

## Additional tables

**Additional table 1** Clinical characteristics of the study subjects.

|                         | HUNT2       |             | MONICA      | HELENA      |
|-------------------------|-------------|-------------|-------------|-------------|
|                         | Controls    | T2D cases   |             |             |
| n                       | 1986        | 835         | 2318        | 1144        |
| Men, n (%)              | 978 (49)    | 407 (49)    | 1190 (51)   | 549 (48)    |
| Age, yrs                | 65.6 ± 14.3 | 66.9 ± 13.6 | 50.7 ± 8.5  | 14.7 ± 1.4  |
| BMI, kg/m <sup>2</sup>  | 26.4 ± 3.9  | 29.1 ± 5    | 28.0 ± 4.6  | 21.3 ± 3.8  |
| Waist circumference, cm | 87.9 ± 11.2 | 96.2 ± 12.5 | 89.2 ± 13.5 | 72.4 ± 8.7  |
| Waist/hip ratio         | 0.86 ± 0.08 | 0.9 ± 0.08  | 0.89 ± 0.09 | 0.79 ± 0.06 |
| Glucose, mmol/L         | 4.98 ± 0.43 | 10.2 ± 4.52 | 5.64 ± 1.41 | 5.00 ± 0.40 |
| Triglyceride, mmol/L    | 1.68 ± 0.92 | 2.5 ± 1.8   | 1.34 ± 1.51 | 0.78 ± 0.38 |
| Cholesterol, mmol/L     | 6.27 ± 1.25 | 6.1 ± 1.3   | 5.84 ± 1.05 | 4.16 ± 0.71 |
| HDL-cholesterol, mmol/L | 1.41 ± 0.41 | 1.2 ± 0.4   | 1.48 ± 0.46 | 1.43 ± 0.25 |

Data are means ± SD or n (%).

**Additional table 2** *LXR $\beta$*  gene sequencing primers.

| <b>Primer pair no:</b> | <b>Forward primer:</b>  | <b>Reverse primer:</b>   |
|------------------------|-------------------------|--------------------------|
| 1                      | CGATGGGCCTGAGTAGACAT    | TGCAAAAATGGTTTCAATAACTTG |
| 2                      | GGTCCGAGACTGAGCTTTTT    | AACCCATTTCCCTCGCTTCTT    |
| 3                      | CCAATCACCAAGTTATTGAAACC | GGGAGGAAATGGAAGGAGAG     |
| 4                      | TCCGGTGAGTTTCCAACCTC    | TCCAATCCACCTGCTTTTTC     |
| 5                      | GAGGTGGGGTCAGAATGAGA    | CAAAGAGCCAGAGGATGGAG     |
| 6                      | GAGGGGTTTAGGAAGGGAGA    | GTGGGCAGATGGACCATTA      |
| 7                      | CCCTCCACAACCTTGAGTGT    | CTCCAACAGGGATGAGTTGG     |
| 8                      | TGAGCCAAGGAGAGAAAGGA    | CTTGGGTGAGACCACGTTTT     |
| 9                      | CACGTGGCAGGTACTIONAGTG  | CCAGATCTCCGACAGCAGA      |
| 10                     | GTTTCGGGCTGAGGGAGT      | ACCCTATGTGCCACCCTTTT     |
| 11                     | GGGCTTCTAGGGACCTCAGT    | CCTGGCTTGATCTGTTCTCC     |

The sequencing was performed between each primer pair.

The primer pair numbers 1-11 are in sequential order within the gene.

The amplicons were overlapping in order to also sequence the DNA covered by the primers.

**Additional table 3** Associations for the 5 *LXRβ* SNPs in non-diabetic subjects from HUNT 2.

| <b>rs17373080</b>        | CC            | CG            | GG            | Crude <i>p</i> | Adjusted <i>p</i> |
|--------------------------|---------------|---------------|---------------|----------------|-------------------|
| ( <i>n</i> )             | (807)         | (915)         | (231)         |                | G* vs. CC         |
| BMI (kg/m <sup>2</sup> ) | 26.4 ± 3.9    | 26.4 ± 4.0    | 26.1 ± 3.7    | 0.49           | 0.55              |
| Waist circumference (cm) | 87.6 ± 11.1   | 88.2 ± 11.2   | 87.5 ± 10.8   | 0.43           | 0.99              |
| Waist/hip ratio          | 0.854 ± 0.077 | 0.862 ± 0.081 | 0.860 ± 0.080 | 0.12           | 0.33              |
| Glucose (mmol/l)         | 4.99 ± 0.43   | 4.95 ± 0.44   | 5.00 ± 0.39   | 0.12           | <b>0.03</b>       |
| Triglyceride (mmol/l)    | 1.70 ± 0.92   | 1.68 ± 0.94   | 1.66 ± 0.88   | 0.72           | 0.28              |
| Cholesterol (mmol/l)     | 6.27 ± 1.24   | 6.27 ± 1.25   | 6.30 ± 1.24   | 0.96           | 0.96              |
| HDL-cholesterol (mmol/l) | 1.41 ± 0.40   | 1.42 ± 0.42   | 1.44 ± 0.41   | 0.61           | 0.31              |
| <b>rs56151148</b>        | CC            | CT            | TT            | Crude <i>p</i> | Adjusted <i>p</i> |
| ( <i>n</i> )             | (1628)        | (299)         | (12)          |                | T* vs. CC         |
| BMI (kg/m <sup>2</sup> ) | 26.4 ± 3.8    | 26.5 ± 4.3    | 26.0 ± 4.0    | 0.90           | 0.67              |
| Waist circumference (cm) | 87.9 ± 11.1   | 88.0 ± 11.5   | 83.9 ± 8.3    | 0.46           | 0.82              |
| Waist/hip ratio          | 0.858 ± 0.080 | 0.860 ± 0.079 | 0.822 ± 0.058 | 0.29           | 0.87              |
| Glucose (mmol/l)         | 4.97 ± 0.42   | 5.01 ± 0.46   | 4.98 ± 0.38   | 0.10           | 0.07              |
| Triglyceride (mmol/l)    | 1.69 ± 0.92   | 1.63 ± 0.92   | 1.52 ± 0.91   | 0.24           | <b>0.03</b>       |
| Cholesterol (mmol/l)     | 6.28 ± 1.25   | 6.25 ± 1.21   | 6.42 ± 1.30   | 0.84           | 0.57              |
| HDL-cholesterol (mmol/l) | 1.41 ± 0.42   | 1.44 ± 0.40   | 1.48 ± 0.32   | 0.53           | 0.25              |
| <b>rs2695121</b>         | CC            | CT            | TT            | Crude <i>p</i> | Adjusted <i>p</i> |
| ( <i>n</i> )             | (620)         | (951)         | (379)         |                | T* vs. CC         |
| BMI (kg/m <sup>2</sup> ) | 26.3 ± 4.0    | 26.4 ± 3.9    | 26.5 ± 3.7    | 0.62           | 0.32              |
| Waist circumference (cm) | 88.0 ± 11.1   | 87.7 ± 11.1   | 88.1 ± 11.2   | 0.74           | 0.51              |
| Waist/hip ratio          | 0.862 ± 0.082 | 0.856 ± 0.077 | 0.859 ± 0.081 | 0.25           | 0.75              |
| Glucose (mmol/l)         | 4.98 ± 0.42   | 4.97 ± 0.43   | 4.99 ± 0.43   | 0.85           | 0.92              |
| Triglyceride (mmol/l)    | 1.66 ± 0.94   | 1.68 ± 0.88   | 1.73 ± 0.99   | 0.52           | 0.19              |
| Cholesterol (mmol/l)     | 6.32 ± 1.20   | 6.23 ± 1.27   | 6.30 ± 1.24   | 0.36           | 0.18              |
| HDL-cholesterol (mmol/l) | 1.43 ± 0.43   | 1.42 ± 0.40   | 1.39 ± 0.42   | 0.36           | 0.12              |
| <b>rs2303044</b>         | CC            | CT            | TT            | Crude <i>p</i> | Adjusted <i>p</i> |
| ( <i>n</i> )             | (1702)        | (235)         | (12)          |                | T* vs. CC         |
| BMI (kg/m <sup>2</sup> ) | 26.4 ± 3.9    | 26.7 ± 4.0    | 25.9 ± 3.4    | 0.46           | 0.52              |
| Waist circumference (cm) | 87.8 ± 11.1   | 88.8 ± 11.4   | 88.8 ± 6.0    | 0.42           | 0.53              |
| Waist/hip ratio          | 0.858 ± 0.079 | 0.864 ± 0.084 | 0.878 ± 0.059 | 0.40           | 0.37              |
| Glucose (mmol/l)         | 4.98 ± 0.44   | 4.99 ± 0.36   | 4.88 ± 0.55   | 0.79           | 0.73              |
| Triglyceride (mmol/l)    | 1.68 ± 0.92   | 1.74 ± 0.98   | 1.35 ± 0.34   | 0.49           | 0.79              |
| Cholesterol (mmol/l)     | 6.27 ± 1.24   | 6.34 ± 1.23   | 5.93 ± 1.25   | 0.43           | 0.40              |
| HDL-cholesterol (mmol/l) | 1.42 ± 0.42   | 1.42 ± 0.40   | 1.33 ± 0.36   | 0.79           | 0.64              |
| <b>rs3219281</b>         | CC            | CT            | TT            | Crude <i>p</i> | Adjusted <i>p</i> |
| ( <i>n</i> )             | (1850)        | (368)         | (23)          |                | T* vs. CC         |
| BMI (kg/m <sup>2</sup> ) | 26.4 ± 3.9    | 26.4 ± 3.9    | 26.6 ± 4.0    | 0.97           | 0.78              |
| Waist circumference (cm) | 87.8 ± 11.1   | 87.9 ± 11.3   | 91.7 ± 9.3    | 0.29           | 0.97              |
| Waist/hip ratio          | 0.858 ± 0.079 | 0.860 ± 0.081 | 0.902 ± 0.072 | 0.04           | 0.37              |
| Glucose (mmol/l)         | 4.98 ± 0.43   | 4.97 ± 0.41   | 4.90 ± 0.51   | 0.57           | 0.53              |
| Triglyceride (mmol/l)    | 1.69 ± 0.94   | 1.70 ± 0.87   | 1.47 ± 0.49   | 0.56           | 0.63              |
| Cholesterol (mmol/l)     | 6.26 ± 1.24   | 6.37 ± 1.27   | 6.18 ± 1.18   | 0.32           | 0.07              |
| HDL-cholesterol (mmol/l) | 1.41 ± 0.41   | 1.42 ± 0.44   | 1.33 ± 0.31   | 0.59           | 0.43              |

Data are means ± SD.

*p* values were adjusted for age, gender and further adjusted for BMI for biochemical variables.Significant *p* values are indicated in bold.

**Additional table 4** Associations for the 5 *LXRβ* SNPs in the MONICA study.

| <b>rs17373080</b><br>( <i>n</i> ) | CC<br>(1093)  | CG<br>(969)   | GG<br>(234)   | Crude <i>p</i> | Adjusted <i>p</i><br>G* vs. CC | Adjusted <i>p</i><br>GG vs. C* |
|-----------------------------------|---------------|---------------|---------------|----------------|--------------------------------|--------------------------------|
| BMI (kg/m <sup>2</sup> )          | 25.9 ± 4.5    | 26.1 ± 4.8    | 26.4 ± 4.5    | 0.42           | 0.23                           | 0.32                           |
| Waist circumference (cm)          | 89.0 ± 13.4   | 88.9 ± 13.7   | 90.2 ± 13.2   | 0.38           | 0.40                           | 0.12                           |
| Waist/hip ratio                   | 0.885 ± 0.094 | 0.882 ± 0.090 | 0.893 ± 0.095 | 0.43           | 0.40                           | <b>0.03</b>                    |
| Glucose (mmol/l)                  | 5.66 ± 1.51   | 5.59 ± 1.28   | 5.64 ± 1.25   | 0.60           | 0.35                           | 0.82                           |
| Insulin (μU/ml)                   | 11.26 ± 9.04  | 11.00 ± 6.95  | 11.39 ± 6.44  | 0.57           | 0.46                           | 0.83                           |
| HOMA-IR index                     | 2.95 ± 3.13   | 2.84 ± 2.44   | 2.96 ± 2.10   | 0.47           | 0.28                           | 0.79                           |
| HOMA-B cell index (%)             | 134.0 ± 476.0 | 119.0 ± 73.8  | 127.9 ± 118.2 | 0.64           | 0.71                           | 0.86                           |
| Triglyceride (mmol/l)             | 1.27 ± 0.90   | 1.28 ± 0.92   | 1.43 ± 1.34   | 0.28           | 0.40                           | 0.14                           |
| HDL-cholesterol (mmol/l)          | 1.47 ± 0.45   | 1.50 ± 0.46   | 1.45 ± 0.44   | 0.29           | 0.36                           | 0.26                           |
| <b>rs56151148</b><br>( <i>n</i> ) | CC<br>(1907)  | CT<br>(378)   | TT<br>(12)    | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |                                |
| BMI (kg/m <sup>2</sup> )          | 26.0 ± 4.7    | 25.9 ± 4.3    | 26.2 ± 4.8    | 0.85           | 0.31                           |                                |
| Waist circumference (cm)          | 89.1 ± 13.5   | 88.9 ± 13.4   | 87.0 ± 11.3   | 0.82           | 0.24                           |                                |
| Waist/hip ratio                   | 0.885 ± 0.092 | 0.883 ± 0.095 | 0.863 ± 0.102 | 0.68           | 0.21                           |                                |
| Glucose (mmol/l)                  | 5.64 ± 1.43   | 5.59 ± 1.21   | 5.32 ± 0.78   | 0.62           | 0.72                           |                                |
| Insulin (μU/ml)                   | 11.28 ± 8.28  | 10.53 ± 5.29  | 11.00 ± 10.15 | 0.33           | 0.09                           |                                |
| HOMA-IR index                     | 2.94 ± 2.89   | 2.69 ± 1.76   | 2.56 ± 2.45   | 0.32           | 0.13                           |                                |
| HOMA-B cell index (%)             | 129.6 ± 365.8 | 114.0 ± 61.8  | 140.3 ± 110.7 | 0.48           | 0.15                           |                                |
| Triglyceride (mmol/l)             | 1.30 ± 0.95   | 1.26 ± 1.03   | 1.00 ± 0.41   | 0.35           | 0.27                           |                                |
| HDL-cholesterol (mmol/l)          | 1.48 ± 0.45   | 1.47 ± 0.47   | 1.49 ± 0.34   | 0.85           | 0.43                           |                                |
| <b>rs2695121</b><br>( <i>n</i> )  | CC<br>(744)   | CT<br>(1128)  | TT<br>(428)   | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC | Adjusted <i>p</i><br>TT vs. C* |
| BMI (kg/m <sup>2</sup> )          | 26.2 ± 4.7    | 25.9 ± 4.8    | 26.0 ± 4.2    | 0.39           | 0.25                           | 0.99                           |
| Waist circumference (cm)          | 89.5 ± 13.6   | 88.6 ± 13.3   | 88.6 ± 13.6   | 0.31           | 0.37                           | 0.23                           |
| Waist/hip ratio                   | 0.885 ± 0.092 | 0.882 ± 0.092 | 0.889 ± 0.094 | 0.42           | 0.58                           | 0.23                           |
| Glucose (mmol/l)                  | 5.61 ± 1.29   | 5.62 ± 1.43   | 5.69 ± 1.46   | 0.57           | 0.51                           | 0.36                           |
| Insulin (μU/ml)                   | 11.29 ± 6.55  | 10.75 ± 6.28  | 11.37 ± 7.59  | 0.09           | 0.30                           | 0.18                           |
| HOMA-IR index                     | 2.93 ± 2.48   | 2.74 ± 1.96   | 2.98 ± 2.59   | 0.18           | 0.56                           | 0.16                           |
| HOMA-B cell index (%)             | 124.6 ± 93.9  | 114.6 ± 60.1  | 162.1 ± 757.2 | 0.09           | 0.20                           | 0.30                           |
| Triglyceride (mmol/l)             | 1.33 ± 1.11   | 1.27 ± 0.91   | 1.28 ± 0.83   | 0.77           | 0.51                           | 0.82                           |
| HDL-cholesterol (mmol/l)          | 1.48 ± 0.45   | 1.48 ± 0.46   | 1.48 ± 0.46   | 1.00           | 0.41                           | 0.95                           |
| <b>rs2303044</b><br>( <i>n</i> )  | CC<br>(1964)  | CT<br>(322)   | TT<br>(23)    | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |                                |
| BMI (kg/m <sup>2</sup> )          | 26.0 ± 4.6    | 26.2 ± 4.7    | 25.8 ± 4.8    | 0.74           | 0.35                           |                                |
| Waist circumference (cm)          | 89.1 ± 13.4   | 89.1 ± 13.7   | 91.8 ± 16.7   | 0.63           | 0.33                           |                                |
| Waist/hip ratio                   | 0.884 ± 0.092 | 0.884 ± 0.094 | 0.910 ± 0.096 | 0.41           | 0.15                           |                                |
| Glucose (mmol/l)                  | 5.63 ± 1.42   | 5.59 ± 1.21   | 5.72 ± 1.16   | 0.75           | 0.56                           |                                |
| Insulin (μU/ml)                   | 11.05 ± 7.88  | 11.69 ± 8.22  | 13.55 ± 10.88 | 0.23           | 0.16                           |                                |
| HOMA-IR index                     | 2.87 ± 2.75   | 3.03 ± 2.70   | 3.67 ± 3.42   | 0.35           | 0.34                           |                                |
| HOMA-B cell index (%)             | 126.6 ± 358.3 | 130.7 ± 121.8 | 123.2 ± 78.1  | 0.22           | 0.84                           |                                |
| Triglyceride (mmol/l)             | 1.28 ± 0.94   | 1.31 ± 0.99   | 1.92 ± 1.88   | 0.08           | 0.16                           |                                |
| HDL-cholesterol (mmol/l)          | 1.48 ± 0.45   | 1.48 ± 0.47   | 1.28 ± 0.40   | 0.11           | 0.32                           |                                |
| <b>rs3219281</b><br>( <i>n</i> )  | CC<br>(1875)  | CT<br>(371)   | TT<br>(24)    | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |                                |
| BMI (kg/m <sup>2</sup> )          | 26.0 ± 4.7    | 26.1 ± 4.5    | 26.6 ± 4.6    | 0.78           | 0.58                           |                                |
| Waist circumference (cm)          | 89.1 ± 13.6   | 89.6 ± 13.1   | 93.4 ± 15.0   | 0.26           | 0.26                           |                                |
| Waist/hip ratio                   | 0.884 ± 0.092 | 0.890 ± 0.093 | 0.906 ± 0.064 | 0.26           | 0.08                           |                                |
| Glucose (mmol/l)                  | 5.63 ± 1.40   | 5.62 ± 1.26   | 6.17 ± 1.59   | 0.07           | 0.86                           |                                |
| Insulin (μU/ml)                   | 11.05 ± 7.89  | 11.57 ± 7.95  | 14.10 ± 8.94  | 0.07           | 0.09                           |                                |
| HOMA-IR index                     | 2.87 ± 2.78   | 3.01 ± 2.60   | 4.19 ± 3.33   | <b>0.03</b>    | 0.13                           |                                |
| HOMA-B cell index (%)             | 126.6 ± 366.1 | 127.1 ± 114.9 | 111.5 ± 62.3  | 0.50           | 0.19                           |                                |
| Triglyceride (mmol/l)             | 1.28 ± 0.94   | 1.39 ± 1.10   | 1.52 ± 1.11   | <b>0.03</b>    | <b>0.01</b>                    |                                |
| HDL-cholesterol (mmol/l)          | 1.48 ± 0.46   | 1.46 ± 0.45   | 1.22 ± 0.40   | <b>0.02</b>    | 0.16                           |                                |

Data are means ± SD.

*p* values were adjusted for age, gender, centre, smoking habit, alcohol consumption and physical activity level and further adjusted for BMI for biochemical variables. Significant *p* values are indicated in bold.

**Additional table 5** Associations for the 5 *LXRβ* SNPs in the HELENA study.

| <b>rs17373080</b><br>(n) | CC<br>(532)   | CG<br>(494)   | GG<br>(122)   | Crude <i>p</i> | Adjusted <i>p</i><br>G* vs. CC |
|--------------------------|---------------|---------------|---------------|----------------|--------------------------------|
| BMI (kg/m <sup>2</sup> ) | 21.2 ± 3.5    | 21.4 ± 4.0    | 21.5 ± 3.8    | 0.45           | 0.84                           |
| Waist circumference (cm) | 72.2 ± 9.1    | 72.4 ± 9.6    | 72.4 ± 9.3    | 0.90           | 0.27                           |
| Waist/hip ratio          | 0.794 ± 0.069 | 0.796 ± 0.072 | 0.787 ± 0.060 | 0.45           | 0.95                           |
| Glucose (mmol/l)         | 5.01 ± 0.41   | 5.02 ± 0.39   | 4.99 ± 0.40   | 0.58           | 0.21                           |
| Insulin (μU/ml)          | 9.24 ± 4.84   | 10.28 ± 6.23  | 11.39 ± 7.82  | <b>0.03</b>    | <b>0.04</b>                    |
| HOMA-IR index            | 2.07 ± 1.22   | 2.31 ± 1.45   | 2.55 ± 1.79   | <b>0.01</b>    | <b>0.02</b>                    |
| HOMA-B cell index (%)    | 136.2 ± 95.3  | 147.2 ± 126.6 | 163.5 ± 129.7 | 0.06           | 0.24                           |
| Triglyceride (mmol/l)    | 0.78 ± 0.34   | 0.79 ± 0.41   | 0.78 ± 0.37   | 0.91           | 0.88                           |
| HDL-cholesterol (mmol/l) | 1.43 ± 0.26   | 1.43 ± 0.28   | 1.45 ± 0.30   | 0.61           | 0.28                           |
| <b>rs56151148</b><br>(n) | CC<br>(967)   | CT<br>(174)   | TT<br>(10)    | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |
| BMI (kg/m <sup>2</sup> ) | 21.4 ± 3.8    | 20.9 ± 3.7    | 20.9 ± 1.9    | 0.23           | 0.18                           |
| Waist circumference (cm) | 72.3 ± 9.5    | 72.1 ± 8.8    | 71.8 ± 4.6    | 0.94           | 0.68                           |
| Waist/hip ratio          | 0.794 ± 0.073 | 0.791 ± 0.052 | 0.789 ± 0.042 | 0.84           | 0.73                           |
| Glucose (mmol/l)         | 5.00 ± 0.40   | 5.01 ± 0.40   | 4.95 ± 0.37   | 0.90           | 0.52                           |
| Insulin (μU/ml)          | 10.33 ± 7.80  | 10.20 ± 6.88  | 6.28 ± 1.86   | 0.07           | 0.63                           |
| HOMA-IR index            | 2.33 ± 1.94   | 2.27 ± 1.74   | 1.34 ± 0.42   | 0.22           | 0.56                           |
| HOMA-B cell index (%)    | 144.6 ± 115.2 | 143.6 ± 106.8 | 81.5 ± 18.7   | 0.06           | 0.97                           |
| Triglyceride (mmol/l)    | 0.78 ± 0.40   | 0.77 ± 0.34   | 0.77 ± 0.27   | 0.94           | 0.93                           |
| HDL-cholesterol (mmol/l) | 1.43 ± 0.28   | 1.42 ± 0.26   | 1.60 ± 0.39   | 0.10           | 0.53                           |
| <b>rs2695121</b><br>(n)  | CC<br>(411)   | CT<br>(555)   | TT<br>(184)   | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |
| BMI (kg/m <sup>2</sup> ) | 21.5 ± 4.0    | 21.2 ± 3.6    | 21.1 ± 3.5    | 0.31           | 0.13                           |
| Waist circumference (cm) | 72.8 ± 9.5    | 71.9 ± 9.4    | 72.1 ± 8.7    | 0.39           | 0.16                           |
| Waist/hip ratio          | 0.795 ± 0.065 | 0.793 ± 0.076 | 0.794 ± 0.060 | 0.93           | 0.70                           |
| Glucose (mmol/l)         | 5.01 ± 0.42   | 5.00 ± 0.38   | 5.00 ± 0.40   | 0.77           | 0.27                           |
| Insulin (μU/ml)          | 10.85 ± 6.98  | 9.48 ± 5.20   | 9.16 ± 4.68   | <b>0.03</b>    | <b>0.008</b>                   |
| HOMA-IR index            | 2.45 ± 1.71   | 2.11 ± 1.17   | 2.05 ± 1.12   | <b>0.01</b>    | <b>0.002</b>                   |
| HOMA-B cell index (%)    | 153.1 ± 110.9 | 137.4 ± 113.6 | 142.9 ± 118.7 | <b>0.03</b>    | <b>0.03</b>                    |
| Triglyceride (mmol/l)    | 0.77 ± 0.35   | 0.79 ± 0.42   | 0.78 ± 0.36   | 0.79           | 0.23                           |
| HDL-cholesterol (mmol/l) | 1.43 ± 0.28   | 1.44 ± 0.28   | 1.41 ± 0.26   | 0.60           | 0.66                           |
| <b>rs2303044</b><br>(n)  | CC<br>(959)   | CT<br>(161)   | TT<br>(9)     | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |
| BMI (kg/m <sup>2</sup> ) | 21.2 ± 3.6    | 22.0 ± 4.4    | 22.6 ± 3.1    | <b>0.01</b>    | <b>0.006</b>                   |
| Waist circumference (cm) | 72.2 ± 9.2    | 73.1 ± 10.6   | 73.4 ± 7.4    | 0.48           | 0.18                           |
| Waist/hip ratio          | 0.794 ± 0.065 | 0.794 ± 0.079 | 0.757 ± 0.075 | 0.26           | 0.96                           |
| Glucose (mmol/l)         | 5.01 ± 0.40   | 5.02 ± 0.37   | 5.12 ± 0.45   | 0.64           | 0.91                           |
| Insulin (μU/ml)          | 10.19 ± 7.46  | 10.52 ± 8.98  | 14.09 ± 5.84  | 0.06           | 0.73                           |
| HOMA-IR index            | 2.29 ± 1.86   | 2.36 ± 2.16   | 3.36 ± 1.50   | <b>0.04</b>    | 0.84                           |
| HOMA-B cell index (%)    | 141.4 ± 105.3 | 153.9 ± 154.0 | 191.5 ± 76.2  | 0.11           | 0.73                           |
| Triglyceride (mmol/l)    | 0.78 ± 0.39   | 0.83 ± 0.39   | 0.86 ± 0.45   | 0.20           | 0.29                           |
| HDL-cholesterol (mmol/l) | 1.43 ± 0.27   | 1.39 ± 0.28   | 1.56 ± 0.30   | <b>0.05</b>    | 0.53                           |
| <b>rs3219281</b><br>(n)  | CC<br>(937)   | CT<br>(199)   | TT<br>(15)    | Crude <i>p</i> | Adjusted <i>p</i><br>T* vs. CC |
| BMI (kg/m <sup>2</sup> ) | 21.2 ± 3.6    | 21.8 ± 4.3    | 22.3 ± 3.5    | <b>0.05</b>    | <b>0.009</b>                   |
| Waist circumference (cm) | 72.0 ± 9.0    | 73.5 ± 11.0   | 72.2 ± 6.4    | 0.13           | <b>0.03</b>                    |
| Waist/hip ratio          | 0.794 ± 0.070 | 0.794 ± 0.069 | 0.770 ± 0.048 | 0.42           | 0.82                           |
| Glucose (mmol/l)         | 90.85 ± 7.32  | 91.28 ± 7.13  | 93.31 ± 5.83  | 0.32           | 0.18                           |
| Insulin (μU/ml)          | 10.42 ± 10.51 | 10.48 ± 8.71  | 13.60 ± 6.93  | <b>0.05</b>    | 0.87                           |
| HOMA-IR index            | 2.28 ± 1.86   | 2.37 ± 2.11   | 3.19 ± 1.69   | <b>0.03</b>    | 0.74                           |
| HOMA-B cell index (%)    | 141.7 ± 104.7 | 151.6 ± 149.3 | 172.5 ± 84.3  | 0.22           | 0.61                           |
| Triglyceride (mmol/l)    | 68.66 ± 35.56 | 69.88 ± 31.95 | 67.94 ± 26.42 | 0.62           | 0.67                           |
| HDL-cholesterol (mmol/l) | 55.60 ± 10.58 | 54.02 ± 10.76 | 57.69 ± 10.96 | 0.11           | 0.31                           |

Data are means ± SD.

*p* values were adjusted for age, gender, centre and further adjusted for BMI for biochemical variables.Significant *p* values are indicated in bold.