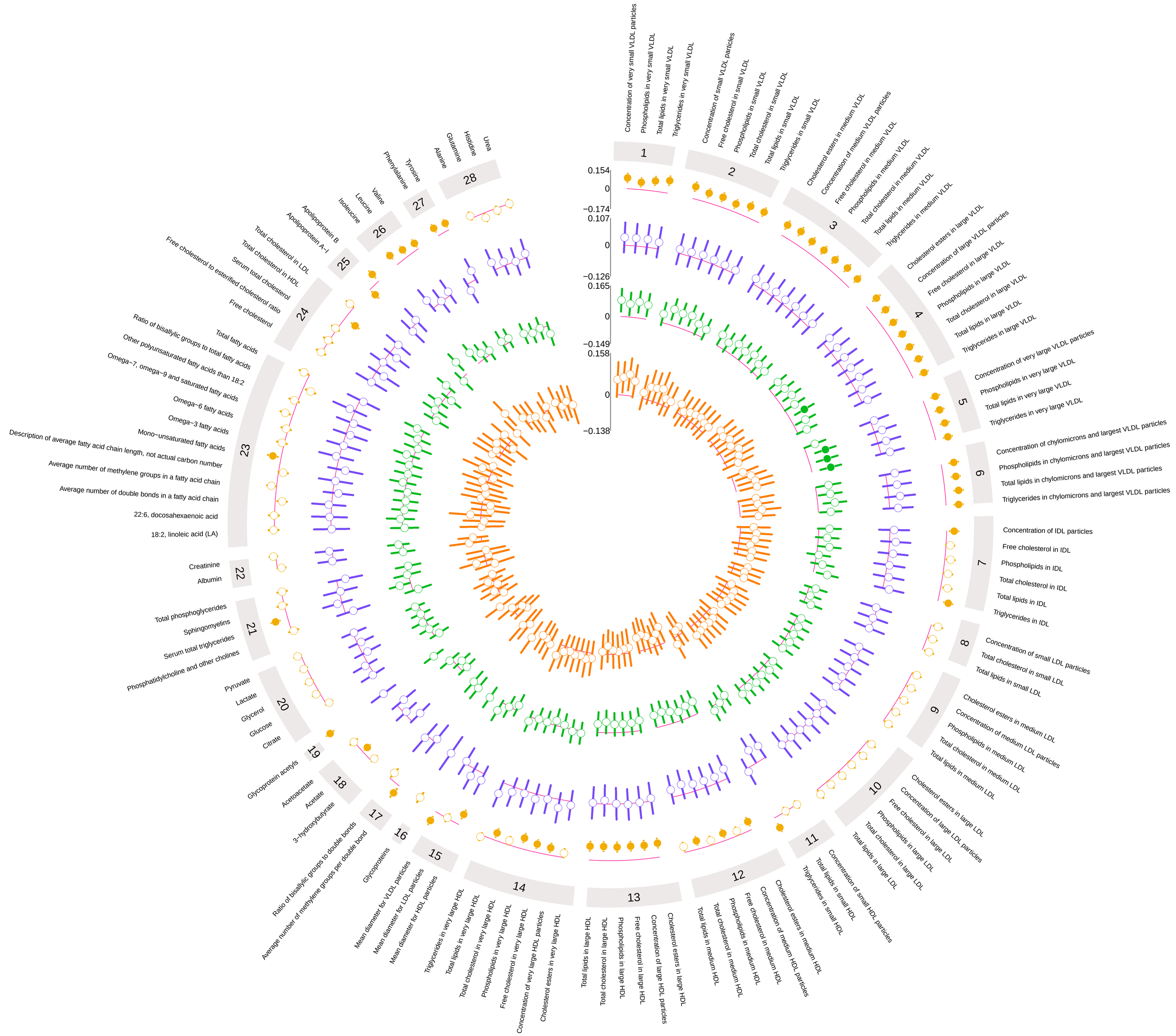
0.154
0
−0.174
0.107
0
−0.126
0.165
0
−0.149
0.158
0
−0.138
1
Concentration of very small VLDL particles
Phospholipids in very small VLDL
Total lipids in very small VLDL
Triglycerides in very small VLDL
2
Concentration of small VLDL particles
Free cholesterol in small VLDL
Phospholipids in small VLDL
Total cholesterol in small VLDL
Total lipids in small VLDL
Triglycerides in small VLDL
3
Cholesterol esters in medium VLDL
Concentration of medium VLDL particles
Free cholesterol in medium VLDL
Phospholipids in medium VLDL
Total cholesterol in medium VLDL
Total lipids in medium VLDL
Triglycerides in medium VLDL
4
Cholesterol esters in large VLDL
Concentration of large VLDL particles
Free cholesterol in large VLDL
Phospholipids in large VLDL
Total cholesterol in large VLDL
Total lipids in large VLDL
Triglycerides in large VLDL
5
Concentration of very large VLDL particles
Phospholipids in very large VLDL
Total lipids in very large VLDL
Triglycerides in very large VLDL
6
Concentration of chylomicrons and largest VLDL particles
Phospholipids in chylomicrons and largest VLDL particles
Total lipids in chylomicrons and largest VLDL particles
Triglycerides in chylomicrons and largest VLDL particles
7
Concentration of IDL particles
Free cholesterol in IDL
Phospholipids in IDL
Total cholesterol in IDL
Total lipids in IDL
Triglycerides in IDL
8
Concentration of small LDL particles
Total cholesterol in small LDL
Total lipids in small LDL
9
Cholesterol esters in medium LDL
Concentration of medium LDL particles
Phospholipids in medium LDL
Total cholesterol in medium LDL
Total lipids in medium LDL
10
Cholesterol esters in large LDL
Concentration of large LDL particles
Free cholesterol in large LDL
Phospholipids in large LDL
Total cholesterol in large LDL
Total lipids in large LDL
11
Concentration of small HDL particles
Total lipids in small HDL
Triglycerides in small HDL
12
Cholesterol esters in medium HDL
Concentration of medium HDL particles
Free cholesterol in medium HDL
Phospholipids in medium HDL
Total cholesterol in medium HDL
Total lipids in medium HDL
13
Cholesterol esters in large HDL
Concentration of large HDL particles
Free cholesterol in large HDL
Phospholipids in large HDL
Total cholesterol in large HDL
Total lipids in large HDL
14
Cholesterol esters in very large HDL
Concentration of very large HDL particles
Free cholesterol in very large HDL
Phospholipids in very large HDL
Total cholesterol in very large HDL
Total lipids in very large HDL
Triglycerides in very large HDL
15
Mean diameter for HDL particles
Mean diameter for LDL particles
Mean diameter for VLDL particles
16
Glycoproteins
17
Average number of methylene groups per double bond
Ratio of bisallylic groups to double bonds
18
3-hydroxybutyrate
Acetate
Acetoacetate
19
Glycoprotein acetyls
20
Citrate
Glucose
Glycerol
Lactate
Pyruvate
21
Phosphatidylcholine and other cholines
Serum total triglycerides
Sphingomyelins
Total phosphoglycerides
22
Albumin
Creatinine
23
18:2, linoleic acid (LA)
22:6, docosahexaenoic acid
Average number of double bonds in a fatty acid chain
Average number of methylene groups in a fatty acid chain
Description of average fatty acid chain length, not actual carbon number
Mono−unsaturated fatty acids
Omega−3 fatty acids
Omega−6 fatty acids
Omega−7, omega−9 and saturated fatty acids
Other polyunsaturated fatty acids than 18:2
Ratio of bisallylic groups to total fatty acids
Total fatty acids
24
Free cholesterol
Free cholesterol to esterified cholesterol ratio
Serum total cholesterol
Total cholesterol in HDL
Total cholesterol in LDL
25
Apolipoprotein A−I
Apolipoprotein B
26
Isoleucine
Leucine
Valine
27
Phenylalanine
Tyrosine
28
Alanine
Glutamine
Histidine
Urea
IVW−MRE
MR−Egger
Weighted median
Weighted mode
P > 0.05/22
1. Very Small VLDL
2. Small VLDL
3. Medium VLDL
4. Large VLDL
5. Very large VLDL
6. Extremely large VLDL
7. IDL
8. Small LDL
9. Medium LDL
10. Large LDL
11. Small HDL
12. Medium HDL
13. Large HDL
14. Very large HDL
15. Lipoprotein particle size
16. Protein
17. Metabolites ratio
18. Ketone bodies
19. Inflammation
20. Glycolysis related metabolites
21. Glycerides and phospholipids
22. Fluid balance
23. Fatty acids
24. Cholesterol
25. Apolipoproteins
26. Branched−chain amino acids
27. Aromatic amino acids
28. Amino acids