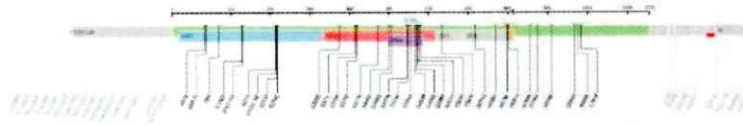


## Company Statement On Virus Mutation

According to the latest research, there are many mutant strains of the Covid-19 virus, which are the British variants (VOC202012/01, B.1.1.7 or 20B/50Y.V1). There are 4 mutation points on the nucleocapsid protein, which are located at D3L, R203K, G203R and S235F. South Africa variants (501.V2, 20C/501Y.V2 or B.1.315) do not have any mutation points on the nucleocapsid protein. The new Indian variants have nucleocapsid protein mutation points located at P6T, P13L and S33I. And the B.1.1.529 has the protein mutation points located at P13L, R203K, G204R, E31, R32, S33

Figure 1: Potential impact of mutations - B.1.1.529(Omicron)

### B.1.1.529 – potential impact of mutations



- Multiple RBD and NTD mutations associated **with resistance to neutralizing antibodies** (and therapeutic monoclonal antibodies)
- Cluster of mutations (H655Y + N679K + P681H) adjacent to S1/S2 furin cleavage site – **associated with more efficient cell entry → enhanced transmissibility**
- nsp6 deletion ( $\Delta$ 105-107) – similar to deletion to Alpha, Beta, Gamma, Lambda – may be associated with **evasion of innate immunity (interferon antagonism) → could also enhance transmissibility**
- R203K+G204R mutations in nucleocapsid - seen in Alpha, Gamma, Lambda – associated with **increased infectivity**

Figure 2: Position of mutations - B.1.1.529(Omicron)



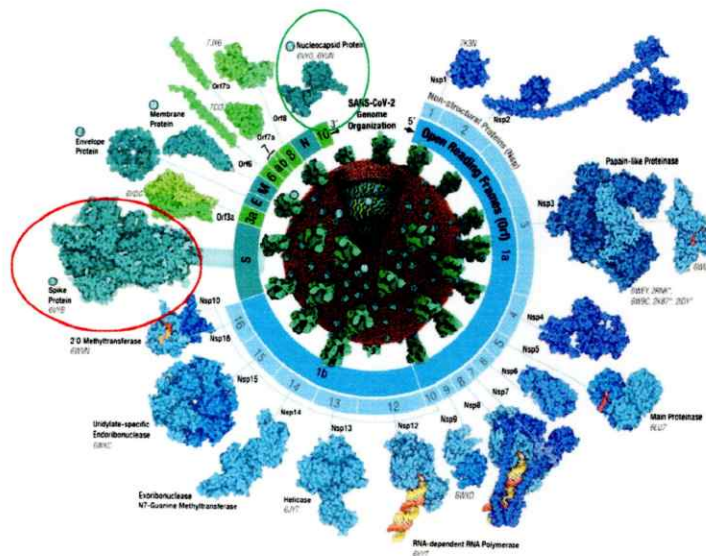
**Nucleocapsid phosphoprotein [Severe acute respiratory syndrome coronavirus 2]**

**ORIGIN**

1 msdngppnqr na**pr**itfggp sdstgsnqng **ers**garskqr rpqglpnnta swftaltqhg  
 61 kedlkfprgq gvpintnssp ddqigyrra trirggdgk mkdlsprwyf yylgtgpeag  
 121 lpygankdgi iwvategaln tpkdhigtrn pannaaiivlq lpqgttlpgk fyaegsrggs  
 181 qasrsssrs rnsrnrstpg ss**rt**sparm agnggdaala lllldrlnql eskmsgkggq  
 241 qggqvtkks aaeaskkprq krtatkaynv tqafgrgpe qtqgnfgdqe lirqgtdykh  
 301 wpqiaqfaps asaffgmsri gmevtpsgtw ltytgaikld dkdpnfdqv illnkhiday  
 361 ktfppteppk dkkkkadetq alpqrqkkqk tvllpaadl ddfskqlqqs mssadstqa

- **Label Red:** The mutations of nucleocapsid phosphoprotein - B.1.1.529(Omicron)
- **Label Yellow:** Recognition epitopes which the corresponding antigen are located in N47-A173 (NTD region)

**Figure 3: Virus Structure**



We, Hangzhou testsea here solemnly declare that Covid-19 tests which we produce use nucleocapsid phosphoprotein monoclonal antibodies for detection, recognition epitopes which the corresponding antigen are located in N47-A173 (NTD region), as a result, our tests are qualified for these virus variants.

