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Supplementary appendix

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Supplement to: Muecksch F, Wise H, Templeton K, et al. Longitudinal variation in SARS-CoV-2 antibody levels and emergence of viral variants: a serological analysis. *Lancet Microbe* 2022; published online May 27. https://doi.org/10.1016/S2666-5247(22)00090-8.

Appendix methods, figures and legends for

Longitudinal variation in SARS-CoV-2 antibody levels and emergence of viral variants: implications for the ability of serological assays to predict immunity.

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Appendix Methods

Study design and participants

This study is an observational cohort study and no statistical methods were used to predetermine sample size. Individuals with a positive SARS-CoV-2 PCR result were contacted by telephone by a research nurse and offered the opportunity to enrol in the study. Further recruitment took place by email advert. To enroll, participants must have been over 18 and had PCR confirmed SARS-CoV-2 infection at least 21 days prior. Exclusion criteria included individuals who were frail or shielding. At the baseline visit, participants consent was obtained together with a completed questionnaire detailing their symptoms and any hospitalization (see appendix Table 1). Serum samples were collected. Patients were invited to attend subsequent visits at approximately 2, 4, 8 and 20 weeks later. The final sample sizes were based on how many participants could be recruited for blood donation at each visit. Routine PCR testing was not available and therefore we cannot exclude that the one patient showing significantly increased neutralizing titers over time (Figure 1A) was not re-infected. As this is an observational study, experiments were not randomized, and the investigators were not blinded to allocation during experiments and outcome assessment.

Determination of assay sensitivity and specificity relative to neutralizing antibody titers (NT50).

The sensitivity and specificity of the antibody assays to detect samples with neutralising antibody titres was determined. An NT50 of >50 was selected as being above the limit of detection in the neutralization assay. Samples were assigned as true positive (TP) if the sample had an NT50 > 50, and an antibody assay value above the threshold. They were assigned as false negative (FN) if the sample had an NT50 > 50 but had a result below the threshold in the antibody assay, as false positive (FP) if the sample had an NT50 < 50 but had an antibody assay result above the threshold and as true negative (TN) if the sample had an NT50 < 50 and a negative result in the antibody assay. Sensitivity (% Sens) was calculated as [TP/(TP+FN)]*100 and measures the percentage of samples with an NT50 > 50 that had a positive antibody result. The total number of samples tested (n) is also shown. Specificity (% Spec) was calculated as [TN/(TN+FP)]*100 and measures the percentage of samples with an NT50 < 50 with a negative antibody result. The positive predictive value (% PPV) was calculated using the formula [TP/(TP+FP)]*100 and measures the percentage of samples with a positive antibody result and an NT50 >50. The negative predictive value (% NPV) was calculated using the formula [TN/(TN+FN]*100 and measures the percentage of samples with a negative antibody result and an NT50 < 50. These values were calculated for each assay at the manufacturer's recommended threshold (given in the first row for each manufacturer, and using assay specific units). For some assays the FDA recommended cut off for convalescent plasma donations was also available, and this is shown in a second row for the assay. Clopper-Pearson confidence intervals were used. As the cPass assay is not intended as a diagnostic assay with a specific cutoff value, this assay was not included in this analysis. We note, that given that the sample size is small, the power of the study to assess differences between tests may be limited.

Statistical analysis of antibody levels over time

A four-parameter nonlinear regression using the least squares regression method without weighting (GraphPad Prism) was used to calculate the half-maximal neutralization titers for sera (NT_{50}). This method allows the consideration of four parameters, the upper and lower plateau of the curve, the Hill slope and the 50% inhibitory dilution (i.e. the NT50). The upper plateau was constrained to 1and the lower to 0 representing 100% and 0% infection, respectively. For each individual study participant, assay values (either neutralizing titers or serological assay values) were normalized to the value obtained at visit 1 resulting in all values expressed as % of visit 1. Next, we analyzed whether assay values differ significantly between visit 1 and 5. To account for the longitudinal character of the dataset, we applied the two-tailed Wilcoxon matched-pairs signed rank test with a Confidence level of 95% and P values were reported.

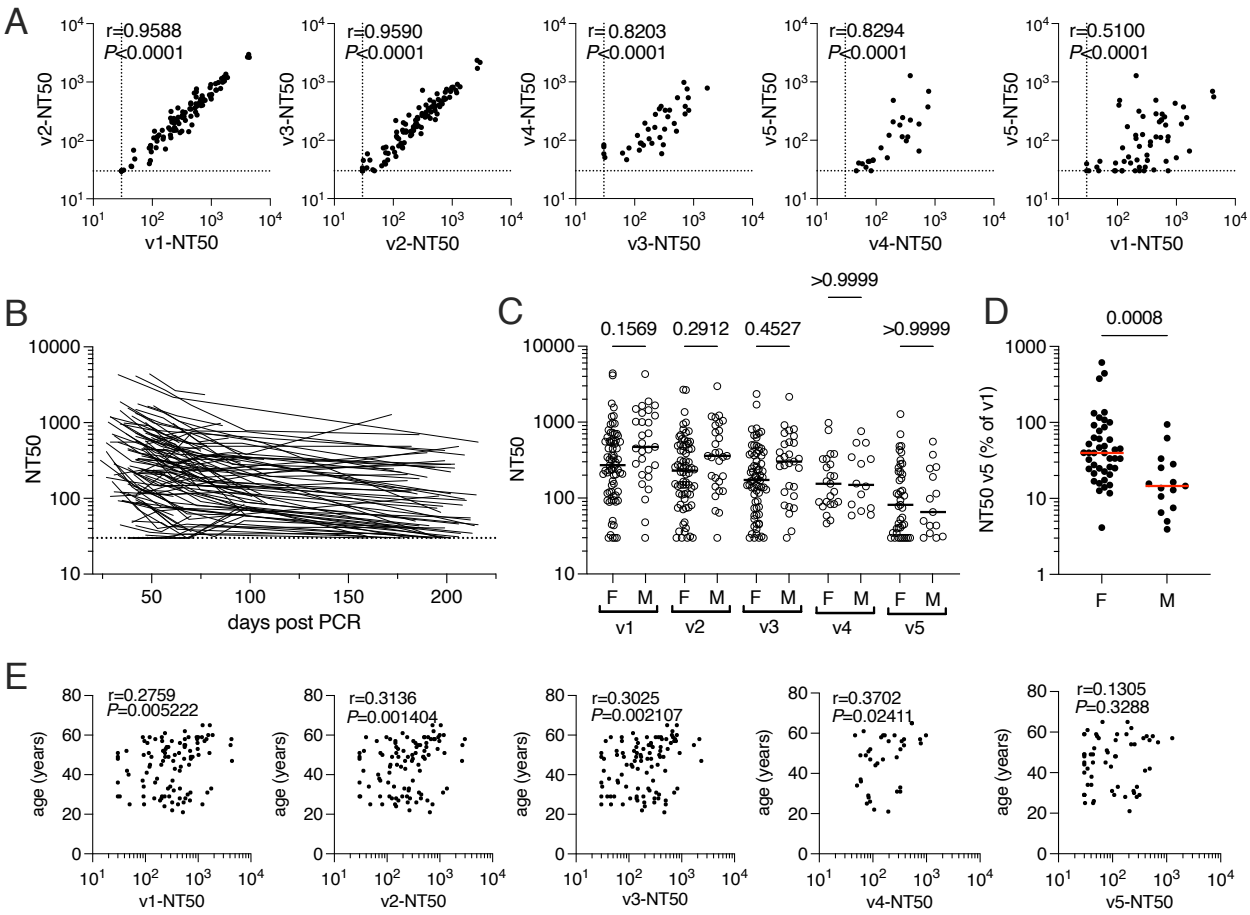
Statistical analysis of neutralizing titer decay-rates over time

The relative decay in neutralizing titers that occured between visit 1 and 3 was compared to the decay in neutralizing titers that occurred between visit 3 and 5. Only paired samples were taken into consideration, i.e. only participants that donated blood at visit 1, 3 and 5 were included in this analysis, to allow for calculation of the decay-rate between those visits. As a result, the two-tailed, nonparametric paired Wilcoxon matched-pairs signed rank test was used to analyze whether the decay rate differed between early after infection and late after infection. Confidence level was set at 95%.

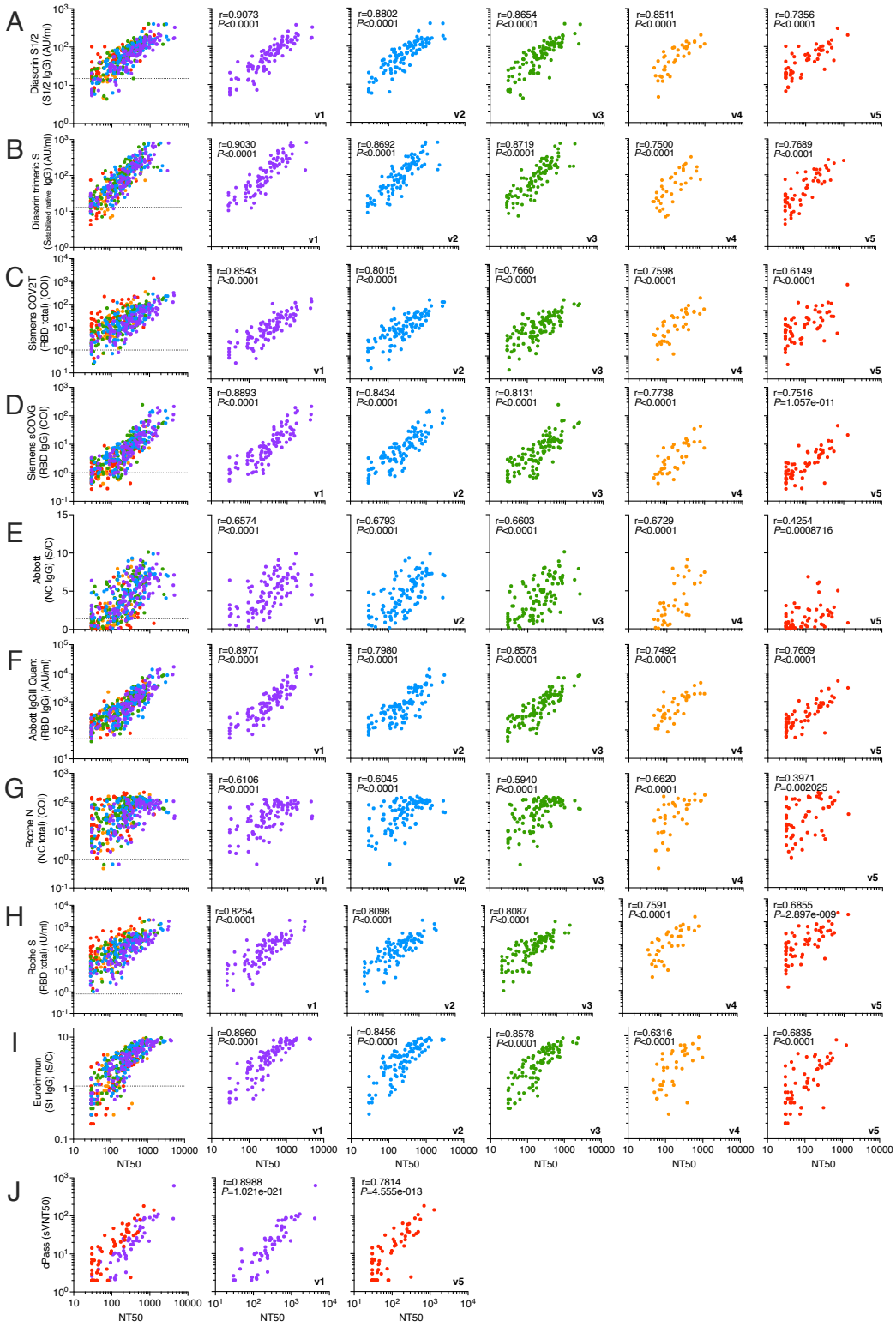
Statistical analysis of variant of concern neutralization titers over time
The neutralization titer for individual variants of concern was assessed in paired samples obtained at visit 1 and visit 5. All values were normalized to neutralization of the corresponding WT control (R683G) and values are expressed as NT50 relative to wt (%). Statistical significance of values obtained at visit 1 and visit 5 was calculated using the nonparametric paired Wilcoxon matched pairs signed rank test conducted at a confidence level of 95. Two-tailed P values are reported.

Statistical analysis of differences between male and female study participants
Differences in neutralization titers obtained in male vs. female study participants were analyzed using the nonparametric unpaired Mann-Whitney test and subsequent Dunn's multiple comparisons test at a confidence level of 95%. Two-tailed P values are reported.

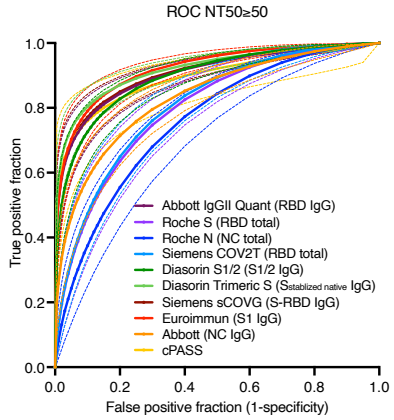
Correlation analyses
Correlation between Neutralizing titers and individual serology assays was assessed by calculating the nonparametric Spearman correlation coefficient. Tests were conducted at a confidence level of 95% and Spearman r with 95% confidence intervals , as well as two-tailed P values, as indicated, were reported. Correlation analyses were always performed for the individual timepoints, as indicated. A heat map was used to visualize those values in addition to correlation diagrams.



Appendix figure 1 – Correlation of neutralization activity and demographic parameters. (A) Correlation of NT50s in samples collected at different timepoints. **(B)** NT50 values per patient over time with each line representing a single participant. **(C)** NT50 values in female and male participants, sampled at the indicated visit. Statistical significance was assessed with the unpaired Kruskal-Wallis test with subsequent Dunn's multiple comparisons test. **(D)** Relative NT50 values at visit 5, normalized to visit 1 for female and male participants. Statistical significance was assessed with the Mann-Whitney test. **(E)** Correlation of NT50 and age at the indicated timepoints. Statistical significance in (A) and (E) was determined using the Spearman correlation test. Spearman r- and respective P-values as indicated. Dotted lines in (A) and (B) indicate limit of detection.

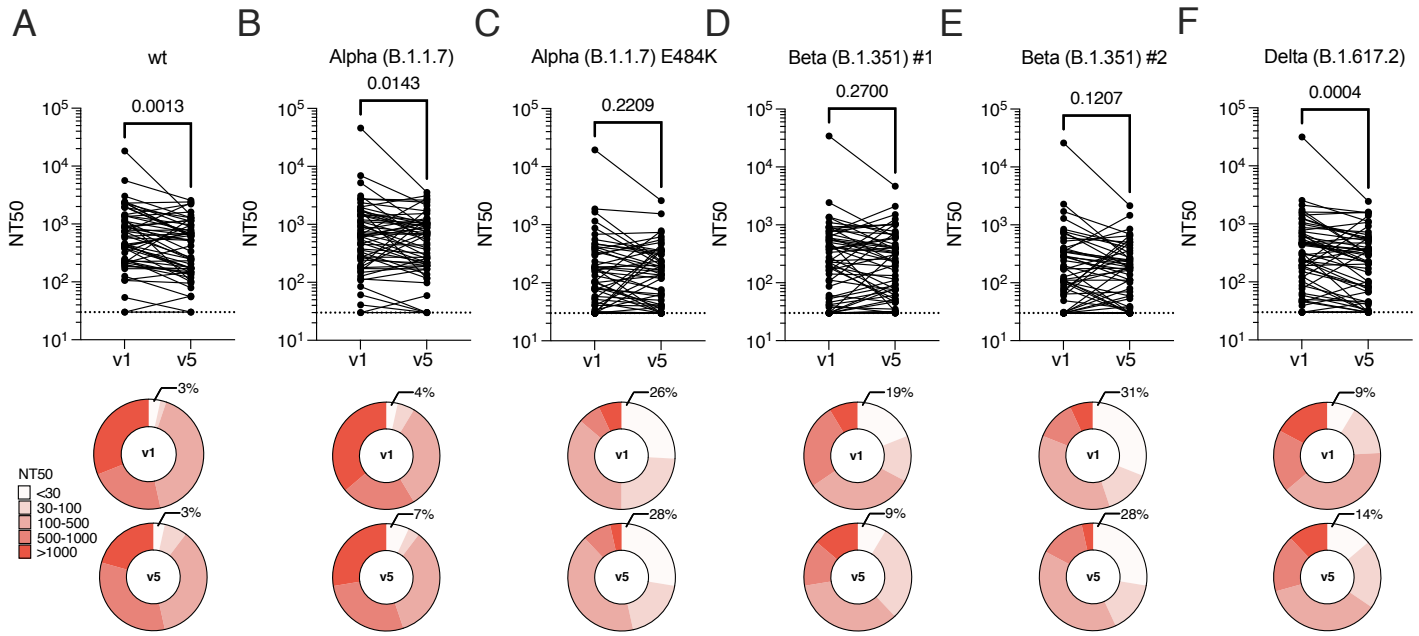


Appendix figure 2 – Correlation of neutralization titers and serology assays per visit. (A-J) Correlation of NT50 (x-axis) and indicated serological assay measurements (y axis) at visit 1 through 5. Sampling timepoints are indicated by color and shown collectively (left) and individually. Statistical significance was determined using the Spearman correlation test and Spearman r- and respective *P*-values are indicated for the individual visits. Dotted lines in left panels indicate serological assay thresholds.

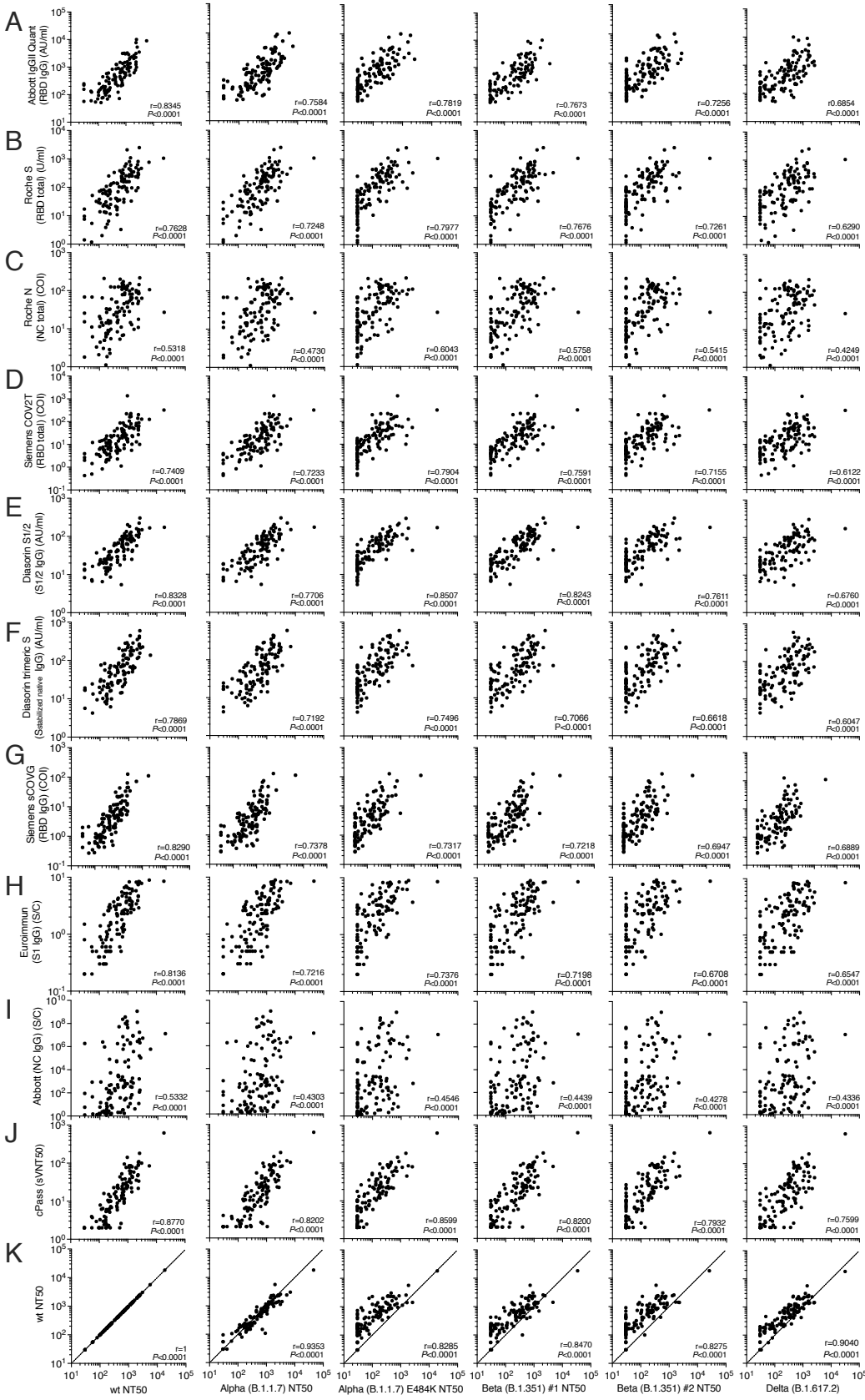


	AOC
Abbott NC IgG	0.8332
Diasorin S1/2 IgG	0.8958
Siemens COV2T	0.8068
Roche NC	0.7576
Roche S-RBD	0.7985
Euroimmun S1 IgG	0.9184
Diasorin Trimeric S	0.9203
Abbott IgGII S IgG	0.9067
Siemens sCOVG	0.9033
cPass	0.891

Appendix figure 3 – ROC analysis. Receiver-operating characteristic curve (ROC) for prediction of NT50>50 based on results obtained with indicated serology assays. Shown are mean values (continuous lines), 95% confidence intervals (dotted lines) and area under the curve (AOC) (table).



Appendix figure 4 – Neutralization of variants of concern. NT50s for wt **(A)** B.1.1.7 **(B)**, Alpha (B.1.1.7) E484K **(C)**, Beta (B.1.351) #1 **(D)**, Beta (B.1.351) #2 **(E)** and Delta (B.1.617.2) **(F)** pseudovirus at visit 1 and visit 5. Statistical significance was determined using Wilcoxon test. Dotted line indicates limit of detection. Deletions/substitutions present in VOCs, as well as respective wt control are in R683G background, as indicated.


A
Abbott IgGII Quant (RBD IgG) (AU/ml)
r=0.8345 P<0.0001
r=0.7584 P<0.0001
r=0.7819 P<0.0001
r=0.7673 P<0.0001
r=0.7256 P<0.0001
r0.6854 P<0.0001
B
Roche S (RBD total) (U/ml)
r=0.7628 P<0.0001
r=0.7248 P<0.0001
r=0.7977 P<0.0001
r=0.7676 P<0.0001
r=0.7261 P<0.0001
r=0.6290 P<0.0001
C
Roche N (NC total) (COI)
r=0.5318 P<0.0001
r=0.4730 P<0.0001
r=0.6043 P<0.0001
r=0.5758 P<0.0001
r=0.5415 P<0.0001
r=0.4249 P<0.0001
D
Siemens COV2T (RBD total) (COI)
r=0.7409 P<0.0001
r=0.7233 P<0.0001
r=0.7904 P<0.0001
r=0.7591 P<0.0001
r=0.7155 P<0.0001
r=0.6122 P<0.0001
E
Diasorin S1/2 (S1/2 IgG) (AU/ml)
r=0.8328 P<0.0001
r=0.7706 P<0.0001
r=0.8507 P<0.0001
r=0.8243 P<0.0001
r=0.7611 P<0.0001
r=0.6760 P<0.0001
F
Diasorin trimeric S (Stabilized native IgG) (AU/ml)
r=0.7869 P<0.0001
r=0.7192 P<0.0001
r=0.7496 P<0.0001
r=0.7066 P<0.0001
r=0.6618 P<0.0001
r=0.6047 P<0.0001
G
Siemens sCOVG (RBD IgG) (COI)
r=0.8290 P<0.0001
r=0.7378 P<0.0001
r=0.7317 P<0.0001
r=0.7218 P<0.0001
r=0.6947 P<0.0001
r=0.6889 P<0.0001
H
Euroimmun (S1 IgG) (S/C)
r=0.8136 P<0.0001
r=0.7216 P<0.0001
r=0.7376 P<0.0001
r=0.7198 P<0.0001
r=0.6708 P<0.0001
r=0.6547 P<0.0001
I
Abbott (NC IgG) (S/C)
r=0.5332 P<0.0001
r=0.4303 P<0.0001
r=0.4546 P<0.0001
r=0.4439 P<0.0001
r=0.4278 P<0.0001
r=0.4336 P<0.0001
J
cPass (sVNT50)
r=0.8770 P<0.0001
r=0.8202 P<0.0001
r=0.8599 P<0.0001
r=0.8200 P<0.0001
r=0.7932 P<0.0001
r=0.7599 P<0.0001
K
wt NT50
r=1 P<0.0001
r=0.9353 P<0.0001
r=0.8285 P<0.0001
r=0.8470 P<0.0001
r=0.8275 P<0.0001
r=0.9040 P<0.0001
wt NT50
Alpha (B.1.1.7) NT50
Alpha (B.1.1.7) E484K NT50
Beta (B.1.351) #1 NT50
Beta (B.1.351) #2 NT50
Delta (B.1.617.2)

Appendix figure 5 – Neutralization of variants of concern versus serology assays. **(A-K)** Correlation of, from left to right NT50s against the indicated pseudoviruses with the Abbott IgGII Quant **(A)**, Roche S **(B)**, Roche N **(C)**, Siemens COV2T **(D)**, Diasorin S1/2 **(E)**, Diasorin Trimeric S **(F)**, Siemens sCOVG **(G)**, Euroimmun **(H)**, Abbott NC **(I)** and the cPass assay **(J)** as well as with wt NT50 values. Samples obtained at visit 1 and visit 5 are included. Statistical significance was determined using the Spearman correlation, with Spearman r- and respective P-values as indicated. Deletions/substitutions present in VOCs, as well as respective wt control are in R683G background.

Table 1. Ability of serological assays to qualitatively identify presence of neutralizing antibodies.

									Sensitivity			Specificity			PPV			NPV		
>=50 - VISIT 1	cut off	TP	FN	TN	FP	test positive	test negative	n	**%SENS**	lower CI	upper CI	**%SPEC**	lower CI	upper CI	**%PPV**	lower CI	upper CI	**%NPV**	lower CI	upper CI
Abbott NC IgG	>=1.4	88	4	3	6	94	7	101	**96**	89.2	98.5	**33**	7.5	65.5	**94**	86.6	97.2	**43**	9.9	77.5
	>=4.5	54	38	8	1	55	46	101	**59**	47.9	67.4	**89**	51.8	99.4	**98**	90.3	99.9	**17**	7.8	29.2
Diasorin S1/2 IgG	>=15	87	5	8	1	88	13	101	**95**	87.8	97.8	**89**	51.8	99.4	**99**	93.8	99.9	**62**	31.6	83.4
Siemens COV2T	>=1	91	1	2	7	98	3	101	**99**	94.1	99.9	**22**	2.8	55.0	**93**	85.8	96.6	**67**	9.4	98.3
	>=4.8	82	10	9	0	82	19	101	**89**	80.9	94.0	**100**	66.4	100.0	**100**	95.6	100.0	**47**	24.4	68.0
Roche NC	>=1	91	1	0	9	100	1	101	**99**	94.1	99.9	**0**	n.a.	28.3	**91**	83.6	95.2	**0**	n.a.	95.0
Roche S-RBD	>=0.8	92	0	0	9	101	0	101	**100**	96.1	100.0	**0**	n.a.	28.3	**91**	83.8	95.3	**n.a.**	n.a.	n.a.
	>=132	44	48	9	0	44	57	101	**48**	37.3	56.9	**100**	66.4	100.0	**100**	92.0	100.0	**16**	7.5	25.9
Euroimmun S1 IgG	>=1.1	85	5	7	2	87	12	99	**94**	84.9	96.4	**78**	40.0	95.9	**98**	91.9	99.6	**58**	27.7	81.9
	>=3.5	55	35	9	0	55	44	99	**61**	49.0	68.4	**100**	66.4	100.0	**100**	93.5	100.0	**20**	9.8	33.0
	>=6	28	62	9	0	28	71	99	**31**	21.3	39.3	**100**	66.4	100.0	**100**	87.7	100.0	**13**	6.0	21.1
	>=8	14	76	9	0	14	85	99	**16**	8.6	22.8	**100**	66.4	100.0	**100**	76.8	100.0	**11**	5.0	17.7
Diasorin Trimeric S	>= 13	90	1	1	8	98	2	100	**99**	92.4	99.6	**11**	0.3	42.9	**92**	84.5	95.9	**50**	1.3	97.5
Abbott IgGII S IgG	>=50	90	0	0	9	99	0	99	**100**	92.4	99.6	**0**	n.a.	28.3	**91**	83.4	95.2	**n.a.**	n.a.	n.a.
	>=500	64	26	9	0	64	35	99	**71**	59.1	77.4	**100**	66.4	100.0	**100**	94.4	100.0	**26**	12.5	40.6
Siemens sCOVG	>=1	88	3	3	6	94	6	100	**97**	89.2	98.5	**33**	7.5	65.5	**94**	86.6	97.2	**50**	11.8	84.7
	>=4.8	64	27	9	0	64	36	100	**70**	59.1	77.4	**100**	66.4	100.0	**100**	94.4	100.0	**25**	12.1	39.6
cPASS (sVNT50)	≥2	53	0	0	5	58	0	58	**100**	46.9	66.3	**0**	n.a.	28.3	**91**	81.0	96.5	**n.a.**	n.a.	n.a.
	≥10	39	14	5	0	39	19	58	**74**	32.1	51.5	**100**	21.2	83.1	**100**	91.0	100.0	**26**	9.1	47.6
NEUT	>=50	92	0	9	0	92	9	101	100			100			100			100		

									Sensitivity			Specificity			PPV			NPV		
>=50 - VISIT 5	cut off	TP	FN	TN	FP	test positive	test negative	n	**%SENS**	lower CI	upper CI	**%SPEC**	lower CI	upper CI	**%PPV**	lower CI	upper CI	**%NPV**	lower CI	upper CI
Abbott NC IgG	>=1.4	29	16	28	8	37	44	81	**64**	48.8	76.3	**78**	60.8	88.4	**78**	61.8	88.8	**64**	47.8	75.7
	>=4.5	7	38	36	0	7	74	81	**16**	6.5	27.2	**100**	90.3	100.0	**100**	59.0	100.0	**49**	36.9	58.8
Diasorin S1/2 IgG	>=15	41	0	9	27	68	9	77	**100**	78.8	96.9	**25**	12.1	39.6	**60**	47.7	70.3	**100**	66.4	100.0
Siemens COV2T	>=1	45	0	3	33	78	3	81	**100**	92.1	100.0	**8**	1.8	20.2	**58**	46.0	67.2	**100**	29.2	100.0
	>=4.8	42	3	10	26	68	13	81	**93**	81.7	98.2	**28**	14.2	42.5	**62**	49.2	71.6	**77**	46.2	93.4
Roche NC	>=1	45	0	2	34	79	2	81	**100**	92.1	100.0	**6**	0.7	16.5	**57**	45.3	66.4	**100**	15.8	100.0
Roche S-RBD	>=0.8	45	0	2	34	79	2	81	**100**	92.1	100.0	**6**	0.7	16.5	**57**	45.3	66.4	**100**	15.8	100.0
	>=132	35	10	28	8	43	38	81	**78**	62.9	87.4	**78**	60.8	88.4	**81**	66.6	90.4	**74**	56.9	85.0
Euroimmun S1 IgG	>=1.1	37	8	27	9	46	35	81	**82**	67.9	90.8	**75**	57.8	86.3	**80**	66.1	89.4	**77**	59.9	88.1
	>=3.5	18	27	36	0	18	63	81	**40**	25.7	53.3	**100**	90.3	100.0	**100**	81.5	100.0	**57**	44.0	67.8
	>=6	4	41	36	0	4	77	81	**9**	2.5	19.2	**100**	90.3	100.0	**100**	39.8	100.0	**47**	35.3	56.7
	>=8	1	44	36	0	1	80	81	**2**	0.1	10.1	**100**	90.3	100.0	**100**	2.5	100.0	**45**	33.8	54.8
Diasorin Trimeric S	>= 13	43	2	13	23	66	15	81	**96**	84.9	99.2	**36**	20.8	51.2	**65**	52.4	74.9	**87**	59.5	97.6
Abbott IgGII S IgG	>=50	45	0	2	34	79	2	81	**100**	92.1	100.0	**6**	0.7	16.5	**57**	45.3	66.4	**100**	15.8	100.0
	>=500	30	15	33	3	33	48	81	**67**	51.0	78.2	**92**	77.5	97.7	**91**	75.7	97.5	**69**	53.7	79.6
Siemens sCOVG	>=1	41	4	21	15	56	25	81	**91**	78.8	96.9	**58**	40.8	72.3	**73**	59.7	82.7	**84**	63.9	94.3
	>=4.8	24	21	36	0	24	57	81	**53**	37.9	66.2	**100**	90.3	100.0	**100**	85.8	100.0	**63**	49.3	73.8
cPASS (sVNT50)	≥2	35	0	0	23	58	0	58	**100**	62.9	87.4	**0**	n.a.	8.0	**60**	46.6	71.2	**n.a.**	n.a.	n.a.
	≥10	30	5	21	2	32	26	58	**86**	51.0	78.2	**91**	40.8	72.3	**94**	79.2	98.9	**81**	60.6	92.1
NEUT	>=50	45	0	36	0	45	36	81	100			100			100			100		

True and false positive and negative samples are defined based on corresponding antibody neutralization titers: TP, true positives are samples that score positive in each assay and have NT50 >50 (the limit of detection in the neutralization assay). FN, false negatives score negative in serological assays but have NT50>50. TN, true negatives score negative in serological assays and have NT50<50. FP, false positives score positive in serological assays but have NT50<50. %SENS, sensitivity measured as the ration of TP over samples with NT50>50. %SPEC, specificity measured as the ratio of TN over samples that with NT50<50. %PPV, positive predictive value is the ratio of TP over total positive serological assay results. %NPV, negative predictive value is the ratio of TN over total negative serological assay results. (For details see appendix methods.) For each assay, cut off values are in assay units with the top row recommended by the manufacturer (MN) and the bottom by the FDA (when available). CI row indicates lower and upper confidence intervals.

Appendix Table 1: Study participant characteristics

										Symptoms							
Patient ID	age	gender	hospitilaztaion	visit 1	visit 2	visit 3	visit 4	visit 5	single visit	fever	cough	muscular aches	anosmia	coryzal	throat	gastrointestnal	shortness of breadth
1	25	M	Y	34	49	62		199		Y	N	N	Y	N	Y	Y	N
2	58	F	N	33	48	61		216		Y	Y	N	N	N	N	N	N
3	58	F	N	33	47	61				Y	Y	N	Y	N	Y	N	Y
5	36	M	N	31	44	59		214		Y	N	Y	Y	N	N	N	N
6	28	M	N	33	46	61				Y	N	Y	Y	N	N	N	Y
7	25	F	N	29	42	57		190		Y	N	N	Y	N	N	N	Y
9	21	M	N	24	42	66		212		Y	Y	Y	Y	N	Y	N	N
10	27	F	N	30	43	58		199		Y	Y	Y	Y	N	Y	N	Y
12	28	F	N	27	40	55		206		Y	Y	Y	Y	N	Y	N	N
13	43	M	N	28	41	56				N	Y	N	N	N	N	N	Y
14	25	M	N	27	40	55				N	Y	N	Y	N	Y	N	N
15	29	M	N	31	44	59		213		Y	Y	Y	N	Y	Y	Y	Y
17	60	F	N	27	40	55		215		Y	Y	Y	Y	Y	N	N	Y
18	48	M	N	38	51	66				Y	Y	Y	N	N	Y	N	Y
19	51	M	N	42	55	70				N	Y	N	Y	Y	Y	N	N
20	57	M	N	36	49	64				Y	N	Y	Y	N	N	N	N
21	53	F	N	33	46	61				Y	Y	Y	N	N	Y	N	Y
22	55	F	N	38	51	66				Y	N	Y	N	N	N	Y	Y
23	36	F	N	42	55	70		196		Y	Y	Y	Y	Y	Y	N	Y
24	56	M	N	38	51	66		212		Y	N	Y	Y	Y	N	N	Y
25	58	M	N	34	47	62				Y	Y	Y	Y	Y	Y	N	Y
26	60	F	N	35	48	63				Y	Y	Y	Y	N	N	N	Y
27	26	F	N	40	53	68		192		Y	Y	Y	Y	Y	N	N	Y
28	52	F	N	37	52	65	93	209		Y	Y	Y	Y	N	Y	N	Y
29	31	F	N	39	54	67				Y	N	Y	Y	Y	Y	N	Y
30	24	F	N	43	58	71				N	Y	Y	Y	Y	N	N	Y
31	41	F	N	29	44	57	85	177		Y	Y	Y	Y	N	N	N	Y
32	51	F	N	40	55	68	99	191		N	N	N	Y	N	Y	Y	N
33	57	M	N	38	53	69	97	185		Y	Y	Y	Y	N	Y	Y	N
34	49	F	N	30	45	58	107			Y	Y	Y	N	Y	Y	Y	Y
35	56	F	N	42	55	70	98	209		Y	N	Y	N	N	N	N	N
36	51	M	N	38	52	66				N	Y	N	Y	N	N	Y	Y

37	49	F	N	38	51	66	94	185		N	N	Y	Y	N	N	N	N
38	29	F	N	38	51	66				Y	Y	Y	Y	Y	Y	N	Y
39	58	F	Y	51	64	79	107	197		Y	Y	N	N	N	N	N	Y
40	54	F	N	41	54	69	97			N	Y	Y	Y	N	Y	N	Y
41	65	F	N	38	51	66				N	Y	Y	N	N	N	N	Y
42	55	F	N	42	57	70	98	206		Y	Y	N	N	N	N	N	Y
43	59	M	N	45	60	82	97	188		Y	Y	Y	Y	N	N	N	Y
44	61	F	N	42	64	91				N	N	N	Y	N	N	N	N
45	26	F	N	42	58	73	98	216		Y	Y	Y	Y	N	Y	Y	Y
46	34	F	N	42	57	70				Y	Y	Y	Y	N	N	Y	N
47	47	F	N	41	56	69	97	206		N	N	Y	Y	N	N	N	N
48	54	F	N	42	57	70	98	186		Y	N	Y	Y	N	N	N	N
49	45	F	N	42	58	73	101	186		Y	Y	Y	Y	Y	N	Y	Y
50	49	F	N	42	58	73	101	186		Y	Y	Y	Y	Y	Y	N	Y
51	49	M	N	42	58	70	98			Y	Y	Y	Y	N	N	N	Y
52	37	F	N	45	58	73	109			N	N	Y	Y	Y	N	N	Y
53	28	M	N	34	47	62	90			Y	Y	Y	N	N	N	N	Y
54	59	F	N	43	62	75	106			N	Y	Y	Y	Y	N	Y	Y
55	58	F	N	45	58	73	101			N	Y	N	Y	Y	Y	N	N
56	55	M	N	43	55	68	96			Y	N	Y	Y	N	N	N	N
57	38	M	N	34	47	62	90	193		Y	Y	N	N	N	Y	N	Y
58	32	F	N	45	58	73	101	207		N	Y	N	N	N	N	Y	Y
59	28	F	N	47	60	75	103	184		Y	N	Y	N	N	N	N	N
60	59	F	N	43	56	71	99			Y	N	Y	Y	N	N	N	Y
61	33	M	Y	48	63	86				Y	Y	N	N	N	N	N	Y
62	51	M	N	46	61	74	106			Y	Y	Y	N	N	N	N	Y
63	44	F	N	45	60	73				Y	Y	Y	Y	Y	Y	Y	Y
64	57	F	N	45	61	76		182		N	Y	Y	Y	N	N	Y	Y
65	49	F	N	47	62	75	108	202		Y	N	Y	Y	Y	N	N	N
66	52	M	N	47	62	75		202		N	Y	N	Y	N	Y	N	N
67	29	M	N	57	79	95				Y	Y	Y	Y	Y	Y	N	Y
68	48	F	N	44	59	72	104			Y	N	Y	Y	N	Y	N	N
69	46	F	N	47	62	75	110	180		Y	N	Y	Y	Y	N	Y	Y
70	45	F	N	45	60	76		208		N	Y	Y	Y	N	Y	N	Y
71	47	F	N	61	74	89		194		Y	Y	N	N	N	N	N	Y
72	42	F	N	50	63	78		204		N	Y	Y	Y	Y	Y	N	Y
74	65	F	N	42	56	68	91	173		Y	Y	Y	Y	N	N	Y	N
75	53	F	N	41	54	69		196		Y	N	Y	Y	N	N	Y	Y
76	50	M	N	47	60	75		202		Y	Y	Y	N	Y	Y	N	Y
77	31	F	N	47	61	75		202		Y	Y	Y	N	Y	Y	N	Y

78	43	M	N	40	53	68		170		Y	Y	Y	Y	Y	Y	Y	Y
79	45	F	N	47	60	75		199		N	Y	Y	N	Y	Y	N	Y
80	29	F	Y	49	62	77				Y	Y	Y	Y	N	N	Y	Y
81	60	F	N	51	64	86		198		N	Y	Y	Y	N	N	N	Y
82	47	M	N	31	46	59	87	181		N	Y	Y	Y	N	Y	Y	Y
83	33	F	N	31	46	59	87	195		Y	Y	Y	Y	N	N	N	N
84	54	F	N	54	69	82		210		Y	Y	Y	Y	N	N	N	N
85	30	F	N	31	46	59	87	181		N	Y	Y	N	Y	Y	N	N
86	22	M	N	40	55	68	96	190		N	Y	N	Y	N	Y	N	N
87	59	F	N	29	44	57	85			Y	Y	Y	Y	Y	N	N	N
88	37	F	N	56	71	84		204		Y	N	Y	Y	Y	N	Y	N
89	59	F	N	47	62	75				Y	Y	Y	Y	Y	Y	N	N
90	33	F	N	46	61	75				Y	Y	Y	Y	N	Y	N	Y
91	59	F	N	54	69	91		180		Y	Y	Y	Y	N	Y	N	Y
92	45	M	N	42	57	70	98	172		Y	Y	N	Y	N	N	N	Y
93	40	M	N	58	71	86		202		N	Y	Y	Y	Y	N	N	Y
94	57	F	N	55	68	83				N	Y	N	Y	N	Y	N	Y
95	49	F	N	49	68	83				N	N	Y	Y	N	N	N	Y
97	62	F	N	50	63	78				Y	Y	N	Y	Y	N	N	Y
100	50	F	N	34	49	62		174		N	Y	N	N	Y	N	N	Y
101	50	F	N	39	55	70		182		N	N	Y	Y	N	Y	Y	N
102	29	F	N	58	73	86		198		Y	Y	Y	N	Y	Y	N	Y
103	34	F	N	43	58	71		163		N	N	N	Y	N	N	N	Y
104	27	F	N	38	53	67		160		N	N	N	Y	Y	N	N	N
105	26	F	N	35	50	63		177		Y	Y	N	Y	Y	N	N	Y
106	51	F	N	36	49	64				N	N	Y	N	N	N	Y	Y
110	44	F	N	42	55	70				Y	N	Y	N	N	N	Y	Y
111	48	F	N	61	74	89				Y	Y	Y	Y	Y	Y	Y	Y
112	29	F	N	29	42	57				Y	Y	Y	Y	Y	Y	Y	Y
LR964-C001	38	F	N						179								
LR964-C002	55	F	N						152								
LR964-C003	42	F	N						184								
LR964-C004	60	F	N						175								
LR964-C005	46	F	N						199								
LR964-C006	39	M	N						164								
LR964-C007	28	F	N						178								
LR964-C008	57	F	N						179								
LR964-C009	53	F	N						189								

LR964-C011	26	F	N						146									
LR964-C025	32	F	N						163									
LR964-C038	41	M	N						179									
LR964-C041	44	M	N						202									
LR964-C067	20	M	N						131									
LR964-C073	35	F	N						203									
LR964-C074	52	F	N						178									
LR964-C075	53	F	N						168									
LR964-C077	40	F	N						201									
LR964-C079	28	F	N						178									
LR964-C082	31	F	N						192									
LR964-C083	24	F	N						168									
LR964-C087	31	F	N						189									
LR964-C086	56	F	N						44									

Study cohort information. Gender and age are shown, along with whether the patient was hospitalized during their illness. Times (days) post-RT-PCR SARS-CoV-2 positive test are provided for each sample at each visit. Patient symptoms at visit 1 are indicated (based on patient answers to a questionnaire). Demographic information of the cohort was not recorded.