-07	11	61670187	INCENP*
rs11230928	a	0.362	-0.16	3.71E-07	11	61670381	INCENP*
rs2511347	a	0.639	0.15	6.20E-07	11	61671551	INCENP*
rs1675108	a	0.639	0.15	5.97E-07	11	61675209	INCENP*
rs11230935	t	0.352	-0.15	1.67E-06	11	61679424	INCENP
rs7928360	a	0.361	-0.15	5.52E-07	11	61680171	INCENP
rs11230938	a	0.639	0.15	5.62E-07	11	61681281	INCENP
rs2903922	a	0.272	-0.23	5.70E-12	11	61685874	INCENP
rs11230941	a	0.271	-0.23	6.33E-12	11	61687373	INCENP
rs1460027	a	0.275	-0.23	7.52E-12	11	61688511	INCENP
rs11603737	t	0.636	0.15	7.06E-07	11	61689516	INCENP
rs1675088	c	0.637	0.15	9.34E-07	11	61692317	INCENP
rs10897221	t	0.26	-0.21	6.15E-10	11	61695695	INCENP
rs1675102	t	0.261	-0.21	8.25E-10	11	61710585	SCGB1D1
rs2298823	c	0.733	0.23	7.55E-11	11	61716395	SCGB1D1*
rs1675105	a	0.277	-0.23	1.89E-11	11	61720191	SCGB1D1
rs1792876	a	0.277	-0.23	1.90E-11	11	61720208	SCGB1D1
rs1729370	c	0.662	-0.15	1.44E-06	11	61722597	SCGB1D1
rs11230982	a	0.662	-0.15	1.56E-06	11	61724917	SCGB1D1
rs1792957	a	0.337	0.15	1.53E-06	11	61725383	SCGB2A1
rs1729372	a	0.722	0.23	1.50E-11	11	61725587	SCGB2A1
rs1729374	a	0.278	-0.23	1.46E-11	11	61726006	SCGB2A1
rs2463838	t	0.337	0.15	1.45E-06	11	61728113	SCGB2A1
rs12420642	a	0.278	-0.23	1.27E-11	11	61728427	SCGB2A1
rs1729377	t	0.647	0.16	1.61E-07	11	61730632	SCGB2A1
rs3900954	a	0.648	0.16	1.71E-07	11	61731707	SCGB2A1
rs1792902	c	0.647	0.17	9.85E-08	11	61732331	SCGB2A1
rs10897237	c	0.648	0.16	1.35E-07	11	61733368	SCGB2A1*

rs12806663	a	0.205	-0.24	5.84E-09	11	61757990	SCGB1D2
rs7936908	t	0.147	0.22	8.55E-08	11	61773341	SCGB1D2
rs12798472	c	0.168	0.18	3.83E-06	11	61791795	SCGB2A2
rs12800927	t	0.168	0.18	3.83E-06	11	61792253	SCGB2A2
rs7925016	t	0.793	-0.23	1.40E-09	11	61800505	SCGB2A2
rs3889277	c	0.038	0.54	3.28E-09	11	61935397	SCGB1A1
rs12788265	c	0.038	0.47	4.88E-08	11	61956342	AHNAK
rs17663676	t	0.966	-0.47	4.52E-08	11	61957578	AHNAK
rs4985167	t	0.274	-0.22	4.60E-09	16	14990366	PDXDC1*
rs7192552	a	0.556	0.21	2.11E-08	16	15029696	PDXDC1*
rs4985124	t	0.69	0.19	1.01E-09	16	15032942	PDXDC1*
rs12926897	t	0.149	-0.26	6.36E-09	16	15034391	PDXDC1*
rs4985155	a	0.65	0.18	6.60E-09	16	15036960	PDXDC1*
rs7200543	a	0.692	0.2	1.69E-10	16	15037471	PDXDC1*
rs1741	c	0.308	-0.2	1.64E-10	16	15037852	PDXDC1*
rs6498540	a	0.692	0.2	1.70E-10	16	15038095	PDXDC1*
rs1121	a	0.308	-0.2	1.80E-10	16	15038577	PDXDC1*
rs1135999	a	0.692	0.2	2.06E-10	16	15039463	NTAN1;PDXDC1*
rs1136001	t	0.308	-0.2	2.10E-10	16	15039475	NTAN1;PDXDC1*
rs2740	a	0.692	0.2	2.12E-10	16	15039609	NTAN1;PDXDC1*
rs16966952	a	0.308	-0.2	2.43E-10	16	15043444	NTAN1*
rs3803573	t	0.308	-0.2	2.47E-10	16	15045914	NTAN1*
rs4500751	t	0.319	-0.19	1.85E-09	16	15047712	NTAN1*
rs4985148	a	0.683	0.19	1.49E-09	16	15055289	NTAN1*

Supplementary Table 6. Comprehensive results for Adrenic acid (22:4,n6) with $P < 5 \times 10^{-6}$

Marker Name	Effect Allele	Allele Frequency	Effect[$]	P-value	Chr	Position	Nearest Gene
rs3734398	t	0.577	-0.01	1.17E-06	6	11090959	ELOVL2*
rs4532436	c	0.567	-0.01	3.65E-06	6	11091957	ELOVL2*
rs3798707	t	0.442	0.01	2.70E-06	6	11099921	ELOVL2*
rs2236212	c	0.431	0.01	6.80E-07	6	11103001	ELOVL2*
rs3798711	t	0.559	-0.01	3.24E-06	6	11110796	ELOVL2*
rs1323739	c	0.569	-0.01	1.02E-06	6	11112547	ELOVL2*
rs2295602	t	0.56	-0.01	3.44E-06	6	11113828	ELOVL2*
rs3798713	c	0.431	0.01	1.03E-06	6	11116608	ELOVL2*
rs953413	a	0.439	0.01	5.54E-06	6	11120845	ELOVL2*
rs7743830	a	0.56	-0.01	3.54E-06	6	11122206	ELOVL2*
rs1570069	a	0.56	-0.01	3.47E-06	6	11125811	ELOVL2*
rs1321536	t	0.555	-0.01	5.01E-06	6	11126798	ELOVL2*
rs3134950	a	0.625	-0.01	5.72E-06	6	32235455	PPT2*
rs1061808	t	0.376	0.01	7.28E-06	6	32244525	AGPAT1*
rs11203868	a	0.375	-0.01	9.41E-07	8	17413757	SLC7A2
rs1962772	t	0.623	0.01	8.96E-07	8	17415157	SLC7A2
rs6997118	a	0.623	0.01	9.78E-07	8	17415784	SLC7A2
rs6997306	c	0.623	0.01	9.97E-07	8	17415901	SLC7A2
rs2213906	c	0.355	-0.01	4.82E-06	8	17421436	SLC7A2
rs2188021	a	0.646	0.01	4.82E-06	8	17421621	SLC7A2
rs2188022	a	0.648	0.01	4.13E-06	8	17421772	SLC7A2
rs7073746	a	0.51	-0.01	2.80E-06	10	64574077	NRBF2*
rs4454603	t	0.492	0.01	3.80E-06	10	64682756	JMJD1C*
rs10761742	a	0.51	-0.01	2.39E-06	10	64755054	JMJD1C*
rs10761771	t	0.519	-0.01	5.81E-06	10	64900170	JMJD1C
rs7909960	a	0.482	0.01	6.77E-06	10	64909183	JMJD1C
rs7897379	t	0.542	-0.01	2.46E-06	10	64971731	REEP3*
rs10761784	a	0.527	-0.01	3.10E-06	10	64978756	REEP3*
rs2163188	c	0.492	-0.01	1.17E-06	10	64984717	REEP3*
rs6479905	a	0.508	0.01	1.24E-06	10	64985237	REEP3*
rs10740134	t	0.524	-0.01	3.44E-06	10	64985439	REEP3*
rs7919685	t	0.487	-0.01	1.13E-06	10	64985806	REEP3*
rs12247907	c	0.487	-0.01	1.12E-06	10	64987051	REEP3*
rs7070761	a	0.512	0.01	1.06E-06	10	64987062	REEP3*
rs10761785	t	0.498	0.01	6.51E-07	10	64988772	REEP3*
rs2393986	a	0.521	-0.01	2.81E-06	10	64990012	REEP3*
rs4083482	t	0.039	-0.03	1.67E-06	11	35308215	SLC1A2*
rs2453710	a	0.541	-0.01	9.46E-08	11	61163118	DAGLA
rs1692120	a	0.475	0.01	1.80E-09	11	61174048	DAGLA

rs11230766	a	0.623	-0.01	2.13E-07	11	61183158	DAGLA
rs11230767	a	0.377	0.01	1.49E-07	11	61183508	DAGLA
rs198428	a	0.416	0.01	1.05E-06	11	61246281	DAGLA*
rs198426	t	0.364	0.01	1.87E-10	11	61247062	DAGLA*
rs569258	t	0.649	-0.01	2.49E-10	11	61277244	C11orf9
rs198464	a	0.494	0.01	5.72E-12	11	61278197	C11orf9
rs198462	a	0.5	0.01	2.00E-11	11	61280695	C11orf9*
rs198476	a	0.498	0.01	1.35E-11	11	61282306	C11orf9*
rs198475	t	0.25	-0.01	1.23E-08	11	61282647	C11orf9*
rs198473	a	0.752	0.01	1.10E-08	11	61283132	C11orf9*
rs650436	t	0.45	0.02	1.67E-11	11	61293006	C11orf9*
rs579383	a	0.541	-0.01	1.71E-10	11	61293159	C11orf9*
rs2269928	t	0.789	0.04	2.24E-38	11	61294105	C11orf9*
rs149803	c	0.75	-0.04	3.29E-33	11	61295596	C11orf9*
rs174528	t	0.634	0.05	6.83E-119	11	61300075	C11orf9*
rs108499	t	0.335	-0.05	7.07E-102	11	61303813	C11orf9*
rs509360	a	0.331	0.03	1.07E-42	11	61305135	C11orf9*
rs174532	a	0.301	0.03	2.11E-35	11	61305450	C11orf9*
rs174534	a	0.666	0.04	7.28E-102	11	61306034	C11orf9*
rs174535	t	0.67	0.05	3.73E-138	11	61307932	C11orf9*
rs174536	a	0.671	0.05	3.36E-138	11	61308503	C11orf9*
rs174537	t	0.328	-0.05	7.71E-138	11	61309256	C11orf9*
rs102275	t	0.668	0.05	1.59E-136	11	61314379	C11orf10*
rs174538	a	0.296	-0.05	4.89E-120	11	61316657	C11orf10*
rs412334	t	0.156	0.03	1.11E-18	11	61316837	FEN1*
rs695867	a	0.962	0.03	3.11E-08	11	61317864	FEN1*
rs4246215	t	0.35	-0.05	2.95E-124	11	61320875	FEN1*
rs174541	t	0.65	0.05	1.75E-124	11	61322484	FADS1
rs174545	c	0.673	0.05	2.22E-139	11	61325882	FADS1*
rs174546	t	0.327	-0.05	2.40E-139	11	61326406	FADS1*
rs174547	t	0.674	0.05	6.26E-140	11	61327359	FADS1*
rs174548	c	0.711	0.05	4.66E-128	11	61327924	FADS1*
rs174549	a	0.289	-0.05	5.94E-128	11	61327958	FADS1*
rs174550	t	0.674	0.05	3.98E-140	11	61328054	FADS1*
rs174555	t	0.711	0.05	4.62E-128	11	61336336	FADS1*
rs174556	t	0.289	-0.05	1.01E-125	11	61337211	FADS1*
rs968567	t	0.165	-0.03	2.46E-40	11	61352140	FADS2
rs174570	t	0.13	-0.04	1.66E-57	11	61353788	FADS2*
rs1535	a	0.671	0.05	1.02E-137	11	61354548	FADS2*
rs174574	a	0.332	-0.05	2.33E-135	11	61356918	FADS2*
rs2845573	a	0.921	0.05	2.25E-45	11	61358484	FADS2*
rs174575	c	0.746	0.04	3.63E-74	11	61358579	FADS2*
rs2727270	t	0.114	-0.04	5.25E-59	11	61359813	FADS2*

rs2727271	a	0.886	0.04	7.15E-59	11	61359934	FADS2*
rs174576	a	0.34	-0.05	3.05E-134	11	61360086	FADS2*
rs2524299	a	0.886	0.04	7.27E-58	11	61361358	FADS2*
rs174577	a	0.341	-0.05	9.13E-134	11	61361390	FADS2*
rs2072114	a	0.879	0.04	6.04E-59	11	61361791	FADS2*
rs174578	a	0.343	-0.05	1.47E-133	11	61362075	FADS2*
rs174579	t	0.225	-0.04	2.24E-51	11	61362189	FADS2*
rs17156426	a	0.958	0.04	7.43E-19	11	61365899	FADS2*
rs174583	t	0.345	-0.05	9.10E-132	11	61366326	FADS2*
rs174585	a	0.227	-0.04	5.26E-48	11	61368270	FADS2*
rs17156442	t	0.052	-0.04	1.60E-15	11	61370599	FADS2*
rs7935946	t	0.051	-0.04	1.59E-15	11	61372118	FADS2*
rs174589	c	0.779	0.03	1.27E-45	11	61372379	FADS2*
rs2851682	a	0.916	0.04	2.35E-41	11	61372588	FADS2*
rs174591	a	0.284	-0.04	1.73E-64	11	61374252	FADS2*
rs174593	t	0.791	0.04	2.02E-44	11	61375407	FADS2*
rs174597	c	0.209	-0.04	2.15E-44	11	61377616	FADS2*
rs174601	t	0.376	-0.05	5.05E-121	11	61379716	FADS2*
rs2526678	a	0.079	-0.05	3.65E-41	11	61380369	FADS2*
rs526126	c	0.786	0.04	2.82E-31	11	61381461	FADS2*
rs174605	t	0.285	-0.03	4.62E-41	11	61383497	FADS2*
rs174611	t	0.704	0.03	1.31E-42	11	61384457	FADS2*
rs174616	a	0.46	-0.03	4.02E-40	11	61385698	FADS2*
rs17764324	t	0.102	-0.02	1.22E-10	11	61391664	FADS2
rs17831757	t	0.898	0.02	1.31E-10	11	61391776	FADS2
rs11230815	c	0.898	0.02	1.36E-10	11	61392702	FADS2
rs174626	a	0.547	0.03	1.81E-37	11	61393633	FADS2
rs174627	a	0.167	-0.03	3.32E-23	11	61394042	FADS2
rs7104849	a	0.898	0.02	1.48E-10	11	61394620	FADS3
rs422249	t	0.331	-0.03	1.27E-51	11	61396064	FADS3
rs174448	a	0.64	0.03	2.36E-55	11	61396149	FADS3
rs7482316	a	0.898	0.02	2.06E-10	11	61396774	FADS3
rs174449	a	0.641	0.03	7.84E-55	11	61396955	FADS3
rs174450	t	0.535	0.03	2.35E-38	11	61398118	FADS3*
rs174634	c	0.747	0.03	2.68E-31	11	61403963	FADS3*
rs7394871	a	0.048	-0.04	4.46E-13	11	61409090	FADS3*
rs1000778	a	0.253	-0.02	1.82E-30	11	61411881	FADS3*
rs174455	a	0.643	0.03	1.44E-45	11	61412693	FADS3*
rs174456	a	0.749	0.03	8.72E-31	11	61412758	FADS3*
rs174464	a	0.25	-0.03	8.86E-31	11	61414502	FADS3*
rs174468	a	0.43	0.02	2.34E-23	11	61420267	RAB3IL1
rs17764935	a	0.055	-0.04	4.03E-13	11	61421333	RAB3IL1
rs174476	t	0.425	0.02	4.30E-21	11	61430694	RAB3IL1*

rs666870	a	0.425	0.02	4.35E-21	11	61434055	RAB3IL1*
rs174478	t	0.575	-0.02	5.64E-21	11	61435152	RAB3IL1*
rs174479	c	0.821	0.03	7.16E-21	11	61435330	RAB3IL1*
rs2521568	c	0.072	-0.02	7.62E-09	11	61457509	RAB3IL1
rs2727266	a	0.928	0.02	7.42E-09	11	61460910	BEST1
rs2521572	t	0.053	-0.03	1.24E-06	11	61468051	BEST1

[$]Regression coefficient associated with one copy of the effect allele
*SNP is within the reference gene

Supplementary Table 7. Estimated coefficient (standard error) of top SNPs in individual cohorts.

	ARIC	CARDIA	CHS	InChianti	MESA
Linoleic acid (LA; 18:2,n6)					
chr10:rs10740118	.16 (.067)	.30 (.11)	.24 (.078)	.53 (.15)	.37 (.16)
chr11:rs174547	1.54 (.065)	1.36 (.11)	1.59 (.071)	.87 (.17)	1.27 (.16)
chr16:rs16966952	.29 (.070)	.30 (.11)	.42 (.075)	.47 (.17)	.35 (.16)
Gamma linolenic acid (GLA; 18:3,n6)					
chr11:rs174547	.01(.001)	.02 (.002)	.02 (.001)	NA	.01 (.003)
chr16:rs16966952	.007 (.002)	.005 (.002)	.004 (.002)	NA	.010 (.003)
Dihomo-gamma-linolenic acid (DGLA; 20:3,n6)					
chr11:rs174547	.34 (.020)	.36 (.034)	.35 (.024)	NA	.41 (.044)
chr16:rs16966952	.22 (.020)	.18 (.033)	.23 (.022)	NA	.26 (.044)
Arachidonic acid (AA; 20:4,n6)					
chr11:rs174547	1.79 (.039)	1.69 (.074)	1.74 (.043)	1.22 (.074)	1.61 (.12)
chr16:rs16966952	.17 (.052)	.26 (.080)	.20 (.056)	.20 (.085)	.21 (.12)
Adrenic acid (22:4,n6)					
chr11:rs174547	.050 (.002)	NA	.046 (.003)	NA	NA

Supplementary Table 8. Pearson correlation coefficients between the five n-6 fatty acids using samples from ARIC cohort.

	LA	GLA	DGLA	AA	AdrA
LA	1.00				
GLA	-.26	1.00			
DGLA	-.29	.22	1.00		
AA	-.63	.08	-.15	1.00	
AdrA	-.48	.20	.21	.49	1.00

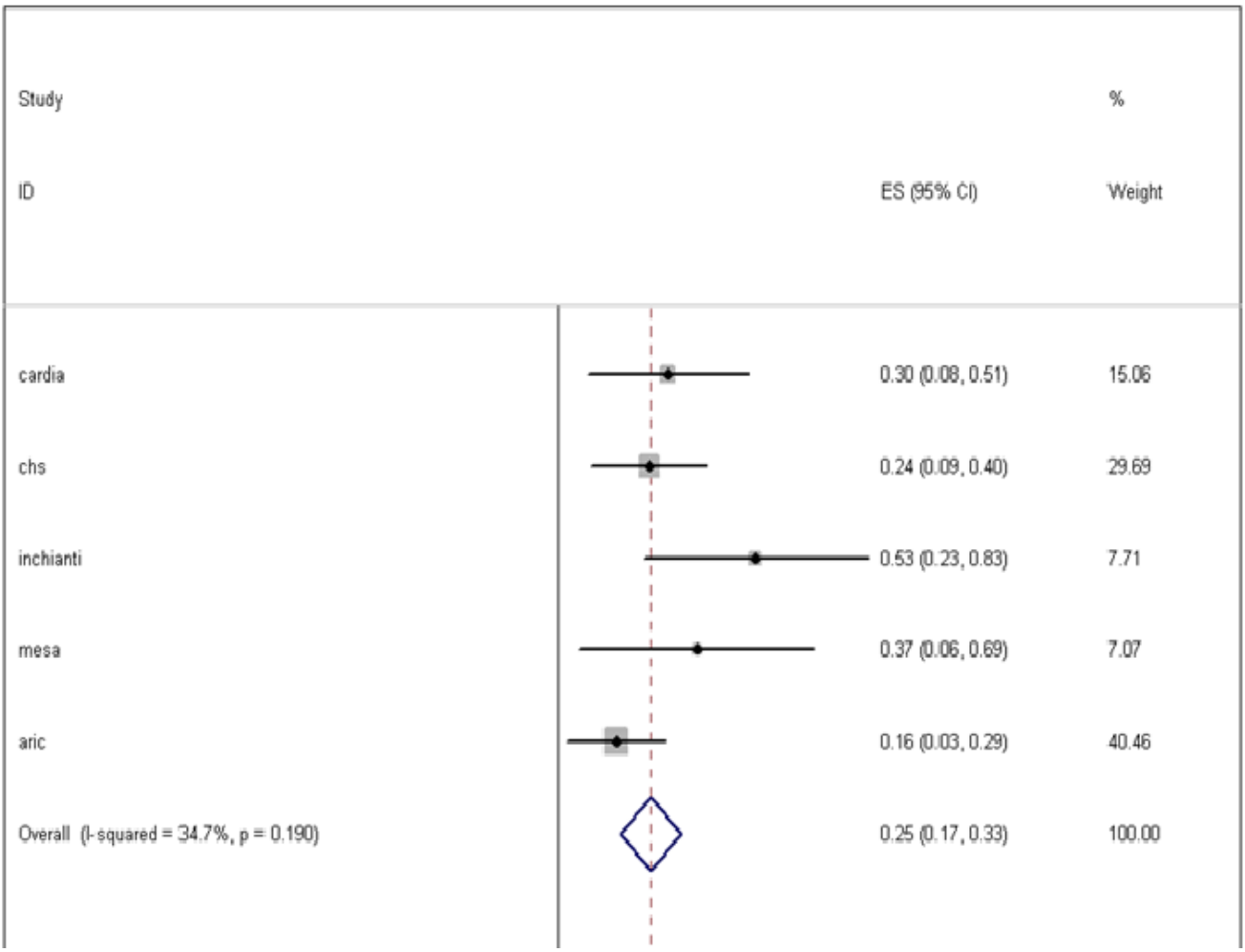
Supplementary Table 9: Estimated effect size for SNPs significantly associated with plasma n6 fatty acids in the main analysis. Model 1: covariates include age and sex; Model 2: covariates include age, sex, BMI (<25, 25-30, >30), intakes of total calories and linoleic acid, and physical activity. Analyses were based on the ARIC cohort (n=3269).

	Parameter coefficient (p-value)	
	Model 1	Model 2
Linoleic acid (LA; 18:2,n6)		
chr10:rs10740118	-0.161 (1.61e-02)	-0.174 (6.83e-03)
chr11:rs174547	1.551 (9.29e-117)	1.537 (4.74e-124)
chr16:rs16966952	0.283 (5.39e-05)	0.300 (8.41e-06)
Gamma linolenic acid (GLA; 18:3,n6)		
chr11:rs174547	-0.0142 (5.61e-25)	-0.0140 (2.06e-24)
chr16:rs16966952	-0.00670 (5.49e-06)	-0.00662 (7.74e-06)
Dihomo-gamma-linolenic acid (DGLA; 20:3,n6)		
chr11:rs174547	0.342 (1.13e-60)	0.335 (2.92e-67)
chr16:rs16966952	-0.220 (3.63e-28)	-0.222 (7.45e-33)
Arachidonic acid (AA; 20:4,n6)		
chr11:rs174547	-1.788 (<1.00e-308)	-1.786 (<1e-308)
chr16:rs16966952	-0.160 (1.94e-03)	-0.171 (9.84e-04)
Adrenic acid (22:4,n6)		
chr11:rs174547	-0.0498 (5.43e-87)	-0.0495 (9.84e-87)

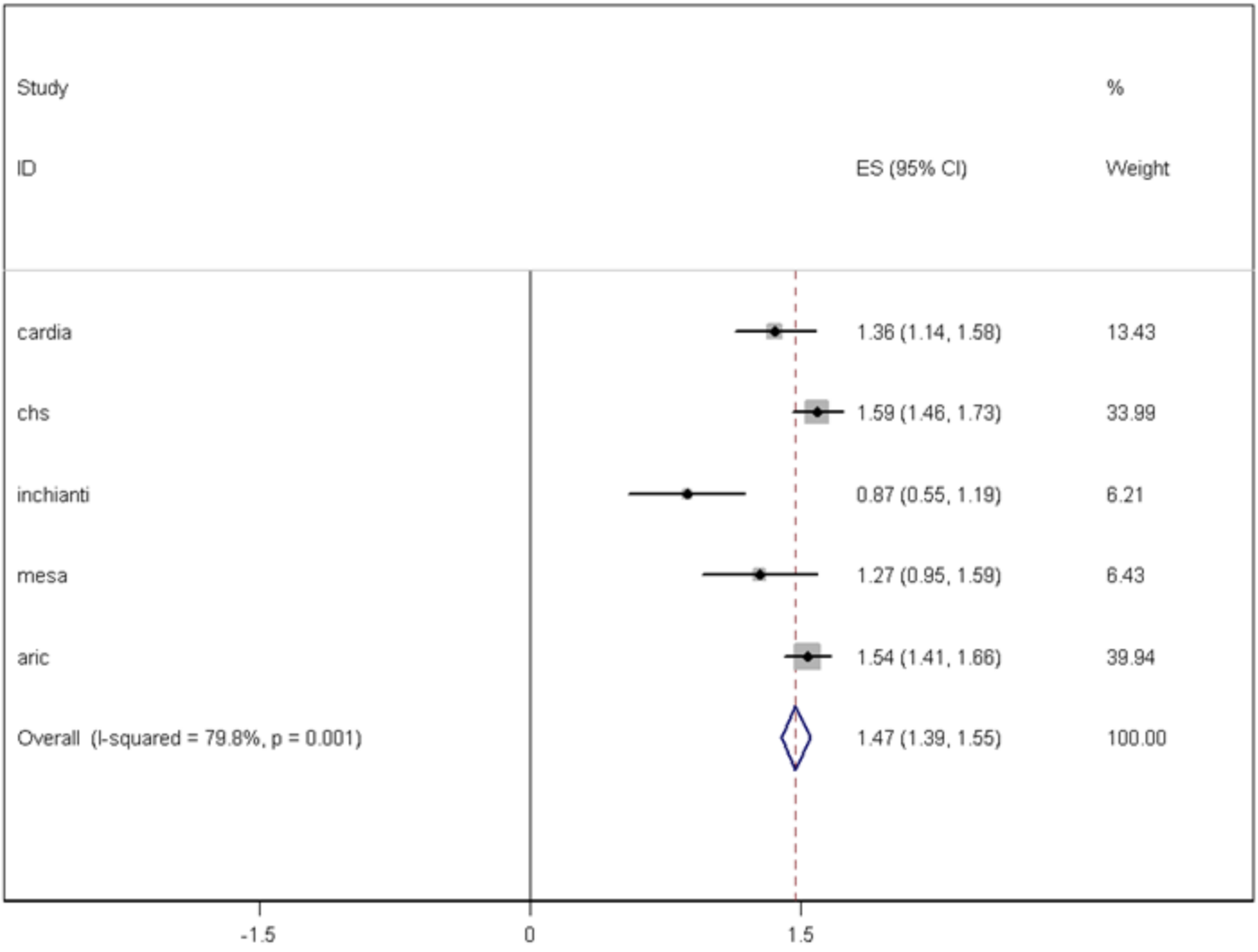
Supplemental Figure 1 legend

Forest plots for meta-analysis of genome-wide associations for Linoleic acid (LA; 18:2,n6): Within cohort effect size and 95% CI's were obtained from linear regression analysis using robust standard errors, and results were pooled using inverse-variance weighted meta-analysis. The size of the grey box around the central effect size estimate of each study is proportional to its inverse-variance weight in the meta-analysis. The vertical dashed line indicates the pooled meta-analysis effect size estimate. Chi-square test for heterogeneity *p*-values, and the I^2 statistic are also shown for each meta-analysis. The top SNP for each of the three identified regions by meta-analysis: chr10:rs10740118; chr11:rs174547; chr16:rs16966952. Association results for other n6 fatty acids are similar (data not shown).

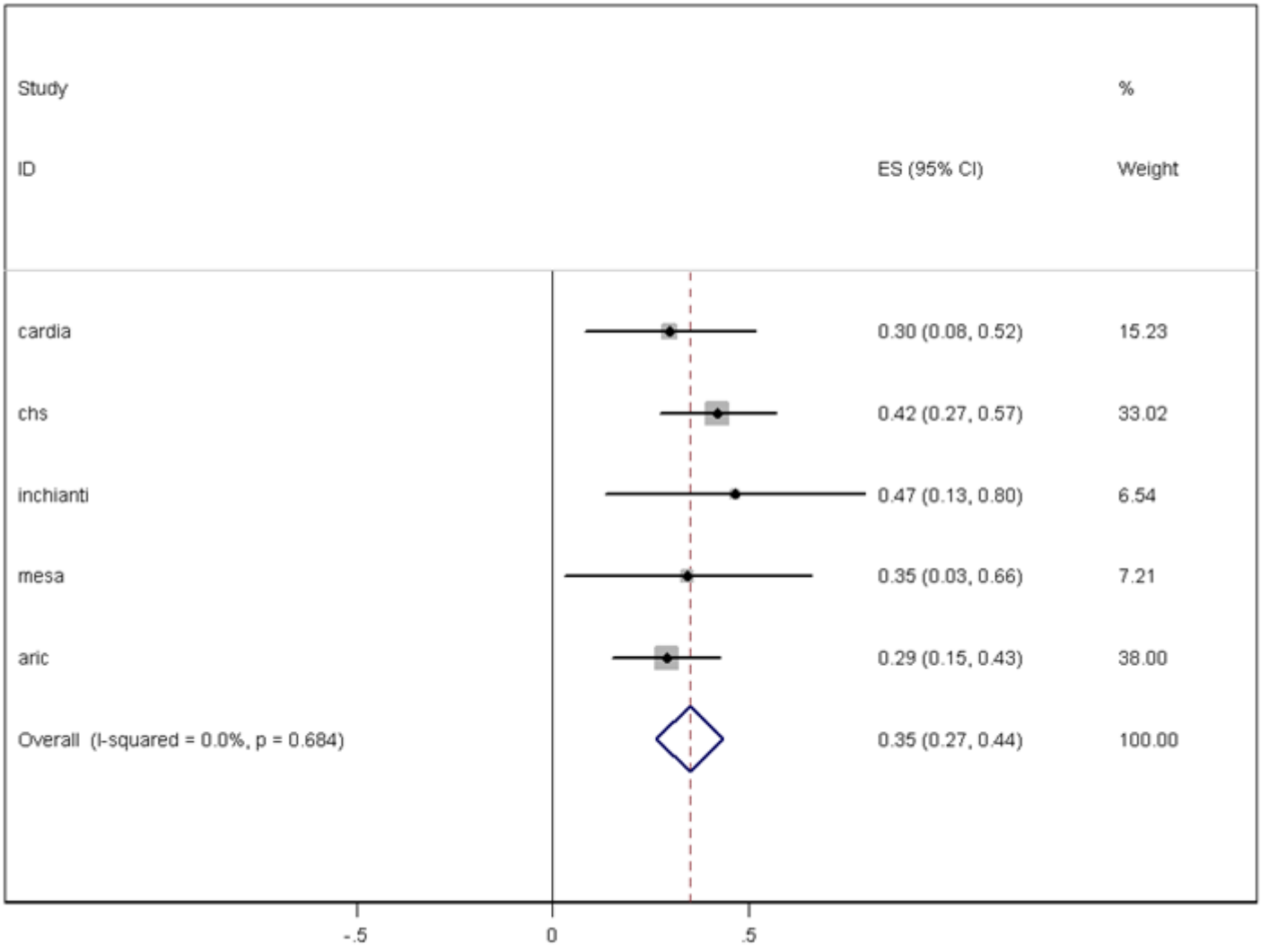
rs10740118


Study
ID
ES (95% CI)
%
Weight
cardia
0.30 (0.08, 0.51)
15.06
chs
0.24 (0.09, 0.40)
29.69
inchianti
0.53 (0.23, 0.83)
7.71
mesa
0.37 (0.06, 0.69)
7.07
aric
0.16 (0.03, 0.29)
40.46
Overall (I-squared = 34.7%, p = 0.190)
0.25 (0.17, 0.33)
100.00

rs174547


Study
ID
ES (95% CI)
%
Weight
cardia
1.36 (1.14, 1.58)
13.43
chs
1.59 (1.46, 1.73)
33.99
inchianti
0.87 (0.55, 1.19)
6.21
mesa
1.27 (0.95, 1.59)
6.43
aric
1.54 (1.41, 1.66)
39.94
Overall (I-squared = 79.8%, p = 0.001)
1.47 (1.39, 1.55)
100.00
-1.5
0
1.5

rs16966952


Study
ID
ES (95% CI)
%
Weight
cardia
0.30 (0.08, 0.52)
15.23
chs
0.42 (0.27, 0.57)
33.02
inchianti
0.47 (0.13, 0.80)
6.54
mesa
0.35 (0.03, 0.66)
7.21
aric
0.29 (0.15, 0.43)
38.00
Overall (I-squared = 0.0%, p = 0.684)
0.35 (0.27, 0.44)
100.00
-.5
0
.5

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