

Table S2 List of substances for correlation analysis

Category	Number	Substance
microbiota diversity	G01	<i>Adlercreutzia</i>
	G02	<i>Allobaculum</i>
	G03	<i>Bacteroides</i>
	G04	<i>Blautia</i>
	G05	<i>Bulleidia</i>
	G06	<i>Butyricicoccus</i>
	G07	<i>Cetobacterium</i>
	G08	<i>Clostridium</i>
	G09	<i>Collinsella</i>
	G10	<i>Coprococcus</i>
	G11	<i>Dialister</i>
	G12	<i>Enterococcus</i>
	G13	<i>Escherichia</i>
	G14	<i>Eubacterium</i>
	G15	<i>Faecalibacterium</i>
	G16	<i>Gemmiger</i>
	G17	<i>Lactobacillus</i>
	G18	<i>Oscillospira</i>
	G19	<i>Prevotella</i>
	G20	<i>Ruminococcus</i>
	G21	<i>Slackia</i>
	G22	<i>Streptococcus</i>

G23	<i>Turicibacter</i>
G24	<i>Anaerobiospirillum</i>
G25	<i>Veillonella</i>
G26	<i>Megamonas</i>
G27	<i>Peptococcus</i>
G28	<i>Catenibacterium</i>
G29	<i>Dorea</i>
G30	<i>Fusobacterium</i>
S01	<i>Bacteroides coprophilus</i>
S02	<i>Bacteroides plebeius</i>
S03	<i>Bifidobacterium adolescentis</i>
S04	<i>Blautia producta</i>
S05	<i>Bulleidia p-1630-c5</i>
S06	<i>Butyricicoccus pullicaecorum</i>
S07	<i>Clostridium clostridioforme</i>
S08	<i>Clostridium spiroforme</i>
S09	<i>Collinsella stercoris</i>
S10	<i>Enterococcus cecorum</i>
S11	<i>Eubacterium bifforme</i>
S12	<i>Faecalibacterium prausnitzii</i>
S13	<i>Gemmiger formicilis</i>
S14	<i>Lactobacillus helveticus</i>
S15	<i>Prevotella copri</i>
S16	<i>Ruminococcus torques</i>

	S17	<i>Cetobacterium somerae</i>
	S18	<i>Ruminococcus gnavus</i>
	S19	Other(<0.0005)
metabolites	M01	L-Citrulline
	M02	Cyclohexylamine
	M03	gamma-L-Glutamyl-L-phenylalanine
	M04	P-Fluorophenylalanine
	M05	Choline
	M06	3.alpha.-Mannobiose
	M07	Glycerol 3-phosphate
	M08	Ser-Asp
	M09	Phosphorylcholine
	M10	Glutaraldehyde
	M11	Ala-Asp
	M12	Isomaltose
	M13	Ile-Glu
	M14	Guanosine 5'-diphosphate (GDP)
	M15	D-Fructose 1,6-bisphosphate
	M16	Thr-Glu
	M17	Glyceraldehyde 3-phosphate
	M18	gamma-L-Glutamyl-L-valine
	M19	1-Aminocyclopropanecarboxylic acid
	M20	Vanillin
	M21	DL-Indole-3-lactic acid

M22	L-Carnitine
M23	Creatinine
M24	Ala-Glu
M25	L-Aspartate
M26	2'-O-methylcytidine
M27	Uridine 5'-diphosphate (UDP)
M28	alpha-D-Glucose 1-phosphate
M29	L-Tryptophan
M30	Deoxyadenosine
M31	gamma-L-Glutamyl-L-glutamic acid
M32	Dihydroxyfumarate
M33	Creatine
M34	Ile-Asp
M35	D-Alanyl-D-alanine (D-Ala-D-Ala)
M36	Uridine 5'-monophosphate (UMP)
M37	L-Pipecolic acid
M38	Nicotinamide adenine dinucleotide (NAD)
M39	Arg-Glu
M40	L-Glutamate
M41	ADP-ribose
M42	Norharmaline
M43	Diaminopimelic acid
M44	N6,N6,N6-Trimethyl-L-lysine
M45	Acetylcholine

M46	D-Glucose 6-phosphate
M47	4-Aminobutyric acid
M48	Stearidonic Acid
M49	Diacyl
M50	N-Acetylcadaverine
M51	N6-Acetyl-L-lysine
M52	D-Proline
M53	3-Phospho-D-glycerate
M54	(3-Carboxypropyl)trimethylammonium cation
M55	Tyramine
M56	N-Acetyl-L-Histidine
M57	D-Pipecolinic acid
M58	Phosphoenolpyruvate
M59	Dopamine
M60	4-Hydroxybutanoic acid lactone
M61	Flavin adenine dinucleotide (FAD)
M62	L-Tyrosine
M63	Ser-Glu
M64	L-Methionine
M65	L-Phenylalanine
M66	Adenosine monophosphate (AMP)
M67	N6-Methyl-L-lysine
M68	trans-2-Hydroxycinnamic acid
M69	2'-Deoxyadenosine 5'-monophosphate (dAMP)

M70	L-Carnosine
M71	Adenine
M72	L-Fucose-1-phosphate
M73	S-Methyl-5'-thioadenosine
M74	His-Pro
M75	Cytosine
M76	Triethanolamine
M77	Daidzein
M78	L- .alpha.-Amino-.gamma.-butyrolactone
M79	Cytidine 5'-monophosphate (CMP)
M80	Glycerophosphocholine
M81	Phe-Gln
M82	L-Leucine
M83	3-Aminobutanoic acid
M84	Dimethylaminopurine
M85	Nicotinamide
M86	L-Arginine
M87	Acetylcarnitine
M88	S-Adenosylmethionine
M89	L-Proline
M90	Adenosine 5'-diphosphate (ADP)
M91	His-Ile
M92	L-Histidine
M93	Uracil

M94	2-Hydroxyadenine
M95	Betaine
M96	16-Hydroxypalmitic acid
M97	1-Deoxy-D-xylulose 5-phosphate
M98	N-Acetyl-D-lactosamine
M99	L-Pyroglutamic acid
M100	D-Tagatose
M101	D-Mannose
M102	D-Mannose 1-phosphate
M103	3-Hydroxy-3-methylglutaric acid
M104	Guanosine 5'-monophosphate (GMP)
M105	Nicotinate
M106	2-Deoxyribose 5-phosphate
M107	Flavin mononucleotide (FMN)
M108	N-Formylmethionine
M109	2-Dehydro-3-deoxy-D-gluconate
M110	3-Hydroxypropionic acid (beta-lactic acid)
M111	Ribitol
M112	Galactinol
M113	D-Ribulose 5-phosphate
M114	Adenosine 3',5'-diphosphate (PAP)
M115	ADP-glucose
M116	Palmitic acid
M117	Cyclic adenosine diphosphate ribose

M118	D-Aspartic acid
M119	N-Acetyl-L-aspartic acid
M120	N-Acetyl-L-glutamate
M121	UDP-N-acetylmuramate
M122	Fructose 1-phosphate
M123	Maltotriose
M124	L-Alanine
M125	L-Threonine
M126	L-Threonate
M127	D-Arabinono-1,4-lactone
M128	L-Valine
M129	Thymine
M130	D-Erythrose 4-phosphate
M131	L-Rhamnose
M132	D-Ribulose 1,5-bisphosphate
M133	Uridine diphosphate glucose(UDP-D-Glucose)
M134	Alpha-D-Glucose
M135	2-Methyl-3-hydroxybutyric acid
M136	Deoxyguanosine triphosphate (dGTP)
M137	Dihydrouracil
M138	Dodecanoic acid
M139	Succinate
M140	Ribulose 5-phosphate
M141	Galactonic acid

M142	cis-9-Palmitoleic acid
M143	L-Glutamine
M144	Dihydroxyacetone phosphate
M145	5-L-Glutamyl-L-alanine
M146	Norethindrone Acetate
M147	L-Asparagine
M148	3-Hydroxydodecanoic acid
M149	9,10-DiHOME
M150	DL-lactate
M151	Citrate
M152	Myristic acid
M153	myo-Inositol
M154	UDP-N-acetylglucosamine
M155	9R,10S-EpOME
M156	(S)-2-Hydroxyglutarate
M157	Indolelactic acid
M158	all cis-(6,9,12)-Linolenic acid
M159	Hydroxyphenyllactic acid
M160	Lumichrome
M161	Acetylglycine
M162	Linoleic acid
M163	2E-Eicosenoic acid
M164	L-Gulonic gamma-lactone
M165	2-Oxoadipic acid

M166

Oleic acid

M167

Sucrose
