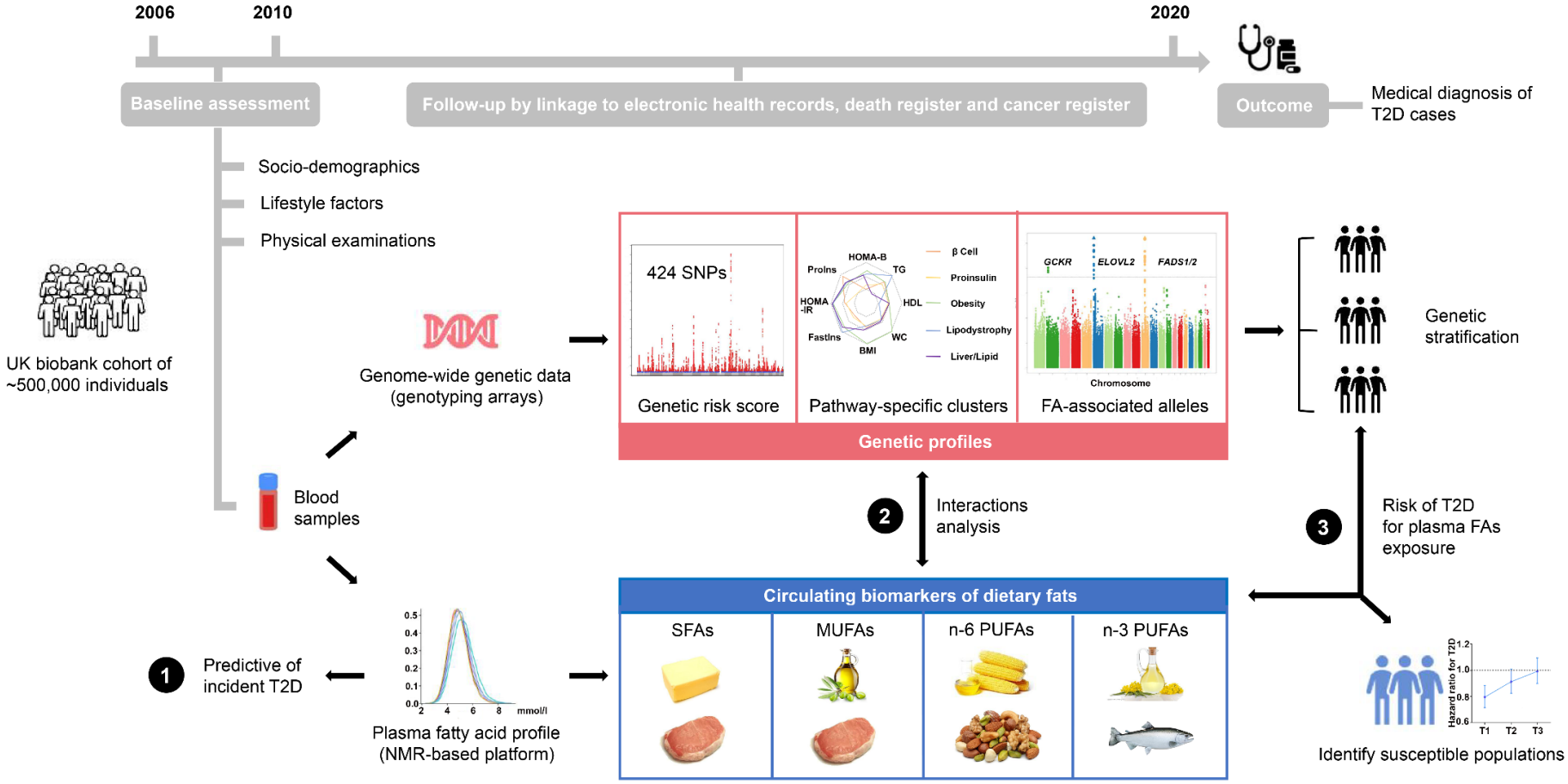
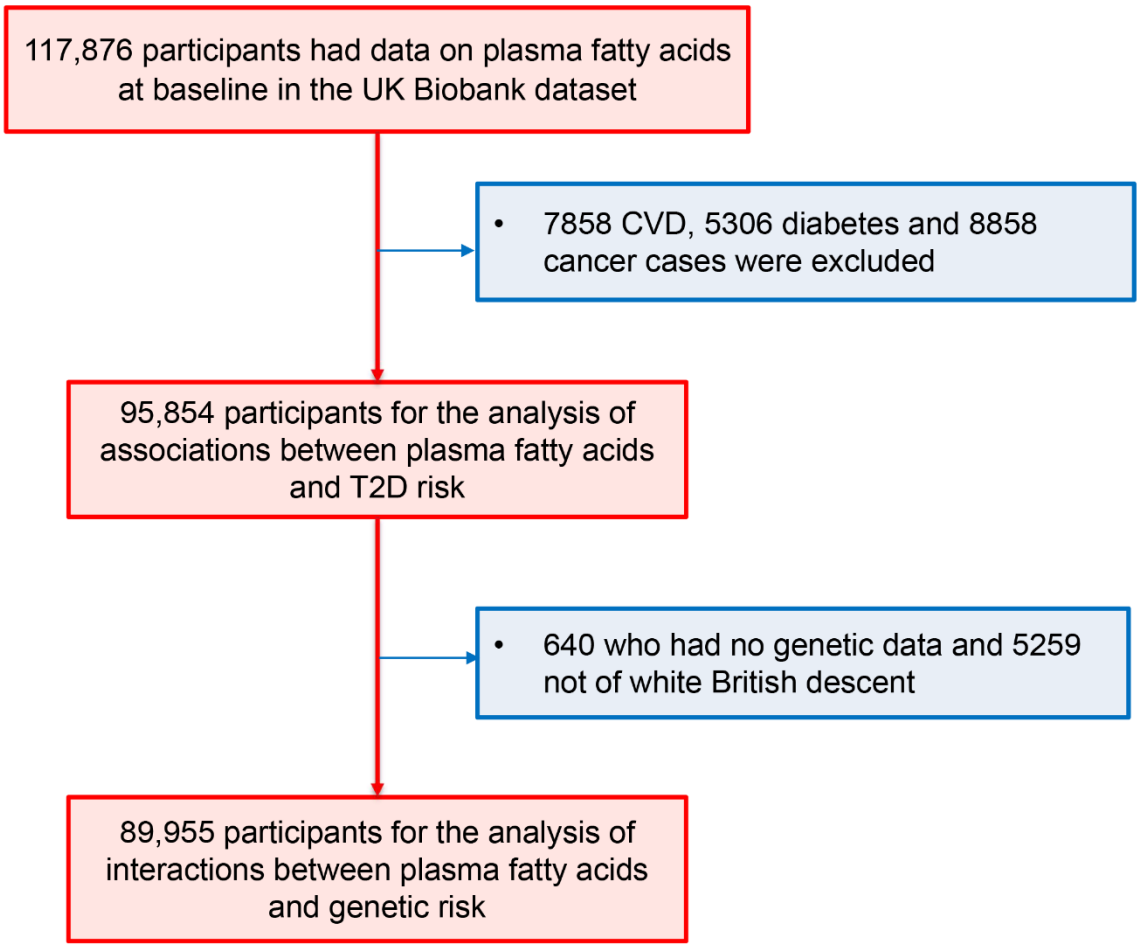
SUPPLEMENTARY DATA

Contents

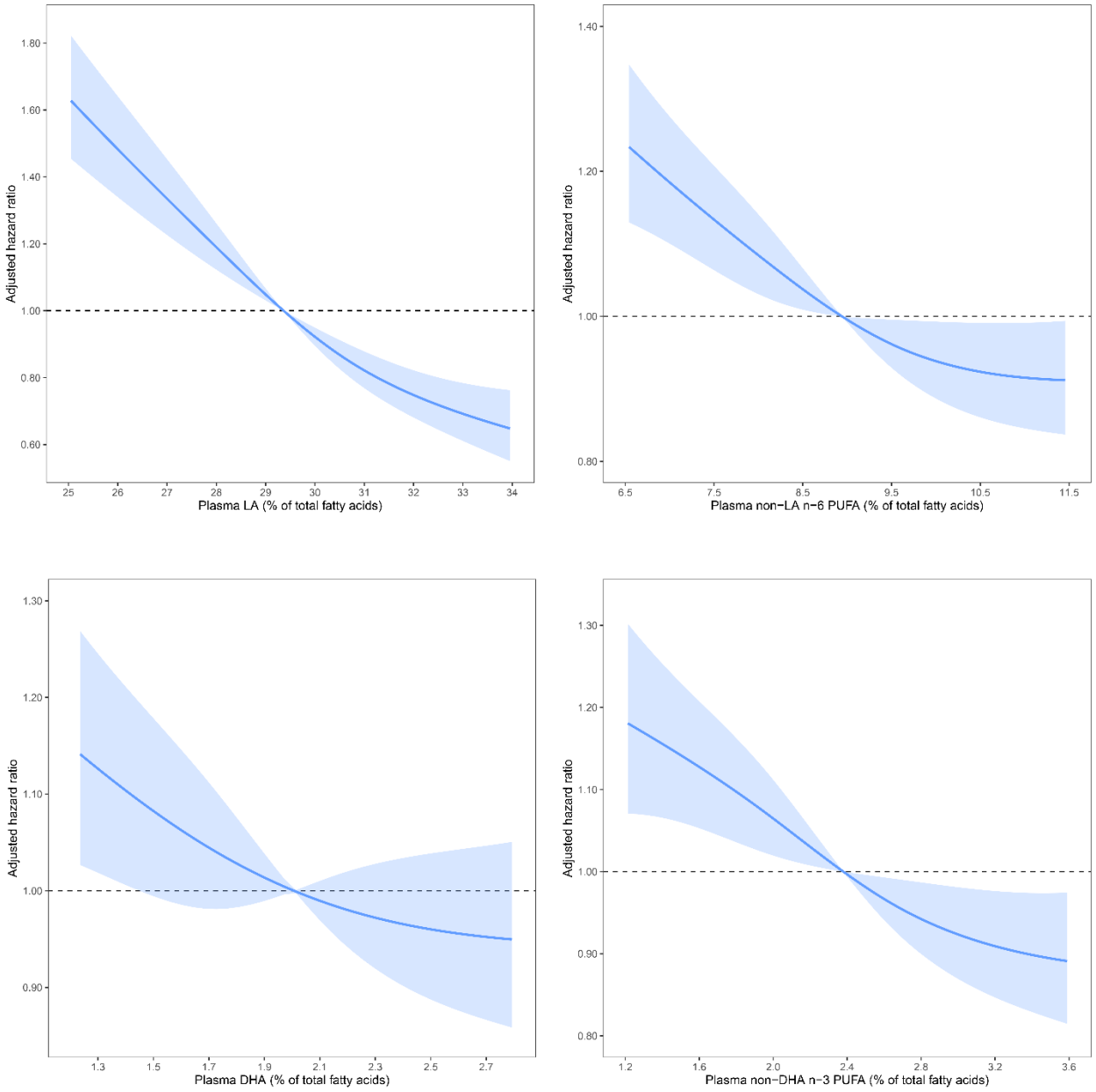


Supplementary Figure 1—Summary of study design and analytical strategy.

Participants from the UK Biobank were enrolled between 2006 and 2010 and were prospectively followed up to the end of 2020. A wealth of phenotypic data was collected at baseline. Genome-wide genetic data were obtained by genotyping arrays and plasma FA profile was analyzed by a high-throughput NMR-based platform. We first assessed the relations of specific plasma FAs with future T2D risk (*n*=95,854). Second, we evaluated the interactions between specific plasma FAs and the genetic predisposition to T2D, captured by the GRS and pathway-specific GRSs (*n*=89,955). Third, risk of T2D in subgroups stratified by GRSs or FA-associated variants was also explored. FA, fatty acid; GRS, genetic risk score; MUFAs, monounsaturated fatty acids; PUFAs, polyunsaturated fatty acids; SFAs, saturated fatty acids; T2D, type 2 diabetes.



Supplementary Figure 2. Flow of participants in current UK biobank study



Supplementary Figure 3. Associations between plasma polyunsaturated fatty acids and type 2 diabetes risk.

Hazard ratio were estimated by restricted-cubic-spline regression adjusted for age, sex, race, centers, BMI, education, Townsend deprivation index, household income, smoking, alcohol consumption, physical activity, history of hypertension, history of high cholesterol, family history of diabetes, vitamin supplement use, mineral supplement use, aspirin use, and remaining plasma fatty acids (SFAs, MUFAs, LA, non-LA n-6 PUFAs, DHA, and non-DHA n-3 PUFAs). Shaded areas represent 95% confidence intervals. MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid.

Supplementary Table 1. Characteristics of 424 T2D-associated SNPs in UK biobank

rsid	Chr	leadSNP	Effect allele	Other	EAF	β
rs10097617	8	chr8:95961626	T	C	0.469	0.037
rs10137475	14	chr14:58797953	G	A	0.422	0.026
rs10145154	14	chr14:79939525	T	C	0.222	0.055
rs10188334	2	chr2:653874	C	T	0.828	0.050
rs10240790	7	chr7:89880949	G	A	0.714	0.028
rs10305420	6	chr6:39016636	C	T	0.608	0.032
rs10404726	19	chr19:18834514	C	T	0.533	0.028
rs10406327	19	chr19:33890838	C	G	0.521	0.037
rs10407429	19	chr19:46157237	G	A	0.574	0.054
rs10471048	4	chr4:83587562	G	C	0.337	0.034
rs10490871	3	chr3:35667761	G	A	0.365	0.027
rs1059592	8	chr8:22477778	A	G	0.354	0.027
rs10737818	1	chr1:235542023	G	A	0.643	0.040
rs10750397	11	chr11:128234144	A	G	0.278	0.048
rs10769936	11	chr11:8654528	C	T	0.725	0.035
rs10771372	12	chr12:27962260	C	T	0.803	0.072
rs10771813	12	chr12:31367856	C	A	0.554	0.026
rs10787287	10	chr10:112647195	T	C	0.767	0.036
rs10788575	10	chr10:89768584	A	G	0.164	0.035
rs10811661	9	chr9:22134094	T	C	0.826	0.138
rs10821311	9	chr9:96943059	A	G	0.318	0.036
rs10830963	11	chr11:92708710	G	C	0.274	0.089
rs10841868	12	chr12:21781246	G	T	0.740	0.032
rs10844518	12	chr12:33410780	G	A	0.279	0.033
rs10882891	10	chr10:99059645	C	A	0.403	0.031
rs10889560	1	chr1:65989878	A	C	0.082	0.047
rs10899283	11	chr11:76505202	C	T	0.778	0.031
rs10915188	1	chr1:29024956	A	G	0.583	0.029
rs10916784	1	chr1:20729451	G	C	0.581	0.027
rs10937208	3	chr3:184877626	G	A	0.136	0.044
rs10937721	4	chr4:6306763	C	G	0.591	0.084
rs10938398	4	chr4:45186139	A	G	0.434	0.043
rs10963942	9	chr9:19080352	G	A	0.390	0.037
rs10974438	9	chr9:4291928	C	A	0.351	0.047
rs10998304	10	chr10:70342775	C	T	0.451	0.031
rs11038672	11	chr11:45846498	C	G	0.475	0.029
rs11048458	12	chr12:26465585	T	C	0.243	0.046
rs11073147	15	chr15:36392562	G	A	0.551	0.025
rs11078916	17	chr17:37746307	T	C	0.276	0.037
rs11108094	12	chr12:95928113	A	C	0.069	0.060
rs11117364	16	chr16:88132199	G	A	0.676	0.029
rs1111875	10	chr10:94462882	C	T	0.591	0.092
rs11129735	3	chr3:36870230	A	G	0.455	0.026
rs11155073	6	chr6:139837128	T	C	0.409	0.030
rs11181613	12	chr12:43046449	C	A	0.849	0.043
rs111824905	1	chr1:28110797	C	T	0.052	0.069

rs11201999	10	chr10:88124501	C	T	0.541	0.026
rs1122518	7	chr7:13900325	C	T	0.476	0.026
rs11257655	10	chr10:12307894	T	C	0.207	0.091
rs112667817	5	chr5:137823156	C	T	0.883	0.061
rs1127215	1	chr1:117532790	C	T	0.580	0.043
rs113036477	12	chr12:97848227	C	T	0.943	0.072
rs114136102	5	chr5:36084426	C	T	0.040	0.072
rs114447556	4	chr4:53207093	T	C	0.082	0.058
rs11558471	8	chr8:118185733	A	G	0.682	0.103
rs11602873	11	chr11:72460762	A	T	0.843	0.098
rs11614914	12	chr12:133070294	T	C	0.327	0.039
rs11616380	13	chr13:80705315	G	T	0.712	0.079
rs11639470	15	chr15:39639171	C	G	0.535	0.027
rs11646052	16	chr16:85716463	G	A	0.394	0.026
rs11655898	17	chr17:62201374	C	T	0.070	0.059
rs11657964	17	chr17:36100767	A	G	0.397	0.059
rs11662800	18	chr18:13271367	A	G	0.415	0.028
rs11666603	19	chr19:12496934	C	T	0.764	0.033
rs11667244	19	chr19:47580185	G	A	0.715	0.035
rs11680058	2	chr2:16574669	A	G	0.870	0.056
rs116861182	11	chr11:55588216	C	A	0.057	0.064
rs117001013	22	chr22:32348841	C	T	0.914	0.047
rs11708067	3	chr3:123065778	A	G	0.757	0.078
rs11716527	3	chr3:89986280	C	T	0.105	0.049
rs117173251	8	chr8:4186731	T	C	0.033	0.077
rs11723275	4	chr4:77528821	C	A	0.464	0.027
rs117233107	12	chr12:4328521	G	A	0.985	0.325
rs117316450	11	chr11:14518419	G	C	0.021	0.131
rs11759026	6	chr6:126792095	G	A	0.228	0.065
rs11793831	9	chr9:23362311	T	G	0.415	0.027
rs11830243	12	chr12:132544694	T	C	0.108	0.044
rs11870735	17	chr17:481604	T	C	0.180	0.034
rs11922794	3	chr3:72813582	C	G	0.245	0.030
rs11940813	4	chr4:20210953	G	A	0.133	0.037
rs1194606	1	chr1:154294260	C	T	0.235	0.030
rs11967262	6	chr6:43760327	G	C	0.488	0.037
rs12001437	9	chr9:34074476	C	T	0.368	0.034
rs12048743	1	chr1:205114873	G	C	0.430	0.032
rs12056338	8	chr8:12643055	T	G	0.416	0.031
rs12187734	5	chr5:51763665	C	T	0.515	0.029
rs12194820	6	chr6:127401978	A	T	0.755	0.046
rs1225052	3	chr3:131644937	G	A	0.375	0.027
rs12263348	10	chr10:65305252	T	C	0.348	0.028
rs12305809	12	chr12:133777466	G	A	0.606	0.033
rs12454712	18	chr18:60845884	T	C	0.623	0.041
rs12463719	2	chr2:203450680	A	G	0.283	0.032
rs12505942	4	chr4:140906390	T	C	0.656	0.030
rs12509379	4	chr4:129179458	T	G	0.202	0.031

rs12519500	5	chr5:78436905	C	A	0.650	0.038
rs12539264	7	chr7:48839003	G	A	0.283	0.029
rs12602834	17	chr17:29637308	G	A	0.385	0.029
rs1260326	2	chr2:27730940	C	T	0.604	0.064
rs12625671	20	chr20:42994812	C	T	0.107	0.065
rs12741141	1	chr1:6669970	G	C	0.355	0.040
rs12773019	10	chr10:73835274	G	C	0.027	0.089
rs12820906	12	chr12:123493123	A	G	0.753	0.043
rs12823740	12	chr12:124458002	C	A	0.666	0.041
rs12890750	14	chr14:103860309	G	T	0.651	0.028
rs12910361	15	chr15:77782335	G	A	0.712	0.072
rs12912777	15	chr15:38852386	T	C	0.125	0.059
rs12917449	15	chr15:74331659	C	A	0.196	0.036
rs12920022	16	chr16:89564055	A	T	0.161	0.039
rs12933120	16	chr16:3634746	A	C	0.143	0.042
rs12977104	19	chr19:4949921	A	G	0.204	0.041
rs12992995	2	chr2:175197545	C	A	0.724	0.031
rs13005841	2	chr2:212302573	A	T	0.708	0.029
rs13020443	2	chr2:152167830	C	T	0.508	0.031
rs13155752	5	chr5:44680687	C	A	0.396	0.032
rs13237518	7	chr7:12269593	A	C	0.415	0.029
rs13262861	8	chr8:41508577	C	A	0.825	0.102
rs133015	22	chr22:38572526	C	G	0.560	0.029
rs13389219	2	chr2:165528876	C	T	0.606	0.065
rs13414140	2	chr2:43671176	C	T	0.885	0.118
rs1412234	9	chr9:28410683	C	T	0.327	0.044
rs1421085	16	chr16:53800954	C	T	0.403	0.118
rs1430780	2	chr2:67878328	T	C	0.320	0.027
rs1431819	9	chr9:116943357	G	A	0.696	0.029
rs1437055	3	chr3:86831077	A	C	0.617	0.027
rs144245804	11	chr11:69453044	G	A	0.974	0.130
rs1449348	3	chr3:168225055	C	T	0.860	0.045
rs1451506	17	chr17:57407019	A	G	0.115	0.042
rs145904381	1	chr1:151017991	T	C	0.988	0.174
rs146886108	5	chr5:14751305	C	T	0.993	0.390
rs1475655	13	chr13:91963080	A	T	0.739	0.044
rs149364428	8	chr8:97737741	A	G	0.008	0.224
rs1493694	1	chr1:120526982	T	C	0.107	0.071
rs1513272	7	chr7:28200097	C	T	0.498	0.081
rs1517037	18	chr18:56878274	C	T	0.812	0.038
rs152839	5	chr5:50145266	C	T	0.584	0.026
rs1531583	4	chr4:744972	T	G	0.039	0.099
rs1561927	8	chr8:129568078	C	T	0.268	0.035
rs1562398	7	chr7:130457931	G	C	0.415	0.041
rs1573090	6	chr6:137302159	T	G	0.538	0.045
rs1656794	17	chr17:75386909	G	A	0.725	0.031
rs17035289	4	chr4:106048291	C	T	0.160	0.043
rs17036160	3	chr3:12329783	C	T	0.882	0.103

rs1705263	12	chr12:71523043	C	A	0.560	0.040
rs17091891	8	chr8:19843171	T	C	0.880	0.042
rs17175860	19	chr19:7235146	G	A	0.194	0.045
rs1724557	4	chr4:137094048	C	A	0.413	0.025
rs17265513	20	chr20:39832628	C	T	0.199	0.033
rs17294565	8	chr8:14124809	C	A	0.384	0.027
rs17354348	2	chr2:213835977	A	G	0.743	0.029
rs17439448	7	chr7:40816653	T	C	0.122	0.040
rs174541	11	chr11:61565908	T	C	0.640	0.029
rs1752169	9	chr9:126586563	A	C	0.250	0.032
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rs197379	1	chr1:112292303	C	T	0.380	0.027
rs197482	6	chr6:143069315	C	T	0.623	0.030
rs2008027	6	chr6:126052359	G	A	0.516	0.027
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rs2032912	16	chr16:69568303	G	T	0.590	0.042
rs2033159	2	chr2:145261174	C	A	0.229	0.035
rs2055997	4	chr4:76535086	G	A	0.708	0.031
rs2056857	14	chr14:77300863	C	T	0.582	0.026
rs2080090	17	chr17:65828371	A	T	0.189	0.053
rs2103132	7	chr7:69782073	C	G	0.247	0.032
rs2115107	19	chr19:7968168	A	G	0.382	0.038
rs2191349	7	chr7:15064309	T	G	0.548	0.066
rs2237895	11	chr11:2857194	C	A	0.415	0.073
rs2243102	17	chr17:4839149	C	T	0.406	0.026
rs2250301	10	chr10:104548393	G	A	0.751	0.032
rs2252221	20	chr20:51621922	G	A	0.526	0.025
rs2268078	20	chr20:32596704	A	G	0.641	0.039
rs2269247	1	chr1:64107284	C	T	0.818	0.035
rs2280141	10	chr10:124193181	T	G	0.528	0.045
rs2289739	15	chr15:41801512	T	G	0.345	0.050
rs2290203	15	chr15:91512067	A	G	0.198	0.056
rs2292662	3	chr3:63897215	C	T	0.849	0.056
rs2297508	17	chr17:17715317	C	G	0.351	0.033

rs2313211	3	chr3:183738626	T	A	0.445	0.029
rs2336938	1	chr1:206618799	A	C	0.477	0.030
rs2403221	11	chr11:9852475	A	G	0.674	0.032
rs2409742	8	chr8:11069960	C	T	0.512	0.036
rs2410767	5	chr5:87705268	C	G	0.787	0.033
rs2426439	20	chr20:50999627	C	T	0.633	0.037
rs243018	2	chr2:60586707	G	C	0.451	0.056
rs2435907	15	chr15:57333416	A	G	0.582	0.029
rs253412	5	chr5:74955841	A	G	0.662	0.046
rs2540949	2	chr2:65284231	A	T	0.624	0.050
rs256904	5	chr5:55810305	T	A	0.746	0.069
rs2581787	3	chr3:53127677	T	G	0.560	0.025
rs2583921	12	chr12:66170481	C	A	0.089	0.095
rs2613503	1	chr1:72839774	A	C	0.803	0.039
rs2658746	18	chr18:74582340	C	T	0.378	0.030
rs2675662	10	chr10:75599127	A	G	0.563	0.027
rs2725371	8	chr8:30854033	A	G	0.303	0.037
rs2732480	12	chr12:48736303	C	A	0.572	0.034
rs2733289	12	chr12:41838235	C	T	0.478	0.030
rs2737226	8	chr8:116639474	T	C	0.392	0.038
rs2796441	9	chr9:84308948	G	A	0.581	0.059
rs2820444	1	chr1:219741820	G	A	0.702	0.047
rs28429551	9	chr9:139243334	A	T	0.755	0.073
rs2862954	10	chr10:101912064	T	C	0.502	0.029
rs2876826	7	chr7:50581972	G	A	0.223	0.031
rs28819812	4	chr4:157652753	C	A	0.678	0.038
rs2908286	7	chr7:44234737	T	C	0.178	0.068
rs2925979	16	chr16:81534790	T	C	0.299	0.045
rs2933211	14	chr14:47313541	A	G	0.493	0.027
rs2972145	2	chr2:227101309	C	T	0.646	0.090
rs3020781	1	chr1:155269776	G	A	0.265	0.033
rs303760	18	chr18:21083738	T	C	0.345	0.034
rs3094682	6	chr6:31264461	C	A	0.815	0.060
rs3111316	19	chr19:13038415	A	G	0.587	0.044
rs314879	13	chr13:23309382	C	T	0.212	0.039
rs3176466	1	chr1:51438365	C	T	0.910	0.064
rs329122	5	chr5:133864599	A	G	0.421	0.026
rs340874	1	chr1:214159256	C	T	0.568	0.067
rs34143602	15	chr15:63940058	G	A	0.410	0.035
rs34298980	6	chr6:40409243	T	C	0.491	0.038
rs34329895	2	chr2:208870017	A	G	0.396	0.028
rs34340810	8	chr8:105661926	G	C	0.927	0.054
rs34506349	2	chr2:100598726	G	A	0.959	0.068
rs34573045	3	chr3:149196752	G	C	0.433	0.031
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rs35901985	4	chr4:186580062	A	G	0.821	0.035
rs36051838	10	chr10:34018730	C	T	0.086	0.044
rs36111056	15	chr15:83461873	G	A	0.789	0.034
rs362307	4	chr4:3241845	T	C	0.074	0.050
rs3742305	13	chr13:31036642	C	G	0.732	0.030
rs3747207	22	chr22:44324855	A	G	0.215	0.047
rs3755879	4	chr4:96114385	A	G	0.301	0.033
rs3757969	8	chr8:145551199	G	C	0.374	0.048
rs3764002	12	chr12:108618630	C	T	0.738	0.040
rs3798519	6	chr6:50788778	C	A	0.179	0.050
rs38221	7	chr7:15926228	T	C	0.253	0.033
rs3872707	3	chr3:9514016	A	G	0.124	0.045
rs3887925	3	chr3:186665645	T	C	0.549	0.042
rs39328	7	chr7:103444978	T	C	0.424	0.028
rs41276588	1	chr1:118148384	A	G	0.285	0.038
rs4132228	3	chr3:64708114	C	T	0.711	0.047
rs419842	20	chr20:42310811	T	A	0.842	0.041
rs429358	19	chr19:45411941	T	C	0.846	0.073
rs4325	17	chr17:61563200	C	A	0.532	0.035
rs4397977	13	chr13:41688401	A	G	0.342	0.029
rs4465929	3	chr3:15741389	T	C	0.402	0.030
rs448918	9	chr9:136885979	A	G	0.265	0.033
rs4655617	1	chr1:67010654	C	A	0.440	0.028
rs4688760	3	chr3:49980596	T	C	0.689	0.034
rs4709746	6	chr6:164133001	C	T	0.865	0.058
rs4714422	6	chr6:41012405	G	A	0.245	0.029
rs4721089	7	chr7:1872921	T	C	0.782	0.034
rs4734193	8	chr8:110140564	C	A	0.527	0.034
rs4776970	15	chr15:68080886	A	T	0.642	0.029
rs4796224	17	chr17:34842521	G	A	0.472	0.025
rs4805681	19	chr19:31835516	C	T	0.605	0.027
rs480840	11	chr11:74625997	C	T	0.429	0.025
rs4809369	20	chr20:62470785	G	A	0.548	0.034
rs4845987	1	chr1:11306279	C	G	0.709	0.028
rs484943	15	chr15:40398754	T	C	0.338	0.033
rs4865796	5	chr5:53272664	A	G	0.692	0.047
rs4899280	14	chr14:69526307	T	C	0.332	0.028
rs4916253	1	chr1:172361032	G	T	0.433	0.027
rs4929965	11	chr11:2197286	A	G	0.379	0.062
rs495203	9	chr9:136145240	T	C	0.318	0.049
rs4976033	5	chr5:67714246	G	A	0.401	0.028

rs4984980	16	chr16:968292	A	G	0.182	0.035
rs5219	11	chr11:17409572	T	C	0.357	0.069
rs534043	7	chr7:100312724	G	A	0.887	0.045
rs543159	6	chr6:160776017	C	A	0.527	0.032
rs545608	1	chr1:177899121	C	G	0.206	0.036
rs555784	9	chr9:85318704	T	A	0.617	0.030
rs55812705	6	chr6:111738793	T	C	0.755	0.031
rs55857387	16	chr16:300388	T	C	0.801	0.052
rs56337234	4	chr4:1784403	C	T	0.506	0.041
rs56348580	12	chr12:121432117	G	C	0.692	0.058
rs56394279	3	chr3:160171092	C	T	0.471	0.031
rs567185	1	chr1:201763499	T	C	0.649	0.037
rs5751061	22	chr22:41593873	G	T	0.629	0.026
rs5753043	22	chr22:30588041	C	A	0.908	0.061
rs576674	13	chr13:33554302	G	A	0.167	0.061
rs5771069	22	chr22:50435480	G	A	0.497	0.033
rs583769	7	chr7:18331915	A	G	0.246	0.031
rs58542926	19	chr19:19379549	T	C	0.074	0.089
rs60519666	6	chr6:107427166	G	A	0.676	0.035
rs6066138	20	chr20:45594711	G	A	0.718	0.045
rs61736066	17	chr17:70645032	G	A	0.913	0.051
rs61779275	1	chr1:39820310	T	C	0.212	0.075
rs62034975	16	chr16:20392415	C	G	0.302	0.031
rs62075585	17	chr17:76762039	G	A	0.473	0.030
rs62262091	3	chr3:47693664	T	C	0.094	0.056
rs62271373	3	chr3:150066540	A	T	0.060	0.069
rs62310934	4	chr4:48880627	C	G	0.618	0.030
rs62450857	7	chr7:4683258	A	G	0.134	0.039
rs62492368	7	chr7:150537635	A	G	0.304	0.034
rs62515938	8	chr8:57483013	T	C	0.261	0.029
rs62618693	11	chr11:32956492	C	T	0.955	0.085
rs6432613	2	chr2:161145612	G	A	0.724	0.039
rs6438247	3	chr3:115084080	C	T	0.131	0.044
rs6459733	7	chr7:156930550	G	C	0.662	0.051
rs6495182	15	chr15:75814388	C	T	0.749	0.041
rs663640	18	chr18:57846077	T	C	0.219	0.050
rs6685701	1	chr1:26868639	A	G	0.271	0.030
rs67013744	12	chr12:6681786	G	A	0.166	0.035
rs6715901	2	chr2:179650954	G	A	0.503	0.027
rs6741676	2	chr2:181618654	A	G	0.662	0.032
rs6766859	3	chr3:138055136	C	T	0.372	0.033
rs67755137	7	chr7:74108135	A	G	0.193	0.033
rs6777684	3	chr3:187741842	G	A	0.610	0.057
rs6819331	4	chr4:153504295	C	T	0.681	0.040
rs6821438	4	chr4:95091911	A	G	0.530	0.029
rs684214	17	chr17:40696915	T	C	0.280	0.042
rs686998	3	chr3:173119768	G	A	0.530	0.027
rs6878122	5	chr5:76427311	G	A	0.319	0.055

rs6976111	7	chr7:117495667	A	C	0.302	0.032
rs7026688	9	chr9:125975397	G	A	0.863	0.044
rs703981	10	chr10:80942855	G	C	0.543	0.061
rs7046845	9	chr9:97804641	A	C	0.911	0.047
rs7071943	10	chr10:93956552	G	T	0.659	0.044
rs7099048	10	chr10:77647107	A	G	0.515	0.028
rs7132908	12	chr12:50263148	A	G	0.384	0.033
rs7163757	15	chr15:62391608	C	T	0.571	0.041
rs7188071	16	chr16:28917644	T	C	0.353	0.029
rs7219033	17	chr17:9787958	A	G	0.329	0.029
rs7220340	17	chr17:27566326	A	G	0.460	0.027
rs7240767	18	chr18:7070642	C	T	0.387	0.037
rs72501964	4	chr4:1267203	G	T	0.963	0.083
rs72692805	1	chr1:149894355	G	A	0.921	0.054
rs72695645	4	chr4:185713608	G	A	0.859	0.061
rs727734	6	chr6:15475051	A	T	0.761	0.030
rs72802342	16	chr16:75234872	C	A	0.923	0.115
rs72803684	2	chr2:26192802	T	C	0.047	0.069
rs72836348	2	chr2:111888043	G	A	0.898	0.056
rs72926932	18	chr18:53050646	C	A	0.080	0.075
rs72951506	6	chr6:118011723	C	T	0.844	0.042
rs73347525	14	chr14:101255172	A	G	0.818	0.049
rs73872717	3	chr3:141134569	C	T	0.954	0.086
rs74672008	3	chr3:152451616	G	A	0.964	0.080
rs74804697	15	chr15:52588722	C	G	0.955	0.084
rs75332279	15	chr15:53099306	C	T	0.100	0.056
rs7538321	1	chr1:205789455	T	A	0.127	0.042
rs75401573	22	chr22:29805444	C	T	0.922	0.051
rs75432112	5	chr5:102586407	A	G	0.050	0.134
rs7558413	2	chr2:18721662	A	G	0.580	0.029
rs7559658	2	chr2:147920213	C	T	0.189	0.034
rs756145	9	chr9:1039939	A	G	0.306	0.029
rs7561798	2	chr2:228973660	G	A	0.481	0.028
rs7568172	2	chr2:158335340	G	A	0.937	0.067
rs75686861	4	chr4:145621328	A	G	0.092	0.047
rs75693095	7	chr7:23440057	C	G	0.022	0.112
rs75756987	21	chr21:47767295	G	C	0.896	0.044
rs7609422	2	chr2:146348037	G	A	0.408	0.030
rs7619708	3	chr3:195810187	T	C	0.760	0.033
rs76263492	3	chr3:54828827	T	G	0.043	0.068
rs7656001	4	chr4:91243865	A	G	0.550	0.026
rs7660000	4	chr4:89751858	C	T	0.718	0.031
rs7695096	4	chr4:103932556	C	T	0.514	0.038
rs7719891	5	chr5:86577352	G	A	0.247	0.040
rs7739842	6	chr6:131954797	G	T	0.189	0.033
rs7756992	6	chr6:20679709	G	A	0.265	0.122
rs7858727	9	chr9:111936128	C	A	0.205	0.034
rs7867635	9	chr9:20241069	C	T	0.411	0.037

rs7903146	10	chr10:114758349	T	C	0.287	0.280
rs79489938	1	chr1:147121000	G	A	0.984	0.113
rs798549	7	chr7:2760750	C	A	0.269	0.030
rs799661	14	chr14:35390146	C	T	0.891	0.043
rs8005994	14	chr14:29744532	A	G	0.645	0.027
rs8008540	14	chr14:74948180	C	T	0.563	0.030
rs8010382	14	chr14:91963722	G	A	0.414	0.032
rs8018512	14	chr14:38818723	G	A	0.749	0.037
rs8031576	15	chr15:90380214	C	A	0.280	0.057
rs8033609	15	chr15:60938816	A	C	0.542	0.027
rs8054556	16	chr16:29958216	A	G	0.467	0.036
rs8071043	17	chr17:3988451	C	T	0.330	0.054
rs827237	10	chr10:72648336	T	C	0.199	0.037
rs838735	2	chr2:234324192	C	G	0.385	0.029
rs844215	3	chr3:71656045	C	T	0.583	0.026
rs858519	17	chr17:7531965	T	C	0.443	0.026
rs867489	20	chr20:48833957	C	T	0.536	0.031
rs878017	10	chr10:13566204	A	G	0.527	0.035
rs890940	5	chr5:158026744	T	C	0.211	0.048
rs911300	20	chr20:57387262	G	A	0.543	0.035
rs917195	7	chr7:30728452	C	T	0.768	0.047
rs9275184	6	chr6:32654714	C	T	0.103	0.098
rs9296095	6	chr6:33542523	T	C	0.821	0.034
rs9316500	13	chr13:51094114	T	G	0.704	0.047
rs9319382	13	chr13:28245127	C	T	0.685	0.028
rs9368112	6	chr6:19718157	T	C	0.529	0.026
rs9379084	6	chr6:7231843	G	A	0.884	0.075
rs9383649	6	chr6:153428102	G	A	0.403	0.033
rs9555581	13	chr13:109944192	C	T	0.613	0.030
rs9563574	13	chr13:58656599	T	C	0.827	0.041
rs9784137	2	chr2:121325908	G	A	0.845	0.061
rs980183	2	chr2:59311536	G	A	0.397	0.036
rs9828772	3	chr3:129333182	C	G	0.897	0.052
rs9842137	3	chr3:3649850	T	C	0.001	0.425
rs9852406	3	chr3:135625498	T	C	0.253	0.038
rs9854769	3	chr3:185520948	G	A	0.314	0.108
rs9873519	3	chr3:124921457	T	C	0.532	0.038
rs9873618	3	chr3:170733076	G	A	0.710	0.058
rs987949	4	chr4:85384069	A	G	0.010	0.153
rs9900074	17	chr17:46124326	G	C	0.928	0.055
rs9912236	17	chr17:77895311	C	T	0.754	0.031
rs9927842	16	chr16:15153717	T	C	0.155	0.038

Chr, chromosome.

Effect allele is the one associated with high risk of T2D; and other is the reference allele. Each SNP's relative effect size β was obtained from the ancestry-specific analysis of Europeans in the latest Genome-wide multi-ethnic meta-analysis.

Supplementary Table 2. Cluster weight for T2D Loci*

Loci	SNP	EA	Beta-Cell	Proinsulin	Obesity	Lipodystrophy	Liver
MTNR1B	rs10830961	G	3.81	0.00	0.27	0.00	0.00
CDKAL1	rs7756992	G	3.05	0.00	0.00	0.11	0.00
C2CD4A	rs4502156	T	2.68	0.00	0.00	0.00	0.64
HHEX	rs1111875	C	2.66	0.00	0.14	0.05	0.17
TCF7L2	rs7903146	T	2.47	0.29	0.00	0.74	0.14
SLC30A8	rs3802177	G	2.41	0.09	0.00	0.22	0.23
CDKN2A_B	rs10811661	T	1.77	0.20	0.32	0.00	0.00
CDC123.CAMK1D	rs11257655	T	1.59	0.78	0.05	0.00	0.41
HNF1A	rs7957197	T	1.56	0.41	0.39	0.00	0.00
AP3S2	rs1371135	T	1.54	0.00	0.07	0.07	0.07
ZHX3	rs17265513	C	1.37	0.00	0.56	0.00	0.08
UBE2E2	rs1496653	A	1.35	0.23	0.00	0.06	0.15
ACSL1	rs1996546	G	1.35	0.06	0.00	0.17	0.51
PRC1	rs12899811	G	1.26	0.00	0.14	0.00	0.00
GIPR	rs8108269	G	1.25	0.04	0.03	0.27	0.10
GLP2R	rs17676067	C	1.22	0.00	0.58	0.00	0.26
KCNJ11	rs5215	C	1.19	0.56	0.16	0.06	0.00
KCNQ1_2	rs233449	G	1.18	0.62	0.24	0.03	0.00
ABO	rs505922	C	1.17	0.04	0.66	0.19	0.44
ANK1	rs516946	C	1.12	0.62	0.05	0.19	0.35
GLIS3	rs10758593	A	1.09	0.27	0.00	0.18	0.44
HNF1B	rs4430796	G	1.04	0.32	0.00	0.27	0.00
CTRB2	rs9921586	G	1.01	0.00	0.01	0.43	0.19
CDKN2A_2	rs2184061	A	0.97	0.00	0.09	0.32	0.70
DUSP8	rs2334499	T	0.96	0.64	0.06	0.35	0.00
ADCY5	rs11708067	A	0.92	0.11	0.00	1.24	0.18
GIP	rs15563	G	0.88	0.20	0.14	0.50	0.00
HNF4A	rs4812829	A	0.84	0.79	0.08	0.00	0.10
HSD17B12	rs3736505	G	0.78	0.00	1.24	0.03	0.21
TLE4	rs17791513	A	0.78	0.01	0.23	0.00	0.17
LPP	rs6808574	C	0.73	0.51	0.34	0.36	0.00
DGKB	rs2191349	T	0.72	0.35	0.26	0.00	0.64
NOTCH2	rs10923931	T	0.70	0.00	0.02	0.17	0.48
PLEKHA1	rs2421016	C	0.63	0.13	0.00	0.43	0.44
RREB1	rs9502570	C	0.57	0.55	0.50	0.05	0.00
FAF1	rs17106184	G	0.57	0.35	0.05	0.81	0.00
IGF2BP2	rs4402960	T	0.56	0.97	0.00	0.50	0.00
ARL15	rs702634	A	0.55	0.00	0.18	1.29	0.49
PROX1	rs340874	C	0.55	0.52	0.10	0.50	0.00
TSPAN8.LGR5	rs7961581	C	0.54	0.00	0.00	0.17	0.83
ADAMTS9	rs6795735	C	0.54	0.00	0.18	0.95	0.16
KCNQ1	rs2237892	C	0.53	0.30	0.00	0.32	0.00
DGKB_2	rs10276674	C	0.47	1.00	0.14	0.11	0.19
KLF14	rs3996352	A	0.46	0.00	0.00	1.63	0.40
ARAP1	rs1552224	A	0.42	4.48	0.00	0.05	0.05
TMEM154	rs6813195	C	0.42	0.10	0.16	0.31	0.01

FTO	rs9939609	A	0.40	0.00	4.96	0.00	0.27
JAZF1	rs864745	T	0.40	0.00	0.00	0.68	0.58
SPRY2	rs1359790	G	0.39	1.07	0.20	0.27	0.06
THADA	rs10203174	C	0.39	0.53	0.20	0.26	0.11
ZBED3	rs4457053	G	0.39	0.30	0.04	0.96	0.00
MNX1	rs1182397	G	0.37	0.17	0.39	0.08	0.33
KCNQ1_1	rs231361	A	0.36	0.25	0.04	0.36	0.00
MTMR3	rs36608	A	0.34	0.16	0.43	0.57	0.22
KLHDC5	rs10842994	C	0.33	0.17	0.17	0.33	0.39
ANKRD55_2	rs3843467	T	0.32	0.00	0.19	1.31	0.15
KCNQ1_3	rs384037	A	0.28	0.04	0.01	0.38	0.09
TP53INP1	rs7845219	T	0.25	0.45	0.36	0.00	0.28
CCND2_2	rs10219509	C	0.22	0.02	0.27	0.27	0.09
HMG20A	rs7178572	G	0.21	0.08	0.25	0.37	0.00
BCL11A	rs243021	A	0.16	0.09	0.07	0.57	0.33
PPARG	rs1801282	C	0.14	0.06	0.00	2.11	0.08
CDKN2A_3	rs10757282	C	0.13	0.06	0.14	0.29	0.16
SLC35D3	rs4407733	A	0.13	0.42	0.00	0.65	0.26
MPHOSPH9	rs1106240	T	0.10	0.10	0.05	0.79	0.49
MACF1	rs2296172	G	0.09	0.00	0.74	1.03	0.08
ZMIZ1	rs12571751	A	0.08	0.19	0.56	0.63	0.00
HNF4A_2	rs1800961	T	0.08	0.50	0.29	0.64	0.38
GRB14	rs13389219	C	0.08	0.00	0.17	2.74	0.00
HMGA2	rs2261181	T	0.08	0.14	0.03	0.74	0.03
TLE1	rs2796441	G	0.08	0.04	0.00	0.71	0.47
GCKR	rs780094	C	0.06	0.00	0.58	0.00	5.34
LPL	rs10503669	C	0.06	0.00	0.41	1.54	0.16
WFS1	rs4458523	G	0.04	0.53	0.25	0.50	0.39
RBMS1	rs6742799	A	0.03	0.00	1.04	0.69	0.26
MAP3K11	rs11227234	T	0.00	0.10	0.60	0.43	0.02
ZZEF1	rs8068804	A	0.00	0.00	0.43	0.57	0.29
INS.IGF2	rs10840595	C	0.00	0.18	0.20	0.29	0.37
NEUROG3	rs4746890	T	0.00	0.25	0.00	0.32	0.42
CCND2	rs11063069	G	0.00	0.81	0.01	0.94	0.13
HLA.DQA1	rs9271775	T	0.00	0.52	0.12	0.73	0.98
ZFAND6	rs2866367	0	0.00	0.39	0.20	0.60	0.01
POU5F1	rs3132524	C	0.00	0.36	0.24	1.06	0.32
LAMA1	rs9948462	T	0.00	0.29	0.30	0.20	0.41
C17orf58	rs9891146	T	0.00	0.15	0.59	1.08	0.00
CMIP	rs2925979	T	0.00	0.14	0.00	1.74	0.30
MC4R	rs12970134	A	0.00	0.12	2.78	0.37	0.00
NRXN3	rs10146997	G	0.00	0.07	1.72	0.37	0.00
PNPLA3	rs738409	G	0.00	0.04	0.22	0.59	0.84
KIF9	rs2276853	A	0.00	0.04	0.31	0.96	0.02
LYPLAL1	rs2820443	T	0.00	0.00	0.28	1.92	0.00
IRS1	rs2943641	C	0.00	0.00	0.00	3.01	0.00
ANKRD55	rs459193	G	0.00	0.00	0.00	1.80	0.55
CILP2	rs16996148	T	0.00	0.00	0.00	0.67	2.05

EA, effect allele.
Each SNP's cluster weight was obtained from the soft clustering analysis of GWAS results.
*Udler MS, Kim J, von Grotthuss M, Bonàs-Guarch S, Cole JB, Chiou J; Christopher D. Anderson on behalf of METASTROKE and the ISGC, Boehnke M, Laakso M, Atzmon G, Glaser B, Mercader JM, Gaulton K, Flannick J, Getz G, Florez JC. Type 2 diabetes genetic loci informed by multi-trait associations point to disease mechanisms and subtypes: A soft clustering analysis. PLoS Med. 2018;15(9):e1002654. doi: 10.1371/journal.pmed.1002654.

Supplementary Table 3. Single-nucleotide polymorphisms associated with circulating individual FAs*

								Summary statistics for SNP-FA association		
Type of FAs	**FAs**	**SNP**	**Chr**	**Nearby gene**	**EA**	**NEA**	**% Variance explained**	**Beta†**	**SE**	**P**
n-3 PUFAs	ALA	rs174547	11	FADS1	C	T	1	0.02	0.001	3.50E-64
	EPA	rs3798713	6	ELOVL2	C	G	0.4	0.04	0.005	1.90E-12
		rs174538	11	FADS1/C11orf10	G	A	1.7	0.08	0.005	5.40E-58
		rs780094	2	GCKR	T	C	0.5	0.02	0.003	9.00E-09
	DPA	rs3734398	6	ELOVL2	C	T	2.7	0.04	0.003	9.70E-43
		rs174547	11	FADS1	T	C	8.4	0.08	0.003	3.80E-154
	DHA	rs2236212	6	ELOVL2	G	C	0.7	0.11	0.014	1.30E-15
n-6 PUFAs	LA	rs10740118	10	JMJD1C	G	C	0.2-0.7	0.25	0.050	8.10E-09
		rs174547	11	FADS1	C	T	7.6-18.1	1.47	0.050	5.00E-274
		rs16966952	16	NTAN1	G	A	0.5-2.5	0.35	0.040	1.20E-15
	AA	rs174547	11	FADS1	T	C	3.7-37.6	1.69	0.020	3.30E-971
		rs16966952	16	NTAN1	G	A	0.1-0.6	0.20	0.030	2.40E-10
n-7 MUFAs	POA	rs780093	2	GCKR	T	C	0.2-0.9	0.02	0.003	9.80E-10
		rs6722456	2	RN7SKP93	G	A	0.01-0.6	0.05	0.009	4.10E-08
		rs603424	10	SCD/PKD2L1	G	A	0.3-1.6	0.03	0.004	5.70E-15
		rs11190604	10	HIF1AN	G	A	0.02-0.7	0.02	0.004	5.70E-09
		rs102275	11	FADS1/2	C	T	0.15-1.0	0.02	0.003	6.60E-13
n-9 MUFAs	OA	rs102275	11	FADS1/2	C	T	0.3-2.1	0.23	0.020	2.20E-32
SFAs	PA	rs2391388	1	ALG14	C	A	0.2-1.0	0.18	0.030	2.70E-11
	SA	rs6675668	1	ALG14	G	T	0.4-1.4	0.17	0.020	2.20E-18
		rs11119805	1	LPGAT1	T	A	0.01-0.7	0.17	0.030	2.80E-09
		rs102275	11	FADS1/2	T	C	0.3-1.2	0.18	0.020	1.30E-20

AA, arachidonic acid; ALA, α-linolenic acid; Chr, chromosome; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; EA, effect allele; EAF, effect allele frequency; EPA, eicosapentaenoic acid; FA, fatty acid; LA, linoleic acid; MUFA, monounsaturated fatty acid; OA, oleic acid; PA, palmitic acid; POA, palmitoleic acid; PUFA, polyunsaturated fatty acid; SA, stearic acid; SD, standard deviation; SFA, saturated fatty acid; SNP, single-nucleotide polymorphisms.

*Yuan S, Larsson SC. Plasma phospholipid fatty acids and risk of atrial fibrillation: A mendelian randomization study. Nutrients. 2019;11(7):1651. doi: 10.3390/nu11071651.

†The beta coefficients represent the change in the percentage of total fatty acids for each additional effect allele.

Supplementary Table 4. Components and scaling methods of diet quality score used in the UK Biobank study

Components	Field IDs	Amount per serving	Criteria for maximum score (10)	Criteria for minimum score (0)
Fruit	1309 (pieces fresh fruit/day) 1319 (pieces dried fruit/day)	1309 – 1 piece 1319 – 5 pieces	≥3 servings/day	0 servings/day
Vegetable	1289 (tablespoons cooked vegetables/day) 1299 (salad/raw vegetables/day)	3 heaped tablespoons	≥3 servings/day	0 servings/day
Fish	1329 (oily fish/week) 1339 (non-oily fish/week)	Once/week	≥2 servings/week	0 servings/week
Whole grains	1438, 1448 (wholemeal/wholegrain bread slices/week) 1458, 1468 (bran/oat/muesli cereal bowls/week)	1438/1448 – 1 slice/day 1458/1468 – 1 bowl/day	≥3 servings/day	0 servings/day
Dairy	1408 (cheese/week) 1418 (milk type)	1408 – 1 piece/day 1418 – 1 glass/day if consumption of any type of milk	≥2 servings/day	0 servings/day
Vegetable oils	1428 (Flora Pro-Active/Benecol spread) 2654 (Flora Pro-Active/Benecol, soft margarine -, olive oil based -, polyunsaturated/sunflower oil based -, other low/reduced fat spread) 1438 (bread slices/week)	1 serving/day if in combination with eating at least 2 slices of bread (ID 1438)	≥2 servings/day	0 servings/day
Refined grains	1438, 1448 (white, brown, other bread slices/week) 1458, 1468 (biscuit, other cereals/week)	1438/1448 – 1 slice/day 1458/1468 – 1 bowl/day	0 servings/day	>2 servings/day
Processed meats	1349 (processed meat/week or daily) 3680 (age when last ate meat)	1349 – 1 piece/day 3680 – 0 pieces/day if indicated having never eaten meat	0 serving/week	>1 serving/week
Unprocessed red meats	1369 (beef/week or day) 1379 (lamb or mutton/week or day) 1389 (pork/week or day) 3680 (age when last ate meat)	1359-1389 – once/week 3680 – 0 pieces/day if indicated having never eaten meat	0 serving/week	>2 serving/week
Sugar-sweetened beverages	6144 (never consumes drinks containing sugar)	0 servings	Don’t drink	Drink

Field IDs and serving sizes used per diet component in UK Biobank with available data from the general baseline questionnaire. Intermediate intakes were scored between the minimum and the maximum according to the following formula: component score = (maximum score / (A_{max} - A_{min})) × (X - A_{min}) for adequacy components; component score = (maximum score - maximum score / (A_{max} - A_{min})) × (X - A_{min}) for moderate components (refined grains, processed meat, and unprocessed red meat); A_{max} is maximum amount of the component corresponding to the recommended intake; A_{min} is minimum amount of the component corresponding to the recommended intake; X is amount consumed by the individual. The total diet quality score was the sum of all the diet component scores and ranged from 0 to 100.

Supplementary Table 5. Definitions of prevalent diabetes and incident T2D

	ICD-9	ICD-10	Self-reported fields
Diabetes at baseline [Both "possible" diabetes (T1D, T2D and other types of diabetes) and "probable" diabetes (T1D, T2D and other types of diabetes) were excluded at baseline.]*	250, 6480	E10, E11, E12, E13, E14, O24	2443(1), 2976, 6153(3), 6177(3), 20002(1220, 1222, 1223), 20003
Incident T2D		E11	

*Eastwood SV, Mathur R, Atkinson M, et al. Algorithms for the capture and adjudication of prevalent and incident diabetes in UK Biobank. PLoS One. 2016. 11(9): e0162388.

Supplementary Table 6. The percentages of participants with missing covariates

Covariates	%
Ethnicity	0.43
Body mass index (m^2/kg)	0.32
Education	1.14
Townsend deprivation index	0.13
Household income	14.02
Smoking status	0.46
Alcohol consumption	0.20
Physical activity (MET-h/wk)	18.72

Supplementary Table 7. Spearman correlations between plasma fatty acids (% of total fatty acids)

	SFAs	MUFAs	PUFAs	n-6 PUFAs	LA	non-LA n-6 PUFAs	n-3 PUFAs	DHA	non-DHA n-3 PUFAs
SFAs	1.00	0.26	-0.69	-0.65	-0.64	-0.09	-0.13	-0.27	-0.01
MUFAs		1.00	-0.86	-0.74	-0.47	-0.56	-0.29	-0.65	-0.03
PUFAs			1.00	0.88	0.67	0.45	0.28	0.61	0.03
n-6 PUFAs				1.00	0.83	0.37	-0.14	0.26	-0.38
LA					1.00	-0.14	-0.25	0.06	-0.41
non-LA n-6 PUFAs						1.00	0.19	0.43	0.01
n-3 PUFAs							1.00	0.83	0.93
DHA								1.00	0.60
non-DHA n-3 PUFAs									1.00

DHA, docosahexaenoic acid; LA, linoleic acid; MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid. $P<0.001$ for all correlations.

Supplementary Table 8. Associations between plasma PUFAs and type 2 diabetes risk

	Quartiles of plasma fatty acids (% of total fatty acids)					
	Q1	**Q2**	**Q3**	**Q4**	**P trend**	**HR (95% CI)***
LA						
Range	≤27.3	27.3-29.5	29.5-31.6	≥31.6		
Median	25.6	28.5	30.5	33.0		
Cases/person-years	1525/271825	741/276859	462/279717	324/282239		
Model 1†	1.00	0.50 (0.46-0.55)	0.33 (0.29-0.36)	0.24 (0.21-0.27)	<0.001	0.49 (0.48-0.52)
Model 2‡	1.00	0.66 (0.60-0.72)	0.50 (0.45-0.56)	0.40 (0.35-0.46)	<0.001	0.63 (0.60-0.66)
Model 3§	1.00	0.80 (0.72-0.89)	0.66 (0.57-0.77)	0.56 (0.46-0.69)	<0.001	0.67 (0.62-0.72)
non-LA n-6 PUFAs						
Range	≤7.6	7.6-8.8	8.8-10.1	≥10.1		
Median	6.9	8.2	9.4	11.1		
Cases/person-years	1030/277421	754/278201	673/277900	595/277119		
Model 1†	1.00	0.74 (0.67-0.81)	0.68 (0.62-0.75)	0.61 (0.56-0.68)	<0.001	0.83 (0.80-0.86)
Model 2‡	1.00	0.78 (0.71-0.85)	0.69 (0.63-0.77)	0.53 (0.47-0.59)	<0.001	0.78 (0.75-0.81)
Model 3§	1.00	0.87 (0.79-0.96)	0.87 (0.77-0.97)	0.75 (0.64-0.87)	<0.001	0.89 (0.84-0.95)
DHA						
Range	≤1.6	1.6-1.9	1.9-2.4	≥2.4		
Median	1.3	1.7	2.1	2.7		
Cases/person-years	1376/274136	741/277778	505/279201	430/279526		
Model 1†	1.00	0.53 (0.48-0.58)	0.35 (0.32-0.39)	0.29 (0.26-0.32)	<0.001	0.56 (0.53-0.58)
Model 2‡	1.00	0.68 (0.62-0.75)	0.54 (0.48-0.60)	0.49 (0.44-0.55)	<0.001	0.72 (0.68-0.75)
Model 3§	1.00	0.92 (0.83-1.02)	0.85 (0.75-0.98)	0.95 (0.79-1.14)	0.288	0.93 (0.87-1.00)
non-DHA n-3 PUFAs						
Range	≤1.7	1.7-2.3	2.3-2.9	≥2.9		
Median	1.3	2.0	2.6	3.5		
Cases/person-years	704/277929	793/277645	822/277581	733/277486		
Model 1†	1.00	1.05 (0.95-1.17)	1.05 (0.95-1.16)	0.90 (0.81-1.00)	0.025	0.96 (0.92-0.99)
Model 2‡	1.00	1.02 (0.92-1.13)	1.02 (0.92-1.14)	0.93 (0.83-1.04)	0.178	0.98 (0.94-1.01)
Model 3§	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.92)	0.75 (0.64-0.87)	<0.001	0.90 (0.85-0.96)

CI, confidence interval; HR, hazard ratio; MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid.

*Indicates hazard ratio of type 2 diabetes for 1 SD increment in plasma fatty acids.

†Model 1 was adjusted for age and sex.

‡Model 2 was further adjusted for race (White, Asian, Black, mixed, or other ethnic group), centers (22 categories), BMI (in kg/m^2; <18.5, 18.5 to 25, 25 to 30, 30 to 35, ≥35, or missing), education (college or university degree, vocational qualifications, optional national exams at ages 17–18 years, national exams at age 16 years, others, or missing), Townsend deprivation index (quartiles), household income (<£18,000, £18,000-£30,999, £31,000-£51,999, £52,000-£100,000, >£100,000, or missing), smoking (never, former, current, or missing), alcohol consumption (never or special occasions only, 1 to 3 times/month, 1 or 2 times/week, 3 or 4 times/week, or daily/almost daily), physical activity (in MET-h/wk; quartiles), history of hypertension (yes or no), history of high cholesterol (yes or no), family history of diabetes (yes or no), vitamin supplement use (yes or no), mineral supplement use (yes or no), and aspirin use (yes or no).

§Model 3 was further adjusted for remaining plasma fatty acids (SFAs, MUFAs, LA, non-LA n-6 PUFAs, DHA, and non-DHA n-3 PUFAs).

Supplementary Table 9. Interactions between plasma PUFAs and GRS/cluster GRSs for T2D

	Plasma FAs			GRS			Plasma FAs×GRS		
	β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
LA	-0.440	0.045	<0.001	0.410	0.024	<0.001	-0.007	0.023	0.767
non-LA n-6 PUFAs	-0.129	0.034	<0.001	0.411	0.020	<0.001	-0.015	0.021	0.477
DHA	-0.077	0.039	0.049	0.411	0.022	<0.001	-0.004	0.022	0.867
non-DHA n-3 PUFAs	-0.126	0.036	<0.001	0.413	0.020	<0.001	-0.016	0.022	0.467
	Plasma FAs			**Beta cell GRS**			**Plasma FAs×Beta cell GRS**		
	β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
LA	-0.455	0.044	<0.001	0.221	0.024	<0.001	0.010	0.022	0.662
non-LA n-6 PUFAs	-0.128	0.033	<0.001	0.213	0.020	<0.001	-0.003	0.021	0.898
DHA	-0.090	0.038	0.018	0.228	0.022	<0.001	0.030	0.021	0.153
non-DHA n-3 PUFAs	-0.131	0.035	<0.001	0.214	0.019	<0.001	0.021	0.022	0.328
	Plasma FAs			**Proinsulin GRS**			**Plasma FAs×Proinsulin GRS**		
	β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
LA	-0.447	0.044	<0.001	0.084	0.024	<0.001	0.002	0.023	0.929
non-LA n-6 PUFAs	-0.129	0.033	<0.001	0.084	0.021	<0.001	-0.003	0.022	0.909
DHA	-0.085	0.038	0.024	0.093	0.023	<0.001	0.018	0.022	0.415
non-DHA n-3 PUFAs	-0.128	0.035	<0.001	0.084	0.020	<0.001	0.029	0.023	0.207
	Plasma FAs			**Obesity GRS**			**Plasma FAs×Obesity GRS**		
	β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
LA	-0.447	0.044	<0.001	0.027	0.023	0.253	-0.002	0.022	0.928
non-LA n-6 PUFAs	-0.133	0.033	<0.001	0.033	0.020	0.092	0.024	0.021	0.238
DHA	-0.086	0.038	0.025	0.047	0.022	0.030	0.041	0.021	0.055
non-DHA n-3 PUFAs	-0.127	0.035	<0.001	0.028	0.019	0.146	0.039	0.022	0.074
	Plasma FAs			**Lipodystrophy GRS**			**Plasma FAs×Lipodystrophy GRS**		
	β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
LA	-0.441	0.044	<0.001	0.107	0.024	<0.001	-0.010	0.022	0.647
non-LA n-6 PUFAs	-0.131	0.033	<0.001	0.121	0.020	<0.001	0.029	0.021	0.169
DHA	-0.078	0.038	0.040	0.112	0.022	<0.001	-0.005	0.022	0.833
non-DHA n-3 PUFAs	-0.130	0.035	<0.001	0.115	0.020	<0.001	0.014	0.022	0.534
	Plasma FAs			**Liver/Lipid GRS**			**Plasma FAs×Liver/Lipid GRS**		
	β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
LA	-0.457	0.044	<0.001	0.085	0.024	<0.001	-0.014	0.022	0.529
non-LA n-6 PUFAs	-0.135	0.033	<0.001	0.085	0.020	<0.001	-0.010	0.021	0.643
DHA	-0.082	0.038	0.031	0.104	0.022	<0.001	0.035	0.022	0.107
non-DHA n-3 PUFAs	-0.120	0.035	<0.001	0.087	0.020	<0.001	0.041	0.022	0.061

CI, confidence interval; FA, fatty acid; GRS, genetic risk score; HR, hazard ratio; MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid.

Cox proportional hazards regression models for type 2 diabetes were performed using standardized

values of plasma fatty acids and GRS. β coefficients were adjusted for age, sex, centers, BMI, education, Townsend deprivation index, household income, smoking, alcohol consumption, physical activity, history of hypertension, history of high cholesterol, vitamin supplement use, mineral supplement use, aspirin use, and remaining plasma fatty acids (SFAs, MUFAs, LA, non-LA n-6 PUFAs, DHA, and non-DHA n-3 PUFAs).

Supplementary Table 10. Interactions between plasma FAs and number of FA-associated alleles for T2D

		Number of alleles			FAs			Number of alleles×FAs		
		β	**SE**	***P***	**β**	**SE**	***P***	**β**	**SE**	***P***
SFA-associated alleles	SFAs	0.018	0.022	0.419	-0.017	0.032	0.598	0.010	0.006	0.106
MUFA-associated alleles	MUFAs	-0.022	0.012	0.058	0.094	0.030	0.002	-0.008	0.004	0.052
LA-associated alleles	n-6 PUFAs	-0.021	0.020	0.297	-0.464	0.079	<0.001	0.010	0.019	0.609
	LA	-0.033	0.020	0.098	-0.411	0.076	<0.001	-0.011	0.019	0.570
	non-LA n-6 PUFAs	-0.021	0.017	0.229	-0.252	0.067	<0.001	0.035	0.017	0.040
AA-associated alleles	n-6 PUFAs	0.031	0.026	0.238	-0.463	0.078	<0.001	0.012	0.025	0.618
	LA	0.025	0.026	0.331	-0.441	0.077	<0.001	-0.002	0.024	0.939
	non-LA n-6 PUFAs	0.040	0.023	0.085	-0.233	0.069	<0.001	0.036	0.023	0.112
EPA-associated alleles	n-3 PUFAs	-0.005	0.021	0.817	-0.040	0.059	0.496	-0.034	0.023	0.139
	DHA	-0.006	0.024	0.808	-0.028	0.061	0.649	-0.025	0.022	0.255
	non-DHA n-3 PUFAs	0.005	0.021	0.810	-0.048	0.060	0.426	-0.037	0.023	0.107
DPA-associated alleles	n-3 PUFAs	-0.043	0.017	0.013	0.026	0.061	0.676	-0.045	0.019	0.017
	DHA	-0.050	0.019	0.009	0.024	0.063	0.711	-0.038	0.018	0.037
	non-DHA n-3 PUFAs	-0.032	0.017	0.053	0.006	0.063	0.918	-0.042	0.018	0.023

FA, fatty acid; MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid; T2D, type 2 diabetes.

β coefficients were estimated using standardized values of plasma fatty acids from Cox proportional hazards models adjusted for age, sex, centers, BMI, education, Townsend deprivation index, household income, smoking, alcohol consumption, physical activity, history of hypertension, history of high cholesterol, vitamin supplement use, mineral supplement use, aspirin use, and remaining plasma fatty acids (SFAs, MUFAs, PUFAs, n-6 PUFAs, LA, non-LA n-6 PUFAs, n-3 PUFAs, DHA, and non-DHA n-3 PUFAs).

Supplementary Table 11. Interactions between plasma FAs and individual FA-associated SNPs for T2D

		SNP			FAs			SNP×FAs		
		β	**SE**	***P***	**β***	**SE**	***P***	**β**	**SE**	***P***
rs2391388	SFAs	0.027	0.028	0.328	0.017	0.012	0.138	0.016	0.010	0.104
rs6675668	SFAs	-0.029	0.028	0.292	0.030	0.022	0.166	-0.003	0.020	0.894
rs11119805	SFAs	-0.017	0.041	0.679	0.050	0.030	0.094	-0.012	0.016	0.454
rs102275	SFAs	0.041	0.029	0.160	0.016	0.013	0.199	0.011	0.008	0.148
rs780093	MUFAs	-0.078	0.032	0.015	0.063	0.025	0.013	-0.033	0.026	0.193
rs6722456	MUFAs	0.003	0.095	0.971	0.035	0.062	0.568	-0.003	0.032	0.935
rs603424	MUFAs	0.025	0.043	0.561	0.097	0.084	0.251	-0.034	0.042	0.428
rs11190604	MUFAs	-0.041	0.035	0.248	0.027	0.009	0.004	0.017	0.017	0.300
rs102275	MUFAs	-0.017	0.029	0.562	0.051	0.011	<0.001	-0.015	0.008	0.070
	n-6 PUFAs	0.012	0.034	0.721	-0.438	0.061	<0.001	0.006	0.032	0.853
rs10740118	LA	0.002	0.034	0.963	-0.429	0.058	<0.001	-0.015	0.032	0.642
	non-LA n-6 PUFAs	0.019	0.029	0.513	-0.172	0.049	<0.001	0.034	0.030	0.262
	PUFAs	-0.047	0.037	0.203	-0.505	0.056	<0.001	0.002	0.034	0.958
rs174547	n-6 PUFAs	-0.073	0.037	0.047	-0.431	0.052	<0.001	0.000	0.033	1.000
	LA	-0.081	0.036	0.025	-0.440	0.050	<0.001	-0.006	0.032	0.862
	non-LA n-6 PUFAs	-0.088	0.032	0.007	-0.144	0.040	<0.001	-0.003	0.032	0.919
	n-6 PUFAs	-0.011	0.037	0.772	-0.467	0.066	<0.001	0.027	0.035	0.449
rs16966952	LA	-0.031	0.036	0.392	-0.433	0.064	<0.001	-0.010	0.034	0.762
	non-LA n-6 PUFAs	-0.008	0.031	0.805	-0.237	0.056	<0.001	0.077	0.033	**0.019**
	n-3 PUFAs	-0.065	0.032	0.043	-0.135	0.039	<0.001	0.005	0.033	0.880
rs174547	DHA	-0.076	0.036	0.034	-0.086	0.046	0.059	0.006	0.032	0.841
	non-DHA n-3 PUFAs	-0.076	0.031	0.016	-0.165	0.044	<0.001	0.018	0.032	0.577
	n-3 PUFAs	-0.072	0.029	0.012	-0.068	0.040	0.092	-0.053	0.033	0.104
rs3798713	DHA	-0.084	0.032	0.008	-0.048	0.046	0.296	-0.043	0.031	0.167
	non-DHA n-3 PUFAs	-0.062	0.028	0.027	-0.087	0.044	0.046	-0.042	0.032	0.185
	n-3 PUFAs	0.082	0.033	0.013	-0.131	0.055	0.017	-0.002	0.034	0.950
rs174538	DHA	0.097	0.037	0.008	-0.084	0.057	0.137	0.002	0.033	0.942
	non-DHA n-3 PUFAs	0.091	0.032	0.004	-0.128	0.057	0.025	-0.019	0.033	0.561

	n-3 PUFAs	-0.106	0.029	<0.001	-0.066	0.039	0.088	-0.058	0.033	0.080
rs780094	DHA	-0.121	0.032	<0.001	-0.040	0.045	0.372	-0.054	0.032	0.091
	non-DHA n-3 PUFAs	-0.095	0.028	<0.001	-0.086	0.042	0.042	-0.046	0.032	0.143
	n-3 PUFAs	-0.068	0.029	0.018	-0.063	0.040	0.115	-0.059	0.033	0.073
rs3734398	DHA	-0.080	0.032	0.012	-0.046	0.046	0.316	-0.045	0.031	0.147
	non-DHA n-3 PUFAs	-0.057	0.028	0.043	-0.082	0.044	0.060	-0.048	0.032	0.125
	n-3 PUFAs	0.065	0.032	0.043	-0.125	0.052	0.016	-0.005	0.033	0.880
rs174547	DHA	0.076	0.036	0.034	-0.073	0.054	0.177	-0.006	0.032	0.841
	non-DHA n-3 PUFAs	0.076	0.031	0.016	-0.129	0.054	0.018	-0.018	0.032	0.577
	n-3 PUFAs	0.075	0.029	0.009	-0.185	0.049	<0.001	0.062	0.033	0.057
rs2236212	DHA	0.090	0.032	0.005	-0.146	0.053	0.006	0.052	0.031	0.095
	non-DHA n-3 PUFAs	0.063	0.028	0.024	-0.179	0.051	<0.001	0.048	0.032	0.126

FA, fatty acid; MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid; T2D, type 2 diabetes.

β coefficients were estimated using standardized values of plasma fatty acids from Cox proportional hazards models adjusted for age, sex, centers, BMI, education, Townsend deprivation index, household income, smoking, alcohol consumption, physical activity, history of hypertension, history of high cholesterol, vitamin supplement use, mineral supplement use, aspirin use, and remaining plasma fatty acids (SFAs, MUFAs, PUFAs, n-6 PUFAs, LA, non-LA n-6 PUFAs, n-3 PUFAs, DHA, and non-DHA n-3 PUFAs).

Supplementary Table 12. Multivariable hazard ratio (95% CIs) of T2D from subgroup analyses

	Sex				
	Women (*n*=53,236)		Men (*n*=42,618)		*P* for interaction
	HR (95% CI)	*P* value	HR (95% CI)	*P* value	
Cases/person-years	1,386/620,830		1,666/489,810		
Plasma SFAs	1.04 (1.01-1.06)	0.002	1.03 (1.01-1.05)	<0.001	0.368
Plasma MUFAs	1.06 (1.04-1.09)	<0.001	1.03 (1.00-1.05)	0.021	0.006
Plasma PUFAs	0.51 (0.43-0.59)	<0.001	0.67 (0.60-0.76)	<0.001	<0.001
Plasma n-6 PUFAs	0.57 (0.49-0.65)	<0.001	0.72 (0.64-0.80)	<0.001	<0.001
Plasma LA	0.63 (0.55-0.72)	<0.001	0.68 (0.61-0.76)	<0.001	0.027
Plasma non-LA n-6 PUFAs	0.82 (0.75-0.90)	<0.001	0.95 (0.88-1.02)	0.173	0.005
Plasma n-3 PUFAs	0.88 (0.81-0.96)	0.003	0.91 (0.85-0.98)	0.013	0.604
Plasma DHA	0.87 (0.78-0.97)	0.014	0.96 (0.88-1.05)	0.383	0.017
Plasma non-DHA n-3 PUFAs	0.91 (0.83-1.00)	0.061	0.90 (0.83-0.98)	0.011	0.731
Plasma n-6/n-3 ratio	1.00 (0.95-1.04)	0.882	1.02 (0.98-1.07)	0.349	0.489
	Baseline age (years)				
	<65 (*n*=80,465)		≥65 (*n*=15,389)		*P* for interaction
	HR (95% CI)	*P* value	HR (95% CI)	*P* value	
Cases/person-years	2,295/938,139		757/172,501		
Plasma SFAs	1.03 (1.01-1.04)	<0.001	1.75 (1.47-2.08)	<0.001	0.009
Plasma MUFAs	1.03 (1.01-1.05)	0.001	1.44 (1.22-1.69)	<0.001	0.690
Plasma PUFAs	0.63 (0.56-0.70)	<0.001	0.60 (0.48-0.74)	<0.001	0.292
Plasma n-6 PUFAs	0.67 (0.61-0.74)	<0.001	0.65 (0.54-0.79)	<0.001	0.481
Plasma LA	0.68 (0.62-0.74)	<0.001	0.64 (0.54-0.76)	<0.001	0.597
Plasma non-LA n-6 PUFAs	0.89 (0.83-0.95)	<0.001	0.95 (0.84-1.07)	0.406	0.271
Plasma n-3 PUFAs	0.89 (0.83-0.94)	<0.001	0.94 (0.84-1.04)	0.237	0.088
Plasma DHA	0.93 (0.86-1.01)	0.072	0.94 (0.82-1.07)	0.327	0.069
Plasma non-DHA n-3 PUFAs	0.90 (0.84-0.97)	0.006	0.89 (0.79-1.01)	0.074	0.290
Plasma n-6/n-3 ratio	1.00 (0.97-1.04)	0.971	1.05 (0.98-1.14)	0.161	0.650
	Baseline BMI				
	<30 (*n*=74,322)		≥30 (*n*=21,230)		*P* for interaction
	HR (95% CI)	*P* value	HR (95% CI)	*P* value	
Cases/person-years	1,366/866,416		1,665/240,963		
Plasma SFAs	1.03 (1.01-1.05)	0.005	1.03 (1.01-1.05)	<0.001	0.929
Plasma MUFAs	1.05 (1.03-1.07)	<0.001	1.02 (1.00-1.05)	0.029	0.082
Plasma PUFAs	0.59 (0.50-0.68)	<0.001	0.64 (0.57-0.73)	<0.001	0.051
Plasma n-6 PUFAs	0.63 (0.55-0.72)	<0.001	0.70 (0.62-0.78)	<0.001	0.083
Plasma LA	0.67 (0.59-0.76)	<0.001	0.66 (0.59-0.74)	<0.001	0.547
Plasma non-LA n-6 PUFAs	0.87 (0.79-0.95)	0.003	0.91 (0.84-0.98)	0.017	0.085
Plasma n-3 PUFAs	0.89 (0.82-0.96)	0.004	0.91 (0.84-0.98)	0.011	0.874
Plasma DHA	0.90 (0.81-0.99)	0.038	0.97 (0.88-1.06)	0.435	0.047
Plasma non-DHA n-3 PUFAs	0.96 (0.87-1.05)	0.324	0.85 (0.78-0.92)	<0.001	0.551

Plasma n-6/n-3 ratio	1.04 (0.99-1.09)	0.130	1.00 (0.96-1.04)	0.907	0.459
	Townsend deprivation index				
	Below median (*n*=47,866)		**Above median (*n*=47,866)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	1,184/559,077		1,867/550,128		
Plasma SFAs	1.02 (1.00-1.04)	0.051	1.04 (1.02-1.06)	<0.001	0.196
Plasma MUFAs	1.02 (1.00-1.05)	0.091	1.06 (1.03-1.08)	<0.001	0.064
Plasma PUFAs	0.59 (0.50-0.69)	<0.001	0.63 (0.56-0.72)	<0.001	0.255
Plasma n-6 PUFAs	0.63 (0.55-0.73)	<0.001	0.69 (0.62-0.77)	<0.001	0.354
Plasma LA	0.65 (0.56-0.74)	<0.001	0.68 (0.61-0.75)	<0.001	0.857
Plasma non-LA n-6 PUFAs	0.85 (0.76-0.94)	0.001	0.92 (0.86-0.99)	0.035	0.090
Plasma n-3 PUFAs	0.90 (0.83-0.99)	0.021	0.90 (0.84-0.97)	0.003	0.455
Plasma DHA	0.95 (0.85-1.06)	0.330	0.92 (0.85-1.01)	0.077	0.536
Plasma non-DHA n-3 PUFAs	0.87 (0.78-0.96)	0.007	0.92 (0.85-1.00)	0.037	0.473
Plasma n-6/n-3 ratio	1.06 (1.00-1.13)	0.056	0.99 (0.95-1.03)	0.691	0.126
	Smoking status				
	Never (*n*=53,687)		**Previous/current (*n*=41,723)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	1,435/626,442		1,591/479,197		
Plasma SFAs	1.04 (1.02-1.06)	<0.001	1.02 (1.00-1.04)	0.020	0.417
Plasma MUFAs	1.05 (1.02-1.08)	<0.001	1.03 (1.01-1.05)	0.015	0.108
Plasma PUFAs	0.56 (0.48-0.66)	<0.001	0.65 (0.58-0.74)	<0.001	0.036
Plasma n-6 PUFAs	0.61 (0.54-0.70)	<0.001	0.70 (0.63-0.79)	<0.001	0.008
Plasma LA	0.66 (0.59-0.75)	<0.001	0.66 (0.60-0.74)	<0.001	0.043
Plasma non-LA n-6 PUFAs	0.85 (0.78-0.93)	<0.001	0.93 (0.86-1.01)	0.084	0.257
Plasma n-3 PUFAs	0.93 (0.86-1.00)	0.055	0.89 (0.82-0.95)	0.001	0.049
Plasma DHA	0.94 (0.85-1.04)	0.228	0.93 (0.85-1.02)	0.144	0.565
Plasma non-DHA n-3 PUFAs	0.94 (0.85-1.03)	0.151	0.87 (0.80-0.95)	0.002	0.029
Plasma n-6/n-3 ratio	0.99 (0.95-1.04)	0.751	1.03 (0.98-1.08)	0.222	0.130
	Alcohol consumption				
	Never/special occasions only (*n*=17,288)		**≥1 time/month (*n*=78,378)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	978/196,931		2,062/911,658		
Plasma SFAs	1.03 (1.01-1.06)	0.010	1.03 (1.01-1.05)	<0.001	0.963
Plasma MUFAs	1.04 (1.01-1.07)	0.015	1.03 (1.02-1.05)	<0.001	0.766
Plasma PUFAs	0.65 (0.54-0.78)	<0.001	0.61 (0.54-0.68)	<0.001	0.026
Plasma n-6 PUFAs	0.71 (0.61-0.84)	<0.001	0.65 (0.59-0.72)	<0.001	0.018
Plasma LA	0.78 (0.67-0.91)	0.001	0.63 (0.57-0.69)	<0.001	0.002
Plasma non-LA n-6 PUFAs	0.88 (0.79-0.97)	0.013	0.89 (0.83-0.96)	0.003	0.704
Plasma n-3 PUFAs	0.92 (0.83-1.01)	0.073	0.89 (0.83-0.95)	<0.001	0.888
Plasma DHA	0.96 (0.85-1.08)	0.495	0.93 (0.85-1.01)	0.072	0.314
Plasma non-DHA n-3 PUFAs	0.89 (0.80-0.99)	0.026	0.90 (0.84-0.98)	0.010	0.334
Plasma n-6/n-3 ratio	1.01 (0.97-1.05)	0.733	1.02 (0.97-1.07)	0.403	0.933

	Physical activity (MET-h/wk)				
	Below median (*n*=38,956)		Above median (*n*=38,958)		*P* for interaction
	HR (95% CI)	*P* value	HR (95% CI)	*P* value	
Cases/person-years	1,298/451,193		1,005/452,615		
Plasma SFAs	1.02 (1.00-1.04)	0.025	1.04 (1.01-1.07)	0.003	0.298
Plasma MUFAs	1.02 (1.00-1.05)	0.036	1.05 (1.02-1.09)	0.005	0.121
Plasma PUFAs	0.61 (0.53-0.70)	<0.001	0.63 (0.53-0.75)	<0.001	0.922
Plasma n-6 PUFAs	0.67 (0.58-0.76)	<0.001	0.67 (0.57-0.79)	<0.001	0.995
Plasma LA	0.64 (0.56-0.72)	<0.001	0.70 (0.60-0.80)	<0.001	0.945
Plasma non-LA n-6 PUFAs	0.91 (0.83-0.99)	0.037	0.90 (0.81-1.00)	0.058	0.973
Plasma n-3 PUFAs	0.92 (0.85-0.99)	0.031	0.86 (0.79-0.95)	0.002	0.673
Plasma DHA	0.95 (0.86-1.05)	0.350	0.92 (0.82-1.04)	0.192	0.945
Plasma non-DHA n-3 PUFAs	0.90 (0.82-0.99)	0.030	0.87 (0.78-0.97)	0.012	0.713
Plasma n-6/n-3 ratio	1.05 (1.00-1.11)	0.074	1.03 (0.97-1.09)	0.361	0.470
	History of hypertension				
	No (*n*=44,372)		**Yes (*n*=51,482)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	722/521,396		2,330/589,245		
Plasma SFAs	1.03 (1.00-1.06)	0.046	1.03 (1.01-1.05)	<0.001	0.939
Plasma MUFAs	1.05 (1.02-1.08)	<0.001	1.03 (1.01-1.05)	0.003	0.095
Plasma PUFAs	0.49 (0.40-0.61)	<0.001	0.66 (0.59-0.73)	<0.001	0.003
Plasma n-6 PUFAs	0.54 (0.45-0.65)	<0.001	0.71 (0.64-0.78)	<0.001	0.005
Plasma LA	0.60 (0.50-0.71)	<0.001	0.68 (0.62-0.75)	<0.001	0.046
Plasma non-LA n-6 PUFAs	0.83 (0.73-0.94)	0.004	0.92 (0.86-0.98)	0.015	0.072
Plasma n-3 PUFAs	0.88 (0.79-0.99)	0.027	0.91 (0.85-0.97)	0.002	0.582
Plasma DHA	0.82 (0.70-0.96)	0.011	0.96 (0.89-1.03)	0.268	0.044
Plasma non-DHA n-3 PUFAs	1.00 (0.88-1.13)	0.967	0.87 (0.81-0.94)	<0.001	0.675
Plasma n-6/n-3 ratio	1.00 (0.93-1.07)	0.958	1.01 (0.98-1.05)	0.398	0.884
	History of high cholesterol				
	No (*n*=84,337)		**Yes (*n*=11,517)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	2,226/981,121		826/129,519		
Plasma SFAs	1.04 (1.03-1.06)	<0.001	1.02 (0.99-1.05)	0.235	0.100
Plasma MUFAs	1.06 (1.04-1.08)	<0.001	1.02 (0.98-1.05)	0.340	0.021
Plasma PUFAs	0.59 (0.53-0.66)	<0.001	0.70 (0.58-0.84)	<0.001	<0.001
Plasma n-6 PUFAs	0.64 (0.58-0.70)	<0.001	0.74 (0.63-0.88)	<0.001	<0.001
Plasma LA	0.64 (0.58-0.70)	<0.001	0.73 (0.63-0.85)	<0.001	0.010
Plasma non-LA n-6 PUFAs	0.84 (0.78-0.91)	<0.001	1.00 (0.93-1.07)	0.946	0.016
Plasma n-3 PUFAs	0.90 (0.84-0.96)	0.001	0.92 (0.83-1.01)	0.087	0.295
Plasma DHA	0.96 (0.88-1.04)	0.304	0.87 (0.77-0.99)	0.038	0.255
Plasma non-DHA n-3 PUFAs	0.87 (0.80-0.93)	<0.001	1.01 (0.90-1.12)	0.893	0.578
Plasma n-6/n-3 ratio	1.00 (0.97-1.04)	0.885	1.08 (0.98-1.20)	0.129	0.189
	Family history of diabetes				

	No (*n*=75,502)		Yes (*n*=20,352)		*P* for interaction
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	1,942/876,901		1,110/233,739		
Plasma SFAs	1.02 (1.01-1.04)	0.009	1.06 (1.03-1.08)	<0.001	0.023
Plasma MUFAs	1.03 (1.01-1.04)	0.004	1.07 (1.03-1.11)	<0.001	0.060
Plasma PUFAs	0.60 (0.53-0.68)	<0.001	0.65 (0.56-0.77)	<0.001	0.546
Plasma n-6 PUFAs	0.65 (0.58-0.72)	<0.001	0.71 (0.61-0.82)	<0.001	0.474
Plasma LA	0.63 (0.57-0.69)	<0.001	0.75 (0.65-0.86)	<0.001	0.085
Plasma non-LA n-6 PUFAs	0.92 (0.85-0.99)	0.024	0.85 (0.77-0.94)	0.001	0.060
Plasma n-3 PUFAs	0.90 (0.84-0.96)	0.001	0.91 (0.83-1.00)	0.049	0.826
Plasma DHA	0.94 (0.86-1.02)	0.122	0.92 (0.81-1.03)	0.145	0.773
Plasma non-DHA n-3 PUFAs	0.90 (0.83-0.97)	0.006	0.92 (0.83-1.02)	0.111	0.855
Plasma n-6/n-3 ratio	1.02 (0.98-1.07)	0.367	1.00 (0.95-1.04)	0.812	0.693
	Vitamin supplementation				
	No (*n*=65,434)		**Yes (*n*=30,420)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	2,135/758,253		917/352,388		
Plasma SFAs	1.04 (1.02-1.06)	<0.001	1.02 (1.00-1.05)	0.093	0.304
Plasma MUFAs	1.06 (1.03-1.08)	<0.001	1.02 (0.99-1.05)	0.170	0.053
Plasma PUFAs	0.61 (0.55-0.69)	<0.001	0.62 (0.52-0.74)	<0.001	0.652
Plasma n-6 PUFAs	0.67 (0.60-0.74)	<0.001	0.66 (0.57-0.77)	<0.001	0.320
Plasma LA	0.67 (0.60-0.74)	<0.001	0.67 (0.58-0.77)	<0.001	0.403
Plasma non-LA n-6 PUFAs	0.89 (0.83-0.95)	0.001	0.90 (0.81-1.01)	0.067	0.755
Plasma n-3 PUFAs	0.87 (0.82-0.93)	<.0001	0.95 (0.87-1.03)	0.223	0.109
Plasma DHA	0.89 (0.81-0.97)	0.007	0.99 (0.90-1.10)	0.895	0.281
Plasma non-DHA n-3 PUFAs	0.90 (0.83-0.97)	0.005	0.90 (0.81-1.01)	0.066	0.154
Plasma n-6/n-3 ratio	1.03 (0.99-1.07)	0.202	0.99 (0.93-1.05)	0.717	0.253
	Mineral supplementation				
	No (*n*=84,084)		**Yes (*n*=11,770)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	2,704/974,332		348/136,309		
Plasma SFAs	1.03 (1.02-1.05)	<0.001	1.03 (1.00-1.07)	0.074	0.894
Plasma MUFAs	1.03 (1.02-1.05)	<0.001	1.04 (0.99-1.09)	0.115	0.389
Plasma PUFAs	0.61 (0.56-0.68)	<0.001	0.64 (0.47-0.88)	0.006	0.037
Plasma n-6 PUFAs	0.66 (0.61-0.73)	<0.001	0.66 (0.50-0.88)	0.004	0.078
Plasma LA	0.66 (0.61-0.72)	<0.001	0.68 (0.53-0.87)	0.002	0.027
Plasma non-LA n-6 PUFAs	0.89 (0.84-0.95)	<0.001	0.89 (0.74-1.07)	0.197	0.818
Plasma n-3 PUFAs	0.89 (0.84-0.94)	<0.001	1.02 (0.88-1.19)	0.790	0.205
Plasma DHA	0.91 (0.85-0.98)	0.017	1.03 (0.85-1.25)	0.789	0.112
Plasma non-DHA n-3 PUFAs	0.90 (0.84-0.96)	0.002	0.93 (0.78-1.11)	0.422	0.615
Plasma n-6/n-3 ratio	1.01 (0.98-1.04)	0.533	0.99 (0.89-1.11)	0.901	0.907
	Aspirin use				
	No (*n*=87,610)		**Yes (*n*=8,244)**		***P* for interaction**

	HR (95% CI)	*P* value	HR (95% CI)	*P* value	
Cases/person-years	2,570/1,016,538		482/94,103		
Plasma SFAs	1.04 (1.02-1.05)	<0.001	1.01 (0.98-1.04)	0.507	0.173
Plasma MUFAs	1.06 (1.04-1.08)	<0.001	1.00 (0.96-1.05)	0.901	0.070
Plasma PUFAs	0.60 (0.54-0.66)	<0.001	0.72 (0.56-0.93)	0.011	<0.001
Plasma n-6 PUFAs	0.64 (0.59-0.71)	<0.001	0.76 (0.60-0.96)	0.019	<0.001
Plasma LA	0.65 (0.59-0.71)	<0.001	0.76 (0.61-0.93)	0.009	0.006
Plasma non-LA n-6 PUFAs	0.87 (0.81-0.93)	<0.001	0.98 (0.90-1.07)	0.655	0.034
Plasma n-3 PUFAs	0.89 (0.84-0.95)	<0.001	0.93 (0.83-1.05)	0.250	0.598
Plasma DHA	0.93 (0.86-1.00)	0.056	0.93 (0.80-1.07)	0.302	0.128
Plasma non-DHA n-3 PUFAs	0.90 (0.84-0.97)	0.004	0.91 (0.79-1.05)	0.205	0.725
Plasma n-6/n-3 ratio	1.01 (0.97-1.04)	0.732	1.04 (0.94-1.15)	0.423	0.366
	Healthy diet score				
	Below median (*n*=47,878)		**Above median (*n*=47,867)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	1,796/552,088		1,248/557,379		
Plasma SFAs	1.04 (1.02-1.06)	<0.001	1.03 (1.00-1.05)	0.019	0.280
Plasma MUFAs	1.07 (1.05-1.10)	<0.001	1.02 (0.99-1.04)	0.241	0.006
Plasma PUFAs	0.63 (0.56-0.71)	<0.001	0.59 (0.51-0.69)	<0.001	0.196
Plasma n-6 PUFAs	0.68 (0.61-0.76)	<0.001	0.64 (0.56-0.74)	<0.001	0.101
Plasma LA	0.65 (0.59-0.73)	<0.001	0.68 (0.60-0.77)	<0.001	0.070
Plasma non-LA n-6 PUFAs	0.91 (0.84-0.98)	0.015	0.86 (0.78-0.94)	0.002	0.736
Plasma n-3 PUFAs	0.88 (0.82-0.95)	<0.001	0.93 (0.86-1.00)	0.060	0.160
Plasma DHA	0.94 (0.86-1.04)	0.218	0.92 (0.83-1.02)	0.095	0.774
Plasma non-DHA n-3 PUFAs	0.86 (0.79-0.94)	<0.001	0.95 (0.87-1.04)	0.258	0.177
Plasma n-6/n-3 ratio	1.01 (0.96-1.06)	0.711	1.01 (0.97-1.06)	0.648	0.580
	Healthy lifestyle score				
	Below median (*n*=45,766)		**Above median (*n*=50,088)**		***P* for interaction**
	HR (95% CI)	***P* value**	**HR (95% CI)**	***P* value**	
Cases/person-years	2,185/524,452		867/586,189		
Plasma SFAs	1.03 (1.02-1.05)	<0.001	1.03 (1.00-1.06)	0.039	0.690
Plasma MUFAs	1.03 (1.02-1.05)	<0.001	1.04 (1.00-1.08)	0.032	0.579
Plasma PUFAs	0.65 (0.59-0.73)	<0.001	0.51 (0.42-0.62)	<0.001	0.107
Plasma n-6 PUFAs	0.70 (0.64-0.78)	<0.001	0.56 (0.47-0.67)	<0.001	0.057
Plasma LA	0.67 (0.61-0.74)	<0.001	0.65 (0.55-0.76)	<0.001	0.320
Plasma non-LA n-6 PUFAs	0.92 (0.86-0.99)	0.024	0.83 (0.74-0.93)	0.001	0.141
Plasma n-3 PUFAs	0.91 (0.85-0.97)	0.004	0.89 (0.80-0.98)	0.016	0.198
Plasma DHA	0.95 (0.87-1.03)	0.176	0.91 (0.80-1.03)	0.134	0.810
Plasma non-DHA n-3 PUFAs	0.86 (0.80-0.93)	<0.001	1.01 (0.91-1.13)	0.818	0.140
Plasma n-6/n-3 ratio	1.00 (0.97-1.04)	0.958	1.03 (0.97-1.10)	0.338	0.776

MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid; T2D, type 2 diabetes.

Hazard ratio for 1 SD increment in plasma fatty acids were estimated by Cox proportional hazards models adjusted for age, sex, race, centers, BMI, education, Townsend deprivation index, household income,

smoking, alcohol consumption, physical activity, history of hypertension, history of high cholesterol, family history of diabetes, vitamin supplement use, mineral supplement use, aspirin use, and remaining plasma fatty acids (SFAs, MUFAs, PUFAs, n-6 PUFAs, LA, non-LA n-6 PUFAs, n-3 PUFAs, DHA, and non-DHA n-3 PUFAs).

Supplementary Table 13. Multivariable hazard ratio (95% CIs) of T2D from sensitivity analyses

	Quartiles of plasma fatty acids (% of total fatty acids)				
	Q1	**Q2**	**Q3**	**Q4**	***P* trend**
Further adjusted for lipid-lowering medications					
Plasma SFAs	1.00	1.20 (1.05-1.38)	1.22 (1.05-1.41)	1.72 (1.47-2.03)	<0.001
Plasma MUFAs	1.00	1.16 (0.97-1.39)	1.33 (1.09-1.64)	1.88 (1.49-2.37)	<0.001
Plasma PUFAs	1.00	0.86 (0.75-0.98)	0.79 (0.65-0.96)	0.68 (0.51-0.89)	0.005
Plasma n-6 PUFAs	1.00	0.81 (0.72-0.92)	0.76 (0.64-0.90)	0.72 (0.57-0.90)	<0.001
Plasma LA	1.00	0.81 (0.72-0.90)	0.67 (0.57-0.77)	0.57 (0.46-0.69)	<0.001
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.86 (0.76-0.96)	0.73 (0.63-0.85)	<0.001
Plasma n-3 PUFAs	1.00	0.94 (0.86-1.04)	0.77 (0.69-0.86)	0.82 (0.72-0.93)	<0.001
Plasma DHA	1.00	0.92 (0.83-1.02)	0.85 (0.75-0.98)	0.95 (0.79-1.14)	0.297
Plasma non-DHA n-3 PUFAs	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.92)	0.74 (0.64-0.87)	<0.001
Plasma n-6/n-3 ratio	1.00	0.98 (0.88-1.08)	1.06 (0.96-1.18)	1.10 (0.99-1.22)	0.037
Further adjusted for glucosamine					
Plasma SFAs	1.00	1.20 (1.05-1.38)	1.21 (1.04-1.41)	1.72 (1.46-2.02)	<0.001
Plasma MUFAs	1.00	1.16 (0.97-1.39)	1.33 (1.09-1.64)	1.87 (1.48-2.37)	<0.001
Plasma PUFAs	1.00	0.86 (0.75-0.98)	0.79 (0.65-0.96)	0.67 (0.51-0.89)	0.005
Plasma n-6 PUFAs	1.00	0.81 (0.72-0.92)	0.76 (0.64-0.90)	0.72 (0.57-0.90)	<0.001
Plasma LA	1.00	0.80 (0.72-0.89)	0.66 (0.57-0.77)	0.56 (0.46-0.69)	<0.001
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.87 (0.77-0.97)	0.75 (0.64-0.87)	<0.001
Plasma n-3 PUFAs	1.00	0.94 (0.86-1.04)	0.77 (0.69-0.86)	0.82 (0.72-0.93)	<0.001
Plasma DHA	1.00	0.92 (0.83-1.02)	0.85 (0.75-0.98)	0.95 (0.79-1.13)	0.277
Plasma non-DHA n-3 PUFAs	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.92)	0.74 (0.64-0.86)	<0.001
Plasma n-6/n-3 ratio	1.00	0.98 (0.88-1.08)	1.06 (0.96-1.18)	1.10 (0.98-1.22)	0.038
Further adjusted for hormone and contraceptive					
Plasma SFAs	1.00	1.20 (1.05-1.38)	1.22 (1.05-1.41)	1.72 (1.47-2.03)	<0.001
Plasma MUFAs	1.00	1.16 (0.97-1.38)	1.33 (1.08-1.63)	1.87 (1.48-2.36)	<0.001
Plasma PUFAs	1.00	0.86 (0.75-0.98)	0.79 (0.65-0.96)	0.67 (0.51-0.89)	0.005
Plasma n-6 PUFAs	1.00	0.81 (0.72-0.92)	0.76 (0.64-0.90)	0.72 (0.57-0.90)	<0.001
Plasma LA	1.00	0.80 (0.72-0.89)	0.66 (0.57-0.77)	0.56 (0.46-0.69)	<0.001
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.87 (0.77-0.97)	0.75 (0.64-0.87)	<0.001
Plasma n-3 PUFAs	1.00	0.94 (0.86-1.04)	0.78 (0.70-0.86)	0.82 (0.72-0.94)	<0.001
Plasma DHA	1.00	0.92 (0.83-1.02)	0.86 (0.75-0.98)	0.95 (0.79-1.14)	0.303
Plasma non-DHA n-3 PUFAs	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.92)	0.75 (0.64-0.87)	<0.001
Plasma n-6/n-3 ratio	1.00	0.97 (0.88-1.08)	1.06 (0.96-1.17)	1.09 (0.98-1.22)	0.047
Further adjusted for a sleep pattern					
Plasma SFAs	1.00	1.21 (1.05-1.38)	1.22 (1.05-1.42)	1.73 (1.47-2.03)	<0.001
Plasma MUFAs	1.00	1.17 (0.98-1.40)	1.35 (1.10-1.66)	1.90 (1.51-2.41)	<0.001
Plasma PUFAs	1.00	0.87 (0.76-0.99)	0.80 (0.66-0.98)	0.69 (0.52-0.91)	0.009
Plasma n-6 PUFAs	1.00	0.82 (0.73-0.92)	0.76 (0.64-0.90)	0.73 (0.58-0.91)	<0.001
Plasma LA	1.00	0.79 (0.71-0.88)	0.66 (0.57-0.77)	0.57 (0.46-0.70)	<0.001
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.87 (0.78-0.97)	0.75 (0.65-0.87)	<0.001
Plasma n-3 PUFAs	1.00	0.94 (0.85-1.03)	0.77 (0.69-0.86)	0.82 (0.72-0.93)	<0.001
Plasma DHA	1.00	0.93 (0.84-1.03)	0.86 (0.75-0.99)	0.96 (0.80-1.15)	0.344
Plasma non-DHA n-3 PUFAs	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.92)	0.74 (0.64-0.86)	<0.001

Plasma n-6/n-3 ratio	1.00	0.97 (0.88-1.08)	1.06 (0.96-1.17)	1.09 (0.98-1.22)	0.045
Further adjusted for healthy diet score					
Plasma SFAs	1.00	1.20 (1.05-1.38)	1.21 (1.04-1.41)	1.72 (1.46-2.02)	<0.001
Plasma MUFAs	1.00	1.17 (0.98-1.40)	1.35 (1.10-1.66)	1.90 (1.50-2.40)	<0.001
Plasma PUFAs	1.00	0.87 (0.76-0.99)	0.80 (0.66-0.98)	0.69 (0.52-0.92)	0.009
Plasma n-6 PUFAs	1.00	0.82 (0.72-0.92)	0.76 (0.64-0.90)	0.72 (0.57-0.91)	<0.001
Plasma LA	1.00	0.80 (0.72-0.89)	0.67 (0.57-0.77)	0.57 (0.46-0.70)	<0.001
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.86 (0.77-0.97)	0.74 (0.64-0.86)	<0.001
Plasma n-3 PUFAs	1.00	0.95 (0.86-1.04)	0.78 (0.70-0.87)	0.84 (0.74-0.96)	<0.001
Plasma DHA	1.00	0.93 (0.84-1.03)	0.87 (0.76-0.99)	0.97 (0.81-1.16)	0.418
Plasma non-DHA n-3 PUFAs	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.93)	0.75 (0.65-0.87)	<0.001
Plasma n-6/n-3 ratio	1.00	0.96 (0.87-1.07)	1.04 (0.94-1.16)	1.07 (0.96-1.20)	0.096
Further adjusted for history of nonalcoholic fatty liver disease					
Plasma SFAs	1.00	1.20 (1.05-1.38)	1.21 (1.04-1.41)	1.72 (1.46-2.02)	<0.001
Plasma MUFAs	1.00	1.16 (0.97-1.39)	1.33 (1.08-1.63)	1.87 (1.48-2.37)	<0.001
Plasma PUFAs	1.00	0.86 (0.75-0.98)	0.79 (0.65-0.96)	0.67 (0.51-0.89)	0.005
Plasma n-6 PUFAs	1.00	0.81 (0.72-0.92)	0.76 (0.64-0.90)	0.72 (0.57-0.90)	<0.001
Plasma LA	1.00	0.80 (0.72-0.89)	0.66 (0.57-0.77)	0.56 (0.46-0.69)	<0.001
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.87 (0.77-0.97)	0.75 (0.64-0.87)	<0.001
Plasma n-3 PUFAs	1.00	0.94 (0.86-1.04)	0.77 (0.69-0.86)	0.82 (0.72-0.93)	<0.001
Plasma DHA	1.00	0.92 (0.83-1.02)	0.86 (0.75-0.98)	0.95 (0.79-1.14)	0.288
Plasma non-DHA n-3 PUFAs	1.00	0.87 (0.78-0.97)	0.82 (0.73-0.92)	0.75 (0.64-0.87)	<0.001
Plasma n-6/n-3 ratio	1.00	0.98 (0.88-1.08)	1.06 (0.96-1.18)	1.09 (0.98-1.22)	0.043
Excluding T2D cases occurred within the first 2 years					
Cases/*n*	453/23,937	545/23,938	642/23,924	1,243/23,886	
Plasma SFAs	1.00	1.21 (1.05-1.39)	1.21 (1.03-1.41)	1.72 (1.45-2.03)	<0.001
Cases/*n*	248/23,950	408/23,937	709/23,933	1,518/23,865	
Plasma MUFAs	1.00	1.14 (0.95-1.37)	1.33 (1.08-1.65)	1.85 (1.46-2.35)	<0.001
Cases/*n*	1,532/23,864	688/23,934	396/23,940	267/23,947	
Plasma PUFAs	1.00	0.87 (0.76-0.99)	0.78 (0.64-0.96)	0.67 (0.50-0.89)	0.007
Cases/*n*	1,493/23,870	665/23,929	418/23,942	307/23,944	
Plasma n-6 PUFAs	1.00	0.82 (0.72-0.93)	0.76 (0.64-0.91)	0.72 (0.57-0.91)	0.001
Cases/*n*	1,443/23,881	692/23,915	445/23,947	303/23,942	
Plasma LA	1.00	0.79 (0.71-0.88)	0.67 (0.58-0.78)	0.56 (0.45-0.69)	<0.001
Cases/*n*	969/23,902	710/23,920	639/23,930	565/23,933	
Plasma non-LA n-6 PUFAs	1.00	0.87 (0.79-0.96)	0.87 (0.77-0.97)	0.74 (0.64-0.87)	<0.001
Cases/*n*	882/23,906	812/23,910	624/23,933	565/23,936	
Plasma n-3 PUFAs	1.00	0.94 (0.85-1.04)	0.78 (0.70-0.88)	0.83 (0.73-0.95)	<0.001
Cases/*n*	1,287/23,874	706/23,929	479/23,938	411/23,944	
Plasma DHA	1.00	0.93 (0.84-1.04)	0.87 (0.75-0.99)	0.97 (0.81-1.17)	0.432
Cases/*n*	659/23,918	750/23,921	777/23,919	697/23,927	
Plasma non-DHA n-3 PUFAs	1.00	0.88 (0.78-0.98)	0.82 (0.73-0.93)	0.74 (0.64-0.87)	<0.001
Cases/*n*	737/23,924	711/23,927	730/23,919	705/23,915	
Plasma n-6/n-3 ratio	1.00	0.98 (0.88-1.08)	1.06 (0.95-1.17)	1.08 (0.97-1.21)	0.080
Excluding participants with HbA1c levels ≥ 48 (mmol/mol) or glucose level ≥ 11.1 (mmol/L)					
Cases/*n*	444/23,892	516/23,877	603/23,829	1,118/23,643	

Plasma SFAs	1.00	1.15 (1.00-1.33)	1.13 (0.97-1.33)	1.55 (1.30-1.83)	<0.001
Cases/*n*	245/23,920	393/23,893	663/23,836	1,380/23,592	
Plasma MUFAs	1.00	1.09 (0.91-1.32)	1.24 (1.00-1.53)	1.67 (1.31-2.14)	<0.001
Cases/*n*	1,391/23,585	641/23,840	389/23,902	260/23,914	
Plasma PUFAs	1.00	0.84 (0.73-0.96)	0.76 (0.62-0.94)	0.62 (0.46-0.83)	0.002
Cases/*n*	1,364/23,614	610/23,826	403/23,883	304/23,918	
Plasma n-6 PUFAs	1.00	0.78 (0.69-0.89)	0.74 (0.62-0.89)	0.70 (0.55-0.89)	<0.001
Cases/*n*	1,317/23,628	656/23,838	415/23,866	293/23,909	
Plasma LA	1.00	0.79 (0.71-0.89)	0.65 (0.56-0.77)	0.55 (0.44-0.68)	<0.001
Cases/*n*	862/23,696	671/23,827	608/23,853	540/23,865	
Plasma non-LA n-6 PUFAs	1.00	0.91 (0.82-1.02)	0.91 (0.81-1.03)	0.78 (0.67-0.91)	0.004
Cases/*n*	812/23,745	753/23,786	584/23,840	532/23,870	
Plasma n-3 PUFAs	1.00	0.93 (0.84-1.04)	0.78 (0.69-0.87)	0.81 (0.71-0.93)	<0.001
Cases/*n*	1,173/23,633	661/23,831	455/23,881	392/23,896	
Plasma DHA	1.00	0.91 (0.82-1.02)	0.84 (0.72-0.96)	0.90 (0.74-1.09)	0.142
Cases/*n*	621/23,823	683/23,782	720/23,796	657/23,840	
Plasma non-DHA n-3 PUFAs	1.00	0.86 (0.76-0.96)	0.82 (0.73-0.94)	0.76 (0.65-0.90)	0.001
Cases/*n*	691/23,829	655/23,813	675/23,794	660/23,805	
Plasma n-6/n-3 ratio	1.00	0.96 (0.86-1.07)	1.05 (0.94-1.17)	1.08 (0.97-1.21)	0.078
Excluding participants with extreme BMIs (<18.5 or >40)					
Cases/*n*	442/23,464	517/23,443	622/23,388	1,204/23,320	
Plasma SFAs	1.00	1.19 (1.04-1.38)	1.23 (1.05-1.44)	1.74 (1.47-2.07)	<0.001
Cases/*n*	244/23,534	397/23,548	687/23,429	1,457/23,104	
Plasma MUFAs	1.00	1.15 (0.96-1.38)	1.38 (1.11-1.70)	1.96 (1.53-2.49)	<0.001
Cases/*n*	1,474/23,164	662/23,399	386/23,520	263/23,532	
Plasma PUFAs	1.00	0.88 (0.76-1.00)	0.81 (0.65-0.99)	0.70 (0.52-0.93)	0.016
Cases/*n*	1,438/23,262	646/23,404	403/23,462	298/23,487	
Plasma n-6 PUFAs	1.00	0.83 (0.73-0.94)	0.78 (0.65-0.94)	0.73 (0.57-0.92)	0.002
Cases/*n*	1,378/23,223	677/23,367	428/23,506	302/23,519	
Plasma LA	1.00	0.80 (0.72-0.90)	0.67 (0.57-0.78)	0.56 (0.45-0.69)	<0.001
Cases/*n*	950/23,441	697/23,436	611/23,392	527/23,346	
Plasma non-LA n-6 PUFAs	1.00	0.88 (0.79-0.97)	0.87 (0.77-0.97)	0.74 (0.63-0.86)	<0.001
Cases/*n*	834/23,155	786/23,353	610/23,529	555/23,578	
Plasma n-3 PUFAs	1.00	0.94 (0.85-1.03)	0.78 (0.69-0.87)	0.81 (0.71-0.93)	<0.001
Cases/*n*	1,231/23,091	678/23,386	471/23,565	405/23,573	
Plasma DHA	1.00	0.91 (0.81-1.01)	0.85 (0.74-0.98)	0.94 (0.78-1.14)	0.290
Cases/*n*	628/23,230	709/23,368	758/23,455	690/23,562	
Plasma non-DHA n-3 PUFAs	1.00	0.86 (0.77-0.96)	0.82 (0.72-0.92)	0.74 (0.63-0.86)	<0.001
Cases/*n*	731/23,552	689/23,487	694/23,378	671/23,198	
Plasma n-6/n-3 ratio	1.00	0.97 (0.87-1.07)	1.05 (0.94-1.17)	1.10 (0.98-1.23)	0.039
Excluding participants with missing covariate data					
Cases/*n*	309/17,193	364/16,988	431/17,037	853/17,250	
Plasma SFAs	1.00	1.21 (1.02-1.43)	1.21 (1.00-1.45)	1.69 (1.38-2.07)	<0.001
Cases/*n*	162/17,351	282/17,166	470/16,950	1,043/17,001	
Plasma MUFAs	1.00	1.19 (0.95-1.48)	1.39 (1.08-1.80)	1.97 (1.47-2.64)	<0.001
Cases/*n*	1,055/17,114	439/16,898	292/17,136	171/17,320	

Plasma PUFAs	1.00	0.83 (0.71-0.98)	0.89 (0.70-1.14)	0.70 (0.49-0.99)	0.046
Cases/*n*	1,024/17,063	441/16,955	271/17,017	221/17,433	
Plasma n-6 PUFAs	1.00	0.80 (0.69-0.93)	0.76 (0.61-0.94)	0.80 (0.60-1.06)	0.014
Cases/*n*	990/16,897	460/17,069	296/17,144	211/17,358	
Plasma LA	1.00	0.74 (0.65-0.85)	0.64 (0.53-0.77)	0.55 (0.43-0.72)	<0.001
Cases/*n*	654/17,150	491/17,263	431/17,068	381/16,987	
Plasma non-LA n-6 PUFAs	1.00	0.89 (0.78-1.00)	0.89 (0.78-1.03)	0.78 (0.65-0.94)	0.010
Cases/*n*	620/17,190	553/17,126	418/17,300	366/16,852	
Plasma n-3 PUFAs	1.00	0.93 (0.82-1.04)	0.74 (0.64-0.84)	0.78 (0.66-0.92)	<0.001
Cases/*n*	883/16,959	475/17,166	335/17,246	264/17,097	
Plasma DHA	1.00	0.92 (0.81-1.04)	0.89 (0.76-1.05)	0.95 (0.76-1.19)	0.475
Cases/*n*	473/17,315	508/17,185	517/17,113	459/16,855	
Plasma non-DHA n-3 PUFAs	1.00	0.82 (0.72-0.94)	0.75 (0.65-0.87)	0.67 (0.56-0.81)	<0.001
Cases/*n*	489/16,903	471/17,137	499/17,191	498/17,237	
Plasma n-6/n-3 ratio	1.00	0.96 (0.85-1.10)	1.10 (0.97-1.25)	1.15 (1.01-1.32)	0.010

MUFA, monounsaturated fatty acid; PUFA, polyunsaturated fatty acid; SFA, saturated fatty acid; T2D, type 2 diabetes.

Hazard ratio were estimated from Cox proportional hazards models adjusted for age, sex, race, centers, BMI, education, Townsend deprivation index, household income, smoking, alcohol consumption, physical activity, history of hypertension, history of high cholesterol, family history of diabetes, vitamin supplement use, mineral supplement use, aspirin use, and remaining plasma fatty acids (SFAs, MUFAs, PUFAs, n-6 PUFAs, LA, non-LA n-6 PUFAs, n-3 PUFAs, DHA, and non-DHA n-3 PUFAs).