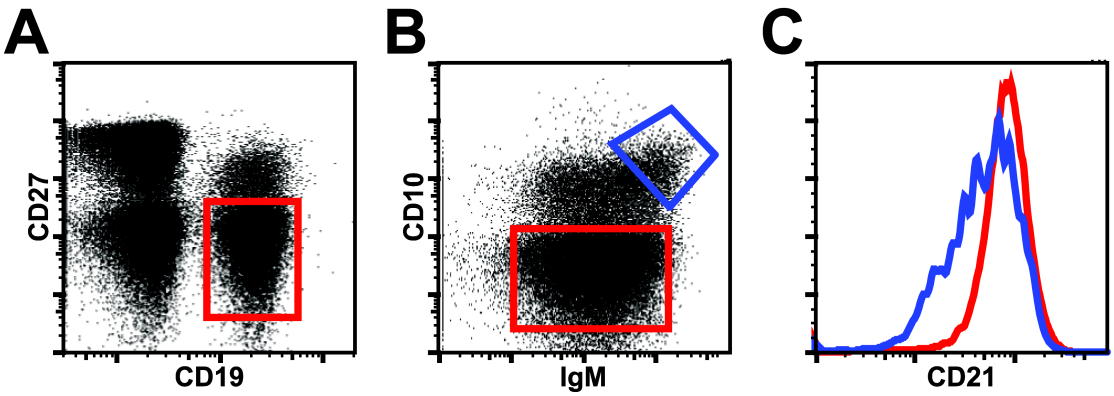
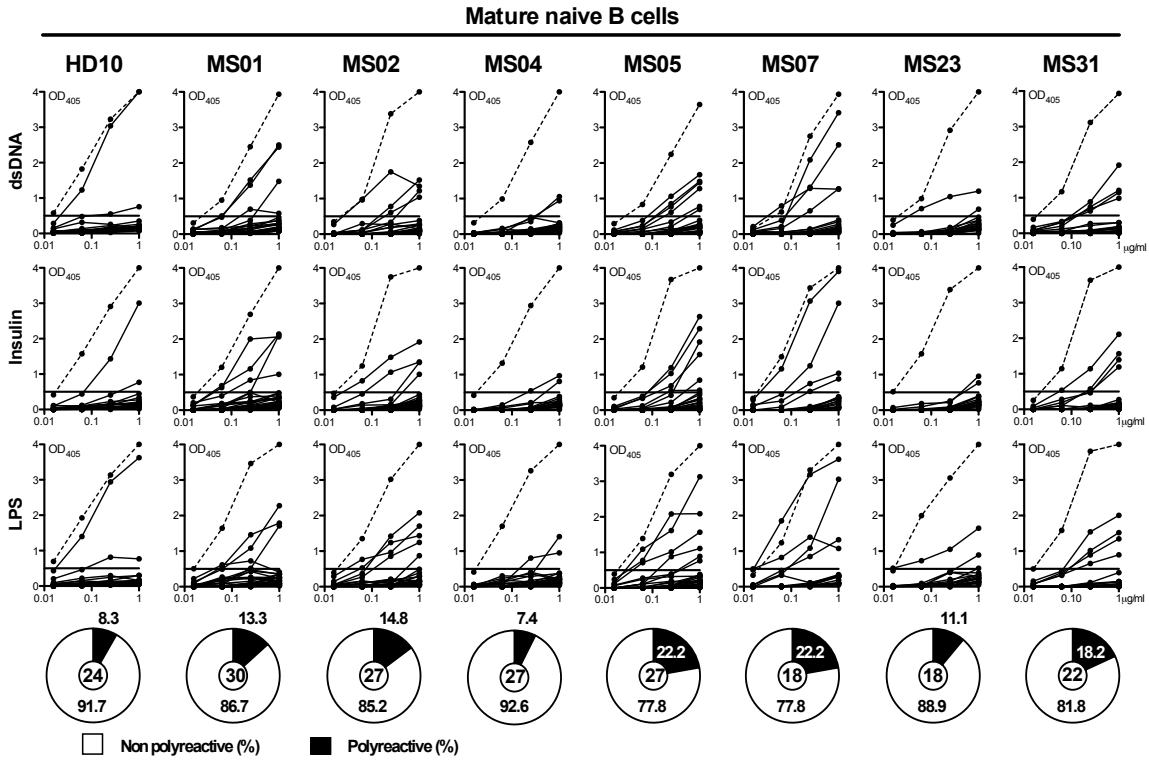
Supplemental Methods

White matter extract ELISA. For the preparation of white matter extract, frozen brain white matter tissue from a healthy donor was finely cut and homogenized in ice-cold PBS buffer containing 1.0% Nonidet P-40 and protease inhibitors using a glass Dounce apparatus. Insoluble matter was removed by centrifugation at 20,000 x g for 20 min. The supernatant was cleared of debris using a 0.45 µm filter and IgG was removed from the extract by using a mixture of protein A and protein G beads (GE Healthcare). The resulting protein extract was used to coat ELISA plates at a concentration of 1 µg/ml, and the ELISA was performed as previously described (Wardemann H et al., Science 2003).

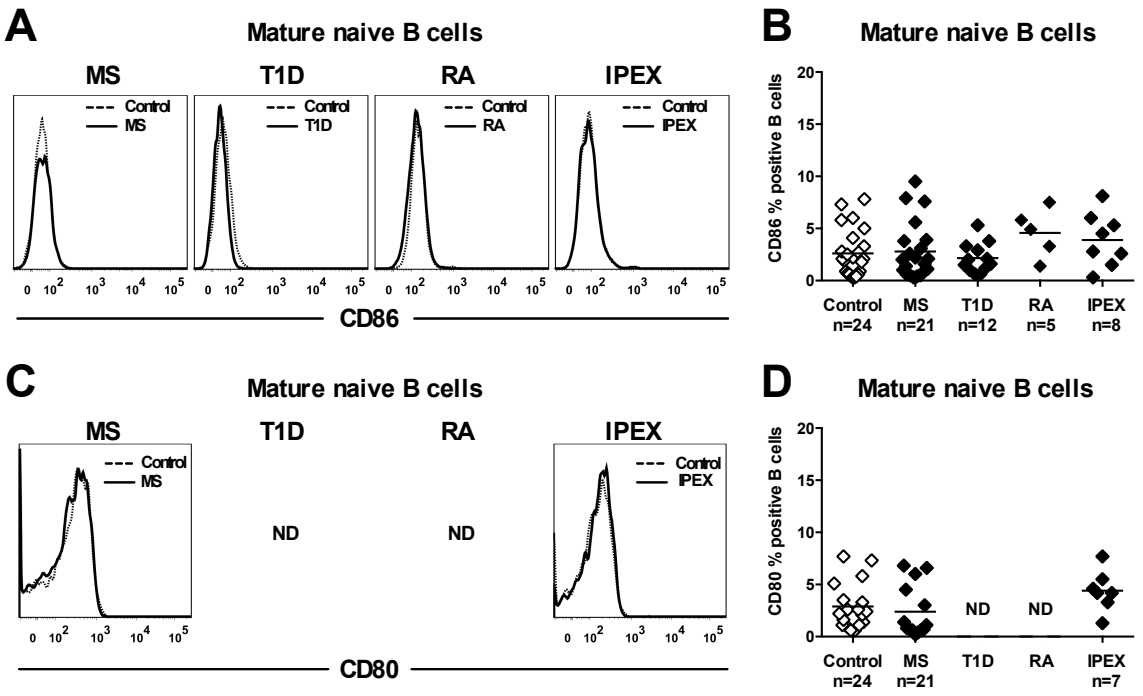
KREC assay. Genomic DNA was isolated from flow cytometrically sorted B cell fractions by lysing cell pellets in 10 mM Tris-HCl, pH 8.0, containing 100 µg/ml proteinase K (Roche), incubating for 1 h at 56°C, and heat inactivating the enzyme at 95°C for 10 min. Two separate RQ-PCR reactions were performed, one reaction to amplify the signal joint and the other to amplify the coding joint, as previously reported (van Zelm MC et al., J Exp Med 2007). The number of cell divisions was calculated by subtracting the cycle threshold of the PCR detecting the coding joint from that of the PCR detecting the signal joint.



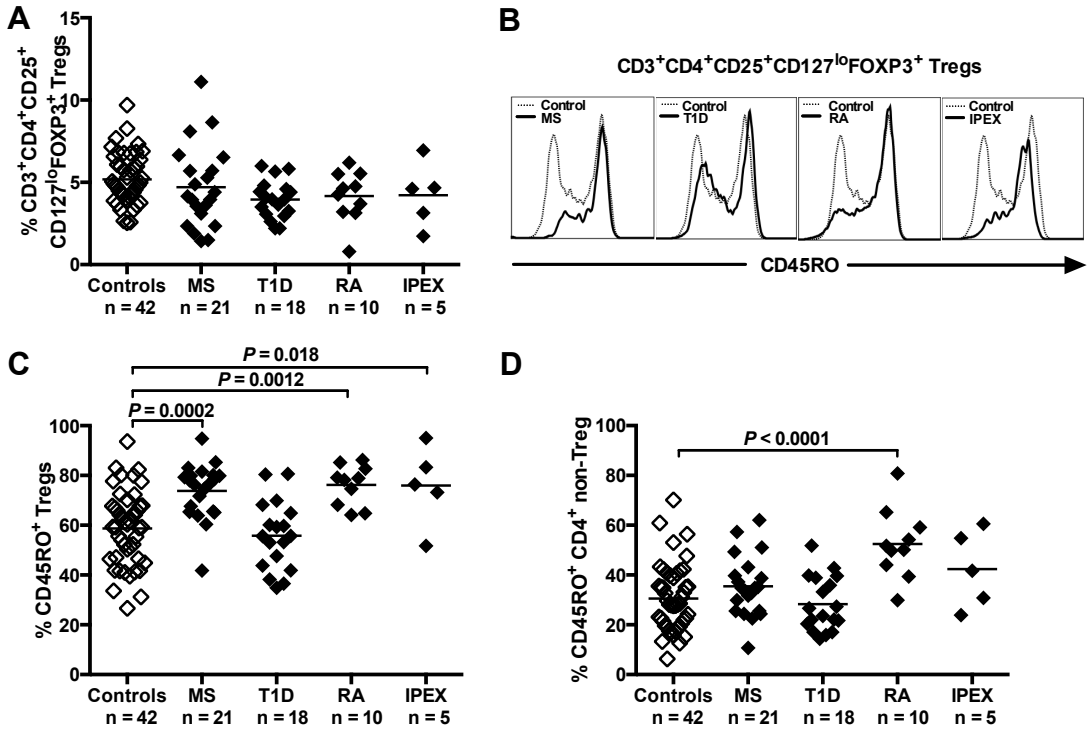
Supplemental Figure 1. Sorting strategy for new emigrant/transitional and mature naive B cells. Naive B cells ($CD19^{+}CD27^{-}$, red) were first sorted based on the expression of CD19 and CD27 **(A)**, and further divided into new emigrant/transitional ($IgM^{hi}CD10^{hi}$, blue) and mature naive ($IgM^{+}CD10^{-}$, red) B cell subsets **(B)**. The expression of CD21 within these subsets is shown in **(C).**



Supplemental Figure 2. Increased frequencies of polyreactive mature naïve B cells in MS patients. Antibodies from mature naïve B cells from a healthy donor and MS patients were tested by ELISA for reactivity against dsDNA, insulin and lipopolysaccharide (LPS). Antibodies were considered polyreactive when they could recognize all 3 antigens. Dotted lines show ED45-positive control and solid lines show binding for each cloned recombinant antibody. Horizontal lines define cutoff OD_{405nm} for positive reactivity. For each individual, the frequency of polyreactive (filled area) and nonpolyreactive (open area) clones is summarized in pie charts, with the total number of clones tested indicated in the centers.



Supplemental Figure 3. Normal expression of CD80 and CD86 on mature naive B cells from MS, T1D, RA and IPEX patients. (A) Representative CD86 and (**C**) CD80 expression on CD19+CD27- naïve B cells and their percentage (**B, D**) in patients with MS, T1D, RA and IPEX (bold line) compared to healthy donors (dotted line). Statistical differences are indicated when significant.



Supplemental Figure 4. Increased frequency of CD45RO$^+$ memory Tregs in MS and RA patients. (**A**) Normal CD3$^+$CD4$^+$CD25$^+$CD127^{lo}FOXP3$^+$ Treg cell frequencies in MS, T1D, RA and IPEX patients compared to healthy donors. (**B**) Representative CD45RO expression on Tregs from MS, T1D, RA and IPEX patients (bold line) compared to healthy donors (dotted line). (**C**) The increased frequency of CD45RO$^+$ memory Tregs in MS and RA patients is similar to that of IPEX patients and is not observed in CD3$^+$CD4$^+$CD25$^-$CD127$^+$FOXP3$^-$ non-Tregs (**D**). Statistical differences are indicated when significant.

Supplemental Table 1. Characteristics of MS patients and healthy donors

	MS01	MS02	MS04	MS05	MS07	MS23	MS31
Age (y)	56	34	33	28	48	17	24
Gender	Female	Female	Female	Female	Male	Female	Male
Time from diagnosis	6 mo	New onset	1 mo	New onset	New onset	New onset	New onset
Clinical symptoms	Optic neuritis	Dizziness, numbness	Optic neuritis, numbness	Dizziness, tinnitus, numbness	Numbness	Optic neuritis, tingling	Vertigo, urinary frequency, ataxia

	HD01	HD02	HD03	HD08	HD09	HD10	HD11	HD15	HD27	HD28	HD29
Age (y)	23	24	23	14	5	36	24	53	25	50	29
Gender	Male	Female	Female	Female	Female	Male	Female	Female	Female	Male	Male

Supplemental Table 2. Repertoire and reactivity of antibodies from new emigrant B cells of MS01

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS01 03	3-64	3-22	2	3	YYALHAFDI	9	1-6	4	LQDYNYPLT	9	+	-	-
neMS01 06	1-69	6-19	2	5	ERMGNTSSGWTNWFDP	16	1-39	5	QQSYSTPQIT	10	+	+	-
neMS01 09	3-15	1-26	2	4	DRSGSYRPWGY	11	2-28	2	MQALQTPPYT	10	-	-	-
neMS01 10	4-39	2-15	3	3	HGIWLVAATPQSPGNAFDI	19	1-5	2	QQYNSYPMYT	10	+	+	-
neMS01 11#	4-34	/	/	4	GINGVNFDY	9	3-20	1	QQYGSSPWT	9			
neMS01 14#	3-9	3-3	3	5	ATTGITIFGVVENWFDP	17	1-39	4	QQSYSTPLT	9			
neMS01 16#	4-31	3-9	2	4	FATYDILTGYSV	12	1-5	2	QQYNSSPYT	9			
neMS01 18	3-23	1-26	2	4	GGSGSPSYHFDY	12	3-20	2	QQYGSSLYT	9	-	-	-
neMS01 20	3-33	4-23	3	6	VRTGVSYYYMDV	12	1-39	2	QQSYSTPYT	9			
neMS01 21	3-48	/	/	4	DAMTCLDY	8	3-20	4	QQYGSSPALT	10	-	+	-
neMS01 24	3-43	/	/	4	DSPAVGWKYYFDY	13	3-15	4	QQYNNWPPLT	10	-	-	-
neMS01 26	3-30-3	6-13	3	4	ATIAAAVDY	9	1-39	2	QQSYSTPNT	9	-	+	c
neMS01 30	3-15	/	/	6	DWVHDSPYYYYGMDV	15	1-39	4	QQSYSTLT	8	-	-	-
neMS01 34	4-34	1-1	3	5	GWSTGTTRGAWFDP	14	1-39	1	QQSYSTPWT	9	-	+	-
neMS01 39	3-7	4-17	2	4	VPYGDYLYYFDY	12	4-1	2	QQYYSTPPT	9	-	-	-
neMS01 41	3-7	6-13	3	4	GGAAAGTGRYCVFDY	15	1-5	3	QQYNSYSGVT	10	-	+	-
neMS01 45	3-9	6-19	3	4	DPSIAVSLPDY	11	3-20	4	QQYGSSPLT	9	-	-	-
neMS01 46	3-9	3-22	3	3	DLGTSQPLIVAGDAFDI	17	3-11	4	QQRSNWPPRLT	11	-	-	-
neMS01 48	1-69	2-2	2	5	DLPPPPLGYCSSTSCYSRDNWFDP	24	4-1	2	QQYYSTPYT	9			
neMS01 05							3-20	3	QQYGSSPGVFT	11			
neMS01 17							4-1	4	QQYYSTPPT	9			
neMS01 22							1-39	2	QQSYSTPPT	9			
neMS01 27							3-20	1	QQYGSSPWT	9			
neMS01 28							1-39	2	QQSYSTPYT	9			
neMS01 43							2-23	2	CSYAGSSTLV	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS01 01	3-7	/	/	4	AGLLRGGDYFDY	12	3-21	2	QVWDSSSDHLV	11	-	-	-
neMS01 04	4-59	6-13	3	6	DGGTIAAAGYYYYYGMDV	18	1-40	3	QSYDSSLSGWV	11	+	+	-
neMS01 07	3-20	3-9	2	4	KRPNYDILTGYYHEYYFDY	19	2-14	2	SSYTSSSTVV	10	+	-	-
neMS01 08	4-59	5-5	1	6	DRVQLWTREHYYYYGMDV	18	2-14	2	SSYTSSSTL	9	+	+	-
neMS01 13	3-30-3	6-13	3	5	DLILRPPIAAAGTWFDP	17	2-11	1	CSYAGSYTYV	10	+	+	-
neMS01 14#					see kappa		3-10	3	YSTDSSGNPLV	11			
neMS01 16					see kappa		1-47	7	AAWDDSLSGAV	11	+	-	-
neMS01 18#					see kappa		3-27	1	YSAADNNYV	9			
neMS01 19	4-34	5-12	3	6	SPVVATITIAPHYYYYMDV	19	1-51	2	GTWDSSLSAVV	11	+	+	-
neMS01 20					see kappa		3-21	3	QVWDSSSDHPV	11	-	+	-
neMS01 23	3-23	1-26	3	3	EDGGIVEAGAFDI	13	3-25	3	QSADSSGTYRV	11	-	-	-
neMS01 25	3-30-3	5-5	3	3	DLVDTATGGPELRWVFDI	18	2-23	3	CSYAGSSTLV	10	-	-	-
neMS01 33#	1-69	3-22	2	4	DYYDSSGYVYFDY	13	3-25	2	QSADSSGTYVV	11			
neMS01 36	3-43	/	/	6	AKDTFERPRQYYYGMDV	17	2-14	1	SSYTSSSTEV	10	-	-	-
neMS01 38#	3-15	4-4	3	6	DRDQTVTTLYYGMDV	15	7-43	2	LLYYGGAQLV	10			
neMS01 40	5-51	5-5	2	5	HESYSYGRINWFDP	14	2-14	2	SSYTSSSTLV	10	-	-	-
neMS01 44	4-34	2-2	3	3	VFVPAAIIYAFDI	13	2-14	2	SSYTSSSTKV	10	-	-	-
neMS01 47	3-15	3-22	2	4	EYYDSSGQIDY	11	2-14	2	SSYTSSSTLKV	11	-	-	-

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 3. Repertoire and reactivity of antibodies from new emigrant B cells of MS02

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS02 2	3-21	6-6	2	4	EKRGSSSLDY	10	1-5	1	QQYNSYSWT	9	-	+	-
neMS02 4	1-18	4-17/ 3-16	3/3	4	DPTTVTYLGGGDFDY	15	3-20	5	QQYGSSPVT	9	-	+	-
neMS02 8	4-30	3-22	2	5	GRRDYYDSSGSSWFDP	16	1-39	1	QQSYSTPWT	9	-	+	N
neMS02 13#	1-46	2-8	2	6	EGDCTNGVCSHPRSYYGMDV	20	3-20	4	QQYGSSPLT	9			
neMS02 17	3-66	3-22	3	3	HIFGITMIVVVDDAFDI	17	1-39	4	QQSYSTPPT	9	-	-	-
neMS02 23	4-39	6-19	1	6	IPLPSQWLGYYYGMDV	16	3-20	4	QQYGSS	6	+	+	c
neMS02 26	1-69	4-23	2	2	GGGDYGGNPPWYFDL	15	1-8	2	QQYYSYPPT	9	-	+	-
neMS02 29#	1-18	2-15	3	6	HQVVVVAATPYGMDV	15	3-15	1	QQYNNWFWT	9			
neMS02 30	1-2	3-22	2	4	DTYYYDSSGSSGWFDY	16	3-11	4	QQRSNWPLT	9	-	-	-
neMS02 33	4-61	6-13	3	4	SGALAAAYLGVDY	13	2-28	1	MQALQTPPWT	10	-	-	-
neMS02 40	5-a	3-10	2	5	HGPGALYGSGPTPSTNWFDP	20	3-15	2	QQYNNWPPLYT	11	-	+	-
neMS02 42	3-48	2-8	3	3	TAKYIVLMVYHPPGAFDI	18	1-5	2	QQYNSYSYS	9	-	+	-
neMS02 43	3-21	6-19	3	4	DMTAVAGTEYFDY	13	1-39	1	QQSYSTPRT	9	-	-	-
neMS02 46	3-30	1-7	1	4	PASLEPSYYFDY	12	1-5	4	QQYNSYPFT	9	-	-	-
neMS02 47	3-15	6-19	2	1	DLNSSGWAEPQYFQH	15	3-15	1	QQYNNWPRT	9	-	-	-
neMS02 48	3-33	3-16	1	4	SAGEGWYDY	9	3-15	2	QQYNNWPPNT	10	-	-	-
neMS02 9	3-23	2-2	3	6	DLVVVVPAAIPLRYGMDV	18							
neMS02 21	3-23	3-22	2	2	DIRGDYYDSSGPVSPPNWYFDL	22							
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS02 11	4-30-4	3-22	2	3	LYYYDLPDAFDI	12	2-23	3	CSYAGSRV	8	-	-	-
neMS02 12	3-48	4-23	3	4	EKTVAYYFDY	10	3-21	3	QVWDSSSDHWV	11	-	+	-
neMS02 14#	1-2	6-13	3	4	AIAAAAPERLNY	12	2-14	2	SSYTSSSTQV	10			
neMS02 18	3-30	1-7	1	4	PASLEPSYYFDY	12	2-23	3	CSYAGRWV	8	-	-	-
neMS02 19	3-30	5-5	2	4	DGVRGYSYGYVGY	13	1-51	3	GTWDSSLSVRV	11	-	-	-
neMS02 20	3-21	/	/	2	DSGHWYFDL	9	2-14	2	SSYTSSSTLVV	11	-	+	-
neMS02 25	3-21	5-5	3	5	DRAVDTAGFDP	11	3-21	3	QVWDSSSDHSNWV	13	-	-	-
neMS02 28	3-49	6-6	2	5	TYSSSPNWFDP	11	3-28	3	QVWDSSSDHVV	11	-	-	-
neMS02 32	3-30	/	/	4	GPSLEA	6	2-11	3	CSYAGSYT	8	-	+	-
neMS02 38	3-7	/	/	4	PSLVNHRGYYFDY	13	3-21	2	QVWDSSSDPGVV	12	-	-	-

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 4. Repertoire and reactivity of antibodies from new emigrant B cells of MS04

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS04 1	4-59	1-26	3	6	GGVGATTSYYGMDV	14	3-20	5	QQYGSSPIT	9	-	-	-
neMS04 3#	3-30	7-27	2	3	EGAAWGAFDI	10	3-11	2	QQRSNWPPGCS	11			
neMS04 4	3-23	1-26	2	3	ALKNGPNSGSDEGAFDI	17	1-8	1	QQYYSYPRT	9	-	-	-
neMS04 5	4-61	2-2	2	6	LIGGTRSTSRYYYYYYMDV	19	1-8	1	QQYYSYPWT	9	+	+	c
neMS04 7#	3-30-3	1-26	3	4	DHTVGATTWGIPPSGY	16	1-39	5	QQSYSTPRIT	10			
neMS04 13	3-30	3-10	3	4	GASITMVRGVITDYFDY	17	3-11	4	QQRSNWPPLT	10	-	-	-
neMS04 15	4-59	3-3	3	3	DIRIFGVVHDAFDI	14	3-20	2	QQYGSSPYS	9	-	-	-
neMS04 16	3-15	/	/	4	DHGDPKAGY	9	1-39	1	QQSYSTPRT	9	-	-	-
neMS04 17	3-23	3-3	3	4	SGGLVTIFGVVIMPYYFDY	19	2-29	1	MQGIHLPPT	9	-	+	N
neMS04 18	3-23	/	/	4	SYGFDY	6	1-6	1	LQDYNYPWT	9	-	-	c
neMS04 19	4-34	3-16	2	4	DRSYYDYVWGSYPSRCDY	18	1-27	3	QKYNSAPRT	9	+	+	c
neMS04 20#	1-58	6-6	2	6	VTIEPEYSSFARYYYYYMDV	20	3-20	1	QQYGSSPQT	9			
neMS04 22	3-23	/	/	6	PPFIYYYYYMDV	12	3-20	3	QQYGSSPLT	9	+	+	c
neMS04 25	3-33	5-12	3	6	DKDIVATTAMYYYYYYMDV	19	3-20	1	QQSGT	5	-	+	-
neMS04 26	1-2	3-16	3	6	DLQALMITFGGPIDYYGMDV	20	1-39	3	QQSYSTSFT	9	-	-	c
neMS04 27#	4-61	6-6	3	6	VLGGIAARYYYYYYMDV	17	3-15	1	QQYNNWPPGET	11			
neMS04 30	4-59	3-3	3	4	STIFGVVTPPGY	12	1-5	1	QQYNSYWT	8	+	+	-
neMS04 31	3-33	3-10	3	4	EHVVRGAVLGY	11	1-33	3	QQYDNLPS	8	-	-	-
neMS04 33	4-34	2-15	3	5	GNKGDLDIVVVVAATRVDYNWFDP	24	1-39	1	QQSYSTPST	9	-	+	-
neMS04 35	3-23	3-10	2	4	DMRHGSGSSIDY	12	1-16	3	QQYNSYPFT	9	-	-	-
neMS04 36	3-15	3-3	2	5	DITRPDFWSGYYMS	14	1-8	1	QQYYSYPPT	9	-	+	-
neMS04 39#	5-51	3-10	3	6	GVRGVKTRYYYYYGMDV	17	1-5	1	QQYNSYPWT	9			
neMS04 41	1-2	2-8	3	6	GSLMVYAIPHYYYGMDV	17	2-28	2	MQALQTPYS	9	-	-	-
neMS04 42	4-61	2-2	2	5	LTLGYCSP	8	3-20	5	QQYGSSPFT	9	-	+	c
neMS04 44	3-23	3-22	2	3	VRKEDDSSDRVVDAFDI	17	1-5	1	QQYNSYSWT	9	-	-	-
neMS04 32	3-11	/	/	3	GTPGGGAAFDI	11							
neMS04 23							1-39	2	QQSYSTPPS	9			
neMS04 45							1-27	4	QKYNSAPFT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS04 6	4-34	5-24	2	4	RGPRDGYNYYFDY	13	2-8	2	SSYAGSNNHVV	11	-	+	-
neMS04 7#					see kappa		2-14	2	SSYTSSSTLVV	11			
neMS04 8#	5-51	4-4	2	6	TQISDYSTPYYYYYMDV	17	2-14	3	SSYTSSSTLWV	11			
neMS04 9	4-59	2-2	3	6	VIVVVPAAIYYMDV	14	1-44	1	AAWDDSLNGPV	11	-	-	-
neMS04 10	3-7	5-5	1	4	KGFRIQLWSDY	11	2-14	3	SSYTSSSTRV	10	+	+	c+N
neMS04 12	3-30	2-15	3	6	DPVVAATLYYYYMDV	15	1-51	1	GTWDSSLSAYV	11	-	-	-
neMS04 14	3-9	2-2	2	6	DIGYCSSTSCYSAVSYYYYYGMDV	24	1-44	2	AAWDDSLNGVV	11	-	-	-
neMS04 22					see kappa		1-51	3	GTWDSSLSVNWF	12	+	+	c
neMS04 24	3-33	1-26	1	2	DKGQWELLPDWYFDL	15	2-14	3	SSYTSSSTRV	10	-	+	-
neMS04 25#					see kappa		1-47	2	AAWDDSLSGDVV	12			
neMS04 28	3-21	3-3	2	4	DKSHFWSGYPPTAFDY	16	2-23	2	CSYAGSSTYVV	11	+	+	c
neMS04 34	4-61	3-16	2	3	APDNVWGSYRYTGAFDI	17	2-18	2	SSYTSSSTLV	10	-	-	-
neMS04 40	3-30	2-21	3	4	PHRRVVVIAIPLDY	14	3-1	2	QAWDSSTVV	9	-	+	c+N
neMS04 45#					see kappa		1-40	3	QSYDSSLSAV	10			
neMS04 46	3-23	/	/	4	EGESSLRYFDY	11	3-25	2	QSADSSGTV	9	-	-	-
neMS04 48	3-23	6-19	3	4	PIAVAGPIDY	10	1-47	3	AAWDDSLSGRV	11	-	+	c
neMS04 37							3-21	2	QVWDSSSDHVV	11			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 5. Repertoire and reactivity of antibodies from new emigrant B cells of MS05

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS05 01#	1-69	3-22	2	6	AYYDSSGYLYGMDV	14	3-20	1	QQYGSSPRT	9			
neMS05 02	3-7	3-22	2	5	EQVYYYDSSGYYYV	14	1-5	1	QQYNSYSQT	9	-		
neMS05 05	4-34	2-2	3	4	VEGVVPAAIAARPRLDY	17	3-20	4	QQYGSSPSLT	10	-		
neMS05 07	4-39	/	/	3	RSENGSLEWGASSDAFDI	18	1-39	4	QQSYSTPLLT	10	-		
neMS05 08	3-11	6-6	2	4	GYSSSSY	7	1-5	2	QQYNSYSRT	9	-		
neMS05 09	3-11	2-2	2	6	AGYCSSTSCYEGYYYYGMDV	21	3-20	3	QQYGSSPT	8	-		
neMS05 11	3-73	3-3	3	6	SWPTGGVVIPLDYYYGMDV	19	3-11	4	QQGSNWLT	8	+		
neMS05 12	4-59	2-8	2	3	GGVFNAFDI	9	3-20	4	QQYGSSLT	8	-		
neMS05 14	3-30-3	3-10	2	4	DLRAERYGSGTGQFDY	16	1-39	3	QQSYSTPWT	9	-		
neMS05 15	3-30	6-13	3	6	DFVGIAAAEYYYYGMDV	17	1-39	1	QQSYSTPLA	9	-		
neMS05 16	3-15	2-2	3	6	DELGVGVPAAIYYYGMDV	18	4-1	1	QQYYSTPRT	9	-		
neMS05 18	3-30-3	3-3	3	4	DNGITIFGVVTPPGY	15	3-15	1	QQYNNWPWT	9	-		
neMS05 19#	3-30-3	3-16	2	4	DNPMYDYVWGSYRQDY	16	1-5	1	QQYNSYSWT	9			
neMS05 23	3-73	3-3	3	6	SWPTGGVVIPLDYYYGMDV	19	2-28	1	MQALQTPGT	9	-		
neMS05 24	4-31	5-12	2	4	DLDSGYDFHLPLPDY	15	1-17	1	LQHNSYPRT	9	-		
neMS05 26	4-59	2-2	1	5	GAIGRVHVPTAEVGNQLLLVGWFDP	25	3-11	5	QQRSNWPPIT	10	-		
neMS05 27	4-4	2-2	2	6	ANKMIDRGYFYYYGMDV	17	1-5	1	QQYNSSPWT	9	-		
neMS05 28	3-23	6-13	3	4	DSGGPFAAAGTGDVVFDY	18	1-8	2	QQYYSYPYT	9	-		
neMS05 30	3-48	6-6	2	3	IKTQTVTYSSSSPDAFDI	18	1-39	2	QQSYSTLPWYT	11	-		
neMS05 36	4-30-4	3-3	3	5	SRGVTIFGPFDP	12	1-5	2	QQYNSSLMYT	10	-		
neMS05 38	4-31	1-7	2	4	EESGTTAFDY	10	3-20	1	QQYGSSPRT	9			
neMS05 40	4-59	6-13	2	5	HGSSSWSLLNWFDP	14	1-5	1	QQYNSYPRT	9			
neMS05 41	3-21	1-26	3	4	VGIVGATDY	9	3-20	2	QQYGSSPVT	9			
neMS05 43	3-15	6-13	2	5	DWYSSSWT	8	1-5	1	QQYNSYSRT	9			
neMS05 44	4-30-2	3-16	2	3	AGAYDYVWGSHIYPVADAFDI	21	4-1	1	QQYYSTPQT	9			
neMS05 48	1-69	5-5	3	6	DPTYPTAMAKYYYYGMDV	18	3-11	1	QQRSNWPRGWT	11			
neMS05 32	1-69	3-3	2	3	IWREGYDFWSGYYVSPPDAFDI	22							
neMS05 45	3-30	6-19	1	4	DLSGQQWLPTTIDY	14							
neMS05 04	3-7	6-13	2	2	EEWWYSSSWYWYFDL	15							
neMS05 17	3-21	1-26	3	4	VPIVGATSVY	10							
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS05 03	1-18	6-19	2	4	EGVGSGWFEVAYFDY	15	2-14	1	SSYTSSSTRV	10	-		
neMS05 06	3-23	6-19	3	4	NNLRTGIAVAATDY	14	2-8	1	SSYAGSNNLGV	11	-		
neMS05 13	3-30-3	2-21	2	6	DPPPVAYCGGDCYSGYYYYGMDV	23	3-21	2	QVWDSSSDRVV	11	-		
neMS05 20	1-2	3-3	2	5	DSIGNYDFWSGYPNNWFDP	19	3-21	3	QVWPGV	6	-		
neMS05 21	3-15	1-26	1	6	LPMGRELSPDYYYGMDV	17	3-10	2	YSTDSSGNHGV	11	-		
neMS05 33#	3-33	4-17	2	4	DFNDYGDYVGPFDY	14	3-21	3	QVWDSSSDHWV	11			
neMS05 34	3-53	5-12	2	6	DRRGYSGYDLSYGMDV	16	1-40	1	QSYDSSLSPYV	11	-		
neMS05 37	4-31	/	/	3	GVAVLDAFDI	10	3-1	2	QAWDSSTDVV	10	-		
neMS05 38					see kappa		2-8	2	SSYAGSNTNVV	11			
neMS05 39	3-33	3-22	2	3	DPRNYYDSSGYFSRSGYAFDI	21	3-1	2	QAWDSSTVV	9	-		
neMS05 46	3-23	7-27	2	4	EDWGRYY	7	2-14	3	SSYTSSSTTGV	11			
neMS05 47	3-11	2-15	2	6	FFAERIGYCSGGSCRNPPHDYYYGMDV	27	2-14	1	SSYTSSSTPPVYV	13			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 6. Repertoire and reactivity of antibodies from new emigrant B cells of MS07

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS07 1	4-4	/	/	4	VGV	3	1-39	1	QQSYSTPRT	9	-		
neMS07 2#	3-30	5-5	3	6	ENVDTAKEDYYYYGMDV	17	1-27	1	QKYNSAPQT	9			
neMS07 4	4-39	3-22	2	4	RGYYDSSGFFDY	12	3-15	4	QQYNNWLT	8	-		
neMS07 9#	5-51	/	/	6	STPPRAPYYYGMDV	14	4-1	2	QQYYSTPPT	9			
neMS07 11	4-34	3-10	3	6	HRTRGVKYDYYYGMDV	16	1-5	1	QQYNSYSRT	9	-		
neMS07 19	4-34	/	/	6	GGGVEYYYGMDV	12	2-28	2	MQALQTPKYT	10	-		
neMS07 22	4-4	2-2	2	6	FGVSCSSTSCYGGYYYYYGMDV	22	3-20	1	QQYGSSPRT	9	-		
neMS07 23	3-21	6-19	3	6	DPMEIPIAVKPLAHPGYWFDP	21	4-1	2	QQYYSTPCS	9	-		
neMS07 29	4-31	/	/	6	APAYYYGMDV	10	3-15	4	QQYNNWPLT	9	-		
neMS07 30#	5-a	5-5	2	4	YLGYSYGYGY	10	3-20	2	QQYGSSPGCS	10			
neMS07 32	3-15	3-10	3	6	GVTMVRGAETAYYYYGMDV	20	3-15	4	QQYNNWPLT	9	-		
neMS07 34	3-53	4-23	2	3	DAGRHYGGNPGDAFDI	16	1-5	2	QQYNSWIS	8	+		
neMS07 39	3-53	/	/	3	EGHGVHGMYAFDI	13	3-11	4	QQRSNWPS	8	-		
neMS07 41	3-33	2-15	3	6	DLAATQDYYYGMDV	14	3-11	5	QQRSNWPIT	9			
neMS07 43	3-48	4-4	3	4	EGSVTTLDY	9	3-11	4	QQRSNWPLT	9	-		
neMS07 48	4-4	5-12	2	4	VPMEVSRGYDYEGYFDY	17	1-27	1	QKYNSAPRT	9	-		
neMS07 25	3-74	2-15	2	6	AQGYCSGGSCYDYYYGMDV	19							
neMS07 27	3-33	6-13	3	6	EMGIAAAGASGYYYYGMDV	19							
neMS07 3	4-34	3-22	2	3	MYYYDSSGYYYVGSPGAFDI	20							
neMS07 21	3-23	/	/	4	DRRGGFDY	8							
neMS07 13							3-11	2	QQRSNWPPYT	10			
neMS07 14							3-15	1	QQYNNWPRGT	10			
neMS07 31							1-39	5	QQSYSTPRAT	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS07 5	1-69	3-22	2	4	DPELAYDSSGYLSLLY	16	1-51	2	GTWDSSLSAGV	11			
neMS07 7	3-53	6-19	2	4	HSSGLGYFVDY	11	2-11	1	CSYAGSYTYV	10	-		
neMS07 8	4-61	4-17	2	4	ASDYGDPGVGFDY	13	1-47	1	AAWDDSLSGRYV	12	-		
neMS07 10	4-39	2-2	3	3	LNIVVVPAAIHHAFDI	16	2-23	3	CSYAGSSTWV	10	-		
neMS07 16	1-18	/	/	5	LYIRHNWFDP	10	2-11	1	CSYAGSPYV	9	-		
neMS07 17	4-4	6-19	2	4	DGIDEYSSGWYGSHLDY	17	1-44	3	AAWDDSLNGRV	11	-		
neMS07 26	4-59	3-22	2	4	LYYDSSGYYYHFDY	14	3-1	2	QAWDSSLV	8	-		
neMS07 33	4-4	3-22	2	3	VSDYDSSGYHDAFDI	15	3-25	2	QSADSSGTYVV	11	-		
neMS07 35	3-33	6-19	3	6	NRVAVAEYYYYGMDV	15	1-51	2	GTWDSSLSAGV	11	-		
neMS07 36	4-39	6-19	2	4	LDSSGWYVGY	10	3-21	3	QVWDSSSDHQV	11	-		
neMS07 37	1-69	6-19	2	4	EPGYSSGWEKFDY	13	2-14	1	SSYTSSSTNV	10	-		
neMS07 40	3-7	6-19	2	4	DVGSSGWWYFDY	12	1-40	3	QSYDSSLSGSV	11	-		
neMS07 44	1-69	4-23	3	6	NLRFSSSHSVGYYYYYGMDV	20	2-14	2	SSYTSSSTYVV	11	-		
neMS07 45	3-21	3-22	2	4	DYYDSSGYYRHFDY	14	1-51	2	GTWDSSLSAVV	11	-		
neMS07 47	1-24	1-7	3	6	TDGTGITGTPYYYYGMDV	18	2-11	2	CSYAGSYTVV	10	-		
neMS07 20							1-47	3	AAWDDSLSGWV	11			
neMS07 25							3-1	2	QAWDSSTVV	9			
neMS07 42							2-14	2	SSYTSSSTLVV	11			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 7. Repertoire and reactivity of antibodies from new emigrant B cells of MS23

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS23 5	3-23	/	/	2	GWDAYWYFDL	10	1-39	1	QQSYSTPPT	9	-		
neMS23 6	3-33	5-12	2	6	DADSGYDSATVYYYYGMDV	19	1-16	2	QQYNSYPYT	9	-		
neMS23 9	3-11	/	/	6	GSLTYYYYGMDV	12	1-16	4	QQYNSYPLT	9	-		
neMS23 10	4-34	6-13	2	6	SSSWHPYYYGMDV	13	3-11	4	QQRSNWRLT	9	-		
neMS23 12	3-48	3-16	3	3	IMITFGGVIVDAFDI	15	1-5	2	QQYNSYTYT	9	-		
neMS23 14	3-13	6-13	2	4	SYSSSWYDY	9	3-15	2	QQYNNWPSYT	10	-		
neMS23 15	1-45	1-20	2	6	SEGWNDPYYYYYGMDV	16	3-20	1	QQGT	4			
neMS23 17	4-34	3-10	2	4	SQGVYGSGSFDY	12	3-15	2	QQYNNWPPYT	10	-		
neMS23 20	4-39	6-19	3	5	GGVAGTEDWFDP	12	3-11	4	QQRSNWLT	8	-		
neMS23 27	4-34	6-13	1	5	GLEQQLVRVQEYNWFDP	17	3D-20	5	QQYGSSPPIT	10	-		
neMS23 32	4-4	/	/	4	RDPCFDY	7	2-28	3	MQALQTPFT	9	-		
neMS23 33	1-18	/	/	5	EKQLSGWFDP	10	4-1	3	QQYYSTPRT	9	-		
neMS23 35#	1-24	4-4	3	4	SATVTTPYYFDY	12	4-1	3	QQYYSTPPT	9			
neMS23 41	3-21	3-10	1	6	DRGGELLWFGEYYYYYYGMDV	21	2-29	4	MQGIHLPRT	9	-		
neMS23 43	3-15	5-5	1	4	DRVPQLWPRVY	11	3-20	2	QQYGSSPYT	9	-		
neMS23 44	4-4	4-17	2	4	RADDYGDYTPDY	12	1-16	5	QQYNSYPIT	9	-		
neMS23 48	3-13	6-19	1	4	VASSGWNDY	9	4-1	2	QQYYSTPNT	9	-		
neMS23 1	4-59	/	/	6	LGLVAPLYYYYGMDV	15							
neMS23 2	3-49	4-17	2	3	DGDYQDAFDI	10							
neMS23 4	4-59	3-10	1	6	AGIGESIGGYGMDV	14							
neMS07 8	4-59	6-13	3	3	PGIAAAGTLAFDI	13							
neMS23 16	4-31	6-13	2	4	GVSSWLYIDY	10							
neMS23 18	3-48	6-13	2	4	ERVSSSPSGVFDY	13							
neMS23 39	3-43	2-15	2	6	DIEVRYCSGGSCYSSYHYGMDV	22							
neMS23 40	4-34	6-19	3	4	CAVAGTSVLFDY	12							
neMS23 45	4-31	3-10	2	5	GFYYGSGIVGWFDP	14							
neMS23 46	3-30	3-10	1	4	GAGLWFGELLDY	12							
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS23 11#	3-30	3-22	2	4	DLPPYYDSSGYYLENRWSFDY	21	2-14	3	SSYTSSSTLV	10			
neMS23 13	4-39	3-3	3	4	FGVVTKTPDY	10	2-23	2	CSYAGSSTYVV	11	-		
neMS23 15					see kappa		2-8	2	SSYAGSNNVV	10			
neMS23 19#	4-4	4-17	2	2	DRRYYGDLPYWYFDL	15	2-8	3	SSYAGSNGV	9			
neMS23 22	3-33	6-19	2	4	GSSGWYGEEFDY	12	1-40	1	QSYDSSLSGPYV	12	-		
neMS23 23	4-b	/	/	6	DGEGLYYYYGMDV	13	3-21	2	QVWDSSSDHRV	11	-		
neMS23 25	3-23	6-6	3	6	GVIAARPDYYYYGMDV	16	3-1	2	QAWDSSIVV	9			
neMS23 29	4-31	3-10	2	5	EHYYYGSGSYRRWFDP	16	1-40	7	QSYDSSLSGFAV	12	-		
neMS23 31	4-4	2-2	2	6	ICSSTSCYYYGMDV	14	1-44	2	AAWDDSLNGHVV	12	-		
neMS23 36	1-2	2-15	3	4	GGMDIVVVVAATGVDY	16	2-14	3	SSYTSSSTLV	10	-		
neMS23 38	4-59	2-8	2	4	LGGAYYFDY	9	1-40	1	QSYDSSLSGYV	11	-		
neMS23 42	4-31	4-17	2	4	GIPTNYGDPYYFDY	14	1-51	2	GTWDSSLSAVV	11	-		
neMS23 7							1-51	2	GTWDSSLSAGVV	12			
neMS23 26							1-44	2	AAWDDSLNGLV	11			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 8. Repertoire and reactivity of antibodies from new emigrant B cells of MS31

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS31 01	1-69	3-22	2	5	DPTYYYDSSGYNQYNWFDP	19	1-12	4	QQANSFTLT	8	-		
neMS31 03	4-34	2-8	2	5	PKAGHCTNGVCRGGHWFDP	19	4-1	1	QQYYSTPMT	9	-		
neMS31 05#	3-23	3-10	2	5	DLNDYYGSGDWFDP	14	1-39	5	QQSYSTPF	8			
neMS31 07	4-34	6-19	3	6	DRWGGGIAVAGDGSYYYYYGMDV	23	1-5	2	QQYNSYPYT	9	-		
neMS31 09	3-23	3-22	2	4	RRERNNYYDSSGYYGY	16	1-5	2	QQYNSYSGT	9	-		
neMS31 10	4-34	6-19	3	3	GARIAVAGFDAFDI	14	3-20	1	QQYGSSPRT	9	-		
neMS31 11	4-34	5-12	1	4	SMRLRCIDY	9	3-15	1	QQYNNWPGT	9	-		
neMS31 12	5-51	3-10	2	4	EFYYGSGSYSDFDY	14	3-20	5	QQYGSSPQT	9	-		
neMS31 17#	1-3	2-15	3	4	VGVVVAIDY	9	1-9	3	QQLNSYAFT	9			
neMS31 21	1-69	3-3	3	5	DREKGITIFGVVTPEGGNWFDP	22	1-33	3	QQYDNLPSFT	10	-		
neMS31 23#	4-4	3-22	2	6	DDAASTYYYDSSGPTYYYYGMDV	23	3-15	4	QQYNNWPLT	9			
neMS31 34	3-9	2-2	3	4	GDIVVVPAAYFDY	13	3-11	4	QQRSNWPLT	9	-		
neMS31 35	3-23	4-23	2	4	SSYGAFSGY	9	1-5	1	QQYNSYSPT	9	-		
neMS31 42	4-59	1-1	1	6	VQLVDYYYYGMDV	13	3-20	4	QQYGSSPLT	9	-		
neMS31 43	4-34	6-13	2	6	TTGSSWYYYGMDV	13	4-1	2	QQYYSTPRS	9	-		
neMS31 44	4-34	1-26	3	4	GIVGATVDY	9	3-20	1	QQYGSSPRT	9	-		
neMS31 45	1-3	3-22	2	4	VGGYYYDSSGSIDY	14	1-16	4	QQYNSYPLT	9	-		
neMS31 14	5-51	4-17	3	4	HLGTVTTPDY	10							
neMS31 16	4-39	6-13	3	3	PMTISPPIAAAGTGFAFDI	19							
neMS31 47	1-69	6-13	3	4	SLSAGPIYFDY	11							
neMS31 28	3-23	7-27	2	4	DSKPNWGGGQKGFDY	15							
neMS31 39	4-59	5-5	1	2	APWIQPLWYFDL	12							
neMS31 02							1-5	1	QQYNSYSWT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
neMS31 13	4-39	2-15	2	6	WGGYCSGGSCYTRRKDLFALFMDV	24	2-14	3	SSYTSSSTLV	10	-		
neMS31 15	3-33	/	/	6	DNRVTRPYYYYYGMDV	16	1-51	2	GTWDSSLSAVV	11	-		
neMS31 18	3-23	3-10	1	6	SVLLWFGEYPYGMDV	15	2-8	2	SSYAGSNNLV	10	+		
neMS31 19	3-33	2-8	2	4	EPYCTNGVCFLDY	13	3-21	1	QVWDSSSDHHYV	12	-		
neMS31 22#	3-33	5-5	2	6	DPIRGGYGPYYGMDV	15	7-46	2	LLSYSGARPVV	11			
neMS31 30	4-39	5-5	2	4	ERGYSYGYLSRDFDY	15	2-14	2	SSYTSSSNVV	10	-		
neMS31 31#	5-51	6-13	3	3	HSPFGIAAAGISDAFDI	17	3-1	2	QAWDSSTAAV	10			
neMS31 32	4-34	3-3	2	4	GGSGRSGVPLDFDY	14	1-40	2	QSYDSSLSGLVV	12	-		
neMS31 36	3-15	/	/	5	DQAGFDP	7	3-21	2	QVWDSSSDHVV	11	-		
neMS31 38	3-48	2-8	3	6	DHLLMVYASSYYYGMDV	17	3-1	2	QAWDSSTVV	9	-		
neMS31 46	3-33	2-15	2	5	ERCSGGSCYSFWFDP	15	3-21	2	QVWDSSSDHVV	11	-		
neMS31 48	3-23	5-24	2	2	AAAPEGDGYNFYWYFDL	17	3-21	2	QVWDSSSDLVV	11	-		

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 9. Repertoire and reactivity of antibodies from mature naive B cells of MS01

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS01 54	3-48	2-15	2	6	DGLRYCSGGSCYSDYGMDV	19	1-12	4	QQANSFPRT	9	-	-	-
mMS01 55	4-4	6-19	2	4	VGGYHSSGWTFDY	13	1-39	1	QQSYSTPWT	9	-	-	-
mMS01 56	3-48	1-7	3	6	TSVIGTGTTFAGPEYYYYMDV	21	1-12	2	QQANSFPYT	9	-	-	-
mMS01 63	1-18	6-13	3	1	VRAAAPGAYFQH	12	3-15	3	QQYNNWPPGIT	11	-	+	-
mMS01 65#	3-48	/	/	3	PLEHDAFDI	9	4-1	2	QQYYSTPIT	9			
mMS01 68	1-2	2-2	2	6	KGYCSSTSCYFADYYYGMDV	20	1-39	2	QQSYSTPHT	9	+	+	c
mMS01 69	1-69	3-22	2	6	VQDDSSGNHYRMDV	14	4-1	1	QQYYSTSWT	9	-	-	c
mMS01 71	3-66	2-2	2	6	DHCSSTSCCSPLDYYYYGMDV	21	3-20	2	QQYGSSPQYT	10	-	-	-
mMS01 74	3-21	5-5	2	4	QDSYGSFFDY	10	4-1	1	QQYYSTPWT	9	-	-	-
mMS01 77	4-34	3-10	2	5	GSPTYYYGSGSYNWFDP	17	1-39	4	QQSYSTLLT	9	-	+	-
mMS01 78	4-59	5-24	2	6	SSGDGYIYTPSNYYYYMDV	19	1-8	1	QQYYSYPWT	9	-	+	-
mMS01 81	3-23	5-24	3	4	TNKEMATIFGFLFDY	15	3-11	2	QQRSNWPPEYT	11	-	-	c+N
mMS01 83	1-2	5-5	3	5	DGDTAMDH	8	4-1	4	QQYYSTPPT	9	-	-	-
mMS01 89	3-11	6-13	3	6	FLSPGIAAAGTLNYYYYYGMDV	22	1-39	5	QQSYSTPIT	9	-	+	c
mMS01 90#	1-69	1-1	1	4	ELEPRPGGVY	10	2-28	2	MQALQTPNT	9			
mMS01 91	1-69	5-12	2	6	DRGHSGYDSNIYYYYYGMDV	20	1-5	1	QQYNSYPWT	9	-	+	-
mMS01 95	4-59	7-27	1	6	LLGPHYYYYMDV	12	1-39	1	QQSYSTPQT	9	-	+	-
mMS01 96	3-49	3-22	2	4	APGLYYYDSSGVGDY	15	3-15	1	QQYNNWLTWT	10	-	+	-
mMS01 85							3-11	4	QQRSNWRALT	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS01 49	3-30	3-22	3	4	TMSFDY	6	3-25	2	QSADSSGTFVV	11	+	+	c
mMS01 52	3-72	3-22	2	5	AMTDYYDSSGYWFDP	15	3-1	2	QAWDSSIVV	9	-	-	-
mMS01 53	4-59	3-3	2	6	VAHYDFWSGQSYIGYYYYYMDV	22	1-44	3	AAWDDSLNGPNWV	13	+	+	-
mMS01 59	3-30	3-3	2	6	AMYYDFWSGYSDYYYYGMDV	20	2-8	2	SSYAGSKEI	9	-	-	-
mMS01 64	4-4	6-13	3	4	DLGAAAGGFDY	11	3-1	3	QAWDSSTAV	9	-	-	-
mMS01 72	4-30-4	4-17	2	4	VSGYGGNFDY	10	2-8	2	SSYAGSNNLV	10	-	-	-
mMS01 73	3-48	1-26	2	6	PQGVDSGSYGWVYYYYGMDV	20	3-21	2	QVWDSSSDHGV	11	-	+	-
mMS01 75	3-64	3-22	2	4	EVGGYYYDSSGYYNTDYYFDY	21	1-40	2	QSYDSSLSGSGV	12	-	-	-
mMS01 76	4-4	3-10	2	5	EGSDYYGSGSYLVLVDKGFDP	21	1-44	2	AAWDDSLNGQVV	12	-	-	-
mMS01 79	3-23	6-19	2	6	KEGGSGWYGLDYMDV	15	1-40	3	QSYDSSLSGSV	11	-	-	c
mMS01 82	3-23	6-6	3	4	VGAARAFDY	9	1-44	3	AAWDDSLNGWV	11	-	-	c
mMS01 87	3-21	6-19	2	3	DWEYSSGSDAFDI	13	1-40	2	QSYDSSLSGSNVV	13	-	-	-
mMS01 88	1-24	3-22	2	4	DLYYYDSSGYRLKYYFDY	18	2-8	2	SSYAGSVVV	9	-	-	-
mMS01 89					see kappa		1-47	3	AAWDDSLSL	9	+	+	-
mMS01 94	1-46	3-10	2	5	ENGYGSGSYYNGGDWFDP	18	1-44	2	AAWDDSLNGPV	11	-	-	-

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 10. Repertoire and reactivity of antibodies from mature naive B cells of MS02

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS02_49	3-21	7-27	2	5	SDWGWFDP	8	4-1	4	QQYYSTPPT	9	-	-	c
mMS02_51	3-23	6-19	2	4	ASSGWYGGGYFDY	13	1-39	2	QQSYSTPDS	9	-	+	c
mMS02_52	3-30-3	1-26	2	4	GYSGSHDSGAIDY	13	1-5	1	QQYNSYSPWT	10	-	-	-
mMS02_56	1-46	5-5	3	6	VASVAGGRNTAVDV	14	2-28	4	MQALQTPPT	9	-	-	-
mMS02_57	3-66	4-17	2	6	GVRLYGDYNYGMDV	14	2-28	4	MQALQTPLT	9	-	-	-
mMS02_58	3-23	3-22	2	4	ERRGTYYDSSGYYYGPGCFDY	21	4-1	4	QQYYSTPLT	9	-	+	-
mMS02_59	4-39	6-6	2	6	KVGSSSSEMDV	11	1-5	1	QQYNSYST	8	-	-	-
mMS02_61	4-4	3-3	2	3	QNYDFWSGPGAFDI	14	3-15	1	QQYNNWPPWT	10	-	-	c
mMS02_65#	1-2	6-19	1	4	RGLGKQWLAWGLSAFDY	17	4-1	4	QQYYSTLTLT	10			
mMS02_67	3-66	3-10	1	5	EGYERFGELSAL	12	3-11	1	QQRSNSWT	8	-	-	-
mMS02_68	4-30-2	3-10	3	6	VRGAPWGYYYGMDV	14	3-15	4	QQYNNWLGT	9	+	+	c
mMS02_70	3-23	3-16	2	6	DQSSTGGGPSGENYYGMDV	19	1-39	2	QQSYSTPYT	9	-	-	-
mMS02_71	4-39	5-5	3	4	ELLDTAMVTLPHYFDY	16	3-15	4	QQYNNWPHT	9	-	-	-
mMS02_72#	5-a	/	/	6	RVSKGWDYYYGMDV	14	3-20	4	QQYGSSPLT	9			
mMS02_73	4-4	6-19	2	4	RSGPFDY	7	1-39	4	QQSYSTPSLT	10	-	-	-
mMS02_74	3-30-3	6-13	2	6	EESSSWYRGYYYGMDV	16	1-39	2	QQSYSTPPGS	10	-	+	-
mMS02_75#	1-69	1-26	3	2	DGSIVGATLQKLRYFDL	17	3-20	2	QQYGSSPSGS	10			
mMS02_79	3-21	6-19	2	4	DLLLEGWYGPQGGY	14	3-20	1	QQYGSSPS	8	-	+	-
mMS02_82	4-39	3-3	3	3	GHGSRITIFGVVIMDDAFDI	20	3-20	1	QQYGSSLT	8	+	+	-
mMS02_84#	4-34	/	/	4	APSVFLRAPRTRSFDY	16	3-15	1	QQYNNWLTWT	10			
mMS02_86	1-18	2-15	2	5	ACAFGSGGSCAKPRGP	16	1-5	2	QQYNSYMYT	9	+	+	c+N
mMS02_89	1-18	2-2	3	6	DGPYIVVVPAAIFPMDV	17	3-15	1	QQYNNWRGT	9	-	+	-
mMS02_90	3-20	6-19	3	5	DALIAVAGPYNWFDP	15	1-12	2	QQANSFPYS	9	-	-	-
mMS02_92#	1-18	/	/	3	DNPPYDRYGLDAFDI	15	3-11	3	QQRSNWPSIFT	11			
mMS02_94	3-7	2-15	2	4	SSYSHY	6	1-5	1	QQYNSYSQT	9	-	+	-
mMS02_64	1-18	3-22	2	4	AGFYDSSGYYSLGY	14							
mMS02_69	1-18	6-19	3	4	DAEVGIAVAGKGGHFGY	17							
mMS02_55							1-9	3	QQLNSYPF	8			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS02_50#	1-2	1-7	3	6	AVGITGTTTYYYYGMDV	17	2-11	1	CSYAGSYTFV	10			
mMS02_53	1-69	3-10	2	4	DGVVDYGSGSYYAGDYFDY	19	2-11	1	CSYAGSYTYV	10	+	+	c
mMS02_54	4-59	1-1	2	4	ARVNWDLDY	9	3-21	2	QVWDSSSDHPGVV	13	-	-	-
mMS02_60	4-39	6-19	3	5	AEIAVAGTVGWFDP	14	1-51	2	GTWDSSLSAV	10	-	-	-
mMS02_63	3-21	1-26	3	3	EEMGATGNAFDI	12	1-44	1	AAWDDSLNAHYV	12	-	-	-
mMS02_76#	3-23	2-21	2	4	PWGDFPGGFDY	11	3-1	3	QAWDSSTGWV	10			
mMS02_78	5-a	/	/	3	HSFKLGSTNAFDI	13	2-14	3	SSYTSSSTWV	10	-	-	-
mMS02_84					see kappa		1-44	3	AAWDDSLNGRWV	12	-	-	-
mMS02_87	4-30-4	6-19	2	4	EPNSSGFNLYYFDY	14	1-40	1	QSYDSSLSGYV	11	-	-	-
mMS02_95	4-39	/	/	4	MAFPYYFDY	9	2-14	3	SSYTSSSTLGV	11			
mMS02_96							3-21	3	QVWDSSSDSWV	11			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 11. Repertoire and reactivity of antibodies from mature naive B cells of MS04

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS04 49	3-23	2-21	2	4	DLFYCGGDCYSPPFDY	16	3-20	3	QQYGSSLFT	9	-	-	-
mMS04 53	3-15	1-26/ 3-9	3/2	4	DEVDINGVGAYYVSSDY	17	3-11	4	QQRSNWPPLT	10	-	-	-
mMS04 54	4-39	3-3	2	5	LKDFWSGLRYQNNWFDP	17	1-39	1	QQSYSTLPT	9	-	+	c
mMS04 55	1-18	1-26	1	4	APPWELLYFDY	11	1-27	3	QKYNSAPFT	9	-	-	-
mMS04 57	3-30	1-7	2	6	EGSPRYNWNYAGYYYYGMDV	20	2-28	5	MQALQTPRT	9	+	+	-
mMS04 59	3-23	1-26	1	4	DVTELPLYFDY	11	3-20	4	QQYGSSPQA	9	-	-	-
mMS04 60	3-33	3-22	2	6	DYYDSSGYYTYYYYYGMDV	19	1-17	1	LQHNSYPWT	9	-	-	-
mMS04 61	3-21	2-2	2	4	DISYHCSSTSCLGL	14	1-8	1	QQYYSYPPT	9	-	+	c
mMS04 66	3-23	3-3	2	5	GEYDFWSGYYEG	12	3-15	1	QQYNNWPPT	9	-	+	-
mMS04 67	3-23	4-17	2	4	DGDYVGMNYFDY	12	4-1	1	QQYYSTLRA	9	-	-	-
mMS04 68	3-23	2-2	2	4	DRVTSWRIPLTDY	13	1-39	3	QQSYSTPSFT	10	+	+	-
mMS04 71#	3-30	5-12	2	4	SGYDSDYFDY	10	1-39	2	QQSYSTPDS	9			
mMS04 77	3-23	3-22	2	4	DSHYDPTYFDY	11	3-15	2	QQYNNWPPCS	10	-	+	-
mMS04 79#	1-18	6-19	1	4	DRPDRQWLVDFDY	13	2-30	2	MQGTHWPPYS	10			
mMS04 86	3-9	3-3	1	3	GRFLEWSDAFDI	12	1-39	2	QQSYSTLMCS	10	-	+	-
mMS04 90	3-7	5-24	2	4	ESDGYSINYFDY	12	1-5	4	QQYNSYSRT	9	-	-	-
mMS04 91	3-30	1-26	3	6	VGVVGATFGYGMDV	14	1-33	4	QQYDNLPLT	9	-	-	-
mMS04 92	3-74	/	/	4	DRNRAPFDY	9	4-1	1	QQYYSTPPA	9	-	-	-
mMS04 93	4-61	3-16	3	4	DPFTFGGVIVKDY	13	2-29	2	MQGIHLKS	8	-	-	-
mMS04 62	3-23	3-22	2	3	EIYDSSGYGGGVAFDI	16							
mMS04 56							3-20	1	QQYGSSPRT	9			
mMS04 63							1-33	4	QQYDNLPPRLT	11			
mMS04 76							3-15	2	QQYNNWPPYS	10			
mMS04 80							1-27	1	QKYNSAPQT				
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS04 50	3-30	3-16	2	3	LYLDFYDYVWGSYRYLAFDI	20	2-8	1	SSYAGSNIGV	10	-	+	-
mMS04 51	3-30-3	5-5	3	4	DKLVTRYYFDY	11	3-21	2	QVWDSSSDHVV	11	-	-	c
mMS04 52	3-23	2-21	2	4	VGGGICGGDCSSFDY	15	2-14	3	SSYTSSSTWV	10	-	-	-
mMS04 60#					see kappa		2-14	3	SSYTSSSTRV	10			
mMS04 62					see kappa		3-1	2	QAWDSSTYVV	10	-	-	-
mMS04 82	4-31	6-19	2	5	ANKKEYSSGWYDPSNWFDP	19	2-23	1	CSYAGSSTYV	10	-	-	-
mMS04 85	3-23	1-26	2	5	SGSYYVGWFDP	11	1-51	2	GTWDSSLSVVV	11	-	-	-
mMS04 88	1-18	5-5	2	4	VVVAGYSYGSTPYFDY	16	3-21	2	QVWDSSSDHYVV	12	-	-	-
mMS04 89	3-21	3-3	3	4	DHLIFGVVIISGFDY	15	1-40	2	QSYDSSLSGSVV	12	-	-	-
mMS04 95	4-4	2-15	2	6	EYCSGGSCYYYYYYMDV	17	2-23	3	CSYAGSSTFWV	11	-	+	c
mMS04 96	4-59	2-21	2	3	LAYCGGDCYSNDAFDI	16	1-47	3	AAWDDSLSGV	10	-	-	-

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 12. Repertoire and reactivity of antibodies from mature naive B cells of MS05

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS05 49	3-53	5-24	3	6	DTATTNYGMDV	11	1-39	2	QQSYSTPYT	9	-	-	c
mMS05 52	3-11	6-13	3	6	GIAAAAPSRASSKEGYYYYGMDV	23	2-28	3	MQALQTLFT	9	-	-	-
mMS05 53	3-9	6-19	2	4	GGSGWYMVDY	10	1-17	4	LQHNSYPLT	9	-	-	-
mMS05 54	4-59	6-13	2	6	DSGYSSSWYSRAARVLDV	18	3-11	4	QQRSNWLT	8	+	+	c
mMS05 58	4-34	2-2	2	6	GYCSSTSCYTYGMDV	15	1-13	2	QQFNNYPCT	9			
mMS05 61	4-59	1-7	2	6	SEGVHWNPYYYGMDV	15	4-1	2	QQYYSTPYT	9	-	+	c
mMS05 62	4-39	3-22	2	4	PDDRRGFDY	9	1-5	2	QQYNSYMYT	9	-	+	c
mMS05 63	4-59	3-22	3	4	VGSVVVTTMSSYYFDY	16	1D-8	1	QQYYSFPWT	9	-	+	-
mMS05 65	3-23	3-3	2	3	LYYYDSSGYYRLLLWGAFDI	20	1-33	5	QQYDNLPVT	9	-	-	-
mMS05 68	4-34	5-5	2	4	GRGGYSARPRFDY	13	3-20	2	QHRDT	5	+	+	N
mMS05 69	4-4	3-22	2	1	DSRPGRGYFQH	11	1-39	4	QQSYSTPLT	9	+	+	c
mMS05 71	3-30	3-10	1	4	DSVALWFGEIRGLTFDY	17	3-20	5	QQYGSSIT	8	+	-	-
mMS05 73#	1-24	3-22	3	4	LMIVVDHQGGYFDY	14	3D-11	3	QQRSNWPFT	9			
mMS05 74	1-69	/	/	5	VPSPYETTLAYLGEGWFDP	19	2-30	4	MQGTHWPKLT	10	+	+	-
mMS05 75	4-39	6-19	3	4	SIAVAGGFDY	10	1-9	4	QQLNSYLLT	9	-	-	-
mMS05 80	3-30-3	3-22	3	4	DPHIVVVMSYFDY	13	1-5	1	QQYNSYRT	8	-	+	-
mMS05 81	3-11	3-9	2	4	GFDILTGLDY	10	1-9	1	QQLNSYPPWT	10	-	-	-
mMS05 83	3-23	6-19	3	4	VAGLYAPGGRIAVAGTPIDY	20	1D-8	1	QQYYSFPWT	9	-	+	-
mMS05 84	3-33	6-13	2	6	DLNSGSSWYGVYYYYGMDV	19	3-20	4	QQYGSSPLT	9	-	+	c
mMS05 85	3-9	6-19	3	6	DRIAVDQWYYYGMDV	15	3-15	4	QQYNNWPLT	9	-	+	c
mMS05 86	3-64	1-26	1	4	GGELHRVFDY	10	1-17	4	LQHNSYPRT	9			
mMS05 88	3-21	5-12	3	3	DHDIVAGRAFDI	12	1-39	1	QQSYSTPGT	9			
mMS05 89	1-69	3-22	2	5	VNVGQDKDYYDSSGYYYVGWFDP	23	3-20	1	QQYGSSPKT	9	-	-	-
mMS05 91	4-34	5-5	2	4	RGGYSYGHRPMYFDY	15	3-15	3	QQYNNWPPT	9	-	+	c
mMS05 95#	3-30	2-2	2	6	DQADFYCSSTSCSIGPYYYYYGMDV	25	2-24	2	MQATQFPYT	9			
mMS05 96	3-21	1-20	2	4	EGNWNDRGGDY	11	3-15	1	QQYNNWPRT	9	-	+	c
mMS05 77	5-a	6-13	2	6	ISFSSSLTQYYYYYGMDV	18							
mMS05 56							1-17	4	LQLGGLLT	8			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS05 57	3-74	3-22	3	2	EGGVVVSGFDL	11	3-25	2	QSADSSGTYPV	11	-	-	-
mMS05 58					see kappa		1-44	3	AAWDDSLNAWV	11			
mMS05 59	4-34	3-3	2	6	GRYYDFWSGSYYYYGMDV	18	2-14	1	SSYTSSSTLSYV	12	+	+	-
mMS05 60	3-23	/	/	3	EGVICDRISATQDAFDI	17	3-25	3	QSADSSGTYEV	11	-	+	-
mMS05 70	3-20	3-3	3	3	DSQIFGVVIHADGAFDI	17	1-40	2	QSYDSSLSGYVV	12	-	-	-
mMS05 72	3-11	/	/	6	DLGGKYYYYGMDV	14	2-14	2	SSYTSSSTLVV	11	-	-	-
mMS05 73					see kappa		3-21	3	QVWDSSSDHWV	11			
mMS05 76	3-21	4-17	3	4	VYTVWEYYFDY	11	1-51	3	GTWDSSLSAGV	11	-	-	-
mMS05 86					see kappa		3-1	1	QAWDSSTAV	9			
mMS05 88					see kappa		2-14	3	SSYTSSSTWV	10			
mMS05 78							1-47	1	AAWDDSLGV	9			
mMS05 93							2-23	1	CSYAGSSTPPFYV	13			
mMS05 94							3-21	1	QVWDSSSDQGV	11			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 13. Repertoire and reactivity of antibodies from mature naive B cells of MS07

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS07 51	4-30-4	5-5	2	4	SPVRGGYSYGFFDY	14	1D-8	1	QQYYSFPWT	9	-	-	-
mMS07 52	4-34	3-3	2	4	VTREHDFWSGYYQKYYFDY	19	1-17	1	LQHNSYPPT	9	+	+	-
mMS07 56	1-24	6-19	2	4	GGYSSGWYPDY	11	1-39	1	QQSYSTPWT	9	-	-	-
mMS07 58	4-34	3-10	3	4	ARIQPWVRGAARLLHPTHYFDY	22	3-20	4	QQYGSSPFT	9	+	+	c
mMS07 63	3-30	3-22	3	5	GEVGRGMIVVVIGIE	15	1-33	1	QQYDNLQWT	9	-	+	-
mMS07 67#	4-59	3-9	2	6	GRSRAEYYDILTGQGGGMDV	20	1-8	1	QQYYSYPPGT	10			
mMS07 70	3-53	4-17	2	4	GDYGDIPPFFHY	12	1-12	4	QQANSFPLT	9	-	-	-
mMS07 72	1-3	3-22	2	4	DYYDSSGYPYFDY	13	3-20	2	QQYGSSPMCS	10	-	+	-
mMS07 77	3-64	3-3	2	6	DHPVGYDFWSGYSGTYYYYGMDV	23	1-8	1	QQYYSYPPWT	10	+	+	c
mMS07 79	3-33	/	/	6	RSRSGNYYYGMDV	13	2-40	1	MQRIEFPWT	9	-	+	-
mMS07 80	5-51	2-15	2	4	LGYCSGGSCWALDY	14	2-28	5	MQALQTPPT	9	-	-	-
mMS07 83	3-30	6-6	1	6	DRPQLDNYYYGMDV	14	4-1	2	QQYYSTPNT	9	+	+	c
mMS07 85	1-3	2-15	1	4	GAYCSGGSCYFTGDY	15	4-1	5	QQYYSTPSIT	10	-	+	c+N
mMS07 86	1-2	6-6	3	6	DGSIAARRGLYYYGMDV	17	3-20	4	QQYGSSLT	8	-	+	-
mMS07 88	1-2	3-22	2	6	RTSYDSSGYDYYYYGMDV	18	1-39	2	QQSYSTPYT	9	-	-	-
mMS07 91	3-30	/	/	6	DWVYGMDV	8	1-5	4	QQYNSYSRTL	10	-	+	c
mMS07 94#	4-59	4-17	2	2	DRRYYGDLPYWYFDL	15	1-39	4	QQSYSTPPLT	10			
mMS07 49	4-31	4-17	2	4	SYDYGDFTDY	10							
mMS07 54	5-a	4-4	2	4	GDMTDYSNYVGTIDY	15							
mMS07 57	1-18	3-3	2	3	GWVGTYYDFWSGYRSIFRSEDAFDI	25							
mMS07 82	3-30	/	/	6	DKDGDLYGMDV	10							
mMS07 75	3-33	3-3	3	4	DQGELGVVPDY	11							
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS07 51					see kappa		3-1	2	QAWDSSTAWDVV	12	-	-	-
mMS07 56					see kappa		1-44	2	AAWDDSLNGHHVV	13	-	-	-
mMS07 66	1-2	/	/	6	ADTSWGMDV	9	2-14	2	SSPRV	5	-	+	-
mMS07 76	3-23	2-2	2	6	RLVCSSTSCYTYYYYGMDV	20	3-1	1	QAWDSSTAGYV	11	-	-	c
mMS07 77					see kappa		3-1	2	QAWDSSTVV	9	+	+	c
mMS07 78	3-30	5-12	3	4	GRVVATPDY	9	2-14	2	SSYTSSSIVV	10	-	-	-
mMS07 86					see kappa		1-40	2	QSYDSSLSVV	10	-	+	-
mMS07 88					see kappa		1-44	3	AAWDDSLNGLV	11	-	-	-

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 14. Repertoire and reactivity of antibodies from mature naive B cells of MS23

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS23 55	1-18	2-2	3	4	ARSQRIVVVPAQHGAFDY	18	2-28	2	MQALQTPPT	9	-	-	-
mMS23 56	4-59	3-10	3	4	ARHGYSGPVRGVLTLDY	17	1-33	3	QQYDNLPFT	9	-	-	-
mMS23 58	3-33	3-10	1	4	AKDQVSLWFGELYY	14	2-29	4	MQGIHLPLT	9	-	+	-
mMS23 60	4-39	6-19	3	4	ARHGYDTVAQLDY	13	4-1	2	QQYYSTPPT	9	-	-	-
mMS23 61	3-11	1-20	2	4	AREGLVSWNDLERPFDY	17	1-8	1	QQYYSYPRT	9	-	+	-
mMS23 62#	4-b	/	/	6	ARKHYYYGMDV	11	1-6	1	LQDYNYLS	8			
mMS23 63	4-59	6-19	3	4	ASGAVAGTSYFDY	13	3-20	1	QQYGSSPRT	9	-	-	-
mMS23 65	3-21	2-21	3	3	ARDGIVVVTVLAFDI	15	1-13	4	QQFNSYPLT	9	-	-	-
mMS23 66	3-48	2-2	2	6	ARDGPGYCSSTSCYWVAVDYYYGMDV	26	3-15	1	QQYNNWPPYT	10	+	+	c
mMS23 67	3-23	6-19	3	4	ANILAGLGNY	10	2-30	2	MQGTHWPPRYT	11	+	+	-
mMS23 70	4-4	2-2	2	4	ARVRYCSSTSCYGLDY	16	1-33	2	QQYDNLPYT	9	-	-	-
mMS23 71	4-59	/	/	3	ARDAEDTVAFDI	12	2-28	3	MQALQTPFT	9	-	-	-
mMS23 72#	1-8	1-7	1	5	ARDRGLERRGWFDP	14	3-20	1	QQYGSSPWT	9			
mMS23 76#	1-18	3-10	1	4	ARDFAAWFGELLPFDY	16	2-29	1	MQGIHLPQT	9			
mMS23 82#	1-18	3-22	3	6	ARDNSITMIVVVRDYYDMDV	20	1-39	1	QQSYSTPWT	9			
mMS23 86	4-34	6-13	2	2	ARVRLDSSSWYHWYFDL	17	1-5	1	QQYNSYPPWT	10	-	+	c
mMS23 87	4-59	1-26	3	4	ARGFVGATGFDY	12	4-1	2	QQYYSTPPT	9	-	+	-
mMS23 89	4-34	6-19	1	4	ARGRQWLVILDY	12	3-20	1	QQYGSSPPRT	10	-	+	c
mMS23 95	4-34	1-26	2	4	ARSGNSGSYSYFDY	14	3-20	1	QQYGSSTWT	9	-	+	-
mMS23 64	4-34	3-10	3	4	ARGGRITMVRGIDY	14							
mMS23 68	1-2	6-13	2	5	ASRDYSSNWYNWFDP	15							
mMS23 69	1-46	6-13	2	2	ARDVRDSSSWYGWYFDL	17							
mMS23 94							3-20	4	QQYGSSPLT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS23 51#	1-2	6-19	1	2	ARDLGRQWLVLDWYFDL	17	1-44	2	AAWDDSLNGQVV	12			
mMS23 55					see kappa		1-40	2	QSYDSSLSVV	10	-	-	-
mMS23 63					see kappa		1-47	2	AAWDDSLSGVV	11	-	-	-
mMS23 70					see kappa		1-40	2	QSYDSSPVV	9	-	+	+
mMS23 71					see kappa		3-1	2	QAWDSSTVV	9	-	-	-
mMS23 78	1-18	1-26	3	6	AREGATAYYYYGMDV	15	2-23	2	CSYAGSSTSVV	11	-	+	c
mMS23 79	3-30	5-12	3	3	ARDEEDIVATIPSGGAFDI	19	1-40	2	QSYDSSLSGSV	11	-	-	-
mMS23 90	5-51	3-9	2	4	ARLGDILTGYLDY	13	3-1	2	QAWDSSTVV	9	-	-	-
mMS23 81							3-1	2	QAWDSSTAWDVV	12			

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining

Supplemental Table 15. Repertoire and reactivity of antibodies from mature naive B cells of MS31

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS31 49	1-69	2-15	2	4	MGHYCSGGSCYSY	13	1-16	4	QQYNSYPLT	9	-	+	-
mMS31 54	3-9	6-13	3	6	DTAAAVVGRYYYYGMDV	17	1-39	2	QQSYSTPYT	9	-	+	-
mMS31 57	1-2	2-15	2	4	APHGLGYCSGGSCYSFCFDY	20	2D-29	1	MQSIQLPWT	9	-	+	-
mMS31 61	3-21	3-9	2	4	DHPLTGYYGHSDLDY	15	1-27	3	QKYNSAPFT	9	-	-	-
mMS31 71	1-46	3-22	2	3	VGRGYYDSSGYLDAFDI	17	3-20	4	QQYGSSPLT	9	-	-	-
mMS31 78	4-39	7-27	3	4	NPSMPWGLTLFFDY	14	3-20	1	QQYGSSPRT	9	-	-	-
mMS31 80	3-33	6-19	2	4	DADRSSGWLFDY	12	1-39	4	QQSYSTPLT	9	-	-	-
mMS31 89	4-34	3-22	2	4	GGSSGYYYWDQRLEFDY	17	1-17	1	LQHNSYPRT	9	+	+	c
mMS31 173	3-11	2-2	2	6	YDYCSSTSCYRPTYYYYGMDV	21	2-28	1	MQALQTRGT	9	-	+	-
mMS31 179	3-23	4-23	3	4	DYLTTVVTPDIIDY	14	3-11	5	QQRSNWPPT	9	-	-	-
mMS31 180	4-34	5-5	2	6	GRGRGYSYGPGYYYYGMDV	19	3-20	1	QQYGSSPRT	9	+	+	c
mMS31 185	3-23	6-13	2	4	DDEMYSSSWYGFGY	14	1-39	4	QQSYSTLLLT	10	-	+	-
mMS31 188	4-34	1-26	2	4	GPVYSGSYFRGRPSHYYFDY	20	1-5	2	QQYNSWCS	8	+	+	-
mMS31 189	4-34	3-3	3	5	SQRITIFGVALPNWFDP	17	3-15	1	QQYNNWPKT	9	+	+	-
mMS31 192	5-51	3-3	2	6	TYDFWSGSYYYGMDV	15	2-28	1	MQALQTPGT	9	-	-	-
mMS31 187	1-46	3-16	2	4	GKGYYDYVFGY	11							
mMS31 93	3-23	3-10	2	6	EARLIEAYYYGSGPPKYGMDV	21							
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	Hep2	Staining
mMS31 49#					see kappa		1-47	2	AAWDDSLSGRV	11			
mMS31 51	4-34	4-17	2	4	GHYGDYDGVDY	11	1-44	1	AAWDDSLNGRYV	12	-	-	-
mMS31 62	4-61	2-15	2	4	YWPYCSGGSCYAFDY	15	1-44	2	AAWDDSLNGPVV	12	-	-	-
mMS31 63	4-34	4-17	2	3	PPNYGRDAFDI	11	2-11	1	CSYAGSSYV	9	-	+	-
mMS31 70#	5-51	3-9	2	4	GRYYDILTGYAHFDY	15	2-14	1	SSYTSSSTLEV	11			
mMS31 71					see kappa		2-11	3	CSYAGSYTWV	10	-	-	-
mMS31 91	3-48	/	/	4	IDY	3	6-57	3	QSYDSSNWV	9	-	-	-
mMS31 92	4-39	6-19	2	3	LAGYSSGGNAFDI	13	1-51	3	GTWDSSLSAGV	11	-	-	-
mMS31 174	3-33	3-22	2	4	DFDYYDSSGYHGLDY	15	1-44	3	AAWDDSLNGWV	11	-	-	-
mMS31 193	3-48	3-3	2	4	FDFWSAVRDY	10	1-44	2	AAWDDSLNGVV	11	-	-	-

RF, reading frame; #, antibody failed to be expressed; -, non-reactive; +, reactive;

c, cytoplasmic staining; N, nuclear staining