

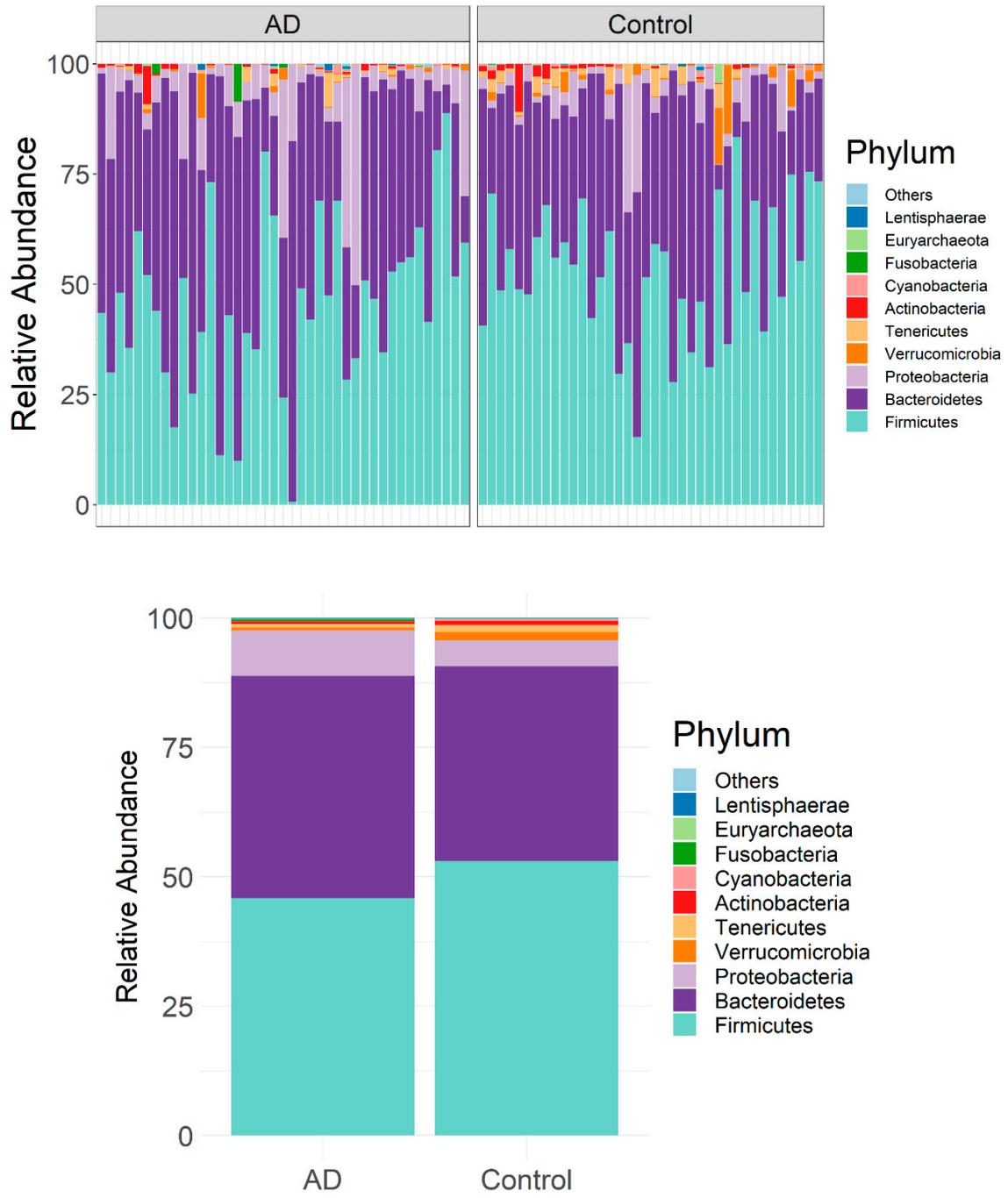
## Supplementary Materials:

### Association of gut microbiota with atherogenic dyslipidemia, and its impact on serum lipid levels after bariatric surgery

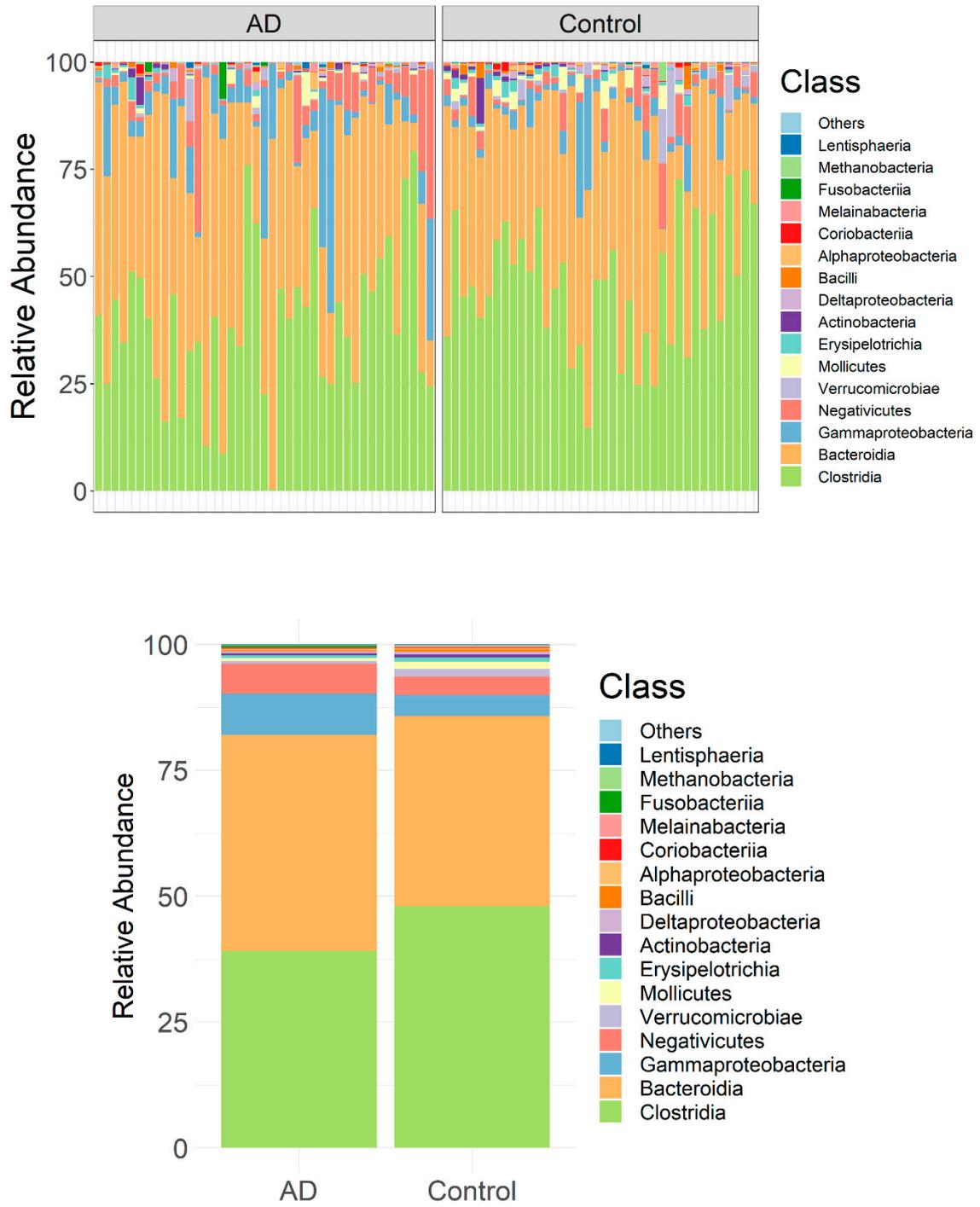
**Table S1.** Comparison of dietary macronutrient intake in AD cases and controls.

Trait	Atherogenic dyslipidemia (n=41)	Control (n=38)	<i>P</i>
Energy, kcal/day	1556.90 (1221.88 – 1994.62)	1595.68 (1278.28 – 2290.65)	0.841
Carbohydrates (%)	61.94 (56.84 – 66.55)	59.31 (53.27 – 67.92)	0.399
Protein (%)	13.77 (11.98 – 15.05)	13.75 (12.06 – 15.35)	0.746
Total fat (%)	24.40 (20.70 – 28.83)	26.91 (20.40 – 31.82)	0.280
SFA (%)	8.09 (6.84 – 10.48)	8.81 (6.13 – 9.96)	0.631
MUFA (%)	10.85 (8.43 – 12.36)	11.91 (8.69 – 14.55)	0.164
PUFA (%)	4.92 (4.18 – 6.18)	5.75 (4.61 – 7.11)	0.035
Dietary fiber (g/1000kcal)	15.18 (10.42 – 20.42)	17.24 (11.14 – 21.65)	0.524

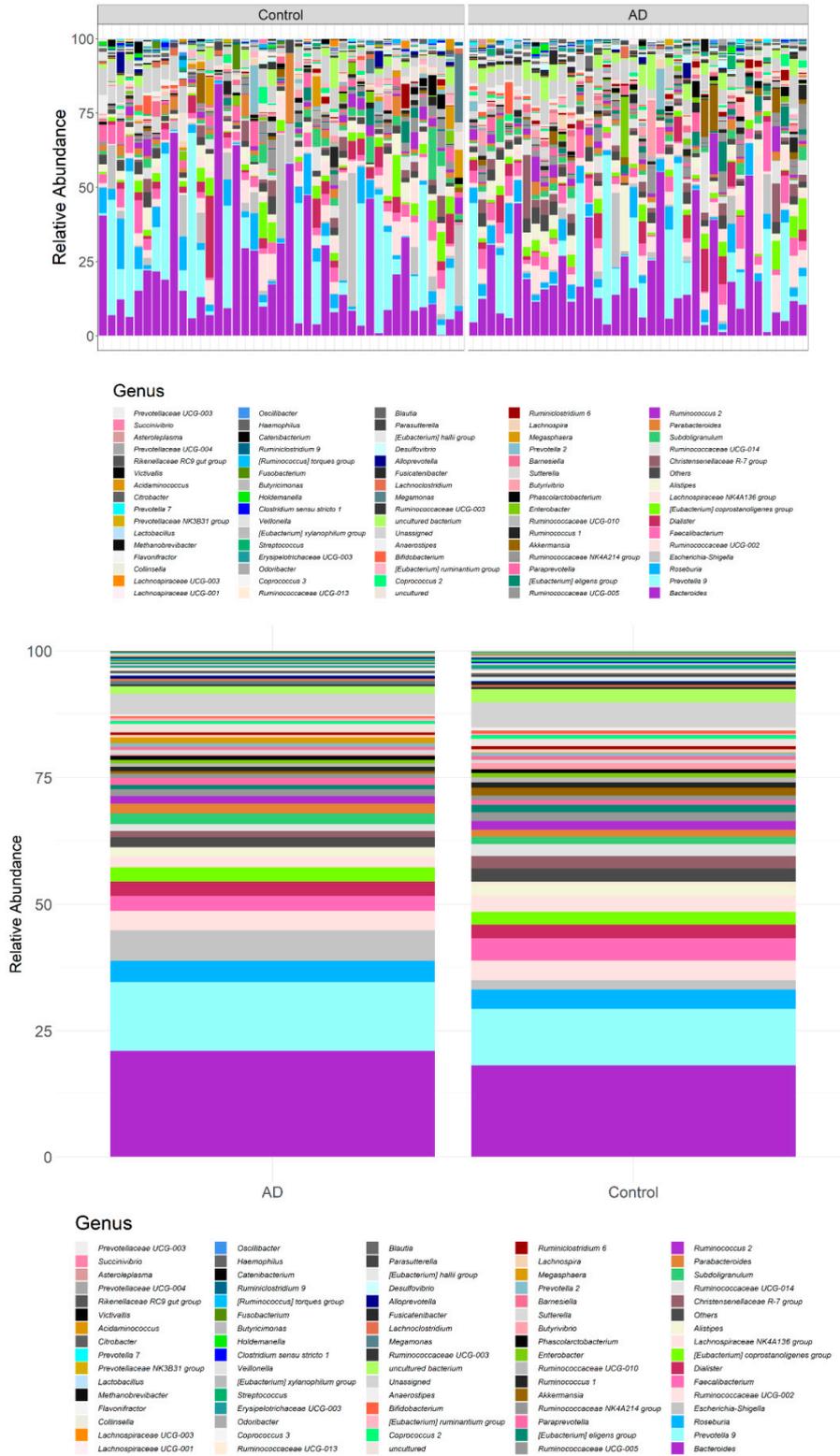
Data are presented as median (interquartile range). P-values were obtained using Mann-Whitney U-test. AD, atherogenic dyslipidemia; SFA, saturated fatty acids; MUFA, monounsaturated fatty acids; PUFA, polyunsaturated fatty acids.



**Figure S1.** Distribution of bacterial composition at phylum level in atherogenic dyslipidemia (AD) patients and controls.



**Figure S2.** Distribution of bacterial composition at the class level in atherogenic dyslipidemia (AD) patients and controls.



**Figure S3.** Distribution of bacterial composition at the genus levels in atherogenic dyslipidemia (AD) patients and controls.

**Table S2.** Association of genera abundance with atherogenic dyslipidemia adjusting for age, sex and BMI.

<b>Genus</b>	<b>Coefficients</b>	<b>P-value</b>	<b>q-value</b>
<i>[Eubacterium] eligens group</i>	-2.005	0.002	0.045
<i>Parasutterella</i>	-2.394	0.003	0.046
<i>Lachnospiraceae FCS020 group</i>	-0.795	0.004	0.046
<i>Ruminococcaceae UCG 014</i>	-2.175	0.008	0.080
<i>[Eubacterium] xylanophilum.group</i>	-1.661	0.007	0.080
<i>Escherichia-Shigella</i>	1.753	0.010	0.082
<i>Fusicatenibacter</i>	-1.527	0.010	0.082
<i>Christensenellaceae R 7 group</i>	-2.091	0.013	0.086
<i>Erysipelotrichaceae UCG 003</i>	-1.725	0.014	0.086
<i>Megasphaera</i>	2.128	0.022	0.111
<i>Olsenella</i>	0.606	0.026	0.125
<i>Ruminiclostridium 6</i>	-1.855	0.033	0.139
<i>Lachnospiraceae UCG 004</i>	-1.157	0.033	0.139
<i>Ruminococcaceae UCG 013</i>	-1.399	0.038	0.152
<i>Coprococcus 1</i>	-1.057	0.042	0.156
<i>Fusobacterium</i>	1.206	0.051	0.178
<i>[Ruminococcus] gaurvrauii.group</i>	-0.585	0.087	0.253
<i>Anaerostipes</i>	-1.313	0.097	0.263
<i>Odoribacter</i>	-0.734	0.116	0.304
<i>Akkermansia</i>	-1.294	0.157	0.336
<i>Hydrogenoanaerobacterium</i>	-0.379	0.221	0.414
<i>Weissella</i>	-0.341	0.239	0.423
<i>Blautia</i>	-0.628	0.349	0.573

Coefficients from the generalized linear model using MaAsLin2 on pairwise testing between the atherogenic dyslipidemia and the control groups. *q*-values were calculated using FDR correction.

**Table S3.** Comparison of anthropometric and biochemical parameters of atherogenic dyslipidemia (AD) patients before and after bariatric surgery.

Trait	AD subjects (n=10)		
	Pre-surgery	Post-surgery	<i>P</i>
Female, n (%)	7 (70)	-	-
Age, years	41.5 (30.3 – 51.0)	-	-
BMI, kg/m <sup>2</sup>	48.3 (41.3 – 55.7)	32.9 (28.8 – 37.7)	0.002
HDL-C, mg/dL	33.0 (30.8 – 36.5)	42.0 (37.0 – 46.5)	0.010
Triglycerides, mg/dL	175.0 (162.8 – 183.3)	135.0 (108.3 – 149.0)	0.002
Total cholesterol, mg/dL	157.0 (133.8 – 189.3)	143.0 (124.5 – 159.8)	0.257
Hypolipidemic treatment, n (%)	3 (30)	1 (10)	0.264

Data are presented as median (interquartile range) or as number and percentage. BMI, Body mass index; HDL-C, High density lipoprotein cholesterol.