

Supplementary Materials
Phylum

	Coefficient	p-Value
Age	-0.0025	0.4596
Sex	-0.1921	0.0659
Smoke	-0.1013	0.2374
Diet	-0.0222	0.8593
RF	0.1616	0.1977
ACPA	-0.0522	0.7024
ESR	-0.0016	0.6642
RCP	0.0069	0.2604
DAS	0.1623	0.0003
Disease duration	0.0012	0.7626
Actinobacteria	-0.2893	0.2939
Bacteroidetes	-0.2985	0.2795
Caldithrix	8.7069	0.7135
Chloroflexi	5.3327	0.3057
Cyanobacteria	-0.2817	0.3663
Euryarchaeota	-2.094	0.0241
Firmicutes	-0.299	0.2780
Fusobacteria	0.8659	0.6134
Nitrospirae	0.3769	0.7133
Proteobacteria	-0.3390	0.2279
Synergistetes	0.1822	0.7676
Tenericutes	-1.0269	0.0563
Thermotogae	-2.980	0.1709
Unclassified	-0.1288	0.6348
Verrucobacteria	-0.2959	0.2944

Class

	Coefficient	p-Value
Age	0.0022	0.4668
Sex	-0.0864	0.3293
Smoke	-0.0917	0.2823
Diet	0.0202	0.859
RF	0.1773	0.1435
ACPA	-0.1500	0.9489
ESR	-0.0053	0.0797
RCP	0.004	0.4528
DAS	0.1423	0.0002
Disease duration	0.0011	0.7727
Alphaproteobacteria	-0.004	0.9489
Bacilli	0.005	0.7099
Bacteroidia	-0.0032	0.7372
Betaproteobacteria	0.0302	0.4625
Clostridia	-0.0067	0.5940
Deltaproteobacteria	-0.1088	0.1673
Erysipelotrichi	0.0735	0.0078
Flavobacteriia	-0.0259	0.2792
Gammaproteobacteria	-0.0244	0.1847
Mollicutes	-0.1725	0.5747
Nostocophycideae	0.0076	0.8282
Sphingobacteriia	0.0221	0.6312
Synergistia	0.2349	0.5868
Unclassified	0.0053	0.9332
Verrucomicrobiae	-0.0066	0.7948

Order

	Coefficient	p-Value
Age	0.0044	0.2357
Sex	-0.1912	0.1197
Smoke	-0.0603	0.5435
Diet	0.0523	0.7157
RF	0.1164	0.4194
ACPA	-0.0537	0.7794
ESR	-0.0040	0.2554
RCP	0.0061	0.3272
DAS	0.1282	0.0053
Disease duration	0.0027	0.5500
Acholeplasmatales	-0.0356	0.9164
Aeromonadales	0.2389	0.9936
Bacteroidales	0.0151	0.6954
Bifidobacteriales	0.0216	0.6023
Burkholderiales	0.0933	0.1622
Clostridiales	0.0142	0.7151
Coriobacteriales	0.0369	0.4086
Desulfovibrionales	-0.1829	0.2763
Desulfuromonadales	0.2452	0.5124
Enterobacteriales	0.0456	0.4523
Erysipelotrichales	0.0388	0.3794
Flavobacteriales	-0.0284	0.5464
Lactobacillales	0.0067	0.8660
Nostocales	0.0796	0.1617
Pasteurellales	0.0608	0.6430
Rhodospirillales	N/A	N/A
Sphingobacteriales	-0.0237	0.7567
Synergistales	0.4927	0.5487
Turicibacterales	-0.5280	0.5094
Unclassified	0.0541	0.7350
Verrucomicrobiales	0.0375	0.3819

Family

Genus

	Coefficient	p-Value		Coefficient	p-Value
Age	9.933×10^{-2}	0.5716	Age	0.0077	0.3047
Sex	-5.220×10^{-2}	0.6618	Sex	-0.0925	0.5727
Smoke	-8.745×10^{-2}	0.5695	Smoke	0.0604	0.7578
Diet	-6.821×10^{-2}	0.7412	Diet	0.1647	0.5269
RF	1.823×10^{-1}	0.3757	RF	0.0299	0.8828
ACPA	-1.928×10^{-2}	0.9361	ACPA	0.2291	0.3384
ESR	-7.771×10^{-3}	0.3027	ESR	-0.0063	0.3118
RCP	-6.780×10^{-4}	0.9463	RCP	-0.0033	0.7606
DAS	1.414×10^{-1}	0.0802	DAS	0.0686	0.3954
Disease duration	1.142×10^{-2}	0.2754	Disease duration	0.0067	0.4568
Alcaligenaceae	3.121×10^{-2}	0.6570	<i>Akkermansia</i>	0.0358	0.4671
Anaerobrancaceae	-1.850×10^{-1}	0.3572	<i>Alkaliphilus</i>	-0.0341	0.5263
Bacteroidaceae	9.793×10^{-5}	0.9935	<i>Bacteroides</i>	0.0008	0.9538
Bifidobacteriaceae	2.582×10^{-4}	0.9881	<i>Bifidobacterium</i>	0.0193	0.5458
Clostridiaceae	8.937×10^{-4}	0.9759	<i>Blautia</i>	0.0187	0.5637
Coriobacteriaceae	2.533×10^{-2}	0.3793	<i>Clostridium</i>	0.0561	0.3078
Desulfuvibrionaceae	2.091×10^{-2}	0.9707	<i>Collinsella</i>	0.0360	0.3291
Enterobacteriaceae	1.726×10^{-2}	0.3941	<i>Coproccoccus</i>	-0.0075	0.9335
Enterococcaceae	-5.809×10^{-2}	0.6918	<i>Dialister</i>	0.0386	0.4020
Erysipelotrichaceae	2.815×10^{-2}	0.6522	<i>Dysgomomonas</i>	-0.0274	0.7381
Flavobacteriaceae	-2.575×10^{-2}	0.4014	<i>Eggerthella</i>	-0.0009	0.9982
Lachnospiraceae	-6.152×10^{-3}	0.6461	<i>Eubacterium</i>	0.0309	0.7122
Lactobacillaceae	1.906×10^{-2}	0.8853	<i>Faecalibacterium</i>	-0.0033	0.8392
Nostocaceae	3.277×10^{-2}	0.5624	<i>Flavobacterium</i>	-0.0334	0.2203
Paraprevotellaceae	-2.045×10^{-2}	0.6590	<i>Lachnobacterium</i>	-0.0813	0.8828
Peptostreptococcaceae	7.441×10^{-3}	0.8518	<i>Lachnospira</i>	0.0240	0.6603
Porphyromonadaceae	-1.1241×10^{-2}	0.6769	<i>Magamonas</i>	-0.0454	0.6647
Prevotellaceae	-2.859×10^{-3}	0.8333	<i>Mitsuokella</i>	0.0021	0.9772
Ruminococcaceae	-9.149×10^{-3}	0.5072	<i>Oscillospira</i>	0.0078	0.8501
Sphingobacteriaceae	-1.142×10^{-3}	0.9906	<i>Parabacteroides</i>	0.0101	0.8517
Streptococcaceae	2.562×10^{-3}	0.9016	<i>Paraprevotella</i>	-0.1424	0.5930
Succinivibrionaceae	-3.360×10^{-2}	0.3649	<i>Phascolarctobacterium</i>	-0.0021	0.9791
Unclassified	3.664×10^{-3}	0.9235	<i>Prevotella</i>	0.0058	0.7540
Veillonellaceae	-4.780×10^{-3}	0.8461	<i>Roseburia</i>	-0.0045	0.8850
Verrucomicrobiaceae	-1.699×10^{-2}	0.6704	<i>Ruminococcus</i>	0.0053	0.8009
			<i>Streptococcus</i>	0.0225	0.2470
			<i>Succinivibrio</i>	-0.0231	0.4953
			<i>Sutterella</i>	-0.0692	0.5600
			<i>Tetragenococcus</i>	-0.0131	0.9247
			Unclassified	0.0211	0.6159
			<i>Veillonella</i>	-0.0117	0.8991

Species

	Coefficient	p-Value
Age	0.0376	N/A
Sex	N/A	N/A
Smoke	N/A	N/A
Diet	0.0523	N/A
RF	2.0596	N/A
ACPA	-3.3820	N/A
ESR	N/A	N/A
RCP	N/A	N/A
DAS	0.4464	N/A
Disease duration	-0.0507	N/A
<i>Akkermansia muciniphila</i>	0.1180	N/A
<i>Alkaliphilus crotonatoxidans</i>	-0.0551	N/A
<i>Alkaliphilus peptidifermentans</i>	-0.05250	N/A
<i>Anaerobranca zavarzinii</i>	0.0508	N/A
<i>Bacteroides caccae</i>	0.5154	N/A
<i>Bacteroides clarus</i>	-0.7977	N/A
<i>Bacteroides coprocola</i>	0.1291	N/A
<i>Bacteroides coprophilus</i>	-0.4894	N/A
<i>Bacteroides denticanum</i>	0.6316	N/A
<i>Bacteroides dorei</i>	0.2492	N/A
<i>Bacteroides eggerthi</i>	0.2596	N/A
<i>Bacteroides fluxus</i>	-0.7791	N/A
<i>Bacteroides fragilis</i>	-0.8098	N/A
<i>Bacteroides massiliensis</i>	0.2400	N/A
<i>Bacteroides ovatus</i>	0.0042	N/A
<i>Bacteroides plebeius</i>	0.0012	N/A
<i>Bacteroides rodentium</i>	0.1631	N/A
<i>Bacteroides salanitronis</i>	0.5717	N/A
<i>Bacteroides stercoris</i>	-0.2675	N/A
<i>Bacteroides thetaiotaomicron</i>	1.5040	N/A
<i>Bacteroides uniformis</i>	0.1386	N/A
<i>Bacteroides vulgatus</i>	0.0377	N/A
<i>Bacteroides xylanisolvens</i>	0.3099	N/A
<i>Balutia coccoides</i>	-0.3024	N/A
<i>Bifidobacterium adolescentis</i>	0.1308	N/A
<i>Bifidobacterium longum</i>	0.0819	N/A
<i>Bifidobacterium stercoris</i>	0.1522	N/A
<i>Blautia hansenii</i>	0.0126	N/A
<i>Caloramator mitchellensis</i>	-0.2299	N/A
<i>Catenibacterium mitsuokai</i>	-0.1411	N/A
<i>Collinsella aerofaciens</i>	0.0937	N/A
<i>Coprococcus eutactus</i>	3.3342	N/A
<i>Dialister invisus</i>	-0.0950	N/A
<i>Dysgomonas wimpennyi</i>	0.0489	N/A
<i>Erysipelothrix inopinata</i>	1.3249	N/A
<i>Erysipelothrix muris</i>	N/A	N/A
<i>Eubacterium bifforme</i>	0.1793	N/A
<i>Faecalibacterium prausnitzii</i>	0.1913	N/A
<i>Lachnospira pectinoschiza</i>	-0.4873	N/A
<i>Megamonas funiformis</i>	N/A	N/A
<i>Megasphaera elsdenii</i>	-10.9889	N/A
<i>Mitsuokella multacida</i>	4.6313	N/A
<i>Negativicoccus succinivorans</i>	-0.2108	N/A
<i>Novispirillum peregrinum</i>	-2.9861	N/A
<i>Oscillospira eae</i>	-0.4399	N/A
<i>Parabacteroides distasonis</i>	0.0190	N/A
<i>Parabacteroides merdae</i>	-0.1958	N/A
<i>Paraprevotella xylaniphila</i>	N/A	N/A
<i>Pedobacter kwangyangensis</i>	N/A	N/A
<i>Phascolarctobacterium succinatutens</i>	N/A	N/A
<i>Prevotella copri</i>	N/A	N/A
<i>Prevotella stercorea</i>	N/A	N/A
<i>Roseburia faecis</i>	N/A	N/A
<i>Ruminococcus bromii</i>	N/A	N/A
<i>Ruminococcus gnavus</i>	N/A	N/A
<i>Streptococcus parasanguinis</i>	N/A	N/A
<i>Streptococcus thermophilus</i>	N/A	N/A

<i>Streptococcus vestibularis</i>	N/A	N/A
<i>Succiniclasticum ruminis</i>	N/A	N/A
<i>Sutterella wadsworthensis</i>	N/A	N/A
<i>Tetragenococcus halophilus</i>	N/A	N/A
Unclassified	N/A	N/A
<i>Veillonella dispar</i>	N/A	N/A