

Supplementary Table SIV. Pleiotropy and heterogeneity test results of 82 metabolites.

ID.Exposure	Exposure	SNPs	P _{heterogeneity}	P _{pleiotropy}	P _{presso}
GCST90199621	Carnitine levels	25	0.689	0.581	0.723
GCST90199649	1-stearoyl-2-arachidonoyl-GPI (18:0/20:4) levels	24	0.665	0.311	0.560
GCST90199663	4-acetylphenol sulfate levels	19	0.337	0.249	0.371
GCST90199685	2-linoleoylglycerol (18:2) levels	21	0.609	0.822	0.625
GCST90199704	3-hydroxysebacate levels	20	0.853	0.373	0.869
GCST90199708	Propionylcarnitine (c3) levels	21	0.45	0.971	0.513
GCST90199710	Docosatrienoate (22:3n3) levels	23	0.051	0.597	0.064
GCST90199728	10-nonadecenoate (19:1n9) levels	11	0.285	0.341	0.325
GCST90199788	1-arachidonoyl-gpc (20:4n6) levels	28	0.527	0.313	0.510
GCST90199885	Alpha-ketoglutaramate levels	20	0.894	0.131	0.859
GCST90199988	Tyramine O-sulfate levels	22	0.529	0.741	0.564
GCST90199990	3-hydroxypyridine sulfate levels	23	0.221	0.441	0.243
GCST90200011	Arabitol/xylitol levels	24	0.851	0.939	0.851
GCST90200030	1,2-dilinoeoyl-GPC (18:2/18:2) levels	17	0.421	0.086	0.362
GCST90200082	1-oleoyl-2-linoleoyl-GPE (18:1/18:2) levels	31	0.092	0.236	0.058
GCST90200095	1-linoleoyl-2-linolenoyl-GPC (18:2/18:3) levels	21	0.222	0.171	0.122
GCST90200098	Ceramide (d18:1/24:1) levels	29	0.164	0.255	0.198
GCST90200100	Perfluorooctanesulfonate (PFOS) levels	24	0.311	0.845	0.383
GCST90200109	Linoleoyl-arachidonoyl-glycerol (18:2/20:4) [2] levels	16	0.098	0.226	0.110
GCST90200144	Dihomo-linoleoylcarnitine (C20:2) levels	31	0.305	0.198	0.320
GCST90200155	2-furoylcarnitine levels	20	0.696	0.301	0.728
GCST90200161	2-hydroxyarachidate levels	23	0.393	0.167	0.450
GCST90200171	Perfluorooctanoate (PFOA) levels	20	0.829	0.687	0.834
GCST90200186	8-methoxykynurenate levels	26	0.501	0.419	0.534
GCST90200187	Tetradecadienoate (14:2) levels	14	0.469	0.817	0.502
GCST90200188	3-amino-2-piperidone levels	24	0.218	0.921	0.219
GCST90200215	4-ethylcatechol sulfate levels	23	0.407	0.191	0.433
GCST90200219	Cholic acid glucuronide levels	20	0.258	0.731	0.218
GCST90200324	Anthranilate levels	27	0.987	0.644	0.988

GCST90200329	3-phosphoglycerate levels	23	0.991	0.515	0.997
GCST90200340	1-palmitoyl-2-oleoyl-gpc (16:0/18:1) levels	23	0.804	0.403	0.789
GCST90200349	Eicosapentaenoate (EPA; 20:5n3) levels	10	0.143	0.864	0.148
GCST90200381	S-1-pyrroline-5-carboxylate levels	19	0.826	0.652	0.860
GCST90200411	Plasma free proline levels	31	0.823	0.262	0.872
GCST90200430	Pyruvate levels	21	0.478	0.568	0.499
GCST90200439	Cysteine levels	14	0.876	0.391	0.895
GCST90200450	Caproate (6:0) levels	24	0.775	0.699	0.797
GCST90200460	X-11372 levels	26	0.919	0.527	0.920
GCST90200468	X-11847 levels	18	0.673	0.912	0.706
GCST90200483	X-12216 levels	23	0.303	0.389	0.293
GCST90200488	X-12117 levels	31	0.509	0.593	0.543
GCST90200502	X-12707 levels	30	0.545	0.668	0.581
GCST90200534	X-16580 levels	17	0.653	0.898	0.661
GCST90200579	X-21442 levels	19	0.252	0.751	0.342
GCST90200605	X-21845 levels	21	0.342	0.512	0.367
GCST90200614	X-23780 levels	23	0.609	0.116	0.630
GCST90200618	X-23782 levels	20	0.379	0.271	0.405
GCST90200619	X-24295 levels	20	0.574	0.498	0.590
GCST90200634	X-24518 levels	23	0.156	0.812	0.182
GCST90200646	X-24801 levels	32	0.208	0.362	0.221
GCST90200650	X-25109 levels	29	0.483	0.131	0.472
GCST90200651	X-24947 levels	26	0.901	0.482	0.925
GCST90200673	Carnitine C4 levels	38	0.111	0.547	0.167
GCST90200685	1-stearoyl-2-arachidonoyl-gpc (18:0/20:4) levels	34	0.681	0.317	0.541
GCST90200740	Arachidonate (20:4n6) to oleate to vaccenate (18:1) ratio	19	0.267	0.32	0.253
GCST90200769	Phosphate to mannose ratio	21	0.792	0.633	0.827
GCST90200804	Spermidine to pyruvate ratio	15	0.355	0.689	0.360
GCST90200841	Adenosine 5'-diphosphate (ADP) to oxalate (ethanedioate) ratio	23	0.327	0.537	0.365
GCST90200844	Aspartate to phosphate ratio	17	0.623	0.598	0.679
GCST90200854	Arginine to phosphate ratio	22	0.603	0.086	0.610

GCST90200893	Taurine to cysteine ratio	21	0.538	0.397	0.532
GCST90200908	Retinol (Vitamin A) to linoleoyl-arachidonoyl-glycerol (18:2 to 20:4) [2] ratio	20	0.115	0.559	0.072
GCST90200909	Uridine to 2'-deoxyuridine ratio	29	0.573	0.645	0.571
GCST90200938	Alpha-ketoglutarate to alanine ratio	21	0.545	0.854	0.554
GCST90200948	Adenosine 5'-diphosphate (ADP) to mannitol to sorbitol ratio	20	0.571	0.772	0.592
GCST90200955	Adenosine 5'-diphosphate (ADP) to choline phosphate ratio	22	0.683	0.901	0.703
GCST90200967	Phosphate to urate ratio	32	0.974	0.911	0.976
GCST90200979	Arachidonate (20:4n6) to linoleate (18:2n6) ratio	24	0.029	0.316	0.068
GCST90199742	1-linoleoyl-gpc (18:2) levels	28	0.045	0.332	0.047
GCST90199770	1-arachidonoylglycerol (20:4) levels	23	0.007	0.391	0.007
GCST90199995	Sphingomyelin (d18:1/20:2, d18:2/20:1, d16:1/22:2) levels	26	0.041	0.269	0.038
GCST90200037	1-stearoyl-2-linoleoyl-gpc (18:0/18:2) levels	22	0.031	0.440	0.016
GCST90200043	1-palmitoyl-2-docosahexaenoyl-gpc (16:0/22:6) levels	23	0.057	0.088	0.040
GCST90200052	1-(1-enyl-palmitoyl)-2-arachidonoyl-gpc (p-16:0/20:4) levels	33	0.006	0.121	0.012
GCST90200083	1-(1-enyl-palmitoyl)-2-palmitoyl-GPC (P-16:0/16:0) levels	32	0.01	0.345	0.008
GCST90200086	Arachidonoylcholine levels	19	0.054	0.122	0.031
GCST90200126	Sphingomyelin (d18:2/23:1) levels	26	0.001	0.105	0.001
GCST90200138	Docosatrienoate (22:3n6) levels	15	0.068	0.659	0.043
GCST90200393	Phosphate levels (UKB data field 30810)	22	0.022	0.703	0.029
GCST90200541	X-15523 levels	88	0.032	0.97	0.021
GCST90200692	1-palmitoyl-2-arachidonoyl-gpc (16:0/20:4n6) levels	31	0.005	0.407	0.036
GCST90200902	Phosphate to linoleoyl-arachidonoyl-glycerol (18:2 to 20:4) [2] ratio	19	0.036	0.454	0.038

*SNP single nucleotide polymorphism.