# SUPPLEMENTARY TABLES

## Supplementary Table 1. List of measured metabolites.

| Short name          | Name                                                                 |
|---------------------|----------------------------------------------------------------------|
| C2                  | Acetyl carnitine                                                     |
| C3                  | Propionyl carnitine                                                 |
| C4                  | Butyryl carnitine or isobutryl carnitine                            |
| C5:1                | Tiglyl carnitine or 3-methyl crotonyl carnitine                     |
| C5                  | Isovaleryl, 3-methylbutyryl carnitine, 2-Methylbutyryl, valeryl or pivaloyl carnitine |
| C4-OH               | D-3-Hydroxy-butyryl carnitine, L-3-hydroxybutyryl carnitine          |
| C6                  | Hexanoyl carnitine                                                  |
| C5-OH/C3-DC         | 3-Hydroxy-isovaleryl carnitine or malonyl carnitine                 |
| C4-DC/C6-OH         | Methylmalonyl carnitine or succinyl carnitine                       |
| C8:1                | Octenoyl carnitine                                                  |
| C8                  | Octanoyl carnitine                                                  |
| C5-DC               | Glutaryl carnitine, ethylmalonyl carnitine                          |
| C8:1-OH/C6:1-DC     | 3-Hydroxy-octenoyl carnitine or hexenedioyl carnitine               |
| C8-OH/C6-DC         | 3-hydroxy octanoyl carnitine or adipoyl carnitine, 3-methylglutaryl carnitine |
| C10:3               | Decatrienoyl carnitine                                              |
| C10:1               | Decenoyl carnitine                                                  |
| C10                 | Decanoyl carnitine                                                  |
| C7-DC               | Pimeloyl carnitine, heptanediyl carnitine                           |
| C8:1-DC             | Octadecenedioyl carnitine                                           |
| C8-DC               | Suberoyl carnitine                                                  |
| C12:2               | -                                                                  |
| C12:1               | Dodecanoyl carnitine                                                |
| C12                 | Lauroyl carnitine                                                   |
| C12:2-OH/C10:2-DC   | -                                                                  |
| C12:1-OH            | Hydroxyparadecanoyl carnitine                                       |
| C12-OH/C10-DC       | 3-Hydroxy-dodecanoyl carnitine or sebacoyl carnitine                |
| C14:3               | -                                                                  |
| C14:2               | Tetradecadienoyl carnitine                                          |
| C14:1               | Tetradecenoyl carnitine                                             |
| C14                 | Myristoyl carnitine                                                 |
| C14:3-OH/C12:3-DC   | -                                                                  |
| C14:2-OH            | 3-Hydroxytetradecanoylcarnitine                                     |
| C14:1-OH            | 3-Hydroxy-tetradecanoyl carnitine                                   |
| C14-OH/C12-DC       | 3-Hydroxy-tetradecanoyl carnitine or dodecanedioyl carnitine        |
| C16:3               | -                                                                  |
| C16:2               | Hexadecadienoyl carnitine                                           |
| C16:1               | Palmitoleoyl carnitine                                              |
| C16                 | Palmitoyl carnitine                                                 |
| C16:3-OH/C14:3-DC   | -                                                                  |
| C16:2-OH            | 3-Hydroxyhexadecadienoyl carnitine                                 |
| C16:1-OH/C14:1-DC   | 3-Hydroxy-palmitoleoyl carnitine or cis-5-tetradecanediyl carnitine |
| Fatty Acid | Carnitine Name |
|------------|----------------|
| C16-OH     | 3-Hydroxy-hexadecanoyl carnitine |
| C18:3      | Linolenyl carnitine |
| C18:2      | Linoleyl carnitine |
| C18:1      | Oleyl carnitine |
| C18        | Stearoyl carnitine |
| C18:3-OH/C16:3-DC | 3-Hydroxy-linolenyl carnitine or |
| C18:2-OH/C16:2-DC | 3-Hydroxy-linoleyl carnitine or hexadecadienoyl carnitine |
| C18:1-OH/C16:1-DC | 3-Hydroxy-octadecenoyl carnitine or hexadecanediyl carnitine |
| C18-OH/C16-DC | 3-Hydroxy-octadecanoyl carnitine or hexadecanediyl carnitine, thapsoyl carnitine |
| C20:4      | Arachidonoyl carnitine |
| C20:3      | Dihomogammalinolenyl carnitine |
| C20:2      | - |
| C20:1      | - |
| C20        | Arachidoyl carnitine, eicosanoyl carnitine |
| C20:3-OH/C18:3-DC | - |
| C20:2-OH/C18:2-DC | - |
| C20:1-OH/C18:1-DC | Octadecenediyl carnitine |
| C20-OH/C18-DC | 3-Hydroxy-eicosanoyl carnitine or octadecanediyl carnitine |
| C22:5      | - |
| C22:4      | - |
| C22:3      | - |
| C22:2      | - |
| C22:1      | - |
| C22        | Docosanoyl carnitine, Behenoyl carnitine |
Supplementary Table 2. Factors identified by sparse principal component analysis and the associated individual components, description and variance.

| Factors | Description | Components | Percentage of variance accounted |
|---------|-------------|------------|---------------------------------|
| 1       | Medium and long-chain carnitines | C8, C121, C12, C120HC10DC, C142, C141, C14, C163, C162, C161, C181 | 11 |
| 2       | Short- and medium- chain dicarboxyl/ hydroxyl carnitines | C3, C4, C5, C4OH, C5OH3DC, C4DC6OH, C5DC, C81OH61DC, C8OH6DC, C102, C81DC, C8DC C120HC102DC, C121OH, C142OH, C141OH, C183OH163DC, C182OH162DC, C201, C20, C202OH182DC, C201OH181DC, C20OH18DC, C221 | 6.9 |
| 3       | Long chain dicarboxyl/hydroxyl carnitines | C16, C183, C182, C181, C18, C204, C203, C202, C201, C20, C202OH182DC, C225, C224 | 6.8 |
| 4       | Long chain carnitines | C4, C4OH, C8DC, C120HC10DC, C141OH, C140HC12DC, C163OH143DC, C162OH, C161OH141DC, C16OH, C181OH161DC, C180HC16DC, C203OH183DC, C201OH181DC | 6.4 |
| 5       | Medium and long chain dicarboxyl/hydroxyl carnitines | C3, C4, C5, C15, C81OH61DC, C102, C101, C120HC10DC, C143, C140HC12DC, C163OH143DC, C161OH141DC, C16OH, C181OH161DC, C180HC16DC, C203OH183DC, C201OH181DC | 7.7 |
| 6       | Wide spectrum carnitines including odd short chain carnitines | C2, C4OH, C6, C81, C103, C102, C101, C10, C122, C122OH102DC, C121OH, C143, C142, C14, C141OH, C162, C161, C16, C162OH, C182, C182OH162DC, C180HC16DC, C202, C20, C203OH183DC, C225, C224, C222, C22 C3, C4, C5, C4OH, C4DC6OH, C5DC, C81OH61DC, C8OH6DC, C7DC, C8DC, C122, C122OH102DC, C160OH, C183, C203OH183DC, C202OH182DC | 3.1 |
| 7       | Wide spectrum carnitines including odd short chain carnitines | C101, C81DC, C120HC10DC, C141OH, C162OH, C160OH, C183, C183OH163DC, C182OH162DC, C180HC16DC, C20, C203OH183DC, C201OH181DC, C200HC18DC, C223, C221 | 4.3 |
| 8       | Wide spectrum carnitines including odd short chain carnitines | C101, C81DC, C120HC10DC, C141OH, C162OH, C160OH, C183, C183OH163DC, C182OH162DC, C180HC16DC, C20, C203OH183DC, C201OH181DC, C200HC18DC, C223, C221 | 2.5 |
| 9       | Wide spectrum carnitines | C102, C10, C12, C121OH, C143, C14, C143OH123DC, C163, C16, C182, C18, C204, C203, C201, C20, C221, C22 | 2.3 |
| 10      | Medium and long chain carnitines | C102, C10, C12, C121OH, C143, C14, C143OH123DC, C163, C16, C182, C18, C204, C203, C201, C20, C221, C22 | 2.3 |
## Supplementary Table 3. Cardiovascular characteristics of young vs old non-diabetic.

| Echocardiography measurements                                      | Young (n=418) | Old (n=515) | Univariate P-value | ~Adjusted P-value |
|-------------------------------------------------------------------|---------------|-------------|--------------------|-------------------|
| Interventricular septum thickness at end diastole (IVSD) (cm)    | 0.77 (0.1)    | 0.80 (0.2)  | 0.001              | 0.042             |
| Interventricular septum thickness at end systole (IVSS) (cm)     | 1.2 (0.2)     | 1.3 (0.2)   | 0.003              | 0.027             |
| Left ventricular internal diameter end diastole (LVIDD) (cm)     | 4.4 (0.4)     | 4.4 (0.6)   | 0.019              | 0.044             |
| Left ventricular internal diameter end systole (LVIDS) (cm)      | 2.7 (0.4)     | 2.5 (0.5)   | <0.0001            | <0.0001           |
| Left ventricular posterior wall end diastole (LVPWD) (cm)        | 0.7 (0.1)     | 0.8 (0.1)   | 0.001              | 0.008             |
| Left ventricular posterior wall end systole (LVPWS) (cm)         | 1.4 (0.3)     | 1.4 (0.2)   | 0.11               | -                 |
| Left ventricular outflow tract (LVOT) (cm)                       | 2.1 (1.5)     | 2.1 (0.2)   | 0.24               | -                 |
| Aortic diameter (AO) (cm)                                        | 2.8 (0.5)     | 3.0 (0.5)   | <0.0001            | <0.0001           |
| Left atrium (LA) (cm)                                            | 3.4 (0.5)     | 3.7 (0.6)   | <0.0001            | <0.0001           |
| Left ventricular ejection fraction (LVEF) (%)                    | 71 (8.1)      | 74 (8.1)    | <0.0001            | <0.0001           |
| Left ventricular fractional shortening (LVFS) (%)                | 40 (6.9)      | 43 (7.5)    | <0.0001            | <0.0001           |
| Left ventricular mass (grams)                                    | 112 (32)      | 120 (47)    | 0.004              | 0.047             |
| Left ventricular mass index (grams/m²)                           | 66 (16)       | 73 (26)     | <0.0001            | <0.0001           |
| Left atrial volume (ml)                                          | 33 (11)       | 35 (13)     | 0.011              | 0.17              |
| Left atrial volume index (ml/m²)                                 | 20 (6.1)      | 21 (7.8)    | <0.0001            | 0.002             |
| Isovolumic relaxation time (IVRT) (ms)                           | 94 (15)       | 103 (18)    | <0.0001            | <0.0001           |
| Peak velocity flow in early diastole E (MV E peak) (m/s)         | 0.8 (0.2)     | 0.7 (0.2)   | <0.0001            | <0.0001           |
| Peak velocity flow in late diastole by atrial contraction A (MV A peak) (m/s) | 0.6 (0.2)     | 0.8 (0.2)   | <0.0001            | <0.0001           |
| Ratio of MV E peak velocity: MV A peak velocity                  | 1.4 (0.5)     | 0.9 (0.3)   | <0.0001            | <0.0001           |
| Mitral valve flow deceleration time (MV DT) (ms)                 | 198 (28)      | 215 (41)    | <0.0001            | <0.0001           |
| Right atrial pressure (mmHg)                                     | 4.3 (1.3)     | 4.9 (1.4)   | <0.0001            | <0.0001           |
| Pulmonary artery systolic pressure (PASP) (mmHg)                 | 22 (5.4)      | 27 (7.0)    | <0.0001            | <0.0001           |
| Peak systolic septal mitral annular velocity (Septal S') (m/s)   | 0.09 (0.04)   | 0.08 (0.02) | <0.0001            | <0.0001           |
| Peak early diastolic septal mitral annular velocity (Septal E') (m/s) | 0.10 (0.03)   | 0.07 (0.02) | <0.0001            | <0.0001           |
| Septal mitral annular velocity during atrial contraction (Septal A') (m/s) | 0.1 (0.02)    | 0.1 (0.06)  | 0.50               | -                 |
| Peak systolic lateral mitral annular velocity (m/s)              | 0.1 (0.03)    | 0.10 (0.03) | <0.0001            | <0.0001           |
| Peak early diastolic lateral mitral annular velocity (m/s)       | 0.1 (0.03)    | 0.09 (0.02) | <0.0001            | <0.0001           |
| Lateral mitral annular velocity during atrial contraction (m/s)  | 0.1 (0.03)    | 0.1 (0.03)  | 0.53               | -                 |
| Ratio of Peak velocity flow in early diastole E (MV E peak) velocity to Peak early diastolic septal mitral annular velocity (Septal E') | 8.2 (2.5)     | 10 (3.3)    | <0.0001            | <0.0001           |

### CMR measurements

|                        | Young (n=15) | Old (n=224) | Univariate P-value | ~Adjusted P-value |
|------------------------|--------------|-------------|--------------------|-------------------|
| LV global longitudinal strain (LVGLS) (%) | -21 (3.0) | -21 (2.9) | 1.00               | -                 |
| LV global circumferential strain (LVGCS) (%) | -21 (4.6) | -22 (3.7) | 0.36               | -                 |
| LV global radial strain (LVGRS) (%)           | 92 (53)      | 104 (24)    | 0.10               | -                 |
| Right ventricular global longitudinal strain (RVGLS) (%) | -34 (5.1) | -31 (5.4) | 0.11               | -                 |

|                        | Young (n=23) | Old (n=217) | Univariate P-value | ~Adjusted P-value |
|------------------------|--------------|-------------|--------------------|-------------------|
| LA reservoir strain (es) (%)  | 39 (6.2)     | 31 (6.8)    | <0.0001            | <0.0001           |
| LA conduit strain (ee) (%)    | 21 (4.8)     | 13 (4.2)    | <0.0001            | <0.0001           |
| LA booster strain (ea) (%)    | 17 (4.0)     | 17 (4.6)    | 0.97               | -                 |
| Reservoir strain rate (SRs) (1/s) | 2.0 (0.5) | 1.5 (0.5)  | <0.0001            | <0.0001           |
| Conduit strain rate (SRe) (1/s) | -2.5 (0.7)  | -1.3 (0.5)  | <0.0001            | <0.0001           |
| Booster strain rate (SRA) (1/s) | -2.4 (0.7)  | -2.2 (0.7)  | 0.26               | -                 |
| Ratio of SRe/SRa              | 1.1 (0.4)    | 0.6 (0.3)   | <0.0001            | <0.0001           |
| LAvolume_min (ml)             | 28 (8.8)     | 31 (12)     | 0.30               | -                 |
| LAvolume_max (ml)             | 65 (14)      | 62 (18)     | 0.47               | -                 |
| LA ejection fraction (%)      | 58 (8.1)     | 52 (8.6)    | 0.002              | 0.004             |

*~adjusted for female, BMI, CV rfs >2.*
Supplementary Table 4. Association between archived metabolites and cardiovascular function.
i) Outcome: E/A<=0.9.

| Archived metabolites | Events/total | HR (95% CI)    | p-value | Adjusted HR (95%)* | Adjusted p-value* |
|----------------------|--------------|----------------|---------|--------------------|------------------|
| **Short chain**      |              |                |         |                    |                  |
| C3                   | 124/180      | 1.0 (1.0, 1.001) | 0.45    | -                  | -                |
| C4                   | 124/180      | 1.0 (1.0, 1.002) | 0.62    | -                  | -                |
| C4-OH                | 124/180      | 1.0 (0.97, 1.02) | 0.59    | -                  | -                |
| C5                   | 124/180      | 1.0 (1.0, 1.002) | 0.50    | -                  | -                |
| C5:1                 | 119/173      | 1.03 (1.01, 1.05) | **0.003** | 1.03 (1.01, 1.05) | **0.011** |
| **Medium chain**     |              |                |         |                    |                  |
| C10:1                | 119/168      | 1.0 (1.0, 1.004) | 0.97    | -                  | -                |
| C10:2                | 96/143       | 1.01 (0.98, 1.03) | 0.53    | -                  | -                |
| C12-OH/C10-DC        | 124/180      | 0.99 (0.92, 1.07) | 0.88    | -                  | -                |
| C8:1-OH/C6:1-DC      | 124/180      | 1.0 (0.99, 1.01) | 0.81    | -                  | -                |
| C8-DC                | 124/180      | 0.99 (0.97, 1.01) | 0.50    | -                  | -                |
| **Long chain**       |              |                |         |                    |                  |
| C14:1-OH             | 124/180      | 0.99 (0.96, 1.02) | 0.47    | -                  | -                |
| C14:3                | 124/180      | 0.98 (0.91, 1.06) | 0.69    | -                  | -                |
| C14-OH/C12-DC        | 124/180      | 0.99 (0.96, 1.02) | 0.57    | -                  | -                |
| C16                  | 124/180      | 1.0 (1.0, 1.002) | 0.60    | -                  | -                |
| C16:1-OH/C14:1-DC    | 124/180      | 0.99 (0.92, 1.06) | 0.74    | -                  | -                |
| C16:2-OH             | 124/180      | 0.96 (0.87, 1.07) | 0.48    | -                  | -                |
| C16:3-OH/C14:3-DC    | 118/172      | 1.25 (1.01, 1.54) | **0.036** | 1.19 (0.97, 1.46) | 0.10            |
| C16:OH               | 124/180      | 1.0 (0.98, 1.01) | 0.61    | -                  | -                |
| C18                  | 124/180      | 1.0 (1.0, 1.002) | 0.95    | -                  | -                |
| C18:1                | 124/180      | 1.0 (1.0, 1.005) | 0.17    | -                  | -                |
| C18:1-OH/C16:1-DC    | 124/180      | 0.98 (0.93, 1.04) | 0.55    | -                  | -                |
| C18:2                | 124/180      | 1.0 (1.0, 1.005) | 0.87    | -                  | -                |
| C18:3                | 121/176      | 0.99 (0.94, 1.04) | 0.71    | -                  | -                |
| C18-OH/C16-DC        | 124/180      | 1.0 (0.98, 1.01) | 0.88    | -                  | -                |
| C20                  | 124/180      | 1.02 (0.94, 1.10) | 0.62    | -                  | -                |
| C20:1                | 124/180      | 1.01 (0.96, 1.07) | 0.62    | -                  | -                |
| C20:1-OH/C18:1-DC    | 124/180      | 0.99 (0.97, 1.02) | 0.53    | -                  | -                |
| C20:2                | 124/180      | 1.03 (0.96, 1.11) | 0.37    | -                  | -                |
| C20:2-OH/C18:2-DC    | 123/179      | 0.97 (0.89, 1.07) | 0.55    | -                  | -                |
| C20:3                | 124/180      | 1.02 (1.01, 1.03) | **0.003** | 1.01 (1.003, 1.03) | **0.014** |
| C20:3-OH/C18:3-DC    | 115/168      | 0.98 (0.91, 1.18) | 0.83    | -                  | -                |
| C20:4                | 124/180      | 1.01 (0.98, 1.05) | 0.46    | -                  | -                |
| C22:1                | 124/180      | 0.92 (0.83, 1.02) | 0.10    | -                  | -                |
| C22:2                | 119/170      | 1.06 (0.93, 1.19) | 0.44    | -                  | -                |
| C22:4                | 121/176      | 1.07 (0.89, 1.28) | 0.47    | -                  | -                |
| C22:5                | 123/178      | 0.97 (0.84, 1.12) | 0.64    | -                  | -                |

*Correct for diabetes mellitus, female, BMI, CV rf>2.
### ii) Outcome: εe<=13.4 %.

| Archived metabolites | Events/total | HR (95% CI) | p-value | Adjusted HR (95% CI) * | Adjusted p-value * |
|-----------------------|--------------|-------------|---------|------------------------|-------------------|
| **Short chain**       |              |             |         |                        |                   |
| C3                    | 85/163       | 1.0 (1.0, 1.001) | 0.98    | -                      | -                 |
| C4                    | 85/163       | 1.0 (1.0, 1.001) | 0.42    | -                      | -                 |
| C4-OH                 | 85/163       | 0.98 (0.94, 1.01) | 0.22    | -                      | -                 |
| C5                    | 85/163       | 1.0 (1.0, 1.002) | 0.56    | -                      | -                 |
| C5:1                  | 83/159       | 1.03 (1.005, 1.06) | 0.018   | 1.03 (1.002, 1.06)     | 0.037             |
| **Medium chain**      |              |             |         |                        |                   |
| C10:1                 | 81/151       | 1.0 (0.99, 1.004) | 0.68    | -                      | -                 |
| C10:2                 | 68/130       | 0.99 (0.96, 1.02) | 0.44    | -                      | -                 |
| C12-OH/C10-DC         | 85/163       | 1.005 (0.93, 1.08) | 0.90    | -                      | -                 |
| C8:1-OH/C6:1-DC       | 85/163       | 1.01 (0.99, 1.03) | 0.20    | -                      | -                 |
| C8-DC                 | 85/163       | 0.99 (0.97, 1.02) | 0.66    | -                      | -                 |
| **Long chain**        |              |             |         |                        |                   |
| C14:1-OH              | 85/163       | 1.006 (0.97, 1.04) | 0.73    | -                      | -                 |
| C14:3                 | 85/163       | 0.93 (0.84, 1.02) | 0.12    | -                      | -                 |
| C14-OH/C12-DC         | 85/163       | 0.99 (0.96, 1.02) | 0.66    | -                      | -                 |
| C16                   | 85/163       | 1.0 (1.0, 1.001) | 0.27    | -                      | -                 |
| C16:1-OH/C14:1-DC     | 85/163       | 0.95 (0.86, 1.04) | 0.26    | -                      | -                 |
| C16:2-OH              | 85/163       | 0.99 (0.88, 1.11) | 0.83    | -                      | -                 |
| C16:3-OH/C14:3-DC     | 82/155       | 1.34 (1.05, 1.71) | 0.017   | 1.32 (1.05, 1.67)     | 0.019             |
| C16-OH                | 85/163       | 0.99 (0.97, 1.02) | 0.57    | -                      | -                 |
| C18                   | 85/163       | 1.0 (0.99, 1.002) | 0.32    | -                      | -                 |
| C18:1                 | 85/163       | 1.0 (1.0, 1.003) | 0.64    | -                      | -                 |
| C18:1-OH/C16:1-DC     | 85/163       | 0.98 (0.91, 1.05) | 0.51    | -                      | -                 |
| C18:2                 | 85/163       | 1.0 (0.99, 1.001) | 0.12    | -                      | -                 |
| C18:3                 | 83/161       | 0.91 (0.84, 0.98) | 0.019   | 0.89 (0.82, 0.96)     | 0.005             |
| C18-OH/C16-DC         | 85/163       | 0.99 (0.97, 1.01) | 0.50    | -                      | -                 |
| C20                   | 85/163       | 1.07 (0.97, 1.18) | 0.16    | -                      | -                 |
| C20:1                 | 85/163       | 1.0 (0.93, 1.06) | 0.89    | -                      | -                 |
| C20:1-OH/C18:1-DC     | 85/163       | 0.97 (0.93, 1.01) | 0.19    | -                      | -                 |
| C20:2                 | 85/163       | 1.0 (0.91, 1.10) | 0.99    | -                      | -                 |
| C20:2-OH/C18:2-DC     | 85/162       | 0.93 (0.82, 1.06) | 0.29    | -                      | -                 |
| C20:3                 | 85/163       | 0.96 (0.91, 1.02) | 0.20    | -                      | -                 |
| C20:3-OH/C18:3-DC     | 79/153       | 1.06 (0.83, 1.34) | 0.66    | -                      | -                 |
| C20:4                 | 85/163       | 0.98 (0.93, 1.02) | 0.33    | -                      | -                 |
| C22:1                 | 85/163       | 0.88 (0.76, 1.02) | 0.096   | -                      | -                 |
| C22:2                 | 79/154       | 0.98 (0.81, 1.19) | 0.85    | -                      | -                 |
| C22:4                 | 83/160       | 0.87 (0.69, 1.10) | 0.24    | -                      | -                 |
| C22:5                 | 83/161       | 0.86 (0.71, 1.05) | 0.14    | -                      | -                 |

*adjusted for diabetes mellitus, female, BMI, CV rf>2.
Supplementary Table 5. Association between change in metabolites and cardiovascular function.
i) Outcome: $\varepsilon e \leq 13.4\%$.

| Changes from archived to current | Events/total | OR (95% CI) | p-value | Adjusted OR (95% CI) * | Adjusted p-value * |
|---------------------------------|-------------|-------------|---------|------------------------|------------------|
| **Short chain**                 |             |             |         |                        |                  |
| C3                              | 85/163      | 1.0 (1.0, 1.002) | 0.37     | -                      | -                |
| C4                              | 85/163      | 1.0 (1.0, 1.004) | 0.14     | -                      | -                |
| C4-OH                           | 85/163      | 1.06 (1.02, 1.09) | **0.001** | 1.05 (1.01, 1.08) | **0.017** |
| C5                              | 85/163      | 1.01 (1.0, 1.01) | 0.077    | -                      | -                |
| C5:1                            | 83/159      | 1.01 (0.98, 1.03) | 0.66     | -                      | -                |
| **Medium chain**                |             |             |         |                        |                  |
| C10:1                           | 81/151      | 1.0 (1.0, 1.008) | 0.25     | -                      | -                |
| C10:2                           | 68/130      | 1.01 (0.99, 1.04) | 0.32     | -                      | -                |
| C12-OH/C10-DC                   | 85/163      | 1.09 (0.92, 1.28) | 0.32     | -                      | -                |
| C8:1-OH/C6:1-DC                 | 85/163      | 1.0 (0.98, 1.01) | 0.55     | -                      | -                |
| C8-DC                           | 85/163      | 1.02 (1.0, 1.04) | 0.092    | -                      | -                |
| **Long chain**                  |             |             |         |                        |                  |
| C14:1-OH                        | 85/163      | 1.03 (0.99, 1.08) | 0.13     | -                      | -                |
| C14:3                           | 85/163      | 1.11 (1.005, 1.22) | **0.040** | 1.12 (1.009, 1.25) | **0.033** |
| C14-OH/C12-DC                   | 85/163      | 1.07 (0.99, 1.16) | 0.076    | -                      | -                |
| C16                             | 85/163      | 1.0 (1.0, 1.01) | 0.11     | -                      | -                |
| C16:1-OH/C14:1-DC               | 85/163      | 1.11 (0.99, 1.23) | 0.068    | -                      | -                |
| C16:2-OH                        | 85/163      | 1.19 (1.03, 1.38) | **0.017** | 1.18 (1.01, 1.37) | **0.037** |
| C16:3-OH/C14:3-DC               | 82/155      | 1.28 (0.98, 1.66) | 0.067    | -                      | -                |
| C16-OL                          | 85/163      | 1.02 (0.97, 1.07) | 0.40     | -                      | -                |
| C18                             | 85/163      | 1.01 (1.0, 1.01) | 0.36     | -                      | -                |
| C18:1                           | 85/163      | 1.01 (1.001, 1.01) | **0.027** | 1.01 (1.001, 1.01) | **0.018** |
| C18:1-OH/C16:1-DC               | 85/163      | 1.08 (0.98, 1.19) | 0.12     | -                      | -                |
| C18:2                           | 85/163      | 1.01 (1.0, 1.02) | **0.047** | 1.01 (1.001, 1.02) | **0.028** |
| C18:3                           | 83/161      | 1.10 (1.01, 1.20) | **0.036** | 1.12 (1.02, 1.23) | **0.019** |
| C18-OL/OH                        | 85/163      | 1.03 (0.98, 1.07) | 0.28     | -                      | -                |
| C20                             | 85/163      | 1.02 (0.90, 1.16) | 0.76     | -                      | -                |
| C20:1                           | 85/163      | 1.06 (0.97, 1.15) | 0.23     | -                      | -                |
| C20:1-OH/C18:1-DC               | 85/163      | 1.05 (0.99, 1.11) | 0.10     | -                      | -                |
| C20:2                           | 85/163      | 1.07 (0.94, 1.23) | 0.31     | -                      | -                |
| C20:2-OH/C18:2-DC               | 85/162      | 1.09 (0.94, 1.27) | 0.26     | -                      | -                |
| C20:3                           | 85/163      | 1.08 (0.99, 1.18) | 0.070    | -                      | -                |
| C20:3-OH/C18:3-DC               | 79/153      | 1.04 (0.80, 1.36) | 0.77     | -                      | -                |
| C20:4                           | 85/163      | 1.10 (1.007, 1.19) | **0.033** | 1.10 (1.01, 1.20) | **0.038** |
| C22:1                           | 85/163      | 1.13 (0.98, 1.29) | 0.092    | -                      | -                |
| C22:2                           | 79/154      | 1.11 (0.89, 1.39) | 0.35     | -                      | -                |
| C22:4                           | 83/160      | 1.23 (0.89, 1.69) | 0.21     | -                      | -                |
| C22:5                           | 83/161      | 1.28 (1.004, 1.63) | **0.046** | 1.31 (1.01, 1.71) | **0.043** |

*adjusted for diabetes mellitus, female, BMI, CV rf>2.