

Published COVID-19 T-cell Epitopes

Version 3. January 20, 2021

HLA Allele	Peptide	Antigen	Reference	T-cell immune monitoring assays	
				MHC Multimer	Other assay
A*0101	ATSRTLSYY	Membrane	6		X
A*0101	CTDDNALAY	ORF1ab	8	X	
A*0101	CTDDNALAYY	ORF1ab	6, 8, 11	X	X
A*0101	DTDFVNEFY	ORF1ab	6, 8, 11, 14	X	X
A*0101	FTSDYYQLY	ORF3a	2, 6, 8, 10, 14	X	X
A*0101	GTDLEGNFY	ORF1ab	6, 14	X	X
A*0101	LTDEMIAQY	Spike	5, 8, 14	X	X
A*0101	NTCDGTTFTY	ORF1ab	6		X
A*0101	PTDNYITTY	ORF1ab	6, 11, 14	X	X
A*0101	RTFKVSIWNLDY	ORF6	5		X
A*0101	TTDPSFLGRY	ORF1ab	5, 6, 10, 11	X	X
A*0101	TVATSRTLSY	Membrane	11	X	
A*0101	TTDPSFLGRYM	ORF1ab	10	X	
A*0101	CTEIDPKLDNY	ORF1ab	10	X	
A*0101	HTTDPDFLGRY	ORF1ab	14	X	
A*0201	ALSKGVHFV	ORF3	5, 7, 14	X	X
A*0201	ALWEIQQVV	ORF1ab	6, 14	X	X
A*0201	FLHVTYVPA	Spike	4		X
A*0201	FLLPSLATV	ORF1ab	8	X	
A*0201	GMSRIGMEV	Nucleocapsid	8, 16	X	
A*0201	HLVDFQVTI	ORF6	7	X	
A*0201	ILFTRFFYV	ORF1ab	8	X	
A*0201	KIYSKHTPI	Spike	4		X
A*0201	KLLEQWNLV	Membrane	7	X	
A*0201	KLPDDFTGCV	Spike	4		X
A*0201	KLWAQCVQL	ORF1ab	6		X
A*0201	LALLLLDRL	Nucleocapsid	8	X	
A*0201	LLFNKVTLA	Spike	4		X
A*0201	LLLDRLNQL	Nucleocapsid	6, 7, 8, 14, 16	X	X
A*0201	LLLLDRLNQL	Nucleocapsid	5		X
A*0201	LLYDANYFL	ORF3a	6, 7, 8, 14	X	X
A*0201	RLDKVEAEV	Spike	4		X
A*0201	RLITGRLQSL	Spike	4		X
A*0201	RLQSLQTYV	Spike	1, 17	X	X

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A*0201	SLVKPSFYV	Envelope	7	X	
A*0201	TLDSKTQSL	Spike	7	X	
A*0201	VLNDILSRL	Spike	7, 16	X	
A*0201	YLFDESGEFLK	ORF1ab	6	X	X
A*0201	YLQPRTFLL	Spike	1, 6, 7, 9, 11, 14, 17, 18	X	X
A*0201	YLYALVYFL	ORF3a	8, 14	X	
A*0201	RLNEVAKNL	Spike	11, 16	X	
A*0201	FLLNKEMYL	ORF1ab	9	X	
A*0201	NLLLLFVTV	ORF3	10	X	
A*0201	RTIKVFTTV	ORF1ab	10	X	
A*0201	SLDTYPSLETI	ORF1ab	10	X	
A*0201	YLATALLTL	ORF1ab	14	X	
A*0201	YLDAYNMMI	ORF1ab	14	X	
A*0201	NLIDSYFVV	ORF1ab	14	X	
A*0201	VVFLHVTVYV	Spike	14	X	
A*0201	TLACFVLA AV	Membrane	16	X	
A*0201	ILLNKHIDA	Nucleocapsid	16	X	
A*0201	NLNESLIDL	Spike	16	X	
A*0201	FIAGLIAIV	Spike	16, 18	X	
A*0301	KCYGVSP TK	Spike	6		X
A*0301	KLFAAETLK	ORF1ab	5		X
A*0301	KTFPPTEPK	Nucleocapsid	2, 6, 11, 14	X	X
A*0301	KTIQPRVEK	ORF1ab	6, 14	X	X
A*0301	MVTNNTFTLK	ORF1ab	6		X
A*0301	QLRARSVSPK	ORF7	5		X
A*0301	RMYIFFASFY	ORF1ab	8	X	
A*0301	VVYRGTTTTYK	ORF1ab	8, 14	X	
A*0301	VTNNTFTLK	ORF1ab	14	X	
A*0301	GVYFASTEK	Spike	14	X	
A*0301	KLFD RYFKY	ORF1ab	14	X	
A*0301	TSFGPLVRK	ORF1ab	14	X	
A*0301	SASKIITLK	ORF3a	14	X	
A*0301	TISLAGSYK	ORF1ab	14	X	
A*1101	ASAFFGMSR	Nucleocapsid	6		X

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				MHC Multimer	Other assay
A*1101	ASMPPTIAK	ORF1ab	5, 8	X	X
A*1101	ATEGALNTPK	Nucleocapsid	5, 6		X
A*1101	ATSRTLSSYYK	Membrane	6		X
A*1101	KTFPPTEPK	Nucleocapsid	2, 6, 14	X	X
A*1101	SAFAMMFVK	ORF1ab	8, 14	X	
A*1101	STFNVPMEK	ORF1ab	8, 14	X	
A*1101	VTDTPKGP	ORF1ab	6		X
A*1101	VVNARLRAK	ORF1ab	14	X	
A*1101	RLFRKSNLK	Spike	14	X	
A*1101	VTNNTFTLK	ORF1ab	14	X	
A*1101	GTHWFVTQR	Spike	14	X	
A*1101	AGFSLWVYK	ORF1ab	14	X	
A*1101	AVFDKNLYDK	ORF1ab	14	X	
A*1101	TISLAGSYK	ORF1ab	14	X	
A*1101	GVYFASTEK	Spike	14	X	
A*1101	SASKIITLK	ORF3a	14	X	
A*1101	KTIQPRVEK	ORF1ab	14	X	
A*2402	KWPWYIWLGF	Spike	17	X	
A*2402	DYKHWYQIAQF	Nucleocapsid	5		X
A*2402	FVYYSRVKLN	Envelope	5		X
A*2402	QYIKWPWYI	Spike	5, 6, 11, 14, 17	X	X
A*2402	VYFLQSINF	ORF3a	5, 6, 14	X	X
A*2402	VYIGDPAQL	ORF1ab	5, 6, 14	X	X
A*2402	FYAYLRKHF	ORF1ab	10	X	
A*2402	NYNYLYRLF	Spike	14, 17	X	
A*2402	NYMPYFFTL	ORF1ab	14	X	
A*2402	YYTSNPTTF	ORF1ab	14	X	
A*2402	RFDNPVLPF	Spike	14	X	
A*2402	TYACWHHSI	ORF1ab	14	X	
B*0702	FPRGQGVPI	Nucleocapsid	5, 7, 8	X	X
B*0702	IPRRNVATL	ORF1ab	6, 8, 14	X	X
B*0702	KPRQKRTAT	Nucleocapsid	7, 8	X	
B*0702	NPANNAIIVL	Nucleocapsid	5		X
B*0702	RPDTRYVL	ORF1ab	6		X
B*0702	SPRRARSVA	Spike	7, 8	X	

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B*0702	SPRWYFYYL	Nucleocapsid	2, 6, 7, 8, 10, 14	X	X
B*0702	QPGQTFSVL	ORF1ab	14	X	
B*0702	RARSVSPKL	ORF7a	14	X	
B*0702	APHGVVFL	Spike	14	X	
B*0702	RPDTRYVLM	ORF1ab	14	X	
B*0801	DLKGKYVQI	ORF1ab	5		X
B*0801	EAFEKMOVSL	ORF1ab	5		X
B*0801	FVKHKHAFL	ORF1ab	5		X
B*0801	TPKYKFVRI	ORF1ab	5		X
B*1501	AQFAPSASAF	Nucleocapsid	8	X	
B*1501	KQLIKVTLVF	ORF1ab	8	X	
B*1501	LVQMAPISAM	ORF1ab	8	X	
B*1501	YLITPVHVM	ORF1ab	10	X	
B*2705	QRNAPRITF	Nucleocapsid	2	X	
B*3501	QPTESIVRF	Spike	17	X	
B*3501	LPFNDGVYF	Spike	17	X	
B*3501	IPFAMQMAY	Spike	17	X	
B*4001	GETLPTEVL	ORF1ab	8	X	
B*4001	GEVITFDNL	ORF1ab	8	X	
B*4001	GEEANFCAL	ORF1ab	8	X	
B*4001	TEVVGDIIL	ORF1ab	8	X	
B*4001	IEYPIIGDEL	ORF1ab	5		X
B*4001	LEYHDVVRVVL	ORF8	5		X
B*4001	MEVTPSGTWL	Nucleocapsid	2, 5, 8	X	X
B*4001	SELVIGAVIL	Membrane	5		X
B*4001	YEGNSPFHPL	ORF7	5		X
B*4403	EEAIRHVRAW	ORF1ab	8	X	
B*4403	EEIAILASF	ORF1ab	8	X	
B*4403	MEVTPSGTW	Nucleocapsid	8	X	
B*4403	QEILGTVSW	ORF1ab	8	X	
B*4403	QEYADVFLY	ORF1ab	8	X	
B*4403	SEFSSLPSY	ORF1ab	8	X	
B*4403	YEQYIKWPW	Spike	8	X	

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				MHC Multimer	Other assay
C*0602	FYYVWKSIV	ORF1ab	10	X	
C*0702	NRFLYIIKL	Membrane	5		X
C*0702	QRNAPRITF	Nucleocapsid	5		X
C*0702	YYQLYSTQL	ORF3a	5		X
C*0702	FYYVWKSIV	ORF1ab	10	X	
C*0702	SLRPDTRYVL	ORF1ab	10	X	
DRB1*0101 DRB1*0401 DRB1*0701 DRB1*1501	QLIRAAEIRASANLAATK	Spike	2	X	
DR	KDGIIWVATEGALNT	Nucleocapsid	5		X
DR	GTWLTYTGAIKLDDK	Nucleocapsid	5		X
DR	RWYFYFLGTGPEAGL	Nucleocapsid	5		X
DR	ASWFTALTQHGKEDL	Nucleocapsid	5		X
DR	ASAFFGMSRIGMEVT	Nucleocapsid	5		X
DR	IGYYRRATRRIRGGD	Nucleocapsid	5		X
DRB1*0101	LLLLDRLNQLESKMS	Nucleocapsid	5		X
DR	AADLDDFSKQLQQSM	Nucleocapsid	5		X
DR	AIVLQLPQGTTLPKG	Nucleocapsid	5		X
DR	YKHWQPQIAQFAPSAS	Nucleocapsid	5		X
DR	LDDFVEIIKSQDLSV	ORF1ab	5		X
DR	ITRFQTLALHRSYL	Spike	5		X
DR	FNGLTVLPPLTDEM	Spike	5		X
DR	FMRIFTIGTVTLKQG	ORF3a	5		X
DRB1*0101 DRB1*0401 DRB1*0701	FYVYSRVKLNSSRV	Envelope	5		X
DR	LSYYKLGASQRVAGD	Membrane	5		X
DR	IWNLDYIINLIKLN	ORF6	5		X
DR	QEEVQELYSPIFLIV	ORF7	5		X
DR	SKWYIRVGARKSAPL	ORF8	5		X
DR	INVFAFPFTIYSLLL	ORF10	5		X

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