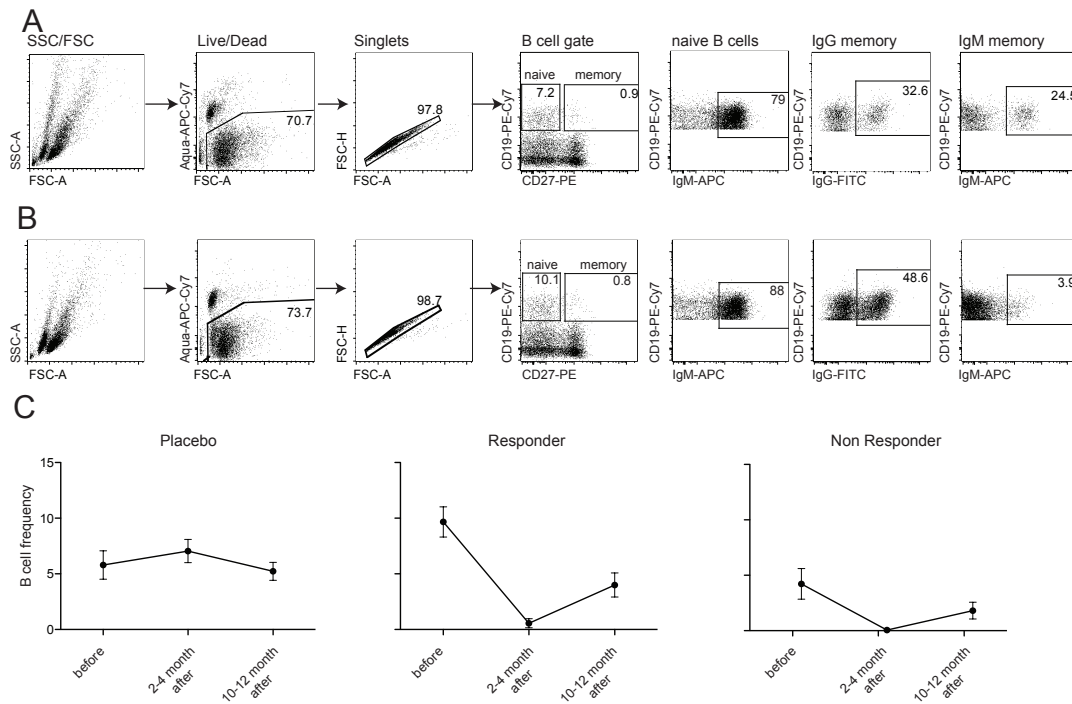
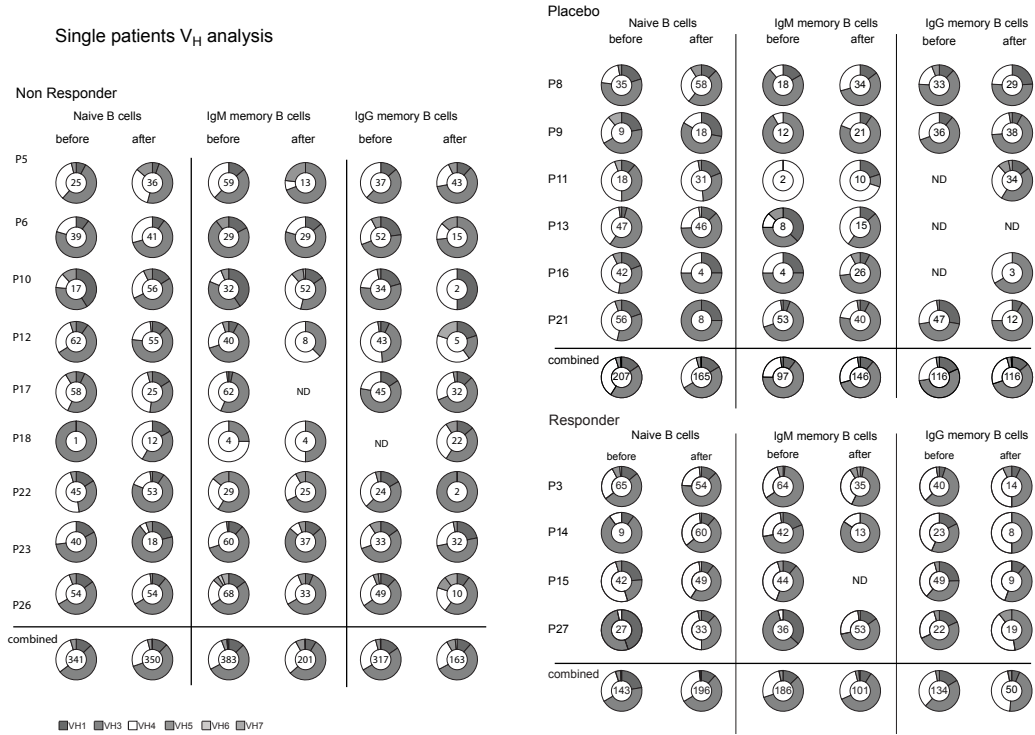


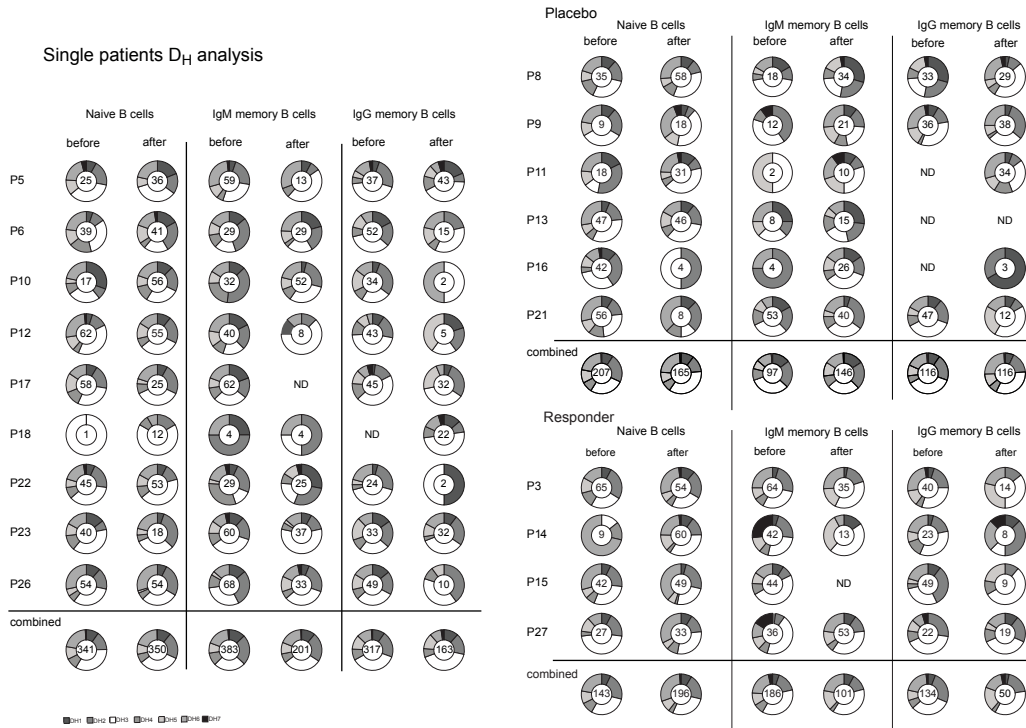
Supplementary Figure 1. Gating strategy to identify naïve, IgM memory and IgG memory B cells before rituximab therapy (A) and 12 months after treatment initiation (B). Peripheral blood B cell frequencies from all live cells in the lymphocyte gate and are shown in (C). Panel A and B were generated with data from the same patient.



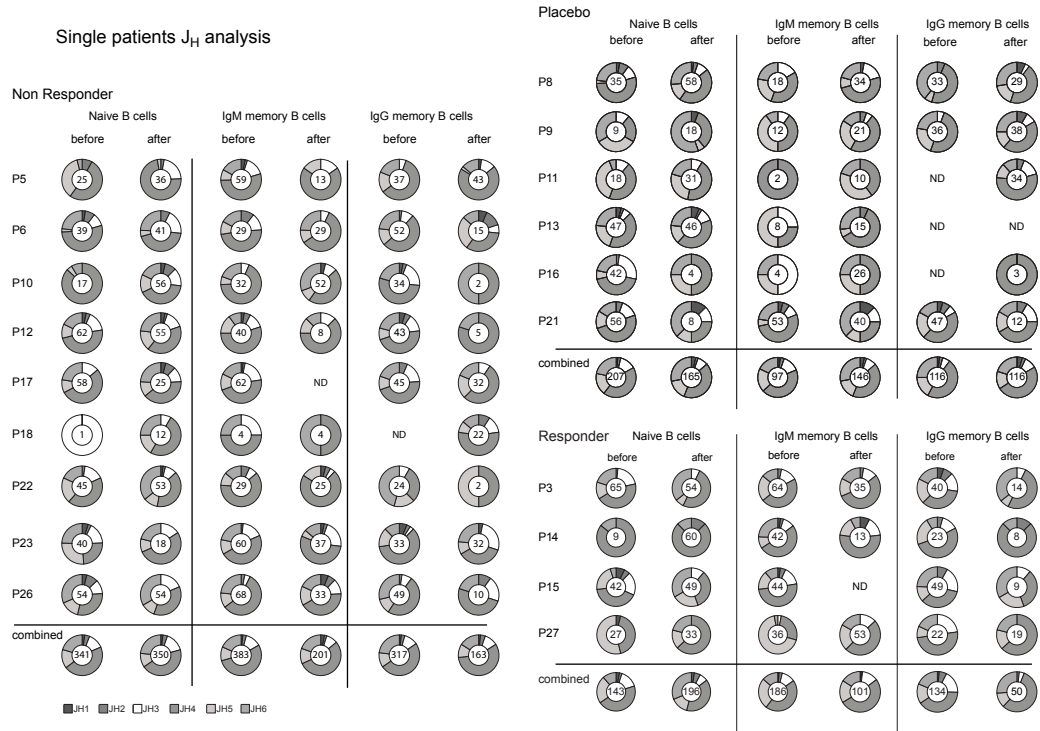
Supplementary Figure 2. IgH chain gene variable (V) repertoires in single cell sorted CD19⁺CD27⁺IgM⁺, CD19⁺CD27⁻IgM⁺ and CD19⁺CD27⁺IgG⁺ B cells, respectively. Samples were analyzed before and 12 months after rituximab and placebo (normal saline solution) therapy. Clonally expanded sequences were counted as one sequence. The numbers in circles indicate the number of individual sequences per patient.



Supplementary Figure 3. IgH diversity (D) region repertoires in single cell sorted CD19⁺CD27⁻IgM⁺, CD19⁺CD27⁺IgM⁺ and CD19⁺CD27⁺IgG⁺ B cells, respectively. Samples were analyzed before and 12 months after rituximab and placebo (normal saline solution) therapy. Clonally expanded sequences were counted as one sequence. The numbers in circles indicate the number of individual sequences per patient.



Supplementary Figure 4. IgH chain joining (J) regions repertoires in single cell sorted CD19⁺CD27⁺IgM⁺, CD19⁺CD27⁺IgM⁺ and CD19⁺CD27⁺IgG⁺ B cells, respectively. Samples were analyzed before and 12 months after rituximab and placebo (normal saline solution) therapy. Clonally expanded sequences were counted as one sequence. The numbers in circles indicate the number of individual sequences per patient.



Supplementary Table 1. Frequency of expanded sequences in the memory compartment of all patients before and after therapy are depicted as frequency of expanded sequences divided by the total sequence count for each patient.

Patient Subgroup	Patient	Memory compartment	Before Vs. after therapy	Frequency of exp. seq. (%)
Placebo	P8	IgM	after	7/45 (15.6%)
Placebo	P8	IgM	after	2/45 (4.4%)
Placebo	P8	IgM	after	2/45 (4.4%)
Placebo	P8	IgM	after	2/45 (4.4%)
Placebo	P8	IgM	after	2/45 (4.4%)
Placebo	P8	IgM	after	2/45 (4.4%)
Placebo	P8	IgM	before	12/31 (38.7%)
Placebo	P8	IgM	before	3/31 (9.7%)
Placebo	P8	IgG	before	2/37 (5.4%)
Placebo	P8	IgG	before	3/37 (8.1%)
Placebo	P8	IgG	before	2/37 (5.4%)
Placebo	P8	IgG	after	3/31 (9.7%)
Placebo	P9	IgM	before	31/43 (72.1%)
Placebo	P9	IgM	before	2/43 (4.7%)
Placebo	P9	IgM	after	45/67 (67.2%)
Placebo	P9	IgM	after	3/67 (4.5%)
Placebo	P9	IgG	after	20/60 (33.3%)
Placebo	P9	IgG	after	2/60 (3.3%)
Placebo	P9	IgG	after	2/60 (3.3%)
Placebo	P9	IgG	after	2/60 (3.3%)
Placebo	P11	IgM	before	12/13 (92.3%)
Placebo	P11	IgM	after	8/24 (33.3%)
Placebo	P11	IgM	after	4/24 (16.7%)

Placebo	P11	IgM	after	2/24 (8.3%)
Placebo	P11	IgM	after	2/24 (8.3%)
Placebo	P13	IgM	after	2/16 (12.5%)
Placebo	P16	IgM	after	3/29 (10.3%)
Placebo	P16	IgM	after	2/29 (6.9%)
Placebo	P21	IgM	before	4/57 (7.0%)
Placebo	P21	IgM	before	2/57 (3.5%)
Responder	P3	IgM	after	2/37 (5.4%)
Responder	P3	IgM	after	2/37 (5.4%)
Responder	P3	IgG	after	3/16 (18.8%)
Responder	P14	IgM	before	6/49 (12.2%)
Responder	P14	IgM	before	2/49 (4.1%)
Responder	P14	IgM	before	2/49 (4.1%)
Responder	P14	IgG	after	2/9 (22.2%)
Responder	P27	IgM	before	7/44 (15.9%)
Responder	P27	IgM	before	4/44 (9.1%)
Non-responder	P5	IgG	after	2/44 (4.5%)
Non-responder	P5	IgG	before	2/38 (5.3%)
Non-responder	P5	IgM	after	5/20 (25%)
Non-responder	P5	IgM	after	4/20 (20%)
Non-responder	P5	IgM	after	4/20 (20%)
Non-responder	P5	IgM	before	19/78 (24.4%)
Non-responder	P5	IgM	before	2/78 (2.6%)
Non-responder	P6	IgM	before	2/32 (6.3%)
Non-responder	P6	IgM	before	2/32 (6.3%)
Non-responder	P6	IgM	before	2/32 (6.3%)

Non-responder	P6	IgM	after	3/31 (9.7%)
Non-responder	P10	IgG	before	2/35 (5.7%)
Non-responder	P10	IgM	after	2/53 (3.8%)
Non-responder	P10	IgM	before	3/58 (5.2%)
Non-responder	P10	IgM	before	2/58 (3.4%)
Non-responder	P10	IgM	before	24/58 (41.4%)
Non-responder	P12	IgM	before	3/43 (7.0%)
Non-responder	P12	IgM	before	2/43 (4.7%)
Non-responder	P17	IgM	before	2/74 (2.7%)
Non-responder	P17	IgM	before	2/74 (2.7%)
Non-responder	P17	IgM	before	10/74 (13.5%)
Non-responder	P17	IgM	before	2/74 (2.7%)
Non-responder	P17	IgG	after	2/33 (6.1%)
Non-responder	P18	IgG	after	2/23 (8.7%)
Non-responder	P22	IgG	after	2/3 (66.7%)
Non-responder	P22	IgM	before	2/30 (6.7%)
Non-responder	P22	IgM	after	2/25 (8.0%)
Non-responder	P23	IgM	after	6/43 (14.0%)
Non-responder	P23	IgM	after	2/43 (4.7%)
Non-responder	P23	IgM	before	2/64 (3.1%)
Non-responder	P23	IgM	before	2/64 (3.1%)
Non-responder	P23	IgM	before	2/64 (3.1%)
Non-responder	P23	IgM	before	2/64 (3.1%)
Non-responder	P23	IgM	before	1/64 (1.5%)
Non-responder	P26	IgM	after	4/38 (10.5%)
Non-responder	P26	IgM	after	2/38 (5.3%)

Non-responder	P26	IgM	after	2/38 (5.3%)
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Supplementary Table 2. Individual VH, DH, JH sequences and mutations in IgM memory B cells of patient 27 before therapy.

Frequency of seq. (%)	V-gene allele	J-gene allele	D-gene allele	FWR1 length bp	FWR1 mutations	CDR1 length bp	CDR1 mutations	FWR2 length bp	FWR2 mutations	CDR2 length bp	CDR2 mutations	FWR3 length bp	FWR3 mutations	Sequence
1/45 (2.2%)	<i>IGHV3-7*01</i>	<i>IGHJ5*01</i>	<i>IGHD4-23*01</i>	75	8	24	5	51	3	24	4	73	14	tacaggtgccatccagtagcagcttaagglltcccaltgtagggtaggtgagttgagggatcggggga ggattggcccagcctgggggtccttgagactctcctgtaggctcgtgattcagctcaglaatttttg gatgacclgggtccgcccaggtccaagggaaagggctggatgggtggcccaatcaagcaagcaagtg gaagtgagcagttattcctggactctgtaaggccogattcaactctccagagacaaccaaga actcactatctgcaaatgagagccctgagcccgacagacaaggcttattactctgtagcagact ccggagggctgtagcaggtgggtgattctggggcccagggaaacctggtcaccgtctctcag ggaggcctcccccccc
1/45 (2.2%)	<i>IGHV3-74*01</i>	<i>IGHJ4*02</i>	<i>IGHD3-22*01</i>	75	1	24	2	51	7	24	5	114	9	ctttaagggtcccaagtgtaggtgtagcctggagtcgggggagccttagttcagcctgggggt ccctggactctctgcaacctgtagttaccctcagtaattactggtagcactgtagcccaaggt ccaagggaagggtctgggtctgtagttaaactctgtagggagtaagtcagactcagcagcag tcagtgaaggccgattccaactctccagacaaccccaagacagctgctgcaaaatgaac agctgaagcccaagacacgctgtttattttgtagtagtctgtagcagctcagcagcagctt ggggccaggaacctgtcaccgtctcctcagagggtctcccccccc
1/45 (2.2%)	<i>IGHV1-58*01</i>	<i>IGHJ5*02</i>	<i>IGHD3-10*01</i>	75	3	24	0	51	0	24	0	114	0	tacaggtgccactccaggtgtagctgtagcctgtagctggcctgagtgagaagcctgggacct aglaaagttcctgcaagctctgattaccctactgactctctgtagcaggtggtagcagagct cgtggacaacgcctgagtagalagtaggtctgtgtgcaagtgtaacacaactcagcagcag aagttccaggaagagttaccattaccaggacaagttcccaagacaagcctcatgtagctgag cagcctgagatccgagacacggccgtgtaactctgtagcaggttctcccgcttgggtctcagg gagttataacggaccacaatgactgtagccctggggccaggaaacctgttaccctctctc agggggtcccccaatt
1/45 (2.2%)	<i>IGHV3-7*01</i>	<i>IGHJ5*02</i>	<i>IGHD2-21*02</i>	75	12	24	7	51	6	24	6	114	37	tgccactcccaggtgcatagtaaggtagctgtagctgtagcagctgtagctgtagcaggtgaggt cgttccagccgggggtgcttcaagacttctagttcagcctctgtagttcagttcttttggatgac ctgggtccgctgctccaagaaaggggtcagtagtggggcccaatgagaaggaagggaagcgt gagagattcacttctggggaaggccacaatcaacactcagagacaacacagcaacaagct gactgatcaaaatgaacagctgtagctgtagcagcagctgtagttatgggggtggggagtagtca ggggggggcccaaggactttagctctggggccagggaaacctgtcaccgtctcctcagagg agggtcccccccc
7/45 (9.3%)	<i>IGHV3-7*01</i>	<i>IGHJ4*02</i>	<i>IGHD6-13*01</i>	75	3	24	8	51	5	24	4	114	12	gcttaagggtcccaagtgtaggtgtagctgtagctgtagcagctgtagcaggtgtagcagctgtagg tccctgagactcctctgtagcctgctccttaataactactgtagttagttagctgtagcagct ccagggaagggtgtaggtgggtccagcacaagaagaagtagtagagtagtagtagtagtagtgg actctgtaggggtgtagcctcctcagagacaacccaagtagttagctcttctgcaactgtagc agcctgagcggcgaagacacgctgtagtatttagttagcagactccggatgggtcggccgggtgac ttgattctgggcccagggaacctgtgaccgtctcctcaggggggtcccccccc
1/45 (2.2%)	<i>IGHV3-7*01</i>	<i>IGHJ4*02</i>	<i>IGHD6-13*01</i>	75	5	24	8	51	7	24	4	114	14	caggtgccactcccaagtgtagctgtaggtgtagcagctgtagcaggtgtagcagctgtagg gaggtgtagcagcctgggggtcctgtagactcctcctgtagcctgtagcagcctccttaatactta ctgtagttagtgggtcctcaggtccangaaagggctgtagtggggccagcacaagaagaag atgaagtagaagttcctgtagcctgtaggggtgtagcctcctcagagacaaccca agagttcctctcgaactgaacaacctgtagcggcgtgtagcagctgtagtatttagttagcagac tccgaagggtcggccgggtggctttagctgtagggccagggaacctgttaccgtctcctcag agggtcccccaact
1/45 (2.2%)	<i>IGHV1-58*01</i>	<i>IGHJ5*02</i>	<i>IGHD3-10*01</i>	75	56	24	1	51	1	24	0	114	13	acaggtgccatcccaaggtgtagctgtagcctgtaggtgagaagcctgggacctcag tgaagttctcgaagggtgggattcacttactgtagctgtagcagtgtaggtgtagcagagctcag tggacaacgcctgtagtagtagtagctgtagctgtagcagtgtagtaacacaagtagtagcacaaga gttccaggaagagtagcacttaccagggcagggcccaagacacagctgtagtatttagttagcagac cagcagtagtagcagagaccgctctattctgtagcagtagtctcccgctcatgggttccg gagttatataagcggagccaatgtagcttagaccctggggccagggaaacctgttaccgttccg ctcaggaagggtcccccccc

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1/45 (2.2%)	IGHV3-7*01	IGHJ5*01,	IGHD3-16*01	75	3	24	8	51	5	24	4	110	14	tgtaaggtgtccantgtgaggtgacagctgagctgctggggaggctgtgccaagctgggggtc cctgagacctctgtgctggctgctgctcttaatactctgactgactggctgctgagctc cagggaagggtctgagtgctgctgcccagcatcaagaagatgaagtgagaagctatgtgga ctctgtgaggggcccattcaccatctccagagacaacccaagattgctctccaactgaaca gctgagcgggatgacacggctgtgattattgctgagactcggagctgggctgctggcgggtgtt attctggggcagggaacccctgctcaccgtctctcaggaggctccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ4*02	IGHD6-13*01	75	4	24	8	51	6	24	4	114	13	tacaggtgccactccaggtgcagctgttaaggtgtccaggtgaggtgcagatgtggagtctggg ggaggctgtgccaagcctgggggtccctgagactctctgtgctggctgctgctcttaatact actggtgactgtgctgctgagctcagggtccagggaagggtccagagtggtggtgccaagaaa gatgaagtgagaagctctatgtgactctgctgaggggcattcaccatctccagagacaagcc aagattgctctcttctgcaactgaacagcctgagcggcgatgacacatccatctccagagaca ctcggatggctgctggctgtgattactgggcccagggaacccctgctcctccagg gaaggccccccccccc	
1/45 (2.2%)	IGHV1-58*01	IGHJ5*02	IGHD3-10*01	75	56	24	14	51	1	24	2	114	14	cctacagggggccatccaggtgcagctgtgacagctgcaactgaggtgaagaagcctgggacc tcagtgaagctctctgcaagcctctgattcagactcagctgctgctgctgctgctgctgctgca ctctgtgacaacccctgagtgatgagatgcatctgctgctggcagagtaacacaagctcagc agaagttccaggaagagtcaccattaccaggacatgctcagctcagctcagagacaagcc gagcaagatgagatccagagacaagcggcagctattcagctgctgctgctgctgctgctgctg ctgggagtgatgaagcgaacgaatgactgctgctgctgctgctgctgctgctgctgctgctg ctccaggagccccccccccc	
1/45 (2.2%)	IGHV1-58*01	IGHJ5*02	IGHD3-10*01	75	10	24	1	51	1	24	3	114	6	tacaggtgccactccaggtgcagctgtgacagctgcaactgaggtgaagaatcctgggacctca gtgaagtttccctcagcctctgattcactctgactgctgctgctgctgctgctgctgctgctg gtggaacagcctgagtgatgagatgcatctgctgctgctgctgctgctgctgctgctgctg aagttccaggaagagtcaccattaccaggacatgctcagctcagctcagagacaagcc cagctgagatccagagacaagctgctgctgctgctgctgctgctgctgctgctgctgctg ggagtataacggagcaatgactgctgctgctgctgctgctgctgctgctgctgctgctg caggaggctccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ4*02	IGHD3-3*01	75	5	24	9	51	6	24	4	114	13	tacaggtgccactccaggtgcagctgtgacagctgcaactgaggtgaagaatcctgggacctca gtgaagtttccctcagcctctgattcactctgactgctgctgctgctgctgctgctgctgctg gtggaacagcctgagtgatgagatgcatctgctgctgctgctgctgctgctgctgctgctg aagttccaggaagagtcaccattaccaggacatgctcagctcagctcagagacaagcc cagctgagatccagagacaagctgctgctgctgctgctgctgctgctgctgctgctgctg ggagtataacggagcaatgactgctgctgctgctgctgctgctgctgctgctgctgctg caggaggctccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ5*02	IGHD3-16*01	75	56	24	19	51	13	24	4	114	39	ctacaggtgccactccaggtgcagctgtgacagcttccaggaagggaacaaatctgtagtctcag gaagctgtgctcagcctggggggattgagactctgctgctgctgctgctgctgctgctgctg agtgaaagcgggctcctgcaagcctcctggaagggtccggagtgagctccagacaagaaa gtgaaagtgagaagctcatalgtgagctgctgctgctgctgctgctgctgctgctgctgctg aagattctctgagggaccagctgaaacactgagcggcctgagctcctccctgctgctgctg actccggaaagcggctgcaagggaggttgaattcctggggcccagggaacccctgctccttcc taagggaaggccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ5*01,	IGHD5-12*01	75	42	24	18	51	33	24	13	114	28	gtaattaaaggttccaggtgaggtgacagctatggagctgctggggaggcctgtgctcagcctggggg gtccctgagactctctgctgctgggtccccctctcttaatactctgagatgactgctgctgctg tccagggagggtctgagtgctgctgctgctgctgctgctgctgctgctgctgctgctgctg taagtgagggtgctgctgctgctgctgctgctgctgctgctgctgctgctgctgctgctg aacatgagcggatgacacggctgtgattgtgctgagactcggatgctgctgctgctgctg tgattactggggcagggaacccctgctcctcctcaggaggctccccccccc	
1/45 (2.2%)	IGHV1-58*01	IGHJ5*02	IGHD3-10*01	75	50	24	19	51	31	24	8	114	46	tacaggtgccactccaggtgcagctgtgacagctgcaactgaggtgaagaatcctgggacctcag gaagctcccccaagggggattcagactctctgctgctgctgctgctgctgctgctgctgctg ggcaaacgctgagtgatgagctccatggaaggtgcccaggtgtaacgcaagctcagcagag altaaggaagagctcattaccagggaagggcaccattcaccatccagagacaagagc agctgagatctgagagaccagcaactcactgaggtgctgctgctgctgctgctgctgctg gggggtcagaaggggtgctgcaagggattgaccctggggcccagggaacccctgtgctc cgtttccagggaaggccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ5*01	IGHD3-16*01	75	9	24	10	51	10	24	9	106	72	tacaggtgccactccaggtgcagctgtgacagctgcaactgaggtgaagaatcctgggacctcag ggaggctgtgctcagctgaggggtctgagactctgctgctgctgctgctgctgctgctgctg tactgagatgctgctgctgctgctgctgctgctgctgctgctgctgctgctgctgctg agatgaaglaagaagctctgactgactgctgctgctgctgctgctgctgctgctgctgctg caagagatctcttaccagcgaacactgagcggcagacagcggctgtattatggga gagctcgaaggggtgctgcaaggggtgtgactcctggggcccagggaacccctgtgctcctct caggagctcccccaacc	
1/45 (2.2%)	IGHV4-39*05	IGHJ5*02	IGHD6-13*01	75	31	30	21	51	6	21	1	114	5	tattacaggtgccactccaggtccaactgtgctgctgctgctgctgctgctgctgctgctg tcaactgagatctctgcaagcctgggtaccactcactgctgctgctgctgctgctgctgctg gtagctgagacagggcgggagcggcagccagccagggaagggtgaggtgctgctgctgctg tattatggggaccaccactcaacccctcctcaagagctgagccaccatctcctgagcagctc caagaaccagttctcctgaggtgactgctgctgctgctgctgctgctgctgctgctgctgctg	

															agaacagaagtcgtctacaactggtcgaccctggggccgggaacctgtgacgctctctcc tcgggggatccccccatc
1/45 (2.2%)	IGHV3-7*01	IGHJ5*02	IGHD2-15*01	75	57	24	20	51	15	24	6	114	48	actcagggtccatcccaagtcagcttcaagtcactgaggggacaaaactgaggatctca ggaaggtctccagctgggggggattgagactctactcggggtcagctgctccgacaatc gtgacaacgccgggtctcagagctcatggaaggggccagagtgggcacaacgacataca aagatgaaglaaagctcatgtgacaggggacaggggacattccatctccagagacaa gagcaagagatctcgaggaaccagccgaacantgagcggcgagagctgctgctgattatt tcgaagctccgaagggtgcgcacgggaggtctgactctgggcccagggaacctgtgca ccgttctccaggaggccctccccccacc	
1/45 (2.2%)	IGHV1-58*01	IGHJ5*02	IGHD3-10*01	75	19	24	10	51	5	24	6	103	31	ttacaggtcccatcccaagtcagcttcaagtggtccctggggggaagagctgggatctca gtgaaggtttgtcccaagctggggttcagactatagctcggggtcagtggttcgacagta tcgtggaacaacgctggatgagatgcatggaagtggtcagagtgaaacaaagatccac agaagttccagaaagagtcaccattaccagggacagggcaccattccatctccagagaca gagcaaaagagatctcgaggaacaggtctactgagtgccgagatcggcctgtgagg gttcgggactcagaaggggcgcgggacttgaccctggggccgggaacctgtgaccc gttctccaggaggccccccccccccc	
1/45 (2.2%)	IGHV1-58*01	IGHJ5*02	IGHD3-10*01	75	35	24	15	51	18	24	9	114	46	tacaggtcccatcccaagtcagcttcaagtggtccctggggggaagagctgggatctca ggggaaggtgttccagctggggggttgaagctctcatgtcgggctcagtggttcgaca gtacttaggggaacgctgggtccgtcaggtcatggaaggccagagtgacacacagatc aacaagatgaagaaagagtcaccattaccagggacagggcaccattccatctccagaga caagagcaagagatctcgaggaaccagccgaacactagagtgccgagatctcccggtga tggggtcggggagtcggaagcgtgcaaggggtcgaacctggggccagggaacctgtgaccc caccgtctccaggaggctcccccaacc	
1/45 (2.2%)	IGHV4-39*01	IGHJ3*02	IGHD4-17*01	75	3	30	5	51	0	21	1	114	3	gcaattctcacagcgacgacccagatgctctgtgacaggtgagctgagagtggtggccc aggactgtgaagccttcggaaccctgtccctcaactgctctcagtggtccctcaacagtg gtagttactctgggctgagctccagccccaggggaggggctgagtgattgggagatctat tatagtgggaaccgactacaaccgtcccaagctgagtcagtcacatgacagctgatactg aagaaccagttctccctgaagctgagctgtgaccgcccagacaacggctgtgattactgtgag acgtacgtgactcttatgattgtatctgggccaagggaacatgctaccgtctcaggg aggatccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ4*02	IGHD3-16*01	75	14	24	16	51	13	24	9	106	70	ctacagggtccatcccaagtcagcttcaaggttccactgtaagggaacaaactgtagctg ggggaggtgtgctcagcctgggggggactgagactctatgctgagggctcagcgggtcttcaa tctctgggacaacgctgggtccgataggtctcatggaagggccagagtgggcggccagatca agaaagatgaagggaagatcatgltggtgaggtcagggccgagatccatctccagagaca acggcaagattctcttccctcagcaacactgagcggcgcagacaacggctgtgattatggg agactccggaagggtgctccgggaggttattcctggggcagggaacctgtgacctgtctcc caggggatccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ4*02	IGHD5-12*01	75	5	24	10	51	32	24	3	113	45	tacaggtcccatcccaagtcagcttcaaggttccactgtaagggtgagctggtgagctgggg agggctcagctcagctggggggtgagactctctgtagcctctgagttcaattcagcttattg gatgactgtgctcagctcagcctgggaggggctgggtggggtgacaaatggaagagat ggagtgagatactatgtgactgtgagagggccgattccatctccagagacaacccaag attctctgatgacaaatgactgattgagtgtagcagacacgctgttattactggaaactcgc gaggggtcagcaggggtacattgacctgtggccgggaacctggctaccctgccccgggg ggccccccccccccccc	
1/45 (2.2%)	IGHV3-7*01	IGHJ5*02	IGHD6-13*01	75	5	24	11	51	6	24	4	114	16	tagttaaggtgtccagtgagggcagctagtgagctgaggggagcctgtcagctgaggg gtccctgagactctctgctgctgctcctgctcctgtaatttactgcatgactggctcagag ctccagggaagggtgagtgaggggccagcaacaagaagatgaagtggaagctctatgt ggactgtgaggggctcaccatctccagagacaacccagaggtctcttggcaacactgc aacagctgagcggcagcagcagcgtgtgatttattgtccagacatccggatggctgcccgggt ggcttattctggggccagggaacctgtgacctctccagggagcc	
1/45 (2.2%)	IGHV1-58*01	IGHJ5*02	IGHD3-10*01	75	5	24	0	51	1	24	2	89	4	tacaggtcccatcccaagtcagcttcaaggttccactgtaagggtgagctggtgagagctca gtgaaggtctcctgcaaggtctgtgacttactgactctgctgagtggttcgacaggtc gtgacaacgctgtgagtgatgagtgatctgagtgagtgagtgagtgagtgagtgagtgag aagttccagaaagagtcaccattaccagggacatgctccagacaacccgctcactggagaga cagcagatgagctcagagcagcagctgtattactgtgctggcagctgtccccctgtgggtctg ggactattatacagggagcgaagggttaccctctggccagggaacctgtgacacctt ctccagggaaggccc	

1/52 (1.9%)	IGHV3-15*01	IGHJ4*02	IGHD1-26*01	75	3	24	1	51	0	30	0	114	2	tcttaaggtgccagtgtaggtgcagctggaggagctctggggagggctgtgaaagcctgggggtccctgactctctgtagcctctggattcattcaaaagccctgtagctggtcccgagctccagggaggggctggagtggtggccgtttaaagaacaaactgtagtggggaacaagactacgctgcacccctgaaagccagattccacattcaagagatgattcaaaaacacgctgtatcga aalgaacagcctgaaacccagggacacagccgtgtattactgtaccacaggtatcgatgtgg agctatggacttggactctggggccagggaaacctgtgtccactctctcaag
1/52 (1.9%)	IGHV4-39*01	IGHJ4*02	IGHD1-7*01	75	0	24	0	51	0	24	0	114	0	tcccaatgggtctgtccaggtgcagctgcaggtgcagggccagggagctgtgaaagcctgga gacctctccctcactgctctgtgctccatcagcagtagtattactctgggtggatcgc ccagccccagggaggggctggagtggtgattggagtagtattatagtgggagcaactactac aacccctccctcaagagctgagctaccatctcgtagacagctcaagaacagcttccctgaagc ttagctctgtgaccgcccagacacggctgtattactgtcgagtcgaaatgctgagctacacta atccgctactggggccagggaaacctgtaccctctctcagagg
1/52 (1.9%)	IGHV3-30*03	IGHJ4*02	IGHD2-15*01	75	0	24	0	51	0	21	0	114	0	taaggttcccaggtgaggtgcagctgcaggtgtggggagggctgtgaaagcctgggagcttcc gtagactctctgtagcctcctgattcactcctcagtagctagctgtagctgtagctgtagctc agggcaagggctggagtggtggagtagtattatagtgaggagtaataactatgtagctc cgtgaaagggcattcaccatctccagagacaatccaagaacagctgtatctcaatgaacag cctgagagctgagggacagcgtgtattactgtcgaaatgctgagctacactaattgactact gggccagggaaacctgtgtccctcctca
1/52 (1.9%)	IGHV1-3*01	IGHJ4*02	IGHD2-2*01	75	1	30	0	51	0	24	0	114	0	catcccaggtcaggtgtgtagctgtgggtgaggtgaaagcctggggcctcagtagattctc tagcaagctctctgtagcactcactactatctatattgtgctgcccagggccccggaca aa ggctgtagtgagtgagtggaacacagctggccaatgtagtggagcaataactcagctcag gacagattcaccattaccagggcctcagcagcagcagctctcaggtgtagcagctgagct ttagaacaagcctgtatattactgtgagagcattgtgacactcaactcaatgtctccggggct actggccagggaaacctgtgtaccctctctca
1/52 (1.9%)	IGHV4-39*01	IGHJ4*02	IGHD2-2*02	75	0	24	0	51	0	24	0	114	0	gcctgtcccaggtgcagctgcaggtgcaggtgcagggccagggagctgtgaaagcctgggagccctgtccc taccctgtagctctctgtagctccatcagcagtagtattactctgggtggatcccgagcccc cagggaaagggctggagtggtggagtagtattatagtgaggagcaactcactacacagctc caagattcgagctaccatctcagtagacagctcaagaacagcttccctgtagctgtagctgt acccgccagacagcgtgtgtattactgtcgagaacacagctcagcttagtagtagtaccagctg ctatgtatcacttgcactctggggccagggaaacctgtgtaccctctctca
1/52 (1.9%)	IGHV3-7*01	IGHJ4*02	IGHD5-12*01	75	0	24	0	51	0	24	0	114	0	taaggttcccaggtgaggtgcagctgcaggtgtggagtggtggggagggctgtgaaagcctgggggtcc ctgagactctctgtagcctcctgattcactccttcttgaagtagctgtagctgtagctgtagctc agggaaagggcctggagtggtggccaacatgaaagagtaggaaagtaggaaagtagtattgtgtc tctgtgaaagggcagattcaccatctccagagacaacccaagactctctatctcaaatgaaca gcctgagcggcagcagcagcgtgtttattactgtgagagactcggaggggctgtagcgggtaca ttgactctggggccagggaaacctgtgtaccctctctcagggg
1/52 (1.9%)	IGHV4-4*02	IGHJ3*02	IGHD6-19*01	75	1	24	1	51	0	24	0	114	0	cctgtcccaggtgcagctgcaggtgcaggtgcagggccagggagctgtgaaagcctggggacctctccct cactcctgctctctgtgtagcctcactcagcagtagtattactgtgagtggtcggagccccag ggaagggcctggagtggtgggaaatctcactatagtgaggagcaactcaactcaacccctccca agagtgagctaccatctcagtagaagccaagcagcttccctgaagctgtagctgtgtagcgc cggccggaacagcggctgtattactgtcgagaagggggcctagcagctgtagctgtagctctttt galactgtggggccagggaaacctgtgtaccctctctcagggg
1/52 (1.9%)	IGHV4-34*01	IGHJ5*01	IGHD3-22*01	75	1	24	0	51	0	24	0	114	0	gccccaggtgtgtaggtgcagctgcagctgcaggtgcagggccagggagctgtgaaagcctgcca gacctctcctcactgctgtctatgtgtgtctcctcaggtttactactgtagctgtagctgtagc cccccagggagggcctggagtggtgggaaatcaatcactatagtgaggagcaactcaactcaac ccctcctcaagagctgagctaccatctcagtagacagctcaagaacagcttccctgaaagctgag ctctgtgaccgcccggcagcagcgtgtattactgtcgagtagtactgtagtagtagtattact gggccagcactctggggccagggaaacctgtgtaccctctctcaggg
1/52 (1.9%)	IGHV3-48*01	IGHJ3*02	IGHD6-6*01	75	2	24	0	51	1	24	8	114	0	taaggttcccaggtgtaggtgcaggtgtggagtggtggggagggctgtgaaagcctggggagctc ttagactctctgtagcctcctgggttaccctggtgtctataattggcttgggtcccgctggcgc agggagggctggagtggtcttactatgtgttcaactgtgtcaactctgtagcactcaactacgc agagccgctgtagcctcctcagagacaatccaagggactcacttctcctcaaatgaatgagctc aagggccagggacaagcggctgtattactgtgtagagtagtgcgcccggggctgtgactgtgg gccaagggcaaacgctcctcaggg
1/52 (1.9%)	IGHV3-9*01	IGHJ4*02	IGHD3-9*01	75	1	24	3	51	0	21	0	114	6	taaggttcccaggtgtaggtgcagctgcaggtgtggggagggctgtgaaagcctggggagctc cctgagactctctgtagcctcctgattcactccttgaattgtagctgtagctgtagctgtagctc ccagggaaagggcctggagtggtctcagtagtattgtgaaatgtagtagtagtagtagtagtag ctgtgaaagggcagattcaccatctccagagacaacccaagaaacctcctgtatctgcaatgaaca gctgtagcgtgagggacagcggctgtattactgtgaaagctgtgtttgactgtgtgtgactgtg actgtggggccagggaaacctgtgtaccctctcagggg
1/52 (1.9%)	IGHV3-15*01	IGHJ5*02		75	0	27	0	51	0	24	0	114	0	taaggttcccaggtgtaggtgcagctgcaggtgtggggagggctgtgaaagcctgggggtcc cttgactctctgtagcctcctgattcactccttgaactgtagctgtagctgtagctgtagctc cagggaaagggcctggagtggtctcagtagtattgtgaaatgtagtagtagtagtagtagtag ctgtgaaagggcagattcaccatctcagagacaacccaagaaacctcctgtatctgcaatgaaca atgaacagcctgaaacccagggacacagcggctgtattactgtgaaagctgtgtttgactgtgtg actgtggggccagggaaacctgtgtaccctctcagggg

1/52 (1.9%)	<i>IGHV3-30*03</i>	<i>IGHJ3*02</i>	<i>IGHD3-22*01</i>	75	0	30	0	51	0	21	0	114	0	ttaagggtccagtgtgaggtgcagctggaggctctggggaggcgtggtccagcctggaggtcc ctgagactcctgtgcagcctctgattcaccttcagtagctatggcatgcactgggtccgaggctc caggcaaggggctggagtggtggcagttatcatatgatggaagtaataactatgcagactc cgtgaagggccgattcacctctcagagacaattccaagaacacgctglatctgcaaatgaacag cctgagagctgaggacacggctgttactctgcgaaagctacgtattactatgatagtagtctgg ggctttgatctggggccaagggacaatgtcaccgtctctcaggaggc
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