

## Romberg et al 2013

*TACI* mutations associated with CVID affect autoreactive B-cell selection and activation

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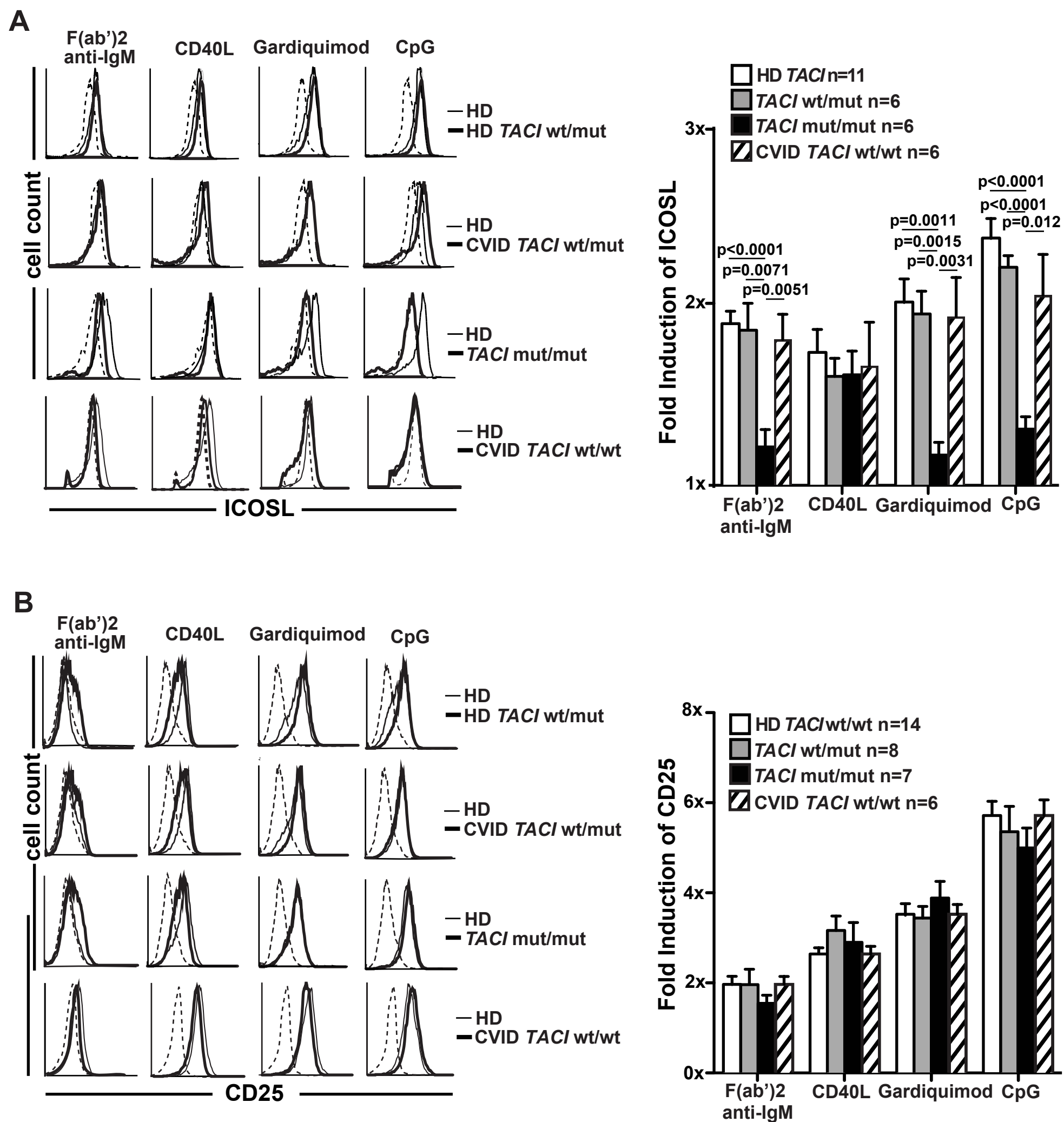
**Supplemental Table 31.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 218

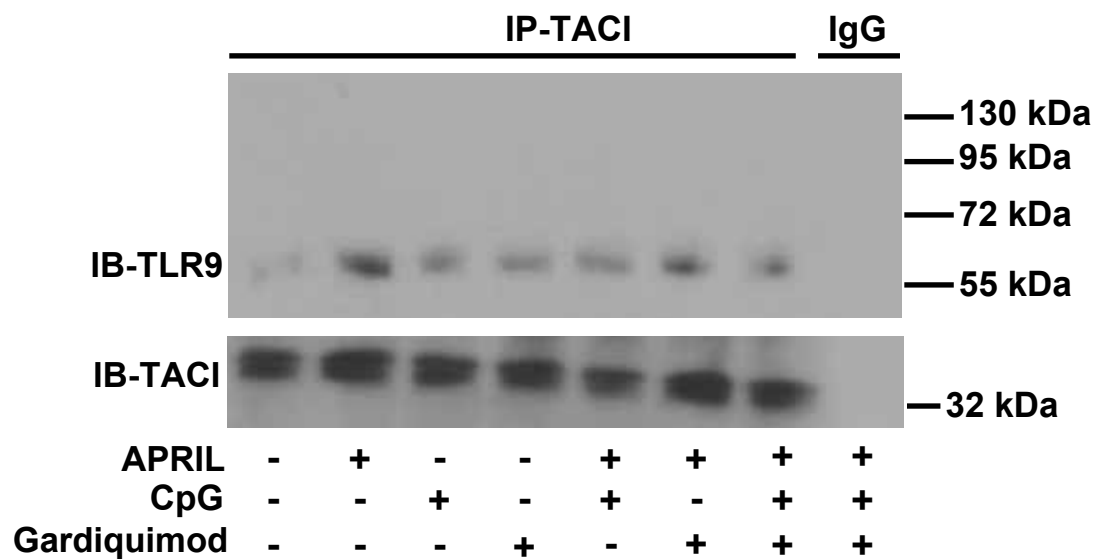
**Supplemental Table 32.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 251

**Supplemental Table 33.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 170

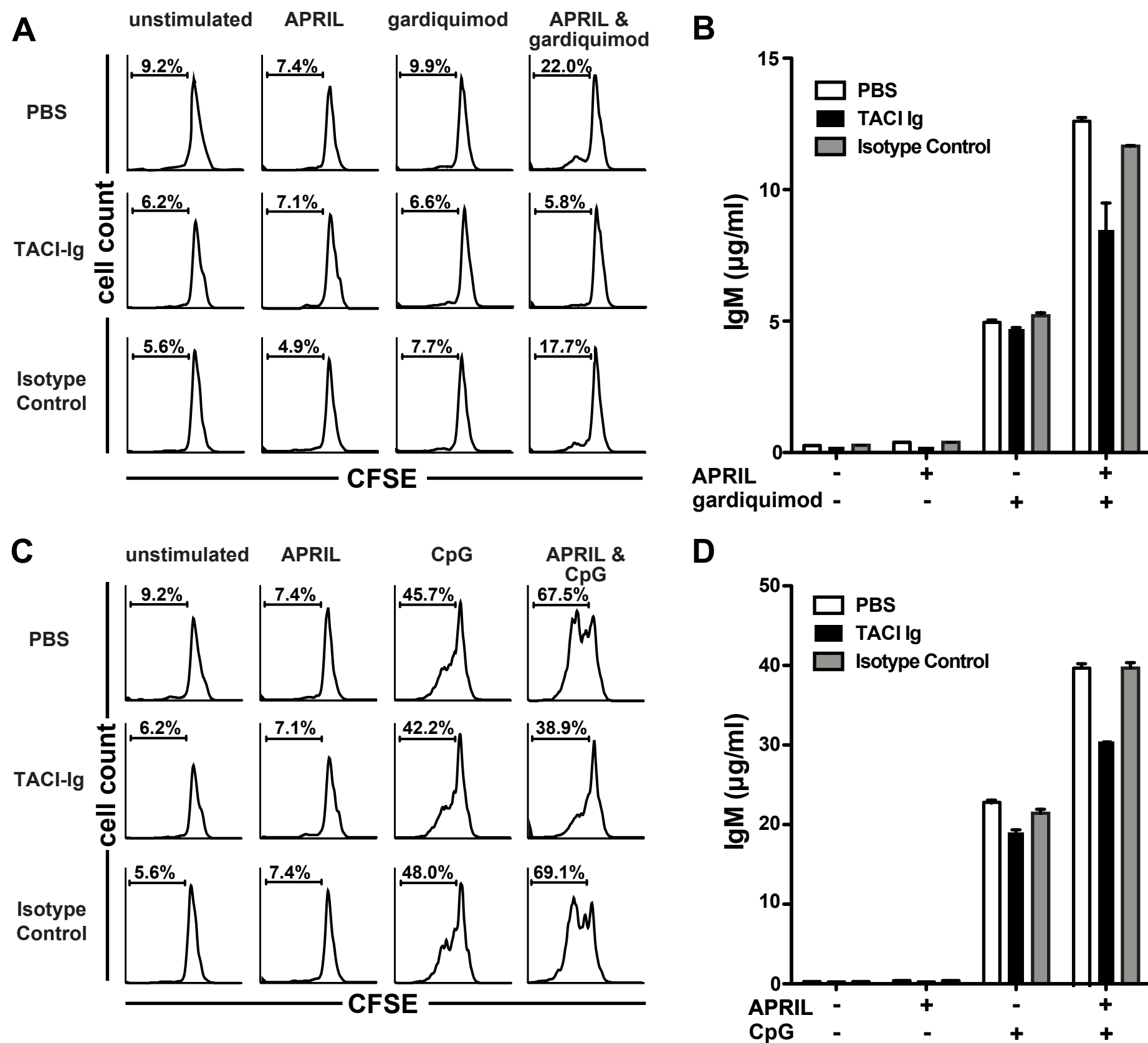
**Supplemental Table 34.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 124

**Supplemental Table 35.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 332

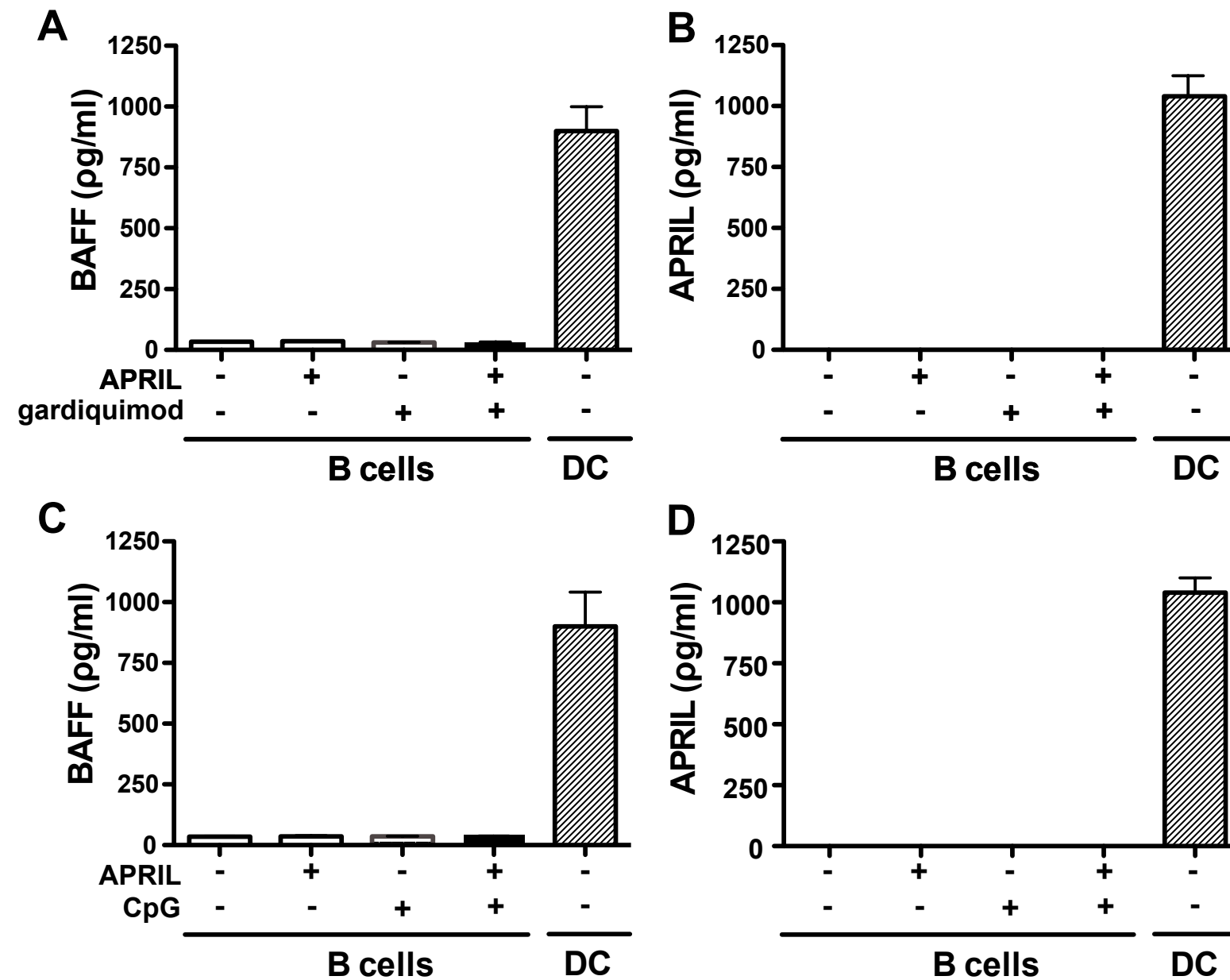




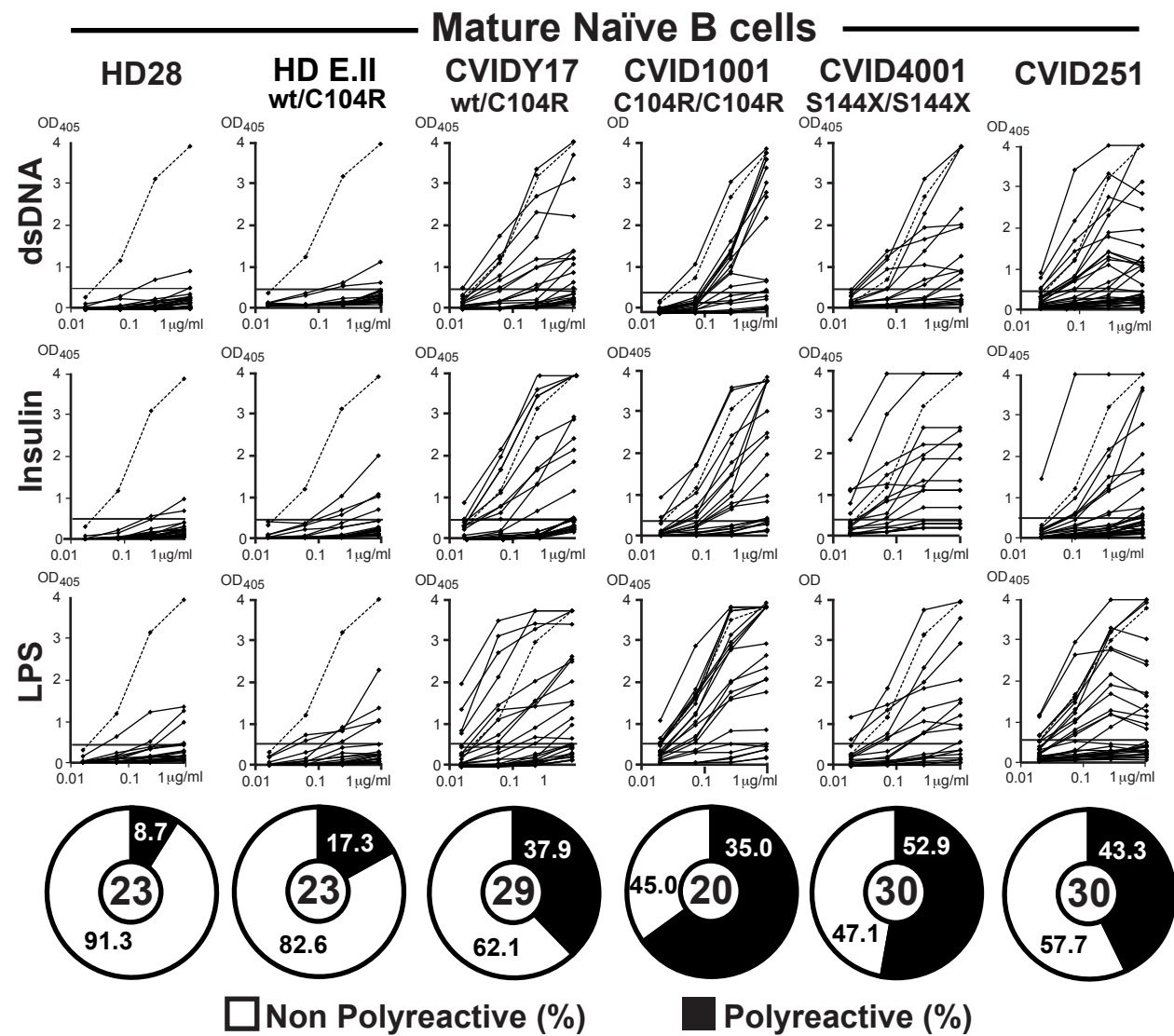
**Supplemental Figure 2.** Coprecipitation of TAC1 and the activated/cleaved 65 kDa form of TLR9 in 2E2 cells under multiple activating conditions.



**Supplemental Figure 3.** The TACI ligand APRIL potentiates TLR7 and TLR9 mediated activation of healthy donor splenic B cells. At five days healthy donor splenic B cells undergo more cell divisions (**A** and **C**) and secrete greater quantities of IgM (**B** and **D**) when treated with a TLR7 agonist (gardiquimod) or a TLR9 agonist (CpG) in combination with APRIL. The additional response attributed to APRIL is mitigated by the addition of a soluble decoy TACI receptor (TACI-Ig) which sequesters APRIL and BAFF. B-cell proliferation and IgM secretion experiments performed in duplicate. Error bars represent the mean  $\pm$  SEM.

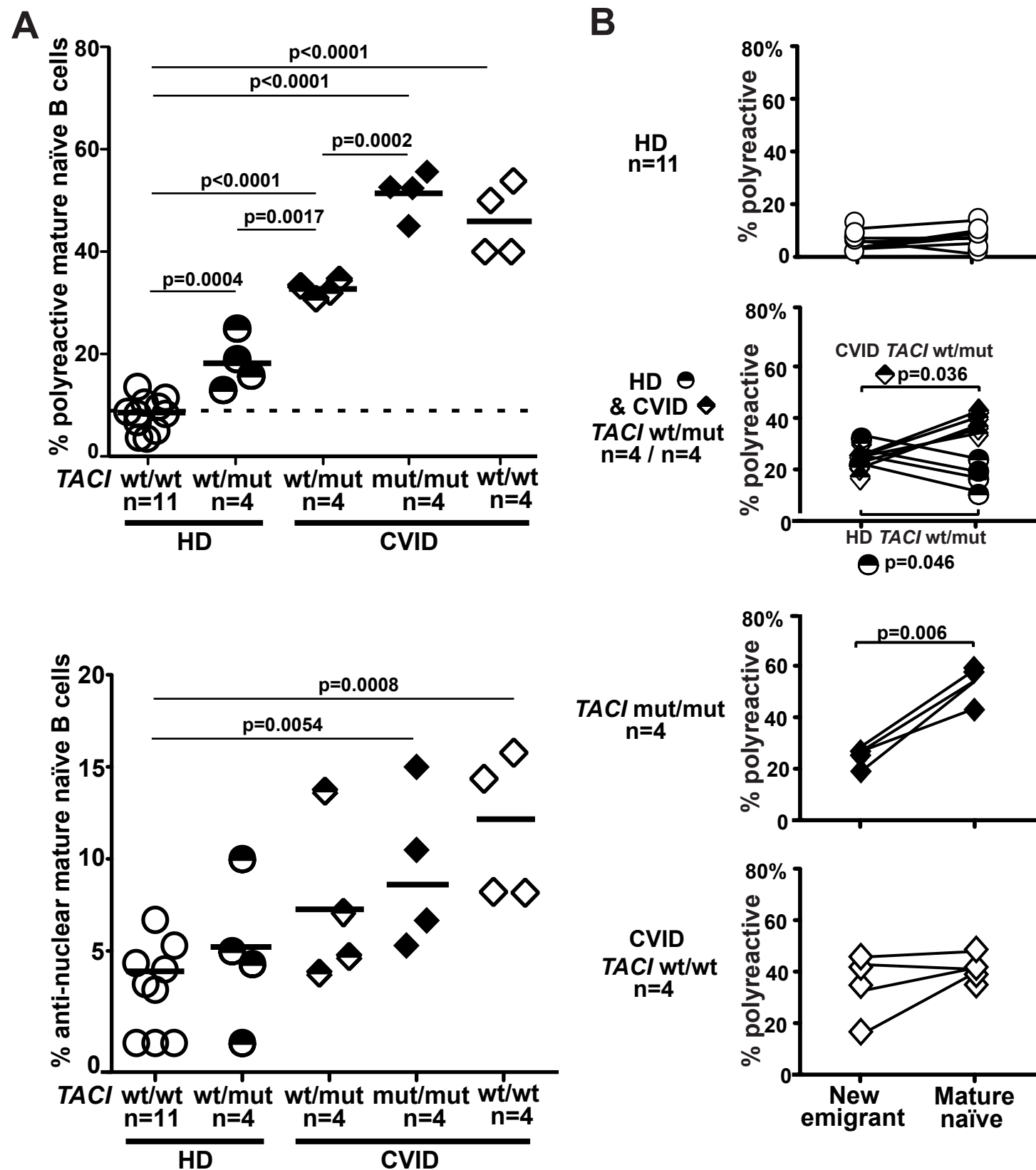


**Supplemental Figure 4.** Limited BAFF and absent APRIL secretion by healthy donor splenic B cells. After two hours healthy donor splenic B cells secrete little soluble BAFF (**A** and **C**) and undetectable soluble APRIL (**B** and **D**) under various activating conditions. Dendritic cells (DC) from healthy donors secrete significant soluble BAFF and APRIL in the same time interval without activation. Experiment performed in duplicate. Error bars represent the mean  $\pm$  SEM.

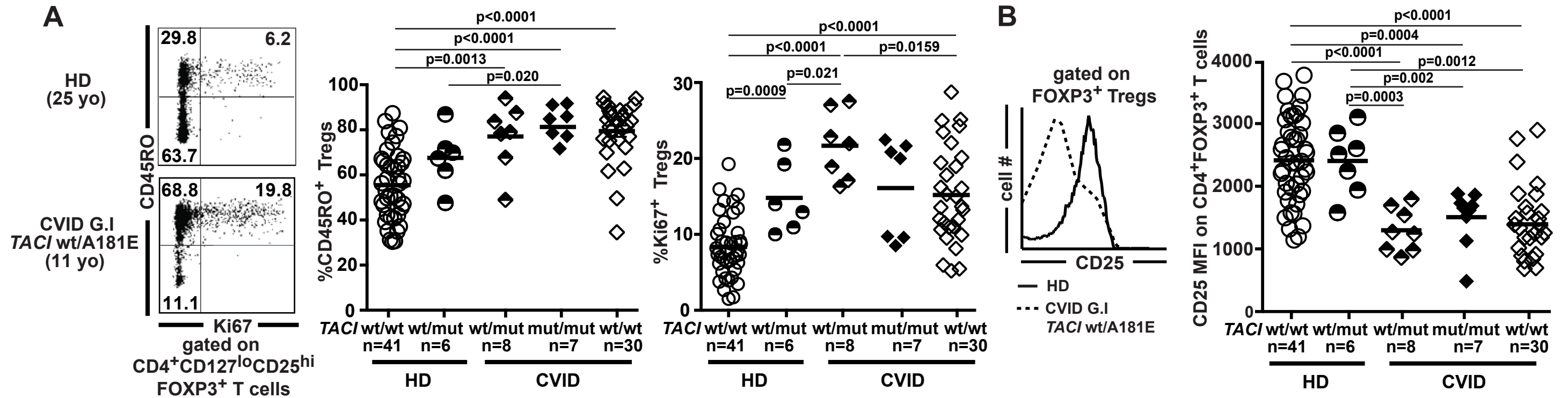


**Supplemental Figure 5.** Persistence of polyreactive mature naïve B cells in the blood of representative CVID patients. Recombinant antibodies derived from mature naïve B cells from representative individuals were tested by ELISA for reactivity against dsDNA, insulin, and lipopolysaccharide (LPS)(20). Antibodies were considered polyreactive when they reacted against all 3 antigens. Dashed lines show ED38-antibody positive control and solid lines show binding for each cloned recombinant antibody. Horizontal lines define cutoff OD405 for positive reactivity. For each individual, the frequency of polyreactive and non-polyreactive clones is summarized in pie pie charts with the total number of antibodies tested indicated in the center.

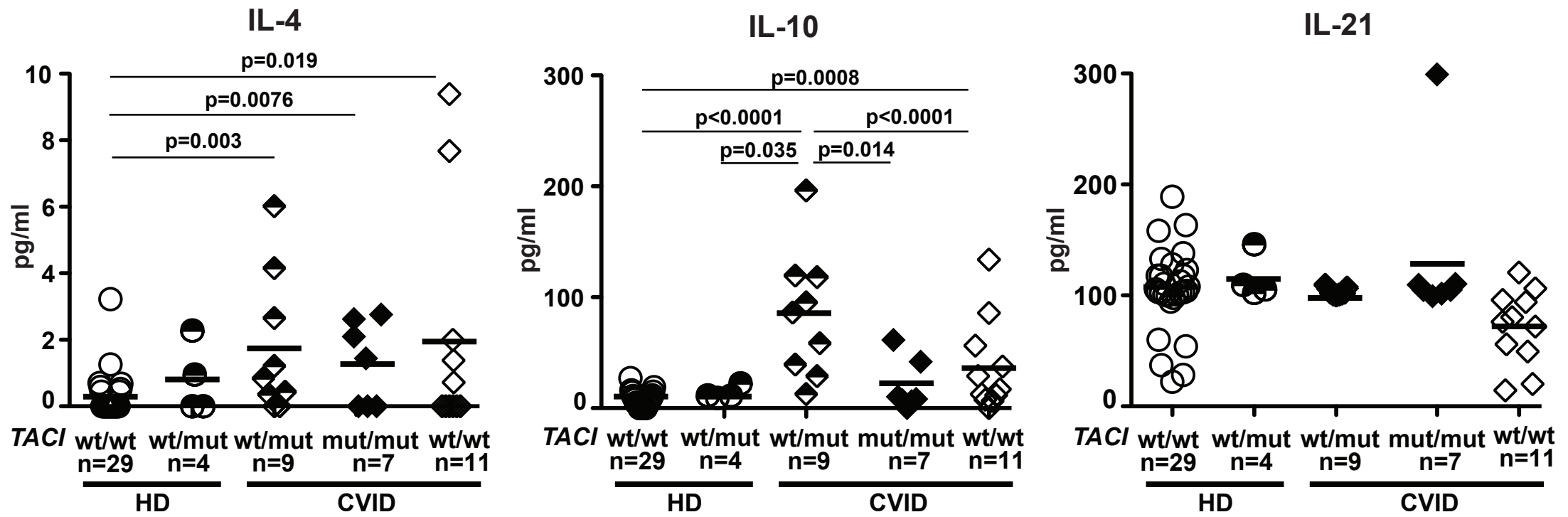




**Supplemental Figure 6.** Persistence of autoreactive clones in the mature naïve B cell pool of CVID patients. **(A)** Recombinant antibodies derived from mature naïve B cells were tested for polyreactivity via ELISA and anti-nuclear reactivity via immunofluorescence. **(B)** The frequency of polyreactive clones increased from the new emigrant/transitional to the mature naïve stage of B-cell development in CVID patients. Statistical significance by unpaired **(A)** and paired **(B)** student t-test is indicated.



**Supplemental Figure 7.** CVID disease status but not TACI mutation carrier status is associated with an altered Treg phenotype. (A) Dot plots represent an increased frequency of CD4<sup>+</sup>CD25<sup>hi</sup>FOXP3<sup>+</sup> T cells expressing the memory marker CD45RO<sup>+</sup> and the intracellular proliferation marker Ki67<sup>+</sup> in a representative CVID patient with a *TACI* mutation and a comparison healthy donor control. Scatter plots demonstrate that an increased frequency of CD45RO<sup>+</sup>Ki67<sup>+</sup> Tregs are a feature of CVID patients and also healthy carriers of a single *TACI* mutation. (B) Downregulated CD25/IL-2RA cell surface expression on FOXP3<sup>+</sup> T cells in CVID patients (dashed line) versus healthy donors (solid line). Statistical significance by unpaired student t-test is indicated.



**Supplemental Figure 8.** Predominant Th2 serum cytokines in CVID patients with a single *TAC1* mutation. Statistical significance by unpaired student t-test is indicated.

**Supplemental Table 1.** Characteristics of healthy donors and CVID patients with *TACI* mutations.

Individual	Age	Sex	<i>TACI</i> mutation(s)	Disease status	Autoimmune disease	Splenectomized?	Receiving antibody replacement therapy?
HD G.II	38	F	A181E	Healthy	-	No	No
HD E.V	80	F	C104R	Healthy	-	No	No
HD D.II	82	M	C104R	Healthy	-	No	No
HD E.II	79	M	C104R	Healthy	-	No	No
HD D.III	14	M	C104R	Healthy	-	No	No
M.I.1	78	M	C104R	Healthy	-	No	No
M.I.2	78	F	C104R	Healthy	-	No	No
CVID321	27	F	A181E	CVID	ITP, arthritis, uvetitis	Yes	Yes
CVIDY15	40	M	C104R	CVID	-	No	Yes
CVIDY17	48	F	C104R	CVID	Autoimmune liver disease	No	Yes
CVID B.I	19	F	A181E	CVID	-	No	Yes
CVID292	45	F	C104R	CVID	ITP	Yes	Yes
CVID G.I	11	F	A181E	CVID	ITP, AIHA	No	Yes
CVID376	45	M	C104R	CVID	ITP	No	Yes
C12A	12	M	C104R	CVID	-	No	Yes
M.II.1	30	F	C104R/C104R	CVID	-	No	Yes
M.II.2	32	F	C104R/C104R	CVID	-	No	Yes
A.II.1	75	M	S144X/S144X	Hypogammaglobulinemia	-	Yes	No
CVID1001	26	F	C104R/C104R	CVID	-	No	Yes
CVID1073	52	F	C104R/571insG	CVID	-	No	Yes
C12	41	F	C104R/204insA	CVID	-	No	Yes
CVID218	58	F	C104R/S194X	CVID	ITP, AIHA,	Yes	Yes

Healthy donors without *TACI* mutations #1-50: age range 11-61yrs (mean 39.3yrs); 45% male, 55% female.

CVID patients without *TACI* mutations #1-50: age range 7-74yrs (mean 43.1yrs); 36% male,64% female

*AIHA*, Autoimmune hemolytic anemia; *F*, female; *ITP*, idiopathic thrombocytopenia; *M*, male;

**Supplemental Table 2.** Repertoire and reactivity of antibodies from new emigrant B cells of healthy donor 29

Ig	HEAVY					LIGHT					REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHD29 03	3-30	3-10	3	4	GPGGVRGVITYFDY	13	1-39	4	QQSYSTLLT	9	-	-	-
neHD29 04	4-31	3-22	2	4	DGSRLDSSGYYFYDY	16	3-15	5	QQYNNWPLIT	10	-	-	c
neHD29 14	3-23	3-10	2	3	GHYYSGSGYYNGVAFDI	17	1-39	2	QQSYSTPYT	9	-	-	-
neHD29 16	3-23	5-5	2	6	GGYSYGVGYGMDV	14	1-39	5	QQSYSTPIT	11	-	-	c
neHD29 23	1-18	2-2	2	3	GRGYCSSTSCYLRS DGMDV	20	1-12	3	QQANSFPLT	9	-	+	-
neHD29 24	4-34	1-26	3	5	APLEV GATRWFDP	13	1-39	4	QQSYSTPLT	9	-	-	-
neHD29 25	4-34	6-13	3	4	IAGAGGGGY	9	2D-29	4	MQSIQLPLT	10	-	-	-
neHD29 28 #	1-3	2-2	2	3	AWAGYCSSTSCNYAFDI	17	4-1	3	QQYYSTPLS	9			
neHD29 30	3-9	3-10	2	4	DITRYYGSGRSLGD	14	1-39	1	QQSYSTLWT	10	-	-	-
neHD29 31 #	4-31	4-23	2	5	ELYGGPIDP	9	3-15	4	QQYNNWPLT	10			
neHD29 33	3-9	3-22	2	3	DQDDSSGSPHAFDI	14	1-NL1	2	QQYYSTPLYT	10	-	-	-
neHD29 34	1-3	2-8	2	6	DRDYCTNGVCYLNYYYGMDV	20	2-28	1	MQALQTPRT	10	-	-	-
neHD29 37	1-69	5-12	2	3	WSPSGYDGGDV	11	4-1	2	QQYYSTLLY	11	-	+	-
neHD29 44	4-34	2-15	3	5	ASIVVVAARDNRFDP	16	1-39	5	QQSYSTPIT	9	-	-	-
neHD29 46	3-66	5-5	2	6	DAAKRGSYSSSSYYYGMDV	20	3-15	1	QQYNNWPPWT	11	-	-	-
neHD29 48 #	3-21	/	/	6	VFYGM DV	7	1-27	1	QKYSAPQT	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHD29 01	1-8	6-13	2	6	IGRSGYSSSWYRTGHLARGAPYYYGMDV	29	2-14	3	SSYTSSSTLV	10	+	+	-
neHD29 09	4-b	4-17	3	4	GVTTPFYFYDY	11	1-44	1	AAWDDSLNGHYV	12	-	-	-
neHD29 12	1-69	3-9	3	6	GGVTIFSYGMDV	12	3-21	2	QVWDSSTDHGV	11	-	-	-
neHD29 13 #	4-59	1-7	2	5	ARGGDNWNYYGGNWFDP	16	3-21	2	QVWDSSTDHV	11			
neHD29 19	4-4	3-22	2	4	ALYYDSSGSPWTRSFDP	18	1-44	2	AAWDDSLNGVV	12	-	-	-
neHD29 20	5-51	6-6	2	5	RQSSSPLNNWFDP	14	1-51	3	GTWDSSTLYWV	11	-	+	-
neHD29 22	1-69	6-19	2	6	DCSGWYSPPLTCYYYGMDV	20	2-11	2	CSYAGSPVW	12	+	+	-
neHD29 27 #	4-59	5-24	3	3	RGAVEMATIANDAFDI	16	3-1	2	QAWDSSTVW	10			
neHD29 29	3-21	2-2	3	6	WGVVPAIPLYYYGMDV	17	2-8	2	SSYAGSNLV	11	-	-	-
neHD29 42	3-21	2-21	2	3	DPPGRSDVCGGDCYSMNAFDI	21	1-51	3	GTWDSLSAGV	11	-	+	-
neHD29 43	1-24	3-22	3	3	VVTRAMIVAGFLGI	14	3-1	1	QAWDSSTPYV	10	-	+	-
neHD29 45 #	5-51	/	/	5	VNYVASSRFDP	11	1-44	3	AAWDDSLNGL	11			
neHD29 48 #					see kappa		6-57	7	QSYDSSNHV	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHD29 26	7-4-1	6-13	2	4	APDPSSWYPLSPDY	14							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 3.** Repertoire and reactivity of antibodies from new emigrant B cells of healthy donor G.II.

Ig	HEAVY					LIGHT					REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDG.II 01	1-2	2	3	6	VDIVVNGMDV	11	4	1	QQYYSWSWT	9	-	+	-
neHDG.II 02	3-30	2-2	2	6	AIPAYCSSTSCYAKPSDYGGYGGMDV	25	2-28	2	MQALQTGYS	9	+2	-	c
neHDG.II 03	1-69	6-6	3	4	SGIAARREQYFDY	14	1-33	4	QQYDNLPT	9	-	-	-
neHDG.II 05	1-69	6-19	3	6	DLKGNRIAAENYYGGMDV	19	1-8	2	QQYYSYPYS	9	-	+	-
neHDG.II 06	3-30	4-4	2	4	DNSRIDYSNYGRYFDY	16	3-15	1	QQYNNWPRT	9	-	+	A
neHDG.II 08 #	1-69	3-10	3	4	GYLRGGEPARFDY	13	3-20	2	QQYGSSTLYT	9			
neHDG.II 11 #	1-18	3-10	1	4	GPRLWFGELLSNDY	15	4-1	3	QQYYSPTVT	9			
neHDG.II 12	3-49	3-9	2	6	GGDILTYGYPDYGGYGGMDV	20	2-30	3	MQGTHWPPLT	10	-	-	-
neHDG.II 13	3-66	1-26	2	6	DSSGTTVPVGGYGGMDV	17	1-8	4	QQYYSYPRY	9	-	-	-
neHDG.II 16	3-23	3-16	3	4	SRVSRHITFGGVIKVDVTDY	21	3-15	2	QQYNNWPRT	10	+2	-	N
neHDG.II 29	5-51	4-23	2	6	LSHTIPDYGGMDV	13	3-11	1	QQRSNWPPT	9	+	+	c
neHDG.II 31	3-30	3-3	2	4	DTYYDFWSGFPMY	14	3-15	1	QQYNNWPRT	9	-	-	-
neHDG.II 34	3-33	4-17	2	6	DRNDYDHYGGYGGMDV	17	1-39	2	QQSYSTPPYT	10	-	-	-
neHDG.II 36	3-15	/	/	3	TTPPNAFDI	9	1-39	2	QQSYSTPYT	9	-	+	-
neHDG.II 38 #	5-51	3-10	3	5	QLGGMVRGVIRWFDY	15	1-39	3	QQSYSTPLFT	10			
neHDG.II 39	1-2	3-3	2	4	EIIVVPNNYDFWSGYTRGFY	22	1-39	5	QQSYSTLGIT	10	-	+	-
neHDG.II 40 #	1-8	2-2	2	6	GAKKYCSSTSCYTAPNYYGGMDV	24	1-5	2	QQYNSYSYS	9			
neHDG.II 43	1-69	3-22	3	5	ANGAITMKVWVWFDY	14	3-11	4	QQRSNWLT	8	+	+	c
neHDG.II 27							1-39	1	QQSYSTPYT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>I</sub>	J <sub>I</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDG.II 03 #	1-69	6-6	3	4	SGIAARREQYFDY	14	2-23	3	CSYAGSSTWV	10			
neHDG.II 09	4-39	2-2	2	3	FAYCSSTSCYQTDAFDI	17	3-1	3	QAWDSSTARV	11	-	-	-
neHDG.II 10	1-46	6-19	3	6	DRNSIAVPTGYYGGMDV	19	2-8	3	SSYAGSNPHV	12	-	-	-
neHDG.II 15	3-30	2-2	1	6	DRGYQLLGASGMDV	14	2-14	3	SSYSSSTV	10	-	-	-
neHDG.II 17 #	3-48	6-13	1	4	LQQLVDY	7	3-27	3	YSAADNNQV	10			
neHDG.II 19	3-43	2-8	2	6	DIANGVYYGGMDV	14	2-14	1	SSYSSSTLGV	11	-	+	-
neHDG.II 20	4-39	/	/	3	HERAWILKGAFDI	13	1-47	3	AAWDDSLSGPV	11	-	-	-
neHDG.II 27	3-21	3-10	1	3	ARRFSRDREFGELLYDAFDI	21	1-40	3	QSYDSSLGHV	12	+2	+	A
neHDG.II 28	1-69	5-24	3	2	EGFEMAPNWFYDL	13	2-14	3	SSYSSSTLV	10	-	-	-
neHDG.II 35	3-15	4-17	3	6	RPLNTVTTLG	10	1-44	3	AAWDDSLNGRV	11	+	+	-
neHDG.II 42	3-15	1-26	1	6	DLPDSKWEELGYYGGMDV	19	1-47	1	AAWDDSLSGYV	11	-	-	-
neHDG.II 03							2-23	3	CSYAGSSTWV	10			
neHDG.II 27							1-40	3	QSYDSSLGHV	12			
neHDG.II 36							3-10	3	QAWDSSTAV	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDG.II 25	4-34	3-10	1	5	VKRLWFGEGNWFYDL	15							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 4.** Repertoire and reactivity of antibodies from new emigrant B cells of healthy donor E.V.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDE.V 06	3-7	6-13	3	6	AIGAAVLRGALYYYGMDV	19	2-28	5	MQALQTITFD	10	-	-	-
neHDE.V 08	3-30	/	/	6	GPIPARGYYYGMDV	14	1-39	1	QQSYSTLWT	9	-	-	-
neHDE.V 11	3-30	3-22	3	5	DSGVVVITNFRFDP	14	1-39	4	QQSYSTRLT	10	-	-	-
neHDE.V 15	1-3	6-19	2	3	VPYSSGWKGAFDI	13	1-39	2	QQSYSTPYT	9	-	-	-
neHDE.V 18	1-18	1-26	2	4	NSGSFRGSYFPGNYFDY	17	3-20	4	QQYGSSPLT	9	+	-	-
neHDE.V 19	3-9	1-26	3	4	SLGATTGSVFDY	12	3-20	4	QQYGTSLT	9	-	-	-
neHDE.V 23	4-4	3-3	2	4	GEYYDFWSGPQNFYD	15	3-20	5	QQYDNLITFD	11	-	+	-
neHDE.V 24	4-59	3-22	2	3	ESHGHQHYDSSGRKSHAFDI	22	1-39	3	QQSYSTPFT	9	+	+	-
neHDE.V 25 #	3-30	3-10	2	3	DSGPKNTAYGSGSYRAFDI	20	1-39	1	QQSYSTPWT	9	-	-	-
neHDE.V 27	5-a	6-13	2	6	LSSSWYAAPNYYYGMDV	18	2-28	1	MQAWGG	6	-	-	-
neHDE.V 29	4-4	3-22	2	5	HSSGYLGFWD	12	1-6	4	LQDYNPLT	9	-	-	-
neHDE.V 30	4-34	4-4	3	6	GTTVVYYYMDV	14	1-39	1	QQSYSTPRT	9	-	-	-
neHDE.V 31	1-24	3-16	2	4	DGARYDYVWGY	11	1-39	2	QQSYSTPRT	9	-	+	c
neHDE.V 32	1-46	2-2	3	6	DLGIVVPAIYGMDV	16	3-20	4	QQYGSSPGLT	10	-	-	-
neHDE.V 36 #	4-39	4-17	3	6	PTVTITGAYYGMVDV	15	3-11	1	QQRSNWPLT	9	-	-	-
neHDE.V 39	3-48	1-26	2	4	DADGSYFGWYFDY	14	3-15	4	QQYNNWPLT	10	-	-	-
neHDE.V 41	3-7	6-6	2	2	SYSSAWYFDL	11	4-1	1	QQYYSTPT	8	-	+	c
neHDE.V 42	3-30	3-3	3	6	APNTIFGYYYMDV	14	2-28	1	MQPLQTPLA	9	-	-	-
neHDE.V 46	4-34	2-2	3	4	APYRVVRSYDILTGQAGYFDY	23	4-1	1	QQYYSTPQT	9	+	+	c
neHDE.V 21							2-14	1	SSYSSSTRYV	11			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDE.V 10	3-30	6-25	2	6	KESGYYYGMDV	11	3-21	3	QVWSSSDHWV	11	-	+	-
neHDE.V 17	3-20	3-16	2	4	VHDYVWGSYRYDY	13	8-61	3	VLYMGSGFVW	10	-	+	-
neHDE.V 21	3-30	3-22	2	5	GLSYLYYDSSGYWFD	17	2-14	1	SSYSSSTRYV	11	+	+	-
neHDE.V 22	1-2	1-26	3	3	VGATSRSSFIAFDI	15	2-14	2	SSYSSSTLV	10	-	+	N
neHDE.V 26	1-46	2-15	3	6	ARVVAATPQLNSMDV	16	1-36	2	AAWDDSLNGVW	11	-	-	-
neHDE.V 28	3-23	5-5	2	3	GSYSGKGNDAFDI	13	3-21	3	QVWSSSDHRV	11	+	+	c
neHDE.V 35	4-30	6-13	1	4	FVVGQLALRIYFDY	15	2-11	2	CSYAGSYIVV	10	-	-	-
neHDE.V 38 #	3-49	3-22	2	4	TRDKGSGSDY	10	3-21	2	QVWSSSDHVW	11			
neHDE.V 40	3-30	3-10	1	4	DGGDARFGEYVWSPY	15	1-40	3	QSYDSSLVHWV	12	-	-	-
neHDE.V 45	3-48	6-19	1	6	GWATARNGLVMDV	14	1-47	3	AAWDDSLSGVW	11	+	-	-
neHDE.V 47 #	4-34	/	/	4	GPEYLLPPSRGY	12	1-47	3	AAWDDSLSGVW	11			
neHDE.V 48	3-30	3-22	2	5	GLSYLYYDSSGYWFD	17	2-11	3	CSYGSYTWV	9	+	+	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDE.V 20	4-34	6-6	2	4	MYSSSYADY	10							
neHDE.V 48	3-30	3-22	2	5	GLSYLYYDSSGYWFD	17							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 5.** Repertoire and reactivity of antibodies from new emigrant B cells of healthy donor E.II.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDE.II 22	3-11	5-12	3	4	ALATVPSD	8	3-15	2	QQYNNWPR	8	+	-	-
neHDE.II 23	4-61	1-26	1	4	VNSGWELPLSGGHFDY	16	3-20	4	QQYGSSPLT	9	-	+	-
neHDE.II 24 #	3-33	2-15	2	6	DRRGCSGGSCYNIDYYGMD	20	1-39	1	QQSYSTPWT	9	-	-	-
neHDE.II 25	3-33	6-13	3	5	DEAAAVNWFD	12	1-39	2	QQSYSTPMYT	10	-	-	-
neHDE.II 26	3-53	6-19	2	4	LSSGCAQPLSVCYDY	15	1-27	1	QKYNAPLWT	10	-	-	-
neHDE.II 27	4-4	1-26	3	2	VPVGATLYFDL	11	3-11	2	QQRSNWPPGYT	11	-	-	c
neHDE.II 35	3-30	3-10	2	4	DSGVNLYYGGSYFDY	17	1-39	4	QQSYSTPLT	9	-	-	-
neHDE.II 36 #	4-34	2-15	2	5	GRYCSGGSCYSRPRFGNNWFD	22	3-20	2	QQYGSSPQT	9	-	-	-
neHDE.II 37	4-39	3-22	3	2	PLNDYYDSSGHDAFDI	16	3-20	1	QQYGSSPRT	9	-	-	-
neHDE.II 42	4-39	/	/	3	RPLHDAFDI	9	3-15	5	QQYNNWPPIT	11	+2	+	-
neHDE.II 44	1-8	3-22	2	4	GPQQYYDSSGPRDY	15	3-20	2	QQYGSSPNT	9	-	-	-
neHDE.II 45	3-11	6-19	3	4	PSKNAVAGIIDY	13	3-15	1	QQYNNWPRT	9	-	-	-
neHDE.II 46	4-61	3-22	3	5	GITMIVVPGV	11	1-5	1	QQYNSYFWT	9	+2	+2	N
neHDE.II 47	3-23	3-9	2	4	MYDILTYEASDNKYFFDY	21	3-15	1	QQYNNWPPRGT	11	-	-	-
neHDE.II 48	3-73	3-9	2	4	VGGDYDILTYYSFDY	16	2-28	1	MQUALQTPGA	9	-	+	-
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDE.II 03	3-11	4-23	2	4	EPYGGNPLYFFDY	13	8-61	3	VLYMGSGISV	11	-	+	c
neHDE.II 06	3-48	3-9	1	6	DQNRYSWLLS	11	3-21	1	QVWSSSDHRGVV	15	-	+2	-
neHDE.II 12	4-31	5-24	2	4	GPDGYKFDY	9	1-47	3	AAWDDSLSGHVV	12	-	-	-
neHDE.II 15	3-23	3-3	3	4	DLFAIFGVVIRGHYFDY	19	1-44	3	AAWDDSLNGPV	11	+	+	N
neHDE.II 20	4-39	3-3	2	4	VGNFWSGYTLFDY	15	3-21	3	QVWSSSDHPWV	13	-	-	-
neHDE.II 34	1-69	6-13	2	4	SQYSSSWYHFDY	12	1-41	3	LAWDTSPRAWV	11	-	+	-
neHDE.II 28							3-21	3	QVWSSSDHQV	11			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDE.II 43	3-9	3-22	3	3	DLFRITMIVGGAFDI	15							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining



**Supplemental Table 6.** Repertoire and reactivity of antibodies from new emigrant B cells of healthy donor D.III.

Ig	HEAVY					LIGHT					REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDD.III 04	3-7	6-25	2	6	DLGYYYGMDV	10	3-20	2	QQYGSSPLYT	11	-	-	-
neHDD.III 06 #	3-30	3-22	2	4	ERRVYDSSGGYDY	14	1-5	2	QQYNSYPYS	10	-	-	-
neHDD.III 08	3-15	6-6	2	5	DQDSSPGRGIL	11	2-28	2	MQALQTLT	8	-	-	-
neHDD.III 09 #	4-31	3-22	3	4	GSPTMIKAAWFYFDY	16	3-11	5	QQYNSYPIT	9	-	-	-
neHDD.III 12	3-9	5-12	2	4	DPGAYSGYDPRGDYFDY	17	1-9	4	QQLNSYPRVT	10	-	-	-
neHDD.III 13	4-59	5-5	3	4	LLHARAMVYFDY	12	1-39	2	QQSYSTPYT	9	+	+	A
neHDD.III 17 #	1-18	3-22	3	4	DRVTILGADY	10	3-11	5	QQRSNWPA	8	-	-	-
neHDD.III 18 #	5-51	/	/	6	HLSPVDVPHYYYGMDV	17	1-39	2	QQSYSTPPYT	10	-	-	-
neHDD.III 19	1-69	3-22	2	5	SHPYDSSGGYSP	12	1-27	3	QKYNSAPFT	9	+2	+	-
neHDD.III 20	4-30	4-17	2	3	RPPFYGDYSSDDAFDI	16	1-5	2	QQYNSYWT	8	-	-	-
neHDD.III 21	3-7	3-22	2	3	DDYDSSGYNWGAFDI	15	1-39	5	QQSYSTPRGAT	8	-	-	-
neHDD.III 22	5-51	3-10	2	2	SRGDYDSSGGYWFYFDL	17	3-20	3	QQYGSSPIFT	10	-	-	-
neHDD.III 23	4-39	/	/	4	TGAFDY	6	3-11	1	QQRSNWPPWT	10	+	+	-
neHDD.III 25	4-34	2-2	3	5	RRDGTGVVPAQAQYNWFDP	20	1-39	4	QQSYSTPLT	9	-	-	-
neHDD.III 27	3-7	3-3	1	4	SRGGFLEWLPESEFDY	15	1-27	3	QKYNSAPLT	9	-	-	-
neHDD.III 29	3-21	3-22	2	4	GDSSGGYLDQNDY	13	3-11	2	QQRSNWPPYS	10	-	+	-
neHDD.III 33	4-30	2-2	3	5	GAUVGNWFDP	10	3-11	2	QQRSNWYT	8	-	-	-
neHDD.III 39 #	3-33	3-3	1	6	DLKYGAERPLEWSLNNYYGMDV	22	3-15	5	QQYNNWPWLT	10	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDD.III 05	3-15	6-13	2	5	ELGLRGSWFDP	11	3-1	2	QAWDSSVVV	9	-	-	-
neHDD.III 10	3-49	2-2	3	6	EGGRDIVVPAADYYYYGMDV	22	3-27	3	YSAADNNQV	9	+	-	-
neHDD.III 12	3-9	5-12	2	4	DPGAYSGYDPRGDYFDY	17	1-51	2	GTWDSSLSAGV	11	-	-	-
neHDD.III 16	3-9	4-4	2	6	VETYSNDLLYYGMDV	15	1-47	3	AAWDDSLSGWV	11	-	-	-
neHDD.III 24	3-30	2-15	3	4	PARVVVAARTYYFDY	15	3-25	2	QSADSSGTYVV	11	+	+	-
neHDD.III 26	1-18	4-17	2	6	QSDGDYRYYYGMDV	15	1-40	3	QSYDSSLSGWV	11	-	+	-
neHDD.III 30	4-34	5-24	3	4	QSDRLPAMATTQFDY	16	1-51	2	GTWDSSLSAGV	11	-	-	-
neHDD.III 32	3-23	/	/	6	DAPDIPARGWDYGMDV	16	1-44	2	AWDDSLNGVV	10	-	-	-
neHDD.III 34	4-59	6-6	3	5	IAARPMQWWFDP	12	3-1	2	QAWDSSTVV	9	-	+	-
neHDD.III 37	4-4	3-9	2	4	EGTITPFDY	9	1-41	3	LAWDTSRAWV	11	-	+	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neHDD.III 03	3-30	3-22	2	4	DGAYYDSSGAYY	13							
neHDD.III 28	1-58	6-13	3	4	TSPLSIAAAYYFDY	14							
neHDD.III 32	3-23	/	/	6	DAPDIPARGWDYGMDV	16							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 7.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient 321.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID321 05	4-59	/	/	4	GGPPDY	6	1-5	4	QQYNSYLLT	9	+	+2	c
neCVID321 10	3-30	1-26	1	4	DYAGKWELPSYFDY	14	1-16	4	QQYNSYPLT	9	-	-	-
neCVID321 16	4-31	/	/	6	ESRAVYYYGMDV	12	1-16	1	QQYNSYPRT	9	-	-	-
neCVID321 33	3-33	3-3	3	6	NTIFGVVIAYYYGMDV	16	1-9	1	QQLNSYPQT	9	+2	-	c
neCVID321 45	3-30	2-15	2	6	VLRDCSGGSCYSGYYYYGMDV	22	3-15	5	QQYNNWPPIT	10	-	+	-
neCVID321 50	1-18	3-22	3	6	VSTMIVAEENYYYGMDV	17	1-39	3	QQSYSTPLFT	10	-	-	-
neCVID321 52	3-15	3-22	2	3	GTYYDSSGYGAFDI	15	1-27	4	QKYNALQT	9	-	-	-
neCVID321 53	1-69	3-22	2	4	DARATYYDSSGYHHYD	18	3-20	5	QQYSSSPIT	9	+	-	-
neCVID321 61	4-34	6-6	3	5	ALPIAAREGWFD	13	1-9	4	QQLNSYPRT	9	+	+	c
neCVID321 64	3-23	4-17	3	4	DRADTTVTYRFDY	14	1-33	3	QQYDNLST	9	-	-	-
neCVID321 66	4-59	7-27	2	5	GGYGIPNWFDP	11	1-39	1	QQSYSTLWT	9	-	+	-
neCVID321 68 #	1-3	3-9	2	4	FPTVGITSPVDY	12	3-11	1	QQRSNWPRWT	10			
neCVID321 78	4-59	1-26	3	6	DRPIVGAPYGM	13	3-20	1	QQYSSSPWT	9	-	+	-
neCVID321 79	3-23	3-22	2	4	GDYYDGTGEDY	12	1-16	5	QQYNSYPRE	9	-	+	-
neCVID321 86	3-23	5-24	1	4	GRGLQFFSHDY	11	1-16	3	QQYNSYPLT	9	-	+	N,
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID321 01	3-23	3-22	2	4	SPLYDSSGYPIGGFDY	17	1-40	2	QSYDSSLV	10	-	-	-
neCVID321 06	3-15	3-22	1	6	DVLLPYYYGMDV	12	1-47	3	AAWDDSLGGV	11	-	+	-
neCVID321 09	3-48	3-22	3	4	ALGVVTHYFDY	12	3-21	2	QWWDSSDHV	11	-	-	-
neCVID321 18	3-74	2-2	2	6	VPRGIYCSSTSCYEAHHYYGMDV	24	1-40	1	QSYDSSLGYV	11	-	+	c
neCVID321 19 #	1-2	6-13	2	6	SPAYSSWYYYGMDV	16	2-14	2	SSYTSSSTLE	10			
neCVID321 25	3-21	6-19	2	4	EDSSGLIQYYFDY	13	1-44	1	AAWDDSLNGYV	11	-	-	-
neCVID321 26	1-18	4-17	3	6	HIMGATVTPRPDYGMDV	20	2-14	1	SSYTSSSTYV	10	-	-	-
neCVID321 30	4-34	6-19	1	4	DGQWLVRGFDY	11	1-40	2	QSYDSSLVWV	11	-	-	c
neCVID321 31	4-24	3-22	2	4	GLYYDSSGYTD	12	2-14	2	SSYTSSSTLV	10	-	-	-
neCVID321 33					see kappa		2-23	3	CSYAGSSTWV	10	+2	+2	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID321 17	3-21	4-17	2	6	DPSGFGGDYVYYYGMDV	20							
neCVID321 22	4-34	3-3	3	5	GRLTGIFGVDFDP	15							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 8.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient Y17.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDY17 01 #	3-9	/	/	6	EGYYGMDV	8	1-6	4	LQDYNYPRLT	10			
neCVIDY17 02	3-13	/	/	4	SSTPDQSGAEGFDY	14	3-20	1	QQYGSLLWT	9	-	-	c
neCVIDY17 04	3-48	3-10	2	6	DQNYGSGSYRPERGYYYGMDV	22	2-28	2	MQALQTPPKYMYT	13	-	-	-
neCVIDY17 06	3-30	6-19	3	1	DNPKSIAVAGGAIEYFQH	17	4-1	4	QQYYSTPLT	9	-	+	-
neCVIDY17 07	3-33	3-10	2	4	GHEIPGSGSYNSVDY	16	1-16	1	QQYNSYPRT	9	-	-	-
neCVIDY17 08	3-23	2-2	3	4	PGRDIVVPAASFDY	15	4-1	3	QQYYSTPFT	9	-	-	-
neCVIDY17 09	3-30	3-10	1	6	DSLLWFGELAFDYMDV	17	4-1	1	QQYYSTPPT	9	+2	+	-
neCVIDY17 11	3-49	3-22	2	4	TRDKGSGSDY	10	2-28	4	MQALQTPST	9	-	-	-
neCVIDY17 12	1-58	1-26	1	4	DKWELGDFDY	10	3-15	2	QQYNNWPPYT	10	-	+	-
neCVIDY17 14	3-11	3-9	1	3	VFRDFDAFDI	10	3-20	5	QQYGSSPIT	9	-	-	-
neCVIDY17 17	4-39	1-26	2	4	HKSSPPPMYSGSLFDY	17	3-11	4	QQRSNWPLT	9	-	+	-
neCVIDY17 19	1-2	2-8	2	5	DRAGYCTNGVCYNWFDP	17	1-5	2	QQYNSYSYS	9	-	-	-
neCVIDY17 20	1-18	3-10	1	4	WFEGGKLPQDRRELGNVDY	19	2-28	4	MQALQTPLT	9	-	-	-
neCVIDY17 21	3-11	6-19	3	4	ARRVALAGSLHFDY	14	4-1	1	QQYYSTPPT	9	+	+	-
neCVIDY17 23	3-15	3-10	3	4	TTDFRGAIFDY	11	1-39	4	QQSYSTPVL	10	-	-	-
neCVIDY17 27 #	3-23	3-10	2	4	DGPHGSGSYFFGY	14	1-39	2	QQSYSTPPYT	10			
neCVIDY17 30	3-7	2-15	2	6	VATDCSGGSCYSPVLGYYYYGMDV	25	1-13	5	QQFNYSYIS	9	+	+	c
neCVIDY17 32	3-23	4-4	2	5	DFTFNYSNLEGWFDY	16	3-20	4	QQYGSPLT	9	-	-	-
neCVIDY17 34 #	3-21	2-2	1	6	VVDERGYQLLSYYYGMDV	19	2-28	4	MQALQTLPLT	10			
neCVIDY17 36	3-73	3-22	2	4	LGYYDSSGYYYVNFYD	17	2-28	5	MQALQTPP	8	+2	+	-
neCVIDY17 37	3-43	1-7	2	4	PRGYNSSGYYWDFDY	15	3-15	1	QQYNNWPPWT	10	-	-	-
neCVIDY17 38	3-33	4-17	3	6	DLISMFTVTTHNLYYYYGMDV	21	3-11	4	QQRSNWPLT	9	+	+	-
neCVIDY17 41	4-59	2-21	2	3	RGFCGGDCYRAFDI	14	3-20	2	QQYGSPPMYT	10	-	+	-
neCVIDY17 42	3-48	4-17	3	6	EEGMTVTITDPGANGMDV	18	2-24	2	MQATQFPRT	9	-	-	-
neCVIDY17 44	4-34	3-22	2	4	GERNSSGVYFDY	12	1-39	3	QQSYSTPRT	9	-	-	-
neCVIDY17 46 #	1-69	4-17	3	4	RRVEPVTVTITPLDY	15	1-39	4	QQSYNT	6			
neCVIDY17 16							1-39	1	QQSYSTPWT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDY17 10	3-15	/	/	4	TTAFF	5	2-14	3	SSYTSSSTWV	10	-	+	-
neCVIDY17 15	3-11	7-27	3	4	GFSGDLRDLVDY	12	1-44	2	AAWDDSLNGPV	11	-	-	-
neCVIDY17 18	3-23	6-13	3	3	PAAADAFDI	9	2-14	3	SSYTSSSRV	9	-	-	-
neCVIDY17 19	1-2	2-8	2	5	DRAGYCTNGVCYNWFDP	17	2-23	2	CSYAGSSV	9	-	+	c
neCVIDY17 24	1-18	3-22	2	4	DRYYYDSSGYCHFDFY	15	2-14	2	SSYTSSSTHVV	11	+	-	-
neCVIDY17 26	3-23	3-22	2	4	YLPQDTRPPYDSSGYYYGFDY	21	7-43	3	LLYYGGAQGV	10	+	-	-
neCVIDY17 28	1-18	3-10	2	4	AHGSGSYRFDY	11	2-14	2	SSYTSSSTL	9	-	-	-
neCVIDY17 31	3-43	3-9	2	4	DLGIPYSSSPGGLDY	15	2-14	2	SSYTSSSVV	10	-	-	-
neCVIDY17 32	3-23	4-4	2	5	DFTFNYSNLEGWFDY	16	3-10	3	YSTDSSGNHWSV	12	+	+	c
neCVIDY17 39	1-2	3-22	2	6	DALYYDSSRSGYYYGMDV	23	2-14	1	SSYTSSSTYV	10	-	+	-
neCVIDY17 40	1-18	1-7	2	4	TQGENWNYGPTLSTYFYD	19	1-51	3	GTWSSLSAGV	11	-	-	-
neCVIDY17 43	4-39	3-10	1	4	QGGGRFGEFTFDY	13	2-23	2	CSYAGSSTGV	10	-	-	-
neCVIDY17 13							1-51	3	GTWSSLSAGV	11			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDY17 22	4-59	6-13	2	4	LRSSCPCPDY	10							
neCVIDY17 29	3-30	5-5	3	6	DGRVAMVVYDGMVDV	14							
neCVIDY17 35	5-51	3-9	2	4	GVHDIPVFMH	11							
neCVIDY17 45	4-59	6-6	2	4	ESIGPYSSSSRELYFDY	17							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 9.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient B.I.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDB.I.04 #	1-69	2-8	2	6	EKLHCTNGVCYTRYYYGMDV	20	1-39	2	QQSYSTPRT	9			
neCVIDB.I.09	3-66	4-17	2	6	DLGDYYYYYGMVDV	13	2-28	4	MQALQTPLT	9	-	-	-
neCVIDB.I.11	3-30	2-21	3	4	DLIVVTAIPDY	12	1-8	1	QQYYSYPR	9	+	+	-
neCVIDB.I.12	1-2	6-6	1	4	GGGGGQQLVWL	12	4-1	2	QQYYSTPYT	9	-	-	-
neCVIDB.I.13	3-66	6-19	3	4	DGANAVAGTHFDY	13	1-39	1	QQSYSTPPWT	10	-	-	-
neCVIDB.I.14	3-9	3-22	2	4	DMGDSSGLVDY	11	3-15	1	QQYNNWLSWT	10	-	-	-
neCVIDB.I.28	3-23	3-22	3	5	DPLITMICCAEPLDP	16	1-27	4	QKYNAPRT	9	+	+	c
neCVIDB.I.30	3-30	3-22	2	4	DISSGYPTNPFDY	14	1-39	3	QQSYSTPIT	9	-	-	-
neCVIDB.I.36	3-49	6-19	3	4	EVAATDY	7	1-39	2	QQSYSTPRT	9	-	-	-
neCVIDB.I.40	3-23	3-3	2	4	YYDFWSGETIDY	12	3-11	4	QQRSNWPRLT	10	-	-	-
neCVIDB.I.42	3-33	6-19	3	4	DIAVAPEYGG	10	3-11	1	QQRSNWPRWT	10	+	+	-
neCVIDB.I.48	3-15	1-26	3	2	VGATHPLLDWYFDL	14	2-28	4	MQALQTPLT	9	-	+	c
	VH	D	RF	JH	CDR3 (aa)	Length	VA	JA	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDB.I.14	3-9	3-22	2	4	DMGDSSGLVDY	11	2-14	2	SSYTSSTWV	10	-	-	c
neCVIDB.I.18	4-34	4-17	2	4	GRSYGDYGSYFDY	14	3-1	1	QAWDSSLTYV	10	-	+	N
neCVIDB.I.29	4-34	/	/	4	GGMVKREFDY	10	3-21	2	QVWSSSDHPGV	12	-	+	c
neCVIDB.I.34	1-8	/	/	6	VRYGMDV	7	1-44	2	AAWDDSLNGLV	11	-	-	-
neCVIDB.I.42 #	3-33	6-19	3	4	DIAVAPEYGG	10	1-40	1	QSYDSSLQGV	11			
neCVIDB.I.48 #	3-15	1-26	3	2	VGATHPLLDWYFDL	14	2-23	1	CSYAGSSTRV	10			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDB.I.01	3-21	4-17	3	5	DYYITVTRDGKFNWFDP	17							
neCVIDB.I.15	4-34	2-15	2	5	GRYCSGGSCYSRPRFGNNWFDP	22							
neCVIDB.I.16	3-21	4-17	3	5	DYYITVTRDGKFNWFDP	17							
neCVIDB.I.21	1-69	2-2	2	5	EGLRYCGDCSPGGGRFDP	19							
neCVIDB.I.31	3-49	1-26	2	5	YSGSYWAWFDP	11							
neCVIDB.I.32	4-4	3-3	3	6	EDPQSTIFGSESTRVYGMDV	20							
neCVIDB.I.41	3-7	2-2	3	4	ARDGDIVVPAAYDY	15							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 10.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient G.I.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDG.I 03	4-31	3-22	2	5	DRFHYYDSSGLSSFDP	16	1-39	2	QQSYSTPYT	9	-	-	-
neCVIDG.I 07	3-30	3-22	2	4	ARLTYYYDSSGYLGY	15	1-5	1	QQYNSYSTA	9	-	+2	N
neCVIDG.I 08	1-18	1-26	1	4	DWGELLKRKGIDY	13	1-9	1	QQLNSYPRT	9	+	+	A
neCVIDG.I 10	3-30	6-6	2	4	AGYSSSAGAFDY	12	1-39	2	QQSYSTPYT	9	-	-	c
neCVIDG.I 11	3-21	3-10	2	4	DRTGYYGSGSYPHHQLTDY	20	1-33	4	QQYDNLPPPT	9	-	-	-
neCVIDG.I 12	4-34	5-5	2	4	VVAALGYSYGTDFDY	15	3-20	2	QQYGSSRRT	9	-	+	-
neCVIDG.I 18	3-23	5-24	2	4	SYNLVRWCFDY	11	3-15	1	QQYNNWPRT	9	+	-	A
neCVIDG.I 26	1-2	3-3	1	4	DFTRGDFLEWLPNDY	15	3-20	1	QQYGSSPRT	9	-	-	-
neCVIDG.I 27	1-24	3-10	2	4	WDYGSGSYNVGVPIDY	17	1-27	1	QKYNSAPRT	9	-	-	-
neCVIDG.I 39	4-39	6-19	3	4	QRAVAGRDY	10	3D-11	3	QQRSNWRGFT	9	-	-	-
neCVIDG.I 44	3-21	1-26	3	4	DLVGATTGFDY	11	3-11	1	QQRSNWPPWT	10	-	+	-
neCVIDG.I 45	3-33	3-3	1	4	DRGRFLEWLFDY	12	1-27	1	HSGPSRT	19	-	+	c
neCVIDG.I 48	1-18	2-15	2	6	GPPNYCSGGSCYSVCMCV	19	3-20	2	QQYGSSPMYT	10	+	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDG.I 05	3-74	6-19	3	3	EFGLGIAVAGHSAFDI	16	2-23	3	CSYAGSSV	9	+	-	-
neCVIDG.I 26	1-2	3-3	1	4	DFTRGDFLEWLPNDY	15	2-14	3	SSYTSSSTRV	10	-	+	-
neCVIDG.I 29 #	3-23	3-3	2	4	VPSHYDFWSGYLDY	14	2-14	3	SSYTSSSTPHWV	12			
neCVIDG.I 33	3-33	6-13	2	4	VEATSSSWYVLDY	13	2-11	3	CSYAGSYTLV	10	-	-	c
neCVIDG.I 42	3-33	1-26	3	4	GGVVGATTHYFDY	13	1-51	3	GTWDSSLSAVV	11	-	-	-
neCVIDG.I 43 #	4-34	6-19	3	4	GAETAVAGRGYFFDY	15	3-1	3	QAWDSSTEGVV	11			
neCVIDG.I 46 #	4-34	3-3	2	5	GRTYYDFWSGYAQQDWDFDP	20	3-20	2	QQYGSSPMYT	11			
neCVIDG.I 22							1-40	3	QSYDSSLGWW	11			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDG.I 25	5-51	3-22	2	5	QSPGDYDSSGYYYFEWDFP	20							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 11.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient A.II.1.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDA.II.1 01	3-15	3-10	1	4	ALLWFGELLYLPAH	14	1-9	1	QQLNSYPRT	9	+2	+	c
neCVIDA.II.1 05 #	3-21	2-8	3	4	DGAPIVLKPDDY	12	1-5	2	QQYNSYPMYT	10			
neCVIDA.II.1 07	4-59	6-13	1	5	SPKLVLDGLVNVWFDP	15	1-39	3	QQSYSTRMFT	10	-	-	-
neCVIDA.II.1 15	3-11	6-19	3	3	AVAGQVGEDAFDI	13	1-27	3	QKYNSAPFT	9	-	-	-
neCVIDA.II.1 21	3-48	4-17	2	4	DNGDYVPDI	9	1-17	4	LQHNSYPQLT	10	-	+	-
neCVIDA.II.1 25	4-39	/	/	3	SDFDI	5	4-1	4	QQYYSTPPT	9	-	+2	c
neCVIDA.II.1 26	4-34	2-15	3	6	SIPSDIVVVAVGIHYGMDV	20	3-20	1	QQYGSSPRT	9	+	+2	N
neCVIDA.II.1 31 #	3-33	2-21	2	6	TIGAPVDCGGDCYTPYGMDV	20	1-16	3	QQYNSYPLFT	9			
neCVIDA.II.1 32	4-34	3-10	2	5	VGPVRYGSGSYA	13	3-11	5	QQRSNWLIT	9	-	+	-
neCVIDA.II.1 36	3-53	1-26	3	5	IVGA	4	1-5	1	QQYNSYSPSWT	11	+	+	-
neCVIDA.II.1 37	4-31	1-7	2	4	TGYNWNYVPEIIDY	14	3-15	4	QQYNNWPPLT	10	+	+	c
neCVIDA.II.1 39	5-51	/	/	4	IINRGY	6	1-6	3	LQDYNYPFT	9	+2	+	-
neCVIDA.II.1 40	3-53	6-19	3	3	HRNKAVAGTMGAFDI	15	1-17	2	LQHNSYPPYT	10	+	+	N
neCVIDA.II.1 41	3-33	3-22	3	3	GGAGMIVDDAFDI	13	3-20	3	QQYGSSPFT	9	-	-	-
neCVIDA.II.1 42	3-21	1-26	3	5	DTGNIVGARAFDP	14	1-8	3	QQYYSYPLT	9	-	-	-
neCVIDA.II.1 47	3-38	6-19	2	4	GGREYSSGWYVDY	13	3-15	2	QQYNNWLYT	9	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDA.II.1 01					see kappa		1-40	2	QSYDSSLVSVV	10	+	+2	-
neCVIDA.II.1 03	3-74	1-1	3	4	DLRTTGTTVPSFGGY	15	1-51	2	GTWDSSLSAPVV	12	-	-	-
neCVIDA.II.1 13	3-30	6-13	2	6	SSSSWYYYGMDV	13	1-44	2	AAWDDSLNGVV	11	-	-	-
neCVIDA.II.1 18	3-48	2-2	2	6	DMVDCSSTSCYSYYYGMDV	20	3-21	1	QVWSSSDHYV	11	-	-	-
neCVIDA.II.1 22	1-69	1-26	3	4	DKGVGADNFDY	11	1-40	3	QSYDSSLSGWV	11	+2	+2	c
neCVIDA.II.1 23	4-34	3-22	2	4	GAGASGDSSGYPSEFDY	18	1-40	3	QSYDSSLSGWV	11	-	-	-
neCVIDA.II.1 27 #	1-69	6-19	3	6	DETVAGSTTGDDYGYGMDV	18	1-44	3	AAWDDSLNGWV	11			
neCVIDA.II.1 30	4-31	/	/	3	GASSAVGAFDI	11	2-14	1	SSYTSSSTRI	10	-	-	-
neCVIDA.II.1 34	5-51	6-19	3	1	QAVAGTSRYFQH	12	2-14	1	SSYTSSSTLEV	11	-	-	-
neCVIDA.II.1 35	4-34	6-6	2	4	GGYSSSDY	9	2-14	1	SSYTSSSTLV	10	-	-	-
neCVIDA.II.1 43	3-13	3-9	2	4	AILTGDDY	8	2-8	2	SSYAGSNLNDVV	10	-	-	-
neCVIDA.II.1 46	4-39	5-24	1	4	GWLQFAHFDY	10	3-1	1	QAWDSSNYV	9	-	+2	c
neCVIDA.II.1 24							3-1	2	QAWDSSTVV	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDA.II.1 17	1-69	3-3	2	6	DTPRNDFWSGYHHSGMDV	18							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 12.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient 1001.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID1001 19	4-59	3-3	2	4	DRRQSSGYSD	10	1-12	3	QQANSFPFT	9	-	+	-
ne CVID 1001 50	4-31	3-16	1	4	GLRLGDTSFYD	11	1-39	4	QQSYSTPLT	9	+	+	c
ne CVID 1001 51 #	4-34	5-24	2	4	ARGGEGERDGYNEDY	15	1-5	1	QQYNSYSRT	9			
ne CVID 1001 54	4-61	6-13	2	5	DDSSWDYQGFDY	13	3-11	2	QQRSNWPHT	9	-	+2	-
ne CVID 1001 56	3-74	2-2	3	6	VRLIVVVPAGGMDV	14	3-15	5	QQYNNWPPIT	10	+	+	-
ne CVID 1001 58					see lamda		1-8	5	QQYYSYPIT	9	-	-	-
ne CVID 1001 62 #	4-34	6-19	3	4	GGGDAVADPAPGY	13	3-11	5	QQRSNWPPSIT	11			
ne CVID 1001 67 #					see lamda		1-39	4	QQSYSTPLT	9			
ne CVID 1001 68	3-23	1-1	3	4	DEGTGLLDY	9	1-5	1	QQYNSYRT	8	-	-	-
ne CVID 1001 69	4-34	5-5	2	6	GYSYGYYYGMDV	12	1-9	3	QQLNSYPFT	9	-	+2	-
ne CVID 1001 73 #	1-24	7-27	1	4	GPQYSLGIY	10	1-8	2	QQYYSYSWT	9			
ne CVID 1001 81	4-61	5-24	3	6	GTRMATILNGMDV	13	3-20	3	QQYSSSPIT	9	+2	+	N+c
ne CVID 1001 88	3-15	5-12	2	6	DLYSGYDYGVYYYGMDV	18	2-28	3	MQALQTLT	8	-	+	c
ne CVID 1001 89	4-4	6-13	1	4	RGQQLVRDTPGDY	13	3-11	5	QQRSNWPIT	9	+	-	N
ne CVID 1001 90 #	4-34	6-6	2	6	GSSTNKLRLPYSSSSYGYGMDV	23	1-8	1	QQYYSYPRT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID1001 40	3-53	4-23	3	2	DRAVVTGGWYFDL	13	3-21	2	QVWDSSSDHFVY	12	+2	+	N+c
neCVID1001 42	4-34	5-24	3	4	VMGMATTKSWWFDY	14	1-51	2	GTWSSSLSAVV	11	-	-	-
neCVID1001 58	3-23	6-13	3	4	FLAAAATY	8	2-14	1	SSYTSSSTYV	10	-	-	-
neCVID1001 67	3-7	1-7	1	4	DDPQLELGTFGY	12	2-23	1	CSYAGSSTYK	10	-	+	-
neCVID1001 79	4-39	/	/	6	QADGVLLGEENYYYGMDV	18	3-1	3	QAWDSSTVV	9	-	+	-
neCVID1001 93	1-3	3-10	2	4	GLEGYYGSGSYYYFDY	17	2-14	3	SSYTSSSTVV	10	-	-	-
neCVID1001 94	3-21	3-9	2	6	GNQPNYDILTGHIPSGYYYGMDV	23	3-21	3	QVWDSSSDRVV	11	-	+	-
neCVID1001 95	3-21	3-9	1	4	DSGGLDFDWLSE	12	1-47	2	AAWDDSLSAVV	11	-	+	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
ne CVID 1001 59	5-51	3-22	2	4	REYYYDSSGYPLDY	14							
neCVID1001 61	4-34	2-2	3	4	GVDDVVVPAAMPPIPRDFNFDY	21							
ne CVID 1001 74	4-39	3-3	1	5	HDYVLRFLDLFDY	13							
ne CVID 1001 75	3-30	6-6	3	6	DNHVDIAARLNYYYGMDV	18							
neCVID1001 92	3-30	6-19	3	6	GIAVAGTGPYYYGMDV	17							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 13.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient C12.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDC12 03 #	4-34	3-22	3	3	FSRDLFDTMIVVSVVADDAFDI	23	1-39	2	QQSYSTPYT	9			
neCVIDC12 05	1-69	5-5	2	6	GGGYGPGYGM DV	11	1-39	2	QQSYSTLYT	9	-	+	-
neCVIDC12 06	3-33	3-3	1	6	DLKYGAERP LEWLSLNNYYGMDV	22	3-20	4	QQYGSSPPEALT	12	-	-	c
neCVIDC12 09	1-18	3-3	3	6	DWDEAGGVITIFGAISYGM DV	21	4-1	1	QQYYSTRT	8	-	-	-
neCVIDC12 21	1-69	4-17	3	4	RGAVTPILHWFDY	13	3-15	3	QQYNNWPPSFT	11	+	+2	-
neCVIDC12 25	4-34	6-13	3	5	GFQIAAASIDP	11	3-20	2	QQYGSSPYT	9	-	-	-
neCVIDC12 26	1-3	3-3	2	4	DLGGGGYSRSYYFDY	15	1-12	4	QQANSFPLT	9	-	+	N
neCVIDC12 29	4-31	6-13	3	4	EAAAAGTNY	9	1-12	5	QQANSFPIT	9	-	-	-
neCVIDC12 32	1-69	3-22	2	4	EGTLDYDSSGYDY	14	4-1	1	QQYYSTPWT	9	+2	+2	-
neCVIDC12 43	3-30	6-13	3	6	DVGAAAGTFYYGMDV	16	2-28	4	MQALQTPLT	9	-	+2	-
neCVIDC12 48	3-53	6-19	2	3	APGSGWYVGAFDI	13	1-13	4	QQFNYSPLT	9	-	+	N+c
neCVIDC12 52 #	4-31	3-22	2	4	SDYYDSSGYFPPDY	14	1-17	1	LQHNSYPPT	9			
neCVIDC12 67 #	3-30	3-9	2	3	DKAYDILTAHAFDI	14	1-5	1	QQYNSYPRT	9			
neCVIDC12 69 #	3-30-3	2-8	3	3	DRLALVYATPNAFDI	16	1-5	1	QQYNSYSPWT	10			
neCVIDC12 11							3-20	4	QQYGSSPLT	10			
neCVIDC12 13							1-39	1	QQSYSTPWG	9			
neCVIDC12 30							3-20	1	QQYGSSLWT	9			
neCVIDC12 38							1-33	2	QQYDNLPLYT	9			
neCVIDC12 53							3-15	4	QQYNNWPLT	9			
neCVIDC12 54							3-20	1	QQYGSSPWT	9			
neCVIDC12 55							1-9	4	QQLL	5			
neCVIDC12 56							2-28	4	MQALQTPLT	9			
neCVIDC12 65							3-15	3	QQYNNWLF	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDC12 02	4-61	5-5	2	5	AGRHSYGYRS	10	3-21	2	QVWDSSSDHV	11	-	-	-
neCVIDC12 07	4-30-2	3-3	2	5	DRRGYLSWFDP	11	2-14	2	SSYTSSSTPHV	12	+	+2	N+c
neCVIDC12 12	4-39	5-5	1	5	DSRSQLWFLSWFDP	14	2-11	2	CSYAGSYTYV	11	+	+	-
neCVIDC12 16	3-23	3-22	2	4	DGSYYDSSGYSDY	15	2-14	2	SSYTSSSTV	10	-	-	-
neCVIDC12 32					see kappa		1-51	2	GTWDSLSAVV	11	+	+	-
neCVIDC12 33	4-39	2-2	1	3	VSHAGLGQLLFAFDI	16	1-44	2	AAWDDSLNGHV	12	-	-	-
neCVIDC12 44	1-69	3-9	2	6	PSGVGDILTGYYYYYYGM DV	21	1-51	2	GTWDSLSGVV	11	+	-	-
neCVIDC12 47	4-4	5-12	2	4	EGSGYDGGGEIYFDY	15	3-25	2	QSADSSGTVEV	11	-	-	-
neCVIDC12 68							1-40	1	QSYDSSLSGRV	11			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVIDC12 17	1-46	6-6	2	6	SLRMYSSSSAWDYYYYYGM DV	20							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining



**Supplemental Table 14.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID 218.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID218 09	4-39	3-9	3	2	DPITTYGPSVGYFDL	15	1-5	1	QQYNSYPWT	9	+	+	c
neCVID218 13	4-31	3-3	2	3	ERTDDYDFWSGYLPPDAFDI	20	3-11	3	QQRSNWPRT	9	-	+	-
neCVID218 19	3-23	1-7	2	6	DRAGYNWNKEGMDV	15	1D-13	3	QQFNYPPLT	9	-	-	-
neCVID218 22	3-23	6-13	2	3	DRGVGSSSRDADFID	15	3-15	1	QQYNNWPPMT	10	-	-	-
neCVID218 23	59-61	1-26	1	5	APLQWEVSFDP	11	3-20	2	QQYGSSSLYT	10	-	+	-
neCVID218 24	3-33	6-19	3	4	SLKGIAGAGEDY	12	1-5	1	QQYNSSWT	8	+	+	-
neCVID218 25 #	3-15	6-13	3	4	GDGGIAAGYYFDY	14	3-20	4	QQYGSSSPLT	9			
neCVID218 26	3-7	3-3	2	6	GPLVDYDFWSGYFVRSNGYGMVDV	24	3-20	1	QQYGSSSLKT	9	+2	+2	-
neCVID218 31	3-48	1-26	2	4	DGGSRYFDY	9	3-15	1	QQYNNWPPWT	10	-	-	-
neCVID218 32 #	3-48	3-22	2	2	GDSSGYYYWYFDL	13	3-20	2	QQYGSSPYT	9			
neCVID218 33	4-34	2-8	2	4	GRTLGYCTNGVCYTPYFDY	19	1-39	1	QQSYSTPRT	9	+2	+	-
neCVID218 34 #	4-31	6-13	3	4	VATPGIAAADSEY	13	1-17	4	LQHNSYPPT	9			
neCVID218 35 #	3-48	1-26	2	4	DGGSRYFDY	9	2-29	1	MQGIHLPWT	9			
neCVID218 36 #	3-30	3-10	1	4	DGLILWFGELSDFDY	15	2-30	1	MQGTHWPPT	9			
neCVID218 37	3-23	3-3	1	4	DSQWLFHDI	9	3-15	2	QQYNNWHSYS	10	-	-	c
neCVID218 39 #	3-23	2-2	2	6	DLGYSSTSCYPQHYGMVDV	19	1-39	2	QQSYSTPRT	9			
neCVID218 40	3-21	3-3	2	6	GGAYDFWSGYPFKFLGMDV	20	2-29	4	MQGIHLPWT	9	+	+	c
neCVID218 43 #	4-34	6-19	2	4	LGRDSSGWVDVY	12	3-20	2	QQYGSSPLYT	10			
neCVID218 44	3-23	2-21	3	4	EPAVGHIVVTAIRGYFDY	20	3-11	4	QQRSNWPLT	9	+	+	N
neCVID218 48	3-21	3-10	2	4	DPDGSYSYITLVYFDY	18	1-5	1	QQYNSYRT	8	-	+	c
neCVID218 54	3-30	6-6	1	4	DGEQLVTRGYFDY	13	3-20	2	QQYGSSPPGT	10	-	-	-
neCVID218 55	4-59	3-16	1	4	DRPGRDLGELDY	12	1-5	3	QQYNSYSLIFT	11	-	+	-
neCVID218 58	3-30	6-6	3	5	GTGAARPPGWFDP	14	2-28	2	MQALQTPYT	9	-	-	-
neCVID218 63	4-31	2-21	2	4	VRRKDEYCGGDCYSPFDY	18	1-5	1	QQYNSYWT	8	-	-	-
neCVID218 65	3-30	1-26	3	4	DPSRRVVGATPFDY	14	2-40	2	MQRIEFPHT	9	-	-	-
neCVID218 67	3-33	/	/	3	DGMRFGAFDI	10	3-20	1	QQYGSSSWT	9	+	+	N+c
neCVID218 69 #	4-55	/	/	6	LRPDNNPGSPPPNYYYMDV	21	1-9	1	QQLNSYPRT	9			
neCVID218 71 #	3-64	3-22	2	6	DSPTYYYDSSGYFSGDYGMVDV	21	2-30	1	MQGTHWLWT	9			
neCVID218 72 #	1-18	3-3	2	5	ATYYDFWSGYTGWFDP	17	1-39	4	QQSYSTPPLT	10			
neCVID218 73 #	3-30	2-2	3	6	DLDIVVPAANYYYGYMDV	20	3-20	1	QQYGSSRET	9			
neCVID218 81	3-43	6-6	3	4	DIARIAARPGHFDY	14	2-29	1	MQGIHLPRT	9	-	-	c
neCVID218 85 #	3-23	3-16	2	4	DPYYDYVWGSYRYTGVGGLDY	22	2D-29	4	MQSIQLPLT	9			
neCVID218 87 #	3-7	1-1	3	3	VVTGTTSAFDI	11	1-12	4	QQANSFPLT	9			
neCVID218 46							3-20	1	QQYGSSPRT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID218 03 #	4-55	6-13	1	6	DARQQLDYYYYYGMDV	16	2-14	1	SSYTSSSPYV	11			
neCVID218 08	59-61	3-9	2	3	DLGYDILTGRPNDAFDI	18	3-25	2	QSADSSGYVYV	10	-	-	-
neCVID218 16 #	3-30	3-10	2	6	DAYYYGSGSYIRPNYYYYGMDV	23	2-14	3	SSYTSSSWV	9			
neCVID218 17 #	4-55	2-15	2	4	VGEGYCSGGSCHTTGYFDY	20	2-14	1	SSYTSSSTRYV	12			
neCVID218 27	4-59	7-27	2	3	RVGLLNWGSRDDAFDI	16	1-47	2	AAWDDSLSGV	11	-	+	-
neCVID218 30 #	4-55	6-13	3	3	GTAADVRAFDI	11	2-23	1	CSYAGSSTRV	10			
neCVID218 44					see kappa		1-51	3	GTWDSLSAFVW	12	+	+	-
neCVID218 52 #	3-33	3-10	2	4	DFSDNYGSFDY	11	3-21	1	QVWDSSSDHSGV	12			
neCVID218 55 #					see kappa		2-14	1	SSYTSSSTLDV	11			
neCVID218 61	3-30	3-10	2	4	DGGLSYGSGSYIFFDY	17	1-51	3	GTWDSLSAGV	11	-	+	N+c
neCVID218 66	4-39	6-13	3	3	QGIAAHDAFDI	11	2-8	1	SSYAGSNNFYV	11	-	-	-
neCVID218 70 #	3-53	/	/	3	DSGGTDAFDI	10	2-8	1	SSYAGSNKLGV	11			
neCVID218 74 #	4-34	/	/	4	RSLEY	5	7-43	3	LLYYGGPWV	9			
neCVID218 78	3-53	1-7	3	4	DHPITGTRAFDY	12	2-14	1	SSYTSSSSYV	10	-	-	-
neCVID218 88 #	3-23	3-16	3	4	DRITFGVIDY	11	1-51	3	GTWDSLSAGV	11			
neCVID218 93	4-39	6-13	2	4	SAAPSSWYLRPQRHPIDGYYFDY	24	2-8	2	SSYAGSNNLV	10	+	+	-
neCVID218 95 #	3-7	2-21	2	4	QYCGGDCYLGRSPDRRPAIDY	23	1-40	1	QSYDSSLSQGV	11			
neCVID218 57							2-23	3	CSYAGSSTYVW	11			
neCVID218 76							1-40	1	QSYDSSLSV	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID218 64	3-30	2-2	2	4	DVCSSTSCYTFDY	13							
neCVID218 73					see kappa								

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 15.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient 251.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID251 15	1-2	3-22	2	3	AGGSGYEFGAFDI	13	1-39	2	QQSYSTSCS	9	-	+	-
neCVID251 16	1-46	3-10	2	6	DLISGTQYGMDV	12	1-39	1	QQSYSTPPT	9	-	-	-
neCVID251 17	3-64	5-24	1	4	GWLQGSC	7	1-39	4	QQSYSTPLT	9	-	-	-
neCVID251 21	3-23	/	/	6	DPEYYYGMDV	10	3-11	2	QQRSNWPLYT	10	-	-	-
neCVID251 24	1-2	4-17	3	5	EGVPTVTTVTKGGWFDP	17	1-39	4	QQSYSTPQLT	10	-	-	-
neCVID251 27	1-46	3-22	3	4	DITMIVGYFDY	13	3-11	4	QQRSNWPLT	10	-	-	-
neCVID251 56	4-39	3-22	2	4	GYYYDSSGYPLWDY	15	1-5	1	QQYNSYSPA	9	-	-	-
neCVID251 59	1-46			4	DFRATYFDY	9	3-15	1	QQYNNWPRT	9	-	-	-
neCVID251 60	4-31	3-22	2	4	NWFGGYYDSSGYLGSGRNDY	23	1-39	3	QQSYSTPLFT	11	+	+	-
neCVID251 65 #	4-34			4	GNGAPLFDY	9	4-1	4	QQYYSTPPT	9			
neCVID251 68 #	4-39	2-15	2	5	REGQGGYCSGGSCYGLDP	19	4-1	4	QQYYSTPQLT	10			
neCVID251 74 #	4-34	3-22	2	6	DLYYYDSSGYGYGMDV	16	1-12	1	QQANSFPWT	9			
neCVID251 83	4-34	3-10	1	5	GGEVSPFDP	9	3-11	1	QQRSNWPPWT	10	-	-	-
neCVID251 88	1-18	2-15	2	4	DRYCSGGSCYDY	12	1-39	1	QQSYSTPRT	9	+	+	c
neCVID251 92	3-21	6-13	2	2	RSSWSYWFDL	11	1D-8	1	QQYYSFPT	9	+	+	-
neCVID251 94 #	3-33	5-24	2	2	DEGGRDGYNLLHWYFDL	17	1-5	1	QQYNSYPWT	9			
neCVID251 75							4-1	1	QQYYSTPWT	9			
neCVID251 78							3-15	5	QQYNNWPS	8			
neCVID251 85							2-28	1	MQALQTPRT	9	+	+	-
neCVID251 95							3-20	2	QQYGSSPPYT	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID251 04	1-2	3-22	2	4	NYDSSGYLPCWNY	14	2-23	2	CSYAGSGAV	9	+	+	-
neCVID251 08	1-3	3-10	3	6	AGTMVRGVIPTPYGMDV	17	2-23	1	CSYAGSSTYV	10	+	+	-
neCVID251 11	4-59	/	/	5	RPPAGPFDP	9	3-21	1	QVWDSDDHLYV	12	-	-	c
neCVID251 15					see kappa		3-25	1	QSADSSGTHYV	11	-	-	-
neCVID251 22	1-18	2-15	2	6	DPHSYCGGDCYNQLHYYYYGMDV	24	1-40	1	QSYDSSLGIFYV	12	-	-	-
neCVID251 28	3-9	6-19	2	4	DPYSGYSSGWSIGYFDY	17	1-51	2	GTWDSLSVPV	11	-	-	-
neCVID251 31	3-7	6-13	3	4	DPAAAGRRDY	10	2-14	1	SSYTSSSRV	9	-	-	-
neCVID251 36	4-61	1-1	2	6	EGPNWNDEREMVYYGMDV	20	1-36	3	AAWDDSLNGLV	11	-	-	-
neCVID251 38	3-21	3-3	2	5	LVDYDFWSPGFDP	14	3-21	2	QVWDSDDRVV	11	+	+	-
neCVID251 41 #	4-59	2-15	2	6	GNCSSGSCYYYYGMDV	16	3-25	1	QSADSSGTYV	10			
neCVID251 47	4-39	2-15	2	5	YCSGGSCNWFDP	12	3-27	3	YSAADNNWV	9	-	-	-
neCVID251 67	1-46	3-22	2	5	EGDSSGSNWFDP	12	2-14	1	SSYTSSSTPYV	11	-	-	-
neCVID251 83 #					see kappa		2-14	2	SSYTSSSTLWV	11			
neCVID251 71							2-11	3	CSYAGSYIWW	10			
neCVID251 79							2-23	3	CSYAGSSTYV	10			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID251 43	4-34			4	GGVRLLEGSFDY	12							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 16.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient 170.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID170 02	4-34	6-13	1	5	ARGVGGSGQQLVGFDP	17	3-11	4	QLGIT	5	-	+	-
neCVID170 03 #	5-51	1-26	1	6	ARTPSWELPYYYYGMDV	17	3-15	1	QQYNNWPLWT	10			
neCVID170 05 #	1-69	6-13	1	4	ARTGEQQYPSGDFDY	15	2-24	1	MQATQFPWT	9			
		7-27	3										
neCVID170 06	3-23	6-6	2	1	AKDLQDSSSLTDFQH	16	2-30	4	MQGTHWPLT	9	-	-	-
neCVID170 07	3-15	6-19	3	6	TTYVRIAVAGTPGHYYYYGMDV	23	2-28	3	MQALQTPFT	9	-	+	-
neCVID170 08	4-39	3-10	1	4	ARYVLLWFGESLEYFDY	17	2-24	1	MQATQFPWT	9	-	-	-
neCVID170 10	4-34	6-6	1	6	ARSRELARYYYGMDV	15	1-12	4	QQANSFPPT	9	-	-	-
neCVID170 13	3-23	1-26	2	4	AKSGSYYGPDY	12	1-5	1	QQYNSYST	8	-	-	-
neCVID170 15 #	1-18	3-3	2	6	ARDIYYDFWSGQERAYYYGMDV	23	3-20	1	QQYGSSPPRT	10			
neCVID170 16	4-34	3-9	2	4	ARCAPADNVTYDILTGHTLDY	22	3-20	1	QQYGSSPRT	9	-	-	-
neCVID170 17	3-7	3-10	1	6	AAIFREFPWDGMDV	14	1-17	1	LQHNSYPWT	9	-	+	N+c
neCVID170 18	3-11	1-26	2	4	ARHQAPSGSYHNDY	14	3-20	1	QQYGSSPPTWT	11	-	-	-
neCVID170 19	3-74	6-19	3	6	ARGIAVAGYYYGMDV	17	2-28	2	MQALQTPGT	9	-	-	-
neCVID170 20	1-2	3-22	3	4	ARSMIVHFLSDY	12	2-28	1	MQALQTPYS	9	-	-	-
neCVID170 23	3-23	4-17	2	4	ANAKTFDYGDWPWDY	15	1-17	1	LQHNSYPPT	9	-	-	-
neCVID170 24	4-34	3-3	2	2	ARMTYYDFWSGYLHWYFDL	19	3-11	5	QQRSNWPPLT	10	+	+	N+c
neCVID170 27	1-3	1-26	3	4	GRVGATMPPGY	11	3-15	2	QQYNNWPPYT	10	+	+	N
neCVID170 30	3-13	6-13	2	2	GQASSWYVRLNEWYFDL	18	3-20	4	QQYGSSPGLT	10	+	+	N+c
neCVID170 33 #	3-11	/	/	4	AREFSGSLGDFDY	14	2D-29	4	MQSIQLPLT	9			
neCVID170 29							3-20	1	QQYGSSPET	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID170 09	1-3	4-17	2	5	ARDYGDSREGWFDP	14	3-21	3	QVWDSSTVPL	10	-	-	-
neCVID170 12	3-7	6-13	1	6	ARDAGPGQLEDYGMDV	17	3-1	2	QAWDSSTVW	9	-	-	-
neCVID170 14	3-48	2-15	2	4	ARDLGYCSGGSCYGGFDY	18	3-9	2	QVWDSSTVW	9	-	-	-
neCVID170 21	7-4	/	/	4	DMGLPPPAIDY	11	7-43	3	LLYGGAAQV	9	-	+	N
neCVID170 22	4-39	3-22	2	4	HDYPYYFDY	10	1-40	2	QSYDSSLGCVV	11	-	-	-
neCVID170 26	3-9	2-15	2	5	GYCSGGSCYGFDP	13	2-8	1	SSYAGSNVCV	10	-	-	-
neCVID170 28	3-21	5-12	2	6	DRPDDSGYDFDYGGMDV	18	1-51	3	GTWDSLSAGV	11	-	-	-
neCVID170 32	4-34	3-10	2	5	GDMNYGSGSAMGS	14	2-23	2	CSYAGSSTYVW	11	-	+	N+c
neCVID170 01							3-25	2	QSADSSGTYGDVV	13			
neCVID170 04							1-44	1	AAWDDSLNGPDVY	13			

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 17.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient 124.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID124 06	3-9	2-2	2	3	AKDMRYALGYCSSTSLWGCGAFDI	25	3-20	1	QQYGSSLT	8	+	+	-
neCVID124 14	3-23	6-6	2	4	AKDGRSSSSVGPY	13	1-33	1	QQYDNLPR	9	-	-	-
neCVID124 16	3-30	4-17	2	4	ARDAGDYGDYSSCGDY	16	1-5	4	QQYNSYPLT	9	-	-	-
neCVID124 17	3-23	3-10	1	4	HTAFRRFGELRYFDY	16	1-33	4	QQYDNLQWLT	11	+	-	-
neCVID124 19	1-18	/	/	5	ARWWWSSGWFD	12	1-33	2	QQYDNLMT	9	-	-	-
neCVID124 20	3-30	3-3	2	6	AKDPLAFWGSFMDV	15	3-11	4	QQRSNWPPALT	11	+	+	N+c
neCVID124 24	1-8	6-13	2	5	ARGGYSSQT	9	1-39	2	QQSYSTPYT	9	-	-	-
neCVID124 28 #	5-51	4-17		2	ARLQGDYDPWYFDL	14	1-33	4	QQYDNLPP	8			
neCVID124 30	4-31	3-22	2	4	ARSPRSGYDSSGPLQQVEYFDY	23	2-29	2	MQGILGCT	8	+	-	-
neCVID124 31	3-30	2-8	3	3	ASLVLMYAIRAHDAFDI	18	2-28	1	MQALQTPWT	9	+2	+	N+c
neCVID124 32	3-15	3-10	1	5	TTDFMVRGVIGWFD	15	2-28	2	MQALQTPRT	9	+	+	N+c
neCVID124 35	4-28	7-27	2	4	ASLKNWGRTVSFDY	14	1-33	4	QQYDNLQPT	9	-	+	-
neCVID124 38	4-34	1-26	2	4	ATLPTTLSSPGVIGGSVDY	20	3-20	1	QQYGSSPRT	9	+	+	-
neCVID124 42	5-51	3-22	2	4	ARTNGCQLRDYDSSGYDY	19	1-33	5	QQYDNLPT	9	-	+	N
neCVID124 50 #	3-23	3-22	2	4	AKGRVDLYDSSGSFVYFGRPK	23	1-33	4	QQYDNLSTLT	11			
neCVID124 51	3-74	3-22	2	4	ARMGPPYYDSSGYPESY	18	2D-29	4	MQSIQLPLT	9	-	+	-
neCVID124 59	4-59	3-3	3	6	ARSPTIFGVVSGMDV	15	2-28	1	MQALQTPWT	9	-	-	-
neCVID124 61	3-7	4-17	2	6	ASGNTVSDFSYGMDV	15	1-39	3	QQSYSTLFT	9	-	-	-
neCVID124 67	1-3	1-26	2	6	AIPVVGATPGWEHYGMDV	19	1-39	2	QQSYSTPYT	9	-	+	-
neCVID124 68	3-30	6-13	3	4	ARDCGISRIAAQGY	15	1-8	1	QQYNSYPT	9	+2	-	-
neCVID124 69	4-34	6-13	2	4	ARGSGYSSSWHTSYFDY	17	3-20	1	QQYGSSPRT	9	-	+	-
neCVID124 71	1-46	/	/	2	ARGPLDKVRPIDVRLWYFDL	21	1-5	1	QQYNSYST	8	+	-	-
neCVID124 79	3-30	3-10	2	6	AKDLLLVGFYYYYGMDV	17	2-28	2	MQALQTP	8	+	-	-
neCVID124 84 #	1-46	3-10	1	5	ARDFGAIWFGDFNWFD	17	1-5	1	QQYNSYST	8			
neCVID124 86	3-21	3-3	1	4	ARDDAIRFLEWLLSPYFDY	19	3-15	1	QQYNNWPRT	9	+	+	N+c
neCVID124 92	3-30	3-10	1	4	AKDVGEAYYFDY	12	2D-29	4	MQSIQLPLT	9	-	-	-
neCVID124 93	3-33	5-12	1	2	ARGGGLVWLRFEWYFDL	20	3-15	5	QQYNNWPPAT	10	+	+	N+c
neCVID124 94 #	1-18	3-22	3	3	ARDEDITMIVNAFDI	15	3-11	4	QQRSNWPS	8			
neCVID124 95 #	3-11	6-19	3	6	ARQAAVAGPGEIYYYYGMDV	21	2-28	1	MQALQLWT	9			
neCVID124 96	3-7	5-5	2	6	ARDKFGYSRYYYYYGMDV	20	1-9	4	QQLNRF	6	-	+	N+c
neCVID124 73							2-28	1	MQALQTPWT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID124 33	4-28	3-3	3	4	ARITLLFGVVIIFDY	15	3-21	2	QVWDSSSDHVV	11	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID124 15	3-73	2-2	2	6	TSFIMSIGYCSSTSCYGANYYYGMDV	27							
neCVID124 70	3-23	5-12	2	4	AKDLGGYSGYEKFDY	15							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 18.** Repertoire and reactivity of antibodies from new emigrant B cells of CVID patient 332.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>κ</sub>	J <sub>κ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID332 07	4-34			4	ARGRPGEVYFDY	12	3-20	1	QQYGSSPWT	9	-	-	-
neCVID332 23	4-34	1-26	3	4	ARGNIVGATDYFDY	14	3-20	1	QQYGSSPPT	9	-	-	-
neCVID332 30	1-69	1-26	1	3	AREWELLSRAFDI	13	1-39	1	QQSYRTAWT	9	+	+	-
neCVID332 40	4-34	6-6	2	4	ARGPSEYSSSSGGFFDY	18	3-11	2	QQRSNWPPRGFT	12	+	+	-
neCVID332 43	4-34	2-2	2	4	ARGGPWGYCSTSCYATGSKYSSFDY	27	3-20	1	QQYGSSPRT	9	+	+	-
neCVID332 45	3-23	2-15	3	4	AKDLRDVVVVAATAFDY	18	3-20	4	QQYGSSPLT	9	-	-	-
neCVID332 46	4-34	3-22	2	4	ARGRIFGGSSGYFDY	17	4-1	1	QQYYSTPRT	9	+	-	-
neCVID332 50	4-34	6-13	2	4	ASSSSWYFLAY	11	1-5	2	QQYNSYSYT	9	-	-	-
neCVID332 51	3-33	6-19	2	4	ATASSGWNKPFDY	13	3-11	2	QQRSNWPPEYT	11	+	+	N, c
neCVID332 57	4-34	5-5	2	4	ASRGGGYSYGDIAAAGTFDY	20	3-20	2	QQYGSSPYT	9	-	-	-
		6-13	3										
neCVID332 62	4-34	4-17	3	4	ARRDVTGLPFDY	13	3-20	4	QQYGSSPDLT	10	-	-	-
neCVID332 70	4-34	3-10	2	4	ARGSGSGSLAFFDY	14	4-1	4	QQYYSTPPT	9	-	-	-
neCVID332 75	4-34			6	ARGSTRGYYYGMDV	15	4-1	1	QQYYSTPRT	9	-	-	-
neCVID332 77	3-23	6-6	3	3	AKVGPSSIAAHGI	13	1-5	2	QQYNSYPYT	9	+	-	-
neCVID332 82	4-34			4	ASQRGRMYLFDY	13	3-20	4	QQYGSSGT	8	-	-	-
neCVID332 83	1-69	4-17	3	4	ARGTRWGVTTY	11	3-20	1	QQYGSSPQT	9	+	+	-
neCVID332 86	3-33	6-13	2	6	ARKMSSWHYYYYGMDV	17	3-20	2	QQYGSSPYT	9	+	+	N+c
neCVID332 91	4-34	2-15	2	5	ARGRGYCSGGSCYGTNWFDP	21	1-8	4	QQYYSYPLT	9	+	+	N+c
neCVID332 94	4-34	6-19	3	4	ARREAVAEYFDY	13	3-20	1	QQYGSSRGT	9	-	-	-
neCVID332 95	4-34	2-8	2	4	AGAAVGDTNGVCYYTGYYFDY	23	3-20	1	QQYGSSPGT	9	-	+	-
neCVID332 01							3-20	1	QQYGSSPQT	9			
neCVID332 02							1-5	1	QQYNSYSQT	9			
neCVID332 10							3-11	5	QQRSNWPPIT	10			
neCVID332 11							3-11	4	QQRSNWPT	8			
neCVID332 14							4-1	1	QQYYSTPPWT	10			
neCVID332 24							3-20	1	QQYGSSPPT	9			
neCVID332 29							4-1	1	QQYYSTPRT	9			
neCVID332 35							3-20	2	QQYGSSSYT	9			
neCVID332 49							1-5	2	QQYNSRT	7			
neCVID332 58							1-5	1	QQYNSYPWT	9			
neCVID332 65							1-13	4	QQFNYSYPLT	9			
neCVID332 67							4-1	1	QQYYSTPQT	9			
neCVID332 68							3-11	1	QQRSNWPRT	9			
neCVID332 69							1-39	2	QQSYSTPYT	9			
neCVID332 72							1-5	1	QQYNSYSRT	9			
neCVID332 80							1-39	4	QQSYSTPLT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID332 15	4-61			4	ASGSYTPSDY	10	2-23	1	CSYAGSSTFDYV	12	-	-	-
neCVID332 37	4-4	3-22	2	5	ARGGGYDSSGYFWFDP	17	2-14	1	SSYSSSTPYV	11	-	-	-
neCVID332 41	3-33	5-12	2	6	AREDYDSQYYYYGMDV	17	2-23	2	CSYAGSSVV	9	-	+	N+c
neCVID332 42	4-34	4-17	3	4	ATLSRTTVTPPFDY	14	2-11	3	CSYAGSWV	8	+	-	-
neCVID332 48	4-31	2-15	2	3	ARGGHCSSGSCIDAFDI	17	1-44	3	AAWDDSLNGSWV	12	-	-	-
neCVID332 52	5-51	5-5	2	4	ARRVVGYSGPPLNYFDY	18	1-51	3	GTWDSLSAGV	11	+	+	-
neCVID332 59	4-34	6-13	1	6	ARGLQQRGGMDV	12	2-23	2	CSYAGSSIVV	10	-	-	-
neCVID332 62					see kappa		2-23	3	CSYAGSSTFNWV	12	-	+	-
neCVID332 71	4-34	4-17	3	6	ARSRVTNRRGRYGMV	16	1-51	1	GTWDSLSAYV	11	+	-	N+c
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID332 44	1-18	3-22	2	6	ARDYDSSGYEFDNYYYYGMDV	21							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 19.** Repertoire and reactivity of antibodies from mature naïve B cells of healthy donor 29.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3(aa)	Length	Vk	Jk	CDR3(aa)	Length	Poly	HEp-2	Staining
mnHD29 49.1	4-59	5-5	2	4	DTVSYGLDY	9	3-11	5	QQRST	5	-	-	-
mnHD29 58.1 #	4-34	3-10	1	5	VKRLWFGEGNWFD	15	3-15	1	QQYNNWPRT	9			
mnHD29 59.1	4-34	6-19	2	4	GDSSGRADVFDY	12	1-39	4	QQSYSTPRT	9	-	-	-
mnHD29 64.1	3-9	3-22	2	4	DMGYDDSSGSYFD	14	1-39	1	QQSYNTPGT	9	-	-	-
mnHD29 66.1	3-7	3-10	2	4	DMGSHYSGSYLPYFDY	17	3-11	4	QQRSNWPRST	10	-	-	-
mnHD29 69.1	3-9	2-2	1	4	GAPYQLLYGPPYFDY	15	3-20	1	QQYGSSPGT	9	-	+	-
mnHD29 74.1	3-23	3-3	1	5	DLGFLEWLIDP	11	1-8	2	QQYYSYPV	8	-	+	-
mnHD29 75.1	3-33	/	/	5	EPVAGTPENWFDP	13	3-11	4	QQRSNWPPALT	11	-	-	-
mnHD29 76.1 #	1-3	/	/	4	EVQRTFDY	8	3-20	4	QQYGSSPL	8			
mnHD29 81.1 #	4-61	5-24	3	3	DAPKVRYLGVPGTGLDI	17	4-1	1	QQYYSTPRT	9			
mnHD29 94.1 #	3-21	1-7	2	4	VTNWKREGGY	10	2-28	1	MQALQWTW	8			
mnHD29 52.2	3-21	/	/	6	SVAEGAYYYGMDV	14	3-11	5	QQRSNWPLT	9	-	-	-
mnHD29 60.2	3-66	1-26	1	4	LEWELHPTAIDY	12	1-39	1	QQSYSTPWT	9	-	-	-
mnHD29 63.2	3-23	3-22	2	4	DEYYYDSSGYPGEDY	15	3-20	5	QQYGSSHT	8	-	-	-
mnHD29 65.2	3-23	4-23	2	4	DIGGNKNY	8	3-11	5	QQRSNWPRIT	10	-	+	-
mnHD29 69.2	3-30	4-4	3	6	DFTVTIFRTDYYGMDV	16	4-1	4	QQYYSTPLT	9	-	-	-
mnHD29 71.2	3-30	3-10	2	6	DLGDGSEYYYGMDV	15	4-1	1	QQYYSTPATWT	11	-	-	-
mnHD29 78.2 #	5-51	3-9	2	4	LLSHPPYFDY	10	4-1	1	QQYYSTPPWT	10			
mnHD29 83.2	3-7	5-24	2	4	SARGGDGYNLPYFDY	16	4-1	4	QQYYSTPH	8	-	-	-
mnHD29 86.2	3-23	3-16	2	6	AARYTGYYDYVWGSYRYTDYYYGMDV	26	1-9	1	QLNSYPS	8	+	+	c
mnHD29 92.2	1-69	2-21	2	6	GLRGAYCGGDYDYYYGMDV	20	3-15	4	QQYNNWPS	8	-	+	-
mnHD29 93.2	3-7	3-3	2	5	DFAYDFWWFDP	12	1-12	2	QQANSFPYT	9	-	-	-
mnHD29 84.1							1-5	1	QQYNSYST	8			
mnHD29 49.2							3-11	3	QQRSNWPLT	9			
mnHD2951.2							1-39	4	QQSYSTLT	8			
mnHD29 55.2							4-1	4	QQYYSTPLT	9			
mnHD29 74.2							3-11	4	QQRSNWPLT	9			
mnHD29 75.2							3-20	2	QQYGSSPGT	9			
mnHD29 89.2							3-11	4	QQRSNWPT	8			
mnHD29 90.2							3-20	1	QQYGSSPRT	9			
mnHD29 96.2							1-5	2	QQYNSLYT	8			
	VH	D	RF	JH	CDR3(aa)	Length	VI	Jl	CDR3(aa)	Length	Poly	HEp-2	Staining
mnHD29 70.1	3-9	3-16	3	4	DQIPGFTFGGVMDY	14	1-44	3	AAWDDDFRWW	10	-	-	-
mnHD29 71.1	3-9	3-22	3	3	DTSTMIVEAFDI	12	2-8	2	SSYAGSNIVV	10	-	-	-
mnHD29 56.2 #	3-33	/	/	6	IGGESYGMDV	10	3-25	2	QSADSSGTYYV	11			
mnHD29 61.2	1-8	4-23	2	4	WRETDYGDY	9	3-1	2	QAWDSSTHVV	10	-	-	-
mnHD29 84.2							1-44	3	AAWDDSLNGWV	11			
mnHD29 88.2							3-21	2	QWWDSSSDHPHV	13			
	VH	D	RF	JH	CDR3(aa)	Length	VI	Jl	CDR3(aa)	Length	Poly	HEp-2	Staining
mnHD29 79.1	3-30	5-12	2	4	VGSGYDWATFDY	12							
mnHD29 83.1	4-59	4-23	1	3	RLRWYPPDAFDI	12							
mnHD29 92.1	3-9	6-19	2	6	DMLPSPPGYSSGWYYGMDV	19							
mnHD29 93.1	4-31	3-16	2	5	FYDYVWGLGGNWFDP	15							
mnHD29 54.2	1-69	/	/	4	GLPLPDY	7							
mnHD29 64.2	4-b	6-13	2	4	WGMRSSWFIY	10							
mnHD29 87.2	3-74	3-22	2	6	GTYSYSSGYFYFYGGMDV	18							
mnHD29 80.2	3-11	3-22	2	4	DLYDSSGGLGY	12							
mnHD29 91.2	7-4-1	2-2	2	4	DPGTSCTSGDY	11							
mnHD29 95.2	3-30	6-13	2	5	SWSHRGVPAGS	11							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 20.** Repertoire and reactivity of antibodies from mature naïve B cells of healthy donor G.II.

Ig	HEAVY					LIGHT					REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDG.II 02	3-64	6-19	2	4	VSGWYGPFDY	10	1-39	4	QQSYSTPLT	9	-	-	-
mnHDG.II 03 #	3-30	6-13	3	4	RIAAAGMLFDY	11	2-28	2	MQALQTRWS	9			
mnHDG.II 05 #	3-64	6-19	2	4	VSGWYGPFDY	10	1D-8	4	QQYYSFPLT	9			
mnHDG.II 08 #	4-34	4-23	3	6	DPAVTTLGYYYYGMDV	17	4-1	1	QQYYSSTPLT	9			
mnHDG.II 09	3-30	3-3	2	4	TTRDRYDFWSGYQMGY	16	1-33	3	QQYDNLFFF	10	-	-	-
mnHDG.II 10	3-30	2-15	3	6	DTHPVVFRVCMVDV	14	1-5	1	QQYNSYWT	8	+	-	-
mnHDG.II 11 #	4-4	3-22	2	6	EILSSGYGAYYYYGMDV	18	4-1	4	QQYYSSTPLT	9			
mnHDG.II 15	4-31	5-5	2	6	DPGDSYGKGVYYYGMDV	17	3-20	2	QQYGSSPMYT	10	-	+	-
mnHDG.II 17	3-30	3-22	2	4	DSNWYYYDSSGYSAFDY	17	1-8	4	QQYYSYPPLT	10	-	-	N
mnHDG.II 18	1-69	3-10	3	4	GRRETMVRGASYFDY	16	2-28	2	MQALQTPS	8	-	-	-
mnHDG.II 20	1-8	3-22	2	3	ALTYYYDSSGYDDAFDI	17	1-39	4	QQSYSTPLT	9	-	-	-
mnHDG.II 21	4-4	5-12	2	3	YAADAFDI	8	3-20	2	QQYGSSPPYS	10	-	-	-
mnHDG.II 22	4-39	3-10	1	6	LLWFGFRLRAYGMDV	17	1-5	1	QQYNSYSRE	9	+2	+	-
mnHDG.II 24	3-23	3-10	1	5	WFGELSPNWFDP	13	3-15	1	QQYNNWPRT	9	-	-	-
mnHDG.II 26 #	1-46	/	/	5	AATASGAAGIDP	12	3-11	3	QQRSNWPL	8			
mnHDG.II 29	5-51	3-22	2	4	GDSSGHIRPFDY	12	1-5	3	QQYNSFPGT	9	-	-	-
mnHDG.II 30	4-34	4-23	3	6	DPAVTTLGYYYYGMDV	17	4-1	2	QQYYSPTYT	9	-	-	-
mnHDG.II 31	3-21	6-13	3	5	DIAAAGTGTG	10	1-8	1	QQYYSYPRY	9	-	-	c
mnHDG.II 32 #	3-15	3-10	3	4	TTDFRGAIFDY	11	2-30	2	MQGTHWPPYS	11			
mnHDG.II 33 #	3-23	5-5	2	6	DEYSFGGYYYGMDV	14	1-8	1	QQYYSYPG	11			
mnHDG.II 34	3-48	3-10	1	4	DRFGELFPDY	10	1-39	2	QQSYSTPRYS	11	-	-	-
mnHDG.II 38	3-30	3-22	2	4	TEEDYYDSSGYHFDD	15	3-20	1	QQYGSSRWT	11	+2	+2	N
mnHDG.II 39	4-34	5-12	2	6	GAMYGGYGASYYYYGMDV	20	1-17	1	LQHNSYPRY	11	+	-	-
mnHDG.II 40							4-1	3	QQYYSLTRT	11			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDG.II 04	4-28	/	/	4	SGVEESEYFDY	11	1-47	3	AAWDDSLSLWV	12	-	-	-
mnHDG.II 07	3-30	6-6	3	4	DQIAARDALDY	11	1-44	3	AAWDDSLNGWV	12	-	-	-
mnHDG.II 19	3-30	3-10	3	4	AYMVRGVDPLGY	12	2-11	3	CSYAGSYTWV	10	-	-	-
mnHDG.II 26	1-46	/	/	5	AATASGAAGIDP		2-11	3	CSYAGSYWV	9	-	-	-
mnHDG.II 27 #	4-34	3-3	2	5	GERINYDFWSGYTYGYWFDV	20	3-9	3	QVWDSSTWV	9			
mnHDG.II 28 #	4-59	2-2	2	3	VRYCSSTSCYTDNAFDI	17	3-1	3	QAWDSSTVW	9			
mnHDG.II 35 #	1-2	2-2	3	5	DIVVPTATNWFDP	14	1-44	1	AAWDDSLNGYV	11			
mnHDG.II 25	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
	4-39	5-12	2	4	LGRGYSGYRNDY	12							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 21.** Repertoire and reactivity of antibodies from mature naive B cells of healthy donor E.V.

Ig	HEAVY					LIGHT					REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDE.V 49	5-a	3-9	1	3	YFDWRGNAFDI	11	3-20	2	QQYGSSPPYT	10	+	-	-
mnHDE.V 51	4-31	/	/	4	AKKTTAYFDY	10	1-5	1	QQYNSYSWT	9	-	+	c
mnHDE.V 58	1-3	1-7	2	6	IGNNWKGM DV	10	1-39	3	QQYSTPFT	9	-	-	-
mnHDE.V 60	4-59	/	/	4	GRSADFY	8	1-39	1	QQYSTPRT	9	-	-	-
mnHDE.V 61	4-31	4-17	2	4	FMPGDYDWEFYYFDY	16	3-20	2	QQYGSSLYT	9	-	-	-
mnHDE.V 62	3-73	1-26	2	6	RGGSSLLYGM DV	13	3-20	5	QQYGSSPITFD	9	-	-	-
mnHDE.V 66 #	1-18	1-26	3	4	SRIVGATLDLY	11	1-5	1	QQYNSYST	8			
mnHDE.V 69	3-21	3-3	3	6	VTRVTIFGVVYYYYGMDV	19	2-28	2	MQALQTPCT	9	-	-	-
mnHDE.V 73	3-66	3-22	2	4	ILVYYDSSGYSYFFDY	16	1-39	2	QQYSTPLYT	10	-	-	-
mnHDE.V 74 #	1-3	1-26	3	5	LVGAQNWFDP	10	1-43	1	QQYSTPRT	9			
mnHDE.V 75	3-30	2-2	3	6	VVPAAITSFYYYGM DV	16	1-12	1	QQANSFPRT	9	-	-	-
mnHDE.V 81	3-13	2-21	2	2	GSGNCGDCSYWYFDL	16	1-8	1	QQYYSYPPT	9	-	-	-
mnHDE.V 82	3-66	6-19	2	5	DRSGWYGGWFDP	12	1-9	4	QQLNSYPLT	9	+	+	-
mnHDE.V 85	4-59	3-22	2	4	VGPNYYDSSGYLALDY	17	3-20	4	QQYGSSPPGLT	11	-	-	-
mnHDE.V 88	4-34	3-22	2	1	GPKQTYYYDSSSYWLFQH	20	1-5	1	QQYNSYSRT	9	+2	+	N
mnHDE.V 89	1-2	2-8	2	6	DNLGGGYMDWVG	13	3-11	2	QQRSNWPPYT	10	-	-	-
mnHDE.V 93	3-30	2-15	2	6	GGYCSGNSCYLDYYYYGLDV	21	3-15	4	QQYNNWPPLT	10	-	-	-
mnHDE.V 96	3-21	6-6	3	3	WGEKAARRTFDI	12	3-20	1	QQYGSSPLWT	10	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	VI	Jl	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDE.V 57 #	4-34	1-7	1	5	GLLELPLNWFDP	12	2-14	2	SSYTSSSTLV	10			
mnHDE.V 59	1-69	6-6	3	6	EIIAARPLHYGMDV	17	2-14	2	SSYTSSSTV	9	+2	+	-
mnHDE.V 74 #	1-3	1-26	3	5	LVGAQNWFDP	10	3-21	2	QVWDSSSDHVV	11			
mnHDE.V 78 #	1-3	2-15	3	5	VVAKALSFYWFDP	14	2-23	1	CSYAGSSTFYV	11			
mnHDE.V 84	1-3	2-15	3	4	VVAKALSFYWG	12	2-8	1	SSYAGSNNFV	10	-	-	-
mnHDE.V 85	4-59	3-22	2	4	VGPNYYDSSGYLALDY	17	2-14	2	SSYTSSSTQV	10	-	-	-
mnHDE.V 92	3-48	3-10	1	6	VIMRRFGRHYMDV	14	1-40	3	QSYDSSLGGSV	11	+2	+	c
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3(aa)	Length	Poly	HEp-2	Staining
mnHDE.V 50	3-9	5-24	1	4	DMSGGRWLQSLYFDY	15							
mnHDE.V 64	4-61	6-13	3	6	EPTAGYEPLYYYGMDG	17							
mnHDE.V 65	3-23	3-9	1	5	RTYSSRGDWFPD	12							
mnHDE.V 70	3-49	1-26	3	5	GGVVGATRWFPD	12							
mnHDE.V 72	3-21	4-23	3	6	DLTLLTGYYYGMDV	14							
mnHDE.V 79	1-58	3-10	1	6	ELWFGELPIPYGMD	15							
mnHDE.V 90	4-59	3-16	/	2	RAEYWFYFDL	9							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining



**Supplemental Table 22.** Repertoire and reactivity of antibodies from mature naïve B cells of healthy donor E.II.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDE.II 01	s	6-13	2	5	VVYSSSWPPGNWFDP	15	1-39	3	QQSYSTLFT	9	-	-	-
mnHDE.II 03 #	3-21	3-10	1	4	GPELLWFGELLPYFDY	18	3-15	2	QQYNNWPPMYT	11			
mnHDE.II 06	1-46	6-19	3	4	LVAGRLDY	8	1-9	4	QQLNSY	6	+	-	-
mnHDE.II 10	1-2	3-22	3	3	CSMIVVNDAFDI	12	1-38	2	QQSYSTPFG	9	-	-	-
mnHDE.II 12 #	3-33	4-17	2	4	QAGDYEYFDY	11	1-5	3	QQYNSYPLFT	10			
mnHDE.II 18	1-18	3-10	2	4	ERGIGSGMTGY	11	1-27	4	QKYSAPLT	11	-	+	-
mnHDE.II 21	4-61	2-15	2	5	VASGYCSGGSCYSPGWFD	19	1D-8	1	QQYYSFPWT	9	-	-	-
mnHDE.II 28	3-23	3-22	3	4	ASGIVVPRYY	11	1-39	1	QQSYSTRWT	9	+	-	c
mnHDE.II 30	3-9	3-22	2	4	DNYDSSGYTSFDY	14	1-39	4	QQSYSTPPT	9	-	-	-
mnHDE.II 31	3-23	4-17	3	5	DNVTVTAAEGGWFD	16	2-28	1	MQALQTPPA	9	-	-	-
mnHDE.II 32 #	1-3	2-15	3	5	DRRVVVAANWFDP	13	3-20	3	QQYGSSPLT	9			
mnHDE.II 33	3-7	6-13	2	4	QIGSSSWYEDARFDY	15	1-39	2	QQSYSTPPMYT	11	-	-	-
mnHDE.II 34	3-11	5-12	2	4	ESRGGYAQRGFDY	13	2-28	2	MQALQIPYT	9	-	-	-
mnHDE.II 45	3-9	/	/	4	DRLGYFDY	8	3-20	1	QQYGSSPRT	9	-	-	-
mnHDE.II 47	3-11	3-22	2	4	VAYYDSSGYFVDY	15	3-15	1	QQYNNWPGT	9	-	-	-
mnHDE.II 24							1-8	1	QQYYSYPLT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDE.II 02	3-48	6-25	2	4	AGIGGYARFVYFDY	14	2-8	3	SSYAGSNNLV	10	-	-	-
mnHDE.II 06	1-46	6-19	3	4	LVAGRLDY	8	1-47	3	AAWDDSLSGVV	11	+	+	-
mnHDE.II 09	3-7	6-6	2	4	DRFYSSSLFDY	12	1-40	3	QSYDSSLVSV	12	-	-	-
mnHDE.II 12	3-33	4-17	2	4	QAGDYEYFDY	11	2-8	3	SSYAGSNNLV	10	-	-	-
mnHDE.II 22	3-33	6-13	2	5	DGLLYSSSWYEGGHGWFD	19	2-8	2	SSYAGSNNLV	10	-	-	-
mnHDE.II 38	1-18	3-22	2	4	DSSGTFDY	8	3-1	1	QAWDSSTYV	9	-	-	-
mnHDE.II 48	4-61	1-7	2	3	VDSPDWDWNLNRNIDY	15	2-23	3	CSYAGSST	8	+2	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDE.II 05	4-31	3-22	2	2	AYYYDSSGYWFDY	13							
mnHDE.II 08	1-46	3-10	2	4	ALNYGFFFDY	10							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 23.** Repertoire and reactivity of antibodies from mature naïve B cells of healthy donor D.III.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>κ</sub>	J <sub>κ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDD.III 49 #	5-51	4-17	2	6	HYGDYDYYYYYGMDV	14	2-28	1	MQALQTTPN	9			
mnHDD.III 50	4-59	3-22	2	4	GGYDSSGYYPGGY	14	1-5	2	QQYNSYPYT	9	-	-	-
mnHDD.III 51	3-30	2-21	3	4	GGVVVIALDY	11	1-17	1	LQHNSYPWT	9	-	-	-
mnHDD.III 58	3-15	3-22	2	4	SNIIYYDSSGYDY	13	3-11	4	QQRSNWPLTFG	12	-	-	-
mnHDD.III 65	3-30	5-5	1	2	ESLTIQLWDEEGYFDL	17	1-13	3	QQFNSYPFT	9	-	+	-
mnHDD.III 67	1-69	3-10	3	5	DSSRITMVQGATNWFDP	17	1-39	1	QQSYSTPRT	9	+	+	-
mnHDD.III 68	3-11	2-21	2	6	ENPTYCGGDCYPEYYYYGMDV	21	3-11	4	QQRSNWLT	8	-	-	-
mnHDD.III 78	1-8	2-15	3	6	GVVVAATGYYYYYGMDV	17	1-33	3	QQYDNLLSFT	10	-	-	-
mnHDD.III 79 #	3-11	3-22	2	6	DWPLNTGYYYYYGMDV	15	1-33	4	QQYDNLLPLT	9			
mnHDD.III 82	3-23	2-21	1	4	GESSILW	7	3-15	4	QQYNNWPLT	9	-	-	-
mnHDD.III 83	4-4	3-22	2	3	AYDAFDI	7	3-11	4	QQRSNWPL	8	-	-	-
mnHDD.III 84	3-48	2-8	2	4	ALRTGGVCYTCDFDY	16	1-8	2	QQYYSYPPYS	10	-	-	N
mnHDD.III 85	1-18	3-10	3	6	DPTITMVQGGPGTYYYYYGMDV	20	3-11	2	QQRSNWPPYS	10	-	-	-
mnHDD.III 86	3-30	/	/	4	DSLGYPTTEYFDY	13	3-15	1	QQYNNWPPVA	10	-	-	-
mnHDD.III 87	1-18	/	/	4	GSVAYFDY	8	1-5	2	QQYNSYSYT	9	-	-	-
mnHDD.III 91	1-24	3-10	2	5	IPRYYGSGSWPFDP	14	3-15	1	QQYNNWPPWT	10	-	-	-
mnHDD.III 92	4-34	/	/	3	GKGDDEDAFDI	11	4-1	3	QQYSTPFT	9	-	-	-
mnHDD.III 93	3-23	3-9	2	5	GGDILTYGYNWTFDP	15	3-15	2	QQYNNWPGGS	10	+	-	c
mnHDD.III 96	5a	3-22	2	5	LAEYDSSGHS	12	4-1	4	QQYSTPLT	9	-	+	c
mnHDD.III 53							2-28	4	MQALQTPLT	9			
mnHDD.III 59							2-28	2	MQALQTPRSYT	11			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>κ</sub>	J <sub>κ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDD.III 54	3-73	5-12	3	6	HQGDIVATTTYYYYGMDV	18	3-25	3	QSADSSGTYYWV	11	-	-	-
mnHDD.III 63	3-15	1-1	2	4	YNWNEGLGGY	10	6-57	3	QSYDSSTWV	9	-	-	-
mnHDD.III 71	1-36	6-13	1	5	ERQQLVQTGFDP	12	1-47	2	AAWDDSLSGQV	11	-	-	-
mnHDD.III 77	3-48	6-19	1	3	DRKQWHRDAFDI	12	1-44	3	AAWDDSLNGWV	11	-	+	c
mnHDD.III 80 #	3-23	1-7	1	4	YLIELEPPRYFDY	14	1-40	3	QSYDSSLSGTV	11			
mnHDD.III 90	3-30	6-13	2	3	DFYSSLSAFDI	12	6-57	3	QSYDSSAHWV	10	-	-	-
mnHDD.III 94	1-69	5-5	3	4	SPLGAAMVVVDY	12	1-44	7	AAWDDSLNGAV	11	+2	+	-
mnHDD.III 89							3-35	3	QSADSTGTALWV	12			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnHDD.III 61	3-33	2-2	2	4	WPEGGTSCYGCYFDY	15							
mnHDD.III 88	3-33	/	/	3	ERDAFDI	7							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 24.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 321.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	Vκ	Jκ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID321 07	4-55	1-1	1	4	GSRRELERREFDY	13	2-24	1	MQATQFPWWT	9	-	-	-
neCVID321 08	3-48	3-3	3	4	ADFGVVG	8	1-12	4	QQANSFPPLT	10	-	+	-
neCVID321 10	1-18	5-5	3	6	DSAIRTAMVTFSSYYGMDV	18	1-39	2	QQSYSTLYT	9	-	+	-
neCVID321 11	1-18	5-5	3	6	EVDTAPGGGFWYYGMDV	17	3-15	1	QQYNNWPRT	9	-	+	c
neCVID321 13	3-23	5-24	2	4	NAAGGGYNSLDY	12	3-11	4	QQRSNWPLT	9	-	-	-
neCVID321 19 #	3-48	2-2	3	5	AIVSVPAASPGWFDP	15	3-15	4	QQYNNWPPLT	10			
neCVID321 21	3-48	3-22	2	5	ERRDYDSSGYVNWVDFP	17	1-17	3	LQHNSYPLT	9	-	-	c
neCVID321 22 #	4-39	/	/	5	HRAARSSPGWFDP	13	1-39	2	QQSYSTPYT	9			
neCVID321 23	3-53	2-15	2	6	HCSGGSCYYYYYGMV	17	3-15	1	QQYNNWPPWT	10	+	-	-
neCVID321 28	3-48	3-10	2	6	KYYGSGKANYYYGMDV	17	1-39	2	QQSYSTPPT	9	-	-	-
neCVID321 30	4-34	4-17	2	4	VSGRKYGDFCR	11	1-39	1	QQSYSTPRT	9	-	-	-
neCVID321 34	3-30	2-2	3	4	VGGIVVPAAPDY	13	1-12	4	QQANSFPLT	9	+	+	c
neCVID321 35	3-9	3-22	2	4	DTLPRYYDSSGNDY	14	3-11	4	QQRSNWPPRIT	11	-	-	-
neCVID321 36	3-53	6-6	2	3	GRYSSSSGGGAFDI	14	3-15	3	QQYNNWPLFT	11	-	+	-
neCVID321 39	3-48	5-24	2	3	LYRRDGYNSPEGGAFDI	17	1-27	1	QKYNAPWT	9	-	-	-
neCVID321 42	3-21	2-2	2	5	GYCSSTSCYEGEDNWVDFP	18	1-8	1	QQYSSYPRT	9	-	-	-
neCVID321 43	4-34	3-22	2	4	PYDSSGYGY	9	3-11	1	QQRSNWPRS	9	-	+	-
neCVID321 44	3-23	6-6	2	4	SRLVGRDGSSSSGDWGLWFGESLV	26	4-1	4	QQYYSTPLT	9	-	+	c
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID321 02	4-34	6-6	2	4	ESSSSFYD	8	1-40	3	QSYDSSLGWW	11	-	-	-
neCVID321 05	3-15	6-13	2	4	DRGWSSWPAVGY	13	1-40	2	QSYDSSLVHV	12	-	+	c
neCVID321 06	3-33	2-15	2	4	DLGYCSGGSCYFFPAY	17	2-14	2	SSYTSSSHV	10	-	-	A
neCVID321 14	5-51	2-2	2	5	RRGRQPGYCSSTSCYTGWFDP	22	2-14	1	SSYTSSSTYV	10	+	+	N+c
neCVID321 17	3-13	1-26	2	6	EPRLGLVSGSKYGMDV	16	3-1	1	QAWDSSTDYV	10	+	-	-
neCVID321 20	1-8	3-3	2	6	GRDPIWVSGYFYGGMDV	16	1-40	3	QSYDSSLGSRV	12	-	-	-
neCVID321 29	3-30	3-22	2	6	DALPRQTYYYDSRDLYYYGMDV	24	3-1	2	QAWDSSTALV	10	-	-	c
neCVID321 32	4-59	4-17	3	6	GAAVTTVSGYYYGMDV	17	3-25	1	QSADSSGTLYV	11	-	+	-
neCVID321 46	1-69	6-19	2	6	GQALSPSSGWYWWYYGMDV	20	2-14	1	SSYTSSSTLYV	12	+2	+2	c
neCVID321 48	3-23	1-1	3	5	EGTGTWPIVNWVDFP	15	1-40	2	QSYDSSLGFVV	12	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
neCVID321 15	4-59	3-3	1	5	RVLRRGWVDFP	10							
neCVID321 16	1-18	/	/	4	EANLSPLDY	9							
neCVID321 18	1-46	3-22	2	4	APNYDSSGYEYDY	15							
neCVID321 25	3-43	3-10	3	6	DSTMVRGVEGDYWWYYGMDV	20							
neCVID321 37	3-23	3-3	3	6	TAPTRTGITIFGVVAPAGNGMDV	24							

RF, reading frame; #, antibody

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 25.** Repertoire and reactivity of antibodies from mature naive B cells of COVID patient Y17.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDY17 02	1-18	1-26	2	6	DRGSYSPLYYYGMDV	15	2-28	5	MQALQTPAT	9	-	-	-
mnCVIDY17 03	3-33	4-17	2	3	DFVADYGDYNDAFDI	15	4-1	1	QQYYSTRWT	9	-	-	-
mnCVIDY17 04	4-31	/	/	4	EGSFPYFDY	10	3-20	1	QQYGSSPWT	9	-	-	-
mnCVIDY17 08	4-31	3-9	1	5	GTGYFDWLLLSGSVEYWFDP	21	3-15	1	QQYNNWPPWT	10	+2	+2	c
mnCVIDY17 10	4-59	1-7	3	5	QSRFGITGTRVFMGWDFP	19	1-8	3	QQTTSYPPS	9	-	+	-
mnCVIDY17 11	3-23	/	/	4	DSLGVVYVY	8	1-5	1	QQYNSYSAWT	10	+2	-	-
mnCVIDY17 12	1-2	2-15	2	4	AQAGGCSGGSCYRCFDY	17	1-12	3	QQANSFPPT	9	-	-	-
mnCVIDY17 13	4-39	2-15	2	5	PNHLGYCSGGSCYDH	15	2-40	2	MQRIEFPYT	9	-	-	-
mnCVIDY17 15	1-69	5-5	2	5	DRGYSYGYWFDP	13	3-20	1	QQYGSSPT	8	+	+2	-
mnCVIDY17 16	4-31	4-17	2	4	ERHGDYEGVYFDY	14	2-28	2	MQALQTPYT	9	-	-	-
mnCVIDY17 20 #	1-46	3-3	2	6	RIWDYDFWSGYWEDYYGMDV	21	3-20	1	QQYGSSSGT	9			
mnCVIDY17 21	4-39	1-26	3	4	RVVIGATLFDY	11	3-20	4	QQYGSSSPLT	9	-	+2	c
mnCVIDY17 22 #	3-9	6-19	2	4	DMYSSGWSHPFDY	13	1-5	1	QQYNSYSRT	9			
mnCVIDY17 23	1-46	3-3	3	4	EGDITGGYTIFGVVILHPYFDY	24	4-1	4	QQYYSPLT	9	-	-	-
mnCVIDY17 24 #	1-46	4-23	2	4	DLSGGNSVSPYFDY	15	1-5	4	QQYNSYPLT	9			
mnCVIDY17 25	3-33	3-3	3	4	STIFGVVTPMGY	12	1-5	1	QQYNSYWT	8	+	+	-
mnCVIDY17 29 #	1-69	6-13	2	5	AGYSSWRDNWFDP	14	3-11	4	QQRSNWPLT	9			
mnCVIDY17 32	4-39	3-3	2	5	FGGYVHNWFDP	12	1-8	3	QQYYSYPFT	9	+2	+2	-
mnCVIDY17 34 #	1-18	/	/	6	DPPDYYYGMDV	12	1-5	1	QQYNSYSKT	9			
mnCVIDY17 37	1-2	3-22	3	5	GQISLRGFTMIVS	13	1-39	2	QQSYSTPYT	9	+	+	-
mnCVIDY17 42	4-4	3-3	2	6	AAKFWSGYSMDV	12	1-39	2	QQSYSTPLYT	10	-	-	-
mnCVIDY17 43	4-39	6-6	3	6	AAADQYGMDV	10	2-30	2	MQGTHWPPMYT	11	-	-	-
mnCVIDY17 44	4-59	3-3	2	3	DILHYDFWGGYYMTRDAFDI	21	1-16	4	QQYNSYPLT	9	+	-	-
mnCVIDY17 45	1-18	1-26	2	4	SGSYFPGY	8	1-9	1	QQLNSYPTWT	10			
mnCVIDY17 46	4-34	4-17	2	4	GGDYGDYPRLDFDY	14	3-11	4	QQRNSLT	8			
mnCVIDY17 48	4-39	2-15	2	2	QQYCSGGSCYESPHYWYFDL	20	1-13	4	QQFNSYPLT	9			
mnCVIDY17 06							3-11	4	QQYYSYPPS	9			
mnCVIDY17 28							4-1	2	QQYYSTPYT	9			
mnCVIDY17 30							3-20	2	QQYGSSPRGYT	11			
mnCVIDY17 31							3-20	5	QQYSSIT	8			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDY17 09 #	1-69	6-13	2	6	TGYSSSWPMDV	11	3-25	2	QSADSSVV	8			
mnCVIDY17 14	4-39	3-22	2	4	RHLGYVYFDY	11	4-69	3	QWTGTGIQV	9	-	+	-
mnCVIDY17 18	1-46	6-13	1	4	DYKGWQQLPFDY	13	3-21	3	QVWDSSEVV	10	-	-	-
mnCVIDY17 19	3-23	/	/	6	VRAEQNKYYYYYHGMVDV	17	3-1	3	QAWDSSTAVV	10	-	+	N+c
mnCVIDY17 33	3-33	2-2	2	4	DPCSSTSCYHFDY	13	3-1	2	QAWDSSTVV	9	-	-	N+c
mnCVIDY17 35	1-2	6-19	2	4	DRLYSSGWSFFDY	13	3-1	2	QAWDSSTVV	9	-	-	-
mnCVIDY17 36	4-59	3-22	2	5	GHYYDSSGPGDFGDFP	17	1-44	1	AAWDDSLNVWT	11	-	-	-
mnCVIDY17 40	3-33	2-15	2	6	DRGCSGGSCYNIDYYGMDV	20	7-46	3	LLSYSGAWV	9	-	-	-
mnCVIDY17 47	3-23	3-10	1	6	VSAKWFGGPRGMDV	14	7-43	2	LLYYGGAVV	9	+2	+2	c
							3-1	2	QAWDSSTAV	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDY17 07	4-31	3-9	1	5	GTGYFDWLLLSGSVEYWFDP	20							
mnCVIDY17 38	3-30	4-23	2	4	APPDYGGNSLLGYFDY	17							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 26.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient B.I.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDB.I 03	3-66	3-22	2	4	AYDSSGGYSHLSPDY	15	3-20	4	QQPLT	5	-	-	-
mnCVIDB.I 09 #	3-23	3-3	1	6	AKCQRFLEWLLYPSDYGGMD	21	1-5	1	QQYNSYSWT	9	-	-	-
mnCVIDB.I 10	3-23	/	/	4	RVPSRGSFPDY	11	1-17	2	LQHNSYPRGT	10	-	+	N
mnCVIDB.I 12	3-33	/	/	3	GVFAFDI	7	2-30	1	MQGTHWPPWT	10	-	+	-
mnCVIDB.I 16	3-9	6-19	2	4	DKGTGFDY	8	3-20	1	QQYGSSPRT	9	-	+	-
mnCVIDB.I 17 #	5-51	5-5	2	6	RGYSYGLDYYGMDV	15	1-12	3	QQANSFPLT	9	-	-	-
mnCVIDB.I 19 #	3-66	5-12	1	6	DTLWLRSDYYGMDV	15	1-27	5	QQYNNWPPIT	10	-	-	-
mnCVIDB.I 20	3-30	6-13	3	6	AAAGSPYYYGMDV	14	1-17	1	LQHNSYPWT	9	+	+	-
mnCVIDB.I 21	1-46	4-17	2	4	SPTMYGDYDENGPFYD	17	1-9	2	QQLNSYLPYT	10	-	-	-
mnCVIDB.I 22 #	3-7	2-2	2	3	EGSTSSMVDI	10	1-39	5	QQSYSTPPT	9	-	-	-
mnCVIDB.I 29 #	3-23	1-26	3	4	DVGAYRSYFFDY	12	3-20	1	QQYGSSLT	8	-	-	-
mnCVIDB.I 30	4-61	2-15	2	4	DKYCSGGSCYSYGFYD	17	1-5	1	QQYNSYSLT	9	-	-	-
mnCVIDB.I 32 #	4-30	3-22	2	3	DYDSSGYTKDAFDI	15	1-39	1	QQSYSTPQT	9	-	-	-
mnCVIDB.I 33 #	3-30	3-10	2	6	EDTAMAPDNYYYGMDV	17	1-8	1	QQYYSYPRT	9	-	-	-
mnCVIDB.I 34	3-21	3-3	2	4	NLGSGRSDFWSGYVGNFDY	20	3-20	1	QHQT	5	+	+	c
mnCVIDB.I 35	1-3	3-3	2	6	DRPTGGYDFWSGYVGNFDY	19	1-39	1	QQSYSTPRT	9	+	-	-
mnCVIDB.I 37	3-30	/	/	4	DRFDY	5	3-20	3	QQYGSSLFT	9	-	-	-
mnCVIDB.I 43 #	3-9	5-12	3	4	GAGGEDIVASFYD	14	1-27	1	QKYNAPVT	9	-	-	-
mnCVIDB.I 45	4-61	3-22	2	6	DSRGGNDSSGYVGNFDY	20	1-39	1	QQSYSTPKT	9	-	+	A
mnCVIDB.I 47	4-34	2-15	3	5	GGPRIGSVVVAATTRWFDP	20	3-15	5	QQYNNWPPIT	10	+	-	-
mnCVIDB.I 48	4-31	6-13	2	6	GPSSWAVGNYYYGMDV	17	3-15	3	QQYNNWPEFT	11	-	-	-
mnCVIDB.I 11							3-20	2	QQYGSSPYT	9	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDB.I 06	4-39	6-19	1	6	GDYKKQWLEEYGMVDV	16	1-47	3	AAWDDSLSGVW	11	-	-	-
mnCVIDB.I 13 #	4-4	6-6	2	4	STEYSSSITYFDY	13	3-21	3	QVWDSRV	7	-	-	-
mnCVIDB.I 14 #	3-23	7-27	3	6	ADGDIPEWAQDSYYYGGMDV	21	2-23	3	CSYAGSSTSWW	13	-	-	-
mnCVIDB.I 18 #	3-23	3-3	1	6	ETRGLRFLEWLSPTYYYGGMDV	23	2-14	2	SSYTSSTRV	10	-	-	-
mnCVIDB.I 21 #	3-9	3-22	2	4	DLSSGYLLT IGY	14	2-14	2	SSYTSSSVW	10	-	-	-
mnCVIDB.I 25	1-2	3-3	2	4	GGSYPGVKFDY	11	2-23	3	CSYAGSSTWV	10	-	-	-
mnCVIDB.I 28	3-23	4-23	1	6	VLRWDYYYGGMDV	13	2-23	1	SSYAGSNNPYV	11	-	+	A
mnCVIDB.I 31 #	1-18	2-2	3	4	DIRAMPTSLDY	12	1-51	2	GTWDSLSAGV	11	-	-	-
mnCVIDB.I 34	1-2	6-19	1	4	EVGEKQWPEPYIDY	14	1-47	3	AAWDDSLSGPWV	12	-	-	c
mnCVIDB.I 36	3-9	2-2	2	6	DMGGHCSSTSCYYYGGMDV	22	2-8	3	SSYAGSNNGV	10	-	-	-
mnCVIDB.I 37	3-7	6-19	2	4	EAAVAGILIRLVPLQDY	18	1-51	1	GTWDSLSAYV	11	+	+2	-
mnCVIDB.I 38 #	3-53	6-6	2	6	DKYSSSYHYVGGMDV	17	2-14	2	SSYTSSTVW	10	-	-	-
mnCVIDB.I 40 #	1-2	/	/	6	LPPSTVLHYVGGMDV	15	1-47	3	AAWDDSLSSVW	12	-	-	-
mnCVIDB.I 41 #	3-30	3-10	2	2	EGSGSSDWFYDL	12	3-25	3	QSADSSGTSV	10	-	-	-
mnCVIDB.I 44 #	3-23	6-6	2	4	GIGSSYHHPDQNYFDY	16	3-1	2	QAWDSSSVV	9	-	-	-
mnCVIDB.I 45	3-7	/	/	4	PPS	3	2-8	1	MQGTHWPPWT	11	+2	+	-
mnCVIDB.I 47	4-39	3-10	1	4	AILWFGEIVFDY	13	2-23	2	CSYAGSSTLV	10	+	+	-
mnCVIDB.I 11							2-14	2	SSYTSSTVW	10	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDB.I 07	4-34	3-22	3	3	FSRDLFTMIVVSVVADDAFDI	23					-	-	-
mnCVIDB.I 15	1-18	3-3	3	5	ARDFGVVNFDP	11					-	-	-
mnCVIDB.I 24	1-8	3-9	3	6	GQVDVPIPRYYYGGMDV	18					-	-	-

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 27.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient G.I.

Ig	HEAVY						LIGHT			REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	Length	Poly	HEp-2	Staining
mnCVIDG.I 10	1-69	6-6	3	4	GSIAARGGDY	10	1-33	2	11	-	-	-
mnCVIDG.I 25	1-8	2-15	2	5	SLYCSGGSCYSS	12	3-11	4	9	+	+	N
mnCVIDG.I 27	3-66	/	/	6	GEYYYGMDV	9	1-39	1	9	-	-	-
mnCVIDG.I 33	1-18	1-26	1	4	DWGELLKRKGIDY	13	3-15	2	10	+	+	c
mnCVIDG.I 38	3-30	6-6	2	4	AGYSSSAGAFDY	12	1-39	2	9	-	-	-
mnCVIDG.I 44	3-33	6-13	3	4	DQLAAAGLYFDY	13	1-39	2	11	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	Length	Poly	HEp-2	Staining
mnCVIDG.I 04	3-33	3-10	2	6	NRRRQYYGSGSYTTRPYYYYGMDV	26	3-1	3	8	+2	+2	N
mnCVIDG.I 05	3-30	3-22	2	5	GLSYLYYDSSGYWFD	17	1-51	3	11	+	-	-
mnCVIDG.I 14	3-53	3-3	2	6	DRYDFWSGYPDAFDI	15	2-14	1	12	-	+	-
mnCVIDG.I 18	4-34	3-10	3	4	VHLMVRSQFDY	11	2-23	3	11	-	-	-
mnCVIDG.I 19	3-30	3-10	1	4	GGLWFGEPQRKNYFAY	16	1-36	3	11	-	+	-
mnCVIDG.I 30	3-23	2-15	1	4	GWWYRVTAFDY	11	2-11	3	10	+	+	c
mnCVIDG.I 42	3-33	6-19	3	6	VGAVIHADWDYYGMDV	16	3-21	3	13	-	-	-
mnCVIDG.I 43	4-34	6-13	3	5	FLAAAGLGWFDP	12	3-21	3	12	-	-	-
mnCVIDG.I 34							3-1	3	8			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	Length	Poly	HEp-2	Staining
mnCVIDG.I 41	18-1	4-17	2	4	ENYGDYEH	8						
mnCVIDG.I 46	3-21	6-13	2	6	DAGSSWYARFGGYLFTNYGMDV	22						

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 28.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient A.II.1.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDA.II.1 02	3-23	/	/	4	VSRTLPLGY	9	1-5	2	QQYNSYYPGYT	11	+2	+	-
mnCVIDA.II.1 04	4-34	2-2	3	5	RDGTGVVPAQAQYNWFDP	20	2-18	2	MQALQTPRT	9	-	-	-
mnCVIDA.II.1 07	3-23	/	/	6	GASSARSYGMDV	13	2-28	2	MQALQTPRT	9	+	+	-
mnCVIDA.II.1 11	4-4	3-22	2	4	DNDSSGYFTLYYFDY	16	3-20	1	QQCGSPPWT	10	-	-	-
mnCVIDA.II.1 18	3-23	4-4	2	6	DYSNRYYYYGMDV	14	1-39	1	QQSYSTPFT	9	+	-	-
mnCVIDA.II.1 20	4-31	3-10	2	6	DRRGYSGIVLGEYYYGMDV	21	3-20	2	QQYGSSYT	8	+	-	-
mnCVIDA.II.1 24 #	4-39	3-9	2	4	QGAGYYSQFDY	11	4-1	4	QQYYSTPLT	9			
mnCVIDA.II.1 30	3-33	2-15	3	3	NTPEAHVVVAATGYDAFDI	20	1-39	3	QQSYSTPDT	9	+	+	c
mnCVIDA.II.1 35	3-23	6-19	3	6	ETLVAGTPYYYYYGMVDV	18	1-5	2	QQYNSYSRT	9	+2	+2	-
mnCVIDA.II.1 43 #	3-64	1-7	3	4	SSGTTDYFDY	10	1-39	3	QQSYSTPFT	9			
mnCVIDA.II.1 46	4-4	3-22	2	5	LGYYTSSGLIQ	14	2-28	2	MQALQHT	8	-	-	-
mnCVIDA.II.1 48	4-31	3-3	2	4	FGPNYDFWGSTIDY	14	3-20	5	QQYGSSPIT	9	+	+	-
	VH	D	RF	JH	CDR3 (aa)	Length	Vλ	Jλ	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDA.II.1 01	4-39	4-23	2	1	VQYGGKSAEYFQH	14	1-40	2	QSYDSSLGSSV	12	-	+	-
mnCVIDA.II.1 04 #	1-8	6-6	2	6	GALSSSFYYYYYGMVDV	17	3-1	2	QAWDSSTVV	9			
mnCVIDA.II.1 12	3-15	4-4	3	6	ATVTTPPYYYYYGMVDV	15	3-1	2	QAWDSSTVV	9	-	-	-
mnCVIDA.II.1 21	1-69	5-5	2	5	DLYSLGDAPS	10	2-8	2	SSYAGSNNLV	10	+2	+	-
mnCVIDA.II.1 36	3-9	5-24	1	4	DGERWLQNFYD	11	2-23	3	CSYAGSST	8	-	-	-
mnCVIDA.II.1 39	4-31	3-10	1	4	GWVRWFGELTHFDY	14	2-11	2	CSGV	4	+2	+	N
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDA.II.1 40	3-23	6-13	2	4	HLWDGYSSSWYFDY	14							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 29.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 1001.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>κ</sub>	J <sub>κ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID1001 46	4-39	/	/	6	HVPTSYYYYGMDV	13	1-27	1	QKYNAPWT	9	+2	-	-
mnCVID1001 52	4-59	6-19	2	6	DAQGVGSGWVYYYYGMDV	18	3-20	2	QQYGSSPYT	9	+2	+	-
mnCVID1001 59	3-15	3-22	2	4	DEGQVWYYDSSGYLNY	16	3-15	1	QQYNNWPPWT	10	-	-	-
mnCVID1001 69	4-4	6-13	2	4	DDGYGSFDY	9	3-11	4	QQRNQLT	8	-	-	-
mnCVID1001 70	4-34	3-3	3	6	CITIFGAGMDV	11	3-15	2	QQYNNWPRVYT	11	+2	+	c
mnCVID1001 80	3-33	3-9	2	6	GILSYYYYYGMDV	13	1-9	4	QQLNSYPSA	9	+2	+2	-
mnCVID1001 85	4-34	/	/	6	WRHYYYGMDV	10	1-39	2	QQSYSTPRT	9	+2	+	-
mnCVID1001 102	1-3	2-15	2	5	DRLSSGYCSGGSCYPTRYNWFD	23	3-20	4	QQYGSSPLT	9	-	+	N
mnCVID1001 118	4-34	1-7	2	5	GGYNWNYDVLHYWFD	16	1-8	2	QQYYSYPRT	9	-	-	-
mnCVID1001 119	3-21	3-10	2	4	DGSNYGSGSYSPYYFDY	20	1-5	1	QQYNSYPRT	9	+2	+	-
mnCVID1001 129	4-61	3-3	3	5	DGGRITIFGVAPGWFD	17	1-39	1	QQSYSTPLWT	10	+2	+	-
mnCVID1001 131	4-34	5-12	2	4	VHRTYSGYDFDY	12	3-20	1	QQYGSSLWT	9	+	+	-
mnCVID1001 134	3-23	3-3	2	4	ANHDFWSGYGY	13	3-15	1	QQYNNWPGT	9	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID1001 04	4-34	3-3	1	5	DGNSVLRFLWLGELWSFDP	20	2-11	1	CSYAGSYIRV	10	+2	+2	c
mnCVID1001 53	3-30	2-21	3	4	GAHIVVTAMSLMDY	15	3-21	2	QVWSSSDHVV	11	-	-	-
mnCVID1001 55 #	3-73	3-3	2	6	LSNYDFWVSGYGMV	14	3-21	3	QVWSSSDPRGV	12			
mnCVID1001 103	4-34	6-19	1	5	GRRIQWLVSWFD	13	2-23	3	CSYAGSSTWV	10	+2	+	N
mnCVID1001 113	3-74	/	/	4	GKGFY	6	2-23	3	CSYAGSSTWV	10	-	+	-
mnCVID1001 143	3-30	3-3	2	6	EFYDFWVSGYFYGMV	15	2-23	1	CSYAGSSTPYV	11	+	+	-
mnCVID1001 162 #	4-34	3-3	1	4	RRFLEWLLPPKREYFDY	18	1-51	2	GTWSSSLSAV	11			
mnCVID1001 164	4-34	1-7	2	5	GRIFLWVWYVWVWFD	18	2-14	2	SSYTSSSTWV	10	+2	+2	N
mnCVID1001 166	3-66	6-13	3	4	DPNTAAAGDY	10	1-47	1	AAWDDSLSVHYV	12	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID1001 44	3-33	5-12	2	6	ERFGYDYAYYGMV	15							
mnCVID1001 72	4-61	/	/	4	DSIEWGDDY	9							
mnCVID1001 122	4-34	3-10	3	4	VRGVIPTRGARYPWIDY	17							
mnCVID1001 57	4-4	/	/	4	LGGQPFY	8							
mnCVID1001 60	4-34	/	/	5	GRTYGSRGPWFD	13							
mnCVID1001 67	3-15	6-19	2	2	AESGYSSGWYDWYFDL	16							
mnCVID1001 93	3-21	/	/	4	TSDYSEDHDI	10							
mnCVID1001 123	4-34	5-5	3	4	RDTRPFY	8							
mnCVID1001 169	3-33	5-24	2	4	GDGYNAYFDY	11							
mnCVID1001 178	4-31	1-26	2	4	RSGSYVDY	8							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining



**Supplemental Table 30.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient C12.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDC12 02	1-18	6-19	2	6	RALGSGWVGFYYGMDV	17	2-28	1	MQALQTPQT	9	+	+2	-
mnCVIDC12 13	3-73	6-6	2	4	LYSSSFDF	8	4-1	1	QQY YSTPWT	10	+2	+2	-
mnCVIDC12 14 #	4-31	3-3	2	5	GCVDFWVSGYESSLLPWFD	18	3-15	4	QQYNNWPNT	9			
mnCVIDC12 21	3-23	3-9	2	6	DLTYDILTGYIPRDYYYYGMDV	24	2-30	2	MQGTHWP	7	+	+2	-
mnCVIDC12 24	4-61	3-10	2	4	DFHSGIVDWWYVYD	15	1-39	1	QQSYSTPRT	9	+	+2	-
mnCVIDC12 28	3-33	3-3	2	4	DNGGFWSGYSGFYD	14	1-9	4	QQLNSYLQGLT	11	+	+2	-
mnCVIDC12 29	3-23	3-22	2	4	EPGSHYYDSSGYFFDY	16	3-11	5	QQRSNWPKT	9	-	+	-
mnCVIDC12 31	4-31	3-22	2	5	DSSSGAHNWFDP	12	3-15	2	QQYGYT	7	+	+	-
mnCVIDC12 33	4-59	3-22	1	6	SLLPTYYYGMDV	12	1-39	2	QQSYSTPYT	9	+	+	-
mnCVIDC12 34	3-48	4-4	3	4	DLPLSTVTYYFDY	13	1-39	1	QQSYSTPWT	9	-	-	-
mnCVIDC12 36	3-33	4-17	2	5	DLPYGDYDGGSW	12	4-1	1	QQYYSTPPT	9	-	-	-
mnCVIDC12 37	3-23	3-10	1	4	DYLLWFGESEPFYD	14	3-15	3	QQYNNWPLT	9	-	-	-
mnCVIDC12 52	4-31	3-22	2	4	SDYYDSSGYFFPDY	14	1-17	1	LQHNSYPPT	9			
mnCVIDC12 53	4-59	5-5	2	4	GGATWSYED	9	3-15	4	QQYNNWPLT	9			
mnCVIDC12 54	3-74	1-26	2	4	PLYSGSYYY	9	3-20	1	QQYGSSPWT	9			
mnCVIDC12 55	5-51	3-22	2	4	TPQYYDSSGYFVDY	14	1-9	4	QQLTLT	7			
mnCVIDC12 56	3-74	/	/	4	DAVQGAQRDY	10	2-28	4	MQALQTPLT	9			
mnCVIDC12 65	3-7	5-5	3	5	NTAMANG	7	3-15	3	QQYNNWLF	9			
mnCVIDC12 67	3-30	3-9	2	3	DKAYDILTAHAFDI	14	1-5	1	QQYNSYPRT	9			
mnCVIDC12 69	3-30	2-8	3	3	DRLALVYATPNAFDI	16	1-5	1	QQYNSYSPWT	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDC12 12	1-2	6-13	2	6	RDSHPTGSSSFGLQPMVDV	20	3-1	1	QAWDSSTVV	9	-	+	-
mnCVIDC12 19	3-7	2-2	3	4	VGRRVVPADFY	12	2-11	3	CSYAGSYTLDDV	12	-	-	-
mnCVIDC12 26	3-33	1-26	2	4	DRPDMGGSYLNAPDY	15	7-43	3	LLYYGGAQPWW	11	+	+	-
mnCVIDC12 40	4-39	/	/	4	DDPKEHTRQFRH	12	3-21	3	QVWSSSDHL	10	-	+	N
mnCVIDC12 45	3-43	/	/	6	DFHRFIGPTYGMDV	14	3-1	3	QAWSSSILV	9	-	-	c
mnCVIDC12 47	3-30	6-13	3	4	DLLGVAAGPEHYFDY	17	2-14	3	SSYTSSTPVV	11	-	-	-
mnCVIDC12 48	1-69	3-16	2	4	ASRVYDYVWGSFREPPIHFDY	20	1-40	3	QSYDSSLSGLV	11	+	+	N
mnCVIDC12 63 #	5-51	4-4	2	4	RLEFGNYLQPFYD	13	2-14	3	SSYTSSTLV	10			
mnCVIDC12 68 #	3-23	3-22	2	6	DLNYYDSSGYPHDGMVDV	17	1-40	1	QSYDSSLSGRV	11			
mnCVIDC12 08	3-30	/	/	5			1-44	3	AAWDDLSLV	10	-	-	-
mnCVIDC12 23	3-21	6-19	2	4			2-14	3	SSYTSSSNVV	10			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVIDC12 35	3-23	/	/	6	EEGALPYYYGMDV	14							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 31.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 218.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID218 07	1-18	6-13	2	6	DPGELYSSSWQWPYYGMDV	20	3-20	4	QQYGSSPPALT	11	-	+2	c
mnCVID218 08 #	4-30	4-17	2	3	DRRGDYGDYVGGAKDDAFDI	20	2D-29	1	MQSIQLPT	8			
mnCVID218 10	1-18	/	/	6	DTPRQYYYYGMDV	13	2D-29	2	MQSIQLPRT	9	-	+	-
mnCVID218 11	3-23	3-22	2	6	FYYDSSGYNNYYYYGMDV	19	1-9	3	QQLNSYEGFLT	11	+	+2	c
mnCVID218 20	1-3	6-6	2	4	EYSSSSDY	8	1-39	1	QQSYSTPRT	9	-	+	-
mnCVID218 26	3-30	3-3	3	4	DRQFGVVPNYFDY	13	3-15	1	QQYNNWPPWGT	11	-	-	-
mnCVID218 29 #	4-39	3-3	2	4	FYYDFWSGTTYGFDY	15	2-28	2	MQALQTPYT	9			
mnCVID218 30	3-23	5-24	3	4	GGMATIKVLNFDY	13	1-39	1	QQSYSTPPT	9	-	-	-
mnCVID218 31	3-7	1-26	3	4	GGVVGAPPPYQNRLDY	16	1-33	4	QQYDNLPLT	9	-	-	-
mnCVID218 33	1-46	6-19	2	4	DLAGGWTSY	9	2-30	4	MQGTHWPPLT	10	-	-	-
mnCVID218 34	4-34	2-2	1	4	GLYQLLFFFDY	11	1-39	1	QQSYSTRT	8	+	+2	-
mnCVID218 35	4-61	3-22	2	3	SFFSGYLLDAFDI	13	1-8	2	QQYYSYPYT	9	+	+2	-
mnCVID218 43	3-23	6-19	1	4	DQWRLVSGSIDY	12	3-15	1	QQYNNWPPWT	10	-	+2	-
mnCVID218 45	3-33	6-13	1	4	GQLATFDY	8	1-39	2	QQSYSTSYP	9	-	+	-
mnCVID218 46 #	3-43	/	/	4	WRI	3	2-28	2	MQALQTPYT	9			
mnCVID218 47	4-30-4	2-8	2	4	GYCTNGVCYKPYFDY	16	1-39	2	QQSYSTPNT	9	-	+	-
mnCVID218 44							1-39	5	QQSYSTPIT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID218 01	1-69	6-19	2	5	YSSGWSNWFDP	11	1-51	1	GTWDSLSADV	11	+2	+2	-
mnCVID218 03 #	1-69	2-15	2	6	EIDCSGGSCYFVHYYYYGMDV	21	2-23	2	CSYAGSSTFWV	11			
mnCVID218 13	4-34	6-13	2	4	GPTRRRSSWDNPFYD	15	1-47	1	AAWDDSLSGPCV	12	+2	+2	N
mnCVID218 38	4-59	3-3	2	2	APPSDFWSGYTHWYFDL	18	1-44	3	AAWDDSLRGV	10	+2	+	-
mnCVID218 40 #	1-69	2-2	2	5	EGLRYCGDCSPGGGRFDP	19	1-39	4	QQSYSTTLT	9			
mnCVID218 41	1-18	1-26	2	5	DQGGSYLLGPPWFDP	15	2-14	2	SSYSSSTLEGV	12	-	-	-
mnCVID218 42	3-66	/	/	6	DRDPSPYGMDV	11	2-8	1	SSYAGSNPYV	10	-	-	-
mnCVID218 43					see kappa		2-8	3	SSYAGSNLNV	10	+	-	-
mnCVID218 09							3-1	3	QAWDSSAFVW	11			
mnCVID218 15							3-1	2	QAWDSSAVVW	11			
mnCVID218 23							1-40	2	QSYDSSLSVW	10			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID218 14	4-34	6-19	3	4	RGTKYRAVAGHFDY	14							
mnCVID218 12	1-18	2-2	2	4	GGYCSSTSCQNVDTAMVNFYD	21							
mnCVID218 17	3-66	3-3	2	6	ADFWSGYYYYYGMDV	14							
mnCVID218 27	3-30-3	3-10	2	4	GYGSGSNYYFDY	12							
mnCVID218 28	3-74	3-16	2	6	VVWGLDSGSYFLYYYYYMDV	20							
		1-26	2										
mnCVID218 48	1-69	3-9	1	4	DRYRRYFDWLWVY	13							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 32.** Repertoire and reactivity of antibodies from mature naïve B cells of CVID patient 251.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>κ</sub>	J <sub>κ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID251 01	3-9	/	/	6	AKDIWTGSYYYYGMDV	16	1-39	1	QQSYSTPLT	9	-	+	c
mnCVID251 04	4-4	3-3	2	6	AREDFWSGYYLALSYYGMDV	20	3-11	4	QQRSNWPRT	9	+2	+2	c
mnCVID251 05	4-39	6-13	2	4	ASGPRSSWYHGIFYDY	15	3-15	1	QQYNNWPRT	9	+	-	-
mnCVID251 07	1-69	6-19	3	1	ATHSYTTIAVAGTHFQH	17	1-39	4	QQSYSTPLT	9	+	+	c
mnCVID251 10	3-73	1-7	3	4	TTGTSYRIDY	10	3-20	4	QQYGSSLT	8	-	+	-
mnCVID251 12	4-34	3-16	1	2	ARCKKRLGKRIGSWYFDL	19	3-20	5	QQYGSSPPIT	10	+2	+2	N+c
mnCVID251 14 #	3-43	6-19	3	6	AKDLGPLAVAGTAYYYGMDV	20	2D-29	1	MQSIQLPWT	9			
mnCVID251 16	3-7	2-8	3	6	ARDKDIVLNEDGDYFYYGMDV	21	3-11	5	QQRSNWPPIT	10	-	-	-
mnCVID251 17	1-46	/	/	4	ARVPLTADEAPWVNGDY	17	3-15	3	QQYNNWPWGFT	11	+	+	-
mnCVID251 19	3-53	2-15	2	4	ARVRYCSGGSCYSAPWVDY	19	3-15	1	QQYNNWPLT	9	+	+	N+c
mnCVID251 20	1-3	3-22	2	4	AREGGYYDSSTYDY	15	1-39	2	QQSYSTRRWS	10	-	+	c
mnCVID251 24	4-39	3-10	1	6	ARHNSRQLLWFGELLYKGDYWGVMGV	27	1-33	4	QQYDNLPLT	9	+	-	-
mnCVID251 28	3-33	5-5	2	6	ASDPGYSYGFVYYYGMDV	18	1-39	3	QQSYSTPPR	9	+	+	N+c
mnCVID251 29	3-64	3-22	2	4	VKEYYYDSSGYDY	14	1-39	2	QQSYSTQYT	9	-	-	-
mnCVID251 32	4-4	6-19	2	4	ARKAYSSGWYFDY	13	1-39	4	QQSYSTPLT	9	-	-	-
mnCVID251 33	1-69	3-10	2	6	ARSRREYSGSGYYPLPYYYYGMDV	27	3-11	5	QQRSNWPIT	9	+	+	-
mnCVID251 37	1-58	3-22	2	6	AASYYYDSSGYVVDYGGMDV	21	3D-15	1	QQYNNWPPWT	10	-	+	-
mnCVID251 38	1-69	4-23	2	4	ARDLSGGNSEAYFDY	15	3-15	1	QQYNNWPPWT	10	+	+	-
mnCVID251 40	5-51	3-10	1	4	ARGGWFGGTRYFDY	15	3-11	4	QQRSNWPPGVT	11	+2	+	c
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID251 02	3-9	3-22	2	4	AKDPVAYYDSSGYFDY	17	3-21	3	QVWDSDDLRLV	11	-	-	-
mnCVID251 03	1-69	2-15	2	5	ARDCSGGSCYSGNWFDP	17	3-16	3	LSADSSGTYPV	11	+	-	-
mnCVID251 06	3-7	3-9	1	4	ARDFDLHDY	9	1-40	2	QSYDSSLGTV	11	-	-	-
mnCVID251 11	3-9	1-1	2	3	AKDLVMWNGAGVAFDI	16	2-11	2	CSYAGSYSF	9	-	-	-
mnCVID251 13	4-34	2-2	3	4	ARNIVLPTHQTEAYYFDY	19	2-8	1	SSYAGSNLTV	11	-	-	-
mnCVID251 15	3-15	3-22	2	4	TTDPEKSEYYDSSGYRTPAY	21	3-25	3	QSADSSGTFVW	11	-	+	-
mnCVID251 18	3-30	5-5	2	4	AKDRIGYSYSGSIDY	15	1-44	3	AAWDDSLNGWV	11	-	-	-
mnCVID251 25	3-7	3-3	2	6	ARDCYDFWGSPEPRMDV	18	1-47	2	AAWDDSLSGHVV	12	-	-	-
mnCVID251 27	3-66	3-10	2	4	ARDLGYHEQEQQYGSSEN	17	1-47	1	AAWDDSLSGPFVY	13	-	-	-
mnCVID251 30	3-73	/	/	4	TRSPRVGDFDY	11	2-23	1	CSYAGFTWV	9	+	+	N+c
mnCVID251 35	3-20	/	/	5	ARDMGGWFDP	10	1-51	3	GTWDDSLSVWV	11	-	-	-
mnCVID251 36	3-23	1-7	2	4	AKDRHNWNYYY	11	3-27	2	YSAADNNLV	9	+	+	N+c
mnCVID251 45							1-44	1	AAWDDSLNGYV	11			
mnCVID251 47							3-1	1	QAWDSSNYV	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID251 39	1-2	5-5	3	4	ARGGNVDTAMVEDY	14							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 33.** Repertoire and reactivity of antibodies from mature naive B cells of CVID patient 170.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID170 01	3-9	/	/	6	SSGYGGNYGMDV	12	1-27	1	QKYNAPWT	9	-	-	-
mnCVID170 04	3-23	6-13	3	4	ASPRGALIAAAGYFDY	16	1-9	3	QQLNSYPPVT	10	+	+	N+c
mnCVID170 09	3-33	/	/	3	ARDKGTVSAFDI	12	4-1	2	QQYYSTPYT	9	+	-	-
mnCVID170 17	4-34	5-24	1	4	ARAPPFSRWLQLSYFDY	17	3-11	2	QQRSNWPT	8	+2	+	c
mnCVID170 21	4-34	3-22	3	5	ARGMITMIVVAHNWFDP	17	1-39	2	QQSYSTPYT	9	+	-	c
mnCVID170 22	4-34	3-16	2	4	DTIHNYGYFDY	11	1-5	2	QQYNSYPYT	9	-	-	-
mnCVID170 26	3-21	2-2	2	4	ARSTYCSSTSCLFDY	16	1-5	2	QQYNSYPYT	9	-	-	-
mnCVID170 27	3-30	6-19	3	4	AKDPLPVARSAYYFDY	16	1-12	5	QQANSFPIT	9	+	+	-
mnCVID170 31	3-33	3-22	2	4	ARPLGYDSSGYLGGPGIDY	22	3-20	4	QQYSSPPLT	10	+	+	N+c
mnCVID170 37	1-18	1-26	2	6	ARDSSGSFAGYGGYGGMDV	18	2-24	2	MQATQFPYT	9	-	-	-
mnCVID170 38	4-34	3-10	2	6	ARGPPTTYYYGSGRLRGMDV	20	1-9	4	QQLNSYPLT	9	+	-	-
mnCVID170 39 #	4-61	/	/	5	ARDGGYKDWFDP	12	1-37	5	QRTYNAPHP	9			
mnCVID170 41	3-9	6-6	2	4	AKDPSSSSGLC	11	4-1	1	QQYYSTPWT	9	-	-	-
mnCVID170 42	4-34	2-2	3	6	ARGVPHIVVPAASLYGMDV	20	1-17	1	LQHNSYPRT	9	+	+	N+c
mnCVID170 44	3-9	1-26	3	5	AKDISVGVGALGT	12	2-28	3	MQALQTPRT	9	-	-	-
mnCVID170 46	1-18	1-26	3	4	ARVEQVGTAGADY	13	1D-8	3	QQYYSFPT	8	-	-	-
mnCVID170 03 #							3-11	1	QQRSNWPPGT	10			
	VH	D	RF	JH	CDR3 (aa)	Length	Vk	Jk	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID170 08 #	3-30	3-3	3	4	ARDPRRITIFGVVITIRFQFDY	22	9-49	2	GADHGSGSNFVSKV	14			
mnCVID170 10 #	3-9	6-13	3	4	AKDSLAAAGRIDY	13	1-40	3	QSYDSSLSGVV	11			
mnCVID170 14	3-21	6-13	3	1	ARDKREAAAEPEYFQH	16	2-14	2	SSYTSSSTLV	10	-	-	-
mnCVID170 15	1-8	3-3	3	5	ARGNRPPRITIFGVVIRTQNWFDP	24	2-8	2	SSYAGSNVNV	10	+2	+	c
mnCVID170 18	1-8	6-13	3	4	ASRIAAAGTEDY	12	3-1	1	QAWDSGYV	8	-	-	-
mnCVID170 19	3-23	2-8	3	4	AKDHGGYIVLDHFDY	15	6-57	7	QSYDSSNAV	9	-	-	-
mnCVID170 20	4-30	3-22	2	4	AREGGYYEIDY	12	1-51	3	GTWDSLSVGV	11	-	-	-
mnCVID170 21					see kappa		1-47	2	AAWDDSLGHVV	12	+	+	N+c
mnCVID170 22					see kappa		1-44	3	AAWDDSLNGVV	11	-	-	-
mnCVID170 25	4-34	5-12	2	4	GHYSGYDWGIDY	12	1-47	3	AAWDDSLSGRV	11	+	-	-
mnCVID170 32	1-46	/	/	6	ARDLLVDPYYYYGMDV	17	3-25	2	QSADSSGTYRV	11	-	-	-
mnCVID170 39	4-59	/	/	5	DGGYKDWFDP	10	3-1	1	QAWDSSTFYV	10	-	-	-
mnCVID170 40	3-7	3-3	2	4	AKDIKDDFWSGEYFDY	18	3-1	2	QAWDSSTV	9	-	-	-
mnCVID170 43	1-2	6-13	2	5	ARDHRRGSSSWYRAGNNWFDP	21	2-23	2	CSYAGSSTFDVV	12	+2	+2	N
mnCVID170 47	4-34	2-15	2	4	ARGASDSSYCSGGSCYSIDY	20	2-14	1	SSYTSSSTPYV	11	-	-	-
mnCVID170 34							2-8	3	SSYAGSNNRV	10			
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID170 13	4-34	1-26	2	5	AREGGSYLLDWFDP	14							
mnCVID170 30	4-59	/	/	4	ARASGVPTFDY	11							
mnCVID170 41					see kappa								

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 34.** Repertoire and reactivity of antibodies from mature naive B cells of CVID patient 124.

Ig	HEAVY						LIGHT				REACTIVITY		
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID124 01	4-34	1-26	3	5	ARSLRIVGAAKIGWFDP	17	3-20	1	QQYGSSPWT	9	-	-	-
mnCVID124 03	4-34	3-3	2	4	ARDYRRYYDFWVGKGGYFDY	20	3-20	1	QQYGSSPGT	9	+	+	c
mnCVID124 14	4-34	3-3	1	4	ARGDPDSLRFLEWLRETGACYFDY	24	3-20	2	QQYGSSPGT	9	-	+	c
mnCVID124 17	3-33	6-6	3	4	ARSPRRSSIAARPPYFDY	19	3-20	5	QQYGSSLIT	9	+	+	N+c
mnCVID124 19	1-69	6-13	3	4	ARDRPPYGAAGRAFDY	18	3-11	4	QQRSNWPPVLT	11	-	+	c
mnCVID124 27	4-34	4-4	2	4	ARGYSKWDSYFDY	13	3-20	1	QQYGSSPKT	9	-	-	-
mnCVID124 30	3-21	1-7	2	5	ARDNWSSGWT	10	1-33	1	QQYDNLPT	9	-	-	-
		6-19	2										
mnCVID124 31	4-34	1-1	2	4	ARRYNWDEYFDY	13	3-11	1	QQRSNWSPWT	10	+	-	-
mnCVID124 34	4-34	3-10	2	4	ARGRNYGSGSYIIRY	16	3-20	1	QQYGSSPPWT	10	+	+	-
mnCVID124 36	4-34	5-12	2	4	ARGLTGGYSGYVLYYFDY	21	3-11	3	QQRSNWPPT	9	+	+	-
mnCVID124 42	3-15	2-2	3	4	TTGMLVPAAMGGGRNY	17	3-20	4	QQYGSSPLT	9	-	-	-
mnCVID124 45	4-39	3-22	3	5	ARHSRMIVVVIKAPNWFDP	20	3-20	4	QQYGSSPLT	9	+2	+	c
mnCVID124 47 #	4-34	3-16	3	4	ARARFAGAVGGVLDY	15	3-20	1	QQYGSSPRRT	10			
		6-19	3										
mnCVID124 50	1-69	2-2	1	6	ASERGWEYQALTYGMDV	19	3-20	1	QQYGSSPPWT	10	+	+	-
mnCVID124 52	4-34	6-3-5	2	4	ASPQSSGS	9	3-20	1	QQYGSSPRT	9	-	+	-
mnCVID124 55	4-34	3-3	3	5	ARGPNRITIFGVGKGFDP	19	3-20	1	QQYGSSPRT	9	+	+	-
mnCVID124 56	4-39	3-3	2	4	ARQGYDFWSGYSYFDY	16	3-20	1	QQYGSSPGT	9	-	+	c
mnCVID124 57	4-31	6-6	2	6	ARNSYSSSGVSYYYGMDV	19	4-1	1	QQYYSTPWT	9	-	+	-
mnCVID124 58 #	3-49	6-19	3	4	ARDRRGPGAADV	14	3-15	1	QQYNNWPPWT	10			
mnCVID124 59 #	4-31	3-16	2	5	AGSKAYVWGSRGWFDP	16	3-20	2	QQYGSSPGYT	10			
mnCVID124 61 #	3-30	2-15	2	4	AKWGGGSCYFDY	12	3-15	4	QQYNNWPLT	9			
mnCVID124 67	3-64	6-19	2	4	VKGGYSSGWQTRFDY	16	3-15	2	QQYNNWPRDT	10	+2	-	-
mnCVID124 69 #	4-34	2-2	3	5	ARSISPALTDGGVPAAMANWFDP	24	1-39	1	QQSYSTPRT	9			
mnCVID124 70	3-33	3-10	2	4	AREHYGSGIGGKPPDY	17	1-5	2	QQYNSYSYT	9	-	+	N+c
mnCVID124 72 #	3-23	3-9	2	4	AKDIGSYDLTGYSLFDY	19	3-20	2	QQYGSSPRYT	10			
mnCVID124 74 #	1-69	6-13	2	4	ARVGSWYDGFWDY	14	3-20	1	QQYGSSPWT	9			
mnCVID124 90 #	3-23	6-6	2	4	AKEGVSAAEYSSLSVDY	17	3-11	4	QQRSNWPLT	9			
mnCVID124 91 #	3-30	1-26	1	1	AKVAPWFALLGGGYFQH	18	3-20	4	QQYGSSPLT	9			
mnCVID124 92 #	4-34	6-6	2	5	ARGYGEYSSSQGVTS	15	3-20	1	QQYGSSRWT	9			
mnCVID124 93 #	3-73	2-15	2	3	TSSGGIFRI	9	1-5	1	QQYNSMGA	8			
mnCVID124 94 #	4-34	6-6	3	4	ASFGSRARPSYFDY	15	3-20	1	QQYGSSPRT	9			
mnCVID124 95	1-69	6-13	2	6	ARSAGELSSSHSYYYYGMDV	21	1-33	4	QQYDNLPLT	9	+	+	-
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID124 19					see kappa		2-8	2	SSYAGSNNAVV	11	+2	-	-
mnCVID124 32 #	1-69	1-26	2	4	ARAVGSYLIDY	11	4-69	2	QTWGTGMEV	9			
mnCVID124 55					see kappa		2-14	2	SSYSSSTVW	10	+2	-	c
mnCVID124 72					see kappa		1-47	2	AAWDDSLSGVV	11	-	-	-
mnCVID124 91 #					see kappa		1-40	2	QSYDSSLGVV	11			
mnCVID124 134	1-69	6-6	2	3	ARDRPSDSSSRADAFDI	18	1-44	1	AAWDDSLNGYV	11	-	-	-
mnCVID124 139	3-30	5-12	3	4	AKIVHREVATTMAALNDY	18	5-52	3	GTWHSNSWV	9	-	-	-
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID124 16	3-30-3	/	/	4	ARLEG	5							
mnCVID124 25	4-34	2-2	1	4	ARVSYQLPQHFDY	13							
mnCVID124 65	3-30	3-3	1	4	AKFLEPVRFFDWLLGGGYFDY	21							
		3-9	1										

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining

**Supplemental Table 35.** Repertoire and reactivity of antibodies from mature naive B cells of CVID patient 332.

Ig	HEAVY					LIGHT				REACTIVITY			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>k</sub>	J <sub>k</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID332 17	4-34			3	ARGRRQIVRGAFDI	14	1-5	1	QQYNSYRT	8	+	+2	N
mnCVID332 18	3-7			4	ARDPKDRGFDY	11	4-1	1	QQYYSTPRT	9	-	-	-
mnCVID332 21	4-34	1-26	2	4	ARGGSGSFLVYFDY	14	3-20	4	QQYGSSPLT	9	-	-	-
mnCVID332 24	4-34	3-10	3	5	ARRADGRPITMVRGVIIILTRKRNWFD	28	3-11	5	QQRSNWPS	8	+	+2	c
mnCVID332 25	1-69	6-6	2	4	AMTRSSSSFSY	12	1-39	2	QQSYSTPPT	9	+	+	-
mnCVID332 28	4-34	6-13	2	4	ARWVQSSSHKKFDY	14	3-11	4	QQRSNWPPALT	11	-	-	-
mnCVID332 30 #	3-23	1-26	1	4	AKDRWGWELLFVYFDY	17	1-12	3	QQANSFPPT	9			
mnCVID332 32	4-34	6-19	2	5	ARGQGRGWFD	11	3-20	1	QQYGSSPRT	9	-	-	-
mnCVID332 35 #	4-34	6-13	3	4	AREGKIAAVVVSFDY	16	3-11	2	QQRSNWPRT	9			
mnCVID332 37	4-34	5-5	2	4	ARGRSDSYGYIDY	14	3-20	1	QQYGSSPTWT	10	-	+	-
mnCVID332 38	4-34	6-19	3	4	ARGLPKVAGKSVDY	14	1-39	3	QQSYSTPRT	9	-	+	-
mnCVID332 39	3-53	3-22	2	5	ARGGPYYERWFD	14	3-20	1	QQYGSSPPWT	10	+	-	-
mnCVID332 43	4-34			4	ARKDIDY	7	1-39	1	QQSYSTPRT	9	+	-	-
mnCVID332 44	4-59	6-13	1	6	ARHWGKGRQQLVPPYYGMDV	21	1-39	1	QQSYSTPWT	9	-	-	-
mnCVID332 45	4-59	6-13	2	6	ARGEYSSWYGYGMDV	18	3-20	2	QQYGSSPYT	9	-	+	c
mnCVID332 47	4-34			4	ARGLQRGYFDY	11	3-15	1	QQYNNWPRT	9	-	-	-
mnCVID332 54	4-34	6-13	3	4	ARGPCRNCIAGKGYFDY	17	3-20	1	QQYGSSPKT	9	-	-	-
mnCVID332 57 #	4-39	3-3	2	1	ARQGGGYSDFWSGPTSDFFQH	21	4-1	4	QQYYSTPLT	9			
mnCVID332 58	4-34	1-26	3	4	ARGHRVGATYFDY	13	1-9	3	QQLNSYPPT	9	-	-	-
mnCVID332 59	4-34	1-26	3	4	ARKVGARGYFDY	12	3-15	1	QQYNNWPPWT	10	-	-	-
mnCVID332 61	4-34			4	ARSRKNFYD	10	1-5	2	QQYNSYTT	8	-	-	-
mnCVID332 62 #	1-3	3-3	3	4	ARSHFGVVIISPFYD	15	4-1	1	QQYYSTPPT	9			
mnCVID332 64	4-59	2-21	2	6	ARHSENCGGDCYYYGMDV	21	3-20	2	QQYGSSPYT	10	-	-	-
mnCVID332 65 #	4-34	3-10	1	4	ARGNIGTLLWFRKYYFDY	19	3-20	4	QQYGSSPAT	9			
mnCVID332 67	4-34	6-13	2	4	ARGRRSSSWSHLDY	15	3-20	1	QQYGSSPKT	9	+	+2	N
mnCVID332 68 #	4-34			4	AICRGYFDY	9	3-20	3	QQYGSSRT	8			
mnCVID332 73 #	4-34	3-10	1	5	ARGEELWFRTPRKRRQGGNWFDP	24	1-39	2	QQSYSTPYT	9			
	VH	D	RF	JH	CDR3 (aa)	Length	V <sub>λ</sub>	J <sub>λ</sub>	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID332 16 #	4-34	6-13	2	5	ARGYSSWYEVFDP	15	1-44	3	AAWDDSLNR	9			
mnCVID332 22 #	4-34	6-13	1	3	ASWGYQQPNEGDAFDI	16	3-21	2	QWDDSSDRYVV	12			
mnCVID332 41	1-69	3-10	2	4	ARDRSPYSGSCLDY	15	2-23	3	CSYAGSSIFGV	11	+	+	G
mnCVID332 48	4-34	1-26	2	4	ARARSGSYLRQKKSFDY	17	1-51	2	GTWDSLSAGGV	12	+	+	-
mnCVID332 94	4-39	2-2	2	4	ARHLLGYCSSTSCYAPRLYYFDY	24	2-14	3	SSYTSSTSWV	11	+	+2	M
	VH	D	RF	JH	CDR3 (aa)	Length	V	J	CDR3 (aa)	Length	Poly	HEp-2	Staining
mnCVID332 69	4-34	3-10	3	5	ARGRMVGVMRGTIWFDP	18							

RF, reading frame; #, antibody failed to be expressed

-, non-reactive; +, reactive; +2, highly reactive

c, diffuse cytoplasmic staining; A, actin staining; G, Golgi staining; M, mitochondria staining; N, nuclear staining