Supplementary data chapter 8

Moving towards endotypes in atopic dermatitis: identification of patient clusters based on serum biomarker analysis

Judith L. Thijs[1,4*] M.D., Ian Strickland[2*] Ph.D., Carla A.F. M. Bruijnzeel-Koomen CAF[1] M.D., Ph.D., Stefan Nierkens[4] Ph.D., Barbara Giovannone[1,4] Ph.D., Edward F. Knol[1,4] Ph.D., Eszter Csomor[2] Ph.D., Bret R. Sellman[3] Ph.D., Tomas Mustelin[3] M.D., Ph.D., Matthew A. Sleeman[2] Ph.D., Marjolein S. de Bruin-Weller[1] M.D., Ph.D., Athula Herath[2] Ph.D., Julia Drylewicz[4] Ph.D., Richard D. May[2#] Ph.D., and DirkJan Hijnen[1,4#] M.D., Ph.D.

1. Department of Dermatology and Allergology, University Medical Center Utrecht, Utrecht, the Netherlands.
2. MedImmune, Granta Park, Cambridge, CB21 6GH, UK.
3. MedImmune, Gaithersburg, MD, 20878, USA.
4. Laboratory of Translational Immunology, University Medical Center Utrecht, Utrecht, The Netherlands.

*,# These authors contributed equally to this work

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Table S1. Categorization of serum mediators based on their function.

Serum mediators		
Apoptosis biomarkers	**Growth factors**	**Leukocyte migration biomarkers**
Fas	ANG-1	ICAM-1
Fas-L	ANG-2	P-selectin
KIM-1	DKK-1	
	EGF	**Neutrophil/granulocyte biomarkers**
Atopic biomarker	FGFβ	Elastase
Total IgE	HGF	ENA-78 (CXCL5)
	IL-7	GCP-2 (CXCL6)
Chemokines	SCF	GCSF
BLC (CXCL13)	Thrombopoietin	GM-CSF
BRAK (CXCL14)		GRO-α (CXCL1)
CTACK (CCL27)	**Immunomodulatory cytokines**	IL-6
MPIF (CCL23)	IL-2	NAP-2 (CXCL7)
Eotaxin (CCL11)	IL-10	S100A8
Eotaxin-3 (CCL26)	IL-12	
I-309 (CCL1)	IL-18	**Proteases and protease inhibitors**
IP-10 (CXCL10)	IL-21	Cathepsin B
ITAC (CXCL11)	IL-22	Cathepsin L
MCP-1 (CCL2)	IL-23	Cathepsin S
MCP-2 (CCL8)	IL-26	Cystatin C
MCP-3 (CCL7)	IL-27	SLPI
MCP-4 (CCL13)	IL-37	MMP-8
MDC (CCL22)	LAIR-1	MMP-9
MPIF (CCL23)	LIF	
MIG (CXCL9)	NGF	**Remodelling biomarkers**
MIP-1α (CCL3)	Oncostatin	Endoglin
MIP-1β (CCL4)	Osteoprotegerin	GDF (MIC-1)
MIP-3α (CCL20)	PD1	LAP (TGF-β)
PARC (CCL18)	Resistin	LIGHT
PF4 (CXCL4)		MMP-1
RANTES (CCL5)	**Inflammatory biomarkers**	MMP-3
SDF-1 (CXCL12)	sCD163	TIMP-1
SRPSOX (CXCL16)	M-CSF	
TARC (CCL17)	E-selectin	**Th2 cytokines**
TECK (CCL25)	IL-1α	DPP4
XCL-1	IL-1β	IL-4
	IL-1R1	IL-5
Complement pathway	IL-1R2	IL-9
C5a	IL-1R4	IL-13
	IL-1Ra	Periostin
Epithelial cytokines	sIL-2Rα	
IL-25	IL-3	**Vascular regulation**
IL-33	IL-8 (CXCL8)	PAI-1
S100A12	IL-11	PLGF
TSLP	IL-17	TIE-2
	IL-18BPa	VEGF
Galectins	IL-19	sVEGF-R1
Galectin-1	IL-20	
Galectin-3	IL-31	**Viral response**
Galectin-9	Osteopontin	IFN-α
	SAA1	IFN-β
Glucose regulation	sSCFR	IFN-γ
Adiponectin	TNF-α	IL-15
Adipsin	TACI	IL-29
Apelin	TNF-R1	TNF-β
Chemerin 4	TNF-R2	
Leptin	TREM1	**Other**
RBP4	TWEAK	ACE
	VCAM-1	BDNF
	YKL-40 (CHI3L1)	Cathepsin S
		EPO-R
	Innate immunity biomarkers	SOST
	sCD14	
	%Neutralisation of α-toxin-induced lysis	
	Serum Ig targeting alpha toxin	

Table S2. Summary of differentially expressed serum mediators that characterise the 4 AD disease clusters.

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Healthy controls
Apoptosis biomarkers					
Fas^{GM}	2229.7 $^{>N,2,3}$ (1988.6, 2499.7)	1845.1 $^{>N,<1,4}$ (1701.7, 2000.6)	1717 $^{>N,<1,4}$ (1551, 1900.8)	2255.4 $^{>N,2,3}$ (2013.4, 2526.5)	840.9 $^{<1,2,3,4}$ (721.8, 979.7)
Fas-L^{Med}	40.3 (29.5, 58.4)	54.0 $^{>3}$ (41.3, 67.4)	30.1 $^{<2,4}$ (19.2, 56.1)	57.5 $^{>3}$ (36.5, 93.6)	32.8 (31.0, 37.5)
KIM-1^{GM}	$7.3x10^{1}$ ($4.0x10^{1}$, $3.0x10^{2}$)	$8.1x10^{1>3}$ ($5.5x10^{1}$, $1.2x10^{2}$)	$3.3x10^{1<2,4}$ ($2.2x10^{1}$, $4.9x10^{1}$)	$1.0x10^{2>3}$ ($5.8x10^{1}$, $1.9x10^{2}$)	$4.4x10^{1}$ ($2.6x10^{1}$, $7.4x10^{1}$)
Chemokines					
BLC^{M}	68.7 $^{>N,2,3,<4}$ (55.6, 58.2)	42.4 $^{>3,<1,4}$ (36.1, 49.4)	28.2 $^{<N,1,2,4}$ (24.0, 33.0)	116.4 $^{>N,1,2,3}$ (83.9, 161.5)	43.8 $^{<1,4,>3}$ (32.9, 58.2)
BRAK^{Med}	541.8 $^{<4}$ (318.5, 872.7)	574.5 $^{>N}$ (389.3, 814.0)	473.7 $^{<4}$ (243.5, 747.3)	774.7 $^{>N,1,3}$ (678.3, 1131.9)	310.3 $^{<2,4}$ (195.5, 487.2)
CTACK^{Med}	432.4 $^{>,3N}$ (237.6, 720.6)	451.5 $^{>3,N}$ (287.0, 774.2)	292.5 $^{<2,3,4}$ (153.9, 555.4)	446.6 $^{>3,N}$ (283, 821)	2.5 $^{<1,2,3,4}$ (2.5, 4.3)
Eotaxin^{Med}	915.3 $^{>N,2,3,<4}$ (770.5, 1087.4)	543.2 $^{>3,N,<1,4}$ (458.0, 644.2)	258.3 $^{>N,<1,2,4}$ (220.8, 302.2)	1747.1 $^{>N,1,2,3}$ (1407.4, 2168.7)	73.6 $^{<1,2,3,4}$ (61.4, 88.3)
Eotaxin-3^{GM}	1.7 (1.7, 1.7)	1.7 (1.7, 1.7)	1.7 (1.7, 1.7)	1.7 $^{>N,3}$ (1.7, 6.6)	1.7 $^{<4}$ (1.7,1.7)
I309^{GM}	75.4 $^{>N,2,3}$ (61.0, 93.2)	29.4 $^{>N,<1,4}$ (22.8, 37.9)	25.7 $^{>N,<1,4}$ (19.2, 34.4)	67 $^{>N,2,3}$ (47.9, 93.8)	2.1 $^{<1,2,3,4}$ (2.1, 2.1)
IP-10^{GM}	503.7 $^{>N}$ (442.5, 573.4)	435.7 $^{>N,<4}$ (397.3, 477.8)	426.4 $^{>N,<4}$ (383.3, 474.4)	561 $^{>N,2,3}$ (496.6, 670.1)	280.6 $^{<1,2,3,4}$ (239.9, 328.1)
ITAC^{GM}	127.0 $^{>N}$ (100.5, 160.5)	91.5 $^{>N,<4}$ (75.6, 110.7)	105.1 $^{>N,<4}$ (87.2, 126.6)	165.4 $^{>N,2,3}$ (121.8, 224.6)	38.5 $^{<1,2,3,4}$ (29.9, 49.4)
MCP-1^{GM}	198.4 $^{>N}$ (177.9, 221.3)	179.2 $^{>N}$ (164.6, 195.2)	205.0 $^{>N}$ (186.3, 225.5)	214.2 $^{>N}$ (190.4, 240.9)	79.1 $^{<1,2,3,4}$ (67.9, 92.2)
MCP-3^{Med}	5.5 $^{<4}$ (5.5, 39.6)	22.0 $^{<4,>3}$ (16.8, 49.9)	5.5 $^{<2,4}$ (5.5, 5.5)	117.8 $^{>N,1,2,3}$ (27.5, 195)	5.5 $^{<4}$ (5.5, 29.9)
MCP-4^{Med}	55.9 (44.2, 88.8)	61.0 (41.3, 103.5)	57.1 $^{<N}$ (24.2, 99.1)	67.2 (46.3, 111.1)	103.8 $^{>3}$ (53.4, 136.7)
MIG^{GM}	232.4 $^{>N,2,3}$ (201.6, 268.0)	112.0 $^{<1,4,>3}$ (98.1, 127.7)	73.1 $^{<N,1,2,4}$ (60.7, 88.1)	282.7 $^{>N,2,3}$ (245.5, 325.6)	97.2 $^{<1,4,>3}$ (90.2, 104.8)
MIP-1α^{Med}	116.2 $^{>N,<4}$ (72.7, 154.7)	106.1 $^{>N,<4}$ (77.6, 152.9)	86.9 $^{>N,<4}$ (57.4, 143.2)	144.9 $^{>N,1,2,3}$ (117.1, 191.9)	16.5 $^{<1,2,3,4}$ (16.5, 16.5)
MIP-3α^{Med}	10.7 $^{>N,3}$ (6.5, 15.8)	7.7 $^{>N,<4}$ (5.4, 10.2)	6.1 $^{>N,<1,4}$ (2.9, 10.7)	13 $^{>N,2,3}$ (7.7, 17)	0.6 $^{<1,2,3,4}$ (0.6, 0.6)
PARC^{Med}	$8.7x10^{6}$ $^{>N,2,3,4}$ ($3.9x10^{6}$, $8.7x10^{6}$)	$6.3x10^{5}$ $^{<1}$ ($2.7x10^{5}$, $2.5x10^{6}$)	$1.0x10^{6}$ $^{<1}$ ($3.7x10^{5}$, $8.7x10^{6}$)	$9.3x10^{5}$ $^{<1}$ ($3.8x10^{5}$, $3.5x10^{6}$)	$4.7x10^{5}$ $^{<1}$ ($2.8x10^{5}$, $7.1x10^{5}$)
SDF-1α^{Med}	$7.2x10^{2}$ $^{>2,4}$ ($4.3x10^{2}$, $1.1x10^{3}$)	$2.6x10^{1}$ $^{<N,1,3}$ ($2.6x10^{1}$, $2.6x10^{1}$)	$7.7x10^{2}$ $^{>2,4}$ ($4.5x10^{2}$, $1.3x10^{3}$)	$2.6x10^{1}$ $^{<N,1,3}$ ($2.6x10^{1}$, $1.3x10^{2}$)	$3.1x10^{2}$ $^{>2,4}$ ($2.4x10^{2}$, $5.3x10^{2}$)
TARC^{Med}	6294.8 $^{>N,2,3}$ (1765.1, 8943.8)	2880.2 $^{>N,<1}$ (612.1, 8943.8)	2194.6 $^{>N,<1}$ (961.4, 8943.8)	2508.1 $^{>N}$ (1204.2, 5125.6)	96.5 $^{<1,2,3,4}$ (67.7, 137.1)
TECK^{Med}	513.5 $^{<N}$ (323.4, 742.3)	411.3 $^{<N}$ (286.8, 578.6)	394.9 $^{<N}$ (292.5, 634.1)	507.5 (412.7, 674.6)	915.9 $^{>1,2,3}$ (562.1, 1324.1)
XCL-1^{Med}	8.5 $^{<N,2,4}$ (8.5, 8.5)	32.7 $^{>N,1,3,<4}$ (8.5, 61.3)	8.5 $^{<N,2,4}$ (8.5, 8.5)	71.9 $^{>N,1,2,3}$ (50, 118.1)	8.5 $^{>1,3,<4}$ (8.5, 61.5)
Complement pathway					
C5a^{GM}	$1.7x10^{5}$ $^{>2,3,N}$ ($1.4x10^{5}$, $2.2x10^{5}$)	$8.4x10^{4}$ $^{<1,4,>N}$ ($7.2x10^{4}$, $9.8x10^{4}$)	$1.1x10^{5}$ $^{<1,>N}$ ($8.5x10^{4}$, $1.3x10^{5}$)	$1.4x10^{5}$ $^{>N}$ ($1.1x10^{5}$, $1.8x10^{5}$)	$5.2x10^{4}$ $^{<1,2,3,4}$ ($4.3x10^{4}$, $6.3x10^{4}$)
Epithelial cytokines					
IL-25^{Med}	$1.5x10^{4}$ $^{>N,2,3}$ ($1.0x10^{4}$, 2.2x104)	$6.7x10^{3}$ $^{>N,3,<1,4}$ ($4.9x10^{3}$, $9.8x10^{3}$)	$4.5x10^{3}$ $^{>N,<1,2,4}$ ($1.6x10^{3}$, $6.2x10^{3}$)	$1.8x10^{4}$ $^{>N,2,3}$ ($1.5x10^{4}$, $2.4x10^{4}$)	$8.2x10^{1}$ $^{<1,2,3,4}$ ($8.2x10^{1}$, $5.8x10^{2}$)

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Healthy controls
IL-33^{GM}	92.8$^{>N,2,3}$ (73.2, 117.8)	38.7$^{>N,3,<1,4}$ (31.6, 47.4)	22.5$^{>N,<1,2,4}$ (18.8, 27.0)	119.8$^{>N,2,3}$ (93.5, 153.5)	9.2$^{<1,2,3,4}$ (6.0, 14.1)
S100A12^{Med}	4.0x10$^{6<2,4}$ (3.4x10^{6}, 5.3x10^{6})	7.9x10$^{6>1,3}$ (6.5x10^{6}, 8.7x10^{6})	3.7x10$^{6<2,4}$ (2.5x10^{6}, 5.0x10^{6})	8.5x10$^{6>1,3}$ (6.6x10^{6}, 9.4x10^{6})	NA
TSLP^{GM}	24.4$^{>N,2,3,<4}$ (20.9, 28.4)	16.4$^{>N,3,<1,4}$ (14.3, 18.7)	6.9$^{>N,<1,2,4}$ (5.6, 8.5)	57.0$^{>N,1,2,3}$ (45.5, 71.3)	3.3$^{<1,2,3,4}$ (1.6, 6.7)
Galectins					
Galectin-1^{M}	2.8x10$^{4>N,3}$ (2.6x10^{4}, 3.0x10^{4})	2.8x10$^{4>N,3}$ (2.6x10^{4}, 3.0x10^{4})	2.4x10$^{4>N,<1,2}$ (2.3x10^{4}, 2.6x10^{4})	2.8x10$^{4>N}$ (2.5x10^{4}, 3.1x10^{4})	1.9x10$^{4<1,2,3,4}$ (1.6x10^{4}, 2.1x10^{4})
Galectin-9^{Med}	1x10$^{1<N}$ (1x10^{1,} 1x10^{1})	1x10$^{1<N,>1,3}$ (1x10^{1,} 1x10^{5})	1x10$^{1<N}$ (1x10^{1,} 1x10^{5})	1x10$^{1<N,>1,3}$ (1x10^{1,} 1x10^{5})	3.2x10$^{3>1,2,3,4}$ (2.3x10^{3,} 4.4x10^{3})
Glucose regulation					
Adipsin^{Med}	1.7x10$^{4<4}$ (1.5x10^{4}, 1.7x10^{4})	1.7x10$^{4>N,3}$ (1.6x10^{4}, 1.8x10^{4})	1.6x10$^{4<2,4}$ (1.5x10^{4}, 1.7x10^{4})	1.9x10$^{4>N,1,3}$ (1.8x10^{4}, 2.0x10^{4})	1.5x10$^{4<2,4}$ (1.4x10^{4}, 1.7x10^{4})
Chemerin 4^{Med}	6.8x10$^{3<N,4}$ (6.8x10^{3}, 2.0x10^{4})	1.5x10$^{4<N}$ (6.8x10^{3}, 2.1x10^{4})	6.8x10$^{3<N,4}$ (6.8x10^{3}, 1.6x10^{4})	2.0x10$^{4>1,3}$ (6.8x10^{3}, 2.8x10^{4})	1.9x10$^{4>1,2,3}$ (1.7x10^{4}, 2.5x10^{4})
RBP4^{Med}	2.7x10^{7} (2.5x10^{7}, 3.0x10^{7})	2.5x10$^{7<N}$ (2.2x10^{7}, 2.6x10^{7})	2.6x10$^{7<N}$ (2.3x10^{7}, 2.9x10^{7})	2.7x10^{7} (2.5x10^{7}, 2.9x10^{7})	2.8x10$^{7>2,3}$ (2.7x10^{7}, 2.9x10^{7})
Growth factors					
EGF^{GM}	23.0$^{>2,3}$ (20.4, 25.8)	12.6$^{<N,1,4}$ (11.0, 14.5)	9.5$^{<N,1,4}$ (8.3, 10.9)	27.1$^{>2,3}$ (23.5, 31.1)	24.3$^{>2,3}$ (12.2, 48.6)
FGFb^{Med}	7.8$^{<4}$ (7.8, 7.8)	7.8$^{<4}$ (7.8, 7.8)	7.8$^{<4}$ (7.8, 7.8)	7.8$^{>N,1,2,3}$ (7.8, 136.6)	7.8$^{<4}$ (7.8, 7.8)
HGF^{GM}	1237.5$^{>N,>2,3}$ (1118.1, 1369.6)	824.1$^{>N,<1,4}$ (754.3, 901.1)	844.0$^{>N,<1,4}$ (770.8, 924.0)	1426.1$^{>N,2,3}$ (1249.4, 1627.8)	629.1$^{<1,2,3,4}$ (521.8, 758.6)
IL-7^{M}	46.8$^{>N,2,3}$ (42.2, 51.4)	30.7$^{>N,<1,4}$ (28.3, 33.2)	27.7$^{>N,<1,4}$ (25.2, 30.1)	51.6$^{>N,2,3}$ (46.0, 57.2)	5.2$^{<1,2,3,4}$ (3.8, 6.6)
SCF	29.0$^{<N,2,4}$ (16.8, 35.6)	40.4$^{>1,3}$ (32.3, 52.1)	22.0$^{<N,2,4}$ (14.0, 31.2)	53.6$^{>1,3}$ (44.2, 70.0)	50.8$^{>1,3}$ (37.7, 59)
Immunomodulatory cytokines					
IL-2^{Med}	2.1$^{<N}$ (2.1, 2.1)	2.1 (2.1, 2.1)	2.1$^{<N}$ (2.1, 2.1)	2.1$^{>1,2,3}$ (2.1, 5.4)	2.1$^{>1,3}$ (2.1, 2.1)
IL-10^{Med}	1.7$^{<2,4}$ (1.7, 1.7)	6.4$^{>N,1,3}$ (4.4, 8.6)	1.7$^{<2,4}$ (1.7, 1.7)	9.0$^{>N,1,3}$ (5.5, 12.8)	1.7$^{<2,4}$ (1.7, 1.7)
IL-12^{Med}	102.7$^{>N,2,3}$ (62.3, 154.9)	54.1$^{>N,3,<1,4}$ (43.5, 77.3)	29.5$^{>N,<1,2,4}$ (11.8, 44.2)	135$^{>N,2,3}$ (112.5, 169.2)	3.3$^{<1,2,3,4}$ (3.3, 11.7)
IL-18^{GM}	370.0$^{>N,2,3}$ (318.4, 430.1)	214.2$^{>N,<1,4}$ (179.1, 256.2)	284.4$^{>N,<1}$ (211.8, 291.3)	314.9$^{>N,2}$ (245.3, 404.3)	82.5$^{<1,2,3,4}$ (66.4, 102.4)
IL-21^{GM}	7.5x10$^{3>N,3,<4}$ (6.6x10^{3}, 8.4x10^{3})	6.3x10$^{3>N,3,<4}$ (5.7x10^{3}, 3.7x10^{3})	2.4x10$^{3>N,<1,2,4}$ (1.7x10^{3}, 3.5x10^{3})	1.7x10$^{4>N,1,2,3}$ (1.4x10^{4}, 2.2x10^{4})	3.5x10$^{2<1,2,3,4}$ (1.1x10^{2}, 1.2x10^{3})
IL-22^{Med}	341.5$^{>N}$ (58.4, 554.7)	254.5$^{>N,3}$ (106.6, 523.1)	117.0$^{>N,<2}$ (31.9, 368.9)	280.8$^{>N}$ (104.7, 420.5)	1.8$^{<1,2,3,4}$ (1.8, 1.8)
IL-23^{Med}	6.8x10$^{2>N,3}$ (1.1x10^{2}, 1.7x10^{3})	2.3x10$^{2>N,3}$ (1.5x10^{2}, 9.6x10^{2})	9.8x10$^{1>1,<4}$ (1.5x10^{1}, 7.3x10^{2})	1.3x10$^{3>N,3}$ (2.5x10^{2}, 4.9x10^{3})	1.5x10$^{1<1,2,4}$ (1.5x10^{1}, 6.9x10^{1})
IL-26^{Med}	5.7x10$^{2<2,4,>3}$ (3.8x10^{1}, 2.2x10^{3})	5.8x10$^{3>N,1,3}$ (4.5x10^{3}, 6.9x10^{3})	3.8x10$^{1<N,1,2,4}$ (3.8x10^{1}, 4.2x10^{2})	8.6x10$^{3>N,1,3}$ (6.5x10^{3}, 9.9x10^{3})	6.5x10$^{2<2,4,>3}$ (1.4x10^{2}, 1.5x10^{3})
IL-27^{Med}	1.6x10$^{1<N}$ (1.6x10^{1}, 1.6x10^{1})	1.6x10$^{1<N,>3}$ (1.6x10^{1}, 1.9x10^{4})	1.6x10$^{1<N}$ (1.6x10^{1}, 1.6x10^{1})	1.6x10$^{1<N}$ (1.6x10^{1}, 1.9x10^{4})	1.4x10^{3} (4.7x10^{2}, 2.7x10^{3})
IL-37^{Med}	1397.3$^{>N,2,3,<4}$ (829.1, 2333.5)	950.9$^{>N,3<1,4}$ (554.2, 1276.3)	44.2$^{<1,2,4}$ (44.2, 360.4)	2540.7$^{>N,1,2,3}$ (2081.5, 3156)	44.2$^{<1,2,4}$ (44.2, 44.2)
LAIR-1^{Med}	182.1$^{<4}$ (182.1, 182.1)	182.1$^{<4}$ (182.1, 182.1)	182.1$^{<4}$ (182.1, 182.1)	966.4$^{>N,1,2,3}$ (182.1, 2330.2)	182.1$^{<4}$ (182.1, 182.1)
LIF^{Med}	4.8$^{<2,4}$ (4.8, 4.8)	4.8$^{>N,1,3}$ (4.8, 26.2)	4.8$^{<2,4}$ (4.8, 4.8)	13.5$^{>N,1,3}$ (4.8, 36.9)	4.8$^{<2,4}$ (4.8, 4.8)
NGF^{Med}	4.4$^{<2,4}$ (1.8, 10.1)	8.6$^{<4,>N,1,3}$ (2.2, 14.5)	1.8$^{<2,4}$ (1.8, 5.7)	18.5$^{>N,1,2,3}$ (10.4, 24.7)	2.8$^{<2,4}$ (1.8, 6.7)

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Healthy controls
Oncostatin M^{Med}	11.4$^{>N}$ (3.3, 36.7)	20.8$^{>N}$ (7.0, 47.7)	3.3$^{<2,4}$ (3.3, 11.9)	41.1$^{>3,N}$ (14.3, 59.2)	3.3$^{<1,2,4}$ (3.3, 3.3)
Osteoptegrin^{Med}	2091.7$^{>N}$ (1885.7, 2388.2)	2738.5$^{>N,3,<4}$ (2220.4, 3078.4)	1949.5$^{>N,<2}$ (1345.1, 2188.7)	2781.8$^{>N,2}$ (2201.4, 3140.6)	7.6$^{<1,2,3,4}$ (7.6, 7.6)
PD1^{Med}	4.6x10^{0} (4.6x10^{0}, 5.8x10^{3})	2.3x10^{2} (4.6x10^{0}, 5.0x10^{3})	4.6x10$^{0<4}$ (4.6x10^{0}, 3.5x10^{2})	3.1x10$^{2>3}$ (9.5x10^{1}, 2.3x10^{3})	2.1x10^{1} (4.6x10^{0}, 2.0x10^{2})
Resistin^{Med}	9.8x10$^{3>2,3}$ (8.4x10^{3}, 1.2x10^{4})	6.5x10$^{3<N,1,4}$ (5.6x10^{3}, 7.6x10^{3})	6.2x10$^{3<N,1}$ (4.9x10^{3}, 8.1x10^{3})	8.7x10$^{3>2,3}$ (7.1x10^{3}, 9.8x10^{3})	9.4x10$^{3>2,3}$ (8.9x10^{3}, 1.0x10^{4})
Inflammatory biomarkers					
E-selectin^{Med}	2.3x10^{4} (1.8x10^{4}, 3.4x10^{4})	2.2x10$^{4<N}$ (1.5x10^{4}, 2.8x10^{4})	2.1x10$^{4<N}$ (1.6x10^{4}, 3.1x10^{4})	2.2x10$^{4<N}$ (1.7x10^{4}, 2.8x10^{4})	6.4x10$^{4>2,3,4}$ (4.3x10^{4}, 8.5x10^{4})
IL-1α^{Med}	22.5$^{>N,3<2,4}$ (8.3, 43.7)	34.6$^{>N,1,3<4}$ (25.4, 50.5)	10.4$^{<1,2,4}$ (1.1, 20.1)	77.4$^{>N,1,2,3}$ (57.2, 89.5)	4.7$^{<1,2,4}$ (3.1, 8.1)
IL-1β^{GM}	22.7$^{>N,2,3,<4}$ (19.7, 26.2)	10.9$^{>N,3<1,4}$ (9.5, 12.4)	7.4$^{>N,<1,2,4}$ (6.4, 8.6)	35.5$^{>N,1,2,3}$ (28.8, 43.9)	1.1$^{<1,2,3,4}$ (0.7, 1.9)
IL-1R1^{Med}	88.4$^{>N,3,<4}$ (65.2, 112.6)	89.7$^{>N,3,<4}$ (68.1, 109.0)	37.2$^{>N,<1,2,4}$ (18.8, 55.3)	160.5$^{>N,1,2,3}$ (145.6, 201.3)	5.6$^{<1,2,3,4}$ (2.7, 7.5)
IL-1R2^{Med}	2046.8 (1400.9, 2356.7)	1865.4$^{>N}$ (1441.7, 2275.3)	1688.5 (1215.7, 2576.7)	1745 (1366.4, 2120.5)	1473.4$^{<2}$ (842.3, 2059.5)
IL-1R4^{Med}	3.0$^{<4}$ (0.6, 11.6)	9.1$^{>3}$ (0.6, 17.2)	0.6$^{<2,4}$ (0.6, 9.0)	14.6$^{>N,3}$ (4.3, 22.8)	0.6$^{<4}$ (0.6, 12.8)
IL-1Ra^{Med}	37.1$^{<2,4,>3}$ (17.3, 69.4)	50.9$^{>N,1,3,<4}$ (42.8, 74.0)	4.2$^{<N,1,2,4}$ (4.2, 11.2)	118.0$^{>N,1,2,3}$ (92.9, 163.0)	4.2$^{<2,3,4}$ (4.2, 88.0)
sIL-2Rα^{Med}	23.5$^{<N,4}$ (23.5, 23.5)	23.5 (23.5, 23.5)	23.5$^{<N,4}$ (23.5, 23.5)	23.5$^{>1,3}$ (23.5, 465.4)	23.5$^{>1,3}$ (23.5, 335.7)
IL-6^{Med}	13.7$^{>N,<4}$ (8.9, 28.5)	23.0$^{>N,3}$ (14.9, 51.5)	7.8$^{>N,<2,4}$ (3.4, 20.8)	29.7$^{>N,1,3}$ (22.6, 53.7)	1.4$^{<1,2,3,4}$ (1.4, 10.2)
IL-8^{GM}	20.0$^{>3,<4}$ (14.2, 28.1)	15.0$^{<4}$ (11.4, 17.9)	8.6$^{<N,1,4}$ (6.1, 12.0)	68.1$^{>N,1,2,3}$ (43.0, 107.9)	20.9$^{>3,<4}$ (12.6, 34.4)
IL-11^{Med}	4.0$^{>N,<2,4}$ (4.0, 26.1)	70.3$^{>N,1,3}$ (30.9, 108.8)	4.0$^{>N,<2,4}$ (4.0, 9.6)	113.7$^{>N,1,2,3}$ (83.5, 227.7)	4$^{<1,2,3,4}$ (4, 4)
IL-17^{Med}	2.8$^{<2,4}$ (2.8, 6.2)	7.7$^{>N,1,3,<4}$ (2.8, 17.1)	2.8$^{<2,4}$ (2.8, 2.8)	24$^{>N,1,2,3}$ (15, 35.4)	2.8$^{<2,4}$ (2.8, 2.8)
IL-18BPa^{Med}	2535.7$^{>N}$ (1880.6, 3002.2)	2435.6$^{<4}$ (1791.8, 2868.9)	2091.2$^{<4}$ (1580.6, 2767.5)	2816.9$^{>N,2,3}$ (2604.1, 3281.5)	1416.3$^{<1,4}$ (1121.3, 1740.4)
IL-19^{Med}	1715.6$^{>2,3}$ (1272.7, 2164.4)	1184.9$^{>3,<1,4}$ (896.0, 1543.2)	733.7$^{<1,2,4}$ (422.2, 911.4)	2316.8$^{>2,3}$ (1921.1, 2714.7)	NA
IL-20^{Med}	42.4$^{>N,<4}$ (42.4, 42.4)	42.4$^{>N,<4}$ (42.4, 42.4)	42.4$^{>N,<4}$ (42.4, 42.4)	122.2$^{>N,1,2,3}$ (102.1, 160.5)	42.4$^{<1,2,3}$ (42.4, 42,4)
TNF-α^{Med}	1.1$^{<2,4}$ (1.1, 1.1)	3.6$^{>N,1,3,<4}$ (1.1, 6.7)	1.1$^{<2,4}$ (1.1, 1.1)	9.3$^{>N,1,2,3}$ (2.5, 24.8)	1.1$^{<2,4}$ (1.1, 1.1)
TNF-R1^{M}	6.4x10$^{3>N,2}$ (5.8x10^{3}, 7.0x10^{3})	5.1x10$^{3>N,<1}$ (4.7x10^{3}, 5.5x10^{3})	5.7x10$^{3>N}$ (5.2x10^{3}, 6.1x10^{3})	5.5x10$^{3>N}$ (4.6x10^{3}, 6.4x10^{3})	5.9x10$^{2<1,2,3,4}$ (2.8x10^{2}, 9.1x10^{2})
TNF-R2^{M}	2324.9$^{>N,2,3}$ (2106.0, 2543.8)	1993.2$^{>N,<1}$ (1875.4, 2110.9)	1876.2$^{>N,<1,4}$ (1722.1, 2030.4)	2310$^{>N,3}$ (2067.3, 2552.6)	1476.4$^{<1,2,3,4}$ (1351.6, 1601.1)
TREM1^{GM}	8.3x10$^{1>N,3,<4}$ (6.3x10^{1}, 1.1x10^{2})	8.7x10$^{1>N,3,<4}$ (6.9x10^{1}, 1.1x10^{2})	2.4x10$^{1>N,<1,2,4}$ (1.8x10^{1}, 3.3x10^{1})	1.7x10$^{2>N,1,2,3}$ (1.4x10^{2}, 1.9x10^{2})	1.4x10$^{1<1,2,3,4}$ (9.3x10^{0}, 2.1x10^{1})
YKL40^{Med}	5.6x10$^{4>2}$ (4.4x10^{4}, 8.8x10^{4})	3.8x10$^{4<1}$ (3.2x10^{4}, 4.4x10^{4})	4.8x10^{4} (3.3x10^{4}, 6.7x10^{4})	3.9x10^{4} (3.2.x10^{4}, 5.8x10^{4})	5.0x10^{4} (4.5x10^{4}, 6.6x10^{4})
Innate immunity biomarkers					
sCD14^{Med}	2.0x10$^{6>2,3,4}$ (1.5x10^{6}, 2.5x10^{6})	1.2x10$^{6<N,1}$ (1.1x10^{6}, 1.3x10^{5})	1.6x10$^{6<N,1}$ (1.1x10^{6}, 2.0x10^{6})	1.3x10$^{6<N,1}$ (1.1x10^{6}, 1.7x10^{6})	2.3x10$^{6>2,3,4}$ (2.1x10^{6}, 2.5x10^{6})
%Neutralisation of α-toxin-induced lysis^{Med}	50.1$^{>N,3}$ (28.8, 86.1)	25.1$^{>N}$ (15.9, 48.0)	34.0$^{>N,<1}$ (9.0, 57.0)	28.6$^{>N}$ (14.0, 72.5)	10.8$^{<1,2,3,4}$ (0.9, 20.5)
Leukocyte migration biomarkers					
ICAM-1^{Med}	6.2x10$^{5>N,2,3}$ (5.3x10^{5}, 7.7x10^{5})	4.1x10$^{5<1,>N}$ (3.7x10^{5}, 4.9x10^{5})	4.9x10$^{5<1,>N}$ (3.8x10^{5}, 6.7x10^{5})	4.8x10$^{5>N}$ (3.9x10^{5}, 5.6x10^{5})	2.9x10$^{5<1,2,3,4}$ (2.2x10^{5}, 3.4x10^{5})

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Healthy controls
P-selectin	$3.6x10^5$ ($2.0x10^5$, $1.4x10^6$)	$3.8x10^{5\ <N}$ ($2.1x10^5$, $5.7x10^5$)	$2.9x10^{5\ <N}$ ($2.0x10^5$, $4.7x10^5$)	$3.7x10^5$ ($2.7x10^5$, $5.8x10^5$)	$5.5x10^{5\ >2,3}$ ($3.5x10^5$, $1.4x10^6$)
Neutrophil/Granulocyte biomarkers					
Elastase^{Med}	$2.7x10^{4\ <4,\ >N}$ ($1.3x10^4$, $8.6x10^4$)	$2.3x10^{4\ <4,\ >N}$ ($1.4x10^4$, $8.6x10^4$)	$2.2x10^{4\ <4,\ >N}$ ($1.0x10^4$, $8.6x10^4$)	$8.6x10^{4\ >1,2,3,N}$ ($8.6x10^4$, $8.6x10^4$)	$1.2x10^{4\ <1,2,3,4}$ ($7.1x10^3$, $1.6x10^4$)
GCP-2^{GM}	$160.3^{\ >N,\ <4}$ (120.9, 212.6)	$127.1^{\ >N,\ <4}$ (101.5, 159.1)	$102.6^{\ <4}$ (77.1, 136.6)	$399.8^{\ >N,1,2,3}$ (304.8, 524.5)	$64.2^{\ <1,2,4}$ (34.4, 119.8)
GM-CSF^{Med}	$7.6^{\ <4,\ >N}$ (7.6, 7.6)	$7.6^{\ <4,\ >N}$ (7.6, 7.6)	$7.6^{\ <4,\ >N}$ (7.6, 7.6)	$17.3^{\ >N,1,2,3}$ (7.6, 35.3)	$7.6^{\ <1,2,3,4}$ (7.6, 7.6)
GRO-α^{GM}	$125.5^{>3,\ <4}$ (110.8, 142.3)	$110.3^{>3,\ <4}$ (102.2, 118.9)	$74.7^{<1,2,4}$ (67.3, 82.8)	$245.1^{>1,2,3}$ (198.0, 303.4)	NA
S100A8^{Med}	$1.3x10^{5\ >N}$ ($1.2x10^5$, $1.6x10^5$)	$1.6x10^{5\ >N,3}$ ($1.4x10^5$, $1.8x10^5$)	$1.3x10^{5\ >N,\ <2}$ ($1.1x10^5$, $1.5x10^5$)	$1.6x10^{5\ >N}$ ($1.5x10^5$, $1.9x10^5$)	$1.2x10^{4\ <1,2,3,4}$ ($8.4x10^3$, $1.6x10^4$)
Proteases and protease inhibitors					
Cathepsin S^{Med}	$1.6x10^{4\ >2,3}$ ($1.4x10^4$, $2.0x10^4$)	$1.3x10^{4\ <N,1}$ ($1.1x10^4$, $1.4x10^4$)	$1.3x10^{4\ <N,1}$ ($1.1x10^4$, $1.6x10^4$)	$1.4x10^4$ ($1.2x10^4$, $1.7x10^4$)	$1.7x10^{4\ >2,3}$ ($1.6x10^4$, $1.9x10^4$)
SLPI^{Med}	$9.4x10^{3\ >N,\ <2,4}$ ($8.2x10^3$, $1.9x10^4$)	$1.9x10^{4\ >N,1,3}$ ($1.9x10^4$, $1.9x10^4$)	$9.2x10^{3\ >N,\ <2,4}$ ($8.1x10^3$, $1.9x10^4$)	$1.9x10^{4\ >N,1,3}$ ($1.9x10^4$, $1.9x10^4$)	$6.4x10^{3\ <1,2,3,4}$ ($5.9x10^3$, $7.2x10^3$)
MMP-8^{GM}	$1.9x10^{5\ <N,\ >2,3}$ ($1.6x10^5$, $2.2x10^5$)	$1.0x10^{5\ <N,1,4}$ ($8.9x10^4$, $1.2x10^5$)	$9.5x10^{4\ <N,1,4}$ ($8.5x10^4$, $1.1x10^5$)	$1.6x10^{5\ <N,\ >2,3}$ ($1.3x10^5$, $1.8x10^5$)	$3.0x10^{5\ >1,2,3,4}$ ($2.7x10^5$, $3.2x10^5$)
Remodelling biomarkers					
Endoglin^{GM}	$3.2x10^{3\ >N,2}$ ($2.9x10^3$, $3.6x10^3$)	$2.3x10^{3\ >N,\ <1,3}$ ($2.0x10^3$, $2.5x10^3$)	$2.8x10^{3\ >N,2}$ ($2.5x10^3$, $3.1x10^3$)	$2.8x10^{3\ >N}$ ($2.4x10^3$, $3.2x10^3$)	$1.2x10^{3\ <1,2,3,4}$ ($1.1x10^3$, $1.3x10^3$)
LAP-TGFα^{GM}	$3.0x10^{5\ >N,\ <2,4}$ ($2.8x10^5$, $3.2x10^5$)	$3.5x10^{5\ >N,1,3}$ ($3.4x10^5$, $3.7x10^5$)	$2.9x10^{5\ >N,\ <2,4}$ ($2.7x10^5$, $3.1x10^5$)	$3.7x10^{5\ >N,1,3}$ ($3.4x10^5$, $4.0x10^5$)	$1.5x10^{5\ <1,2,3,4}$ ($1.4x10^5$, $1.7x10^5$)
LIGHT^{Med}	$4.0^{<N,2,4}$ (4.0, 4.0)	$151.7^{>1,3,\ <4}$ (4.0, 257.3)	$4.0^{<N,2,4}$ (4.0, 4.0)	$331.3^{>N,1,2,3}$ (209.9, 610.4)	$29.8^{>1,3,\ <4}$ (4, 73.3)
MMP-1^{GM}	$6.0x10^{4\ >N,2}$ ($5.2x10^4$, $6.9x10^4$)	$3.4010^{4<1,3}$ ($2.5x10^4$, $3.5x10^4$)	$4.5x10^{4\ >2}$ ($3.6x10^4$, $5.5x10^4$)	$4.0x10^4$ ($3.2x10^4$, $5.0x10^4$)	$3.5x10^{4\ <1}$ ($2.8x10^4$, $4.3x10^4$)
TIMP-1^{M}	$6.0x10^{5\ >N,2,3,4}$ ($5.7x10^5$, $6.3x10^5$)	$4.3x10^{5\ <N,1,3,4}$ ($4.2x10^5$, $4.5x10^5$)	$5.3x10^{5\ <1,\ >2}$ ($5.0x10^5$, $5.6x10^5$)	$4.8x10^{5\ <1}$ ($4.5x10^5$, $5.0x10^5$)	$5.0x10^{5\ <1,\ >2}$ ($4.8x10^5$, $5.2x10^5$)
Th2 cytokines					
IL-4^{Med}	$6.7^{>N,2,3,\ <4}$ (4.1, 9.5)	$3.6^{>N,3,\ <1,4}$ (2.5, 5.5)	$1.4^{>N,\ <1,2,4}$ (0.3, 2.2)	$10.2^{>N,1,2,3}$ (7.8, 14.1)	$0.3^{<1,2,3,4}$ (0.3, 0.3)
IL-5^{GM}	$323.7^{>N,2,3}$ (278.9, 375.6)	$171.9^{>N,\ <1,4}$ (151.2, 195.6)	$124.9^{>N,\ <1,4}$ (101.6, 153.6)	$506.8^{>N,2,3}$ (415.4, 618.3)	$5.0^{<1,2,3,4}$ (2.6, 9.6)
IL-9^{GM}	$145.9^{>N,2,3,\ <4}$ (122.0, 174.4)	$75.7^{>N,3\ <1,4}$ (64.4, 89.0)	$34.3^{>N,\ <1,2,4}$ (25.5, 46.1)	$349.2^{>N,1,2,3}$ (265.6, 459)	$12.2^{<1,2,3,4}$ (4.8, 31.3)
IL-13^{GM}	$97.1^{>N,2,3,\ <4}$ (83.8, 112.6)	$51.9^{>N,3,\ <1,4}$ (45.9, 58.6)	$39.9^{>N,\ <1,4}$ (34.2, 46.7)	$170.3^{>N,1,2,3}$ (134.2, 216.2)	$23.3^{<1,2,3,4}$ (10.3, 52.8)
Periostin^{GM}	$18.6^{>N}$ (14.5, 24.0)	$13.2^{>N}$ (11.4, 15.4)	$15.0^{>N}$ (13.1, 17.3)	11.8 (9.4, 14.8)	$6.7^{<1,2,3}$ (3.4, 13.4)
Vascular regulation					
PAI-1^{Med}	$8.7x10^{5\ >4}$ ($7.4x10^5$, $1.2x10^6$)	$1.0x10^{5\ <N,1,3}$ ($4.4x10^4$, $1.0x10^5$)	$8.6x10^{5\ >2,3}$ ($6.9x10^5$, $1.1x10^6$)	$4.4x10^{5\ <N,1,3}$ ($4.4x10^4$, $7.8x10^5$)	$9.5x10^{5\ >2,4}$ ($6.6x10^5$, $1.3x10^6$)
PLGF^{Med}	$40.5^{<4}$ (10.6, 54.2)	$45.4^{<4}$ (16.1, 59.7)	$31.0^{<4}$ (16.7, 52.3)	$64.3^{>1,2,3}$ (40.2, 89.7)	40.8 (26.7, 61.6)
TIE-2^{M}	$9.6x10^{3\ >N,2}$ ($8.6x10^3$, $1.1x10^4$)	$7.8x10^{3\ >N,\ <1}$ ($7.3x10^3$, $8.3x10^3$)	$8.6x10^{3\ >N}$ ($7.9x10^3$, $9.2x10^3$)	$8.5x10^{3\ >N}$ ($7.9x10^3$, $9.1x10^3$)	$2.6x10^{3\ <1,2,3,4}$ ($2.3x10^3$, $2.8x10^3$)
VEGF^{Med}	$873.5^{>N,2}$ (687.4, 1295.9)	$493.1^{>N,\ <1,3,4}$ (317.1, 871.3)	$793.0^{>N,2}$ (439.4, 1295.8)	$945.5^{>N,2}$ (535.5, 1278.7)	$346.4^{<1,2,3,4}$ (170.2, 602.5)
sVEGF-R1^{GM}	$1.6x10^{3\ >3,\ <4}$ ($1.3x10^3$, $1.8x10^3$)	$1.2x10^{3\ <4}$ ($1.1x10^3$, $1.5x10^3$)	$1.1x10^{3\ <N,1,4}$ ($9.7x10^2$, $1.2x10^3$)	$2.2x10^{3\ >N,1,2,3}$ ($1.9x10^3$, $2.5x10^3$)	$1.5x10^{3\ >3,\ <4}$ ($1.2x10^3$, $1.9x10^3$)
Viral response					

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Healthy controls
IFN-α^{Med}	$95.1^{>N,2}$ (82.0, 100.2)	$41.5^{>N,<1,3,4}$ (30.3, 51.2)	$93.3^{>N,2}$ (81.8, 101.0)	$63.2^{>N,2}$ (55.5, 110.1)	$0.7^{<1,2,3,4}$ (0.7, 2.9)
IFN-β^{Med}	$9.4x10^{1\ <N,2,4,\ >3}$ ($9.7x10^{0}$, $1.9x10^{2}$)	$1.9x10^{2\ <N,4,\ >1,3}$ ($1.4x10^{2}$, $2.9x10^{2}$)	$9.7x10^{0\ <N,1,2,4}$ ($9.7x10^{0}$, $4.2x10^{1}$)	$6.5x10^{2\ >1,2,3}$ ($3.4x10^{2}$, $1.1x10^{3}$)	$3.2x10^{2\ >1,2,3}$ ($1.5x10^{2}$, $9.1x10^{2}$)
IFN-γ^{Med}	$4.4^{<2,4}$ (4.4, 4.4)	$11.0^{<4,\ >1,3}$ (4.4, 27.0)	$4.4^{<2,4}$ (4.4, 4.4)	$95.2^{>N,1,2,3}$ (28.4, 178.2)	$4.4^{<4}$ (4.4, 4.4)
IL-15^{Med}	$174.9^{>N,2,3,\ <4}$ (101.7, 238.8)	$84.6^{>N,3,\ <1,4}$ (63.0, 132.4)	$44.6^{>N,\ <1,2,4}$ (22.2, 65.4)	$242.7^{>N,1,2,3}$ (213, 354.1)	$3.7^{<1,2,3,4}$ (1.5, 6.4)
IL-29^{Med}	$1.0x10^{1}$ ($1.0x10^{1}$, $1.0x10^{1}$)	$1.0x10^{1>3}$ ($1.0x10^{1}$, $1.1x10^{2}$)	$1.0x10^{1<2,4}$ ($1.0x10^{1}$, $1.0x10^{1}$)	$1.0x10^{1>3}$ ($1.0x10^{1}$, $2.0x10^{1}$)	$1.0x10^{1}$ ($1.0x10^{1}$, $1.0x10^{1}$)
TNF-β^{Med}	$1.5^{<4}$ (1.5, 1.5)	$3.5^{<4}$ (1.5, 10.3)	$1.5^{<N,4}$ (1.5, 1.5)	$44.2^{>N,1,2,3}$ (5.3, 118.6)	$1.5^{<3,4}$ (1.5, 12.8)
Other					
ACE^{GM}	$3.6x10^{5>2,3}$ ($3.2x10^{5}$, $4.1x10^{5}$)	$2.6x10^{5<N,1}$ ($2.4x10^{5}$, $2.9x10^{5}$)	$2.7x10^{5<N,1}$ ($2.3x10^{5}$, $3.2x10^{5}$)	$2.9x10^{5}$ ($2.5x10^{5}$, $3.4x10^{5}$)	$4.0\ x10^{5>2,3}$ ($3.6\ x10^{5}$, $4.3\ x10^{5}$)
$BDNF^{M}$	$2.3x10^{5\ <N}$ ($2.2x10^{5}$, $2.5x10^{5}$)	$2.3x10^{5\ <N}$ ($2.1x10^{5}$, $2.4x10^{5}$)	$2.0x10^{5\ <N,4}$ ($1.8x10^{5}$, $2.2x10^{5}$)	$2.6x10^{5\ <N}$ ($2.5x10^{5}$, $2.8x10^{5}$)	$5.5x10^{5\ >1,2,3,4}$ ($4.7x10^{5}$, $6.2x10^{5}$)
EPO-R^{Med}	$13.7^{<4}$ (13.7, 225.1)	$26.0^{<4}$ (13.7, 473.0)	$13.7^{<4}$ (13.7, 45.3)	$914.5^{>N,1,2,3}$ (123.9, 1935.1)	$13.7^{<4}$ (13.7, 13.7)
MIF^{GM}	$4.4x10^{3\ <N,\ >2,3}$ ($3.8x10^{3}$, $5.0x10^{3}$)	$2.6x10^{3\ <N,1,4}$ ($2.2x10^{3}$, $3.1x10^{3}$)	$2.2x10^{3\ <N,1,4}$ ($2.0x10^{3}$, $2.5x10^{3}$)	$4.4x10^{3\ <N,\ >2,3}$ ($3.8x10^{3}$, $5.2x10^{3}$)	$7.0x10^{3\ >1,2,3,4}$ ($5.2x10^{3}$, $9.3x10^{3}$)
NAP-2^{Med}	$4.0x10^{7>2,3}$ ($3.3x10^{7}$, $4.0x10^{7}$)	$1.5x10^{7<1}$ ($1.3x10^{7}$, $1.6x10^{7}$)	$2.8x10^{7<1}$ ($1.5x10^{7}$, $4.0x10^{7}$)	$1.6x10^{7}$ ($1.5x10^{7}$, $1.7x10^{7}$)	$1.9x10^{7}$ ($1.7x10^{7}$, $4.0x10^{7}$)
$SOST^{Med}$	$11.7^{<N,2,4}$ (11.7, 11.7)	$11.7^{<N,4,\ >1,3}$ (11.7, 11.7)	$11.7^{<N,2,4}$ (11.7, 11.7)	$272.6^{>N,1,2,3}$ (104, 389.5)	$11.7^{<4,\ >1,2,3}$ (11.7, 87.7)
Trappin-2^{Med}	$37.1^{<N,2,4}$ (14.9, 90.3)	$236.4^{<N,>1,3}$ (164.9, 384.5)	$36.4^{<N,2,4}$ (13.2, 77.9)	$181.5^{<N,>1,3}$ (162.0, 240.0)	2226.0 (1923.7, 2576.3)

Variable types are shown in superscript next to variable name; M (mean) for normally distributed data, Med (median) for log-non normally distributed data, GM (geometric mean) for log-normally distributed data. Numbers shown in brackets after measure of central tendency are 95% confidence intervals (for mean and geomean) or interquartile range (median). Superscript numbers after measure of central tendency are groups that are significantly different.

Table S3. Table showing analytes that do not significantly differ between clusters.

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Healthy controls
Adiponectin^{Med}	$1.9x10^8$ ($1.1x10^8$, $4.2x10^8$)	$1.3x10^8$ ($8.6x10^7$, $1.7x10^8$)	$1.8x10^8$ ($9.6x10^7$, $4.2x10^8$)	$1.5x10^8$ ($1.3x10^8$, $1.8x10^8$)	$1.3x10^8$ ($9.0x10^7$, $1.6x10^8$)
Ang1^{Med}	$5.4x10^4$ ($4.2x10^4$, $7.0x10^4$)	$4.9x10^4$ ($4.2x10^4$, $5.6x10^4$)	$5.5x10^4$ ($4.3x10^4$, $7.1x10^4$)	$6.2x10^4$ ($5.0x10^4$, $7.0x10^4$)	$4.4x10^4$ ($3.6x10^4$, $6.0x10^4$)
Ang2^{Med}	$1.4x10^{4\,<N}$ ($1.3x10^4$, $1.6x10^4$)	$1.2x10^{4\,<N}$ ($1.1x10^4$, $1.4x10^4$)	$1.3x10^{4\,<N}$ ($1.1x10^4$, $1.6x10^4$)	$1.3x10^{4\,<N}$ ($1.2x10^4$, $1.5x10^4$)	$1.9x10^{4\,>1,2,3,4}$ ($1.8x10^4$, $2.8x10^4$)
Apelin^{Med}	$6.5x10^{4\,>N}$ ($6.1x10^4$, $7.0x10^4$)	$6.1x10^{4\,>N}$ ($5.7x10^4$, $6.4x10^4$)	$6.4x10^{4\,>N}$ ($5.8x10^4$, $6.8x10^4$)	$6.4x10^{4\,>N}$ ($6.3x10^4$, $6.6x10^4$)	$4.7x10^{4\,<1,2,3,4}$ ($3.8x10^4$, $5.2x10^4$)
Cathepsin B^{M}	$1.7x10^{4\,>N}$ ($1.5x10^4$, $1.9x10^4$)	$1.6x10^{4\,>N}$ ($1.4x10^4$, $1.7x10^4$)	$1.7x10^{4\,>N}$ ($1.5x10^4$, $1.9x10^4$)	$1.6x10^{4\,>N}$ ($1.3x10^4$, $1.8x10^4$)	$9.9x10^{3\,<1,2,3,4}$ ($8.5x10^3$, $1.1x10^4$)
Cathepsin L^{Med}	$1.3x10^{3\,>2,3,\,<N}$ ($1.1x10^3$, $1.7x10^3$)	$9.5x10^{2\,<1,\,N}$ ($6.6x10^2$, $1.2x10^3$)	$1.1x10^{3\,<1,\,N}$ ($7.3x10^2$, $1.4x10^3$)	$1.1x10^{3\,<N}$ ($8.2x10^2$, $1.3x10^3$)	$6.4x10^{3\,>1,2,3,4}$ ($5.0x10^3$, $8.0x10^3$)
Cystatin C^{Med}	$2.1x10^{5\,>N}$ ($1.9x10^5$, $2.4x10^5$)	$1.9x10^{5\,>N}$ ($1.7x10^5$, $2.1x10^5$)	$2.0x10^{5\,>N}$ ($1.7x10^5$, $2.2x10^5$)	$1.9x10^{5\,>N}$ ($1.6x10^5$, $2.1x10^5$)	$1.2x10^{5\,<1,2,3,4}$ ($8.4x10^4$, $1.5x10^5$)
DKK-1^{M}	2299.1 (2179.8, 2418.4)	2177.0 (2117.5, 2236.4)	2391.9 (2320.5, 2463.4)	2282.3 (2205, 2359.7)	2403.4 (1913.3, 2893.4)
DPP4^{GM}	614.4 (557.0, 678.3)	586.2 (541.2, 634.8)	619.2 (578.8, 662.4)	570.9 (504.2, 646.5)	539.3 (498.5, 583.3)
ENA-78^{Med}	$2.5x10^{3\,>N}$ ($1.9x10^3$, $4.0x10^3$)	$2.1x10^{3\,>N}$ ($1.2x10^3$, $2.8x10^3$)	$2.7x10^{3\,>N}$ ($2.1x10^3$, $4.0x10^3$)	$3.7x10^{3\,>N}$ ($2.4x10^3$, $5.3x10^3$)	$7.4x10^{2\,<1,2,3,4}$ ($4.8x10^2$, $1.2x10^3$)
Galectin-3^{M}	$2.2x10^{4\,>3}$ ($1.9x10^4$, $2.6x10^4$)	$2.1x10^{4\,<N}$ ($1.8x10^4$, $2.3x10^4$)	$1.8x10^{4\,<N,1,4}$ ($1.6x10^4$, $1.9x10^4$)	$2.4x10^{4\,>3}$ ($2.1x10^4$, $2.8x10^4$)	$2.8x10^{4\,>2,3}$ ($2.6x10^4$, $3.0x10^4$)
GCSF^{GM}	$8.4x10^{3\,>N}$ ($6.4x10^3$, $1.5x10^4$)	$8.6x10^{3\,>N}$ ($6.3x10^3$, $1.5x10^4$)	$7.0x10^{3\,>N}$ ($5.4x10^3$, $1.1x10^4$)	$1.1x10^{4\,>N}$ ($8.3x10^3$, $1.9x10^4$)	$1.8x10^{1\,<1,2,3,4}$ ($1.8x10^1$, $1.8x10^1$)
GDF^{Med}	$1.1x10^{3>2}$ ($8.4x10^2$, $1.6x10^3$)	$7.4x10^{2<1}$ ($6.7x10^2$, $9.9x10^2$)	$1.0x10^3$ ($7.3x10^2$, $1.6x10^3$)	$8.8x10^2$ ($7.6x10^2$, $1.1x10^3$)	$1.2x10^3$ ($1.0x10^3$, $1.3x10^3$)
IL-3^{Med}	$2.5^{\,>N}$ (2.5, 283.2)	$2.5^{\,>N}$ (2.5, 400.9)	$2.5^{\,>N}$ (2.5, 242.4)	$167.7^{\,>N}$ (2.5, 536.1)	$2.5^{\,<1,2,3,4}$ (2.5, 2.5)
IL-16^{M}	$2.0x10^3$ ($1.7x10^3$, $2.3x10^3$)	$1.9x10^3$ ($1.7x10^3$, $2.1x10^3$)	$1.2x10^3$ ($1.1x10^3$, $1.4x10^3$)	$2.1x10^3$ ($1.9x10^3$, $2.3x10^3$)	$2.0x10^3$ ($6.8x10^2$, $3.4x10^3$)
IL-31^{Med}	$1.2x10^1$ ($1.2x10^1$, $3.1x10^3$)	$1.2x10^1$ ($1.2x10^1$, $2.5x10^3$)	$1.2x10^1$ ($1.2x10^1$, $1.2x10^1$)	$1.2x10^1$ ($1.2x10^1$, $4.6x10^1$)	$1.2x10^1$ ($1.2x10^1$, $2.5x10^1$)
Leptin^{Med}	$8.0x10^{2\,<N}$ ($8.0x10^2$, $2.4x10^3$)	$8.0x10^{2\,<N}$ ($8.0x10^2$, $1.4x10^3$)	$8.0x10^{2\,<N}$ ($8.0x10^2$, $1.4x10^3$)	$8.0x10^{2\,<N}$ ($8.0x10^2$, $2.0x10^3$)	$3.6x10^{3\,>1,2,3,4}$ ($2.8x10^3$, $5.4x10^3$)
MCP-2^{Med}	50.4 (42.2, 62.7)	41.8 (34.5, 56.9)	45.4 (33.6, 56.6)	$53^{>N}$ (46.1, 65.8)	$36.5^{<4}$ (28.7, 44.2)
MCSF^{GM}	7.6 (7.6, 7.6)	7.6 (7.6, 7.6)	7.6 (7.6, 7.6)	7.6 (7.6, 7.6)	7.6 (7.6, 7.6)
MDC^{Med}	$3352.0^{>N}$ (2210.0, 9001.0)	$2493.3^{>N}$ (1764.5, 4146.5)	$2330.7^{>N}$ (1784.7, 4040.4)	$2975.6^{>N}$ (2125.7, 4217.4)	$737.8^{<1,2,3,4}$ (681.2, 873.9)
MIP-1β^{GM}	$138.2^{>N}$ (119.8, 159.4)	$108.3^{>N}$ (95.0, 123.4)	$127.7^{>N}$ (112.7, 144.7)	$132.6^{>N}$ (105.4, 166.9)	$41.0^{<1,2,3,4}$ (32.8, 51.4)
MIP-3β^{Med}	$1.6x10^0$ ($1.6x10^0$, $1.2x10^1$)	$1.6x10^0$ ($1.6x10^0$, $1.1x10^4$)	$1.6x10^0$ ($1.6x10^0$, $1.6x10^0$)	$1.6x10^0$ ($1.6x10^0$, $1.5x10^1$)	$6.6x10^1$ ($3.9x10^1$, $1.1x10^2$)
MMP-3^{GM}	$3.5x10^{4>2}$ ($3.0x10^4$, $4.2x10^4$)	$2.4x10^{4<1}$ ($2.1x10^4$, $2.8x10^4$)	$2.6x10^4$ ($2.2x10^4$, $3.2x10^4$)	$2.8x10^4$ ($2.2x10^4$, $3.5x10^4$)	$2.5x10^4$ ($2.1x10^4$, $3.0x10^4$)
MMP-9^{Med}	$1.6x10^6$ ($1.6x10^6$, $1.6x10^6$)	$1.6x10^6$ ($1.6x10^6$, $1.6x10^6$)	$1.6x10^6$ ($1.6x10^6$, $1.6x10^6$)	$1.6x10^6$ ($1.6x10^6$, $1.6x10^6$)	$1.6x10^6$ ($1.6x10^6$, $1.6x10^6$)
MPIF^{Med}	$480.4^{>N}$ (287.2, 643.2)	$341.6^{>N}$ (198.3, 536.6)	$398.4^{>N}$ (254.9, 491.8)	$362.8^{>N}$ (173.4, 508)	$94.4^{<1,2,3,4}$ (40.9, 170.8)

Osteopontin^{GM}	$3.5x10^{4}$ $^{<N}$ ($3.1x10^{4}$, $4.1x10^{4}$)	$3.2x10^{4}$ $^{<N}$ ($2.7x10^{4}$, $3.7x10^{4}$)	$3.6x10^{4}$ $^{<N}$ ($3.0x10^{4}$, $4.3x10^{4}$)	$3.6x10^{4}$ $^{<N}$ ($3.1x10^{4}$, $4.3x10^{4}$)	$1.2x10^{4}$ $^{>1,2,3,4}$ ($9.2x10^{3}$, $1.5x10^{4}$)
PF4^{Med}	$2.0x10^{6}$ $^{<N}$ ($2.0x10^{6}$, $2.0x10^{6}$)	$2.0x10^{6}$ $^{<N}$ ($2.0x10^{6}$, $2.0x10^{6}$)	$2.0x10^{6}$ $^{<N}$ ($2.0x10^{6}$, $2.0x10^{6}$)	$2.0x10^{6}$ $^{<N}$ ($2.0x10^{6}$, $2.0x10^{6}$)	$4.7x10^{6}$ $^{>1,2,3,4}$ ($3.2x10^{6}$, $6.6x10^{6}$)
RANTES^{Med}	$1.6x10^{5}$ $^{<N, >2,3}$ ($1.3x10^{5}$, $2.5x10^{5}$)	$8.4x10^{4}$ $^{<N,1,3,4}$ ($4.8x10^{4}$, $1.4x10^{5}$)	$1.4x10^{5}$ $^{<N,1, >2}$ ($6.3x10^{4}$, $2.2x10^{5}$)	$1.6x10^{5}$ $^{<N, >2}$ ($1.1x10^{5}$, $2.1x10^{5}$)	$6.4x10^{5}$ $^{>1,2,3,4}$ ($4.0x10^{5}$, $9.1x10^{5}$)
SAA1^{Med}	$1.0x10^{8}$ ($1.0x10^{8}$, $1.0x10^{8}$)	$1.0x10^{8}$ ($1.0x10^{8}$, $1.0x10^{8}$)	$1.0x10^{8}$ ($1.0x10^{8}$, $1.0x10^{8}$)	$1.0x10^{8}$ ($1.0x10^{8}$, $1.0x10^{8}$)	$1.0x10^{8}$ ($5.2x10^{7}$, $1.0x10^{8}$)
sCD163^{Med}	$4.3x10^{4}$ $^{<N}$ ($4.3x10^{4}$, $4.3x10^{4}$)	$4.3x10^{4}$ $^{<N}$ ($4.3x10^{4}$, $4.3x10^{4}$)	$4.3x10^{4}$ $^{<N}$ ($4.3x10^{4}$, $4.3x10^{4}$)	$4.3x10^{4}$ $^{<N}$ ($4.3x10^{4}$, $4.3x10^{4}$)	$1.4x10^{5}$ $^{>1,2,3,4}$ ($1.2x10^{5}$, $1.7x10^{5}$)
Serum Ig targeting alpha toxin^{GM}	93.9 $^{>N}$ (70.6, 125.0)	93.8 $^{>N}$ (65.5, 134.5)	65.7 $^{>N}$ (51.7, 83.3)	117.4 $^{>N}$ (71.6, 192.8)	11.2 $^{<1,2,3,4}$ (7.0, 18.0)
SRPSOX^{Med}	$8.9x10^{2}$ ($6.3x10^{2}$, $6.0x10^{3}$)	$8.6x10^{2}$ ($7.3x10^{2}$, $2.6x10^{3}$)	$8.0x10^{2}$ ($6.1x10^{2}$, $1.4x10^{3}$)	$8.3x10^{2}$ ($6.5x10^{2}$, $3.5x10^{3}$)	NA
sSCFR^{Med}	$6.5x10^{4}$ $^{>N}$ ($5.8x10^{4}$, $8.0x10^{4}$)	$6.4x10^{4}$ $^{>N}$ ($4.9x10^{4}$, $7.6x10^{4}$)	$6.2x10^{4}$ $^{>N}$ ($4.9x10^{4}$, $8.4x10^{4}$)	$6.4x10^{4}$ $^{>N}$ ($5.4x10^{4}$, $7.5x10^{4}$)	$4.2x10^{4}$ $^{<1,2,3,4}$ ($3.8x10^{4}$, $4.4x10^{4}$)
TACI^{Med}	$8.0x10^{2}$ $^{<N}$ ($8.0x10^{2}$, $8.0x10^{2}$)	$8.0x10^{2}$ $^{<N}$ ($8.0x10^{2}$, $8.0x10^{2}$)	$8.0x10^{2}$ $^{<N}$ ($8.0x10^{2}$, $8.0x10^{2}$)	$8.0x10^{2}$ $^{<N}$ ($8.0x10^{2}$, $8.0x10^{2}$)	$8.9x10^{4}$ $^{>1,2,3,4}$ ($6.6x10^{4}$, $1.1x10^{5}$)
Thrombopoietin^{Med}	$1.2x10^{6}$ $^{<N, >2,3,4}$ ($9.8x10^{5}$, $1.8x10^{6}$)	$7.6x10^{5}$ $^{<N,1,3,4}$ ($5.6x10^{5}$, $9.0x10^{5}$)	$1.0x10^{6}$ $^{<N,1 >2}$ ($8.3x10^{5}$, $1.2x10^{6}$)	$9.2x10^{5}$ $^{<N,1, >2}$ ($7.1x10^{5}$, $1.2x10^{6}$)	$8.6x10^{6}$ $^{>1,2,3,4}$ ($8x10^{6}$, $9.1x10^{6}$)
Total IgE^{Med}	$3.4x10^{3}$ $^{>N}$ ($1.1x10^{3}$, $1.0x10^{4}$)	$1.8x10^{3}$ $^{>N}$ ($3.1x10^{2}$, $5.1x10^{3}$)	$1.6x10^{3}$ $^{>N}$ ($5.1x10^{2}$, $5.9x10^{3}$)	$1.8x10^{3}$ $^{>N}$ ($2.3x10^{2}$, $6.3x10^{3}$)	$3.7x10^{1}$ $^{<1,2,3,4}$ ($1.5x10^{1}$, $1.8x10^{1}$)
TWEAK^{GM}	$1.1x10^{4}$ $^{<N, >2}$ ($9.8x10^{3}$, $1.2x10^{4}$)	$8.5x10^{3}$ $^{<N,1,3,4}$ ($8.0x10^{3}$, $9.1x10^{3}$)	$1.0x10^{4}$ $^{<N, >2}$ ($9.5x10^{3}$, $1.1x10^{4}$)	$1.1x10^{4}$ $^{<N, >2}$ ($9.3x10^{3}$, $1.3x10^{4}$)	$1.6x10^{4}$ $^{>1,2,3,4}$ ($1.4x10^{4}$, $1.9x10^{4}$)
VCAM-1^{Med}	$2.4x10^{6}$ $^{<N, >2,3}$ ($2.1x10^{6}$, $3.1x10^{6}$)	$1.9x10^{6}$ $^{<N,1}$ ($1.6x10^{6}$, $2.2x10^{6}$)	$2.0x10^{6}$ $^{<N,1}$ ($1.6x10^{6}$, $2.5x10^{6}$)	$2.3x10^{6}$ $^{<N}$ ($2.0x10^{6}$, $2.6x10^{6}$)	$4.3x10^{6}$ $^{>1,2,3,4}$ ($3.7x10^{5}$, $5.3x10^{6}$)

Variable types are shown in superscript next to variable name; M (mean), Med (median), GM (geometric mean). Numbers shown in brackets after measure of central tendency are 95% confidence intervals (for mean and geomean) or interquartile

Table S4. Summary of serum mediators that are differentially regulated in atopic dermatitis versus healthy controls but do not associate with disease severity.

Variables where HC < AD	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
Serum Ig targeting alpha toxin^{GM}	11.2$^{<Mod,Sev}$ (7, 18)	75.7$^{<HC}$ (62, 92)	99.4$^{<HC}$ (77.5, 127.5)
Apelin^{Med}	4.7x10$^{4<Mod,Sev}$ (3.8x10^4, 5.2x10^4)	6.3x10$^{4>HC}$ (5.8x10^4, 6.7x10^4)	6.4x10$^{4>HC}$ (5.8x10^4, 6.6x10^4)
C5a^{GM}	5.2x10$^{4<Mod,Sev}$ (4.3x10^4, 6.3x10^4)	1.3x10$^{5>HC}$ (1.1x10^5, 1.5x10^5)	1.1x10$^{5>HC}$ (9.4x10^4, 1.3x10^5)
Cathepsin B^{M}	9.9x10$^{3<Mod,Sev}$ (8.5x10^3, 1.1x10^4)	1.6x10$^{4>HC}$ (1.5x10^4, 1.8x10^4)	1.7x10$^{4>HC}$ (1.5x10^4, 1.8x10^4)
Cystatin C^{Med}	1.2x10$^{5<Mod,Sev}$ (8.4x10^4, 1.5x10^5)	1.9x10$^{5>HC}$ (1.7x10^5, 2.2x10^5)	2.0x10$^{5>HC}$ (1.7x10^5, 2.2x10^5)
Elastase^{Med}	1.2x10$^{4<Mod,Sev}$ (7.1x10^3, 1.6x10^4)	2.3x10$^{4>HC}$ (1.1x10^4, 8.6x10^4)	3.2x10$^{4>HC}$ (1.5x10^4, 8.6x10^4)
ENA-78^{Med}	7.4x10$^{2<Mod,Sev}$ (4.8x10^2, 1.2x10^3)	2.4x10$^{3>HC}$ (1.6x10^3, 3.8x10^3)	2.7x10$^{3>HC}$ (1.9x10^3, 4.2x10^3)
Endoglin^{GM}	1.2x10$^{3<Mod,Sev}$ (1.1x10^3, 1.3x10^3)	2.7x10$^{3>HC}$ (2.5x10^3, 3.0x10^3)	2.6x10$^{3>HC}$ (2.4x10^3, 2.9x10^3)
Eotaxin-1^{GM}	73.6$^{<Mod,Sev}$ (61, 88)	525.3$^{>HC}$ (439, 629)	610.5$^{>HC}$ (509, 733)
Fas^{GM}	840.9$^{<Mod,Sev}$ (721, 978)	1889.4$^{>HC}$ (1756, 2033)	1987.3$^{>HC}$ (1846, 2140)
GCP-2^{GM}	64.2$^{<Mod,Sev}$ (34, 120)	148.7$^{>HC}$ (121, 182)	147.6$^{>HC}$ (119, 183)
GCSF^{Med}	1.8x10$^{1<Mod,Sev}$ (1.8x10^1, 1.8x10^1)	8.7x10$^{3>HC}$ (6.2x10^3, 1.7x10^4)	8.6x10$^{3>HC}$ (6.2x10^3, 1.5x10^4)
HGF^{GM}	629.1$^{<Mod,Sev}$ (522, 759)	935.5$^{>HC}$ (868, 1009)	1036.4$^{>HC}$ (950, 1130)
ICAM-1^{Med}	2.9x10$^{5<Mod,Sev}$ (2.2x10^5, 3.4x10^5)	4.7x10$^{5>HC}$ (3.7x10^5, 6.0x10^5)	5.0x10$^{5>HC}$ (4.0x10^5, 6.7x10^5)
IFN-α^{Med}	0.7$^{<Mod,Sev}$ (1, 3)	82.5$^{>HC}$ (53, 99)	81.9$^{>HC}$ (48, 98)
IL-1α^{Med}	4.7$^{<Mod,Sev}$ (3, 8)	23.8$^{>HC}$ (9, 39)	26.0$^{>HC}$ (14, 53)
IL-1β^{GM}	1.1$^{<Mod,Sev}$ (1, 2)	12.5$^{>HC}$ (11, 15)	14.4$^{>HC}$ (12, 17)
IL-1R1^{Med}	5.6$^{<Mod,Sev}$ (3, 8)	76.2$^{>HC}$ (39, 114)	79.1$^{>HC}$ (52, 118)
IL-1R2^{Med}	1473.4$^{<Sev}$ (842, 2060)	1615.2 (1218, 2126)	2002.6$^{>HC}$ (1509, 2624)
IL-3^{Med}	2.5$^{<Mod,Sev}$ (3, 3)	2.5$^{>HC}$ (3, 420)	2.5$^{>HC}$ (3, 339)
IL-4^{Med}	0.3$^{<Mod,Sev}$ (0, 0)	3.6$^{>HC}$ (2, 7)	3.7$^{>HC}$ (2, 8)
IL-5^{Med}	5.0$^{<Mod,Sev}$ (3, 10)	196.6$^{>HC}$ (164, 236)	220.1$^{>HC}$ (191, 254)
IL-6^{Med}	1.4$^{<Mod,Sev}$ (1, 10)	18.3$^{>HC}$ (10, 47)	18.4$^{>HC}$ (8, 36)
IL-7^{M}	5.2$^{<Mod,Sev}$ (4, 7)	35.4$^{>HC}$ (32, 38)	38$^{>HC}$ (34, 41)
IL-9^{GM}	12.2$^{<Mod,Sev}$ (5, 31)	76.4$^{>HC}$ (60, 98)	93$^{>HC}$ (75, 116)
IL-10^{Med}	1.7$^{<Mod}$ (2, 2)	1.7$^{>HC}$ (2, 8)	1.7 (2, 7)
IL-11^{Med}	4.0$^{<Mod,Sev}$ (4, 4)	19.7$^{>HC}$ (4, 89)	30.6$^{>HC}$ (4, 89)
IL-12^{Med}	3.3$^{<Mod,Sev}$ (3, 12)	58.3$^{>HC}$ (29, 109)	58.5$^{>HC}$ (38, 104)

IL-13^{GM}	23.3$^{<Mod,Sev}$ (10, 53)	62.6$^{>HC}$ (54, 73)	67.7$^{>HC}$ (58, 79)
IL-15^{Med}	3.7$^{<Mod,Sev}$ (2, 6)	93.4$^{>HC}$ (57, 182)	92.6$^{>HC}$ (51, 181)
IL-20^{Med}	42.4$^{<Mod,Sev}$ (42, 42)	42.4$^{>HC}$ (42, 42)	42.4$^{>HC}$ (42, 42)
IL-21^{GM}	3.5x10$^{2<Mod,Sev}$ (1.5x10^{2}, 1.2x10^{3})	5.5x10$^{3>HC}$ (4.4x10^{3}, 6.8x10^{3})	5.6x10$^{3>HC}$ (4.4x10^{3}, 7.2x10^{3})
IL-23^{Med}	1.5x10$^{1<Mod,Sev}$ (1.5x10^{1}, 6.9x10^{1})	5.9x10$^{2>HC}$ (9.6x10^{1}, 1.4x10^{3})	2.7x10$^{2>HC}$ (1.0x10^{2}, 1.5x10^{3})
IL-25^{Med}	8.2x10$^{1<Mod,Sev}$ (8.2x10^{1}, 5.8x10^{2})	7.4x10$^{3>HC}$ (4.3x10^{3}, 1.5x10^{4})	8.3x10$^{3>HC}$ (4.7x10^{3}, 1.5x10^{4})
IL-33^{GM}	9.2$^{<Mod,Sev}$ (6, 14)	42.4$^{>HC}$ (34, 51)	50.9$^{>HC}$ (42, 62)
IL-37^{Med}	44.2$^{<Mod,Sev}$ (44, 44)	865.9$^{>HC}$ (68, 1572)	801.1$^{>HC}$ (305, 1645)
ITAC^{GM}	38.5$^{<Mod,Sev}$ (30, 49)	104.1$^{>HC}$ (91, 119)	120.4$^{>HC}$ (102, 142)
LAP-TGFβ^{M}	1.5x10$^{5<Mod,Sev}$ (1.4x10^{5}, 1.7x10^{5})	3.2x10$^{5>HC}$ (3.1x10^{5}, 3.4x10^{5})	3.2x10$^{5>HC}$ (3.1x10^{5}, 3.4x10^{5})
LIF^{Med}	4.8$^{<Mod,Sev}$ (5, 5)	4.8$^{>HC}$ (5, 5)	4.8$^{>HC}$ (5, 5)
MCP-1^{GM}	79.1$^{<Mod,Sev}$ (68, 92)	191.1$^{>HC}$ (179, 204)	201.7$^{>HC}$ (187, 218)

Variables where HC < AD	**Healthy controls (n=30)**	**Moderate AD (n=95)**	**Severe AD (n=98)**
MCP-2^{Med}	36.5$^{<Mod,Sev}$ (29, 44)	46.6$^{>HC}$ (36, 57)	48.4$^{>HC}$ (38, 61)
MIG^{GM}	97.2$^{<Sev}$ (90, 105)	119.7 (101, 142)	142.6$^{>HC}$ (124, 165)
MIP-1β^{Med}	41.0$^{<Mod, Sev}$ (33, 51)	122.7$^{>HC}$ (110, 137)	124.8$^{>HC}$ (113, 138)
MPIF^{Med}	94.4$^{<Mod, Sev}$ (41, 171)	371.9$^{>HC}$ (199, 530)	404.3$^{>HC}$ (246, 562)
Osteoptegrin^{Med}	7.6$^{<Mod, Sev}$ (8, 8)	2109.0$^{>HC}$ (1656, 2683)	2278.0$^{>HC}$ (1888, 2850)
Oncostatin M^{Med}	3.3$^{<Mod, Sev}$ (3, 3)	7$^{>HC}$ (3, 28)	15$^{>HC}$ (3, 43)
%Neutralisation of α-toxin-induced lysis^{Med}	10.8$^{<Mod, Sev}$ (1, 21)	26.4$^{>HC}$ (15, 56)	35.5$^{>HC}$ (23, 80)
S100A8^{Med}	1.2x10$^{4<Mod,Sev}$ (8.4x10^{3}, 1.6x10^{4})	1.5x10$^{5>HC}$ (1.3x10^{5}, 1.7x10^{5})	1.5x10$^{5>HC}$ (1.2x10^{5}, 1.7x10^{5})
SAA1^{Med}	1.0x10$^{8<Mod,Sev}$ (5.2x10^{7}, 1.0x10^{8})	1.0x10$^{8>HC}$ (1.0x10^{8}, 1.0x10^{8})	1.0x10$^{8>HC}$ (1.0x10^{8}, 1.0x10^{8})
SLPI^{Med}	6.4x10$^{3<Mod,Sev}$ (5.9x10^{3}, 7.2x10^{3})	1.9x10$^{4>HC}$ (8.7x10^{3}, 1.9x10^{4})	1.9x10$^{4>HC}$ (9.1x10^{3}, 1.9x10^{4})
sSCFR^{Med}	4.2x10$^{4<Mod,Sev}$ (3.8x10^{4}, 4.4x10^{4})	6.3x10$^{4>HC}$ (4.9x10^{4}, 7.7x10^{4})	6.3x10$^{4>HC}$ (5.3x10^{4}, 7.8x10^{4})
TIE-2^{GM}	2.6x10$^{3<Mod,Sev}$ (2.3x10^{3}, 2.8x10^{3})	8.6x10$^{3>HC}$ (8.1x10^{3}, 9.1x10^{3})	8.6x10$^{3>HC}$ (8.1x10^{3}, 9.0x10^{3})
TNFR1^{M}	5.9x10$^{2<Mod,Sev}$ (2.8x10^{2}, 9.1x10^{2})	5.6x10$^{3>HC}$ (5.2x10^{3}, 5.9x10^{3})	5.7x10$^{3>HC}$ (5.3x10^{3}, 6.1x10^{3})
TREM-1^{GM}	1.4x10$^{1<Mod,Sev}$ (9.3x10^{0}, 2.1x10^{1})	5.8x10$^{1>HC}$ (4.5x10^{1}, 7.6x10^{1})	6.6x10$^{1>HC}$ (5.4x10^{1}, 8.2x10^{1})
TSLP^{GM}	3.3$^{<Mod, Sev}$ (2, 7)	15.1$^{>HC}$ (12, 18)	17.0$^{>HC}$ (14, 21)
VEGF^{Med}	346.4$^{<Mod, Sev}$ (170, 603)	685.1$^{>HC}$ (372, 1085)	856.5$^{>HC}$ (500, 1324)

Variables where HC > AD	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
ACE^{GM}	$4.0x10^{5>Mod,Sev}$ ($3.6\ x10^5$, $4.3\ x10^5$)	$2.8x10^{5<HC}$ ($2.6x10^5$, $3.1x10^5$)	$3.0x10^{5<HC}$ ($2.7x10^5$, $3.3x10^5$)
Ang2^{Med}	$1.9x10^{4>Mod,Sev}$ ($1.8x10^4$, $2.8x10^4$)	$1.3x10^{4<HC}$ ($1.1x10^4$, $1.5x10^4$)	$1.4x10^{4<HC}$ ($1.2x10^4$, $1.5x10^4$)
BDNF^{M}	$5.5x10^{5>Mod,Sev}$ ($4.7x10^5$, $6.2x10^5$)	$2.2x10^{5<HC}$ ($2.1x10^5$, $2.4x10^5$)	$2.3x10^{5<HC}$ ($2.2x10^5$, $2.4x10^5$)
Cathepsin S^{M}	$1.7x10^{4>Mod,Sev}$ ($1.6x10^4$, $1.9x10^4$)	$1.3x10^{4<HC}$ ($1.1x10^4$, $1.6x10^4$)	$1.4x10^{4<HC}$ ($1.2x10^4$, $1.7x10^4$)
Chemerin 4^{Med}	$1.9x10^{4>Mod,Sev}$ ($1.7x10^4$, $2.5x10^4$)	$6.8x10^{3<HC}$ ($6.8x10^3$, $2.1x10^4$)	$1.4x10^{4<HC}$ ($6.8x10^3$, $2.2x10^4$)
EGF^{GM}	$24.3^{>Mod,Sev}$ (12, 49)	$13.8^{<HC}$ (12, 16)	$15.5^{<HC}$ (14, 18)
Galectin-3^{GM}	$2.8x10^{4>Mod,Sev}$ ($2.6x10^4$, $3.0x10^4$)	$2.0x10^{4<HC}$ ($1.8x10^4$, $2.1x10^4$)	$2.1x10^{4<HC}$ ($2.0x10^4$, $2.3x10^4$)
Galectin-9^{Med}	$3.2x10^{3>Mod,Sev}$ ($2.3x10^3$, $4.4x10^3$)	$1.0x10^{1<HC}$ ($1.0x10^1$, $8.1x10^3$)	$1.0x10^{1<HC}$ ($1.0x10^1$, $1.0x10^1$)
IFN-β^{Med}	$3.2x10^{2>Mod,Sev}$ ($1.5x10^2$, $9.1x10^2$)	$1.4x10^{2<HC}$ ($9.7x10^0$, $3.4x10^2$)	$1.4x10^{2<HC}$ ($9.7x10^0$, $2.8x10^2$)
IL-27^{Med}	$1.4x10^{3>Mod,Sev}$ ($4.7x10^2$, $2.7x10^3$)	$1.6x10^{0<HC}$ ($1.6x10^0$, $1.9x10^4$)	$1.6x10^{0<HC}$ ($1.6x10^0$, $1.6x10^0$)
Leptin-3^{Med}	$3.6x10^{3>Mod,Sev}$ ($2.8x10^3$, $5.4x10^3$)	$8.0x10^{2<HC}$ ($8.0x10^2$, $1.9x10^3$)	$8.0x10^{2<HC}$ ($8.0x10^2$, $2.0x10^3$)
MIF^{GM}	$7.0x10^{3>Mod,Sev}$ ($5.2x10^3$, $9.3x10^3$)	$2.8x10^{3<HC}$ ($2.5x10^3$, $3.1x10^3$)	$3.2x10^{3<HC}$ ($2.8x10^3$, $3.6x10^3$)
PAI-1^{Med}	$9.5x10^{5>Mod,Sev}$ ($6.6x10^5$, $1.3x10^6$)	$6.9x10^{5<HC}$ ($2.9x10^5$, $9.6x10^5$)	$7.5x10^{5<HC}$ ($1.7x10^5$, $1.0x10^6$)
P-selectin^{Med}	$5.5x10^{5>Mod,Sev}$ ($3.5x10^5$, $1.4x10^6$)	$3.4x10^{5<HC}$ ($2.0x10^5$, $5.5x10^5$)	$3.7x10^{5<HC}$ ($2.2x10^5$, $6.6x10^5$)
RBP-4^{Med}	$2.8x10^{7>Mod,Sev}$ ($2.7x10^7$, $2.9x10^7$)	$2.6x10^{7<HC}$ ($2.4x10^7$, $2.9x10^7$)	$2.6x10^{7<HC}$ ($2.4x10^7$, $2.8x10^7$)
Resistin^{Med}	$9.4x10^{3>Mod,Sev}$ ($8.9x10^3$, $1.0x10^4$)	$6.8x10^{3<HC}$ ($5.7x10^3$, $9.3x10^3$)	$7.5x10^{3<HC}$ ($6.0x10^3$, $9.5x10^3$)
sCD14^{Med}	$2.3x10^{6>Mod,Sev}$ ($2.1x10^6$, $2.5x10^6$)	$1.3x10^{6<HC}$ ($1.1x10^6$, $1.8x10^6$)	$1.5x10^{6<HC}$ ($1.2x10^6$, $2.0x10^6$)
sCD163^{Med}	$1.4x10^{5>Mod,Sev}$ ($1.2x10^5$, $1.7x10^5$)	$4.3x10^{4<HC}$ ($4.3x10^4$, $4.3x10^4$)	$4.3x10^{4<HC}$ ($4.3x10^4$, $4.3x10^4$)
SCF^{Med}	$50.8^{>Mod,\ Sev}$ (38, 59)	$31.5^{<HC}$ (20, 45)	$34.5^{<HC}$ (21, 52)
sIL-2Rα^{Med}	$23.5^{>Mod,\ Sev}$ (24, 336)	$23.5^{<HC}$ (24, 24)	$23.5^{<HC}$ (24, 24)
TACI^{Med}	$8.9x10^{4>Mod,Sev}$ ($6.6x10^4$, $1.1x10^5$)	$8.0x10^{2<HC}$ ($8.0x10^2$, $8.0x10^2$)	$8.0x10^{2<HC}$ ($8.0x10^2$, $8.0x10^2$)
TECK^{Med}	$915.9^{>Mod,\ Sev}$ (562, 1324)	$405.0^{<HC}$ (294, 601)	$481.3^{<HC}$ (306, 755)
TPO^{Med}	$8.6x10^{6>Mod,Sev}$ ($8.0x10^6$, $9.1x10^6$)	$9.2x10^{5<HC}$ ($7.2x10^5$, $1.2x10^6$)	$9.7x10^{5<HC}$ ($7.6x10^5$, $1.3x10^6$)

Variables where HC > AD	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
Trappin-2^{Med}	$2226.0^{>Mod,Sev}$ (1924, 2576)	$123.1^{<HC}$ (27, 243)	$99.8^{<HC}$ (29, 240)
TWEAK^{GM}	$1.6x10^{4>Mod,Sev}$ ($1.4x10^4$, $1.9x10^4$)	$9.9x10^{3<HC}$ ($9.3x10^3$, $1.1x10^4$)	$1.0x10^{4<HC}$ ($9.3x10^3$, $1.1x10^4$)
VCAM-1^{Med}	$4.3x10^{6>Mod,Sev}$ ($3.7x10^6$, $5.3x10^6$)	$2.0x10^{6<HC}$ ($1.6x10^6$, $2.5x10^6$)	$2.2x10^{6<HC}$ ($1.8x10^6$, $2.6x10^6$)

Variable types are shown in superscript next to variable name; M (mean) for normally distributed data, Med (median) for log-non normally distributed data, GM (geometric mean) for log-normally distributed

data. Numbers shown in brackets after measure of central tendency are 95% confidence intervals (for mean and geomean) or interquartile range (median). Superscript numbers after measure of central tendency are groups that are significantly different.

Table S5. Summary of serum mediators that are differentially regulated in atopic dermatitis versus healthy controls and associate with disease severity.

Variables where HC < AD	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
BRAK1^{Med}	$310.3^{<Mod,Sev}$ (196, 487)	$522.6^{>HC, <Sev}$ (284, 690)	$721.2^{>HC, Mod}$ (421, 948)
CTACK^{Med}	$2.5^{<Mod,Sev}$ (3, 4)	$297.6^{>HC, <Sev}$ (168, 521)	$480.1^{>HC, Mod}$ (283, 863)
Galectin-1^{M}	$1.9x10^{4<Mod,Sev}$ ($1.6x10^4$, $2.1x10^4$)	$2.5x10^{4>HC, <Sev}$ ($2.4x10^4$, $2.7x10^4$)	$2.8x10^{4>HC, Mod}$ ($2.7x10^4$, $3.0x10^4$)
I-309^{GM}	$2.1^{<Mod,Sev}$ (2, 2)	$29.4^{>HC, <Sev}$ (24, 37)	$51.2^{>HC, Mod}$ (42, 62)
IL-18^{GM}	$82.5^{<Mod,Sev}$ (66, 102)	$220.9^{>HC, <Sev}$ (191, 255)	$314.7^{>HC, Mod}$ (280, 354)
IL-18BPa^{Med}	$1416.3^{<Mod,Sev}$ (1121, 1740)	$2225.8^{>HC, <Sev}$ (1613, 2819)	$2597.0^{>HC, Mod}$ (2000, 3135)
IL-22^{Med}	$1.8^{<Mod,Sev}$ (2, 2)	$110.2^{>HC, <Sev}$ (46, 300)	$367^{>HC, Mod}$ (140, 602)
IP-10^{GM}	$280.6^{<Mod,Sev}$ (240, 328)	$426.4^{>HC, <Sev}$ (395, 460)	$500^{>HC, Mod}$ (458, 546)
MDC^{Med}	$737.8^{<Mod, Sev}$ (681, 874)	$2218.2^{>HC, <Sev}$ (1529, 3169)	$3730.3^{>HC, Mod}$ (2255, 9001)
MIP-1α^{Med}	$16.5^{<Mod, Sev}$ (17, 17)	$90.2^{>HC, <Sev}$ (69, 147)	$129.5^{>HC, Mod}$ (85, 162)
MIP-3α^{Med}	$0.6^{<Mod, Sev}$ (1, 1)	$7.4^{>HC, <Sev}$ (4, 11)	$9.5^{>HC, Mod}$ (6, 14)
Osteopontin^{GM}	$1.2x10^{4<Mod,Sev}$ ($9.2x10^3$, $1.5x10^4$)	$3.0x10^{4>HC, <Sev}$ ($2.7x10^4$, $3.4x10^4$)	$3.9x10^{4>HC, Mod}$ ($3.5x10^4$, $4.4x10^4$)
PARC^{Med}	$4.7x10^{5<Mod,Sev}$ ($2.8x10^5$, $7.1x10^5$)	$7.7x10^{5>HC, <Sev}$ ($3.3x10^5$, $3.8x10^6$)	$3.1x10^{6>HC, Mod}$ ($5.8x10^5$, $8.7x10^6$)
Periostin^{GM}	$6.7^{<Mod, Sev}$ (3, 13)	$12.0^{>HC, <Sev}$ (11, 13)	$17.8^{>HC, Mod}$ (16, 21)
TARC^{Med}	$96.5^{<Mod, Sev}$ (68, 137)	$1504.5^{>HC, <Sev}$ (654, 3200)	$3950.0^{>HC, Mod}$ (2104, 8944)
TNFR2^{M}	$1476.4^{<Mod, Sev}$ (1352, 1601)	$1968.9^{>HC, <Sev}$ (1836, 2102)	$2167.0^{>HC, Mod}$ (2053, 2281)
Total IgE^{Med}	$3.7x10^{1<Mod,Sev}$ ($1.5x10^1$, $8.0x10^1$)	$1.0x10^{3>HC, <Sev}$ ($2.5x10^2$, $3.2x10^3$)	$4.2x10^{3>HC, Mod}$ ($1.1x10^3$, $9.4x10^3$)

Variables where HC > AD	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
Cathepsin L^{Med}	$6.4x10^{3>Mod,Sev}$ ($5.0x10^3$, $8.0x10^3$)	$1.1x10^{3<HC, Sev}$ ($6.9x10^2$, $1.4x10^3$)	$1.1x10^{3<HC, >Mod}$ ($8.5x10^2$, $1.5x10^3$)
E-selectin^{Med}	$6.4x10^{4>Mod,Sev}$ ($4.3x10^4$, $8.5x10^4$)	$1.9x10^{4<HC, Sev}$ ($1.4x10^4$, $2.5x10^4$)	$2.7x10^{4<HC, >Mod}$ ($1.9x10^4$, $3.8x10^4$)
MCP-4^{Med}	$103.8^{>Mod}$ (240, 328)	$49.7^{<HC, Sev}$ (29, 70)	$76.9^{>Mod}$ (47, 134)
MMP8^{Med}	$3.0x10^{5>Mod,Sev}$ ($2.7x10^5$, $3.2x10^5$)	$1.1x10^{5<HC, Sev}$ ($1.0x10^5$, $1.2x10^5$)	$1.3x10^{5<HC, >Mod}$ ($1.2x10^5$, $1.5x10^4$)
RANTES^{Med}	$6.4x10^{5>Mod,Sev}$	$1.2x10^{5<HC, Sev}$	$1.5x10^{5<HC, >Mod}$

	($4.0x10^5$, $9.1x10^5$)	($6.2x10^4$, $1.8x10^5$)	($7.7x10^4$, $2.2x10^5$)

Variable types are shown in superscript next to variable name; M (mean) for normally distributed data, Med (median) for log-non normally distributed data, GM (geometric mean) for log-normally distributed data. Numbers shown in brackets after measure of central tendency are 95% confidence intervals (for mean and geomean) or interquartile range (median). Superscript numbers after measure of central tendency are groups that are significantly different.

Table S6. Summary of serum mediators that are not differentially regulated in atopic dermatitis versus healthy controls but associate with disease severity.

Variable	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
GDF^{Med}	$1.2x10^3$ ($1.0x10^3$, $1.3x10^3$)	$8.4x10^{2<Sev}$ ($7.1x10^2$, $1.1x10^3$)	$9.6x10^{2>Mod}$ ($7.4x10^2$, $1.5x10^3$)
MMP-1^{GM}	$3.5x10^4$ ($2.8x10^4$, $4.3x10^4$)	$3.7x10^{4<Sev}$ ($3.1x10^4$, $4.3x10^4$)	$4.7x10^{4>Mod}$ ($4.1x10^4$, $5.3x10^4$)

Variable types are shown in superscript next to variable name; M (mean) for normally distributed data, Med (median) for log-non normally distributed data, GM (geometric mean) for log-normally distributed data. Numbers shown in brackets after measure of central tendency are 95% confidence intervals (for mean and geomean) or interquartile range (median). Superscript numbers after measure of central tendency are groups that are significantly different.

Table S7. Summary of serum mediators that are not differentially regulated in atopic dermatitis versus healthy controls.

Variable	Healthy controls (n=30)	Moderate AD (n=95)	Severe AD (n=98)
Adiponectin^{Med}	$1.3x10^8$ ($9.0x10^7$, $1.6x10^8$)	$1.6x10^8$ ($1.2x10^8$, $4.2x10^8$)	$1.5x10^8$ ($9.5x10^7$, $4.2x10^8$)
Adipsin^{Med}	$1.5x10^4$ ($1.4x10^4$, $1.7x10^4$)	$1.7x10^4$ ($1.5x10^4$, $1.8x10^4$)	$1.7x10^4$ ($1.5x10^4$, $1.8x10^4$)
Ang1^{Med}	$4.4x10^4$ ($3.6x10^4$, $6.0x10^4$)	$5.2x10^4$ ($4.3x10^4$, $6.2x10^4$)	$5.4x10^4$ ($4.3x10^4$, $6.9x10^4$)
BLC^{GM}	43.8 (33, 58)	42.8 (36, 51)	53.4 (45, 64)
DKK-1^{M}	2403.4 (1913, 2893)	2260.6 (2195, 2326)	2321 (2268, 2373)
DPP-4^{GM}	539.3 (499, 583)	620.7 (583, 661)	584.6 (553, 618)
Eotaxin-3^{Med}	1.7 (1.7, 1.7)	1.7 (1.7, 1.7)	1.7 (1.7, 1.7)
EPO-R^{Med}	13.7 (13.7, 13.7)	13.7 (13.7, 623.1)	13.7 (13.7, 304.2)
FasL^{Med}	32.8 (31, 38)	45 (28, 68)	45 (26, 63)
FGFβ^{Med}	8 (8, 8)	8 (8, 8)	8 (8, 8)
GMCSF^{Med}	8 (8, 8)	8 (8, 8)	8 (8, 8)
GRO-α^{GM}	NA	106.7 (96, 119)	118.2 (105, 133)
IFN-γ^{Med}	4 (4,4)	4 (4,28)	4 (4,23)
IL1R4^{Med}	0.6 (1, 13)	4.3 (1, 14)	5.2 (1, 18)
IL1Ra^{Med}	4.2 (4, 88)	40.2 (4, 77)	43 (5, 77)
IL-2^{Med}	2.1 (2, 2)	2.1 (2, 2)	2.1 (2, 2)
IL-8^{GM}	20.9 (13, 34)	15.3 (12, 20)	18.0 (14, 24)
IL-16^{M}	$2.0x10^3$ ($6.8x10^2$, $3.4x10^3$)	$1.6x10^3$ ($1.5x10^3$, $1.8x10^3$)	$1.9x10^3$ ($1.7x10^3$, $2.0x10^3$)
IL-17^{Med}	2.8 (3, 3)	2.8 (3, 11)	2.8 (3, 12)
IL-19^{Med}	NA	1155.4 (787, 1815)	1241.7 (838, 1753)
IL-26^{Med}	$6.5x10^2$ ($1.4x10^2$, $1.5x10^3$)	$2.1x10^3$ ($3.8x10^1$, $6.6x10^3$)	$2.4x10^3$ ($3.8x10^1$, $6.4x10^3$)
IL-29^{Med}	$1.0x10^1$ ($1.0x10^1$, $1.0x10^1$)	$1.0x10^1$ ($1.0x10^1$, $1.0x10^1$)	$1.0x10^1$ ($1.0x10^1$, $1.0x10^1$)
IL-31^{Med}	$1.2x10^1$ ($1.2x10^1$, $2.5x10^1$)	$1.2x10^1$ ($1.2x10^1$, $3.1x10^3$)	$1.2x10^1$ ($1.2x10^1$, $1.2x10^1$)
KIM-1^{GM}	$4.4x10^1$ ($2.6x10^1$, $7.4x10^1$)	$6.6x10^1$ ($4.6x10^1$, $9.4x10^1$)	$5.7x10^1$ ($4.2x10^1$, $7.8x10^1$)
LAIR-1^{Med}	182.1 (182, 182)	182.1 (182, 182)	182.1 (182, 182)
LIGHT^{Med}	29.8 (4, 73)	4 (1, 128)	4 (4, 206)
MCP-3^{Med}	5.5 (6, 30)	14.4 (6, 53)	17.2 (6, 49)
MCSF^{Med}	7.6 (8, 8)	7.6 (8, 8)	7.6 (8, 8)

MIP-3β^{Med}	$6.6x10^{1}$ ($3.9x10^{1}$, $1.1x10^{2}$)	$1.6x10^{0}$ ($1.6x10^{0}$, $7.4x10^{3}$)	$1.6x10^{0}$ ($1.6x10^{0}$, $1.6x10^{0}$)
MMP-3^{Med}	$2.5x10^{4}$ ($2.1x10^{4}$, $3.0x10^{4}$)	$2.8x10^{4}$ ($2.4x10^{4}$, $3.2x10^{4}$)	$2.8x10^{4}$ ($2.5x10^{4}$, $3.2x10^{4}$)
NAP2^{Med}	$1.9x10^{7}$ ($1.7x10^{7}$, $4.0x10^{7}$)	$1.7x10^{7}$ ($1.3x10^{7}$, $4.0x10^{7}$)	$1.7x10^{7}$ ($1.5x10^{7}$, $4.0x10^{7}$)
NGF^{Med}	2.8 (2, 7)	4.9 (2, 14)	6.4 (2, 13)
PD1^{Med}	$2.1x10^{1}$ ($4.6x10^{0}$, $2.0x10^{2}$)	$4.6x10^{0}$ ($4.6x10^{0}$, $4.8x10^{3}$)	$3.6x10^{1}$ ($4.6x10^{0}$, $1.3x10^{3}$)
PLGF^{Med}	40.8 (27, 62)	41.5 (19, 59)	35.9 (19, 59)
S100A12^{Med}	NA	$5.4x10^{6}$ ($3.5x10^{6}$, $7.8x10^{6}$)	$5.3x10^{6}$ ($3.6x10^{6}$, $8.1x10^{6}$)
SDF-1α^{Med}	$3.1x10^{2}$ ($2.4x10^{2}$, $5.3x10^{2}$)	$3.7x10^{2}$ ($2.6x10^{1}$, $8.7x10^{2}$)	$5.0x10^{2}$ ($2.6x10^{1}$, $1.1x10^{3}$)
SOST^{Med}	11.7 (12, 88)	11.7 (12, 12)	11.7 (12, 12)
SRPSOX^{Med}	NA	$8.2x10^{2}$ ($6.3x10^{2}$, $2.9x10^{3}$)	$8.6x10^{2}$ ($6.8x10^{2}$, $2.1x10^{3}$)
TIMP-1^{M}	$5.0x10^{5}$ ($4.8x10^{5}$, $5.2x10^{5}$)	$5.0x10^{5}$ ($4.8x10^{5}$, $5.3x10^{5}$)	$5.2x10^{5}$ ($4.9x10^{5}$, $5.4x10^{5}$)
TNF-α^{Med}	1.1 (1, 1)	1.1 (1, 5)	1.1 (1, 5)
TNF-β^{Med}	1.5 (2, 13)	1.5 (2, 9)	1.5 (2, 9)
VEGFR^{GM}	$1.5x10^{3}$ ($1.2x10^{3}$, $1.9x10^{3}$)	$1.3x10^{3}$ ($1.2x10^{3}$, $1.5x10^{3}$)	$1.4x10^{3}$ ($1.3x10^{3}$, $1.6x10^{3}$)
XCL-1^{Med}	8.5 (9, 62)	8.5 (9, 39)	8.5 (9, 50)
YKL40^{Med}	$5.0x10^{4}$ ($4.5x10^{4}$, $6.6x10^{4}$)	$4.3x10^{4}$ ($3.3x10^{4}$, $6.2x10^{4}$)	$4.4x10^{4}$ ($3.4x10^{4}$, $6.3x10^{4}$)

Variable types are shown in superscript next to variable name; M (mean) for normally distributed data, Med (median) for log-non normally distributed data, GM (geometric mean) for log-normally distributed data. Numbers shown in brackets after measure of central tendency are 95% confidence intervals (for mean and geomean) or interquartile range (median). Superscript numbers after measure of central tendency are groups that are significantly different.

Table S8. ISAC sensitization pattern in healthy controls, moderate and severe AD patients.

Component	Sensitisation	Healthy controls (n=30)		Moderate AD (n=95		Severe AD (n=97)	
		no. of patients	% of patients	no. of patients	% of patients	no. of patients	% of patients
actd1	Negative	29	96.7	81	85.3	79	81.4
	Positive	1	3.3	14	14.7	18	18.6
actd2	Negative	30	100.0	81	85.3	78	80.4
	Positive	0	0.0	14	14.7	19	19.6
actd5	Negative	30	100.0	93	97.9	95	97.9
	Positive	0	0.0	2	2.1	2	2.1
actd8	Negative	28	93.3	61	64.2	55	56.7
	Positive	2	6.7	34	35.8	42	43.3
alng1	Negative	27	90.0	36	37.9	38	39.2
	Positive	3	10.0	59	62.1	59	60.8
alta1	Negative	30	100.0	64	67.4	64	66.0
	Positive	0	0.0	31	63.6	33	34.0
alta6	Negative	30	100.0	85	89.5	82	84.5
	Positive	0	0.0	10	10.5	15	15.5
amba1	Negative	30	100.0	94	99.0	93	95.9
	Positive	0	0.0	1	1.0	4	4.1
anao2	Negative	30	100.0	88	92.6	86	88.7
	Positive	0	0.0	7	7.4	11	11.3
anis1	Negative	30	100.0	93	97.9	93	95.9
	Positive	0	0.0	2	2.1	4	4.1
anis3	Negative	29	96.7	91	95.8	84	86.6
	Positive	1	3.3	4	4.2	13	13.4
apig1	Negative	29	96.7	59	62.1	54	55.7
	Positive	1	3.3	36	37.9	43	44.3
apim1	Negative	30	100.0	91	95.8	90	92.8
	Positive	0	0.0	4	4.2	7	7.2
apim4	Negative	30	100.0	95	100.0	97	100.0
	Positive	0	0.0	0	0.0	0	0.0
arah1	Negative	30	100.0	86	90.5	86	88.7
	Positive	0	0.0	9	9.5	11	11.3
arah2	Negative	30	100.0	84	88.4	85	87.6
	Positive	0	0.0	11	11.6	12	12.4
arah3	Negative	30	100.0	85	89.5	87	89.7
	Positive	0	0.0	10	10.5	10	10.3
arah6	Negative	30	100.0	83	87.4	85	87.6
	Positive	0	0.0	12	12.6	12	12.4
arah8	Negative	28	93.3	41	43.2	42	43.3
	Positive	2	6.7	54	56.8	55	56.7
arah9	Negative	30	100.0	88	92.6	85	87.6
	Positive	0	0.0	7	7.4	12	12.4
artv1	Negative	30	100.0	89	93.7	84	86.6
	Positive	0	0.0	6	6.3	13	13.4
artv3	Negative	30	100.0	88	92.6	81	83.5
	Positive	0	0.0	7	7.4	16	16.5
aspf1	Negative	30	100.0	91	95.8	90	92.8
	Positive	0	0.0	4	4.2	7	7.2
aspf6	Negative	30	100.0	63	66.3	67	69.1
	Positive	0	0.0	32	33.7	30	30.9
aspf3	Negative	28	93.3	87	91.6	87	89.7
	Positive	2	6.7	8	8.4	10	10.3
bere1	Negative	30	100.0	93	97.9	95	97.9
	Positive	0	0.0	2	2.1	2	2.1
betv1	Negative	25	83.3	32	33.7	37	38.1
	Positive	5	16.7	63	66.3	60	61.9
betv2	Negative	30	100.0	84	88.4	81	83.5
	Positive	0	0.0	11	11.6	16	16.5
betv4	Negative	30	100.0	91	95.8	90	92.8
	Positive	0	0.0	4	4.2	7	7.2
blag1	Negative	30	100.0	91	95.8	91	93.8
	Positive	0	0.0	4	4.2	6	6.2
blag2	Negative	30	100.0	69	72.6	54	55.7
	Positive	0	0.0	26	27.4	43	44.3
blag5	Negative	29	96.7	95	100.0	96	99.0
	Positive	1	3.3	0	0.0	1	1.0
blag7	Negative	29	96.7	86	90.5	78	80.4
	Positive	1	3.3	9	9.5	19	19.6
blot5	Negative	29	96.7	75	79.0	64	66.0
	Positive	1	3.3	20	21.1	33	34.0

bosd4	Negative	30	100.0	86	90.5	93	95.9
	Positive	0	0.0	9	9.5	4	4.1
bosd5	Negative	30	100.0	83	87.4	86	88.7
	Positive	0	0.0	12	12.6	11	11.3
bosd6	Negative	30	100.0	89	93.7	86	88.7
	Positive	0	0.0	6	6.3	11	11.3
bosd8	Negative	30	100.0	79	83.2	79	81.4
	Positive	0	0.0	16	16.8	18	18.6
bosdlacto	Negative	30	100.0	93	97.9	88	90.7
	Positive	0	0.0	2	2.1	9	9.3
canf1	Negative	30	100.0	56	59.0	40	41.2
	Positive	0	0.0	39	41.0	57	58.8
canf2	Negative	30	100.0	71	74.7	60	61.9
	Positive	0	0.0	24	25.3	37	38.1
canf3	Negative	30	100.0	70	73.7	57	58.8
	Positive	0	0.0	25	26.3	40	41.2
canf5	Negative	30	100.0	63	66.3	59	60.8
	Positive	0	0.0	32	33.7	38	39.2
chea1	Negative	30	100.0	82	86.3	84	86.6
	Positive	0	0.0	13	13.7	13	13.4
clah8	Negative	30	100.0	83	87.4	86	88.7
	Positive	0	0.0	12	12.6	11	11.3
cora1.0101	Negative	27	90.0	36	37.9	41	42.3
	Positive	3	10.0	59	62.1	56	57.7
cora1.0401	Negative	26	86.7	35	36.8	35	36.1
	Positive	4	13.3	60	63.2	62	63.9
cora8	Negative	30	100.0	85	89.5	81	83.5
	Positive	0	0.0	10	10.5	16	16.5
cora9	Negative	30	100.0	89	93.7	86	88.7
	Positive	0	0.0	6	6.3	11	11.3
cryj1	Negative	29	96.7	81	85.3	71	73.2
	Positive	1	3.3	14	14.7	26	26.8
cupa1	Negative	29	96.7	80	84.2	68	70.1
	Positive	1	3.3	15	15.8	29	29.9
cynd1	Negative	27	90.0	38	40.0	31	32.0
	Positive	3	10.0	57	60.0	66	68.0
derf1	Negative	28	93.3	39	41.0	27	27.8
	Positive	2	6.7	56	59.0	70	72.2
derf2	Negative	27	90.0	35	36.8	34	35.0
	Positive	3	10.0	60	63.2	63	65.0
derp1	Negative	28	93.3	34	35.8	28	28.9
	Positive	2	6.7	61	64.2	69	71.1
derp10	Negative	29	96.7	50	52.6	36	37.1
	Positive	1	3.3	45	47.4	61	62.9
derp2	Negative	27	90.0	36	37.9	35	36.1
	Positive	3	10.0	59	62.1	62	63.9
equc1	Negative	30	100.0	66	69.5	59	60.8
	Positive	0	0.0	29	30.5	38	39.2
equc3	Negative	30	100.0	90	94.7	78	80.4
	Positive	0	0.0	5	5.3	19	19.6
fage2	Negative	30	100.0	93	97.9	96	99.0
	Positive	0	0.0	2	2.1	1	1.0
feld1	Negative	29	96.7	31	32.6	29	29.9
	Positive	1	3.3	64	67.4	68	70.1
feld2	Negative	30	100.0	87	91.6	76	78.3
	Positive	0	0.0	8	8.4	21	21.6
feld4	Negative	30	100.0	64	67.4	52	53.6
	Positive	0	0.0	31	32.6	45	46.4
gadc1	Negative	30	100.0	93	97.9	88	90.7
	Positive	0	0.0	2	2.1	9	9.3
gald1	Negative	30	100.0	78	82.1	71	73.2
	Positive	0	0.0	17	17.9	26	26.8
gald2	Negative	30	100.0	87	91.6	82	84.5
	Positive	0	0.0	8	8.4	15	15.5
gald3	Negative	30	100.0	42	44.2	33	34.0
	Positive	0	0.0	53	55.8	64	66.0
gald5	Negative	30	100.0	92	96.8	84	86.6
	Positive	0	0.0	3	3.2	13	13.4
glym4	Negative	28	93.3	52	54.7	47	48.5
	Positive	2	6.7	43	45.3	50	51.5
glym5	Negative	30	100.0	88	92.6	93	95.9
	Positive	0	0.0	7	7.4	4	4.1
glym6	Negative	30	100.0	85	89.5	86	88.7
	Positive	0	0.0	10	10.5	11	11.3
hevb1	Negative	30	100.0	92	96.8	91	93.8

	Positive	0	0.0	3	3.2	6	6.2
hevb3	Negative	30	100.0	94	99.0	89	91.8
	Positive	0	0.0	1	1.0	8	8.2
hevb5	Negative	30	100.0	94	99.0	93	95.9
	Positive	0	0.0	1	1.0	4	4.1
hevb6.01	Negative	30	100.0	83	87.4	78	80.4
	Positive	0	0.0	12	12.6	19	19.6
hevb8	Negative	30	100.0	82	86.3	77	79.4
	Positive	0	0.0	13	13.7	20	20.6
jugr1	Negative	30	100.0	89	93.7	86	88.7
	Positive	0	0.0	6	6.3	11	11.3
jugr2	Negative	30	100.0	81	85.3	63	65.0
	Positive	0	0.0	14	14.7	34	35.0
jugr3	Negative	29	96.7	85	89.5	86	88.7
	Positive	1	3.3	10	10.5	11	11.3
lepd2	Negative	29	96.7	67	70.5	61	62.9
	Positive	1	3.3	28	29.5	36	37.1
mald1	Negative	26	86.7	39	41.0	40	41.2
	Positive	4	13.3	56	59.0	57	58.8
mera1	Negative	30	100.0	85	89.5	81	83.5
	Positive	0	0.0	10	10.5	16	16.5
musm1	Negative	30	100.0	70	73.7	65	67.0
	Positive	0	0.0	25	26.3	32	33.0
muxf3	Negative	30	100.0	81	85.3	76	78.3
	Positive	0	0.0	14	14.7	21	21.6
olee1	Negative	29	96.7	76	80.0	78	80.4
	Positive	1	3.3	19	20.0	19	19.6
olee7	Negative	29	96.7	88	92.6	85	87.6
	Positive	1	3.3	7	7.4	12	12.4
olee9	Negative	30	100.0	57	60.0	41	42.3
	Positive	0	0.0	38	40.0	56	57.7
parj2	Negative	30	100.0	66	69.5	59	60.8
	Positive	0	0.0	29	30.5	38	39.2
penm1	Negative	29	96.7	90	94.7	82	84.5
	Positive	1	3.3	5	5.3	15	15.5
penm2	Negative	30	100.0	77	81.0	72	74.2
	Positive	0	0.0	18	18.9	25	25.8
penm4	Negative	30	100.0	92	96.8	92	94.8
	Positive	0	0.0	3	3.2	5	5.2
phlp1	Negative	26	86.7	35	36.8	32	33.0
	Positive	4	13.3	60	63.2	65	67.0
phlp11	Negative	29	96.7	78	82.1	80	82.5
	Positive	1	3.3	17	17.9	17	17.5
phlp12	Negative	29	96.7	85	89.5	80	82.5
	Positive	1	3.3	10	10.5	17	17.5
phlp2	Negative	29	96.7	56	59.0	56	57.7
	Positive	1	3.3	39	41.0	41	42.3
phlp4	Negative	29	96.7	38	40.0	29	29.9
	Positive	1	3.3	57	60.0	68	70.1
phlp5	Negative	28	93.3	53	55.8	45	46.4
	Positive	2	6.7	42	44.2	52	53.6
phlp6	Negative	28	93.3	61	64.2	55	56.7
	Positive	2	6.7	34	35.8	42	43.3
phlp7	Negative	30	100.0	81	85.3	83	85.6
	Positive	0	0.0	14	14.7	14	14.4
plaa1	Negative	30	100.0	93	97.9	91	93.8
	Positive	0	0.0	2	2.1	6	6.2
plaa2	Negative	30	100.0	73	76.8	55	56.7
	Positive	0	0.0	22	23.2	42	43.3
plaa3	Negative	30	100.0	86	90.5	84	86.6
	Positive	0	0.0	9	9.5	13	13.4
plal1	Negative	30	100.0	91	95.8	90	92.8
	Positive	0	0.0	4	4.2	7	7.2
pold5	Negative	29	96.7	90	94.7	85	87.6
	Positive	1	3.3	5	5.3	12	12.4
phlp6.1	Negative	28	93.3	61	64.2	55	56.7
	Positive	2	6.7	34	35.8	42	43.3
phlp7.1	Negative	30	100.0	81	85.3	83	85.6
	Positive	0	0.0	14	14.7	14	14.4
plaa1.1	Negative	30	100.0	93	97.9	91	93.8
	Positive	0	0.0	2	2.1	6	6.2
plaa2.1	Negative	30	100.0	73	76.8	55	56.7
	Positive	0	0.0	22	23.2	42	43.3
plaa3.1	Negative	30	100.0	86	90.5	84	86.6
	Positive	0	0.0	9	9.5	13	13.4

plal1.1	Negative	30	100.0	91	95.8	90	92.8
	Positive	0	0.0	4	4.2	7	7.2
pold5.1	Negative	29	96.7	90	94.7	85	87.6
	Positive	1	3.3	5	5.3	12	12.4
prup1	Negative	28	93.3	40	42.1	42	43.3
	Positive	2	6.7	55	57.9	55	56.7
prup3	Negative	30	100.0	57	60.0	46	47.4
	Positive	0	0.0	38	40.0	51	52.6
salk1	Negative	30	100.0	90	94.7	89	91.8
	Positive	0	0.0	5	5.3	8	8.2
sesi1	Negative	30	100.0	91	95.8	92	94.8
	Positive	0	0.0	4	4.2	5	5.2
tria14	Negative	30	100.0	91	95.8	81	83.5
	Positive	0	0.0	4	4.2	16	16.5
tria19.0101	Negative	30	100.0	95	100.0	92	94.8
	Positive	0	0.0	0	0.0	5	5.2
triaaati	Negative	30	100.0	92	96.8	89	91.8
	Positive	0	0.0	3	3.2	8	8.2
vesv5	Negative	28	93.3	90	94.7	80	82.5
	Positive	2	6.7	5	5.3	17	17.5

Sensitisation is binominally displayed; sensitisation of >0.3 was classified as being positive

Table S9. ISAC sensitization pattern for each of the four cluster and healthy controls

Component	Sensitisation	Healthy controls (n=30)		Cluster 1 (n=44)		Cluster 2 (n=54)		Cluster 3 (n=62)		Cluster 4 (n=28)	
		No. of HC	% of HC	No. of patients	% of patients	No. of patients	% of patients	No. of patients	% of patients	No. of patients	% of patients
actd1	Negative	29	96.7	37	84.1	47	87.0	49	79.0	23	82.1
	Positive	1	3.3	7	15.9	7	13.0	13	21.0	5	17.9
actd2	Negative	30	100.0	33	75.0	45	83.3	55	88.7	55	78.6
	Positive	0	0.0	11	25.0	9	16.7	7	11.3	6	21.4
actd5	Negative	30	100.0	44	100.0	54	100.0	60	96.8	26	92.9
	Positive	0	0.0	0	0.0	0	0.0	2	3.2	2	7.1
actd8	Negative	28	93.3	23	52.3	33	61.1	41	66.1	15	53.6
	Positive	2	6.7	21	47.7	21	38.9	21	33.9	13	46.4
alng1	Negative	27	90.0	18	40.9	18	33.3	26	41.9	9	32.1
	Positive	3	10.0	26	59.1	36	66.7	36	58.1	19	67.9
alta1	Negative	30	100.0	30	68.2	31	57.4	49	79.0	16	57.1
	Positive	0	0.0	14	31.8	23	42.6	13	21.0	12	42.9
alta6	Negative	30	100.0	34	77.3	52	96.3	56	90.3	21	75.0
	Positive	0	0.0	10	22.7	2	3.7	6	9.7	7	25.0
amba1	Negative	30	100.0	41	93.2	54	100.0	62	100.0	26	92.9
	Positive	0	0.0	3	6.8	0	0.0	0	0.0	2	7.1
anao2	Negative	30	100.0	40	90.9	46	85.2	60	96.8	24	85.7
	Positive	0	0.0	4	9.1	8	14.8	2	3.2	4	14.3
anis1	Negative	30	100.0	41	93.2	54	100.0	61	98.4	26	92.9
	Positive	0	0.0	3	6.8	0	0.0	1	1.6	2	7.1
anis3	Negative	29	96.7	40	90.9	50	92.6	55	88.7	26	92.9
	Positive	1	3.3	4	9.1	4	7.4	7	11.3	2	7.1
apig1	Negative	29	96.7	19	43.2	31	57.4	41	66.1	18	64.3
	Positive	1	3.3	25	56.8	23	42.6	21	33.9	10	35.7
apim1	Negative	30	100.0	39	88.6	53	98.2	58	93.5	27	96.4
	Positive	0	0.0	5	11.4	1	1.8	4	6.4	1	3.6
apim4	Negative	30	100.0	44	100.0	54	100.0	62	100.0	28	100.0
	Positive	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
arah1	Negative	30	100.0	40	90.9	46	85.2	57	91.9	25	89.3
	Positive	0	0.0	4	9.1	8	14.8	5	8.1	3	10.7
arah2	Negative	30	100.0	37	84.1	45	83.3	59	95.2	25	89.3
	Positive	0	0.0	7	15.9	9	16.7	3	4.8	3	10.7
arah3	Negative	30	100.0	37	84.1	47	87.0	59	95.2	25	89.3
	Positive	0	0.0	7	15.9	7	13.0	3	4.8	3	10.7
arah6	Negative	30	100.0	35	79.5	46	85.2	58	93.5	25	89.3
	Positive	0	0.0	9	20.4	8	14.8	4	6.4	3	10.7
arah8	Negative	28	93.3	18	40.9	20	37.0	31	50.0	11	39.3
	Positive	2	6.7	26	59.1	34	63.0	31	50.0	17	60.7
arah9	Negative	30	100.0	37	84.1	51	94.4	57	91.9	24	85.7
	Positive	0	0.0	7	15.9	3	5.6	5	8.1	4	14.3
artv1	Negative	30	100.0	39	88.6	49	90.7	55	88.7	26	92.9
	Positive	0	0.0	5	11.4	5	9.3	7	11.3	2	7.1
artv3	Negative	30	100.0	36	81.8	50	92.6	56	90.3	23	82.1
	Positive	0	0.0	8	18.2	4	7.4	6	9.7	5	17.9
aspf1	Negative	30	100.0	41	93.2	53	98.2	57	91.9	26	92.9
	Positive	0	0.0	3	6.8	1	1.8	5	8.1	2	7.1
aspf6	Negative	30	100.0	27	61.4	39	72.2	42	67.7	19	67.9
	Positive	0	0.0	17	38.6	15	27.8	20	32.3	9	32.1
aspf3	Negative	28	93.3	39	88.6	47	87.0	59	95.2	26	92.9
	Positive	2	6.7	5	11.4	7	13.0	3	4.8	2	7.1
bere1	Negative	30	100.0	44	100.0	53	98.2	61	98.4	26	92.9
	Positive	0	0.0	0	0.0	1	1.8	1	1.6	2	7.1
betv1	Negative	25	83.3	16	36.4	16	29.6	27	43.5	7	25.0
	Positive	5	16.7	28	63.6	38	70.4	35	56.5	21	75.0
betv2	Negative	30	100.0	37	84.1	48	88.9	55	88.7	21	75.0
	Positive	0	0.0	7	15.9	6	11.1	7	11.3	7	25.0
betv4	Negative	30	100.0	40	90.9	52	96.3	59	95.2	27	96.4
	Positive	0	0.0	4	9.1	2	3.7	3	4.8	1	3.6
blag1	Negative	30	100.0	40	90.9	52	96.3	59	95.2	27	96.4
	Positive	0	0.0	4	9.1	2	3.7	3	4.8	1	3.6
blag2	Negative	30	100.0	22	50.0	33	61.1	45	72.6	19	67.9
	Positive	0	0.0	22	50.0	21	38.9	17	27.4	9	32.1
blag5	Negative	29	96.7	44	100.0	54	100.0	61	98.4	28	100.0
	Positive	1	3.3	0	0.0	0	0.0	1	1.6	0	0.0
blag7	Negative	29	96.7	36	81.8	49	90.7	51	82.3	24	85.7

	Positive	1	3.3	8	18.2	5	9.3	11	17.7	4	14.3
blot5	Negative	29	96.7	28	63.6	43	79.6	42	67.7	23	82.1
	Positive	1	3.3	16	36.4	11	20.4	20	32.3	5	17.9
bosd4	Negative	30	100.0	42	95.5	50	92.6	57	91.9	26	92.9
	Positive	0	0.0	2	4.5	4	7.4	5	8.1	2	7.1
bosd5	Negative	30	100.0	38	86.4	50	92.6	53	85.5	24	85.7
	Positive	0	0.0	6	13.6	4	7.4	9	14.5	4	14.3
bosd6	Negative	30	100.0	40	90.9	50	92.6	55	88.7	27	96.4
	Positive	0	0.0	4	9.1	4	7.4	7	11.3	1	3.6
bosd8	Negative	30	100.0	34	77.3	42	77.8	52	83.9	26	92.9
	Positive	0	0.0	10	22.7	12	22.2	10	16.1	2	7.1
bosdlacto	Negative	30	100.0	40	90.9	51	94.4	58	93.5	28	100.0
	Positive	0	0.0	4	9.1	3	5.6	4	6.4	0	0.0
canf1	Negative	30	100.0	16	36.4	29	53.7	33	53.2	14	50.0
	Positive	0	0.0	28	63.6	25	46.3	29	46.8	14	50.0
canf2	Negative	30	100.0	25	56.8	38	70.4	46	74.2	19	67.9
	Positive	0	0.0	19	43.2	16	29.6	16	25.8	9	32.1
canf3	Negative	30	100.0	25	56.8	38	70.4	42	67.7	18	64.3
	Positive	0	0.0	19	43.2	16	29.6	20	32.3	10	35.7
canf5	Negative	30	100.0	25	56.8	33	61.1	39	62.9	22	78.6
	Positive	0	0.0	19	43.2	21	38.9	23	37.1	6	21.4
chea1	Negative	30	100.0	36	81.8	45	83.3	55	88.7	26	92.9
	Positive	0	0.0	8	18.2	9	16.7	7	11.3	2	7.1
clah8	Negative	30	100.0	36	81.8	50	92.6	56	90.3	23	82.1
	Positive	0	0.0	8	18.2	4	7.4	6	9.7	5	17.9
cora1	Negative	27	90.0	18	40.9	19	35.2	27	43.5	10	35.7
	Positive	3	10.0	26	59.1	35	64.8	35	56.5	18	64.3
cora1.0401	Negative	26	86.7	15	34.1	19	35.2	23	37.1	10	35.7
	Positive	4	13.3	29	65.9	35	64.8	39	62.9	18	64.3
cora8	Negative	30	100.0	34	77.3	50	92.6	55	88.7	23	82.1
	Positive	0	0.0	10	22.7	4	7.4	7	11.3	5	17.9
cora9	Negative	30	100.0	39	88.6	50	92.6	59	95.2	23	82.1
	Positive	0	0.0	5	11.4	4	7.4	3	4.8	5	17.9
cryj1	Negative	29	96.7	34	77.3	42	77.8	55	88.7	18	64.3
	Positive	1	3.3	10	22.7	12	22.2	7	11.3	10	35.7
cupa1	Negative	29	96.7	32	72.7	39	72.2	55	88.7	18	64.3
	Positive	1	3.3	12	27.3	15	27.8	7	11.3	10	35.7
cynd1	Negative	27	90.0	11	25.0	12	22.2	31	50.0	11	39.3
	Positive	3	10.0	33	75.0	42	77.8	31	50.0	17	60.7
derf1	Negative	28	93.3	10	22.7	21	38.9	20	32.3	12	42.9
	Positive	2	6.7	34	77.3	33	61.1	42	67.7	16	57.1
derf2	Negative	27	90.0	13	29.6	22	40.7	18	29.0	13	46.4
	Positive	3	10.0	31	70.5	32	59.3	44	71.0	15	53.6
derp1	Negative	28	93.3	9	20.4	19	35.2	20	32.3	11	39.3
	Positive	2	6.7	35	79.5	35	64.8	42	67.7	17	60.7
derp10	Negative	29	96.7	15	34.1	26	48.1	28	45.2	13	46.4
	Positive	1	3.3	29	65.9	28	51.9	34	54.8	15	53.6
derp2	Negative	27	90.0	13	29.6	24	44.4	17	27.4	14	50.0
	Positive	3	10.0	31	70.5	30	55.6	45	72.6	14	50.0
equc1	Negative	30	100.0	23	52.3	36	66.7	45	72.6	17	60.7
	Positive	0	0.0	21	47.7	18	33.3	17	27.4	11	39.3
equc3	Negative	30	100.0	37	84.1	48	88.9	52	83.9	27	96.4
	Positive	0	0.0	7	15.9	6	11.1	10	16.1	1	3.6
fage2	Negative	30	100.0	42	95.5	53	98.2	62	100.0	28	100.0
	Positive	0	0.0	2	4.5	1	1.8	0	0.0	0	0.0
feld1	Negative	29	96.7	12	27.3	19	35.2	21	33.9	6	21.4
	Positive	1	3.3	32	72.7	35	64.8	41	66.1	22	78.6
feld2	Negative	30	100.0	36	81.8	45	83.3	53	85.5	25	89.3
	Positive	0	0.0	8	18.2	9	16.7	9	14.5	3	10.7
feld4	Negative	30	100.0	23	52.3	33	61.1	43	69.3	14	50.0
	Positive	0	0.0	21	47.7	21	38.9	19	30.6	14	50.0
gadc1	Negative	30	100.0	40	90.9	51	94.4	59	95.2	27	96.4
	Positive	0	0.0	4	9.1	3	5.6	3	4.8	1	3.6
gald1	Negative	30	100.0	31	70.5	42	77.8	47	75.8	25	89.3
	Positive	0	0.0	13	29.6	12	22.2	15	24.2	3	10.7
gald2	Negative	30	100.0	38	86.4	46	85.2	55	88.7	26	92.9
	Positive	0	0.0	6	13.6	8	14.8	7	11.3	2	7.1
gald3	Negative	30	100.0	14	31.8	25	46.3	19	30.6	14	50.0
	Positive	0	0.0	30	68.2	29	53.7	43	69.3	14	50.0
gald5	Negative	30	100.0	40	90.9	49	90.7	57	91.9	26	92.9
	Positive	0	0.0	4	9.1	5	9.3	5	8.1	2	7.1
glym4	Negative	28	93.3	21	47.7	27	50.0	34	54.8	14	50.0

	Positive	2	6.7	23	52.3	27	50.0	28	45.2	14	50.0
glym5	Negative	30	100.0	41	93.2	51	94.4	61	98.4	24	85.7
	Positive	0	0.0	3	6.8	3	5.6	1	1.6	4	14.3
glym6	Negative	30	100.0	39	88.6	47	87.0	59	95.2	22	78.6
	Positive	0	0.0	5	11.4	7	13.0	3	4.8	6	21.4
hevb1	Negative	30	100.0	41	93.2	49	90.7	62	100.0	27	96.4
	Positive	0	0.0	3	6.8	5	9.3	0	0.0	1	3.6
hevb3	Negative	30	100.0	42	95.5	49	90.7	61	98.4	27	96.4
	Positive	0	0.0	2	4.5	5	9.3	1	1.6	1	3.6
hevb5	Negative	30	100.0	43	97.7	52	96.3	62	100.0	26	92.9
	Positive	0	0.0	1	2.3	2	3.7	0	0.0	2	7.1
hevb6.01	Negative	30	100.0	39	88.6	44	81.5	51	82.3	23	82.1
	Positive	0	0.0	5	11.4	10	18.5	11	17.7	5	17.9
hevb8	Negative	30	100.0	36	81.8	42	77.8	56	90.3	21	75.0
	Positive	0	0.0	8	18.2	12	22.2	6	9.7	7	25.0
jugr1	Negative	30	100.0	40	90.9	49	90.7	58	93.5	24	85.7
	Positive	0	0.0	4	9.1	5	9.3	4	6.4	4	14.3
jugr2	Negative	30	100.0	32	72.7	41	75.9	47	75.8	20	71.4
	Positive	0	0.0	12	27.3	13	24.1	15	24.2	8	28.6
jugr3	Negative	29	96.7	39	88.6	48	88.9	56	90.3	24	85.7
	Positive	1	3.3	5	11.4	6	11.1	6	9.7	4	14.3
lepd2	Negative	29	96.7	27	61.4	39	72.2	34	54.8	25	89.3
	Positive	1	3.3	17	38.6	15	27.8	28	45.2	3	10.7
mald1	Negative	26	86.7	18	40.9	19	35.2	29	46.8	10	35.7
	Positive	4	13.3	26	59.1	35	64.8	33	53.2	18	64.3
mera1	Negative	30	100.0	37	84.1	47	87.0	57	91.9	21	75.0
	Positive	0	0.0	7	15.9	7	13.0	5	8.1	7	25.0
musm1	Negative	30	100.0	28	63.6	36	66.7	49	79.0	18	64.3
	Positive	0	0.0	16	36.4	18	33.3	13	21.0	10	35.7
muxf3	Negative	30	100.0	31	70.5	43	79.6	55	88.7	24	85.7
	Positive	0	0.0	13	29.6	11	20.4	7	11.3	4	14.3
olee1	Negative	29	96.7	33	75.0	41	75.9	54	87.1	22	78.6
	Positive	1	3.3	11	25.0	13	24.1	8	12.9	6	21.4
olee7	Negative	29	96.7	41	93.2	45	83.3	57	91.9	26	92.9
	Positive	1	3.3	3	6.8	9	16.7	5	8.1	2	7.1
olee9	Negative	30	100.0	17	38.6	29	53.7	35	56.5	14	50.0
	Positive	0	0.0	27	61.4	25	46.3	27	43.5	14	50.0
parj2	Negative	30	100.0	24	54.5	34	63.0	44	71.0	19	67.9
	Positive	0	0.0	20	45.5	20	37.0	18	29.0	9	32.1
penm1	Negative	29	96.7	39	88.6	48	88.9	56	90.3	25	89.3
	Positive	1	3.3	5	11.4	6	11.1	6	9.7	3	10.7
penm2	Negative	30	100.0	31	70.5	44	81.5	48	77.4	22	78.6
	Positive	0	0.0	13	29.6	10	18.5	14	22.6	6	21.4
penm4	Negative	30	100.0	44	100.0	51	94.4	58	93.5	27	96.4
	Positive	0	0.0	0	0.0	3	5.6	4	6.4	1	3.6
phlp1	Negative	26	86.7	12	27.3	10	18.5	32	51.6	9	32.1
	Positive	4	13.3	32	72.7	44	81.5	30	48.4	19	67.9
phlp11	Negative	29	96.7	35	79.5	40	74.1	55	88.7	24	85.7
	Positive	1	3.3	9	20.4	14	25.9	7	11.3	4	14.3
phlp12	Negative	29	96.7	38	86.4	46	85.2	57	91.9	20	71.4
	Positive	1	3.3	6	13.6	8	14.8	5	8.1	8	28.6
phlp2	Negative	29	96.7	23	52.3	26	48.1	45	72.6	14	50.0
	Positive	1	3.3	21	47.7	28	51.9	17	27.4	14	50.0
phlp4	Negative	29	96.7	11	25.0	10	18.5	30	48.4	13	46.4
	Positive	1	3.3	33	75.0	44	81.5	32	51.6	15	53.6
phlp5	Negative	28	93.3	19	43.2	23	42.6	37	59.7	16	57.1
	Positive	2	6.7	25	56.8	31	57.4	25	40.3	12	42.9
phlp6	Negative	28	93.3	23	52.3	26	48.1	46	74.2	17	60.7
	Positive	2	6.7	21	47.7	28	51.9	16	25.8	11	39.3
phlp7	Negative	30	100.0	36	81.8	45	83.3	57	91.9	22	78.6
	Positive	0	0.0	8	18.2	9	16.7	5	8.1	6	21.4
plaa1	Negative	30	100.0	42	95.5	50	92.6	61	98.4	27	96.4
	Positive	0	0.0	2	4.5	4	7.4	1	1.6	1	3.6
plaa2	Negative	30	100.0	22	50.0	37	68.5	45	72.6	20	71.4
	Positive	0	0.0	22	50.0	17	31.5	17	27.4	8	28.6
plaa3	Negative	30	100.0	36	81.8	49	90.7	57	91.9	24	85.7
	Positive	0	0.0	8	18.2	5	9.3	5	8.1	4	14.3
plal1	Negative	30	100.0	39	88.6	53	98.2	60	96.8	25	89.3
	Positive	0	0.0	5	11.4	1	1.8	2	3.2	3	10.7
pold5	Negative	29	96.7	40	90.9	48	88.9	56	90.3	28	100.0
	Positive	1	3.3	4	9.1	6	11.1	6	9.7	0	0.0
phlp6.1	Negative	28	93.3	23	52.3	26	48.1	46	74.2	17	60.7

	Positive	2	6.7	21	47.7	28	51.9	16	25.8	11	39.3
phlp7.1	Negative	30	100.0	36	81.8	45	83.3	57	91.9	22	78.6
	Positive	0	0.0	8	18.2	9	16.7	5	8.1	6	21.4
plaa1.1	Negative	30	100.0	42	95.5	50	92.6	61	98.4	27	96.4
	Positive	0	0.0	2	4.5	4	7.4	1	1.6	1	3.6
plaa2.1	Negative	30	100.0	22	50.0	37	68.5	45	72.6	20	71.4
	Positive	0	0.0	22	50.0	17	31.5	17	27.4	8	28.6
plaa3.1	Negative	30	100.0	36	81.8	49	90.7	57	91.9	24	85.7
	Positive	0	0.0	8	18.2	5	9.3	5	8.1	4	14.3
plal1.1	Negative	30	100.0	39	88.6	53	98.2	60	96.8	25	89.3
	Positive	0	0.0	5	11.4	1	1.8	2	3.2	3	10.7
pold5.1	Negative	29	96.7	40	90.9	48	88.9	56	90.3	28	100.0
	Positive	1	3.3	4	9.1	6	11.1	6	9.7	0	0.0
prup1	Negative	28	93.3	18	40.9	21	38.9	30	48.4	10	35.7
	Positive	2	6.7	26	59.1	33	61.1	32	51.6	18	64.3
prup3	Negative	30	100.0	17	38.6	29	53.7	39	62.9	14	50.0
	Positive	0	0.0	27	61.4	25	46.3	23	37.1	14	50.0
salk1	Negative	30	100.0	39	88.6	50	92.6	61	98.4	25	89.3
	Positive	0	0.0	5	11.4	4	7.4	1	1.6	3	10.7
sesi1	Negative	30	100.0	42	95.5	54	100.0	58	93.5	25	89.3
	Positive	0	0.0	2	4.5	0	0.0	4	6.4	3	10.7
tria14	Negative	30	100.0	41	93.2	49	90.7	55	88.7	23	82.1
	Positive	0	0.0	3	6.8	5	9.3	7	11.3	5	17.9
tria19	Negative	30	100.0	42	95.5	53	98.2	60	96.8	28	100.0
	Positive	0	0.0	2	4.5	1	1.8	2	3.2	0	0.0
triaaati	Negative	30	100.0	41	93.2	52	96.3	60	96.8	24	85.7
	Positive	0	0.0	3	6.8	2	3.7	2	3.2	4	14.3
vesv5	Negative	28	93.3	39	88.6	47	87.0	55	88.7	26	92.9
	Positive	2	6.7	5	11.4	7	13.0	7	11.3	2	7.1

Sensitisation is binominally displayed; sensitisation of >0.3 was classified as being positive

Supplemental Movie E10. Principal component analysis of AD patients.

3D animation of the first three PCs showing the separation of the four patient clusters generated by unsupervised k-means cluster analysis (see Figure 1C). Patients in cluster 1 are represented by black dots, patients in cluster 2 by red dots, patients in cluster 3 by green dots and patients in cluster 4 by blue dots.