

Table S1. List of Included Cerebrospinal Fluid (CSF) Metabolites

id	Trait
GCST90026002	Bilirubin (z, z) levels
GCST90026003	Cholesterol levels
GCST90026004	Lysine levels
GCST90026005	Tyrosine levels
GCST90026006	Pyroglutamine levels
GCST90026007	Cortisol levels
GCST90026008	Lactate levels
GCST90026009	Sulfate levels
GCST90026010	1,5-anhydroglucitol (1,5-ag) levels
GCST90026011	Kynurenine levels
GCST90026012	Asparagine levels
GCST90026013	Glycine levels
GCST90026014	Proline levels
GCST90026015	Ornithine levels
GCST90026016	Citrulline levels
GCST90026017	Acetoacetate levels
GCST90026018	Sphingomyelin (d18:1/14:0, d16:1/16:0) levels
GCST90026019	Sphingomyelin (d18:1/18:1, d18:2/18:0) levels
GCST90026020	Sphingomyelin (d18:1/20:0, d16:1/22:0) levels
GCST90026021	Sphingomyelin (d18:1/20:1, d18:2/20:0) levels
GCST90026022	Sphingomyelin (d18:1/22:1, d18:2/22:0, d16:1/24:0) levels
GCST90026023	Sphingomyelin (d18:1/24:1, d18:2/24:0) levels
GCST90026024	Sphingomyelin (d18:2/16:0, d18:1/16:1) levels
GCST90026025	Sphingomyelin (d18:2/24:1, d18:1/24:2) levels
GCST90026026	Allantoin levels
GCST90026027	Alpha-ketoglutarate levels
GCST90026028	Dimethylglycine levels
GCST90026029	Glucuronate levels
GCST90026030	Glycerol 3-phosphate levels
GCST90026031	Hypoxanthine levels
GCST90026032	3-indoxyl sulfate levels
GCST90026033	Inosine levels
GCST90026034	Malate levels
GCST90026035	Taurine levels
GCST90026036	Uridine levels
GCST90026037	Xanthine levels
GCST90026038	Phosphate levels
GCST90026039	3-hydroxyisobutyrate levels
GCST90026040	5-oxoproline levels
GCST90026041	P-cresol sulfate levels
GCST90026042	(N(1) + N(8))-acetylspermidine levels
GCST90026043	1,2-dipalmitoyl-gpc (16:0/16:0) levels
GCST90026044	1-(1-enyl-palmitoyl)-2-arachidonoyl-gpc (p-16:0/20:4n6) levels
GCST90026045	1-(1-enyl-palmitoyl)-2-oleoyl-gpc (p-16:0/18:1) levels
GCST90026046	1-arachidonoyl-gpc (20:4n6) levels

GCST90026047	1-linoleoyl-gpc (18:2) levels
GCST90026048	1-methylhistidine levels
GCST90026049	1-methylnicotinamide levels
GCST90026050	1-myristoyl-2-palmitoyl-gpc (14:0/16:0) levels
GCST90026051	1-oleoyl-GPC (18:1) levels
GCST90026315	X-23308 levels
GCST90026316	Ethyl beta-glucoopyranoside levels
GCST90026317	X-23587 levels
GCST90026318	X-23590 levels
GCST90026319	X-23593 levels
GCST90026320	X-23639 levels
GCST90026321	X-23644 levels
GCST90026322	X-23652 levels
GCST90026323	X-23739 levels
GCST90026324	X-24228 levels
GCST90026325	X-24295 levels
GCST90026326	3-(3-amino-3-carboxypropyl)uridine levels
GCST90026327	X-24337 levels
GCST90026328	X-24431 levels
GCST90026329	X-24452 levels
GCST90026330	X-24686 levels
GCST90026331	X-24699 levels
GCST90026332	3-amino-2-piperidone levels
GCST90026333	X-24813 levels
GCST90026334	X-24952 levels
GCST90026335	X-25109 levels
GCST90026336	N6-methyllysine levels
GCST90025999	Glucose levels
GCST90026000	Creatinine levels
GCST90026001	Urate levels
GCST90026052	1-palmitoyl-2-arachidonoyl-gpc (16:0/20:4n6) lev
GCST90026053	1-palmitoyl-2-docosahexaenoyl-gpc (16:0/22:6) le
GCST90026054	1-palmitoyl-2-linoleoyl-gpc (16:0/18:2) levels
GCST90026055	1-palmitoyl-2-oleoyl-gpc (16:0/18:1) levels
GCST90026056	1-palmitoyl-2-palmitoleoyl-gpc (16:0/16:1) level
GCST90026057	1-palmitoyl-2-stearoyl-gpc (16:0/18:0) levels
GCST90026058	1-palmitoyl-2-stearoyl-gpc (16:0/18:0) levels
GCST90026059	1-ribosyl-imidazoleacetate levels
GCST90026060	1-stearoyl-2-arachidonoyl-gpc (18:0/20:4) levels
GCST90026061	1-stearoyl-2-docosahexaenoyl-gpc (18:0/22:6) lev
GCST90026062	1-stearoyl-2-linoleoyl-gpc (18:0/18:2) levels
GCST90026063	1-stearoyl-2-oleoyl-gpc (18:0/18:1) levels
GCST90026064	1-stearoyl-gpc (18:0) levels
GCST90026065	2'-deoxyuridine levels
GCST90026066	2'-o-methylcytidine levels
GCST90026067	2,3-dihydroxy-2-methylbutyrate levels
GCST90026068	2,3-dihydroxyisovalerate levels

GCST90026069	2-aminobutyrate levels
GCST90026070	2-aminophenol sulfate levels
GCST90026071	2-hydroxy-3-methylvalerate levels
GCST90026072	2-hydroxyadipate levels
GCST90026073	2-hydroxybutyrate/2-hydroxyisobutyrate levels
GCST90026074	2-hydroxyglutarate levels
GCST90026075	2-oxoadipate levels
GCST90026076	2-piperidinone levels
GCST90026077	3-(4-hydroxyphenyl)lactate levels
GCST90026078	3-carboxy-4-methyl-5-propyl-2-furanpropanoate (c
GCST90026079	3-hydroxy-2-ethylpropionate levels
GCST90026080	3-hydroxy-3-methylglutarate levels
GCST90026081	3-hydroxybutyrate (bhba) levels
GCST90026082	3-hydroxyhexanoate levels
GCST90026083	3-hydroxyoctanoate levels
GCST90026084	3-hydroxypyridine sulfate levels
GCST90026085	3-hydroxystachydrine levels
GCST90026086	3-methoxytyramine sulfate levels
GCST90026087	3-methoxytyrosine levels
GCST90026088	3-methyl-2-oxobutyrate levels
GCST90026089	3-methyl-2-oxovalerate levels
GCST90026090	3-methylglutaconate levels
GCST90026091	3-methylglutaryl carnitine (2) levels
GCST90026092	3-methylhistidine levels
GCST90026093	3-methylxanthine levels
GCST90026094	3-ureidopropionate levels
GCST90026095	4-acetamidobutanoate levels
GCST90026096	4-methyl-2-oxopentanoate levels
GCST90026097	4-methylcatechol sulfate levels
GCST90026098	5,6-dihydrothymine levels
GCST90026099	5,6-dihydrouridine levels
GCST90026100	5-acetylamino-6-amino-3-methyluracil levels
GCST90026101	5-hydroxyhexanoate levels
GCST90026102	5-hydroxyindoleacetate levels
GCST90026103	5-methylcytidine levels
GCST90026104	5-methylthioadenosine (mta) levels
GCST90026105	5-methyluridine (ribothymidine) levels
GCST90026106	6-oxopiperidine-2-carboxylate levels
GCST90026107	7-alpha-hydroxy-3-oxo-4-cholestenoate (7-hoca) l
GCST90026108	7-methylguanine levels
GCST90026109	7-methylxanthine levels
GCST90026110	Acetylcarnitine (c2) levels
GCST90026111	Acisoga levels
GCST90026112	Adenine levels
GCST90026113	Adenosine 3',5'-cyclic monophosphate (camp) leve
GCST90026114	Alanine levels
GCST90026115	Alpha-hydroxyisocaproate levels

GCST90026116	Alpha-hydroxyisovalerate levels
GCST90026117	Alpha-ketoglutaramate levels
GCST90026118	Alpha-tocopherol levels
GCST90026119	Arabinose levels
GCST90026120	Arabitol/xylitol levels
GCST90026121	Arabonate/xylonate levels
GCST90026122	Arachidonate (20:4n6) levels
GCST90026123	Argininate levels
GCST90026124	Arginine levels
GCST90026125	Argininosuccinate levels
GCST90026126	Ascorbate (vitamin c) levels
GCST90026290	X-11795 levels
GCST90026291	X-12007 levels
GCST90026292	X-12015 levels
GCST90026293	X-12100 levels
GCST90026294	X-12101 levels
GCST90026295	X-12104 levels
GCST90026296	Ascorbic acid 3-sulfate levels
GCST90026297	X-12411 levels
GCST90026298	X-12906 levels
GCST90026299	1-carboxyethylvaline levels
GCST90026300	X-13728 levels
GCST90026301	X-14056 levels
GCST90026302	1-methyl-5-imidazoleacetate levels
GCST90026303	X-15245 levels
GCST90026304	1-carboxyethylphenylalanine levels
GCST90026305	X-15674 levels
GCST90026306	N,n,n-trimethyl-alanylproline betaine (tmap) lev
GCST90026307	X-18887 levels
GCST90026308	X-19438 levels
GCST90026309	X-21286 levels
GCST90026310	Butyrate (4:0) levels
GCST90026311	X-21733 levels
GCST90026312	2-o-methylascorbic acid levels
GCST90026313	X-22162 levels
GCST90026314	4-chlorobenzoic acid levels
GCST90026202	Methylsuccinoylcarnitine levels
GCST90026203	Myo-inositol levels
GCST90026204	N-acetyl-3-methylhistidine levels
GCST90026205	N-acetyl-aspartyl-glutamate (naag) levels
GCST90026206	N-acetyl-beta-alanine levels
GCST90026207	N-acetyl-isoputreanine levels
GCST90026208	N-acetyllalanine levels
GCST90026209	N-acetylarginine levels
GCST90026210	N-acetylasparagine levels
GCST90026211	N-acetylaspartate (naa) levels
GCST90026212	N-acetylglucosamine/n-acetylgalactosamine levels

GCST90026213	N-acetylglutamate levels
GCST90026214	N-acetylglutamine levels
GCST90026215	N-acetylglycine levels
GCST90026216	N-acetylhistidine levels
GCST90026217	N-acetylisoleucine levels
GCST90026218	N-acetylleucine levels
GCST90026219	N-acetylmethionine levels
GCST90026220	N-acetylneuraminate levels
GCST90026221	N-acetylphenylalanine levels
GCST90026222	N-acetylputrescine levels
GCST90026223	N-acetylserine levels
GCST90026224	N-acetyltaurine levels
GCST90026225	N-acetylthreonine levels
GCST90026226	N-acetylvaline levels
GCST90026227	N-delta-acetylornithine levels
GCST90026228	N-formylanthranilic acid levels
GCST90026229	N-formylmethionine levels
GCST90026230	N-trimethyl 5-aminovalerate levels
GCST90026231	N1-methyl-2-pyridone-5-carboxamide levels
GCST90026232	N1-methyladenosine levels
GCST90026233	N1-methylinosine levels
GCST90026234	N2,n2-dimethylguanosine levels
GCST90026235	N6,n6,n6-trimethyllysine levels
GCST90026236	N6-carbamoylthreonyladenosine levels
GCST90026237	N6-succinyladenosine levels
GCST90026238	Nicotinamide riboside levels
GCST90026239	O-sulfo-l-tyrosine levels
GCST90026240	Octanoylcarnitine (c8) levels
GCST90026241	Orotate levels
GCST90026242	Orotidine levels
GCST90026243	Oxalate (ethanedioate) levels
GCST90026244	Palmitoyl dihydrosphingomyelin (d18:0/16:0) levels
GCST90026245	Palmitoyl sphingomyelin (d18:1/16:0) levels
GCST90026246	Pantothenate levels
GCST90026247	Phenol sulfate levels
GCST90026248	Phenylacetylglutamine levels
GCST90026249	Phenylalanine levels
GCST90026250	Phenyllactate (pla) levels
GCST90026251	Pipecolate levels
GCST90026152	Dimethylarginine (sdma + adma) levels
GCST90026153	Dimethylmalonic acid levels
GCST90026154	Dopamine 3-o-sulfate levels
GCST90026155	Ergothioneine levels
GCST90026156	Erythritol levels
GCST90026157	Erythronate levels
GCST90026158	Ethylmalonate levels
GCST90026159	Fructose levels

GCST90026160	Galactonate levels
GCST90026161	Galactosylglycerol levels
GCST90026162	Gamma-glutamyl-alpha-lysine levels
GCST90026163	Gamma-glutamylglutamine levels
GCST90026164	Gamma-glutamylleucine levels
GCST90026165	Gamma-glutamylphenylalanine levels
GCST90026166	Gamma-glutamylthreonine levels
GCST90026167	Gamma-glutamylvaline levels
GCST90026168	Gluconate levels
GCST90026169	Glutamate levels
GCST90026170	Glutamine levels
GCST90026171	Glutarylcarntine (c5-dc) levels
GCST90026172	Glycerate levels
GCST90026173	Glycerol levels
GCST90026174	Glycerophosphoinositol levels
GCST90026175	Guaiacol sulfate levels
GCST90026176	Guanosine levels
GCST90026127	Behenoyl sphingomyelin (d18:1/22:0) levels
GCST90026128	Benzoate levels
GCST90026129	Beta-alanine levels
GCST90026130	Beta-citrylglutamate levels
GCST90026131	Beta-hydroxyisovalerate levels
GCST90026132	Betaine levels
GCST90026133	C-glycosyltryptophan levels
GCST90026134	Caffeine levels
GCST90026135	Carboxyethyl-gaba levels
GCST90026136	Carnitine levels
GCST90026137	Catechol sulfate levels
GCST90026138	Choline levels
GCST90026139	Choline phosphate levels
GCST90026140	Citramalate levels
GCST90026141	Citrate levels
GCST90026142	Cortisone levels
GCST90026143	Creatine levels
GCST90026144	Cys-gly, oxidized levels
GCST90026145	Cysteine levels
GCST90026146	Cysteinylglycine levels
GCST90026147	Cysteinylglycine disulfide levels
GCST90026148	Cytidine levels
GCST90026149	Deoxycarnitine levels
GCST90026150	Diglycerol levels
GCST90026151	Dimethyl sulfone levels
GCST90026177	Gulonate levels
GCST90026178	Hippurate levels
GCST90026179	Histidine levels
GCST90026180	Homoarginine levels
GCST90026181	Homocarnosine levels

GCST90026182	Homostachydrine levels
GCST90026183	Homovanillate (hva) levels
GCST90026184	Hydroxy-cmpf levels
GCST90026185	Hydroxyasparagine levels
GCST90026186	Indoleacetate levels
GCST90026187	Isobutyrylcarnitine (c4) levels
GCST90026188	Isocitrate levels
GCST90026189	Isoleucine levels
GCST90026190	Isovalerate (i5:0) levels
GCST90026191	Kynurenate levels
GCST90026192	Leucine levels
GCST90026193	Maleate levels
GCST90026194	Mannitol/sorbitol levels
GCST90026195	Mannose levels
GCST90026196	Methionine levels
GCST90026197	Methionine sulfone levels
GCST90026198	Methionine sulfoxide levels
GCST90026199	Methyl glucopyranoside (alpha + beta) levels
GCST90026200	Methylmalonate (mma) levels
GCST90026201	Methylsuccinate levels
GCST90026252	Propionylcarnitine (c3) levels
GCST90026253	Pseudouridine levels
GCST90026254	Pyridoxal levels
GCST90026255	Pyridoxate levels
GCST90026256	Pyruvate levels
GCST90026257	Quinate levels
GCST90026258	Ribitol levels
GCST90026259	Ribonate levels
GCST90026260	Ribulonate/xylulonate levels
GCST90026261	S-1-pyrroline-5-carboxylate levels
GCST90026262	S-methylcysteine levels
GCST90026263	Salicylate levels
GCST90026264	Serine levels
GCST90026265	Spermidine levels
GCST90026266	Stachydrine levels
GCST90026267	Stearoyl sphingomyelin (d18:1/18:0) levels
GCST90026268	Succinimide levels
GCST90026269	Succinylcarnitine (c4-dc) levels
GCST90026270	Tartarate levels
GCST90026271	Tartronate (hydroxymalonate) levels
GCST90026272	Theobromine levels
GCST90026273	Theophylline levels
GCST90026274	Thioprolinone levels
GCST90026275	Threonate levels
GCST90026276	Threonine levels
GCST90026277	Trans-4-hydroxyproline levels
GCST90026278	Trigonelline (n'-methylnicotinate) levels

GCST90026279	Trimethylamine n-oxide levels
GCST90026280	Tryptophan levels
GCST90026281	Tryptophan betaine levels
GCST90026282	Uracil levels
GCST90026283	Urea levels
GCST90026284	Valine levels
GCST90026285	X-10457 levels
GCST90026286	X-11261 levels
GCST90026287	2,3-dihydroxy-5-methylthio-4-pentenoate (dmtpa)
GCST90026288	X-11612 levels
GCST90026289	X-11787 levels

Table S2. Complete Mendelian Randomization Results

ID	Reported Trait	method	nsnp	b
GCST90026004	Lysine levels	MR Egger	49	0.033778
GCST90026004	Lysine levels	Weighted median	49	0.015226
GCST90026004	Lysine levels	Inverse variance	49	0.015091
GCST90026004	Lysine levels	Simple mode	49	0.012246
GCST90026004	Lysine levels	Weighted mode	49	0.026164
GCST90026011	Kynurenine levels	MR Egger	49	0.014351
GCST90026011	Kynurenine levels	Weighted median	49	0.024271
GCST90026011	Kynurenine levels	Inverse variance	49	0.024714
GCST90026011	Kynurenine levels	Simple mode	49	0.012671
GCST90026011	Kynurenine levels	Weighted mode	49	0.025079
GCST90026091	3-methylglutarylcarnitine	MR Egger	49	0.059665
GCST90026091	3-methylglutarylcarnitine	Weighted median	49	0.005615
GCST90026091	3-methylglutarylcarnitine	Inverse variance	49	0.029301
GCST90026091	3-methylglutarylcarnitine	Simple mode	49	0.02463
GCST90026091	3-methylglutarylcarnitine	Weighted mode	49	0.010453
GCST90026121	Arabonate/xylonate levels	MR Egger	49	0.010438
GCST90026121	Arabonate/xylonate levels	Weighted median	49	-0.01696
GCST90026121	Arabonate/xylonate levels	Inverse variance	49	-0.02347
GCST90026121	Arabonate/xylonate levels	Simple mode	49	0.006997
GCST90026121	Arabonate/xylonate levels	Weighted mode	49	-0.01205
GCST90026122	Arachidonate (20:4n6) level	MR Egger	49	0.102497
GCST90026122	Arachidonate (20:4n6) level	Weighted median	49	0.104504
GCST90026122	Arachidonate (20:4n6) level	Inverse variance	49	0.086644
GCST90026122	Arachidonate (20:4n6) level	Simple mode	49	0.144029
GCST90026122	Arachidonate (20:4n6) level	Weighted mode	49	0.119883
GCST90026190	Isovalerate (i5:0) levels	MR Egger	49	0.103656
GCST90026190	Isovalerate (i5:0) levels	Weighted median	49	0.099851
GCST90026190	Isovalerate (i5:0) levels	Inverse variance	49	0.071158
GCST90026190	Isovalerate (i5:0) levels	Simple mode	49	0.072157
GCST90026190	Isovalerate (i5:0) levels	Weighted mode	49	0.092599
GCST90026201	Methylsuccinate levels	MR Egger	49	-0.15118
GCST90026201	Methylsuccinate levels	Weighted median	49	-0.11049
GCST90026201	Methylsuccinate levels	Inverse variance	49	-0.07176
GCST90026201	Methylsuccinate levels	Simple mode	49	-0.11711
GCST90026201	Methylsuccinate levels	Weighted mode	49	-0.12108
GCST90026203	Myo-inositol levels	MR Egger	49	-0.03617
GCST90026203	Myo-inositol levels	Weighted median	49	-0.00698
GCST90026203	Myo-inositol levels	Inverse variance	49	0.027678
GCST90026203	Myo-inositol levels	Simple mode	49	-0.00352
GCST90026203	Myo-inositol levels	Weighted mode	49	-0.01103

se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
0.012414	0.009097	0.009447	0.058109	1.034355	1.009492	1.05983
0.009391	0.104939	-0.00318	0.033632	1.015342	0.996825	1.034204
0.006711	0.024521	0.001939	0.028244	1.015206	1.00194	1.028647
0.021696	0.575077	-0.03028	0.05477	1.012321	0.970176	1.056297
0.015867	0.105688	-0.00494	0.057263	1.026509	0.995077	1.058934
0.019507	0.465593	-0.02388	0.052585	1.014454	0.976399	1.053993
0.016891	0.150746	-0.00884	0.057378	1.024568	0.991203	1.059057
0.010252	0.015922	0.00462	0.044808	1.025022	1.004631	1.045827
0.03182	0.692251	-0.0497	0.075038	1.012751	0.951518	1.077925
0.020505	0.227292	-0.01511	0.065269	1.025396	0.985002	1.067446
0.027666	0.036184	0.005439	0.11389	1.061481	1.005454	1.120629
0.023904	0.814304	-0.04124	0.052467	1.00563	0.959601	1.053868
0.014646	0.045432	0.000595	0.058007	1.029735	1.000595	1.059723
0.043814	0.576638	-0.06125	0.110505	1.024935	0.940592	1.116842
0.029013	0.720201	-0.04641	0.067319	1.010508	0.954649	1.069636
0.020459	0.612322	-0.02966	0.050538	1.010492	0.970773	1.051837
0.019462	0.383659	-0.0551	0.021191	0.983188	0.946389	1.021417
0.010966	0.032312	-0.04497	-0.00198	0.976801	0.95603	0.998022
0.033519	0.835528	-0.0587	0.072693	1.007021	0.94299	1.075401
0.021849	0.583963	-0.05487	0.030778	0.988026	0.946608	1.031257
0.05827	0.085089	-0.01171	0.216706	1.107934	0.988355	1.24198
0.051466	0.042301	0.003631	0.205377	1.110159	1.003637	1.227987
0.03039	0.004357	0.02708	0.146209	1.090509	1.02745	1.157438
0.09142	0.121716	-0.03515	0.323212	1.154918	0.965457	1.381559
0.059928	0.051124	0.002425	0.237341	1.127365	1.002428	1.267874
0.047041	0.032495	0.011455	0.195857	1.109219	1.011521	1.216353
0.039722	0.011945	0.021997	0.177705	1.105006	1.02224	1.194473
0.024956	0.004353	0.022245	0.120072	1.073751	1.022494	1.127578
0.078681	0.363685	-0.08206	0.226371	1.074824	0.921219	1.254041
0.056596	0.108351	-0.01833	0.203527	1.097022	0.981838	1.225718
0.062447	0.019394	-0.27358	-0.02879	0.85969	0.760653	0.971623
0.047554	0.020151	-0.2037	-0.01729	0.895393	0.815709	0.982861
0.033054	0.029943	-0.13654	-0.00697	0.930758	0.87237	0.993055
0.100475	0.249562	-0.31404	0.079824	0.88949	0.730491	1.083096
0.067214	0.077932	-0.25281	0.010664	0.885967	0.776612	1.010721
0.025523	0.163022	-0.0862	0.013854	0.964475	0.917413	1.013951
0.020704	0.736134	-0.04756	0.033603	0.993047	0.953556	1.034174
0.01369	0.043196	0.000846	0.05451	1.028065	1.000846	1.056023
0.044629	0.937507	-0.09099	0.083956	0.996489	0.913026	1.087581
0.026056	0.673892	-0.0621	0.040037	0.989029	0.939788	1.040849

Table S3. Sensitivity Analyses for Heterogeneity and Horizontal Pleiotropy

ID	Reported Trait	method	Q	Q_df	Q_pval
GCST90026004	Lysine levels	MR Egger	52.40425	47	0.272402
GCST90026004	Lysine levels	Inverse v	55.91185	48	0.202088
GCST90026011	Kynurenine levels	MR Egger	49.99468	47	0.355309
GCST90026011	Kynurenine levels	Inverse v	50.41148	48	0.378302
GCST90026091	3-methylglutarylca	MR Egger	48.87157	47	0.397764
GCST90026091	3-methylglutarylca	Inverse v	50.60252	48	0.371164
GCST90026121	Arabonate/xylonate	MR Egger	46.09463	47	0.509991
GCST90026121	Arabonate/xylonate	Inverse v	49.8911	48	0.398041
GCST90026122	Arachidonate (20:4	MR Egger	49.23125	47	0.383938
GCST90026122	Arachidonate (20:4	Inverse v	49.3385	48	0.419445
GCST90026190	Isovalerate (i5:0)	MR Egger	43.50756	47	0.61802
GCST90026190	Isovalerate (i5:0)	Inverse v	44.17174	48	0.630452
GCST90026201	Methylsuccinate le	MR Egger	37.20489	47	0.846224
GCST90026201	Methylsuccinate le	Inverse v	39.45237	48	0.805422
GCST90026203	Myo-inositol level	MR Egger	40.86903	47	0.72326
GCST90026203	Myo-inositol level	Inverse v	49.54525	48	0.411387

Egger_intise		pval
-0.00558	0.003146	0.082598
0.00309	0.004937	0.534367
-0.00902	0.006993	0.203287
-0.01007	0.005168	0.057345
-0.00472	0.014735	0.750394
-0.00972	0.011929	0.419197
0.023726	0.015826	0.14052
0.019017	0.006456	0.005001

Table S4. MR-PRESSO Global Test and Outlier Detection Results

ID	Reported Trait	MR Analysis	Causal EstimSd	
GCST90026004	Lysine levels	Raw	0.01509145	0.0067107
GCST90026004	Lysine levels	Outlier-correc	NA	NA
GCST90026011	Kynurenine levels	Raw	0.02471407	0.0102518
GCST90026011	Kynurenine levels	Outlier-correc	NA	NA
GCST90026091	3-methylglutarylcarnit	Raw	0.02930113	0.0146459
GCST90026091	3-methylglutarylcarnit	Outlier-correc	NA	NA
GCST90026121	Arabonate/xylonate lev	Raw	-0.02347264	0.0109658
GCST90026121	Arabonate/xylonate lev	Outlier-correc	NA	NA
GCST90026122	Arachidonate (20:4n6)	Raw	0.08664419	0.03039
GCST90026122	Arachidonate (20:4n6)	Outlier-correc	NA	NA
GCST90026190	Isovalerate (i5:0) lev	Raw	0.0711581	0.02394
GCST90026190	Isovalerate (i5:0) lev	Outlier-correc	NA	NA
GCST90026201	Methylsuccinate levels	Raw	-0.07175561	0.029967
GCST90026201	Methylsuccinate levels	Outlier-correc	NA	NA
GCST90026203	Myo-inositol levels	Raw	0.02767808	0.0136898
GCST90026203	Myo-inositol levels	Outlier-correc	NA	NA

T-stat	P-value	RSSobs	Pvalue
2.248874	0.029146	59.14674	0.206
NA	NA		
2.410699	0.0198	52.07101	0.429
NA	NA		
2.000636	0.051105	52.79369	0.384
NA	NA		
2.000636	0.037421	51.58076	0.427
NA	NA		
2.851075	0.006405	51.19173	0.427
NA	NA		
2.972352	0.004609	45.93771	0.671
NA	NA		
-2.39449	0.020597	41.26963	0.812
NA	NA		
2.021807	0.04879	52.33868	0.4
NA	NA		