

| Strain Name | PANGO lineage | Clade | IHU isolate | Total number of nucleotide substitutions | Total number of nucleotide deletions | Total number of nucleotide insertions | Total number of amino acid substitutions | Total number of amino acid deletions | Nucleotide substitutions | Nucleotide deletions | Nucleotide insertions |
|------------------------------|---------------|-----------------|-------------|--|--------------------------------------|---------------------------------------|--|--------------------------------------|---|---|-------------------------|
| Original/B.1.1 Virus | B.1.1 | 20B | IHUMI717 | 19 | 9 | 0 | 11 | 3 | C241T, C313T, C3037T, C4755T, A6488G, A7903G, C14408T, C15024T, G19518T, T21318C, A23403G, G23607C, C24700T, G26143T, C26333T, G28845T, G28881A, G28882A, G28883C | 3341-3349 | - |
| Marseille-4/B.1.160 variant | B.1.160 | 20A | IHUMI2096 | 20 | 0 | 0 | 11 | 0 | C241T, C3037T, C4543T, G5629T, G9526T, C11497T, G13993T, C14408T, G15766T, A16889G, G17019T, C18877T, G22992A, A23403G, G25563T, C25710T, C26735T, T26876C, G28975C, G29399A | - | - |
| Marseille-501/A.27 variant | A.27 | 19B | IHUMI3217 | 31 | 15 | 0 | 20 | 4 | A361G, C1122T, C2509T, A7112G, T7999C, C8782T, A9204G, A11217G, C15103G, C16293T, C16466T, G17815A, A18366G, G19925A, A20262G, C21614T, T22917G, A23063T, C23520T, C23525T, G23948T, G24089A, G25218T, G25494T, T25541C, C27247T, T27499C, T28144C, A28273T, G28878A, C29149A | 26161-26168, 27388, 28248-28253 | - |
| Marseille-484K.V1/R.1variant | R.1 | 20B | IHUMI3239 | 24 | 1 | 0 | 14 | 0 | C241T, C3037T, C13860T, C14220A, C14340T, C14408T, C14599T, G17551A, C18877T, A19167G, C19274A, T19839C, G22017T, G23012A, A23403G, G23868T, T26604C, C27213T, T28334C, C28833T, G28881A, G28882A, G28883C, G29527T | 28271 | - |
| B.1.214.2variant | B.1.214.2 | 20B | IHUMI3246 | 30 | 32 | 10 | 28 | 11 | C241T, G587A, G1394T, C3037T, A4457G, C4891T, C5184T, C5907T, A9204G, A11430G, C11941T, A12077T, C12312T, C14408T, A15187G, C15324T, C19975A, C22802A, G22899A, T22912G, A23403G, C23709T, T24071G, T27576C, C27881A, G28280C, A28281T, T28282A, C28846T, C28887T | 25447-25476, 28271-28272 | 6698:T, 22206:ACAGATCGA |
| Alpha variant | B.1.1.7 | 20I (Alpha, V1) | IHUMI3076 | 31 | 25 | 0 | 20 | 8 | C241T, C913T, A1399G, C3037T, C3267T, C5388A, C5986T, T6954C, C14408T, C14676T, C15279T, T16176C, A17615G, A23063T, C23271A, A23403G, C23604A, C23709T, T24506G, G24914C, G26730C, C27972T, G28048T, A28111G, G28280C, A28281T, T28282A, G28881A, G28882A, G28883C, C28977T | 11288-11296, 12041-12046, 21765-21770, 21992-21994, 28271 | - |
| Beta variant | B.1.351.2 | 20H (Beta, V2) | IHUMI3147 | 27 | 19 | 0 | 18 | 6 | C28T, G174T, C241T, C1059T, A2692T, C3037T, G5230T, A8052G, A10323G, G10396T, C10632T, C14408T, C21614T, A21801C, A22206G, G22813T, G23012A, A23063T, A23403G, T23560C, C23664T, G25563T, C25904T, C26456T, C28253T, T28729C, C28887T | 26, 11288-11296, 22283-22291 | - |
| Gamma variant | P.1 | 20J (Gamma, V3) | IHUMI3191 | 36 | 10 | 5 | 23 | 3 | C28T, C241T, T733C, C2749T, C3037T, C3828T, A5648C, A6319G, A6613G, C12778T, C13860T, C14408T, G17259T, C21614T, C21621A, C21638T, G21974T, G22132T, A22812C, G23012A, A23063T, A23403G, C23525T, C23606T, C24642T, G25088T, T26149C, G28167A, C28512G, A28877T, G28878C, G28881A, G28882A, G28883C, T29834A, T29858A | 26, 11288-11296 | 5:C, 28264:AACA |
| Delta/B.1.617.2 variant | B.1.617.2 | 21J (Delta) | IHUMI3396 | 38 | 13 | 0 | 31 | 4 | G210T, C241T, C3037T, G4181T, C6402T, C7124T, C8986T, G9053T, C9559T, C10029T, G11083T, A11201G, A11332G, C14408T, C15240T, G15451A, C16466T, C19220T, C21618G, C21762T, C21846T, T22917G, C22995A, A23403G, C23604G, G23607A, C25469T, T26767C, G27358T, T27638C, C27752T, C27874T, T28007C, A28461G, G28881T, G28916T, G29402T, G29742T | 22029-22034, 28248-28253, 28271 | - |
| Delta/AY.37 variant | AY.37 | 21I (Delta) | IHUMI3630 | 34 | 13 | 0 | 28 | 4 | G210T, C241T, C2509T, C3037T, C5184T, A5584G, C9891T, T11418C, C11514T, C13019T, C14408T, G15451A, C16466T, C16726T, A18931G, C19118T, C21618G, C22227T, T22917G, C22995A, A23403G, C23604G, C23606T, G24410A, C25317T, C25469T, C26753T, T26767C, T27638C, C27752T, A28461G, G28881T, G29402T, G29742T | 22029-22034, 28248-28253, 28271 | - |

| Strain Name | PANGO lineage | Clade | IHU isolate | Amino acid substitutions | Spike amino acid substitutions | Amino acid deletions | Spike amino acid deletions | Amino acid substitutions reported as associated with immune escape and/or modified infectivity/transmissibility * |
|------------------------------|---------------|-----------------|-------------|---|--|--|----------------------------|---|
| Original/B.1.1 Virus | B.1.1 | 20B | IHUMI717 | E:T30I, N:R191L, N:R203K, N:G204R, ORF1a:P1497L, ORF1a:I2075V, ORF1b:P314L, ORF1b:L2017F, ORF3a:G251C, S:D614G, S:R682P | D614G, R682P | ORF1a:N1026-, ORF1a:S1027-, ORF1a:F1028- | - | D614G |
| Marseille-4/B.1.160 variant | B.1.160 | 20A | IHUMI2096 | N:M234I, N:A376T, ORF1a:M3087I, ORF1b:A176S, ORF1b:P314L, ORF1b:V767L, ORF1b:K1141R, ORF1b:E1184D, ORF3a:Q57H, S:S477N, S:D614G | S477N, D614G | - | - | S477N, D614G |
| Marseille-501/A.27 variant | A.27 | 19B | IHUMI3217 | N:S202N, ORF1a:P286L, ORF1a:T2283A, ORF1a:D2980G, ORF1a:N3651S, ORF1b:R546G, ORF1b:P1000L, ORF1b:G1450R, ORF1b:C2153Y, ORF3a:V50A, ORF7a:S36P, ORF8:L84S, S:L18F, S:L452R, S:N501Y, S:A653V, S:H655Y, S:D796Y, S:D843N, S:G1219V | L18F, L452R, N501Y, A653V, H655Y, D796Y, D843N, G1219V | ORF3a:N257-, ORF3a:P258-, ORF8:D119-, ORF8:F120- | - | L452R, N501Y, L18F |
| Marseille-484K.V1/R.1variant | R.1 | 20B | IHUMI3239 | M:F28L, N:S21P, N:S187L, N:R203K, N:G204R, N:Q418H, ORF1b:D251E, ORF1b:P314L, ORF1b:G1362R, ORF1b:P1936H, S:W152L, S:E484K, S:D614G, S:G769V | W152L, E484K, D614G, G769V | - | - | E484K, D614G |
| B.1.214.2variant | B.1.214.2 | 20B | IHUMI3246 | N:D3L, N:T205I, ORF1a:V108I, ORF1a:E377*, ORF1a:I1398V, ORF1a:P1640L, ORF1a:T1881I, ORF1b:P314L, ORF1b:R574G, ORF1b:L2170I, ORF3a:R6D, ORF3a:I7L, ORF3a:T9R, ORF3a:G11F, ORF3a:K21G, ORF3a:D22T, ORF3a:A23V, ORF3a:P25L, ORF3a:S26K, ORF3a:D27Q, ORF3a:F28G, ORF7b:H42Q, S:Q414K, S:G446D, S:N450K, S:D614G, S:T716I, S:Y837D | Q414K, G446D, N450K, D614G, T716I, Y837D | ORF3a:M1-, ORF3a:D2-, ORF3a:L3-, ORF3a:F4-, ORF3a:V13-, ORF3a:T14-, ORF3a:L15-, ORF3a:K16-, ORF3a:Q17-, ORF3a:G18-, ORF3a:E19- | - | D614G |
| Alpha variant | B.1.1.7 | 20I (Alpha, V1) | IHUMI3076 | M:V70L, N:D3L, N:R203K, N:G204R, N:S235F, ORF1a:T1001I, ORF1a:A1708D, ORF1a:I2230T, ORF1b:P314L, ORF1b:K1383R, ORF8:Q27*, ORF8:R52I, ORF8:Y73C, S:N501Y, S:A570D, S:D614G, S:P681H, S:T716I, S:S982A, S:D1118H | N501Y, A570D, D614G, P681H, T716I, S982A, D1118H | ORF1a:S3675-, ORF1a:G3676-, ORF1a:F3677-, ORF1a:D3926-, ORF1a:I3927-, S:H69-, S:V70-, S:Y144- | H69-, V70-, Y144- | Δ69–70, Δ144, D614G, N501Y |
| Beta variant | B.1.351.2 | 20H (Beta, V2) | IHUMI3147 | E:P71L, N:T205I, ORF1a:T265I, ORF1a:K1655N, ORF1a:N2596S, ORF1a:K3353R, ORF1a:A3456V, ORF1b:P314L, ORF3a:Q57H, ORF3a:S171L, S:L18F, S:D80A, S:D215G, S:K417N, S:E484K, S:N501Y, S:D614G, S:A701V | L18F, D80A, D215G, L242H, K417N, E484K, N501Y, D614G, A701V | ORF1a:S3675-, ORF1a:G3676-, ORF1a:F3677-, S:L241-, S:L242-, S:A243- | A243-, L244-, H245- | E484K, Δ243, D614G, N501Y, K417N, L18F |
| Gamma variant | P.1 | 20J (Gamma, V3) | IHUMI3191 | N:P80R, N:R203K, N:G204R, ORF1a:S1188L, ORF1a:K1795Q, ORF1b:P314L, ORF1b:E1264D, ORF3a:S253P, ORF8:E92K, ORF9b:Q77E, S:L18F, S:T20N, S:P26S, S:D138Y, S:R190S, S:K417T, S:E484K, S:N501Y, S:D614G, S:H655Y, S:R682W, S:T1027L S:V1176F | L18F, T20N, P26S, D138Y, R190S, K417T, E484K, N501Y, D614G, H655Y, R682W, T1027L, V1176F | ORF1a:S3675-, ORF1a:G3676-, ORF1a:F3677- | - | E484K, D614G, N501Y, K417T, L18F, T20N |
| Delta/B.1.617.2 variant | B.1.617.2 | 21J (Delta) | IHUMI3396 | M:I82T, N:D63G, N:R203M, N:G215C, N:D377Y, ORF1a:A1306S, ORF1a:P2046L, ORF1a:P2287S, ORF1a:V2930L, ORF1a:T3255I, ORF1a:L3606F, ORF1a:T3646A, ORF1b:P314L, ORF1b:G662S, ORF1b:P1000L, ORF1b:A1918V, ORF3a:S26L, ORF6:D53Y, ORF7a:V82A, ORF7a:T120I, ORF7b:T40I, ORF9b:T60A, S:T19R, S:A67V, S:T95I, S:R158G, S:L452R, S:T478K, S:D614G, S:P681R, S:R682Q | T19R, A67V, T95I, R158G, L452R, T478K, D614G, P681R, R682Q | ORF8:D119-, ORF8:F120-, S:E156-, S:F157- | E156-, F157- | L452R, D614G |
| Delta/AY.37 variant | AY.37 | 21I (Delta) | IHUMI3630 | M:I82T, N:D63G, N:R203M, N:D377Y, ORF1a:P1640L, ORF1a:A3209V, ORF1a:V3718A, ORF1a:T3750I, ORF1b:P314L, ORF1b:G662S, ORF1b:P1000L, ORF1b:H1087Y, ORF1b:I1822V, ORF1b:A1884V, ORF3a:S26L, ORF7a:V82A, ORF7a:T120I, ORF9b:T60A, S:T19R, S:R158G, S:A222V, S:L452R, S:T478K, S:D614G, S:P681R, S:R682W, S:D950N, S:S1252F | T19R, R158G, A222V, L452R, T478K, D614G, P681R, R682W, D950N, S1252F | ORF8:D119-, ORF8:F120-, S:E156-, S:F157- | E156-, F157- | L452R, A222V, D614G |

* According to: Tao K, Tzou PL, Nouhin J, Gupta RK, de Oliveira T, Kosakovsky Pond SL, Fera D, Shafer RW. The biological and clinical significance of emerging SARS-CoV-2 variants. Nat Rev Genet. 2021 Sep 17:1–17. doi: 10.1038/s41576-021-00408-x. Epub ahead of print. PMID: 34535792; PMCID: PMC8447121.