

Table S1. Metabolic pathways linked to risk of prediabetes in the SOLAR cohort and identified in step 1 of our analysis. Analysis was performed using version 2 of the MS peaks to paths module from MetaboAnalyst v5.0. The results of this analysis were used to identify the 595 metabolite features for inclusion in the LASSO feature selection. See text for additional details.

Metabolic Pathway Name	Significant Metabolites
Linoleate metabolism	18
Fatty acid activation	10
De novo fatty acid biosynthesis	9
Chondroitin sulfate degradation	5
Heparan sulfate degradation	5
Butanoate metabolism	12
Tyrosine metabolism	31
Limonene and pinene degradation	6
Fatty Acid Metabolism	4
Keratan sulfate biosynthesis	1
Glycosphingolipid biosynthesis - globoseries	1
Proteoglycan biosynthesis	1
Pyrimidine metabolism	8
Aspartate and asparagine metabolism	14
Valine, leucine and isoleucine degradation	7
Glycosphingolipid biosynthesis - ganglioseries	3
Saturated fatty acids beta-oxidation	2
Glutamate metabolism	4
Arginine and Proline Metabolism	5
Propanoate metabolism	4
Methionine and cysteine metabolism	12
Drug metabolism - cytochrome P450	10
Phosphatidylinositol phosphate metabolism	4
Keratan sulfate degradation	3
Hyaluronan Metabolism	1
Fructose and mannose metabolism	7
Vitamin B3 (nicotinate and nicotinamide) metabolism	2
Pentose and Glucuronate Interconversions	6
Prostaglandin formation from arachidonate	9
Lysine metabolism	6
Alanine and Aspartate Metabolism	6
N-Glycan biosynthesis	3
Glycolysis and Gluconeogenesis	4
Pentose phosphate pathway	6
Purine metabolism	8
Arachidonic acid metabolism	24
N-Glycan Degradation	3
Porphyrin metabolism	3
Carnitine shuttle	8

D4&E4-neuroprostanes formation	1
Bile acid biosynthesis	10
Tryptophan metabolism	13
Ascorbate (Vitamin C) and Aldarate Metabolism	5
TCA cycle	2
Glycosphingolipid metabolism	9
C21-steroid hormone biosynthesis and metabolism	18
Lipoate metabolism	2
Vitamin H (biotin) metabolism	1
Vitamin A (retinol) metabolism	2
Vitamin B1 (thiamin) metabolism	1
Prostaglandin formation from dihomo gama-linoleic acid	2
Squalene and cholesterol biosynthesis	1
Nitrogen metabolism	2
Beta-Alanine metabolism	2
Di-unsaturated fatty acid beta-oxidation	1
Urea cycle/amino group metabolism	8
Phytanic acid peroxisomal oxidation	2
Starch and Sucrose Metabolism	3
Hexose phosphorylation	6
Leukotriene metabolism	2
C5-Branched dibasic acid metabolism	2
Aminosugars metabolism	3
Putative anti-Inflammatory metabolites formation from EPA	1
Vitamin B2 (riboflavin) metabolism	1
Carbon fixation	1
Galactose metabolism	10
Sialic acid metabolism	6
Fatty acid oxidation, peroxisome	1
Selenoamino acid metabolism	1
Vitamin B6 (pyridoxine) metabolism	2
Vitamin B9 (folate) metabolism	1
Glycine, serine, alanine and threonine metabolism	5
Glycerophospholipid metabolism	9
Vitamin D3 (cholecalciferol) metabolism	2
Xenobiotics metabolism	4
CoA Catabolism	1
Omega-3 fatty acid metabolism	1
Glyoxylate and Dicarboxylate Metabolism	1
Androgen and estrogen biosynthesis and metabolism	3
Vitamin B5 - CoA biosynthesis from pantothenate	1
Vitamin E metabolism	2
Drug metabolism - other enzymes	1
Histidine metabolism	1
