

Supplementary Table S1. Plasma lipids and NMR lipoprotein profiles of participants

| Parameter | Fasting (1117) | 3.5 h (1044) | 6.0 h (1047) |
|-------------------|-----------------------|----------------------------|-----------------------------|
| Triglycerides | 143.2 ± 31.9 | 223.3 ± 139.4 [†] | 205.0 ± 156.6 ^{†*} |
| Total Cholesterol | 183.7 ± 38.6 | 188.5 ± 40.0 | 192.4 ± 41.2 ^{†*} |
| Chylomicrons | 4.8 ± 4.9 | 58.0 ± 50.6 [†] | 49.8 ± 56.9 [†] |
| HDL-C | 45.5 ± 13.5 | 45.6 ± 14.1 | 48.2 ± 14.3 ^{†*} |
| LDL-C | 116.5 ± 31.9 | 118.6 ± 32.7 | 121.4 ± 32.7 [†] |
| VLDL-TG | 106.5 ± 105 | 183.7 ± 135 | 164.8 ± 152.3 [†] |
| VLDL particle | 74.4 ± 50 | 68.8 ± 42.6 | 63.1 ± 43.1 [†] |
| Small VLDL | 33 ± 22 | 19.6 ± 18.1 [†] | 24 ± 18.4 ^{†*} |
| HDL size | 8.8 ± 0.5 | 8.9 ± 0.5 | 9.0 ± 0.5 |
| VLDL size | 59.7 ± 10.4 | 51.9 ± 8.7 [†] | 59.3 ± 11.8 |

Fasting plasma lipid levels (mg/dl), lipoprotein particle (nmol/l) and size (nm), mean ±s.d., were measured in participants (number indicated in parentheses) after an overnight fast and at 3.5h and 6h after ingestion of a high fat (83%) milkshake (700 calories/m² body surface area). Abbreviations: High, low and very low density lipoproteins: HDL, LDL and VLDL. †Compared to fasting, p≤ 0.001, *p<0.001 compared to 3.5 h.

Supplementary Table S2: *CD36* tag SNPs related to fasting LDL particle number also associate with postprandial levels of LDL particles

| SNP | Effect Allele | MAF | β (se) | <i>p</i> -value |
|---------------------|--------------------|------|--------------|-----------------|
| <u>3.5 h</u> | | | | |
| rs6970109 | C/ <u>A</u> | 0.10 | 0.24 (0.09) | 0.0059 |
| rs1722507 | A/ <u>G</u> | 0.39 | 0.18 (0.05) | 0.0011 |
| rs1761665 | T/ <u>C</u> | 0.44 | 0.19 (0.05) | 0.0005 |
| rs3211842 | G/ <u>A</u> | 0.42 | 0.16 (0.05) | 0.0031 |
| rs7755 | G/ <u>A</u> | 0.46 | 0.14 (0.05) | 0.0084 |
| <u>6.0 h</u> | | | | |
| rs1722507 | A/ <u>G</u> | 0.39 | 0.16 (0.05) | 0.0026 |
| rs1761665 | T/ <u>C</u> | 0.44 | 0.17 (0.05) | 0.0012 |
| rs3211842 | G/ <u>A</u> | 0.42 | 0.15 (0.05) | 0.0034 |
| rs7755 | G/ <u>A</u> | 0.46 | 0.14 (0.05) | 0.0055 |

SNPs are listed based on genomic location. Effect allele is bolded. Shown are beta-estimates (β) \pm standard errors and raw *p*-values for representative *CD36* tag SNPs. *Bonferroni corrections threshold, raw *p*-value <0.006.

Supplementary Table S3. Associations between rs7755, rs1761665 and adipose tissue CD36 mRNA adjusted for DNA methylation

| | | β methylation | β SNP | <i>p</i> -value |
|-----------|------------|---------------------|-------------|------------------------|
| rs7755 | cg18508525 | 1.15 | -0.42 | 6.75×10^{-42} |
| | cg25783969 | 1.65 | -0.42 | 9.62×10^{-42} |
| | cg21055948 | 0.97 | -0.42 | 5.84×10^{-41} |
| | cg19096849 | 0.35 | -0.43 | 5.28×10^{-42} |
| | cg26138637 | 1.22 | -0.42 | 1.48×10^{-42} |
| | cg14093018 | 0.82 | -0.43 | 3.47×10^{-43} |
| | cg05917188 | 0.77 | -0.43 | 5.03×10^{-44} |
| rs1761665 | cg18508525 | 1.54 | -0.27 | 8.67×10^{-17} |
| | cg25783969 | 2.21 | -0.27 | 6.9×10^{-17} |
| | cg21055948 | 1.37 | -0.26 | 4.32×10^{-16} |
| | cg19096849 | 0.73 | -0.27 | 1.46×10^{-16} |
| | cg26138637 | 1.63 | -0.27 | 1.90×10^{-17} |
| | cg14093018 | 1.10 | -0.28 | 3.24×10^{-18} |
| | cg05917188 | 1.09 | -0.28 | 1.02×10^{-18} |

Given the twin structure of the MuTHER cohort, a mixed-linear model was used to examine SNP effects on *CD36* mRNA levels (ILMN_1784863; NM_001001548.1) adjusted for methylation at the designated CpG sites, *p*-values represent effect SNP-expression including methylation within the model.