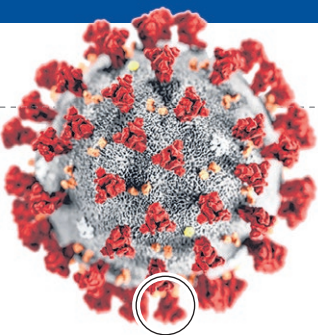


How T cells fight the variant strains



Spike protein of Sars-CoV-2 virus

▼ Diagram of the sequence of amino acids that codes for the spike protein

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MFVFLVLLPLVSSQC VNI TTRTQLP PAYTNSFTRGVYYPDKVFRSSVLHSTQDQLFLPFFSNVTWF
HAI HVSGTNGTKR FDN PVLPFN DGVYFASTEK SNIIRGWIFGTTLDSKITQSLIVNNATNVVIKV
CEFQFCND PFLG VYYHKNNKSWMESEFRVYSSANNCTFEVYSQPFMLDLEGGKGNFKNL REF
VFKNIDGYFKIYSKHTPINLVR DLPQGFSALEPLVDLPIGINITRFQTL LALHRSYLTPGDSSSGWT
AGAAAYVGY LQ PRT FLLKYENGTITDAVDCALDPLSETKCTLKSFTEKGIYQTSNFRVQPT
SIVRFPNITNLCPFGVEFNATRFASVYAWNRKRISNCVADYSVLYNSASFSTFKCYGVSPTKLN D
CFTNVYADSFVIRGDEVRQIAPGGTG KIADYNYKLPDDFTGCVIAWNSNLLDSKVGG NYNYLY
RLFRKSNL KPFERDISTEIYQAGSTPCNGV EGFNCYF LQSYGFQPT NGVGYQPYRVVLSFELL
HAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRI ADTTDAVRDPQT
LEILDITPCSFGGVSVITPGTNTSNQAVLYQ DVNCTEVPVAIHADQLPTWRVYSTGNSVNFQT
RAGCLIGAE HVNNSYECIDIPIGAGICASYQTQ TNSPRRARSVASQSIAYTMSL GAENSVAYSNN
SIAIPT TNFTISVTTEILPVSMTKTSVDCTMYICGDS TECSNLLQYGSFCTQLNRALTGIAVEQDK
NTQEVFAQVKQIYKTPPIKDFGGFN SOIIPDPSPKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLG
DIAARDLCAQKFNGLTVLPL LT DEM IAQYTSALLAGITSGWTFGAGAALQIPFAMQ MAYFR
NGIGVTQNVLYENQKLIANQFNSAIGKIQDLSSTASALGKLDVNVQNAQALNTLVKQLSSNF
GAISSVLNDIL SRLDKVEAEVQIDRLITGRLOSLOTYVTTQQLIRAAEIRASANLAA TKMSECVLG
QSKRVD ECGKGYHLSMFPQ SA PHGVV FLH VTVYPAQEKNF TAPAICHDGKAHFPREGVFS
NG TH WF VT QR NF YE P QI T T DN TF VS GN CD VV IG VN NT V DP LQ PE LD SF EK EL DK YF NH T
SPD VD LG DI SI NA SV VN IQ KE ID RL NE VA KN LN ES LI DL QE LG KY E QI K W P W Y WL GF IA GL I
AIVMVTIMLCCMTSCCCLGKCCSCGSCCKFDEDDSEPVLKGVKLHYT
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- 1 Each letter is an amino acid – the building block of proteins. Combined, the entire chain of letters spells out the signature spike protein on the surface of the original strain of the Sars-CoV-2 virus, which causes Covid-19.
- 2 The orange letters represent amino acids which have mutated in three key variant strains of the virus.
- 3 The green highlights are protein fragments that T cells recognise, signalling to them to attack the virus.
- 4 Only one of the regions that T cells are programmed to be on the alert for has been affected by mutations (seen in the second line – where the orange letter lies within the highlighted green section)
- 5 This means that the sections which the T cells need to “read” in order to recognise the virus as an enemy have largely been unaffected by mutations in the three variants. Thus, the body may still be able to kill cells infected with the variants.

Source: CD8+ T CELL RESPONSES IN CIRCU-19 CONVALESCENT INDIVIDUALS TARGET CONSERVED EPITOPES FROM MULTIPLE PROMINENT SARS-COV-2 CIRCULATING VARIANTS, OPEN FORUM INFECTIOUS DISEASES, 2021; OFAB143

PHOTO: AFP STRAITS TIMES GRAPHICS