

Supplementary Information

Serological fingerprints link antiviral activity of therapeutic antibodies to affinity and concentration

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Table S1. Mutations within the spike protein shared among SARS-CoV-2 variants⁴⁴.

		SARS-CoV-2 variant												
Spike protein		Alpha	Beta	Gamma	Delta	Kappa	Omicron (BA.1)	Omicron (BA.2)	Eta	Iota	Lambda	Mu		
Domain	Region	Shared mutations												
S1	NTD	L18F	L18F											
					T19R			T19I						
						P26S			P26-					
								A67V		A67V				
		H69- V70-						H69- V70-		H69- V70-				
								T95I			T95I		T95I	
								G142- V143-		G142- V143-				
								Y144- Y145D		Y144- Y145D		Y144-		Y144S Y145N
												D253G	D253N	
									G339D	G339D				
							S371L	S371F						
							S373P	S373P						
							S375F	S375F						
			K417N	K417T			K417N	K417N						
							N440K	N440K						
					L452R	L452R					L452Q			
							S477N	S477N						
						T478K	T478K	T478K						
			E484K	E484K		E484Q	E484A	E484A	E484K	E484K		E484K		
							Q493R	Q493R						
							Q498R	Q498R						
		N501Y	N501Y	N501Y			N501Y	N501Y				N501Y		
							Y505H	Y505H						
		D614G	D614G	D614G	D614G	D614G	D614G	D614G	D614G	D614G	D614G	D614G		
				H655Y			H655Y	H655Y						
							N679K	N679K						
		P681H			P681R	P681R	P681H	P681H				P681H		
S2			A701V							A701V				
							N764K	N764K						
							D796Y	D796Y						
	HR1				D950N						D950N			
							Q954H	Q954H						
							N969K	N969K						

Table S2. Mutations within the spike protein unique among SARS-CoV-2 variants⁴⁴.

		SARS-CoV-2 variant										
		Alpha	Beta	Gamma	Delta	Kappa	Omicron (BA.1)	Omicron (BA.2)	Eta	Lota	Lambda	Mu
		Unique mutations										
	A570D	D80A	T20N	E156-	E154K	N211-	L24-	Q52R	L5F	G75V	R346K	
	T716I	D215G	D138Y	F157-	Q1071H	L212I	P25-	Q677H		T76I		
	S982A	L241-	R190S	R158G		G446S	A27S	F888L		R246-		
	D1118H	L242-	T1027I			G496S	V213G			S247-		
		A243-	V1176F			T547K	T376A			Y248-		
						N856K	D405N			L249-		
						L981F	R408S			T250-		
										P251-		
										G252-		
										F490S		
										T859N		

Table S3. Summary of unpublished microfluidic antibody affinity profiling data from SARS-CoV-2 convalescent samples shown in Figure 3. Results from samples collected by Blutspendedienst (BDS) Kanton Zürich and University Hospital Zurich (CH) have been published previously in *Life Sci. Alliance* 2021, 5 (2), e202101270.

Sample source: Working reagent for anti-SARS-CoV-2 immunoglobulin, NIBSC code 21/234. National Institute for Biological Standards and Control (UK)							
	K_D (nM)				[antibody] (nM)		
antigen	best fit	lower 95% CI	upper 95% CI		best fit	upper 95% CI	lower 95% CI
SARS-CoV-2 wt spike RBD	12.3	9.3	16.4		110	130	93.9
SARS-CoV-2 delta spike RBD	17.5	13	24.3		119	138	98.1
SARS-CoV-2 omicron spike RBD	30.1	23	39.9		59.3	71.7	46.4
Sample source: Fred Hutchinson Cancer Research Center, Seattle WA, USA							
	K_D (nM)				[antibody] (nM)		
antigen	best fit	lower 95% CI	upper 95% CI		best fit	lower 95% CI	upper 95% CI
SARS-CoV-2 wt spike RBD	11.2	3.2	26.8		246	76.7	452
SARS-CoV-2 wt spike RBD	9.3	4.1	18.9		70.5	40.5	110
SARS-CoV-2 wt spike RBD	6.9	3.6	12.2		676.8	597	813
SARS-CoV-2 wt spike RBD	9.4	5.8	13.2		240	196	281
SARS-CoV-2 wt spike RBD	17.4	12.4	23.1		495	414	583
SARS-CoV-2 wt spike RBD	8.6	3.2	25.9		424	230	777
SARS-CoV-2 wt spike RBD	40.4	23.5	64.9		239	161	324
SARS-CoV-2 wt spike RBD	15.1	0.29	37.0		104	3.1	202
SARS-CoV-2 wt spike RBD	4.5	0.01	11.2		190	67.7	349
SARS-CoV-2 wt spike RBD	10.9	3.9	27.4		170	77.3	275
SARS-CoV-2 wt spike RBD	9.3	0.06	28.5		71.7	22.0	127
SARS-CoV-2 wt spike RBD	5.8	1.9	11.0		140	99.6	192
SARS-CoV-2 wt spike RBD	25.4	11.9	60.9		249	127	400
SARS-CoV-2 wt spike RBD	9.7	0.01	1108		9.7	0.09	1416
SARS-CoV-2 wt spike RBD	9.4	3.4	16.1		1778	1176	2270
SARS-CoV-2 wt spike RBD	30.7	11.8	62.5		275	146	788
SARS-CoV-2 wt spike RBD	6.8	1.4	19.6		26.7	11.3	46
SARS-CoV-2 wt spike RBD	48.3	1.0	278		326	4.5	804
SARS-CoV-2 wt spike RBD	9.2	0.01	294		373	0.0	3441
SARS-CoV-2 wt spike RBD	6.5	2.8	11.7		135	108	178
SARS-CoV-2 wt spike RBD	51.8	20.0	124		340	103	1014
SARS-CoV-2 wt spike RBD	16.3	10.5	24.1		297	224	383
SARS-CoV-2 wt spike RBD	7.4	0.02	14.3		96.0	32.0	151
SARS-CoV-2 wt spike RBD	29.2	17.2	47.7		430	241	583
SARS-CoV-2 wt spike RBD	18.5	8.1	37.7		92.0	39.0	153
Sample source: Mayo Clinic, Rochester, MN, USA							

antigen	K_D (nM)			[antibody] (nM)		
	best fit	lower 95% CI	upper 95% CI	best fit	lower 95% CI	upper 95% CI
SARS-CoV-2 wt spike RBD	0.55	0.011	1.5	2.3	1.2	5.6
SARS-CoV-2 wt spike RBD	0.02	0.010	1.98	22.3	14.6	66.5
SARS-CoV-2 wt spike RBD	1.0	0.013	2.8	19.4	13.1	26.2
SARS-CoV-2 wt spike RBD	0.02	0.010	0.67	3.3	2.0	10.4