frontiers

Supplementary Material

Table of contents

1 **Supplementary Table 1.** Main inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
For all patients - Age ≥18 years - Diagnosed according to the prevailing criteria for systemic lupus erythematosus (SLE) - Informed consent signed	**For all patients** - Pediatric lupus - Drug-induced lupus - Severe nephrotic syndrome with proteinuria ≥3.5 g/day - Patients with stable doses of prednisone equivalent >15 mg/day for the last 3 months or with IV corticosteroids in the last 3 months - Patients under immunosuppressant treatment in the last 3 months prior to recruitment and patients with combined therapy using two or more immunosuppressants: • Methotrexate ≥25mg/week • Azathioprine ≥2.5mg/kg/day • Cyclosporine A >3mg/kg/day • Mycophenolate mofetil >2g/day - Chronic HBV or HCV infection - Patients who are also diagnosed according to the prevailing criteria for one of the following autoimmune diseases: • Rheumatoid arthritis (RA) • Scleroderma or systemic sclerosis (SSc) • Primary Sjögren's syndrome (pSjS) • Primary antiphospholipid syndrome (pAPS) • Mixed connective tissue disease (MCTD) • Patients with undifferentiated connective tissue disease (UCTD) for over 1 year and that do not fulfill the diagnosis of any of the above diseases or SLE **For controls** - Individuals on chronic medication - Individuals suffering from any inflammatory autoimmune, allergic or infectious condition, and with a history of autoimmune disease, particularly thyroid disease or other diseases that may modify cellular profiles in blood

Adapted from "Integrative Analysis Reveals a Molecular Stratification of Systemic Autoimmune Diseases." Arthritis Rheum. 2021;73(6):1073-1085. Copyright 2021 by the American College of Rheumatology. Adapted with permission. IV: intravenous, HBV: hepatitis B virus, HCV: hepatitis C virus.

2 List of local investigators from the participating clinical sites

Lorenzo Beretta[1], Barbara Vigone[1], Jacques-Olivier Pers[2], Alain Saraux[2], Valérie Devauchelle-Pensec[2], Divi Cornec[2], Sandrine Jousse-Joulin[2], Bernard Lauwerys[3], Julie Ducreux[3], Anne-Lise Maudoux[3], Carlos Vasconcelos[4], Ana Tavares[4], Esmeralda Neves[4], Raquel Faria[4], Mariana Brandão[4], Ana Campar[4], António Marinho[4], Fátima Farinha[4], Isabel Almeida[4], Miguel Angel Gonzalez-Gay Mantecón[5], Ricardo Blanco Alonso[5], Alfonso Corrales Martínez[5], Ricard Cervera[6], Ignasi Rodríguez-Pintó[6], Gerard Espinosa[6], Rik Lories[7], Ellen De Langhe[7], Nicolas Hunzelmann[8], Doreen Belz[8], Torsten Witte[9], Niklas Baerlecken[9], Georg Stummvoll[10], Michael Zauner[10], Michaela Lehner[10], Eduardo Collantes[11], Rafaela Ortega-Castro[11], Mª Angeles Aguirre-Zamorano[11], Alejandro Escudero-Contreras[11], Mª Carmen Castro-Villegas[11], Norberto Ortego[12], María Concepción Fernández Roldán[12], Enrique Raya[13], Inmaculada Jiménez Moleón[13], Enrique de Ramon[14], Isabel Díaz Quintero[14], Pier Luigi Meroni[15], Maria Gerosa[15], Tommaso Schioppo[15], Carolina Artusi[15], Carlo Chizzolini[16], Aleksandra Zuber[16], Donatienne Wynar[16], Laszló Kovács[17], Attila Balog[17], Magdolna Deák[17], Márta Bocskai[17], Sonja Dulic[17], Gabriella Kádár[17], Falk Hiepe[18], Velia Gerl[18], Silvia Thiel[18], Manuel Rodriguez Maresca[19], Antonio López-Berrio[19], Rocío Aguilar-Quesada[19], Héctor Navarro-Linares[19]

Affiliations

1. Referral Center for Systemic Autoimmune Diseases, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Italy.

2. Centre Hospitalier Universitaire de Brest, Hospital de la Cavale Blanche, Brest, France.

3. Pôle de pathologies rhumatismales systémiques et inflammatoires, Institut de Recherche Expérimentale et Clinique, Université catholique de Louvain, Brussels, Belgium.

4. Centro Hospitalar do Porto, Portugal.

5. Servicio Cantabro de Salud, Hospital Universitario Marqués de Valdecilla, Santander, Spain.

6. Hospital Clinic I Provicia, Institut d'Investigacions Biomèdiques August Pi i Sunyer, Barcelona, Spain.

7. Katholieke Universiteit Leuven, Belgium.

8. Klinikum der Universitaet zu Koeln, Cologne, Germany.

9. Medizinische Hochschule Hannover, Germany.

10. Medical University Vienna, Vienna, Austria.

11. Servicio Andaluz de Salud, Hospital Universitario Reina Sofía Córdoba, Spain.

12. Servicio Andaluz de Salud, Complejo hospitalario Universitario de Granada (Hospital Universitario San Cecilio), Spain.

13. Servicio Andaluz de Salud, Complejo hospitalario Universitario de Granada (Hospital Virgen de las Nieves), Spain.

14. Servicio Andaluz de Salud, Hospital Regional Universitario de Málaga, Spain

15. Università degli studi di Milano, Milan, Italy.

16. Hospitaux Universitaires de Genève, Switzerland.

17. University of Szeged, Szeged, Hungary.

18. Charite, Berlin, Germany.

19. Andalusian Public Health System Biobank, Granada, Spain

Supplementary Table 2. Serum levels of selected autoimmunity-associated cytokines in patients with SLE versus healthy controls in the PRECISESADS study population

Cytokines	SLE		HC		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	258/422	6.04 (5.84–6.17)	295/546	5.97 (5.87–6.05)	**<0.001**
CCL13	194/422	2.16 (2.01–2.27)	178/546	2.15 (2.04–2.26)	0.608
CCL17	194/422	2.80 (2.62–3.02)	178/546	2.71 (2.50–2.87)	**<0.001**
CCL18	45/422	4.60 (4.49–4.68)	48/546	4.49 (4.38–4.55)	**0.018**
CCL2	45/422	2.65 (2.50–2.71)	48/546	2.61 (2.55–2.70)	0.851
CCL20	45/422	1.68 (1.48–1.86)	48/546	1.58 (1.46–1.78)	0.267
CCL3	38/422	2.31 (2.15–2.47)	42/546	2.30 (2.13–2.46)	0.992
CCL4	184/422	2.23 (2.08–2.49)	160/546	2.20 (1.95–2.52)	0.229
CCL5	45/422	4.67 (4.46–4.81)	48/546	4.69 (4.55–4.84)	0.569
CCL7	44/422	1.99 (1.81–2.30)	45/546	1.93 (1.62–2.21)	0.188
CCL8	194/422	1.92 (1.76–2.05)	178/546	1.82 (1.72–1.94)	**<0.001**
CRP	162/422	6.16 (5.61–6.57)	143/546	5.97 (5.42–6.36)	**0.005**
CXCL1	25/422	2.09 (1.94–2.20)	27/546	2.04 (1.91–2.30)	0.956
CXCL10	194/422	1.45 (1.29–1.77)	178/546	1.28 (1.13–1.40)	**<0.001**
CXCL11	45/422	2.46 (2.29–2.55)	48/546	2.36 (2.27–2.46)	**0.017**
CXCL13	194/422	2.02 (1.85–2.24)	175/546	1.78 (1.69–1.89)	**<0.001**
CXCL16	45/422	3.11 (3.04–3.19)	48/546	3.07 (3.02–3.10)	**0.004**
CXCL5	45/422	3.06 (2.87–3.27)	48/546	3.15 (3.04–3.38)	0.124
CXCL9	45/422	2.78 (2.67–3.00)	47/546	2.78 (2.67–2.86)	0.125
DcR1	45/422	3.47 (3.33–3.64)	48/546	3.53 (3.39–3.60)	0.643
DcR3	45/422	2.64 (2.49–2.73)	47/546	2.64 (2.48–2.75)	0.582
E-selectin	45/422	4.40 (4.26–4.49)	48/546	4.38 (4.21–4.50)	0.845
EGF	45/422	2.27 (2.06–2.44)	48/546	2.30 (2.04–2.39)	0.906
Fas	45/422	3.89 (3.83–4.02)	48/546	3.86 (3.82–3.90)	0.059
FasL	194/422	1.65 (1.49–1.78)	178/546	1.62 (1.54–1.73)	0.628
FGF2	45/422	2.18 (2.06–2.26)	48/546	2.12 (2.06–2.24)	0.389
FGF21	44/422	3.33 (3.18–3.45)	48/546	3.35 (3.17–3.46)	0.897
G-CSF	45/422	1.48 (1.41–1.55)	47/546	1.39 (1.31–1.46)	**0.003**
Galactin-3	45/422	3.89 (3.79–3.98)	48/546	3.85 (3.78–3.91)	0.113
GDF15	194/422	2.89 (2.70–3.11)	178/546	2.70 (2.57–2.84)	**<0.001**
GH	45/422	3.43 (2.96–3.62)	48/546	3.02 (2.61–3.42)	**0.034**
HGF	45/422	2.26 (2.14–2.41)	48/546	2.32 (2.23–2.40)	0.385
ICAM-1	45/422	5.39 (5.24–5.61)	48/546	5.40 (5.18–5.52)	0.498
IFN-γ	32/422	26.09 (21.99–32.58)	39/546	17.51 (13.79–20.56)	**<0.001**
IFNGR1	45/422	1.88 (1.84–2.00)	48/546	1.88 (1.79–1.92)	0.070
IL-10	23/422	0.54 (0.22–1.12)	15/546	0.28 (0.19–0.56)	0.244
IL-12	13/422	10.70 (6.58–28.37)	19/546	14.81 (6.11–30.33)	0.939
IL-13	22/422	2.21 (2.05–2.30)	24/546	2.33 (1.89–2.44)	0.261
IL-17A	18/422	1.94 (0.62–3.35)	15/546	2.99 (1.86–4.99)	0.158
IL-17F	18/422	1.11 (0.76–1.52)	12/546	0.94 (0.25–1.18)	0.305
IL-18BP	45/422	2.43 (2.32–2.64)	48/546	2.28 (2.05–2.44)	**0.002**
IL-1α	45/422	1.61 (1.44–1.72)	48/546	1.52 (1.38–1.78)	0.258
IL-1β	25/422	4.49 (3.21–7.15)	31/546	3.17 (1.89–4.81)	**0.015**
IL-1R1	45/422	3.17 (3.06–3.23)	48/546	3.11 (3.07–3.16)	0.194
IL-1R2	194/422	3.84 (3.74–3.90)	178/546	3.83 (3.77–3.89)	0.896
IL-1RA	192/422	3.01 (2.89–3.19)	178/546	2.92 (2.78–3.05)	**<0.001**
IL-2	32/422	1.98 (1.82–2.09)	28/546	1.88 (1.66–2.06)	0.159
IL-22	7/422	1.24 (0.96–1.30)	7/546	1.31 (0.84–1.46)	0.620
IL-23	45/422	2.61 (2.50–2.71)	48/546	2.56 (2.45–2.65)	0.257
IL-27	21/422	185.83 (99.39–281.72)	18/546	117.50 (48.72–188.24)	0.088
IL-28A	26/422	2.38 (1.86–2.68)	27/546	2.05 (1.80–2.16)	**0.027**
IL-2Rα	45/422	2.72 (2.62–2.89)	48/546	2.63 (2.53–2.72)	**<0.001**

IL-31	38/422	2.10 (2.02–2.17)	43/546	2.06 (1.93–2.21)	0.508
IL-33	29/422	3.48 (2.19–5.21)	33/546	3.07 (2.25–5.80)	0.767
IL-5	32/422	3.72 (3.10–4.16)	38/546	3.90 (3.47–4.50)	0.179
IL-6	256/422	3.33 (2.90–3.60)	290/546	3.18 (2.91–3.38)	**<0.001**
IL-6Rα	45/422	4.08 (4.01–4.11)	48/546	4.07 (4.03–4.12)	0.948
IL-8	45/422	1.28 (1.16–1.41)	48/546	1.29 (1.20–1.36)	0.531
IL-9	7/422	302.42 (194.84–529.25)	6/546	263.29 (52.12–558.71)	0.720
M-CSF	13/422	55.62 (31.77–67.73)	16/546	58.42 (29.66–166.84)	0.380
MDC	45/422	2.87 (2.70–2.96)	48/546	2.83 (2.70–2.91)	0.292
MIF	44/422	3.79 (3.55–3.95)	48/546	3.60 (3.44–3.83)	**0.020**
MMP-1	45/422	3.29 (3.02–3.49)	48/546	3.30 (3.12–3.45)	1.000
MMP-12	5/422	107.31 (98.79–130.23)	7/546	53.62 (35.45–91.67)	0.415
MMP-13	41/422	2.58 (2.39–2.73)	40/546	2.54 (2.35–2.60)	0.221
MMP-2	164/422	5.33 (5.26–5.42)	143/546	5.35 (5.27–5.44)	0.344
MMP-3	45/422	4.22 (3.99–4.45)	47/546	4.09 (3.98–4.19)	**0.021**
MMP-7	45/422	3.40 (3.24–3.55)	48/546	3.32 (3.18–3.41)	0.078
MMP-8	193/422	3.51 (3.26–3.78)	178/546	3.57 (3.35–3.80)	0.125
MMP-9	45/422	5.28 (5.02–5.44)	48/546	5.35 (5.24–5.47)	**0.037**
MPO	45/422	5.12 (4.81–5.29)	48/546	5.08 (4.95–5.32)	0.881
P-selectin	45/422	4.60 (4.54–4.68)	48/546	4.60 (4.55–4.66)	0.985
PF4	44/422	6.87 (6.79–6.97)	45/546	6.92 (6.87–7.05)	**0.016**
PTX3	45/422	2.97 (2.80–3.33)	48/546	3.04 (2.92–3.22)	0.758
TACI	43/422	1.20 (0.92–1.28)	45/546	1.04 (0.91–1.20)	0.167
TGF-β	258/422	8.01 (7.78–8.15)	295/546	8.07 (7.71–8.20)	**0.015**
TNF-α	258/422	2.95 (2.63–3.15)	294/546	2.86 (2.63–2.98)	**<0.001**
TNFR1	194/422	3.72 (3.62–3.81)	178/546	3.63 (3.57–3.71)	**<0.001**
TNFR2	45/422	3.40 (3.19–3.58)	48/546	3.32 (3.18–3.36)	**0.005**
VCAM-1	45/422	6.05 (5.95–6.16)	48/546	5.86 (5.79–5.94)	**<0.001**
VEGF	45/422	1.77 (1.65–2.00)	48/546	1.84 (1.72–2.10)	0.081
VEGF-C	41/422	3.00 (2.80–3.16)	47/546	3.14 (2.92–3.26)	**0.041**
VEGFR3	45/422	2.14 (1.75–2.36)	48/546	2.14 (1.86–2.39)	0.513

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold. N/A indicates that the comparison could not be conducted owing to low numbers of observations (n<4).

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HC: healthy controls; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon gamma; IFNGR1: interferon gamma receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; PF4: platelet factor 4; PTX3: pentraxin 3; SLE: systemic lupus erythematosus; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

Supplementary Table 3. Serum levels of selected autoimmunity-associated cytokines in patients with active versus inactive SLE in the PRECISESADS study population

Cytokines	Active SLE		Inactive SLE		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	230/348	6.05 (5.88–6.17)	21/45	5.90 (5.81–6.10)	0.059
CCL13	148/348	2.15 (2.02–2.28)	20/45	2.17 (2.02–2.31)	0.858
CCL17	148/348	2.81 (2.62–3.02)	20/45	2.75 (2.59–2.87)	0.374
CCL18	31/348	4.59 (4.38–4.64)	4/45	4.71 (4.69–4.73)	**0.027**
CCL2	31/348	2.67 (2.51–2.72)	4/45	2.62 (2.55–2.74)	0.980
CCL20	31/348	1.68 (1.48–1.88)	4/45	1.64 (1.58–1.72)	0.897
CCL3	25/348	2.27 (2.14–2.41)	4/45	2.30 (2.22–2.37)	0.874
CCL4	141/348	2.23 (2.08–2.44)	19/45	2.17 (2.09–2.39)	0.525
CCL5	31/348	4.72 (4.46–4.87)	4/45	4.61 (4.56–4.68)	0.531
CCL7	30/348	1.99 (1.82–2.23)	4/45	1.81 (1.73–1.94)	0.349
CCL8	148/348	1.93 (1.76–2.04)	20/45	1.80 (1.70–1.97)	0.102
CRP	130/348	6.19 (5.75–6.59)	16/45	5.79 (5.31–6.18)	**0.036**
CXCL1	17/348	2.01 (1.83–2.20)	2/45	2.19 (2.18–2.19)	N/A
CXCL10	148/348	1.45 (1.28–1.77)	20/45	1.33 (1.19–1.51)	0.069
CXCL11	31/348	2.46 (2.32–2.54)	4/45	2.40 (2.34–2.43)	0.337
CXCL13	148/348	2.03 (1.88–2.27)	20/45	1.83 (1.75–1.99)	**0.004**
CXCL16	31/348	3.11 (3.05–3.17)	4/45	3.18 (3.14–3.21)	0.352
CXCL5	31/348	3.07 (2.90–3.28)	4/45	3.27 (3.10–3.42)	0.326
CXCL9	31/348	2.78 (2.68–2.96)	4/45	2.64 (2.59–2.76)	0.276
DcR1	31/348	3.45 (3.30–3.68)	4/45	3.42 (3.33–3.53)	0.940
DcR3	31/348	2.63 (2.48–2.73)	4/45	2.66 (2.48–2.80)	0.876
E-selectin	31/348	4.37 (4.26–4.46)	4/45	4.37 (4.24–4.48)	1.000
EGF	31/348	2.17 (1.93–2.41)	4/45	2.37 (2.30–2.45)	0.254
Fas	31/348	3.89 (3.81–4.01)	4/45	3.93 (3.88–3.99)	0.565
FasL	148/348	1.67 (1.47–1.79)	20/45	1.59 (1.51–1.64)	0.175
FGF2	31/348	2.16 (2.05–2.28)	4/45	2.21 (2.18–2.24)	0.717
FGF21	30/348	3.31 (3.01–3.40)	4/45	3.39 (3.31–3.49)	0.262
G-CSF	31/348	1.46 (1.36–1.54)	4/45	1.56 (1.50–1.62)	0.102
Galactin-3	31/348	3.91 (3.77–3.99)	4/45	3.85 (3.81–3.90)	0.671
GDF15	148/348	2.86 (2.70–3.11)	20/45	2.91 (2.64–3.16)	0.881
GH	31/348	3.49 (3.15–3.70)	4/45	3.29 (2.99–3.46)	0.301
HGF	31/348	2.25 (2.14–2.40)	4/45	2.31 (2.08–2.61)	0.708
ICAM-1	31/348	5.39 (5.25–5.66)	4/45	5.47 (5.32–5.63)	0.940
IFN-γ	29/348	26.00 (21.99–32.86)	3/45	30.96 (26.61–31.72)	N/A
IFNGR1	31/348	1.91 (1.83–2.00)	4/45	1.88 (1.87–1.96)	0.783
IL-10	21/348	0.54 (0.17–1.20)	2/45	0.74 (0.59–0.89)	N/A
IL-12	12/348	15.91 (6.58–28.55)	1/45	0.18 (0.18–0.18)	N/A
IL-13	15/348	2.20 (2.01–2.30)	3/45	2.12 (2.00–2.17)	N/A
IL-17A	16/348	1.94 (0.80–3.33)	2/45	2.04 (1.06–3.01)	N/A
IL-17F	15/348	1.30 (0.81–1.56)	2/45	0.92 (0.79–1.05)	N/A
IL-18BP	31/348	2.41 (2.32–2.60)	4/45	2.32 (2.08–2.56)	0.708
IL-1α	31/348	1.57 (1.47–1.85)	4/45	1.69 (1.62–1.72)	0.531
IL-1β	22/348	4.79 (2.78–7.64)	3/45	3.75 (3.49–3.88)	N/A
IL-1R1	31/348	3.17 (3.03–3.24)	4/45	3.17 (3.10–3.21)	0.940
IL-1R2	148/348	3.84 (3.75–3.91)	20/45	3.83 (3.76–3.90)	0.908
IL-1RA	146/348	3.00 (2.89–3.20)	20/45	2.97 (2.83–3.09)	0.053
IL-2	19/348	1.98 (1.80–2.08)	3/45	1.95 (1.83–2.02)	N/A
IL-22	5/348	1.24 (0.69–1.24)	1/45	1.28 (1.28–1.28)	N/A
IL-23	31/348	2.56 (2.42–2.68)	4/45	2.74 (2.69–2.75)	0.055
IL-27	19/348	180.41 (82.90–283.65)	2/45	243.83 (231.24–256.42)	N/A
IL-28A	17/348	2.51 (2.12–2.75)	4/45	2.13 (1.84–2.44)	0.244
IL-2Rα	31/348	2.70 (2.60–2.87)	4/45	2.73 (2.66–2.93)	0.783

IL-31	25/348	2.09 (2.00–2.13)	4/45	2.13 (2.01–2.24)	0.448
IL-33	26/348	3.64 (2.34–5.13)	3/45	3.48 (2.66–4.92)	N/A
IL-5	29/348	3.70 (2.97–4.16)	3/45	3.75 (3.72–3.96)	N/A
IL-6	228/348	3.34 (2.91–3.64)	21/45	3.20 (3.03–3.49)	0.141
IL-6Rα	31/348	4.07 (4.01–4.10)	4/45	4.06 (4.02–4.11)	1.000
IL-8	31/348	1.26 (1.13–1.40)	4/45	1.42 (1.40–1.52)	0.052
IL-9	6/348	287.00 (156.47–405.85)	1/45	736.41 (736.41–736.41)	N/A
M-CSF	10/348	55.82 (22.96–65.87)	3/45	55.62 (46.33–63.61)	N/A
MDC	31/348	2.87 (2.70–2.93)	4/45	2.87 (2.80–2.96)	0.635
MIF	30/348	3.75 (3.51–3.88)	4/45	3.70 (3.53–3.92)	0.777
MMP-1	31/348	3.31 (3.12–3.47)	4/45	3.23 (3.14–3.34)	0.783
MMP-12	5/348	107.31 (98.79–130.23)	0/45	N/A	N/A
MMP-13	28/348	2.53 (2.39–2.73)	4/45	2.53 (2.38–2.65)	0.588
MMP-2	131/348	5.33 (5.25–5.44)	17/45	5.36 (5.32–5.41)	0.200
MMP-3	31/348	4.29 (4.10–4.48)	4/45	3.95 (3.92–4.09)	0.064
MMP-7	31/348	3.37 (3.13–3.50)	4/45	3.63 (3.57–3.68)	**0.049**
MMP-8	147/348	3.53 (3.30–3.78)	20/45	3.47 (3.37–3.63)	0.596
MMP-9	31/348	5.25 (5.01–5.43)	4/45	5.22 (5.04–5.43)	0.861
MPO	31/348	5.11 (4.80–5.22)	4/45	5.13 (4.87–5.33)	0.980
P-selectin	31/348	4.58 (4.53–4.67)	4/45	4.70 (4.57–4.81)	0.233
PF4	30/348	6.87 (6.80–6.98)	4/45	6.93 (6.88–6.98)	0.661
PTX3	31/348	2.93 (2.82–3.27)	4/45	3.07 (2.81–3.35)	0.856
TACI	29/348	1.21 (0.97–1.28)	4/45	1.18 (1.01–1.39)	0.651
TGF-β	230/348	8.03 (7.83–8.15)	21/45	7.96 (7.78–8.05)	0.197
TNF-α	230/348	2.95 (2.67–3.16)	21/45	2.96 (2.57–3.05)	0.124
TNFR1	148/348	3.72 (3.62–3.81)	20/45	3.68 (3.62–3.81)	0.605
TNFR2	31/348	3.41 (3.22–3.58)	4/45	3.39 (3.30–3.53)	1.000
VCAM-1	31/348	6.04 (5.95–6.08)	4/45	5.92 (5.80–6.12)	0.499
VEGF	31/348	1.72 (1.63–1.99)	4/45	1.88 (1.72–2.03)	0.352
VEGF-C	28/348	2.95 (2.79–3.08)	4/45	3.17 (3.11–3.20)	0.093
VEGFR3	31/348	2.14 (1.81–2.35)	4/45	2.38 (2.18–2.47)	0.337

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold. N/A indicates that the comparison could not be conducted owing to low numbers of observations (n<4).

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon gamma; IFNGR1: interferon gamma receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; N/A: not applicable; PF4: platelet factor 4; PTX3: pentraxin 3; SLE: systemic lupus erythematosus; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

5 Supplementary Table 4. Serum levels of selected autoimmunity-associated cytokines in patients with active SLE versus healthy controls in the PRECISESADS study population

Cytokines	Active SLE		HC		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	230/348	6.05 (5.88–6.17)	295/546	5.97 (5.87–6.05)	**<0.001**
CCL13	148/348	2.15 (2.02–2.28)	178/546	2.15 (2.04–2.26)	0.652
CCL17	148/348	2.81 (2.62–3.02)	178/546	2.71 (2.50–2.87)	**<0.001**
CCL18	31/348	4.59 (4.38–4.64)	48/546	4.49 (4.38–4.55)	0.131
CCL2	31/348	2.67 (2.51–2.72)	48/546	2.61 (2.55–2.70)	0.463
CCL20	31/348	1.68 (1.48–1.88)	48/546	1.58 (1.46–1.78)	0.248
CCL3	25/348	2.27 (2.14–2.41)	42/546	2.30 (2.13–2.46)	0.464
CCL4	141/348	2.23 (2.08–2.44)	160/546	2.20 (1.95–2.52)	0.404
CCL5	31/348	4.72 (4.46–4.87)	48/546	4.69 (4.55–4.84)	0.693
CCL7	30/348	1.99 (1.82–2.23)	45/546	1.93 (1.62–2.21)	0.275
CCL8	148/348	1.93 (1.76–2.04)	178/546	1.82 (1.72–1.94)	**<0.001**
CRP	130/348	6.19 (5.75–6.59)	143/546	5.97 (5.42–6.36)	**0.001**
CXCL1	17/348	2.01 (1.83–2.20)	27/546	2.04 (1.91–2.30)	0.588
CXCL10	148/348	1.45 (1.28–1.77)	178/546	1.28 (1.13–1.40)	**<0.001**
CXCL11	31/348	2.46 (2.32–2.54)	48/546	2.36 (2.27–2.46)	**0.031**
CXCL13	148/348	2.03 (1.88–2.27)	175/546	1.78 (1.69–1.89)	**<0.001**
CXCL16	31/348	3.11 (3.05–3.17)	48/546	3.07 (3.02–3.10)	**0.025**
CXCL5	31/348	3.07 (2.90–3.28)	48/546	3.15 (3.04–3.38)	0.376
CXCL9	31/348	2.78 (2.68–2.96)	47/546	2.78 (2.67–2.86)	0.195
DcR1	31/348	3.45 (3.30–3.68)	48/546	3.53 (3.39–3.60)	0.753
DcR3	31/348	2.63 (2.48–2.73)	47/546	2.64 (2.48–2.75)	0.854
E-selectin	31/348	4.37 (4.26–4.46)	48/546	4.38 (4.21–4.50)	0.909
EGF	31/348	2.17 (1.93–2.41)	48/546	2.30 (2.04–2.39)	0.404
Fas	31/348	3.89 (3.81–4.01)	48/546	3.86 (3.82–3.90)	0.213
FasL	148/348	1.67 (1.47–1.79)	178/546	1.62 (1.54–1.73)	0.539
FGF2	31/348	2.16 (2.05–2.28)	48/546	2.12 (2.06–2.24)	0.511
FGF21	30/348	3.31 (3.01–3.40)	48/546	3.35 (3.17–3.46)	0.363
G-CSF	31/348	1.46 (1.36–1.54)	47/546	1.39 (1.31–1.46)	0.060
Galactin-3	31/348	3.91 (3.77–3.99)	48/546	3.85 (3.78–3.91)	0.119
GDF15	148/348	2.86 (2.70–3.11)	178/546	2.70 (2.57–2.84)	**<0.001**
GH	31/348	3.49 (3.15–3.70)	48/546	3.02 (2.61–3.42)	**0.009**
HGF	31/348	2.25 (2.14–2.40)	48/546	2.32 (2.23–2.40)	0.185
ICAM-1	31/348	5.39 (5.25–5.66)	48/546	5.40 (5.18–5.52)	0.421
IFN-γ	29/348	26.00 (21.99–32.86)	39/546	17.51 (13.79–20.56)	**<0.001**
IFNGR1	31/348	1.91 (1.83–2.00)	48/546	1.88 (1.79–1.92)	0.131
IL-10	21/348	0.54 (0.17–1.20)	15/546	0.28 (0.19–0.56)	0.304
IL-12	12/348	15.91 (6.58–28.55)	19/546	14.81 (6.11–30.33)	0.823
IL-13	15/348	2.20 (2.01–2.30)	24/546	2.33 (1.89–2.44)	0.265
IL-17A	16/348	1.94 (0.80–3.33)	15/546	2.99 (1.86–4.99)	0.166
IL-17F	15/348	1.30 (0.81–1.56)	12/546	0.94 (0.25–1.18)	0.152
IL-18BP	31/348	2.41 (2.32–2.60)	48/546	2.28 (2.05–2.44)	**0.009**
IL-1α	31/348	1.57 (1.47–1.85)	48/546	1.52 (1.38–1.78)	0.163
IL-1β	22/348	4.79 (2.78–7.64)	31/546	3.17 (1.89–4.81)	**0.017**
IL-1R1	31/348	3.17 (3.03–3.24)	48/546	3.11 (3.07–3.16)	0.269
IL-1R2	148/348	3.84 (3.75–3.91)	178/546	3.83 (3.77–3.89)	0.632
IL-1RA	146/348	3.00 (2.89–3.20)	178/546	2.92 (2.78–3.05)	**<0.001**
IL-2	19/348	1.98 (1.80–2.08)	28/546	1.88 (1.66–2.06)	0.313
IL-22	5/348	1.24 (0.69–1.24)	7/546	1.31 (0.84–1.46)	0.343
IL-23	31/348	2.56 (2.42–2.68)	48/546	2.56 (2.45–2.65)	0.740
IL-27	19/348	180.41 (82.90–283.65)	18/546	117.50 (48.72–188.24)	0.158
IL-28A	17/348	2.51 (2.12–2.75)	27/546	2.05 (1.80–2.16)	**0.006**
IL-2Rα	31/348	2.70 (2.60–2.87)	48/546	2.63 (2.53–2.72)	**0.014**

IL-31	25/348	2.09 (2.00–2.13)	43/546	2.06 (1.93–2.21)	0.884
IL-33	26/348	3.64 (2.34–5.13)	33/546	3.07 (2.25–5.80)	0.760
IL-5	29/348	3.70 (2.97–4.16)	38/546	3.90 (3.47–4.50)	0.156
IL-6	228/348	3.34 (2.91–3.64)	290/546	3.18 (2.91–3.38)	**<0.001**
IL-6Rα	31/348	4.07 (4.01–4.10)	48/546	4.07 (4.03–4.12)	0.791
IL-8	31/348	1.26 (1.13–1.40)	48/546	1.29 (1.20–1.36)	0.928
IL-9	6/348	287.00 (156.47–405.85)	6/546	263.29 (52.12–558.71)	0.936
M-CSF	10/348	55.82 (22.96–65.87)	16/546	58.42 (29.66–166.84)	0.343
MDC	31/348	2.87 (2.70–2.93)	48/546	2.83 (2.70–2.91)	0.433
MIF	30/348	3.75 (3.51–3.88)	48/546	3.60 (3.44–3.83)	0.159
MMP-1	31/348	3.31 (3.12–3.47)	48/546	3.30 (3.12–3.45)	0.854
MMP-12	5/348	107.31 (98.79–130.23)	7/546	53.62 (35.45–91.67)	0.415
MMP-13	28/348	2.53 (2.39–2.73)	40/546	2.54 (2.35–2.60)	0.319
MMP-2	131/348	5.33 (5.25–5.44)	143/546	5.35 (5.27–5.44)	0.280
MMP-3	31/348	4.29 (4.10–4.48)	47/546	4.09 (3.98–4.19)	**0.001**
MMP-7	31/348	3.37 (3.13–3.50)	48/546	3.32 (3.18–3.41)	0.498
MMP-8	147/348	3.53 (3.30–3.78)	178/546	3.57 (3.35–3.80)	0.212
MMP-9	31/348	5.25 (5.01–5.43)	48/546	5.35 (5.24–5.47)	**0.020**
MPO	31/348	5.11 (4.80–5.22)	48/546	5.08 (4.95–5.32)	0.784
P-selectin	31/348	4.58 (4.53–4.67)	48/546	4.60 (4.55–4.66)	0.566
PF4	30/348	6.87 (6.80–6.98)	45/546	6.92 (6.87–7.05)	0.060
PTX3	31/348	2.93 (2.82–3.27)	48/546	3.04 (2.92–3.22)	0.345
TACI	29/348	1.21 (0.97–1.28)	45/546	1.04 (0.91–1.20)	0.115
TGF-β	230/348	8.03 (7.83–8.15)	295/546	8.07 (7.71–8.20)	0.060
TNF-α	230/348	2.95 (2.67–3.16)	294/546	2.86 (2.63–2.98)	**<0.001**
TNFR1	148/348	3.72 (3.62–3.81)	178/546	3.63 (3.57–3.71)	**<0.001**
TNFR2	31/348	3.41 (3.22–3.58)	48/546	3.32 (3.18–3.36)	**0.013**
VCAM-1	31/348	6.04 (5.95–6.08)	48/546	5.86 (5.79–5.94)	**<0.001**
VEGF	31/348	1.72 (1.63–1.99)	48/546	1.84 (1.72–2.10)	0.054
VEGF-C	28/348	2.95 (2.79–3.08)	47/546	3.14 (2.92–3.26)	**0.013**
VEGFR3	31/348	2.14 (1.81–2.35)	48/546	2.14 (1.86–2.39)	0.677

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold. N/A indicates that the comparison could not be conducted owing to low numbers of observations (n<4).

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HC: healthy controls; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; N/A: not applicable; PF4: platelet factor 4; PTX3: pentraxin 3; SLE: systemic lupus erythematosus; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

Supplementary Table 5. Serum levels of selected autoimmunity-associated cytokines in patients with inactive SLE versus healthy controls in the PRECISESADS study population

Cytokines	Inactive SLE		HC		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	21/45	5.90 (5.81–6.10)	295/546	5.97 (5.87–6.05)	0.685
CCL13	20/45	2.17 (2.02–2.31)	178/546	2.15 (2.04–2.26)	0.903
CCL17	20/45	2.75 (2.59–2.87)	178/546	2.71 (2.50–2.87)	0.407
CCL18	4/45	4.71 (4.69–4.73)	48/546	4.49 (4.38–4.55)	**0.014**
CCL2	4/45	2.62 (2.55–2.74)	48/546	2.61 (2.55–2.70)	0.778
CCL20	4/45	1.64 (1.58–1.72)	48/546	1.58 (1.46–1.78)	0.492
CCL3	4/45	2.30 (2.22–2.37)	42/546	2.30 (2.13–2.46)	0.984
CCL4	19/45	2.17 (2.09–2.39)	160/546	2.20 (1.95–2.52)	0.873
CCL5	4/45	4.61 (4.56–4.68)	48/546	4.69 (4.55–4.84)	0.455
CCL7	4/45	1.81 (1.73–1.94)	45/546	1.93 (1.62–2.21)	0.728
CCL8	20/45	1.80 (1.70–1.97)	178/546	1.82 (1.72–1.94)	0.995
CRP	16/45	5.79 (5.31–6.18)	143/546	5.97 (5.42–6.36)	0.448
CXCL1	2/45	2.19 (2.18–2.19)	27/546	2.04 (1.91–2.30)	N/A
CXCL10	20/45	1.33 (1.19–1.51)	178/546	1.28 (1.13–1.40)	0.104
CXCL11	4/45	2.40 (2.34–2.43)	48/546	2.36 (2.27–2.46)	0.770
CXCL13	20/45	1.83 (1.75–1.99)	175/546	1.78 (1.69–1.89)	0.150
CXCL16	4/45	3.18 (3.14–3.21)	48/546	3.07 (3.02–3.10)	**0.042**
CXCL5	4/45	3.27 (3.10–3.42)	48/546	3.15 (3.04–3.38)	0.655
CXCL9	4/45	2.64 (2.59–2.76)	47/546	2.78 (2.67–2.86)	0.483
DcR1	4/45	3.42 (3.33–3.53)	48/546	3.53 (3.39–3.60)	0.496
DcR3	4/45	2.66 (2.48–2.80)	47/546	2.64 (2.48–2.75)	0.726
E-selectin	4/45	4.37 (4.24–4.48)	48/546	4.38 (4.21–4.50)	0.987
EGF	4/45	2.37 (2.30–2.45)	48/546	2.30 (2.04–2.39)	0.377
Fas	4/45	3.93 (3.88–3.99)	48/546	3.86 (3.82–3.90)	0.182
FasL	20/45	1.59 (1.51–1.64)	178/546	1.62 (1.54–1.73)	0.165
FGF2	4/45	2.21 (2.18–2.24)	48/546	2.12 (2.06–2.24)	0.243
FGF21	4/45	3.39 (3.31–3.49)	48/546	3.35 (3.17–3.46)	0.279
G-CSF	4/45	1.56 (1.50–1.62)	47/546	1.39 (1.31–1.46)	**0.014**
Galactin-3	4/45	3.85 (3.81–3.90)	48/546	3.85 (3.78–3.91)	0.679
GDF15	20/45	2.91 (2.64–3.16)	178/546	2.70 (2.57–2.84)	**0.004**
GH	4/45	3.29 (2.99–3.46)	48/546	3.02 (2.61–3.42)	0.607
HGF	4/45	2.31 (2.08–2.61)	48/546	2.32 (2.23–2.40)	0.882
ICAM-1	4/45	5.47 (5.32–5.63)	48/546	5.40 (5.18–5.52)	0.539
IFN-γ	3/45	30.96 (26.61–31.72)	39/546	17.51 (13.79–20.56)	N/A
IFNGR1	4/45	1.88 (1.87–1.96)	48/546	1.88 (1.79–1.92)	0.496
IL-10	2/45	0.74 (0.59–0.89)	15/546	0.28 (0.19–0.56)	N/A
IL-12	1/45	0.18 (0.18–0.18)	19/546	14.81 (6.11–30.33)	N/A
IL-13	3/45	2.12 (2.00–2.17)	24/546	2.33 (1.89–2.44)	N/A
IL-17A	2/45	2.04 (1.06–3.01)	15/546	2.99 (1.86–4.99)	N/A
IL-17F	2/45	0.92 (0.79–1.05)	12/546	0.94 (0.25–1.18)	N/A
IL-18BP	4/45	2.32 (2.08–2.56)	48/546	2.28 (2.05–2.44)	0.655
IL-1α	4/45	1.69 (1.62–1.72)	48/546	1.52 (1.38–1.78)	0.328
IL-1β	3/45	3.75 (3.49–3.88)	31/546	3.17 (1.89–4.81)	N/A
IL-1R1	4/45	3.17 (3.10–3.21)	48/546	3.11 (3.07–3.16)	0.435
IL-1R2	20/45	3.83 (3.76–3.90)	178/546	3.83 (3.77–3.89)	0.941
IL-1RA	20/45	2.97 (2.83–3.09)	178/546	2.92 (2.78–3.05)	0.600
IL-2	3/45	1.95 (1.83–2.02)	28/546	1.88 (1.66–2.06)	N/A
IL-22	1/45	1.28 (1.28–1.28)	7/546	1.31 (0.84–1.46)	N/A
IL-23	4/45	2.74 (2.69–2.75)	48/546	2.56 (2.45–2.65)	**0.048**
IL-27	2/45	243.83 (231.24–256.42)	18/546	117.50 (48.72–188.24)	N/A
IL-28A	4/45	2.13 (1.84–2.44)	27/546	2.05 (1.80–2.16)	0.723
IL-2Rα	4/45	2.73 (2.66–2.93)	48/546	2.63 (2.53–2.72)	0.219

IL-31	4/45	2.13 (2.01–2.24)	43/546	2.06 (1.93–2.21)	0.634
IL-33	3/45	3.48 (2.66–4.92)	33/546	3.07 (2.25–5.80)	N/A
IL-5	3/45	3.75 (3.72–3.96)	38/546	3.90 (3.47–4.50)	N/A
IL-6	21/45	3.20 (3.03–3.49)	290/546	3.18 (2.91–3.38)	0.568
IL-6Rα	4/45	4.06 (4.02–4.11)	48/546	4.07 (4.03–4.12)	0.855
IL-8	4/45	1.42 (1.40–1.52)	48/546	1.29 (1.20–1.36)	**0.009**
IL-9	1/45	736.41 (736.41–736.41)	6/546	263.29 (52.12–558.71)	N/A
M-CSF	3/45	55.62 (46.33–63.61)	16/546	58.42 (29.66–166.84)	N/A
MDC	4/45	2.87 (2.80–2.96)	48/546	2.83 (2.70–2.91)	0.396
MIF	4/45	3.70 (3.53–3.92)	48/546	3.60 (3.44–3.83)	0.539
MMP-1	4/45	3.23 (3.14–3.34)	48/546	3.30 (3.12–3.45)	0.753
MMP-12	0/45	N/A	7/546	53.62 (35.45–91.67)	N/A
MMP-13	4/45	2.53 (2.38–2.65)	40/546	2.54 (2.35–2.60)	0.854
MMP-2	17/45	5.36 (5.32–5.41)	143/546	5.35 (5.27–5.44)	0.482
MMP-3	4/45	3.95 (3.92–4.09)	47/546	4.09 (3.98–4.19)	0.386
MMP-7	4/45	3.63 (3.57–3.68)	48/546	3.32 (3.18–3.41)	**0.008**
MMP-8	20/45	3.47 (3.37–3.63)	178/546	3.57 (3.35–3.80)	0.280
MMP-9	4/45	5.22 (5.04–5.43)	48/546	5.35 (5.24–5.47)	0.396
MPO	4/45	5.13 (4.87–5.33)	48/546	5.08 (4.95–5.32)	0.882
P-selectin	4/45	4.70 (4.57–4.81)	48/546	4.60 (4.55–4.66)	0.377
PF4	4/45	6.93 (6.88–6.98)	45/546	6.92 (6.87–7.05)	0.738
PTX3	4/45	3.07 (2.81–3.35)	48/546	3.04 (2.92–3.22)	0.959
TACI	4/45	1.18 (1.01–1.39)	45/546	1.04 (0.91–1.20)	0.315
TGF-β	21/45	7.96 (7.78–8.05)	295/546	8.07 (7.71–8.20)	0.043
TNF-α	21/45	2.96 (2.57–3.05)	294/546	2.86 (2.63–2.98)	0.669
TNFR1	20/45	3.68 (3.62–3.81)	178/546	3.63 (3.57–3.71)	**0.034**
TNFR2	4/45	3.39 (3.30–3.53)	48/546	3.32 (3.18–3.36)	0.292
VCAM-1	4/45	5.92 (5.80–6.12)	48/546	5.86 (5.79–5.94)	0.518
VEGF	4/45	1.88 (1.72–2.03)	48/546	1.84 (1.72–2.10)	0.855
VEGF-C	4/45	3.17 (3.11–3.20)	47/546	3.14 (2.92–3.26)	0.723
VEGFR3	4/45	2.38 (2.18–2.47)	48/546	2.14 (1.86–2.39)	0.420

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold. N/A indicates that the comparison could not be conducted owing to low numbers of observations (n<4).

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HC: healthy controls; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; N/A: not applicable; PF4: platelet factor 4; PTX3: pentraxin 3; SLE: systemic lupus erythematosus; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

Supplementary Table 6. Serum levels of selected autoimmunity-associated cytokines in patients with autoimmune diseases* versus healthy controls in the PRECISESADS study population

Cytokines	AID		HC		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	735/1223	6.02 (5.89–6.13)	295/546	5.97 (5.87–6.05)	**<0.001**
CCL13	707/1223	2.19 (2.07–2.34)	178/546	2.15 (2.04–2.26)	**0.013**
CCL17	705/1223	2.80 (2.58–2.99)	178/546	2.71 (2.50–2.87)	**<0.001**
CCL18	158/1223	4.66 (4.51–4.75)	48/546	4.49 (4.38–4.55)	**<0.001**
CCL2	158/1223	2.66 (2.56–2.79)	48/546	2.61 (2.55–2.70)	**0.027**
CCL20	158/1223	1.71 (1.51–1.91)	48/546	1.58 (1.46–1.78)	**0.024**
CCL3	139/1223	2.32 (2.20–2.49)	42/546	2.30 (2.13–2.46)	0.626
CCL4	640/1223	2.17 (2.02–2.54)	160/546	2.20 (1.95–2.52)	0.717
CCL5	158/1223	4.66 (4.54–4.78)	48/546	4.69 (4.55–4.84)	0.511
CCL7	157/1223	2.07 (1.85–2.31)	45/546	1.93 (1.62–2.21)	**0.046**
CCL8	707/1223	1.88 (1.73–2.01)	178/546	1.82 (1.72–1.94)	**0.004**
CRP	602/1223	6.22 (5.75–6.58)	143/546	5.97 (5.42–6.36)	**<0.001**
CXCL1	91/1223	2.17 (2.00–2.32)	27/546	2.04 (1.91–2.30)	0.176
CXCL10	707/1223	1.45 (1.25–1.68)	178/546	1.28 (1.13–1.40)	**<0.001**
CXCL11	158/1223	2.45 (2.36–2.54)	48/546	2.36 (2.27–2.46)	**<0.001**
CXCL13	705/1223	1.95 (1.78–2.10)	175/546	1.78 (1.69–1.89)	**<0.001**
CXCL16	158/1223	3.05 (2.99–3.13)	48/546	3.07 (3.02–3.10)	0.606
CXCL5	158/1223	3.17 (3.02–3.33)	48/546	3.15 (3.04–3.38)	0.917
CXCL9	149/1223	2.85 (2.75–2.96)	47/546	2.78 (2.67–2.86)	**0.001**
DcR1	158/1223	3.51 (3.37–3.67)	48/546	3.53 (3.39–3.60)	0.990
DcR3	157/1223	2.72 (2.58–2.91)	47/546	2.64 (2.48–2.75)	**0.001**
E-selectin	158/1223	4.40 (4.27–4.52)	48/546	4.38 (4.21–4.50)	0.182
EGF	158/1223	2.23 (2.04–2.36)	48/546	2.30 (2.04–2.39)	0.339
Fas	158/1223	3.89 (3.77–3.97)	48/546	3.86 (3.82–3.90)	0.218
FasL	704/1223	1.60 (1.45–1.73)	178/546	1.62 (1.54–1.73)	**0.006**
FGF2	158/1223	2.15 (2.07–2.28)	48/546	2.12 (2.06–2.24)	0.255
FGF21	157/1223	3.41 (3.30–3.53)	48/546	3.35 (3.17–3.46)	**0.003**
G-CSF	155/1223	1.48 (1.36–1.58)	47/546	1.39 (1.31–1.46)	**0.001**
Galactin-3	158/1223	3.90 (3.83–3.98)	48/546	3.85 (3.78–3.91)	**0.005**
GDF15	705/1223	3.00 (2.80–3.19)	178/546	2.70 (2.57–2.84)	**<0.001**
GH	157/1223	3.10 (2.72–3.52)	48/546	3.02 (2.61–3.42)	0.516
HGF	158/1223	2.35 (2.24–2.48)	48/546	2.32 (2.23–2.40)	0.116
ICAM-1	158/1223	5.34 (5.18–5.60)	48/546	5.40 (5.18–5.52)	0.926
IFN-γ	111/1223	21.99 (15.85–30.58)	39/546	17.51 (13.79–20.56)	**0.002**
IFNGR1	158/1223	1.87 (1.80–1.97)	48/546	1.88 (1.79–1.92)	0.445
IL-10	65/1223	0.48 (0.20–0.84)	15/546	0.28 (0.19–0.56)	0.333
IL-12	53/1223	35.22 (18.86–70.29)	19/546	14.81 (6.11–30.33)	**0.001**
IL-13	72/1223	2.30 (2.12–2.44)	24/546	2.33 (1.89–2.44)	0.741
IL-17A	57/1223	2.28 (0.67–4.96)	15/546	2.99 (1.86–4.99)	0.375
IL-17F	50/1223	1.02 (0.52–1.35)	12/546	0.94 (0.25–1.18)	0.418
IL-18BP	158/1223	2.49 (2.24–2.62)	48/546	2.28 (2.05–2.44)	**<0.001**
IL-1α	158/1223	1.56 (1.43–1.81)	48/546	1.52 (1.38–1.78)	0.204
IL-1β	84/1223	3.21 (1.85–4.88)	31/546	3.17 (1.89–4.81)	0.564
IL-1R1	158/1223	3.12 (3.03–3.18)	48/546	3.11 (3.07–3.16)	0.687
IL-1R2	707/1223	3.81 (3.73–3.89)	178/546	3.83 (3.77–3.89)	**0.008**
IL-1RA	707/1223	2.96 (2.82–3.12)	178/546	2.92 (2.78–3.05)	**0.011**
IL-2	115/1223	1.99 (1.82–2.13)	28/546	1.88 (1.66–2.06)	0.083
IL-22	30/1223	1.46 (0.99–1.72)	7/546	1.31 (0.84–1.46)	0.506
IL-23	158/1223	2.58 (2.45–2.70)	48/546	2.56 (2.45–2.65)	0.259
IL-27	32/1223	161.14 (62.70–211.88)	18/546	117.50 (48.72–188.24)	0.467
IL-28A	91/1223	2.12 (1.80–2.56)	27/546	2.05 (1.80–2.16)	0.177

IL-2Rα	158/1223	2.73 (2.60–2.86)	48/546	2.63 (2.53–2.72)	**<0.001**
IL-31	145/1223	2.06 (1.95–2.18)	43/546	2.06 (1.93–2.21)	0.905
IL-33	109/1223	6.13 (2.89–12.73)	33/546	3.07 (2.25–5.80)	**0.004**
IL-5	111/1223	3.78 (2.88–4.61)	38/546	3.90 (3.47–4.50)	0.275
IL-6	730/1223	3.42 (3.06–3.72)	290/546	3.18 (2.91–3.38)	**<0.001**
IL-6Rα	158/1223	4.08 (4.03–4.13)	48/546	4.07 (4.03–4.12)	0.444
IL-8	158/1223	1.34 (1.22–1.48)	48/546	1.29 (1.20–1.36)	**0.007**
IL-9	33/1223	470.60 (241.68–1432.94)	6/546	263.29 (52.12–558.71)	0.302
M-CSF	60/1223	104.13 (43.40–172.14)	16/546	58.42 (29.66–166.84)	0.268
MDC	158/1223	2.86 (2.74–2.95)	48/546	2.83 (2.70–2.91)	0.190
MIF	157/1223	3.75 (3.58–3.95)	48/546	3.60 (3.44–3.83)	**<0.001**
MMP-1	158/1223	3.41 (3.25–3.59)	48/546	3.30 (3.12–3.45)	**0.009**
MMP-12	20/1223	103.16 (49.27–157.49)	7/546	53.62 (35.45–91.67)	0.280
MMP-13	128/1223	2.51 (2.33–2.65)	40/546	2.54 (2.35–2.60)	0.874
MMP-2	605/1223	5.35 (5.27–5.44)	143/546	5.35 (5.27–5.44)	0.792
MMP-3	158/1223	4.14 (3.95–4.37)	47/546	4.09 (3.98–4.19)	0.167
MMP-7	157/1223	3.46 (3.32–3.65)	48/546	3.32 (3.18–3.41)	**<0.001**
MMP-8	705/1223	3.49 (3.25–3.76)	178/546	3.57 (3.35–3.80)	**0.012**
MMP-9	158/1223	5.31 (5.12–5.53)	48/546	5.35 (5.24–5.47)	0.262
MPO	158/1223	5.11 (4.87–5.31)	48/546	5.08 (4.95–5.32)	0.710
P-selectin	158/1223	4.56 (4.46–4.65)	48/546	4.60 (4.55–4.66)	0.053
PF4	156/1223	6.95 (6.85–7.05)	45/546	6.92 (6.87–7.05)	0.888
PTX3	158/1223	3.01 (2.83–3.24)	48/546	3.04 (2.92–3.22)	0.669
TACI	149/1223	1.04 (0.85–1.21)	45/546	1.04 (0.91–1.20)	0.941
TGF-β	735/1223	8.00 (7.52–8.17)	295/546	8.07 (7.71–8.20)	**0.002**
TNF-α	734/1223	2.96 (2.65–3.14)	294/546	2.86 (2.63–2.98)	**<0.001**
TNFR1	707/1223	3.69 (3.60–3.79)	178/546	3.63 (3.57–3.71)	**<0.001**
TNFR2	157/1223	3.35 (3.21–3.55)	48/546	3.32 (3.18–3.36)	**0.009**
VCAM-1	158/1223	5.99 (5.86–6.12)	48/546	5.86 (5.79–5.94)	**<0.001**
VEGF	158/1223	1.94 (1.71–2.07)	48/546	1.84 (1.72–2.10)	0.811
VEGF-C	151/1223	2.94 (2.73–3.13)	47/546	3.14 (2.92–3.26)	**0.001**
VEGFR3	158/1223	2.00 (1.63–2.31)	48/546	2.14 (1.86–2.39)	**0.018**

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold.

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HC: healthy controls; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; PF4: platelet factor 4; PTX3: pentraxin 3; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

* Mixed connective tissue disease, primary antiphospholipid syndrome, primary Sjögren's syndrome, rheumatoid arthritis, and systemic sclerosis.

Supplementary Table 7. Serum levels of selected autoimmunity-associated cytokines in patients with SLE versus other autoimmune diseases* in the PRECISESADS study population

Cytokines	SLE		AID		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	258/422	6.04 (5.84–6.17)	735/1223	6.02 (5.89–6.13)	0.176
CCL13	194/422	2.16 (2.01–2.27)	707/1223	2.19 (2.07–2.34)	**0.001**
CCL17	194/422	2.80 (2.62–3.02)	705/1223	2.80 (2.58–2.99)	0.562
CCL18	45/422	4.60 (4.49–4.68)	158/1223	4.66 (4.51–4.75)	**0.046**
CCL2	45/422	2.65 (2.50–2.71)	158/1223	2.66 (2.56–2.79)	0.088
CCL20	45/422	1.68 (1.48–1.86)	158/1223	1.71 (1.51–1.91)	0.404
CCL3	38/422	2.31 (2.15–2.47)	139/1223	2.32 (2.20–2.49)	0.500
CCL4	184/422	2.23 (2.08–2.49)	640/1223	2.17 (2.02–2.54)	0.179
CCL5	45/422	4.67 (4.46–4.81)	158/1223	4.66 (4.54–4.78)	0.833
CCL7	44/422	1.99 (1.81–2.30)	157/1223	2.07 (1.85–2.31)	0.573
CCL8	194/422	1.92 (1.76–2.05)	707/1223	1.88 (1.73–2.01)	**0.007**
CRP	162/422	6.16 (5.61–6.57)	602/1223	6.22 (5.75–6.58)	0.468
CXCL1	25/422	2.09 (1.94–2.20)	91/1223	2.17 (2.00–2.32)	0.155
CXCL10	194/422	1.45 (1.29–1.77)	707/1223	1.45 (1.25–1.68)	0.125
CXCL11	45/422	2.46 (2.29–2.55)	158/1223	2.45 (2.36–2.54)	0.826
CXCL13	194/422	2.02 (1.85–2.24)	705/1223	1.95 (1.78–2.10)	**<0.001**
CXCL16	45/422	3.11 (3.04–3.19)	158/1223	3.05 (2.99–3.13)	**0.001**
CXCL5	45/422	3.06 (2.87–3.27)	158/1223	3.17 (3.02–3.33)	**0.040**
CXCL9	45/422	2.78 (2.67–3.00)	149/1223	2.85 (2.75–2.96)	0.197
DcR1	45/422	3.47 (3.33–3.64)	158/1223	3.51 (3.37–3.67)	0.610
DcR3	45/422	2.64 (2.49–2.73)	157/1223	2.72 (2.58–2.91)	**0.018**
E-selectin	45/422	4.40 (4.26–4.49)	158/1223	4.40 (4.27–4.52)	0.386
EGF	45/422	2.27 (2.06–2.44)	158/1223	2.23 (2.04–2.36)	0.462
Fas	45/422	3.89 (3.83–4.02)	158/1223	3.89 (3.77–3.97)	0.162
FasL	194/422	1.65 (1.49–1.78)	704/1223	1.60 (1.45–1.73)	**0.004**
FGF2	45/422	2.18 (2.06–2.26)	158/1223	2.15 (2.07–2.28)	0.889
FGF21	44/422	3.33 (3.18–3.45)	157/1223	3.41 (3.30–3.53)	**0.004**
G-CSF	45/422	1.48 (1.41–1.55)	155/1223	1.48 (1.36–1.58)	0.917
Galactin-3	45/422	3.89 (3.79–3.98)	158/1223	3.90 (3.83–3.98)	0.714
GDF15	194/422	2.89 (2.70–3.11)	705/1223	3.00 (2.80–3.19)	**<0.001**
GH	45/422	3.43 (2.96–3.62)	157/1223	3.10 (2.72–3.52)	**0.037**
HGF	45/422	2.26 (2.14–2.41)	158/1223	2.35 (2.24–2.48)	**0.015**
ICAM-1	45/422	5.39 (5.24–5.61)	158/1223	5.34 (5.18–5.60)	0.376
IFN-γ	32/422	26.09 (21.99–32.58)	111/1223	21.99 (15.85–30.58)	0.051
IFNGR1	45/422	1.88 (1.84–2.00)	158/1223	1.87 (1.80–1.97)	0.161
IL-10	23/422	0.54 (0.22–1.12)	65/1223	0.48 (0.20–0.84)	0.638
IL-12	13/422	10.70 (6.58–28.37)	53/1223	35.22 (18.86–70.29)	**0.005**
IL-13	22/422	2.21 (2.05–2.30)	72/1223	2.30 (2.12–2.44)	**0.038**
IL-17A	18/422	1.94 (0.62–3.35)	57/1223	2.28 (0.67–4.96)	0.539
IL-17F	18/422	1.11 (0.76–1.52)	50/1223	1.02 (0.52–1.35)	0.483
IL-18BP	45/422	2.43 (2.32–2.64)	158/1223	2.49 (2.24–2.62)	0.733
IL-1α	45/422	1.61 (1.44–1.72)	158/1223	1.56 (1.43–1.81)	0.921
IL-1β	25/422	4.49 (3.21–7.15)	84/1223	3.21 (1.85–4.88)	**0.012**
IL-1R1	45/422	3.17 (3.06–3.23)	158/1223	3.12 (3.03–3.18)	**0.049**
IL-1R2	194/422	3.84 (3.74–3.90)	707/1223	3.81 (3.73–3.89)	**0.017**
IL-1RA	192/422	3.01 (2.89–3.19)	707/1223	2.96 (2.82–3.12)	**0.001**
IL-2	32/422	1.98 (1.82–2.09)	115/1223	1.99 (1.82–2.13)	0.987
IL-22	7/422	1.24 (0.96–1.30)	30/1223	1.46 (0.99–1.72)	0.276
IL-23	45/422	2.61 (2.50–2.71)	158/1223	2.58 (2.45–2.70)	0.723
IL-27	21/422	185.83 (99.39–281.72)	32/1223	161.14 (62.70–211.88)	0.291
IL-28A	26/422	2.38 (1.86–2.68)	91/1223	2.12 (1.80–2.56)	0.343
IL-2Rα	45/422	2.72 (2.62–2.89)	158/1223	2.73 (2.60–2.86)	0.688

IL-31	38/422	2.10 (2.02–2.17)	145/1223	2.06 (1.95–2.18)	0.470
IL-33	29/422	3.48 (2.19–5.21)	109/1223	6.13 (2.89–12.73)	**0.013**
IL-5	32/422	3.72 (3.10–4.16)	111/1223	3.78 (2.88–4.61)	0.720
IL-6	256/422	3.33 (2.90–3.60)	730/1223	3.42 (3.06–3.72)	**0.006**
IL-6Rα	45/422	4.08 (4.01–4.11)	158/1223	4.08 (4.03–4.13)	0.457
IL-8	45/422	1.28 (1.16–1.41)	158/1223	1.34 (1.22–1.48)	0.068
IL-9	7/422	302.42 (194.84–529.25)	33/1223	470.60 (241.68–1432.94)	0.255
M-CSF	13/422	55.62 (31.77–67.73)	60/1223	104.13 (43.40–172.14)	**0.011**
MDC	45/422	2.87 (2.70–2.96)	158/1223	2.86 (2.74–2.95)	0.983
MIF	44/422	3.79 (3.55–3.95)	157/1223	3.75 (3.58–3.95)	0.755
MMP-1	45/422	3.29 (3.02–3.49)	158/1223	3.41 (3.25–3.59)	**0.030**
MMP-12	5/422	107.31 (98.79–130.23)	20/1223	103.16 (49.27–157.49)	0.760
MMP-13	41/422	2.58 (2.39–2.73)	128/1223	2.51 (2.33–2.65)	0.227
MMP-2	164/422	5.33 (5.26–5.42)	605/1223	5.35 (5.27–5.44)	0.150
MMP-3	45/422	4.22 (3.99–4.45)	158/1223	4.14 (3.95–4.37)	0.092
MMP-7	45/422	3.40 (3.24–3.55)	157/1223	3.46 (3.32–3.65)	**0.045**
MMP-8	193/422	3.51 (3.26–3.78)	705/1223	3.49 (3.25–3.76)	0.470
MMP-9	45/422	5.28 (5.02–5.44)	158/1223	5.31 (5.12–5.53)	0.182
MPO	45/422	5.12 (4.81–5.29)	158/1223	5.11 (4.87–5.31)	0.951
P-selectin	45/422	4.60 (4.54–4.68)	158/1223	4.56 (4.46–4.65)	0.121
PF4	44/422	6.87 (6.79–6.97)	156/1223	6.95 (6.85–7.05)	**0.004**
PTX3	45/422	2.97 (2.80–3.33)	158/1223	3.01 (2.83–3.24)	0.922
TACI	43/422	1.20 (0.92–1.28)	149/1223	1.04 (0.85–1.21)	0.106
TGF-β	258/422	8.01 (7.78–8.15)	735/1223	8.00 (7.52–8.17)	0.660
TNF-α	258/422	2.95 (2.63–3.15)	734/1223	2.96 (2.65–3.14)	0.863
TNFR1	194/422	3.72 (3.62–3.81)	707/1223	3.69 (3.60–3.79)	**0.029**
TNFR2	45/422	3.40 (3.19–3.58)	157/1223	3.35 (3.21–3.55)	0.500
VCAM-1	45/422	6.05 (5.95–6.16)	158/1223	5.99 (5.86–6.12)	0.110
VEGF	45/422	1.77 (1.65–2.00)	158/1223	1.94 (1.71–2.07)	**0.025**
VEGF-C	41/422	3.00 (2.80–3.16)	151/1223	2.94 (2.73–3.13)	0.372
VEGFR3	45/422	2.14 (1.75–2.36)	158/1223	2.00 (1.63–2.31)	0.169

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold.

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; PF4: platelet factor 4; N/A: not applicable; N/A: not applicable; PTX3: pentraxin 3; SLE: systemic lupus erythematosus; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

* Mixed connective tissue disease, primary antiphospholipid syndrome, primary Sjögren's syndrome, rheumatoid arthritis, and systemic sclerosis.

Supplementary Table 8. Serum levels of selected autoimmunity-associated cytokines in patients with pAPS versus healthy controls in the PRECISESADS study population

Cytokines	pAPS		HC		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	34/97	5.96 (5.68–6.03)	295/546	5.97 (5.87–6.05)	0.466
CCL13	57/97	2.07 (1.93–2.21)	178/546	2.15 (2.04–2.26)	**0.012**
CCL17	57/97	2.57 (2.34–2.90)	178/546	2.71 (2.50–2.87)	0.080
CCL18	7/97	4.53 (4.45–4.60)	48/546	4.49 (4.38–4.55)	0.279
CCL2	7/97	2.52 (2.46–2.53)	48/546	2.61 (2.55–2.70)	**0.003**
CCL20	7/97	1.77 (1.62–2.11)	48/546	1.58 (1.46–1.78)	0.114
CCL3	7/97	2.30 (2.22–2.43)	42/546	2.30 (2.13–2.46)	0.989
CCL4	50/97	2.18 (2.06–2.32)	160/546	2.20 (1.95–2.52)	0.967
CCL5	7/97	4.66 (4.58–4.72)	48/546	4.69 (4.55–4.84)	0.465
CCL7	7/97	1.92 (1.72–1.95)	45/546	1.93 (1.62–2.21)	0.788
CCL8	57/97	1.74 (1.66–1.87)	178/546	1.82 (1.72–1.94)	**0.010**
CRP	52/97	6.22 (5.91–6.36)	143/546	5.97 (5.42–6.36)	**0.015**
CXCL1	5/97	2.30 (2.09–2.46)	27/546	2.04 (1.91–2.30)	0.082
CXCL10	57/97	1.31 (1.19–1.51)	178/546	1.28 (1.13–1.40)	0.050
CXCL11	7/97	2.39 (2.34–2.49)	48/546	2.36 (2.27–2.46)	0.331
CXCL13	57/97	1.82 (1.74–1.95)	175/546	1.78 (1.69–1.89)	0.073
CXCL16	7/97	3.01 (2.98–3.09)	48/546	3.07 (3.02–3.10)	0.392
CXCL5	7/97	3.09 (3.02–3.25)	48/546	3.15 (3.04–3.38)	0.795
CXCL9	6/97	2.72 (2.71–2.77)	47/546	2.78 (2.67–2.86)	0.407
DcR1	7/97	3.61 (3.52–3.77)	48/546	3.53 (3.39–3.60)	0.088
DcR3	7/97	2.71 (2.65–2.82)	47/546	2.64 (2.48–2.75)	0.110
E-selectin	7/97	4.37 (4.28–4.51)	48/546	4.38 (4.21–4.50)	0.739
EGF	7/97	2.31 (2.22–2.34)	48/546	2.30 (2.04–2.39)	0.757
Fas	7/97	3.86 (3.80–3.92)	48/546	3.86 (3.82–3.90)	0.912
FasL	57/97	1.70 (1.55–1.80)	178/546	1.62 (1.54–1.73)	**0.043**
FGF2	7/97	2.14 (2.10–2.17)	48/546	2.12 (2.06–2.24)	0.771
FGF21	7/97	3.35 (3.20–3.47)	48/546	3.35 (3.17–3.46)	0.791
G-CSF	7/97	1.44 (1.32–1.52)	47/546	1.39 (1.31–1.46)	0.652
Galactin-3	7/97	3.86 (3.83–3.89)	48/546	3.85 (3.78–3.91)	0.683
GDF15	57/97	2.74 (2.67–2.98)	178/546	2.70 (2.57–2.84)	**0.005**
GH	7/97	3.10 (2.93–3.31)	48/546	3.02 (2.61–3.42)	0.762
HGF	7/97	2.35 (2.33–2.49)	48/546	2.32 (2.23–2.40)	0.216
ICAM-1	7/97	5.34 (5.31–5.52)	48/546	5.40 (5.18–5.52)	0.853
IFN-γ	4/97	48.08 (30.91–223.32)	39/546	17.51 (13.79–20.56)	**0.008**
IFNGR1	7/97	1.97 (1.91–2.01)	48/546	1.88 (1.79–1.92)	**0.022**
IL-10	4/97	0.37 (0.19–0.81)	15/546	0.28 (0.19–0.56)	0.841
IL-12	3/97	15.89 (10.20–16.37)	19/546	14.81 (6.11–30.33)	N/A
IL-13	5/97	2.29 (2.29–2.29)	24/546	2.33 (1.89–2.44)	0.706
IL-17A	4/97	1.11 (0.46–13.72)	15/546	2.99 (1.86–4.99)	0.395
IL-17F	3/97	1.17 (0.82–1.56)	12/546	0.94 (0.25–1.18)	N/A
IL-18BP	7/97	2.45 (2.42–2.58)	48/546	2.28 (2.05–2.44)	**0.017**
IL-1α	7/97	1.54 (1.47–1.65)	48/546	1.52 (1.38–1.78)	0.810
IL-1β	3/97	3.90 (3.56–5.34)	31/546	3.17 (1.89–4.81)	N/A
IL-1R1	7/97	3.16 (3.10–3.22)	48/546	3.11 (3.07–3.16)	0.365
IL-1R2	57/97	3.85 (3.78–3.89)	178/546	3.83 (3.77–3.89)	0.513
IL-1RA	57/97	2.97 (2.89–3.13)	178/546	2.92 (2.78–3.05)	**0.012**
IL-2	6/97	1.92 (1.85–2.14)	28/546	1.88 (1.66–2.06)	0.259
IL-22	1/97	0.81 (0.81–0.81)	7/546	1.31 (0.84–1.46)	N/A
IL-23	7/97	2.57 (2.52–2.63)	48/546	2.56 (2.45–2.65)	0.791
IL-27	3/97	162.33 (108.01–959.04)	18/546	117.50 (48.72–188.24)	N/A
IL-28A	3/97	2.35 (2.07–2.64)	27/546	2.05 (1.80–2.16)	N/A
IL-2Rα	7/97	2.72 (2.66–2.88)	48/546	2.63 (2.53–2.72)	**0.007**

IL-31	6/97	2.13 (1.80–2.19)	43/546	2.06 (1.93–2.21)	0.939
IL-33	4/97	22.42 (4.52–70.84)	33/546	3.07 (2.25–5.80)	0.117
IL-5	4/97	4.25 (3.61–4.53)	38/546	3.90 (3.47–4.50)	0.881
IL-6	33/97	3.24 (2.70–3.42)	290/546	3.18 (2.91–3.38)	0.588
IL-6Rα	7/97	4.09 (4.08–4.13)	48/546	4.07 (4.03–4.12)	0.216
IL-8	7/97	1.48 (1.37–1.62)	48/546	1.29 (1.20–1.36)	**0.007**
IL-9	2/97	2319.28 (1424.38–3214.17)	6/546	263.29 (52.12–558.71)	N/A
M-CSF	3/97	354.61 (193.93–578.10)	16/546	58.42 (29.66–166.84)	N/A
MDC	7/97	2.83 (2.79–2.90)	48/546	2.83 (2.70–2.91)	0.776
MIF	7/97	3.69 (3.51–3.91)	48/546	3.60 (3.44–3.83)	0.378
MMP-1	7/97	3.32 (3.16–3.43)	48/546	3.30 (3.12–3.45)	0.931
MMP-12	2/97	76.15 (56.19–96.11)	7/546	53.62 (35.45–91.67)	N/A
MMP-13	6/97	2.61 (2.32–2.69)	40/546	2.54 (2.35–2.60)	0.557
MMP-2	52/97	5.28 (5.23–5.33)	143/546	5.35 (5.27–5.44)	**<0.001**
MMP-3	7/97	4.10 (3.84–4.31)	47/546	4.09 (3.98–4.19)	0.980
MMP-7	7/97	3.38 (3.34–3.57)	48/546	3.32 (3.18–3.41)	0.181
MMP-8	57/97	3.57 (3.37–3.84)	178/546	3.57 (3.35–3.80)	0.770
MMP-9	7/97	5.35 (5.24–5.49)	48/546	5.35 (5.24–5.47)	0.931
MPO	7/97	5.44 (5.26–5.50)	48/546	5.08 (4.95–5.32)	0.059
P-selectin	7/97	4.63 (4.60–4.66)	48/546	4.60 (4.55–4.66)	0.544
PF4	7/97	6.86 (6.82–7.03)	45/546	6.92 (6.87–7.05)	0.461
PTX3	7/97	3.48 (3.04–3.52)	48/546	3.04 (2.92–3.22)	0.067
TACI	7/97	1.08 (0.86–1.21)	45/546	1.04 (0.91–1.20)	0.862
TGF-β	34/97	8.13 (7.55–8.20)	295/546	8.07 (7.71–8.20)	0.899
TNF-α	34/97	2.87 (1.80–3.08)	294/546	2.86 (2.63–2.98)	0.490
TNFR1	57/97	3.67 (3.63–3.78)	178/546	3.63 (3.57–3.71)	**0.019**
TNFR2	6/97	3.35 (3.24–3.42)	48/546	3.32 (3.18–3.36)	0.426
VCAM-1	7/97	5.96 (5.84–6.08)	48/546	5.86 (5.79–5.94)	0.116
VEGF	7/97	1.76 (1.74–1.91)	48/546	1.84 (1.72–2.10)	0.378
VEGF-C	7/97	2.72 (2.60–3.10)	47/546	3.14 (2.92–3.26)	0.067
VEGFR3	7/97	2.48 (1.84–2.50)	48/546	2.14 (1.86–2.39)	0.587

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold.

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HC: healthy controls; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; N/A: not applicable; pAPS: primary antiphospholipid syndrome; PF4: platelet factor 4; PTX3: pentraxin 3; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

Supplementary Table 9. Serum levels of selected autoimmunity-associated cytokines in patients with SLE versus pAPS in the PRECISESADS study population

Cytokines	SLE		pAPS		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	258/422	6.04 (5.84–6.17)	34/97	5.96 (5.68–6.03)	**0.006**
CCL13	194/422	2.16 (2.01–2.27)	57/97	2.07 (1.93–2.21)	**0.040**
CCL17	194/422	2.80 (2.62–3.02)	57/97	2.57 (2.34–2.90)	**<0.001**
CCL18	45/422	4.60 (4.49–4.68)	7/97	4.53 (4.45–4.60)	0.545
CCL2	45/422	2.65 (2.50–2.71)	7/97	2.52 (2.46–2.53)	**0.028**
CCL20	45/422	1.68 (1.48–1.86)	7/97	1.77 (1.62–2.11)	0.228
CCL3	38/422	2.31 (2.15–2.47)	7/97	2.30 (2.22–2.43)	0.863
CCL4	184/422	2.23 (2.08–2.49)	50/97	2.18 (2.06–2.32)	0.314
CCL5	45/422	4.67 (4.46–4.81)	7/97	4.66 (4.58–4.72)	0.694
CCL7	44/422	1.99 (1.81–2.30)	7/97	1.92 (1.72–1.95)	0.298
CCL8	194/422	1.92 (1.76–2.05)	57/97	1.74 (1.66–1.87)	**<0.001**
CRP	162/422	6.16 (5.61–6.57)	52/97	6.22 (5.91–6.36)	0.774
CXCL1	25/422	2.09 (1.94–2.20)	5/97	2.30 (2.09–2.46)	0.106
CXCL10	194/422	1.45 (1.29–1.77)	57/97	1.31 (1.19–1.51)	**0.001**
CXCL11	45/422	2.46 (2.29–2.55)	7/97	2.39 (2.34–2.49)	0.668
CXCL13	194/422	2.02 (1.85–2.24)	57/97	1.82 (1.74–1.95)	**<0.001**
CXCL16	45/422	3.11 (3.04–3.19)	7/97	3.01 (2.98–3.09)	0.097
CXCL5	45/422	3.06 (2.87–3.27)	7/97	3.09 (3.02–3.25)	0.563
CXCL9	45/422	2.78 (2.67–3.00)	6/97	2.72 (2.71–2.77)	0.236
DcR1	45/422	3.47 (3.33–3.64)	7/97	3.61 (3.52–3.77)	0.097
DcR3	45/422	2.64 (2.49–2.73)	7/97	2.71 (2.65–2.82)	0.249
E-selectin	45/422	4.40 (4.26–4.49)	7/97	4.37 (4.28–4.51)	0.793
EGF	45/422	2.27 (2.06–2.44)	7/97	2.31 (2.22–2.34)	0.599
Fas	45/422	3.89 (3.83–4.02)	7/97	3.86 (3.80–3.92)	0.461
FasL	194/422	1.65 (1.49–1.78)	57/97	1.70 (1.55–1.80)	0.156
FGF2	45/422	2.18 (2.06–2.26)	7/97	2.14 (2.10–2.17)	0.658
FGF21	44/422	3.33 (3.18–3.45)	7/97	3.35 (3.20–3.47)	0.841
G-CSF	45/422	1.48 (1.41–1.55)	7/97	1.44 (1.32–1.52)	0.362
Galactin-3	45/422	3.89 (3.79–3.98)	7/97	3.86 (3.83–3.89)	0.618
GDF15	194/422	2.89 (2.70–3.11)	57/97	2.74 (2.67–2.98)	**0.036**
GH	45/422	3.43 (2.96–3.62)	7/97	3.10 (2.93–3.31)	0.356
HGF	45/422	2.26 (2.14–2.41)	7/97	2.35 (2.33–2.49)	0.143
ICAM-1	45/422	5.39 (5.24–5.61)	7/97	5.34 (5.31–5.52)	0.937
IFN-γ	32/422	26.09 (21.99–32.58)	4/97	48.08 (30.91–223.32)	0.144
IFNGR1	45/422	1.88 (1.84–2.00)	7/97	1.97 (1.91–2.01)	0.316
IL-10	23/422	0.54 (0.22–1.12)	4/97	0.37 (0.19–0.81)	0.785
IL-12	13/422	10.70 (6.58–28.37)	3/97	15.89 (10.20–16.37)	N/A
IL-13	22/422	2.21 (2.05–2.30)	5/97	2.29 (2.29–2.29)	0.471
IL-17A	18/422	1.94 (0.62–3.35)	4/97	1.11 (0.46–13.72)	0.798
IL-17F	18/422	1.11 (0.76–1.52)	3/97	1.17 (0.82–1.56)	N/A
IL-18BP	45/422	2.43 (2.32–2.64)	7/97	2.45 (2.42–2.58)	0.461
IL-1α	45/422	1.61 (1.44–1.72)	7/97	1.54 (1.47–1.65)	0.655
IL-1β	25/422	4.49 (3.21–7.15)	3/97	3.90 (3.56–5.34)	N/A
IL-1R1	45/422	3.17 (3.06–3.23)	7/97	3.16 (3.10–3.22)	0.854
IL-1R2	194/422	3.84 (3.74–3.90)	57/97	3.85 (3.78–3.89)	0.631
IL-1RA	192/422	3.01 (2.89–3.19)	57/97	2.97 (2.89–3.13)	0.388
IL-2	32/422	1.98 (1.82–2.09)	6/97	1.92 (1.85–2.14)	0.779
IL-22	7/422	1.24 (0.96–1.30)	1/97	0.81 (0.81–0.81)	N/A
IL-23	45/422	2.61 (2.50–2.71)	7/97	2.57 (2.52–2.63)	0.629
IL-27	21/422	185.83 (99.39–281.72)	3/97	162.33 (108.01–959.04)	N/A
IL-28A	26/422	2.38 (1.86–2.68)	3/97	2.35 (2.07–2.64)	N/A
IL-2Rα	45/422	2.72 (2.62–2.89)	7/97	2.72 (2.66–2.88)	0.581

IL-31	38/422	2.10 (2.02–2.17)	6/97	2.13 (1.80–2.19)	0.771
IL-33	29/422	3.48 (2.19–5.21)	4/97	22.42 (4.52–70.84)	0.116
IL-5	32/422	3.72 (3.10–4.16)	4/97	4.25 (3.61–4.53)	0.465
IL-6	256/422	3.33 (2.90–3.60)	33/97	3.24 (2.70–3.42)	0.142
IL-6Rα	45/422	4.08 (4.01–4.11)	7/97	4.09 (4.08–4.13)	0.329
IL-8	45/422	1.28 (1.16–1.41)	7/97	1.48 (1.37–1.62)	**0.021**
IL-9	7/422	302.42 (194.84–529.25)	2/97	2319.28 (1424.38–3214.17)	N/A
M-CSF	13/422	55.62 (31.77–67.73)	3/97	354.61 (193.93–578.10)	N/A
MDC	45/422	2.87 (2.70–2.96)	7/97	2.83 (2.79–2.90)	0.753
MIF	44/422	3.79 (3.55–3.95)	7/97	3.69 (3.51–3.91)	0.904
MMP-1	45/422	3.29 (3.02–3.49)	7/97	3.32 (3.16–3.43)	0.854
MMP-12	5/422	107.31 (98.79–130.23)	2/97	76.15 (56.19–96.11)	N/A
MMP-13	41/422	2.58 (2.39–2.73)	6/97	2.61 (2.32–2.69)	0.848
MMP-2	164/422	5.33 (5.26–5.42)	52/97	5.28 (5.23–5.33)	**0.001**
MMP-3	45/422	4.22 (3.99–4.45)	7/97	4.10 (3.84–4.31)	0.213
MMP-7	45/422	3.40 (3.24–3.55)	7/97	3.38 (3.34–3.57)	0.655
MMP-8	193/422	3.51 (3.26–3.78)	57/97	3.57 (3.37–3.84)	0.184
MMP-9	45/422	5.28 (5.02–5.44)	7/97	5.35 (5.24–5.49)	0.290
MPO	45/422	5.12 (4.81–5.29)	7/97	5.44 (5.26–5.50)	**0.049**
P-selectin	45/422	4.60 (4.54–4.68)	7/97	4.63 (4.60–4.66)	0.581
PF4	44/422	6.87 (6.79–6.97)	7/97	6.86 (6.82–7.03)	0.564
PTX3	45/422	2.97 (2.80–3.33)	7/97	3.48 (3.04–3.52)	0.068
TACI	43/422	1.20 (0.92–1.28)	7/97	1.08 (0.86–1.21)	0.485
TGF-β	258/422	8.01 (7.78–8.15)	34/97	8.13 (7.55–8.20)	0.324
TNF-α	258/422	2.95 (2.63–3.15)	34/97	2.87 (1.80–3.08)	0.211
TNFR1	194/422	3.72 (3.62–3.81)	57/97	3.67 (3.63–3.78)	0.135
TNFR2	45/422	3.40 (3.19–3.58)	6/97	3.35 (3.24–3.42)	0.658
VCAM-1	45/422	6.05 (5.95–6.16)	7/97	5.96 (5.84–6.08)	0.356
VEGF	45/422	1.77 (1.65–2.00)	7/97	1.76 (1.74–1.91)	1.000
VEGF-C	41/422	3.00 (2.80–3.16)	7/97	2.72 (2.60–3.10)	0.293
VEGFR3	45/422	2.14 (1.75–2.36)	7/97	2.48 (1.84–2.50)	0.272

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold.

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HC: healthy controls; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; N/A: not applicable; pAPS: primary antiphospholipid syndrome; PF4: platelet factor 4; PTX3: pentraxin 3; SLE: systemic lupus erythematosus; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

Supplementary Table 10. Serum levels of selected autoimmunity-associated cytokines in patients with pAPS versus other autoimmune diseases* in the PRECISESADS study population

Cytokines	pAPS		AID		*p* value
	n/N	Serum levels (pg/mL)	n/N	Serum levels (pg/mL)	
BAFF	34/97	5.96 (5.68–6.03)	701/1126	6.03 (5.89–6.13)	**0.009**
CCL13	57/97	2.07 (1.93–2.21)	650/1126	2.21 (2.08–2.34)	**<0.001**
CCL17	57/97	2.57 (2.34–2.90)	648/1126	2.81 (2.60–3.00)	**<0.001**
CCL18	7/97	4.53 (4.45–4.60)	151/1126	4.67 (4.51–4.75)	0.216
CCL2	7/97	2.52 (2.46–2.53)	151/1126	2.67 (2.58–2.80)	**0.001**
CCL20	7/97	1.77 (1.62–2.11)	151/1126	1.70 (1.51–1.90)	0.473
CCL3	7/97	2.30 (2.22–2.43)	132/1126	2.32 (2.20–2.50)	0.859
CCL4	50/97	2.18 (2.06–2.32)	590/1126	2.17 (2.02–2.55)	0.982
CCL5	7/97	4.66 (4.58–4.72)	151/1126	4.66 (4.54–4.78)	0.627
CCL7	7/97	1.92 (1.72–1.95)	150/1126	2.09 (1.85–2.31)	0.126
CCL8	57/97	1.74 (1.66–1.87)	650/1126	1.89 (1.74–2.01)	**<0.001**
CRP	52/97	6.22 (5.91–6.36)	550/1126	6.22 (5.75–6.59)	0.818
CXCL1	5/97	2.30 (2.09–2.46)	86/1126	2.17 (1.99–2.30)	0.216
CXCL10	57/97	1.31 (1.19–1.51)	650/1126	1.47 (1.26–1.69)	**0.002**
CXCL11	7/97	2.39 (2.34–2.49)	151/1126	2.45 (2.36–2.54)	0.415
CXCL13	57/97	1.82 (1.74–1.95)	648/1126	1.96 (1.80–2.12)	**<0.001**
CXCL16	7/97	3.01 (2.98–3.09)	151/1126	3.06 (2.99–3.13)	0.720
CXCL5	7/97	3.09 (3.02–3.25)	151/1126	3.17 (3.03–3.34)	0.670
CXCL9	6/97	2.72 (2.71–2.77)	143/1126	2.86 (2.76–2.97)	**0.020**
DcR1	7/97	3.61 (3.52–3.77)	151/1126	3.51 (3.35–3.66)	0.086
DcR3	7/97	2.71 (2.65–2.82)	150/1126	2.72 (2.58–2.92)	0.966
E-selectin	7/97	4.37 (4.28–4.51)	151/1126	4.40 (4.27–4.52)	0.829
EGF	7/97	2.31 (2.22–2.34)	151/1126	2.23 (2.04–2.35)	0.213
Fas	7/97	3.86 (3.80–3.92)	151/1126	3.89 (3.77–3.97)	0.720
FasL	57/97	1.70 (1.55–1.80)	647/1126	1.59 (1.45–1.72)	**<0.001**
FGF2	7/97	2.14 (2.10–2.17)	151/1126	2.16 (2.07–2.29)	0.710
FGF21	7/97	3.35 (3.20–3.47)	150/1126	3.41 (3.31–3.53)	0.262
G-CSF	7/97	1.44 (1.32–1.52)	148/1126	1.48 (1.37–1.58)	0.259
Galactin-3	7/97	3.86 (3.83–3.89)	151/1126	3.90 (3.83–3.98)	0.368
GDF15	57/97	2.74 (2.67–2.98)	648/1126	3.01 (2.83–3.20)	**<0.001**
GH	7/97	3.10 (2.93–3.31)	150/1126	3.10 (2.71–3.53)	0.993
HGF	7/97	2.35 (2.33–2.49)	151/1126	2.36 (2.23–2.48)	0.540
ICAM-1	7/97	5.34 (5.31–5.52)	151/1126	5.34 (5.18–5.61)	0.645
IFN-γ	4/97	48.08 (30.91–223.32)	107/1126	21.98 (15.79–29.00)	0.051
IFNGR1	7/97	1.97 (1.91–2.01)	151/1126	1.87 (1.80–1.96)	0.067
IL-10	4/97	0.37 (0.19–0.81)	61/1126	0.48 (0.20–0.84)	0.859
IL-12	3/97	15.89 (10.20–16.37)	50/1126	37.17 (23.16–77.15)	N/A
IL-13	5/97	2.29 (2.29–2.29)	67/1126	2.30 (2.12–2.44)	0.723
IL-17A	4/97	1.11 (0.46–13.72)	53/1126	2.34 (0.72–4.96)	0.650
IL-17F	3/97	1.17 (0.82–1.56)	47/1126	1.02 (0.52–1.34)	N/A
IL-18BP	7/97	2.45 (2.42–2.58)	151/1126	2.49 (2.23–2.62)	0.642
IL-1α	7/97	1.54 (1.47–1.65)	151/1126	1.57 (1.43–1.82)	0.771
IL-1β	3/97	3.90 (3.56–5.34)	81/1126	3.18 (1.74–4.81)	N/A
IL-1R1	7/97	3.16 (3.10–3.22)	151/1126	3.12 (3.03–3.18)	0.325
IL-1R2	57/97	3.85 (3.78–3.89)	650/1126	3.80 (3.72–3.88)	**0.018**
IL-1RA	57/97	2.97 (2.89–3.13)	650/1126	2.95 (2.81–3.12)	0.256
IL-2	6/97	1.92 (1.85–2.14)	109/1126	1.99 (1.79–2.13)	0.739
IL-22	1/97	0.81 (0.81–0.81)	29/1126	1.46 (1.01–1.73)	N/A
IL-23	7/97	2.57 (2.52–2.63)	151/1126	2.58 (2.45–2.70)	0.774
IL-27	3/97	162.33 (108.01–959.04)	29/1126	161.14 (65.70–211.40)	N/A
IL-28A	3/97	2.35 (2.07–2.64)	88/1126	2.12 (1.80–2.56)	N/A
IL-2Rα	7/97	2.72 (2.66–2.88)	151/1126	2.74 (2.59–2.86)	0.529

IL-31	6/97	2.13 (1.80–2.19)	139/1126	2.06 (1.95–2.18)	0.816
IL-33	4/97	22.42 (4.52–70.84)	105/1126	6.13 (2.89–12.04)	0.318
IL-5	4/97	4.25 (3.61–4.53)	107/1126	3.67 (2.88–4.61)	0.681
IL-6	33/97	3.24 (2.70–3.42)	697/1126	3.42 (3.07–3.73)	**0.004**
IL-6Rα	7/97	4.09 (4.08–4.13)	151/1126	4.08 (4.03–4.13)	0.373
IL-8	7/97	1.48 (1.37–1.62)	151/1126	1.33 (1.22–1.48)	0.094
IL-9	2/97	2319.28 (1424.38–3214.17)	31/1126	417.44 (241.68–1409.85)	N/A
M-CSF	3/97	354.61 (193.93–578.10)	57/1126	104.13 (43.52–162.59)	N/A
MDC	7/97	2.83 (2.79–2.90)	151/1126	2.86 (2.74–2.96)	0.701
MIF	7/97	3.69 (3.51–3.91)	150/1126	3.75 (3.59–3.95)	0.610
MMP-1	7/97	3.32 (3.16–3.43)	151/1126	3.41 (3.25–3.59)	0.170
MMP-12	2/97	76.15 (56.19–96.11)	18/1126	103.16 (57.08–160.43)	N/A
MMP-13	6/97	2.61 (2.32–2.69)	122/1126	2.51 (2.33–2.64)	0.668
MMP-2	52/97	5.28 (5.23–5.33)	553/1126	5.37 (5.28–5.45)	**<0.001**
MMP-3	7/97	4.10 (3.84–4.31)	151/1126	4.15 (3.95–4.37)	0.670
MMP-7	7/97	3.38 (3.34–3.57)	150/1126	3.46 (3.32–3.65)	0.734
MMP-8	57/97	3.57 (3.37–3.84)	648/1126	3.48 (3.23–3.75)	**0.048**
MMP-9	7/97	5.35 (5.24–5.49)	151/1126	5.30 (5.12–5.54)	0.563
MPO	7/97	5.44 (5.26–5.50)	151/1126	5.08 (4.86–5.27)	**0.025**
P-selectin	7/97	4.63 (4.60–4.66)	151/1126	4.56 (4.45–4.65)	0.281
PF4	7/97	6.86 (6.82–7.03)	149/1126	6.95 (6.85–7.05)	0.439
PTX3	7/97	3.48 (3.04–3.52)	151/1126	3.01 (2.82–3.23)	**0.035**
TACI	7/97	1.08 (0.86–1.21)	142/1126	1.04 (0.86–1.21)	0.914
TGF-β	34/97	8.13 (7.55–8.20)	701/1126	8.00 (7.52–8.16)	0.299
TNF-α	34/97	2.87 (1.80–3.08)	700/1126	2.96 (2.65–3.14)	0.169
TNFR1	57/97	3.67 (3.63–3.78)	650/1126	3.69 (3.60–3.80)	0.839
TNFR2	6/97	3.35 (3.24–3.42)	151/1126	3.36 (3.20–3.56)	0.913
VCAM-1	7/97	5.96 (5.84–6.08)	151/1126	5.99 (5.86–6.12)	0.764
VEGF	7/97	1.76 (1.74–1.91)	151/1126	1.95 (1.71–2.09)	0.206
VEGF-C	7/97	2.72 (2.60–3.10)	144/1126	2.94 (2.75–3.13)	0.496
VEGFR3	7/97	2.48 (1.84–2.50)	151/1126	1.99 (1.60–2.30)	0.122

Data are presented as medians (interquartile range). In case of missing values, the total number of patients with available data is indicated. All *p* values are derived from non-parametrical Mann-Whitney *U* tests. Statistically significant *p* values are in bold.

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18; C-C motif chemokine ligand 18; CCL2; C-C motif chemokine ligand 2; CCL20; C-C motif chemokine ligand 20; CCL3; C-C motif chemokine ligand 3; CCL4; C-C motif chemokine ligand 4; CCL5; C-C motif chemokine ligand 5; CCL7; C-C motif chemokine ligand 7; CCL8; C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-10: interleukin 10; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-2: interleukin 2; IL-22: interleukin 22; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; MPO: myeloperoxidase; N/A: not applicable; pAPS: primary antiphospholipid syndrome; PF4: platelet factor 4; PTX3: pentraxin 3; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

* Mixed connective tissue disease, primary Sjögren's syndrome, rheumatoid arthritis, and systemic sclerosis.

Supplementary Table 11. Correlations between cytokine levels and disease activity in patients with SLE

Cytokines	n/N	Coefficient	*p* value
BAFF	32/297	0.15	**0.019**
CCL13	23/297	0.01	0.848
CCL17	13/297	0.08	0.312
CCL18	18/297	-0.21	0.221
CCL2	25/297	0.15	0.401
CCL20	21/297	0.32	0.059
CCL3	29/297	-0.24	0.201
CCL4	32/297	-0.09	0.264
CCL5	13/297	0.15	0.402
CCL7	251/297	0.26	0.142
CCL8	168/297	0.21	**0.005**
CRP	146/297	0.11	0.176
CXCL1	35/297	-0.36	0.133
CXCL10	35/297	0.04	0.595
CXCL11	35/297	0.18	0.290
CXCL13	35/297	0.18	**0.021**
CXCL16	35/297	-0.05	0.769
CXCL5	35/297	-0.22	0.208
CXCL9	168/297	0.25	0.152
DcR1	34/297	0.20	0.248
DcR3	35/297	0.02	0.893
E-selectin	35/297	-0.03	0.883
EGF	35/297	-0.09	0.613
Fas	168/297	0.12	0.492
FasL	19/297	-0.01	0.849
FGF2	35/297	-0.02	0.907
FGF21	35/297	0.00	0.994
G-CSF	35/297	-0.11	0.535
Galactin-3	35/297	0.12	0.505
GDF15	35/297	0.12	0.137
GH	166/297	0.07	0.667
HGF	35/297	0.19	0.280
ICAM-1	168/297	0.02	0.908
IFN-γ	18/297	0.00	0.995
IFNGR1	35/297	0.22	0.202
IL-10	35/297	0.18	0.403
IL-12	22/297	0.44	0.133
IL-13	35/297	0.36	0.141
IL-17A	35/297	0.29	0.241
IL-17F	21/297	0.35	0.170
IL-18BP	29/297	0.21	0.230
IL-1α	17/297	-0.01	0.977
IL-1β	168/297	0.20	0.330
IL-1R1	249/297	0.38	**0.023**
IL-1R2	35/297	0.01	0.942
IL-1RA	35/297	0.19	**0.015**
IL-23	168/297	0.06	0.742
IL-27	34/297	0.08	0.721
IL-28A	168/297	0.27	0.230
IL-2Rα	35/297	0.11	0.516
IL-31	34/297	-0.13	0.503
IL-33	35/297	0.19	0.321
IL-5	29/297	0.09	0.631
IL-6	160/297	0.12	0.062

IL-6Rα	35/297	0.06	0.718
IL-8	35/297	-0.01	0.961
M-CSF	32/297	0.28	0.347
MDC	148/297	-0.11	0.518
MIF	35/297	0.19	0.293
MMP-1	35/297	0.25	0.146
MMP-13	167/297	0.11	0.536
MMP-2	35/297	0.01	0.879
MMP-3	35/297	0.33	0.053
MMP-7	35/297	0.04	0.800
MMP-8	35/297	0.16	**0.035**
MMP-9	35/297	0.16	0.352
MPO	34/297	0.32	0.061
P-selectin	35/297	-0.35	**0.040**
PF4	33/297	-0.06	0.750
PTX3	168/297	0.38	**0.023**
TACI	251/297	-0.17	0.337
TGF-β	251/297	0.07	0.246
TNF-α	168/297	0.12	0.061
TNFR1	35/297	0.10	0.188
TNFR2	35/297	0.00	0.981
VCAM-1	35/297	0.27	0.118
VEGF	35/297	-0.21	0.234
VEGF-C	32/297	-0.20	0.279
VEGFR3	35/297	-0.16	0.348

Spearman's rank correlation coefficients of correlations between levels of different cytokines and SLEDAI-2K scores. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold. Only comparisons with sufficient numbers of observations (n≥10) are included.

BAFF: B cell activating factor belonging to the tumour necrosis factor ligand family; CCL13: C-C motif chemokine ligand 13; CCL17: C-C motif chemokine ligand 17; CCL18: C-C motif chemokine ligand 18; CCL2: C-C motif chemokine ligand 2; CCL20: C-C motif chemokine ligand 20; CCL3: C-C motif chemokine ligand 3; CCL4: C-C motif chemokine ligand 4; CCL5: C-C motif chemokine ligand 5; CCL7: C-C motif chemokine ligand 7; CCL8: C-C motif chemokine ligand 8; CRP: C-reactive protein: CXCL1: C-X-C motif ligand 1; CXCL10: C-X-C motif ligand 10; CXCL11: C-X-C motif ligand 11; CXCL13: C-X-C motif ligand 13: CXCL16: C-X-C motif ligand 16; CXCL5: C-X-C motif ligand 5; CXCL9: C-X-C motif ligand 9; DcR1: decoy receptor 1; DcR3: decoy receptor 3; EGF: epidermal growth factor; FasL; Fas ligand; FGF2: fibroblast growth factor 2; FGF21: fibroblast growth factor 21; G-CSF: granulocyte colony-stimulating factor; GDF15: growth differentiation factor 15; GH: growth hormone; HGF: hepatocyte growth factor; ICAM-1: intercellular adhesion molecule 1; IFN-γ: interferon γ; IFNGR1: interferon γ receptor 1; IL-12: interleukin 12; IL-13: interleukin 13; IL-17A: interleukin 17A; IL-17F: interleukin 17F; IL-18BP: interleukin 18 binding protein; IL-1α: interleukin 1 α; IL-1β: interleukin 1β; IL-1R1: interleukin 1 receptor type 1; IL-1R2: interleukin 1 receptor type 2; IL-1RA: interleukin 1 receptor antagonist; IL-23: interleukin 23; IL-27: interleukin 27; IL-28A: interleukin 28A; IL-2Rα: interleukin 2 receptor α; IL-31: interleukin 31; IL-33: interleukin 33; IL-5: interleukin 5; IL-6: interleukin 6; IL-6Rα: interleukin 6 receptor α; IL-8: interleukin 8; IL-9; interleukin 9; M-CSF: macrophage colony-stimulating factor; MDC: macrophage-derived chemokine; MIF: macrophage migration inhibitory factor; MMP-1: matrix metalloproteinase 1; MMP-12: matrix metalloproteinase 12; MMP-13: matrix metalloproteinase 13; MMP-2: matrix metalloproteinase 12; MMP-3: matrix metalloproteinase 3; MMP-7: matrix metalloproteinase 7; MMP-8: matrix metalloproteinase 8; MMP-9: matrix metalloproteinase 9; PF4: platelet factor 4; PTX3: pentraxin 3; SLEDAI-2K: Systemic Lupus Erythematosus Disease Activity Index 2000; TACI: transmembrane activator and calcium modulator and cyclophilin ligand interactor; TGF-β: transforming growth factor β; TNF-α: tumour necrosis factor α; TNFR1: tumour necrosis factor receptor 1; TNFR2: tumour necrosis factor receptor 2; VCAM-1: vascular cell adhesion protein 1; VEGF: vascular endothelial growth factor; VEGF-C: vascular endothelial growth factor C; VEGFR3: vascular endothelial growth factor receptor 3.

Supplementary Table 12. Correlations between positivity for selected serological markers and the cSLEDAI-2K CNS domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	0.01	0.801
B2M	338/347	0.01	0.808
C3C	347/347	-0.06	0.285
C4	347/347	0.05	0.342
CHROMATIN	312/347	0.02	0.671
CLG	342/347	0.01	0.861
CLM	342/347	0.04	0.505
DNA	342/347	-0.07	0.198
PFLC	220/347	0.05	0.468
RF	346/347	0.07	0.202
SM	314/347	-0.06	0.266
SSA52	304/347	-0.02	0.760
SSA60	305/347	0.01	0.829
SSB	315/347	0.02	0.739
U1RNP	315/347	-0.04	0.518

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K CNS domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold. B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; CNS: central nervous system; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

14 **Supplementary Table 13.** Correlations between positivity for selected serological markers and the cSLEDAI-2K vascular domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	-0.09	0.116
B2M	338/347	-0.07	0.216
C3C	347/347	0.01	0.810
C4	347/347	0.02	0.704
CHROMATIN	312/347	-0.01	0.845
CLG	342/347	-0.09	0.108
CLM	342/347	-0.08	0.165
DNA	342/347	-0.01	0.911
PFLC	220/347	0.04	0.550
RF	346/347	0.15	**0.007**
SM	314/347	-0.05	0.344
SSA52	304/347	0.08	0.163
SSA60	305/347	0.05	0.403
SSB	315/347	0.04	0.428
U1RNP	315/347	-0.06	0.264

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K vascular domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 14. Correlations between positivity for selected serological markers and the cSLEDAI-2K musculoskeletal domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	-0.09	0.089
B2M	338/347	-0.05	0.357
C3C	347/347	0.05	0.376
C4	347/347	0.04	0.470
CHROMATIN	312/347	0.06	0.276
CLG	342/347	-0.07	0.180
CLM	342/347	-0.07	0.185
DNA	342/347	0.06	0.287
PFLC	220/347	0.00	0.995
RF	346/347	0.06	0.276
SM	314/347	0.17	**0.002**
SSA52	304/347	0.06	0.289
SSA60	305/347	0.14	**0.014**
SSB	315/347	0.07	0.200
U1RNP	315/347	0.03	0.648

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K musculoskeletal domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

16 Supplementary Table 15. Correlations between positivity for selected serological markers and the cSLEDAI-2K renal domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	0.02	0.734
B2M	338/347	0.01	0.867
C3C	347/347	-0.01	0.900
C4	347/347	-0.03	0.562
CHROMATIN	312/347	0.19	**0.001**
CLG	342/347	0.01	0.878
CLM	342/347	-0.02	0.674
DNA	342/347	0.14	**0.008**
PFLC	220/347	0.04	0.524
RF	346/347	0.02	0.681
SM	314/347	0.05	0.425
SSA52	304/347	-0.01	0.835
SSA60	305/347	-0.03	0.644
SSB	315/347	-0.04	0.527
U1RNP	315/347	-0.03	0.611

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K renal domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold. B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 16. Correlations between positivity for selected serological markers and the cSLEDAI-2K mucocutaneous domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	0.03	0.636
B2M	338/347	0.00	0.948
C3C	347/347	0.00	0.937
C4	347/347	0.05	0.352
CHROMATIN	312/347	0.15	**0.007**
CLG	342/347	0.04	0.420
CLM	342/347	-0.04	0.486
DNA	342/347	0.07	0.228
PFLC	220/347	0.16	**0.018**
RF	346/347	-0.01	0.900
SM	314/347	0.02	0.769
SSA52	304/347	-0.01	0.902
SSA60	305/347	0.03	0.564
SSB	315/347	0.09	0.111
U1RNP	315/347	0.08	0.164

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K mucocutaneous domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

18 Supplementary Table 17. Correlations between positivity for selected serological markers and the cSLEDAI-2K serosal domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	0.01	0.887
B2M	338/347	0.03	0.549
C3C	347/347	-0.05	0.398
C4	347/347	-0.03	0.633
CHROMATIN	312/347	0.11	**0.043**
CLG	342/347	0.01	0.922
CLM	342/347	0.02	0.707
DNA	342/347	0.14	**0.010**
PFLC	220/347	0.14	**0.040**
RF	346/347	-0.04	0.457
SM	314/347	-0.03	0.581
SSA52	304/347	-0.02	0.763
SSA60	305/347	-0.03	0.581
SSB	315/347	-0.04	0.500
U1RNP	315/347	-0.02	0.716

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K serosal domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 18. Correlations between positivity for selected serological markers and the cSLEDAI-2K constitutional domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	-0.04	0.482
B2M	338/347	-0.03	0.579
C3C	347/347	0.08	0.145
C4	347/347	0.10	0.071
CHROMATIN	312/347	0.05	0.361
CLG	342/347	-0.04	0.472
CLM	342/347	-0.03	0.534
DNA	342/347	0.04	0.461
PFLC	220/347	-0.06	0.353
RF	346/347	-0.03	0.601
SM	314/347	-0.02	0.698
SSA52	304/347	0.03	0.625
SSA60	305/347	0.17	**0.004**
SSB	315/347	-0.03	0.635
U1RNP	315/347	0.02	0.665

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K constitutional domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 19. Correlations between positivity for selected serological markers and the cSLEDAI-2K haematological domain

Serological marker	n/N	Coefficient	*p* value
B2G	338/347	-0.02	0.742
B2M	338/347	-0.03	0.590
C3C	347/347	0.07	0.177
C4	347/347	0.07	0.186
CHROMATIN	312/347	0.02	0.687
CLG	342/347	-0.02	0.647
CLM	342/347	-0.03	0.564
DNA	342/347	0.03	0.621
PFLC	220/347	-0.13	0.052
RF	346/347	0.10	0.057
SM	314/347	-0.07	0.193
SSA52	304/347	0.12	**0.037**
SSA60	305/347	0.14	**0.011**
SSB	315/347	0.05	0.355
U1RNP	315/347	-0.04	0.465

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and the cSLEDAI-2K haematological domain. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; cSLEDAI-2K: clinical Systemic Lupus Erythematosus Disease Activity Index 2000; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 20. Correlations between positivity for selected serological markers and history of or current mucocutaneous manifestations

Serological marker	n/N	Coefficient	*p* value
B2G	249/253	0.04	0.503
B2M	249/253	-0.04	0.509
C3C	253/253	0.03	0.639
C4	253/253	0.02	0.769
CHROMATIN	229/253	0.06	0.357
CLG	253/253	0.08	0.201
CLM	253/253	-0.08	0.217
DNA	253/253	-0.03	0.644
PFLC	151/253	0.11	0.175
RF	252/253	0.06	0.336
SM	237/253	-0.01	0.823
SSA52	231/253	0.01	0.894
SSA60	232/253	-0.03	0.602
SSB	238/253	-0.03	0.660
U1RNP	238/253	0.06	0.333

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and any history of mucocutaneous manifestations. Mucocutaneous manifestations included malar rash, photosensitivity, acute cutaneous lupus, discoid lupus, chronic cutaneous lupus, mucosal ulcers, and alopecia. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; CNS: central nervous system; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 21. Correlations between positivity for selected serological markers and history of or current arthritis

Serological marker	n/N	Coefficient	*p* value
B2G	249/253	-0.11	0.095
B2M	249/253	-0.03	0.630
C3C	253/253	0.03	0.674
C4	253/253	-0.02	0.756
CHROMATIN	229/253	-0.02	0.747
CLG	253/253	-0.06	0.346
CLM	253/253	-0.05	0.469
DNA	253/253	0.08	0.178
PFLC	151/253	0.03	0.697
RF	252/253	0.06	0.374
SM	237/253	0.02	0.804
SSA52	231/253	-0.01	0.901
SSA60	232/253	0.04	0.512
SSB	238/253	0.03	0.640
U1RNP	238/253	0.13	0.051

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and any history of arthritis. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold. B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 22. Correlations between positivity for selected serological markers and history of or current serositis

Serological marker	n/N	Coefficient	*p* value
B2G	249/253	0.02	0.806
B2M	249/253	0.07	0.298
C3C	253/253	-0.10	0.125
C4	253/253	-0.05	0.385
CHROMATIN	229/253	0.17	**0.009**
CLG	253/253	0.03	0.603
CLM	253/253	0.03	0.628
DNA	253/253	0.18	**0.003**
PFLC	151/253	0.28	**<0.001**
RF	252/253	0.03	0.595
SM	237/253	-0.01	0.834
SSA52	231/253	0.12	0.072
SSA60	232/253	0.12	0.075
SSB	238/253	0.02	0.804
U1RNP	238/253	0.13	**0.039**

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and any history of serositis. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold. B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 23. Correlations between positivity for selected serological markers and history of or current lupus nephritis

Serological marker	n/N	Coefficient	*p* value
B2G	249/253	0.01	0.928
B2M	249/253	0.00	0.975
C3C	253/253	0.00	0.962
C4	253/253	0.01	0.900
CHROMATIN	229/253	0.17	**0.010**
CLG	253/253	0.01	0.856
CLM	253/253	-0.01	0.854
DNA	253/253	0.12	0.062
PFLC	151/253	0.07	0.374
RF	252/253	-0.02	0.726
SM	237/253	0.08	0.237
SSA52	231/253	-0.06	0.347
SSA60	232/253	0.00	0.954
SSB	238/253	-0.05	0.461
U1RNP	238/253	-0.08	0.223

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and any history of lupus nephritis. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold. B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 24. Correlations between positivity for selected serological markers and history of or current neuropsychiatric systemic lupus erythematosus

Serological marker	n/N	Coefficient	*p* value
B2G	249/253	-0.01	0.871
B2M	249/253	0.05	0.426
C3C	253/253	-0.04	0.557
C4	253/253	0.09	0.159
CHROMATIN	229/253	0.08	0.205
CLG	253/253	-0.02	0.790
CLM	253/253	0.07	0.256
DNA	253/253	-0.03	0.689
PFLC	151/253	0.08	0.350
RF	252/253	0.16	**0.010**
SM	237/253	-0.08	0.195
SSA52	231/253	0.01	0.829
SSA60	232/253	0.07	0.295
SSB	238/253	0.04	0.572
U1RNP	238/253	-0.04	0.588

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and any history of neuropsychiatric systemic lupus erythematosus. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.

Supplementary Table 25. Correlations between positivity for selected serological markers and history of or current haematological manifestations

Serological marker	n/N	Coefficient	*p* value
B2G	249/253	-0.06	0.372
B2M	249/253	-0.01	0.933
C3C	253/253	0.12	0.052
C4	253/253	0.17	**0.006**
CHROMATIN	229/253	0.10	0.128
CLG	253/253	-0.06	0.316
CLM	253/253	-0.03	0.638
DNA	253/253	0.14	**0.024**
PFLC	151/253	-0.05	0.513
RF	252/253	0.09	0.135
SM	237/253	0.06	0.377
SSA52	231/253	0.06	0.390
SSA60	232/253	0.13	**0.044**
SSB	238/253	0.15	**0.021**
U1RNP	238/253	-0.03	0.637

Phi (φ) correlations between autoantibody positivity or low levels of C3c or C4 and any history of haematological manifestations. Haematological manifestations included haemolytic anaemia, leukopenia, lymphopenia, and thrombocytopenia. In case of missing values, the total number of patients with available data is indicated. Statistically significant *p* values are in bold.

B2G: anti-β_2 glycoprotein I IgG; B2M: anti-β_2 glycoprotein I IgM; C3c: complement component 3c; C4: complement component 4; CLG: anti-cardiolipin IgG; CLM: anti-cardiolipin IgM; DNA: anti-double stranded (ds)DNA; PFLC: polyclonal free light chains of kappa and lambda type; RF: rheumatoid factor; SM: anti-Smith; SSA52: anti-SSA/Ro52; SSA60: anti-SSA/Ro60; SSB: anti-SSB/La.