

– Supplementary Information –

Table S1. IgG epitopes mapped for Sars-CoV-2 Spike protein using a pool of sera from patients with COVID-19 disease and cross-reactivity against DENV serotypes 1-4 (Taxid: 12637).

Peptides	Cross-reactivity*	Specificity
FNDGVYFASTEKSN	DENV2	Sars-CoV-2, BatCoV-RaTG13
DSKTQSLLIVNNATN	DENV3	Sars-CoV-2, BatCoV-RaTG13
LGVYYHKNNK	No	Sars-CoV-2, BatCoV-RaTG13
LMDLEGKQGNFKNLR	DENV3	Sars-CoV-2, BatCoV-RaTG13
NLVRDLPQGF	No	Sars-CoV-2, BatCoV-RaTG13
RSVLTPGDSSS	Gram-positive bacteria and rodent	Sars-CoV-2, BatCoV-RaTG13
GAAAYYVGYL	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV
GIYQTSNFRV	DENV2	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
KRISNCVADYSVLYN	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
YADSFVIRGD	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
GKIADYNYKL	DENV1	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
LDSKVGGNYN	No	SARS-CoV-2
LKPFERDIST	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
PLQSYGFQPTGVGY	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
NKKFLPFQQF	DENV2	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
DTTDAVRDPQ	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
NQVAVLYQDV	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
ADQLTPTWRV	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
IGAHEVNNSY	DENV2	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
TQTNSPRRAR	DENV 1 and 3	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
SIAYTMSL	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
AYSNNIAIP	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
AVEGD	No	Sars-CoV-2, BatCoV-RaTG13
KQIYK	Several organisms and DENV2	Sars-CoV-2, BatCoV-RaTG13
DFGGF	Several organisms and DENV1	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV
LPDPSKPSKRSFIED	DENV1 and 2	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV
LPPLLTDEMI	DENV3	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV, HCoV_OC43, HCoV_HKU1
ALLAGTITSGWTFGA	DENV1	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
QMAYRFNGIG	No	Sars-CoV-2, BatCoV-

		RaTG13, SARS-CoV-1, MERS-CoV
KLIANGFNSA	Fungi	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV, HCoV_OC43, HCoV_HKU1, HCoV-NL63, HCoV-229E
VVNQNAQALN	DENV1	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV, HCoV_OC43, HCoV_HKU1, HCoV-NL63, HCoV-229E
GAISSVLNDI	DENV1 and 3	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, MERS-CoV, HCoV_OC43, HCoV_HKU1
LITGRLQSLQ	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1, HCoV-NL63, HCoV-229E
AEIRA	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
GYHLMSFPQS	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
REGVFVSNQTHW	DENV3	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
EPQII	Several organisms	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
TVYDPLQPEL	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
KEIDRLNEVAK	Fungi, DENV1 and 3	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
SLIDLQELGK	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1
FDEDDSEPMI	No	Sars-CoV-2, BatCoV-RaTG13, SARS-CoV-1

*Cross-reactivity was performed using the Basic Local Alignment Search Tool (BLAST) and was considered if sequences matches at least four amino acids



Figure S1. Sequence logos for spike protein cross-reactive DENV-identified sequences in Sars-CoV-2 variants of concern (Wuhan [wild type], Alpha, Beta, Delta, Gamma, Omicron BA.1, Omicron BA.2, Omicron BA.2.12.1, Omicron BA.4, Omicron BA.5) showing residues conservation. The selected amino acid sequence is shown on the X-axis. The height of each letter on the Y-axis indicates its relative frequency. N, N-terminal end; C, C-terminal end.

SARS-CoV-2	----	MFVFLVLLPLV	-----	SSQCVNLT	-----	TRTQLPPAYTNSFTR	----	GVY	-----	YP-DKVF	44																													
SARS	----	MFIFLLFLTL	-----	SGSDDLDRCTTFDDVQAPNYTQHTSSMR	----	GVY	-----		----	YP-DEIF	48																													
MERS-CoV		MIHSVFILMFLLTPTESYVDVGPDSVKASACIEVDIQTFFDKTWPR	----	PIDVSKADGII	-----		----		----	YPQGR	65																													
HCoV OC43	----	MFILLISLPT-AFAVIG	----	DLKCTSDNIND	----	KDTGPPPISTDTVDVTNGLGTY	-----		----	YVLDRV	58																													
HCoV NL63	----	MKLFILLVLPASCFETCSNA-NLSMLQLGVDPDSSSTIVTGLLTHWFCAQSTSVYSANGFFYIDVGNHRSALHTGYDANQYYI	----	VTNEIGL	-----		----		----		97																													
HCoV HKU1	----	MFIIIFILPTT-LAVIG	----	DFNCTNSFIND	----	YNKTIPIRISEDVVDVSLGLGTY	-----		----	YVLNRV	57																													
HCoV 229E	----	MFVLLVA	-----		----		----		----	YAL	10																													
BatCoV-RaTG13	----	MFVFLVLLPLV	-----	SSQCVNLT	-----	TRTQLPPAYTNSSTR	----	GVY	-----	YP-DKVF	44																													
SARS-CoV-2	SSV			LHSTQDLFLPF		FSNVTFWFAIHVSGTNGTKR					78																													
SARS	SDT			LYLTQDLFLPF		YSNVTFGFHTINHT					75																													
MERS-CoV	NIT			ITYQG		LFPYQG-DHGDMYVVSAGHATGTTTPQKL					100																													
HCoV OC43	NTT			LFLNG		YYPTSGSTYRNMAKLGSVLLSRLWFKPP					94																													
HCoV NL63	NASVTLKICKFSRNTTFDFLSNASSSFDICVNL			LFTEQLGAPLGITISGETVRLHLNVTRTFYVPAAYKLTKLSVKCYFNYSVFSVNVATVTNVNTH							197																													
HCoV HKU1	NTT			LLFTG		YFPKSGANFRDLALKGSKYLSTLWYKPP					93																													
HCoV 229E				LHTAG		SVV					27																													
BatCoV-RaTG13	SSV			LHSTQDLFLPF		FSNVTFWFAIHVSGTNGIKR					78																													
SARS-CoV-2	-----	FDNP	-----	VLP	-----	NDGVYFASTEKSNIIRG	-----	WIFGTTLDSKT	-----	QSLILVNN	127																													
SARS	-----	FGNP	-----	VIP	-----	KDGIYFAATEKSNVVRG	-----	WVFGSTMNKS	-----	QSVIIINN	124																													
MERS-CoV	-----	FVANYSQDVQ	-----	ANGF	-----	VVRIGAAANSTGTVIISPSATSIRKIYPAFMLGSSVGNFSDGKMGREFNHLVLLP	-----		-----	DGCGT	178																													
HCoV OC43	-----	FLSD	-----	FINGI	-----	FAKVNTKVIKDRVMYSE	-----	FPAITIGTFVNTS	-----	YSVVQPR	160																													
HCoV NL63	NGRVVNYTV	-----	CNG	-----	TDNI	-----	FSVQDGRIPNGFP	-----	FNNWFL	-----	LTNGS	250																												
HCoV HKU1	-----	FLSD	-----	FINGI	-----	FSKVNTKLYVNNTLYSE	-----	FSTIVIGSVFVNTS	-----	YTIIVVPH	147																													
HCoV 229E	-----	VCNG	-----	CVG	-----	SENV-FAVESGGYIPSDFA	-----	FNNWFL	-----	LTNTS	72																													
BatCoV-RaTG13	-----	FDNP	-----	VLP	-----	NDGVYFASTEKSNIIRG	-----	WIFGTTLDSKT	-----	QSLILVNN	127																													
SARS-CoV-2		IKVCFEQFCNDPFL		VYYHKNK		SWMESEFRVYSSANNCTFEYVSQPF		LM		LEGKQGN	KNLRE	-----	FVFNKIDGYFKIYSK	-----	HTPI	210																								
SARS		IRACNFELCDNPF		SKPMGTQTHM		IFDNAFNCTFEYISDAFSLDVSE		SN		SHIRE	-----	FVFNKIDGYFLVYKG	-----	YQPI	203																									
MERS-CoV		LLRAFYCILE		PRSEN		CPAGNSYTSFATYHTPATD		-----		SDGNYNRNASLNS		KEYFN	-----	LRNCTFMYTINITEDEILE		FGITQTAQGVHL	265																							
HCoV OC43		VSVCQYNMCEYPQT		C		PNLGNHRKELWHLDTGVVSC		-----		LYKRNFYD		VNADYLYPHEFYQE	-----	GGTFYAYFT	-----		228																							
HCoV NL63		LYQPLRLTCLWPVP		EL		KSSTGFVY		-----		FNATGSDVNC		-----		NGYQHSVVDVMRYNLNFSANS		LDNLKSGVIVFKTLQYDVLVFC	334																							
HCoV HKU1		ITACQYTMCEYPHT		C		KSKGSIRNESWHIDSEPLC		-----		LFKKNFY		NVSADWLYPHEFYQE	-----	RGVFYAYYA	-----		214																							
HCoV 229E		SFQPLLLNCLWSVS		EL		RFTTGFFVY		-----		FN		GTGRGDC	-----	KGFS		SSDVLSDVIRVNLNFE	-----	ENLRGRTILFKTSYGVVVFYCT	151																					
BatCoV-RaTG13		IKVCFEQFCNDPFL		VYYHKNK		SWMESEFRVYSSANNCTFEYVSQPF		LM		LEGKQGN		KNLRE	-----	FVFNKIDGYFKIYSK	-----	HTPI	210																							
SARS-CoV-2	NLVRDL	-----	LPQG	-----	FSALEPLVDLP		GINITRFQT	-----	LLALHRSYLT	-----	PGDSSSGWTAGAAAY	-----	GY	-----	QPRTEFL		KYNENGTITDAVDCALDPLSE	TKCTLKS	305																					
SARS	DVVRDL	-----	PSG	-----	FNTLKPIFKLP		GINITNFA	-----	ILTA	-----	FSQAQDI	-----	WGTS	-----	FAAF	-----	VG	-----	IKPTTEM		KYDENGTTITDAVDCSQNP	PLAELKCSVKS	292																	
MERS-CoV	FSSRY	-----	VDLY	-----	GGNMFQFATLP		VDYTIKYYSI	-----	IPHSIRS	-----	IQSDR	-----	KA	-----	W	-----	AA	-----	YK	-----	QPLTEFL		DFSVDGYIRRAIDCGFNDLS		QLHCSYES	353														
HCoV OC43	-----	DTGVVTK	-----	F	-----	LFNVY	-----	GMALSHYYV	-----	MLPTCS	-----	SKLT	-----	LE	-----	Y	-----	VTP	-----	TSRQYL		AFNQDGIIFNAEDCMSDFMS		IKCKTQS	304															
HCoV NL63	VLDTT	-----	IFG	-----	PSQPYCFIN		NTTHVSTFVGILPPTVREIVARTGQ	-----	FYINGEK	-----	YDL	-----	GLF	-----	LEAVNEN	-----	VTASA	-----	-----		TDFWVAFATFV		DVLVNVSA	429																
HCoV HKU1	-----	DVGMP	-----	T	-----	F	-----	LFSLY	-----	GTILSHYYV	-----	MLPTCKA	-----	ISSNTDNE	-----	TL	-----	EW	-----	VTP	-----	SRQYL		NFDEHGVTNAVDCSSSFLS		EIOCKTQS	296													
HCoV 229E	SGDAH	-----	IFPGTVLGNFYCFVNTT	-----	IGNETTS		SAFVGALPKTVREFVISRTGH	-----	FYINGYR	-----	YTL	-----	EN	-----	EAVERN	-----	VTAAET	-----	-----		TDFCTVALASAD		DVLVNVSQ	246																
BatCoV-RaTG13	NLVRDL	-----	PPG	-----	FSALEPLVDLP		GINITRFQT	-----	LLALHRSYLT	-----	PGDSSSGWTAGAAAY	-----	GY	-----	QPRTEFL		KYNENGTITDAVDCALDPLSE	TKCTLKS	305																					
SARS-CoV-2	FTVEK	-----	GIYQTSNFRVQPTESIV	-----	RFPN		ITNLCPFGEVFNATRFASVYAWNRRKISNCVADYSVLVNSASFSTFKCYGVSPTKLN	-----	DLCF	-----	FTNVY	-----	ADSFVIRG	404																										
SARS	FEIDK	-----	GIYQTSNFRVVP	-----	SGDV		RFPN	-----	ITNLCPFGEVFNATKFP	-----	SVYAWERKKISNCVADYSVLVNSTFFSTFKCYGVSATKLN	-----	DLCF	-----	SNVY	-----	ADSFVIRG	391																						
MERS-CoV	FVDSG	-----	VYVSVSSEFSGSVVEQAEGVE	-----	-----	CDPS	-----	PLLSGTP	-----	PQVYVFKRLVFTNCYNLTKLLSLFSVNDFTCSQISPAATASNCYSSLI	-----	DYFSYPL	450																											
HCoV OC43	IAPPT	-----	GVYELNGYTVQPIADVYR	-----	KPN		PN	-----	CNIEAWLNDKSVSP	-----	PLNWERTF	-----	FSNCNFMN	-----	SSLSM	-----	SFTQADSET	-----	CNNIDA		AKIYGMCFSSIT		DKFAIPN	403																
HCoV NL63	-----	TIQNL	-----	LLYCDSPFEK	-----	LQCEHLQ	-----	-----	FG	-----	LDG	-----	FYSANFLDDNVLPETYVALPIYYQHTD	-----	INFATASF	-----	-----	GG	-----	SCYVCKPHQV	-----	-----	NISNG	-----	511															
HCoV HKU1	FAPNT	-----	GVYDL	-----	SGFTKPVATVYRRIP		NLPD	-----	CDIDN	-----	LNNVSPVSP	-----	PLNWERIF	-----	FSNCN	-----	FLSTLLRLVHVDSEFS	-----	CNNL	-----	DKSKIFGSCFNSIT		DKFAIPN	395																
HCoV 229E	TSIAN	-----	IYCN	-----	SVINLR	-----	CDQLS	-----	-----	FD	-----	VPDG	-----	FYSTSPIQ	-----	SVELPVSIVSLPVYHKHTFIVLYVDFKP	-----	QSGG	-----	KFCNCPAGV	-----	-----	NITIANF	-----	N	333														
BatCoV-RaTG13	FTVEK	-----	GIYQTSNFRVQPTDSIV	-----	RFPN		ITNLCPFGEVFNATTFASVYAWNRRKISNCVADYSVLVNSTFSSTFKCYGVSPTKLN	-----	DLCF	-----	FTNVY	-----	ADSFVITG	404																										
SARS-CoV-2	DEV	-----	QIAPGQT	-----	GKIADYNYKL		PPDFTGC	-----	CVIAWNSN	-----	NLDSKVG	-----	GNYN	-----	-----	YLYR	-----	LF	-----	-----	KS	-----	NLPFERDISTE		IYQAGST	-----	PC	-----	480											
SARS	DDV	-----	QIAPGQT	-----	GKIADYNYKL		PPDFMGC	-----	VLAWNR	-----	INIDAT	-----	STGN	-----	-----	YKYR	-----	LYR	-----	-----	HG	-----	KLPFERDIS		NVPFSPDGK	-----	PC	-----	467											
MERS-CoV	SMK	-----	DLVSSA	-----	PISQFN		YKQSFNSNPTCLILATVPHNLTIT	-----	TKPLN	-----	-----	YS	-----	-----	-----	IN	-----	KSRFL	-----	SDDRTE		VPQLV	-----	-----	518															
HCoV OC43	GRK	-----	VDLQ	-----	GNLYLQSF		NFRIDTTATSCQ	-----	LYNLP	-----	PAANVS	-----	SVSRFP	-----	NPSTWNKR	-----	FGFIED	-----	SVFK	-----	PRPAGV		TNHDVVYAQHC		KAPKNFCPC	-----	KLNGSCV	500												
HCoV NL63	-----	NTS	-----	CVRTSHFS	-----	IRY	-----	INRVKSGSPGDS	-----	SWWHY	-----	LGK	-----	STC	-----	P	-----	-----	FS	-----	FK	-----	-----	INN	-----	FQK	-----	FKTC	-----	STVEVPGSC	577									
HCoV HKU1	RRRD	-----	QLGSS	-----	FLQSS		KIDISSSSCQ	-----	LYSLPLVNV	-----	TINNFP	-----	SNWNR	-----	RG	-----	GSFN	-----	-----	VSS	-----	VDVYSDHCF	-----	SVNSDF	-----	CCADP	-----	SVN	-----	SCV	486									
HCoV 229E	ETK	-----	GPLCVD	-----	TSHFTK		IVAVYANVG	-----	-----	RWS	-----	ASINTGNC	-----	P	-----	-----	FS	-----	FK	-----	-----	-----	VNN	-----	FVK	-----	FGS	-----	VCFLSK	-----	DIPGGC	396								
BatCoV-RaTG13	DEV	-----	QIAPGQT	-----	GKIADYNYKL		PPDFTGC	-----	CVIAWNSKHIDAKEGGNFN	-----	-----	YLYR	-----	LF	-----	-----	KAN	-----	KLPFERDISTE		IYQAGSK	-----	PC	-----	-----	480														
SARS-CoV-2	-----	NGVEGFNC	-----	YF	-----	PLQSYGFQPT	-----	-----	NGVG	-----	QPYRVV	-----	VSFE	516																										
SARS	-----	TPPALNC	-----	YW	-----	PLNDYGFYTT	-----	-----	TGIG	-----	QPYRVV	-----	VSFE	502																										
MERS-CoV	-----	NANQYSPC	-----	-----	VSIP	-----	STVWEDGDYIRKQLSPLEGGGWL	-----	VASG	-----	-----	STVAMTE	-----	QLQMGFGIT	-----	574																								
HCoV OC43	-----	GSGPGKNNIGITC	-----	PCAGTNYLTCD	-----	-----	NLCTPD	-----	PIFTTGTGYKCPQTKSLVGTGEHCSGLAVKSDYCGG	-----	-----	NSCTCR	-----	QPAFLGWSAD	-----	SCLO	584																							
HCoV NL63	-----	NFPLEAT	-----	-----	WHYTSYTI	-----	-----	-----	VGAL	-----	YVTW	-----	SE	603																										
HCoV HKU1	-----	KSKPLS	-----	-----	AICPAGTKYRHCDLDTTLYVNNWCR	-----	CSCLPD	-----	ISTYSTPNTC	-----	PQKKVVVG	-----	GEHCPGLGINEEKCGTQLNHSSC	-----	SCSPDAFLGWS	-----	FDSCIS	582																						
HCoV 229E	-----	AMPIVAN	-----	-----	WAYS	-----	KYYT	-----	-----	IGSL	-----	VVSDG	-----	422																										
BatCoV-RaTG13	-----	NGQTGLNC	-----	YY	-----	PLYRYGFYPT	-----	-----	DGVG	-----	QPYRVV	-----	VSFE	516																										
SARS-CoV-2	-----	LLHA	-----	PATVCGPKK	-----	STNLV	-----	-----	KNK	-----	VNFN	-----	ENGLTGTGVL	-----	TES	-----	NKKFL	-----	PFQ	-----	QFGRD		IADTTDAVRDPQ		TLEILD		TPCS	-----	FGGVS	598										
SARS	-----	LLNA	-----	PATVCGPKL	-----	STDLI	-----	-----	KNQ	-----	VNFN	-----	ENGLTGTGVL	-----	TPSS	-----	RQ	-----	PFQ	-----	QFGRD		VSDFTDSVRDPK		TSEILD		ISPC	-----	FGGVS	584										
MERS-CoV	-----	-----	-----	VQYGD	-----	TNSVCPKLEFANDTK	-----	IASQ	-----	GN	-----	VEYSLYGV	-----	SGRV	-----	FNCTAVGV	-----	RO	-----	RF	-----	VYDAYQ		NLVGYYS	-----	DDGNY	-----	CY	-----	RACVSPV	662									
HCoV OC43	-----	GDKCN	-----	IFANFILHDSNGLT	-----	CSDLQKANTD	-----	II	-----	-----	LG	-----	VNDY	-----	LG	-----	QG	-----	GF	-----	FVEV	-----	NTATYNSW	-----	NLLY	-----	DS	-----	SGNGLY	-----	GFRDY	-----	IINRTFM		RSYSGRVS	682				
HCoV NL63	-----	-----	-----	NSI	-----	TGVPYPVSGIREFS	-----	NLV	-----	-----	LNN	-----	TKYNI	-----	YDVG	-----	TGI	-----	IRSS	-----	NS	-----	LAGG	-----	ITYV	-----	-----	SNS	-----	G	-----	NLLG	-----	FKNVSTGN	-----	IFIVTP		QNPDQ	686	
HCoV HKU1	-----	-----	-----	NNRCN	-----	IFSNFIFNGINS	-----	GTCSNDLLYSNTE	-----	VS	-----	-----	TGV	-----	VNDY	-----	LG	-----	YG	-----	QG	-----	GF	-----	KEV	-----	SAAYNNW	-----	NLLY	-----	DS	-----	SGNGLY	-----	GFRD	-----	FLTNKTY		ILPCYS	680
HCoV 229E	-----	-----	-----	QOSII	-----	CAMTAVNESRYGLQ	-----	-----	-----	NLL	-----	QLENFY	-----	-----	VS	-----	GGNNCT	-----	TAV	-----	MTYSNF	-----	-----	-----	GI	-----	CADGSL	-----	IPVR	-----	PN	-----	-----	-----	-----	-----	-----	671		
BatCoV-RaTG13	-----	LLNA	-----	PATVCGPKK	-----	STNLV	-----	-----	KNK	-----	VNFN	-----	ENGLTGTGVL	-----	TES	-----	NKKFL	-----	PFQ	-----	QFGRD		IADTTDAVRDPQ		TLEILD		TPCS	-----	FGGVS	598										
SARS-CoV-2	TPGT	-----	NTSNQVAVLYQDVNCTE	-----	VPV		AIHA	-----	-----	DQ	-----	LTPTRVYSTG	-----	SNVFTQ	-----	TRAGCLIGAEHVNS	-----	-----	YEC	-----	DIP	-----	GAGIC		CASYQ	-----	T	-----	QTN	-----	SPRRARS	-----	VAS	689						
SARS	TPGT	-----	NASSEVAVLYQDVNCTD	-----	VS		TAIHA	-----	-----	DQ	-----	LTPTRVYSTG	-----	SNVFTQ	-----	TRAGCLIGAEHVNS	-----	-----	YEC	-----	DIP	-----	GAGIC		CASYH	-----	VS	-----	LLR	-----	-----	-----	-----	671						
MERS-CoV	Y	-----	DKETK	-----	THATLFGSVACEH		ISSTMSQYSRSTR	-----	MLKRRDSTY	-----	-----	GPL	-----	QTPVCGVL	-----	GVNS	-----	SLF	-----	VED	-----	CKPL		QSLCALPD		PS	-----	IL	-----	TP	-----	SV	-----	VPG	755					
HCoV OC43	F	-----	HANSSEP	-----	ALLFRN		IKNYFN	-----	-----	NSL	-----	TRQLQPI	-----	-----	NY	-----	FSYL	-----	GVNA	-----	YNST	-----	AI	-----	SVQ	-----	CDLTVG	-----	SGV	-----	CVDYS	-----	-----	KNRRS	-----	GA	-----	IT	764	
HCoV NL63	Y	-----	-----	-----	QOSII	-----	CAMTAVNESRYGLQ	-----	-----	-----	NLL	-----	QLENFY	-----	-----	VS	-----	GGNNCT	-----	TAV	-----	MTYSNF	-----	-----	-----	GI	-----	CADGSL	-----	IPVR	-----	PN	-----	-----	-----	-----	749			
HCoV HKU1	F	-----	YQNSSP</																																					

HCoV 229E Y----QQAVVCAMLSENFSTSYGFS-----NVVELPKFFY----ASNGTYNCTDAVLTYSF-----GVCADGSI-IAVQPN----- 568
 BatCoV-RaTG13 TPGTNASNQVAVLYQDVNCTEVPVAIHA-----DQLTPTRWVYSTGNSVFPTRAGOLIGAEHVNS--YECDIPIGAGICASYQQTNSR-----SVAS 685

 SARS-CoV-2 QSIIAYTMSLGAENSVAYSNNS---IAIPTNFTISVTEILPVSMTKTSVDCMTYICGDSTECNSNLLQYGSFCTQLNRAITGIAVEQDKNTQEVFAQVK 786
 SARS KSIIVAYTMSLGAESSIAYSNNT---IAIPTNFTISITTEVMPVSMAKTSVDCNMYICGDSTECANLLQYGSFCTQLNRAISGIAAEQDRNTEVFAQVK 768

 MERS-CoV EMRLAS-IAFNHPIQVDQLNSSFYKLSIPTNFSFGVTQEQYIQTITQKVTVDCQYVVCNGFKQCEQLLREYQGFCSKINQALHGANLRQDSDVRNLFASVK 854
 HCoV OC43 RFTNFEPFTVNSVNDLSLEPVGGLEYIQIPSEFTIGMVEFIQTSPKVTIDCAAFVCGDYAAKSQLVEYGSFCDNINAIITEVNELLDTTQLQVANSIM 864
 HCoV NL63 -----SSDNGISAITAN-----LSIPSNWTTTSVQVEYLQITSTPIVVDCAATVYCNNGNPRKNLLKQYTSACKTIEDAIRLSAHLETNDVSSMLTFDS 837
 HCoV HKU1 RFVTFEPFNVSFVNDSVETVGGLEFIQIPTNFTIAGHEEFIQTSPPKVTIDCSAFVCSNYAACHDLSLEYGTFCDNINSIINEVNDLLDITQLQVANALM 862
 HCoV 229E -----VSYDSVAIVTAN-----LSIPSNWTTTSVQVEYLQITSTPIVVDCAATVYCNNGNPRKNLLKQYTSACKTIEDAIRNSARLESADVSEMLTFD 656
 BatCoV-RaTG13 QSIIAYTMSLGAENSVAYSNNS---IAIPTNFTISVTEILPVSMTKTSVDCMTYICGDSTECNSNLLQYGSFCTQLNRAITGIAVEQDKNTQEVFAQVK 782

 SARS-CoV-2 QIYKTPPIKDFG-----G-FNFSQILPD-PSK---PSKRSFIEDLLFNKVTILADAGFIKQ-YGDCI--GDIAARDLICAQKFNGLTVLPPLLTDEMIAQY 873
 SARS QMYKTPPLKYFG-----G-FNFSQILPD-PLK---PTKRSFIEDLLFNKVTILADAGFMKQ-YGECI--GDINARDLICAQKFNGLTVLPPLLTDDMIAAY 855
 MERS-CoV SSQSSPIIPGFG-----GDFNLTLLEPVISTGS-RSARSFIEDLLFDKVTIADPGYMQG-YDDCMQGPASARDLICAQYVAGYKVLPLPMDVNMEAAAY 947
 HCoV OC43 NGVTLSFKLDGVNFVDDINFSPVLGCLGSECSKASSRAIEDLLFDKVKLSDVGEVEA-YNNCT--GGAEIRDLCVQSYKGIKVLPLPSENQISGY 961
 HCoV NL63 NAFSLANVTSFG-----D-YNLSSVLPQRNIRSSRIAGRSFIEDLLFSKVVTSGLTVDVDYKSC--KGLSADLACAQYNGIMVLPVGVADAERMAMY 929
 HCoV HKU1 QGVTLSSNLNLTNLHSDVDNIDFKSLGCLGSGCQG-SSRSFIEDLLFNKVKLSDVGEVEA-YNNCT--GGSEIRDLCVQSFENGKVLPLPILSETQISGY 958
 HCoV 229E KAPTLANVSSFG-----D-YNLSSVLPSTSGSRVAGRSFIEDLLFSKVVTSGLTVDVDYKSC--KGLSADLACAQYNGIMVLPVGVADAERMAMY 748
 BatCoV-RaTG13 QIYKTPPIKDFG-----G-FNFSQILPD-PSK---PSKRSFIEDLLFNKVTILADAGFIKQ-YGDCI--GDIAARDLICAQKFNGLTVLPPLLTDEMIAQY 869

 SARS-CoV-2 TSALLAGTITSGWTFAGAAALQIPFAMQMAFYFNGIGVTONVLYENQKLIANQFNSAIGKIQDSLSTTA-----SALGKLQDVVNQNAQAL 959
 SARS TAAIVSGTATAGWTFAGAAALQIPFAMQMAFYFNGIGVTONVLYENQKLIANQFNSAISQIQESLTTTS-----TALGKLQDVVNQNAQAL 941
 MERS-CoV TSSLGSIAGVGWTFAGLSFAAIPFAQSIIFYLNGVGITQVVLSENQKLIANKFNQALGAMQTFGTTTN-----EAFHKVQDAVNNAQAL 1033
 HCoV OC43 TLAATSASLFPWTA-----AGVPFYLNVQYRINGLGVTMDVLSQNKLIANAFNNALYAIQEGFDATN-----SALVKIQAVVNANAQAL 1043
 HCoV NL63 TGSILGGMVGLGLTSA-----AAIPFSLALQALNYVALQTDVQENQKILASFENKAINNIVASFSSVNDATITQTAEAIHTVTIALNKIQDVVNQQAQAL 1025
 HCoV HKU1 TTAATVAAFPWPSA-----AGVPFSLNVQYRINGLGVTMDVLSQNKLIANAFNNALYAIQEGFDATN-----SALVKIQAVVNANAQAL 1040
 HCoV 229E TGSILGIGIALGLTSA-----VSIPFSLAIQALNYVALQTDVQENQKILASFENKAMTNIVDAFTGVNDATITQTSQALQTVATALNKIQDVVNQQAQAL 844
 BatCoV-RaTG13 TSALLAGTITSGWTFAGAAALQIPFAMQMAFYFNGIGVTONVLYENQKLIANQFNSAIGKIQDSLSTTA-----SALGKLQDVVNQNAQAL 955

 SARS-CoV-2 NTLVKQLSSNFGAISSVLNDILSRDLKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATMSECVLGQSKRVDFCCGKYHLMSPFOAPHG 1059
 SARS NTLVQQLSSNFGAISSVLNDILSRDLKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATMSECVLGQSKRVDFCCGKYHLMSPFOAPHG 1041
 MERS-CoV SKLASEISNTFGAISASIGDIQRLVDLEQDAQIDRLINGRLTTLNFAVAAQLVRSESAALSAQLAKDVNECVKQSKRSFGFCGQSTHLSVSVVNAPNG 1133
 HCoV OC43 NNILQQLSNRFGAISASIQEILSRDLDAEAQIDRLINGRLTALNAYVSQQLSDSTLVKFSAAQAMEKNECVKQSSRNIFFCGNGNHLISLVNAPYG 1143
 HCoV NL63 NHTLSQIRHNFQAISNSIQAIYDRLDSTQADQVDRITGRLAALNAYVSQVLNKYTEVRGSRRLAQKINECVKQSSNRGFCGNGNHLISLVNAPYG 1125
 HCoV HKU1 NSILQQLFNKFGAISSSIQEILSRDLNLEAEVQIDRLINGRLTALNAYVSQQLSDITLKAGASRAIEKNECVKQSSRNIFFCGNGNHLISLVNAPYG 1140
 HCoV 229E NHTLSQIRHNFQAISNSIQAIYDRLDSTQADQVDRITGRLAALNAYVSQVLNKYTEVRASRQLAQKINECVKQSSNRGFCGNGNHLISLVNAPYG 944
 BatCoV-RaTG13 NTLVQQLSSNFGAISSVLNDILSRDLKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATMSECVLGQSKRVDFCCGKYHLMSPFOAPHG 1055

 SARS-CoV-2 VVFLHVTYVPAQEKNETTAPAICHG---KAHFPREGVVF--SNGTH-----WVFIQRNFYEPQIITDNTFVSGNCDVIGIINNNTVYDPLQPEL--DS 1147
 SARS VVFLHVTYVPSQERNETTAPAICHEG---KAYFPREGVVF--FNQTS-----WFIQRNFYEPQIITDNTFVSGNCDVIGIINNNTVYDPLQPEL--DS 1129
 MERS-CoV LYIMHVGYPPSNHIEVVSAAGLDAANTPCIAPVNGYFI--KTNNTRIVDEWSYTGSSFAPEPITSLNTKYVAP-QVTYQNIISNLPPLLNSTGID 1230
 HCoV OC43 LYIFHFSYVPTKYVTARVSPGLCIAGD--RGIAPKSGYFV--NVNMT-----WMTGSGYYPEPITENNVVMSTCAVNYTKAPYVMLNTSIPNL--PD 1232
 HCoV NL63 LLFLHTVLLPTDYKKNVKAWSGICVDGI--YGYVLRQPNLVLYSDNGV-----FRVSRVMFQPRLPVLSDFVQIYNCNVTFVNIISRVLEHTVIPDY--VD 1216
 HCoV HKU1 LLIFHFSYKPTSFKTVLVSPEGLSGD--RGIAPKQGYFI--KQND-----WMTGSSYYPEPISDKNVVMNSCSVNFKAPFIYLNNSIPNL--SD 1229
 HCoV 229E LVFLHTVLLPTQYKDVSAWSGLVDGT--NGYVLRQPNLALYKEGNY-----YRISRMIEPRIPTMAFDVQIENCNVTFVNIISRVLEHTVIPDY--ID 1035
 BatCoV-RaTG13 VVFLHVTYVPAQEKNETTAPAICHG---KAHFPREGVVF--SNGTH-----WVFIQRNFYEPQIITDNTFVSGNCDVIGIINNNTVYDPLQPEL--DS 1143

 SARS-CoV-2 FKEELDKY-FKNHTSPDVLGDISGINASVNIQKEID-----RLNEVAKNLNESLIDLQELGKYEQYIKWPWYIWLGFAGLIAIIVMTI 1232
 SARS FKEELDKY-FKNHTSPDVLGDISGINASVNIQKEID-----RLNEVAKNLNESLIDLQELGKYEQYIKWPWYIWLGFAGLIAIIVMTI 1214
 MERS-CoV FQDELDEF-FKNVSTSIPIFSGSLTQINTLLDLTYEML-----SLQVQVKALNESYIDLKELGNITYYKWPWYIWLGFAGLIAIIVMTI 1315
 HCoV OC43 FKEELDQW-FKNQTSVAPDL-SLDYINVTFLDLQVEMN-----RLQEAIKVLNQSYINLKDITGYEYVYKWPWYIWLGFAGLIAIIVMTI 1316
 HCoV NL63 VNKTQLQEAQNLPKYVKNF-DLTPFNLTLYNLSELKQLEAKTASLFTQTTVELQGLIDQINSTYVDLKLNRNFENYIKWPWVWLIISVVFVLLSLLV 1315
 HCoV HKU1 FEAEFSLW-FKNHTSIAPNLTFSHINATFLD-----FEAEFSLW-FKNHTSIAPNLTFSHINATFLD 1260
 HCoV 229E VNKTQLQELSYKLPNTYVDPDL-VVEQYNTILNLTSEISTLENKSAELNYTVQRLQTLIDNINSTYVDLKLNRNFENYIKWPWVWLIISVVFVLLSLLV 1134
 BatCoV-RaTG13 FKEELDKY-FKNHTSPDVLGDISGINASVNIQKEID-----RLNEVAKNLNESLIDLQELGKYEQYIKWPWYIWLGFAGLIAIIVMTI 1228

 SARS-CoV-2 MLCCMTSCCSCLKGCSCGSCCKFDEDDSEPVLGKVKLHYT 1273
 SARS LLCMTSCCSCLKGCSCGSCCKFDEDDSEPVLGKVKLHYT 1255
 MERS-CoV FILCCTGCGTNCMGLKCNRC--DRYEEYD-LEPHKVHVH 1353
 HCoV OC43 FICCTGCGT--SCFKKCGGCC--DDYTGQYELVIKTHSD 1353
 HCoV NL63 FCCLSTGCCGCCNCLTSSMRGCCDCGSKLPYEFKVVHQ 1356
 HCoV HKU1 FICCTGCGT--SCFKKCGGCC--DDYTGQYELVIKTHSD 1260
 HCoV 229E LCCSTGCCGFFSCFASSIRGC--CESTKLPYDVEKIHQ 1173
 BatCoV-RaTG13 MLCCMTSCCSCLKGCSCGSCCKFDEDDSEPVLGKVKLHYT 1269

Figure S2. Multiple sequence alignment of Sars-CoV-2 Spike protein [P0DTC2] and endemic coronaviruses. Identified cross-reactive sites (yellow), correspondent identical residues (red) in coronaviruses (Sars-CoV-1 [P59594], MERS-CoV [K9N5Q8], HCoV-OC43 [P36334], HCoV-NL63 [Q6Q1S2], HCoV-HKU1 [Q14EB0], HCoV-229E [P15423], BatCoV-RaTG13 [A0A6B9WHD3]), similar amino acids (gray) were highlighted. Analysis was performed using MEGA11 software, and alignment was performed using the MUSCLE algorithm.

Table S2. Information of serum samples used in the study and dose regimen for COVID-19 vaccines.

Sample	Gender	Dose regimen	Days after vaccination
M3	F	A	70
M4	F	A	50
M5	M	A	97
M7	F	A	17

M9	M	A	24
M10	M	A	11
M11	M	A	46
M12	F	A	92
M13	M	A	91
M14	F	A	90
M17	M	A	89
M20	M	A	88
M23	M	A	60
M24	F	A	54
M27	F	A	39
M28	F	A	37
M29	F	A	17
M30	F	A	80
M34	F	A	40
M37	F	A	37
M39	F	A	16
M40	F	A	27
M43	F	A	35
M46	F	A	33
B1	M	A/A/A/P	236
B2	F	A/A/P/P	259
B3	M	A/A/P/A	142
B4	M	A/A/P/P	122
B5	F	A/A/P/J	303
B6	F	A/A/P	401
B7	F	A/A/P/A	261

*A= Astrazeneca viral vector vaccine; P = Pfizer Spike mRNA vaccine; J = Janssen virus-based technology vaccine

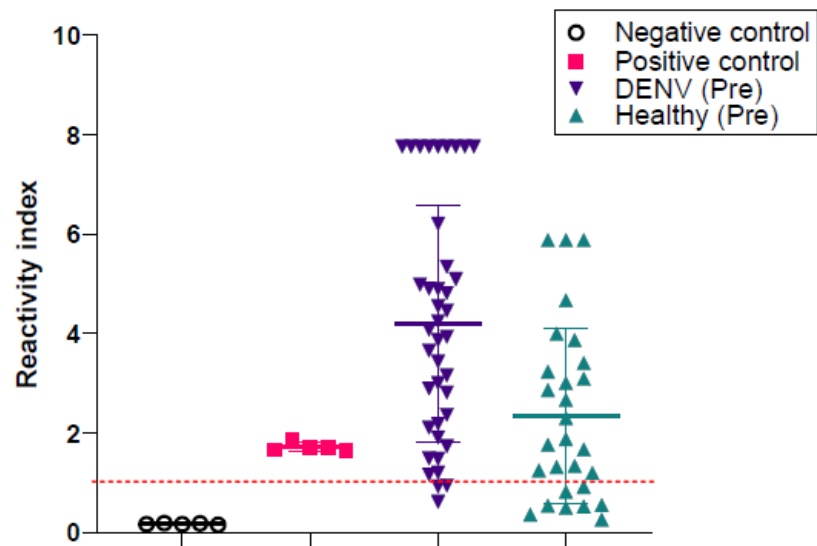


Figure S3. Analysis of ELISA test for DENV (Serotypes 1-4). Reactivity index of serum samples from healthy (n=28) and DENV (n=40) pre-pandemic individuals.