

Supplementary Table 1: Metabolic pathways

Metabolite	Super-Pathway	Sub-Pathway
α-keto-β-methylvaleric acid 1	Amino Acid	Leucine, Isoleucine and Valine Metabolism
α-keto-β-methylvaleric acid 2	Amino Acid	Leucine, Isoleucine and Valine Metabolism
1-methylhistamine	Amino Acid	Histidine Metabolism
2-Arachidonyl glycerol	Lipid	Glycerolipid Metabolism
2'-deoxyadenosine	Nucleotide	Pyrimidine Metabolism, Cytidine containing
3-IPA	Amino Acid	Tryptophan Metabolism
3HK	Amino Acid	Tryptophan Metabolism
5-Aminolevulinic Acid	Energy	Heme synthesis
Acetylcarnitine	Lipid	Fatty Acid Metabolism(Acyl Carnitine)
Adenosine	Nucleotide	Purine Metabolism, Adenine containing
Alanine	Amino Acid	Alanine and Aspartate Metabolism
Anandamide	Lipid	Endocannabinoid
Arachidonic acid	Lipid	Fatty acid Metabolism
Arginine	Amino Acid	Urea cycle; Arginine and Proline Metabolism
Asparagine	Amino Acid	Alanine and Aspartate Metabolism
Aspartate	Amino Acid	Alanine and Aspartate Metabolism
Betaine	Amino Acid	Glycine, Serine and Threonine Metabolism
Butyrylcarnitine	Lipid	Fatty Acid Metabolism
cAMP	Nucleotide	Purine Metabolism, Adenine containing
Carnitine	Lipid	Carnitine Metabolism
Choline	Lipid	Phospholipid Metabolism
Creatine	Amino Acid	Creatine Metabolism
Cysteamine	Amino Acid	Methionine, Cysteine, SAM and Taurine Metabolism
Cysteine	Amino Acid	Methionine, Cysteine, SAM and Taurine Metabolism
Cytosine	Nucleotide	Pyrimidine Metabolism, Cytidine containing
DMGV	amino Acid	Urea cycle; Arginine and Proline Metabolism
GlucosePos2	Carbohydrate	Glycolysis, Gluconeogenesis, and Pyruvate Metabolism
Glutamate	Amino Acid	Glutamate Metabolism
Glutamine	Amino Acid	Glutamate Metabolism
Histidine	Amino Acid	Histidine Metabolism
Isoleucine_Leucine	Amino Acid	Leucine, Isoleucine and Valine Metabolism
Kynurenic acid	Amino Acid	Tryptophan Metabolism

L-Homoserine	Amino Acid	Glycine, Serine and Threonine Metabolism
Methionine	Amino Acid	Methionine, Cysteine, SAM and Taurine Metabolism
Phenylalanine	Amino Acid	Phenylalanine
Phosphocholine	Lipid	Phosphatidylcholine
Proline	Amino Acid	Proline
Riboflavin	Cofactors and Vitamins	Riboflavin
Serine	Amino Acid	Glycine, Serine and Threonine Metabolism
Serotonin	Amino Acid	Tryptophan Metabolism
Spermine	Amino Acid	Polyamine Metabolism
Taurine	Amino Acid	Taurine
Thiamine	Carbohydrate	Glycolysis, Gluconeogenesis, and Pyruvate Metabolism
Threonine	Amino Acid	Threonine
Thymidine	Nucleotide	Pyrimidine Metabolism, Thymine containing
TMAO	Lipid	Phospholipid Metabolism
trans-HYP	Amino Acid	Urea cycle; Arginine and Proline Metabolism
Tyrosine	Amino Acid	Tyrosine Metabolism
Uridine	Nucleotide	Pyrimidine Metabolism, Uracil containing
Valine	Amino Acid	Leucine, Isoleucine and Valine Metabolism
Valine-d8	Amino Acid	Leucine, Isoleucine and Valine Metabolism

Supplementary Table 2. Pearson correlations of DMGV with traditional CAD risk factors.

	Pearson Correlation	P value
Hypertension	0.145	<0.001
Hypercholesterolaemia	0.029	0.359
Diabetes mellitus	0.172	<0.001
Smoking	0.078	0.014
Body mass index	0.218	<0.001
Age	0.135	<0.001
Gender	0.011	0.729

Supplementary Table 3. DMGV associations with presence of CAD, adjusted for traditional risk factors (one at a time).

	CAD			
	OR	Lower CI	Upper CI	P value
DMGV (unadjusted)	1.41	1.12	1.79	0.004
DMGV adjusted for:				
Hypertension	1.30	1.02	1.66	0.033
Hypercholesterolaemia	1.40	1.10	1.79	0.006
Diabetes mellitus	1.37	1.08	1.74	0.011
Smoking	1.42	1.12	1.80	0.004
Body mass index	1.02	0.99	1.05	0.258
Age	1.15	0.88	1.50	0.322
Gender	1.41	1.11	1.80	0.005

Supplementary Table 4. Univariate Binary Logistic Regression Associations with Presence of CAD.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.82	0.53	1.26	0.357	0.612
α -keto- β -methylvaleric acid 2	1.23	0.91	1.67	0.184	0.424
Acetylcarnitine	0.86	0.70	1.06	0.166	0.399
Adenosine	1.47	1.04	2.08	0.031	0.207
Alanine	0.97	0.78	1.22	0.808	0.948
Anandamide	0.88	0.62	1.25	0.464	0.723
Arachidonic.acid	0.72	0.48	1.07	0.104	0.324
Arginine	1.00	0.75	1.32	0.972	0.972
Asparagine	1.60	1.13	2.27	0.008	0.089
Aspartate	1.03	0.76	1.39	0.846	0.948
Betaine	0.95	0.79	1.15	0.621	0.850
Butyrylcarnitine	1.02	0.79	1.32	0.868	0.948
cAMP	1.39	1.12	1.74	0.003	0.075
Carnitine	1.14	0.78	1.65	0.498	0.755
Choline	1.45	0.99	2.13	0.057	0.233
Colchicine	0.82	0.64	1.06	0.134	0.375
Creatine	0.97	0.68	1.38	0.844	0.948
Cysteamine	0.76	0.54	1.08	0.122	0.359
Cysteine	1.04	0.70	1.54	0.844	0.948
Cytosine	1.08	0.79	1.46	0.642	0.850
DMGV	1.41	1.12	1.79	0.004	0.075
GlucosePos2	0.99	0.68	1.44	0.946	0.972
Glutamate	1.15	0.84	1.57	0.398	0.645
Glutamine	0.94	0.64	1.37	0.734	0.948
Histidine	0.79	0.50	1.24	0.299	0.589
Isoleucine_Leucine	0.96	0.70	1.31	0.796	0.948
Kynurenic acid	1.22	1.00	1.48	0.048	0.233
L-Homoserine	1.07	0.81	1.40	0.631	0.850
Methionine	1.03	0.75	1.41	0.877	0.948
Phenylalanine	0.99	0.65	1.48	0.943	0.972
Phosphocholine	1.16	0.82	1.64	0.401	0.645
Proline	1.58	1.13	2.21	0.008	0.089
Riboflavin	1.15	0.97	1.35	0.101	0.324
Serine	0.91	0.74	1.12	0.358	0.612
Serotonin	0.89	0.59	1.33	0.557	0.804

Spermine	1.43	1.08	1.90	0.013	0.116
Taurine	0.93	0.71	1.20	0.561	0.804
Thiamine	1.36	1.01	1.84	0.042	0.223
Threonine	0.82	0.56	1.20	0.311	0.589
Thymidine	0.58	0.35	0.97	0.037	0.216
TMAO	0.85	0.62	1.16	0.305	0.589
trans-HYP	0.84	0.69	1.02	0.084	0.318
Tyrosine	0.71	0.51	1.01	0.054	0.233
Uridine	0.64	0.47	0.86	0.004	0.075
Valine	1.20	0.86	1.69	0.281	0.589
Valine-d8	0.99	0.78	1.28	0.963	0.972
1-methylhistamine	1.25	0.83	1.86	0.285	0.589
2'-deoxyadenosine	0.90	0.73	1.11	0.333	0.608
2-Arachidonyl glycerol	0.65	0.45	0.95	0.026	0.200
3-deaazadenosine	0.76	0.51	1.12	0.165	0.399
3-IPA	0.90	0.79	1.02	0.104	0.324
3HK	1.14	0.95	1.35	0.153	0.399
5-Aminolevulinic Acid	0.98	0.83	1.16	0.792	0.948

Supplementary Table 5. Univariate Binary Logistic Regression Associations with Presence of Calcified Plaque.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.89	0.59	1.34	0.568	0.739
α -keto- β -methylvaleric acid 2	1.18	0.88	1.58	0.268	0.617
Acetylcarnitine	0.89	0.73	1.09	0.258	0.617
Adenosine	1.47	1.05	2.05	0.024	0.130
Alanine	0.99	0.79	1.22	0.894	0.894
Anandamide	0.85	0.61	1.19	0.345	0.651
Arachidonic acid	0.69	0.47	1.02	0.063	0.257
Arginine	1.11	0.85	1.46	0.438	0.683
Asparagine	1.62	1.15	2.27	0.006	0.044
Aspartate	1.09	0.81	1.45	0.576	0.739
Betaine	0.96	0.80	1.15	0.653	0.786
Butyrylcarnitine	1.11	0.87	1.42	0.414	0.683
cAMP	1.36	1.11	1.67	0.003	0.031
Carnitine	1.16	0.81	1.67	0.421	0.683
Choline	1.32	0.91	1.92	0.140	0.469
Colchicine	0.83	0.64	1.07	0.156	0.487
Creatine	0.95	0.67	1.34	0.765	0.834
Cysteamine	0.71	0.51	1.00	0.050	0.219
Cysteine	1.22	0.83	1.78	0.307	0.625
Cytosine	1.14	0.84	1.53	0.402	0.683
DMGV	1.59	1.26	2.01	0.0001	0.006
GlucosePos2	0.87	0.61	1.26	0.464	0.703
Glutamate	1.21	0.89	1.65	0.214	0.539
Glutamine	0.90	0.62	1.30	0.561	0.739
Histidine	0.91	0.59	1.42	0.690	0.796
Isoleucine_Leucine	0.92	0.68	1.25	0.604	0.745
Kynurenic acid	1.32	1.09	1.60	0.004	0.037
L-Homoserine	1.15	0.89	1.50	0.291	0.625
Methionine	1.10	0.81	1.49	0.554	0.739
Phenylalanine	1.12	0.75	1.67	0.570	0.739
Phosphocholine	1.03	0.74	1.43	0.879	0.894
Proline	1.69	1.21	2.36	0.002	0.030
Riboflavin	1.14	0.98	1.33	0.100	0.380
Serine	0.97	0.80	1.19	0.771	0.834

Serotonin	0.81	0.55	1.20	0.300	0.625
Spermine	1.54	1.17	2.02	0.002	0.030
Taurine	0.93	0.72	1.20	0.585	0.739
Thiamine	1.36	1.02	1.81	0.035	0.170
Threonine	0.96	0.67	1.38	0.823	0.872
Thymidine	0.53	0.32	0.87	0.012	0.072
TMAO	0.98	0.72	1.32	0.885	0.894
trans-HYP	0.87	0.72	1.05	0.142	0.469
Tyrosine	0.81	0.58	1.11	0.191	0.539
Uridine	0.63	0.47	0.84	0.002	0.030
Valine	1.17	0.84	1.61	0.356	0.651
Valine.d8	0.96	0.75	1.22	0.711	0.802
1-methylhistamine	1.12	0.76	1.66	0.556	0.739
2'-deoxyadenosine	0.92	0.75	1.13	0.431	0.683
2-Arachidonyl glycerol	0.62	0.43	0.89	0.010	0.066
3-deaazadenosine	0.82	0.56	1.21	0.318	0.625
3-IPA	0.92	0.82	1.05	0.207	0.539
3HK	1.12	0.94	1.32	0.198	0.539
5-Aminolevulinic Acid	0.97	0.82	1.14	0.691	0.796

Supplementary Table 6. Univariate Binary Logistic Regression Associations with Presence of Non-calcified Plaque.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	1.02	0.68	1.52	0.941	0.985
α -keto- β -methylvaleric acid 2	1.01	0.76	1.35	0.932	0.985
Acetylcarnitine	0.94	0.77	1.13	0.496	0.822
Adenosine	1.18	0.86	1.63	0.294	0.653
Alanine	1.01	0.82	1.25	0.923	0.985
Anandamide	0.85	0.61	1.19	0.340	0.721
Arachidonic acid	0.67	0.45	0.98	0.040	0.193
Arginine	0.89	0.68	1.16	0.394	0.746
Asparagine	1.36	0.98	1.90	0.067	0.235
Aspartate	0.88	0.66	1.17	0.384	0.746
Betaine	0.99	0.83	1.19	0.948	0.985
Butyrylcarnitine	1.03	0.81	1.31	0.824	0.930
cAMP	1.28	1.06	1.54	0.010	0.129
Carnitine	1.29	0.90	1.86	0.169	0.473
Choline	1.63	1.12	2.36	0.011	0.129
Colchicine	0.86	0.66	1.11	0.235	0.567
Creatine	0.96	0.68	1.34	0.809	0.930
Cysteamine	0.75	0.54	1.05	0.092	0.271
Cysteine	0.82	0.57	1.19	0.295	0.653
Cytosine	0.91	0.68	1.22	0.536	0.835
DMGV	1.40	1.11	1.75	0.004	0.129
GlucosePos2	1.10	0.77	1.58	0.590	0.845
Glutamate	1.48	1.09	2.01	0.011	0.129
Glutamine	0.99	0.69	1.43	0.973	0.991
Histidine	0.62	0.40	0.96	0.031	0.166
Isoleucine_Leucine	1.08	0.80	1.45	0.620	0.865
Kynurenic acid	1.18	0.98	1.41	0.088	0.271
L-Homoserine	1.00	0.77	1.29	0.999	0.999
Methionine	1.21	0.89	1.64	0.220	0.556
Phenylalanine	0.88	0.60	1.30	0.526	0.835
Phosphocholine	1.15	0.83	1.59	0.415	0.754
Proline	1.38	1.00	1.90	0.049	0.198
Riboflavin	1.15	0.98	1.34	0.083	0.271
Serine	1.03	0.84	1.25	0.786	0.930
Serotonin	0.78	0.53	1.15	0.215	0.556

Spermine	1.36	1.04	1.79	0.025	0.162
Taurine	0.90	0.70	1.16	0.427	0.754
Thiamine	1.31	1.00	1.73	0.053	0.201
Threonine	1.10	0.77	1.58	0.588	0.845
Thymidine	0.57	0.35	0.92	0.022	0.162
TMAO	0.72	0.53	0.97	0.029	0.166
trans-HYP	0.94	0.78	1.13	0.489	0.822
Tyrosine	0.93	0.68	1.27	0.641	0.872
Uridine	0.69	0.52	0.92	0.012	0.129
Valine	1.06	0.77	1.45	0.744	0.930
Valine.d8	1.05	0.83	1.34	0.668	0.885
1-methylhistamine	1.08	0.74	1.58	0.697	0.900
2'-deoxyadenosine	1.03	0.84	1.25	0.779	0.930
2-Arachidonyl glycerol	0.90	0.63	1.28	0.554	0.839
3-deaazadenosine	1.05	0.72	1.52	0.819	0.930
3-IPA	0.86	0.76	0.97	0.017	0.155
3HK	1.19	1.00	1.40	0.047	0.198
5-Aminolevulinic Acid	1.08	0.92	1.26	0.365	0.743

Supplementary Table 7. Univariate Binary Logistic Regression Associations with Presence of Obstructive CAD.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.9	0.45	1.78	0.763	0.833
α -keto- β -methylvaleric acid 2	1.11	0.72	1.71	0.644	0.827
Acetylcarnitine	0.86	0.65	1.14	0.295	0.54
Adenosine	1.74	1.09	2.78	0.020	0.128
Alanine	1.02	0.74	1.42	0.903	0.921
Anandamide	0.81	0.5	1.31	0.39	0.607
Arachidonic acid	0.51	0.27	0.95	0.034	0.139
Arginine	1.01	0.68	1.5	0.966	0.966
Asparagine	1.89	1.12	3.17	0.016	0.128
Aspartate	1.18	0.78	1.78	0.429	0.626
Betaine	1.05	0.8	1.38	0.711	0.833
Butyrylcarnitine	1.18	0.81	1.72	0.385	0.607
cAMP	1.39	1.06	1.82	0.017	0.128
Carnitine	1.36	0.75	2.47	0.31	0.54
Choline	1.24	0.72	2.16	0.439	0.626
Colchicine	0.70	0.43	1.13	0.141	0.394
Creatine	1.12	0.66	1.9	0.671	0.827
Cysteamine	0.54	0.31	0.92	0.024	0.128
Cysteine	1.06	0.62	1.81	0.843	0.894
Cytosine	1.29	0.81	2.06	0.284	0.54
DMGV	2.33	1.59	3.43	<0.001	<0.001
GlucosePos2	1.12	0.67	1.87	0.669	0.827
Glutamate	1.25	0.78	2.01	0.361	0.597
Glutamine	1.1	0.61	1.98	0.75	0.833
Histidine	0.63	0.33	1.19	0.153	0.405
Isoleucine_Leucine	0.93	0.57	1.5	0.752	0.833
Kynurenic acid	1.49	1.1	2.02	0.01	0.128
L-Homoserine	1.09	0.75	1.6	0.653	0.827
Methionine	1.28	0.81	2.02	0.296	0.54
Phenylalanine	1.84	1.01	3.33	0.046	0.173
Phosphocholine	0.09	0.66	1.81	0.731	0.833
Proline	1.99	1.2	3.28	0.007	0.128
Riboflavin	1.34	1.06	1.67	0.012	0.128
Serine	0.98	0.73	1.32	0.889	0.921

Serotonin	0.66	0.38	1.13	0.129	0.38
Spermine	1.56	1.04	2.35	0.0321	0.139
Taurine	0.79	0.54	1.14	0.202	0.511
Thiamine	1.5	1.04	2.17	0.0303	0.139
Threonine	0.76	0.46	1.27	0.296	0.54
Thymidine	0.51	0.24	1.08	0.0807	0.267
TMAO	0.79	0.52	1.22	0.292	0.54
trans-HYP	0.86	0.67	1.12	0.259	0.54
Tyrosine	0.69	0.43	1.11	0.128	0.38
Uridine	0.6	0.4	0.9	0.0125	0.128
Valine	1.33	0.8	2.13	0.23	0.53
Valine-d8	1.16	0.8	1.68	0.449	0.626
1-methylhistamine	0.78	0.43	1.4	0.408	0.618
2'-deoxyadenosine	0.86	0.65	1.15	0.316	0.54
2-Arachidonyl glycerol	0.56	0.33	0.93	0.024	0.128
3-deaazadenosine	0.84	0.48	1.47	0.534	0.726
3-IPA	0.85	0.71	1.02	0.077	0.267
3HK	1.16	0.91	1.47	0.223	0.53
5-Aminolevulinic Acid	0.97	0.77	1.22	0.77	0.833

Supplementary Table 8. Univariate Linear Regression Associations with Gensini Score.

Metabolite	Beta	lower_ CI.2.5 %	upper_ CI.97.5 %	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	-0.06	-0.35	0.23	0.690	0.871
α -keto- β -methylvaleric acid 2	-0.20	-0.42	0.01	0.063	0.418
Acetylcarnitine	0.02	-0.12	0.17	0.781	0.905
Adenosine	0.10	-0.13	0.33	0.388	0.655
Alanine	-0.05	-0.21	0.11	0.512	0.776
Anandamide	-0.06	-0.32	0.19	0.628	0.833
Arachidonic acid	-0.14	-0.43	0.14	0.321	0.655
Arginine	0.02	-0.19	0.22	0.865	0.954
Asparagine	0.01	-0.24	0.25	0.965	0.985
Aspartate	0.00	-0.22	0.22	0.993	0.993
Betaine	0.04	-0.10	0.18	0.561	0.827
Butyrylcarnitine	0.09	-0.10	0.27	0.365	0.655
cAMP	0.06	-0.07	0.18	0.357	0.655
Carnitine	0.29	0.03	0.54	0.029	0.219
Choline	-0.04	-0.32	0.24	0.785	0.905
Colchicine	0.04	-0.17	0.25	0.720	0.887
Creatine	0.02	-0.23	0.26	0.892	0.954
Cysteamine	-0.18	-0.41	0.06	0.145	0.548
Cysteine	-0.03	-0.31	0.25	0.833	0.939
Cytosine	0.11	-0.10	0.33	0.309	0.655
DMGV	0.30	0.14	0.45	0.0002	0.014
GlucosePos2	0.14	-0.15	0.44	0.339	0.655
Glutamate	0.14	-0.09	0.36	0.234	0.655
Glutamine	0.13	-0.14	0.39	0.349	0.655
Histidine	-0.19	-0.52	0.13	0.247	0.655
Isoleucine_Leucine	-0.06	-0.28	0.15	0.579	0.830
Kynurenic acid	0.17	0.04	0.30	0.012	0.205
L-Homoserine	-0.01	-0.21	0.18	0.900	0.954
Methionine	0.27	0.04	0.50	0.020	0.218
Phenylalanine	0.33	0.04	0.62	0.025	0.218
Phosphocholine	-0.12	-0.36	0.12	0.331	0.655
Proline	0.18	-0.06	0.41	0.136	0.548
Riboflavin	0.15	0.04	0.26	0.009	0.205
Serine	0.04	-0.11	0.19	0.616	0.833
Serotonin	-0.16	-0.45	0.13	0.278	0.655
Spermine	0.08	-0.12	0.28	0.427	0.685
Taurine	0.06	-0.12	0.25	0.497	0.775

Thiamine	0.17	-0.03	0.37	0.096	0.509
Threonine	0.13	-0.15	0.41	0.371	0.655
Thymidine	-0.39	-0.73	-0.05	0.023	0.218
TMAO	-0.16	-0.39	0.07	0.185	0.653
trans-HYP	0.02	-0.12	0.16	0.741	0.893
Tyrosine	0.11	-0.13	0.34	0.379	0.655
Uridine	-0.17	-0.40	0.05	0.123	0.548
Valine	-0.11	-0.35	0.13	0.364	0.655
Valine-d8	0.05	-0.13	0.22	0.607	0.833
1-methylhistamine	-0.15	-0.44	0.13	0.293	0.655
2'-deoxyadenosine	0.06	-0.08	0.21	0.395	0.655
2-Arachidonyl.glycerol	-0.01	-0.28	0.27	0.966	0.985
3-deaazadenosine	0.26	-0.02	0.54	0.073	0.429
3-IPA	-0.07	-0.17	0.02	0.137	0.548
3HK	0.07	-0.06	0.20	0.263	0.655
5-Aminolevulinic Acid	0.03	-0.09	0.14	0.675	0.871

Supplementary Table 9. Univariate Linear Regression Associations with CACS.

Metabolite	Beta	lower_CI .25 %	upper_CI .97.5 %	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	-0.42	-1.10	0.26	0.223	0.657
α -keto- β -methylvaleric acid 2	-0.44	-0.93	0.05	0.079	0.464
Acetylcarnitine	0.03	-0.31	0.37	0.862	0.971
Adenosine	0.03	-0.50	0.56	0.912	0.971
Alanine	-0.16	-0.52	0.20	0.390	0.784
Anandamide	0.14	-0.46	0.74	0.644	0.892
Arachidonic acid	-0.15	-0.79	0.50	0.657	0.892
Arginine	0.05	-0.44	0.53	0.852	0.971
Asparagine	-0.16	-0.73	0.41	0.573	0.882
Aspartate	0.09	-0.42	0.61	0.721	0.932
Betaine	0.14	-0.18	0.46	0.387	0.784
Butyrylcarnitine	0.32	-0.12	0.76	0.155	0.600
cAMP	0.17	-0.12	0.46	0.240	0.668
Carnitine	0.62	0.02	1.22	0.044	0.334
Choline	-0.07	-0.73	0.59	0.830	0.971
Colchicine	-0.04	-0.50	0.43	0.879	0.971
Creatine	0.31	-0.25	0.88	0.273	0.677
Cysteamine	-0.41	-0.98	0.15	0.154	0.600
Cysteine	-0.45	-1.10	0.20	0.171	0.600
Cytosine	-0.01	-0.51	0.49	0.960	0.971
DMGV	0.49	0.11	0.87	0.011	0.292
GlucosePos2	0.40	-0.29	1.08	0.258	0.677
Glutamate	0.05	-0.48	0.58	0.863	0.971
Glutamine	0.41	-0.18	1.01	0.174	0.600
Histidine	-0.51	-1.27	0.24	0.181	0.600
Isoleucine_Leucine	-0.14	-0.63	0.35	0.582	0.882
Kynurenic acid	0.31	0.00	0.62	0.050	0.334
L-Homoserine	-0.16	-0.61	0.28	0.479	0.859
Methionine	0.54	0.01	1.07	0.045	0.334
Phenylalanine	0.88	0.23	1.53	0.008	0.292
Phosphocholine	-0.30	-0.87	0.27	0.296	0.681
Proline	0.56	0.01	1.11	0.045	0.334
Riboflavin	0.29	0.04	0.55	0.022	0.334
Serine	-0.19	-0.55	0.16	0.281	0.677
Serotonin	-0.21	-0.87	0.45	0.541	0.882
Spermine	-0.11	-0.58	0.36	0.643	0.892
Taurine	0.28	-0.15	0.70	0.197	0.616

Thiamine	0.52	0.06	0.98	0.026	0.334
Threonine	-0.21	-0.88	0.45	0.529	0.882
Thymidine	-0.32	-1.11	0.47	0.430	0.815
TMAO	-0.46	-0.99	0.08	0.093	0.464
trans-HYP	0.04	-0.28	0.36	0.805	0.971
Tyrosine	0.24	-0.30	0.78	0.382	0.784
Uridine	-0.02	-0.53	0.49	0.933	0.971
Valine	-0.14	-0.70	0.42	0.621	0.892
Valine-d8	0.14	-0.26	0.54	0.486	0.859
1-methylhistamine	-0.14	-0.81	0.54	0.694	0.919
2'-deoxyadenosine	0.10	-0.25	0.44	0.576	0.882
2-Arachidonyl glycerol	-0.03	-0.66	0.61	0.938	0.971
3-deaazadenosine	0.55	-0.10	1.20	0.096	0.464
3-IPA	0.00	-0.22	0.23	0.971	0.971
3HK	0.13	-0.17	0.42	0.400	0.784
5-Aminolevulinic Acid	-0.02	-0.30	0.26	0.897	0.971

Supplementary Table 10. Univariate Linear Regression Associations with Soft Plaque Score.

Metabolite	Beta	lower_CI. 2.5 %	upper_CI .97.5 %	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	- 0.02	-0.30	0.27	0.900	0.946
α -keto- β -methylvaleric acid 2	- 0.01	-0.24	0.21	0.901	0.946
Acetylcarnitine	- 0.02	-0.18	0.13	0.766	0.946
Adenosine	0.12	-0.12	0.35	0.327	0.946
Alanine	- 0.01	-0.18	0.15	0.891	0.946
Anandamide	- 0.08	-0.35	0.19	0.552	0.946
Arachidonic acid	- 0.03	-0.33	0.27	0.828	0.946
Arginine	- 0.03	-0.24	0.19	0.818	0.946
Asparagine	- 0.09	-0.34	0.16	0.490	0.946
Aspartate	- 0.05	-0.28	0.18	0.684	0.946
Betaine	0.07	-0.07	0.21	0.329	0.946
Butyrylcarnitine	0.08	-0.12	0.27	0.437	0.946
cAMP	- 0.03	-0.16	0.10	0.672	0.946
Carnitine	0.16	-0.10	0.42	0.229	0.946
Choline	- 0.29	-0.59	0.00	0.054	0.774
Colchicine	- 0.02	-0.23	0.18	0.827	0.946
Creatine	- 0.06	-0.31	0.19	0.621	0.946
Cysteamine	0.05	-0.19	0.30	0.665	0.946
Cysteine	0.03	-0.27	0.33	0.847	0.946
Cytosine	0.08	-0.15	0.32	0.481	0.946
DMGV	0.15	-0.02	0.32	0.089	0.842
GlucosePos2	0.11	-0.19	0.41	0.483	0.946
Glutamate	0.12	-0.12	0.36	0.326	0.946
Glutamine	0.01	-0.25	0.28	0.927	0.946
Histidine	- 0.13	-0.48	0.22	0.470	0.946

Isoleucine_Leucine	0.06	-0.16	0.28	0.612	0.946
Kynurenic acid	0.08	-0.06	0.22	0.263	0.946
L-Homoserine	- 0.04	-0.24	0.16	0.668	0.946
Methionine	0.20	-0.04	0.43	0.095	0.842
Phenylalanine	0.29	-0.01	0.58	0.058	0.774
Phosphocholine	- 0.07	-0.31	0.18	0.584	0.946
Proline	0.04	-0.20	0.28	0.753	0.946
Riboflavin	0.17	0.06	0.28	0.003	0.176
Serine	- 0.01	-0.17	0.15	0.890	0.946
Serotonin	- 0.04	-0.33	0.26	0.798	0.946
Spermine	0.07	-0.13	0.28	0.496	0.946
Taurine	0.03	-0.16	0.22	0.758	0.946
Thiamine	0.23	0.02	0.44	0.028	0.755
Threonine	0.04	-0.26	0.34	0.804	0.946
Thymidine	- 0.26	-0.61	0.08	0.134	0.946
TMAO	- 0.05	-0.29	0.19	0.707	0.946
trans-HYP	0.00	-0.15	0.15	0.984	0.984
Tyrosine	0.08	-0.17	0.32	0.539	0.946
Uridine	0.02	-0.21	0.25	0.858	0.946
Valine	0.03	-0.22	0.28	0.792	0.946
Valine-d8	0.05	-0.13	0.23	0.559	0.946
1-methylhistamine	0.03	-0.27	0.33	0.840	0.946
2'-deoxyadenosine	0.01	-0.15	0.16	0.928	0.946
2-Arachidonyl glycerol	- 0.07	-0.36	0.22	0.651	0.946
3-deazadenosine	0.21	-0.09	0.51	0.174	0.946
3-IPA	- 0.04	-0.14	0.06	0.406	0.946
3HK	0.04	-0.10	0.17	0.567	0.946
5-Aminolevulinic Acid	- 0.01	-0.14	0.11	0.819	0.946

Supplementary Table 11. Multivariable Binary Logistic Regression Associations with Presence of CAD.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.80	0.47	1.36	0.415	0.936
α -keto- β -methylvaleric acid 2	1.17	0.80	1.71	0.408	0.936
Acetylcarnitine	0.91	0.71	1.16	0.434	0.936
Adenosine	1.19	0.77	1.82	0.437	0.936
Alanine	0.90	0.68	1.19	0.472	0.936
Anandamide	0.91	0.59	1.40	0.678	0.936
Arachidonic acid	1.17	0.72	1.91	0.531	0.936
Arginine	0.98	0.70	1.39	0.919	0.936
Asparagine	1.10	0.71	1.70	0.661	0.936
Aspartate	0.93	0.65	1.34	0.697	0.936
Betaine	0.95	0.75	1.20	0.685	0.936
Butyrylcarnitine	0.87	0.64	1.19	0.380	0.936
cAMP	1.03	0.81	1.30	0.814	0.936
Carnitine	1.02	0.64	1.62	0.936	0.936
Choline	1.47	0.92	2.35	0.104	0.936
Colchicine	0.81	0.57	1.15	0.237	0.936
Creatine	1.05	0.68	1.62	0.839	0.936
Cysteamine	0.98	0.64	1.52	0.934	0.936
Cysteine	1.12	0.69	1.80	0.653	0.936
Cytosine	1.16	0.79	1.69	0.454	0.936
DMGV	0.93	0.69	1.26	0.641	0.936
GlucosePos2	0.88	0.55	1.39	0.580	0.936
Glutamate	0.96	0.65	1.41	0.819	0.936
Glutamine	0.74	0.45	1.23	0.249	0.936
Histidine	0.96	0.54	1.68	0.877	0.936
Isoleucine_Leucine	1.02	0.68	1.51	0.935	0.936
Kynurenic acid	1.07	0.83	1.36	0.616	0.936
L-Homoserine	1.08	0.78	1.51	0.637	0.936
Methionine	0.93	0.63	1.37	0.715	0.936
Phenylalanine	0.85	0.51	1.44	0.556	0.936
Phosphocholine	1.42	0.92	2.20	0.116	0.936
Proline	1.02	0.69	1.52	0.909	0.936
Riboflavin	1.05	0.86	1.29	0.609	0.936
Serine	0.96	0.75	1.24	0.762	0.936
Serotonin	0.93	0.56	1.54	0.768	0.936

Spermine	1.21	0.84	1.73	0.309	0.936
Taurine	0.99	0.72	1.36	0.934	0.936
Thiamine	1.12	0.76	1.63	0.574	0.936
Threonine	0.72	0.46	1.14	0.164	0.936
Thymidine	1.05	0.57	1.92	0.877	0.936
TMAO	0.83	0.57	1.22	0.350	0.936
trans-HYP	0.85	0.67	1.07	0.164	0.936
Tyrosine	0.84	0.56	1.27	0.414	0.936
Uridine	0.69	0.47	1.01	0.057	0.936
Valine	1.36	0.89	2.10	0.157	0.936
Valine-d8	1.05	0.77	1.42	0.769	0.936
1-methylhistamine	1.25	0.76	2.06	0.375	0.936
2'-deoxyadenosine	0.97	0.75	1.25	0.816	0.936
2-Arachidonyl glycerol	0.87	0.56	1.37	0.554	0.936
3-deaazadenosine	0.71	0.44	1.16	0.176	0.936
3-IPA	0.86	0.74	1.00	0.053	0.936
3HK	1.15	0.92	1.42	0.217	0.936
5-Aminolevulinic Acid	0.99	0.80	1.22	0.891	0.936

Supplementary Table 12. Multivariable Binary Logistic Regression Associations with Presence of Calcified CAD.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.94	0.56	1.58	0.805	0.983
α -keto- β -methylvaleric acid 2	1.11	0.77	1.61	0.574	0.983
Acetylcarnitine	0.96	0.75	1.23	0.744	0.983
Adenosine	1.17	0.77	1.78	0.461	0.983
Alanine	0.92	0.70	1.20	0.531	0.983
Anandamide	0.87	0.57	1.33	0.511	0.983
Arachidonic acid	1.15	0.71	1.86	0.575	0.983
Arginine	1.17	0.83	1.65	0.364	0.983
Asparagine	1.13	0.73	1.72	0.587	0.983
Aspartate	0.98	0.68	1.40	0.897	0.983
Betaine	0.96	0.77	1.21	0.747	0.983
Butyrylcarnitine	0.98	0.72	1.33	0.906	0.983
cAMP	1.00	0.80	1.26	0.973	0.983
Carnitine	1.05	0.67	1.64	0.834	0.983
Choline	1.31	0.82	2.08	0.253	0.983
Colchicine	0.83	0.59	1.17	0.289	0.983
Creatine	1.01	0.66	1.54	0.983	0.983
Cysteamine	0.88	0.57	1.37	0.576	0.983
Cysteine	1.44	0.89	2.33	0.138	0.983
Cytosine	1.30	0.89	1.89	0.178	0.983
DMGV	1.11	0.83	1.50	0.482	0.983
GlucosePos2	0.71	0.45	1.13	0.149	0.983
Glutamate	1.07	0.73	1.57	0.736	0.983
Glutamine	0.68	0.41	1.11	0.125	0.983
Histidine	1.26	0.72	2.19	0.414	0.983
Isoleucine_Leucine	0.96	0.65	1.41	0.830	0.983
Kynurenic acid	1.22	0.96	1.55	0.102	0.983
L-Homoserine	1.21	0.87	1.67	0.261	0.983
Methionine	1.04	0.71	1.51	0.844	0.983
Phenylalanine	0.97	0.59	1.62	0.921	0.983
Phosphocholine	1.17	0.77	1.78	0.460	0.983
Proline	1.06	0.72	1.56	0.756	0.983
Riboflavin	1.06	0.87	1.28	0.586	0.983
Serine	1.07	0.83	1.37	0.620	0.983
Serotonin	0.81	0.49	1.33	0.400	0.983
Spermine	1.37	0.96	1.95	0.086	0.983
Taurine	0.99	0.73	1.36	0.966	0.983

Thiamine	1.10	0.76	1.59	0.607	0.983
Threonine	0.92	0.59	1.44	0.714	0.983
Thymidine	0.90	0.50	1.63	0.734	0.983
TMAO	1.03	0.71	1.50	0.880	0.983
trans-HYP	0.89	0.71	1.12	0.316	0.983
Tyrosine	1.02	0.69	1.51	0.914	0.983
Uridine	0.68	0.47	0.98	0.041	0.983
Valine	1.28	0.84	1.94	0.257	0.983
Valine-d8	1.01	0.75	1.36	0.948	0.983
1-methylhistamine	1.05	0.64	1.71	0.850	0.983
2'-deoxyadenosine	1.02	0.79	1.31	0.900	0.983
2-Arachidonyl glycerol	0.82	0.52	1.27	0.372	0.983
3-deaazadenosine	0.78	0.48	1.27	0.323	0.983
3-IPA	0.88	0.76	1.03	0.107	0.983
3HK	1.12	0.91	1.38	0.300	0.983
5-Aminolevulinic Acid	0.98	0.80	1.21	0.883	0.983

Supplementary Table 13. Multivariable Binary Logistic Regression Associations with Presence of Non-Calcified CAD.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	1.08	0.67	1.73	0.756	0.912
α -keto- β -methylvaleric acid 2	0.92	0.66	1.28	0.606	0.912
Acetylcarnitine	0.98	0.79	1.23	0.881	0.960
Adenosine	0.94	0.65	1.37	0.757	0.912
Alanine	0.96	0.75	1.23	0.751	0.912
Anandamide	0.88	0.60	1.29	0.506	0.912
Arachidonic acid	0.96	0.62	1.50	0.856	0.960
Arginine	0.87	0.63	1.18	0.368	0.880
Asparagine	0.98	0.67	1.44	0.929	0.965
Aspartate	0.76	0.55	1.06	0.106	0.880
Betaine	1.01	0.82	1.24	0.937	0.965
Butyrylcarnitine	0.92	0.69	1.22	0.552	0.912
cAMP	1.03	0.84	1.26	0.809	0.953
Carnitine	1.20	0.80	1.79	0.387	0.880
Choline	1.61	1.05	2.49	0.031	0.545
Colchicine	0.86	0.63	1.17	0.329	0.880
Creatine	1.01	0.69	1.49	0.947	0.965
Cysteamine	0.90	0.60	1.33	0.588	0.912
Cysteine	0.77	0.50	1.19	0.239	0.880
Cytosine	0.86	0.61	1.21	0.399	0.880
DMGV	1.05	0.80	1.38	0.717	0.912
GlucosePos2	1.09	0.71	1.65	0.703	0.912
Glutamate	1.42	1.00	2.03	0.053	0.699
Glutamine	0.86	0.56	1.32	0.488	0.912
Histidine	0.70	0.42	1.16	0.168	0.880
Isoleucine_Leucine	1.17	0.82	1.65	0.386	0.880
Kynurenic acid	1.04	0.83	1.29	0.747	0.912
L-Homoserine	0.99	0.74	1.33	0.971	0.971
Methionine	1.18	0.83	1.67	0.351	0.880
Phenylalanine	0.73	0.46	1.15	0.176	0.880
Phosphocholine	1.32	0.90	1.94	0.154	0.880
Proline	0.93	0.65	1.34	0.700	0.912
Riboflavin	1.08	0.91	1.29	0.374	0.880
Serine	1.12	0.89	1.41	0.339	0.880
Serotonin	0.77	0.49	1.21	0.253	0.880
Spermine	1.13	0.82	1.56	0.445	0.912
Taurine	0.94	0.70	1.25	0.650	0.912

Thiamine	1.13	0.82	1.56	0.457	0.912
Threonine	1.10	0.73	1.66	0.646	0.912
Thymidine	0.87	0.51	1.50	0.617	0.912
TMAO	0.65	0.46	0.92	0.016	0.420
trans-HYP	0.98	0.80	1.21	0.871	0.960
Tyrosine	1.14	0.80	1.63	0.481	0.912
Uridine	0.81	0.58	1.13	0.217	0.880
Valine	1.13	0.77	1.66	0.525	0.912
Valine-d8	1.14	0.87	1.50	0.347	0.880
1-methylhistamine	0.97	0.62	1.51	0.887	0.960
2'-deoxyadenosine	1.13	0.90	1.42	0.304	0.880
2-Arachidonyl glycerol	1.25	0.83	1.88	0.281	0.880
3-deaazadenosine	1.10	0.71	1.70	0.684	0.912
3-IPA	0.83	0.72	0.96	0.011	0.420
3HK	1.20	0.99	1.45	0.067	0.706
5-Aminolevulinic Acid	1.14	0.94	1.37	0.177	0.880

Supplementary Table 14. Multivariable Binary Logistic Regression Associations with Presence of Obstructive CAD.

Metabolite	Odds Ratio	lower_CI	upper_CI	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.98	0.35	2.73	0.969	0.997
α -keto- β -methylvaleric acid 2	1.15	0.6	2.19	0.674	0.913
Acetylcarnitine	0.90	0.59	1.38	0.63	0.913
Adenosine	1.39	0.67	2.88	0.373	0.913
Alanine	1.11	0.69	1.8	0.663	0.913
Anandamide	0.62	0.30	1.29	0.203	0.913
Arachidonic acid	1.16	0.48	2.81	0.736	0.913
Arginine	1.08	0.61	1.93	0.793	0.913
Asparagine	1.66	0.81	3.42	0.17	0.913
Aspartate	1	0.55	1.84	0.997	0.997
Betaine	1.18	0.79	1.76	0.431	0.913
Butyrylcarnitine	1.42	0.77	2.62	0.264	0.913
cAMP	1.05	0.74	1.49	0.783	0.913
Carnitine	1	0.42	2.41	0.996	0.997
Choline	1.2	0.51	2.82	0.67	0.913
Colchicine	0.79	0.40	1.55	0.494	0.913
Creatine	1.46	0.67	3.17	0.344	0.913
Cysteamine	0.59	0.27	1.28	0.184	0.913
Cysteine	1.27	0.55	2.95	0.574	0.913
Cytosine	1.25	0.61	2.56	0.534	0.913
DMGV	1.65	0.92	2.96	0.094	0.913
GlucosePos2	0.81	0.37	1.75	0.583	0.913
Glutamate	1.3	0.64	2.66	0.472	0.913
Glutamine	0.89	0.37	2.12	0.787	0.913
Histidine	0.67	0.25	1.75	0.408	0.913
Isoleucine_Leucine	1.2	0.55	2.62	0.651	0.913
Kynurenic acid	1.16	0.74	1.8	0.523	0.913
L-Homoserine	0.95	0.55	1.66	0.867	0.96
Methionine	1.3	0.66	2.56	0.455	0.913
Phenylalanine	1.22	0.51	2.91	0.661	0.913
Phosphocholine	1.91	0.91	4.02	0.087	0.913
Proline	0.89	0.43	1.86	0.756	0.913
Riboflavin	1.24	0.9	1.71	0.183	0.913
Serine	0.96	0.61	1.52	0.87	0.96
Serotonin	0.82	0.38	1.75	0.599	0.913
Spermine	1.3	0.71	2.39	0.39	0.913
Taurine	0.9	0.51	1.57	0.702	0.913

Thiamine	1.15	0.68	1.95	0.593	0.913
Threonine	0.51	0.23	1.1	0.0857	0.913
Thymidine	0.78	0.27	2.25	0.651	0.913
TMAO	0.84	0.45	1.59	0.6	0.913
trans-HYP	0.92	0.63	1.36	0.684	0.913
Tyrosine	1.13	0.54	2.36	0.743	0.913
Uridine	0.78	0.43	1.42	0.417	0.913
Valine	1.87	0.9	3.91	0.0944	0.913
Valine-d8	1.47	0.85	2.53	0.167	0.913
1-methylhistamine	0.96	0.41	2.24	0.93	0.997
2'-deoxyadenosine	0.99	0.64	1.52	0.962	0.997
2-Arachidonyl glycerol	0.79	0.38	1.63	0.516	0.913
3-deaazadenosine	0.84	0.38	1.88	0.676	0.913
3-IPA	0.72	0.56	0.94	0.016	0.829
3HK	1.13	0.8	1.58	0.489	0.913
5-Aminolevulinic Acid	0.89	0.63	1.25	0.487	0.913

Supplementary Table 15. Multivariable Linear Regression Associations with Gensini Score.

Metabolite	Beta	lower_CI .25 %	upper_CI .97.5 %	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	-0.03	-0.29	0.23	0.811	0.896
α -keto- β -methylvaleric acid 2	-0.17	-0.36	0.02	0.081	0.533
Acetylcarnitine	0.02	-0.11	0.15	0.810	0.896
Adenosine	-0.03	-0.24	0.17	0.747	0.896
Alanine	-0.08	-0.23	0.06	0.247	0.769
Anandamide	-0.01	-0.24	0.22	0.901	0.936
Arachidonic acid	0.11	-0.15	0.37	0.396	0.769
Arginine	0.00	-0.19	0.18	0.960	0.979
Asparagine	-0.16	-0.38	0.06	0.160	0.741
Aspartate	-0.08	-0.27	0.12	0.435	0.769
Betaine	0.04	-0.09	0.16	0.568	0.890
Butyrylcarnitine	0.03	-0.13	0.20	0.705	0.890
cAMP	-0.03	-0.14	0.08	0.584	0.890
Carnitine	0.26	0.03	0.49	0.030	0.402
Choline	-0.03	-0.28	0.23	0.832	0.900
Colchicine	0.04	-0.15	0.22	0.691	0.890
Creatine	0.00	-0.22	0.22	0.997	0.997
Cysteamine	-0.12	-0.34	0.09	0.247	0.769
Cysteine	-0.06	-0.31	0.19	0.636	0.890
Cytosine	0.09	-0.10	0.29	0.346	0.769
DMGV	0.17	0.02	0.32	0.026	0.402
GlucosePos2	0.11	-0.15	0.38	0.396	0.769
Glutamate	0.10	-0.10	0.30	0.333	0.769
Glutamine	0.03	-0.20	0.26	0.801	0.896
Histidine	-0.08	-0.38	0.21	0.572	0.890
Isoleucine_Leucine	-0.04	-0.24	0.16	0.679	0.890
Kynurenic acid	0.11	-0.01	0.23	0.079	0.533
L-Homoserine	0.03	-0.15	0.20	0.772	0.896
Methionine	0.22	0.02	0.43	0.030	0.402
Phenylalanine	0.26	0.01	0.52	0.046	0.402
Phosphocholine	0.02	-0.20	0.23	0.874	0.926
Proline	-0.05	-0.26	0.17	0.674	0.890
Riboflavin	0.12	0.03	0.22	0.014	0.402
Serine	0.06	-0.07	0.20	0.354	0.769
Serotonin	-0.11	-0.37	0.15	0.398	0.769
Spermine	-0.04	-0.22	0.14	0.681	0.890
Taurine	0.05	-0.11	0.22	0.536	0.890

Thiamine	0.11	-0.07	0.29	0.242	0.769
Threonine	0.12	-0.14	0.37	0.371	0.769
Thymidine	-0.17	-0.47	0.14	0.289	0.769
TMAO	-0.21	-0.42	-0.01	0.044	0.402
trans-HYP	0.03	-0.10	0.15	0.671	0.890
Tyrosine	0.15	-0.06	0.36	0.152	0.741
Uridine	-0.03	-0.24	0.17	0.752	0.896
Valine	-0.05	-0.27	0.17	0.661	0.890
Valine-d8	0.06	-0.09	0.22	0.426	0.769
1-methylhistamine	-0.17	-0.42	0.08	0.187	0.762
2'-deoxyadenosine	0.09	-0.05	0.22	0.202	0.766
2-Arachidonyl glycerol	0.12	-0.13	0.37	0.358	0.769
3-deaazadenosine	0.18	-0.08	0.43	0.168	0.741
3-IPA	-0.07	-0.16	0.01	0.091	0.537
3HK	0.05	-0.07	0.16	0.412	0.769
5-Aminolevulinic Acid	0.05	-0.06	0.15	0.388	0.769

Supplementary Table 16. Multivariable Linear Regression Associations with CACS.

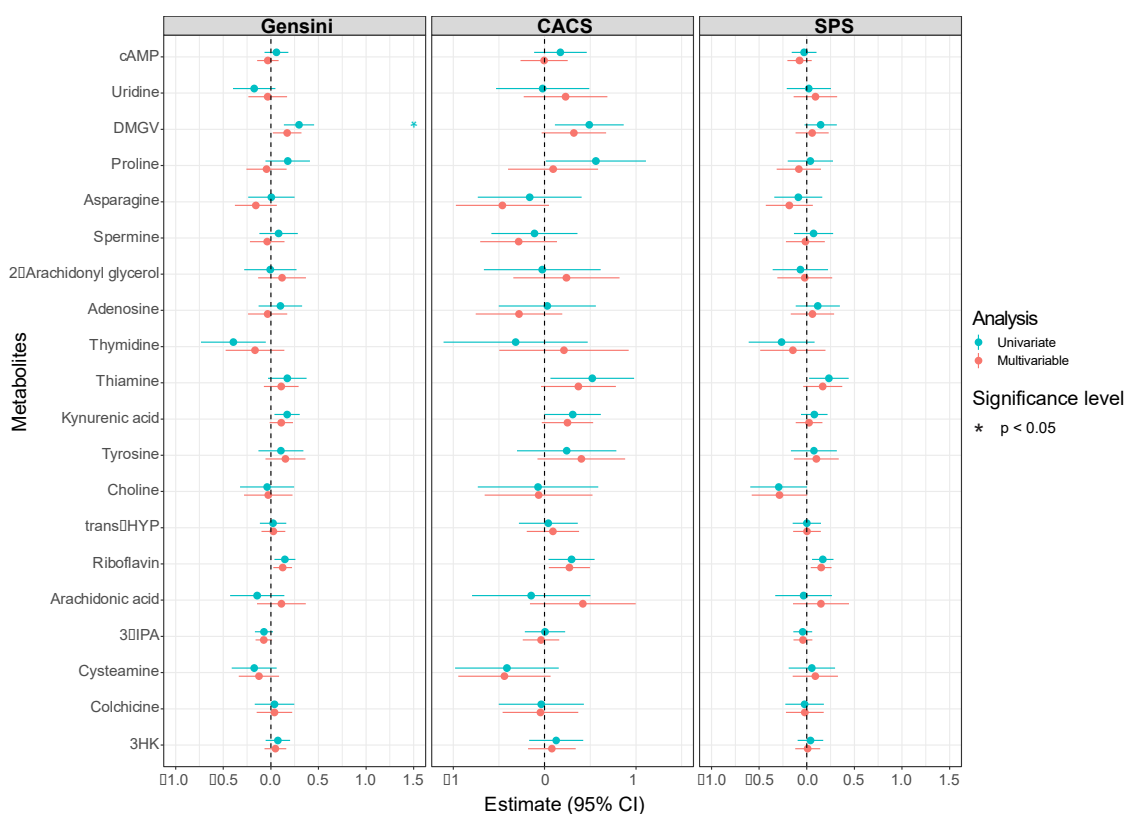
Metabolite	Beta	lower_CI .25 %	upper_CI .97.5 %	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	-0.20	-0.80	0.40	0.519	0.844
α -keto- β -methylvaleric acid 2	-0.38	-0.82	0.05	0.084	0.422
Acetylcarnitine	0.09	-0.21	0.40	0.548	0.844
Adenosine	-0.28	-0.75	0.19	0.247	0.595
Alanine	-0.21	-0.53	0.12	0.209	0.578
Anandamide	0.21	-0.32	0.74	0.434	0.844
Arachidonic acid	0.42	-0.16	1.00	0.156	0.516
Arginine	0.02	-0.41	0.45	0.922	0.955
Asparagine	-0.46	-0.97	0.05	0.076	0.422
Aspartate	-0.16	-0.62	0.30	0.494	0.844
Betaine	0.19	-0.09	0.48	0.187	0.550
Butyrylcarnitine	0.31	-0.08	0.70	0.122	0.453
cAMP	-0.01	-0.26	0.25	0.968	0.968
Carnitine	0.64	0.10	1.17	0.020	0.263
Choline	-0.06	-0.65	0.53	0.829	0.940
Colchicine	-0.05	-0.46	0.37	0.829	0.940
Creatine	0.23	-0.27	0.73	0.361	0.765
Cysteamine	-0.44	-0.95	0.06	0.088	0.422
Cysteine	-0.35	-0.92	0.22	0.230	0.581
Cytosine	0.02	-0.42	0.47	0.924	0.955
DMGV	0.32	-0.03	0.67	0.074	0.422
GlucosePos2	0.14	-0.47	0.76	0.645	0.918
Glutamate	0.05	-0.43	0.53	0.833	0.940
Glutamine	0.11	-0.41	0.64	0.670	0.918
Histidine	-0.25	-0.93	0.42	0.458	0.844
Isoleucine_Leucine	-0.02	-0.47	0.42	0.921	0.955
Kynurenic acid	0.25	-0.03	0.53	0.081	0.422
L-Homoserine	-0.08	-0.47	0.31	0.688	0.918
Methionine	0.46	-0.01	0.93	0.053	0.422
Phenylalanine	0.77	0.19	1.35	0.010	0.263
Phosphocholine	-0.02	-0.53	0.48	0.929	0.955
Proline	0.09	-0.40	0.59	0.710	0.918
Riboflavin	0.27	0.05	0.50	0.018	0.263
Serine	-0.05	-0.37	0.26	0.744	0.939
Serotonin	-0.09	-0.67	0.50	0.775	0.940
Spermine	-0.28	-0.70	0.14	0.184	0.550
Taurine	0.29	-0.08	0.67	0.128	0.453

Thiamine	0.37	-0.04	0.78	0.077	0.422
Threonine	-0.02	-0.62	0.57	0.937	0.955
Thymidine	0.21	-0.50	0.92	0.558	0.844
TMAO	-0.58	-1.05	-0.10	0.017	0.263
trans-HYP	0.09	-0.19	0.38	0.531	0.844
Tyrosine	0.40	-0.08	0.88	0.101	0.423
Uridine	0.23	-0.23	0.69	0.324	0.716
Valine	0.07	-0.45	0.58	0.802	0.940
Valine-d8	0.20	-0.15	0.55	0.267	0.615
1-methylhistamine	-0.19	-0.79	0.42	0.543	0.844
2'-deoxyadenosine	0.19	-0.11	0.50	0.218	0.578
2-Arachidonyl glycerol	0.24	-0.34	0.82	0.420	0.844
3-deaazadenosine	0.48	-0.10	1.06	0.104	0.423
3-IPA	-0.04	-0.24	0.16	0.697	0.918
3HK	0.08	-0.18	0.34	0.549	0.844
5-Aminolevulinic Acid	0.06	-0.19	0.31	0.626	0.918

Supplementary Table 17. Multivariable Linear Regression Associations with SPS.

Metabolite	Beta	lower_CI .25 %	upper_CI .97.5 %	P value	FDR Adjusted P-value
α -keto- β -methylvaleric acid 1	0.00	-0.28	0.28	0.993	0.993
α -keto- β -methylvaleric acid 2	0.04	-0.19	0.26	0.752	0.993
Acetylcarnitine	-0.04	-0.19	0.11	0.578	0.993
Adenosine	0.06	-0.17	0.29	0.608	0.993
Alanine	-0.03	-0.20	0.13	0.699	0.993
Anandamide	-0.05	-0.31	0.22	0.728	0.993
Arachidonic acid	0.15	-0.14	0.44	0.318	0.993
Arginine	-0.04	-0.25	0.18	0.743	0.993
Asparagine	-0.18	-0.43	0.06	0.147	0.993
Aspartate	-0.09	-0.31	0.13	0.429	0.993
Betaine	0.06	-0.08	0.20	0.396	0.993
Butyrylcarnitine	0.03	-0.15	0.22	0.727	0.993
cAMP	-0.08	-0.20	0.05	0.244	0.993
Carnitine	0.16	-0.09	0.42	0.211	0.993
Choline	-0.29	-0.58	0.01	0.054	0.993
Colchicine	-0.02	-0.22	0.18	0.843	0.993
Creatine	-0.09	-0.33	0.16	0.486	0.993
Cysteamine	0.09	-0.15	0.33	0.456	0.993
Cysteine	0.02	-0.28	0.31	0.917	0.993
Cytosine	0.05	-0.18	0.28	0.682	0.993
DMGV	0.06	-0.12	0.23	0.523	0.993
GlucosePos2	0.10	-0.19	0.40	0.493	0.993
Glutamate	0.08	-0.16	0.31	0.529	0.993
Glutamine	0.00	-0.26	0.25	0.980	0.993
Histidine	-0.09	-0.43	0.25	0.597	0.993
Isoleucine_Leucine	0.04	-0.18	0.26	0.715	0.993
Kynurenic acid	0.02	-0.12	0.16	0.739	0.993
L-Homoserine	-0.01	-0.20	0.18	0.907	0.993
Methionine	0.14	-0.08	0.37	0.215	0.993
Phenylalanine	0.24	-0.05	0.53	0.106	0.993
Phosphocholine	-0.01	-0.24	0.23	0.961	0.993
Proline	-0.08	-0.32	0.15	0.487	0.993
Riboflavin	0.15	0.04	0.26	0.007	0.367
Serine	0.00	-0.16	0.15	0.981	0.993
Serotonin	0.03	-0.25	0.32	0.813	0.993
Spermine	-0.01	-0.22	0.19	0.891	0.993
Taurine	0.02	-0.17	0.21	0.825	0.993

Thiamine	0.17	-0.04	0.37	0.108	0.993
Threonine	0.01	-0.28	0.30	0.936	0.993
Thymidine	-0.15	-0.49	0.20	0.405	0.993
TMAO	-0.09	-0.32	0.15	0.475	0.993
trans-HYP	0.00	-0.14	0.15	0.971	0.993
Tyrosine	0.10	-0.13	0.34	0.398	0.993
Uridine	0.09	-0.14	0.32	0.433	0.993
Valine	0.03	-0.22	0.28	0.797	0.993
Valine-d8	0.05	-0.12	0.23	0.543	0.993
1-methylhistamine	0.01	-0.28	0.30	0.962	0.993
2'-deoxyadenosine	0.01	-0.14	0.16	0.891	0.993
2-Arachidonyl glycerol	-0.02	-0.31	0.27	0.888	0.993
3-deaazadenosine	0.12	-0.18	0.42	0.426	0.993
3-IPA	-0.04	-0.14	0.06	0.429	0.993
3HK	0.01	-0.12	0.14	0.885	0.993
5-Aminolevulinic Acid	-0.01	-0.13	0.11	0.868	0.993



Supplementary Figure 1: Regression coefficients for association of top 20 metabolites for amount of CAD (left), calcified plaque (middle), and soft plaque (right). Ranked according to strength of univariate association with presence of CAD. Dots represent beta coefficients, lines represent 95% confidence intervals. P values are adjusted for a 5% discovery rate using Benjamini and Hochberg approach: * $p < 0.05$. Turquoise represents univariate associations. Red represents associations adjusted for age, sex, hypertension, hypercholesterolaemia, diabetes, and significant smoking.