

Supplementary Table SI. Summary data from all GWAS used in current study

Phenotype	Category	Year	Samplesize	Cases	Controls	Ethnic	Consortium	Pubmed ID	
Trimethylamine N-oxide	Continuous	2013		2076 /	/	Europe	FHS Offspring Cohort	23823483	
Carnitine	Continuous	2013		2076 /	/	Europe	FHS Offspring Cohort	23823483	
Choline	Continuous	2013		2076 /	/	Europe	FHS Offspring Cohort	23823483	
Betaine	Continuous	2013		2076 /	/	Europe	FHS Offspring Cohort	23823483	
Parkinson	Binary	2019		482730	33674	449056	Europe	IPDG	31701892
Parkinson	Binary	2011		1672	816	856	Europe	PROGENI and GenePD	21829596
Parkinson	Binary	2021		218792	2162	216630	Europe	FinnGen	FinnGen Study

Note: IPDG: International Parkinson's Disease Genomics Consortium; FHS: Framingham Heart Study.

Supplementary Table SII. Genetic instrumental variables for TMAO and precursors

Exposure	SNP	effect_allele. exposure	other_allele .exposure	Maf	beta	se	pval	samplesize	Gene	F-statistic
trimethylamine_N_oxide	rs10003933	A	T	0.142193	-0.211	0.051	4.02E-05	2076	SH3RF1	16.86
trimethylamine_N_oxide	rs10104412	A	T	0.189277	0.206	0.050	3.83E-05	2076	ZMAT4	16.95
trimethylamine_N_oxide	rs10870302	G	T	0.479912	-0.140	0.035	4.96E-05	2076	LRRC27	16.46
trimethylamine_N_oxide	rs10873474	G	A	0.091608	0.238	0.058	4.02E-05	2076	LINC02299	16.86
trimethylamine_N_oxide	rs10877835	C	A	0.144761	-0.225	0.056	4.96E-05	2076	SLC2A13	16.46
trimethylamine_N_oxide	rs11098315	C	T	0.177977	0.189	0.044	1.65E-05	2076	NA	18.56
trimethylamine_N_oxide	rs11583422	G	C	0.036628	0.537	0.130	3.88E-05	2076	PTGFRN	16.93
trimethylamine_N_oxide	rs11625777	T	C	0.234492	-0.170	0.040	1.88E-05	2076	NA	18.30
trimethylamine_N_oxide	rs12116428	C	T	0.052473	-0.484	0.117	3.73E-05	2076	NA	17.00
trimethylamine_N_oxide	rs12131532	A	T	0.084664	0.289	0.070	3.36E-05	2076	NA	17.20
trimethylamine_N_oxide	rs12379588	T	C	0.040923	-0.934	0.218	1.83E-05	2076	LOC105375988	18.35
trimethylamine_N_oxide	rs12443031	C	T	0.029039	3.036	0.740	4.05E-05	2076	GOLGA8M	16.85
trimethylamine_N_oxide	rs13097605	C	T	0.272423	0.154	0.038	3.95E-05	2076	NA	16.89
trimethylamine_N_oxide	rs13212146	C	G	0.048852	-0.587	0.137	1.91E-05	2076	LOC105378021	18.28
trimethylamine_N_oxide	rs13236413	C	T	0.090077	0.408	0.086	2.23E-06	2076	NA	22.38
trimethylamine_N_oxide	rs1337398	G	C	0.063116	-0.298	0.072	3.24E-05	2076	BNC2	17.27
trimethylamine_N_oxide	rs1446554	A	G	0.148205	-0.208	0.047	1.05E-05	2076	NA	19.42
trimethylamine_N_oxide	rs1538291	C	T	0.315186	0.183	0.045	4.27E-05	2076	NA	16.75
trimethylamine_N_oxide	rs16917161	T	A	0.091895	0.262	0.059	9.23E-06	2076	XK	19.66
trimethylamine_N_oxide	rs17131718	C	T	0.089742	-0.259	0.059	1.22E-05	2076	NA	19.13
trimethylamine_N_oxide	rs1737681	T	C	0.475448	-0.137	0.033	3.22E-05	2076	LRFN2	17.28

trimethylamine_N_oxide	rs17418675	T	C	0.341383	0.156	0.035	9.11E-06	2076	RTN4	19.69
trimethylamine_N_oxide	rs17526983	G	A	0.084653	0.467	0.114	4.14E-05	2076	MET	16.81
trimethylamine_N_oxide	rs17811040	G	A	0.3335	-0.154	0.037	3.77E-05	2076	NA	16.98
trimethylamine_N_oxide	rs2001146	T	C	0.055643	0.300	0.073	4.16E-05	2076	SNX3	16.80
trimethylamine_N_oxide	rs2243972	G	C	0.043946	0.490	0.118	3.50E-05	2076	NA	17.13
trimethylamine_N_oxide	rs2415847	G	A	0.263951	-0.168	0.041	4.83E-05	2076	NA	16.51
trimethylamine_N_oxide	rs2721876	A	G	0.333201	0.165	0.037	1.01E-05	2076	NA	19.49
trimethylamine_N_oxide	rs3799563	C	T	0.356498	0.145	0.035	3.40E-05	2076	F13A1	17.18
trimethylamine_N_oxide	rs390258	A	G	0.185451	0.186	0.044	2.09E-05	2076	NA	18.10
trimethylamine_N_oxide	rs3935570	G	T	0.260675	-0.227	0.043	1.56E-07	2076	TAS1R2	27.52
trimethylamine_N_oxide	rs422576	G	A	0.207039	0.308	0.071	1.55E-05	2076	NA	18.67
trimethylamine_N_oxide	rs4324493	A	G	0.312746	-0.147	0.036	4.19E-05	2076	CACNA2D3	16.79
trimethylamine_N_oxide	rs4685442	A	G	0.232628	0.210	0.050	3.02E-05	2076	TBC1D5	17.41
trimethylamine_N_oxide	rs4811626	C	T	0.417204	0.154	0.035	1.49E-05	2076	LOC105372677	18.75
trimethylamine_N_oxide	rs4846884	C	A	0.156395	-0.211	0.047	6.19E-06	2076	TTC13	20.43
trimethylamine_N_oxide	rs528224	A	T	0.081545	-0.259	0.062	2.60E-05	2076	RFX3	17.69
trimethylamine_N_oxide	rs550915	A	C	0.169551	0.270	0.062	1.33E-05	2076	ALDOB	18.96
trimethylamine_N_oxide	rs6077980	C	A	0.511551	0.141	0.034	3.45E-05	2076	NA	17.15
trimethylamine_N_oxide	rs6656519	T	G	0.244208	0.182	0.044	4.36E-05	2076	NA	16.71
trimethylamine_N_oxide	rs692588	A	G	0.030551	2.794	0.577	1.27E-06	2076	GOLGA8G/WHAMMP2	23.48
trimethylamine_N_oxide	rs6974263	A	C	0.397505	-0.139	0.034	4.27E-05	2076	KIAA1549	16.75
trimethylamine_N_oxide	rs7018973	C	T	0.050697	0.348	0.081	1.74E-05	2076	RALGPS1	18.45
trimethylamine_N_oxide	rs7243722	A	T	0.052704	0.327	0.079	3.31E-05	2076	OSBPL1A	17.23
trimethylamine_N_oxide	rs7298875	C	T	0.100729	0.250	0.058	1.78E-05	2076	PLXNC1	18.41
trimethylamine_N_oxide	rs7302178	A	G	0.16379	0.237	0.053	6.40E-06	2076	ITPR2	20.37
trimethylamine_N_oxide	rs7522157	C	T	0.291299	0.151	0.037	4.11E-05	2076	AKNAD1	16.82

trimethylamine_N_oxide	rs7944382	C	A	0.179352	0.199	0.047	2.41E-05	2076	CNTN5	17.84
trimethylamine_N_oxide	rs7953354	T	C	0.09864	0.243	0.058	2.54E-05	2076	ANKS1B	17.74
trimethylamine_N_oxide	rs8016345	T	A	0.180877	0.188	0.044	1.62E-05	2076	NA	18.59
trimethylamine_N_oxide	rs8110533	G	T	0.054129	-0.542	0.131	3.65E-05	2076	INSR	17.05
choline	rs2408564	A	G	0.169697	-0.249	0.052	1.41E-06	2076	BTG1/RP11-693J15.6	23.27
choline	rs9599459	A	T	0.011635	-1.015	0.216	2.73E-06	2076	NA	22.00
choline	rs4008155	C	T	0.156004	0.215	0.047	4.02E-06	2076	ALDH1B1	21.25
choline	rs12444044	A	G	0.11218	-0.364	0.080	5.77E-06	2076	WVOX	20.56
choline	rs10819950	A	G	0.316435	0.208	0.046	6.95E-06	2076	HSD17B3	20.21
choline	rs10826197	C	A	0.486752	0.151	0.034	8.15E-06	2076	TFAM	19.90
choline	rs10098425	A	G	0.053791	0.459	0.103	8.93E-06	2076	ZFPM2	19.73
choline	rs9314081	G	A	0.028231	0.528	0.120	1.01E-05	2076	NA	19.49
choline	rs10762269	G	A	0.540265	0.169	0.039	1.18E-05	2076	HKDC1	19.19
choline	rs16938029	T	C	0.091087	0.282	0.066	1.81E-05	2076	NA	18.38
choline	rs10338	A	G	0.168428	0.202	0.047	1.84E-05	2076	H3-3B	18.35
choline	rs3733725	G	A	0.154148	-0.198	0.046	2.01E-05	2076	SEMA6A	18.18
choline	rs4429580	G	A	0.092449	0.251	0.059	2.01E-05	2076	ADK	18.18
choline	rs927811	A	C	0.258911	-0.165	0.039	2.24E-05	2076	MACROD2	17.97
choline	rs11630160	G	A	0.150978	-0.199	0.047	2.31E-05	2076	SLTM	17.91
choline	rs13398317	T	C	0.27498	0.203	0.048	2.80E-05	2076	AC097713.3	17.55
choline	rs1867837	T	C	0.031967	0.421	0.101	2.88E-05	2076	MAP3K19	17.49
choline	rs7834685	C	A	0.233188	0.176	0.042	2.97E-05	2076	NA	17.44
choline	rs1868767	A	G	0.01469	1.844	0.442	3.07E-05	2076	PRH1	17.38
choline	rs785857	G	A	0.412247	-0.148	0.036	3.22E-05	2076	DOCK8	17.28
choline	rs7775235	A	G	0.27103	0.169	0.041	3.37E-05	2076	PDSS2	17.20
choline	rs7850837	T	C	0.399524	-0.142	0.034	3.56E-05	2076	NA	17.09

choline	rs2167267	G	T	0.062147	0.296	0.072	3.80E-05	2076	EPDR1	16.97
choline	rs10758216	G	C	0.401157	0.141	0.034	4.04E-05	2076	ANXA2P2	16.85
choline	rs2201409	A	G	0.178286	0.178	0.044	4.32E-05	2076	SPEF2	16.73
choline	rs9463493	G	A	0.255893	-0.158	0.039	4.38E-05	2076	GLYATL3	16.70
choline	rs6467883	A	G	0.175909	-0.208	0.051	4.71E-05	2076	CACNA2D1	16.56
choline	rs11242519	G	A	0.131239	0.210	0.052	4.74E-05	2076	NA	16.55
choline	rs16904654	A	T	0.028446	-0.491	0.121	4.77E-05	2076	KCNQ3	16.54
carnitine	rs1171617	T	G	0.230228	-0.418	0.040	5.87E-26	2076	SLC16A9	111.01
carnitine	rs9879988	A	G	0.163268	0.239	0.047	3.00E-07	2076	XK	26.25
carnitine	rs6959875	G	A	0.301445	0.270	0.055	7.58E-07	2076	XK	24.46
carnitine	rs6108228	T	G	0.405993	-0.175	0.037	2.56E-06	2076	PLCB1	22.12
carnitine	rs274554	C	T	0.15858	-0.211	0.046	4.68E-06	2076	SLC22A5	20.96
carnitine	rs11733138	G	A	0.345948	0.225	0.050	6.10E-06	2076	CDC42P6	20.46
carnitine	rs562672	T	C	0.366342	-0.234	0.052	7.39E-06	2076	CDON/RP11-673E11.2	20.09
carnitine	rs4656852	T	C	0.05341	-0.508	0.114	8.30E-06	2076	SLAMF8/C1orf204	19.87
carnitine	rs7606454	C	T	0.138628	0.235	0.053	9.62E-06	2076	NA	19.59
carnitine	rs497281	C	A	0.235935	0.182	0.042	1.23E-05	2076	NA	19.12
carnitine	rs9836934	G	T	0.198867	-0.197	0.045	1.28E-05	2076	NA	19.05
carnitine	rs6856402	G	A	0.499058	-0.147	0.034	1.50E-05	2076	NA	18.73
carnitine	rs3807852	G	A	0.329912	0.172	0.040	1.84E-05	2076	ICA1	18.35
carnitine	rs7203840	C	G	0.383897	-0.147	0.035	2.17E-05	2076	NA	18.04
carnitine	rs731034	T	C	0.147802	0.198	0.047	2.52E-05	2076	COLEC11	17.75
carnitine	rs2053244	T	G	0.635741	0.146	0.035	2.57E-05	2076	RALYL	17.71
carnitine	rs13400794	T	A	0.198744	0.183	0.044	2.66E-05	2076	LINC01317	17.65
carnitine	rs7406506	G	A	0.36868	-0.209	0.050	2.95E-05	2076	FAAP100	17.45
carnitine	rs6043753	A	G	0.35832	-0.148	0.036	3.15E-05	2076	NA	17.33

carnitine	rs11658572	T	C	0.330658	0.236	0.057	3.17E-05	2076	NA	17.31
carnitine	rs17488979	T	C	0.011418	1.501	0.361	3.21E-05	2076	ADAMTS12	17.29
carnitine	rs10484239	C	A	0.123375	0.212	0.051	3.31E-05	2076	NA	17.23
carnitine	rs17836364	G	A	0.117714	-0.734	0.177	3.43E-05	2076	LILRA4	17.16
carnitine	rs599951	C	T	0.202986	-0.175	0.042	3.50E-05	2076	NA	17.12
carnitine	rs7076851	A	G	0.041898	-0.509	0.123	3.51E-05	2076	STK32C	17.12
carnitine	rs2925002	C	T	0.442701	-0.141	0.034	4.10E-05	2076	NA	16.83
carnitine	rs2296148	C	T	0.033124	0.402	0.098	4.29E-05	2076	ERCC5	16.74
carnitine	rs3798408	C	T	0.010473	0.772	0.190	4.75E-05	2076	DSE	16.54
carnitine	rs13375160	T	C	0.148329	0.192	0.047	4.79E-05	2076	NA	16.53
betaine	rs6862283	T	C	0.305742	-0.193	0.036	9.57E-08	2076	DMGDH	28.46
betaine	rs11742447	C	T	0.34453	0.246	0.051	1.16E-06	2076	LINC02147	23.64
betaine	rs11224038	C	T	0.013001	-1.211	0.251	1.40E-06	2076	RP11-469N6.1	23.28
betaine	rs10817686	T	C	0.470655	0.456	0.095	1.68E-06	2076	TNC/TNFSF8	22.93
betaine	rs10883712	T	G	0.403856	0.159	0.035	4.02E-06	2076	NOLC1	21.26
betaine	rs10786317	A	G	0.437371	-0.158	0.035	4.72E-06	2076	NRG3	20.95
betaine	rs1868264	A	G	0.195369	0.192	0.042	4.92E-06	2076	TRAF3IP1	20.87
betaine	rs2879414	A	G	0.459427	-0.153	0.033	5.03E-06	2076	MEX3C	20.83
betaine	rs10178297	T	C	0.159669	0.207	0.046	6.74E-06	2076	LINC01965	20.26
betaine	rs11030909	C	A	0.089041	-0.288	0.064	7.30E-06	2076	FSHB	20.11
betaine	rs358538	A	G	0.054655	0.456	0.102	7.86E-06	2076	PDCD5	19.97
betaine	rs2087307	T	G	0.25941	-0.172	0.039	8.63E-06	2076	CLEC1A	19.79
betaine	rs1328452	G	A	0.1329	0.217	0.050	1.54E-05	2076	MGC27382/PTGFR	18.69
betaine	rs7333859	G	A	0.380834	0.177	0.041	1.58E-05	2076	NA	18.64
betaine	rs17099954	A	G	0.482372	0.145	0.034	1.61E-05	2076	SRGAP1	18.61
betaine	rs7449492	G	C	0.41138	0.157	0.036	1.72E-05	2076	NA	18.48

betaine	rs17606892	C	T	0.113677	0.229	0.053	1.80E-05	2076	TBC1D1	18.39
betaine	rs6956293	T	C	0.234032	-0.170	0.040	1.89E-05	2076	EXOC4	18.29
betaine	rs8115215	G	C	0.006607	2.225	0.524	2.15E-05	2076	NA	18.05
betaine	rs182165	A	T	0.475674	-0.171	0.040	2.20E-05	2076	NA	18.01
betaine	rs11615707	A	T	0.126885	-0.216	0.051	2.23E-05	2076	NA	17.99
betaine	rs9627239	C	T	0.155832	-0.214	0.051	2.28E-05	2076	NA	17.94
betaine	rs2279534	A	C	0.035729	0.381	0.090	2.40E-05	2076	DPP6	17.84
betaine	rs298468	G	A	0.106593	0.227	0.054	2.45E-05	2076	LINC00499	17.81
betaine	rs7724650	G	A	0.475322	0.162	0.038	2.45E-05	2076	LINC02998	17.80
betaine	rs17392456	T	C	0.083994	-0.524	0.124	2.53E-05	2076	NA	17.74
betaine	rs1219426	T	C	0.024491	-0.459	0.110	2.82E-05	2076	NA	17.53
betaine	rs7465394	A	G	0.498678	-0.156	0.037	2.93E-05	2076	LOC101929492/RP11-56 6H8.3	17.47
betaine	rs10928063	A	G	0.477418	0.149	0.036	3.01E-05	2076	KAZN	17.41
betaine	rs3948659	A	G	0.040845	-0.516	0.124	3.07E-05	2076	NA	17.37
betaine	rs1923415	G	A	0.114293	0.219	0.053	3.45E-05	2076	NA	17.15
betaine	rs10081	C	T	0.073682	0.269	0.065	3.93E-05	2076	SIRT3	16.91
betaine	rs1909823	T	C	0.117178	0.432	0.105	3.95E-05	2076	NA	16.89
betaine	rs12366073	G	C	0.024099	0.997	0.243	4.07E-05	2076	UBASH3B	16.84
betaine	rs12637363	C	T	0.062403	0.282	0.069	4.10E-05	2076	GXYLT2	16.82
betaine	rs17351871	G	C	0.044278	0.398	0.097	4.17E-05	2076	NA	16.79
betaine	rs7075837	G	A	0.370706	0.148	0.036	4.21E-05	2076	NA	16.78
betaine	rs7250261	G	C	0.445792	0.174	0.043	4.40E-05	2076	NA	16.69
betaine	rs13006343	C	T	0.064037	0.280	0.069	4.55E-05	2076	NA	16.63
betaine	rs2305457	C	T	0.245211	-0.160	0.039	4.83E-05	2076	HS1BP3	16.51
betaine	rs2703825	C	A	0.153624	0.230	0.057	4.89E-05	2076	NA	16.49

betaine	rs6805982	A	T	0.046973	-0.317	0.078	4.94E-05	2076	NA	16.47
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Supplementary Table SIII. Mendelian random results of the TMAO and precursors and parkinson's disease

Outcome	exposure	method	nsnp	Beta	SE	P-value	OR	OR_95%Lower	OR_95%upper
Parkinson's disease (IPDG)	trimethylamine_N_oxide	MR Egger	49	0.0161659	0.020462	0.433476	1.016297	0.97634409	1.057885
Parkinson's disease (IPDG)	trimethylamine_N_oxide	Weighted median	49	0.0034665	0.021048	0.869183	1.003472	0.962918315	1.045735
Parkinson's disease (IPDG)	trimethylamine_N_oxide	Inverse variance weighted	49	0.002046	0.013786	0.88202	1.002048	0.975334967	1.029493
Parkinson's disease (IPDG)	trimethylamine_N_oxide	Simple mode	49	0.0053587	0.04156	0.897945	1.005373	0.92672481	1.090696
Parkinson's disease (IPDG)	trimethylamine_N_oxide	Weighted mode	49	0.0092936	0.020504	0.652413	1.009337	0.969577165	1.050727
Parkinson's disease (PROGENI and GenePD)	trimethylamine_N_oxide	MR Egger	11	0.0064833	0.041231	0.878524	1.006504	0.928365397	1.09122
Parkinson's disease (PROGENI and GenePD)	trimethylamine_N_oxide	Weighted median	11	0.0060746	0.010221	0.552291	1.006093	0.986138692	1.026451
Parkinson's disease (PROGENI and GenePD)	trimethylamine_N_oxide	Inverse variance weighted	11	0.0047933	0.008091	0.553571	1.004805	0.988995873	1.020866
Parkinson's disease (PROGENI and GenePD)	trimethylamine_N_oxide	Simple mode	11	-7.60E-06	0.013605	0.999565	0.999992	0.973678324	1.027018
Parkinson's disease (PROGENI and GenePD)	trimethylamine_N_oxide	Weighted mode	11	0.0076059	0.009838	0.457316	1.007635	0.988392322	1.027252
Parkinson's disease	trimethylamine_N_oxide	MR Egger	49	-0.013818	0.024587	0.576716	0.986277	0.939875277	1.034969

(FinnGen)									
Parkinson's disease (FinnGen)	trimethylamine_N_oxide	Weighted median	49	-0.018237	0.022063	0.408464	0.981928	0.940371688	1.025321
Parkinson's disease (FinnGen)	trimethylamine_N_oxide	Inverse variance weighted	49	-0.015607	0.01906	0.412876	0.984514	0.948412399	1.021989
Parkinson's disease (FinnGen)	trimethylamine_N_oxide	Simple mode	49	-0.060695	0.075855	0.427491	0.94111	0.811094588	1.091967
Parkinson's disease (FinnGen)	trimethylamine_N_oxide	Weighted mode	49	-0.015785	0.018959	0.409108	0.984339	0.948432189	1.021604
Parkinson's disease (IPDG)	choline	MR Egger	30	-0.01326	0.02427	0.589149	0.986828	0.94098479	1.034904
Parkinson's disease (IPDG)	choline	Weighted median	30	-0.005444	0.024481	0.824009	0.99457	0.947975618	1.043456
Parkinson's disease (IPDG)	choline	Inverse variance weighted	30	-0.011939	0.016419	0.467121	0.988132	0.956838903	1.020448
Parkinson's disease (IPDG)	choline	Simple mode	30	-0.034939	0.033262	0.302204	0.965665	0.904718297	1.030717
Parkinson's disease (IPDG)	choline	Weighted mode	30	-0.00767	0.022637	0.737171	0.992359	0.949291375	1.03738
Parkinson's disease (PROGENI and GenePD)	choline	MR Egger	3	-0.013076	0.267616	0.968918	0.987009	0.584146504	1.667709
Parkinson's disease (PROGENI and GenePD)	choline	Weighted median	3	0.0042675	0.043903	0.922565	1.004277	0.921472319	1.094522
Parkinson's disease (PROGENI and GenePD)	choline	Inverse variance weighted	3	0.0046908	0.03745	0.900323	1.004702	0.933595554	1.081224
Parkinson's disease	choline	Simple mode	3	-3E-08	0.053188	1	1	0.901001114	1.109876

(PROGENI and GenePD)									
Parkinson's disease (PROGENI and GenePD)	choline	Weighted mode	3	0.0066396	0.042214	0.889464	1.006662	0.926723826	1.093495
Parkinson's disease (FinnGen)	choline	MR Egger	28	0.0286572	0.067093	0.672802	1.029072	0.902267135	1.173698
Parkinson's disease (FinnGen)	choline	Weighted median	28	0.0493777	0.051224	0.335072	1.050617	0.950257687	1.161576
Parkinson's disease (FinnGen)	choline	Inverse variance weighted	28	0.0405651	0.03555	0.253834	1.041399	0.971307617	1.116549
Parkinson's disease (FinnGen)	choline	Simple mode	28	0.0358025	0.08714	0.684418	1.036451	0.873722156	1.229488
Parkinson's disease (FinnGen)	choline	Weighted mode	28	0.0504318	0.048139	0.304094	1.051725	0.957030689	1.155789
Parkinson's disease (IPDG)	carnitine	MR Egger	27	-0.027689	0.035974	0.448702	0.972691	0.906468984	1.043751
Parkinson's disease (IPDG)	carnitine	Weighted median	27	0.0012322	0.027462	0.96421	1.001233	0.948765998	1.056601
Parkinson's disease (IPDG)	carnitine	Inverse variance weighted	27	0.0208881	0.018331	0.254509	1.021108	0.985070953	1.058463
Parkinson's disease (IPDG)	carnitine	Simple mode	27	0.0045843	0.045079	0.919778	1.004595	0.919642844	1.097394
Parkinson's disease (IPDG)	carnitine	Weighted mode	27	-0.003587	0.029428	0.90392	0.996419	0.940572255	1.055582
Parkinson's disease (PROGENI and GenePD)	carnitine	MR Egger	5	-0.000278	0.111846	0.998173	0.999722	0.802923586	1.244756
Parkinson's disease	carnitine	Weighted median	5	0	0.022669	1	1	0.95654226	1.045432

(PROGENI and GenePD)									
Parkinson's disease (PROGENI and GenePD)	carnitine	Inverse variance weighted	5	6.165E-05	0.019684	0.997501	1.000062	0.96221302	1.039399
Parkinson's disease (PROGENI and GenePD)	carnitine	Simple mode	5	-3E-08	0.028763	0.999999	1	0.94518323	1.057996
Parkinson's disease (PROGENI and GenePD)	carnitine	Weighted mode	5	-3E-08	0.022031	0.999999	1	0.957738817	1.044126
Parkinson's disease (FinnGen)	carnitine	MR Egger	29	0.0357399	0.054587	0.518182	1.036386	0.931227753	1.15342
Parkinson's disease (FinnGen)	carnitine	Weighted median	29	0.0195294	0.041401	0.637129	1.019721	0.940243816	1.105917
Parkinson's disease (FinnGen)	carnitine	Inverse variance weighted	29	0.0151784	0.027177	0.576503	1.015294	0.962627506	1.070842
Parkinson's disease (FinnGen)	carnitine	Simple mode	29	-0.020555	0.0644	0.751963	0.979655	0.863484712	1.111454
Parkinson's disease (FinnGen)	carnitine	Weighted mode	29	0.0081764	0.043104	0.850919	1.00821	0.926532094	1.097088
Parkinson's disease (IPDG)	betaine	MR Egger	39	0.0392904	0.026544	0.147286	1.040072	0.987344867	1.095616
Parkinson's disease (IPDG)	betaine	Weighted median	39	0.033544	0.027672	0.225439	1.034113	0.979519134	1.09175
Parkinson's disease (IPDG)	betaine	Inverse variance weighted	39	0.0203438	0.016396	0.214684	1.020552	0.988277115	1.053881
Parkinson's disease (IPDG)	betaine	Simple mode	39	0.0437465	0.043549	0.321471	1.044718	0.959244933	1.137806
Parkinson's disease	betaine	Weighted mode	39	0.033347	0.025263	0.194739	1.033909	0.983960927	1.086393

(IPDG)									
Parkinson's disease (PROGENI and GenePD)	betaine	MR Egger	5	0.0329526	0.09118	0.741752	1.033502	0.864365162	1.235734
Parkinson's disease (PROGENI and GenePD)	betaine	Weighted median	5	0.0062225	0.027393	0.820304	1.006242	0.953640633	1.061745
Parkinson's disease (PROGENI and GenePD)	betaine	Inverse variance weighted	5	0.003201	0.024078	0.894241	1.003206	0.956960917	1.051686
Parkinson's disease (PROGENI and GenePD)	betaine	Simple mode	5	4.161E-05	0.038287	0.999185	1.000042	0.927742694	1.077975
Parkinson's disease (PROGENI and GenePD)	betaine	Weighted mode	5	0.0094979	0.026134	0.734675	1.009543	0.95913422	1.062601
Parkinson's disease (FinnGen)	betaine	MR Egger	37	0.0162116	0.036236	0.657348	1.016344	0.946664434	1.091152
Parkinson's disease (FinnGen)	betaine	Weighted median	37	0.0113433	0.034432	0.74182	1.011408	0.945404097	1.08202
Parkinson's disease (FinnGen)	betaine	Inverse variance weighted	37	-0.008865	0.023025	0.70021	0.991174	0.94743764	1.036929
Parkinson's disease (FinnGen)	betaine	Simple mode	37	-0.009577	0.071082	0.893576	0.990469	0.861657059	1.138537
Parkinson's disease (FinnGen)	betaine	Weighted mode	37	0.0231923	0.034022	0.499795	1.023463	0.957442107	1.094037

Supplementary Table SIV. The leave-one-out sensitivity analysis of the causal effect of TMAO and precursors on Parkinson's disease

Exposure	Outcome	SNP	Beta	SE	P-value	OR	OR_95%Lower	OR_95%Upper
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs10003933	0.00224895	0.0138895	0.8713712	1.0022515	0.975334743	1.029911055
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs10104412	0.00322253	0.0138566	0.816101	1.0032277	0.9763478	1.030847686
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs10870302	0.00203444	0.0138379	0.8831164	1.0020365	0.975224266	1.029585923
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs10873474	0.00393827	0.0138734	0.7765081	1.003946	0.977014711	1.031619726
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs10877835	0.00341432	0.0138773	0.805654	1.0034202	0.976495453	1.03108725
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs11098315	0.00217104	0.013837	0.8753228	1.0021734	0.975359204	1.029724754
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs11583422	0.00318892	0.0138592	0.8180183	1.003194	0.976310072	1.03081823
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs11625777	0.00118755	0.0138416	0.9316285	1.0011883	0.974391656	1.028721793
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs12116428	0.00045239	0.0139279	0.9740887	1.0004525	0.973510953	1.028139622
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs12131532	0.0020722	0.0138444	0.8810189	1.0020743	0.975248634	1.029637942
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs12379588	0.00196933	0.0139227	0.8875166	1.0019713	0.974998654	1.029690063
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs12443031	0.00173681	0.0155296	0.9109515	1.0017383	0.971706761	1.032698022
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs13097605	0.00266723	0.0138374	0.8471504	1.0026708	0.975842571	1.030236578
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs13212146	0.00375316	0.0140329	0.7891193	1.0037602	0.9765285	1.031751321
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs13236413	-0.00438805	0.0140055	0.7540463	0.9956216	0.968662657	1.023330769
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs1337398	0.001681	0.0138327	0.9032763	1.0016824	0.974889583	1.029211587
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs1446554	0.00171753	0.0138324	0.9011832	1.001719	0.974925748	1.029248595
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs16917161	0.00301472	0.0138552	0.8277503	1.0030193	0.976147627	1.030630638
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs17131718	0.00372196	0.0138615	0.7883057	1.0037289	0.97682624	1.03137247
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs1737681	0.00175256	0.0138501	0.8993063	1.0017541	0.974926144	1.029320289
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs17418675	0.00308886	0.0138578	0.823616	1.0030936	0.976214945	1.030712397

trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs17526983	0.00337162	0.0138867	0.8081639	1.0033773	0.976435842	1.03106213
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs17811040	0.00129501	0.013875	0.925638	1.0012958	0.974432579	1.02889969
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs2001146	0.00218284	0.0138562	0.874823	1.0021852	0.975333984	1.029775691
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs2243972	-1.64E-05	0.0139047	0.9990573	0.9999836	0.973098911	1.027610998
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs2415847	0.0029483	0.0138401	0.831306	1.0029527	0.976111748	1.030531625
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs2721876	0.00014849	0.0138787	0.9914638	1.0001485	0.973308838	1.027728276
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs3799563	0.00093754	0.0138592	0.9460661	1.000938	0.974114522	1.028500052
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs390258	-0.00065863	0.0138374	0.9620367	0.9993416	0.972602469	1.026815826
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs3935570	0.00032921	0.0139263	0.98114	1.0003293	0.97339397	1.028009909
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs422576	0.00215398	0.0139349	0.8771568	1.0021563	0.975155406	1.02990482
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs4685442	0.00178477	0.0138833	0.8977095	1.0017864	0.974894076	1.029420469
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs4811626	0.00196532	0.0138473	0.8871371	1.0019673	0.975138808	1.029533812
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs4846884	0.0022523	0.0138442	0.8707632	1.0022548	0.975424745	1.029822914
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs528224	0.00225074	0.0138393	0.8708069	1.0022533	0.975432466	1.029811558
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs550915	0.0039014	0.0138745	0.7785631	1.003909	0.976976569	1.031583919
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs6077980	0.00369056	0.0138389	0.7897151	1.0036974	0.97683882	1.031294414
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs6656519	0.0017701	0.0138603	0.8983781	1.0017717	0.974923701	1.029358996
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs692588	-0.00312574	0.0155277	0.8404627	0.9968791	0.966996918	1.027684775
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs6974263	0.00540934	0.0138514	0.696148	1.005424	0.978495139	1.033093946
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7018973	0.00153961	0.0138185	0.9112863	1.0015408	0.974778832	1.029037484
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7243722	0.00183595	0.0138877	0.8948266	1.0018376	0.974935456	1.02948215
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7298875	0.00218815	0.0138469	0.8744371	1.0021905	0.975357009	1.029762317
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7302178	0.00298407	0.0138814	0.8297919	1.0029885	0.97606752	1.03065204
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7522157	0.00157623	0.0138564	0.9094328	1.0015775	0.97474206	1.029151675
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7944382	0.00302074	0.0138515	0.8273669	1.0030253	0.976160512	1.030629442
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs7953354	0.00038194	0.0138694	0.9780302	1.000382	0.973553969	1.027949355

trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs8016345	0.00420979	0.0138604	0.7613348	1.0042187	0.977304952	1.031873546
trimethylamine_N_oxide	Parkinson's disease(IPDG)	rs8110533	0.00405191	0.0139094	0.7708158	1.0040601	0.977056828	1.031809736
trimethylamine_N_oxide	Parkinson's disease(IPDG)	All	0.00204595	0.0137858	0.8820195	1.002048	0.975334967	1.02949276
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs10870302	0.0054373	0.0086175	0.5280642	1.0054521	0.988612429	1.022578629
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs10873474	0.00495962	0.0082302	0.5467676	1.0049719	0.98889056	1.021314833
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs1446554	0.00481274	0.0081074	0.552766	1.0048243	0.988983303	1.020919106
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs1737681	0.00493562	0.0082103	0.5477393	1.0049478	0.988905469	1.02125042
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs17418675	0.00476678	0.0081306	0.5576886	1.0047782	0.988892985	1.020918511
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs17811040	0.00311762	0.0102208	0.7603461	1.0031225	0.983227064	1.023420485
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs3935570	0.0046101	0.0099991	0.6447623	1.0046207	0.985123588	1.024503781
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs4811626	0.00474186	0.0081648	0.5613952	1.0047531	0.988802071	1.020961486
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs4846884	0.00485051	0.0081134	0.5499471	1.0048623	0.989009095	1.020969604
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs6974263	0.00507103	0.0083221	0.542298	1.0050839	0.988822561	1.021612678
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	rs7522157	0.00483464	0.0081259	0.5518636	1.0048463	0.988969243	1.020978349
trimethylamine_N_oxide	Parkinson's disease(PROGENI and GenePD)	All	0.00479326	0.008091	0.5535706	1.0048048	0.988995873	1.020866366
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs10003933	-0.01744863	0.0190102	0.3586937	0.9827027	0.94676099	1.020008881
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs10104412	-0.01556419	0.0193242	0.4205736	0.9845563	0.947963259	1.022561912
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs10870302	-0.01559134	0.0193003	0.4191899	0.9845296	0.947981794	1.022486403
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs10873474	-0.01405408	0.0191192	0.462293	0.9860442	0.949777294	1.023695975
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs10877835	-0.0147487	0.0192445	0.4434472	0.9853595	0.948884767	1.023236375
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs11098315	-0.01532037	0.0192972	0.4272448	0.9847964	0.948244452	1.022757296
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs11583422	-0.01411829	0.0191569	0.461134	0.9859809	0.94964611	1.023705919
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs11625777	-0.01680896	0.0191447	0.3799467	0.9833315	0.947117031	1.020930729
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs12116428	-0.01535325	0.0193469	0.4274408	0.984764	0.948121043	1.022823146
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs12131532	-0.01492034	0.0192417	0.4380938	0.9851904	0.948727068	1.023055191
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs12379588	-0.01916219	0.018702	0.3055478	0.9810202	0.945711213	1.017647558

trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs12443031	-0.01672121	0.0194725	0.3905001	0.9834178	0.946591905	1.021676395
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs13097605	-0.01672924	0.0191634	0.3826758	0.9834099	0.947157776	1.021049595
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs13212146	-0.01078692	0.0185434	0.5607617	0.9892711	0.95396141	1.025887641
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs13236413	-0.01599189	0.019429	0.4104548	0.9841353	0.947363192	1.02233473
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs1337398	-0.0128973	0.018539	0.486627	0.9871855	0.951958536	1.023716057
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs1446554	-0.01552682	0.0193011	0.4211357	0.9845931	0.948041503	1.022553929
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs16917161	-0.01362686	0.0188015	0.468589	0.9864656	0.950775122	1.023495771
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs17131718	-0.01828215	0.0187285	0.3289818	0.981884	0.946494578	1.018596531
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs1737681	-0.01758616	0.0188445	0.3507032	0.9825676	0.946938311	1.019537421
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs17418675	-0.01468649	0.0192235	0.4448744	0.9854208	0.948982941	1.023257825
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs17526983	-0.01761283	0.0190992	0.356436	0.9825414	0.946440474	1.0200193
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs17811040	-0.01397352	0.0190415	0.4630431	0.9861237	0.949998501	1.023622532
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs2001146	-0.01548187	0.0193044	0.4225614	0.9846374	0.948077952	1.022606553
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs2243972	-0.01825621	0.0192867	0.3438591	0.9819094	0.945484079	1.019738081
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs2415847	-0.01555701	0.0193063	0.4203575	0.9845634	0.948003308	1.022533395
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs2721876	-0.01548093	0.0193103	0.4227306	0.9846383	0.948067933	1.022619281
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs3799563	-0.01542159	0.0192984	0.4242257	0.9846967	0.948146293	1.022656139
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs390258	-0.01530061	0.0193118	0.4281893	0.9848158	0.94823613	1.02280668
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs3935570	-0.01910827	0.0186598	0.3058196	0.9810731	0.94584033	1.017618372
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs422576	-0.01371822	0.0193015	0.4772484	0.9863754	0.949757046	1.02440569
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs4324493	-0.01455776	0.01919	0.4480855	0.9855477	0.949167279	1.023322514
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs4685442	-0.01401408	0.0190521	0.4619953	0.9860837	0.949940188	1.023602317
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs4811626	-0.0138869	0.0190383	0.4657448	0.9862091	0.950086804	1.023704721
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs4846884	-0.01725184	0.018924	0.3619597	0.9828961	0.947107261	1.020037345
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs528224	-0.01550983	0.0193157	0.4219947	0.9846098	0.948030527	1.022600523
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs550915	-0.01678907	0.019313	0.384675	0.9833511	0.946823536	1.021287818

trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs6077980	-0.01823446	0.0185471	0.3255357	0.9819308	0.94687642	1.018282893
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs6656519	-0.0150435	0.0192692	0.4349783	0.9850691	0.94855911	1.022984331
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs692588	-0.0109651	0.0318138	0.7303466	0.9890948	0.929303193	1.052733407
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs6974263	-0.01449725	0.0191495	0.4490165	0.9856073	0.949300086	1.023303181
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7018973	-0.01628274	0.0191787	0.3958814	0.9838491	0.947552369	1.02153621
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7243722	-0.01564548	0.0193205	0.4180633	0.9844763	0.947892973	1.022471493
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7298875	-0.01483531	0.0192377	0.4406129	0.9852742	0.948815262	1.023134088
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7302178	-0.01447939	0.0191431	0.4494232	0.9856249	0.949329028	1.023308553
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7522157	-0.01351319	0.0188028	0.4723376	0.9865777	0.950880746	1.023614756
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7944382	-0.0166066	0.0191945	0.3869429	0.9835305	0.947216271	1.021236995
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs7953354	-0.01510065	0.0192635	0.4330995	0.9850128	0.94851549	1.022914448
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs8016345	-0.0172952	0.0191289	0.3659209	0.9828535	0.946686003	1.020402763
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	rs8110533	-0.01717344	0.0194134	0.3763636	0.9829732	0.946273373	1.021096337
trimethylamine_N_oxide	Parkinson's disease(FinnGen)	All	-0.01560747	0.0190604	0.412876	0.9845137	0.948412399	1.021989183
choline	Parkinson's disease(IPDG)	rs10098425	-0.01269865	0.0165635	0.4432812	0.9873816	0.955841553	1.019962464
choline	Parkinson's disease(IPDG)	rs10758216	-0.01110267	0.0165337	0.5018896	0.9889587	0.957424293	1.021531824
choline	Parkinson's disease(IPDG)	rs10762269	-0.01075897	0.0166131	0.5172297	0.9892987	0.957604367	1.022042029
choline	Parkinson's disease(IPDG)	rs10819950	-0.01150432	0.016569	0.4874779	0.9885616	0.956973436	1.021192451
choline	Parkinson's disease(IPDG)	rs10826197	-0.012321	0.0165238	0.4558769	0.9877546	0.956277061	1.020268253
choline	Parkinson's disease(IPDG)	rs11242519	-0.01180712	0.0165065	0.4744217	0.9882623	0.956801062	1.02075805
choline	Parkinson's disease(IPDG)	rs11630160	-0.00958199	0.0165646	0.5629522	0.9904638	0.958823203	1.023148467
choline	Parkinson's disease(IPDG)	rs12444044	-0.0132046	0.0166215	0.4269459	0.9868822	0.955249464	1.019562435
choline	Parkinson's disease(IPDG)	rs13398317	-0.01115427	0.016578	0.5010507	0.9889077	0.957291774	1.021567811
choline	Parkinson's disease(IPDG)	rs16904654	-0.01175222	0.0165148	0.4767008	0.9883166	0.95683801	1.02083072
choline	Parkinson's disease(IPDG)	rs16938029	-0.01273301	0.0165357	0.44128	0.9873477	0.955860886	1.01987174
choline	Parkinson's disease(IPDG)	rs1867837	-0.00847277	0.016592	0.6095932	0.991563	0.959835769	1.024339014

choline	Parkinson's disease(IPDG)	rs1868767	-0.01253745	0.0188832	0.5067252	0.9875408	0.951658889	1.024775661
choline	Parkinson's disease(IPDG)	rs2167267	-0.01123435	0.0165179	0.4964217	0.9888285	0.957327736	1.021365836
choline	Parkinson's disease(IPDG)	rs2201409	-0.01363417	0.0165044	0.4087517	0.9864584	0.955058371	1.018890691
choline	Parkinson's disease(IPDG)	rs2408564	-0.00910246	0.0165646	0.5826539	0.9909388	0.959283058	1.023639255
choline	Parkinson's disease(IPDG)	rs3733725	-0.013656	0.0165024	0.4079448	0.9864368	0.955041278	1.018864443
choline	Parkinson's disease(IPDG)	rs4008155	-0.01176978	0.0165176	0.4761176	0.9882992	0.956815945	1.020818416
choline	Parkinson's disease(IPDG)	rs4429580	-0.01109205	0.016537	0.5023857	0.9889692	0.957428161	1.021549398
choline	Parkinson's disease(IPDG)	rs6467883	-0.01108447	0.0165115	0.5020188	0.9889767	0.957483215	1.021506138
choline	Parkinson's disease(IPDG)	rs7775235	-0.01153193	0.0165129	0.4849516	0.9885343	0.957052412	1.02105179
choline	Parkinson's disease(IPDG)	rs7834685	-0.00951533	0.016515	0.5645039	0.9905298	0.958980401	1.023117129
choline	Parkinson's disease(IPDG)	rs7850837	-0.01364343	0.0165268	0.4090691	0.9864492	0.955007597	1.018925993
choline	Parkinson's disease(IPDG)	rs785857	-0.01015386	0.0165581	0.5397272	0.9898975	0.95828718	1.022550555
choline	Parkinson's disease(IPDG)	rs927811	-0.01448073	0.0165476	0.3815204	0.9856236	0.954169514	1.018114581
choline	Parkinson's disease(IPDG)	rs9314081	-0.01124957	0.0165958	0.4978622	0.9888135	0.95716709	1.021506157
choline	Parkinson's disease(IPDG)	rs9463493	-0.01738281	0.0165628	0.2939442	0.9827674	0.951376014	1.015194577
choline	Parkinson's disease(IPDG)	rs9599459	-0.01317371	0.0174989	0.4515529	0.9869127	0.953637514	1.021348924
choline	Parkinson's disease(IPDG)	rs9599459	-0.01317371	0.0174989	0.4515529	0.9869127	0.953637514	1.021348924
choline	Parkinson's disease(IPDG)	rs9599459	-0.01317371	0.0174989	0.4515529	0.9869127	0.953637514	1.021348924
choline	Parkinson's disease(IPDG)	All	-0.01193931	0.0164188	0.4671209	0.9881317	0.956838903	1.020447862
choline	Parkinson's disease(PROGENI and GenePD)	rs10338	0.00570339	0.0412952	0.8901514	1.0057197	0.927525268	1.090506237
choline	Parkinson's disease(PROGENI and GenePD)	rs2167267	0.00530613	0.0398311	0.8940227	1.0053202	0.929821357	1.086949406
choline	Parkinson's disease(PROGENI and GenePD)	rs7834685	0	NA	NA	NA	NA	NA
choline	Parkinson's disease(PROGENI and GenePD)	All	0.00469079	0.0374504	0.9003229	1.0047018	0.933595554	1.081223796
choline	Parkinson's disease(FinnGen)	rs10098425	0.03723258	0.034886	0.2858529	1.0379344	0.969335953	1.111387446
choline	Parkinson's disease(FinnGen)	rs10338	0.04376853	0.0363907	0.229077	1.0447405	0.972819016	1.121979213
choline	Parkinson's disease(FinnGen)	rs10758216	0.03795509	0.0363636	0.296594	1.0386846	0.967231303	1.115416399

choline	Parkinson's disease(FinnGen)	rs10762269	0.04488725	0.0363975	0.2174818	1.0459099	0.973894982	1.123250049
choline	Parkinson's disease(FinnGen)	rs10819950	0.04750783	0.0357753	0.1841947	1.0486544	0.977641925	1.124824996
choline	Parkinson's disease(FinnGen)	rs10826197	0.04570094	0.0360377	0.2047468	1.0467613	0.975375341	1.123371911
choline	Parkinson's disease(FinnGen)	rs11242519	0.0442543	0.0365363	0.2258022	1.0452481	0.973014037	1.122844695
choline	Parkinson's disease(FinnGen)	rs11630160	0.04853928	0.035719	0.1741715	1.0497366	0.978758932	1.125861444
choline	Parkinson's disease(FinnGen)	rs12444044	0.0348025	0.0365684	0.3412439	1.0354152	0.963799962	1.112351806
choline	Parkinson's disease(FinnGen)	rs13398317	0.03629455	0.0364742	0.3197004	1.0369612	0.965417204	1.113807172
choline	Parkinson's disease(FinnGen)	rs16904654	0.0459831	0.0355959	0.1964238	1.0470567	0.976495694	1.122716432
choline	Parkinson's disease(FinnGen)	rs16938029	0.05167516	0.0334796	0.122714	1.0530336	0.98615191	1.124451304
choline	Parkinson's disease(FinnGen)	rs1867837	0.04426001	0.0367711	0.2287204	1.0452541	0.972571751	1.123368137
choline	Parkinson's disease(FinnGen)	rs2167267	0.03964541	0.0363242	0.2750819	1.0404418	0.968942585	1.117216975
choline	Parkinson's disease(FinnGen)	rs2201409	0.04696621	0.035399	0.184586	1.0480866	0.977833521	1.123387048
choline	Parkinson's disease(FinnGen)	rs2408564	0.04280646	0.0367501	0.2441006	1.0437359	0.971199154	1.121690187
choline	Parkinson's disease(FinnGen)	rs3733725	0.03391556	0.0350499	0.3332255	1.0344972	0.965815781	1.108062813
choline	Parkinson's disease(FinnGen)	rs4008155	0.03843446	0.0364868	0.2921668	1.0391826	0.967461499	1.116220668
choline	Parkinson's disease(FinnGen)	rs4429580	0.04230735	0.0369428	0.252121	1.0432151	0.970347997	1.121553995
choline	Parkinson's disease(FinnGen)	rs6467883	0.03722062	0.0359381	0.3003483	1.037922	0.967327603	1.113668241
choline	Parkinson's disease(FinnGen)	rs7775235	0.0409261	0.0366548	0.2641964	1.0417751	0.96955574	1.119373891
choline	Parkinson's disease(FinnGen)	rs7834685	0.03476093	0.0359043	0.3329666	1.0353722	0.965015176	1.110858689
choline	Parkinson's disease(FinnGen)	rs7850837	0.03012315	0.0335597	0.3693996	1.0305814	0.964974225	1.100649199
choline	Parkinson's disease(FinnGen)	rs785857	0.03259175	0.034943	0.3509684	1.0331287	0.964740162	1.106365111
choline	Parkinson's disease(FinnGen)	rs927811	0.03970377	0.0366262	0.278353	1.0405025	0.968425639	1.117943817
choline	Parkinson's disease(FinnGen)	rs9314081	0.03953906	0.0366309	0.280413	1.0403311	0.968257296	1.117769904
choline	Parkinson's disease(FinnGen)	rs9463493	0.04140396	0.0365873	0.2577827	1.0422731	0.970147442	1.119760856
choline	Parkinson's disease(FinnGen)	rs9599459	0.02872266	0.0453432	0.5264399	1.0291391	0.941623225	1.12478891
choline	Parkinson's disease(FinnGen)	All	0.04056515	0.0355496	0.2538341	1.0413992	0.971307617	1.11654864

carnitine	Parkinson's disease(IPDG)	rs10484239	0.01661053	0.0184608	0.368241	1.0167492	0.980617671	1.054212123
carnitine	Parkinson's disease(IPDG)	rs11658572	0.02380455	0.0187308	0.2037716	1.0240901	0.987175185	1.062385521
carnitine	Parkinson's disease(IPDG)	rs1171617	0.03071694	0.0195288	0.1157414	1.0311936	0.992468946	1.071429172
carnitine	Parkinson's disease(IPDG)	rs13375160	0.02007892	0.0187604	0.2844924	1.0202819	0.983447062	1.058496298
carnitine	Parkinson's disease(IPDG)	rs13400794	0.02115663	0.0188168	0.2608665	1.021382	0.984398598	1.059754898
carnitine	Parkinson's disease(IPDG)	rs17488979	0.03025597	0.019002	0.1113286	1.0307183	0.993036358	1.069830205
carnitine	Parkinson's disease(IPDG)	rs17836364	0.02514318	0.0204908	0.2198045	1.0254619	0.985093461	1.067484693
carnitine	Parkinson's disease(IPDG)	rs2053244	0.02297374	0.0184814	0.213841	1.0232397	0.986837565	1.060984567
carnitine	Parkinson's disease(IPDG)	rs2296148	0.01784732	0.0186288	0.3380375	1.0180075	0.981507989	1.055864401
carnitine	Parkinson's disease(IPDG)	rs274554	0.02132565	0.0189525	0.2604968	1.0215547	0.984303309	1.060215824
carnitine	Parkinson's disease(IPDG)	rs2925002	0.01866674	0.0184544	0.3117753	1.018842	0.982648342	1.056368873
carnitine	Parkinson's disease(IPDG)	rs3798408	0.01739536	0.0188239	0.3554296	1.0175475	0.980689351	1.055791
carnitine	Parkinson's disease(IPDG)	rs4656852	0.02026312	0.0199927	0.3108096	1.0204698	0.981255287	1.061251487
carnitine	Parkinson's disease(IPDG)	rs497281	0.02148015	0.0188795	0.2552237	1.0217125	0.984596294	1.060227892
carnitine	Parkinson's disease(IPDG)	rs562672	0.02429463	0.0188486	0.1974194	1.0245921	0.987431124	1.063151693
carnitine	Parkinson's disease(IPDG)	rs599951	0.021191	0.0188207	0.2601906	1.0214171	0.984424984	1.059799326
carnitine	Parkinson's disease(IPDG)	rs6043753	0.01921699	0.0185997	0.3015156	1.0194028	0.982909329	1.057251253
carnitine	Parkinson's disease(IPDG)	rs6108228	0.0202985	0.0188568	0.2817239	1.0205059	0.983477185	1.058928815
carnitine	Parkinson's disease(IPDG)	rs6856402	0.0188707	0.0185361	0.3086544	1.0190499	0.982691432	1.056753534
carnitine	Parkinson's disease(IPDG)	rs6959875	0.01978473	0.0188911	0.2949589	1.0199817	0.982905995	1.058456007
carnitine	Parkinson's disease(IPDG)	rs7076851	0.01773711	0.0185905	0.3400352	1.0178954	0.981473507	1.055668786
carnitine	Parkinson's disease(IPDG)	rs7203840	0.02144664	0.0187989	0.2539349	1.0216783	0.984718704	1.060025058
carnitine	Parkinson's disease(IPDG)	rs731034	0.01595039	0.0184553	0.3874387	1.0160783	0.979981098	1.053505086
carnitine	Parkinson's disease(IPDG)	rs7406506	0.01702735	0.0187622	0.3641246	1.0171731	0.980447084	1.055274898
carnitine	Parkinson's disease(IPDG)	rs7606454	0.02315889	0.0184911	0.2104119	1.0234291	0.987001528	1.061201205
carnitine	Parkinson's disease(IPDG)	rs9836934	0.01778295	0.0184857	0.3360569	1.017942	0.98172017	1.055500299

carnitine	Parkinson's disease(IPDG)	rs9879988	0.02154691	0.0188947	0.2541343	1.0217807	0.984632504	1.060330462
carnitine	Parkinson's disease(IPDG)	All	0.02088812	0.0183315	0.2545087	1.0211078	0.985070953	1.058462984
carnitine	Parkinson's disease(PROGENI and GenePD)	rs1171617	7.14E-05	0.021187	0.9973103	1.0000714	0.95939235	1.042475331
carnitine	Parkinson's disease(PROGENI and GenePD)	rs11733138	7.75E-05	0.0220639	0.9971989	1.0000775	0.957750678	1.044274832
carnitine	Parkinson's disease(PROGENI and GenePD)	rs6043753	6.24E-05	0.0198094	0.9974851	1.0000624	0.961977745	1.039654906
carnitine	Parkinson's disease(PROGENI and GenePD)	rs7406506	0	NA	NA	1	#VALUE!	#VALUE!
carnitine	Parkinson's disease(PROGENI and GenePD)	rs7606454	0.00016913	0.0326032	0.995861	1.0001691	0.938255325	1.066168549
carnitine	Parkinson's disease(PROGENI and GenePD)	All	6.17E-05	0.0196842	0.997501	1.0000617	0.96221302	1.03939906
carnitine	Parkinson's disease(FinnGen)	rs10484239	0.01703028	0.0273939	0.5341513	1.0171761	0.964002152	1.073283143
carnitine	Parkinson's disease(FinnGen)	rs11658572	0.01783552	0.0277083	0.5197768	1.0179955	0.964184427	1.074809816
carnitine	Parkinson's disease(FinnGen)	rs1171617	0.01804257	0.0281661	0.5217972	1.0182063	0.963519078	1.075997501
carnitine	Parkinson's disease(FinnGen)	rs11733138	0.01284208	0.0275875	0.6415712	1.0129249	0.959608899	1.069203127
carnitine	Parkinson's disease(FinnGen)	rs13375160	0.01419485	0.0273458	0.6036997	1.0142961	0.961363321	1.070143315
carnitine	Parkinson's disease(FinnGen)	rs13400794	0.0162074	0.0274274	0.5545737	1.0163395	0.963145999	1.072470727
carnitine	Parkinson's disease(FinnGen)	rs17488979	0.00981638	0.0275278	0.7213918	1.0098647	0.956821886	1.065848057
carnitine	Parkinson's disease(FinnGen)	rs17836364	0.01361369	0.0311603	0.6621894	1.0137068	0.953648183	1.077547723
carnitine	Parkinson's disease(FinnGen)	rs2053244	0.01658193	0.0273739	0.5446764	1.0167202	0.963607765	1.072760056
carnitine	Parkinson's disease(FinnGen)	rs2296148	0.01529935	0.0276143	0.579554	1.015417	0.961919255	1.071890016
carnitine	Parkinson's disease(FinnGen)	rs274554	0.01165559	0.027384	0.6703738	1.0117238	0.958853452	1.067509325
carnitine	Parkinson's disease(FinnGen)	rs2925002	0.01934534	0.0273634	0.4795799	1.0195337	0.966294195	1.075706463
carnitine	Parkinson's disease(FinnGen)	rs3798408	0.02312063	0.0279516	0.408142	1.02339	0.968831639	1.081020704
carnitine	Parkinson's disease(FinnGen)	rs3807852	0.02142336	0.027461	0.4353097	1.0216545	0.968119079	1.078150316
carnitine	Parkinson's disease(FinnGen)	rs4656852	0.0126438	0.0285004	0.6573064	1.0127241	0.957703477	1.070905624
carnitine	Parkinson's disease(FinnGen)	rs497281	0.00966578	0.0274497	0.7247434	1.0097126	0.956824118	1.065524581
carnitine	Parkinson's disease(FinnGen)	rs562672	0.02170072	0.0277147	0.4336252	1.0219379	0.967906163	1.078985846
carnitine	Parkinson's disease(FinnGen)	rs599951	0.00953005	0.0273422	0.7274287	1.0095756	0.956896002	1.065155357

carnitine	Parkinson's disease(FinnGen)	rs6043753	0.0170875	0.0273678	0.5323882	1.0172343	0.964106573	1.073289725
carnitine	Parkinson's disease(FinnGen)	rs6108228	0.01472218	0.0274382	0.5915737	1.0148311	0.961696101	1.070901856
carnitine	Parkinson's disease(FinnGen)	rs6856402	0.01217368	0.0274013	0.6568444	1.0122481	0.959317836	1.068098748
carnitine	Parkinson's disease(FinnGen)	rs6959875	0.01551623	0.027822	0.5770514	1.0156372	0.961736419	1.072558941
carnitine	Parkinson's disease(FinnGen)	rs7076851	0.01040053	0.0275507	0.705798	1.0104548	0.957337966	1.066518775
carnitine	Parkinson's disease(FinnGen)	rs7203840	0.01511997	0.0273848	0.5808598	1.0152349	0.962179447	1.07121578
carnitine	Parkinson's disease(FinnGen)	rs731034	0.01842347	0.0273627	0.5007527	1.0185942	0.965405146	1.074713767
carnitine	Parkinson's disease(FinnGen)	rs7406506	0.01703323	0.0275406	0.5362605	1.0171791	0.963727887	1.073594927
carnitine	Parkinson's disease(FinnGen)	rs7606454	0.00858312	0.0274463	0.7544901	1.0086201	0.955795199	1.064364452
carnitine	Parkinson's disease(FinnGen)	rs9836934	0.01787946	0.0274211	0.5143794	1.0180403	0.964769728	1.074252159
carnitine	Parkinson's disease(FinnGen)	rs9879988	0.01267001	0.0275686	0.6458175	1.0127506	0.959479297	1.06897961
carnitine	Parkinson's disease(FinnGen)	All	0.01517842	0.0271771	0.5765031	1.0152942	0.962627506	1.070842366
betaine	Parkinson's disease(IPDG)	rs10081	0.02021777	0.0165027	0.2205302	1.0204235	0.98794573	1.053969021
betaine	Parkinson's disease(IPDG)	rs10178297	0.01941608	0.0164874	0.2389432	1.0196058	0.987183641	1.05309279
betaine	Parkinson's disease(IPDG)	rs10786317	0.01997155	0.0164965	0.2260291	1.0201723	0.987714432	1.053696819
betaine	Parkinson's disease(IPDG)	rs10817686	0.01796086	0.0172133	0.2967494	1.0181231	0.984346612	1.053058635
betaine	Parkinson's disease(IPDG)	rs10883712	0.02459394	0.0165647	0.1376187	1.0248989	0.992157985	1.058720193
betaine	Parkinson's disease(IPDG)	rs10928063	0.02073345	0.0164838	0.2084614	1.0209499	0.98849193	1.05447361
betaine	Parkinson's disease(IPDG)	rs11030909	0.01875226	0.0165213	0.2563618	1.0189292	0.986462888	1.052464005
betaine	Parkinson's disease(IPDG)	rs11224038	0.01811353	0.0165513	0.2737858	1.0182786	0.985775088	1.051853785
betaine	Parkinson's disease(IPDG)	rs11615707	0.01870566	0.0164719	0.2561202	1.0188817	0.98651248	1.052313027
betaine	Parkinson's disease(IPDG)	rs11742447	0.01928398	0.0164799	0.2419414	1.0194711	0.987067635	1.052938333
betaine	Parkinson's disease(IPDG)	rs1219426	0.01821073	0.016475	0.2690055	1.0183776	0.986018402	1.051798679
betaine	Parkinson's disease(IPDG)	rs12366073	0.02070595	0.0167946	0.2176155	1.0209218	0.987862794	1.05508714
betaine	Parkinson's disease(IPDG)	rs12637363	0.01894813	0.0164525	0.24945	1.0191288	0.98678925	1.052528169
betaine	Parkinson's disease(IPDG)	rs13006343	0.01974388	0.0164769	0.2308089	1.0199401	0.987527623	1.053416377

betaine	Parkinson's disease(IPDG)	rs1328452	0.01655479	0.0164891	0.3153877	1.0166926	0.984359672	1.050087507
betaine	Parkinson's disease(IPDG)	rs17099954	0.0195282	0.0164802	0.2360389	1.0197201	0.987308146	1.053196141
betaine	Parkinson's disease(IPDG)	rs17351871	0.02258324	0.0164951	0.1709716	1.0228402	0.990300212	1.056449348
betaine	Parkinson's disease(IPDG)	rs17392456	0.01921637	0.0166258	0.247756	1.0194022	0.986718809	1.053168156
betaine	Parkinson's disease(IPDG)	rs17606892	0.01700672	0.0164745	0.3019293	1.0171522	0.98483287	1.050532078
betaine	Parkinson's disease(IPDG)	rs1868264	0.02231886	0.0164882	0.1758561	1.0225698	0.990051771	1.056155859
betaine	Parkinson's disease(IPDG)	rs1909823	0.02268569	0.0167157	0.1747331	1.022945	0.989973586	1.057014471
betaine	Parkinson's disease(IPDG)	rs1923415	0.01787049	0.0164854	0.2783575	1.0180311	0.985662799	1.051462391
betaine	Parkinson's disease(IPDG)	rs2087307	0.01904129	0.0165299	0.2493502	1.0192237	0.986731472	1.052785933
betaine	Parkinson's disease(IPDG)	rs2279534	0.01775568	0.0164753	0.2811618	1.0179143	0.985569167	1.051320859
betaine	Parkinson's disease(IPDG)	rs2305457	0.02003797	0.0165183	0.2251004	1.0202401	0.987737902	1.053811762
betaine	Parkinson's disease(IPDG)	rs2703825	0.02174137	0.0165259	0.1883099	1.0219794	0.989407147	1.055624043
betaine	Parkinson's disease(IPDG)	rs2879414	0.02174757	0.01649	0.1872235	1.0219858	0.989482948	1.055556259
betaine	Parkinson's disease(IPDG)	rs298468	0.01840944	0.016474	0.2637885	1.0185799	0.986216193	1.05200573
betaine	Parkinson's disease(IPDG)	rs358538	0.02312661	0.0165881	0.1632661	1.0233961	0.990657888	1.057216209
betaine	Parkinson's disease(IPDG)	rs3948659	0.01724559	0.0166863	0.3013628	1.0173952	0.984659246	1.051219393
betaine	Parkinson's disease(IPDG)	rs6805982	0.02006059	0.0165021	0.2241223	1.0202632	0.987791629	1.053802113
betaine	Parkinson's disease(IPDG)	rs6862283	0.02119937	0.0166325	0.2024587	1.0214257	0.988664477	1.055272468
betaine	Parkinson's disease(IPDG)	rs6956293	0.01837513	0.0164791	0.2648256	1.018545	0.986172619	1.051980037
betaine	Parkinson's disease(IPDG)	rs7075837	0.01812276	0.016498	0.2719935	1.018288	0.985887241	1.051753548
betaine	Parkinson's disease(IPDG)	rs7449492	0.01889156	0.0164965	0.2521313	1.0190711	0.986648414	1.052559306
betaine	Parkinson's disease(IPDG)	rs7465394	0.0230417	0.0164948	0.1624425	1.0233092	0.990754825	1.056933267
betaine	Parkinson's disease(IPDG)	rs7724650	0.01924155	0.0164996	0.2435418	1.0194279	0.986987649	1.052934308
betaine	Parkinson's disease(IPDG)	rs8115215	0.01390316	0.0194709	0.4751987	1.0140003	0.976032002	1.053445495
betaine	Parkinson's disease(IPDG)	rs9627239	0.01888508	0.0164937	0.2522138	1.0190645	0.986647412	1.052546742
betaine	Parkinson's disease(IPDG)	All	0.01962865	0.016386	0.2309585	1.0198226	0.98758979	1.053107335

betaine	Parkinson's disease(PROGENI and GenePD)	rs10786317	0.0032214	0.0241551	0.8939062	1.0032266	0.956836633	1.051865665
betaine	Parkinson's disease(PROGENI and GenePD)	rs11742447	-0.01133844	0.0438002	0.7957376	0.9887256	0.907386421	1.077356103
betaine	Parkinson's disease(PROGENI and GenePD)	rs1328452	0.00335254	0.0246419	0.8917812	1.0033582	0.956049547	1.053007787
betaine	Parkinson's disease(PROGENI and GenePD)	rs358538	0.00389552	0.0265625	0.8834045	1.0039031	0.952974585	1.057553363
betaine	Parkinson's disease(PROGENI and GenePD)	rs7075837	0.00714454	0.025	0.775045	1.0071701	0.959008447	1.0577505
betaine	Parkinson's disease(PROGENI and GenePD)	All	0.00320098	0.0240784	0.894241	1.0032061	0.956960917	1.0516861
betaine	Parkinson's disease(FinnGen)	rs10081	-0.00730718	0.023099	0.7517434	0.9927195	0.948777194	1.03869688
betaine	Parkinson's disease(FinnGen)	rs10178297	-0.01225795	0.0231615	0.5966405	0.9878169	0.943976007	1.033693824
betaine	Parkinson's disease(FinnGen)	rs10786317	-0.00501088	0.0231723	0.8287975	0.9950017	0.950821789	1.041234339
betaine	Parkinson's disease(FinnGen)	rs10817686	-0.00775462	0.0243566	0.7501978	0.9922754	0.94601811	1.04079446
betaine	Parkinson's disease(FinnGen)	rs10883712	-0.00945934	0.0231656	0.683027	0.9905853	0.946614018	1.036599017
betaine	Parkinson's disease(FinnGen)	rs10928063	-0.00880337	0.0231604	0.7038677	0.9912353	0.947244818	1.037268655
betaine	Parkinson's disease(FinnGen)	rs11224038	-0.01061142	0.0240041	0.6584414	0.9894447	0.943971274	1.03710866
betaine	Parkinson's disease(FinnGen)	rs11615707	-0.00681776	0.0231464	0.7683385	0.9932054	0.949153475	1.03930192
betaine	Parkinson's disease(FinnGen)	rs11742447	-0.0094591	0.023166	0.6830396	0.9905855	0.946613531	1.036600051
betaine	Parkinson's disease(FinnGen)	rs1219426	-0.0085482	0.0230953	0.711288	0.9914882	0.947607324	1.037401125
betaine	Parkinson's disease(FinnGen)	rs12366073	-0.0006869	0.0236964	0.9768747	0.9993133	0.953961689	1.046821025
betaine	Parkinson's disease(FinnGen)	rs13006343	-0.01120854	0.0231303	0.6279724	0.988854	0.945024988	1.034715836
betaine	Parkinson's disease(FinnGen)	rs1328452	-0.00285154	0.02319	0.9021351	0.9971525	0.952844219	1.0435212
betaine	Parkinson's disease(FinnGen)	rs17099954	-0.0133786	0.0231564	0.5634339	0.9867105	0.942928122	1.032525787
betaine	Parkinson's disease(FinnGen)	rs17351871	-0.00908277	0.023124	0.6944778	0.9909584	0.94704776	1.036904904
betaine	Parkinson's disease(FinnGen)	rs17392456	-0.00556145	0.0232705	0.8111122	0.994454	0.950115599	1.040861483
betaine	Parkinson's disease(FinnGen)	rs17606892	-0.00719773	0.023137	0.7557313	0.9928281	0.948810382	1.038887945
betaine	Parkinson's disease(FinnGen)	rs1868264	-0.00333535	0.0232281	0.8858232	0.9966702	0.952312154	1.043094421
betaine	Parkinson's disease(FinnGen)	rs1909823	-0.01009035	0.0236755	0.669967	0.9899604	0.945071797	1.036981072
betaine	Parkinson's disease(FinnGen)	rs1923415	-0.01067054	0.0231194	0.6444103	0.9893862	0.945553799	1.035250484

betaine	Parkinson's disease(FinnGen)	rs2087307	-0.00761855	0.0231798	0.7424043	0.9924104	0.948331601	1.038538001
betaine	Parkinson's disease(FinnGen)	rs2279534	-0.00904733	0.0233581	0.6985108	0.9909935	0.946646815	1.037417601
betaine	Parkinson's disease(FinnGen)	rs2305457	-0.00897864	0.0231618	0.6982765	0.9910615	0.947076088	1.03708984
betaine	Parkinson's disease(FinnGen)	rs2703825	-0.00693757	0.0231979	0.7648944	0.9930864	0.948943999	1.039282281
betaine	Parkinson's disease(FinnGen)	rs2879414	-0.01221952	0.0231676	0.5978882	0.9878548	0.944001022	1.033745889
betaine	Parkinson's disease(FinnGen)	rs298468	-0.00645686	0.0231492	0.7803037	0.9935639	0.949490856	1.039682787
betaine	Parkinson's disease(FinnGen)	rs358538	-0.00692105	0.0234074	0.7674758	0.9931028	0.948570185	1.039726187
betaine	Parkinson's disease(FinnGen)	rs3948659	-0.00622499	0.0233247	0.7895582	0.9937943	0.949384538	1.040281525
betaine	Parkinson's disease(FinnGen)	rs6805982	-0.00757868	0.0231738	0.7436398	0.99245	0.948380743	1.038566996
betaine	Parkinson's disease(FinnGen)	rs6862283	-0.01100137	0.0232098	0.6355024	0.9890589	0.945073495	1.035091524
betaine	Parkinson's disease(FinnGen)	rs6956293	-0.00639486	0.0231271	0.7821572	0.9936255	0.949590847	1.039702222
betaine	Parkinson's disease(FinnGen)	rs7075837	-0.01076036	0.0231448	0.6419927	0.9892973	0.945421696	1.035209154
betaine	Parkinson's disease(FinnGen)	rs7333859	-0.00985067	0.0231964	0.6710817	0.9901977	0.946186483	1.036256045
betaine	Parkinson's disease(FinnGen)	rs7465394	-0.00646427	0.0231762	0.7803075	0.9935566	0.949433616	1.039730058
betaine	Parkinson's disease(FinnGen)	rs7724650	-0.00928035	0.0231846	0.6889492	0.9907626	0.946748217	1.036823167
betaine	Parkinson's disease(FinnGen)	rs8115215	-0.03952197	0.0269586	0.1426414	0.9612488	0.911776111	1.013405926
betaine	Parkinson's disease(FinnGen)	rs9627239	-0.01025418	0.0231611	0.6579585	0.9897982	0.945870254	1.035766272
betaine	Parkinson's disease(FinnGen)	All	-0.0088654	0.0230249	0.7002105	0.9911738	0.9474376	1.0369289
