

Supplementary materials for

**Autoantibody profiling using microarray identified biomarkers
associated with chemoimmunotherapy efficacy and immune-
related adverse events in lung cancer patients**

**Clinical and Experimental Medicine (submitted in 2025) –
Zuo Wang et al.**

The PDF file includes:

Figures S1 to S5

Tables S1 to S8

Supplementary figure 1

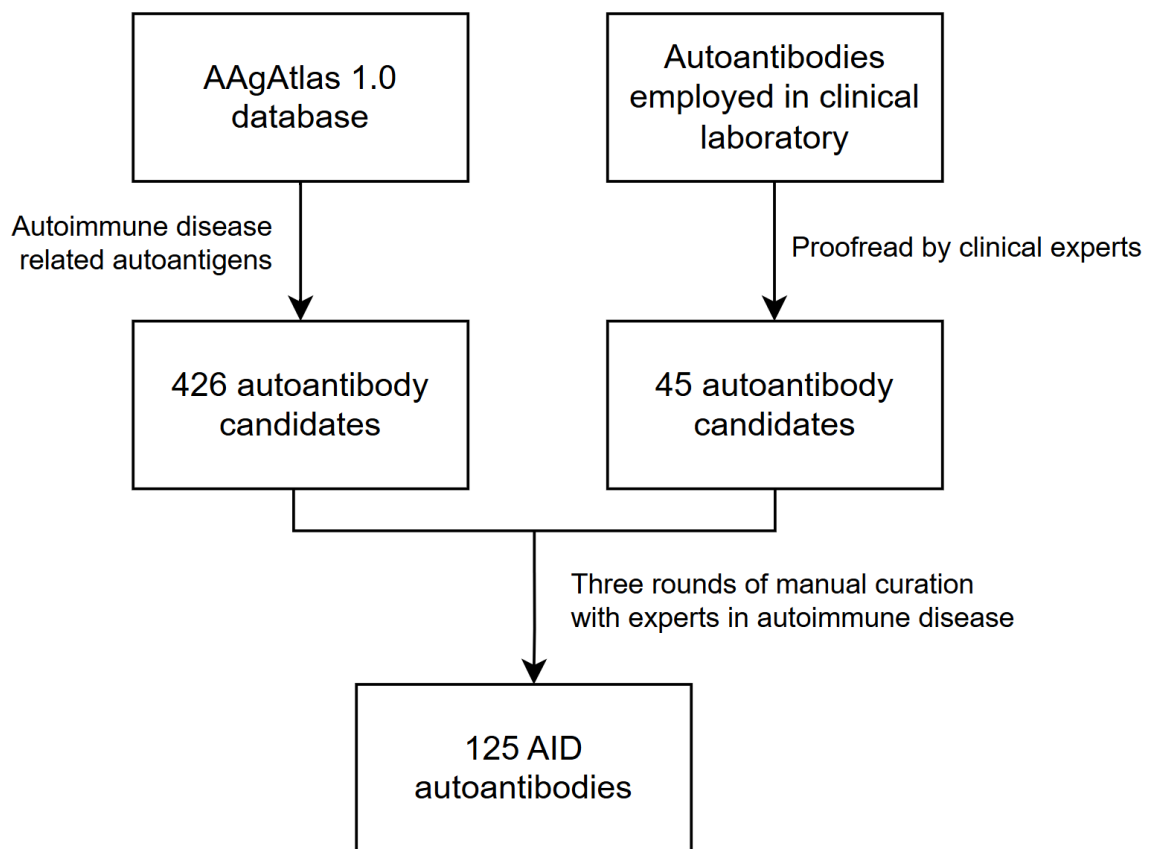


Figure S1 The workflow of AID autoantibodies selection.

Supplementary figure 2

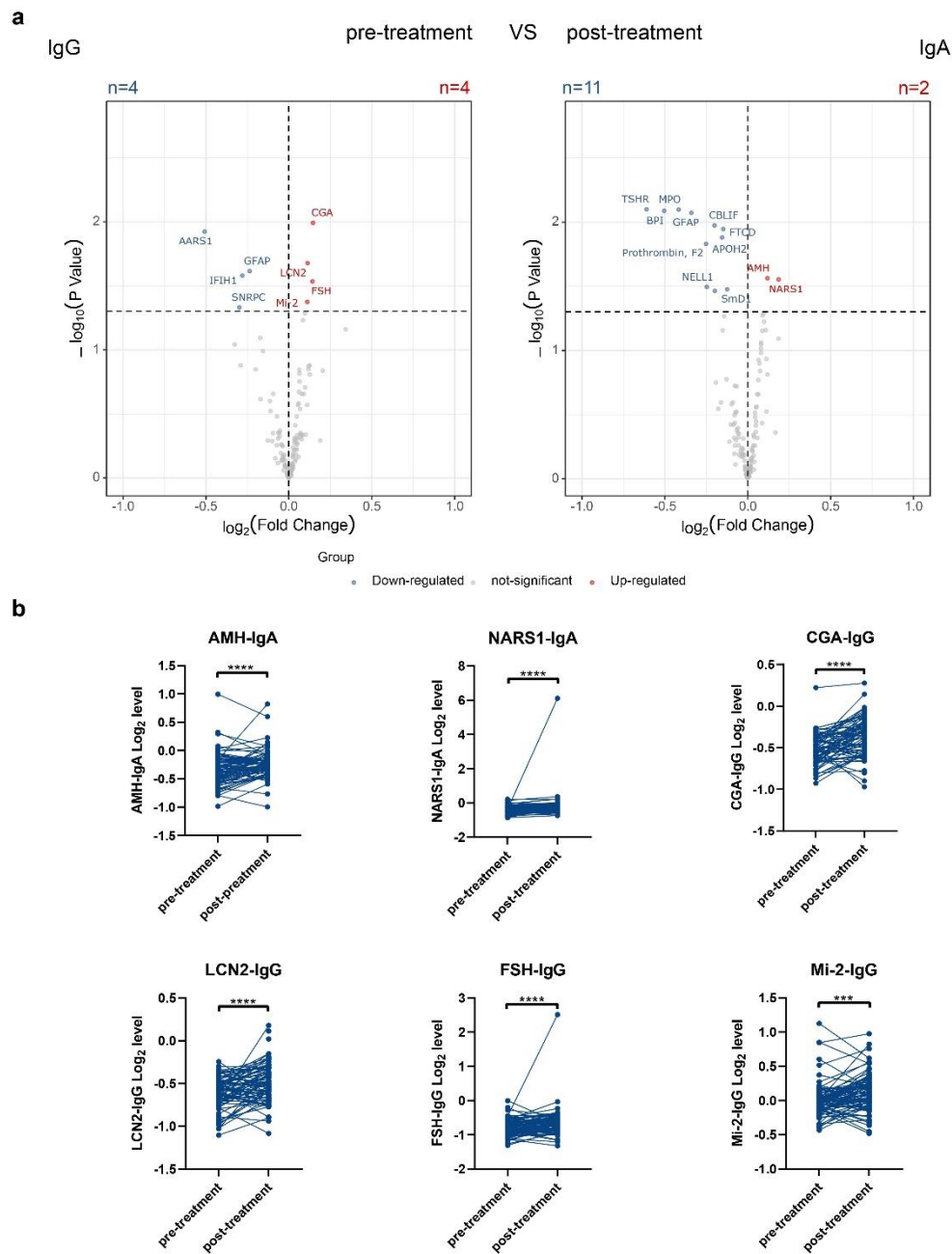


Figure S2 Changes of autoantibodies pre and post-treatment.

(a) Changes of autoantibodies in lung cancer patients pre- and post-treatment. The volcano plot shows the differential autoantibodies of 83 patients in the training cohort pre- and post-treatment. The selection of autoantibodies was performed using samr-nonparametric test ($p < 0.05$). Blue and red dots represent down-regulated and up-regulated autoantibodies. (b) The levels of IgA and IgG autoantibodies were significantly increased from pre-treatment to post-treatment. The statistical analysis was performed using a paired Student's t-test with a p value < 0.05 . ***, **** in the graphs correspond to the p value < 0.001 and 0.0001 , respectively.

Supplementary figure 3

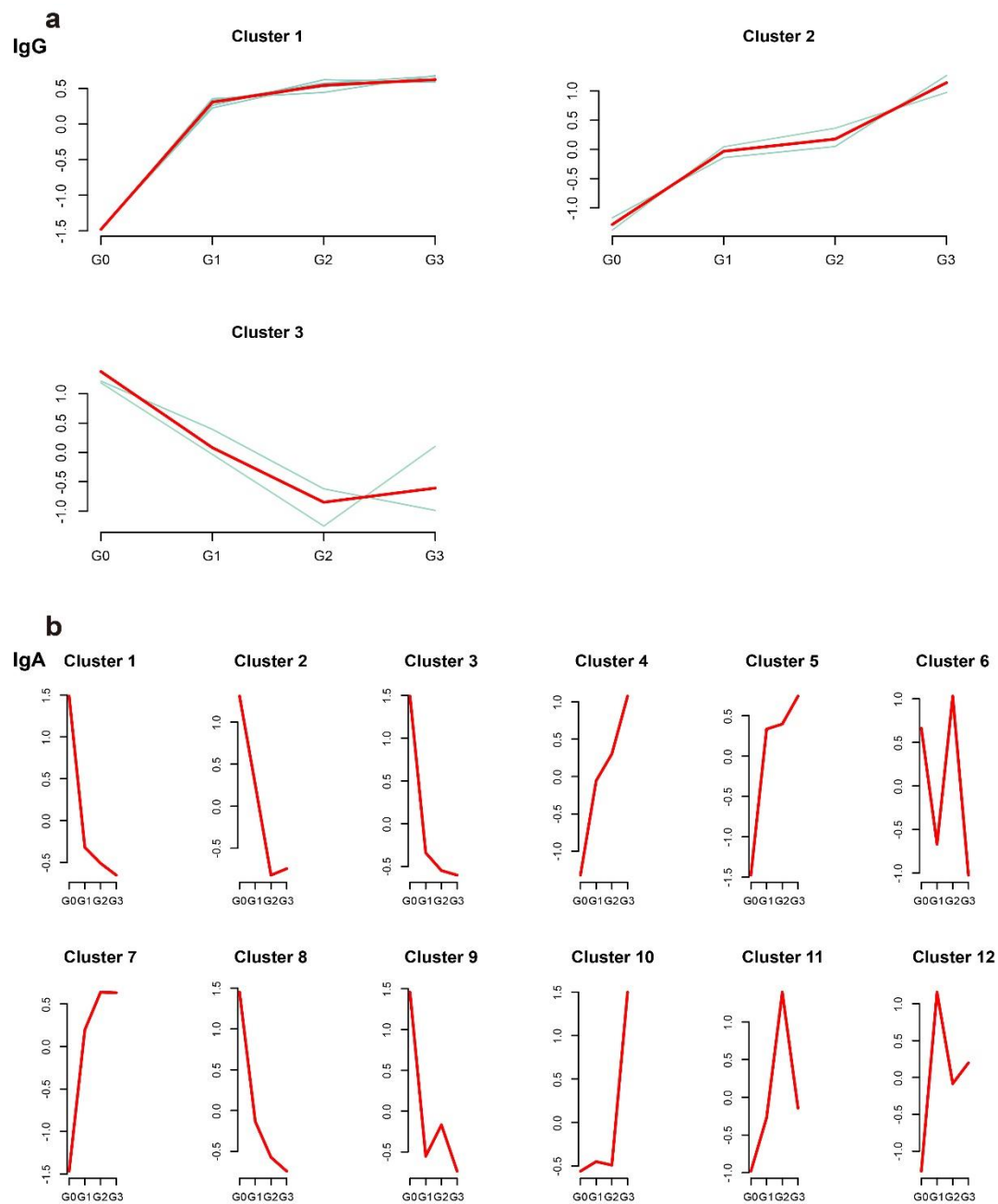


Figure S3 The dynamic changes of differential autoantibody expression with the severity of irAEs.

(a, b) IgG/IgA autoantibody clustered according to their expression patterns, and the abundance were plotted over four groups using the gene cluster trend of Hiplot.

Supplementary figure 4

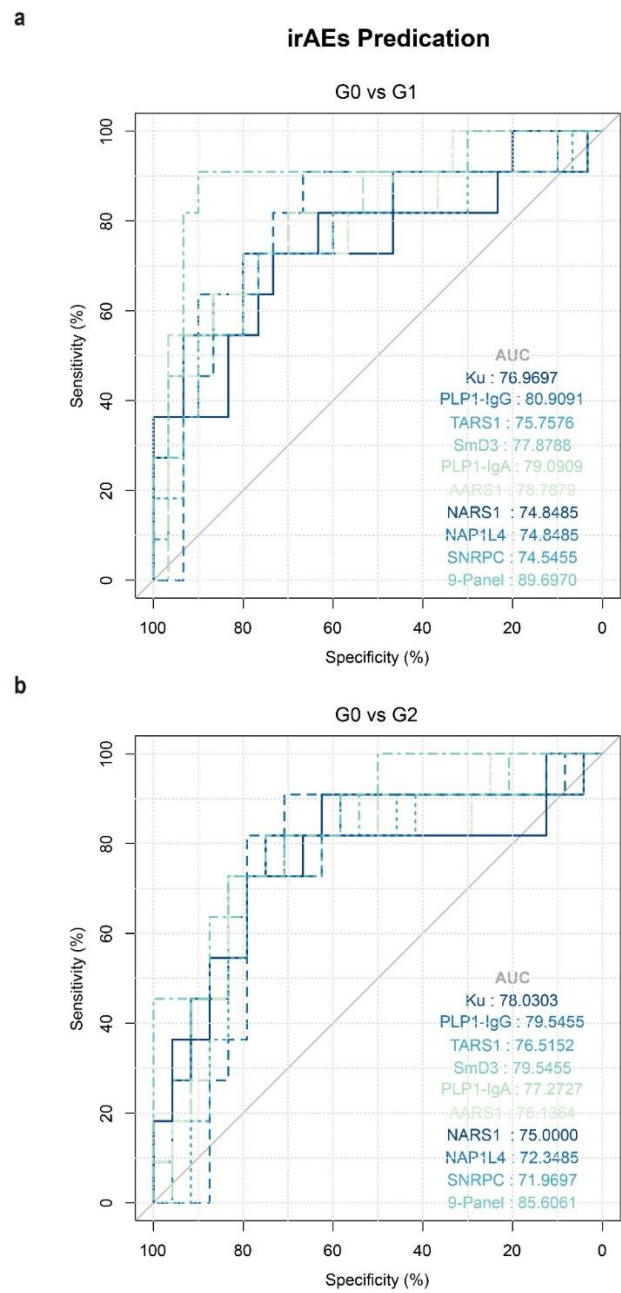


Figure S4 Performance of biomarker panels

(a, b) Performance of biomarker panels in distinguishing G0 vs. G1 and G0 vs. G2, evaluated by ROC curve analysis (AUC, area under the curve).

Supplementary figure 5

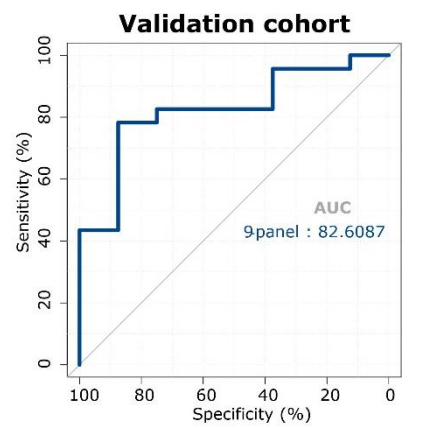


Figure S5 The ability of the 9-panel to distinguish patients with or without irAEs in the validation cohort.

Supplementary table 1: AID microarray marker-related diseases.

No.	Name	Antigen	Representative Disease
1	SNP1	U1-snRNP 68	Mixed connective tissue disease (MCTD)
2	SNRPA	U1-snRNP A	
3	SNRPC	U1-snRNP C	
4	SNRPB	U-snRNP Protein B/B'	
5	RNP/SM	RNP/SM	
6	SNRPD1	Sm	Systemic lupus erythematosus (SLE)
7	SMD1A	SmD	
8	SmD1	SmD1	
9	SmD2	SmD2	
10	SmD3	SmD3	
11	H3C1	Histone	
12	dsDNA (plasmid)	dsDNA	
13	RPLP0	Ribosomal Phosphoprotein P0	
14	RPLP1	Ribosomal Phosphoprotein P1	
15	RPLP2	Ribosomal Phosphoprotein P2	
16	PCNA	Proliferating Cell Nuclear Antigen	
17	PSIP1	DFS70	
18	NCL	Nucleolin	
19	NAP1L4	Nucleosome	Systemic lupus erythematosus (SLE)/Sjogren's syndrome (SS)
20	RO60	Ro/SS-A (60 kDa)	Sjogren's syndrome (SS)
21	SSB	La/SS-B	
22	RO52	Ro/SS-A (52 kDa)	Sjogren's syndrome (SS)/Dermatomyositis
23	PM/Sc1 100	PM/Sc1 100	Multiple myositis/dermatomyositis (PM/DM)
24	PM/Sc1 75	PM/Sc1 75	
25	HARS1	Jo-1	
26	Ku	Ku (p70/p80)	
27	TARS1	Threonyl-tRNA Synthetase (PL-7)	
28	AARS1	Alanyl-tRNA Synthetase (PL-12)	
29	GARS1	Glycyl-tRNA Synthetase (EJ)	
30	NARS1	Asparaginyl-tRNA Synthetase (KS)	
31	SRP54	SRP54	
32	Mi-2	Mi-2	
33	TIF1	TIF1 gamma	
34	IFIH1	MDA5	
35	MORC3	NXP2	
36	HMGCR	3-hydroxy-3-methylglutaryl-coenzyme A reductase	

37	FARSA	Phenylalanine--tRNA ligase alpha subunit	
38	SAE1	SUMO-activating enzyme subunit 1	
39	NT5C1A	Cytosolic 5'-nucleotidase 1A	
40	CENPB	Centromere Protein B (CENP-B)	Systemic sclerosis (SSc)
41	CENPA	Centromere Protein A (CENP-A)	
42	TOP1	Scl-70	
43	MBP	Myelin basic protein	Multiple sclerosis
44	PLP1	Myelin proteolipid protein	
45	TPO	TPO	Autoimmune thyroiditis
46	TG	TG	
47	TSHR	TRAbs	
48	BPI	BPI	ANCA-related vasculitis
49	MPO	MPO	ANCA-related vasculitis/autoimmune hepatitis
50	PRTN3	PR3	
51	CYP2D6	LKM 1	Autoimmune hepatitis
52	FTCD	LC1	
53	SEPSECS	SLA/SEPSECS	
54	ACTB	ACTB	
55	ACTG1	ACTG1	
56	M2-Antigen	M2-Antigen	Primary biliary cirrhosis (PBC)
57	DBT	BCOADC-E2	
58	DLST	OGDC-E2	
59	DLAT	PDC-E2	
60	SP100	SP100	
61	NUP210	gp210	
62	NUP62	Nup62	
63	GAD2	GAD65	Type 1 diabetes
64	INSM2	IA2	
65	APOH	β 2-Glycoprotein 1	Antiphospholipid syndrome
66	Prothrombin, F2	Prothrombin	
67	ANXA5	Annexin A5	
68	C1QA	Complement C1q subcomponent subunit A	
69	PROS1	Vitamin K-dependent protein S	
70	VIM	Vimentin	
71	HSPG2	GBM; dissociated	Anti-glomerular basement membrane disease
72	GP2	GP2	Crohn's disease
73	ITGB6	Integrin alpha V beta 6	Ulcerative colitis
74	CBLIF	Intrinsic Factor	Pernicious anemia with chronic atrophic gastritis
75	RF	Human IgG	Rheumatoid arthritis

76	CCP	Cyclic citrullinated peptide	
77	CEP-1	CEP-1	
78	KRT8	Keratin, type II cytoskeletal 8	
79	KRT19	Keratin, type I cytoskeletal 19	
80	KRT20	Keratin, type I cytoskeletal 20	
81	PTX3	PTX3	
82	DUSP11	RNA/RNP complex-1-interacting phosphatase	Membrane nephropathy
83	PLA2R1	Secretory phospholipase A2 receptor	
84	THSD7A	Thrombospondin type-1 domain-containing protein 7A	
85	PCDH7	Protocadherin-7	
86	NCAM1	Neural cell adhesion molecule 1	
87	NELL1	NELL1	
88	EXT1	Exostosin-1	Reproduction, infertility
89	EXT2	Exostosin-2	
90	AMH	Anti-mullerian Hormone	
91	CGB3	Choriogonadotropin subunit beta 3	
92	CGA	Choriogonadotropin subunit alpha chain	
93	FSH	Follicle-Stimulating Hormone α/β Dimer	
94	PRL	Prolactin	Myasthenia gravis
95	MUSK	Muscle, skeletal receptor tyrosine-protein kinase	
96	CHRNA9	Neuronal acetylcholine receptor subunit alpha-9	
97	CHRNA1	Acetylcholine receptor subunit beta	Neuropsychiatric lupus erythematosus
98	C3	Complement C3	
99	LCN2	Neutrophil gelatinase-associated lipocalin	Neuropsychiatric lupus erythematosus/cytokines
100	CSF1	Macrophage colony-stimulating factor 1	Autoimmune encephalitis/paraneoplastic cerebellar syndrome
101	GRIA1	Glutamate receptor 1	Human syndrome, paraneoplastic cerebellar degeneration
102	GRIA3	Glutamate receptor 3	
103	GRIA4	Glutamate receptor 4	
104	BIN1	Amphiphysin	Optic neuropipette, optic myelitis
105	AQP4	Aquaporin-4	
106	GRM1	Metabotropic glutamate receptor 1	
107	DPYSL5	CRMP-5	

108	SOX1	Transcription factor SOX-1	Neurological Diseases: epilepsy, paraneoplastic neurological syndrome et al.
109	GFAP	Glial fibrillary acidic protein	
110	MOG	Myelin oligodendrocyte glycoprotein	
111	MAG	Myelin-associated glycoprotein	
112	TTN	Titin	
113	SNAP25	Synaptosomal-associated protein 25	
114	AK5	Adenylate kinase isoenzyme 5	
115	DRD2	D (2) dopamine receptor	
116	ZIC4	Zinc finger protein ZIC 4	
117	SYN1	Synapsin-1	
118	CNTN1	Contactin-1	
119	NRXN3	NRXN3 beta	
120	NEFH	Neurofilament heavy polypeptide	
121	PNMA2	Paraneoplastic antigen Ma2	
122	GLRA2	Glycine receptor subunit alpha-2	
123	SEPTIN5	Septin-5	
124	SYN3	Synapsin-3	
125	CACNA2D1	Voltage-dependent calcium channel subunit alpha-2/delta-1	

Supplementary table 2: List of differentially expressed antibodies in different irAEs groups.

IgG				IgA		
G0 VS G1	G0 VS G2	G0 VS G3		G0 VS G1	G0 VS G2	G0 VS G3
PLP1	Ku	PLP1		DRD2	SNRPA	DRD2
Ku	PLP1	MPO		PLP1	RPLP1	SNRPA
TARS1	TARS1	TARS1		BIN1	C1QA	PLP1
SmD3	AARS1	Ku		SP100	Mi-2	RPLP1
AARS1	MPO	AARS1		C1QA	PLP1	NCAM1
SNRPC	SNRPC	SNRPC		NCAM1	AARS1	KRT8
GRM1	SmD3	SNRPA		AARS1	TIF1	AARS1
GARS1	RPLP0	RPLP1		SNRPA	NUP62	Mi-2
IFIH1	SMD1A	SmD3		CYP2D6	SMD1A	RPLP0
NARS1	CCP	PSIP1		NUP62	AK5	BIN1
NAP1L4	RPLP1	RPLP0		NT5C1A	H3C1	C1QA
SOX1	GARS1	ZIC4		SmD3	IFIH1	TIF1
SP100	IFIH1	SEPSECS		Mi-2	NUP210	CENPB
PSIP1	BPI	GARS1		KRT8	FARSA	NUP62
SEPSECS	PSIP1	CCP		HARS1	NARS1	GLRA2
HMGCR	HMGCR	H3C1		Ku	BIN1	H3C1
SMD1A	SEPSECS	DRD2		AK5	RPLP0	ZIC4
KRT20	SmD1	SEPTIN5		AQP4	Prothrombin, F2	CYP2D6
MPO	NARS1	PROS1		TARS1	DRD2	DLAT
FTCD	PROS1	CENPB		NUP210	INSM2	GAD2
	SNRPD1	KRT20		SEPTIN5	NCAM1	PNMA2
	NAP1L4	INSM2		CHRNA1	TARS1	NT5C1A
	NEFH	IFIH1		GLRA2	Ku	SMD1A
	INSM2	HSPG2		NARS1		EXT1
	SmD2	SmD1				NUP210
	AK5	NEFH				SmD3
	SEPTIN5	ACTG1				MORC3
	CACNA2D1	LCN2				Ku
	H3C1	NAP1L4				INSM2
		NCL				PM/Scl 100
		NARS1				APOH3
		FSH				Prothrombin, F2
		AK5				TARS1
		CSF1				SYN1
		SNP1				SNRPC
		DLST				FTCD
		ITGB6				LCN2
						SP100
						MBP

						CHRNA9
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Supplementary table 3: Gene_Cluster_Trend_IgG.

Gene	G0	G1	G2	G3	Cluster
SmD3	-1.288353395	-0.032121536	0.176870774	1.143604157	Cluster 2
TARS1	-1.172920505	-0.142110445	0.049482206	1.265548744	Cluster 2
PLP1	-1.383499678	0.044760551	0.362927146	0.975811981	Cluster 2
Ku	-1.472349911	0.226697618	0.572980836	0.672671458	Cluster 1
MPO	1.216330558	0.394411778	-0.621341435	-0.989400901	Cluster 3
PSIP1	1.378412203	0.080528688	-0.850385016	-0.608555875	Cluster 3
SEPSECS	1.186832996	-0.033752429	-1.256794212	0.103713645	Cluster 3
NARS1	-1.485877428	0.358177599	0.445478416	0.682221413	Cluster 1
NAP1L4	-1.488839838	0.334751266	0.525385256	0.628703316	Cluster 1
GARS1	-1.479761479	0.262314702	0.623017363	0.594429414	Cluster 1
SNRPC	-1.488413521	0.321084119	0.573634427	0.593694975	Cluster 1
AARS1	-1.484582613	0.302367182	0.644828699	0.537386733	Cluster 1
IFIH1	-0.392782398	-1.227861512	0.921755235	0.698888675	Cluster 2

Supplementary table 4: Gene_Cluster_Trend_IgA.

Gene	G0	G1	G2	G3	Cluster
PLP1	-1.321586243	-0.057212433	0.302363393	1.076435283	Cluster 4
AARS1	-1.475656362	0.335151566	0.397428595	0.743076202	Cluster 5
NCAM1	-1.467397201	0.195898896	0.638497742	0.633000562	Cluster 7
SNRPA	1.308082595	0.254666477	-0.81992696	-0.742822112	Cluster 2
DRD2	0.663475324	-0.669439383	1.030511499	-1.02454744	Cluster 6
BIN1	1.457383889	-0.553221652	-0.168159184	-0.736003053	Cluster 9
C1QA	1.490452667	-0.340577633	-0.547998436	-0.601876597	Cluster 3
Mi-2	1.449915954	-0.134481173	-0.572646223	-0.742788559	Cluster 8
NUP210	1.486152844	-0.322061242	-0.511082242	-0.653009359	Cluster 1
Ku	-1.271377331	1.156456839	-0.08325916	0.198179652	Cluster 12
TARS1	-0.559305167	-0.449236566	-0.489908701	1.498450434	Cluster 10
NUP62	-0.980312833	-0.270655376	1.394662785	-0.143694576	Cluster 11

Supplementary table 5: The function of 9-panel corresponding to autoantigens.

UniProt	Gene name	Protein name	Function of protein
P23396	SmD3	Small nuclear ribonucleoprotein Sm D3	Plays a role in pre-mRNA splicing as a core component of the spliceosomal U1, U2, U4 and U5 small nuclear ribonucleoproteins (snRNPs), the building blocks of the spliceosome (By similarity)
P26639	TARS1	Threonyl-tRNA synthetase 1	1.Catalyzes the attachment of threonine to tRNA(Thr) in a two-step reaction: threonine is first activated by ATP to form Thr-AMP and then transferred to the acceptor end of tRNA. 2.Also edits incorrectly charged tRNA(Thr) via its editing domain, at the post-transfer stage
P60201	PLP1	Proteolipid protein 1	This is the major myelin protein from the central nervous system. It plays an important role in the formation or maintenance of the multilamellar structure of myelin.
P12956	Ku	X-ray repair cross-complementing protein 6	1.Single-stranded DNA-dependent ATP-dependent helicase that plays a key role in DNA non-homologous end joining (NHEJ) by recruiting DNA-PK to DNA. 2.Required for double-strand break repair and V(D)J recombination and has a role in chromosome translocation. 3.The DNA helicase II complex binds preferentially to fork-like ends of double-stranded DNA in a cell cycle-dependent manner . 4.During NHEJ, the XRCC5-XRRC6 dimer performs the recognition step: it recognizes and binds to the broken ends of the DNA and protects them from further resection. 5.5'-dRP lyase activity allows to 'clean' the termini of abasic sites, a class of nucleotide damage commonly associated with strand breaks, before such broken ends can be joined . 6.Plays a role in the regulation of DNA virus-mediated innate immune re.sponse by assembling into the HDP-RNP complex, a complex that serves as a platform for IRF3 phosphorylation and subsequent innate

			immune response activation through the cGAS-STING pathway
O43776	NARS1	Asparaginyl-tRNA synthetase 1	1.Catalyzes the attachment of asparagine to tRNA(Asn) in a two-step reaction: asparagine is first activated by ATP to form Asn-AMP and then transferred to the acceptor end of tRNA(Asn). 2.In addition to its essential role in protein synthesis, acts as a signaling molecule that induced migration of CCR3-expressing cells. 3.Has an essential role in the development of the cerebral cortex, being required for proper proliferation of radial glial cells.
Q99733	NAP1L4	Nucleosome assembly protein 1-like 4	1. Acts as a histone chaperone in nucleosome assembly.
P09234	SNRPC	small nuclear ribonucleoprotein C	Component of the spliceosomal U1 snRNP, which is essential for recognition of the pre-mRNA 5' splice-site and the subsequent assembly of the spliceosome. SNRPC/U1-C is directly involved in initial 5' splice-site recognition for both constitutive and regulated alternative splicing. The interaction with the 5' splice-site seems to precede base-pairing between the pre-mRNA and the U1 snRNA. Stimulates commitment or early (E) complex formation by stabilizing the base pairing of the 5' end of the U1 snRNA and the 5' splice-site region.
P49588	AARS1	Alanyl-tRNA synthetase 1	1.Catalyzes the attachment of alanine to tRNA(Ala) in a two-step reaction: alanine is first activated by ATP to form Ala-AMP and then transferred to the acceptor end of tRNA(Ala). 2.Also edits incorrectly charged tRNA(Ala) via its editing domain. 3.In presence of high levels of lactate, also acts as a protein lactyltransferase that mediates lactylation of lysine residues in target proteins, such as TEAD1, TP53/p53 and YAP1. 4.Protein lactylation takes place in a two-step

			reaction: lactate is first activated by ATP to form lactate-AMP and then transferred to lysine residues of target proteins. 5.Acts as an inhibitor of TP53/p53 activity by catalyzing lactylation of TP53/p53. 6.Acts as a positive regulator of the Hippo pathway by mediating lactylation of TEAD1 and YAP1.
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Supplementary table 6: Baseline blood index characteristics of patients.

Sample ID	irAEs Grade	NR 1-R;0-	Age	Gender (1-male, 0-female)	Smoking (1-Yes, 0-No)	squamous cell carcinoma=1, ohter=2	cTNM分期	Status	OS	radiothera py(YES:1 NO:0)	CRP	WBC	RBC	HB	Platelet	Neutrophils	Lymphocyte
39	G1	1	51	0	0	2	IVb	0	8	1	9.25	8.15	4.56	127	385	5.8	1.6
3	G1	1	39	1	0	2	IVb	0	13	0	81.82	13.06	3.14	82	378	10.91	1.31
48	G1	1	60	1	0	1	IVb	0	17	0	43.16	8.75	4.92	144	401	6.42	1.41
26	G1	1	66	1	0	1	IIIb	0	13	0	NA	7.11	4.72	131	229	4.83	1.55
17	G1	1	49	1	1	2	IVb	0	16	0	61.52	10	3.78	114	272	7.94	1.37
43	G1	1	65	1	1	1	IVa	0	9	0	109.48	8.94	4.28	128	287	6.97	1.18
32	G1	1	69	1	1	1	IVa	0	15	0	NA	8.07	4.45	135	217	5.54	1.42
34	G1	1	70	1	1	1	IVa	0	55	0	NA	6.35	3.38	109	392	4.79	0.89
6	G2	1	65	0	0	1	IIIb	0	14	0	8.21	6.85	2.85	114	258	4.47	1.78
45	G2	1	60	1	1	1	IIIb	0	12	1	3.42	7.86	4.5	136	136	4.34	2.66
50	G2	1	65	1	1	1	IVa	1	32	0	NA	6.16	3.99	120	250	4.4	1.09
53	G2	1	68	1	0	1	IVb	1	2	0	9.2	4.58	4.48	141	99	2.82	0.94
55	G2	1	67	1	0	1	IIIb	0	48	1	31.44	6.72	3.35	105	424	4.88	1.25
59	G2	1	72	1	1	1	IIIb	0	13	1	0.07	4.86	4.49	148	140	3.33	1.01
60	G2	1	60	1	0	1	IVb	0	15	0	NA	5.46	4.26	129	300	3.26	1.49
5	G3	1	62	1	1	1	IIIb	1	40	0	NA	8.29	4.27	128	280	5.21	1.93
24	G3	1	60	1	1	2	IIIb	0	12	0	0.31	8.15	5.01	154	341	4.58	2.93
27	G3	1	60	1	1	1	IIIb	0	10	1	157.72	8.94	4.89	149	285	7.14	1.22
31	G3	1	65	1	1	2	IVb	0	11	0	3.83	6.6	4.23	134	198	4.14	1.95
37	G3	1	71	1	1	2	IVa	0	6	1	NA	5.92	3.68	112	264	3.84	1.15
51	G3	1	63	1	1	2	IVb	0	14	0	83.38	8.96	4.19	117	371	6.2	2.02
52	G3	1	54	1	1	1	IVb	0	16	1	146.67	6.54	4.2	120	192	5.17	0.91
54	G3	1	72	1	1	2	IIIb	0	13	0	NA	7.84	3.99	94	178	5.01	1.13
58	G3	1	55	1	1	1	IIIb	1	34	0	NA	5.3	4.9	134	142	2.46	2.11
70	G0	1	68	1	1	1	IIIb	0	4	0	NA	4.84	4.72	145	219	2.78	1.08
76	G0	1	54	1	1	2	IVb	0	1	0	NA	7.28	4.46	124	366	5.13	0.96
80	G0	1	67	1	1	1	IVa	0	1	0	9.31	7.68	3.52	110	251	5.56	1.39
82	G0	1	66	2	0	2	IIIb	0	1	0	9.09	5.7	4.27	116	280	3.81	1.36
71	G1	1	40	1	1	1	IVa	0	3	0	NA	5.7	4.46	140	289	3.71	1.48
67	G1	1	49	1	1	1	IIIc	0	5	1	10.22	12.19	5.43	144	305	9.12	1.88
72	G1	1	56	1	1	1	IIIb	0	2	0	1.62	4.97	4.61	138	147	2.75	1.81
74	G1	1	66	1	1	2	IVb	0	3	0	45.04	6.97	3.56	102	338	4.58	1.6
65	G2	1	69	1	1	1	IIIb	0	6	0	30.44	5.05	3.45	109	230	3.41	1.11
68	G2	1	63	1	1	2	IVb	0	5	0	NA	9.98	3.98	118	277	6.23	1.64
79	G2	1	62	1	1	2	IVa	0	1	0	1.6	3.86	3.73	121	147	2.23	1.12
64	G3	1	60	1	1	2	IIIc	1	5	0	64.71	7.33	3.64	108	321	5.74	1.03
22	G0	0	73	1	1	2	IVa	0	7	0	16.8	7.38	4.72	145	139	4.9	1.7
38	G0	0	66	1	1	1	IVb	0	8	0	251.97	11.81	3.77	118	415	10.2	0.85
63	G0	0	60	1	1	1	IIIb	0	7	1	NA	7.53	3.83	108	375	5.27	1.53
21	G1	0	59	1	0	2	IVb	0	7	0	9.5	7.23	4.3	133	370	5.12	1.55
33	G1	0	61	1	0	2	IVa	0	8	1	NA	4.13	3.86	119	227	2.66	0.81
41	G1	0	60	1	1	1	IIIb	0	9	0	NA	6.3	4.01	126	249	3.7	1.8
14	G2	0	60	1	1	2	IVa	1	31	0	NA	7.48	4.23	125	206	5.06	1.68
15	G2	0	67	1	0	1	IVb	1	16	1	11.67	7.77	4.36	112	279	5.74	1.26
20	G2	0	68	0	0	2	IVb	1	5	0	NA	6.21	4.3	111	293	4.37	1.23
25	G2	0	74	1	1	1	IVb	0	17	1	2.31	5.55	3.91	122	274	3.7	1.27
28	G2	0	76	1	1	1	IVa	1	12	0	132.19	7.71	4.31	124	321	6.25	0.38
56	G2	0	72	1	1	2	IVa	0	17	0	NA	7.07	4.38	140	245	5.08	1.25
57	G2	0	73	1	1	2	IVb	0	13	1	NA	5.02	3.23	113	130	3.15	1.4
4	G3	0	72	1	1	2	IVb	0	17	0	62.48	8.11	3.59	120	150	6.75	0.99
23	G3	0	72	1	0	2	IIIb	0	11	0	NA	7.21	4.21	129	179	5.3	1.1
30	G3	0	50	1	1	1	IIIb	0	17	0	1.08	6.13	4.47	141	347	3.64	1.87
44	G3	0	68	1	1	2	IVa	1	4	0	30.05	6.31	4.18	123	315	3.43	2.31
47	G3	0	66	0	0	2	IVa	0	15	1	10.92	5.94	3.96	110	153	3.9	1.41
69	G0	0	62	1	1	1	IIIb	0	4	0	17.6	7.68	4.55	120	380	4.78	2.2
78	G0	0	69	1	1	1	IVa	0	1	0	NA	6.13	3.79	107	202	3.6	1.62
83	G0	0	74	1	1	1	IVa	0	1	0	1.85	4.67	4.1	124	177	2.62	1.61
75	G1	0	56	0	0	2	IVb	1	2	0	15.69	6.16	4.18	128	252	4.3	1.25
66	G1	0	60	1	1	1	IVb	0	5	0	48.75	8.34	5.26	155	218	6.92	0.63
73	G1	0	66	1	1	1	IVa	0	2	0	NA	5.41	4.69	140	354	2.82	1.89
81	G1	0	68	1	1	1	IVa	0	1	0	2.83	9.98	4.43	139	177	6.54	2.21
2	G2	0	51	0	0	2	IVa	0	17	0	4.11	4.43	4.02	107	239	2.62	1.5
77	G3	0	61	1	0	2	IIIb	0	1	0	2.23	6.57	4.1	131	157	4.35	1.59
42	G1	0	69	1	1	2	IVb	0	7	0	17.2	6.45	130	130	184	4.77	1.09

Monocyte	TP	ALB	GLB	A/G	ALP	PA	LDH	CK	TC	TG	HDL	LDL	CK-MB	hs-cTn	NSE	CEA	SCC
0.4	77.9	43	34.9	1.2	102	0.185	336	129	3.94	2.42	1.03	2.12	0.3	0.8	NA	141.69	0.4
0.76	64.2	31.5	32.7	1	380	0.087	122	15	3.18	0.95	0.46	1.97	0.1	0.7	NA	NA	NA
0.62	67.8	38.5	29.3	1.3	132	0.187	227	44	4.08	1.07	1.03	2.22	1.3	1.3	17.34	1.95	2.8
0.69	65.8	37.1	28.7	1.3	69	0.17	147	35	3.11	0.91	1.05	1.54	1	3.3	15.9	7.08	7.4
0.43	68.1	37.3	30.8	1.2	97	0.165	200	85	4.83	1.18	0.82	2.9	0.5	2.5	11.17	2.46	2.6
0.7	66.3	34.2	32.1	1.1	150	0.107	146	41	4.04	0.63	1.09	2.4	0.4	1.4	9.68	2.99	1.2
0.73	78.8	43.2	35.6	1.2	83	1.2	131	70	6.24	5.03	0.96	4.04	0.5	3	NA	2.7	1.4
0.45	62	31.2	30.8	1	111	NA	376	33	3.84	0.6	1.05	2.61	0.2	1.7	43.74	2.96	2
0.4	69.2	37.6	31.6	1.2	94	0.136	266	46	3.5	0.62	1.08	1.88	0.8	3.7	NA	NA	0.8
0.58	73.1	42.5	30.6	1.4	109	0.233	196	47	5.9	2.09	1.26	3.52	0.4	1.5	17.33	4.01	1.9
0.45	71.2	39.4	31.8	1.2	115	NA	164	39	5.35	0.63	1.3	3.7	0.6	1.7	12.65	3.13	2.3
0.26	60.5	38.8	21.7	1.8	120	NA	158	39	3.73	1.19	1.49	1.9	0.5	1.7	16.47	5.9	4.7
0.5	53.7	26.2	27.5	1	135	NA	180	43	5.48	1.4	1.22	3.21	0.3	2.4	26.12	NA	NA
0.33	61	39.1	21.9	1.8	48	0.231	179	84	2.56	1.24	0.78	1.4	0.9	1.1	12.44	4.7	1.8
0.57	70.7	40.8	29.9	1.4	82	0.2	132	35	2.64	1.05	0.77	1.42	0.3	0.9	10.69	3.47	1.4
0.97	65.8	35.6	30.2	1.2	94	NA	222	44	4.03	0.67	1.67	2.24	0.5	1.9	NA	2.91	2.6
0.42	72.7	45.3	27.4	1.7	93	0.361	151	53	2.57	1.85	0.84	1.26	0.6	5.7	12.16	2.69	0.8
0.48	74.8	42.1	32.7	1.3	174	0.17	164	32	5.59	2.17	1.26	3.41	0.2	0.1	9.84	7.28	0.7
0.4	73.3	40.5	32.8	1.2	92	0.216	370	85	5.32	1.26	1.34	3.06	1	3.7	30.73	1.98	1.1
0.62	65	37.2	27.8	1.3	153	0.18	147	31	3.41	1	1.06	1.62	0.4	3.5	9.58	7.3	4.2
0.66	72.8	37.8	35	1.1	107	0.155	200	48	4.44	0.71	1.06	2.56	0.4	2	11.9	6.06	2.3
0.37	80.8	41	39.8	1	112	0.122	130	37	3.42	0.43	1.06	1.79	0.2	1.5	NA	3.51	0.9
1.35	67.9	41.1	2.68	1.5	63	0.184	143	71	4.5	1.79	1.3	2.43	0.5	0.6	NA	NA	NA
0.53	62.7	37.9	24.8	1.5	60	NA	120	27	5.86	2.45	1.43	3.4	0.3	2.1	11.3	2.65	1.4
0.4	66.8	39.3	27.5	1.4	64	0.233	183	81	4.4	1.09	1.21	2.58	1.6	5.1	11.97	3.34	0.6
0.72	62	34.8	27.2	1.3	55	0.131	172	24	2.75	0.81	1.34	1.4	0.3	0.8	43.35	2.16	0.2
0.45	70.7	40.3	30.4	1.3	106	0.186	135	68	3.55	0.86	1.68	1.87	0.5	0.9	NA	3.24	NA
0.46	62.4	34.9	27.5	1.3	124	0.145	166	31	4.02	1.63	1.18	2.41	0.3	1.4	14.16	17.26	NA
0.4	67.2	43.3	23.9	1.8	88	0.284	136	97	4.26	2.53	0.96	1.96	0.6	1.1	13.6	2.61	2.6
0.79	73.2	38.9	34.3	1.1	192	0.155	204	62	3.24	1.08	0.98	1.76	0.4	2	14.21	1.6	2.6
0.28	62.9	35.9	27	1.3	101	0.196	130	49	3.58	1.02	1.48	1.97	0.7	2.3	10.06	3.23	0.5
0.58	65.1	33.5	31.6	1.1	198	0.13	153	18	4.64	1.13	1.31	2.68	0.6	4.7	NA	8.65	NA
0.44	66.6	32.6	34	1	97	0.118	215	49	2.63	0.62	1.54	1.07	0.5	4.1	NA	4.61	6.4
1.4	70.7	34.5	36.2	1	76	0.093	391	47	3.76	1.05	0.99	2.32	0.8	4.9	NA	NA	NA
0.34	57	39.4	17.6	2.2	80	0.194	152	87	3.31	1.01	1.36	1.75	0.4	42.6	NA	8.15	1
0.4	59.4	30	29.4	1	144	0.108	159	29	3.03	0.65	0.89	1.72	0.6	2	11.88	52.57	4
0.58	63.5	37.5	26	1.4	99	0.169	296	49	4.2	0.74	1.41	2.2	0.8	4	NA	205.13	NA
0.74	59.7	31	28.7	1.1	88	0.058	144	81	3.81	0.66	1.06	2.37	0.6	4.8	7.46	1.79	2
0.5	72.5	39.3	33.2	1.2	91	0.252	149	56	3.62	0.6	1.21	1.86	0.8	0.8	14.19	2.2	2.5
0.51	57.3	35.4	21.9	1.6	158	0.308	294	20	5.18	0.86	1.62	3.01	0.3	1.6	21.9	10.89	3.1
0.43	59.3	37	22.3	1.7	59	0.216	148	82	3.89	1.93	0.78	2.2	NA	NA	8.16	42.87	0.9
0.52	69.9	42	27.9	1.5	85	0.288	169	74	4.12	1.51	1.08	2.4	0.5	1.6	10.97	2.55	1.6
0.64	64.7	40.8	23.9	1.7	107	NA	139	50	4.82	1.48	1.42	2.47	0.8	2.5	12.56	4.47	0.4
0.5	66.6	35.4	31.2	1.1	112	NA	194	52	4.11	1.06	0.97	2.85	0.4	4.3	14.67	3.1	3.9
0.49	68.3	37.3	31	1.2	112	NA	148	29	3.1	1.11	1.04	1.46	0.4	1	NA	557.1	NA
0.44	75.9	41.6	34.3	1.2	112	0.285	487	73	6.88	0.91	2.08	3.49	0.6	4.1	18.47	10.9	1
1.03	66.9	36.2	30.7	1.2	91	0.127	185	43	4.08	0.6	1.36	2	0.5	4.4	NA	2.44	5.4
0.63	70.7	40.8	29.9	1.4	65	0.304	175	81	4.02	0.84	1.36	2.01	1.5	9.7	10.65	16.63	1
0.35	59.2	35.3	23.9	1.5	86	0.238	165	43	4.21	1.32	1.28	2.21	1.6	241.6	NA	NA	NA
0.33	53.6	33.2	20.4	1.6	52	0.147	0	0	4.59	0.95	1.26	3.06	NA	NA	NA	11.56	NA
0.67	71.6	40	31.6	1.3	100	0.219	218	57	4.32	2.17	1.22	2.35	0.7	3.2	17	12.9	1.2
0.44	66.6	40.2	26.4	1.5	112	0.291	218	112	4.48	0.62	1.13	2.54	0.8	1.3	13.33	3.41	1
0.38	66.1	35.5	30.6	1.2	137	0.152	166	119	5.52	1.19	1.12	3.23	0.5	4.4	NA	3.63	NA
0.37	72.2	39.5	32.7	1.2	111	0.191	215	36	4.87	0.68	1.4	2.71	2.2	21.2	NA	12.53	NA
0.47	57.2	33	24.2	1.4	74	0.127	161	37	2.98	0.73	1	1.57	0.6	3	NA	NA	NA
0.8	74.2	35.6	38.6	0.9	84	0.073	368	75	4.19	1.09	1.36	2.43	0.6	7.4	55.96	15.62	9.5
0.3	66.5	39.8	26.7	1.5	108	0.268	149	47	3.92	1.41	1.19	1.89	0.7	4.1	NA	2.28	4.3
0.36	59.9	31.7	28.2	1.1	85	0.169	139	16	4.46	2.9	0.96	2.39	0.3	1.8	NA	19.35	NA
0.56	68.6	31.6	37	0.9	124	0.095	272	39	3.95	0.77	1.17	2.34	0.2	1.9	NA	NA	3.7
0.58	71.6	38.5	33.1	1.2	112	0.207	104	35	4.42	1.08	1.12	2.84	0.5	0.7	NA	2.9	0.5
0.93	68.7	38.1	30.6	1.2	97	0.173	171	77	4.38	1.05	1.35	2.64	0.8	1.8	16.33	4.85	3.7
0.24	66.4	36.2	30.2	1.2	77	0.187	187	51	4.51	2.09	0.92	2.51	0.2	0.9	NA	4.91	NA
0.42	69.9	42.8	27.1	1.6	91	0.314	140	95	2.63	1.68	0.92	1.26	1	10.2	10.76	6.87	1.1
0.43	60.3	36.7	23.6	1.6	79	0.14	131	46	2.76	0.73	1.03	1.24	0.6	1.8	11.9	4.09	1.5

Supplementary table 7: Univariate logistic regression

Univariate logistic regression		
	P value	OR (95% CI)
WBC	0.418	1.125 (0.846 - 1.498)
RBC	0.787	0.869 (0.315 - 2.401)
HB	0.798	0.996 (0.962 - 1.03)
Platelet	0.598	1.002 (0.996 - 1.008)
Neutrophils	0.519	1.104 (0.817 - 1.493)
Lymphocyte	0.98	0.986 (0.327 - 2.97)
Monocyte	0.596	1.872 (0.814 - 19.033)
TP	0.596	1.025 (0.937 - 1.121)
ALB	0.759	1.021 (0.894 - 1.167)
GLB	0.889	0.993 (0.905 - 1.09)
A/G	0.985	1.02 (0.132 - 7.887)
ALP	0.263	1.009 (0.994 - 1.024)
LDH	0.599	0.998 (0.992 - 1.005)
CK	0.368	0.991 (0.971 - 1.011)
TC	0.433	0.808 (0.473 - 1.378)
TG	0.435	1.354 (0.634 - 2.892)
HDL	0.271	0.322 (0.043 - 2.426)
LDL	0.824	0.917 (0.428 - 1.967)
CK-MB	0.1	0.288 (0.065 - 1.271)
hs-cTn	0.506	0.977 (0.911- 1.047)
Age	0.044	0.926 (0.86 - 0.998)
Gender	0.175	3.24 (0.593 - 17.69)
Smoking	0.529	1.421 (0.476 - 4.246)
PLA2R1	0.032	0.411 (0.182 - 0.929)
GAD2	0.08	0.566 (0.3 - 1.069)
SSB	0.012	0.058 (0.006 - 0.542)
MBP	0.013	1.662 (1.113 - 2.482)
GLRA2	0.01	5.058 (1.47 - 17.406)
KRT20	0.027	1.739 (1.066 - 2.836)
SAE1	0.048	3.58 (1.012 - 12.688)
BIN1	0.064	1.89(7.963 - 3.74)

Supplementary table 8: The function of 8-panel corresponding to autoantigens.

UniProt	Gene name	Protein name	Function of protein
Q13018	PLA2R1	Phospholipase A2 receptor 1	1.Receptor for secretory phospholipase A2 (sPLA2). Acts as a receptor for phospholipase sPLA2-IB/PLA2G1B but not sPLA2-IIA/PLA2G2A. Also able to bind to snake PA2-like toxins. 2.In podocytes, binding of sPLA2-IB/PLA2G1B can regulate podocyte survival and glomerular homeostasis
Q05329	GAD2	Glutamate decarboxylase 2	Catalyzes the production of GABA
P05455	SSB	Small RNA binding exonuclease protection factor La	1.Binds to the 3' poly(U) terminus of nascent RNA polymerase III transcripts, protecting them from exonuclease digestion and facilitating their folding and maturation. 2.In case of Cocksackievirus B3 infection, binds to the viral internal ribosome entry site (IRES) and stimulates the IRES-mediated translation.
P02686	MBP	Myelin basic protein	1.The classic group of MBP isoforms (isoform 4-isoform 14) are with PLP the most abundant protein components of the myelin membrane in the CNS. They have a role in both its formation and stabilization. The smaller isoforms might have an important role in remyelination of denuded axons in multiple sclerosis. The non-classic group of MBP isoforms (isoform 1-isoform 3/Golli-MBPs) may preferentially have a role in the early developing brain long before myelination, maybe as components of transcriptional complexes, and may also be involved in signaling pathways in T-cells and neural cells. Differential splicing events combined with optional post-translational modifications give a

			wide spectrum of isomers, with each of them potentially having a specialized function. Induces T-cell proliferation.
P23416	GLRA2	Glycine receptor subunit alpha-2	1.Subunit of heteromeric glycine-gated chloride channels . 2.Plays a role in synaptic plasticity. 3.Contributes to the generation of inhibitory postsynaptic currents, and is involved in the down-regulation of neuronal excitability. 4.Plays a role in cellular responses to ethanol.
P35900	KRT20	Keratin 20	1.Plays a significant role in maintaining keratin filament organization in intestinal epithelia. When phosphorylated, plays a role in the secretion of mucin in the small intestine.
Q9UBE0	SAE1	SUMO1 activating enzyme subunit 1	1.The heterodimer acts as an E1 ligase for SUMO1, SUMO2, SUMO3, and probably SUMO4. It mediates ATP-dependent activation of SUMO proteins followed by formation of a thioester bond between a SUMO protein and a conserved active site cysteine residue on UBA2/SAE2.
O00499	BIN1	Bridging integrator 1	1.Is a key player in the control of plasma membrane curvature, membrane shaping and membrane remodeling. Required in muscle cells for the formation of T-tubules, tubular invaginations of the plasma membrane that function in depolarization-contraction coupling. 2.Is a negative regulator of endocytosis. 3.Is also involved in the regulation of intracellular vesicles sorting,

			modulation of BACE1 trafficking and the control of amyloid-beta production (PubMed:27179792).In neuronal circuits, endocytosis regulation may influence the internalization of PHF-tau aggregates. 4.May be involved in the regulation of MYC activity and the control cell proliferation. 5.Has actin bundling activity and stabilizes actin filaments against depolymerization in vitro.
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