Table S1. Antioxidants target genes.					
Antioxidant Drugs	**Mechanism of action**	**ChEMBL**	**Targets**	**Drug Bank**	**Targets**
N-Acetylcysteine (NAC)	Salvianolic acid B like resveratrol is an activator of SIRT1 and an inhibitor of NF-κB	NA	*NA*	Glutathione synthetase, Cystine/glutamate transporter, Aminoacylase-1, Inhibitor of nuclear factor kappa-B kinase subunit beta, Inhibitor of nuclear factor kappa-B kinase subunit alpha, Glutamate receptor ionotropic, NMDA 1/2A/2B/2D/3A	*GSS* (stimulator), *SLC7A11* (activator), *ACY1* (substrate), *IKBKB* (inhibitor), *CHUK* (inhibitor), *GRIN1* (activator), *GRIN2A* (activator), *GRIN2B* (activator), *GRIN2D* (activator), *GRIN3A* (activator)
Ginkgo biloba extract	Ginko biloba extract (i) Scavenger of superoxide anion, hydroxyl radicals, peroxyl (ii) Reduces the concentration of primary and secondary products of lipid peroxidation (diene conjugates, TBA-active products) (iii) Induces the enzymatic activity of superoxide dismutase and catalase	NA	*NA*	Sodium-dependent noradrenaline transporter, Phospholipase A2 membrane associated, Glycine receptor subunit alpha-1, Gamma-aminobutyric acid receptor subunit alpha-1/beta-2/gamma-2, Amine oxidase [flavin-containing] A, Nitric oxide synthase, inducible	*SLC6A2* (inhibitor), *PLA2G2A* (inhibitor), *GLRA1* (antagonist), *GABRA1* (negative modulator), *GABRB2* (negative modulator), *GABRG2* (negative modulator), *MAOA* (inhibitor), *NOS2* (inhibitor)
Selegiline	The antioxidant effect of selegiline may be associated with the protection of neurons from oxygen free radicals that are released as a result of MAO-B activity	Monoamine oxidase B	*MAOB* (inhibitor)	Amine oxidase [flavin-containing] B, Amine oxidase [flavin-containing] A	*MAOA* (inhibitor), *MAOB* (inhibitor)
Allopurinol	Allopurinol prevents the formation of free radicals: (i) Inhibits the xanthine oxidase reaction, during which superoxide anion radical is actively formed	Xanthine dehydrogenase	*XDH* (inhibitor)	Xanthine dehydrogenase/oxidase	*XDH* (inhibitor)
Vitamin E	Vitamin E is a natural antioxidant that neutralizes free radicals: (i) There is a transfer of hydrogen of the phenyl group to the peroxide radical (ii) Performs structural function by interacting with phospholipids of biological membranes (iii) Restores the oxidation product of tocopherol (α-tocopheroxide) to α-tocopherol	NA	*NA*	SEC14-like protein 4/3/2, Nuclear receptor subfamily 1 group I member 2, Protein kinase C beta/alpha type, Arachidonate 5-lipoxygenase, Diacylglycerol kinase alpha, Serine/threonine-protein phosphatase 2A catalytic subunit beta/alpha isoform	*SEC14L2* (NA), *SEC14L3* (NA), *SEC14L4* (NA), *NR1I2* (NA), *PRKCB* (NA), *PRKCA* (NA), *ALOX5* (NA), *DGKA* (NA), *PPP2CB* (NA), *PPP2CA* (NA)
Vitamin C	Vitamin C antioxidant activity: (i) The formation of a redox pair of ascorbic acid/dehydroascorbic acid, restores the active form of vitamin E (ii) Prevents or reverses the oxidation process of reduced glutathione (GSH) to its functionally inactive form (GSSG)	NA	*NA*	Procollagen-lysine,2-oxoglutarate 5-dioxygenase 2/3, Phytanoyl-CoA dioxygenase peroxisomal, Gamma-butyrobetaine dioxygenase, Dopamine beta-hydroxylase, Peptidyl-glycine alpha-amidating monooxygenase, Prolyl 3-hydroxylase 1/2/3, Prolyl 4-hydroxylase subunit alpha-1, 2-oxoglutarate and iron-dependent oxygenase domain-containing protein 1/2, Alpha-ketoglutarate-dependent dioxygenase alkB homolog 2/3, Lysine-specific demethylase 5D, Procollagen-lysine,2-oxoglutarate 5-dioxygenase 1, Trimethyllysine dioxygenase, mitochondrial, Transmembrane prolyl 4-hydroxylase, Egl nine homolog 1/2/3	*PLOD2* (cofactor), *PLOD3* (cofactor), *PHYH* (cofactor), *BBOX1* (cofactor), *DBH* (cofactor), *PAM* (cofactor), *P3H1* (cofactor), *P3H2* (cofactor), *P3H3* (cofactor), *P4HA1* (cofactor), *OGFOD1* (cofactor), *OGFOD2* (cofactor), *ALKBH2* (activator), *ALKBH3* (activator), *KDM5D* (cofactor), *PLOD1* (cofactor), *TMLHE* (cofactor), *P4HTM* (cofactor), *EGLN1* (cofactor), *EGLN2* (cofactor), *EGLN3* (cofactor)
Polyunsaturated fatty acids (PUFAs)/Omega-3	The detailed mechanisms of action are mostly unknown, but PUFAs have anti-inflammatory and antiatherogenic effects	NA	*NA*	Peroxisome proliferator-activated receptor gamma, Peroxisome proliferator-activated receptor alpha, Sterol regulatory element-binding protein 1	*PPARG* (ligand), *PPARA* (activator), *SREBF1* (inhibitor)
Curcumin	Inhibit Keap1 protein through electrophilic modification, which leads to Nrf2 activation	NA	*NA*	Peroxisome proliferator-activated receptor gamma, Vitamin D3 receptor, Multidrug resistance-associated protein 5, Carbonyl reductase [NADPH] 1, Glutathione S-transferase P	*PPARG* (NA), *VDR* (NA), *ABCC5* (inhibitor), *CBR1* (NA), *GSTP1* (NA)
Resveratrol	Resveratrol is (i) An activator of NAD-dependent deacetylase sirtuin-1 (SIRT1), which activates the transcription factor FoxO (ii) An inhibitor of NF-κB (anti-inflammatory effect)	NA	*NA*	Ribosyldihydronicotinamide dehydrogenase [quinone], Casein kinase II subunit alpha, Prostaglandin G/H synthase 1/2, Arachidonate 15-lipoxygenase, Arachidonate 5-lipoxygenase, Aryl hydrocarbon receptor, Phosphatidylinositol 4-kinase type 2-beta, Integrin alpha-5/beta-3, Amyloid beta A4 protein, Alpha-synuclein, NAD-dependent protein deacetylase sirtuin-1, Estrogen receptor alpha, Melatonin receptor type 1A/1B, C-type lectin domain family 14 member A, Nuclear receptor subfamily 1 group I member 2/3, Solute carrier family 2, facilitated glucose transporter member 1, Carbonyl reductase [NADPH] 1, Peroxisome proliferator-activated receptor alpha/gamma, RAC-alpha serine/threonine-protein kinase, Far upstream element-binding protein 2, Tyrosine--tRNA ligase, cytoplasmic	*NQO2* (NA), *CSNK2A2* (NA), *PTGS2* (inhibitor), *PTGS1* (inhibitor), *ALOX15* (NA), *ALOX5* (NA), *AHR* (NA), *PI4K2B* (NA), *ITGA5* (NA), *ITGB3* (NA), *APP* (NA), *SNCA* (NA), *SIRT1* (NA), *ESR1* (NA), *MTNR1A* (NA), *MTNR1B* (NA), *CLEC14A* (NA), *NR1I2* (NA), *NR1I3* (NA), *SLC2A1* (NA), *CBR1* (inhibitor), *PPARG* (NA), *PPARA* (NA), *AKT1* (inhibitor), *FBP2* (NA), *YARS1* (inhibitor)
Metformin	Activate FoxO3 via AMP-activated protein kinase activation	Mitochondrial glycerol-3-phosphate dehydrogenase	*GPD2*	Electron transfer flavoprotein-ubiquinone oxidoreductase, mitochondrial, 5'-AMP-activated protein kinase subunit beta-1, Glycerol-3-phosphate dehydrogenase [NAD(+)], cytoplasmic	*ETFDH* (inhibitor), *PRKAB1* (inducer activator), *GPD1* (inhibitor)
Vitamin D		Vitamin D receptor	*VDR*	Vitamin D3 receptor, Vitamin D-binding protein	*VDR* (NA), *GC* (NA)
Vitamin A		NA	*NA*	Apolipoprotein D, Prostaglandin-H2 D-isomerase, Retinol dehydrogenase 12, 11-cis retinol dehydrogenase, Retinol dehydrogenase 13/1/2, Lecithin retinol acyltransferase, Short-chain dehydrogenase/reductase 3, Aldehyde dehydrogenase family 1 member A3, All-trans-retinol 13,14-reductase, Retinol dehydrogenase 11, Dehydrogenase/reductase SDR family member 4, Retinol dehydrogenase 14, Retinol dehydrogenase 8	*APOD* (ligand), *PTGDS* (ligand), *RDH5* (substrate), *RDH12* (substrate), *ALDH1A2* (substrate), *ALDH1A1* (substrate), *LCAT* (substrate), *DHRS3* (substrate), *ALDH1A3* (substrate), *RETSAT* (substrate), *RDH11* (substrate), *DHRS4* (substrate), *RDH8* (substrate)
coenzyme Q/ubiquinone		NA	*NA*	NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial, Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial	*NDUFV3* (cofactor), *SDHA* (cofactor)
Melatonin		Melatonin receptor	*MTNR1B, MTNR1A*	Melatonin receptor 1A, Melatonin receptor 1B, Estrogen receptor alpha, Nuclear receptor ROR-beta, Calmodulin, Myeloperoxidase, Eosinophil peroxidase, Calreticulin, Acetylserotonin O-methyltransferase, Ribosyldihydronicotinamide dehydrogenase [quinone]	*MTNR1B* (agonist), *MTNR1A* (agonist), *ESR1* (antagonist), *RORB* (agonist), *CALM1* (NA), *MPO* (inhibitor), *EPX* (inhibitor), *CALR* (NA), *ASMT* (NA), *NQO2* (NA)
Piracetam		NA	*NA*	NA	*NA*
Sulforaphane	Inhibit Keap1 protein through electrophilic modification, which leads to Nrf2 activation. The transcription factor Nrf2 plays a central role in the inducible expressions of many cytoprotective genes in response to oxidative stress	NA	*NA*	NA	*NA*
DDO-7263	Nrf2 activation and NLRP3 inflammasome inhibition	NA	*NA*	NA	*NA*
Salvianolic acid B	Salvianolic acid B like resveratrol is an activator of SIRT1 and an inhibitor of NF-κB	NA	*NA*	NA	*NA*
NA: not applicable					

Table S2. Data sources in this study.				
Exposures	**PMID/URL**	**Ancestry**	**Dataset or consortium**	**Participants**
eQTL	32913098	Predominantly European (~85%)	GTEx V8	
Brain - Amygdala				152
Brain - Anterior cingulate cortex (BA24)				176
Brain - Caudate (basal ganglia)				246
Brain - Cerebellar Hemisphere				215
Brain - Cerebellum				241
Brain - Cortex				255
Brain - Frontal Cortex (BA9)				209
Brain - Hippocampus				197
Brain - Hypothalamus				202
Brain - Nucleus accumbens (basal ganglia)				246
Brain - Putamen (basal ganglia)				205
Brain - Spinal cord (cervical c-1)				159
Brain - Substantia nigra				139
pQTL				
Dorsolateral prefrontal cortex	29865057	European	ROSMAP	376
Outcomes				
Schizophrenia	35396580	European	PGC	53,386 cases and 77,258 controls
Bipolar disorder	34002096	European	PGC	41,917 cases and 371,549 controls
Major depressive disorder	30718901	European	PGC	170,756 cases and 329,443 controls
Obsessive-compulsive disorder	28761083	European	PGC	2688 cases and 7037 controls
Attention-deficit/hyperactivity disorder	30478444	European	PGC	20,183 cases and 35,191 controls
Autism spectrum disorder	30804558	European	PGC	18,381 cases and 27,969 controls
Anorexia nervosa	31308545	European	PGC	16,992 cases and 55,525 controls
Mediators				
Vitamin C	https://gwas.mrcieu.ac.uk/datasets/ukb-b-19390/	European	UK biobank	64,979
Vitamin E	https://gwas.mrcieu.ac.uk/datasets/ukb-b-6888/	European	UK biobank	64,979
Fluid intelligence				
Fluid intelligence score	https://gwas.mrcieu.ac.uk/datasets/ukb-b-5238/	European	UK biobank	149,051
Trail marking				
Duration to complete numeric path	https://gwas.mrcieu.ac.uk/datasets/ukb-b-16026/	European	UK biobank	99,479
Duration to complete alphanumeric path	https://gwas.mrcieu.ac.uk/datasets/ukb-b-20140/	European	UK biobank	99,477
Pairs matching				
Number of incorrect matches in round	https://gwas.mrcieu.ac.uk/datasets/ukb-b-20498/	European	UK biobank	462,302
Number of correct matches in round	https://gwas.mrcieu.ac.uk/datasets/ukb-b-2084/	European	UK biobank	462,302
Numeric Memory				
Maximum digits remembered correctly	https://gwas.mrcieu.ac.uk/datasets/ukb-b-18683/	European	UK biobank	106,162
Prospective Memory				
Prospective memory result	https://gwas.mrcieu.ac.uk/datasets/ukb-b-4282/	European	UK biobank	152,605

Expression quantitative trait loci, eQTL; protein quantitative trait loci, pQTL; Genotype-Tissue Expression, GTEx, version 8; Religious Orders Study and Rush Memory and Aging Project, ROSMAP; Psychiatric Genomics Consortium, PGC.

Table S3. Two-sample MR of the targets on schizophrenia.							
	SNPs	**Test**	**SNP_number**	**Beta**	**Se**	***P_value***	**Genes**
NAC							
Amygdala							
	rs11644783	Wald ratio	1	0.135	0.044	2.14E-03	*GRIN2A*
Cerebellar_Hemisphere							
	rs12003467	Wald ratio	1	0.045	0.020	2.67E-02	*GRIN3A*
Cerebellum							
	rs6058209	Wald ratio	1	-0.126	0.039	1.20E-03	*GSS*
Cortex							
	rs1060615	Wald ratio	1	-0.139	0.056	1.34E-02	*GSS*
Spinal_cord_cervical							
	rs76529537	Wald ratio	1	0.146	0.059	1.35E-02	*IKBKB*
Substantia_nigra							
	rs3105688	Wald ratio	1	0.037	0.013	3.27E-03	*GRIN2A*
ROSMAP							
	rs2236271	Wald ratio	1	-0.381	0.159	1.67E-02	*GSS*
	rs6533014, rs1598856	Inverse variance weighted	2	-0.824	0.260	1.55E-03	*NFKB1*
Ubiquinone							
Amygdala							
	rs2839606	Wald ratio	1	0.071	0.028	1.26E-02	*NDUFV3*
Anterior_cingulate_cortex							
	rs11203218	Wald ratio	1	0.072	0.030	1.54E-02	*NDUFV3*
Putamen_basal_ganglia							
	rs2839606	Wald ratio	1	0.060	0.024	1.26E-02	*NDUFV3*
Vitamin C							
Amygdala							
	rs111899460	Wald ratio	1	0.074	0.033	2.29E-02	*P3H2*
Anterior_cingulate_cortex							
	rs10865952	Wald ratio	1	0.242	0.067	2.80E-04	*P4HTM*
Cerebellum							
	rs28569885	Wald ratio	1	-0.244	0.047	2.14E-07	*OGFOD2*
Frontal_Cortex							
	rs13064784	Wald ratio	1	-0.153	0.046	9.65E-04	*P4HTM*
	rs28768122	Wald ratio	1	-0.204	0.032	1.15E-10	*OGFOD2*
	rs6571602	Wald ratio	1	0.204	0.078	9.31E-03	*EGLN3*
Hypothalamus							
	rs6446205	Wald ratio	1	0.151	0.047	1.43E-03	*P4HTM*
Nucleus_accumbens							
	rs2739514	Wald ratio	1	-0.085	0.042	4.43E-02	*EGLN1*
Putamen_basal_ganglia							
	rs2002556	Wald ratio	1	0.109	0.045	1.51E-02	*PLOD1*
Spinal_cord_cervical							
	rs6791234	Wald ratio	1	0.063	0.020	1.60E-03	*P4HTM*
ROSMAP							
	rs1449453	Wald ratio	1	0.272	0.110	1.32E-02	*PLOD2*
Vitamin E							
Amygdala							
	rs9895770	Wald ratio	1	-0.089	0.044	4.34E-02	*PRKCA*
Cerebellar_Hemisphere							
	rs5753113	Wald ratio	1	0.135	0.038	4.40E-04	*SEC14L2*
Cerebellum							
	rs35289401	Wald ratio	1	0.096	0.045	3.41E-02	*SEC14L2*
Omega-3							
Anterior_cingulate_cortex							
	rs12600694	Wald ratio	1	-0.160	0.053	2.54E-03	*SREBF1*
Spinal_cord_cervical							
	rs116527582	Wald ratio	1	0.084	0.039	3.11E-02	*PPARG*
Vitamin A							
Anterior_cingulate_cortex							
	rs28691263	Wald ratio	1	0.066	0.031	3.19E-02	*APOD*
	rs908304	Wald ratio	1	-0.145	0.042	5.63E-04	*RETSAT*
ROSMAP							
	rs7179609, rs493258, rs17269397	Inverse variance weighted	3	0.077	0.035	2.95E-02	*ALDH1A2*
Metformin							
Caudate_basal_ganglia							
	rs1978108	Wald ratio	1	-0.130	0.038	6.38E-04	*PRKAB1*
Cerebellar_Hemisphere							
	rs8178290	Wald ratio	1	0.074	0.033	2.33E-02	*EPX*
Cerebellum							
	rs7310266	Wald ratio	1	-0.144	0.042	5.46E-04	*PRKAB1*
	rs836178	Wald ratio	1	-0.119	0.036	8.03E-04	*GPD1*
Putamen_basal_ganglia							
	rs7304996	Wald ratio	1	-0.113	0.033	5.89E-04	*PRKAB1*
ROSMAP							
	rs278155	Wald ratio	1	1.621	0.527	2.11E-03	*PRKAB1*
	rs13425727	Wald ratio	1	-0.981	0.377	9.27E-03	*GPD2*
Melatonin							
Caudate_basal_ganglia							
	rs8177477	Wald ratio	1	-0.146	0.047	2.13E-03	*CALR*
Cerebellum							
	rs514209	Wald ratio	1	0.234	0.041	8.80E-09	*RORB*
Hypothalamus							
	rs148781627	Wald ratio	1	-0.051	0.020	1.04E-02	*RORB*
	rs3863211	Wald ratio	1	-0.062	0.020	1.51E-03	*NQO2*
Putamen_basal_ganglia							
	rs4744709	Wald ratio	1	0.198	0.069	4.40E-03	*RORB*
Spinal_cord_cervical							
	rs62082141	Wald ratio	1	-0.055	0.019	4.24E-03	*MPO*
ROSMAP							
	rs318489, rs17136117, rs17300141	Inverse variance weighted	3	-0.084	0.038	2.58E-02	*NQO2*
Ginkgo biloba extract							
Cerebellar_Hemisphere							
	rs55689355	Wald ratio	1	-0.053	0.015	4.07E-04	*GLRA1*
Cerebellum							
	rs56392306	Wald ratio	1	-0.050	0.017	2.40E-03	*GLRA1*
Resveratrol							
Hippocampus							
	rs4817078	Wald ratio	1	-0.159	0.050	1.61E-03	*APP*
Hypothalamus							
	rs3863211	Wald ratio	1	-0.062	0.020	1.51E-03	*NQO2*
Nucleus_accumbens							
	rs4697589	Wald ratio	1	-0.075	0.036	3.95E-02	*PI4K2B*
Spinal_cord_cervical							
	rs116527582	Wald ratio	1	0.084	0.039	3.11E-02	*PPARG*
ROSMAP							
	rs318489, rs17136117, rs17300141	Inverse variance weighted	3	-0.084	0.038	2.58E-02	*NQO2*
Curcumin							
Spinal_cord_cervical							
	rs116527582	Wald ratio	1	0.084	0.039	3.11E-02	*PPARG*
ROSMAP							
	rs7621975	Wald ratio	1	0.775	0.333	1.98E-02	*ABCC5*
NAC, N-Acetylcysteine							
ROSMAP, Religious Orders Study and Rush Memory and Aging Project							

Table S4. Two-sample MR of the targets on bipolar disorder.							
	SNPs	Test	SNP_number	Beta	Se	*P_value*	Genes
NAC							
Amygdala							
	rs3751972	Wald ratio	1	0.073	0.023	1.92E-03	*NOS2*
Caudate_basal_ganglia							
	rs12932206	Wald ratio	1	0.076	0.036	3.44E-02	*GRIN2A*
Cerebellar_Hemisphere							
	rs146285957	Wald ratio	1	-0.228	0.109	3.56E-02	*GRIN1*
	rs12003467	Wald ratio	1	0.056	0.022	9.68E-03	*GRIN3A*
Cerebellum							
	rs6058209	Wald ratio	1	-0.083	0.042	4.76E-02	*GSS*
	rs1337695	Wald ratio	1	0.043	0.019	2.53E-02	*GRIN3A*
Cortex							
	rs72765195	Wald ratio	1	0.203	0.103	4.94E-02	*GRIN1*
Frontal_Cortex							
	rs6479037	Wald ratio	1	-0.197	0.080	1.42E-02	*GRIN3A*
Hippocampus							
	rs12932206	Wald ratio	1	0.114	0.054	3.44E-02	*GRIN2A*
Putamen_basal_ganglia							
	rs12932206	Wald ratio	1	0.055	0.026	3.44E-02	*GRIN2A*
Spinal_cord_cervical							
	rs12932206	Wald ratio	1	0.032	0.015	3.44E-02	*GRIN2A*
Substantia_nigra							
	rs57283800	Wald ratio	1	-0.263	0.076	5.39E-04	*GRIN1*
	rs3105688	Wald ratio	1	0.045	0.014	1.08E-03	*GRIN2A*
ROSMAP							
	rs6533014, rs1598856	Inverse variance	2	-0.595	0.290	4.05E-02	*NFKB1*
Vitamin E							
Amygdala							
	rs9895770	Wald ratio	1	-0.188	0.048	7.69E-05	*PRKCA*
ROSMAP							
	rs120908	Wald ratio	1	-1.395	0.248	1.24E-05	*PRKCB*
	rs8078231, rs741141, rs6504459, rs1995695	Inverse variance	4	-0.613	0.263	1.97E-02	*PRKCA*
Ginkgo biloba extract							
Anterior_cingulate_cortex							
	rs4796172	Wald ratio	1	-0.048	0.017	6.04E-03	*NOS2*
Caudate_basal_ganglia							
	rs3751972	Wald ratio	1	-0.038	0.012	1.92E-03	*NOS2*
Cerebellar_Hemisphere							
	rs55689355	Wald ratio	1	-0.043	0.016	8.46E-03	*GLRA1*
	rs3751972	Wald ratio	1	-0.042	0.014	1.92E-03	*NOS2*
Cerebellum							
	rs56392306	Wald ratio	1	-0.052	0.018	3.63E-03	*GLRA1*
	rs3751972	Wald ratio	1	-0.039	0.013	1.92E-03	*NOS2*
Hippocampus							
	rs11657699	Wald ratio	1	0.045	0.016	4.11E-03	*NOS2*
Hypothalamus							
	rs3751972	Wald ratio	1	0.089	0.029	1.92E-03	*NOS2*
Nucleus_accumbens							
	rs3751972	Wald ratio	1	-0.038	0.012	1.92E-03	*NOS2*
Putamen_basal_ganglia							
	rs3751972	Wald ratio	1	0.061	0.020	1.92E-03	*NOS2*
Spinal_cord_cervical							
	rs3751972	Wald ratio	1	0.062	0.020	1.92E-03	*NOS2*
Substantia_nigra							
	rs3751972	Wald ratio	1	0.067	0.022	1.92E-03	*NOS2*
Vitamin A							
Anterior_cingulate_cortex							
	rs908304	Wald ratio	1	-0.112	0.046	1.46E-02	*RETSAT*
Cerebellar_Hemisphere							
	rs7146599	Wald ratio	1	0.044	0.020	2.97E-02	*DHRS4*
Cerebellum							
	rs7146599	Wald ratio	1	0.044	0.020	2.97E-02	*DHRS4*
Spinal_cord_cervical							
	rs61775046	Wald ratio	1	-0.160	0.059	6.96E-03	*DHRS3*
Resveratrol							
Anterior_cingulate_cortex							
	rs7210182	Wald ratio	1	-0.092	0.027	5.47E-04	*ITGB3*
Cortex							
	rs147286120	Wald ratio	1	0.115	0.038	2.63E-03	*ITGB3*
	rs75756429	Wald ratio	1	0.077	0.032	1.78E-02	*ESR1*
Frontal_Cortex							
	rs4541130	Wald ratio	1	-0.086	0.042	3.84E-02	*ITGB3*
Hypothalamus							
	rs3863211	Wald ratio	1	-0.053	0.021	1.21E-02	*NQO2*
	rs530425	Wald ratio	1	-0.068	0.031	2.84E-02	*PPARG*
Nucleus_accumbens							
	rs12942340	Wald ratio	1	-0.066	0.033	4.78E-02	*ITGB3*
Spinal_cord_cervical							
	rs116527582	Wald ratio	1	0.114	0.042	6.18E-03	*PPARG*
Melatonin							
Caudate_basal_ganglia							
	rs8177477	Wald ratio	1	-0.104	0.049	3.56E-02	*CALR*
Cerebellum							
	rs514209	Wald ratio	1	0.095	0.044	3.10E-02	*RORB*
Cortex							
	rs75756429	Wald ratio	1	0.077	0.032	1.78E-02	*ESR1*
Hypothalamus							
	rs3863211	Wald ratio	1	-0.053	0.021	1.21E-02	*NQO2*
Spinal_cord_cervical							
	rs62082141	Wald ratio	1	-0.055	0.019	4.24E-03	*MPO*
Substantia_nigra							
	rs11668444	Wald ratio	1	0.075	0.036	3.92E-02	*CALR*
Vitamin C							
Cerebellar_Hemisphere							
	rs4660653	Wald ratio	1	0.107	0.052	3.72E-02	*P3H1*
	rs4963510	Wald ratio	1	0.108	0.050	2.96E-02	*P3H3*
	rs4384984	Wald ratio	1	0.096	0.041	1.98E-02	*P4HTM*
Cerebellum							
	rs115117128	Wald ratio	1	0.080	0.038	3.55E-02	*P3H1*
	rs4963510	Wald ratio	1	0.057	0.026	2.96E-02	*P3H3*
Cortex							
	rs4963510	Wald ratio	1	0.095	0.044	2.96E-02	*P3H3*
Frontal_Cortex							
	rs28768122	Wald ratio	1	-0.086	0.035	1.31E-02	*OGFOD2*
Substantia_nigra							
	rs147952742	Wald ratio	1	0.075	0.034	2.59E-02	*OGFOD2*
Omega-3							
Hypothalamus							
	rs530425	Wald ratio	1	-0.068	0.031	2.84E-02	*PPARG*
Spinal_cord_cervical							
	rs116527582	Wald ratio	1	0.114	0.042	6.18E-03	*PPARG*
Curcumin							
Hypothalamus							
	rs530425	Wald ratio	1	-0.068	0.031	2.84E-02	*PPARG*
Spinal_cord_cervical							
	rs116527582	Wald ratio	1	0.114	0.042	6.18E-03	*PPARG*
NAC, N-Acetylcysteine							
ROSMAP, Religious Orders Study and Rush Memory and Aging Project							

Table S5. Two-sample MR of the targets on major depressive disorder.							
	SNPs	**Test**	**SNP_number**	**Beta**	**Se**	***P_value***	**Genes**
NAC							
Amygdala							
	rs11644783	Wald ratio	1	0.057	0.021	6.42E-03	*GRIN2A*
	rs3751972	Wald ratio	1	-0.017	0.007	1.52E-02	*NOS2*
Cerebellar_Hemisphere							
	rs75142508	Wald ratio	1	0.046	0.020	2.03E-02	*GRIN2A*
Cerebellum							
	rs6058209	Wald ratio	1	-0.048	0.019	1.40E-02	*GSS*
	rs1463132	Wald ratio	1	0.047	0.017	6.32E-03	*GRIN2A*
Frontal_Cortex							
	rs12780212	Wald ratio	1	-0.042	0.018	2.17E-02	*CHUK*
Metformin							
Amygdala							
	rs3210749	Wald ratio	1	-0.023	0.011	2.75E-02	*ETFDH*
ubiquinone							
Amygdala							
	rs2839606	Wald ratio	1	-0.035	0.015	1.64E-02	*NDUFV3*
Anterior_cingulate_cortex							
	rs11203218	Wald ratio	1	-0.035	0.015	2.25E-02	*NDUFV3*
Hippocampus							
	rs35893787	Wald ratio	1	-0.025	0.012	3.62E-02	*NDUFV3*
Putamen_basal_ganglia							
	rs2839606	Wald ratio	1	-0.030	0.012	1.64E-02	*NDUFV3*
Resveratrol							
Anterior_cingulate_cortex							
	rs4790213	Wald ratio	1	0.014	0.007	3.34E-02	*ALOX15*
	rs4542199	Wald ratio	1	0.033	0.011	3.60E-03	*NR1I3*
Caudate_basal_ganglia							
	rs9371563	Wald ratio	1	0.050	0.019	7.66E-03	*ESR1*
Cerebellar_Hemisphere							
	rs9906642	Wald ratio	1	0.015	0.007	2.35E-02	*ALOX15*
Frontal_Cortex							
	rs144547994	Wald ratio	1	-0.028	0.012	1.87E-02	*AHR*
	rs16876611	Wald ratio	1	0.073	0.027	8.03E-03	*PI4K2B*
Hippocampus							
	rs139727076	Wald ratio	1	0.035	0.016	3.08E-02	*PTGS2*
Hypothalamus							
	rs3732359	Wald ratio	1	-0.072	0.022	8.78E-04	*NR1I2*
Nucleus_accumbens							
	rs17441991	Wald ratio	1	-0.057	0.029	4.80E-02	*ALOX5*
Spinal_cord_cervical							
	rs4371852	Wald ratio	1	0.026	0.012	2.38E-02	*ESR1*
ROSMAP							
	rs1811442	Wald ratio	1	0.402	0.181	2.60E-02	*SNCA*
Ginkgo biloba extract							
Caudate_basal_ganglia							
	rs3751972	Wald ratio	1	0.023	0.009	1.52E-02	*NOS2*
Cerebellar_Hemisphere							
	rs3751972	Wald ratio	1	0.024	0.010	1.52E-02	*NOS2*
Cerebellum							
	rs3751972	Wald ratio	1	0.018	0.007	1.52E-02	*NOS2*
Hippocampus							
	rs11657699	Wald ratio	1	-0.019	0.007	1.01E-02	*NOS2*
Hypothalamus							
	rs2002846	Wald ratio	1	-0.032	0.010	1.58E-03	*PLA2G2A*
	rs3751972	Wald ratio	1	-0.014	0.006	1.52E-02	*NOS2*
Nucleus_accumbens							
	rs3751972	Wald ratio	1	0.021	0.009	1.52E-02	*NOS2*
Putamen_basal_ganglia							
	rs3751972	Wald ratio	1	0.022	0.009	1.52E-02	*NOS2*
Spinal_cord_cervical							
	rs3751972	Wald ratio	1	0.022	0.009	1.52E-02	*NOS2*
Substantia_nigra							
	rs3751972	Wald ratio	1	-0.013	0.005	1.52E-02	*NOS2*
ROSMAP							
	rs4921420	Wald ratio	1	0.931	0.317	3.37E-03	*GABRA1*
Vitamin E							
Caudate_basal_ganglia							
	rs4955416	Wald ratio	1	0.072	0.028	1.08E-02	*P4HTM*
Cerebellum							
	rs35289401	Wald ratio	1	0.048	0.022	3.11E-02	*SEC14L2*
	rs7007908	Wald ratio	1	0.047	0.020	1.88E-02	*PPP2CB*
Hypothalamus							
	rs3732359	Wald ratio	1	-0.072	0.022	8.78E-04	*NR1I2*
	rs28483846	Wald ratio	1	0.072	0.031	1.88E-02	*PPP2CB*
Nucleus_accumbens							
	rs17441991	Wald ratio	1	-0.057	0.029	4.80E-02	*ALOX5*
Spinal_cord_cervical							
	rs228882	Wald ratio	1	0.033	0.012	4.89E-03	*PRKCA*
Melatonin							
Caudate_basal_ganglia							
	rs9371563	Wald ratio	1	0.050	0.019	7.66E-03	*ESR1*
Hypothalamus							
	rs1862260	Wald ratio	1	-0.043	0.020	2.88E-02	*CALR*
Spinal_cord_cervical							
	rs4371852	Wald ratio	1	0.026	0.012	2.38E-02	*ESR1*
Vitamin C							
Cerebellar_Hemisphere							
	rs4384984	Wald ratio	1	0.088	0.018	1.98E-06	*P4HTM*
Cerebellum							
	rs6769821	Wald ratio	1	0.069	0.014	4.64E-07	*P4HTM*
Cortex							
	rs4955411	Wald ratio	1	0.078	0.028	4.70E-03	*P4HTM*
Frontal_Cortex							
	rs13064784	Wald ratio	1	0.046	0.023	4.80E-02	*P4HTM*
	rs28768122	Wald ratio	1	0.046	0.016	4.47E-03	*OGFOD2*
Hippocampus							
	rs4955416	Wald ratio	1	0.093	0.036	1.08E-02	*P4HTM*
Hypothalamus							
	rs6446205	Wald ratio	1	0.047	0.024	4.80E-02	*P4HTM*
	rs10864725	Wald ratio	1	0.048	0.023	3.43E-02	*EGLN1*
Nucleus_accumbens							
	rs143658733	Wald ratio	1	0.042	0.014	2.91E-03	*DBH*
Putamen_basal_ganglia							
	rs7373072	Wald ratio	1	0.069	0.027	1.08E-02	*P4HTM*
ROSMAP							
	rs7106917	Wald ratio	1	-0.109	0.036	2.24E-03	*BBOX1*
	rs4955426	Wald ratio	1	-0.306	0.116	8.42E-03	*P4HTM*
Vitamin A							
Cerebellum							
	rs12148849	Wald ratio	1	-0.034	0.012	4.11E-03	*ALDH1A3*
Frontal_Cortex							
	rs150543773	Wald ratio	1	-0.043	0.015	3.96E-03	*RDH11*
Curcumin							
Cortex							
	rs762803	Wald ratio	1	-0.030	0.014	3.43E-02	*GSTP1*
Hypothalamus							
	rs7945927	Wald ratio	1	-0.021	0.009	2.56E-02	*GSTP1*
Nucleus_accumbens							
	rs7945927	Wald ratio	1	-0.046	0.021	2.56E-02	*GSTP1*
Substantia_nigra							
	rs67296566	Wald ratio	1	0.033	0.017	4.71E-02	*ABCC5*
ROSMAP							
	rs7621975	Wald ratio	1	-0.410	0.166	1.37E-02	*ABCC5*
	rs7941648	Wald ratio	1	0.101	0.047	3.08E-02	*GSTP1*
NAC, N-Acetylcysteine							
ROSMAP, Religious Orders Study and Rush Memory and Aging Project							

Table S6. Two-sample MR of the targets on attention-deficit/hyperactivity disorder.							
	SNPs	**Test**	**SNP_number**	**Beta**	**Se**	***P_value***	**Genes**
Vitamin C							
Amygdala							
	rs6442126	Wald ratio	1	0.129	0.064	4.48E-02	*P4HTM*
Anterior_cingulate_cortex							
	rs10865952	Wald ratio	1	0.224	0.103	2.93E-02	*P4HTM*
Cerebellar_Hemisphere							
	rs4384984	Wald ratio	1	0.156	0.056	5.57E-03	*P4HTM*
	rs4069668	Wald ratio	1	-0.165	0.079	3.71E-02	*OGFOD2*
Cerebellum							
	rs6769821	Wald ratio	1	0.119	0.042	4.24E-03	*P4HTM*
Cortex							
	rs4955411	Wald ratio	1	0.207	0.083	1.25E-02	*P4HTM*
Frontal_Cortex							
	rs13064784	Wald ratio	1	0.209	0.071	3.49E-03	*P4HTM*
Hypothalamus							
	rs6446205	Wald ratio	1	0.214	0.073	3.57E-03	*P4HTM*
Nucleus_accumbens							
	rs323717	Wald ratio	1	0.185	0.069	7.29E-03	*P3H1*
Spinal_cord_cervical							
	rs6791234	Wald ratio	1	0.089	0.031	3.74E-03	*P4HTM*
ROSMAP							
	rs4379383	Wald ratio	1	0.805	0.383	3.55E-02	*PLOD3*
	rs4955426	Wald ratio	1	-0.921	0.353	9.12E-03	*P4HTM*
NAC							
Caudate_basal_ganglia							
	rs12932206	Wald ratio	1	-0.115	0.051	2.37E-02	*GRIN2A*
Frontal_Cortex							
	rs7657780	Wald ratio	1	0.254	0.111	2.15E-02	*SLC7A11*
	rs76300578	Wald ratio	1	0.128	0.061	3.75E-02	*NFKB1*
Hippocampus							
	rs12932206	Wald ratio	1	-0.173	0.076	2.37E-02	*GRIN2A*
Putamen_basal_ganglia							
	rs12932206	Wald ratio	1	-0.083	0.037	2.37E-02	*GRIN2A*
Spinal_cord_cervical							
	rs12932206	Wald ratio	1	-0.048	0.021	2.37E-02	*GRIN2A*
ROSMAP							
	rs2236271	Wald ratio	1	0.494	0.243	4.24E-02	*GSS*
	rs220593, rs10772724	Inverse variance weighted	2	-1.019	0.494	3.91E-02	*GRIN2B*
Resveratrol							
Caudate_basal_ganglia							
	rs9371563	Wald ratio	1	0.153	0.059	9.64E-03	*ESR1*
Cortex							
	rs75756429	Wald ratio	1	0.110	0.049	2.43E-02	*ESR1*
Frontal_Cortex							
	rs76369590	Wald ratio	1	0.205	0.083	1.36E-02	*ITGA5*
Spinal_cord_cervical							
	rs4371852	Wald ratio	1	0.094	0.036	9.60E-03	*ESR1*
Melatonin							
Caudate_basal_ganglia							
13980	rs9371563	Wald ratio	1	0.153	0.059	9.64E-03	*ESR1*
Cortex							
	rs75756429	Wald ratio	1	0.110	0.049	2.43E-02	*ESR1*
Spinal_cord_cervical							
	rs4371852	Wald ratio	1	0.094	0.036	9.60E-03	*ESR1*
Substantia_nigra							
	rs302864	Wald ratio	1	0.074	0.033	2.44E-02	*EPX*
Vitamin E							
Cerebellum							
14077	rs77290814	Wald ratio	1	-0.296	0.146	4.21E-02	*PRKCA*
Vitamin D							
Spinal_cord_cervical							
	rs886441	Wald ratio	1	-0.087	0.041	3.32E-02	*VDR*
Curcumin							
Spinal_cord_cervical							
	rs886441	Wald ratio	1	-0.087	0.041	3.32E-02	*VDR*
NAC, N-Acetylcysteine							
ROSMAP, Religious Orders Study and Rush Memory and Aging Project							

Table S7. Two-sample MR of the targets on autism spectrum disorder.											
	SNPs	**Test**	**SNP_number**	**Beta**	**Se**	***P_value***	**Genes**				
NAC											
Amygdala											
	rs11644783	Wald ratio	1	0.187	0.069	6.88E-03	*GRIN2A*				
Cerebellar_Hemisphere											
	rs12003467	Wald ratio	1	0.084	0.033	1.17E-02	*GRIN3A*				
Substantia_nigra											
	rs57283800	Wald ratio	1	-0.288	0.114	1.13E-02	*GRIN1*				
Metformin											
Anterior_cingulate_cortex											
	rs72693373	Wald ratio	1	0.082	0.040	4.14E-02	*ETFDH*				
Frontal_Cortex											
	rs10774515	Wald ratio	1	-0.121	0.053	2.20E-02	*PRKAB1*				
Hypothalamus											
	rs11100191	Wald ratio	1	0.065	0.031	3.70E-02	*ETFDH*				
Nucleus_accumbens											
	rs67442921	Wald ratio	1	0.082	0.040	3.94E-02	*ETFDH*				
Substantia_nigra											
	rs55822924	Wald ratio	1	0.068	0.032	3.34E-02	*ETFDH*				
Ginkgo biloba extract											
Caudate_basal_ganglia											
	rs7706918	Wald ratio	1	-0.287	0.145	4.75E-02	*GABRA1*				
Spinal_cord_cervical											
	rs114315666	Wald ratio	1	0.092	0.046	4.88E-02	*GABRA1*				
ROSMAP											
	rs4921381	Wald ratio	1	-2.105	0.715	3.26E-03	*GABRB2*				
	rs4921420	Wald ratio	1	2.114	1.017	3.77E-02	*GABRA1*				
Vitamin A											
ROSMAP											
	rs1342022	Wald ratio	1	-0.790	0.377	3.63E-02	*ALDH1A1*				
Vitamin E											
Caudate_basal_ganglia											
	rs5994305	Wald ratio	1	0.135	0.067	4.21E-02	*SEC14L2*				
Cerebellar_Hemisphere											
	rs5753113	Wald ratio	1	0.169	0.062	6.67E-03	*SEC14L2*				
Frontal_Cortex											
	rs4791035	Wald ratio	1	0.104	0.050	3.71E-02	*PRKCA*				
Nucleus_accumbens											
	rs5994306	Wald ratio	1	0.145	0.073	4.61E-02	*SEC14L2*				
Melatonin											
Cerebellum											
	rs514209	Wald ratio	1	-0.146	0.064	2.27E-02	*RORB*				
Cortex											
	rs75756429	Wald ratio	1	0.107	0.050	3.28E-02	*ESR1*				
Substantia_nigra											
	rs302864	Wald ratio	1	0.070	0.033	3.13E-02	*EPX*				
Resveratrol											
Cortex											
	rs75756429	Wald ratio	1	0.107	0.050	3.28E-02	*ESR1*				
Frontal_Cortex											
	rs16876611	Wald ratio	1	0.180	0.085	3.37E-02	*PI4K2B*				
Hippocampus											
	rs1005696	Wald ratio	1	-0.139	0.069	4.40E-02	*CBR1*				
Hypothalamus											
	rs530425	Wald ratio	1	0.141	0.048	3.15E-03	*PPARG*				
ROSMAP											
	rs2835267	Wald ratio	1	0.316	0.155	4.11E-02	*CBR1*				
	rs1811442	Wald ratio	1	1.322	0.607	2.93E-02	*SNCA*				
Ubiquinone											
Hippocampus											
	rs62345236	Wald ratio	1	0.234	0.090	9.11E-03	*SDHA*				
Nucleus_accumbens											
	rs55671190	Wald ratio	1	0.171	0.066	9.20E-03	*SDHA*				
Spinal_cord_cervical											
	rs62329990	Wald ratio	1	0.111	0.037	2.70E-03	*SDHA*				
Vitamin C											
Hippocampus											
	rs1416912	Wald ratio	1	-0.140	0.059	1.81E-02	*EGLN1*				
Nucleus_accumbens											
	rs2739514	Wald ratio	1	-0.142	0.069	3.92E-02	*EGLN1*				
ROSMAP											
	rs6541266	Wald ratio	1	1.652	0.663	1.27E-02	*EGLN1*				
Curcumin											
Hippocampus											
	rs1005696	Wald ratio	1	-0.139	0.069	4.40E-02	*CBR1*				
Hypothalamus											
	rs530425	Wald ratio	1	0.141	0.048	3.15E-03	*PPARG*				
Putamen_basal_ganglia											
	rs1554395	Wald ratio	1	-0.158	0.071	2.58E-02	*ABCC5*				
ROSMAP											
	rs2835267	Wald ratio	1	0.316	0.155	4.11E-02	*CBR1*				
Omega-3											
Hypothalamus											
	rs530425	Wald ratio	1	0.141	0.048	3.15E-03	*PPARG*				
NAC, N-Acetylcysteine											
ROSMAP, Religious Orders Study and Rush Memory and Aging Project											

Table S8. Two-sample MR of the targets on obsessive-compulsive disorder.							
	SNPs	**Test**	**SNP_number**	**Beta**	**Se**	***P_value***	**Genes**
Vitamin C							
Amygdala							
	rs1375583	Wald ratio	1	-0.257	0.119	3.09E-02	*PLOD2*
Caudate_basal_ganglia							
	rs13088158	Wald ratio	1	-0.388	0.160	1.52E-02	*PLOD2*
Cerebellar_Hemisphere							
	rs4660653	Wald ratio	1	-0.466	0.190	1.42E-02	*P3H1*
	rs7103602	Wald ratio	1	0.299	0.151	4.78E-02	*ALKBH3*
Frontal_Cortex							
	rs45525835	Wald ratio	1	0.688	0.273	1.18E-02	*PLOD1*
	rs147289644	Wald ratio	1	-0.599	0.297	4.40E-02	*BBOX1*
Hypothalamus							
	rs727838	Wald ratio	1	-0.386	0.187	3.89E-02	*BBOX1*
Omega-3							
Anterior_cingulate_cortex							
	rs12600694	Wald ratio	1	-0.475	0.204	1.97E-02	*SREBF1*
NAC							
Caudate_basal_ganglia							
	rs72640377	Wald ratio	1	0.500	0.232	3.14E-02	*IKBKB*
Substantia_nigra							
	rs146318115	Wald ratio	1	-0.298	0.122	1.46E-02	*GRIN2D*
Cerebellum							
	rs1463132	Wald ratio	1	-0.316	0.137	2.10E-02	*GRIN2A*
Frontal_Cortex							
	rs76300578	Wald ratio	1	0.334	0.153	2.89E-02	*NFKB1*
Hypothalamus							
	rs7198417	Wald ratio	1	0.217	0.100	2.93E-02	*GRIN2A*
Ubiquinone							
Putamen_basal_ganglia							
	rs55671190	Wald ratio	1	-0.325	0.156	3.70E-02	*SDHA*
Metformin							
Caudate_basal_ganglia							
	rs1978108	Wald ratio	1	-0.405	0.150	6.84E-03	*PRKAB1*
Cerebellum							
	rs7310266	Wald ratio	1	-0.435	0.163	7.60E-03	*PRKAB1*
Putamen_basal_ganglia							
	rs7304996	Wald ratio	1	-0.343	0.129	7.60E-03	*PRKAB1*
ROSMAP							
	rs278155	Wald ratio	1	-5.947	1.108	4.47E-03	*PRKAB1*
Resveratrol							
Caudate_basal_ganglia							
	rs17552473	Wald ratio	1	-0.625	0.268	1.94E-02	*MTNR1B*
Cortex							
	rs13198902	Wald ratio	1	-0.232	0.097	1.67E-02	*NQO2*
Hypothalamus							
	rs3732359	Wald ratio	1	-0.391	0.169	2.06E-02	*NR1I2*
Melatonin							
Caudate_basal_ganglia							
	rs17552473	Wald ratio	1	-0.625	0.268	1.94E-02	*MTNR1B*
Cortex							
	rs13198902	Wald ratio	1	-0.232	0.097	1.67E-02	*NQO2*
Spinal_cord_cervical							
	rs62082141	Wald ratio	1	-0.167	0.077	2.93E-02	*MPO*
Vitamin A							
Cerebellar_Hemisphere							
	rs7146599	Wald ratio	1	0.253	0.099	1.04E-02	*DHRS4*
Cerebellum							
	rs7146599	Wald ratio	1	0.205	0.080	1.04E-02	*DHRS4*
Frontal_Cortex							
	rs150543773	Wald ratio	1	-0.297	0.117	1.11E-02	*RDH11*
	rs11638367	Wald ratio	1	-0.301	0.104	3.81E-03	*ALDH1A3*
Spinal_cord_cervical							
	rs6759239	Wald ratio	1	-0.335	0.154	2.95E-02	*RETSAT*
Ginkgo biloba extract							
Cortex							
	rs58977775	Wald ratio	1	-0.642	0.302	3.36E-02	*GABRA1*
Spinal_cord_cervical							
	rs606980	Wald ratio	1	-0.129	0.063	4.10E-02	*PLA2G2A*
Vitamin E							
Hippocampus							
	rs42937	Wald ratio	1	-0.287	0.143	4.52E-02	*SEC14L2*
Hypothalamus							
	rs3732359	Wald ratio	1	-0.391	0.169	2.06E-02	*NR1I2*
ROSMAP							
	rs2240422, rs11704395	Inverse variance weighted	2	1.232	1.710	4.51E-02	*SEC14L2*
NAC, N-Acetylcysteine							
ROSMAP, Religious Orders Study and Rush Memory and Aging Project							

Table S9. Two-sample MR of the targets on anorexia nervosa.							
	SNPs	**Test**	**SNP_number**	**Beta**	**Se**	***P_value***	**Genes**
Resveratrol							
Amygdala							
	rs77810888	Wald ratio	1	0.189	0.094	4.37E-02	*AHR*
Ubiquinone							
Cerebellar_Hemisphere							
	rs71320572	Wald ratio	1	-0.122	0.051	1.66E-02	*NDUFV3*
Cerebellum							
	rs71320572	Wald ratio	1	-0.114	0.047	1.66E-02	*NDUFV3*
Cortex							
	rs4148974	Wald ratio	1	0.220	0.098	2.43E-02	*NDUFV3*
Hypothalamus							
	rs4148974	Wald ratio	1	0.289	0.128	2.43E-02	*NDUFV3*
Nucleus_accumbens							
	rs4148974	Wald ratio	1	0.239	0.106	2.43E-02	*NDUFV3*
Vitamin C							
Cerebellum							
	rs8016136	Wald ratio	1	0.230	0.115	4.58E-02	*EGLN3*
Frontal_Cortex							
	rs75543548	Wald ratio	1	0.254	0.122	3.76E-02	*PHYH*
Nucleus_accumbens							
	rs143658733	Wald ratio	1	0.242	0.090	7.31E-03	*DBH*
	rs138098518	Wald ratio	1	-0.236	0.119	4.76E-02	*OGFOD2*
Vitamin A							
Cortex							
	rs12911338	Wald ratio	1	-0.158	0.076	3.67E-02	*ALDH1A3*
Vitamin D							
ROSMAP							
	rs222047	Wald ratio	1	-0.600	0.305	4.97E-02	*GC*
NAC, N-Acetylcysteine							
ROSMAP, Religious Orders Study and Rush Memory and Aging Project							

Table S10. Mediation analysis.												
Target	Mediator	beta1	se1	p1	method	Disease	beta2	se2	p2	method	beta0	proportion
OGFOD2_Cerebellum	Vitamin c	0.018	0.030	5.37E-01	Wald ratio	SCZ	0.070	0.108	5.20E-01	Inverse variance weighted	-0.244	-0.005
OGFOD2_Cerebellum	**Fluid intelligence score**	**0.179**	**0.041**	**1.48E-05**	**Wald ratio**	**SCZ**	**0.170**	**0.029**	**5.20E-09**	**Inverse variance weighted**	**-0.244**	**-0.111**
OGFOD2_Cerebellum	Duration to complete numeric path	0.028	0.024	2.48E-01	Wald ratio	SCZ	-0.306	0.154	4.62E-02	Inverse variance weighted	-0.244	0.035
OGFOD2_Cerebellum	Duration to complete alphanumeric path	0.013	0.024	5.96E-01	Wald ratio	SCZ	-0.624	0.119	1.52E-07	Inverse variance weighted	-0.244	0.033
OGFOD2_Cerebellum	**Number of incorrect matches in round**	**-0.025**	**0.011**	**2.29E-02**	**Wald ratio**	**SCZ**	**-0.906**	**0.149**	**1.17E-09**	**Inverse variance weighted**	**-0.244**	**-0.086**
OGFOD2_Cerebellum	Number of correct matches in round	0.002	0.007	7.47E-01	Wald ratio	SCZ	-0.072	0.406	8.58E-01	Inverse variance weighted	-0.244	0.001
OGFOD2_Cerebellum	Maximum digits remembered correctly	0.070	0.052	1.76E-01	Wald ratio	SCZ	-0.048	0.074	5.17E-01	Inverse variance weighted	-0.244	0.014
OGFOD2_Cerebellum	Prospective memory result	-0.017	0.010	1.04E-01	Wald ratio	SCZ	-0.484	0.262	6.50E-02	Inverse variance weighted	-0.244	-0.032
RORB_Cerebellum	Fluid intelligence score	0.002	0.035	9.52E-01	Wald ratio	SCZ	0.170	0.029	5.20E-09	Inverse variance weighted	0.234	0.002
RORB_Cerebellum	**Duration to complete numeric path**	**-0.058**	**0.021**	**5.47E-03**	**Wald ratio**	**SCZ**	**-0.306**	**0.154**	**4.62E-02**	**Inverse variance weighted**	**0.234**	**0.076**
RORB_Cerebellum	**Duration to complete alphanumeric path**	**-0.045**	**0.021**	**2.97E-02**	**Wald ratio**	**SCZ**	**-0.624**	**0.119**	**1.52E-07**	**Inverse variance weighted**	**0.234**	**0.120**
RORB_Cerebellum	Number of incorrect matches in round	-0.009	0.009	3.54E-01	Wald ratio	SCZ	-0.906	0.149	1.17E-09	Inverse variance weighted	0.234	0.034
RORB_Cerebellum	Number of correct matches in round	-0.004	0.006	5.10E-01	Wald ratio	SCZ	-0.072	0.406	8.58E-01	Inverse variance weighted	0.234	0.001
RORB_Cerebellum	Maximum digits remembered correctly	0.000	0.030	9.87E-01	Wald ratio	SCZ	-0.048	0.074	5.17E-01	Inverse variance weighted	0.234	0.000
RORB_Cerebellum	Prospective memory result	0.012	0.009	1.89E-01	Wald ratio	SCZ	-0.484	0.262	6.50E-02	Inverse variance weighted	0.234	-0.023
PRKCB_ROSMAP	Vitamin e	0.127	0.171	4.57E-01	Inverse vari	BD	0.007	0.081	9.27E-01	Inverse variance weighted	-1.448	-0.001
PRKCB_ROSMAP	Fluid intelligence score	-0.174	0.335	6.05E-01	Inverse vari	BD	0.035	0.024	1.49E-01	Inverse variance weighted	-1.448	0.004
PRKCB_ROSMAP	Duration to complete numeric path	-0.040	0.140	7.73E-01	Inverse vari	BD	-0.142	0.105	1.78E-01	Inverse variance weighted	-1.448	-0.004
PRKCB_ROSMAP	Duration to complete alphanumeric path	0.002	0.139	9.88E-01	Inverse vari	BD	-0.288	0.086	8.03E-04	Inverse variance weighted	-1.448	0.000
PRKCB_ROSMAP	Number of incorrect matches in round	-0.020	0.163	9.03E-01	Inverse vari	BD	-0.548	0.116	2.21E-06	Inverse variance weighted	-1.448	-0.007
PRKCB_ROSMAP	Number of correct matches in round	-0.015	0.040	7.03E-01	Inverse vari	BD	0.187	0.295	5.26E-01	Inverse variance weighted	-1.448	0.002
PRKCB_ROSMAP	Maximum digits remembered correctly	0.247	0.216	2.53E-01	Inverse vari	BD	0.005	0.060	9.40E-01	Inverse variance weighted	-1.448	-0.001
PRKCB_ROSMAP	Prospective memory result	0.014	0.059	8.11E-01	Inverse vari	BD	-0.309	0.185	9.45E-02	Inverse variance weighted	-1.448	0.003
P4HTM_Cerebellum	Vitamin c	0.000	0.017	9.78E-01	Wald ratio	MDD	-0.039	0.050	4.33E-01	Inverse variance weighted	0.069	0.000
P4HTM_Cerebellum	**Fluid intelligence score**	**0.050**	**0.024**	**3.70E-02**	**Wald ratio**	**MDD**	**-0.029**	**0.011**	**7.01E-03**	**Inverse variance weighted**	**0.069**	**-0.021**
P4HTM_Cerebellum	**Duration to complete numeric path**	**-0.036**	**0.014**	**1.00E-02**	**Wald ratio**	**MDD**	**0.109**	**0.053**	**4.10E-02**	**Inverse variance weighted**	**0.069**	**-0.054**
P4HTM_Cerebellum	**Duration to complete alphanumeric path**	**-0.053**	**0.014**	**1.53E-04**	**Wald ratio**	**MDD**	**0.110**	**0.042**	**8.07E-03**	**Inverse variance weighted**	**0.069**	**-0.079**
P4HTM_Cerebellum	**Number of incorrect matches in round**	**-0.018**	**0.006**	**6.20E-03**	**Wald ratio**	**MDD**	**0.219**	**0.053**	**3.28E-05**	**Inverse variance weighted**	**0.069**	**-0.053**
P4HTM_Cerebellum	Number of correct matches in round	0.008	0.004	4.97E-02	Wald ratio	MDD	-0.267	0.158	9.07E-02	Inverse variance weighted	0.069	-0.030
P4HTM_Cerebellum	Maximum digits remembered correctly	0.004	0.020	8.46E-01	Wald ratio	MDD	0.015	0.031	6.31E-01	Inverse variance weighted	0.069	0.001
P4HTM_Cerebellum	Prospective memory result	-0.001	0.006	8.69E-01	Wald ratio	MDD	0.073	0.076	3.33E-01	Inverse variance weighted	0.069	-0.001
P4HTM_Cerebellar_H	Vitamin c	0.003	0.023	9.08E-01	Wald ratio	MDD	-0.039	0.050	4.33E-01	Inverse variance weighted	0.088	-0.001
P4HTM_Cerebellar_H	**Fluid intelligence score**	**0.072**	**0.032**	**2.46E-02**	**Wald ratio**	**MDD**	**-0.029**	**0.011**	**7.01E-03**	**Inverse variance weighted**	**0.088**	**-0.024**
P4HTM_Cerebellar_H	**Duration to complete numeric path**	**-0.051**	**0.019**	**7.24E-03**	**Wald ratio**	**MDD**	**0.109**	**0.053**	**4.10E-02**	**Inverse variance weighted**	**0.088**	**-0.060**
P4HTM_Cerebellar_H	**Duration to complete alphanumeric path**	**-0.075**	**0.019**	**8.59E-05**	**Wald ratio**	**MDD**	**0.110**	**0.042**	**8.07E-03**	**Inverse variance weighted**	**0.088**	**-0.086**
P4HTM_Cerebellar_H	**Number of incorrect matches in round**	**-0.024**	**0.009**	**5.94E-03**	**Wald ratio**	**MDD**	**0.219**	**0.053**	**3.28E-05**	**Inverse variance weighted**	**0.088**	**-0.056**
P4HTM_Cerebellar_H	Number of correct matches in round	0.012	0.005	3.42E-02	Wald ratio	MDD	-0.267	0.158	9.07E-02	Inverse variance weighted	0.088	-0.034
P4HTM_Cerebellar_H	Maximum digits remembered correctly	0.004	0.027	8.82E-01	Wald ratio	MDD	0.015	0.031	6.31E-01	Inverse variance weighted	0.088	0.001
P4HTM_Cerebellar_H	Prospective memory result	-0.004	0.008	6.00E-01	Wald ratio	MDD	0.073	0.076	3.33E-01	Inverse variance weighted	0.088	-0.003
ROSMAP, Religious Orders Study and Rush Memory and Aging Project; SCZ, schiophrenia; BD, bipolar disorder; MDD, major depressive disorder.												