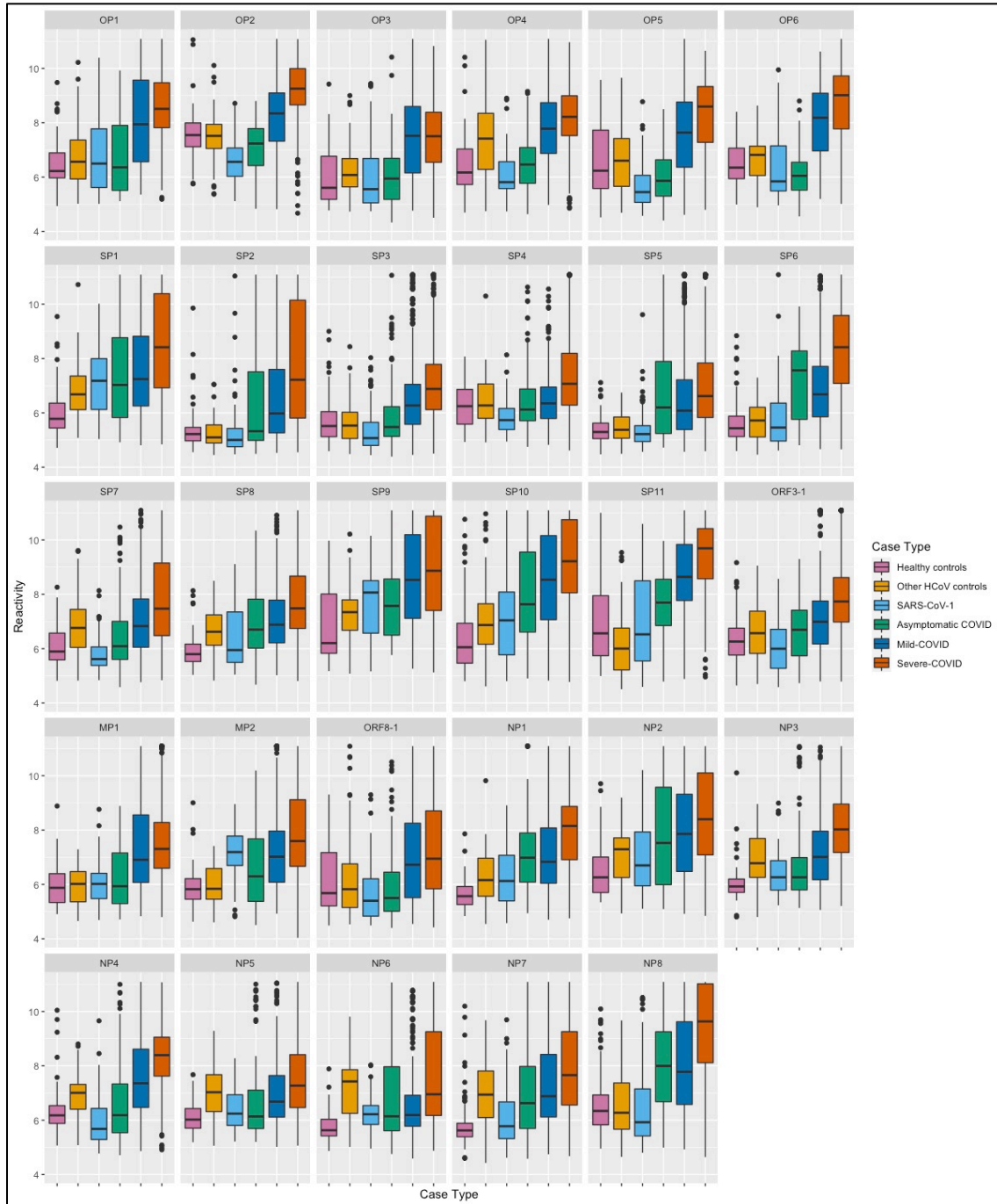
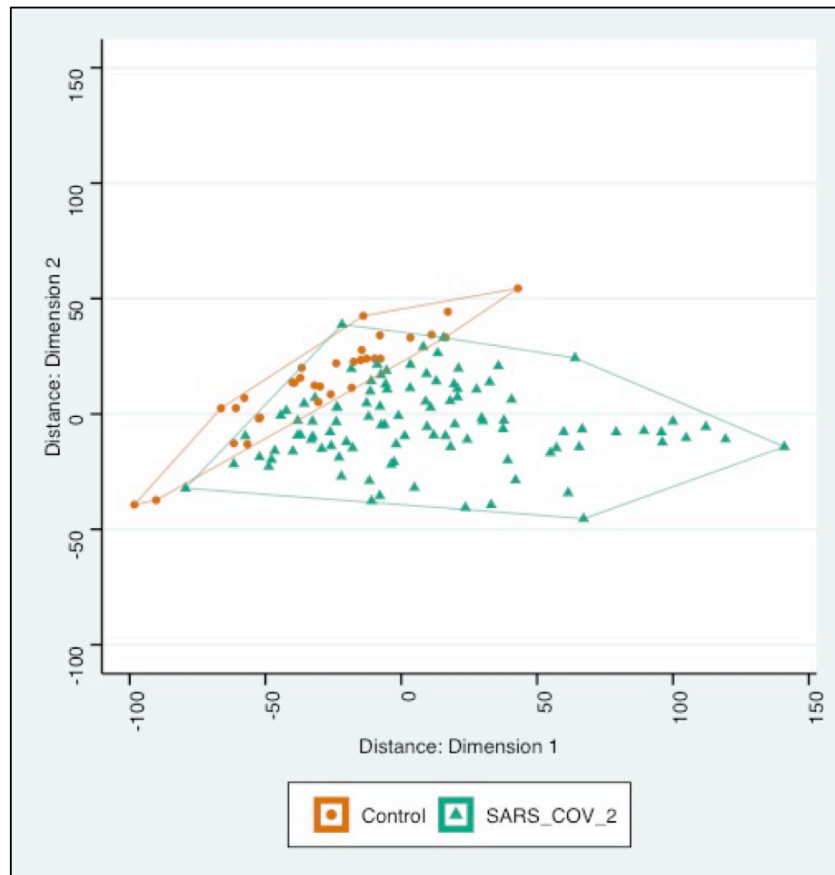


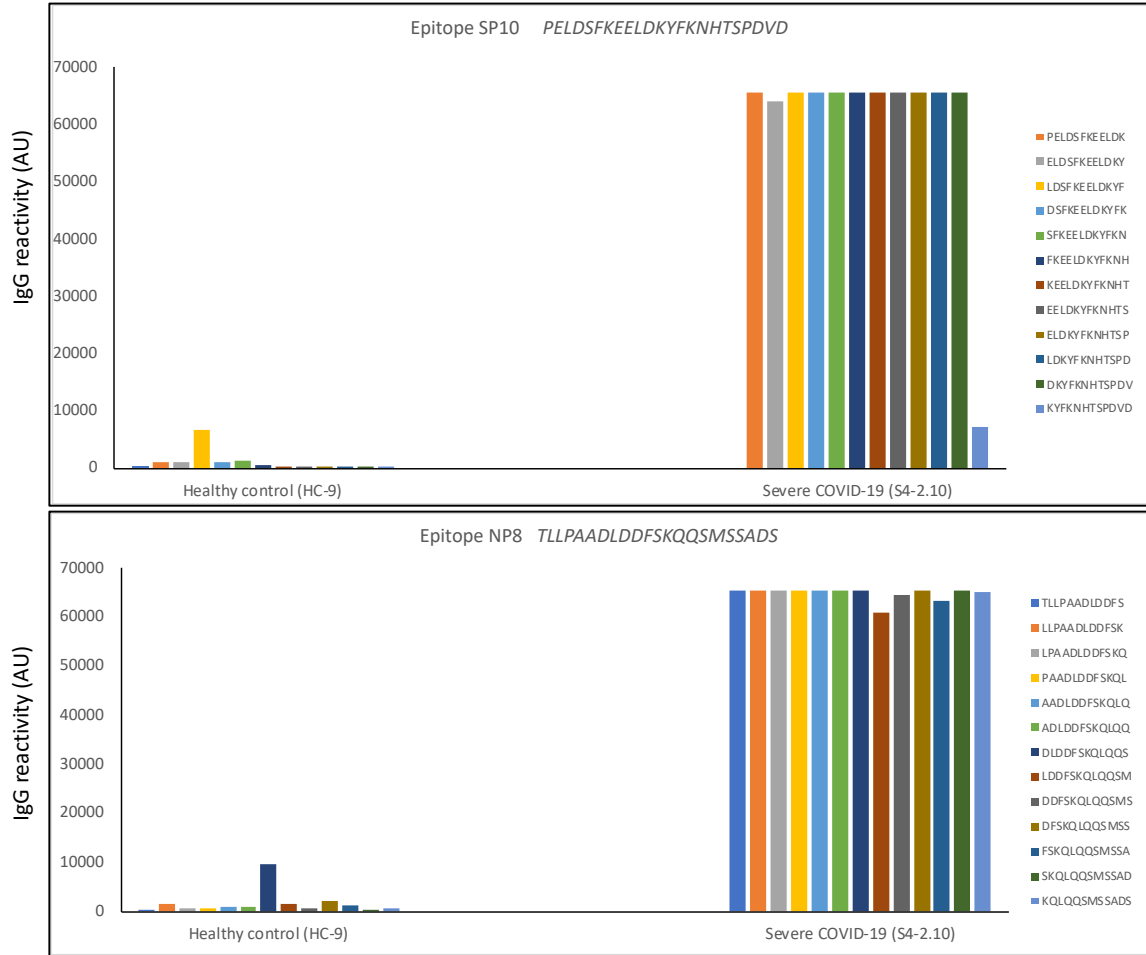
Supplementary figure 1. Notation of twenty-nine immunogenic B cell IgG epitopes on the proteome of SARS-CoV-2 (Accession number MN908947)



Supplementary figure 2. Reactivity intensities of each peptide from 29 immunogenic linear IgG epitopes are plotted on log scale (y-axis). Reactivity to selected peptides is plotted for corresponding groups shown in different colors (x-axis).



Supplementary figure 3. Multidimensional scaling (MDS) of differential IgM peptide signals in assays of sera from subjects with a history of infection with SARS-CoV-2 (n=100) or without historical exposure to SARS-CoV-2 (controls) (n=32). Based on MDS analysis, samples with exposure of SARS-CoV-2 samples (green) versus controls (red) clustered in overlapping groups.



Supplementary figure 4. Illustration of overlapping 12 aa peptides reactivity and formation of SP10 and NP8 epitopes. Reactivity was measured in arbitrary units (X axis) and compared between in a severely ill COVID-19 patient versus healthy control sample (Y axis).

	<b>Virus database</b>	<b>No. of protein sequences</b>	<b>Total redundant "12-aa" peptides</b>	<b>Total unique "12-aa" peptides</b>
1	<i>SARS-CoV-2-MN908947-CDS</i>	10	9591	9591
2	<i>Human-229E-CoV-PDB</i>	662	576999	15756
3	<i>Human-HKU1-CoV-PDB</i>	721	554447	16390
4	<i>Human-NC63-CoV-PDB</i>	1320	1000287	16392
5	<i>Human-OC43-CoV-PDB</i>	2667	2679272	29635
6	<i>MERS-CoV-PDB</i>	7253	8604059	54188
7	<i>SARS-CoV-PDB</i>	1996	1484140	29791
8	<i>Human-CoV-variants-VIPR-PDB</i>	12131	9880717	101145
9	<i>Bat-CoV-ZC45</i>	11	9678	9678
10	<i>Bat-CoV-ZXC21</i>	11	9655	9655
11	<i>Redundant-non-specific-peptides</i>	NA	NA	1000
Total number of unique and redundant peptides			24779921	283630
<b>Total peptides in HCoV-SeroChip</b>			<b>172665</b>	

Supplementary Table 1. Design and characteristics of HCoV-peptide array

	Asymptomatic (n=6)	Non-severe (n=22)	Severe (n=22)	SARS-CoV-1 (n=11)	Healthy (n=10)	Other HCoV (n=11)
Gender (M/F)	2/4	13/9	14/8	1/10	5/5	--
Age (years)	43.5±15.08	44.0±16.73	60.1±12.37	24.4±5.0	46.3±7.3	--
Time of collection (post onset of symptoms days, POD)						
First collection	day of hospitalisation	12.9±5.9	9.6±3.5	--	--	--
Second collection	14.5±4.6	34.7±8.3	24.8±6.8	--	--	--
Symptoms						
Cough	0(0%)	19(86%)	15(68%)	--	--	--
Fever	1(17%)	16(73%)	19(86%)	--	--	--
Dyspnea	0(0%)	2(9%)	5(23%)	--	--	--
Snivel	0(0%)	3(14%)	1(5%)	--	--	--
Sore throat	0(0%)	4(18%)	5(23%)	--	--	--
Diarrhea/Vomit/Stomach ache	0(0%)	7(32%)	8(36%)	--	--	--
Underlying diseases						
Cancer	1(17%)	2(9%)	0(0%)	--	--	--
Thyroid disease	1(17%)	0(0%)	2(9%)	--	--	--
Diabetes	0(0%)	2(9%)	3(14%)	--	--	--
Hypertension	0(0%)	5(23%)	6(27%)	--	--	--
Arthritis	0(0%)	1(5%)	0(0%)	--	--	--
Kidney disease	0(0%)	1(5%)	1(5%)	--	--	--
Appendicitis History	0(0%)	1(5%)	1(5%)	--	--	--
Gastritis history	0(0%)	0(0%)	1(5%)	--	--	--
Spinal diseases	0(0%)	0(0%)	2(9%)	--	--	--
Bronchiectasis	0(0%)	0(0%)	1(5%)	--	--	--
Skin disease	0(0%)	0(0%)	1(5%)	--	--	--
Treatment						
Antibiotic	3(50%)	17(77%)	22(100%)	--	--	--
Antivirus	5(83%)	19(86%)	21(95%)	--	--	--
Interferon	0(0%)	1(5%)	3(14%)	--	--	--
TCM	1(17%)	7(32%)	6(27%)	--	--	--
Globulin	0(0%)	11(50%)	21(95%)	--	--	--
Chloroquine	5(83%)	16(73%)	9(41%)	--	--	--

Supplementary Table 2. Clinical characteristics of patients by groups with SARS-CoV-2 infection and controls.

Sample-ID	229E-CoV	NL63-CoV	OC4-3 CoV	HKU1-CoV
PPA-0166	++++	N	I	++
PPA-0178	+++	+	I	I
PPA-0172	++++	I	+	++++
PPA-0176	++++	++++	++++	++++
PPA-0165	N	N	N	/
PPA-0170	/	/	N	N
PPA-0177	N	/	N	N
PPA-0168	N	+	I	++++
PPA-0179	+	++	N	++++
PPA-0173	N	I	+++	++++
PPA-0169	N	++++	+++	N
NA	Data not available			
I	<i>Indeterminate</i>			
N	<i>Negative</i>			
++	<i>Positive</i>			
+++	<i>Strong Positive</i>			
++++	<i>Very Strong Positive</i>			

Supplementary Table 3. IgG Immunoreactivity of other HCoV controls using S protein based specific ELISAs for four seasonal human coronaviruses (OC43, 229E, HKU1 and NL63).

Epitope ID	Epitope name	Epitope sequence	Group 1-Severe cases of COVID-19 (n=22)			Group 2-Mild cases of COVID-19 (n=22)			Group 3-Asymptomatic cases of		
			Reactive in first time point collection	Reactive in second time point collection	Reactive in both time point collections	Reactive in first time point collection	Reactive in second time point collection	Reactive in both time point collections	Reactive in first time point collection	Reactive in second time point collection	Reactive in both time point collections
1	OP1	TAYNGYLTSSSK TP	1/22 (4.5%)	0/22(0%)	4/22(18.2%)	1/22(4.5%)	1/22(4.5%)	4/22(18.2%)	0/6(0%)	0/6(0%)	0/6(0%)
2	OP2	LVPNQPYPNASF DNF	0/22(0%)	4/22(18.2%)	8/22(36.4%)	1/22(4.5%)	1/22(4.5%)	2/22 (9.1%)	0/6(0%)	0/6(0%)	0/6(0%)
3	OP3	NRFTTLLNDFNL VAMK	0/22(0%)	0/22(0%)	1/22 (4.5%)	1/22(4.5%)	0/22(0%)	3/22(13.6%)	0/6(0%)	0/6(0%)	0/6(0%)
4	OP4	QGLLPKNSIDA FKLNIK	2/22 (9.1%)	2/22 (9.1%)	3/22(13.6%)	0/22(0%)	2/22 (9.1%)	4/22(18.2%)	0/6(0%)	0/6(0%)	0/6(0%)
5	OP5	NTCVGSDNVTD FNAIATCDW	0/22(0%)	8/22(36.4%)	5/22(22.7%)	2/22 (9.1%)	3/22(13.6%)	3/22(13.6%)	0/6(0%)	0/6(0%)	0/6(0%)
6	OP6	FYSYATHSDKFT DGV	2/22 (9.1%)	6/22 (27.3%)	5/22(22.7%)	0/22(0%)	2/22 (9.1%)	0/22(0%)	0/6(0%)	0/6(0%)	0/6(0%)
7	ORF3-1	EHDYQIGGYTEK WESGVKDCVVL	1/22 (4.5%)	2/22 (9.1%)	4/22(18.2%)	0/22(0%)	1/22 (4.5%)	1/22 (4.5%)	0/6(0%)	0/6(0%)	0/6(0%)
8	ORF8-1	GSKSPIQYIDIGN YTVSCLPF	1/22 (4.5%)	5/22(22.7%)	4/22(18.2%)	2/22 (9.1%)	1/22 (4.5%)	2/22 (9.1%)	0/6(0%)	0/6(0%)	0/6(0%)
9	SP1	TESNKKFLPFQQ FGRDIAD	0/22(0%)	13/22(59.1%)	3/22(13.6%)	0/22(0%)	8/22(36.4%)	2/22 (9.1%)	0/6(0%)	1/6(16.7%)	1/6(16.7%)
10	SP2	TDAVRDPQTLLEI LDITPCS	1/22 (4.5%)	14/22(63.6%)	4/22(18.2%)	0/22(0%)	10/22(45.5%)	2/22 (9.1%)	0/6(0%)	0/6(0%)	1/6(16.7%)
11	SP3	QVAVLYQDVNVC TEVPVAIHADQL TPTW	0/22(0%)	9/22(40.9%)	0/22(0%)	0/22(0%)	2/22 (9.1%)	2/22 (9.1%)	0/6(0%)	0/6(0%)	0/6(0%)
12	SP4	CASYQTQTNspr RARSV	0/22(0%)	2/22 (9.1%)	2/22 (9.1%)	0/22(0%)	1/22 (4.5%)	0/22(0%)	0/6(0%)	0/6(0%)	1/6(16.7%)
13	SP5	ARSVASQSIAYT MSLGAENSVVA	1/22 (4.5%)	5/22(22.7%)	1/22 (4.5%)	1/22 (4.5%)	1/22 (4.5%)	3/22(13.6%)	0/6(0%)	0/6(0%)	1/6(16.7%)
14	SP6	RALTGIAVEQDK NTQEVFAQV	2/22 (9.1%)	7/22(31.8%)	8/22(36.4%)	1/22 (4.5%)	4/22(18.2%)	1/22 (4.5%)	2/6(33.3%)	0/6(0%)	0/6(0%)
15	SP7	FAQVKKQYKTPPI KDFGGFNF	1/22 (4.5%)	4/22(18.2%)	4/22(18.2%)	1/22 (4.5%)	3/22(13.6%)	0/22(0%)	0/6(0%)	0/6(0%)	1/6(16.7%)
16	SP8	NFSQILPDPSKPS KRS	0/22(0%)	3/22(13.6%)	1/22 (4.5%)	0/22(0%)	4/22(18.2%)	0/22(0%)	0/6(0%)	0/6(0%)	1/6(16.7%)
17	SP9	KRSFIEDLLFNKV T	0/22(0%)	3/22(13.6%)	5/22(22.7%)	2/22 (9.1%)	3/22(13.6%)	2/22 (9.1%)	1/6(16.7%)	0/6(0%)	0/6(0%)
18	SP10	PELDSFKEELDKY FKNHTSPDVD	0/22(0%)	8/22(36.4%)	14/22(63.6%)	0/22(0%)	9/22(40.9%)	9/22(40.9%)	0/6(0%)	0/6(0%)	4/6(66.7%)
19	SP11	SPDVLGDISGI NASVV	0/22(0%)	8/22(36.4%)	11/22(50%)	1/22 (4.5%)	8/22(36.4%)	5/22(22.7%)	0/6(0%)	0/6(0%)	0/6(0%)
20	MP1	CDIKDLPKEITVA TS	0/22(0%)	8/22(36.4%)	0/22(0%)	0/22(0%)	6/22 (27.3%)	0/22(0%)	0/6(0%)	0/6(0%)	0/6(0%)
21	MP2	QRVAGDSGFAA YSRV	0/22(0%)	10/22(45.5%)	0/22(0%)	0/22(0%)	4/22(18.2%)	0/22(0%)	0/6(0%)	0/6(0%)	0/6(0%)
22	NP1	ALLLLDRLNQLE SKMSG	2/22 (9.1%)	4/22(18.2%)	1/22 (4.5%)	0/22(0%)	3/22(13.6%)	2/22 (9.1%)	0/6(0%)	1/6(16.7%)	0/6(0%)
23	NP2	NQLESKMSGKG QQQQGQTVTKK SA	1/22 (4.5%)	7/22(31.8%)	11/22(50%)	0/22(0%)	7/22(31.8%)	8/22(36.4%)	0/6(0%)	3/6(50%)	2/6(33.3%)
24	NP3	QTVTKKSAAEAS KKPRQK	0/22(0%)	5/22(22.7%)	2/22 (9.1%)	0/22(0%)	3/22(13.6%)	1/22 (4.5%)	0/6(0%)	0/6(0%)	1/6(16.7%)
25	NP4	RGPEQTQGNFG DQELI	1/22 (4.5%)	0/22(0%)	4/22(18.2%)	0/22(0%)	1/22 (4.5%)	2/22 (9.1%)	0/6(0%)	0/6(0%)	1/6(16.7%)
26	NP5	AYKTFPPTPEKK DKKKK	1/22 (4.5%)	2/22 (9.1%)	2/22 (9.1%)	0/22(0%)	2/22 (9.1%)	0/22(0%)	0/6(0%)	0/6(0%)	1/6(16.7%)
27	NP6	KDKKKKADETQ ALPQR	0/22(0%)	2/22 (9.1%)	4/22(18.2%)	0/22(0%)	5/22(22.7%)	0/22(0%)	0/6(0%)	1/6(16.7%)	1/6(16.7%)
28	NP7	ADETQALPQRQ KKQQTVTLPAADL	1/22 (4.5%)	12/22(54.5%)	4/22(18.2%)	1/22 (4.5%)	6/22 (27.3%)	3/22(13.6%)	0/6(0%)	0/6(0%)	1/6(16.7%)
29	NP8	TLLPAADLDDFS KQLQQSMSSAD S	0/22(0%)	6/22 (27.3%)	15/22(68.2%)	1/22 (4.5%)	13/22(59.1%)	5/22(22.7%)	0/6(0%)	1/6(16.7%)	3/6(50%)

Supplementary Table 4. Group and time point wise reactivity to 29 epitopes in plasma samples from COVID-19 patients



		Severe-COVID (Early)	Severe-COVID (Late)	Mild-COVID (Early)	Mild-COVID (Late)	Asymptomatic COVID (First)	Asymptomatic COVID (second)	Other HCoV controls	Healthy controls	SARS-CoV-1 controls
1	LGDELGTDPYEDFQ	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	1/11 (10%)	0/11 (0%)
2	LYIDINGNLHPDSAT	0/22 (0%)	2/22 (10%)	2/22 (10%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
3	ATKYLVDQESPFVMM	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	1/11 (10%)	0/11 (0%)
4	IVFDGSKCEESSA	0/22 (0%)	0/22 (0%)	1/22 (5%)	1/22 (5%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
5	LNDFSNSGSDVLYQP	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	1/10 (10%)	0/11 (0%)	0/11 (0%)
6	LSFCFAVDAAKAY	1/22 (5%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
7	YDFGDFIQITPGSG	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	1/10 (10%)	0/11 (0%)	0/11 (0%)
8	DFIQITPGSGVPVV	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	1/10 (10%)	0/11 (0%)	0/11 (0%)
9	FLKYNENGTITDAV	0/22 (0%)	1/22 (5%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
10	GVLTESNKKFLPFQ	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	1/11 (10%)
11	YQTQTNSPRRARSVA	0/22 (0%)	1/22 (5%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
12	NTQEVFAQVKQIYK	1/22 (5%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
13	<b>MADSNGTITVEELKKLEQWN</b>	<b>1/22 (5%)</b>	<b>8/22 (37%)</b>	<b>0/22 (0%)</b>	<b>4/22 (19%)</b>	<b>0/6 (0%)</b>	<b>1/6 (17%)</b>	<b>0/10 (0%)</b>	<b>0/11 (0%)</b>	<b>0/11 (0%)</b>
14	KEPCSSGTIEGNSPFHP	0/22 (0%)	0/22 (0%)	0/22 (0%)	1/22 (5%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	1/11 (10%)	0/11 (0%)
15	TLLPAADLDDFSKQ	1/22 (5%)	1/22 (5%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	1/6 (17%)	0/10 (0%)	0/11 (0%)	0/11 (0%)
16	AADLDDFSKQLQQS	1/22 (5%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/6 (0%)	0/6 (0%)	0/10 (0%)	0/11 (0%)	0/11 (0%)

Supplementary Table 5. Characteristics of selected sixteen IgM linear epitopes for detection of SARS-CoV-2 infection. Sequences (aa) are based on proteome of Severe acute respiratory syndrome coronavirus 2 isolate Wuhan-Hu-1 (Accession no. MN908947).

Virus name	Epitope sequences	Protein name	Controls			SARS-CoV-2						
			Healthy	SARS-CoV-1	Other Human CoV	Asymptomatic (first)	Asymptomatic (Second)	Mild disease (first)	Mild disease (second)	Severe disease (first)	Severe disease (second)	
Human coronavirus HKU1	MVNPSKSGSSLLITLKT	Nucleocapsid phosphoprotein	0/10 (0%)	0/11 (0%)	4/11 (37%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	1/22 (5%)	0/22 (0%)	0/22 (0%)	
	VKQLPEQFDLSNLSAGTQ	Nucleocapsid phosphoprotein	1/10 (10%)	0/11 (0%)	2/11 (19%)	2/6 (34%)	0/6 (0%)	6/22 (28%)	6/22 (28%)	10/22 (46%)	11/22 (50%)	
	SLLATLDDPYVEDSVA	Nucleocapsid phosphoprotein	0/10 (0%)	1/11 (10%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	4/22 (19%)	1/22 (5%)	5/22 (23%)	10/22 (46%)	
	MNKSFLPQFTSDQAV	Membrane glycoprotein	6/10 (60%)	6/11 (55%)	3/11 (28%)	6/6 (100%)	4/6 (67%)	19/22 (87%)	15/22 (69%)	18/22 (82%)	21/22 (96%)	
	WLNNFNVPSPNLWVERKI	Spike glycoprotein	0/10 (0%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	1/22 (5%)	0/22 (0%)	
	ISASRYRFTVEFFNVS	Spike glycoprotein	2/10 (20%)	2/11 (19%)	4/11 (37%)	2/6 (34%)	0/6 (0%)	11/22 (50%)	10/22 (46%)	11/22 (50%)	10/22 (46%)	
	SRSFFEDLDFDKVLS	Spike glycoprotein	1/10 (10%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	1/6 (17%)	5/22 (23%)	3/22 (14%)	3/22 (14%)	4/22 (19%)	
	VDRQVILVSNKEDFDIIQ	orf1ab polyprotein	1/10 (10%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	2/22 (10%)	7/22 (32%)	11/22 (50%)	
	LLHSKVVPVPLNLYVVV	orf1ab polyprotein	2/10 (20%)	1/11 (10%)	3/11 (28%)	0/6 (0%)	0/6 (0%)	1/22 (5%)	0/22 (0%)	2/22 (10%)	2/22 (10%)	
	FDLVQYDFTDYKLEL	orf1ab polyprotein	0/10 (0%)	1/11 (10%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	4/22 (19%)	2/22 (10%)	7/22 (32%)	11/22 (50%)	
	PASQVIVNNDKSAAGY	orf1ab polyprotein	1/10 (10%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	4/22 (19%)	3/22 (14%)	
	CTGSPYIDDFNKIAS	orf1ab polyprotein	0/10 (0%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	1/6 (17%)	6/22 (28%)	10/22 (46%)	11/22 (50%)	14/22 (64%)	
	CWETGKVPKPLNKNYVFTG	orf1ab polyprotein	2/10 (20%)	1/11 (10%)	1/11 (10%)	1/6 (17%)	2/6 (34%)	4/22 (19%)	5/22 (23%)	4/22 (19%)	5/22 (23%)	
	AKVRVDCYDKFKINDTTCKY	orf1ab polyprotein	0/10 (0%)	1/11 (10%)	2/11 (19%)	2/6 (34%)	2/6 (34%)	2/22 (10%)	1/22 (5%)	4/22 (19%)	4/22 (19%)	
	ISPYNSQNYVAKRVLGVQ	orf1ab polyprotein	1/10 (10%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	2/22 (10%)	2/22 (10%)	5/22 (23%)	6/22 (28%)	
	EFRDYFNNDTSIV	orf1ab polyprotein	2/10 (20%)	1/11 (10%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	3/22 (14%)	3/22 (14%)	6/22 (28%)	8/22 (37%)	
	RKASGLFDIAWDAFVAI	orf1ab polyprotein	2/10 (20%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	2/22 (10%)	1/22 (5%)	0/22 (0%)	1/22 (5%)	
	NVGEPIISQPSKLLNG	orf1ab polyprotein	0/10 (0%)	2/11 (19%)	1/11 (10%)	1/6 (17%)	1/6 (17%)	0/22 (0%)	0/22 (0%)	2/22 (10%)	1/22 (5%)	
	ISYLNRRAGSSAARLEPC	orf1ab polyprotein	0/10 (0%)	1/11 (10%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	
Human coronavirus NL63	CIKACEVVVTLNLSAGWPLNFKGKA	orf1ab polyprotein	1/10 (10%)	1/11 (10%)	3/11 (28%)	0/6 (0%)	0/6 (0%)	1/22 (5%)	2/22 (10%)	1/22 (5%)	3/22 (14%)	
	VFINKYGLDFNFEH	orf1ab polyprotein	0/10 (0%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	5/22 (23%)	5/22 (23%)	
	TVLNASIPESKPLADDDSA	Nucleocapsid phosphoprotein	6/10 (60%)	7/11 (64%)	3/11 (28%)	3/6 (50%)	3/6 (50%)	15/22 (69%)	17/22 (78%)	15/22 (69%)	21/22 (96%)	
	ASQEGVLSEREKLLHI	Membrane glycoprotein	0/10 (0%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	1/22 (5%)	1/22 (5%)	2/22 (10%)	
	QFGLQDGFYSANFLDDNVL	Spike glycoprotein	6/10 (60%)	3/11 (28%)	4/11 (37%)	1/6 (17%)	1/6 (17%)	6/22 (28%)	7/22 (32%)	8/22 (37%)	13/22 (60%)	
	CDCGSKLPYEFKRVHVQ	Spike glycoprotein	7/10 (70%)	0/11 (0%)	3/11 (28%)	1/6 (17%)	2/6 (34%)	8/22 (37%)	6/22 (28%)	12/22 (55%)	15/22 (69%)	
	FDLVQYDFTDYKLEL	nsp9	0/10 (0%)	1/11 (10%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	4/22 (19%)	2/22 (10%)	7/22 (32%)	12/22 (55%)	
	SQVIVNNDKSAAGY	nsp9	0/10 (0%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	6/22 (28%)	9/22 (41%)	
	LSTCDGQKFTDESFKYKMY	nsp9	1/10 (10%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	1/22 (5%)	1/22 (5%)	6/22 (28%)	
	FPLKLAGTAVINLRAD	nsp13	0/10 (0%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	
Human coronavirus OC43	HATRDSIIGNFPLQL	nsp11	1/10 (10%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	5/22 (23%)	6/22 (28%)	2/22 (10%)	6/22 (28%)	
	CTGSPYIDDFNRIAS	nsp10	0/10 (0%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	2/22 (10%)	2/22 (10%)	3/22 (14%)	5/22 (23%)	
	AKVRVCEYDKFKINDTTRKYV	nsp10	0/10 (0%)	2/11 (19%)	2/11 (19%)	1/6 (17%)	2/6 (34%)	1/22 (5%)	3/22 (14%)	5/22 (23%)	5/22 (23%)	
	ASSRSIEDLDFDKVLS	Spike glycoprotein	5/10 (50%)	5/11 (46%)	3/11 (28%)	1/6 (17%)	3/6 (50%)	13/22 (60%)	14/22 (64%)	13/22 (60%)	16/22 (73%)	
	SQVIVNNDKSAAGY	orf1ab polyprotein	0/10 (0%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	
	LSTCDGQKFTDESFKYKMY	orf1ab polyprotein	1/10 (10%)	0/11 (0%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	1/22 (5%)	1/22 (5%)	6/22 (28%)	
	AETQKATEAFKQSYA	orf1ab polyprotein	0/10 (0%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	0/22 (0%)	
	SWEIGKVPKPLNKNYVFTG	orf1ab polyprotein	0/10 (0%)	0/11 (0%)	1/11 (10%)	2/6 (34%)	2/6 (34%)	5/22 (23%)	4/22 (19%)	5/22 (23%)	6/22 (28%)	
	AKVRVCEYDKFKINDTTRKYV	orf1ab polyprotein	0/10 (0%)	2/11 (19%)	2/11 (19%)	1/6 (17%)	2/6 (34%)	1/22 (5%)	3/22 (14%)	5/22 (23%)	8/22 (37%)	
	HATRDSIIGNFPLQL	orf1ab polyprotein	1/10 (10%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	6/22 (28%)	7/22 (32%)	2/22 (10%)	6/22 (28%)	
	Human coronavirus 229E	DVIDNEIVKPNISLCVPL	orf1ab polyprotein	3/10 (30%)	3/11 (28%)	4/11 (37%)	1/6 (17%)	0/6 (0%)	9/22 (41%)	11/22 (50%)	16/22 (73%)	19/22 (87%)
		KHSDFGLGDLVDSYFEND	orf1ab polyprotein	2/10 (20%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	1/6 (17%)	10/22 (46%)	7/22 (32%)	15/22 (69%)	19/22 (87%)
		CITSREVVVTLNLSKSA	orf1ab polyprotein	0/10 (0%)	0/11 (0%)	3/11 (28%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	2/22 (10%)	1/22 (5%)
		DVIDNEIVKPNISLCVPL	orf1ab polyprotein	3/10 (30%)	3/11 (28%)	4/11 (37%)	1/6 (17%)	0/6 (0%)	10/22 (46%)	11/22 (50%)	16/22 (73%)	19/22 (87%)
		KHSDFGLGDLVDSYFEND	orf1ab polyprotein	2/10 (20%)	0/11 (0%)	1/11 (10%)	0/6 (0%)	0/6 (0%)	12/22 (55%)	7/22 (32%)	15/22 (69%)	19/22 (87%)
		SARS-CoV-1	LYEQVVMYLDNLKPRVPEAPKQEEPPNTED	orf1ab polyprotein	4/10 (40%)	7/11 (64%)	3/11 (28%)	3/6 (50%)	4/6 (67%)	12/22 (55%)	14/22 (64%)	13/22 (60%)
	VSVSSPDAVTTYNGYLTSSSKTS EEHF		nsp3	2/10 (20%)	3/11 (28%)	0/11 (0%)	0/6 (0%)	0/6 (0%)	10/22 (46%)	10/22 (46%)	7/22 (32%)	12/22 (55%)
	LGDELGTDPIDEDYEQWNTKHGSGALR		orf1ab polyprotein	3/10 (30%)	3/11 (28%)	2/11 (19%)	0/6 (0%)	0/6 (0%)	10/22 (46%)	13/22 (60%)	17/22 (78%)	18/22 (82%)
	FTLRISITAPVKIDNASPASTVHATA		Orf3	0/10 (0%)	4/11 (37%)	0/11 (0%)	1/6 (17%)	1/6 (17%)	0/22 (0%)	1/22 (5%)	0/22 (0%)	1/22 (5%)
TIVVTEGDGISTPKLQEDYQGGYSEDR	Orf3		0/10 (0%)	6/11 (55%)	0/11 (0%)	0/6 (0%)	0/6 (0%)	0/22 (0%)	0/22 (0%)	2/22 (10%)	1/22 (5%)	
SSGVANPAMDPIYDEPTTTSVPL	Orf3		1/10 (10%)	5/11 (46%)	0/11 (0%)	1/6 (17%)	0/6 (0%)	0/22 (0%)	2/22 (10%)	4/22 (19%)	8/22 (37%)	
MADNGTITVEELKQLLEQWNLVIG	membrane glycoprotein		0/10 (0%)	7/11 (64%)	0/11 (0%)	0/6 (0%)	1/6 (17%)	1/22 (5%)	15/22 (69%)	4/22 (19%)	13/22 (60%)	
TPKDHGTRNPNNAATVQLQPQGITLPGFYAEGSRGGS	Nucleocapsid phosphoprotein		0/10 (0%)	6/11 (55%)	1/11 (10%)	2/6 (34%)	3/6 (50%)	10/22 (46%)	16/22 (73%)	15/22 (69%)	22/22 (100%)	
FSLDVSEKSGNFKHLRFVVF	spike glycoprotein		1/10 (10%)	4/11 (37%)	0/11 (0%)	0/6 (0%)	0/6 (0%)	1/22 (5%)	2/22 (10%)	1/22 (5%)	4/22 (19%)	

Supplementary Table 6. List of selected 53 IgG linear IgG epitopes for detection of HKU-1, NL63, OC43, 229E, SARS-CoV-1. Sequences (aa) are based on proteome of reference sequences from NCBI.