



# List of Service Deliverables

## Research use only

Biomarkers marked with \* are not available for EDTA plasma samples

Biomarkers marked with \*\* are not available for Citrate plasma sample

### Cholesterol (mmol/l)

- Total-C (Total cholesterol)
- VLDL-C (VLDL cholesterol)
- Remnant-C (Remnant cholesterol (non-HDL, non-LDL -cholesterol))
- LDL-C (LDL cholesterol)
- HDL-C (HDL cholesterol)
- HDL2-C (HDL2 cholesterol)
- HDL3-C (HDL3 cholesterol)
- EstC (Total esterified cholesterol)
- FreeC (Total free cholesterol)

### Glycerides and phospholipids

- Total-TG (Total triglycerides, mmol/l)
- VLDL-TG (Triglycerides in VLDL, mmol/l)
- LDL-TG (Triglycerides in LDL, mmol/l)
- HDL-TG (Triglycerides in HDL, mmol/l)
- PG (Phosphoglycerides, mmol/l)
- TG/PG (Ratio of triglycerides to phosphoglycerides)
- Cholines (Total cholines, mmol/l)
- PC (Phosphatidylcholine and other cholines, mmol/l)
- SM (Sphingomyelins, mmol/l)

### Apolipoproteins

- ApoB (Apolipoprotein B, g/l)
- ApoA1 (Apolipoprotein A1, g/l)
- ApoB/ApoA1 (Ratio of apolipoprotein B to apolipoprotein A1)

### Fatty acids

- TotFA (Total fatty acids, mmol/l)
- UnSat (Degree of unsaturation)
- FAW3 (Omega-3 fatty acids, mmol/l)
- FAW6 (Omega-6 fatty acids, mmol/l)
- PUFA (Polyunsaturated fatty acids, mmol/l)
- MUFA (Monounsaturated fatty acids; 16:1, 18:1, mmol/l)
- SFA (Saturated fatty acids, mmol/l)
- DHA (Docosahexaenoic acid; 22:6, mmol/l)
- LA (Linoleic acid; 18:2, mmol/l)

### Fatty acids ratios

- FAW3/FA (Ratio of omega-3 fatty acids to total fatty acids)
- FAW6/FA (Ratio of omega-6 fatty acids to total fatty acids)

- PUFA/FA (Ratio of polyunsaturated fatty acids to total fatty acids)
- MUFA/FA (Ratio of monounsaturated fatty acids to total fatty acids)
- SFA/FA (Ratio of saturated fatty acids to total fatty acids)
- DHA/FA (Ratio of docosahexaenoic acid to total fatty acids)
- LA/FA (Ratio of linoleic acid to total fatty acids)

### Amino acids (mmol/l)

- Ala (Alanine)
- Gln (Glutamine)
- Gly (Glycine)\*
- His (Histidine)

### Branched-chain amino acids

- Ile (Isoleucine)
- Leu (Leucine)
- Val (Valine)

### Aromatic amino acids

- Phe (Phenylalanine)
- Tyr (Tyrosine)

### Glycolysis related metabolites (mmol/l)

- Glc (Glucose)
- Lac (Lactate)
- Pyr (Pyruvate)\*
- Cit (Citrate)\*\*
- Glol (Glycerol)\*

### Ketone bodies (mmol/l)

- Ace (Acetate)
- AcAce (Acetoacetate)
- bOHBut (3-hydroxybutyrate)

### Fluid balance

- Crea (Creatinine, mmol/l)
- Alb (Albumin, signal area)

### Inflammation (mmol/l)

Gp (Glycoprotein acetyls, mainly alpha-1-acid glycoprotein)



## Lipoprotein subclasses

### Chylomicrons and extremely large VLDL

- XXL-VLDL-P  
(Concentration of chylomicrons and extremely large VLDL particles, mol/l)
- XXL-VLDL-L  
(Total lipids in chylomicrons and extremely large VLDL, mmol/l)
- XXL-VLDL-PL  
(Phospholipids in chylomicrons and extremely large VLDL, mmol/l)
- XXL-VLDL-C  
(Cholesterol in chylomicrons and extremely large VLDL, mmol/l)
- XXL-VLDL-CE  
(Cholesteryl esters in chylomicrons and extremely large VLDL, mmol/l)
- XXL-VLDL-FC  
(Free cholesterol in chylomicrons and extremely large VLDL, mmol/l)
- XXL-VLDL-TG  
(Triglycerides in chylomicrons and extremely large VLDL, mmol/l)

### Very large VLDL

- XL-VLDL-P  
(Concentration of very large VLDL particles, mol/l)
- XL-VLDL-L  
(Total lipids in very large VLDL, mmol/l)
- XL-VLDL-PL  
(Phospholipids in very large VLDL, mmol/l)
- XL-VLDL-C  
(Cholesterol in very large VLDL, mmol/l)
- XL-VLDL-CE  
(Cholesteryl esters in very large VLDL, mmol/l)
- XL-VLDL-FC  
(Free cholesterol in very large VLDL, mmol/l)
- XL-VLDL-TG  
(Triglycerides in very large VLDL, mmol/l)

### Large VLDL

- L-VLDL-P  
(Concentration of large VLDL particles, mol/l)
- L-VLDL-L  
(Total lipids in large VLDL, mmol/l)
- L-VLDL-PL  
(Phospholipids in large VLDL, mmol/l)
- L-VLDL-C  
(Cholesterol in large VLDL, mmol/l)
- L-VLDL-CE  
(Cholesteryl esters in large VLDL, mmol/l)
- L-VLDL-FC  
(Free cholesterol in large VLDL, mmol/l)
- L-VLDL-TG  
(Triglycerides in large VLDL, mmol/l)

### Medium VLDL

- M-VLDL-P  
(Concentration of medium VLDL particles, mol/l)
- M-VLDL-L  
(Total lipids in medium VLDL, mmol/l)
- M-VLDL-PL  
(Phospholipids in medium VLDL, mmol/l)
- M-VLDL-C  
(Cholesterol in medium VLDL, mmol/l)
- M-VLDL-CE  
(Cholesteryl esters in medium VLDL, mmol/l)
- M-VLDL-FC  
(Free cholesterol in medium VLDL, mmol/l)
- M-VLDL-TG  
(Triglycerides in medium VLDL, mmol/l)

### Small VLDL

- S-VLDL-P  
(Concentration of small VLDL particles, mol/l)
- S-VLDL-L  
(Total lipids in small VLDL, mmol/l)
- S-VLDL-PL  
(Phospholipids in small VLDL, mmol/l)
- S-VLDL-C  
(Cholesterol in small VLDL, mmol/l)
- S-VLDL-CE  
(Cholesteryl esters in small VLDL, mmol/l)
- S-VLDL-FC  
(Free cholesterol in small VLDL, mmol/l)
- S-VLDL-TG  
(Triglycerides in small VLDL, mmol/l)

### Very small VLDL

- XS-VLDL-P  
(Concentration of very small VLDL particles, mol/l)
- XS-VLDL-L  
(Total lipids in very small VLDL, mmol/l)
- XS-VLDL-PL  
(Phospholipids in very small VLDL, mmol/l)
- XS-VLDL-C  
(Cholesterol in very small VLDL, mmol/l)
- XS-VLDL-CE  
(Cholesteryl esters in very small VLDL, mmol/l)
- XS-VLDL-FC  
(Free cholesterol in very small VLDL, mmol/l)
- XS-VLDL-TG  
(Triglycerides in very small VLDL, mmol/l)

### IDL

- IDL-P (Concentration of IDL particles, mol/l)
- IDL-L (Total lipids in IDL, mmol/l)
- IDL-PL (Phospholipids in IDL, mmol/l)
- IDL-C (Cholesterol in IDL, mmol/l)
- IDL-CE (Cholesteryl esters in IDL, mmol/l)
- IDL-FC (Free cholesterol in IDL, mmol/l)
- IDL-TG (Triglycerides in IDL, mmol/l)



### Large LDL

- L-LDL-P  
(Concentration of large LDL particles, mol/l)
- L-LDL-L  
(Total lipids in large LDL, mmol/l)
- L-LDL-PL  
(Phospholipids in large LDL, mmol/l)
- L-LDL-C  
(Cholesterol in large LDL, mmol/l)
- L-LDL-CE  
(Cholesteryl esters in large LDL, mmol/l)
- L-LDL-FC  
(Free cholesterol in large LDL, mmol/l)
- L-LDL-TG  
(Triglycerides in large LDL, mmol/l)

### Medium LDL

- M-LDL-P  
(Concentration of medium LDL particles, mol/l)
- M-LDL-L  
(Total lipids in medium LDL, mmol/l)
- M-LDL-PL  
(Phospholipids in medium LDL, mmol/l)
- M-LDL-C  
(Cholesterol in medium LDL, mmol/l)
- M-LDL-CE  
(Cholesteryl esters in medium LDL, mmol/l)
- M-LDL-FC  
(Free cholesterol in medium LDL, mmol/l)
- M-LDL-TG  
(Triglycerides in medium LDL, mmol/l)

### Small LDL

- S-LDL-P  
(Concentration of small LDL particles, mol/l)
- S-LDL-L (Total lipids in small LDL, mmol/l)
- S-LDL-PL (Phospholipids in small LDL, mmol/l)
- S-LDL-C (Cholesterol in small LDL, mmol/l)
- S-LDL-CE (Cholesteryl esters in small LDL, mmol/l)
- S-LDL-FC (Free cholesterol in small LDL, mmol/l)
- S-LDL-TG (Triglycerides in small LDL, mmol/l)

### Very large HDL

- XL-HDL-P  
(Concentration of very large HDL particles, mol/l)
- XL-HDL-L  
(Total lipids in very large HDL, mmol/l)
- XL-HDL-PL  
(Phospholipids in very large HDL, mmol/l)
- XL-HDL-C  
(Cholesterol in very large HDL, mmol/l)
- XL-HDL-CE  
(Cholesteryl esters in very large HDL, mmol/l)
- XL-HDL-FC  
(Free cholesterol in very large HDL, mmol/l)
- XL-HDL-TG  
(Triglycerides in very large HDL, mmol/l)

### Large HDL

- L-HDL-P  
(Concentration of large HDL particles, mol/l)
- L-HDL-L (Total lipids in large HDL, mmol/l)
- L-HDL-PL (Phospholipids in large HDL, mmol/l)
- L-HDL-C (Cholesterol in large HDL, mmol/l)
- L-HDL-CE (Cholesteryl esters in large HDL, mmol/l)
- L-HDL-FC (Free cholesterol in large HDL, mmol/l)
- L-HDL-TG (Triglycerides in large HDL, mmol/l)

### Medium HDL

- M-HDL-P  
(Concentration of medium HDL particles, mol/l)
- M-HDL-L  
(Total lipids in medium HDL, mmol/l)
- M-HDL-PL  
(Phospholipids in medium HDL, mmol/l)
- M-HDL-C  
(Cholesterol in medium HDL, mmol/l)
- M-HDL-CE  
(Cholesteryl esters in medium HDL, mmol/l)
- M-HDL-FC  
(Free cholesterol in medium HDL, mmol/l)
- M-HDL-TG  
(Triglycerides in medium HDL, mmol/l)

### Small HDL

- S-HDL-P  
(Concentration of small HDL particles, mol/l)
- S-HDL-L (Total lipids in small HDL, mmol/l)
- S-HDL-PL (Phospholipids in small HDL, mmol/l)
- S-HDL-C (Cholesterol in small HDL, mmol/l)
- S-HDL-CE (Cholesteryl esters in small HDL, mmol/l)
- S-HDL-FC (Free cholesterol in small HDL, mmol/l)
- S-HDL-TG (Triglycerides in small HDL, mmol/l)

### Lipoprotein particle size (nm)

- VLDL-D (Mean diameter of VLDL particles)
- LDL-D (Mean diameter of LDL particles)
- HDL-D (Mean diameter of HDL particles)



## Relative lipoprotein lipid concentrations

### Chylomicrons and extremely large VLDL

- **XXL-VLDL-PL %**  
(Phospholipids to total lipids ratio in chylomicrons and extremely large VLDL, %)
- **XXL-VLDL-C %**  
(Cholesterol to total lipids ratio in chylomicrons and extremely large VLDL, %)
- **XXL-VLDL-CE %**  
(Cholesteryl esters to total lipids ratio in chylomicrons and extremely large VLDL, %)
- **XXL-VLDL-FC %**  
(Free cholesterol to total lipids ratio in chylomicrons and extremely large VLDL, %)
- **XXL-VLDL-TG %**  
(Triglycerides to total lipids ratio in chylomicrons and extremely large VLDL, %)

### Very large VLDL

- **XL-VLDL-PL %**  
(Phospholipids to total lipids ratio in very large VLDL, %)
- **XL-VLDL-C %**  
(Cholesterol to total lipids ratio in very large VLDL, %)
- **XL-VLDL-CE %**  
(Cholesteryl esters to total lipids ratio in very large VLDL, %)
- **XL-VLDL-FC %**  
(Free cholesterol to total lipids ratio in very large VLDL, %)
- **XL-VLDL-TG %**  
(Triglycerides to total lipids ratio in very large VLDL, %)

### Large VLDL

- **L-VLDL-PL %**  
(Phospholipids to total lipids ratio in large VLDL, %)
- **L-VLDL-C %**  
(Cholesterol to total lipids ratio in large VLDL, %)
- **L-VLDL-CE %**  
(Cholesteryl esters to total lipids ratio in large VLDL, %)
- **L-VLDL-FC %**  
(Free cholesterol to total lipids ratio in large VLDL, %)
- **L-VLDL-TG %**  
(Triglycerides to total lipids ratio in large VLDL, %)

### Medium VLDL

- **M-VLDL-PL %**  
(Phospholipids to total lipids ratio in medium VLDL, %)
- **M-VLDL-C %**  
(Cholesterol to total lipids ratio in medium VLDL, %)

- **M-VLDL-CE %**  
(Cholesteryl esters to total lipids ratio in medium VLDL, %)
- **M-VLDL-FC %**  
(Free cholesterol to total lipids ratio in medium VLDL, %)
- **M-VLDL-TG %**  
(Triglycerides to total lipids ratio in medium VLDL, %)

### Small VLDL

- **S-VLDL-PL %**  
(Phospholipids to total lipids ratio in small VLDL, %)
- **S-VLDL-C %**  
(Cholesterol to total lipids ratio in small VLDL, %)
- **S-VLDL-CE %**  
(Cholesteryl esters to total lipids ratio in small VLDL, %)
- **S-VLDL-FC %**  
(Free cholesterol to total lipids ratio in small VLDL, %)
- **S-VLDL-TG %**  
(Triglycerides to total lipids ratio in small VLDL, %)

### Very small VLDL

- **XS-VLDL-PL %**  
(Phospholipids to total lipids ratio in very small VLDL, %)
- **XS-VLDL-C %**  
(Cholesterol to total lipids ratio in very small VLDL, %)
- **XS-VLDL-CE %**  
(Cholesteryl esters to total lipids ratio in very small VLDL, %)
- **XS-VLDL-FC %**  
(Free cholesterol to total lipids ratio in very small VLDL, %)
- **XS-VLDL-TG %**  
(Triglycerides to total lipids ratio in very small VLDL, %)

### IDL

- **IDL-PL %**  
(Phospholipids to total lipids ratio in IDL, %)
- **IDL-C %**  
(Cholesterol to total lipids ratio in IDL, %)
- **IDL-CE %**  
(Cholesteryl esters to total lipids ratio in IDL, %)
- **IDL-FC %**  
(Free cholesterol to total lipids ratio in IDL, %)
- **IDL-TG %**  
(Triglycerides to total lipids ratio in IDL, %)



### Large LDL

- L-LDL-PL %  
(Phospholipids to total lipids ratio in large LDL, %)
- L-LDL-C %  
(Cholesterol to total lipids ratio in large LDL, %)
- L-LDL-CE %  
(Cholesteryl esters to total lipids ratio in large LDL, %)
- L-LDL-FC %  
(Free cholesterol to total lipids ratio in large LDL, %)
- L-LDL-TG %  
(Triglycerides to total lipids ratio in large LDL, %)

### Medium LDL

- M-LDL-PL %  
(Phospholipids to total lipids ratio in medium LDL, %)
- M-LDL-C %  
(Cholesterol to total lipids ratio in medium LDL, %)
- M-LDL-CE %  
(Cholesteryl esters to total lipids ratio in medium LDL, %)
- M-LDL-FC %  
(Free cholesterol to total lipids ratio in medium LDL, %)
- M-LDL-TG %  
(Triglycerides to total lipids ratio in medium LDL, %)

### Small LDL

- S-LDL-PL %  
(Phospholipids to total lipids ratio in small LDL, %)
- S-LDL-C %  
(Cholesterol to total lipids ratio in small LDL, %)
- S-LDL-CE %  
(Cholesteryl esters to total lipids ratio in small LDL, %)
- S-LDL-FC %  
(Free cholesterol to total lipids ratio in small LDL, %)
- S-LDL-TG %  
(Triglycerides to total lipids ratio in small LDL, %)

### Very large HDL

- XL-HDL-PL %  
(Phospholipids to total lipids ratio in very large HDL, %)
- XL-HDL-C %  
(Cholesterol to total lipids ratio in very large HDL, %)
- XL-HDL-CE %  
(Cholesteryl esters to total lipids ratio in very large HDL, %)
- XL-HDL-FC %  
(Free cholesterol to total lipids ratio in very large HDL, %)
- XL-HDL-TG %  
(Triglycerides to total lipids ratio in very large HDL, %)

### Large HDL

- L-HDL-PL %  
(Phospholipids to total lipids ratio in large HDL, %)
- L-HDL-C %  
(Cholesterol to total lipids ratio in large HDL, %)
- L-HDL-CE %  
(Cholesteryl esters to total lipids ratio in large HDL, %)
- L-HDL-FC %  
(Free cholesterol to total lipids ratio in large HDL, %)
- L-HDL-TG %  
(Triglycerides to total lipids ratio in large HDL, %)

### Medium HDL

- M-HDL-PL %  
(Phospholipids to total lipids ratio in medium HDL, %)
- M-HDL-C %  
(Cholesterol to total lipids ratio in medium HDL, %)
- M-HDL-CE %  
(Cholesteryl esters to total lipids ratio in medium HDL, %)
- M-HDL-FC %  
(Free cholesterol to total lipids ratio in medium HDL, %)
- M-HDL-TG %  
(Triglycerides to total lipids ratio in medium HDL, %)

### Small HDL

- S-HDL-PL %  
(Phospholipids to total lipids ratio in small HDL, %)
- S-HDL-C %  
(Cholesterol to total lipids ratio in small HDL, %)
- S-HDL-CE %  
(Cholesteryl esters to total lipids ratio in small HDL, %)
- S-HDL-FC %  
(Free cholesterol to total lipids ratio in small HDL, %)
- S-HDL-TG %  
(Triglycerides to total lipids ratio in small HDL, %)