**Table S1.** Summary characteristics of participating studies. N: sample size; SD: standard deviation.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Statistics** | **Unit** | **UK Biobank** | **FinnGen** | **Published GWAS** | **Published GWAS Reference** |
| **Age** | N | years | 451,099 | 176,899 | NA | NA |
| mean (SD) |  | 57.32 (8.02) | NA | NA | NA |
| **Sex** | males / females | NA | 206,251/244,848 | NA | NA | NA |
| **Body fat percentage** | N (males / females) | % | 442,278 | NA | 100,716 (52,416/48,956) | PMID: 26833246 |
| mean (SD) | 31.39 (8.52) | Not available |
| **BMI** | N (males / females) | kg/m2 | 448,621 | NA | 681,275 | PMID: 30124842 |
| mean (SD) | 27.37 (4.76) | Not available |
| **HDL-cholesterol** | N (males / females) | mmol/L | 392,965 | NA | 188,577 | PMID: 24097068 |
| mean (SD) | 1.45 (0.38) | Not available |
| **Sex hormone-binding globulin** | N (males / females) | nmol/L | 389,354 | NA | 21,791 (12,401/9,390) | PMID: 22829776 |
| mean (SD) | 51.98 (27.77) | Not available |
| **Triglycerides** | N (males / females) | mmol/L | 429,011 | NA | 188,577 | PMID: 24097068 |
| mean (SD) | 1.75 (1.02) | Not available |
| **Aspartate transaminase** | N (males / females) | U/L | 427,778 | NA | 61,089 | PMID: 22001757 |
| mean (SD) | 26.21 (10.61) | Not available |
| **Alanine transaminase** | N (males / females) | U/L | 429,203 | NA | 61,089 | PMID: 22001757 |
| mean (SD) | 23.54 (14.14) | Not available |
| **C-reactive protein** | N (males / females) | mg/L | 428,430 | NA | 204,402 | PMID: 30388399 |
| mean (SD) | 2.59 (4.37) | Not available |
| **Visceral adipose tissue** | N (males / females) | L | 32,859 | NA | 18,332 (8738/9594) | PMID: 27918534 |
| mean (SD) | 3.92 (2.3) | Not available |
| **Subcutaneous adipose tissue** | N (males / females) | L | 32,859 | NA | 18,247 (8685/9562) | PMID: 27918534 |
| mean (SD) | 8.16 (4.1) | Not available |
| **VATSAT ratio** | N (males / females) |  | 32,859 | NA | 18,191 (8374/9823) | PMID: 27918534 |
| mean (SD) |  | Not available |
| **Liver fat** | N | % | 32,655 | NA | NA | NA |
| mean (SD) | 5.06 (5) |
| **Pancreas fat** | N | % | 24,673 | NA | NA | NA |
| mean (SD) | 10.41 (7.9) |
| **Liver volume** | N | L | 32,859 | NA | NA | NA |
| mean (SD) | 1.38 (0.3) |
| **Pancreas volume** | N | L | 31,758 | NA | NA | NA |
| mean (SD) | 0.06 (0.018) |
| **Pericardial adipose tissue** | N (males / females) |  | NA | NA | 12,204 (5842/6362) | PMID: 27918534 |
| mean (SD) | Not available |
| **Type 2 diabetes** | N cases / N controls | NA | 14,371/428,017 | 23,338/148,190 | 74,124/824,006 | PMID: 30297969 |
| **Heart disease** | N cases / N controls | NA | 43,054/407,969 | 25,366/151,533 | 60,801/123,504 | PMID: 26343387 |
| **Hypertension** | N cases / N controls | NA | 101,426/349,599 | 43,576/97,214 | NA | NA |
| **Stroke** | N cases / N controls | NA | 11,926/439,096 | 14,171/133,027 | 40,585/406,111 | PMID: 29531354 |
| **Fatty liver disease** | N cases / N controls | NA | 5225/445,800 | NA | NA | NA |
| **Non-alcoholic fatter liver disease** | N cases / N controls | NA | NA | 651/176,248 | NA | NA |
| **Polycystic ovary syndrome** | N cases / N controls | NA | 738/244,064 | 462/96,172 | 10,074/103,164 | PMID: 30566500 |

**Table S2.** The summary of 254 genetic variants associated with both adiposity and a composite metabolic biomarker. EA: effect allele; EAF: effect allele frequency; P: p-value; BFP: body fat percentage; HDL: HDL-cholesterol; SHBG: sex-hormone binding globulin; ALT: alanine transaminase; AST: aspartate transaminase.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **RSID** | **Chr:Position** | **EA** | **EAF** | **Nearest gene** | **Cluster** | **metaCCA P** | **BFP beta** | **BFP P** | **HDL beta** | **HDL P** | **SHBG beta** | **SHBG P** | **Triglycerides beta** | **Triglycerides P** | **ALT beta** | **ALT P** | **AST beta** | **AST P** |
| **rs11642015** | 16:53802494 | T | 0.40 | *[FTO]* | UFA | 2E-157 | 0.041 | 7E-165 | -0.014 | 4E-16 | -0.018 | 3E-20 | 0.003 | 0.13 | 0.018 | 8E-20 | 0.010 | 7E-7 |
| **rs13107325** | 4:103188709 | T | 0.07 | *[SLC39A8]* | UFA | 5E-32 | 0.031 | 3E-28 | -0.078 | 5E-118 | -0.004 | 0.19 | 0.029 | 2E-14 | 0.022 | 8E-10 | 0.058 | 3E-54 |
| **rs143684747** | 2:633053 | AC | 0.83 | *NA* | UFA | 4E-24 | 0.029 | 3E-49 | -0.009 | 2E-5 | -0.013 | 2E-7 | 0.005 | 0.01 | 0.009 | 0.001 | 0.009 | 6E-4 |
| **rs539515** | 1:177889025 | C | 0.21 | *FAM5B---[]-SEC16B* | UFA | 1E-35 | 0.028 | 9E-54 | -0.007 | 0.002 | 0.002 | 0.49 | 3E-4 | 0.97 | 0.008 | 5E-4 | 0.010 | 2E-4 |
| **rs6567160** | 18:57829135 | C | 0.23 | *PMAIP1---[]---MC4R* | UFA | 1E-35 | 0.026 | 5E-48 | -0.023 | 5E-25 | -0.020 | 2E-19 | 0.013 | 4E-8 | 0.004 | 0.08 | 0.007 | 0.002 |
| **6:34650934\_CGT\_C** | 6:34650934 | C | 0.14 | *[C6orf106]* | UFA | 1E-30 | 0.026 | 2E-33 | -0.027 | 4E-28 | 0.013 | 8E-6 | 4E-4 | 1.00 | 0.002 | 0.51 | 0.019 | 3E-11 |
| **5:87969925\_CGG\_C** | 5:87969925 | C | 0.14 | *TMEM161B---[]--MEF2C* | UFA | 4E-10 | 0.025 | 3E-30 | -0.010 | 6E-4 | -0.011 | 1E-4 | 0.007 | 0.02 | 0.009 | 0.003 | 0.001 | 0.68 |
| **rs71658797** | 1:77967507 | A | 0.12 | *[AK5]* | UFA | 3E-10 | 0.024 | 6E-26 | -0.004 | 0.30 | 0.003 | 0.39 | -0.001 | 0.53 | 0.003 | 0.22 | 0.006 | 0.12 |
| **rs72892910** | 6:50816887 | T | 0.17 | *TFAP2B-[]---PKHD1* | UFA | 5E-16 | 0.023 | 2E-32 | -0.005 | 0.09 | -0.011 | 8E-6 | 0.006 | 0.03 | 0.009 | 3E-4 | 0.010 | 1E-4 |
| **rs6752378** | 2:25150116 | A | 0.49 | *ADCY3-[]--DNAJC27* | UFA | 1E-60 | 0.023 | 7E-55 | -0.007 | 2E-4 | -0.003 | 0.22 | 0.002 | 0.25 | -4E-4 | 0.81 | 0.007 | 8E-4 |
| **rs56186137** | 16:28825953 | G | 0.40 | *[NPIPL1]* | UFA | 7E-46 | 0.023 | 3E-50 | -0.010 | 4E-7 | -0.013 | 2E-11 | 0.003 | 0.08 | 0.010 | 2E-7 | 0.008 | 2E-5 |
| **rs7124681** | 11:47529947 | A | 0.41 | *CELF1--[]--PTPMT1* | UFA | 2E-80 | 0.022 | 7E-50 | -0.038 | 2E-97 | -0.003 | 0.07 | 0.016 | 5E-15 | 7E-4 | 0.79 | -0.013 | 7E-10 |
| **rs6602997** | 15:84521398 | T | 0.71 | *[ADAMTSL3]* | UFA | 4E-30 | 0.022 | 6E-43 | -0.005 | 0.02 | -0.003 | 0.08 | 0.006 | 0.005 | 0.005 | 0.04 | 0.004 | 0.12 |
| **rs9358912** | 6:26211146 | G | 0.73 | *HIST1H4E-[]-HIST1H2BG* | UFA | 7E-26 | 0.022 | 5E-39 | -0.011 | 7E-8 | -0.017 | 2E-15 | 0.005 | 0.008 | 0.003 | 0.14 | -0.002 | 0.42 |
| **14:79940130\_TAGGAGTTTTTCCAGATCATTAGCCACTTATACGGAG\_T** | 14:79940130 | T | 0.20 | *NA* | UFA | 7E-14 | 0.022 | 7E-30 | -0.010 | 1E-5 | -0.008 | 2E-4 | 0.007 | 0.004 | 0.014 | 2E-8 | 0.006 | 0.02 |
| **rs55931203** | 17:65854602 | T | 0.19 | *[BPTF]* | UFA | 3E-15 | 0.021 | 6E-28 | -0.011 | 2E-6 | -0.007 | 5E-4 | 0.024 | 3E-20 | 0.023 | 1E-19 | 0.010 | 1E-4 |
| **rs4790292** | 17:1824305 | C | 0.85 | *RPA1--[]--RTN4RL1* | UFA | 4E-9 | 0.021 | 6E-24 | -0.007 | 0.006 | -0.009 | 3E-4 | 0.007 | 0.005 | 0.011 | 3E-4 | 0.002 | 0.58 |
| **rs4776985** | 15:68123021 | T | 0.78 | *[SKOR1]* | UFA | 1E-16 | 0.020 | 9E-31 | -0.005 | 0.01 | -0.006 | 0.004 | 0.003 | 0.10 | 0.003 | 0.14 | -3E-4 | 0.95 |
| **1:72767554\_CA\_C** | 1:72767554 | CA | 0.79 | *NA* | UFA | 3E-12 | 0.020 | 2E-25 | -0.012 | 3E-8 | -0.011 | 3E-6 | 0.011 | 3E-6 | 0.006 | 0.03 | 0.004 | 0.17 |
| **rs10938397** | 4:45182527 | G | 0.43 | *GNPDA2---[]---GABRG1* | UFA | 2E-36 | 0.020 | 7E-41 | -0.005 | 0.007 | -0.008 | 2E-5 | -2E-4 | 0.83 | 0.009 | 5E-6 | 0.003 | 0.15 |
| **rs10756713** | 9:15880555 | A | 0.56 | *[CCDC171]* | UFA | 2E-31 | 0.019 | 1E-37 | -0.003 | 0.15 | -0.007 | 5E-4 | 0.005 | 0.007 | 0.006 | 0.006 | 5E-4 | 0.79 |
| **rs7132908** | 12:50263148 | A | 0.38 | *[FAIM2]* | UFA | 5E-33 | 0.019 | 1E-36 | -0.010 | 9E-8 | -0.002 | 0.40 | 0.003 | 0.22 | 7E-4 | 0.79 | 0.002 | 0.34 |
| **rs3764002** | 12:108618630 | C | 0.74 | *[WSCD2]* | UFA | 1E-18 | 0.019 | 2E-29 | -0.001 | 0.46 | -0.011 | 2E-7 | 0.011 | 1E-6 | 0.008 | 7E-4 | -0.001 | 0.47 |
| **rs2112347** | 5:75015242 | T | 0.64 | *POC5-[]---SV2C* | UFA | 2E-27 | 0.018 | 2E-31 | -0.018 | 2E-22 | -0.012 | 6E-11 | 0.005 | 0.008 | 0.005 | 0.009 | -0.005 | 0.04 |
| **rs4876611** | 8:116671848 | G | 0.72 | *[TRPS1]* | UFA | 3E-27 | 0.018 | 7E-28 | 0.004 | 0.01 | -0.008 | 9E-5 | 0.014 | 6E-10 | 0.004 | 0.11 | 0.004 | 0.13 |
| **rs61888762** | 11:27709630 | G | 0.32 | *[BDNF]* | UFA | 3E-25 | 0.018 | 3E-29 | -0.017 | 1E-18 | -0.007 | 7E-5 | 0.013 | 1E-9 | 0.010 | 1E-6 | 0.011 | 7E-7 |
| **rs771025058** | 18:21122207 | AAG | 0.54 | *[NPC1]* | UFA | 7E-26 | 0.017 | 4E-30 | -0.015 | 4E-17 | -0.007 | 3E-4 | 0.015 | 5E-15 | 0.010 | 4E-7 | 0.006 | 0.009 |
| **rs4755725** | 11:43637975 | C | 0.33 | *NA* | UFA | 7E-18 | 0.017 | 3E-26 | -0.010 | 7E-7 | -0.009 | 1E-7 | 0.008 | 7E-5 | 0.013 | 4E-9 | 0.007 | 2E-4 |
| **rs11666808** | 19:18383506 | T | 0.37 | *[KIAA1683]* | UFA | 9E-24 | 0.017 | 6E-27 | -0.006 | 6E-4 | -0.017 | 4E-18 | 0.011 | 3E-9 | 0.012 | 2E-9 | -0.003 | 0.08 |
| **rs2274224** | 10:96039597 | G | 0.57 | *[PLCE1]* | UFA | 3E-28 | 0.017 | 7E-29 | 0.001 | 0.18 | -0.007 | 2E-4 | 0.009 | 3E-6 | 0.012 | 5E-10 | 0.012 | 1E-9 |
| **rs8049669** | 16:69551467 | A | 0.43 | *CYB5B--[]--NFAT5* | UFA | 3E-19 | 0.016 | 7E-26 | -0.009 | 1E-6 | -0.010 | 9E-8 | 0.016 | 4E-16 | 0.008 | 2E-5 | 0.003 | 0.09 |
| **rs10623997** | 5:107478679 | T | 0.76 | *NA* | UFA | 2E-8 | 0.015 | 2E-16 | -0.004 | 0.13 | -0.009 | 5E-5 | 0.007 | 0.001 | 0.013 | 2E-7 | 0.008 | 0.002 |
| **15:73322940\_AT\_A** | 15:73322940 | A | 0.59 | *NA* | UFA | 3E-19 | 0.014 | 3E-21 | -0.010 | 6E-7 | -0.008 | 4E-5 | 0.010 | 3E-6 | 0.008 | 2E-4 | 0.011 | 5E-8 |
| **1:113202203\_TCTCTC\_T** | 1:113202203 | TCTCTC | 0.80 | *NA* | UFA | 4E-11 | 0.014 | 3E-14 | 0.003 | 0.06 | -0.014 | 2E-9 | 0.010 | 1E-5 | 0.011 | 4E-6 | 0.015 | 1E-9 |
| **rs236660** | 7:75050086 | C | 0.57 | *NA* | UFA | 1E-15 | 0.014 | 2E-19 | -0.008 | 7E-7 | -0.002 | 0.13 | 0.008 | 5E-5 | 0.013 | 3E-11 | 0.011 | 6E-8 |
| **rs17764730** | 5:127357526 | C | 0.75 | *CTXN3---[]--SLC12A2* | UFA | 2E-12 | 0.012 | 8E-12 | -0.017 | 2E-15 | -0.021 | 2E-21 | 0.008 | 2E-4 | 0.014 | 8E-11 | 0.010 | 3E-6 |
| **rs1471740** | 3:136328270 | C | 0.74 | *[STAG1]* | UFA | 4E-53 | 0.010 | 4E-9 | -0.021 | 3E-25 | -0.053 | 1E-140 | 0.027 | 5E-33 | 0.025 | 2E-27 | 0.008 | 2E-4 |
| **rs11122450** | 1:230301811 | T | 0.39 | *[GALNT2]* | UFA | 1E-154 | 0.010 | 6E-11 | -0.058 | 5E-212 | -0.008 | 3E-4 | 0.048 | 3E-131 | 0.004 | 0.02 | 0.012 | 3E-9 |
| **rs12369179** | 12:122963550 | C | 0.91 | *[ZCCHC8]* | FA | 1E-18 | 0.029 | 2E-29 | 0.038 | 3E-34 | -0.002 | 0.76 | -0.020 | 1E-8 | -0.018 | 4E-7 | -0.011 | 1E-3 |
| **rs4684847** | 3:12386337 | T | 0.12 | *SYN2---[]-PPARG* | FA | 7E-42 | 0.029 | 3E-37 | 0.019 | 6E-12 | 0.035 | 6E-33 | -0.025 | 1E-18 | -0.034 | 3E-31 | -0.024 | 1E-16 |
| **rs555162510** | 19:46183031 | A | 0.82 | *NA* | FA | 8E-23 | 0.024 | 5E-34 | 0.010 | 2E-6 | -0.007 | 0.04 | -0.012 | 2E-6 | -8E-4 | 0.57 | -0.005 | 0.03 |
| **rs62271373** | 3:150066540 | T | 0.94 | *PFN2---[]--TSC22D2* | FA | 8E-10 | 0.024 | 2E-14 | 0.040 | 4E-26 | 0.031 | 5E-14 | -0.043 | 8E-25 | -0.022 | 9E-7 | -0.004 | 0.43 |
| **rs72959041** | 6:127454893 | G | 0.95 | *[RSPO3]* | FA | 2E-10 | 0.023 | 2E-12 | 0.050 | 9E-33 | 0.018 | 2E-5 | -0.063 | 6E-43 | -0.038 | 9E-16 | -0.029 | 4E-9 |
| **rs12130231** | 1:219631304 | A | 0.41 | *LYPLAL1---[]---SLC30A10* | FA | 8E-86 | 0.020 | 4E-41 | 0.015 | 1E-17 | 0.014 | 3E-14 | -0.019 | 2E-21 | -0.015 | 4E-14 | -0.012 | 8E-10 |
| **rs7133378** | 12:124409502 | A | 0.32 | *[DNAH10]* | FA | 3E-89 | 0.019 | 4E-33 | 0.037 | 2E-78 | 0.015 | 5E-14 | -0.029 | 2E-42 | -0.008 | 4E-5 | 0.005 | 0.05 |
| **rs4821764** | 22:38599364 | G | 0.42 | *[MAFF]* | FA | 4E-69 | 0.017 | 3E-29 | 0.021 | 9E-29 | 0.007 | 8E-5 | -0.023 | 2E-29 | -0.017 | 7E-17 | -0.005 | 0.03 |
| **rs13389219** | 2:165528876 | T | 0.39 | *GRB14--[]--COBLL1* | FA | 7E-127 | 0.017 | 2E-29 | 0.027 | 5E-51 | 0.027 | 6E-48 | -0.038 | 4E-84 | -0.023 | 5E-30 | -0.010 | 1E-7 |
| **rs2943653** | 2:227047771 | C | 0.33 | *NYAP2---[]---IRS1* | FA | 3E-125 | 0.016 | 1E-23 | 0.040 | 2E-100 | 0.026 | 2E-39 | -0.038 | 3E-76 | -0.025 | 4E-34 | -0.017 | 4E-17 |
| **rs7258937** | 19:33938800 | T | 0.51 | *[PEPD]* | FA | 2E-50 | 0.016 | 2E-26 | 0.014 | 2E-14 | 0.012 | 3E-12 | -0.009 | 3E-6 | -0.009 | 8E-6 | -0.013 | 2E-10 |
| **rs72697297** | 14:93069989 | T | 0.82 | *[RIN3]* | FA | 6E-11 | 0.015 | 8E-15 | 0.005 | 0.03 | 0.004 | 0.14 | -0.005 | 0.04 | -0.010 | 8E-5 | -0.009 | 9E-4 |
| **rs972283** | 7:130466854 | A | 0.49 | *KLF14--[]---MKLN1* | FA | 9E-98 | 0.014 | 2E-22 | 0.030 | 2E-60 | 0.012 | 4E-9 | -0.033 | 2E-62 | -0.012 | 4E-9 | -0.005 | 0.009 |
| **rs11135038** | 5:157930133 | G | 0.27 | *CLINT1---[]---EBF1* | FA | 3E-27 | 0.014 | 3E-16 | 0.012 | 8E-11 | 0.013 | 4E-9 | -0.013 | 3E-10 | -0.008 | 2E-4 | -0.008 | 3E-4 |
| **rs9851766** | 3:138121509 | A | 0.84 | *[MRAS]* | FA | 1E-9 | 0.014 | 1E-11 | 0.009 | 3E-4 | 0.009 | 5E-4 | -0.010 | 4E-4 | -0.009 | 5E-4 | -0.004 | 0.12 |
| **rs142186653** | 17:73879851 | C | 0.23 | *TRIM47-[]-TRIM65* | FA | 4E-11 | 0.012 | 1E-11 | -8E-4 | 0.62 | 0.008 | 1E-3 | -0.010 | 7E-6 | -0.010 | 3E-5 | -0.007 | 0.005 |
| **rs987469** | 4:89706643 | C | 0.54 | *[FAM13A]* | FA | 6E-50 | 0.012 | 6E-17 | 0.020 | 5E-29 | 0.009 | 2E-6 | -0.015 | 1E-14 | -0.008 | 4E-5 | -0.009 | 4E-6 |
| **rs2980888** | 8:126504383 | C | 0.70 | *TRIB1--[]* | FA | 4E-242 | 0.012 | 4E-14 | 0.038 | 3E-85 | 0.003 | 0.22 | -0.085 | 0E+0 | -0.038 | 4E-70 | -0.024 | 2E-28 |
| **rs30351** | 5:55794632 | G | 0.26 | *ANKRD55---[]---MAP3K1* | FA | 2E-59 | 0.012 | 2E-12 | 0.027 | 2E-38 | 0.029 | 5E-42 | -0.031 | 9E-44 | -0.018 | 7E-16 | -4E-4 | 0.70 |
| **rs12681990** | 8:36859186 | T | 0.84 | *KCNU1--[]---ZNF703* | FA | 3E-9 | 0.012 | 5E-9 | 0.009 | 2E-4 | 0.013 | 3E-6 | -0.012 | 1E-6 | -0.010 | 2E-4 | -0.006 | 0.06 |
| **rs6977416** | 7:150542711 | G | 0.67 | *TMEM176A--[]-ABP1* | FA | 8E-27 | 0.012 | 3E-14 | 0.016 | 7E-17 | 0.008 | 2E-4 | -0.012 | 3E-8 | -0.005 | 0.007 | -1E-4 | 0.88 |
| **rs4976033** | 5:67714246 | A | 0.60 | *PIK3R1---[]---SLC30A5* | FA | 7E-39 | 0.012 | 5E-14 | 0.012 | 3E-11 | 0.013 | 5E-12 | -0.019 | 2E-21 | -0.013 | 3E-11 | -0.011 | 4E-8 |
| **rs12441543** | 15:31689543 | A | 0.29 | *KLF13--[]--OTUD7A* | FA | 2E-13 | 0.012 | 1E-12 | 1E-4 | 0.95 | 0.007 | 0.003 | -0.004 | 0.07 | -0.010 | 2E-6 | -0.009 | 2E-4 |
| **rs12940684** | 17:7453919 | C | 0.30 | *[TNFSF12-TNFSF13]* | FA | 0E+0 | 0.011 | 1E-11 | 0.004 | 0.03 | 0.173 | 0E+0 | -0.007 | 5E-4 | 0.006 | 0.009 | 0.013 | 4E-10 |
| **rs113222038** | 11:62380027 | C | 0.72 | *[EML3]* | FA | 2E-19 | 0.011 | 3E-12 | 0.011 | 1E-7 | -0.007 | 8E-4 | -0.013 | 4E-9 | -0.008 | 1E-4 | -0.007 | 7E-4 |
| **rs11045172** | 12:20470221 | C | 0.20 | *AEBP2---[]--PDE3A* | FA | 9E-21 | 0.011 | 5E-9 | 0.027 | 8E-32 | 0.011 | 4E-6 | -0.025 | 9E-25 | -0.004 | 0.14 | -0.001 | 0.56 |
| **rs2802774** | 1:203527812 | A | 0.55 | *OPTC--[]--ATP2B4* | FA | 7E-22 | 0.011 | 4E-13 | 0.007 | 2E-5 | 0.007 | 1E-4 | -0.010 | 1E-7 | -0.007 | 3E-4 | -0.005 | 0.01 |
| **rs7233512** | 18:42595076 | G | 0.71 | *[SETBP1]* | FA | 3E-16 | 0.011 | 8E-11 | 0.005 | 0.01 | 0.008 | 3E-4 | -0.009 | 2E-5 | -0.007 | 6E-4 | -0.005 | 0.008 |
| **rs9764678** | 5:118726662 | C | 0.27 | *[TNFAIP8]* | FA | 8E-23 | 0.010 | 3E-10 | 0.016 | 2E-14 | 0.003 | 0.10 | -0.021 | 7E-22 | -0.006 | 0.007 | -0.003 | 0.15 |
| **rs10876529** | 12:54421810 | C | 0.37 | *HOXC8--[]HOXC6* | FA | 7E-20 | 0.010 | 5E-12 | 0.008 | 1E-5 | 0.010 | 1E-6 | -0.012 | 5E-9 | -0.008 | 4E-5 | -0.003 | 0.11 |
| **rs11664106** | 18:2846812 | T | 0.37 | *SMCHD1--[]EMILIN2* | FA | 9E-22 | 0.009 | 5E-9 | 0.009 | 1E-5 | 0.012 | 2E-9 | -0.013 | 1E-9 | -0.006 | 0.003 | -0.002 | 0.30 |
| **rs998584** | 6:43757896 | C | 0.52 | *VEGFA-[]---C6orf223* | FA | 2E-122 | 0.009 | 1E-9 | 0.035 | 2E-83 | 0.016 | 8E-19 | -0.040 | 4E-96 | -0.017 | 3E-18 | -0.018 | 4E-18 |
| **rs6029180** | 20:39178923 | G | 0.33 | *[]---MAFB* | FA | 3E-16 | 0.009 | 2E-8 | 0.005 | 0.01 | 0.003 | 0.06 | -0.015 | 2E-14 | -0.013 | 6E-10 | -0.009 | 2E-5 |
| **rs13132853** | 4:38680015 | A | 0.64 | *[KLF3]* | FA | 4E-16 | 0.009 | 1E-8 | 0.004 | 0.09 | 0.002 | 0.72 | -0.011 | 1E-7 | -0.011 | 9E-8 | -0.007 | 9E-4 |
| **rs573454216** | 6:139837429 | A | 0.60 | *CITED2---[]* | FA | 6E-47 | 0.009 | 1E-8 | 0.019 | 4E-23 | 0.010 | 4E-7 | -0.028 | 2E-44 | -0.014 | 1E-11 | -0.008 | 4E-5 |
| **rs4450871** | 4:4990298 | G | 0.44 | *MSX1---[]--CYTL1* | FA | 2E-24 | 0.009 | 1E-8 | 0.008 | 5E-7 | 0.011 | 3E-8 | -0.014 | 1E-12 | -0.009 | 9E-7 | -0.005 | 0.009 |
| **rs11205303** | 1:149906413 | C | 0.41 | *[MTMR11]* | Conflicting | 3E-36 | 0.019 | 3E-35 | -0.001 | 0.54 | 9E-4 | 0.93 | -0.004 | 0.15 | 0.001 | 0.48 | 0.003 | 0.08 |
| **rs1808629** | 8:73435964 | G | 0.31 | *TRPA1---[]--KCNB2* | Conflicting | 2E-17 | 0.017 | 2E-24 | -0.012 | 7E-9 | -0.009 | 6E-6 | 0.009 | 1E-5 | 0.003 | 0.17 | -0.002 | 0.19 |
| **rs2855818** | 17:42290015 | A | 0.24 | *[UBTF]* | Conflicting | 3E-13 | 0.016 | 1E-21 | 0.002 | 0.59 | -0.010 | 9E-6 | 0.005 | 0.02 | 0.004 | 0.08 | -0.001 | 0.66 |
| **rs1046080** | 6:31595882 | A | 0.72 | *[PRRC2A]* | Conflicting | 2E-18 | 0.016 | 4E-22 | -0.005 | 0.01 | -0.013 | 4E-8 | 0.009 | 6E-4 | 0.004 | 0.24 | -0.011 | 2E-7 |
| **rs11012732** | 10:21830104 | G | 0.33 | *[MLLT10]* | Conflicting | 1E-21 | 0.016 | 2E-24 | -0.004 | 0.02 | 0.002 | 0.30 | 0.002 | 0.38 | 8E-4 | 0.66 | -0.011 | 3E-7 |
| **rs10999456** | 10:72413827 | T | 0.27 | *PRF1--[]--ADAMTS14* | Conflicting | 1E-13 | 0.016 | 2E-21 | -9E-4 | 0.91 | -0.003 | 0.39 | 0.004 | 0.06 | 0.003 | 0.26 | 5E-4 | 0.82 |
| **rs7166081** | 15:67492301 | A | 0.77 | *SMAD3-[]AAGAB* | Conflicting | 3E-12 | 0.016 | 2E-20 | -0.004 | 0.07 | 0.003 | 0.12 | 0.004 | 0.06 | 0.001 | 0.54 | 0.002 | 0.28 |
| **rs6938973** | 6:98421721 | C | 0.60 | *MMS22L---[]---POU3F2* | Conflicting | 2E-18 | 0.016 | 7E-26 | -0.009 | 2E-7 | -0.009 | 2E-6 | 0.006 | 0.001 | 0.009 | 1E-5 | 0.002 | 0.42 |
| **rs72798148** | 16:29926552 | T | 0.78 | *[KCTD13]* | Conflicting | 1E-8 | 0.016 | 7E-18 | -0.006 | 0.003 | -0.005 | 0.01 | 0.004 | 0.03 | 0.004 | 0.05 | -9E-4 | 0.49 |
| **rs9843653** | 3:49920571 | C | 0.51 | *CAMKV--[]-MST1R* | Conflicting | 4E-29 | 0.016 | 4E-26 | -0.019 | 1E-27 | -0.017 | 1E-20 | 0.008 | 4E-5 | 0.003 | 0.07 | -7E-4 | 0.80 |
| **rs9788550** | 14:29681138 | G | 0.75 | *C14orf23---[]---PRKD1* | Conflicting | 3E-11 | 0.015 | 9E-20 | -0.005 | 0.02 | -0.007 | 0.003 | 0.006 | 0.007 | 6E-4 | 0.77 | 7E-4 | 0.79 |
| **rs9770544** | 7:27232126 | C | 0.18 | *LOC402470-[]-HOXA13* | Conflicting | 5E-9 | 0.015 | 8E-15 | 0.003 | 0.07 | 0.004 | 0.08 | 0.002 | 0.43 | 0.002 | 0.69 | 0.006 | 0.03 |
| **rs200119412** | 8:77224420 | C | 0.56 | *NA* | Conflicting | 1E-20 | 0.015 | 3E-24 | -0.001 | 0.75 | -0.007 | 3E-4 | 0.004 | 0.09 | -9E-4 | 0.61 | -0.002 | 0.45 |
| **rs17770336** | 9:28414625 | T | 0.32 | *[LINGO2]* | Conflicting | 3E-14 | 0.015 | 2E-21 | -0.011 | 8E-9 | -0.006 | 3E-4 | 0.008 | 4E-5 | 0.008 | 2E-4 | 0.003 | 0.29 |
| **rs704061** | 12:89771903 | C | 0.45 | *DUSP6--[]---GALNT4* | Conflicting | 2E-22 | 0.015 | 8E-24 | 0.004 | 0.07 | -2E-4 | 0.99 | 0.002 | 0.30 | 0.007 | 0.001 | 9E-5 | 0.94 |
| **rs3817428** | 15:89415247 | C | 0.73 | *[ACAN]* | Conflicting | 5E-11 | 0.015 | 1E-18 | -0.003 | 0.09 | -0.003 | 0.09 | 0.004 | 0.07 | 9E-4 | 0.65 | -0.003 | 0.14 |
| **rs3045391** | 22:41867105 | T | 0.20 | *[ACO2]* | Conflicting | 2E-9 | 0.015 | 3E-15 | -0.005 | 0.03 | 0.006 | 0.01 | 0.003 | 0.20 | 0.005 | 0.05 | 0.008 | 9E-4 |
| **rs34898535** | 16:31025641 | C | 0.62 | *STX1B-[]--STX4* | Conflicting | 3E-29 | 0.015 | 1E-21 | -0.010 | 3E-8 | 0.007 | 2E-4 | 0.015 | 3E-15 | 5E-4 | 0.59 | -0.006 | 0.010 |
| **rs1013293** | 1:62570321 | G | 0.57 | *[INADL]* | Conflicting | 3E-17 | 0.015 | 1E-22 | -0.009 | 3E-7 | -0.004 | 0.005 | 0.009 | 1E-6 | 0.008 | 8E-5 | 0.005 | 0.009 |
| **rs11165643** | 1:96924097 | T | 0.59 | *[]---PTBP2* | Conflicting | 4E-16 | 0.014 | 1E-21 | -0.005 | 0.03 | -0.007 | 2E-4 | 0.004 | 0.04 | 0.006 | 0.003 | 0.001 | 0.42 |
| **rs56218501** | 20:46365636 | C | 0.79 | *[SULF2]* | Conflicting | 3E-11 | 0.014 | 5E-15 | -0.018 | 7E-17 | -0.005 | 0.04 | 0.005 | 0.05 | 0.006 | 0.01 | 0.001 | 0.71 |
| **rs9471333** | 6:40362023 | C | 0.45 | *[LRFN2]* | Conflicting | 2E-16 | 0.014 | 7E-22 | -0.006 | 0.003 | -0.008 | 9E-7 | 0.007 | 9E-5 | 0.004 | 0.03 | 0.002 | 0.46 |
| **rs10172678** | 2:59294558 | T | 0.40 | *FANCL---[]* | Conflicting | 4E-17 | 0.014 | 1E-20 | -0.008 | 5E-6 | -0.004 | 0.06 | 0.012 | 3E-11 | 0.011 | 6E-8 | 0.005 | 0.005 |
| **rs3215750** | 2:230633572 | TAAATC | 0.33 | *[TRIP12]* | Conflicting | 1E-12 | 0.014 | 2E-19 | -0.006 | 0.002 | -0.005 | 0.007 | 0.004 | 0.02 | 0.007 | 0.001 | 9E-4 | 0.71 |
| **rs9847672** | 3:131618541 | T | 0.28 | *[CPNE4]* | Conflicting | 3E-11 | 0.014 | 3E-18 | -0.013 | 7E-11 | -0.007 | 0.003 | 0.006 | 0.001 | 0.005 | 0.006 | -0.001 | 0.61 |
| **rs12072739** | 1:98315893 | G | 0.23 | *[DPYD]* | Conflicting | 6E-9 | 0.014 | 7E-16 | -0.010 | 5E-6 | -0.010 | 3E-5 | 0.017 | 2E-13 | 0.003 | 0.21 | 1E-3 | 0.54 |
| **rs2596121** | 8:76660225 | G | 0.59 | *HNF4G---[]---ZFHX4* | Conflicting | 6E-16 | 0.014 | 4E-20 | -0.004 | 0.08 | -0.005 | 0.01 | 0.003 | 0.15 | -2E-4 | 0.98 | -0.001 | 0.59 |
| **rs2192527** | 4:18329824 | G | 0.46 | *LCORL---[]* | Conflicting | 4E-17 | 0.014 | 4E-21 | -0.005 | 0.004 | 2E-4 | 0.94 | 0.007 | 4E-4 | 0.008 | 4E-5 | 0.004 | 0.08 |
| **rs59499656** | 18:40768309 | A | 0.66 | *RIT2--[]--SYT4* | Conflicting | 2E-13 | 0.014 | 2E-18 | -0.013 | 5E-11 | -0.004 | 0.03 | 0.008 | 1E-4 | 0.007 | 5E-4 | 0.001 | 0.44 |
| **rs879620** | 16:4015729 | T | 0.61 | *[ADCY9]* | Conflicting | 7E-17 | 0.014 | 1E-19 | -0.006 | 5E-4 | -0.004 | 0.06 | 0.004 | 0.11 | 0.003 | 0.12 | 0.007 | 0.001 |
| **rs10756798** | 9:16739763 | C | 0.35 | *[BNC2]* | Conflicting | 5E-13 | 0.014 | 1E-18 | -0.009 | 1E-5 | -0.008 | 8E-5 | 0.004 | 0.03 | 0.005 | 0.008 | 0.001 | 0.42 |
| **rs11042030** | 11:8690718 | T | 0.72 | *TRIM66--[]--RPL27A* | Conflicting | 2E-9 | 0.014 | 6E-17 | -0.009 | 8E-6 | -0.005 | 0.003 | 0.008 | 3E-4 | 0.007 | 9E-4 | 7E-4 | 0.85 |
| **rs569541320** | 19:30286450 | GA | 0.33 | *NA* | Conflicting | 1E-14 | 0.014 | 5E-17 | -0.005 | 0.03 | -0.004 | 0.03 | 0.006 | 0.002 | 0.002 | 0.36 | -0.012 | 8E-9 |
| **rs6693294** | 1:49879122 | A | 0.31 | *[AGBL4]* | Conflicting | 3E-11 | 0.014 | 3E-18 | -0.005 | 0.009 | -0.003 | 0.16 | 0.007 | 0.001 | 0.004 | 0.03 | 3E-4 | 0.73 |
| **3:185821409\_AACACACACACAC\_A** | 3:185821409 | A | 0.85 | *NA* | Conflicting | 3E-16 | 0.014 | 2E-10 | 0.027 | 8E-25 | -0.005 | 0.11 | 0.002 | 0.37 | 0.014 | 5E-7 | 0.008 | 0.009 |
| **rs812949** | 5:170506141 | C | 0.73 | *[RANBP17]* | Conflicting | 4E-10 | 0.014 | 6E-16 | -0.009 | 1E-5 | -0.003 | 0.14 | 0.004 | 0.04 | 0.008 | 9E-4 | -0.001 | 0.72 |
| **rs2678204** | 1:201800511 | G | 0.34 | *[IPO9]* | Conflicting | 4E-17 | 0.014 | 3E-18 | -0.009 | 2E-7 | -0.004 | 0.02 | 0.010 | 7E-7 | 0.004 | 0.06 | 0.010 | 1E-6 |
| **rs11907932** | 20:51148656 | A | 0.68 | *ZFP64---[]---TSHZ2* | Conflicting | 7E-11 | 0.014 | 2E-17 | -0.005 | 0.02 | -0.011 | 8E-8 | 0.007 | 8E-4 | 0.006 | 0.02 | 2E-4 | 0.97 |
| **rs541582524** | 2:100827641 | G | 0.59 | *NA* | Conflicting | 2E-14 | 0.014 | 5E-19 | -0.007 | 3E-5 | -0.004 | 0.009 | 0.003 | 0.15 | 0.006 | 0.003 | 0.003 | 0.18 |
| **rs13329943** | 16:24733751 | T | 0.73 | *NA* | Conflicting | 4E-11 | 0.013 | 1E-15 | -0.008 | 3E-4 | -1E-4 | 0.89 | 0.007 | 0.001 | -6E-4 | 0.80 | -2E-4 | 0.95 |
| **rs57800857** | 4:140863365 | A | 0.63 | *[MAML3]* | Conflicting | 7E-12 | 0.013 | 9E-18 | -0.009 | 1E-6 | -0.007 | 0.002 | 0.009 | 2E-5 | 0.007 | 6E-4 | 0.003 | 0.19 |
| **rs1454687** | 3:94038085 | C | 0.48 | *NSUN3---[]* | Conflicting | 1E-14 | 0.013 | 6E-20 | -0.007 | 7E-5 | -0.009 | 2E-6 | 0.010 | 4E-7 | 0.010 | 6E-7 | 0.003 | 0.16 |
| **rs801738** | 11:65924217 | C | 0.64 | *[PACS1]* | Conflicting | 6E-14 | 0.013 | 7E-18 | -0.014 | 6E-13 | -0.005 | 0.01 | 0.008 | 4E-5 | 0.009 | 3E-5 | 0.003 | 0.13 |
| **rs200882902** | 2:228996202 | CT | 0.33 | *NA* | Conflicting | 2E-10 | 0.013 | 1E-17 | -0.009 | 2E-5 | -0.009 | 2E-5 | 0.009 | 2E-5 | 0.003 | 0.10 | -2E-4 | 0.98 |
| **rs6575340** | 14:94023972 | A | 0.64 | *[UNC79]* | Conflicting | 1E-12 | 0.013 | 9E-18 | -0.009 | 4E-6 | -0.006 | 8E-4 | 0.005 | 0.01 | 0.003 | 0.16 | 0.002 | 0.55 |
| **rs522110** | 10:99772885 | G | 0.56 | *[CRTAC1]* | Conflicting | 7E-17 | 0.013 | 9E-19 | -0.013 | 3E-14 | -0.010 | 1E-7 | 0.016 | 3E-17 | 0.004 | 0.04 | 0.001 | 0.61 |
| **rs11079849** | 17:47090785 | C | 0.67 | *[IGF2BP1]* | Conflicting | 2E-13 | 0.013 | 6E-17 | -0.010 | 1E-7 | -0.013 | 2E-10 | 0.007 | 4E-4 | 0.007 | 0.001 | 0.001 | 0.51 |
| **rs217672** | 14:62361021 | C | 0.27 | *SNAPC1--[]---SYT16* | Conflicting | 3E-8 | 0.013 | 4E-15 | -0.008 | 3E-4 | -0.007 | 5E-4 | 0.006 | 0.004 | 0.005 | 0.02 | 0.002 | 0.45 |
| **13:99119385\_TAA\_T** | 13:99119385 | TAA | 0.71 | *NA* | Conflicting | 6E-9 | 0.013 | 6E-16 | -0.006 | 0.007 | -0.007 | 1E-3 | 0.009 | 8E-6 | 0.007 | 0.004 | 9E-4 | 0.74 |
| **rs7213608** | 17:21279289 | C | 0.33 | *MAP2K3--[]--KCNJ12* | Conflicting | 5E-10 | 0.013 | 4E-16 | -9E-4 | 0.58 | -9E-4 | 0.60 | 0.004 | 0.05 | 0.007 | 5E-4 | 0.002 | 0.27 |
| **rs72634813** | 1:1537887 | C | 0.65 | *C1orf233-[]--MIB2* | Conflicting | 2E-9 | 0.013 | 2E-15 | -0.003 | 0.13 | -0.004 | 0.03 | 0.003 | 0.11 | 0.006 | 0.004 | 0.002 | 0.34 |
| **rs58300328** | 2:69646357 | G | 0.59 | *NA* | Conflicting | 2E-15 | 0.013 | 3E-18 | -0.006 | 4E-4 | 0.002 | 0.34 | 0.003 | 0.28 | 0.003 | 0.13 | 0.002 | 0.78 |
| **rs62217799** | 20:62347191 | T | 0.66 | *NA* | Conflicting | 3E-16 | 0.013 | 9E-16 | -0.011 | 2E-10 | -0.016 | 5E-15 | 0.005 | 0.02 | 0.003 | 0.09 | 0.007 | 7E-4 |
| **rs11150745** | 17:78757626 | A | 0.68 | *[RPTOR]* | Conflicting | 9E-10 | 0.013 | 2E-15 | -0.006 | 7E-4 | -0.004 | 0.03 | 0.002 | 0.45 | 0.007 | 9E-4 | 0.006 | 0.01 |
| **rs34388845** | 6:28578286 | G | 0.21 | *SCAND3--[]---TRIM27* | Conflicting | 9E-16 | 0.013 | 3E-12 | -0.017 | 2E-14 | -0.007 | 0.002 | -0.008 | 0.001 | -0.004 | 0.09 | -0.028 | 2E-28 |
| **14:33298731\_CA\_C** | 14:33298731 | C | 0.45 | *[AKAP6]* | Conflicting | 4E-12 | 0.013 | 4E-17 | -0.005 | 0.006 | -0.003 | 0.05 | 0.003 | 0.09 | 0.004 | 0.03 | 2E-4 | 0.82 |
| **rs12330631** | 3:123089834 | C | 0.63 | *[ADCY5]* | Conflicting | 1E-13 | 0.013 | 1E-15 | -0.007 | 3E-5 | 0.001 | 0.63 | 0.003 | 0.07 | 0.004 | 0.03 | 0.004 | 0.03 |
| **rs394608** | 21:46581798 | C | 0.54 | *[ADARB1]* | Conflicting | 1E-13 | 0.012 | 7E-17 | -0.008 | 1E-6 | -0.012 | 4E-11 | 0.011 | 1E-7 | 8E-4 | 0.70 | -0.002 | 0.43 |
| **rs9289630** | 3:141178670 | C | 0.39 | *ZBTB38--[]--RASA2* | Conflicting | 5E-15 | 0.012 | 5E-17 | -0.005 | 0.02 | -0.010 | 6E-8 | -8E-4 | 0.51 | 9E-4 | 0.64 | 0.004 | 0.07 |
| **rs59934506** | 20:25373782 | C | 0.44 | *NA* | Conflicting | 1E-13 | 0.012 | 4E-16 | 1E-4 | 0.90 | -0.005 | 0.008 | 0.003 | 0.09 | 0.012 | 2E-10 | 0.005 | 0.005 |
| **rs2287214** | 12:108090518 | G | 0.40 | *[PWP1]* | Conflicting | 7E-14 | 0.012 | 2E-16 | 0.002 | 0.41 | -0.001 | 0.60 | -0.002 | 0.39 | 0.008 | 4E-5 | 0.004 | 0.05 |
| **rs57989773** | 6:100629078 | C | 0.24 | *MCHR2---[]---SIM1* | Conflicting | 7E-14 | 0.012 | 5E-12 | -0.001 | 0.40 | 0.009 | 4E-5 | -0.013 | 4E-8 | 0.006 | 0.009 | -0.003 | 0.17 |
| **rs3803286** | 14:103246470 | A | 0.33 | *[TRAF3]* | Conflicting | 1E-13 | 0.012 | 6E-15 | -0.016 | 3E-17 | -0.005 | 0.005 | 0.007 | 8E-4 | -0.001 | 0.50 | -0.005 | 0.01 |
| **rs2474896** | 6:51760527 | T | 0.55 | *[PKHD1]* | Conflicting | 2E-14 | 0.012 | 4E-16 | 0.003 | 0.32 | -0.003 | 0.22 | 2E-4 | 0.87 | 0.001 | 0.59 | -2E-4 | 0.71 |
| **rs9512696** | 13:28012527 | G | 0.66 | *[MTIF3]* | Conflicting | 9E-10 | 0.012 | 1E-13 | -0.009 | 9E-7 | -0.009 | 5E-6 | 0.005 | 0.006 | 0.003 | 0.11 | 0.001 | 0.41 |
| **rs10169594** | 2:41637688 | C | 0.36 | *SLC8A1---[]---C2orf91* | Conflicting | 1E-9 | 0.012 | 5E-15 | -0.005 | 0.01 | -0.004 | 0.02 | 0.005 | 0.01 | 0.007 | 0.002 | 0.004 | 0.09 |
| **rs13410783** | 2:36789166 | G | 0.37 | *[FEZ2]* | Conflicting | 2E-11 | 0.012 | 8E-15 | -0.009 | 5E-8 | -0.004 | 0.07 | 0.006 | 0.002 | 0.001 | 0.46 | -0.005 | 0.02 |
| **rs3911063** | 3:85906928 | T | 0.68 | *[CADM2]* | Conflicting | 1E-8 | 0.012 | 2E-14 | -0.003 | 0.08 | -0.007 | 4E-4 | 0.005 | 0.03 | 0.005 | 0.02 | 0.002 | 0.17 |
| **rs11135450** | 5:95554016 | G | 0.67 | *ELL2---[]---PCSK1* | Conflicting | 5E-10 | 0.012 | 2E-14 | -0.008 | 1E-4 | -0.008 | 3E-5 | 0.004 | 0.05 | 0.005 | 0.009 | 0.006 | 0.003 |
| **rs1038088** | 17:28074563 | G | 0.52 | *[SSH2]* | Conflicting | 3E-14 | 0.012 | 1E-15 | -0.008 | 8E-6 | -0.001 | 0.41 | -4E-4 | 0.89 | 0.007 | 8E-5 | 0.007 | 1E-4 |
| **rs3810291** | 19:47569003 | A | 0.68 | *[ZC3H4]* | Conflicting | 1E-19 | 0.012 | 1E-13 | -0.015 | 4E-15 | -0.014 | 6E-13 | 0.011 | 1E-7 | -0.010 | 2E-6 | -0.009 | 6E-5 |
| **rs4718964** | 7:70038969 | T | 0.41 | *[AUTS2]* | Conflicting | 2E-12 | 0.012 | 2E-15 | -0.004 | 0.04 | 6E-4 | 0.60 | 0.002 | 0.18 | 0.005 | 0.05 | 0.005 | 0.03 |
| **rs215669** | 7:32378979 | G | 0.39 | *PDE1C--[]---LSM5* | Conflicting | 9E-10 | 0.012 | 8E-15 | -0.006 | 6E-4 | -0.005 | 0.003 | 0.010 | 2E-6 | 0.004 | 0.05 | 2E-4 | 0.90 |
| **rs238675** | 1:42470274 | G | 0.26 | *HIVEP3--[]---GUCA2B* | Conflicting | 5E-9 | 0.012 | 4E-12 | -0.009 | 4E-6 | -0.004 | 0.03 | 0.002 | 0.40 | 0.001 | 0.56 | 0.005 | 0.03 |
| **rs199569565** | 11:130749351 | T | 0.53 | *[SNX19]* | Conflicting | 3E-12 | 0.012 | 2E-15 | -0.006 | 5E-4 | -0.006 | 9E-4 | 0.005 | 0.007 | 0.001 | 0.55 | 0.002 | 0.21 |
| **rs61782665** | 1:47692035 | A | 0.42 | *[TAL1]* | Conflicting | 1E-12 | 0.012 | 4E-15 | -0.007 | 9E-5 | -0.005 | 0.009 | 0.003 | 0.29 | 0.006 | 0.001 | 0.008 | 3E-5 |
| **rs1568488** | 3:153657951 | C | 0.60 | *C3orf79---[]---ARHGEF26* | Conflicting | 1E-11 | 0.012 | 2E-14 | -0.005 | 0.004 | -0.007 | 1E-4 | -2E-4 | 0.96 | -4E-4 | 0.99 | -0.003 | 0.21 |
| **rs1322842** | 6:20488897 | A | 0.39 | *[E2F3]* | Conflicting | 4E-10 | 0.012 | 4E-15 | -0.009 | 3E-6 | -0.008 | 1E-5 | 0.010 | 3E-7 | 0.007 | 4E-4 | 0.002 | 0.29 |
| **rs2371767** | 3:64718258 | C | 0.27 | *ADAMTS9--[]---MAGI1* | Conflicting | 3E-16 | 0.012 | 2E-12 | 0.007 | 0.003 | 0.008 | 8E-4 | -0.007 | 0.002 | -0.007 | 0.003 | 4E-4 | 0.64 |
| **rs34234296** | 2:175166636 | G | 0.61 | *OLA1--[]--SP9* | Conflicting | 4E-10 | 0.012 | 8E-15 | -0.006 | 0.001 | -0.008 | 5E-5 | 0.012 | 5E-9 | 0.006 | 0.003 | 0.002 | 0.35 |
| **rs28433072** | 4:56269683 | C | 0.46 | *[TMEM165]* | Conflicting | 4E-19 | 0.012 | 1E-14 | 0.002 | 0.13 | 0.005 | 0.01 | -0.004 | 0.03 | -8E-4 | 0.56 | -0.008 | 6E-5 |
| **rs7328213** | 13:33377830 | T | 0.55 | *PDS5B--[]---KL* | Conflicting | 6E-16 | 0.012 | 6E-15 | -0.002 | 0.30 | -0.001 | 0.52 | 0.007 | 7E-5 | 0.013 | 1E-11 | 0.002 | 0.45 |
| **rs1441264** | 13:79580919 | A | 0.59 | *RNF219---[]---RBM26* | Conflicting | 2E-9 | 0.012 | 9E-14 | -0.006 | 0.001 | -0.006 | 0.001 | 0.003 | 0.07 | 0.009 | 1E-5 | 0.005 | 0.02 |
| **rs1296328** | 4:137083193 | A | 0.44 | *[]* | Conflicting | 1E-11 | 0.012 | 6E-15 | -0.005 | 0.02 | -0.005 | 0.006 | -2E-4 | 0.90 | 0.006 | 0.002 | 0.005 | 0.02 |
| **rs771140684** | 16:4925963 | CT | 0.33 | *NA* | Conflicting | 1E-8 | 0.012 | 3E-12 | -0.006 | 0.002 | -0.003 | 0.05 | 0.003 | 0.08 | 0.003 | 0.14 | -0.005 | 0.02 |
| **rs12477088** | 2:67841326 | T | 0.59 | *ETAA1---[]---C1D* | Conflicting | 6E-11 | 0.011 | 3E-14 | -7E-4 | 0.72 | -0.007 | 4E-4 | 0.002 | 0.27 | 0.008 | 7E-5 | 0.003 | 0.09 |
| **rs10631643** | 7:113013865 | TTTC | 0.38 | *GPR85---[]---PPP1R3A* | Conflicting | 3E-9 | 0.011 | 3E-14 | -0.003 | 0.08 | -0.003 | 0.18 | 0.005 | 0.006 | 0.004 | 0.03 | -0.001 | 0.40 |
| **rs441792** | 2:105404221 | G | 0.49 | *LOC100287010---[]--POU3F3* | Conflicting | 7E-12 | 0.011 | 1E-14 | -0.004 | 0.02 | -0.003 | 0.05 | 0.003 | 0.10 | 6E-4 | 0.97 | -0.006 | 0.002 |
| **rs4549685** | 7:39326478 | C | 0.67 | *[POU6F2]* | Conflicting | 4E-8 | 0.011 | 3E-13 | -0.008 | 6E-5 | -0.004 | 0.004 | 0.007 | 4E-4 | 0.002 | 0.31 | -0.004 | 0.09 |
| **rs3840590** | 7:77827064 | G | 0.65 | *[MAGI2]* | Conflicting | 3E-8 | 0.011 | 1E-13 | -0.007 | 2E-4 | -0.005 | 0.009 | 0.003 | 0.21 | 0.006 | 0.002 | 0.003 | 0.22 |
| **rs7931311** | 11:65286516 | C | 0.22 | *FRMD8---[]-SCYL1* | Conflicting | 2E-10 | 0.011 | 4E-10 | -0.008 | 1E-4 | -0.018 | 2E-16 | 0.010 | 2E-5 | -0.008 | 5E-4 | -0.005 | 0.05 |
| **rs12028517** | 1:6661732 | C | 0.67 | *[KLHL21]* | Conflicting | 2E-9 | 0.011 | 4E-13 | -0.006 | 0.002 | -0.005 | 0.004 | 0.004 | 0.06 | 0.004 | 0.03 | 0.007 | 8E-4 |
| **rs72867447** | 11:13301875 | G | 0.57 | *[ARNTL]* | Conflicting | 1E-12 | 0.011 | 5E-14 | -0.007 | 0.003 | -0.016 | 1E-18 | 0.011 | 8E-8 | 0.006 | 9E-4 | 0.002 | 0.30 |
| **rs149053776** | 17:43130624 | G | 0.38 | *NA* | Conflicting | 9E-12 | 0.011 | 5E-13 | -0.001 | 0.38 | -0.009 | 5E-6 | 0.005 | 0.02 | 0.001 | 0.49 | 0.005 | 0.01 |
| **rs1731260** | 2:26953354 | T | 0.47 | *[KCNK3]* | Conflicting | 5E-16 | 0.011 | 3E-14 | -0.003 | 0.20 | 0.002 | 0.46 | -0.007 | 4E-4 | 0.005 | 0.02 | 0.004 | 0.009 |
| **rs2456523** | 15:53082481 | G | 0.26 | *ONECUT1[]---WDR72* | Conflicting | 5E-11 | 0.011 | 1E-11 | -0.004 | 0.03 | -0.021 | 1E-22 | 0.006 | 0.01 | 0.003 | 0.20 | 3E-4 | 0.92 |
| **rs4377779** | 6:12117344 | T | 0.65 | *[HIVEP1]* | Conflicting | 1E-11 | 0.011 | 1E-12 | -0.006 | 0.002 | 0.003 | 0.30 | -0.002 | 0.37 | 0.001 | 0.65 | 0.003 | 0.13 |
| **rs7707628** | 5:153546900 | T | 0.35 | *MFAP3---[]--GALNT10* | Conflicting | 2E-11 | 0.011 | 9E-13 | 0.001 | 0.59 | -0.006 | 0.003 | -0.005 | 0.02 | 0.002 | 0.47 | -6E-4 | 0.64 |
| **rs17491275** | 1:39672545 | G | 0.16 | *[MACF1]* | Conflicting | 3E-15 | 0.011 | 4E-8 | -0.037 | 1E-52 | -0.028 | 5E-28 | 0.023 | 3E-19 | 0.005 | 0.03 | -0.008 | 0.003 |
| **rs16975918** | 18:39914522 | T | 0.32 | *PIK3C3---[]---RIT2* | Conflicting | 4E-8 | 0.011 | 4E-12 | -0.011 | 3E-7 | -0.004 | 0.06 | 0.004 | 0.10 | 0.006 | 0.02 | 0.001 | 0.64 |
| **rs429343** | 2:147903382 | A | 0.42 | *[]---ACVR2A* | Conflicting | 2E-9 | 0.011 | 4E-13 | -0.009 | 6E-8 | -0.007 | 9E-5 | 0.009 | 2E-6 | 0.005 | 0.02 | 8E-5 | 0.81 |
| **rs1436348** | 3:104612668 | G | 0.58 | *[]---ALCAM* | Conflicting | 8E-10 | 0.011 | 6E-13 | -0.005 | 0.01 | -0.004 | 0.06 | 0.004 | 0.03 | 4E-4 | 0.72 | -0.004 | 0.05 |
| **rs7925725** | 11:131449365 | C | 0.41 | *SNX19---[]---NTM* | Conflicting | 7E-9 | 0.011 | 2E-13 | -0.007 | 3E-5 | -0.004 | 0.004 | 0.007 | 4E-4 | 0.007 | 0.001 | 1E-3 | 0.83 |
| **rs3743861** | 16:89818340 | G | 0.58 | *[FANCA]* | Conflicting | 4E-9 | 0.011 | 1E-13 | -0.005 | 0.008 | -0.006 | 0.005 | 0.008 | 5E-5 | 0.007 | 1E-4 | 0.006 | 0.001 |
| **rs36090025** | 10:114774433 | A | 0.70 | *[TCF7L2]* | Conflicting | 2E-21 | 0.011 | 1E-11 | 0.003 | 0.10 | 0.012 | 4E-11 | -0.009 | 3E-5 | -0.006 | 0.01 | 0.008 | 5E-5 |
| **rs2957668** | 11:10404382 | T | 0.47 | *ADM--[]--AMPD3* | Conflicting | 2E-12 | 0.011 | 4E-13 | 0.003 | 0.17 | -0.003 | 0.07 | -0.002 | 0.25 | 0.002 | 0.33 | 0.001 | 0.48 |
| **rs5849410** | 3:61264379 | C | 0.59 | *NA* | Conflicting | 2E-9 | 0.011 | 1E-12 | -0.007 | 1E-3 | -0.006 | 0.003 | 0.002 | 0.33 | -5E-5 | 0.91 | 2E-4 | 0.85 |
| **6:126927854\_GT\_G** | 6:126927854 | GT | 0.50 | *NA* | Conflicting | 6E-22 | 0.011 | 4E-13 | -0.003 | 0.07 | 0.011 | 3E-7 | 0.008 | 3E-5 | 0.006 | 0.002 | 0.008 | 8E-5 |
| **rs1841025** | 12:41846272 | C | 0.48 | *[PDZRN4]* | Conflicting | 2E-9 | 0.011 | 3E-13 | -0.002 | 0.32 | -0.005 | 0.003 | 7E-4 | 0.77 | 0.003 | 0.05 | -5E-4 | 0.89 |
| **rs12951079** | 17:34933059 | G | 0.58 | *[GGNBP2]* | Conflicting | 3E-9 | 0.011 | 1E-12 | -0.005 | 0.003 | 0.002 | 0.12 | 0.008 | 5E-5 | 0.007 | 2E-4 | 0.002 | 0.40 |
| **rs67913249** | 5:43204126 | C | 0.66 | *[NIM1]* | Conflicting | 2E-8 | 0.011 | 3E-11 | -0.006 | 0.002 | -0.003 | 0.15 | 0.010 | 6E-6 | 7E-4 | 0.87 | -5E-4 | 0.60 |
| **rs2172131** | 10:133978962 | T | 0.42 | *[JAKMIP3]* | Conflicting | 2E-9 | 0.011 | 1E-12 | -0.004 | 0.02 | -0.008 | 4E-4 | 0.006 | 0.004 | 0.004 | 0.05 | 0.004 | 0.02 |
| **rs11790018** | 9:129702842 | C | 0.63 | *[RALGPS1]* | Conflicting | 5E-11 | 0.011 | 1E-12 | -0.005 | 0.006 | 5E-4 | 0.49 | -5E-4 | 0.85 | -0.004 | 0.05 | -0.004 | 0.18 |
| **rs1503526** | 5:63020706 | C | 0.48 | *[]---HTR1A* | Conflicting | 1E-9 | 0.011 | 3E-13 | -0.006 | 7E-4 | -0.002 | 0.30 | 0.003 | 0.07 | 0.004 | 0.04 | 0.001 | 0.33 |
| **rs3931548** | 9:103113652 | A | 0.38 | *[TEX10]* | Conflicting | 9E-9 | 0.011 | 4E-12 | -0.009 | 2E-6 | -0.005 | 0.03 | 0.002 | 0.32 | 0.005 | 0.01 | 0.005 | 0.04 |
| **rs8074454** | 17:3981148 | C | 0.33 | *[ZZEF1]* | Conflicting | 6E-12 | 0.011 | 3E-11 | -0.011 | 4E-8 | -0.010 | 6E-7 | 0.002 | 0.17 | -0.003 | 0.14 | -0.005 | 0.002 |
| **rs7630228** | 3:71681487 | T | 0.56 | *FOXP1---[]--EIF4E3* | Conflicting | 7E-11 | 0.011 | 4E-12 | -0.013 | 2E-12 | -0.006 | 0.002 | 0.008 | 1E-5 | 0.002 | 0.35 | -0.005 | 0.005 |
| **rs719802** | 11:113234679 | T | 0.39 | *[TTC12]* | Conflicting | 3E-9 | 0.011 | 6E-12 | -0.003 | 0.06 | -0.002 | 0.40 | 0.004 | 0.02 | -6E-4 | 0.78 | -1E-5 | 0.88 |
| **rs10792** | 17:5288179 | T | 0.30 | *[RABEP1]* | Conflicting | 1E-11 | 0.010 | 8E-11 | -0.003 | 0.14 | -0.012 | 3E-8 | -0.002 | 0.21 | 0.005 | 0.04 | -0.005 | 0.01 |
| **rs4894808** | 3:171833266 | G | 0.60 | *[FNDC3B]* | Conflicting | 3E-13 | 0.010 | 8E-12 | 0.004 | 0.02 | 1E-3 | 0.69 | -0.007 | 6E-4 | 0.001 | 0.33 | -0.003 | 0.23 |
| **rs2043016** | 2:198146381 | T | 0.38 | *[ANKRD44]* | Conflicting | 2E-12 | 0.010 | 2E-11 | -0.005 | 0.001 | -0.006 | 0.002 | -0.004 | 0.05 | -0.001 | 0.48 | 0.002 | 0.32 |
| **rs424539** | 9:14442595 | G | 0.38 | *NFIB---[]---ZDHHC21* | Conflicting | 5E-8 | 0.010 | 1E-11 | -0.003 | 0.10 | -9E-4 | 0.65 | 0.005 | 0.02 | 0.002 | 0.28 | -0.001 | 0.53 |
| **rs10854853** | 22:48874412 | T | 0.46 | *[]--FAM19A5* | Conflicting | 9E-10 | 0.010 | 2E-12 | -0.011 | 2E-7 | -0.008 | 1E-4 | 0.006 | 0.003 | 0.004 | 0.04 | 0.002 | 0.39 |
| **rs4908676** | 1:7737099 | G | 0.46 | *[CAMTA1]* | Conflicting | 1E-8 | 0.010 | 2E-12 | -0.007 | 6E-5 | -0.005 | 0.004 | 0.006 | 0.001 | 0.003 | 0.09 | 0.003 | 0.07 |
| **rs12375196** | 7:103416541 | A | 0.42 | *[RELN]* | Conflicting | 2E-9 | 0.010 | 3E-12 | -0.001 | 0.36 | -0.002 | 0.38 | -4E-4 | 0.72 | 0.005 | 0.04 | 0.005 | 0.005 |
| **rs9859077** | 3:101136402 | G | 0.66 | *[SENP7]* | Conflicting | 5E-12 | 0.010 | 4E-11 | 0.006 | 0.002 | -0.007 | 3E-4 | 0.003 | 0.12 | 0.009 | 9E-6 | 1E-3 | 0.53 |
| **rs9435341** | 1:107616641 | T | 0.34 | *PRMT6--[]--NTNG1* | Conflicting | 7E-97 | 0.010 | 2E-11 | -0.005 | 0.01 | 0.046 | 1E-122 | -8E-4 | 0.95 | 0.009 | 3E-6 | 0.004 | 0.06 |
| **rs11786089** | 8:21975521 | G | 0.46 | *[HR]* | Conflicting | 9E-9 | 0.010 | 1E-12 | -0.004 | 0.01 | -0.006 | 0.003 | 0.004 | 0.01 | -2E-4 | 0.72 | -7E-4 | 0.79 |
| **rs529200** | 3:173114305 | G | 0.53 | *SPATA16---[]-NLGN1* | Conflicting | 9E-9 | 0.010 | 6E-12 | -0.009 | 7E-7 | -0.005 | 0.007 | 0.009 | 5E-6 | 0.004 | 0.02 | 0.002 | 0.39 |
| **rs9260127** | 6:29910478 | G | 0.45 | *[HLA-A]* | Conflicting | 3E-20 | 0.010 | 8E-12 | -0.013 | 4E-13 | -6E-4 | 0.85 | -0.015 | 7E-14 | -0.007 | 1E-4 | -0.016 | 4E-17 |
| **rs583893** | 11:118904233 | G | 0.57 | *SLC37A4-[]--HYOU1* | Conflicting | 4E-10 | 0.010 | 3E-11 | -0.013 | 3E-12 | -0.004 | 0.02 | 0.008 | 4E-5 | 0.009 | 9E-6 | 0.003 | 0.14 |
| **rs12945575** | 17:40713071 | T | 0.25 | *HSD17B1-[]-COASY* | Conflicting | 1E-10 | 0.010 | 4E-9 | -0.018 | 2E-18 | -0.016 | 1E-14 | 0.018 | 2E-16 | 0.010 | 3E-5 | 0.003 | 0.22 |
| **rs4780885** | 16:20380004 | G | 0.50 | *[PDILT]* | Conflicting | 6E-11 | 0.010 | 8E-12 | -0.005 | 0.004 | 7E-4 | 0.85 | 6E-5 | 0.85 | 0.004 | 0.02 | 0.002 | 0.16 |
| **rs10681181** | 9:92206788 | TTTG | 0.48 | *NA* | Conflicting | 6E-15 | 0.010 | 2E-12 | -0.009 | 4E-6 | 2E-4 | 0.88 | 0.013 | 7E-12 | 0.004 | 0.08 | -0.008 | 1E-4 |
| **rs12127506** | 1:222075614 | C | 0.68 | *DUSP10---[]---HHIPL2* | Conflicting | 9E-11 | 0.010 | 8E-11 | 0.005 | 0.004 | 0.003 | 0.14 | -0.006 | 0.01 | -8E-4 | 0.67 | -7E-5 | 1.00 |
| **rs67518031** | 3:88742702 | G | 0.50 | *NA* | Conflicting | 2E-8 | 0.010 | 1E-12 | -0.008 | 6E-6 | -0.005 | 0.006 | 0.006 | 0.002 | 0.008 | 5E-5 | 0.004 | 0.07 |
| **5:63940500\_CA\_C** | 5:63940500 | C | 0.53 | *NA* | Conflicting | 2E-8 | 0.010 | 4E-12 | -0.003 | 0.09 | -0.005 | 0.005 | 0.008 | 9E-5 | 0.005 | 0.01 | 0.002 | 0.28 |
| **rs2798297** | 4:3064004 | A | 0.37 | *GRK4--[]--HTT* | Conflicting | 1E-24 | 0.010 | 3E-11 | -0.003 | 0.02 | 0.015 | 3E-15 | 0.014 | 1E-12 | 0.010 | 6E-7 | 0.007 | 8E-4 |
| **rs7519259** | 1:66434743 | A | 0.53 | *[PDE4B]* | Conflicting | 7E-10 | 0.010 | 4E-12 | 0.001 | 0.54 | -0.002 | 0.31 | 0.003 | 0.05 | 0.007 | 3E-4 | 0.008 | 3E-5 |
| **rs6782581** | 3:196979106 | C | 0.56 | *[DLG1]* | Conflicting | 2E-10 | 0.010 | 9E-12 | -0.002 | 0.42 | 0.003 | 0.17 | 4E-4 | 0.79 | 0.002 | 0.28 | -0.001 | 0.53 |
| **rs699929** | 3:157931837 | A | 0.44 | *NA* | Conflicting | 2E-8 | 0.010 | 6E-12 | -0.005 | 0.006 | -0.002 | 0.17 | 8E-4 | 0.81 | 0.002 | 0.31 | 0.001 | 0.54 |
| **rs254027** | 5:103940415 | A | 0.44 | *[]* | Conflicting | 4E-9 | 0.010 | 9E-12 | -0.011 | 5E-11 | -0.006 | 4E-4 | 0.011 | 2E-8 | 0.004 | 0.03 | -0.002 | 0.32 |
| **rs10804146** | 2:206061247 | G | 0.47 | *[PARD3B]* | Conflicting | 4E-9 | 0.010 | 1E-11 | -0.005 | 0.02 | -0.004 | 0.04 | 1E-4 | 0.93 | 0.003 | 0.20 | 0.003 | 0.19 |
| **rs112454648** | 10:70347292 | A | 0.44 | *[TET1]* | Conflicting | 4E-10 | 0.010 | 8E-11 | 0.002 | 0.23 | -0.005 | 0.003 | 0.005 | 0.01 | 0.010 | 9E-7 | 0.007 | 1E-3 |
| **rs68177066** | 13:81104260 | C | 0.34 | *SPRY2---[]* | Conflicting | 7E-12 | 0.010 | 3E-10 | -0.002 | 0.26 | 6E-5 | 0.86 | 0.004 | 0.08 | -0.006 | 0.008 | -0.014 | 6E-12 |
| **rs12997625** | 2:202970250 | T | 0.53 | *[LOC100652824]* | Conflicting | 1E-12 | 0.010 | 7E-12 | 0.002 | 0.16 | -0.005 | 0.008 | 0.010 | 2E-7 | 0.010 | 4E-6 | 0.009 | 9E-6 |
| **3:183513243\_ATTTTTTTTTTTTT\_A** | 3:183513243 | ATTTTTTTTTTTTT | 0.47 | *NA* | Conflicting | 1E-8 | 0.010 | 7E-11 | -0.003 | 0.24 | -6E-4 | 0.65 | 0.001 | 0.70 | -0.001 | 0.87 | 5E-4 | 0.87 |
| **rs159961** | 1:8484228 | T | 0.34 | *[RERE]* | Conflicting | 4E-8 | 0.010 | 8E-11 | -0.004 | 0.07 | 0.001 | 0.66 | 0.003 | 0.06 | -0.001 | 0.78 | 0.001 | 0.51 |
| **rs9319615** | 17:79072594 | A | 0.45 | *[BAIAP2]* | Conflicting | 3E-8 | 0.010 | 3E-11 | -0.003 | 0.24 | -0.007 | 2E-4 | 0.006 | 0.003 | 0.003 | 0.38 | 0.001 | 0.80 |
| **rs61791109** | 3:170734377 | C | 0.28 | *[SLC2A2]* | Conflicting | 3E-8 | 0.010 | 1E-9 | -1E-3 | 0.77 | -0.012 | 5E-8 | 0.012 | 3E-7 | 0.012 | 2E-8 | 0.012 | 3E-8 |
| **rs11172113** | 12:57527283 | C | 0.41 | *[LRP1]* | Conflicting | 6E-12 | 0.010 | 5E-11 | 0.007 | 4E-4 | 0.002 | 0.51 | -0.002 | 0.48 | 0.005 | 0.008 | 0.008 | 4E-5 |
| **rs746336168** | 1:184706212 | G | 0.48 | *[EDEM3]* | Conflicting | 2E-8 | 0.010 | 5E-11 | 3E-4 | 0.83 | -0.008 | 5E-5 | 0.003 | 0.09 | 0.003 | 0.16 | -7E-4 | 0.94 |
| **rs2717609** | 8:143769252 | A | 0.53 | *PSCA-[]--LY6K* | Conflicting | 3E-8 | 0.010 | 4E-11 | -0.003 | 0.07 | -0.003 | 0.25 | 0.005 | 0.01 | 0.010 | 5E-7 | 0.004 | 0.03 |
| **rs6899218** | 5:178988608 | A | 0.51 | *[RUFY1]* | Conflicting | 8E-10 | 0.010 | 1E-11 | -2E-4 | 0.86 | -0.007 | 3E-5 | 0.008 | 6E-5 | 0.001 | 0.61 | 8E-5 | 0.81 |
| **rs747489841** | 16:73095430 | AAC | 0.36 | *ZFHX3--[]* | Conflicting | 5E-9 | 0.010 | 1E-10 | -0.009 | 9E-7 | -0.004 | 0.01 | 0.003 | 0.18 | -0.003 | 0.13 | -0.006 | 0.01 |
| **rs33994795** | 8:9473429 | C | 0.36 | *[TNKS]* | Conflicting | 2E-24 | 0.010 | 2E-10 | -3E-4 | 0.94 | -0.003 | 0.16 | -0.017 | 6E-19 | 0.018 | 7E-19 | 0.018 | 1E-19 |
| **rs10496731** | 2:135597628 | T | 0.63 | *[ACMSD]* | Conflicting | 3E-15 | 0.010 | 3E-10 | -0.013 | 3E-12 | 0.007 | 6E-4 | 0.002 | 0.22 | 0.003 | 0.08 | 0.001 | 0.38 |
| **rs811054** | 16:72251132 | T | 0.54 | *PMFBP1--[]---ZFHX3* | Conflicting | 4E-8 | 0.010 | 2E-10 | -0.003 | 0.10 | -0.004 | 0.07 | 0.011 | 2E-7 | 0.005 | 0.02 | 0.003 | 0.12 |
| **6:143187255\_CA\_C** | 6:143187255 | CA | 0.51 | *[HIVEP2]* | Conflicting | 3E-8 | 0.010 | 8E-11 | -0.001 | 0.46 | -0.005 | 0.002 | 1E-3 | 0.58 | -8E-4 | 0.67 | -9E-4 | 0.59 |
| **rs4668314** | 2:171631258 | G | 0.39 | *SP5--[]-ERICH2* | Conflicting | 3E-8 | 0.010 | 4E-10 | -0.009 | 9E-7 | -0.009 | 7E-7 | 0.013 | 2E-11 | 0.003 | 0.07 | 6E-4 | 0.80 |
| **rs564988630** | 4:83192564 | C | 0.50 | *NA* | Conflicting | 2E-8 | 0.010 | 5E-10 | -0.003 | 0.16 | 2E-4 | 0.99 | -9E-4 | 0.69 | 0.001 | 0.47 | -0.002 | 0.22 |
| **rs560547656** | 15:75443633 | C | 0.47 | *NA* | Conflicting | 3E-11 | 0.009 | 3E-10 | 0.006 | 0.002 | -0.006 | 3E-4 | -0.003 | 0.27 | 0.005 | 0.008 | 0.005 | 0.008 |
| **rs12432026** | 14:75282116 | G | 0.54 | *[YLPM1]* | Conflicting | 1E-13 | 0.009 | 5E-10 | -0.015 | 2E-17 | -0.002 | 0.37 | 0.003 | 0.19 | 0.001 | 0.48 | -0.006 | 9E-4 |
| **rs2712169** | 2:217671349 | G | 0.42 | *IGFBP5---[]--TNP1* | Conflicting | 9E-14 | 0.009 | 4E-10 | 0.003 | 0.24 | 0.005 | 0.02 | -0.008 | 1E-4 | -0.007 | 0.002 | -0.007 | 7E-4 |
| **rs796663884** | 6:52426285 | CT | 0.42 | *NA* | Conflicting | 3E-14 | 0.009 | 5E-10 | 0.003 | 0.12 | 0.006 | 0.006 | -0.005 | 0.01 | 0.001 | 0.60 | -0.008 | 2E-4 |
| **rs79100766** | 1:151690804 | C | 0.52 | *CELF3-[]-RIIAD1* | Conflicting | 8E-9 | 0.009 | 5E-10 | 0.003 | 0.03 | -0.003 | 0.18 | 0.003 | 0.12 | 8E-4 | 0.68 | 2E-5 | 0.99 |
| **rs3856595** | 3:66492604 | G | 0.55 | *[LRIG1]* | Conflicting | 1E-9 | 0.009 | 4E-9 | 0.001 | 0.70 | 0.003 | 0.22 | -6E-4 | 0.78 | -0.001 | 0.57 | -0.005 | 0.02 |
| **rs143020014** | 9:86463210 | G | 0.55 | *[KIF27]* | Conflicting | 7E-37 | 0.009 | 2E-9 | 4E-4 | 0.87 | 0.022 | 1E-29 | -0.005 | 0.02 | -0.003 | 0.12 | 0.012 | 5E-9 |
| **rs17256211** | 14:23754580 | G | 0.65 | *[HOMEZ]* | Conflicting | 5E-12 | 0.009 | 1E-8 | -0.001 | 0.36 | 0.010 | 2E-6 | -0.005 | 0.04 | 0.004 | 0.12 | 0.001 | 0.77 |
| **rs505922** | 9:136149229 | C | 0.32 | *[ABO]* | Conflicting | 7E-120 | 0.009 | 2E-8 | 0.013 | 7E-11 | -0.009 | 5E-6 | -0.013 | 8E-10 | 0.026 | 2E-34 | -0.030 | 3E-43 |
| **rs4577503** | 3:99657922 | G | 0.41 | *[CMSS1* | Conflicting | 7E-11 | 0.009 | 3E-9 | 0.004 | 0.07 | 0.001 | 0.45 | -0.004 | 0.04 | 9E-4 | 0.71 | -0.006 | 0.002 |
| **rs4669869** | 2:12898460 | C | 0.44 | *TRIB2--[]* | Conflicting | 7E-11 | 0.009 | 3E-9 | 0.004 | 0.05 | 0.005 | 0.01 | -0.004 | 0.03 | 3E-4 | 0.81 | 0.003 | 0.16 |
| **rs12927987** | 16:66720206 | T | 0.52 | *[CMTM4]* | Conflicting | 2E-8 | 0.009 | 1E-8 | -0.001 | 0.63 | -0.002 | 0.28 | 5E-4 | 0.62 | -2E-4 | 0.93 | -0.008 | 2E-5 |
| **rs340025** | 15:60908307 | C | 0.58 | *[RORA]* | Conflicting | 7E-13 | 0.009 | 5E-9 | 0.002 | 0.21 | -0.010 | 1E-8 | 0.010 | 1E-5 | 0.017 | 6E-19 | 0.010 | 1E-7 |
| **rs7037043** | 9:77160815 | G | 0.35 | *[RORB]* | Conflicting | 3E-9 | 0.009 | 4E-8 | 0.005 | 0.003 | 0.004 | 0.03 | -0.003 | 0.18 | -0.005 | 0.02 | -0.003 | 0.11 |
| **rs7191378** | 16:58115034 | G | 0.31 | *MMP15--[]--C16orf80* | Conflicting | 1E-8 | 0.009 | 2E-8 | -0.005 | 0.01 | 8E-4 | 0.56 | 0.002 | 0.27 | -0.010 | 2E-6 | -0.008 | 1E-4 |
| **rs8071840** | 17:70721707 | G | 0.48 | *[SLC39A11]* | Conflicting | 6E-9 | 0.008 | 2E-8 | -9E-4 | 0.90 | -0.006 | 0.004 | 1E-4 | 0.94 | -8E-4 | 0.61 | -0.007 | 1E-4 |
| **rs4497915** | 2:48690596 | G | 0.54 | *[PPP1R21]* | Conflicting | 2E-13 | 0.008 | 2E-8 | -0.005 | 0.002 | 0.006 | 9E-4 | 0.003 | 0.17 | 0.013 | 6E-12 | 0.004 | 0.03 |
| **rs2292238** | 12:56493822 | A | 0.59 | *[ERBB3]* | Conflicting | 1E-9 | 0.008 | 5E-8 | -0.010 | 1E-7 | -0.009 | 1E-6 | 0.006 | 0.003 | 0.011 | 2E-8 | 0.012 | 1E-9 |
| **rs4737188** | 8:64756657 | A | 0.53 | *YTHDF3---[]---BHLHE22* | Conflicting | 4E-8 | 0.008 | 3E-8 | -0.012 | 2E-10 | -0.011 | 7E-10 | 0.010 | 2E-7 | 0.004 | 0.04 | 8E-4 | 0.70 |

**Table S3.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CHR** | **Index SNP** | **Gene** | **Traits** | **Posterior\_prob** | **Colocalised SNP** | **Posterior\_explained\_by\_snp** |
| 17 | rs4790292 | RPA1--[]--RTN4RL1 | SHBG, Triglycerides | 0.9993 | rs11078597 | 0.9916 |
| 4 | rs13107325 | [SLC39A8] | BFP, HDL, Triglycerides, ALT, AST | 0.9983 | rs13107325 | 1 |
| 3 | rs1471740 | [STAG1] | SHBG, ALT | 0.9839 | rs687339 | 0.9105 |
| 8 | rs4876611 | [TRPS1] | BFP, Triglycerides | 0.9725 | rs4876611 | 0.3737 |
| 5 | rs2112347 | POC5-[]---SV2C | BFP, HDL | 0.9694 | rs2307111 | 0.9438 |
| 6 | 6:34650934 | [C6orf106] | Triglycerides, ALT | 0.9652 | rs185139895 | 0.6515 |
| 12 | rs3764002 | [WSCD2] | BFP, SHBG, Triglycerides | 0.9635 | rs3764002 | 0.9248 |
| 18 | rs6567160 | PMAIP1---[]---MC4R | BFP, SHBG | 0.946 | rs538656 | 0.1473 |
| 19 | rs11666808 | [KIAA1683] | SHBG, ALT | 0.9455 | rs885683 | 0.1356 |
| 14 | 14:79940130 | NA | BFP, ALT | 0.944 | 14:79940130 | 0.3807 |
| 11 | rs61888762 | [BDNF] | BFP, ALT | 0.9123 | rs61888762 | 0.2306 |
| 16 | rs8049669 | CYB5B--[]--NFAT5 | BFP, Triglycerides | 0.9097 | rs10694251 | 0.2471 |
| 15 | 15:73322940 | NA | ALT, AST | 0.8948 | rs4558379 | 0.8428 |
| 10 | rs2274224 | [PLCE1] | BFP, Triglycerides, ALT, AST | 0.8926 | rs2274224 | 0.2417 |
| 18 | rs6567160 | PMAIP1---[]---MC4R | HDL, Triglycerides | 0.8917 | rs8089364 | 0.0574 |
| 1 | rs539515 | FAM5B---[]-SEC16B | ALT, AST | 0.8849 | rs7523508 | 0.279 |
| 11 | rs61888762 | [BDNF] | HDL, Triglycerides | 0.8779 | rs17309930 | 0.3472 |
| 5 | rs10623997 | NA | HDL, Triglycerides | 0.8531 | rs256538 | 0.2694 |
| 11 | rs4755725 | NA | BFP, HDL, ALT | 0.7865 | rs57951376 | 0.1175 |
| 5 | rs17764730 | CTXN3---[]--SLC12A2 | BFP, HDL, SHBG, ALT, AST | 0.7823 | rs3749748 | 0.2312 |
| 6 | rs9358912 | HIST1H4E-[]-HIST1H2BG | HDL, Triglycerides, AST | 0.7772 | rs76091509 | 0.4528 |
| 11 | rs61888762 | [BDNF] | SHBG, AST | 0.7747 | rs71480157 | 0.0691 |
| 16 | rs11642015 | [FTO] | BFP, HDL, SHBG, ALT, AST | 0.7593 | rs56094641 | 0.7168 |
| 19 | rs11666808 | [KIAA1683] | BFP, Triglycerides | 0.7427 | rs11666808 | 0.2703 |
| 1 | 1:72767554\_CA\_C | NA | BFP, HDL, SHBG, Triglycerides | 0.7324 | rs34361149 | 0.116 |
| 5 | rs10623997 | NA | ALT, AST | 0.7305 | rs288237 | 0.1265 |
| 1 | 1:113202203\_TCTCTC\_T | NA | BFP, SHBG, ALT, AST | 0.7257 | 1:113181720 | 0.2319 |
| 2 | rs143684747 | NA | HDL, Triglycerides | 0.7191 | rs56321614 | 0.0603 |
| 18 | rs771025058 | [NPC1] | HDL, Triglycerides, ALT | 0.7139 | rs7239575 | 0.1674 |
| 16 | rs8049669 | CYB5B--[]--NFAT5 | ALT, AST | 0.7084 | rs78432537 | 0.4964 |
| 12 | rs7132908 | [FAIM2] | HDL, SHBG | 0.7056 | rs9669354 | 0.4722 |

**Table S4.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CHR** | **Index SNP** | **Gene** | **Traits** | **posterior\_prob** | **Colocalised SNP** | **posterior\_explained\_by\_snp** |
| 1 | rs12130231 | NA | ALT, AST | 1 | rs188273166 | 1 |
| 17 | rs12940684 | [TNFSF12-TNFSF13] | ALT, AST | 0.9994 | rs117643180 | 1 |
| 5 | rs4976033 | PIK3R1---[]---SLC30A5 | BFP, HDL, SHBG, Triglycerides, ALT, AST | 0.999 | rs4976033 | 1 |
| 3 | rs62271373 | PFN2---[]--TSC22D2 | BFP, HDL, SHBG, Triglycerides, ALT | 0.9947 | rs62271373 | 1 |
| 19 | rs555162510 | NA | HDL, SHBG | 0.9945 | rs34255979 | 0.6435 |
| 8 | rs2980888 | TRIB1--[] | Triglycerides, ALT | 0.9937 | rs28601761 | 1 |
| 6 | rs998584 | VEGFA-[]---C6orf223 | BFP, HDL, SHBG, Triglycerides, ALT, AST | 0.9926 | rs998584 | 1 |
| 12 | rs7133378 | [DNAH10] | BFP, HDL | 0.991 | rs7133378 | 1 |
| 12 | rs7133378 | [DNAH10] | SHBG, Triglycerides | 0.9872 | rs863750 | 0.3611 |
| 15 | rs12441543 | KLF13--[]--OTUD7A | HDL, SHBG, Triglycerides | 0.9866 | rs28624578 | 0.5104 |
| 2 | rs13389219 | GRB14--[]--COBLL1 | BFP, HDL, SHBG, Triglycerides, ALT | 0.9865 | rs13389219 | 0.9219 |
| 12 | rs11045172 | AEBP2---[]--PDE3A | BFP, HDL, Triglycerides | 0.9822 | rs11045171 | 0.5493 |
| 7 | rs6977416 | TMEM176A--[]-ABP1 | BFP, HDL | 0.9795 | rs6977416 | 0.391 |
| 5 | rs30351 | ANKRD55---[]---MAP3K1 | Triglycerides, ALT, AST | 0.9775 | rs11429307 | 0.913 |
| 12 | rs12369179 | [ZCCHC8] | HDL, Triglycerides | 0.9677 | rs2454702 | 0.1176 |
| 17 | rs142186653 | TRIM47-[]-TRIM65 | SHBG, ALT | 0.9563 | rs73352129 | 0.5269 |
| 20 | rs6029180 | []---MAFB | BFP, Triglycerides, ALT, AST | 0.9547 | rs1883711 | 0.9995 |
| 12 | rs10876529 | HOXC8--[]HOXC6 | BFP, Triglycerides | 0.9511 | rs10876529 | 0.105 |
| 5 | rs9764678 | [TNFAIP8] | BFP, HDL, Triglycerides | 0.9406 | rs5870855 | 0.3534 |
| 8 | rs2980888 | TRIB1--[] | BFP, HDL, AST | 0.9181 | rs2980888 | 0.7557 |
| 5 | rs30351 | ANKRD55---[]---MAP3K1 | BFP, HDL, SHBG | 0.9179 | rs40270 | 1 |
| 4 | rs4450871 | MSX1---[]--CYTL1 | BFP, HDL, SHBG, Triglycerides, ALT | 0.9161 | rs4450871 | 1 |
| 12 | rs7133378 | [DNAH10] | ALT, AST | 0.9123 | rs4930718 | 0.6021 |
| 22 | rs4821764 | [MAFF] | BFP, HDL, Triglycerides, ALT | 0.9102 | rs2267373 | 0.2298 |
| 12 | rs10876529 | HOXC8--[]HOXC6 | SHBG, ALT | 0.9099 | rs143354653 | 0.6252 |
| 12 | rs11045172 | AEBP2---[]--PDE3A | SHBG, ALT, AST | 0.891 | rs10841520 | 0.4452 |
| 1 | rs12130231 | NA | HDL, Triglycerides | 0.8839 | rs1538742 | 0.4564 |
| 2 | rs2943653 | NYAP2---[]---IRS1 | BFP, HDL, SHBG, Triglycerides, ALT, AST | 0.8835 | rs2943645 | 0.8191 |
| 11 | rs113222038 | [EML3] | HDL, Triglycerides | 0.8785 | rs71458418 | 0.0875 |
| 3 | rs4684847 | SYN2---[]-PPARG | BFP, SHBG, Triglycerides, ALT, AST | 0.8538 | rs1801282 | 0.4245 |
| 18 | rs7233512 | [SETBP1] | BFP, Triglycerides | 0.8357 | rs7230240 | 0.1824 |
| 4 | rs13132853 | [KLF3] | BFP, Triglycerides, ALT | 0.7701 | rs13132853 | 0.344 |
| 1 | rs2802774 | OPTC--[]--ATP2B4 | HDL, SHBG, Triglycerides, ALT | 0.7515 | rs36043408 | 0.2103 |

**Table S5.** The sex-combined and sex-specific associations of “favourable adiposity” (FA) and “unfavourable adiposity” (UFA) genetic scores with measures of adiposity and biomarkers, C-reactive protein, MRI-derived measures of fat distribution, and cardiometabolic diseases in UK Biobank. LCI: lower 95% confidence interval; UCI: upper 95% confidence interval; P: p-value; P difference: p-value for test of sex difference in association.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Combined** | | | | **Male** | | | | **Female** | | | |  |
| **Trait** | **Cluster** | **Beta** | **LCI** | **UCI** | **P** | **Beta** | **LCI** | **UCI** | **P** | **Beta** | **LCI** | **UCI** | **P** | **P difference** |
| **Body fat %** | **FA** | 0.014 | 0.012 | 0.016 | 2E-58 | 0.020 | 0.018 | 0.023 | 6E-53 | 0.018 | 0.015 | 0.020 | 9E-43 | 0.15 |
| **UFA** | 0.020 | 0.018 | 0.022 | 5E-95 | 0.026 | 0.024 | 0.029 | 1E-78 | 0.027 | 0.024 | 0.030 | 3E-78 | 0.91 |
| **BMI** | **FA** | 0.009 | 0.007 | 0.012 | 3E-15 | 0.009 | 0.007 | 0.012 | 3E-11 | 0.010 | 0.007 | 0.012 | 1E-16 | 0.87 |
| **UFA** | 0.026 | 0.020 | 0.031 | 4E-22 | 0.026 | 0.021 | 0.032 | 2E-19 | 0.026 | 0.021 | 0.031 | 8E-23 | 0.86 |
| **HDL-cholesterol** | **FA** | 0.018 | 0.014 | 0.022 | 3E-16 | 0.018 | 0.013 | 0.022 | 1E-13 | 0.021 | 0.016 | 0.027 | 9E-14 | 0.32 |
| **UFA** | -0.013 | -0.018 | -0.008 | 2E-7 | -0.016 | -0.022 | -0.010 | 1E-7 | -0.013 | -0.018 | -0.008 | 6E-7 | 0.52 |
| **Sex-hormone binding globulin** | **FA** | 0.016 | 0.006 | 0.025 | 0.001 | 0.015 | 0.002 | 0.028 | 0.02 | 0.019 | 0.010 | 0.028 | 3E-5 | 0.63 |
| **UFA** | -0.010 | -0.013 | -0.006 | 1E-9 | -0.008 | -0.012 | -0.005 | 6E-6 | -0.012 | -0.015 | -0.008 | 2E-11 | 0.16 |
| **Triglycerides** | **FA** | -0.022 | -0.027 | -0.016 | 4E-15 | -0.019 | -0.025 | -0.014 | 5E-11 | -0.025 | -0.031 | -0.018 | 2E-14 | 0.23 |
| **UFA** | 0.010 | 0.007 | 0.013 | 7E-11 | 0.010 | 0.007 | 0.014 | 4E-11 | 0.010 | 0.006 | 0.013 | 1E-8 | 0.76 |
| **Aspartate transaminase** | **FA** | -0.008 | -0.010 | -0.005 | 2E-9 | -0.010 | -0.013 | -0.007 | 5E-10 | -0.006 | -0.009 | -0.004 | 2E-7 | 0.10 |
| **UFA** | 0.007 | 0.004 | 0.010 | 1E-5 | 0.008 | 0.005 | 0.011 | 8E-7 | 0.006 | 0.003 | 0.009 | 2E-4 | 0.43 |
| **Alanine transaminase** | **FA** | -0.013 | -0.016 | -0.010 | 6E-17 | -0.013 | -0.017 | -0.009 | 5E-11 | -0.014 | -0.017 | -0.011 | 1E-20 | 0.72 |
| **UFA** | 0.009 | 0.007 | 0.011 | 4E-21 | 0.010 | 0.008 | 0.012 | 3E-17 | 0.009 | 0.007 | 0.012 | 6E-16 | 0.75 |
| **C-reactive protein** | **FA** | 0.004 | 0.001 | 0.007 | 0.005 | 0.005 | 0.002 | 0.007 | 3E-4 | 0.004 | 1E-4 | 0.007 | 0.04 | 0.65 |
| **UFA** | 0.010 | 0.008 | 0.013 | 3E-14 | 0.010 | 0.007 | 0.013 | 1E-9 | 0.011 | 0.009 | 0.014 | 6E-17 | 0.40 |
| **Subcutaneous adipose tissue** | **FA** | 0.014 | 0.010 | 0.017 | 1E-17 | 0.021 | 0.016 | 0.026 | 6E-17 | 0.011 | 0.006 | 0.015 | 1E-6 | 0.002 |
| **UFA** | 0.022 | 0.018 | 0.026 | 1E-22 | 0.023 | 0.017 | 0.030 | 4E-13 | 0.025 | 0.019 | 0.030 | 8E-21 | 0.79 |
| **Visceral adipose tissue** | **FA** | -2E-4 | -0.005 | 0.004 | 0.92 | 0.006 | -5E-4 | 0.013 | 0.07 | -0.009 | -0.015 | -0.004 | 0.001 | 6E-4 |
| **UFA** | 0.011 | 0.008 | 0.015 | 2E-12 | 0.013 | 0.008 | 0.017 | 2E-8 | 0.016 | 0.011 | 0.020 | 2E-10 | 0.39 |
| **VATSAT ratio** | **FA** | -0.012 | -0.016 | -0.008 | 1E-7 | -0.018 | -0.026 | -0.010 | 6E-6 | -0.021 | -0.028 | -0.013 | 2E-7 | 0.69 |
| **UFA** | -0.007 | -0.010 | -0.004 | 3E-5 | -0.014 | -0.020 | -0.008 | 9E-6 | -0.004 | -0.009 | 8E-4 | 0.10 | 0.01 |
| **Liver fat** | **FA** | -0.010 | -0.014 | -0.006 | 9E-7 | -0.008 | -0.014 | -0.002 | 0.008 | -0.013 | -0.017 | -0.008 | 3E-8 | 0.19 |
| **UFA** | 0.009 | 0.006 | 0.013 | 2E-8 | 0.007 | 0.003 | 0.011 | 0.001 | 0.013 | 0.008 | 0.018 | 7E-8 | 0.07 |
| **Liver volume** | **FA** | -0.006 | -0.010 | -0.002 | 0.006 | -0.006 | -0.011 | -4E-4 | 0.03 | -0.006 | -0.011 | -0.001 | 0.01 | 0.90 |
| **UFA** | 0.013 | 0.009 | 0.017 | 3E-10 | 0.013 | 0.008 | 0.018 | 3E-7 | 0.016 | 0.010 | 0.021 | 4E-8 | 0.49 |
| **Pancreas fat** | **FA** | 0.002 | -0.003 | 0.007 | 0.38 | 0.005 | -0.001 | 0.012 | 0.10 | -0.002 | -0.008 | 0.004 | 0.54 | 0.11 |
| **UFA** | 0.011 | 0.007 | 0.014 | 7E-10 | 0.010 | 0.005 | 0.015 | 2E-5 | 0.015 | 0.009 | 0.020 | 8E-8 | 0.20 |
| **Pancreas volume** | **FA** | -0.006 | -0.011 | -0.002 | 0.003 | -0.007 | -0.011 | -0.002 | 0.003 | -0.007 | -0.012 | -0.001 | 0.02 | 0.97 |
| **UFA** | 0.001 | -0.003 | 0.006 | 0.57 | 9E-4 | -0.005 | 0.006 | 0.76 | 0.002 | -0.004 | 0.008 | 0.45 | 0.74 |
| **Type 2 diabetes** | **FA** | -1E-3 | -0.001 | -6E-4 | 2E-9 | -0.001 | -0.002 | -6E-4 | 7E-6 | -9E-4 | -0.001 | -6E-4 | 4E-11 | 0.45 |
| **UFA** | 0.001 | 9E-4 | 0.001 | 6E-16 | 0.001 | 0.001 | 0.002 | 6E-12 | 9E-4 | 7E-4 | 0.001 | 1E-14 | 0.03 |
| **Heart disease** | **FA** | -8E-4 | -0.001 | -4E-4 | 3E-5 | -0.001 | -0.002 | -6E-4 | 1E-4 | -4E-4 | -7E-4 | -2E-4 | 0.003 | 0.02 |
| **UFA** | 9E-4 | 6E-4 | 0.001 | 2E-7 | 0.001 | 9E-4 | 0.002 | 6E-7 | 5E-4 | 2E-4 | 9E-4 | 0.001 | 0.007 |
| **Hypertension** | **FA** | -0.002 | -0.002 | -7E-4 | 1E-4 | -0.002 | -0.003 | -9E-4 | 7E-5 | -0.001 | -0.002 | -5E-4 | 0.002 | 0.49 |
| **UFA** | 0.002 | 0.002 | 0.003 | 4E-8 | 0.003 | 0.002 | 0.004 | 4E-7 | 0.002 | 0.001 | 0.003 | 6E-8 | 0.74 |
| **Stroke** | **FA** | -1E-4 | -2E-4 | 4E-5 | 0.17 | 1E-5 | -2E-4 | 2E-4 | 0.92 | -2E-4 | -3E-4 | -2E-5 | 0.03 | 0.16 |
| **UFA** | 3E-4 | 1E-4 | 4E-4 | 5E-4 | 4E-4 | 2E-4 | 6E-4 | 2E-4 | 2E-4 | 2E-5 | 3E-4 | 0.03 | 0.12 |
| **Fatty liver disease** | **FA** | -1E-4 | -2E-4 | -1E-5 | 0.03 | -2E-4 | -4E-4 | 3E-5 | 0.09 | -7E-5 | -2E-4 | 6E-5 | 0.31 | 0.32 |
| **UFA** | 1E-4 | 4E-5 | 2E-4 | 0.004 | 5E-5 | -1E-4 | 2E-4 | 0.62 | 2E-4 | 7E-5 | 3E-4 | 0.002 | 0.23 |
| **Polycystic ovary syndrome** | **FA** | -7E-5 | -1E-4 | -1E-5 | 0.02 | NA | NA | NA | NA | -7E-5 | -1E-4 | -1E-5 | 0.02 | NA |
| **UFA** | 1E-4 | 6E-5 | 2E-4 | 7E-5 | NA | NA | NA | NA | 1E-4 | 6E-5 | 2E-4 | 7E-5 | NA |

**Table S6.** The association of “favourable adiposity” (FA) and “unfavourable adiposity” (UFA) genetic score with measures of adiposity and biomarkers, C-reactive protein, MRI-derived measures of fat distribution, and cardiometabolic diseases in UK Biobank, FinnGen and published GWAS. LCI: lower 95% confidence interval; UCI: upper 95% confidence interval; P: p-value.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **UK Biobank** | | | | **FinnGen** | | | | **Published GWAS** | | | |
| **Outcome** | **Cluster** | **Beta** | **LCI** | **UCI** | **P** | **Beta** | **LCI** | **UCI** | **P** | **Beta** | **LCI** | **UCI** | **P** |
| **Body fat %** | **FA** | 0.014 | 0.012 | 0.016 | 2E-58 | NA | NA | NA | NA | 0.015 | 0.013 | 0.018 | 1E-29 |
| **UFA** | 0.020 | 0.018 | 0.022 | 5E-95 | NA | NA | NA | NA | 0.018 | 0.014 | 0.021 | 2E-20 |
| **BMI** | **FA** | 0.009 | 0.007 | 0.012 | 3E-15 | NA | NA | NA | NA | 0.009 | 0.007 | 0.012 | 3E-12 |
| **UFA** | 0.026 | 0.020 | 0.031 | 4E-22 | NA | NA | NA | NA | 0.025 | 0.019 | 0.031 | 7E-17 |
| **HDL-cholesterol** | **FA** | 0.018 | 0.014 | 0.022 | 3E-16 | NA | NA | NA | NA | 0.017 | 0.014 | 0.021 | 9E-21 |
| **UFA** | -0.013 | -0.018 | -0.008 | 2E-7 | NA | NA | NA | NA | -0.013 | -0.018 | -0.008 | 4E-8 |
| **Sex-hormone binding globulin** | **FA** | 0.016 | 0.006 | 0.025 | 0.001 | NA | NA | NA | NA | 0.008 | 0.003 | 0.013 | 0.001 |
| **UFA** | -0.010 | -0.013 | -0.006 | 1E-9 | NA | NA | NA | NA | -6E-4 | -0.003 | 0.002 | 0.60 |
| **Triglycerides** | **FA** | -0.022 | -0.027 | -0.016 | 4E-15 | NA | NA | NA | NA | -0.016 | -0.022 | -0.011 | 3E-10 |
| **UFA** | 0.010 | 0.007 | 0.013 | 7E-11 | NA | NA | NA | NA | 0.010 | 0.007 | 0.013 | 8E-11 |
| **Aspartate transaminase** | **FA** | -0.008 | -0.010 | -0.005 | 2E-9 | NA | NA | NA | NA | -0.002 | -0.003 | -7E-4 | 7E-4 |
| **UFA** | 0.007 | 0.004 | 0.010 | 1E-5 | NA | NA | NA | NA | -6E-5 | -1E-3 | 9E-4 | 0.90 |
| **Alanine transaminase** | **FA** | -0.013 | -0.016 | -0.010 | 6E-17 | NA | NA | NA | NA | -0.002 | -0.003 | -9E-4 | 1E-4 |
| **UFA** | 0.009 | 0.007 | 0.011 | 4E-21 | NA | NA | NA | NA | 0.001 | 7E-4 | 0.002 | 9E-5 |
| **C-reactive protein** | **FA** | 0.004 | 0.001 | 0.007 | 0.005 | NA | NA | NA | NA | 0.003 | 4E-4 | 0.005 | 0.02 |
| **UFA** | 0.010 | 0.008 | 0.013 | 3E-14 | NA | NA | NA | NA | 0.009 | 0.006 | 0.013 | 4E-8 |
| **Subcutaneous adipose tissue** | **FA** | 0.014 | 0.010 | 0.017 | 1E-17 | NA | NA | NA | NA | 0.008 | 0.005 | 0.012 | 6E-6 |
| **UFA** | 0.022 | 0.018 | 0.026 | 1E-22 | NA | NA | NA | NA | 0.012 | 0.008 | 0.016 | 3E-8 |
| **Visceral adipose tissue** | **FA** | -2E-4 | -0.005 | 0.004 | 0.92 | NA | NA | NA | NA | -2E-4 | -0.003 | 0.003 | 0.92 |
| **UFA** | 0.011 | 0.008 | 0.015 | 2E-12 | NA | NA | NA | NA | 0.009 | 0.006 | 0.013 | 6E-7 |
| **VATSAT ratio** | **FA** | -0.012 | -0.016 | -0.008 | 1E-7 | NA | NA | NA | NA | -0.010 | -0.014 | -0.006 | 2E-6 |
| **UFA** | -0.007 | -0.010 | -0.004 | 3E-5 | NA | NA | NA | NA | -6E-4 | -0.004 | 0.003 | 0.70 |
| **Pericardial adipose tissue** | **FA** | NA | NA | NA | NA | NA | NA | NA | NA | 0.002 | -0.003 | 0.006 | 0.50 |
| **UFA** | NA | NA | NA | NA | NA | NA | NA | NA | 0.005 | 0.002 | 0.009 | 0.003 |
| **Liver fat** | **FA** | -0.010 | -0.014 | -0.006 | 9E-7 | NA | NA | NA | NA | NA | NA | NA | NA |
| **UFA** | 0.009 | 0.006 | 0.013 | 2E-8 | NA | NA | NA | NA | NA | NA | NA | NA |
| **Liver volume** | **FA** | -0.006 | -0.010 | -0.002 | 0.006 | NA | NA | NA | NA | NA | NA | NA | NA |
| **UFA** | 0.013 | 0.009 | 0.017 | 3E-10 | NA | NA | NA | NA | NA | NA | NA | NA |
| **Pancreas fat** | **FA** | 0.002 | -0.003 | 0.007 | 0.38 | NA | NA | NA | NA | NA | NA | NA | NA |
| **UFA** | 0.011 | 0.007 | 0.014 | 7E-10 | NA | NA | NA | NA | NA | NA | NA | NA |
| **Pancreas volume** | **FA** | -0.006 | -0.011 | -0.002 | 0.003 | NA | NA | NA | NA | NA | NA | NA | NA |
| **UFA** | 0.001 | -0.003 | 0.006 | 0.57 | NA | NA | NA | NA | NA | NA | NA | NA |
| **Type 2 diabetes** | **FA** | -1E-3 | -0.001 | -6E-4 | 2E-9 | -0.030 | -0.039 | -0.021 | 6E-11 | -0.031 | -0.038 | -0.023 | 8E-15 |
| **UFA** | 0.001 | 9E-4 | 0.001 | 6E-16 | 0.032 | 0.023 | 0.041 | 2E-11 | 0.030 | 0.022 | 0.038 | 3E-13 |
| **Heart disease** | **FA** | -8E-4 | -0.001 | -4E-4 | 3E-5 | -0.016 | -0.022 | -0.010 | 9E-8 | -0.016 | -0.022 | -0.010 | 1E-7 |
| **UFA** | 9E-4 | 6E-4 | 0.001 | 2E-7 | 0.006 | 7E-4 | 0.012 | 0.03 | 0.015 | 0.010 | 0.021 | 1E-7 |
| **Hypertension** | **FA** | -0.002 | -0.002 | -7E-4 | 1E-4 | -0.015 | -0.021 | -0.008 | 2E-5 | NA | NA | NA | NA |
| **UFA** | 0.002 | 0.002 | 0.003 | 4E-8 | 0.021 | 0.012 | 0.029 | 1E-6 | NA | NA | NA | NA |
| **Stroke** | **FA** | -1E-4 | -2E-4 | 4E-5 | 0.17 | -0.009 | -0.015 | -0.003 | 0.002 | -0.004 | -0.008 | 3E-6 | 0.05 |
| **UFA** | 3E-4 | 1E-4 | 4E-4 | 5E-4 | 0.008 | 0.002 | 0.014 | 0.007 | 0.008 | 0.005 | 0.012 | 1E-5 |
| **Non-alcoholic fatty liver disease** | **FA** | NA | NA | NA | NA | -0.027 | -0.051 | -0.003 | 0.03 | NA | NA | NA | NA |
| **UFA** | NA | NA | NA | NA | 0.016 | -0.008 | 0.040 | 0.18 | NA | NA | NA | NA |
| **Polycystic ovary syndrome** | **FA** | -7E-5 | -1E-4 | -1E-5 | 0.02 | -0.017 | -0.041 | 0.008 | 0.19 | -0.009 | -0.021 | 0.003 | 0.13 |
| **UFA** | 1E-4 | 6E-5 | 2E-4 | 7E-5 | 0.042 | 0.017 | 0.067 | 1E-3 | 0.033 | 0.021 | 0.045 | 6E-8 |

**Table S7.** DEPICT tissue enrichment results for “unfavourable adiposity” cluster. MeSH: medical subject headings; false discovery rate.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MeSH.term** | **Name** | **MeSH.first.level.term** | **MeSH.second.level.term** | **Nominal.P.value** | **False.discovery.rate** |
| A11.872.580 | Mesenchymal Stem Cells | Cells | Stem Cells | 0.000739 | <0.05 |
| A07.541.510.110 | Aortic Valve | Cardiovascular System | Heart | 0.00157 | <0.05 |
| A07.541.510 | Heart Valves | Cardiovascular System | Heart | 0.00157 | <0.05 |
| A11.329.114 | Adipocytes | Cells | Connective Tissue Cells | 0.00376 | <0.20 |
| A02.835.583 | Joints | Musculoskeletal System | Skeleton | 0.00433 | <0.20 |
| A02.835.583.443 | Joint Capsule | Musculoskeletal System | Skeleton | 0.00433 | <0.20 |
| A02.835.583.443.800 | Synovial Membrane | Musculoskeletal System | Skeleton | 0.00433 | <0.20 |
| A10.336.707 | Prostate | Tissues | Exocrine Glands | 0.01 | <0.20 |
| A11.329.171 | Chondrocytes | Cells | Connective Tissue Cells | 0.01 | <0.20 |
| A02.835.232.834.151 | Cervical Vertebrae | Musculoskeletal System | Skeleton | 0.01 | <0.20 |
| A05.360.319.679.690 | Myometrium | Urogenital System | Genitalia | 0.01 | <0.20 |
| A02.835.232.834 | Spine | Musculoskeletal System | Skeleton | 0.01 | <0.20 |
| A11.329.629 | Osteoblasts | Cells | Connective Tissue Cells | 0.01 | <0.20 |
| A10.336 | Exocrine Glands | Tissues | Exocrine Glands | 0.02 | <0.20 |
| A05.360.444 | Genitalia Male | Urogenital System | Genitalia | 0.02 | <0.20 |

**Table S8.** DEPICT tissue enrichment results for “favourable adiposity” cluster. MeSH: medical subject headings; false discovery rate.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| MeSH.term | Name | MeSH.first.level.term | MeSH.second.level.term | Nominal.P.value | False.discovery.rate |
| A10.165.114 | Adipose Tissue | Tissues | Connective Tissue | 0.000213 | <0.01 |
| A10.165.114.830.500.750 | Subcutaneous Fat Abdominal | Tissues | Connective Tissue | 0.000237 | <0.01 |
| A10.165.114.830.500 | Abdominal Fat | Tissues | Connective Tissue | 0.000237 | <0.01 |
| A10.165.114.830.750 | Subcutaneous Fat | Tissues | Connective Tissue | 0.000284 | <0.01 |
| A10.165.114.830 | Adipose Tissue White | Tissues | Connective Tissue | 0.000284 | <0.01 |
| A11.329.114 | Adipocytes | Cells | Connective Tissue Cells | 0.000562 | <0.01 |
| A03.556.124.684 | Intestine Small | Digestive System | Gastrointestinal Tract | 0.00178 | <0.05 |
| A03.556.875.500 | Esophagus | Digestive System | Gastrointestinal Tract | 0.00212 | <0.05 |
| A03.734 | Pancreas | Digestive System | Pancreas | 0.00272 | <0.05 |
| A11.329.171 | Chondrocytes | Cells | Connective Tissue Cells | 0.00294 | <0.05 |
| A07.231.114 | Arteries | Cardiovascular System | Blood Vessels | 0.00322 | <0.05 |
| A03.556.875 | Upper Gastrointestinal Tract | Digestive System | Gastrointestinal Tract | 0.00399 | <0.05 |
| A03.556.249.124 | Ileum | Digestive System | Gastrointestinal Tract | 0.00472 | <0.05 |
| A02.835.583.443.800 | Synovial Membrane | Musculoskeletal System | Skeleton | 0.00709 | <0.20 |
| A02.835.583.443 | Joint Capsule | Musculoskeletal System | Skeleton | 0.00709 | <0.20 |
| A02.835.583 | Joints | Musculoskeletal System | Skeleton | 0.00709 | <0.20 |
| A15.378.316.580 | Monocytes | Hemic and Immune Systems | Hematopoietic System | 0.01 | <0.20 |
| A05.810.890 | Urinary Bladder | Urogenital System | Urinary Tract | 0.01 | <0.20 |
| A15.382.812.260 | Dendritic Cells | Hemic and Immune Systems | Immune System | 0.01 | <0.20 |
| A11.066 | Antigen Presenting Cells | Cells | Antigen-Presenting Cells | 0.01 | <0.20 |
| A10.615.789 | Serous Membrane | Tissues | Membranes | 0.01 | <0.20 |
| A02.165 | Cartilage | Musculoskeletal System | Cartilage | 0.02 | <0.20 |
| A03.556.875.875 | Stomach | Digestive System | Gastrointestinal Tract | 0.02 | <0.20 |
| A15.382.812 | Mononuclear Phagocyte System | Hemic and Immune Systems | Immune System | 0.02 | <0.20 |
| A03.556.124.526.767 | Rectum | Digestive System | Gastrointestinal Tract | 0.02 | <0.20 |
| A15.382.680 | Phagocytes | Hemic and Immune Systems | Immune System | 0.03 | <0.20 |
| A15.378 | Hematopoietic System | Hemic and Immune Systems | Hematopoietic System | 0.03 | <0.20 |
| A15.378.316 | Bone Marrow Cells | Hemic and Immune Systems | Hematopoietic System | 0.03 | <0.20 |
| A02.835.583.443.800.800 | Synovial Fluid | Musculoskeletal System | Skeleton | 0.03 | <0.20 |
| A03.556.249.249.209 | Cecum | Digestive System | Gastrointestinal Tract | 0.03 | <0.20 |
| A11.627 | Myeloid Cells | Cells | Myeloid Cells | 0.03 | <0.20 |
| A05.360.319.679.690 | Myometrium | Urogenital System | Genitalia | 0.03 | <0.20 |
| A11.329 | Connective Tissue Cells | Cells | Connective Tissue Cells | 0.04 | <0.20 |

**Table S9.** The inverse-variance weighted (IVW), Egger and weighted median (WM) MR analyses for “favourable adiposity” (FA) and “unfavourable adiposity” (UFA) clusters using UK Biobank, FinnGen and published GWAS. SE: standard error; P: p-value; T2D: type 2 diabetes; CAD: coronary artery disease; FLD: fatty liver disease; NAFLD: non-alcoholic fatty liver disease; PCOS: polycystic ovary syndrome.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Trait** | **Study** | **Cluster** | **betaIVW2** | **sebetaIVW2** | **tIVW** | **pIVW** | **p.hetero** | **betaEgger** | **sebetaEgger** | **tegger** | **pEgger** | **egger\_int** | **int\_p** | **betaWM** | **sebetaWM** | **tWM** | **pWM** |
| **T2D** | **UK Biobank** | **FA** | -2.257 | 0.320 | 7.055 | 3E-8 | 9E-15 | -2.653 | 1.014 | 2.617 | 0.01 | 0.006 | 0.68 | -1.789 | 0.286 | 6.263 | 4E-10 |
| **UFA** | 1.943 | 0.174 | 11.143 | 2E-13 | 1E-7 | 3.137 | 0.573 | 5.476 | 3E-6 | -0.026 | 0.04 | 1.904 | 0.190 | 10.042 | 1E-23 |
| **FinnGen** | **FA** | -2.159 | 0.290 | 7.433 | 1E-8 | 3E-11 | -1.956 | 0.899 | 2.176 | 0.04 | -0.003 | 0.81 | -1.909 | 0.290 | 6.581 | 5E-11 |
| **UFA** | 1.731 | 0.201 | 8.606 | 6E-10 | 7E-10 | 2.585 | 0.689 | 3.753 | 7E-4 | -0.018 | 0.20 | 1.594 | 0.200 | 7.953 | 2E-15 |
| **Published GWAS** | **FA** | -2.202 | 0.234 | 9.402 | 4E-11 | 3E-16 | -2.186 | 0.754 | 2.897 | 0.007 | -2E-4 | 0.98 | -2.120 | 0.233 | 9.119 | 8E-20 |
| **UFA** | 1.686 | 0.163 | 10.324 | 7E-12 | 2E-15 | 2.459 | 0.528 | 4.655 | 5E-5 | -0.017 | 0.13 | 1.647 | 0.145 | 11.371 | 6E-30 |
| **CAD** | **UK Biobank** | **FA** | -0.635 | 0.160 | 3.973 | 3E-4 | 1E-8 | -0.095 | 0.498 | 0.191 | 0.85 | -0.008 | 0.26 | -0.673 | 0.162 | 4.156 | 3E-5 |
| **UFA** | 0.476 | 0.105 | 4.532 | 6E-5 | 2E-8 | -0.172 | 0.349 | 0.491 | 0.63 | 0.014 | 0.06 | 0.363 | 0.097 | 3.735 | 2E-4 |
| **FinnGen** | **FA** | -1.066 | 0.219 | 4.860 | 2E-5 | 0.001 | -0.131 | 0.658 | 0.199 | 0.84 | -0.014 | 0.14 | -1.287 | 0.257 | 4.997 | 6E-7 |
| **UFA** | 0.286 | 0.135 | 2.121 | 0.04 | 0.06 | 0.338 | 0.474 | 0.713 | 0.48 | -0.001 | 0.91 | 0.447 | 0.177 | 2.526 | 0.01 |
| **Published GWAS** | **FA** | -1.073 | 0.229 | 4.677 | 4E-5 | 3E-8 | 0.667 | 0.690 | 0.966 | 0.34 | -0.025 | 0.01 | -1.292 | 0.220 | 5.875 | 4E-9 |
| **UFA** | 0.722 | 0.134 | 5.397 | 6E-6 | 5E-5 | 0.693 | 0.462 | 1.501 | 0.14 | 6E-4 | 0.95 | 0.715 | 0.142 | 5.025 | 5E-7 |
| **Stroke** | **UK Biobank** | **FA** | -0.282 | 0.198 | 1.427 | 0.16 | 0.13 | -0.361 | 0.627 | 0.575 | 0.57 | 0.001 | 0.90 | -0.213 | 0.254 | 0.838 | 0.40 |
| **UFA** | 0.467 | 0.154 | 3.038 | 0.004 | 0.004 | -0.348 | 0.518 | 0.672 | 0.51 | 0.018 | 0.11 | 0.264 | 0.191 | 1.383 | 0.17 |
| **FinnGen** | **FA** | -0.582 | 0.213 | 2.740 | 0.010 | 0.14 | 0.305 | 0.638 | 0.478 | 0.64 | -0.013 | 0.15 | -0.475 | 0.289 | 1.645 | 0.10 |
| **UFA** | 0.350 | 0.135 | 2.601 | 0.01 | 0.59 | -0.230 | 0.466 | 0.494 | 0.62 | 0.013 | 0.18 | 0.209 | 0.207 | 1.007 | 0.31 |
| **Published GWAS** | **FA** | -0.354 | 0.144 | 2.461 | 0.02 | 0.16 | -0.783 | 0.458 | 1.707 | 0.10 | 0.006 | 0.33 | -0.402 | 0.183 | 2.199 | 0.03 |
| **UFA** | 0.365 | 0.094 | 3.872 | 5E-4 | 0.25 | -0.357 | 0.296 | 1.206 | 0.24 | 0.016 | 0.01 | 0.195 | 0.133 | 1.469 | 0.14 |
| **Hypertension** | **UK Biobank** | **FA** | -0.569 | 0.155 | 3.666 | 8E-4 | 0E+0 | -0.098 | 0.486 | 0.201 | 0.84 | -0.007 | 0.31 | -0.507 | 0.115 | 4.394 | 1E-5 |
| **UFA** | 0.690 | 0.113 | 6.102 | 5E-7 | 0E+0 | 0.408 | 0.392 | 1.041 | 0.30 | 0.006 | 0.46 | 0.740 | 0.076 | 9.676 | 4E-22 |
| **FinnGen** | **FA** | -1.074 | 0.245 | 4.381 | 1E-4 | 5E-7 | -0.283 | 0.745 | 0.380 | 0.71 | -0.012 | 0.27 | -1.109 | 0.231 | 4.794 | 2E-6 |
| **UFA** | 1.109 | 0.169 | 6.558 | 2E-7 | 4E-6 | 1.159 | 0.593 | 1.956 | 0.06 | -0.001 | 0.93 | 1.138 | 0.170 | 6.678 | 2E-11 |
| **FLD** | **UK Biobank** | **FA** | -0.863 | 0.346 | 2.494 | 0.02 | 0.005 | -1.384 | 1.095 | 1.263 | 0.22 | 0.008 | 0.62 | -0.818 | 0.398 | 2.056 | 0.04 |
| **UFA** | 0.534 | 0.193 | 2.758 | 0.009 | 0.18 | 0.075 | 0.671 | 0.111 | 0.91 | 0.010 | 0.48 | 0.476 | 0.260 | 1.829 | 0.07 |
| **NAFLD** | **FinnGen** | **FA** | -1.941 | 0.871 | 2.227 | 0.03 | 0.07 | -1.568 | 2.700 | 0.581 | 0.57 | -0.006 | 0.88 | -2.729 | 1.138 | 2.398 | 0.02 |
| **UFA** | 1.307 | 0.564 | 2.317 | 0.03 | 0.27 | 2.568 | 1.967 | 1.305 | 0.20 | -0.027 | 0.51 | 1.059 | 0.788 | 1.344 | 0.18 |
| **PCOS** | **UK Biobank** | **FA** | -1.693 | 0.698 | 2.424 | 0.02 | 0.67 | -1.514 | 2.186 | 0.692 | 0.49 | -0.003 | 0.93 | -1.764 | 1.031 | 1.711 | 0.09 |
| **UFA** | 1.957 | 0.488 | 4.014 | 3E-4 | 0.32 | 1.004 | 1.697 | 0.592 | 0.56 | 0.021 | 0.56 | 1.909 | 0.720 | 2.650 | 0.008 |
| **FinnGen** | **FA** | -1.042 | 0.889 | 1.171 | 0.25 | 0.92 | -0.428 | 2.719 | 0.157 | 0.88 | -0.009 | 0.78 | -0.997 | 1.249 | 0.798 | 0.42 |
| **UFA** | 2.317 | 0.631 | 3.674 | 8E-4 | 0.86 | 2.643 | 2.179 | 1.213 | 0.23 | -0.007 | 0.86 | 1.652 | 0.932 | 1.772 | 0.08 |
| **Published GWAS** | **FA** | -0.547 | 0.516 | 1.060 | 0.30 | 0.07 | 0.943 | 1.678 | 0.562 | 0.58 | -0.022 | 0.36 | -0.334 | 0.671 | 0.497 | 0.62 |
| **UFA** | 1.820 | 0.404 | 4.505 | 8E-5 | 0.002 | 2.878 | 1.385 | 2.078 | 0.05 | -0.023 | 0.43 | 1.739 | 0.461 | 3.770 | 2E-4 |

**Table S10.** The overlap between our UFA and FA variants and previous reported variants with similar pattern. Variants overlapping with Winkler et al. 2018 are RSID matches, whereas those from Pigeyre at al. 2019 are matched by gene and based on the subset of regions they present, which contain only genes previously shown to be associated with both type 2 diabetes and BMI, or type 2 diabetes candidate genes.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SNP | CHR | POS | Cluster | Winkler et al. SNP | Winkler et al. r2 | Winkler et al. screen | Winkler at al. classification | Pigeyre et al. region | Pigeyre et al. classification |
| rs13389219 | 2 | 165528876 | FA | rs1128249 | 0.995963 | BMI+WHR- | Metabolically rather favourable | 118,513-119,273 | Metabolically favourable adiposity |
| rs4684847 | 3 | 12386337 | FA |  |  |  |  | 11,469-12,231 | Metabolically favourable adiposity |
| rs987469 | 4 | 89706643 | FA | rs9991328 | 0.998902301 | BMI+WHR- | Metabolically rather favourable |  |  |
| rs30351 | 5 | 55794632 | FA | rs459193 | 0.966821 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs998584 | 6 | 43757896 | FA | NA | NA | BMI+WHR- | Metabolically rather favourable |  |  |
| rs10876529 | 12 | 54421810 | FA | rs2071449 | 0.949506029 | WHRonly- | Metabolically neutral or inconclusive |  |  |
| rs7133378 | 12 | 124409502 | FA | rs4765219 | 0.88702 | BMI+WHR- | Metabolically rather favourable |  |  |
| rs555162510 | 19 | 46183031 | FA | rs2287019 | 0.851203676 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs539515 | 1 | 177889025 | UFA | rs543874 | 1 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs143684747 | 2 | 633053 | UFA | rs13021737 | 0.993122 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs6752378 | 2 | 25150116 | UFA | rs10182181 | 1 | BMIonly+ | Metabolically neutral or inconclusive |  |  |
| rs10938397 | 4 | 45182527 | UFA | NA | NA | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs13107325 | 4 | 103188709 | UFA | NA | NA | BMIonly+ | Metabolically neutral or inconclusive |  |  |
| rs2112347 | 5 | 75015242 | UFA | NA | NA | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs72892910 | 6 | 50816887 | UFA | rs2207139 | 0.868295967 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs236660 | 7 | 75050086 | UFA | rs1167827 | 0.881831 | BMIonly+ | Metabolically neutral or inconclusive |  |  |
| rs10756713 | 9 | 15880555 | UFA | rs4740619 | 0.882797 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs7124681 | 11 | 47529947 | UFA | rs3817334 | 0.991856 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs7132908 | 12 | 50263148 | UFA | rs7138803 | 0.868750757 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs4776985 | 15 | 68123021 | UFA | rs16951275 | 0.961668 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs56186137 | 16 | 28825953 | UFA | rs3888190 | 0.986555 | BMI+WHR+ | Metabolically unfavourable |  |  |
| rs11642015 | 16 | 53802494 | UFA | rs1558902 | 1 | BMI+WHR+ | Metabolically unfavourable | 22,949-23,713 | Metabolically deleterious adiposity |
| rs771025058 | 18 | 21122207 | UFA | rs1808579 | 0.836409 | BMIonly+ | Metabolically neutral or inconclusive |  |  |
| rs6567160 | 18 | 57829135 | UFA | NA | NA | BMI+WHR+ | Metabolically unfavourable | 41,29-42,057 | Metabolically deleterious adiposity |
| rs11666808 | 19 | 18383506 | UFA | rs12608504 | 0.962062 | WHRonly- | Metabolically neutral or inconclusive |  |  |

**Fig. S1.** Study design.

**Fig. S2.** Adiposity variants were clustered into 3 groups: (a) 36 “favourable adiposity” variants (FA) where adiposity-increasing alleles were associated with a better metabolic profile (examples include the variant near *PPARG*), and 38 “unfavourable adiposity” variants (UFA) were adiposity-increasing alleles were associated with an adverse metabolic profile (examples include the variant near *FTO*), (b) 180 “conflicting” variants with mixed pattern of association with adiposity and metabolic biomarkers. We considered this cluster of ‘conflicting’ to group any variants that did not belong to the FA or UFA clusters and did not pursue these variants in the rest of the analyses to minimize false discovery. The “conflicting” variants had heterogeneous effects on other metabolic biomarkers compared to FA and UFA clusters.

**Fig. S3.** The sex-specific effects of 36 “favourable adiposity” and 38 “unfavourable adiposity” variants for (a) body fat %, (b) BMI, (c) HDL-cholesterol (HDL), (d) sex-hormone binding globulin (SHBG), (e) triglycerides, (f) alanine transaminase (ALT), (g) aspartate transaminase (AST), (h) C-reactive protein (CRP), (i) abdominal subcutaneous adipose tissue (ASAT), (j) visceral adipose tissue (VAT), (k) VATSAT ratio, (l) liver volume, (m) liver fat, (n) pancreas volume, (o) pancreatic fat, (p) type 2 diabetes, (q) heart disease, (r) hypertension, (s) stroke, (t) non-alcoholic fatty liver disease.

**Fig. S4.** The distributions of UFA and FA genetic scores among the UK Biobank participants with and without type 2 diabetes.

**Fig. S5.** Adiposity-increasing alleles were correlated with lower risk of type 2 diabetes for 33 of the 36 “favourable adiposity” variants, and adiposity-increasing alleles were correlated with higher risk of type 2 diabetes for all 38 “unfavourable adiposity” variants using UK Biobank.

**Fig. S6.** Adiposity-increasing alleles were correlated with less liver fat for 29 of the 36 “favourable adiposity” variants, and adiposity-increasing alleles were correlated with more liver fat for 31 of the 38 “unfavourable adiposity” variants using UK Biobank.

**Fig. S7.** “Favourable adiposity” variants had a mixed effect on pancreatic fat, while adiposity-increasing alleles were correlated with higher pancreatic fat for 32 out of the 38 “unfavourable adiposity” variants using UK Biobank.

**Fig. S8.** The association with measures of adiposity and biomarkers, C-reactive protein (CRP), MRI-derived measures of fat distribution, and cardiometabolic diseases in UK Biobank for “favourable adiposity” variants (a) rs4684847(*PPARG*), (b) rs12130231 (*LYPLAL1/SLC30A10*), (c) rs11664106(*EMILIN2*), (d) rs13389219(*GRB14/COBLL1*), (e) rs2943653 (*NYAP2/IRS1*), (f) rs30351(*ANKRD55*), (g) rs4450871(*CYTL1*), and (h) rs7133378(*DNAH10*). HDL: HDL-cholesterol; SHBG: sex-hormone binding globulin; ALT: alanine transaminase; AST: aspartate transaminase; ASAT: abdominal subcutaneous adipose tissue; VAT: visceral adipose tissue; VATSAT: VATSAT ratio; T2D: type 2 diabetes.

**Fig. S9.** Adiposity-increasing alleles were correlated with higher C-reactive protein for 27 of the 36 “favourable adiposity” variants and 35 of the 38 “unfavourable adiposity” variants using UK Biobank.

**Fig. S10.** The association between UFA and FA variants and BMI and WHR. Only 7/36 and 12/36 FA variants are associated with BMI and WHR, respectively. Similarly, while UFA variants are enriched for BMI variants, 7 variants are not associated with BMI and only 14/38 UFA variants are associated with WHR

**Fig. S11**. The comparison of the multivariate GWAS p-values for 14 variants previously identified as ‘favourable adiposity’ from Ji *et al.* Diabetes, 2019 indicates additional power gained in the current study largely attributable to the availability of other metabolic biomarkers in 451,099 individuals in a single cohort, the UK Biobank.

**Supplementary Material**

**Definition of diseases in UK Biobank**

We defined type 2 diabetes cases as individuals who self-reported diabetes on the UK Biobank baseline questionnaire. We included those who were diagnosed at >35 years of age without reporting of insulin use within the first year of diagnosis to exclude other types of diabetes. We defined subjects as hypertensive if systolic blood pressure was >140 mmHg, diastolic blood pressure was >90 mmHg, or blood pressure medication was reported. Control subjects were individuals who did not fulfil these criteria. We defined subjects as having heart disease if they reported angina and/or a heart attack at the interview stage.

For NAFLD, stroke and PCOS, we defined cases based on ICD10 codes (field number: K76 for NAFLD; E282 for PCOS; I60, I61, I63, and I64 for stroke), ICD9 codes (5715, 5716, 5718, and 5719 for NAFLD; 2564 for PCOS; 430, 431, 434, and 436 for stroke) and if self-reported (1350 for PCOS; 1583, 1081, 1086, and 1491 for stroke). We defined control subjects as individuals without these conditions.

**Disease outcomes from FinnGen**

|  |  |  |  |
| --- | --- | --- | --- |
| **Trait** | **Code** | **Name** | **Traits included** |
| **Type 2 diabetes** | E4\_DM2\_STRICT | Type 2 diabetes, strict (exclude DM1) | E4\_DM2COMA|E4\_DM2KETO|E4\_DM2REN|E4\_DM2OPTH|E4\_DM2NEU|E4\_DM2PERIPH|E4\_DM2NASCOMP|E4\_DM2NOCOMP |
| **Heart disease** | I9\_IHD | Ischaemic heart disease, wide definition | I2[0-5] |
| **Hypertension** | FG\_HYPERTENSION | Hypertensive diseases (excluding secondary) | I9\_HYPTENSESS|I9\_HYPTENSPUL|I9\_HYPTENSHR|I9\_HYPTENS |
| **Stroke** | C\_STROKE | STROKE | I9\_SAH|I9\_ICH|I9\_OTHINTRACRA|I9\_STR\_EXH|I9\_STR\_SAH|I9\_TIA |
| **Non-alcoholic fatter liver disease** | NAFLD | Nonalcoholic fatty liver disease |  |
| **Polycystic ovary syndrome** | E4\_POCS | Polycystic ovarian syndrome |  |