

SUPPLEMENTAL MATERIAL

Associations of circulating protein levels with lipid fractions in the general population

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Running Title: Proteomics and lipid levels in general population

Supplemental material:

Supplementary Table I

Supplementary Table II

Supplementary Table III

Supplementary Table IV

Supplementary Table I. Associations between protein biomarkers and lipid levels in age and sex adjusted model.

TRIGLYCERIDES (TG)						
	EpiHealth			PIVUS+ULSAM		
Marker	Beta	SE	P	Beta meta	SE meta	P meta
Tissue-type plasminogen activator (t-PA)	0.380	0.020	3.33E-77	0.296	0.025	1.77E-30
Interleukin-1 receptor antagonist protein (IL-1RA)	0.387	0.021	1.07E-68	0.308	0.025	3.44E-32
Fatty acid-binding protein 4 (FABP4)	0.332	0.019	7.98E-67	0.318	0.023	2.65E-39
Leptin (LEP)	0.304	0.018	6.07E-61	0.243	0.023	2.07E-25
Cathepsin D (CTSD)	0.267	0.022	3.24E-33	0.265	0.026	3.52E-24
Growth hormone (GH)	-0.231	0.020	3.95E-31	-0.128	0.025	5.88E-07
Adrenomedullin (AM)	0.221	0.020	6.22E-27	0.136	0.026	2.36E-07
E-selectin (SELE)	0.235	0.022	1.18E-26	0.188	0.026	9.79E-13
C-C motif chemokine 3 (CCL3)	0.218	0.022	2.90E-23	0.197	0.026	6.52E-14
Kidney Injury Molecule-1 (KIM-1)	0.206	0.021	8.13E-23	0.182	0.026	5.06E-12
Fibroblast growth factor 23 (FGF-23)	0.216	0.022	2.61E-22	0.178	0.026	1.77E-11
Chitinase-3-like protein 1 (CHI3L1)	0.199	0.021	1.68E-21	0.171	0.026	1.12E-10
Interleukin-6 (IL-6)	0.205	0.022	4.60E-21	0.098	0.026	2.17E-04
Agouti-related protein (AGRP)	0.209	0.022	1.52E-20	0.006	0.026	8.08E-01
Tumor necrosis factor receptor superfamily member 6 (FAS)	0.187	0.021	6.90E-19	0.142	0.026	9.37E-08
Urokinase plasminogen activator surface receptor (uPAR)	0.179	0.021	5.97E-18	0.061	0.027	2.16E-02
Placenta growth factor (PlGF)	0.176	0.020	6.30E-18	0.157	0.026	1.65E-09
Interleukin-18 (IL-18)	0.186	0.022	1.47E-17	0.160	0.026	9.69E-10
Stem cell factor (SCF)	-0.194	0.023	1.52E-17	-0.163	0.026	7.14E-10
Tumor necrosis factor receptor 1 (TNF-R1)	0.177	0.021	6.92E-17	0.194	0.026	1.93E-13
Galectin-3 (Gal-3)	0.172	0.021	3.60E-16	0.193	0.025	3.64E-14
Monocyte chemoattractant protein 1 (MCP-1)	0.168	0.021	5.75E-15	0.115	0.026	1.44E-05
P-selectin glycoprotein ligand 1 (PSGL-1)	0.176	0.022	9.05E-15	0.098	0.026	2.12E-04
Lectin-like oxidized LDL receptor 1 (LOX-1)	0.162	0.022	3.62E-13	0.132	0.026	6.36E-07
Interleukin-16 (IL-16)	0.159	0.022	8.71E-13	0.134	0.026	4.11E-07
C-X-C motif chemokine 16 (CXCL16)	0.156	0.022	1.16E-12	0.106	0.026	5.67E-05

Interleukin-6 receptor subunit alpha (IL-6RA)	0.142	0.022	2.08E-10	0.124	0.026	2.84E-06
TNF-related apoptosis-inducing ligand receptor 2 (TRAIL-R2)	0.128	0.021	6.62E-10	0.201	0.026	2.72E-14
Tumor necrosis factor receptor 2 (TNF-R2)	0.129	0.021	2.14E-09	0.165	0.026	4.29E-10
Resistin (RETN)	0.110	0.022	9.08E-07	0.130	0.026	9.02E-07
Myeloperoxidase (MPO)	0.108	0.022	1.49E-06	0.043	0.027	1.04E-01
Growth/differentiation factor 15 (GDF-15)	0.087	0.018	2.13E-06	0.160	0.026	1.08E-09
Vascular endothelial growth factor D (VEGF-D)	-0.101	0.022	7.01E-06	-0.099	0.026	1.80E-04
Osteoprotegerin (OPG)	0.081	0.020	6.41E-05	0.026	0.027	3.34E-01
Matrix metalloproteinase-12 (MMP-12)	0.081	0.021	1.09E-04	0.173	0.026	6.29E-11
Dickkopf-related protein 1 (DKK-1)	0.087	0.023	1.12E-04	0.072	0.026	6.83E-03
Renin (REN)	0.085	0.022	1.27E-04	0.136	0.026	2.13E-07
Heparin-binding EGF-like growth factor (HB-EGF)	0.084	0.023	2.14E-04	0.136	0.026	2.79E-07
Tissue factor (TF)	-0.080	0.022	2.69E-04	0.013	0.027	6.17E-01
Platelet-derived growth factor subunit B (PDGF subunit B)	0.082	0.023	3.64E-04	0.098	0.026	1.96E-04
Thrombomodulin (TM)	0.077	0.022	5.34E-04	0.087	0.026	1.04E-03
Follistatin (FS)	0.072	0.022	1.14E-03	0.157	0.026	2.78E-09
Proto-oncogene tyrosine-protein kinase Src (SRC)	0.064	0.023	5.36E-03	0.078	0.027	3.43E-03
Platelet endothelial cell adhesion molecule (PECAM-1)	0.062	0.022	5.74E-03	0.039	0.027	1.45E-01
CD40L receptor (CD40)	0.060	0.023	8.52E-03	0.066	0.027	1.36E-02
Interleukin-27 subunit alpha (IL27-A)	-0.060	0.023	8.70E-03	0.015	0.027	5.82E-01
Pappalysin-1 (PAPPA)	-0.046	0.021	3.21E-02	0.011	0.026	6.83E-01
Receptor for advanced glycosylation end products (RAGE)	-0.045	0.023	4.59E-02	0.023	0.026	3.83E-01
Angiopoietin-1 receptor (TIE2)	0.044	0.023	5.54E-02	0.113	0.026	1.97E-05
Proteinase-activated receptor 1 (PAR-1)	0.038	0.023	9.38E-02	0.058	0.027	2.76E-02
Spondin-1 (SPON1)	0.036	0.022	9.62E-02	0.079	0.026	2.84E-03
Myoglobin (MB)	0.033	0.020	1.04E-01	0.031	0.025	2.30E-01
Cathepsin L1 (CTSL1)	0.032	0.022	1.52E-01	0.060	0.027	2.37E-02
Matrix metalloproteinase-3 (MMP-3)	-0.016	0.017	3.54E-01	-0.031	0.024	1.96E-01
Kallikrein-6 (KLK6)	0.019	0.022	3.91E-01	0.065	0.027	1.49E-02
C-X-C motif chemokine 1 (CXCL1)	-0.008	0.023	7.18E-01	0.054	0.026	4.13E-02
ST2 protein (ST2)	0.006	0.021	7.62E-01	0.050	0.026	5.52E-02

TOTAL CHOLESTEROL (TC)						
Kidney Injury Molecule-1 (KIM-1)	0.226	0.022	5.02E-24	0.191	0.027	1.36E-12
Galectin-3 (Gal-3)	0.161	0.021	7.24E-14	0.142	0.026	4.85E-08
Agouti-related protein (AGRP)	0.137	0.022	9.32E-10	-0.056	0.027	3.83E-02
Tissue-type plasminogen activator (t-PA)	0.131	0.022	1.37E-09	0.020	0.027	4.48E-01
Osteoprotegerin (OPG)	0.118	0.022	5.90E-08	0.010	0.027	7.19E-01
Monocyte chemotactic protein 1 (MCP-1)	0.115	0.022	1.60E-07	0.051	0.027	6.07E-02
Fatty acid-binding protein 4 (FABP4)	0.098	0.020	1.33E-06	-0.023	0.025	3.64E-01
C-X-C motif chemokine 16 (CXCL16)	0.105	0.022	1.71E-06	0.076	0.027	4.74E-03
Tissue factor (TF)	0.105	0.022	2.83E-06	0.081	0.027	2.85E-03
Resistin (RETN)	-0.098	0.022	8.33E-06	-0.097	0.027	3.41E-04
Interleukin-6 receptor subunit alpha (IL-6RA)	0.088	0.022	6.94E-05	0.022	0.027	4.12E-01
Spondin-1 (SPON1)	0.086	0.022	9.50E-05	0.001	0.027	9.62E-01
Dickkopf-related protein 1 (DKK-1)	0.085	0.022	1.52E-04	0.035	0.027	2.01E-01
Tumor necrosis factor receptor superfamily member 6 (FAS)	0.080	0.022	2.36E-04	-0.020	0.027	4.55E-01
Interleukin-27 subunit alpha (IL27-A)	-0.081	0.023	3.06E-04	-0.092	0.027	6.55E-04
P-selectin glycoprotein ligand 1 (PSGL-1)	0.079	0.022	4.16E-04	0.031	0.027	2.51E-01
Follistatin (FS)	0.075	0.023	8.62E-04	0.082	0.027	2.44E-03
E-selectin (SELE)	0.072	0.022	9.70E-04	-0.032	0.027	2.35E-01
Heparin-binding EGF-like growth factor (HB-EGF)	0.073	0.023	1.13E-03	0.032	0.027	2.35E-01
Thrombomodulin (TM)	0.072	0.022	1.22E-03	0.029	0.027	2.77E-01
Interleukin-6 (IL-6)	-0.072	0.023	1.38E-03	-0.088	0.027	1.20E-03
Cathepsin D (CTSD)	0.067	0.023	3.14E-03	-0.032	0.027	2.38E-01
Pappalysin-1 (PAPPA)	-0.061	0.021	4.30E-03	-0.035	0.026	1.86E-01
Platelet-derived growth factor subunit B (PDGF subunit B)	0.064	0.023	4.31E-03	0.072	0.027	7.72E-03
Platelet endothelial cell adhesion molecule (PECAM-1)	0.063	0.022	4.62E-03	-0.018	0.027	5.12E-01
Lectin-like oxidized LDL receptor 1 (LOX-1)	0.060	0.023	7.41E-03	0.072	0.027	8.06E-03
Kallikrein-6 (KLK6)	0.059	0.022	7.64E-03	0.080	0.027	3.21E-03
Proto-oncogene tyrosine-protein kinase Src (SRC)	-0.058	0.023	1.01E-02	0.029	0.027	2.92E-01
Tumor necrosis factor receptor 2 (TNF-R2)	-0.056	0.022	1.06E-02	-0.134	0.027	6.52E-07

Fibroblast growth factor 23 (FGF-23)	0.056	0.022	1.16E-02	-0.043	0.027	1.16E-01
Leptin (LEP)	0.044	0.019	1.96E-02	-0.024	0.024	3.21E-01
Interleukin-1 receptor antagonist protein (IL-1RA)	-0.052	0.023	2.17E-02	-0.075	0.027	5.32E-03
CD40L receptor (CD40)	0.050	0.022	2.52E-02	0.054	0.027	4.63E-02
Tumor necrosis factor receptor 1 (TNF-R1)	-0.044	0.022	4.58E-02	-0.120	0.027	8.76E-06
Growth hormone (GH)	-0.040	0.020	4.69E-02	-0.032	0.026	2.27E-01
ST2 protein (ST2)	0.040	0.021	5.52E-02	0.031	0.027	2.42E-01
Angiopoietin-1 receptor (TIE2)	0.043	0.023	5.68E-02	-0.021	0.027	4.32E-01
Interleukin-16 (IL-16)	0.039	0.023	8.33E-02	0.013	0.027	6.27E-01
Matrix metalloproteinase-3 (MMP-3)	-0.028	0.017	9.72E-02	0.070	0.024	3.91E-03
Chitinase-3-like protein 1 (CHI3L1)	0.025	0.022	2.62E-01	-0.047	0.027	8.46E-02
Matrix metalloproteinase-12 (MMP-12)	0.024	0.023	2.82E-01	0.059	0.027	3.05E-02
Vascular endothelial growth factor D (VEGF-D)	0.020	0.022	3.69E-01	0.036	0.027	1.74E-01
Myeloperoxidase (MPO)	-0.018	0.022	4.02E-01	0.005	0.027	8.49E-01
Adrenomedullin (AM)	0.018	0.023	4.20E-01	-0.104	0.027	1.03E-04
TNF-related apoptosis-inducing ligand receptor 2 (TRAIL-R2)	-0.017	0.023	4.52E-01	-0.100	0.027	2.29E-04
Urokinase plasminogen activator surface receptor (uPAR)	-0.016	0.022	4.71E-01	-0.068	0.027	1.15E-02
Myoglobin (MB)	-0.014	0.020	4.85E-01	-0.026	0.026	3.10E-01
Growth/differentiation factor 15 (GDF-15)	-0.012	0.022	5.87E-01	-0.093	0.027	5.13E-04
Receptor for advanced glycosylation end products (RAGE)	0.012	0.022	5.93E-01	0.026	0.027	3.29E-01
C-X-C motif chemokine 1 (CXCL1)	-0.011	0.022	6.22E-01	0.033	0.027	2.24E-01
Interleukin-18 (IL-18)	0.005	0.022	8.20E-01	-0.059	0.027	2.77E-02
Renin (REN)	0.004	0.022	8.69E-01	0.006	0.027	8.23E-01
Placenta growth factor (PlGF)	0.004	0.022	8.69E-01	-0.083	0.027	1.78E-03
Cathepsin L1 (CTSL1)	0.004	0.023	8.74E-01	0.022	0.027	4.23E-01
Proteinase-activated receptor 1 (PAR-1)	-0.002	0.023	9.20E-01	-0.141	0.027	1.71E-07
Stem cell factor (SCF)	-0.001	0.023	9.76E-01	0.018	0.027	5.01E-01
C-C motif chemokine 3 (CCL3)	0.000	0.023	9.91E-01	-0.045	0.027	9.34E-02
LDL CHOLESTEROL (LDL-C)						
Kidney Injury Molecule-1 (KIM-1)	0.125	0.021	1.72E-09	0.120	0.027	7.39E-06

Interleukin-27 subunit alpha (IL27-A)	-0.128	0.022	1.01E-08	-0.094	0.027	4.31E-04
Galectin-3 (Gal-3)	0.113	0.021	6.77E-08	0.124	0.026	1.61E-06
Agouti-related protein (AGRP)	0.102	0.022	5.26E-06	-0.067	0.026	1.11E-02
Growth/differentiation factor 15 (GDF-15)	-0.082	0.018	5.56E-06	-0.088	0.026	9.51E-04
Tissue-type plasminogen activator (t-PA)	0.092	0.021	1.02E-05	0.006	0.026	8.17E-01
Interleukin-6 (IL-6)	-0.091	0.022	2.29E-05	-0.054	0.027	4.40E-02
Fatty acid-binding protein 4 (FABP4)	0.076	0.020	9.29E-05	-0.003	0.025	8.98E-01
Resistin (RETN)	-0.084	0.022	1.36E-04	-0.070	0.027	8.74E-03
Tumor necrosis factor receptor 2 (TNF-R2)	-0.072	0.021	6.79E-04	-0.099	0.027	2.05E-04
Monocyte chemotactic protein 1 (MCP-1)	0.071	0.021	8.32E-04	0.047	0.027	7.70E-02
TNF-related apoptosis-inducing ligand receptor 2 (TRAIL-R2)	-0.067	0.020	9.67E-04	-0.081	0.027	2.40E-03
Interleukin-6 receptor subunit alpha (IL-6RA)	0.071	0.022	1.27E-03	0.006	0.027	8.14E-01
C-X-C motif chemokine 16 (CXCL16)	0.069	0.022	1.47E-03	0.047	0.027	7.67E-02
Tumor necrosis factor receptor 1 (TNF-R1)	-0.066	0.021	1.58E-03	-0.098	0.027	2.36E-04
Pappalysin-1 (PAPPA)	-0.067	0.021	1.61E-03	-0.042	0.026	1.05E-01
Chitinase-3-like protein 1 (CHI3L1)	-0.058	0.021	4.97E-03	-0.097	0.027	2.78E-04
Matrix metalloproteinase-3 (MMP-3)	-0.043	0.017	1.29E-02	0.030	0.024	2.09E-01
Urokinase plasminogen activator surface receptor (uPAR)	-0.048	0.021	2.06E-02	-0.066	0.027	1.41E-02
Growth hormone (GH)	-0.046	0.020	2.06E-02	-0.048	0.026	6.16E-02
Leptin (LEP)	0.041	0.019	2.68E-02	0.003	0.024	8.96E-01
Dickkopf-related protein 1 (DKK-1)	0.048	0.022	2.89E-02	0.033	0.027	2.19E-01
E-selectin (SELE)	0.047	0.022	3.20E-02	-0.052	0.027	5.08E-02
Follistatin (FS)	0.047	0.022	3.32E-02	0.065	0.027	1.45E-02
Placenta growth factor (PIGF)	-0.043	0.020	3.53E-02	-0.072	0.026	6.40E-03
Adrenomedullin (AM)	-0.038	0.020	6.16E-02	-0.088	0.026	9.34E-04
Spondin-1 (SPON1)	0.037	0.021	7.90E-02	-0.008	0.027	7.60E-01
Tumor necrosis factor receptor superfamily member 6 (FAS)	0.037	0.021	8.06E-02	-0.007	0.027	7.86E-01
Platelet-derived growth factor subunit B (PDGF subunit B)	0.036	0.023	1.13E-01	0.061	0.027	2.26E-02
Heparin-binding EGF-like growth factor (HB-EGF)	0.035	0.022	1.17E-01	0.031	0.027	2.50E-01
Kallikrein-6 (KLK6)	0.033	0.022	1.37E-01	0.060	0.027	2.40E-02
Osteoprotegerin (OPG)	0.029	0.020	1.39E-01	-0.008	0.027	7.53E-01

Myoglobin (MB)	-0.029	0.020	1.41E-01	-0.012	0.026	6.51E-01
Proteinase-activated receptor 1 (PAR-1)	-0.032	0.022	1.46E-01	-0.138	0.026	1.88E-07
Interleukin-1 receptor antagonist protein (IL-1RA)	-0.032	0.023	1.53E-01	-0.035	0.027	1.86E-01
C-X-C motif chemokine 1 (CXCL1)	-0.032	0.022	1.57E-01	0.027	0.027	3.04E-01
Lectin-like oxidized LDL receptor 1 (LOX-1)	0.029	0.022	1.87E-01	0.072	0.027	7.40E-03
Proto-oncogene tyrosine-protein kinase Src (SRC)	-0.029	0.023	2.05E-01	0.026	0.027	3.26E-01
Platelet endothelial cell adhesion molecule (PECAM-1)	0.028	0.022	2.07E-01	-0.037	0.027	1.66E-01
P-selectin glycoprotein ligand 1 (PSGL-1)	0.028	0.022	2.12E-01	0.021	0.027	4.24E-01
Fibroblast growth factor 23 (FGF-23)	0.027	0.022	2.26E-01	-0.032	0.027	2.31E-01
C-C motif chemokine 3 (CCL3)	-0.024	0.022	2.65E-01	-0.032	0.027	2.32E-01
Myeloperoxidase (MPO)	-0.024	0.022	2.82E-01	-0.004	0.027	8.93E-01
Thrombomodulin (TM)	0.023	0.022	2.83E-01	0.025	0.027	3.43E-01
CD40L receptor (CD40)	0.021	0.022	3.43E-01	0.034	0.027	2.04E-01
Cathepsin L1 (CTSL1)	-0.019	0.022	3.93E-01	0.021	0.027	4.24E-01
Interleukin-16 (IL-16)	0.017	0.022	4.51E-01	0.040	0.027	1.35E-01
Renin (REN)	-0.012	0.022	5.68E-01	-0.010	0.026	7.10E-01
Interleukin-18 (IL-18)	0.012	0.022	5.69E-01	-0.049	0.026	6.27E-02
Angiopoietin-1 receptor (TIE2)	0.011	0.023	6.40E-01	-0.040	0.027	1.40E-01
Stem cell factor (SCF)	-0.010	0.023	6.68E-01	0.012	0.027	6.67E-01
Vascular endothelial growth factor D (VEGF-D)	-0.008	0.022	7.31E-01	0.002	0.027	9.47E-01
Tissue factor (TF)	0.007	0.021	7.49E-01	-0.002	0.027	9.30E-01
Cathepsin D (CTSD)	0.005	0.022	8.16E-01	-0.042	0.027	1.11E-01
Matrix metalloproteinase-12 (MMP-12)	0.004	0.021	8.57E-01	0.101	0.027	1.66E-04
ST2 protein (ST2)	-0.004	0.021	8.60E-01	-0.013	0.026	6.13E-01
Receptor for advanced glycosylation end products (RAGE)	-0.001	0.022	9.59E-01	0.029	0.027	2.71E-01
HDL CHOLESTEROL (HDL-C)						
Interleukin-1 receptor antagonist protein (IL-1RA)	-0.455	0.023	2.14E-79	-0.331	0.026	2.99E-34
Leptin (LEP)	-0.271	0.020	4.54E-40	-0.234	0.024	4.00E-21
Fatty acid-binding protein 4 (FABP4)	-0.265	0.021	3.76E-35	-0.259	0.025	7.96E-24
Interleukin-6 (IL-6)	-0.281	0.023	1.96E-32	-0.182	0.027	4.73E-11

Tissue-type plasminogen activator (t-PA)	-0.267	0.023	3.00E-31	-0.180	0.027	4.49E-11
Tissue factor (TF)	0.260	0.023	2.89E-28	0.203	0.027	1.46E-13
Stem cell factor (SCF)	0.273	0.024	3.11E-28	0.187	0.027	1.12E-11
C-C motif chemokine 3 (CCL3)	-0.244	0.024	2.39E-24	-0.187	0.027	1.06E-11
Urokinase plasminogen activator surface receptor (uPAR)	-0.223	0.022	5.79E-23	-0.088	0.028	1.48E-03
Tumor necrosis factor receptor 1 (TNF-R1)	-0.225	0.023	2.30E-22	-0.219	0.027	1.85E-15
Tumor necrosis factor receptor 2 (TNF-R2)	-0.221	0.023	3.00E-21	-0.237	0.027	6.69E-18
Interleukin-18 (IL-18)	-0.210	0.024	1.68E-18	-0.167	0.027	1.01E-09
Placenta growth factor (PlGF)	-0.184	0.022	1.93E-16	-0.164	0.027	1.61E-09
Adrenomedullin (AM)	-0.182	0.022	9.41E-16	-0.174	0.027	2.54E-10
Resistin (RETN)	-0.195	0.024	1.10E-15	-0.171	0.027	6.08E-10
Interleukin-16 (IL-16)	-0.193	0.024	2.38E-15	-0.131	0.028	2.17E-06
Matrix metalloproteinase-12 (MMP-12)	-0.174	0.023	2.35E-14	-0.202	0.027	2.13E-13
TNF-related apoptosis-inducing ligand receptor 2 (TRAIL-R2)	-0.156	0.023	6.14E-12	-0.206	0.027	9.57E-14
Growth hormone (GH)	0.148	0.022	1.78E-11	0.095	0.027	4.21E-04
Cathepsin D (CTSD)	-0.154	0.025	4.75E-10	-0.164	0.027	2.84E-09
Growth/differentiation factor 15 (GDF-15)	-0.125	0.020	4.77E-10	-0.151	0.027	4.03E-08
E-selectin (SELE)	-0.140	0.024	8.00E-09	-0.104	0.028	1.75E-04
Fibroblast growth factor 23 (FGF-23)	-0.141	0.024	9.20E-09	-0.154	0.028	2.60E-08
Proto-oncogene tyrosine-protein kinase Src (SRC)	-0.143	0.025	1.20E-08	-0.015	0.028	5.78E-01
Tumor necrosis factor receptor superfamily member 6 (FAS)	-0.132	0.023	1.21E-08	-0.105	0.028	1.54E-04
Vascular endothelial growth factor D (VEGF-D)	0.137	0.024	2.20E-08	0.152	0.027	3.13E-08
Lectin-like oxidized LDL receptor 1 (LOX-1)	-0.125	0.024	3.65E-07	-0.067	0.028	1.59E-02
Myeloperoxidase (MPO)	-0.120	0.024	9.71E-07	-0.008	0.028	7.79E-01
Cathepsin L1 (CTSL1)	-0.090	0.024	2.34E-04	-0.053	0.028	5.42E-02
Monocyte chemoattractant protein 1 (MCP-1)	-0.086	0.024	2.88E-04	-0.017	0.028	5.48E-01
Chitinase-3-like protein 1 (CHI3L1)	-0.083	0.023	3.02E-04	-0.021	0.028	4.56E-01
ST2 protein (ST2)	0.077	0.023	8.27E-04	0.074	0.027	6.47E-03
Renin (REN)	-0.078	0.024	1.31E-03	-0.066	0.027	1.70E-02
Interleukin-27 subunit alpha (IL27-A)	0.076	0.025	2.19E-03	-0.046	0.028	1.02E-01
Interleukin-6 receptor subunit alpha (IL-6RA)	-0.072	0.025	3.54E-03	-0.052	0.028	6.12E-02

Myoglobin (MB)	-0.063	0.022	4.07E-03	-0.064	0.027	1.67E-02
Follistatin (FS)	-0.061	0.024	1.20E-02	-0.050	0.028	7.19E-02
Angiopoietin-1 receptor (TIE2)	0.059	0.025	1.84E-02	-0.056	0.028	4.55E-02
Kallikrein-6 (KLK6)	0.052	0.025	3.27E-02	0.024	0.028	3.91E-01
C-X-C motif chemokine 16 (CXCL16)	-0.048	0.024	4.49E-02	0.014	0.028	6.01E-01
Proteinase-activated receptor 1 (PAR-1)	-0.045	0.025	7.01E-02	-0.095	0.028	6.04E-04
P-selectin glycoprotein ligand 1 (PSGL-1)	-0.045	0.025	7.50E-02	-0.013	0.028	6.33E-01
Receptor for advanced glycosylation end products (RAGE)	0.043	0.025	8.35E-02	-0.015	0.028	5.77E-01
C-X-C motif chemokine 1 (CXCL1)	0.035	0.025	1.65E-01	-0.001	0.028	9.71E-01
Galectin-3 (Gal-3)	-0.025	0.023	2.92E-01	-0.024	0.027	3.67E-01
Osteoprotegerin (OPG)	0.023	0.022	3.09E-01	0.047	0.028	8.72E-02
Matrix metalloproteinase-3 (MMP-3)	0.015	0.019	4.44E-01	0.156	0.025	2.97E-10
Platelet endothelial cell adhesion molecule (PECAM-1)	0.017	0.025	4.91E-01	0.021	0.028	4.55E-01
Spondin-1 (SPON1)	0.016	0.024	5.09E-01	-0.034	0.028	2.17E-01
CD40L receptor (CD40)	0.014	0.025	5.70E-01	0.043	0.028	1.23E-01
Heparin-binding EGF-like growth factor (HB-EGF)	-0.011	0.025	6.65E-01	-0.072	0.028	9.83E-03
Pappalysin-1 (PAPPA)	-0.009	0.024	6.90E-01	-0.004	0.027	8.86E-01
Platelet-derived growth factor subunit B (PDGF subunit B)	0.009	0.025	7.28E-01	-0.006	0.028	8.30E-01
Agouti-related protein (AGRP)	-0.007	0.025	7.76E-01	-0.023	0.028	4.09E-01
Dickkopf-related protein 1 (DKK-1)	-0.007	0.025	7.84E-01	-0.031	0.028	2.59E-01
Kidney Injury Molecule-1 (KIM-1)	-0.005	0.023	8.25E-01	0.079	0.028	4.36E-03
Thrombomodulin (TM)	-0.004	0.024	8.76E-01	-0.032	0.028	2.53E-01

Supplementary Table II. Non-significant associations between protein biomarkers and lipid fractions in the multivariable model.

TRIGLYCERIDES (TG)						
	EpiHealth			PIVUS+ULSAM		
Marker	Beta	SE	P	Beta meta	SE meta	P meta
Tissue factor (TF)	-0.051	0.024	3.05E-02	0.046	0.029	1.04E-01
Urokinase plasminogen activator surface receptor (uPAR)	0.101	0.021	2.61E-06	0.041	0.029	1.49E-01
Agouti-related protein (AGRP)	0.272	0.024	4.39E-29	0.027	0.028	3.49E-01
Interleukin-6 (IL-6)	0.075	0.022	8.01E-04	0.024	0.028	3.89E-01
Osteoprotegerin (OPG)	0.064	0.022	3.52E-03	0.022	0.028	4.43E-01
Follistatin (FS)	0.047	0.024	5.12E-02	0.152	0.029	1.48E-07
Growth/differentiation factor 15 (GDF-15)	0.032	0.019	9.37E-02	0.115	0.027	2.31E-05
Angiopoietin-1 receptor (TIE2)	0.050	0.025	4.82E-02	0.084	0.029	3.29E-03
Proto-oncogene tyrosine-protein kinase Src (SRC)	0.052	0.025	3.79E-02	0.083	0.029	4.07E-03
Spondin-1 (SPON1)	0.017	0.024	4.72E-01	0.076	0.028	7.29E-03
Vascular endothelial growth factor D (VEGF-D)	-0.038	0.024	1.09E-01	-0.067	0.028	1.53E-02
C-X-C motif chemokine 1 (CXCL1)	-0.004	0.025	8.70E-01	0.068	0.029	1.86E-02
Receptor for advanced glycosylation end products (RAGE)	0.038	0.024	1.13E-01	0.061	0.028	3.21E-02
ST2 protein (ST2)	0.011	0.023	6.27E-01	0.059	0.028	3.62E-02
Proteinase-activated receptor 1 (PAR-1)	0.025	0.025	3.13E-01	0.051	0.029	7.64E-02
Cathepsin L1 (CTSL1)	0.000	0.024	9.91E-01	0.047	0.029	1.03E-01
Platelet endothelial cell adhesion molecule (PECAM-1)	0.047	0.025	5.80E-02	0.035	0.029	2.29E-01
Pappalysin-1 (PAPPA)	-0.033	0.023	1.56E-01	0.032	0.028	2.58E-01
Myeloperoxidase (MPO)	0.046	0.024	5.85E-02	0.032	0.029	2.67E-01
Interleukin-27 subunit alpha (IL27-A)	-0.027	0.025	2.74E-01	0.012	0.029	6.82E-01
Myoglobin (MB)	0.020	0.022	3.50E-01	0.011	0.027	6.85E-01
Matrix metalloproteinase-3 (MMP-3)	-0.008	0.019	6.87E-01	0.006	0.025	7.99E-01
TOTAL CHOLESTEROL (TC)						
Interleukin-6 receptor subunit alpha (IL-6RA)	0.083	0.023	2.56E-04	0.053	0.028	6.05E-02
Agouti-related protein (AGRP)	0.172	0.023	4.92E-14	-0.050	0.028	7.47E-02

Fatty acid-binding protein 4 (FABP4)	0.084	0.016	2.44E-07	0.040	0.022	7.60E-02
Growth/differentiation factor 15 (GDF-15)	-0.063	0.018	4.48E-04	-0.046	0.027	8.73E-02
Interleukin-1 receptor antagonist protein (IL-1RA)	-0.058	0.020	3.48E-03	-0.037	0.026	1.48E-01
Pappalysin-1 (PAPPA)	-0.087	0.022	6.04E-05	-0.039	0.028	1.58E-01
P-selectin glycoprotein ligand 1 (PSGL-1)	0.074	0.023	1.15E-03	0.034	0.029	2.32E-01
Dickkopf-related protein 1 (DKK-1)	0.059	0.023	1.02E-02	0.028	0.029	3.30E-01
Spondin-1 (SPON1)	0.059	0.022	7.02E-03	0.026	0.028	3.41E-01
Osteoprotegerin (OPG)	0.065	0.020	1.53E-03	0.021	0.028	4.50E-01
Fibroblast growth factor 23 (FGF-23)	0.057	0.022	1.00E-02	-0.013	0.027	6.39E-01
Growth hormone (GH)	-0.056	0.020	5.49E-03	-0.012	0.027	6.57E-01
Platelet endothelial cell adhesion molecule (PECAM-1)	0.051	0.023	2.40E-02	0.007	0.029	8.12E-01
E-selectin (SELE)	0.068	0.022	1.75E-03	0.005	0.028	8.59E-01
Tumor necrosis factor receptor superfamily member 6 (FAS)	0.048	0.021	2.25E-02	-0.002	0.028	9.40E-01
Proteinase-activated receptor 1 (PAR-1)	-0.024	0.023	2.96E-01	-0.120	0.028	1.71E-05
Follistatin (FS)	0.046	0.022	4.03E-02	0.101	0.028	3.83E-04
Adrenomedullin (AM)	-0.012	0.019	5.22E-01	-0.087	0.027	1.41E-03
Lectin-like oxidized LDL receptor 1 (LOX-1)	0.032	0.022	1.51E-01	0.081	0.028	4.29E-03
Matrix metalloproteinase-12 (MMP-12)	-0.018	0.021	4.03E-01	0.070	0.028	1.24E-02
Platelet-derived growth factor subunit B (PDGF subunit B)	0.049	0.023	3.72E-02	0.067	0.029	1.94E-02
Matrix metalloproteinase-3 (MMP-3)	-0.032	0.018	7.22E-02	0.055	0.025	2.75E-02
Placenta growth factor (PIGF)	-0.033	0.021	1.07E-01	-0.060	0.028	3.14E-02
ST2 protein (ST2)	0.033	0.021	1.18E-01	0.053	0.028	5.54E-02
CD40L receptor (CD40)	0.039	0.023	9.03E-02	0.048	0.029	9.67E-02
Renin (REN)	0.044	0.021	3.73E-02	0.042	0.026	1.17E-01
Interleukin-18 (IL-18)	0.007	0.022	7.69E-01	-0.043	0.028	1.28E-01
C-X-C motif chemokine 1 (CXCL1)	-0.027	0.023	2.42E-01	0.042	0.028	1.40E-01
Heparin-binding EGF-like growth factor (HB-EGF)	0.049	0.023	3.29E-02	0.042	0.029	1.42E-01
Thrombomodulin (TM)	0.049	0.023	3.09E-02	0.041	0.028	1.49E-01
Cathepsin L1 (CTSL1)	-0.013	0.023	5.67E-01	0.039	0.028	1.74E-01
Chitinase-3-like protein 1 (CHI3L1)	-0.012	0.021	5.66E-01	-0.038	0.028	1.80E-01
Vascular endothelial growth factor D (VEGF-D)	0.013	0.022	5.70E-01	0.035	0.027	2.05E-01

Interleukin-16 (IL-16)	0.014	0.022	5.32E-01	0.033	0.028	2.43E-01
Receptor for advanced glycosylation end products (RAGE)	0.009	0.023	6.95E-01	0.031	0.028	2.71E-01
C-C motif chemokine 3 (CCL3)	-0.014	0.022	5.20E-01	-0.027	0.028	3.32E-01
Myeloperoxidase (MPO)	-0.033	0.022	1.40E-01	0.025	0.028	3.75E-01
Stem cell factor (SCF)	-0.004	0.023	8.71E-01	0.018	0.028	5.24E-01
Proto-oncogene tyrosine-protein kinase Src (SRC)	-0.052	0.023	2.59E-02	0.015	0.029	5.98E-01
Angiopoietin-1 receptor (TIE2)	0.036	0.023	1.28E-01	0.011	0.028	7.08E-01
Cathepsin D (CTSD)	0.048	0.022	2.70E-02	0.006	0.027	8.32E-01
Myoglobin (MB)	-0.019	0.020	3.33E-01	0.000	0.027	9.91E-01
LDL CHOLESTEROL (LDL-C)						
Urokinase plasminogen activator surface receptor (uPAR)	-0.050	0.020	1.19E-02	-0.053	0.028	5.42E-02
Interleukin-6 (IL-6)	-0.093	0.020	5.23E-06	-0.050	0.027	6.38E-02
Agouti-related protein (AGRP)	0.114	0.023	4.97E-07	-0.050	0.027	6.66E-02
Pappalysin-1 (PAPPA)	-0.080	0.021	2.05E-04	-0.047	0.028	9.14E-02
Growth/differentiation factor 15 (GDF-15)	-0.068	0.018	1.30E-04	-0.042	0.027	1.14E-01
Interleukin-6 receptor subunit alpha (IL-6RA)	0.074	0.023	1.08E-03	0.038	0.028	1.74E-01
Tissue-type plasminogen activator (t-PA)	0.094	0.019	1.15E-06	0.035	0.026	1.85E-01
Leptin (LEP)	0.045	0.013	6.65E-04	0.022	0.018	2.17E-01
Fatty acid-binding protein 4 (FABP4)	0.076	0.016	2.17E-06	0.025	0.022	2.57E-01
Matrix metalloproteinase-12 (MMP-12)	0.011	0.021	5.83E-01	0.119	0.027	1.52E-05
Proteinase-activated receptor 1 (PAR-1)	-0.032	0.023	1.65E-01	-0.119	0.028	1.68E-05
Follistatin (FS)	0.043	0.022	5.14E-02	0.087	0.028	2.09E-03
Adrenomedullin (AM)	-0.029	0.019	1.30E-01	-0.082	0.027	2.32E-03
Lectin-like oxidized LDL receptor 1 (LOX-1)	0.030	0.022	1.77E-01	0.080	0.028	4.27E-03
Platelet-derived growth factor subunit B (PDGF subunit B)	0.029	0.023	2.03E-01	0.057	0.028	4.38E-02
Placenta growth factor (PlGF)	-0.038	0.020	6.30E-02	-0.053	0.027	5.01E-02
Interleukin-16 (IL-16)	0.014	0.022	5.19E-01	0.050	0.028	7.31E-02
C-X-C motif chemokine 1 (CXCL1)	-0.040	0.023	7.98E-02	0.046	0.028	1.05E-01
Receptor for advanced glycosylation end products (RAGE)	0.003	0.022	8.91E-01	0.042	0.028	1.23E-01
Kallikrein-6 (KLK6)	0.049	0.022	2.95E-02	0.041	0.027	1.38E-01

Interleukin-18 (IL-18)	0.020	0.022	3.63E-01	-0.039	0.028	1.61E-01
Heparin-binding EGF-like growth factor (HB-EGF)	0.032	0.023	1.64E-01	0.039	0.028	1.74E-01
Cathepsin L1 (CTSL1)	-0.011	0.022	6.25E-01	0.034	0.028	2.25E-01
Dickkopf-related protein 1 (DKK-1)	0.039	0.023	8.47E-02	0.033	0.028	2.47E-01
Thrombomodulin (TM)	0.023	0.022	3.07E-01	0.032	0.028	2.48E-01
CD40L receptor (CD40)	0.017	0.023	4.64E-01	0.028	0.028	3.28E-01
Matrix metalloproteinase-3 (MMP-3)	-0.040	0.018	2.44E-02	0.024	0.025	3.28E-01
Renin (REN)	0.034	0.021	1.07E-01	0.024	0.026	3.64E-01
E-selectin (SELE)	0.042	0.021	4.95E-02	-0.023	0.027	3.95E-01
C-C motif chemokine 3 (CCL3)	-0.012	0.022	5.92E-01	-0.022	0.028	4.31E-01
P-selectin glycoprotein ligand 1 (PSGL-1)	0.032	0.023	1.61E-01	0.022	0.028	4.44E-01
Interleukin-1 receptor antagonist protein (IL-1RA)	-0.028	0.020	1.51E-01	-0.019	0.026	4.50E-01
Growth hormone (GH)	-0.045	0.020	2.14E-02	-0.020	0.027	4.55E-01
Vascular endothelial growth factor D (VEGF-D)	-0.009	0.022	6.71E-01	0.019	0.027	4.69E-01
Cathepsin D (CTSD)	0.008	0.022	7.18E-01	-0.018	0.027	5.03E-01
Spondin-1 (SPON1)	0.043	0.022	4.67E-02	0.018	0.027	5.14E-01
Platelet endothelial cell adhesion molecule (PECAM-1)	0.026	0.023	2.53E-01	-0.015	0.028	5.94E-01
ST2 protein (ST2)	-0.002	0.021	9.34E-01	0.011	0.027	6.84E-01
Myeloperoxidase (MPO)	-0.033	0.022	1.33E-01	0.011	0.028	6.87E-01
Angiopoietin-1 receptor (TIE2)	0.003	0.023	8.85E-01	-0.009	0.028	7.33E-01
Proto-oncogene tyrosine-protein kinase Src (SRC)	-0.031	0.023	1.85E-01	0.008	0.028	7.66E-01
Tumor necrosis factor receptor superfamily member 6 (FAS)	0.036	0.021	8.31E-02	0.007	0.028	7.93E-01
Osteoprotegerin (OPG)	0.028	0.020	1.60E-01	0.007	0.028	8.13E-01
Tissue factor (TF)	-0.001	0.022	9.61E-01	0.006	0.028	8.37E-01
Stem cell factor (SCF)	-0.011	0.023	6.28E-01	0.006	0.028	8.42E-01
Fibroblast growth factor 23 (FGF-23)	0.041	0.022	6.64E-02	-0.004	0.027	8.90E-01
Myoglobin (MB)	-0.020	0.020	3.08E-01	0.002	0.026	9.39E-01
HDL CHOLESTEROL (HDL-C)						
Lectin-like oxidized LDL receptor 1 (LOX-1)	-0.095	0.026	2.74E-04	-0.059	0.030	5.30E-02
Leptin (LEP)	-0.036	0.016	2.07E-02	-0.018	0.020	3.51E-01

Angiopoietin-1 receptor (TIE2)	0.066	0.028	1.63E-02	-0.021	0.030	4.79E-01
Proto-oncogene tyrosine-protein kinase Src (SRC)	-0.151	0.027	3.98E-08	-0.021	0.031	4.95E-01
Matrix metalloproteinase-3 (MMP-3)	0.011	0.021	5.98E-01	0.116	0.027	1.52E-05
Adrenomedullin (AM)	-0.018	0.023	4.19E-01	-0.098	0.029	8.04E-04
Tumor necrosis factor receptor superfamily member 6 (FAS)	-0.055	0.025	2.79E-02	-0.090	0.030	3.04E-03
Proteinase-activated receptor 1 (PAR-1)	-0.023	0.027	3.97E-01	-0.088	0.030	3.61E-03
Cathepsin D (CTSD)	-0.043	0.026	9.85E-02	-0.078	0.029	7.20E-03
Dickkopf-related protein 1 (DKK-1)	-0.004	0.027	8.75E-01	-0.071	0.031	2.09E-02
Heparin-binding EGF-like growth factor (HB-EGF)	-0.002	0.027	9.34E-01	-0.063	0.031	4.20E-02
Receptor for advanced glycosylation end products (RAGE)	-0.022	0.027	3.99E-01	-0.055	0.030	6.64E-02
Agouti-related protein (AGRP)	-0.026	0.027	3.37E-01	-0.050	0.030	9.27E-02
Osteoprotegerin (OPG)	0.049	0.024	4.14E-02	0.047	0.030	1.14E-01
E-selectin (SELE)	-0.027	0.026	2.86E-01	-0.042	0.030	1.62E-01
Follistatin (FS)	-0.025	0.026	3.36E-01	-0.042	0.031	1.74E-01
Interleukin-6 receptor subunit alpha (IL-6RA)	-0.038	0.027	1.62E-01	-0.041	0.030	1.79E-01
Interleukin-27 subunit alpha (IL27-A)	0.056	0.027	3.90E-02	-0.036	0.030	2.33E-01
CD40L receptor (CD40)	0.018	0.027	5.14E-01	0.035	0.031	2.48E-01
Platelet endothelial cell adhesion molecule (PECAM-1)	0.046	0.027	8.83E-02	0.034	0.031	2.66E-01
Thrombomodulin (TM)	0.018	0.027	5.09E-01	-0.030	0.030	3.18E-01
Cathepsin L1 (CTSL1)	-0.051	0.027	5.82E-02	-0.029	0.030	3.42E-01
Myoglobin (MB)	-0.030	0.024	2.06E-01	-0.025	0.029	3.86E-01
Spondin-1 (SPON1)	0.046	0.026	7.61E-02	-0.024	0.030	4.28E-01
C-X-C motif chemokine 1 (CXCL1)	0.028	0.027	3.12E-01	-0.024	0.031	4.33E-01
Galectin-3 (Gal-3)	0.037	0.025	1.51E-01	0.022	0.029	4.45E-01
C-X-C motif chemokine 16 (CXCL16)	0.006	0.026	8.07E-01	0.022	0.030	4.64E-01
Pappalysin-1 (PAPPA)	-0.029	0.026	2.53E-01	-0.022	0.030	4.69E-01
Myeloperoxidase (MPO)	-0.058	0.026	2.77E-02	0.018	0.031	5.53E-01
Platelet-derived growth factor subunit B (PDGF subunit B)	0.016	0.028	5.52E-01	-0.016	0.031	6.14E-01
Monocyte chemotactic protein 1 (MCP-1)	-0.050	0.026	5.16E-02	-0.014	0.030	6.49E-01
Kallikrein-6 (KLK6)	0.025	0.027	3.52E-01	-0.012	0.030	6.87E-01
Chitinase-3-like protein 1 (CHI3L1)	-0.015	0.025	5.49E-01	0.011	0.030	7.28E-01

P-selectin glycoprotein ligand 1 (PSGL-1)	-0.003	0.027	9.23E-01	-0.010	0.031	7.52E-01
Renin (REN)	-0.002	0.025	9.29E-01	-0.004	0.028	8.81E-01

Supplementary Table III. Cis SNPs associated with protein levels at $P < 5 \times 10^{-8}$ in EpiHealth, PIVUS, ULSAM and IMPROVE and used as genetic instruments.

Protein	SNP	Effect allele	Other allele	EAF	Beta	SE	P
ADM	rs11042731	T	C	0.271	0.193	0.019	2.26E-25
	rs2923084	A	G	0.822	0.118	0.022	4.61E-08
CCL3	rs1634517	A	C	0.238	0.398	0.019	4.10E-97
CHI3L1	rs3087949	A	C	0.733	0.103	0.019	4.60E-08
	rs3766554	A	G	0.059	0.253	0.038	4.63E-11
	rs4950928	C	G	0.764	0.803	0.019	1.00E-200
	rs7539590	A	G	0.146	0.342	0.027	1.05E-37
CSTD	rs11038251	A	C	0.835	0.180	0.023	1.54E-15
	rs12283736	A	T	0.424	0.193	0.017	3.40E-30
	rs2292958	T	C	0.703	0.360	0.020	3.57E-73
CXCL16	rs7219606	T	C	0.763	0.187	0.021	1.21E-18
	rs8080014	T	C	0.578	0.146	0.019	2.60E-15
Dkk-1	rs11003049	A	G	0.120	0.326	0.034	2.60E-21
	rs1149779	A	G	0.511	0.114	0.017	1.49E-11
	rs1159798	A	C	0.231	-0.178	0.029	5.02E-10
	rs7088799	T	G	0.592	-0.147	0.017	4.38E-18
FAS	rs11202892	T	C	0.964	0.444	0.063	2.06E-12
	rs7089946	C	G	0.457	-0.145	0.017	5.69E-18
	rs982764	T	C	0.678	0.279	0.017	2.76E-59
Gal3	rs142720550	A	G	0.077	-0.886	0.030	1.30E-195
	rs17128145	T	G	0.604	0.219	0.020	2.09E-28
	rs3825615	T	C	0.042	0.265	0.043	9.69E-10
GDF15	rs17725099	A	G	0.251	0.163	0.022	2.49E-13
	rs62122430	A	T	0.885	-0.390	0.029	8.60E-42
IL-16	rs4778890	C	G	0.933	1.195	0.031	1.00E-200
	rs859	A	G	0.717	0.175	0.020	8.40E-19
IL-18	rs11226647	A	C	0.767	-0.131	0.023	2.47E-08
	rs5744258	C	G	0.766	0.274	0.019	2.86E-46
IL-1RA	rs10206428	A	G	0.403	0.219	0.017	2.41E-37
	rs6734238	A	G	0.614	0.295	0.017	1.88E-69
IL-6RA	rs11680	C	G	0.933	0.274	0.049	2.59E-08
	rs12565279	A	T	0.841	0.219	0.024	1.91E-19
	rs1552902	C	G	0.683	0.245	0.021	4.68E-32
	rs2340473	T	C	0.570	0.108	0.017	1.33E-10
	rs4133213	A	C	0.403	0.944	0.013	1.00E-200
KIM-1	rs452223	T	C	0.305	0.181	0.019	6.27E-22
	rs6863148	A	G	0.252	-0.560	0.018	1.00E-200
	rs6872094	A	C	0.918	0.171	0.031	2.43E-08
	rs991611	A	G	0.249	-0.123	0.020	1.26E-09
KLK6	rs1722540	C	G	0.391	0.222	0.019	2.55E-32

LOX-1	rs10505752	A	G	0.169	0.183	0.030	1.79E-09
MMP-12	rs11225198	A	G	0.913	0.253	0.045	1.71E-08
	rs313401	C	G	0.620	0.208	0.020	1.35E-24
	rs473238	T	C	0.168	-0.632	0.021	1.00E-200
	rs629946	A	G	0.048	0.409	0.040	7.26E-25
PIGF	rs175037	C	G	0.532	-0.167	0.017	9.14E-22
PSGL-1	rs11829928	A	G	0.021	-1.838	0.074	1.73E-137
REN	rs3014620	T	C	0.975	-0.669	0.085	3.22E-15
RETN	rs1423096	T	C	0.109	0.308	0.043	1.01E-12
SELE	rs3917434	T	C	0.682	-0.137	0.019	3.88E-13
ST2	rs10208293	A	G	0.278	0.324	0.018	4.41E-74
	rs17776702	A	G	0.980	-0.335	0.060	2.77E-08
	rs3917265	T	C	0.481	0.154	0.016	7.87E-21
	rs4399750	T	C	0.485	0.595	0.015	1.00E-200
	rs75372018	A	G	0.975	0.439	0.076	8.89E-09
TF	rs11165186	A	C	0.848	-0.222	0.032	1.72E-12
	rs11808528	A	G	0.375	0.213	0.020	5.91E-26
TM	rs3176123	T	G	0.797	-0.451	0.020	1.94E-114
	rs6076034	A	G	0.383	0.130	0.024	2.97E-08
TNF-R1	rs1800693	T	C	0.599	0.093	0.017	3.16E-08
TNF-R2	rs5745994	T	C	0.037	-0.498	0.046	2.76E-27
TRAIL-R2	rs13265018	A	G	0.080	-0.527	0.042	1.97E-36
uPAR	rs4251938	T	C	0.884	0.214	0.030	2.27E-12

Supplementary Table IV. Results from GWAS Catalog search for the five biomarkers associated with all lipid fractions.

BIOMARKER	DISEASE/TRAIT	REGION	REPORTED GENE(S)	MAPPED GENE	STRONGEST SNP-RISK ALLELE	P	OR or BETA	95% CI (TEXT)	PUBMED ID
KIM-1	Triglycerides	5q33.3	TIMD4, HAVCR1	HAVCR1	rs1553318-C	2.00E-11	0.04	[0.03-0.05] s.d. increase	25961943
	LDL cholesterol	5q33.3	TIMD4, HAVCR1	TIMD4 - HAVCR1	rs1501908-G	1.00E-11	0.07	[0.03-0.11] s.d. decrease	19060906
	Cholesterol, total	5q33.3	TIMD4, HAVCR1	HAVCR1	rs1553318-C	2.00E-21	0.06	[0.05-0.07] s.d. increase	25961943
	LDL cholesterol	5q33.3	TIMD4, HAVCR1	HAVCR1	rs1553318-C	2.00E-15	0.05	[0.04-0.06] s.d. increase	25961943
	Platelet count	5q33.3	intergenic	HAVCR1	rs2862064-G	8.00E-10	0.03	[0.02-0.04] unit decrease	27863252
	LDL cholesterol	5q33.3	TIMD4, HAVCR1	TIMD4 - HAVCR1	rs6882076-T	2.00E-22	1.67	[1.30-2.04] mg/dL decrease	20686565
	Triglycerides	5q33.3	TIMD4, HAVCR1	TIMD4 - HAVCR1	rs6882076-G	4.00E-12	2.63	[1.87-3.39] mg/dL decrease	20686565
	Cholesterol, total	5q33.3	TIMD4, HAVCR1	TIMD4 - HAVCR1	rs6882076-T	7.00E-28	1.98	[1.59-2.37] mg/dL decrease	20686565
	LDL cholesterol levels	5q33.3	TIMD4	TIMD4 - HAVCR1	rs6882076-T	1.00E-33	0.05	[0.04-0.05] unit decrease	28334899
	Total cholesterol levels	5q33.3	TIMD4	TIMD4 - HAVCR1	rs6882076-T	2.00E-43	0.05	[0.04-0.06] unit decrease	28334899

	LDL cholesterol	5q33.3	TIMD4	TIMD4 - HAVCR1	rs6882076-T	3.00E-31	0.05	[NR] unit decrease	24097068
	Cholesterol, total	5q33.3	TIMD4	TIMD4 - HAVCR1	rs6882076-T	5.00E-41	0.05	[NR] unit decrease	24097068
	Triglycerides	5q33.3	TIMD4	TIMD4 - HAVCR1	rs6882076-T	2.00E-15	0.03	[NR] mg/dL decrease	24097068
TNF-R1	Primary biliary cholangitis	12p13.31	TNFRSF1A	TNFRSF1A	rs1800693-C	2.00E-09	1.22	[1.14-1.30]	21399635
	Primary biliary cirrhosis	12p13.31	TNFRSF1A, LTBR, SCNN1A	TNFRSF1A	rs1800693-G	1.00E-14	1.27	[1.19-1.34]	22961000
	Multiple sclerosis	12p13.31	TNFRSF1A	TNFRSF1A	rs1800693-C	2.00E-11	1.20	[1.10-1.31]	19525953
	Primary biliary cholangitis	12p13.31	TNFRSF1A, PLEKHG6	TNFRSF1A	rs1800693-C	2.00E-09	1.22	NR	26394269
	Primary biliary cirrhosis	12p13.31	TNFRSF1A, LTBR, SCNN1A	TNFRSF1A; LTBR	rs1800693-G; rs11064157-A	2.00E-16	1.58		22961000
	Primary biliary cirrhosis	12p13.31	TNFRSF1A, LTBR, SCNN1A	TNFRSF1A; LTBR	rs1800693-A; rs11064157-C	7.00E-19	0.74		22961000
	Primary biliary cirrhosis	12p13.31	TNFRSF1A, LTBR, SCNN1A	LTBR	rs11064157-A	2.00E-09	1.23	[1.15-1.32]	22961000
	Primary biliary cholangitis	12p13.31	TNFRSF1A	TNFRSF1A	rs4149576-A	4.00E-09	1.37	[1.23-1.52]	28425483
	Lymphocyte counts	12p13.31	TNFRSF1A	TNFRSF1A	rs2284344-C	1.00E-09	0.02	[0.02-0.03] unit decrease	27863252
	Monocyte count	12p13.31	TNFRSF1A	TNFRSF1A	rs4149577-A	1.00E-16	0.03	[0.02-0.04] unit decrease	27863252

Ankylosing spondylitis	12p13.31	LTBR, TNFRSF1A	TNFRSF1A	rs1860545-C	3.00E-10	1.13		23749187
Plateletcrit	12p13.31	TNFRSF1A	TNFRSF1A	rs2284344-C	2.00E-16	0.03	[0.02-0.04] unit decrease	27863252
Platelet count	12p13.31	TNFRSF1A	TNFRSF1A	rs2284344-C	5.00E-09	0.02	[0.01-0.03] unit decrease	27863252
Ankylosing spondylitis	12p13.31	LTBR, TNFRSF1A	TNFRSF1A	rs1860545-C	8.00E-10	1.13		23749187
Crohn's disease	12p13.31	CD27, TNFRSF1A, LTBR	LTBR	rs7954567-A	1.00E-09	1.09	[1.06-1.11]	26192919
Chronic inflammatory diseases (ankylosing spondylitis, Crohn's disease, psoriasis, primary sclerosing cholangitis, ulcerative colitis) (pleiotropy)	12p13.31	TNFRSF1A	TNFRSF1A	rs1860545-?	3.00E-17			26974007
Colorectal cancer	12p13.31	PLEKHG6, TNFRSF1A, CD9	LOC105369625	rs10849432-T	6.00E-10	1.14	[1.09-1.18]	24836286
Multiple sclerosis	12p13.31	TNFRSF1A	TNFRSF1A	rs1800693-G	7.00E-28	1.14		24076602
Multiple sclerosis	12p13.31	TNFRSF1A	TNFRSF1A	rs1800693-G	4.00E-14	1.12	[1.11-1.14]	21833088
Ankylosing spondylitis	12p13.31	LTBR-TNFRSF1A	LOC105369628	rs11616188-A	4.00E-12			21743469

TNF-R2	Tuberculosis	1p36.22	CLCN6, MTHFR, NPPA, NPPB, KIAA2013, PLOD1, MFN2, MIIP, TNFRSF8, TNFRSF1B	MFN2	rs4240897-?	1.00E-11	1.27	[1.20-1.33]	29036319
TRAIL-R2	Renal cell carcinoma	8p21.3	TNFRSF10B, RHOBTB2	LOC107986927, RHOBTB2	rs2241261-T	6.00E-09	1.10	[1.06-1.13]	28598434
RETN	Resistin levels	19p13.2	RETN	LOC107985274 - RETN	rs3219175-A	2E-858	7.53	[7.29-7.77] unit increase	27664181
	Resistin levels	19p13.2	RETN	RETN - MCEMP1	rs1423096-T	2E-209	4.79	[4.50-5.08] unit increase	27664181
	Cerebrospinal fluid RETN levels	19p13.2	NR	LOC107985274 - RETN	rs3219175-?	6.00E-39			28031287
	Menarche (age at onset)	19p13.2	EVI5L, RETN	EVI5L	rs652260-T	1.00E-08	0.03	[0.02-0.04] unit increase	25231870