SUPPLEMENT

Inflammation-related plasma protein levels and association with adiposity measurements in young adults

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Table S1. Comparison of characteristics among the study population and participants in the BAMSE cohort not fulfilling the inclusion criteria

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Table S1. Comparison of characteristics among the study population and participants in the BAMSE cohort not fulfilling the inclusion criteria

	Included in study population (n=2074)	Not included in study population (n=2015)	
	n (%)	n (%)	P-value[1]
Male sex (n=4089)	927 (44.7)	1138 (56.5)	<0.001
Parental professional worker at baseline (n=4018)	1740 (85.4)	1583 (79.9)	<0.001
Maternal smoking in pregnancy and/or infancy (n=4086)	255 (12.3)	308 (15.3)	<0.001
Any parent born outside of Scandinavia (n=3398)	281 (15.1)	262 (17.1)	0.11
Breastfeeding ≥4 months (n=3919)	1621 (80.3)	1495 (78.7)	0.21
High physical activity level at 16 years (n=2923)	1181 (67.3)	809 (69.3)	0.44
Overweight at 16 years (n=2599)	241 (14.3)	178 (19.6)	<0.001

[1] P-values estimated using the chi-2 test
[2] Levels of physical activity according to IPAQ (International Physical Activity Questionnaire) guidelines. High: ≥7hours/week of moderate to vigorous activity or ≥ 3.5 hours/week of vigorous activity

Table S2. *Levels of the 71 inflammatory proteins included in the analyses by sex*

Protein	Females (n=1147)		Males (n=927)		p-value
	Mean (sd)	Median (p25 - p75)	Mean (sd)	Median (p25 - p75)	
4EBP1	8.49 (0.85)	8.45 (7.92 - 9.00)	9.08 (0.87)	9.09 (8.59 - 9.65)	<0.001 [abc]
ADA	5.59 (0.41)	5.55 (5.32 - 5.80)	5.82 (0.42)	5.78 (5.55 - 6.05)	<0.001 [abc]
AXIN1	5.45 (0.89)	5.49 (4.97 - 5.98)	6.01 (0.93)	6.08 (5.60 - 6.58)	<0.001 [abc]
CASP8	1.72 (0.51)	1.66 (1.43 - 1.92)	2.18 (0.59)	2.11 (1.80 - 2.52)	<0.001 [abc]
CCL3	4.17 (0.51)	4.12 (3.86 - 4.40)	4.28 (0.44)	4.22 (3.98 - 4.53)	0.053 [a]
CCL4	5.50 (0.53)	5.47 (5.15 - 5.79)	5.74 (0.55)	5.67 (5.37 - 6.06)	0.011 [ab]
CCL11	6.19 (0.42)	6.18 (5.90 - 6.45)	6.40 (0.36)	6.37 (6.15 - 6.62)	0.141 [a]
CCL19	8.78 (0.67)	8.67 (8.35 - 9.07)	8.79 (0.55)	8.71 (8.43 - 9.07)	<0.001 [abc]
CCL20	6.38 (0.81)	6.28 (5.86 - 6.75)	6.46 (0.81)	6.34 (5.98 - 6.75)	<0.001 [abc]
CCL23	10.06 (0.46)	10.06 (9.77 - 10.36)	10.03 (0.44)	10.03 (9.76 - 10.29)	<0.001 [abc]
CCL25	5.70 (0.50)	5.71 (5.35 - 6.01)	5.82 (0.47)	5.79 (5.50 - 6.11)	<0.001 [abc]
CCL28	2.06 (0.38)	2.02 (1.82 - 2.25)	1.91 (0.35)	1.88 (1.70 - 2.08)	<0.001 [abc]
CD5	5.16 (0.46)	5.09 (4.88 - 5.31)	5.21 (0.46)	5.11 (4.92 - 5.36)	<0.001 [abc]
CD6	5.46 (0.81)	5.33 (4.96 - 5.68)	5.60 (0.72)	5.45 (5.16 - 5.86)	0.011 [ab]
CD8A	10.58 (0.57)	10.55 (10.20 - 10.96)	10.57 (0.57)	10.56 (10.19 - 10.93)	<0.001 [abc]
CD40	11.72 (0.43)	11.70 (11.47 - 11.97)	11.91 (0.44)	11.91 (11.66 - 12.18)	0.721
CD244	7.20 (0.37)	7.18 (6.97 - 7.40)	7.37 (0.38)	7.35 (7.12 - 7.59)	0.543 [abc]
CDCP1	2.16 (0.40)	2.11 (1.91 - 2.34)	2.14 (0.38)	2.10 (1.91 - 2.33)	<0.001 [abc]
CSF1	9.86 (0.24)	9.83 (9.69 - 10.02)	9.75 (0.18)	9.75 (9.63 - 9.86)	<0.001 [bc]
CST5	4.94 (0.42)	4.92 (4.66 - 5.19)	5.01 (0.42)	4.96 (4.69 - 5.27)	0.669 [a]
CX3CL1	5.71 (0.33)	5.71 (5.48 - 5.93)	5.71 (0.33)	5.70 (5.47 - 5.93)	0.002 [abc]
CXCL1	9.25 (0.75)	9.35 (8.76 - 9.74)	9.35 (0.76)	9.43 (8.92 - 9.89)	0.472 [a]
CXCL5	11.31 (0.98)	11.36 (10.69 - 11.99)	11.29 (0.95)	11.33 (10.75 - 11.97)	0.086 [c]
CXCL6	8.78 (0.72)	8.76 (8.31 - 9.19)	9.14 (0.73)	9.10 (8.63 - 9.61)	0.539 [a]
CXCL9	6.57 (0.78)	6.43 (6.08 - 6.85)	6.57 (0.73)	6.45 (6.13 - 6.84)	<0.001 [abc]

CXCL10	8.91 (0.84)	8.76 (8.40 - 9.18)	8.92 (0.79)	8.77 (8.41 - 9.20)	0.548
CXCL11	8.19 (0.83)	8.07 (7.63 - 8.66)	8.12 (0.81)	8.04 (7.56 - 8.56)	<0.001 [abc]
DNER	8.96 (0.21)	8.97 (8.82 - 9.11)	9.08 (0.20)	9.08 (8.95 - 9.22)	<0.001 [abc]
ENRAGE	1.84 (0.59)	1.77 (1.48 - 2.08)	2.22 (0.55)	2.16 (1.85 - 2.52)	<0.001 [abc]
FGF19	7.94 (0.96)	7.90 (7.27 - 8.60)	7.92 (0.90)	7.89 (7.31 - 8.48)	0.708 [a]
FGF21	3.78 (1.30)	3.68 (2.90 - 4.59)	3.71 (1.25)	3.68 (2.87 - 4.48)	0.348 [a c]
FGF23	2.56 (0.53)	2.46 (2.24 - 2.74)	2.46 (0.35)	2.44 (2.24 - 2.63)	0.003 [bc]
Flt3L	8.98 (0.38)	8.97 (8.74 - 9.19)	8.80 (0.36)	8.82 (8.57 - 9.03)	<0.001 [abc]
GDNF	2.24 (0.43)	2.22 (1.96 - 2.46)	2.29 (0.31)	2.28 (2.09 - 2.48)	<0.001 [bc]
HGF	8.23 (0.41)	8.20 (7.95 - 8.47)	8.48 (0.37)	8.43 (8.22 - 8.69)	<0.001 [abc]
IFNgamma	6.09 (1.09)	5.86 (5.45 - 6.43)	6.04 (1.08)	5.83 (5.40 - 6.36)	0.176
IL6	2.61 (0.60)	2.50 (2.20 - 2.89)	2.60 (0.63)	2.48 (2.18 - 2.88)	0.002 [abc]
IL7	3.45 (0.61)	3.40 (3.06 - 3.76)	3.54 (0.60)	3.48 (3.18 - 3.86)	0.116 [a]
IL8	4.46 (0.50)	4.42 (4.14 - 4.71)	4.64 (0.50)	4.57 (4.32 - 4.87)	<0.001 [bc]
IL10	3.90 (0.69)	3.81 (3.56 - 4.09)	3.95 (0.57)	3.87 (3.63 - 4.13)	<0.001 [abc]
IL10RB	5.68 (0.25)	5.68 (5.52 - 5.84)	5.70 (0.26)	5.69 (5.53 - 5.86)	0.241 [a]
IL12B	5.80 (0.56)	5.80 (5.42 - 6.16)	5.65 (0.52)	5.65 (5.31 - 6.00)	<0.001 [abc]
IL15RA	1.34 (0.25)	1.33 (1.18 - 1.48)	1.45 (0.23)	1.44 (1.31 - 1.59)	<0.001 [ab]
IL17A	1.85 (0.53)	1.77 (1.51 - 2.09)	1.87 (0.53)	1.79 (1.53 - 2.08)	0.499 [abc]
IL18	7.98 (0.50)	7.95 (7.66 - 8.30)	8.11 (0.51)	8.08 (7.81 - 8.41)	<0.001 [abc]
IL18R1	8.13 (0.39)	8.13 (7.86 - 8.38)	8.21 (0.38)	8.21 (7.94 - 8.46)	<0.001 [abc]
LAPTGFbeta1	7.40 (0.38)	7.36 (7.15 - 7.60)	7.51 (0.41)	7.48 (7.25 - 7.71)	<0.001 [abc]
LIFR	3.65 (0.24)	3.66 (3.49 - 3.80)	3.67 (0.19)	3.66 (3.54 - 3.78)	0.042 [abc]
MCP1	10.88 (0.43)	10.83 (10.61 - 11.08)	11.04 (0.39)	10.98 (10.79 - 11.21)	<0.001 [abc]
MCP2	8.22 (0.66)	8.25 (7.87 - 8.57)	8.41 (0.67)	8.46 (8.03 - 8.78)	<0.001 [abc]
MCP4	12.76 (0.67)	12.71 (12.33 - 13.16)	13.03 (0.66)	12.97 (12.59 - 13.41)	<0.001 [abc]
MMP1	9.09 (1.05)	9.03 (8.43 - 9.68)	9.33 (0.96)	9.28 (8.70 - 9.88)	<0.001 [abc]
MMP10	8.13 (0.67)	8.05 (7.70 - 8.45)	8.14 (0.58)	8.08 (7.77 - 8.50)	0.358

NT3	2.92 (0.42)	2.87 (2.69 - 3.05)	2.95 (0.39)	2.90 (2.71 - 3.11)	0.005 [bc]
OPG	10.05 (0.37)	10.01 (9.81 - 10.26)	9.91 (0.27)	9.92 (9.73 - 10.09)	<0.001 [abc]
OSM	3.61 (1.02)	3.47 (2.84 - 4.30)	3.85 (0.95)	3.74 (3.15 - 4.48)	<0.001 [abc]
PDL1	6.54 (0.39)	6.50 (6.31 - 6.69)	6.74 (0.38)	6.69 (6.51 - 6.91)	<0.001 [abc]
SCF	8.96 (0.40)	9.02 (8.76 - 9.24)	9.11 (0.32)	9.13 (8.96 - 9.33)	<0.001 [abc]
SIRT2	6.00 (1.03)	6.05 (5.40 - 6.67)	6.47 (1.07)	6.54 (5.96 - 7.16)	<0.001 [abc]
ST1A1	3.53 (0.70)	3.55 (3.10 - 3.96)	3.92 (0.71)	3.94 (3.52 - 4.41)	<0.001 [abc]
STAMBP	6.26 (0.90)	6.23 (5.73 - 6.79)	6.85 (0.96)	6.85 (6.36 - 7.45)	<0.001 [abc]
TGFalpha	3.11 (0.37)	3.05 (2.90 - 3.21)	3.15 (0.36)	3.07 (2.92 - 3.25)	0.016 [bc]
TNF	3.05 (0.71)	2.88 (2.65 - 3.21)	3.10 (0.72)	2.96 (2.73 - 3.24)	0.002 [abc]
TNFB	4.96 (0.43)	4.96 (4.73 - 5.22)	4.87 (0.42)	4.90 (4.65 - 5.09)	<0.001 [abc]
TNFRSF9	6.70 (0.35)	6.70 (6.46 - 6.91)	6.84 (0.31)	6.82 (6.62 - 7.05)	<0.001 [abc]
TNFSF14	4.00 (0.59)	3.92 (3.61 - 4.31)	4.27 (0.64)	4.17 (3.85 - 4.61)	<0.001 [abc]
TRAIL	7.75 (0.36)	7.77 (7.52 - 7.98)	8.01 (0.28)	8.00 (7.83 - 8.18)	<0.001 [abc]
TRANCE	4.56 (0.67)	4.60 (4.10 - 5.03)	4.92 (0.57)	4.94 (4.56 - 5.29)	<0.001 [abc]
TWEAK	9.61 (0.37)	9.64 (9.38 - 9.86)	9.83 (0.28)	9.82 (9.64 - 10.00)	<0.001 [abc]
uPA	10.11 (0.35)	10.13 (9.88 - 10.36)	10.24 (0.28)	10.24 (10.09 - 10.41)	0.294 [a]
VEGFA	10.24 (0.32)	10.22 (10.03 - 10.43)	10.26 (0.32)	10.22 (10.05 - 10.44)	<0.001 [abc]

Protein levels in NPX unit.

Linear regression model using normalized protein values (rank-based inverse normal transformation).

p-value at 0.05 FDR

[a] p-value <0.05 adjusted for percentage body fat

[b] p-value <0.05 adjusted for body mass index

[c] p-value <0.05 adjusted for visceral fat rating

sd, standard deviation; p25, 25th percentile; p75, 75th percentile

Table S3. Association between body composition measurements and protein levels

Protein	% Body Fat Coef	95% CI			p-value	Body Mass Index Coef	95% CI			p-value	Visceral Fat Rating Coef	95% CI			p-value	Waist Circumference Coef	95% CI			p-value
4EBP1	0.19	0.13	-	0.25	<0.001	0.02	0.01	-	0.03	<0.001	0.05	0.03	-	0.07	<0.001	0.05	0.03	-	0.07	<0.001
ADA	0.17	0.10	-	0.23	<0.001	0.04	0.03	-	0.05	<0.001	0.04	0.03	-	0.06	<0.001	0.07	0.05	-	0.09	<0.001
AXIN1	0.20	0.14	-	0.27	<0.001	0.03	0.02	-	0.04	<0.001	0.05	0.03	-	0.07	<0.001	0.06	0.04	-	0.08	<0.001
CASP8	0.08	0.02	-	0.14	0.019	0.01	0.00	-	0.02	0.009	0.02	0.00	-	0.03	0.050	0.02	0.00	-	0.04	0.035
CCL3	0.42	0.36	-	0.49	<0.001	0.06	0.05	-	0.07	<0.001	0.11	0.09	-	0.13	<0.001	0.12	0.10	-	0.14	<0.001
CCL4	0.28	0.21	-	0.34	<0.001	0.04	0.03	-	0.05	<0.001	0.08	0.07	-	0.10	<0.001	0.09	0.07	-	0.11	<0.001
CCL11	-0.16	-0.22	-	-0.09	<0.001	-0.02	-0.03	-	-0.01	<0.001	-0.03	-0.05	-	-0.01	<0.001	-0.02	-0.05	-	0.00	0.046
CCL19	0.25	0.19	-	0.32	<0.001	0.04	0.03	-	0.05	<0.001	0.07	0.05	-	0.08	<0.001	0.09	0.07	-	0.11	<0.001
CCL20	0.12	0.06	-	0.19	0.001	0.02	0.01	-	0.03	0.004	0.04	0.02	-	0.06	<0.001	0.05	0.03	-	0.07	<0.001
CCL23	-0.09	-0.16	-	-0.02	0.010	-0.02	-0.03	-	-0.01	0.004	-0.02	-0.04	-	0.00	0.023	-0.03	-0.05	-	0.00	0.035
CCL25	-0.07	-0.14	-	-0.01	0.039	-0.01	-0.02	-	0.00	0.034	-0.01	-0.03	-	0.00	0.153	-0.01	-0.04	-	0.01	0.277
CCL28	-0.16	-0.22	-	-0.09	<0.001	-0.03	-0.04	-	-0.02	<0.001	-0.04	-0.06	-	-0.03	<0.001	-0.06	-0.08	-	-0.03	<0.001
CD5	0.14	0.07	-	0.21	<0.001	0.03	0.02	-	0.04	<0.001	0.04	0.03	-	0.06	<0.001	0.06	0.04	-	0.08	<0.001
CD6	0.03	-0.04	-	0.09	0.449	0.01	0.00	-	0.02	0.055	0.01	0.00	-	0.03	0.090	0.03	0.01	-	0.05	0.013
CD8A	0.04	-0.03	-	0.11	0.262	0.00	-0.01	-	0.01	0.958	0.01	-0.01	-	0.02	0.532	0.01	-0.01	-	0.04	0.294
CD40	0.21	0.14	-	0.27	<0.001	0.03	0.02	-	0.04	<0.001	0.05	0.03	-	0.07	<0.001	0.07	0.05	-	0.09	<0.001
CD244	0.10	0.04	-	0.17	0.004	0.01	0.00	-	0.03	0.013	0.02	0.00	-	0.04	0.021	0.03	0.01	-	0.06	0.005
CDCP1	0.49	0.42	-	0.56	<0.001	0.08	0.07	-	0.09	<0.001	0.15	0.13	-	0.17	<0.001	0.18	0.15	-	0.20	<0.001
CSF1	0.25	0.19	-	0.32	<0.001	0.04	0.03	-	0.05	<0.001	0.07	0.05	-	0.09	<0.001	0.08	0.05	-	0.10	<0.001
CST5	-0.15	-0.21	-	-0.08	<0.001	-0.03	-0.05	-	-0.02	<0.001	-0.03	-0.05	-	-0.02	<0.001	-0.06	-0.08	-	-0.03	<0.001
CX3CL1	-0.11	-0.17	-	-0.04	0.003	-0.02	-0.03	-	-0.01	<0.001	-0.03	-0.05	-	-0.01	0.005	-0.05	-0.07	-	-0.02	<0.001
CXCL1	0.13	0.07	-	0.20	<0.001	0.02	0.01	-	0.03	0.002	0.03	0.01	-	0.05	0.001	0.04	0.01	-	0.06	0.002
CXCL5	0.17	0.11	-	0.24	<0.001	0.02	0.01	-	0.03	<0.001	0.04	0.02	-	0.06	<0.001	0.05	0.03	-	0.07	<0.001

	Estimate	CI low		CI high	p-value	Estimate	CI low		CI high	p-value	Estimate	CI low		CI high	p-value	Estimate	CI low		CI high	p-value
CXCL6	0.13	0.06	-	0.20	<0.001	0.02	0.01	-	0.03	0.002	0.03	0.01	-	0.05	0.001	0.03	0.01	-	0.06	0.003
CXCL9	0.04	-0.02	-	0.11	0.229	0.00	-0.01	-	0.02	0.459	0.00	-0.02	-	0.02	0.877	0.02	0.00	-	0.05	0.046
CXCL10	0.15	0.08	-	0.21	<0.001	0.03	0.02	-	0.04	<0.001	0.04	0.02	-	0.05	<0.001	0.05	0.03	-	0.07	<0.001
CXCL11	0.05	-0.02	-	0.12	0.158	0.00	-0.01	-	0.02	0.441	0.01	0.00	-	0.03	0.182	0.01	-0.01	-	0.04	0.221
DNER	-0.19	-0.26	-	-0.13	<0.001	-0.02	-0.03	-	-0.01	0.001	-0.04	-0.06	-	-0.02	<0.001	-0.06	-0.08	-	-0.04	<0.001
ENRAGE	0.09	0.02	-	0.15	0.010	0.02	0.01	-	0.03	<0.001	0.03	0.02	-	0.05	<0.001	0.04	0.01	-	0.06	0.001
FGF19	-0.11	-0.18	-	-0.04	0.002	-0.02	-0.03	-	-0.01	<0.001	-0.03	-0.05	-	-0.01	0.014	-0.03	-0.06	-	-0.01	0.015
FGF21	0.33	0.27	-	0.40	<0.001	0.04	0.02	-	0.05	<0.001	0.09	0.07	-	0.10	<0.001	0.09	0.06	-	0.11	<0.001
FGF23	0.23	0.16	-	0.30	<0.001	0.03	0.02	-	0.04	<0.001	0.07	0.05	-	0.09	<0.001	0.08	0.06	-	0.10	<0.001
Flt3L	-0.03	-0.10	-	0.04	0.436	0.01	-0.01	-	0.02	0.421	0.01	-0.01	-	0.03	0.306	0.01	-0.01	-	0.03	0.429
GDNF	-0.12	-0.19	-	-0.06	0.001	-0.01	-0.02	-	0.00	0.036	-0.01	-0.02	-	0.01	0.549	-0.03	-0.05	-	-0.01	0.014
HGF	0.34	0.27	-	0.40	<0.001	0.06	0.05	-	0.07	<0.001	0.11	0.09	-	0.12	<0.001	0.12	0.10	-	0.14	<0.001
IFNgamma	0.09	0.03	-	0.16	0.009	0.02	0.01	-	0.03	0.001	0.02	0.00	-	0.03	0.029	0.04	0.02	-	0.06	<0.001
IL6	0.60	0.54	-	0.66	<0.001	0.08	0.07	-	0.09	<0.001	0.14	0.12	-	0.17	<0.001	0.16	0.14	-	0.18	<0.001
IL7	0.20	0.14	-	0.27	<0.001	0.03	0.02	-	0.04	<0.001	0.05	0.04	-	0.07	<0.001	0.07	0.04	-	0.09	<0.001
IL8	0.13	0.06	-	0.20	<0.001	0.02	0.01	-	0.03	0.005	0.04	0.02	-	0.06	<0.001	0.05	0.02	-	0.07	<0.001
IL10	0.12	0.05	-	0.18	0.001	0.02	0.01	-	0.03	0.003	0.03	0.01	-	0.05	0.002	0.05	0.02	-	0.07	<0.001
IL10RB	0.24	0.17	-	0.31	<0.001	0.04	0.03	-	0.05	<0.001	0.07	0.05	-	0.09	<0.001	0.08	0.06	-	0.11	<0.001
IL12B	0.22	0.16	-	0.29	<0.001	0.03	0.02	-	0.05	<0.001	0.05	0.03	-	0.07	<0.001	0.08	0.06	-	0.10	<0.001
IL15RA	0.08	0.02	-	0.15	0.018	0.02	0.01	-	0.03	0.003	0.02	0.01	-	0.04	0.006	0.04	0.02	-	0.06	0.001
IL17A	0.06	-0.01	-	0.13	0.114	0.01	0.00	-	0.02	0.255	0.01	-0.01	-	0.03	0.190	0.03	0.01	-	0.06	0.005
IL18	0.28	0.21	-	0.34	<0.001	0.05	0.04	-	0.06	<0.001	0.08	0.06	-	0.10	<0.001	0.10	0.08	-	0.13	<0.001
IL18R1	0.49	0.42	-	0.56	<0.001	0.07	0.06	-	0.09	<0.001	0.14	0.11	-	0.16	<0.001	0.15	0.13	-	0.17	<0.001
LAPTGFbeta1	0.13	0.07	-	0.20	<0.001	0.03	0.02	-	0.04	<0.001	0.05	0.03	-	0.07	<0.001	0.06	0.03	-	0.08	<0.001
LIFR	-0.29	-0.35	-	-0.22	<0.001	-0.03	-0.04	-	-0.02	<0.001	-0.05	-0.07	-	-0.03	<0.001	-0.06	-0.08	-	-0.03	<0.001
MCP1	0.13	0.06	-	0.19	0.001	0.03	0.02	-	0.04	<0.001	0.05	0.03	-	0.07	<0.001	0.06	0.04	-	0.08	<0.001
MCP2	0.07	0.01	-	0.14	0.042	0.01	0.00	-	0.02	0.180	0.02	0.00	-	0.04	0.063	0.02	-0.01	-	0.04	0.146
MCP4	0.10	0.03	-	0.16	0.009	0.02	0.01	-	0.03	<0.001	0.05	0.03	-	0.06	<0.001	0.05	0.03	-	0.07	<0.001

Protein	Est.	CI low		CI high	p-value	Est.	CI low		CI high	p-value	Est.	CI low		CI high	p-value	Est.	CI low		CI high	p-value
MMP1	-0.03	-0.10	-	0.04	0.407	0.00	-0.01	-	0.01	0.894	0.01	-0.01	-	0.03	0.253	0.00	-0.02	-	0.03	0.691
MMP10	-0.06	-0.12	-	0.01	0.131	-0.01	-0.03	-	0.00	0.014	-0.02	-0.04	-	0.00	0.032	-0.01	-0.04	-	0.01	0.263
NT3	-0.07	-0.14	-	0.00	0.064	-0.01	-0.02	-	0.01	0.378	-0.01	-0.03	-	0.01	0.217	0.00	-0.03	-	0.02	0.796
OPG	-0.04	-0.11	-	0.02	0.219	0.00	-0.01	-	0.01	0.890	-0.01	-0.02	-	0.01	0.532	-0.01	-0.03	-	0.01	0.429
OSM	0.19	0.12	-	0.26	<0.001	0.03	0.02	-	0.04	<0.001	0.06	0.04	-	0.08	<0.001	0.07	0.04	-	0.09	<0.001
PDL1	0.12	0.06	-	0.19	0.001	0.02	0.01	-	0.03	<0.001	0.03	0.01	-	0.05	0.001	0.04	0.01	-	0.06	0.002
SCF	-0.19	-0.26	-	-0.11	<0.001	-0.03	-0.04	-	-0.02	<0.001	-0.06	-0.08	-	-0.04	<0.001	-0.05	-0.08	-	-0.03	<0.001
SIRT2	0.19	0.13	-	0.26	<0.001	0.03	0.02	-	0.04	<0.001	0.05	0.03	-	0.07	<0.001	0.05	0.03	-	0.08	<0.001
ST1A1	0.11	0.04	-	0.17	0.002	0.01	0.00	-	0.02	0.019	0.02	0.00	-	0.04	0.050	0.03	0.00	-	0.05	0.024
STAMBP	0.18	0.12	-	0.25	<0.001	0.03	0.02	-	0.04	<0.001	0.05	0.03	-	0.06	<0.001	0.06	0.04	-	0.08	<0.001
TGFalpha	-0.04	-0.11	-	0.03	0.253	-0.01	-0.02	-	0.00	0.184	0.00	-0.01	-	0.02	0.685	-0.01	-0.03	-	0.02	0.655
TNF	0.14	0.07	-	0.21	<0.001	0.02	0.01	-	0.03	0.002	0.03	0.01	-	0.05	0.001	0.05	0.03	-	0.07	<0.001
TNFB	-0.01	-0.08	-	0.05	0.716	0.00	-0.01	-	0.01	0.674	-0.01	-0.03	-	0.01	0.306	0.01	-0.01	-	0.03	0.385
TNFRSF9	0.08	0.01	-	0.15	0.030	0.02	0.01	-	0.03	0.001	0.03	0.01	-	0.04	0.008	0.05	0.03	-	0.07	<0.001
TNFSF14	0.27	0.21	-	0.34	<0.001	0.04	0.03	-	0.05	<0.001	0.08	0.06	-	0.09	<0.001	0.09	0.07	-	0.11	<0.001
TRAIL	0.24	0.18	-	0.30	<0.001	0.05	0.04	-	0.06	<0.001	0.07	0.05	-	0.09	<0.001	0.09	0.07	-	0.11	<0.001
TRANCE	0.29	0.23	-	0.35	<0.001	0.04	0.03	-	0.06	<0.001	0.07	0.05	-	0.09	<0.001	0.11	0.08	-	0.13	<0.001
TWEAK	-0.09	-0.16	-	-0.03	0.007	-0.02	-0.03	-	-0.01	0.005	-0.02	-0.04	-	-0.01	0.010	-0.02	-0.05	-	0.00	0.043
uPA	-0.06	-0.13	-	0.01	0.115	0.01	0.00	-	0.02	0.274	-0.01	-0.02	-	0.01	0.613	0.01	-0.01	-	0.04	0.244
VEGFA	0.35	0.29	-	0.42	<0.001	0.06	0.05	-	0.07	<0.001	0.10	0.07	-	0.12	<0.001	0.11	0.09	-	0.14	<0.001

Linear regression model using normalized protein values (rank-based inverse normal transformation). Adjusted for sex, smoking, e-cigarette use, snuff use, and age at sampling.

Coefficients per 10% increase in %BF and 5cm increase in waist circumference.

p-value at 0.05 FDR.

Table S4. Association between %BF and protein levels stratified by three BMI categories

Protein	Normal weight (18.5 to <25 kg/ m²) Coef (95% CI)	Overweight (≥25 to <30 kg/ m²) Coef (95% CI)	Obesity (≥30 kg/ m²) Coef (95% CI)
CCL3	0.31 (0.21 - 0.51)	0.61 (0.31 - 0.91)	0.61 (0.21 - 1.01)
CCL20	0.11 (0.01 - 0.21)	0.31 (0.11 - 0.61)	0.61 (0.21 - 1.11)
CDCP1	0.31 (0.21 - 0.41)	0.71 (0.41 - 1.01)	0.71 (0.31 - 1.21)
DNER	-0.21 (-0.31 - -0.11)	-0.41 (-0.61 - -0.11)	-0.71 (-1.31 - -0.21)
FGF21	0.31 (0.21 - 0.41)	1.01 (0.71 - 1.21)	0.61 (0.11 - 1.11)
FGF23	0.11 (-0.11 - 0.21)	0.51 (0.21 - 0.81)	0.51 (0.11 - 0.91)
HGF	0.11 (0.01 - 0.21)	0.51 (0.31 - 0.71)	0.61 (0.31 - 1.01)
IL6	0.51 (0.41 - 0.61)	0.81 (0.61 - 1.01)	0.61 (0.31 - 0.91)
IL18	0.11 (0.01 - 0.31)	0.31 (0.11 - 0.61)	0.51 (0.01 - 1.01)
LAPTGFbeta1	0.01 (-0.11 - 0.11)	0.11 (-0.21 - 0.41)	0.31 (-0.11 - 0.61)
MCP1	-0.11 (-0.21 - 0.01)	0.11 (-0.11 - 0.41)	0.51 (0.11 - 0.81)
MCP4	-0.11 (-0.21 - 0.01)	0.01 (-0.31 - 0.21)	0.21 (-0.21 - 0.71)
OSM	0.01 (-0.11 - 0.11)	0.01 (-0.31 - 0.31)	0.31 (0.01 - 0.71)
TNFSF14	0.21 (0.01 - 0.31)	0.21 (-0.11 - 0.41)	0.31 (-0.11 - 0.61)

Table S5. Association between %BF and protein levels adjusted for physical activity

Protein	Coef	95% CI			p-value
4EBP1	0.18	0.11	-	0.25	<0.001
ADA	0.17	0.10	-	0.24	<0.001
AXIN1	0.20	0.13	-	0.27	<0.001
CASP8	0.08	0.01	-	0.15	0.042
CCL3	0.42	0.35	-	0.49	<0.001
CCL4	0.26	0.19	-	0.34	<0.001
CCL11	-0.16	-0.23	-	-0.08	<0.001
CCL19	0.24	0.16	-	0.31	<0.001
CCL20	0.10	0.03	-	0.18	0.012
CCL23	-0.08	-0.15	-	0.00	0.063
CCL25	-0.10	-0.18	-	-0.03	0.009
CCL28	-0.14	-0.21	-	-0.06	0.001
CD5	0.13	0.05	-	0.21	0.002
CD6	0.02	-0.06	-	0.09	0.662
CD8A	0.04	-0.04	-	0.11	0.388
CD40	0.21	0.13	-	0.28	<0.001
CD244	0.11	0.03	-	0.19	0.007
CDCP1	0.46	0.38	-	0.54	<0.001
CSF1	0.24	0.17	-	0.31	<0.001
CST5	-0.15	-0.23	-	-0.08	<0.001
CX3CL1	-0.15	-0.22	-	-0.07	<0.001
CXCL1	0.15	0.08	-	0.23	<0.001
CXCL5	0.18	0.10	-	0.25	<0.001

CXCL6	0.13	0.05	-	0.20	0.002
CXCL9	0.04	-0.03	-	0.11	0.311
CXCL10	0.13	0.06	-	0.21	0.001
CXCL11	0.05	-0.02	-	0.13	0.179
DNER	-0.22	-0.30	-	-0.15	<0.001
ENRAGE	0.09	0.02	-	0.16	0.020
FGF19	-0.11	-0.19	-	-0.04	0.005
FGF21	0.32	0.25	-	0.39	<0.001
FGF23	0.22	0.15	-	0.30	<0.001
Flt3L	-0.03	-0.11	-	0.05	0.442
GDNF	-0.15	-0.22	-	-0.07	<0.001
HGF	0.33	0.26	-	0.40	<0.001
IFNgamma	0.11	0.04	-	0.18	0.005
IL6	0.59	0.53	-	0.66	<0.001
IL7	0.21	0.14	-	0.29	<0.001
IL8	0.12	0.05	-	0.20	0.003
IL10	0.09	0.01	-	0.16	0.030
IL10RB	0.23	0.15	-	0.30	<0.001
IL12B	0.22	0.14	-	0.29	<0.001
IL15RA	0.07	0.00	-	0.15	0.067
IL17A	0.10	0.02	-	0.18	0.019
IL18	0.28	0.21	-	0.35	<0.001
IL18R1	0.47	0.39	-	0.54	<0.001
LAPTGFbeta1	0.13	0.05	-	0.20	0.002
LIFR	-0.31	-0.38	-	-0.24	<0.001
MCP1	0.10	0.03	-	0.17	0.012
MCP2	0.07	-0.01	-	0.15	0.082
MCP4	0.08	0.00	-	0.16	0.063

MMP1	-0.03	-0.11	-	0.04	0.424
MMP10	-0.06	-0.14	-	0.02	0.169
NT3	-0.06	-0.14	-	0.02	0.153
OPG	-0.06	-0.13	-	0.02	0.146
OSM	0.21	0.13	-	0.29	<0.001
PDL1	0.12	0.05	-	0.20	0.002
SCF	-0.19	-0.27	-	-0.11	<0.001
SIRT2	0.19	0.12	-	0.27	<0.001
ST1A1	0.11	0.04	-	0.19	0.006
STAMBP	0.18	0.11	-	0.25	<0.001
TGFalpha	-0.05	-0.13	-	0.03	0.226
TNF	0.15	0.08	-	0.23	<0.001
TNFB	-0.02	-0.09	-	0.06	0.652
TNFRSF9	0.07	0.00	-	0.15	0.066
TNFSF14	0.27	0.20	-	0.35	<0.001
TRAIL	0.23	0.16	-	0.30	<0.001
TRANCE	0.28	0.21	-	0.35	<0.001
TWEAK	-0.09	-0.16	-	-0.02	0.020
uPA	-0.08	-0.16	-	-0.01	0.039
VEGFA	0.35	0.28	-	0.42	<0.001

Linear regression model using normalized protein values (rank-based inverse normal transformation). Adjusted for sex, smoking, e-cigarette use, snuff use, age at sampling, and level of physical activity.

Coefficients per 10% increase in %BF.

p-value at 0.05 FDR.

n=1728

Table S6. Full and alternative protein names

Protein	Full name in Olink inflammation panel	Alternative names
4EBP1	Eukaryotic translation initiation factor 4E-binding protein 1	
ADA	Adenosine Deaminase	
AXIN1	Axin-1	
CASP8	Caspase-8	
CCL3	C-C motif chemokine 3	MIP-1 alpha
CCL4	C-C motif chemokine 4	MIP-1 beta
CCL11	C-C motif chemokine 11	Eotaxin-1, eosinophil chemotactic protein
CCL19	C-C motif chemokine 19	MIP-3 beta
CCL20	C-C motif chemokine 20	MIP-3 alpha, LARC
CCL23	C-C motif chemokine 23	MIP-3
CCL25	C-C motif chemokine 25	TECK
CCL28	C-C motif chemokine 28	MEC
CD5	Cluster of differentiation 5	
CD6	Cluster of differentiation 6	
CD8A	Cluster of differentiation 8a	
CD40	Cluster of differentiation 40	TNFRSF5
CD244	Natural Killer cell receptor 2B4	SLAMF4, CD244
CDCP1	CUB domain-containing protein 1	CD318, TRASK
CSF1	Macrophage colony-stimulating factor 1	M-CFS
CST5	Cystatin D	
CX3CL1	Fractalkine	
CXCL1	C-X-C motif chemokine 1	Gro 1, Gro alpha
CXCL5	C-X-C motif chemokine 5	ENA-78
CXCL6	C-X-C motif chemokine 6	GCP-2
CXCL9	C-X-C motif chemokine 9	MIG
CXCL10	C-X-C motif chemokine 10	IP-10

CXCL11	C-X-C motif chemokine 11	I-TAC
DNER	Delta and Notch-like epidermal growth factor-related receptor	
ENRAGE	Protein S100-A12	
FGF19	Fibroblast growth factor 19	
FGF21	Fibroblast growth factor 21	
FGF23	Fibroblast growth factor 23	
Flt3L	Fms-related tyrosine kinase 3 ligand	FLT3LG
GDNF	Glial cell line-derived neurotrophic factor	
HGF	Hepatocyte growth factor	
IFNgamma	Interferon-gamma	
IL6	Interleukin-6	
IL7	Interleukin-7	
IL8	Interleukin-8	CXCL8, Neutrophil chemotactic factor
IL10	Interleukin-10	
IL10RB	Interleukin-10 receptor beta	
IL12B	Interleukin-12 subunit beta	
IL15RA	Interleukin-15 receptor alpha	
IL17A	Interleukin-17A	
IL18	Interleukin-18	
IL18R1	Interleukin-18 receptor 1	
LAPTGFbeta1	Latency-associated peptide transforming growth factor beta-1	
LIFR	Leukemia inhibitory factor receptor	CD118
MCP1	Monocyte chemotactic protein 1	CCL2
MCP2	Monocyte chemotactic protein 2	CCL8
MCP4	Monocyte chemotactic protein 4	CCL13
MMP1	Matrix metalloproteinase-1	
MMP10	Matrix metalloproteinase-10	

NT3	Neurotrophin-3	
OPG	Osteoprotegerin	OCIF, TNFRSF11B
OSM	Oncostatin-M	
PDL1	Programmed cell death ligand 1	CD274, B7-H1
SCF	Stem Cell Factor	KIT-ligand
SIRT2	SIR2-like protein 2	Sirtuin 2
ST1A1	Sulfotransferase 1A1	SULT1A1
STAMBP	STAM-binding protein	
TGFalpha	Transforming Growth Factor alpha	
TNF	Tumor necrosis factor	TNF alpha
TNFB	Tumor necrosis factor beta	Lymphotoxin alpha
TNFRSF9	Tumor necrosis factor receptor superfamily member 9	CD137, 4-1BB
TNFSF14	Tumor necrosis factor ligand superfamily member 14	CD258, LIGHT
TRAIL	TNF-related apoptosis-inducing ligand	CD253, TNFSF10
TRANCE	TNF-related activation-induced cytokine	CD254, TNFSF11, RANKL, OPGL, ODF
TWEAK	TNF-related weak inducer of apoptosis	TNFSF12, Apo3L
uPA	Urokinase-type plasminogen activator	
VEGFA	Vascular endothelial growth factor A	

CD: Cluster of Differentiation