

EUROPEAN JOURNAL OF IMMUNOLOGY

Supporting Information

for

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Supporting Table 1

Human autoantigens included in the study.

^a For each of the 348 human autoantigen used in the study, source database and accession number of the corresponding sequence entry is given (sp: Swiss-Prot protein database, embl: EMBL nucleotide database, gb: GenBank nucleotide database).

^b Database identifiers are given corresponding genes in LocusLink and Ensembl databases.

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
embl;AB012122	RUVBL1	8607	ENSG00000175792
embl;AB051232	PTBP2	58155	ENSG00000117569
embl;AF022655	CEP2	11190	ENSG00000126001
embl;AF037364	PNMA1	9240	ENSG00000176903
embl;AF037365	PNMA2	10687	ENSG00000171362
embl;AF054187	NACA	4666	ENSG00000025446
embl;AF063020	PSIP1	11168	ENSG00000164985
embl;AF083898	NOVA2	4858	ENSG00000104967
embl;AF091627	TP73L	8626	ENSG00000073282
embl;AF188611	HSPA5	3309	ENSG00000044574
embl;AF195116	TINAG	27283	ENSG00000137251
embl;AF251218	LSM4	25804	ENSG00000130520
embl;AF282065	SLA/LP	51091	ENSG00000109618
embl;AF322916	UACA	55075	ENSG00000137831
embl;AJ000334	NARS	4677	ENSG00000134440
embl;AJ000503	DCT	1638	ENSG00000080166
embl;AJ277892	TTN	7273	ENSG00000155657
embl;AY035864	TNRC6	27327	ENSG00000090905
embl;AY040871	SE20-4	64061	ENSG00000184205
embl;AY055376	ADAMTS13	11093	ENSG00000160323
embl;D00763	PSMA4	5685	ENSG00000041357
embl;D37984	RECQL	5965	ENSG00000004700
embl;L10910	RNPC2	9584	ENSG00000131051
embl;M15919	SNRPE	6635	ENSG00000176773
embl;M62994	FLNB	2317	ENSG00000136068
embl;M91669	COL17A1	1308	ENSG00000065618

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
embl;U15008	SNRPD2	6633	ENSG00000125743
embl;U17474	RCD-8	23644	ENSG00000038358
embl;U40622	XRCC4	7518	ENSG00000152422
embl;U42408	LAD1	3898	ENSG00000159166
embl;X14322	SOD2	6648	ENSG00000112096
embl;X14830	CHRNA1	1140	ENSG00000170175
embl;X85372	SNRPF	6636	ENSG00000139343
embl;Y00762	CHRNA1	1134	ENSG00000138435
embl;Y14314	SART1	9092	ENSG00000175467
embl;Z11583	NUMA1	4926	ENSG00000137497
gb;AF164622	GOLGIN-67	23015	ENSG00000175265
gb;BC011171	SERPING1	710	ENSG00000149131
gb;BC023021	GOLGA5	9950	ENSG00000066455
gb;L38696	RALY	22913	ENSG00000125970
gb;M17886	RPLP1	6176	ENSG00000174092
gb;M17887	RPLP2	6181	ENSG00000177600
gb;U51587	GOLGA1	2800	ENSG00000136935
gb;X12517	SNRPC	6631	ENSG00000124562
gb;X75304	GOLGB1	2804	ENSG00000173230
gb;X99302	POP1	10940	ENSG00000104356
gb;Z68747	MRPS31	10240	ENSG00000102738
sp;O00158	LMO4	8543	ENSG00000143013
sp;O00294	TULP1	7287	ENSG00000112041
sp;O00330	PDHX	8050	ENSG00000110435
sp;O00555	CACNA1A	773	ENSG00000141837
sp;O14834	TXNL4	10907	ENSG00000141759
sp;O43405	COCH	1690	ENSG00000100473
sp;O43805	SSNA1	8636	ENSG00000176101
sp;O60232	SSSCA1	10534	ENSG00000173465
sp;O60437	PPL	5493	ENSG00000118898
sp;O95954	FTCD	10841	ENSG00000160282
sp;P00451	F8	2157	ENSG00000185010
sp;P00734	F2	2147	ENSG00000180210
sp;P00740	F9	2158	ENSG00000101981
sp;P00751	BF	629	ENSG00000166285
sp;P00915	CA1	759	ENSG00000133742
sp;P00918	CA2	760	ENSG00000104267
sp;P01042	KNG	3827	ENSG00000113889
sp;P01106	MYC	4609	ENSG00000136997
sp;P01138	NGFB	4803	ENSG00000134259
sp;P01225	FSHB	2488	ENSG00000131808

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;P01236	PRL	5617	ENSG00000172179
sp;P01266	TG	7038	ENSG00000042832
sp;P01270	PTH	5741	ENSG00000152266
sp;P01308	INS	3630	ENSG00000129965
sp;P01343	IGF1	3479	ENSG00000017427
sp;P01375	TNF	7124	ENSG00000111956
sp;P01563	IFNA2	3440	ENSG00000176949
sp;P01574	IFNB1	3456	ENSG00000171855
sp;P01579	IFNG	3458	ENSG00000111537
sp;P01583	IL1A	3552	ENSG00000115008
sp;P01588	EPO	2056	ENSG00000130427
sp;P01884	B2M	567	ENSG00000166710
sp;P02452	COL1A1	1277	ENSG00000108821
sp;P02458	COL2A1	1280	ENSG00000139219
sp;P02511	CRYAB	1410	ENSG00000109846
sp;P02545	LMNA	4000	ENSG00000160789
sp;P02647	APOA1	335	ENSG00000118137
sp;P02686	MBP	4155	ENSG00000151507
sp;P02689	PMP2	5375	ENSG00000147588
sp;P02724	GYPA	2993	ENSG00000170180
sp;P02730	SLC4A1	6521	ENSG00000004939
sp;P02745	C1QA	712	ENSG00000173372
sp;P02746	C1QB	713	ENSG00000173369
sp;P02747	C1QG	714	ENSG00000159189
sp;P02749	APOH	350	ENSG00000091583
sp;P02751	FN1	2335	ENSG00000115414
sp;P02765	AHSG	197	ENSG00000145192
sp;P02776	PF4	5196	ENSG00000163737
sp;P02788	LTF	4057	ENSG00000012223
sp;P04040	CAT	847	ENSG00000121691
sp;P04049	RAF1	5894	ENSG00000132155
sp;P04070	PROC	5624	ENSG00000115718
sp;P04083	ANXA1	301	ENSG00000135046
sp;P04141	CSF2	1437	ENSG00000164400
sp;P04271	S100B	6285	ENSG00000160307
sp;P04275	VWF	7450	ENSG00000110799
sp;P04424	ASL	435	ENSG00000169910
sp;P04637	TP53	7157	ENSG00000141510
sp;P04798	CYP1A1	1543	ENSG00000140465
sp;P05014	IFNA4	3441	ENSG00000147877
sp;P05067	APP	351	ENSG00000142192

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;P05093	CYP17A1	1586	ENSG00000148795
sp;P05106	ITGB3	3690	ENSG00000056345
sp;P05107	ITGB2	3689	ENSG00000160255
sp;P05108	CYP11A1	1583	ENSG00000140459
sp;P05112	IL4	3565	ENSG00000113520
sp;P05164	MPO	4353	ENSG00000005381
sp;P05177	CYP1A2	1544	ENSG00000140505
sp;P05181	CYP2E1	1571	ENSG00000130649
sp;P05204	HMGN2	3151	ENSG00000169930
sp;P05231	IL6	3569	ENSG00000136244
sp;P05362	ICAM1	3383	ENSG00000090339
sp;P05388	RPLP0	6175	ENSG00000089157
sp;P05455	SSB	6741	ENSG00000138385
sp;P05783	KRT18	3875	ENSG00000186082
sp;P05787	KRT8	3856	ENSG00000170421
sp;P06213	INSR	3643	ENSG00000171105
sp;P06733	ENO1	2023	ENSG00000074800
sp;P06858	LPL	4023	ENSG00000175445
sp;P07101	TH	7054	ENSG00000180176
sp;P07196	NEFL	4747	ENSG00000104725
sp;P07199	CENPB	1059	ENSG00000125817
sp;P07202	TPO	7173	ENSG00000115705
sp;P07225	PROS1	5627	ENSG00000184500
sp;P07306	ASGR1	432	ENSG00000141505
sp;P07339	CTSD	1509	ENSG00000117984
sp;P07355	ANXA2	302	ENSG00000183059
sp;P07359	GP1BA	2811	ENSG00000185245
sp;P07550	ADRB2	154	ENSG00000169252
sp;P07814	EPRS	2058	ENSG00000136628
sp;P07942	LAMB1	3912	ENSG00000091136
sp;P07951	TPM2	7169	ENSG00000168856
sp;P08100	RHO	6010	ENSG00000163914
sp;P08172	CHRM2	1129	ENSG00000181072
sp;P08238	HSPCB	3326	ENSG00000096384
sp;P08246	ELA2	1991	ENSG00000115644
sp;P08311	CTSG	1511	ENSG00000100448
sp;P08514	ITGA2B	3674	ENSG00000005961
sp;P08559	PDHA1	5160	ENSG00000131828
sp;P08575	PTPRC	5788	ENSG00000081237
sp;P08588	ADRB1	153	ENSG00000043591
sp;P08621	SNRP70	6625	ENSG00000104852

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;P08670	VIM	7431	ENSG00000026025
sp;P08684	CYP3A4	1576	ENSG00000160868
sp;P08686	CYP21A2	1589	ENSG00000168482
sp;P08727	KRT19	3880	ENSG00000171345
sp;P08758	ANXA5	308	ENSG00000164111
sp;P09012	SNRPA	6626	ENSG00000077312
sp;P09104	ENO2	2026	ENSG00000111674
sp;P09327	VIL1	7429	ENSG00000127831
sp;P09382	LGALS1	3956	ENSG00000100097
sp;P09429	HMGB1	3146	ENSG00000132967
sp;P09493	TPM1	7168	ENSG00000140416
sp;P09543	CNP	1267	ENSG00000173786
sp;P09622	DLD	1738	ENSG00000091140
sp;P09874	ADPRT	142	ENSG00000143799
sp;P09923	ALPI	248	ENSG00000163295
sp;P10145	IL8	3576	ENSG00000169429
sp;P10155	SSA2	6738	ENSG00000116747
sp;P10242	MYB	4602	ENSG00000118513
sp;P10515	DLAT	1737	ENSG00000150768
sp;P10523	SAG	6295	ENSG00000130561
sp;P10745	RBP3	5949	ENSG00000107618
sp;P10809	HSPD1	3329	ENSG00000144381
sp;P11047	LAMC1	3915	ENSG00000135862
sp;P11142	HSPA8	3312	ENSG00000109971
sp;P11177	PDHB	5162	ENSG00000168291
sp;P11182	DBT	1629	ENSG00000137992
sp;P11215	ITGAM	3684	ENSG00000169896
sp;P11229	CHRM1	1128	ENSG00000168539
sp;P11387	TOP1	7150	ENSG00000124183
sp;P11509	CYP2A6	1548	ENSG00000167584
sp;P11712	CYP2C9	1559	ENSG00000138109
sp;P12004	PCNA	5111	ENSG00000132646
sp;P12036	NEFH	4744	ENSG00000100285
sp;P12081	HARS	3035	ENSG00000170445
sp;P12259	F5	2153	ENSG00000056213
sp;P12319	FCER1A	2205	ENSG00000179639
sp;P12718	ACTG2	72	ENSG00000163017
sp;P12883	MYH7	4625	ENSG00000092054
sp;P12956	G22P1	2547	ENSG00000100419
sp;P13010	XRCC5	7520	ENSG00000079246
sp;P13473	LAMP2	3920	ENSG00000005893

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;P13533	MYH6	4624	ENSG00000166094
sp;P13624	SRP54	6729	ENSG00000100883
sp;P13637	ATP1A3	478	ENSG00000105409
sp;P13641	SNRPD1	6632	ENSG00000167088
sp;P14136	GFAP	2670	ENSG00000131095
sp;P14635	CCNB1	891	ENSG00000134057
sp;P14678	SNRPB	6628	ENSG00000125835
sp;P14679	TYR	7299	ENSG00000077498
sp;P14770	GP9	2815	ENSG00000169704
sp;P15018	LIF	3976	ENSG00000128342
sp;P15924	DSP	1832	ENSG00000096696
sp;P15927	RPA2	6118	ENSG00000117748
sp;P16144	ITGB4	3691	ENSG00000132470
sp;P16260	SLC25A16	8034	ENSG00000122912
sp;P16284	PECAM1	5175	ENSG00000178012
sp;P16401	HIST1H1B	3009	ENSG00000184357
sp;P16403	HIST1H1C	3006	ENSG00000168298
sp;P16442	ABO	28	ENSG00000175164
sp;P16473	TSHR	7253	ENSG00000165409
sp;P16671	CD36	948	ENSG00000135218
sp;P17066	HSPA6	3310	ENSG00000173110
sp;P17213	BPI	671	ENSG00000101425
sp;P17301	ITGA2	3673	ENSG00000164171
sp;P17480	UBTF	7343	ENSG00000108312
sp;P17600	SYN1	6853	ENSG00000008056
sp;P17661	DES	1674	ENSG00000175084
sp;P17752	TPH1	7166	ENSG00000129167
sp;P17931	LGALS3	3958	ENSG00000131981
sp;P18577	RHCE	6006	ENSG00000074765
sp;P19338	NCL	4691	ENSG00000115053
sp;P19474	SSA1	6737	ENSG00000132109
sp;P20071	FKBP1A	2280	ENSG00000088832
sp;P20160	AZU1	566	ENSG00000172232
sp;P20248	CCNA2	890	ENSG00000145386
sp;P20309	CHRM3	1131	ENSG00000133019
sp;P20648	ATP4A	495	ENSG00000105675
sp;P20700	LMNB1	4001	ENSG00000113368
sp;P20711	DDC	1644	ENSG00000132437
sp;P20810	CAST	831	ENSG00000153113
sp;P20916	MAG	4099	ENSG00000105695
sp;P21817	RYR1	6261	ENSG00000066598

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;P21980	TGM2	7052	ENSG00000101418
sp;P22087	FBL	2091	ENSG00000105202
sp;P22301	IL10	3586	ENSG00000136634
sp;P22626	HNRPA2B1	3181	ENSG00000122566
sp;P23197	CBX1	10951	ENSG00000108468
sp;P23229	ITGA6	3655	ENSG00000091409
sp;P23276	KEL	3792	ENSG00000106135
sp;P23381	WARS	7453	ENSG00000140105
sp;P23497	SP100	6672	ENSG00000067066
sp;P24821	TNC	3371	ENSG000000041982
sp;P25189	MPZ	4359	ENSG00000158887
sp;P26378	ELAVL4	1996	ENSG00000162374
sp;P26583	HMGB2	3148	ENSG00000164104
sp;P26639	TARS	6897	ENSG00000113407
sp;P27352	GIF	2694	ENSG00000134812
sp;P27694	RPA1	6117	ENSG00000132383
sp;P27797	CALR	811	ENSG00000179218
sp;P28907	CD38	952	ENSG000000004468
sp;P29536	LMOD1	25802	ENSG00000163431
sp;P30556	AGTR1	185	ENSG00000144891
sp;P31213	SRD5A2	6716	ENSG000000049319
sp;P31415	CASQ1	844	ENSG00000143318
sp;P32881	IFNA8	3445	ENSG00000120242
sp;P32926	DSG3	1830	ENSG00000134757
sp;P32969	RPL9	6133	ENSG00000185078
sp;P35243	RCV1	5957	ENSG00000109047
sp;P35348	ADRA1A	148	ENSG00000120907
sp;P35555	FBN1	2200	ENSG00000166147
sp;P35609	ACTN2	88	ENSG00000077522
sp;P35659	DEK	7913	ENSG00000124795
sp;P36957	DLST	1743	ENSG00000119689
sp;P38432	COIL	8161	ENSG00000121058
sp;P40189	IL6ST	3572	ENSG00000134352
sp;P40197	GP5	2814	ENSG00000178732
sp;P40967	SILV	6490	ENSG00000185664
sp;P41180	CASR	846	ENSG00000036828
sp;P41250	GARS	2617	ENSG00000106105
sp;P41252	IARS	3376	ENSG00000021374
sp;P42263	GRIA3	2892	ENSG00000125675
sp;P43331	SNRPD3	6634	ENSG00000100028
sp;P45973	CBX5	23468	ENSG00000094916

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;P48436	SOX9	6662	ENSG00000125398
sp;P49321	NASP	4678	ENSG00000132780
sp;P49418	AMPH	273	ENSG00000078053
sp;P49454	CENPF	1063	ENSG00000117724
sp;P49588	AARS	16	ENSG00000090861
sp;P49917	LIG4	3981	ENSG00000174405
sp;P50454	SERPINH1	871	ENSG00000149257
sp;P50995	ANXA11	311	ENSG00000122359
sp;P51003	PAPOLA	10914	ENSG00000090060
sp;P51164	ATP4B	496	ENSG00000186009
sp;P51513	NOVA1	4857	ENSG00000139910
sp;P52434	POLR2H	5437	ENSG00000163882
sp;P52732	KIF11	3832	ENSG00000138160
sp;P54289	CACNA2D1	781	ENSG00000153956
sp;P54652	HSPA2	3306	ENSG00000126803
sp;P56270	MAZ	4150	ENSG00000103495
sp;P56693	SOX10	6663	ENSG00000100146
sp;P57053	H2BFS	54145	ENSG00000173707
sp;P78396	CCNA1	8900	ENSG00000133101
sp;P78527	PRKDC	5591	ENSG00000121031
sp;P80511	S100A12	6283	ENSG00000163221
sp;Q00975	CACNA1B	774	ENSG00000148408
sp;Q01453	PMP22	5376	ENSG00000109099
sp;Q01780	PMSCL2	5394	ENSG00000171824
sp;Q01955	COL4A3	1285	ENSG00000169031
sp;Q02161	RHD	6007	ENSG00000187010
sp;Q02388	COL7A1	1294	ENSG00000114270
sp;Q02413	DSG1	1828	ENSG00000134760
sp;Q02539	HIST1H1A	3024	ENSG00000124610
sp;Q02952	AKAP12	9590	ENSG00000131016
sp;Q03001	BPAG1	667	ENSG00000151914
sp;Q03188	CENPC1	1060	ENSG00000145241
sp;Q03252	LMNB2	84823	ENSG00000099858
sp;Q05084	ICA1	3382	ENSG00000003147
sp;Q06265	PMSCL1	5393	ENSG00000123737
sp;Q08188	TGM3	7053	ENSG00000125780
sp;Q08289	CACNB2	783	ENSG00000165995
sp;Q08379	GOLGA2	2801	ENSG00000167110
sp;Q08554	DSC1	1823	ENSG00000134765
sp;Q08945	SSRP1	6749	ENSG00000149136
sp;Q09470	KCNA1	3736	ENSG00000111262

<i>Autoantigen source^a</i>	<i>Gene symbol</i>	<i>Locus ID number^b</i>	<i>Ensembl Gene Stable ID^b</i>
sp;Q12841	FSTL1	11167	ENSG00000163430
sp;Q12920	PSME3	10197	ENSG00000131467
sp;Q12926	ELAVL2	1993	ENSG00000107105
sp;Q13342	SP140	11262	ENSG00000079263
sp;Q13439	GOLGA4	2803	ENSG00000144674
sp;Q13698	CACNA1S	779	ENSG00000081248
sp;Q13751	LAMB3	3914	ENSG00000008141
sp;Q13753	LAMC2	3918	ENSG00000058085
sp;Q13813	SPTAN1	6709	ENSG00000119363
sp;Q13823	HUMAUANTIG	29889	ENSG00000134697
sp;Q14576	ELAVL3	1995	ENSG00000130171
sp;Q14839	CHD4	1108	ENSG00000111642
sp;Q15149	PLEC1	5339	ENSG00000178209
sp;Q15506	SPA17	53340	ENSG00000064199
sp;Q15717	ELAVL1	1994	ENSG00000066044
sp;Q16222	UAP1	6675	ENSG00000117143
sp;Q16653	MOG	4340	ENSG00000137345
sp;Q16666	IFI16	3428	ENSG00000163565
sp;Q16695	HIST3H3	8290	ENSG00000168148
sp;Q16787	LAMA3	3909	ENSG00000053747
sp;Q16849	PTPRN	5798	ENSG00000054356
sp;Q16881	TXNRD1	7296	ENSG00000136013
sp;Q92791	SC65	10609	ENSG00000141696
sp;Q92817	EVPL	2125	ENSG00000167880
sp;Q92911	SLC5A5	6528	ENSG00000105641
sp;Q92932	PTPRN2	5799	ENSG00000155093
sp;Q99259	GAD1	2571	ENSG00000128683
sp;Q99879	HIST1H2BM	8342	ENSG00000137366
sp;Q99880	HIST1H2BL	8340	ENSG00000185130
sp;Q9BWT3	PAPOLG	64895	ENSG00000115421
sp;Q9H254	SPTBN4	57731	ENSG00000160460
sp;Q9UGN5	ADPRTL2	10038	ENSG00000129484
sp;Q9UN79	SOX13	9580	ENSG00000143842
sp;Q9Y6F1	ADPRTL3	10039	ENSG00000041880
sp;Q9Y6N9	USH1C	10083	ENSG00000006611

Supporting Table 2

Gene length and structure in autoantigens and other human genes.

^a For each gene, lengths of functional regions and number of splice site were extracted from Ensembl database.

^b Significance level was calculated by resampling as described in materials and methods.

^c not significant ($p > 0.01$).

<i>Measure^a</i>	<i>Autoantigens (n=348)</i>	<i>Other human genes (n=14,881)</i>	<i>Significance level^b</i>
mean coding region length	2,024 bp	1,515 bp	$p < 0.0001$
mean intron length	39,100 bp	47,535 bp	n.s. ^c
mean UTR length	678 bp	903 bp	$p < 0.0001$
mean number of splice sites	24.36	17.63	$p < 0.0001$