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Data Article

Immunoglobulin characteristics and RNAseq data of FcRL4+ B cells sorted from synovial fluid and tissue of patients with rheumatoid arthritis



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ARTICLE INFO

Article history:

Received 14 March 2017

Received in revised form

24 May 2017

Accepted 1 June 2017

Available online 7 June 2017

Keywords:

B cells

FcRL4

Rheumatoid arthritis

IRTA1

ABSTRACT

This manuscript is a companion paper to Amara et al. [1]. Data shown here include detailed clinical characteristics from anonymized patients, the Ig subclass data generated from B cells sorted from four individual patients, tables detailing variable gene region sequences from sorted cells linked to the patient information and the sequence yields from individual patients. Furthermore a URL link to the RNAseq datasets submitted to GEO is included.

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DOI of original article: <http://dx.doi.org/10.1016/j.jaut.2017.03.004>

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<http://dx.doi.org/10.1016/j.dib.2017.06.009>

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Specifications Table

Subject area	Immunology
More specific subject area	B cells in Rheumatoid Arthritis
Type of data	1 figure, 3 tables, url to data
How data was acquired	Sequencing, patient clinical characteristics linked to experimental data
Data format	Analyzed, raw
Experimental factors	FcRL4+ and FcRL4- B cells were sorted from synovial fluid and tissue from RA patients. Synovial fluid derived B cells were analysed for their gene expression profile by RNAseq. Immunoglobulin variable region genes from single sorted B cells were sequenced and expressed as components of recombinant monoclonal antibodies. These were investigated for their reactivity with autoantigens.
Experimental features	Data shown here include detailed clinical characteristics from anonymized patients, the Ig isotype data generated from B cells sorted from four individual patients, tables detailing variable gene region sequences from sorted cells linked to the patient clinical characteristics and the sequence yields from individual patients. We also supply a URL link to the RNAseq datasets submitted to GEO.
Data source location	Birmingham UK
Data accessibility	https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE94897
Related research article	1) Amara K, Clay E, Yeo L, Ramsköld D, Spengler J, Sippl N, Cameron JA, Israelsson L, Titcombe PJ, Grönwall C, Sahbudin I, Filer A, Raza K, Malmström V, Scheel-Toellner D. B cells expressing the IgA receptor FcRL4 participate in the autoimmune response in patients with rheumatoid arthritis. <i>J Autoimmun.</i> 2017. pii: S0896-8411(16)30396-1. doi: 10.1016/j.jaut.2017.03.004 [Epub ahead of print]

Value of the data

- First RNAseq dataset from FcRL4+ and FcRL4- B cells sorted from the synovial fluid of patients with rheumatoid arthritis. This will be valuable to researchers interested in the regulation of B cell subpopulations and their functional role in RA.
- Ig subclass distribution in FcRL4+ and FcRL4- B cells infiltrating the rheumatoid joint. This gives important information of the potential origins of these cells and their potential function in the joint.
- The tables linking variable region sequences, gene usage, Ig isotypes and reactivity with citrullinated autoantigens give insight into the immune response to citrullinated proteins on a single cell basis.

1. Data

The data shown in this manuscript have been generated in a study of FcRL4+ and FcRL4- B cells infiltrating the synovial fluid and synovial tissue of RA patients. They include a link to the GEO dataset of RNAseq gene expression profiles of these cells. Furthermore, the Ig isotype distribution of the B cells for these populations is shown for four individual patients in Fig. 1. Table 1 gives detailed clinical characteristics from the anonymized patients. These are linked to the data shown in Table 2, detailing variable gene region sequences from sorted cells, the isotype usage and reactivity with citrullinated proteins of these individual cells. Table 3 displays the number of sequences and recombinant monoclonal antibodies generated from FcRL4+ and FcRL4- B cells from individual patients.

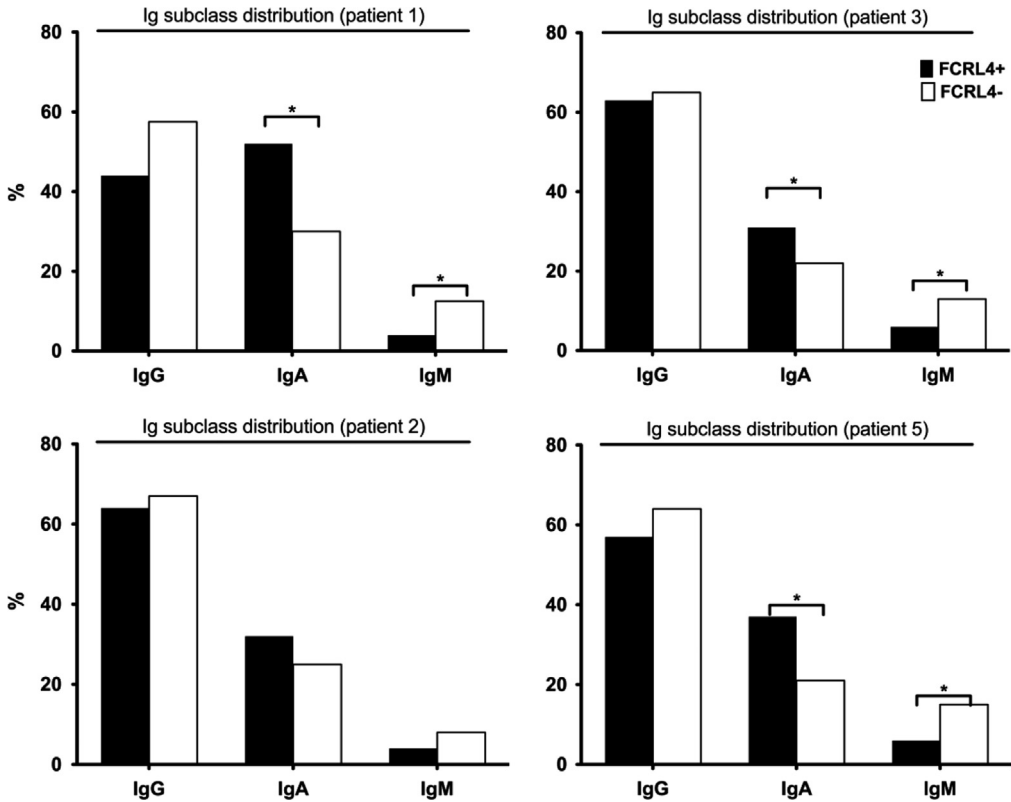


Fig. 1. Ig subclass distribution determined in single sorted FcRL4+ and FcRL4- B cells in four individual patients.

2. Experimental design, materials and methods

More detailed information can be found in Ref. [1].

2.1. Experimental design

FcRL4+ and FcRL4- B cells were sorted from synovial fluid and tissue from RA patients. Synovial fluid derived B cells were analysed for their gene expression profile by RNAseq. Immunoglobulin variable region genes from single sorted B cells were sequenced and expressed as components of recombinant monoclonal antibodies. These were investigated for their reactivity with autoantigens. Amplification of sections of Ig constant regions was used to identify Ig isotype usage.

2.2. Materials and methods

Cells from 4 SF and 2 ST samples were stained for CD19 and FcRL4 and sorted either as single cells or as cell populations. Individual IgH and IgL chain gene rearrangements were PCR-amplified independently. For identification of Ig isotypes, amplification of IgH chains with reverse primers specific for the constant regions of all human Ig classes and sequencing was used. Cloning of the Ig genes into expression vectors and antibody production and purification were performed. Antibody reactivity against citrullinated peptides was determined by ELISA. For gene expression analysis RNA sequencing was carried out on sorted FcRL4+ and FcRL4- B cells from 4 SF samples. Pre-amplification prior to Illumina Truseq library preparation was performed using the SMARTer amplification using olig(dT)

Table 1

Clinical characteristics of RA patients who provided synovial fluid or synovial tissue. RF, rheumatoid factor; CCP, cyclic citrullinated peptide; CRP, C reactive protein; ESR, erythrocyte sedimentation rate, DAS28, disease activity score 28, TJC, tender joint count, SJC swollen joint count, VAS visual analog score. Hydroxychlor., Hydroxychloroquine. NA not available.

Patient identifier	Sample	Diagnosis	Gender	Age (yrs)	Age at onset of RA	Dis. Dur. (yrs)	RF	CCP	CRP	ESR	DAS 28 ESR	TJC (28)	SJC (28)	VAS gen. health	Figures	Current disease modifying therapy
1	ST	RA	F	69	27	42	NA	pos	0	18	5.6	12	3	80	1A, 1B, 2A, 2B, 3A, 3B, 3C, 4A, 4B	Adalimumab
2	ST	RA	M	70	55	15	pos	pos	11	24	3.86	2	1	40	1A, 1B, 2A, 2B, 3A, 3B, 3C	Etanercept, Methotrexate, Hydroxychlor.
3	SF	RA	M	72	72	0.23	neg	neg	23	30	6.0	11	14	49	1A, 1B, 2A, 2B, 3A, 3B, 3C	Nil
4	SF	RA	F	52	41	12	neg	neg	0	38	5.4	5	2	89	1A, 1B, 2A, 2B, 3A, 3B, 3C	Methotrexate
5	SF	RA	F	40	40	0.23	pos	pos	8	9	5.9	19	8	84	1A, 1B, 2A, 2B, 3A, 3B, 3C, 4A, 4B	Tocilizumab Hydroxychlor.
6	SF	RA	F	49	38	11	pos	na	3	15	3.1	2	2	0	1A, 1B, 2A, 2B, 3A, 3B, 3C	Etanercept, Methotrexate
7	SF	RA	M	68	56	12	NA	NA	19	15	NA	NA	NA	NA	1C	Methotrexate
8	SF	RA	F	60	51	9	NA	pos	45	13	NA	6	NA	NA	1C	Methotrexate
9	SF	RA	F	44	41	3	neg	neg	13	29	4.95	7	3	45	1C	Methotrexate
10	SF	RA	F	60	57	3	pos	pos	20	55	7.05	15	10	85	1C	Nil
11	SF	RA	M	39	34	5	NA	NA	NA	NA	NA	NA	NA	NA	1C	Etanercept
12	SF	RA	F	70	68	2	pos	neg	142	21	4.8	5	2	73	1C	Prednisolone
13	SF	RA	F	60	57	3	pos	pos	122	104	5.88	2	4	91	1C	Sulfasalazine
14	SF	RA	F	60	29	31	neg	pos	57	28	6.75	16	11	89	1C	Prednisolone
15	SF	RA	F	63	62	1	pos	pos	30	60	4.13	1	2	22	1C	Methotrexate, prednisolone
16	SF	RA	M	54	54	0.23	neg	neg	88	58	7.39	23	12	93	1C	Nil
17	SF	RA	F	77	68	9	neg	neg	71	62	NA	NA	NA	NA	1C	Methotrexate, Prednisolone
18	SF	RA	M	72	56	16	pos	pos	5	15	13	NA	NA	NA	5A, 5B	Etanercept, Methotrexate, Hydroxychlor.
19	SF	RA	F	32	31.2	0.8	pos	pos	15	48	5.9	8	6	93	5A, 5B	Nil
20	SF	RA	F	52	49	3	pos	pos	13	34	6.54	14	10	78	5A, 5B	Nil
21	SF	RA	F	46	35	9	pos	pos	NA	NA	NA	NA	NA	NA	5A, 5B	Methotrexate, Hydroxychlor.

Table 2
Sequence data and reactivity of monoclonal antibodies from FcRL4+ and FcRL4- B cells from RA patients.

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length	CCP2	CEP-1	cit-vim 60-75	cit-fib 36-52
1	146+.A06	ST (CD19+FcRL4+)	3-33	2-2	6	IgG1	6	SRVGRVPDAVRYFYGDV	3	18				
	146+.A07	ST (CD19+FcRL4+)	3-15	2-2	6	IgG1	29	ATDVFRTVVPVVIYSFYGLAV	1	21	pos	pos	pos	neg
	146+.A08	ST (CD19+ FcRL4+)	3-11	4-17	4	IgA1	10	ARGRWGLYGDYIFDS	2	15				
	146+.A09	ST (CD19+ FcRL4+)	5-51	3-22	3	IgA1	1	ARPHYYSLDLAFDI	2	14				
	146+.A10	ST (CD19+ FcRL4+)	3-33	6-13	4	IgA1	10	AREEGTIVATDTESTDFDFS	1	20	neg	neg	neg	neg
	146+.A11	ST (CD19+ FcRL4+)	1-18	3-10	5	IgA1	15	ARRPDSSQYSNWIDP	2	15	neg	neg	neg	neg
	146+.A12	ST (CD19+ FcRL4+)	3-23	6-13	5	IgA1	23	AKDSDPIATHSSWDS	2	15	neg	neg	neg	neg
	146+.B01	ST (CD19+ FcRL4+)	3-30-3	3-22	4	IgG1	35	VRGYCSSLSCSSFDS	1	15	neg	neg	neg	neg
	146+.B02	ST (CD19+ FcRL4+)	1-46	3-3	3	IgA1	20	ARAEGAVTIDDAFDI	1	15	neg	neg	neg	neg
	146+.B03	ST (CD19+ FcRL4+)	1-69	2-8	4	IgG1	17	ARHCNGLCFYFYFDY	2	15				
	146+.B04	ST (CD19+ FcRL4+)	3-30	4-11	4	IgG1	18	VKDAYRTQSPHFNNR	4	15				
	146+.B05	ST (CD19+ FcRL4+)	4-59	6-13	6	IgA1	21	ARAGSWFLYGMDV	1	13				
	146+.B06	ST (CD19+ FcRL4+)	4-4	3-10	3	IgG1	8	TSPQGGPGSYPHDAFDV	1	17	neg	neg	neg	neg
	146+.B08	ST (CD19+ FcRL4+)	1-2	3-9	4	IgG1	8	CARLRQDFDLITGYQLGSYYFDY	2	23	neg	neg	neg	neg
	146+.B12	ST (CD19+ FcRL4+)	1-18	1-26	6	IgG3	26	AKDQWEAYYGLDV	1	13				
	146+.C01	ST (CD19+ FcRL4+)	3-23	2-2	6	IgA1	12	ARGKARYQLPTYFYGMVDV	3	19	neg	neg	neg	neg
	146+.C04	ST (CD19+ FcRL4+)	3-53	3-3	4	IgG1	14	ARAADVFWSGYHLEY	2	15				
	146+.C05	ST (CD19+ FcRL4+)	5-51	6-13	6	IgA2	22	TRLGSWYLYHYGVVDV	2	15				
	146+.C06	ST (CD19+ FcRL4+)	3-23	2-15	6	IgA1	15	AKRVVVASNHGYYSMDV	3	17				
	146+.C08	ST (CD19+ FcRL4+)	3-21	3-9	4	IgA1	20	ARDYDVFVTGYPShFFDH	3	17				
	146+.C09	ST (CD19+ FcRL4+)	3-21	2-15	6	IgG2	25	ARDRDVIVVKEPNFYGVVDV	3	20				
	146+.C10	ST (CD19+ FcRL4+)	4-34	1-26	4	IgA1	29	ANRRRYTTRFYDFD	4	14				
	146+.D07	ST (CD19+ FcRL4+)	3-23	3-10	1	IgA1	1	AKDRGVLYRFDWLH	4	14	neg	pos	pos	neg
	146+.D08	ST (CD19+ FcRL4+)	4-30-4	3-3	5	IgG2	36	ASSGFFGQPYNWFDR	1	15				
	146+.D09	ST (CD19+ FcRL4+)	3-48	3-3	4	IgG1	31	ARDTRDFWSGYTYFYFDY	2	18	pos	neg	neg	neg
	146+.D10	ST (CD19+ FcRL4+)	5-51	4-23	6	IgA1	19	ARLGKTTTIVTSPYYYYYGMVDV	2	21	neg	neg	neg	neg
	146+.E01	ST (CD19+ FcRL4+)	1-69	5-12	4	IgG1	12	ARDSGYDEGYFYFDY	1	14	neg	neg	neg	neg
	146+.E02	ST (CD19+ FcRL4+)	3-9	1-26	4	IgA1	24	AKASGLTGSFYPLDH	2	15				
	146+.E04	ST (CD19+ FcRL4+)	4-34	2-15	4	IgG1	6	ARGGHRKYCSGGSCIYFYFDY	4	20				
	146+.E05	ST (CD19+ FcRL4+)	3-11	5-12	3	IgA1	19	ARDDTVAFKDALDI	2	14	neg	neg	neg	neg
	146+.E06	ST (CD19+ FcRL4+)	1-69	1-1	4	IgA1	34	ARERALCAEGCPPGDD	2	16	neg	pos	neg	neg
	146+.E07	ST (CD19+ FcRL4+)	5-10-1	3-10	4	IgA2	16	ARVRTYYSAGTYPPFS	2	16				
	146+.E08	ST (CD19+ FcRL4+)	3-30	2-8	6	IgA1	21	AKAWGQLAGFALYFYGLDV	1	19				
	146+.E12	ST (CD19+ FcRL4+)	3-48	3-3	4	IgA1	26	ARINYDYWSDYARFLDS	2	17				
	146+.F01	ST (CD19+ FcRL4+)	4-30-4	3-10	4	IgG1	0	AFHLGEGYSGSYDLDY	1	17	neg	neg	neg	neg
	146+.F02	ST (CD19+ FcRL4+)	4-38-2	6-13	3	IgA1	31	ARDRGYSTNWFGLFDV	2	16	neg	neg	neg	neg
146+.F04	ST (CD19+ FcRL4+)	3-21	2-8	4	IgG1	19	AKPTVVYGPIDY	1	12					
146+.F08	ST (CD19+ FcRL4+)	4-38-2	3-3	4	IgA1	22	AREFEHFGSGYFPVDY	2	16					
146+.F09	ST (CD19+ FcRL4+)	3-49	3-3	4	IgA1	26	NSRSGFGVVAPEIDH	2	15					

146+.F10	ST (CD19+ FcRL4+)	3-23	1-26	4	IgA1	20	ATDGEGLVDFE	0	11	neg	neg	neg	neg
146+.F11	ST (CD19+ FcRL4+)	4-59	3-3	3	IgA1	22	ARVMTVFGVVPDAFDI	1	16				
146+.F12	ST (CD19+ FcRL4+)	3-43	6-19	4	IgM	3	AKDISSTGWEYCFEN	1	15				
146+.G01	ST (CD19+ FcRL4+)	3-20	1-26	4	IgA1	15	AKPSRVGAADADY	2	14				
146+.G02	ST (CD19+ FcRL4+)	4-31	3-3	5	IgG1	10	AREGVHATTFGMIDDQGWFD	2	21	neg	neg	neg	neg
146+.G03	ST (CD19+ FcRL4+)	1-46	1-14	6	IgG1	18	ARVSPGIRDMDV	2	13	neg	neg	neg	neg
146+.G04	ST (CD19+ FcRL4+)	3-30	7-27	4	IgG1	4	ARESGARWVDVYFDY	2	14	neg	neg	neg	neg
146+.G05	ST (CD19+ FcRL4+)	4-30-4	3-16	5	IgG1	36	ARAPPETLRGIVGNWFDP	2	18	neg	pos	pos	neg
146+.G06	ST (CD19+ FcRL4+)	1-3	2-15	4	IgG1	14	VKDGAGGANTFDH	2	14				
146+.G07	ST (CD19+ FcRL4+)	3-33	5-24	4	IgA1	31	ARARRGDGYNQARYYYFDY	4	19	neg	pos	neg	neg
146+.G09	ST (CD19+ FcRL4+)	1-18	6-19	3	IgA1	4	ARGWYSRGGGMDV	2	13	neg	neg	neg	neg
146+.G10	ST (CD19+ FcRL4+)	1-18	3-16	4	IgG1	10	ARGWDPIVLPDYW	1	13				
146+.G11	ST (CD19+ FcRL4+)	3-23	2-2	4	IgA1	27	AKSHLAHYVVPAPPDF	3	17				
146+.G12	ST (CD19+ FcRL4+)	1-3	1-26	6	IgM	1	TRDLLDRGKYRVAGHFYGM	5	22				
146+.H02	ST (CD19+ FcRL4+)	3-30	3-9	6	IgG3	33	ARDGGENEIVTGYPGWSNKP	5	31				
146+.H05	ST (CD19+ FcRL4+)	4-61	3-22	2	IgG2	3	ARHVGRLRRDSFTTRITDA	8	28				
146+.H07	ST (CD19+ FcRL4+)	3-30	1-26	5	IgG1	26	AKQSATMGPNRQPR	3	14	neg	neg	neg	neg
146+.H08	ST (CD19+ FcRL4+)	4-34	6-13	5	IgA1	9	ARGFWDSCSWFDY	1	13				
146+.H09	ST (CD19+ FcRL4+)	4-34	2-21	6	IgG1	8	ASKGGDSVGYHYHMDV	2	16	neg	neg	neg	neg
146+.H10	ST (CD19+ FcRL4+)	1-18	3-3	5	IgA1	14	ARGRPSTFGVVRGFD	3	16				
146-.A03	ST (CD19+ FcRL4-)	3-30	4-17	4	IgG1	13	TRATRVNGNLNTFDY	2	15	neg	neg	neg	neg
146-.A06	ST (CD19+ FcRL4-)	3-9	3-3	5	IgG1	14	AKDRFGELTDLTYVGVWFD	2	19	neg	neg	neg	neg
146-.A07	ST (CD19+ FcRL4-)	5-10-1	3-10	5	IgA1	31	ARLDSVIRGYNWFDP	2	16	neg	neg	neg	neg
146-.B05	ST (CD19+ FcRL4-)	4-59	2-15	3	IgA1	7	ARHRGGSPTAFDI	3	13	neg	neg	neg	neg
146-.B07	ST (CD19+ FcRL4-)	3-15	4-17	4	IgG1	17	TTVDDYECHDY	1	11				
146-.B11	ST (CD19+ FcRL4-)	4-4	2-15	4	IgG1	17	ARVSEAYFDPFYDNN	1	16				
146-.B12	ST (CD19+ FcRL4-)	1-18	3-9	4	IgG1	30	ARAPGSLRYDWWVSLYEEGD	3	21	neg	neg	neg	neg
146-.C01	ST (CD19+ FcRL4-)	1-46	3-10	3	IgA1	20	TSPQGGPGSYPHDAFDV	1	17	neg	neg	neg	neg
146-.C07	ST (CD19+ FcRL4-)	1-46	3-3	6	IgG1	29	ARVTTFESGPNDFGVPDHFY	2	25	neg	neg	neg	neg
146-.C10	ST (CD19+ FcRL4-)	4-34	1-26	4	IgA1	32	ANRRRCTTRFYFDF	4	14	neg	neg	neg	neg
146-.D03	ST (CD19+ FcRL4-)	3-23	2-8	4	IgG1	22	AKPLVYARLYFYDLDY	2	17	neg	neg	neg	neg
146-.D05	ST (CD19+ FcRL4-)	3-48	3-22	4	IgG1	0	VRDSPGWGRFYDY	2	14	neg	neg	neg	neg
146-.D06	ST (CD19+ FcRL4-)	4-30-4	3-22	4	IgM	3	AAYPGDNSGRHLISPPFDN	2	19				
146-.D09	ST (CD19+ FcRL4-)	4-30-4	3-22	4	IgG1	26	AAYGSYDRHLISPNPFYD	2	20	neg	neg	neg	neg
146-.E04	ST (CD19+ FcRL4-)	3-7	6-13	6	IgG2	25	VSQQVVP	0	8				
146-.E05	ST (CD19+ FcRL4-)	3-7	6-13	6	IgA2	31	VSGGLQYQYDVVPC	0	13				
146-.E06	ST (CD19+ FcRL4-)	4-34	2-15	4	IgA1	8	ARGGHRKYCSGSCIIYFDY	4	20	neg	neg	neg	neg
146-.E07	ST (CD19+ FcRL4-)	3-74	2-2	6	IgG3	11	ARVQPQRVLVYFGMDV	2	16				
146-.E08	ST (CD19+ FcRL4-)	3-11	4-17	4	IgG1	16	ARGAVTTPYYFDY	1	14	neg	neg	neg	neg
146-.E10	ST (CD19+ FcRL4-)	4-59	4-11	4	IgA1	25	ARLDYSPAIFDS	1	13	neg	neg	neg	neg
146-.E11	ST (CD19+ FcRL4-)	3-30-3	3-9	4	IgG1	13	ARGWERYDWWVAPGH	3	15				
146-.F01	ST (CD19+ FcRL4-)	3-11	3-10	6	IgG4	26	ARGPSGMFGDLSPYFHYGV	2	21				
146-.F04	ST (CD19+ FcRL4-)	5-10-1	2-15	5	IgG1	19	ARHGKRPSSWYDF	3	13				
146-.F08	ST (CD19+ FcRL4-)	1-3	2-8	4	IgA1	25	ARSHQPILLAGTPGD	2	16	neg	neg	neg	neg

Table 2 (continued)

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length	CCP2	CEP-1	cit-vim 60-75	cit-fib 36-52
	146-.F10	ST (CD19+ FcRL4-)	5-10-1	2-15	3	IgA1	19	AKAASRFDTFDI	2	12	neg	neg	neg	neg
	146-.F11	ST (CD19+ FcRL4-)	4-31	4-23	4	IgG2	22	TRGVIGLRGVPPYFDS	2	16				
	146-.G03	ST (CD19+ FcRL4-)	3-66		4	IgG1	17	RVDDTAVYYCARSPGTYDILTGPFDY	2	26				
	146-.G04	ST (CD19+ FcRL4-)	1-18	6-19	2	IgM	5	ARAVAVNWYFDL	1	12				
	146-.G05	ST (CD19+ FcRL4-)	3-48	5-18	3	IgM	0	ARGRKGYSYDAFDI	3	14				
	146-.G07	ST (CD19+ FcRL4-)	3-20	3-22	4	IgG1	12	ARGPPYIISGYYFSFDS	1	18				
	146-.H01	ST (CD19+ FcRL4-)	4-59	2-21	4	IgA1	22	ARDDSLGGFDY	1	11	neg	neg	neg	neg
	146-.H02	ST (CD19+ FcRL4-)	3-23	3-22	5	IgM	2	AKYYDTSGSYKACDI	2	15				
	146-.H04	ST (CD19+ FcRL4-)	3-11	3-22	4	IgG1	25	ARGFYHDTGATYYHRNQSPFDH	5	21				
Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length	CCP2	CEP-1	cit-vim 60-75	cit-fib 36-52
5	153+.A04	SF (CD19+ FcRL4+)	4-39	3-10	5	IgG1	6	ARLGGGYYGSGYTRFDP	2	18	neg	pos	neg	neg
	153+.A08	SF (CD19+ FcRL4+)	3-13	3-9	1	IgA1	16	ATKPSHIYLRVFDWLLQGVRRLL	4	23				
	153+.A09	SF (CD19+ FcRL4+)	4-39	3-22	4	IgG1	2	ARYLREYDIDISGLDY	2	15	neg	neg	neg	neg
	153+.A10	SF (CD19+ FcRL4+)	1-69	3-10	3	IgG1	12	ARRGYYDYVWVWDFRLTGPPIEGAFDI	3	26	neg	neg	neg	nrq
	153+.B05	SF (CD19+ FcRL4+)	4-59	3-22	4	IgG3	13	AADNYDSSESYSPYSFDS	0	18				
	153+.B08	SF (CD19+ FcRL4+)	3-48	3-3	6	IgG4	4	ASDKYDSWSRYVPPYGLDV	2	19				
	153+.C03	SF (CD19+ FcRL4+)	3-33	3-9	4	IgG2	8	ARGPDILTGGFYFDY	1	15				
	153+.C04	SF (CD19+ FcRL4+)	3-74	3-10	4	IgG1	6	VRGDLWFVELLYG	1	13	neg	neg	neg	neg
	153+.C06	SF (CD19+ FcRL4+)	1-18	3-22	4	IgA1	2	ARGSPYYDSSGYYHYFDS	2	19	neg	neg	neg	neg
	153+.C09	SF (CD19+ FcRL4+)	4-59	3-3	6	IgA1	3	ARDKSADTLEWYYYYYGMDV	2	20				
	153+.C10	SF (CD19+ FcRL4+)	5-51	6-19	4	IgA1	4	APQSGSGWPFYFDY	0	13				
	153+.C12	SF (CD19+ FcRL4+)	3-33	7-27	4	IgA1	16	ARHRGVTGLLNEPGDY	3	16	neg	neg	neg	neg
	153+.D01	SF (CD19+ FcRL4+)	3-33	2-21	4	IgA1	1	ARLLKTYCGGDCSLGY	2	16				
	153+.D06	SF (CD19+ FcRL4+)	5-51	3-3	6	IgA1	0	ARQYYDFWSDYYNSDYGGMDV	1	22				
	153+.D08	SF (CD19+ FcRL4+)	4-34	3-10	6	IgA1	7	ARESHDHAELGYGGMDV	3	18				
	153+.E01	SF (CD19+ FcRL4+)	4-59	6-13	4	IgA1	7	ASLPGSSTWPFYFDY	0	14				
	153+.E03	SF (CD19+ FcRL4+)	3-21	3-10	4	IgA1	10	ARIKTKWFRRSSTMSSFDY	5	20				
	153+.E04	SF (CD19+ FcRL4+)	1-69	2-15	6	IgG2	6	ARGRVPRIYYYYGMDV	3	16				
	153+.E05	SF (CD19+ FcRL4+)	1-2	3-22	3	IgG1	7	ARCDWGIYYDSRAHGAFDF	3	20	neg	neg	neg	neg
	153+.E07	SF (CD19+ FcRL4+)	4-30-2	3-9	4	IgM	1	ARDQFFLAALDY	1	12				
	153+.E11	SF (CD19+ FcRL4+)	1-69	4-17	6	IgG2	4	AREDYGDYDYGGMDV	1	16				
	153+.F02	SF (CD19+ FcRL4+)	3-66	3-22	3	IgG3	4	AREYNYDSSDAFDI	1	14				
	153+.F04	SF (CD19+ FcRL4+)	1-69	6-6	4	IgG2	5	ARSVQNLRYLGYFFDY	2	16				
	153+.F07	SF (CD19+ FcRL4+)	3-15	3-9	4	IgG1	5	TSSLVLRVFDWSTHSSDY	2	18	neg	neg	neg	neg
	153+.G01	SF (CD19+ FcRL4+)	3-15	1-1	4	IgG1	4	TTALNWNWDYYDY	0	13	neg	neg	neg	neg
	153+.G07	SF (CD19+ FcRL4+)	3-9	2-15	4	IgG2	9	VASYWRGYFFDY	1	12				
	153+.H01	SF (CD19+ FcRL4+)	3-33	3-3	6	IgG1	8	AKVAGYDFWSPGGYGGYSSMDV	1	21				
	153+.H02	SF (CD19+ FcRL4+)	1-18	2-15	5	IgM	4	ARDSGGSWLDP	1	11				
	153+.H06	SF (CD19+ FcRL4+)	3-74	1-7	4	IgG1	7	ARGGWGPRYNWNQGAVDY	2	18	pos	pos	pos	neg

153+.H11	SF (CD19+ FcRL4+)	3-11	4-11	6	IgA1	18	ARQSAYANYYYKGM DV	2	16				
153-.A03	SF (CD19+ FcRL4-)	4-34	3-22	2	IgA1	14	ARGLTFSYYDSSGFGY YYYWYFDL	1	23	neg	neg	neg	neg
153-.A04	SF (CD19+ FcRL4-)	1-18	2-15	6	IgG1	7	ARDRHCSGGTCYPYHYGMDV	4	20				
153-.A06	SF (CD19+ FcRL4-)	4-59	3-10	5	IgG4	5	ARTTTRGIVINWFDP	2	15				
153-.A07	SF (CD19+ FcRL4-)	1-69	6-19	5	IgM	1	ARDFQRTSTVTRGIAVGSRFDP	4	22				
153-.A12	SF (CD19+ FcRL4-)	5-51	2-2	3	IgG2	3	ARHLEYPHYVDF	3	13				
153-.B07	SF (CD19+ FcRL4-)	4-4	4-17	4	IgM	4	ARGGIWNDYGD FYPYFDY	1	19				
153-.C04	SF (CD19+ FcRL4-)	3-23	2-21	6	IgG2	6	AKEDYHFGRVD	3	11				
153-.C07	SF (CD19+ FcRL4-)	1-18	6-13	5	IgG3	5	ARDGAMGHPDFWQQLVASWFDP	2	22				
153-.C09	SF (CD19+ FcRL4-)	1-46	5-18	4	IgG1	8	AKSRGYSYGYFDY	2	13				
153-.C11	SF (CD19+ FcRL4-)	5-51	5-12	6	IgG2	6	ARLPHYDWY YYYAMDV	2	16				
153-.C12	SF (CD19+ FcRL4-)	4-39	3-16	4	IgG1	12	ARRSVYDANFDF	2	12	neg	neg	neg	neg
153-.D11	SF (CD19+ FcRL4-)	1-8	3-22	5	IgM	2	ARAPYYDSSGYYRGWFDP	2	19				
153-.D12	SF (CD19+ FcRL4-)	3-21	5-24	4	IgA2	8	ARDLVEMATIIGHISY	2	16				
153-.E12	SF (CD19+ FcRL4-)	4-4	2-15	4	IgG1	10	ARVVSEAA YFDN	1	12	neg	neg	neg	neg
153-.F02	SF (CD19+ FcRL4-)	3-49	3-10	6	IgG1	12	SRVLRVWVGGRYYC MDV	3	17	neg	neg	neg	neg
153-.F03	SF (CD19+ FcRL4-)	4-59	3-10	4	IgA1	5	ARVIMFTMVRGVQYYFDY	2	18				
153-.F05	SF (CD19+ FcRL4-)	4-34	3-10	3	IgA1	5	ARGREVIMVRGV MKGTEAFDI	4	21				
153-.F06	SF (CD19+ FcRL4-)	4-30	3-16	4	IgA1	8	ARGGREMLTIGGVLSAFDF	2	20	neg	neg	neg	neg
153-.F09	SF (CD19+ FcRL4-)	3-9	1-1	4	IgA1	7	VKDITWNRLLWV FDS	2	14				
153-.F10	SF (CD19+ FcRL4-)	4-4	1-14	4	IgG1	7	ARDKGNQPF FDY	2	12	neg	neg	neg	neg
153-.F11	SF (CD19+ FcRL4-)	1-24	3-22	4	IgA1	14	ATVQNYFDSSGRVTPKSDFDY	2	21				
153-.F12	SF (CD19+ FcRL4-)	3-48	3-16	4	IgG1	11	AGGRSYDYFDY	1	11	neg	neg	neg	neg
153-.G02	SF (CD19+ FcRL4-)	3-9	2-15	4	IgM	1	AASYWRGYYFDY	1	12				
153-.G06	SF (CD19+ FcRL4-)	3-7	3-10	4	IgG1	8	ARGESGGWFG EWVDY	1	15	neg	neg	neg	neg
153-.G08	SF (CD19+ FcRL4-)	4-61	4-23	5	IgG2	5	ATYAMGYGKGS	1	12				
153-.G12	SF (CD19+ FcRL4-)	3-23	5-24	4	IgG1	4	AAPPDGYNSEGYFDY	0	15	neg	neg	neg	neg
153-.H01	SF (CD19+ FcRL4-)	3-49	3-22	3	IgG2	3	CREEKDYDRPRDAFDI	4	17				
153-.H01	SF (CD19+ FcRL4-)	1-2	3-3	5	IgG3	5	ARGIGFNSWSGYPNWFDL	1	18				
153-.H04	SF (CD19+ FcRL4-)	3-23	3-9	4	IgM	9	ATVSGWGGH	1	9				
153-.H06	SF (CD19+ FcRL4-)	5-51	3-3	4	IgG1	7	ARHERYYDFWSGYTFEFDY	3	19	neg	neg	neg	neg
153-.H09	SF (CD19+ FcRL4-)	1-18	3-16	4	IgG1	11	ARDLGFTFGGVMGY	1	14				
153-.H10	SF (CD19+ FcRL4-)	1-8	3-3	6	IgG4	6	ARGINDFWSDYGM DV	1	15				
153-.H11	SF (CD19+ FcRL4-)	3-9	6-6	6	IgG2	6	AKDKWKLAGASGGMDV	3	16				

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length
3	423+.A01	SF, CD19+ FcRL4+	4-31	4-17	3	IgG1	6	ARGLDTHYGDYELDAFDI	2	18
	423+.A02	SF, CD19+ FcRL4+	1-69	5-24	6	IgA1	21	TREISAKGAN YYYGMDV	2	18
	423+.A05	SF, CD19+ FcRL4+	3-49	3-22	3	IgG1	12	ARDRWIVVVPEGGASDI	2	17
	423+.A06	SF, CD19+ FcRL4+	1-69	5-18	4	IgG2	17	AREEAVDTAMLWYY	1	14
	423+.A07	SF, CD19+ FcRL4+	1-69	5-24	4	IgG1	18	CAREGLYIATAFFDL	1	15
	423+.A11	SF, CD19+ FcRL4+	4-30-4	3-22	3	IgA1	27	ATQSLGSSGYRAFDI	1	16
	423+.A12	SF, CD19+ FcRL4+	5-10-1	3-22	1	IgA2	22	AKDLLHFPPYYDSSDY WPAVYFDL	2	25
	423+.B04	SF, CD19+ FcRL4+	3-30	1-26	4	IgG2	5	ASGPRSRKDYFD	3	14
	423+.B05	SF, CD19+ FcRL4+	1-69	6-19	4	IgA1	13	VRGSSGWNFDH	2	11

Table 2 (continued)

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+) Length	CCP2	CEP-1	cit-vim 60-75	cit-fib 36-52
423+.B06	SF, CD19+	FcRL4+	4-39	3-3	6	IgA1	11	ASSITIFGVVKKXXXGMDV	1	18			
423+.B11	SF, CD19+	FcRL4+	3-49	5-24	4	IgA1	22	AREITSRNGYNHFAY	3	15			
423+.B12	SF, CD19+	FcRL4+	3-53	5-18	6	IgA1	16	ASGGYSYGLDYYYAMDV	0	17			
423+.C01	SF, CD19+	FcRL4+	1-46	3-10	2	IgA1	5	ARDQSIITMVRGGPPDWNFDL	2	20			
423+.C05	SF, CD19+	FcRL4+	4-59	1-20	4	IgG2	10	AKSSSPYDWNAPKADY	2	16			
423+.C07	SF, CD19+	FcRL4+	3-20	6-13	6	IgG1	11	SRDVGSSFPYPYSYAMDV	1	18			
423+.D05	SF, CD19+	FcRL4+	4-4	3-3	6	IgG3	2	AREGVGSTQGPYYAMDV	1	17			
423+.D10	SF, CD19+	FcRL4+	4-59	3-16	4	IgG1	6	AAEVMNNTDGDVDY	0	13			
423+.E01	SF, CD19+	FcRL4+	4-39	6-13	4	IgG4	13	ARFPAGYAGSWYVDY	1	15			
423+.E02	SF, CD19+	FcRL4+	3-21	6-13	4	IgG2	12	ASSPSGPGAAVFDY	0	14			
423+.E05	SF, CD19+	FcRL4+	1-46	1-1	6	IgG1	4	AKESTATIGTPPEVNYYYGMDV	1	22			
423+.E08	SF, CD19+	FcRL4+	3-30	3-16	3	IgG1	23	ARETNSYAFDI	1	11			
423+.F02	SF, CD19+	FcRL4+	4-48	3-10	4	IgG1	14	AGVERDYVSH	2	10			
423+.F05	SF, CD19+	FcRL4+	4-30-2	3-10	4	IgG1	12	ARVRWVGSGSKIDY	3	13			
423+.F10	SF, CD19+	FcRL4+	1-46	5-18	4	IgA2	17	ARGRGSYGVTFDFY	2	15			
423+.G01	SF, CD19+	FcRL4+	1-46	3-10	4	IgG2	17	ARGSGSGSYNIDY	1	14			
423+.G03	SF, CD19+	FcRL4+	4-4	3-9	4	IgG1	6	ARDPRRYHILTGHYEGGPSDY	5	21			
423+.G07	SF, CD19+	FcRL4+	3-30	2-15	6	IgG1	34	AKRTGPPVVSRGGLDV	3	16			
423+.G10	SF, CD19+	FcRL4+	3-30-3	5-18	5	IgA1	1	AREGGGYSYADNWFDP	1	16			
423+.G12	SF, CD19+	FcRL4+	3-48	6-19	1	IgG4	6	ARDLPSRGAEDFDL	2	16			
423+.H08	SF, CD19+	FcRL4+	4-59	6-19	3	IgG1	5	AREDPGQTPSGDGPDDAFDI	1	20			
423+.H09	SF, CD19+	FcRL4+	4-31	6-6	4	IgM	30	AARIASRYFDS	2	11			
423+.H10	SF, CD19+	FcRL4+	1-69	2-15	3	IgG1	8	ASDVARYCSGGSCYSHAFDI	2	20			
423+.H11	SF, CD19+	FcRL4+	1-69	5-24	3	IgM	24	ARTGEMATTPNAFDIW	1	16			
423-.A02	SF (CD19+	FcRL4-)	1-2	1-26	3	IgA1	15	ARGWGAAQVVFDM	1	13			
423-.A05	SF (CD19+	FcRL4-)	4-34	3-3	4	IgG2	9	ARRTTAYDFWSDYYFDS	2	18			
423-.A09	SF (CD19+	FcRL4-)	1-2	1-26	4	IgA1	12	ARGFRSGSYPGY	2	12			
423-.B01	SF (CD19+	FcRL4-)	3-15	4-23	4	IgG1	18	ATVRRSLSPKLY	3	12			
423-.B10	SF (CD19+	FcRL4-)	4-31	2-21	6	IgA2	12	ARFRHWYYIYDV	3	12			
423-.B11	SF (CD19+	FcRL4-)	4-39	3-10	4	IgA1	13	AGLYGLDFPQVMRYFDP	1	17			
423-.C02	SF (CD19+	FcRL4-)	3-23	3-10	4	IgA1	19	ANAGTYLPPFDY	0	12			
423-.C03	SF (CD19+	FcRL4-)	3-33	3-10	6	IgM	4	ASRGGVGGYYVKDYGMVDV	2	18			
423-.C04	SF (CD19+	FcRL4-)	5-51	3-22	6	IgG1	2	ARLRYYYDSSGYYMNNYYYYYMDV	2	25			
423-.C05	SF (CD19+	FcRL4-)	3-23	5-18	4	IgG2	27	AKDVVDSVMGLPFDY	1	15			
423-.C09	SF (CD19+	FcRL4-)	3-33	3-16	5	IgA1	3	AREGLDIPDRFDP	2	13			
423-.C12	SF (CD19+	FcRL4-)	1-18	2-2	6	IgM	5	SRVGRVPDAVRYFYGDV	3	18			
423-.D01	SF (CD19+	FcRL4-)	1-69	5-12	5	IgA1	29	ARDRRGNNRRRENWFDP	6	17			
423-.D02	SF (CD19+	FcRL4-)	3-43	6-13	4	IgG2	9	AAAPGRRFDY	2	10			
423-.D03	SF (CD19+	FcRL4-)	4-31	2-21	4	IgG1	16	ARGSGSYDLAYCGGDCYFLLDK	2	23			
423-.D06	SF (CD19+	FcRL4-)	4-30-4	3-22	4	IgG1	3	AAYPGSYYDNSGRHLISPPFDN	2	22			

423-.E02	SF (CD19+ FcRL4-)	3-48	5-12	3	IgG2	20	ARGGYSGYLLTHDAFDI	2	17
423-.E07	SF (CD19+ FcRL4-)	3-30	3-3	4	IgG1	12	ANEVDFWSGYDY	0	13
423-.E08	SF (CD19+ FcRL4-)	3-49	3-10	6	IgG1	18	SRVDRVVRGGRYYYCMDV	4	19
423-.E12	SF (CD19+ FcRL4-)	4-61	6-19	4	IgM	6	ARVPRGWYIIDY	2	12
423-.F03	SF (CD19+ FcRL4-)	3-23	2-8	4	IgG1	10	AKPLVYARLYFDY	2	13
423-.F04	SF (CD19+ FcRL4-)	3-33	6-13	5	IgG1	15	ARDPPTSQYSSTVWWTDRGFDH	3	21
423-.F06	SF (CD19+ FcRL4-)	3-11	2-21	4	IgG1	22	AREGPVVVPPV	1	12
423-.F07	SF (CD19+ FcRL4-)	1-2	3-10	4	IgG3	14	ASGVNADGEGGPPTVGY	0	17
423-.F10	SF (CD19+ FcRL4-)	5-10-1	2-15	3	IgG1	10	AKAASRFDTFDI	2	12
423-.G03	SF (CD19+ FcRL4-)	3-33	6-19	4	IgG1	32	ARDRQWLLDY	2	10
423-.G05	SF (CD19+ FcRL4-)	3-9	3-16	5	IgM	1	AKGGWITLGSWFDP	1	14
423-.H03	SF (CD19+ FcRL4-)	1-46	6-19	4	IgG1	18	ARVVTDTAGWYHFDY	2	15
423-.H04	SF (CD19+ FcRL4-)	1-46	2-2	4	IgG3	12	ARGRLPAAIRIDFDY	3	15
423-.H06	SF (CD19+ FcRL4-)	3-30-3	6-19	3	IgG1	8	AKDGKAVDGFSGVLEM	2	16
423-.H07	SF (CD19+ FcRL4-)	4-31	3-10	4	IgG1	29	AGVERDYVSH	2	10
423-.H11	SF (CD19+ FcRL4-)	4-30-4	5-18	6	IgG1	19	ARERSYGRQYHYGMDV	4	16

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length
2	03+.A02	ST, CD19+ FcRL4+	4-59	6-13	1	IgA1	1	ARYFFGGMSAAGSYFQH	2	17
	03+.A03	ST, CD19+ FcRL4+	5-51	3-22	5	IgG2	26	ARLSGYDSSGYYPYNWFDS	1	21
	03+.A09	ST, CD19+ FcRL4+	5-51	3-10	3	IgG1	19	VRHILWFGESDSFDI	2	15
	03+.B01	ST, CD19+ FcRL4+	1-3	2-21	4	IgG3	25	ARSHQPILLAGRPGV	3	16
	03+.B02	ST, CD19+ FcRL4+	3-33	4-17	6	IgA1	25	CAGDYITRPNFYSYYYGMDV	1	20
	03+.B03	ST, CD19+ FcRL4+	3-30-3	5-12	4	IgG1	1	AKYHVDIVATSLEYFDY	2	17
	03+.B04	ST, CD19+ FcRL4+	3-21	3-3	5	IgA1	4	ARVWEDWFDP	1	10
	03+.B05	ST, CD19+ FcRL4+	3-48	5-24	6	IgG1	13	AKDQPHGHYYGLDV	3	15
	03+.B06	ST, CD19+ FcRL4+	4-34	3-22	4	IgM	14	ARDREYYDSRGYSFDY	3	17
	03+.B09	ST, CD19+ FcRL4+	1-18	3-22	4	IgG1	13	AREFPYDSSGYFPGGGDY	1	18
	03+.B09	ST, CD19+ FcRL4+	4-34	6-13	4	IgG1	9	ARGPPRAVPGTARRRYFDS	5	19
	03+.C02	ST, CD19+ FcRL4+	3-33	2-15	5	IgG1	28	ARHGRGPSSWYDF	3	13
	03+.C03	ST, CD19+ FcRL4+	1-69	2-15	6	IgG1	4	ARGYCSGSCFDHYYYYGMDV	2	21
	03+.C10	ST, CD19+ FcRL4+	1-69	1-26	4	IgG1	16	ARGFQVGTITGFDY	1	14
	03+.C11	ST, CD19+ FcRL4+	3-20	2-2	4	IgA1	11	AKSLIGVSSFDS	1	13
	03+.C12	ST, CD19+ FcRL4+	3-30-3	3-22	4	IgG1	10	ARGKDYDSTGYWGILDD	2	19
	03+.D02	ST, CD19+ FcRL4+	3-21	1-26	4	IgG1	2	ARDRRVPYIVGATDFDY	3	17
	03+.D04	ST, CD19+ FcRL4+	3-33	3-10	6	IgA2	31	ARGPSGMFGDLSYPYHYGVDV	2	21
	03+.D06	ST, CD19+ FcRL4+	3-33	2-15	6	IgA1	24	ARDREAATPKYGMDV	3	15
	03+.D07	ST, CD19+ FcRL4+	3-74	6-19	2	IgG1	6	AREVEQWLEHGLVWYFDL	2	18
	03+.D08	ST, CD19+ FcRL4+	1-3	4-17	6	IgG3	13	AGDYITRPNFYSYYYGVDV	1	19
	03+.F01	ST, CD19+ FcRL4+	4-39	5-24	3	IgG1	10	ARDREMGHQGFDI	3	14
	03+.F03	ST, CD19+ FcRL4+	1-3	2-2	6	IgG4	9	SRDRSISWDGDGMDVW	2	16
	03+.F04	ST, CD19+ FcRL4+	4-39	2-8	4	IgG1	13	ARDKGNQPFDDY	2	12
	03+.F05	ST, CD19+ FcRL4+	3-33	3-10	6	IgA1	29	ASRGGVGGYVKRDIYVDV	2	18
	03+.F07	ST, CD19+ FcRL4+	4-4	3-3	6	IgG1	6	ARVSSAKTTFGVTTTWWGGMDV	2	21
	03+.F08	ST, CD19+ FcRL4+	3-20	4-17	4	IgA1	4	ARGGGPGDKVRGDY	3	14

Table 2 (continued)

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+) Length	CCP2	CEP-1	cit-vim 60-75	cit-fib 36-52
	03+.G03	ST, CD19+ FcRL4+	3-66	2-2	6	IgA1	1	ARGGTSIRYYYYFGMDV	2	16			
	03+.G07	ST, CD19+ FcRL4+	1-69	6-19	6	IgA1	19	ARGAVAGRHHYFGLDV	3	16			
	03+.G08	ST, CD19+ FcRL4+	1-69	6-13	5	IgG2	4	TREAAAAGRNNWFDP	2	15			
	03+.G12	ST, CD19+ FcRL4+	1-3	2-8	4	IgG2	13	ARSHQPYILLAGTPGD	2	16			
	03+.H01	ST, CD19+ FcRL4+	4-4	3-22	4	IgG4	18	CACRYLGLDY	1	10			
	03+.H04	ST, CD19+ FcRL4+	4-34	4-23	6	IgG1	9	CARVPEVVTPRYYYYFGLDV	2	20			
	03-.A01	ST (CD19+ FcRL4-)	3-9	2-15	4	IgG3	33	VKDGAGGANTFDH	2	14			
	03-.A02	ST (CD19+ FcRL4-)	1-69	2-21	6	IgG1	29	ASKGGDSVGYHYMDV	2	16			
	03-.A03	ST (CD19+ FcRL4-)	3-23	6-13	4	IgA1	7	AKGPYSSSWYGAPFDY	1	16			
	03-.A04	ST (CD19+ FcRL4-)	1-69	5-24	3	IgG1	22	ARDREMGHQGFID	3	14			
	03-.A06	ST (CD19+ FcRL4-)	1-69	6-13	4	IgG1	4	ARARIAAGNPGSFDY	2	16			
	03-.A08	ST (CD19+ FcRL4-)	4-59	3-10	4	IgG1	4	ARDSYEDSVYFDY	1	14			
	03-.A12	ST (CD19+ FcRL4-)	1-18	2-2	4	IgG4	4	ARDEFQLPDY	1	10			
	03-.B06	ST (CD19+ FcRL4-)	3-23	1-26	6	IgG1	28	AKSWAILQFEPLYGMDV	1	17			
	03-.B11	ST (CD19+ FcRL4-)	3-53	3-16	6	IgG1	15	TRERPHEYVWVGSFRRHYGMDV	6	21			
	03-.C01	ST (CD19+ FcRL4-)	3-49	4-17	5	IgA1	29	TIVFPELPRVPLP	1	13			
	03-.C03	ST (CD19+ FcRL4-)	3-23	3-22	1	IgG2	14	AKDRAGNNSGYVVEYFQH	3	20			
	03-.C05	ST (CD19+ FcRL4-)	4-34	2-8	4	IgG1	4	ARGRETYCAAGVCSKGRPDYFDY	5	25			
	03-.C08	ST (CD19+ FcRL4-)	3-30-3	3-3	4	IgA2	31	AREFEHFGSGYFPVDY	2	16			
	03-.C09	ST (CD19+ FcRL4-)	3-21	3-22	3	IgG2	30	ARDRFPSDDYDGPFGDL	2	18			
	03-.D04	ST (CD19+ FcRL4-)	4-30-4	3-3	4	IgG1	29	ARASTLEWSYGSFDY	1	15			
	03-.D05	ST (CD19+ FcRL4-)	3-23	3-22	4	IgG1	19	AKADYSDSGGYKDY	2	14			
	03-.D07	ST (CD19+ FcRL4-)	3-74	3-3	5	IgG1	13	ASSYRIWSFDP	1	11			
	03-.D08	ST (CD19+ FcRL4-)	3-23	2-8	4	IgA1	1	AKPMVYARLYFDY	2	13			
	03-.D11	ST (CD19+ FcRL4-)	3-23	3-9	4	IgG1	19	AKDFTRYFDWLLRDLFDY	3	18			
	03-.E07	ST (CD19+ FcRL4-)	3-23	5-24	4	IgG1	15	ARDRMACDY	2	9			
	03-.E08	ST (CD19+ FcRL4-)	3-11	3-22	4	IgG2	18	ARDLTGMNSDSSGYSDY	1	18			
	03-.E11	ST (CD19+ FcRL4-)	3-23	3-10	6	IgG1	22	AKAGQSPDMVRGVIRWGPKPEPKNSYYGMDV	5	31			
	03-.F08	ST (CD19+ FcRL4-)	3-30	1-26	4	IgA1	23	AKGVGALQAGLGSVVYFNY	1	20			
	03-.F10	ST (CD19+ FcRL4-)	4-39	5-24	5	IgM	25	ARRGHVWFDP	3	11			
	03-.G07	ST (CD19+ FcRL4-)	3-20	3-22	4	IgM	8	ARGPPYISSGYFSFDS	1	18			
	03-.G11	ST (CD19+ FcRL4-)	3-7	3-9	5	IgA1	6	ARTPGTFHTHNWFDV	3	15			
	03-.H04	ST (CD19+ FcRL4-)	4-31	3-10	5	IgG1	25	ARVVPAAHFHSPGSHSSAFNWFDV	4	24			
	03-.H10	ST (CD19+ FcRL4-)	3-33	3-3	4	IgA1	15	TRSLGYCTRSTCYSHEHYDH	5	20			
Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+) Length				
6	508+.A05	SF (CD19+ FcRL4-)	1-8	2-15	5		18	ARGHGHCSDSGCFFNNWFDP	3	19			
	508+.A07	SF (CD19+ FcRL4-)	3-66	3-9	4		15	ARSPTGYDILTGPFDY	1	16			
	508+.A10	SF (CD19+ FcRL4-)	3-7	3-10	6		32	ARDNARAWFSHYYYGMDV	3	18			
	508+.B03	SF (CD19+ FcRL4-)	3-11	3-10	6		0	ARDLRYGSGMYTYYYGMDV	2	22			

508+.D05	SF, CD19+ FcRL4+	3-33	3-10	6	28	ASRGGVGGYYVKDYGMVDV	2	18
508+.D11	SF (CD19+ FcRL4+)	3-11	3-10	6	33	ARMWFGDDHYYYGLDI	2	16
508+.E03	SF (CD19+ FcRL4+)	4-31	3-3	4	18	ARGQRGAILVHGYPFFDF	3	19
508+.E06	SF, CD19+ FcRL4+	3-30	6-6	4	20	AKDPHSSSLISPLFLGY	2	17
508+.E09	SF (CD19+ FcRL4+)	3-74	3-3	1	19	ARVFKGWSSWYQGSPEYFQH	3	21
508+.E10	SF (CD19+ FcRL4+)	1-69	5-18	5	21	ARGRTYTYGPMRWFPD	3	16
508+.E11	SF (CD19+ FcRL4+)	3-48	6-13	5	28	ARGQGRIEYNWFDL	2	14
508+.F02	SF, CD19+ FcRL4+	4-34	4-11	6	12	ARPTHSTVTMWYFGMDV	2	17
508+.F04	SF, CD19+ FcRL4+	3-30	3-10	5	19	ARDPINIYSGSGYSWNWIDP	1	20
508+.F09	SF, CD19+ FcRL4+	3-11	3-9	6	3	ASPSGNPNPFTMDV	0	14
508+.F11	SF, CD19+ FcRL4+	3-15	3-16	2	10	AREVTPHWYFDL	2	12
508+.F12	SF, CD19+ FcRL4+	1-46	2-15	4	12	ARGGPFTNPLCSASTCYFDS	1	21
508-.B04	SF (CD19+ FcRL4-)	3-7	2-21	4	17	ARAADYGPVAGLFEY	1	15
508-.B09	SF (CD19+ FcRL4-)	1-8	3-10	4	17	AFHLGEYSGSYDLDY	1	17
508-.B10	SF (CD19+ FcRL4-)	3-21	5-12	5	28	ARVWVTGAAIFGDNWFDP	1	18
508-.C04	SF (CD19+ FcRL4-)	1-8	3-3	4	29	ARAADVDFWVSGYHLEY	2	15
508-.C07	SF (CD19+ FcRL4-)	1-24	2-15	4	9	AIMGALYCSGGDCYLRGAGEFDY	1	23
508-.D06	SF (CD19+ FcRL4-)	3-48	2-8	5	14	ARGLGRLCGADNICYNWFDP	2	19
508-.D08	SF (CD19+ FcRL4-)	3-33	2-2	6	13	ARARYSSSSYGMVDV	2	14
508-.D10	SF (CD19+ FcRL4-)	3-23	6-19	4	7	AREGIPVAGTDY	1	12
508-.E12	SF (CD19+ FcRL4-)	3-15	3-3	4	13	TAYRITPGVLTGGERPVDY	2	21
508-.F03	SF (CD19+ FcRL4-)	4-61	2-2	4	17	ARIKGGYCSYTNCKRPVPFDY	4	21
508-.F08	SF (CD19+ FcRL4-)	4-30-4	5-12	4	4	ATAPRSPGTGYDSFYLDS	1	17
508-.G05	SF (CD19+ FcRL4-)	3-48	5-18	3	17	ARGRKGYSYDAFDI	3	14
508-.G08	SF (CD19+ FcRL4-)	3-30	4-17	5	5	AQDRVAALTRGGLGWFPD	2	18
508-.G09	SF (CD19+ FcRL4-)	1-69	4-11	4	4	ARELYSNYFF	1	10
508-.H07	SF (CD19+ FcRL4-)	4-34	7-27	4	4	ARLRPRLRGDLDS	4	13
508-.H08	SF (CD19+ FcRL4-)	1-18	6-19	4	4	ARTTGGDSGWFDMDF	2	16
508-.H11	SF (CD19+ FcRL4-)	3-43	3-22	6	36	AKGLRKTDDVYYDSSGFGYYGMVDV	3	24
508-.H12	SF (CD19+ FcRL4-)	1-24	3-9	4	4	ATENRFRHFWYGFDF	3	15

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length
4	531+.A01	SF (CD19+ FcRL4-)	3-21	1-1	4	15		ARCRPGSTSPEF	2	12
	531+.B07	SF (CD19+ FcRL4+)	3-74	3-10	4	28		ARERSRIIDY	3	10
	531+.B08	SF (CD19+ FcRL4+)	4-39	4-17	2	6		TRQWGSDDYGDYWFYDL	1	16
	531+.B09	SF (CD19+ FcRL4+)	4-39	3-3	6	11		SRDQRITILGVVSVVWFGMDV	2	20
	531+.C02	SF (CD19+ FcRL4+)	1-18	2-2	4	15		ARALLDGYCTGSSCAVGSMDY	1	21
	531+.C07	SF (CD19+ FcRL4+)	3-33	6-19	2	19		AGSLSSGWHGNRYFDL	2	16
	531+.C08	SF, CD19+ FcRL4+	4-34	6-6	4	17		AKGSTSSLYRHTMPYQY	3	17
	531+.C12	SF (CD19+ FcRL4+)	3-9	1-1	4	22		ARDAKYYFDY	2	10
	531+.D03	SF (CD19+ FcRL4-)	4-34	1-26	3	5		ARSWELLGAFDI	1	13
	531+.G01	SF, CD19+ FcRL4+	1-69	6-13	6	28		ATAGYTSRWNPSFYHGLDV	2	19
	531+.G02	SF, CD19+ FcRL4+	1-3	3-10	4	23		ARDYSGNSGIFYDY	1	14
	531+.G03	SF, CD19+ FcRL4+	3-33	4-17	4	3		VTDYGDYVELGY	0	12
	531+.G04	SF, CD19+ FcRL4+	3-15	6-19	6	15		ARGWLEPFYYGVVDV	1	15

Table 2 (continued)

Patient id	Clone	cell origin	VH	DH	JH	Ig SC	VH-mut.	VH CDR3 (aa)	(+)	Length	CCP2	CEP-1	cit-vim 60-75	cit-fib 36-52
531+.G11	SF, CD19+	FcRL4+	3-11	3-10	5		15	ARDLLVHGVAISNWFDP	2	17				
531+.H07	SF, CD19+	FcRL4+	4-4	5-12	6		19	ARYSGFYHYGMDV	2	14				
531-.D10	SF (CD19+	FcRL4-)	3-23	3-3	6		25	AKGGSAGFWSGYKNNYYYYYMDV	2	23				
531-.D11	SF (CD19+	FcRL4-)	1-46	3-3	6		14	ARVTFESNDFGPDHFYVLDV	2	21				
531-.D12	SF (CD19+	FcRL4-)	3-69	1-26	4		3	ARHNGSYKKGYYFDY	4	15				
531-.E01	SF (CD19+	FcRL4-)	3-48	3-16	4		22	AGGRSYDYFDY	1	11				
531-.E02	SF (CD19+	FcRL4-)	3-23	4-23	4		2	AKEVQTEGGFDY	1	12				
531-.E03	SF (CD19+	FcRL4-)	4-4	2-15	4		23	ARVVSEAAAYFDN	1	12				
531-.E09	SF (CD19+	FcRL4-)	3-11	5-18	4		15	ARRGGYSYRKDYFDS	4	15				
531-.E12	SF (CD19+	FcRL4-)	3-23	5-18	4		4	AKDKWEGAMNPHYFDF	3	16				
531-.F02	SF (CD19+	FcRL4-)	3-33	3-16	5		1	ARETFERIRLGEPNWFDP	3	18				
531-.F03	SF (CD19+	FcRL4-)	4-34	3-3	4		25	TRDLSRKIFGVVVPAPYFDY	4	20				
531-.F05	SF (CD19+	FcRL4-)	3-48	3-22	4		5	AREGEGDLYYDSSGYYYL	1	19				
531-.F07	SF (CD19+	FcRL4-)	1-2	3-22	3		3	ASKKEGVLPLDPFDI	2	15				
531-.G03	SF (CD19+	FcRL4-)	4-31	4-11	6		2	GRTLATVPMDV	1	11				
531-.G11	SF (CD19+	FcRL4-)	3-23	6-19	4		9	AKGSVAGPFDY	1	11				
531-.H07	SF (CD19+	FcRL4-)	1-18	3-3	3		9	ARAEGAVTIDDAFDI	1	15				
531-.H08	SF (CD19+	FcRL4-)	4-31	3-10	3		12	ARDGAGRDAFDM	2	12				

Table 3

Number of sequences and recombinant monoclonal antibodies generated from FcRL4+ and FcRL4- B cells respectively.

Patient ID	Sample	Diagnosis	CCP2	RF	FcRL4	Number of sorted 96-well plates	Number of retrieved sequences	Number of ab cloned	Number of ab. expressed
1	ST	RA	pos	pos	positive	1	59	34	26
					negative	1	33	23	17
2	ST	RA	pos	pos	positive	1	33	ND	ND
					negative	1	28	ND	ND
3	SF	RA	neg	neg	positive	1	33	ND	ND
					negative	1	32	ND	ND
4	SF	RA	neg	neg	positive	1	15	ND	ND
					negative	1	16	ND	ND
5	SF	RA	pos	pos	positive	1	30	22	10
					negative	1	33	25	10
6	SF	RA	na	pos	positive	1	16	ND	ND
					negative	1	18	ND	ND

primed reactions. Library prep was carried out using the Illumina TruSeq Stranded prep kit and sequenced on the Illumina HiSeq. 2000/2500 platform. Data were analysed as detailed in [1].

Acknowledgements

We are grateful for excellent technical assistance from Peter Sahlström (KI) and Holly Adams (Birmingham). This study was supported by grants from the Karolinska Institutet Foundations for Rheumatology Research, (2014reum42676) the Nanna Svartz foundation (2015-00077), the Knut and Alice Wallenberg foundation, the Swedish research council (VR) (2012-02677 and 2015-02900), the Swedish association against rheumatism, the Börje Dahlin Foundation, the King Gustaf V 80-year Foundation, the Ulla and Gustaf af Ugglas Foundation (2014uggl42674), and the VR-supported Linneaus consortium (CERIC) (2007-8703) to VM and KA. Furthermore, this work was supported by MRC DPFS grant code MR/M007669/1 to DS-T as well as a Wellcome Trust ISSF (097825/Z/11/A) grant. We received funding from European Community's Collaborative project FP7-HEALTH-F2-2012-305549 "EURO TEAM". AF was supported by an Arthritis Research UK Clinician Scientist Award 18547. The Arthritis Research UK Rheumatoid Arthritis Pathogenesis Centre of Excellence – RACE, - is part-funded by Arthritis Research UK through grant number 20298.

Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.dib.2017.06.009>.

Reference

- [1] K. Amara, E. Clay, L. Yeo, D. Ramsköld, J. Spengler, N. Sippl, J.A. Cameron, L. Israelsson, P.J. Titcombe, C. Grönwall, I. Sahbudin, A. Filer, K. Raza, V. Malmström and D. Scheel-Toellner, B cells expressing the IgA receptor FcRL4 participate in the autoimmune response in patients with rheumatoid arthritis, *J. Autoimmun.* 2017 Jul;81:34–43. doi: <http://dx.doi.org/10.1016/j.jaut.2017.03.004>. Epub 2017 Mar 24. Epub 2017 Mar 24. (Epub ahead of print)(GEO link to RNAseq dataset from sorted FcRL4+ and FcRL4- synovial fluid B cells: <https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE94897>).