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Convergent evolution of SARS-CoV-2 spike mutations, L452R, E484Q and P681R, in the second wave of COVID-19 in Maharashtra, India

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Abstract

As the global severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic expands, genomic epidemiology and whole genome sequencing are being constantly used to investigate its transmissions and evolution. In the backdrop of the global emergence of "variants of concern" (VOCs) during December 2020 and an upsurge in a state in the western part of India since January 2021, whole genome sequencing and analysis of spike protein mutations using sequence and structural approaches was undertaken to identify possible new variants and gauge the fitness of current circulating strains.

Phylogenetic analysis revealed that the predominant clade in circulation was a distinct newly identified lineage B.1.617 possessing common signature mutations D111D, G142D, L452R, E484Q, D614G and P681R, in the spike protein including within the receptor binding domain (RBD). Of these, the mutations at residue positions 452, 484 and 681 have been reported in other globally circulating lineages. The structural analysis of RBD mutations L452R and E484Q along with P681R in the furin cleavage site, revealed that these may possibly result in increased ACE2 binding and rate of S1-S2 cleavage resulting in better transmissibility. The same two RBD mutations indicated decreased binding to select monoclonal antibodies (mAbs) and may affect their neutralization potential. Experimental validation against a wider panel of mAbs, sera from vaccinees and those that recovered from natural infection needs to be studied.

The emergence of such local variants through the accumulation of convergent mutations during the COVID-19 second wave needs to be further investigated for their public health impact in the rest of the country and its possibility of becoming a VOC.

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Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) surface spike (S) protein mediates entry into host cells by binding to the host receptor angiotensin-converting enzyme 2 (ACE2) via its receptor-binding domain (RBD). Crystal structures of SARS-CoV-2 S protein or its RBD complexed with ACE2 from different hosts reveal that the RBD contains a core and a receptor-binding motif (RBM) which forms contacts with ACE2[1]. A number of naturally selected mutations in the RBM have been shown to affect infectivity, human-to-human transmission, pathogenesis and immune escape[2].

As the global SARS-CoV-2 pandemic expands, genomic epidemiology and whole genome sequencing are being constantly used to investigate the transmissions and evolution. The expansion of the genome-wide diversity resulted in delineation of the viral strains into clades, lineages, and sub-lineages. Clades G/GH/GR/GV/GRY as per the Global Initiative on Sharing All Influenza Data (GISAID) database (https://www.gisaid.org/)[3] possess a common mutation D614G in the spike protein. The mutation was shown to result in significantly higher human host infectivity and better transmission efficiency to the virus[4,5]. Three recently emerged "variants of concern" (VOCs) of SARS-CoV-2 are the UK-variant 501Y.V1/B.1.1.7, South Africa variant 501.V2/ B.1.351 and Brazilian variant 501Y.V3/P.1 (alias of lineage B.1.1.28.1). These variants are known to possess multiple mutations across the genome, including several in the S protein and its RBD such as N501Y, E484K and K417N/T[5-7]. Multiple SARS-CoV-2 variants are now seen to be circulating globally.

The potential introduction and consequence of these emerging variants in the country is vital to support the public health response. The National Influenza Centre at the ICMR-National Institute of Virology, Pune, as an apex laboratory of the Indian Council of Medical Research (ICMR) has been continuously involved in the SARS-CoV-2 diagnostics and monitoring the genomic evolution of this virus. In addition, the ICMR-NIV, Pune is also one among the ten national laboratories of the Indian SARS-CoV-2 Consortium on Genomics (INSACOG), Ministry of Health and Family Welfare, Government of India, catering to western India. In the backdrop of the global emergence of VOCs and an upsurge in Maharashtra, a state in the western part of India, enhanced sequencing was undertaken. This was to identify possible new variants and

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analyze spike protein mutants, in particular, to gauge the fitness of current circulating strains, using bioinformatics sequence and molecular structural approaches.

Materials and methods

The State of Maharashtra (latitude 19°39' N, longitude 75°18'E) is located in west central India, in the north western part of the Indian Subcontinent. Since the end of January 2021, a concentrated spurt in COVID-19 cases was noted in several districts of Maharashtra (**Suppl. Fig. 1**). As per the State Government directives, samples from international travelers and 5% of surveillance samples from the positive cases with Ct value <25 including those from clusters, long haulers, mild/moderate/severe and deceased cases, were referred to the ICMR-NIV, Pune for whole genome sequencing. Nasopharyngeal swabs (n=733, November 25, 2020- March 31, 2021) were processed for whole genome sequencing.

Briefly, nucleic acid extraction was performed using 280 µL of each sample in duplicate by Qiagen viral RNA extraction protocol and quantified RNA was further processed for template preparation using the Ion Chef System. Purified template beads were submitted to meta transcriptome next-generation sequencing (NGS) in the Ion S5 platform (ThermoFisher Scientific) using an Ion 540™ chip and the Ion Total RNA-Seq kit v2.0, as per the manufacturer's protocol (ThermoFisher Scientific)[8]. Sequence data was processed using the Torrent Suite Software (TSS) v5.10.1 (ThermoFisher Scientific, USA). Coverage analysis plugins were utilized to generate coverage analysis report for each of the samples. Reference-based reads gathering, and assembly were performed for all the samples using Iterative refinement meta-assembler (IRMA)[9]. A subset of the samples (were also sequenced on the Illumina machine and analyzed using on the CLC Genomics Workbench version 20 (CLC, Qiagen) as described elsewhere[10]. Of 733 whole genomes obtained, 598 were considered for different analyses based on coverage of ≥ 93% of the genome. For each whole genome sequence, the GISAID Clade assignment, was done using CoVsurver: Mutation Analysis of hCoV-19 (https://www.gisaid.org/epiflu-applications/covsurver-mutations-app/). For lineage assignment, the web application ie., Phylogenetic Assignment of Named Global Outbreak LINeages (PangoLIN) COVID-19 Lineage Assigner (https://pangolin.cog-uk.io/), was implemented[7]. The 598 genomes were aligned using MUSCLE and a Maximum Likelihood phylogenetic tree was constructed using IQ-tree v1.6[11,12], employing the GTR as the substitution model and 1,000

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bootstrap replications. The average frequency of nonsynonymous mutations in the genomes over the period from 1st December, 2020 to 31st March, 2021 was calculated, considering Wuhan as the reference strain.

For further structural characterization of the S protein mutations, the crystal structure of SARS-CoV-2 S glycoprotein complexed with ACE2 was obtained from the protein data bank (PDB ID: 7A98[13]. The top ten mutations in the S protein were mapped using Biovia Discovery studio visualizer 2020. To assess the effect of noted RBD mutations on ACE2 binding, the crystal structure of SARS-CoV-2 spike RBD domain complexed with ACE2 (PDB ID: 6LZG[14]) was used. For assessment of the noted mutations on binding to neutralizing antibodies, the SARS-CoV-2 spike RBD domain complexed with two selected mAbs REGN10933/ P2B-2F6 were retrieved (PDB ID: 6XDG; resolution 3.90Å and 7BWJ; resolution 2.65 Å respectively)[15,16] . Point mutations were carried out using Biovia Discovery studio visualizer 2020 and the structures of the complexes were subjected to energy minimization using macro model tool in Schrodinger 2020 using default parameters. The molecular interactions between the RBD-ACE2 interface, within the RBD and between the neutralizing mAbs-RBD were analyzed using non-bonded interactions tool in Biovia Discovery studio visualizer 2020.

Results

The genomic surveillance for the spurt in the COVID-19 cases in Maharashtra was carried out to identify the circulating lineages/VOCs and identify possible functionally-significant mutations in the spike protein.

PangoLIN lineage classification of 598 whole genomes revealed the presence of 47 lineages (**Supplementary Table 1**), all within GISAID clade G, evident from the D614G mutation in the S protein. Lineages B.1.617 (n=273), B.1.36.29 (n=73), B.1.1.306 (n=67), B.1.1.7 (n=31), B.1.1.216 (n=24), B.1.596 (n=17), B.1 (n=17), B.1.1 (n=15) and B.1.36 (n=12) were found to be the predominant lineages (**Supplementary Figure 1**). Phylogenetic analysis revealed four sub-clusters within B.1.617 that could be linked to mutations specific to the spike region (**Figure 1**). Among these, cluster B.1.617:C (n=107), included majority of the strains from eastern part of Maharashtra while B.1.617:B (n=80) also included sequences from major cities like Pune, Thane and Aurangabad, more on the western part of the State. The frequency of mutations L452R and

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E484Q within the RBD and mutations G142D and P681R within the spike but outside the RBD region, increased from January 2021 (**Figure 2**). The P681R is noted in the S1-S2 furin-cleavage site. A mutation H1101D specific to clusters B.1.617: A and B.1.617:B, was not noted in January 2021 (**Figure 1**). The B.1.617:C cluster possessed a T95I-specific mutation. Notably a small cluster of B.1.617 (n=21) emerged in late March and did not possess the E484Q mutation. This clustered with lineage B.1.596 and shared common mutations T19R and D950N in the spike protein. A synonymous mutation D111D was observed to be co-occurring with the RBD mutations L452R and E484Q and it was absent in the cluster that did not possess E484Q (Figure 1). Based on the monthly averages of non-synonymous mutation events when compared to the Wuhan reference strain NC_045512.2, an increased frequency of non-synonymous mutations was noted in February 2021 (**Figure 3**).

The key mutations in the S protein are mapped on a furin-cleaved structure of the S protein (**Figure 4**). The structural implications of the RBD mutations (L452R and E484Q) were analyzed in terms of interaction with the ACE2 receptor and neutralizing antibodies that are known to have interactions with these residues. Effect of the E484Q mutation is noted in terms of disruption in an electrostatic bond of the spike RBD residue E484 with K31 in the ACE2 interaction interface (**Figure 5A, Supplementary Table 2**). The intramolecular interactions in the wild strain indicate that the L452 residue is involved in a hydrophobic interaction with L492 which forms another hydrophobic contact with F490. These residue interactions form a hydrophobic patch on the surface of the RBD. The L452R mutation abolishes the hydrophobic interaction with L492 of the RBD. Estimation of the minimized energies of the wild and mutant structures of RBD complexed with ACE2 showed energy values of -93732.305 kcal/mol and -94543.180 kcal/mol respectively.

The mutations L452R and E484Q are seen to disrupt the interfacial interactions of spike RBD with specific neutralizing antibodies (**Figure 5B, C; Supplementary Table 3**), The heavy chain of monoclonal antibody REGN10933 interacts with the RBD by making two hydrogen bonds (H-bonds) between E484 of the RBD and Y53 and S56 of the antibody. Residue Y453 of the RBD makes an H-bond with D31 of the heavy chain of the antibody. The RBD mutation E484Q disrupts the 2 H-bonds with S56 and Y53 (**Figure 5B**). Residues L452 and E484 possess direct contacts with the mAb P2B-2F6 (**Figure 5C**). The intermolecular interactions of the wild-type

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complex indicate that L452 is involved in hydrophobic interactions with residues I103 and V105 of the heavy chain of the antibody. Residue E484 forms H-bonds with N33 and Y34 of the light chain as well as a salt bridge and H-bond interaction with R112 side chain of the light chain. The L452R mutation breaks the hydrophobic interactions with both residues I103 and V105 and also disrupts the H-bond and electrostatic interaction with R112.

Discussion

In addition to the three global VOCs, some of the global variants of interest (VUIs) include B.1.525/ VUI-202102/03 that emerged in UK (https://cov-lineages.org/global_report_B.1.525.html), B.1.1.49 that emerged in Denmark (https://cov-lineages.org/lineages/lineage_B.1.1.49.html) and A.23.1 that was first detected in Uganda (https://cov-lineages.org/global_report_A.23.1.html). The potential consequences of emerging variants are increased transmissibility, increased pathogenicity and the ability to escape natural or vaccine-induced immunity[17,18]. With this background, we sequenced and analyzed the whole genomes of SARS-CoV-2 from different districts of Maharashtra where a surge in COVID-19 activity was noted since the end of January 2021 after a gap of almost four months.

Phylogenetic and sequence analyses revealed that only a small proportion of sequences majorly in the month of December 2020, were detected as the VOC B.1.1.7, UK-variant. On the other hand, the B.1.617 lineage possessing common signature mutations G142D, L452R, E484Q, D614G and P681R, in the spike protein could be linked to the increase in the proportion of non-synonymous mutations in February 2021. In addition, districts in western Maharashtra, such as Pune, Mumbai, Thane and Nashik showed presence of multiple lineages in circulation in comparison to the dominance of lineage B.1.617 in eastern Maharashtra (Supplementary figure 1). The co-occurrence of synonymous mutations with the non-synonymous mutations observed is interesting and being reported[19,20]. Notably D111D was found to be associated with the signature mutations.

The structural analysis of the effect of RBD mutations L452R and E484Q towards ACE2 binding, revealed decrease in intra-molecular and intermolecular contacts with respect to the wild-type. However, the hydrophobic L452 residue mutation to the hydrophilic 452R might help in interaction with water molecules and overall stabilization of the complex, as was reflected in

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the lower minimum energy of the mutant complex. Another significant mutation P681R in the furin cleavage site, resulting in enhancement of the basicity of the poly-basic stretch, might help in increased rate of membrane fusion, internalization and thus better transmissibility. In vitro and/or *in vivo* studies to understand the phenotypic effects of the mutant strains would be vital in this regard. Structural analysis further showed that the two RBD mutations L452R and E484Q may decrease the binding ability of REGN10933 and P2B-2F6 antibodies to the variant strains, compared to that in the wild-type strain. A recent report[21] revealed that the L452R mutation reduced or abolished neutralizing activity of 14 out of 35 RBD-specific mAbs including three clinical stage mAbs. Another recent study[22] has demonstrated that the mutation L452R can escape from human leukocyte antigen (HLA)-24-restricted cellular immunity and can also increase viral infectivity, potentially promoting viral replication. The combination of the two RBD mutations noted in this study could affect the neutralization of the select mAbs. The neutralizing potential of a wider range of mAbs against the strains of lineage B.1.617 needs to be assessed. Further the level of neutralization efficacy of sera from vaccinees of different vaccine formulations and those who experienced natural infection also needs to be studied.

Mutations at both the residue positions 452 and 484 individually have been reported earlier. L452R has been noted in California lineages B.1.427 and B.1.429 while E484K mutation is common to the three VOCs having global impact. E484Q has also been reported in several sequences in the GISAID with the earliest strain noted in Denmark. P681H is one of the mutations in the UK-variant B.1.1.7 while P681R is one of the mutations in the VUI lineage A.23.1. The unique combination of mutations L452R, E484Q and P681R noted in this study is an indication of convergent evolution.

To summarize, the study investigated the S protein mutations associated with the COVID-19 cases in Maharashtra observed since the month of February 2021. The continuous increase in positivity could be attributed to signature mutations in the spike protein and functionally significant co-occurring mutations. As per GISAID submissions, the B.1.617 lineage has been reported from several countries including UK, USA, Switzerland, Germany, Singapore etc. However, the emergence of such local variants during the COVID-19 second wave in India needs to be further investigated for their public health impact and its possibility of becoming a VOC.

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Legends to figures and Tables:

Figure 1: Maximum-likelihood tree of representative SARS-CoV-2 genomes depicting PangoLIN lineages and the co-occurring mutations in the spike protein in the sub-clusters of lineage B.1.617.

Figure 2: Monthly average of non-synonymous mutations (trend-line) against the total SARS-CoV-2 samples studied (blue bars).

Figure 3: Trend of major mutations in the spike protein from December, 2020 to March, 2021.

Figure 4: Mapping of key mutations on the furin-cleaved crystal structure of SARS-CoV-2 spike glycoprotein (grey surface view) in complex with ACE2 (brown solid ribbon). RBD region shown in green

Figure 5: (**A**) Key interactions between ACE2-RBD involving major mutational hotspots in the RBD (**B**) Interactions between RBD-mAb REGN10933 (**C)** Interactions between RBD-mAb P2B-2F6. wt, corresponds to wild-type strain and mt, mutant strain. In (A), also shown are the intra-molecular contacts in a hydrophobic patch of the RBD region (surface displayed in grey color). In (B) and (C) blue represents heavy chain and red, light chain.

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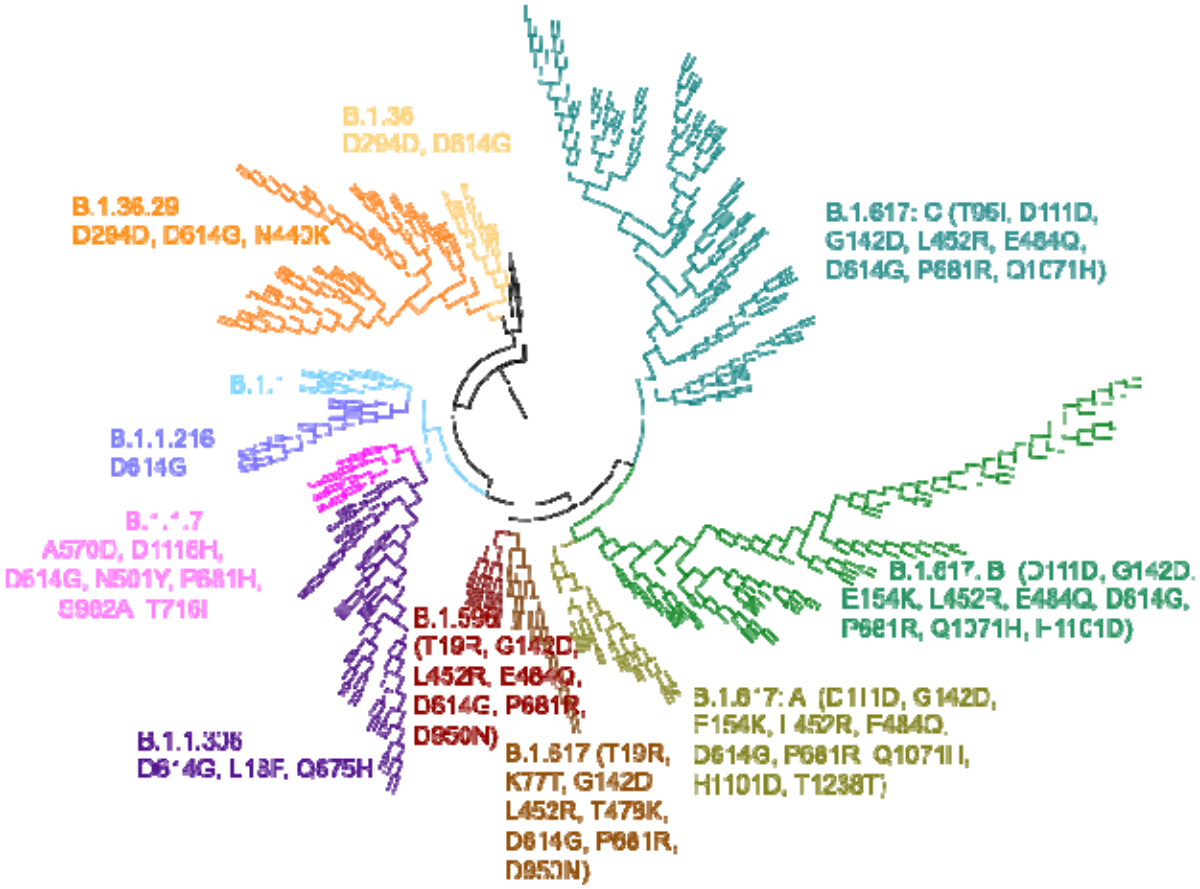


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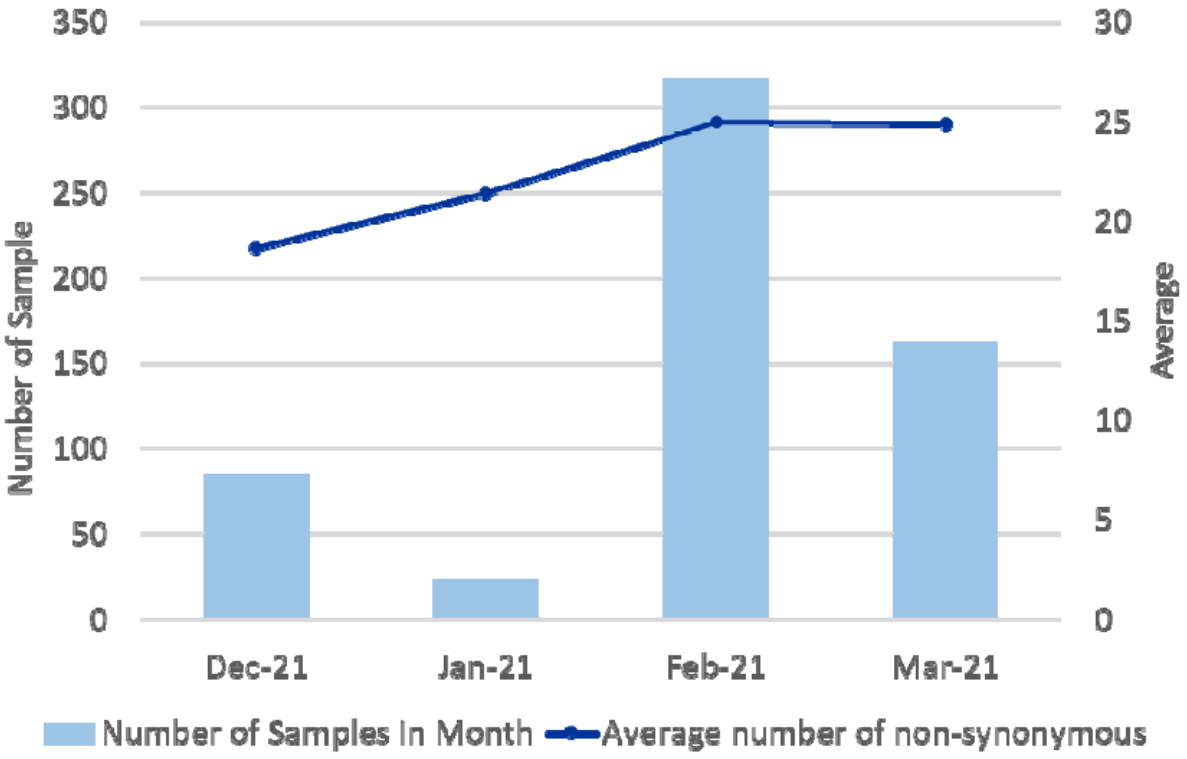


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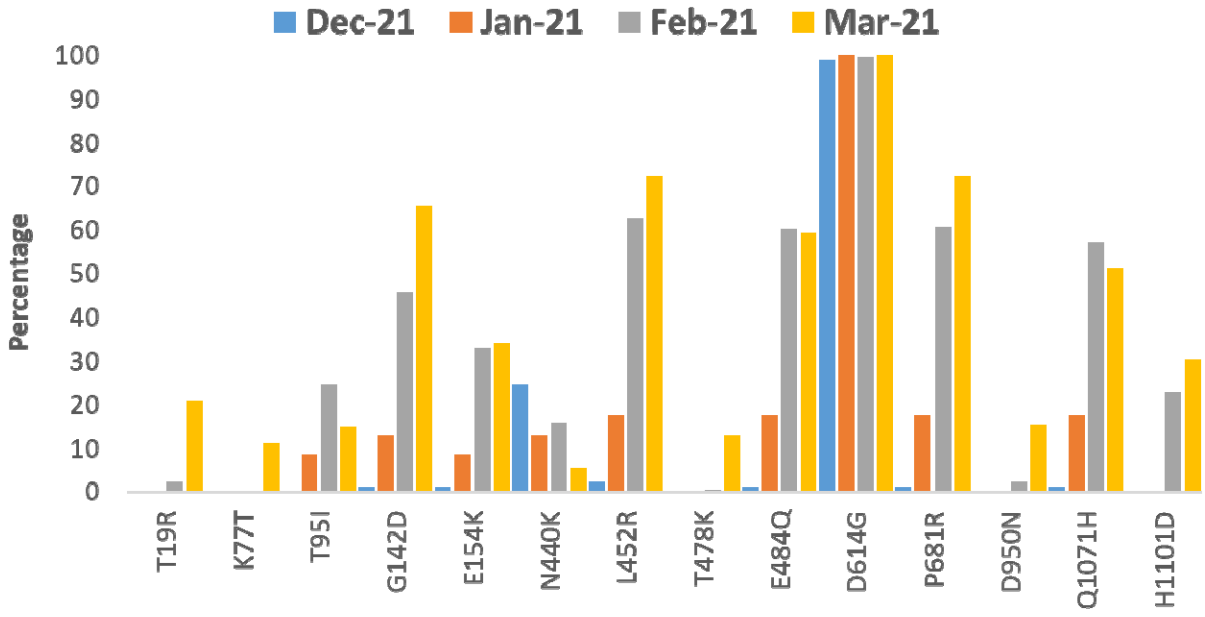
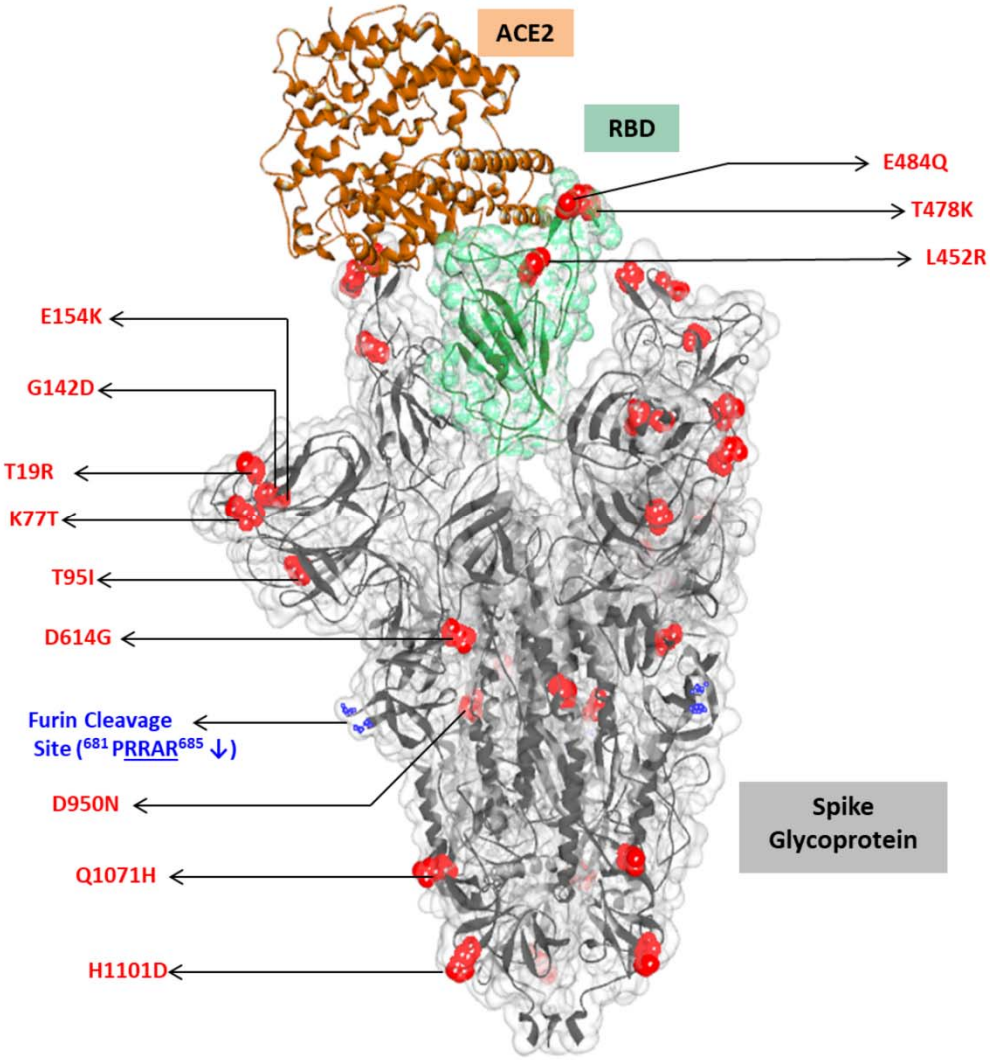


Figure 3: Trend of major mutations in the spike protein from December, 2020 to March, 2021.

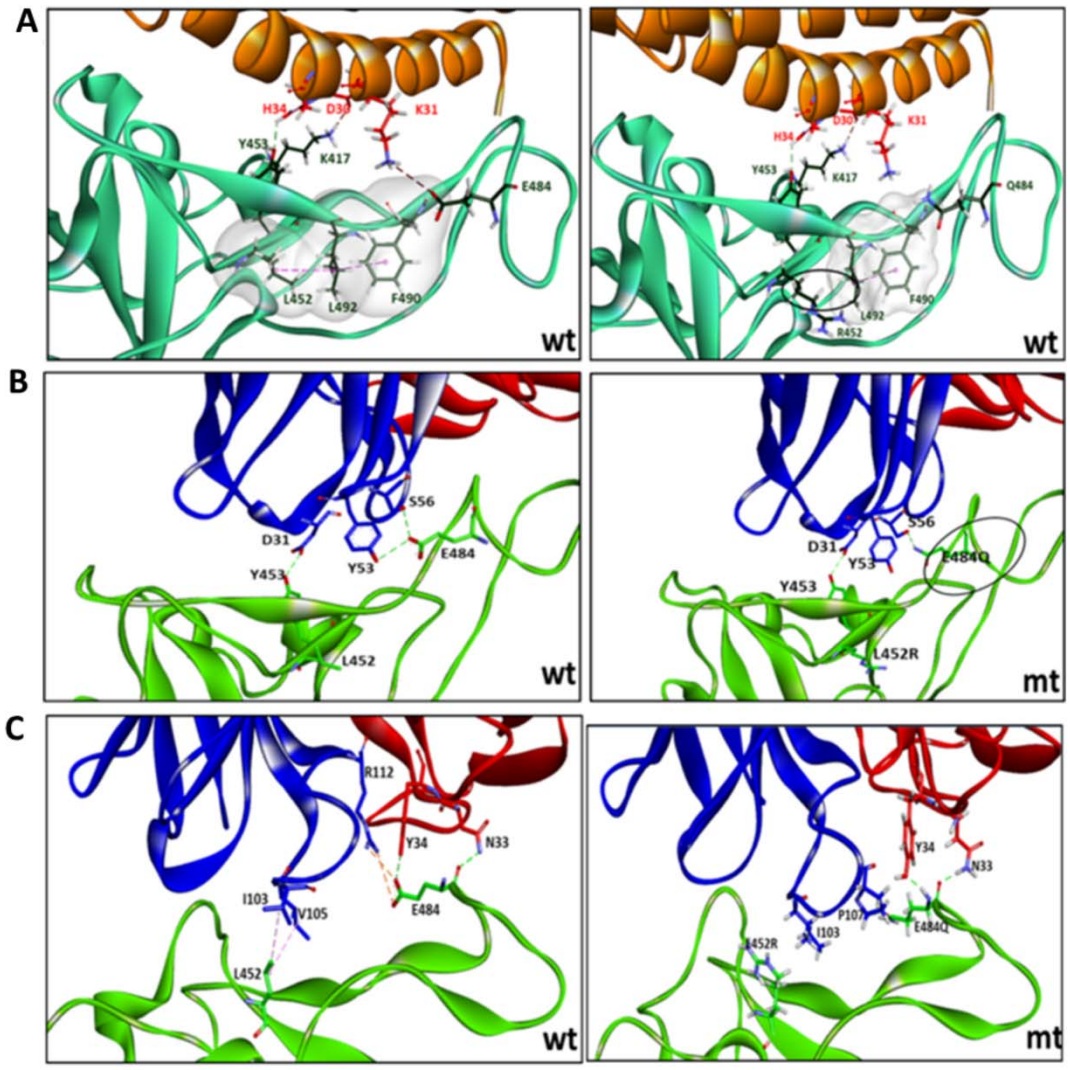
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Figure 4: Mapping of key mutations on the furin-cleaved crystal structure of SARS-CoV-2 spike glycoprotein (grey surface view) in complex with ACE2 (brown solid ribbon). RBD region shown in green

Figure 5: (**A**) Key interactions between ACE2-RBD involving major mutational hotspots in the RBD (**B**) Interactions between RBD-mAb REGN10933 (**C)** Interactions between RBD-mAb P2B-2F6. wt, corresponds to wild-type strain and mt, mutant strain. In (A), also shown are the intra-molecular contacts in a hydrophobic patch of the RBD region (surface displayed in grey color). In (B) and (C) blue represents heavy chain and red, light chain.



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Legends to supplementary material:

Supplementary Figure 1: The distribution of predominant PangoLIN lineages in the labelled districts of Maharashtra. The size of the pie charts is proportional to the number of genome sequences from the particular district.

Supplementary Figure 2: Structural complexes of RBD-ACE2 and RBD-Fab. **A**. RBD - ACE2 (PDB Id-6LZG), **B**. RBD - mAb REGN10933(PDB Id-6XDG) **C**. RBD - mAb P2B-2F6(7bwj)

Supplementary Table 1: List and details of whole genome sequences used in the study

Supplementary Table2: Intra and inter-molecular interactions of wild and mutant spike RBD of SARS-CoV-2 with ACE2. The bonds that are highlighted indicate those that are disrupted in the mutant strain

Supplementary Table3: Intermolecular interaction of neutralizing antibodies with wild and mutant spike RBD of SARS-CoV-2

Supplementary Material

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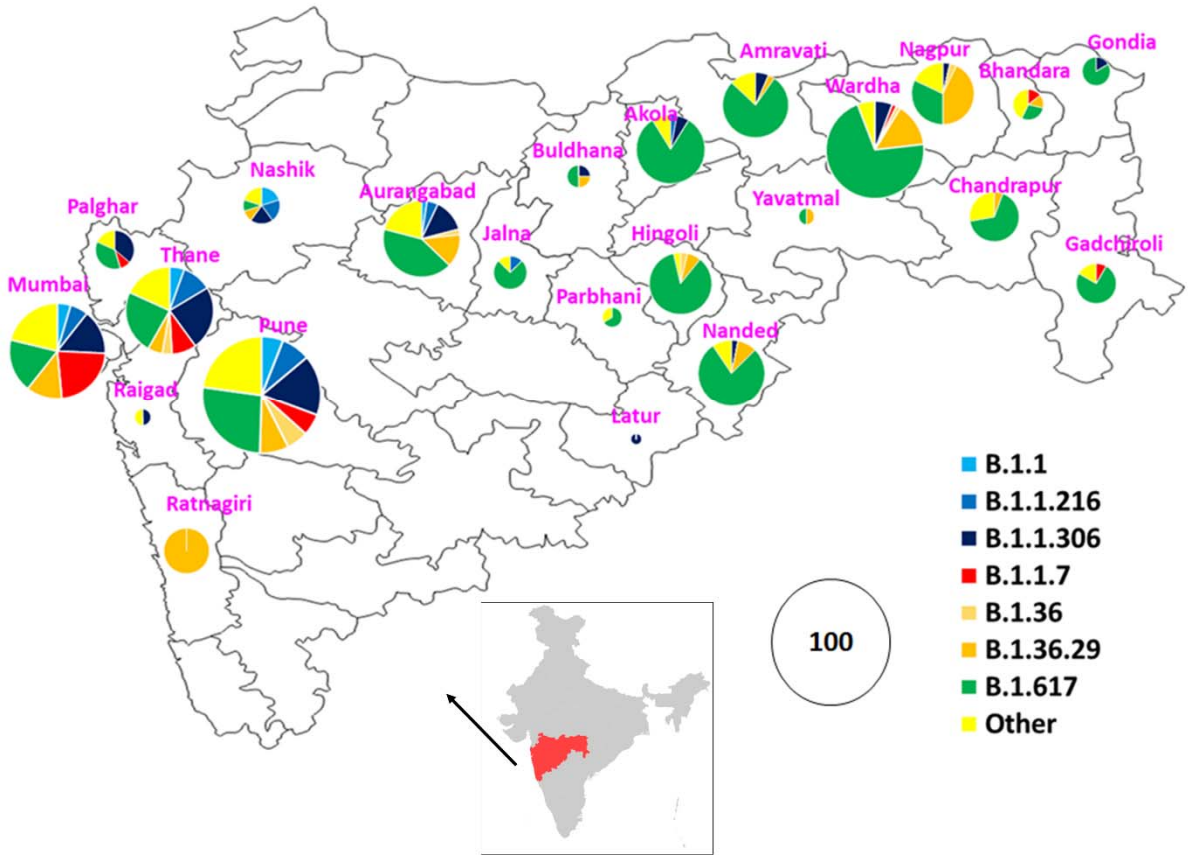


Figure S1: The distribution of predominant PangoLIN lineages in the labelled districts of Maharashtra. The size of the pie charts is proportional to the number of genome sequences from the particular district.

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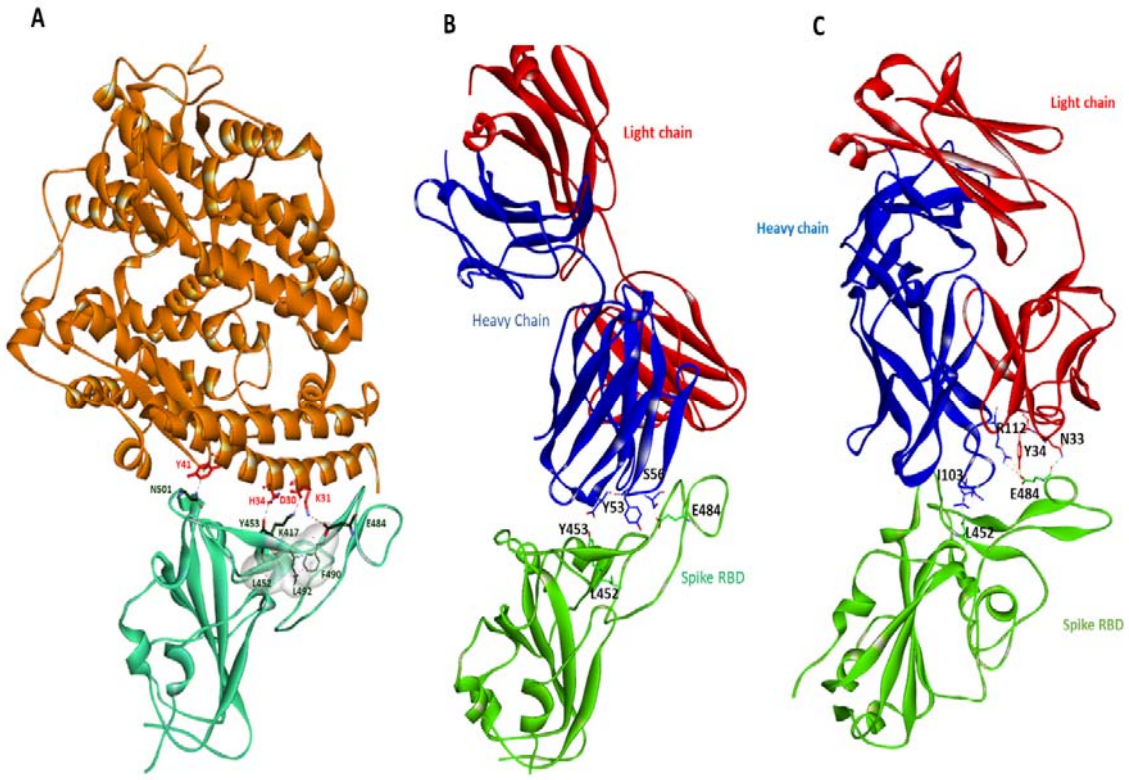


Figure S2: Structural complexes of RBD-ACE2 and RBD-Fab. **A**. RBD - ACE2 (PDB Id-6LZG), **B**. RBD - mAb REGN10933(PDB Id-6XDG) **C**. RBD - mAb P2B-2F6(7bwj)

Supplementary Table 1: List and details of whole genome sequences used in the study

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SAMPLE_ID	Sample	State	District	Month	Lineage
RNA-3540|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3540	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3547|Maharashtra|Buldhana|Aug-20|B.1.36.29	RNA-3547	Maharashtra	Buldhana	Aug-20	B.1.36.29
RNA-3560|Maharashtra|Nagpur|Feb-21|B.1.596	RNA-3560	Maharashtra	Nagpur	Feb-21	B.1.596
RNA-3584|Maharashtra|Wardha|Aug-20|B.1.1.306	RNA-3584	Maharashtra	Wardha	Aug-20	B.1.1.306
RNA-3586|Maharashtra|Mumbai|B.1	RNA-3586	Maharashtra	Mumbai	#N/A	B.1
RNA-3542|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3542	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3449|Maharashtra|Mumbai|Feb-21|B.1.1.7	RNA-3449	Maharashtra	Mumbai	Feb-21	B.1.1.7
RNA-3459|Maharashtra|Mumbai|Feb-21|B.1.1.7	RNA-3459	Maharashtra	Mumbai	Feb-21	B.1.1.7
RNA-3465|Maharashtra|Mumbai|Feb-21|B.1.1.7	RNA-3465	Maharashtra	Mumbai	Feb-21	B.1.1.7
RNA-3455|Maharashtra|Mumbai|Feb-21|B.1.1.7	RNA-3455	Maharashtra	Mumbai	Feb-21	B.1.1.7
RNA-3462|Maharashtra|Mumbai|Jan-21|B.1.1.7	RNA-3462	Maharashtra	Mumbai	Jan-21	B.1.1.7
RNA-3458|Maharashtra|Mumbai|Feb-21|B.1.1.7	RNA-3458	Maharashtra	Mumbai	Feb-21	B.1.1.7
RNA-3461|Maharashtra|Mumbai|Dec-20|B.1.1.7	RNA-3461	Maharashtra	Mumbai	Dec-20	B.1.1.7
RNA-3463|Maharashtra|Mumbai|Feb-21|B.1.1.7	RNA-3463	Maharashtra	Mumbai	Feb-21	B.1.1.7
RNA-	RNA-	Maharasht	Mumbai	Jan-21	B.1.1.7

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3472|Maharashtra|Mumbai|Jan-21|B.1.1.7	3472	ra			
RNA-3483|Maharashtra|Mumbai|Jan-21|B.1.1.7	RNA-3483	Maharashtra	Mumbai	Jan-21	B.1.1.7
RNA-3567|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3567	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3545|Maharashtra|Buldhana|Feb-21|B.1.617	RNA-3545	Maharashtra	Buldhana	Feb-21	B.1.617
RNA-3551|Maharashtra|Buldhana|Feb-21|B.1.617	RNA-3551	Maharashtra	Buldhana	Feb-21	B.1.617
RNA-3556|Maharashtra|Nagpur|Feb-21|B.1.617	RNA-3556	Maharashtra	Nagpur	Feb-21	B.1.617
RNA-3555|Maharashtra|Nagpur|Feb-21|B.1.617	RNA-3555	Maharashtra	Nagpur	Feb-21	B.1.617
RNA-3577|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3577	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3563|Maharashtra|Nagpur|Feb-21|B.1.617	RNA-3563	Maharashtra	Nagpur	Feb-21	B.1.617
RNA-3573|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3573	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3571|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3571	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3565|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3565	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3570|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3570	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3568|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3568	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3569|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3569	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3521|Maharashtra|Nashik|Feb-	RNA-3521	Maharashtra	Nashik	Feb-21	B.1.617

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21|B.1.617					
RNA-3575|Maharashtra|Wardha|Feb-21|B.1.617	RNA-3575	Maharashtra	Wardha	Feb-21	B.1.617
RNA-3554|Maharashtra|Buldhana|Feb-21|B.1.36.29	RNA-3554	Maharashtra	Buldhana	Feb-21	B.1.36.29
RNA-3527|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3527	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3535|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3535	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3529|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3529	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3528|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3528	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3544|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3544	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3536|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3536	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3541|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3541	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3532|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3532	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3537|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3537	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3531|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3531	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3533|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3533	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3534|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3534	Maharashtra	Ratnagiri	Feb-21	B.1.36.29
RNA-3538|Maharashtra|Ratnagiri|Feb-21|B.1.36.29	RNA-3538	Maharashtra	Ratnagiri	Feb-21	B.1.36.29

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RNA-3445|Maharashtra|Mumbai|Feb-21|B.1.525	RNA-3445	Maharashtra	Mumbai	Feb-21	B.1.525
RNA-3523|Maharashtra|Nashik|Feb-21|B.1.1.306	RNA-3523	Maharashtra	Nashik	Feb-21	B.1.1.306
RNA-3512|Maharashtra|Nashik|Feb-21|B.1.36.29	RNA-3512	Maharashtra	Nashik	Feb-21	B.1.36.29
RNA-3582|Maharashtra|Wardha|Feb-21|B.1.36.29	RNA-3582	Maharashtra	Wardha	Feb-21	B.1.36.29
RNA-3576|Maharashtra|Wardha|Feb-21|B.1.36.29	RNA-3576	Maharashtra	Wardha	Feb-21	B.1.36.29
RNA-3557|Maharashtra|Nagpur|Feb-21|B.1.36.29	RNA-3557	Maharashtra	Nagpur	Feb-21	B.1.36.29
RNA-3558|Maharashtra|Nagpur|Feb-21|B.1.36.29	RNA-3558	Maharashtra	Nagpur	Feb-21	B.1.36.29
RNA-3507|Maharashtra|Nashik|Feb-21|B.1.1.316	RNA-3507	Maharashtra	Nashik	Feb-21	B.1.1.316
RNA-3505|Maharashtra|Pune|Feb-21|B.1.36.22	RNA-3505	Maharashtra	Pune	Feb-21	B.1.36.22
RNA-3550|Maharashtra|Buldhana|Feb-21|B.1.1.306	RNA-3550	Maharashtra	Buldhana	Feb-21	B.1.1.306
RNA-3509|Maharashtra|Nashik|Feb-21|B.1.1.306	RNA-3509	Maharashtra	Nashik	Feb-21	B.1.1.306
RNA-3513|Maharashtra|Nashik|Feb-21|B.1.36.24	RNA-3513	Maharashtra	Nashik	Feb-21	B.1.36.24
RNA-3506|Maharashtra|Pune|Feb-21|B.1.1.216	RNA-3506	Maharashtra	Pune	Feb-21	B.1.1.216
VOC-38|Maharashtra|Nagpur|Dec-20|B.1.36.29	VOC-38	Maharashtra	Nagpur	Dec-20	B.1.36.29
VOC-39|Maharashtra|Nagpur|Dec-20|B.1.36.29	VOC-39	Maharashtra	Nagpur	Dec-20	B.1.36.29
VOC-112|Maharashtra|Mumbai|Dec-20|B.1.1.7	VOC-112	Maharashtra	Mumbai	Dec-20	B.1.1.7
VOC-66|Maharashtra|Mumbai|Dec-	VOC-66	Maharashtra	Mumbai	Dec-20	B.1.1.7

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20|B.1.1.7					
VOC-70|Maharashtra|Mumbai|Dec-20|B.1.1.7	VOC-70	Maharashtra	Mumbai	Dec-20	B.1.1.7
VOC-7|Maharashtra|Pune|Dec-20|B.1.1.7	VOC-7	Maharashtra	Pune	Dec-20	B.1.1.7
VOC-65|Maharashtra|Mumbai|Dec-20|B.1.1.7	VOC-65	Maharashtra	Mumbai	Dec-20	B.1.1.7
VOC-84|Maharashtra|NA|Dec-20|B.1.1.7	VOC-84	Maharashtra	NA	Dec-20	B.1.1.7
VOC-49|Maharashtra|Nashik|Dec-20|B.1.1	VOC-49	Maharashtra	Nashik	Dec-20	B.1.1
VOC-114|Maharashtra|Mumbai|Dec-20|B.1.160	VOC-114	Maharashtra	Mumbai	Dec-20	B.1.160
VOC-82|Maharashtra|NA|Dec-20|B.1.1.306	VOC-82	Maharashtra	NA	Dec-20	B.1.1.306
VOC-37|Maharashtra|Pune|Dec-20|B.1.177.81	VOC-37	Maharashtra	Pune	Dec-20	B.1.177.81
VOC-120|Maharashtra|Mumbai|Dec-20|B.1.1.294	VOC-120	Maharashtra	Mumbai	Dec-20	B.1.1.294
VOC-75|Maharashtra|Mumbai|Dec-20|B.1.1.306	VOC-75	Maharashtra	Mumbai	Dec-20	B.1.1.306
VOC-106|Maharashtra|Pune|Dec-20|B.1.177.16	VOC-106	Maharashtra	Pune	Dec-20	B.1.177.16
VOC-48|Maharashtra|Nashik|Dec-20|B.1.1.216	VOC-48	Maharashtra	Nashik	Dec-20	B.1.1.216
VOC-50|Maharashtra|Nashik|Dec-20|B.1.1.216	VOC-50	Maharashtra	Nashik	Dec-20	B.1.1.216
VOC-173|Maharashtra|Pimpri|Dec-20|B.1.1.7	VOC-173	Maharashtra	Pimpri	Dec-20	B.1.1.7
VOC-172|Maharashtra|Pimpri|Dec-20|B.1.1.7	VOC-172	Maharashtra	Pimpri	Dec-20	B.1.1.7
VOC-73|Maharashtra|Mumbai|Dec-20|B.1.524	VOC-73	Maharashtra	Mumbai	Dec-20	B.1.524
VOC-211|Maharashtra|Thane|Dec-20|B.1.36	VOC-211	Maharashtra	Thane	Dec-20	B.1.36
2019nCoV-286757|Maharashtra|Pune|Dec-20|B.1.36	2019nCoV-286757	Maharashtra	Pune	Dec-20	B.1.36

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2019nCoV-282393|Maharashtra|Pune|Dec-20|B.1.36.28	2019nCoV-282393	Maharashtra	Pune	Dec-20	B.1.36.28
2019nCoV-281734|Maharashtra|Pune|Dec-20|B.1.36.29	2019nCoV-281734	Maharashtra	Pune	Dec-20	B.1.36.29
2019nCoV-290248|Maharashtra|Pune|Jan-21|B.1.36.29	2019nCoV-290248	Maharashtra	Pune	Jan-21	B.1.36.29
2019nCoV-290257|Maharashtra|Pune|Jan-21|B.1.36.29	2019nCoV-290257	Maharashtra	Pune	Jan-21	B.1.36.29
2019nCoV-286687|Maharashtra|Pune|Dec-20|B.1.36.29	2019nCoV-286687	Maharashtra	Pune	Dec-20	B.1.36.29
2019nCoV-282387|Maharashtra|Pune|Dec-20|B.1.36.29	2019nCoV-282387	Maharashtra	Pune	Dec-20	B.1.36.29
2019nCoV-274033|Maharashtra|Pune|Dec-20|AE.3	2019nCoV-274033	Maharashtra	Pune	Dec-20	AE.3
2019nCoV-287775|Maharashtra|Pune|Dec-20|B.1.1.7	2019nCoV-287775	Maharashtra	Pune	Dec-20	B.1.1.7
2019nCoV-289128|Maharashtra|Pune|Jan-21|AE.3	2019nCoV-289128	Maharashtra	Pune	Jan-21	AE.3
2019nCoV-288840|Maharashtra|Pune|Jan-21|B.1.1	2019nCoV-288840	Maharashtra	Pune	Jan-21	B.1.1
2019nCoV-280822|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-280822	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-286036|Maharashtra|Pune|Dec-20|B.1.1.148	2019nCoV-286036	Maharashtra	Pune	Dec-20	B.1.1.148
2019nCoV-290239|Maharashtra|Pune|Jan-21|B.1.1.306	2019nCoV-290239	Maharashtra	Pune	Jan-21	B.1.1.306
2019nCoV-289435|Maharashtra|Pune|Jan-21|B.1.1.306	2019nCoV-289435	Maharashtra	Pune	Jan-21	B.1.1.306
2019nCoV-285164|Maharashtra|Pune|Dec-20|B.1.36.28	2019nCoV-285164	Maharashtra	Pune	Dec-20	B.1.36.28
2019nCoV-	2019nCo	Maharasht	Pune	Jan-21	AE.3

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289547|Maharashtra|Pune|Jan-21|AE.3	V-289547	ra			
2019nCoV-285059|Maharashtra|Pune|Dec-20|B.1.36.9	2019nCoV-285059	Maharashtra	Pune	Dec-20	B.1.36.9
2019nCoV-276219|Maharashtra|Pune|Dec-20|B.1.1	2019nCoV-276219	Maharashtra	Pune	Dec-20	B.1.1
2019nCoV-281229|Maharashtra|Pune|Dec-20|B.1.36.28	2019nCoV-281229	Maharashtra	Pune	Dec-20	B.1.36.28
2019nCoV-282472|Maharashtra|Pune|Dec-20|B.1.1.303	2019nCoV-282472	Maharashtra	Pune	Dec-20	B.1.1.303
2019nCoV-289122|Maharashtra|Pune|Jan-21|B.1.1.306	2019nCoV-289122	Maharashtra	Pune	Jan-21	B.1.1.306
2019nCoV-274948|Maharashtra|Pune|Dec-20|B.1.36	2019nCoV-274948	Maharashtra	Pune	Dec-20	B.1.36
2019nCoV-282789|Maharashtra|Pune|Jan-21|AE.6	2019nCoV-282789	Maharashtra	Pune	Jan-21	AE.6
2019nCoV-276813|Maharashtra|Pune|Dec-20|B.1.1.216	2019nCoV-276813	Maharashtra	Pune	Dec-20	B.1.1.216
2019nCoV-286002|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-286002	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-284281|Maharashtra|Pune|Dec-20|B.1.1.216	2019nCoV-284281	Maharashtra	Pune	Dec-20	B.1.1.216
2019nCoV-275555|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-275555	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-274672|Maharashtra|Pune|Dec-20|B.1.1.216	2019nCoV-274672	Maharashtra	Pune	Dec-20	B.1.1.216
2019nCoV-285629|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-285629	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-280527|Maharashtra|Pune|Dec-20|B.1.36	2019nCoV-280527	Maharashtra	Pune	Dec-20	B.1.36
2019nCoV-283552|Maharashtra|Pune|Dec-	2019nCoV-283552	Maharashtra	Pune	Dec-20	B.1.36.28

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20|B.1.36.28					
2019nCoV-277854|Maharashtra|Pune|Dec-20|B.1.1.272	2019nCoV-277854	Maharashtra	Pune	Dec-20	B.1.1.272
2019nCoV-282137|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-282137	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-277925|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-277925	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-273465|Maharashtra|Pune|Dec-20|B.1.1.306	2019nCoV-273465	Maharashtra	Pune	Dec-20	B.1.1.306
2019nCoV-289130|Maharashtra|Pune|Jan-21|B.1.1.306	2019nCoV-289130	Maharashtra	Pune	Jan-21	B.1.1.306
2019nCoV-277856|Maharashtra|Pune|Dec-20|B.1.1	2019nCoV-277856	Maharashtra	Pune	Dec-20	B.1.1
2019nCoV-290266|Maharashtra|Pune|Jan-21|B.1.1	2019nCoV-290266	Maharashtra	Pune	Jan-21	B.1.1
2019nCoV-276959|Maharashtra|Pune|Dec-20|B.1.1.216	2019nCoV-276959	Maharashtra	Pune	Dec-20	B.1.1.216
2019nCoV-284488|Maharashtra|Pune|Dec-20|B.1.1	2019nCoV-284488	Maharashtra	Pune	Dec-20	B.1.1
2019nCoV-280290|Maharashtra|Pune|Dec-20|B.1.1.216	2019nCoV-280290	Maharashtra	Pune	Dec-20	B.1.1.216
2019nCoV-286132|Maharashtra|Pune|Dec-20|B.1.1.216	2019nCoV-286132	Maharashtra	Pune	Dec-20	B.1.1.216
VOC-227|Maharashtra|Mumbai|Dec-20|A.21	VOC-227	Maharashtra	Mumbai	Dec-20	A.21
VOC-288|Maharashtra|Mumbai|Dec-20|B.1.36.28	VOC-288	Maharashtra	Mumbai	Dec-20	B.1.36.28
SEQ-728|Maharashtra|Nagpur|Dec-20|B.1.36.29	SEQ-728	Maharashtra	Nagpur	Dec-20	B.1.36.29
SEQ-732|Maharashtra|Nagpur|Dec-20|B.1.36.29	SEQ-732	Maharashtra	Nagpur	Dec-20	B.1.36.29

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SEQ-740|Maharashtra|Nagpur|Dec-20|B.1	SEQ-740	Maharashtra	Nagpur	Dec-20	B.1
SEQ-730|Maharashtra|Nagpur|Dec-20|B.1.36	SEQ-730	Maharashtra	Nagpur	Dec-20	B.1.36
SEQ-734|Maharashtra|Nagpur|Dec-20|B.1.36.8	SEQ-734	Maharashtra	Nagpur	Dec-20	B.1.36.8
VOC-86|Maharashtra|Thane|Dec-20|B.1.1.45	VOC-86	Maharashtra	Thane	Dec-20	B.1.1.45
VOC-41|Maharashtra|Nagpur|Dec-20|B.1.36.29	VOC-41	Maharashtra	Nagpur	Dec-20	B.1.36.29
VOC-68|Maharashtra|Mumbai|Dec-20|B.1.36.29	VOC-68	Maharashtra	Mumbai	Dec-20	B.1.36.29
VOC-40|Maharashtra|Nagpur|Dec-20|B.1.36.29	VOC-40	Maharashtra	Nagpur	Dec-20	B.1.36.29
VOC-42|Maharashtra|Nagpur|Dec-20|B.1.36.29	VOC-42	Maharashtra	Nagpur	Dec-20	B.1.36.29
VOC-72|Maharashtra|Mumbai|Dec-20|B.1.36.29	VOC-72	Maharashtra	Mumbai	Dec-20	B.1.36.29
VOC-36|Maharashtra|Mumbai|Dec-20|B.1.36.29	VOC-36	Maharashtra	Mumbai	Dec-20	B.1.36.29
VOC-117|Maharashtra|Mumbai|Dec-20|B.1.36.29	VOC-117	Maharashtra	Mumbai	Dec-20	B.1.36.29
VOC-67|Maharashtra|Mumbai|Dec-20|B.1.36.29	VOC-67	Maharashtra	Mumbai	Dec-20	B.1.36.29
VOC-92|Maharashtra|Aurangabad|Dec-20|B.1.1.306	VOC-92	Maharashtra	Aurangabad	Dec-20	B.1.1.306
VOC-85|Maharashtra|Thane|Dec-20|B.1.36.8	VOC-85	Maharashtra	Thane	Dec-20	B.1.36.8
VOC-119|Maharashtra|Mumbai|Dec-20|B.1.1.216	VOC-119	Maharashtra	Mumbai	Dec-20	B.1.1.216
VOC-113|Maharashtra|Mumbai|Dec-20|B.1.177.16	VOC-113	Maharashtra	Mumbai	Dec-20	B.1.177.16
VOC-47|Maharashtra|Nashik|Dec-20|B.1.1	VOC-47	Maharashtra	Nashik	Dec-20	B.1.1
VOC-137|Maharashtra|Thane|Dec-	VOC-137	Maharasht	Thane	Dec-	B.1.1.216

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20|B.1.1.216		ra		20	
VOC-138|Maharashtra|Thane|Dec-20|B.1.1.216	VOC-138	Maharashtra	Thane	Dec-20	B.1.1.216
VOC-171|Maharashtra|Pune|Dec-20|B.1.1.7	VOC-171	Maharashtra	Pune	Dec-20	B.1.1.7
VOC-170|Maharashtra|Pune|Dec-20|B.1.128	VOC-170	Maharashtra	Pune	Dec-20	B.1.128
VOC-370|Maharashtra|Mumbai|Feb-21|B.1.1.59	VOC-370	Maharashtra	Mumbai	Feb-21	B.1.1.59
VOC-336|Maharashtra|Mumbai|Jan-21|B.1.1.306	VOC-336	Maharashtra	Mumbai	Jan-21	B.1.1.306
VOC-369|Maharashtra|Thane|Jan-21|B.1.1	VOC-369	Maharashtra	Thane	Jan-21	B.1.1
VOC-331|Maharashtra|Mumbai|Jan-21|B.1.1.216	VOC-331	Maharashtra	Mumbai	Jan-21	B.1.1.216
GSEQ-117|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-117	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-116|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-116	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-127|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-127	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-18|Maharashtra|Akola|Jan-21|B.1.617	GSEQ-18	Maharashtra	Akola	Jan-21	B.1.617
GSEQ-134|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-134	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-144|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-144	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-142|Maharashtra|Pune|Feb-21|B.1	GSEQ-142	Maharashtra	Pune	Feb-21	B.1
GSEQ-143|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-143	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-76|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-76	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-119|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-119	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-33|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-33	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-35|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-35	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-69|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-69	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-30|Maharashtra|Akola|Feb-	GSEQ-30	Maharasht	Akola	Feb-	B.1.617

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21|B.1.617		ra		21	
GSEQ-128|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-128	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-63|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-63	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-56|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-56	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-66|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-66	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-10|Maharashtra|Akola|Feb-21|B.1	GSEQ-10	Maharashtra	Akola	Feb-21	B.1
GSEQ-31|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-31	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-25|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-25	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-38|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-38	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-14|Maharashtra|Akola|Jan-21|B.1.617	GSEQ-14	Maharashtra	Akola	Jan-21	B.1.617
GSEQ-20|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-20	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-39|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-39	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-34|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-34	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-8|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-8	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-36|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-36	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-123|Maharashtra|Pune|Feb-21|B.1.36.29	GSEQ-123	Maharashtra	Pune	Feb-21	B.1.36.29
GSEQ-136|Maharashtra|Pune|Feb-21|B.1	GSEQ-136	Maharashtra	Pune	Feb-21	B.1
GSEQ-41|Maharashtra|Akola|Feb-21|B.1.1.335	GSEQ-41	Maharashtra	Akola	Feb-21	B.1.1.335
GSEQ-15|Maharashtra|Akola|Jan-21|B.1.1.303	GSEQ-15	Maharashtra	Akola	Jan-21	B.1.1.303
GSEQ-131|Maharashtra|Pune|Feb-21|A.21	GSEQ-131	Maharashtra	Pune	Feb-21	A.21
GSEQ-120|Maharashtra|Pune|Feb-21|B.1.1.306	GSEQ-120	Maharashtra	Pune	Feb-21	B.1.1.306
GSEQ-115|Maharashtra|Pune|Feb-21|B.1.1.306	GSEQ-115	Maharashtra	Pune	Feb-21	B.1.1.306
GSEQ-122|Maharashtra|Pune|Feb-21|B.1.1.306	GSEQ-122	Maharashtra	Pune	Feb-21	B.1.1.306

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GSEQ-57|Maharashtra|Akola|Feb-21|B.1.1.216	GSEQ-57	Maharashtra	Akola	Feb-21	B.1.1.216
GSEQ-114|Maharashtra|Pune|Feb-21|B.1.36	GSEQ-114	Maharashtra	Pune	Feb-21	B.1.36
GSEQ-46|Maharashtra|Akola|Feb-21|B.1.1.306	GSEQ-46	Maharashtra	Akola	Feb-21	B.1.1.306
GSEQ-137|Maharashtra|Pune|Feb-21|B.1.36.22	GSEQ-137	Maharashtra	Pune	Feb-21	B.1.36.22
GSEQ-126|Maharashtra|Pune|Feb-21|B.1.36	GSEQ-126	Maharashtra	Pune	Feb-21	B.1.36
GSEQ-111|Maharashtra|Pune|Feb-21|B.1.1.216	GSEQ-111	Maharashtra	Pune	Feb-21	B.1.1.216
GSEQ-23|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-23	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-141|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-141	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-145|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-145	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-37|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-37	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-113|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-113	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-130|Maharashtra|Pune|Feb-21|B.1.617	GSEQ-130	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-11|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-11	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-47|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-47	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-13|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-13	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-81|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-81	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-32|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-32	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-16|Maharashtra|Akola|Jan-21|B.1.617	GSEQ-16	Maharashtra	Akola	Jan-21	B.1.617
GSEQ-24|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-24	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-55|Maharashtra|Akola|Feb-21|B.1.617	GSEQ-55	Maharashtra	Akola	Feb-21	B.1.617
GSEQ-133|Maharashtra|Pune|Feb-21|B.1.1.306	GSEQ-133	Maharashtra	Pune	Feb-21	B.1.1.306
GSEQ-140|Maharashtra|Pune|Feb-21|B.1.36	GSEQ-140	Maharashtra	Pune	Feb-21	B.1.36
GSEQ-112|Maharashtra|Pune|Feb-21|B.1.1.306	GSEQ-112	Maharashtra	Pune	Feb-21	B.1.1.306

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GSEQ-67|Maharashtra|Akola|Feb-21|B.1.1.306	GSEQ-67	Maharashtra	Akola	Feb-21	B.1.1.306
GSEQ-125|Maharashtra|Pune|Feb-21|B.1.1.326	GSEQ-125	Maharashtra	Pune	Feb-21	B.1.1.326
GSEQ-201|Maharashtra|Amravati|Feb-21|B.1	GSEQ-201	Maharashtra	Amravati	Feb-21	B.1
GSEQ-255|Maharashtra|Nagpur|Feb-21|B.1.596	GSEQ-255	Maharashtra	Nagpur	Feb-21	B.1.596
GSEQ-267|Maharashtra|Aurangabad|Feb-21|B.1.596	GSEQ-267	Maharashtra	Aurangabad	Feb-21	B.1.596
GSEQ-224|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-224	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-246|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-246	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-257|Maharashtra|Nagpur|Feb-21|B.1.617	GSEQ-257	Maharashtra	Nagpur	Feb-21	B.1.617
GSEQ-244|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-244	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-251|Maharashtra|Nagpur|Feb-21|B.1.617	GSEQ-251	Maharashtra	Nagpur	Feb-21	B.1.617
GSEQ-243|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-243	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-248|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-248	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-208|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-208	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-250|Maharashtra|Nagpur|Feb-21|B.1.617	GSEQ-250	Maharashtra	Nagpur	Feb-21	B.1.617
GSEQ-222|Maharashtra|Amravati|Feb-21|B.1	GSEQ-222	Maharashtra	Amravati	Feb-21	B.1
GSEQ-216|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-216	Maharashtra	Amravati	Feb-21	B.1.617

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GSEQ-211|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-211	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-199|Maharashtra|Pune|Feb-21|B.1.335	GSEQ-199	Maharashtra	Pune	Feb-21	B.1.335
GSEQ-205|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-205	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-213|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-213	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-228|Maharashtra|Amravati|Feb-21|B.1.128	GSEQ-228	Maharashtra	Amravati	Feb-21	B.1.128
GSEQ-242|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-242	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-202|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-202	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-227|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-227	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-258|Maharashtra|Nagpur|Feb-21|B.1.617	GSEQ-258	Maharashtra	Nagpur	Feb-21	B.1.617
GSEQ-238|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-238	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-249|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-249	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-204|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-204	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-237|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-237	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-209|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-209	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-233|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-233	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-234|Maharashtra|Amravati|Feb-	GSEQ-234	Maharashtra	Amravati	Feb-21	B.1.617

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21|B.1.617					
GSEQ-236|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-236	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-203|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-203	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-259|Maharashtra|Nagpur|Feb-21|B.1.617	GSEQ-259	Maharashtra	Nagpur	Feb-21	B.1.617
GSEQ-212|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-212	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-247|Maharashtra|Amravati|Feb-21|B.1.617	GSEQ-247	Maharashtra	Amravati	Feb-21	B.1.617
GSEQ-256|Maharashtra|Nagpur|Feb-21|B.1.36.29	GSEQ-256	Maharashtra	Nagpur	Feb-21	B.1.36.29
GSEQ-252|Maharashtra|Nagpur|Feb-21|B.1.36.29	GSEQ-252	Maharashtra	Nagpur	Feb-21	B.1.36.29
GSEQ-223|Maharashtra|Amravati|Feb-21|B.1.36.29	GSEQ-223	Maharashtra	Amravati	Feb-21	B.1.36.29
GSEQ-266|Maharashtra|Aurangabad|Feb-21|B.1.1.216	GSEQ-266	Maharashtra	Aurangabad	Feb-21	B.1.1.216
GSEQ-261|Maharashtra|Aurangabad|Feb-21|B.1.1.306	GSEQ-261	Maharashtra	Aurangabad	Feb-21	B.1.1.306
GSEQ-254|Maharashtra|Nagpur|Feb-21|B.1.1.354	GSEQ-254	Maharashtra	Nagpur	Feb-21	B.1.1.354
GSEQ-265|Maharashtra|Aurangabad|Feb-21|B.1.1.306	GSEQ-265	Maharashtra	Aurangabad	Feb-21	B.1.1.306
GSEQ-226|Maharashtra|Amravati|Feb-21|B.1.1.306	GSEQ-226	Maharashtra	Amravati	Feb-21	B.1.1.306
GSEQ-229|Maharashtra|Amravati|Feb-21|B.1.1.306	GSEQ-229	Maharashtra	Amravati	Feb-21	B.1.1.306
GSEQ-260|Maharashtra|Aurangabad|Feb-21|B.1.1.340	GSEQ-260	Maharashtra	Aurangabad	Feb-21	B.1.1.340

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GSEQ-264|Maharashtra|Aurangabad|Feb-21|B.1.1.306	GSEQ-264	Maharashtra	Aurangabad	Feb-21	B.1.1.306
GSEQ-268|Maharashtra|Aurangabad|Feb-21|B.1.1.306	GSEQ-268	Maharashtra	Aurangabad	Feb-21	B.1.1.306
SEQ-258|Maharashtra|Mumbai|Dec-20|B.1.210	SEQ-258	Maharashtra	Mumbai	Dec-20	B.1.210
GSEQ-373|Maharashtra|Thane|Feb-21|B.1.617	GSEQ-373	Maharashtra	Thane	Feb-21	B.1.617
GSEQ-379|Maharashtra|Thane|Feb-21|B.1.617	GSEQ-379	Maharashtra	Thane	Feb-21	B.1.617
GSEQ-398|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-398	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-399|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-399	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-382|Maharashtra|Thane|Feb-21|B.1.617	GSEQ-382	Maharashtra	Thane	Feb-21	B.1.617
GSEQ-393|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-393	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-386|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-386	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-391|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-391	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-361|Maharashtra|Navi_Mumbai|Feb-21|B.1.617	GSEQ-361	Maharashtra	Navi_Mumbai	Feb-21	B.1.617
GSEQ-390|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-390	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-392|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-392	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-293|Maharashtra|Aurangabad|Feb-21|B.1.617	GSEQ-293	Maharashtra	Aurangabad	Feb-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Aurangabad	Feb-	B.1.617

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291|Maharashtra|Aurangabad|Feb-21|B.1.617	291	ra		21	
GSEQ-298|Maharashtra|Aurangabad|Feb-21|B.1.617	GSEQ-298	Maharashtra	Aurangabad	Feb-21	B.1.617
GSEQ-385|Maharashtra|Yavatmal|Feb-21|B.1.617	GSEQ-385	Maharashtra	Yavatmal	Feb-21	B.1.617
GSEQ-366|Maharashtra|Navi_Mumbai|Feb-21|B.1.617	GSEQ-366	Maharashtra	Navi_Mumbai	Feb-21	B.1.617
GSEQ-371|Maharashtra|Thane|Feb-21|B.1.36.29	GSEQ-371	Maharashtra	Thane	Feb-21	B.1.36.29
GSEQ-294|Maharashtra|Aurangabad|Feb-21|B.1.36.29	GSEQ-294	Maharashtra	Aurangabad	Feb-21	B.1.36.29
GSEQ-292|Maharashtra|Aurangabad|Feb-21|B.1.36.29	GSEQ-292	Maharashtra	Aurangabad	Feb-21	B.1.36.29
GSEQ-297|Maharashtra|Aurangabad|Feb-21|B.1.36.29	GSEQ-297	Maharashtra	Aurangabad	Feb-21	B.1.36.29
GSEQ-397|Maharashtra|Wardha|Feb-21|B.1.36.29	GSEQ-397	Maharashtra	Wardha	Feb-21	B.1.36.29
GSEQ-296|Maharashtra|Aurangabad|Feb-21|B.1.36.29	GSEQ-296	Maharashtra	Aurangabad	Feb-21	B.1.36.29
GSEQ-300|Maharashtra|Aurangabad|Feb-21|B.1.36.29	GSEQ-300	Maharashtra	Aurangabad	Feb-21	B.1.36.29
GSEQ-375|Maharashtra|Thane|Feb-21|B.1.36.29	GSEQ-375	Maharashtra	Thane	Feb-21	B.1.36.29
GSEQ-401|Maharashtra|Wardha|Feb-21|B.1.36.29	GSEQ-401	Maharashtra	Wardha	Feb-21	B.1.36.29
GSEQ-360|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.7	GSEQ-360	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.7
GSEQ-378|Maharashtra|Thane|Feb-21|B.1.1.7	GSEQ-378	Maharashtra	Thane	Feb-21	B.1.1.7
GSEQ-381|Maharashtra|Thane|Feb-	GSEQ-381	Maharashtra	Thane	Feb-21	B.1.1.7

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21|B.1.1.7					
GSEQ-369|Maharashtra|Thane|Feb-21|B.1.1.389	GSEQ-369	Maharashtra	Thane	Feb-21	B.1.1.389
GSEQ-359|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.216	GSEQ-359	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.216
GSEQ-384|Maharashtra|Thane|Feb-21|B.1.1.306	GSEQ-384	Maharashtra	Thane	Feb-21	B.1.1.306
GSEQ-363|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.306	GSEQ-363	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.306
GSEQ-370|Maharashtra|Thane|Feb-21|B.1.1.306	GSEQ-370	Maharashtra	Thane	Feb-21	B.1.1.306
GSEQ-383|Maharashtra|Thane|Feb-21|B.1.1.306	GSEQ-383	Maharashtra	Thane	Feb-21	B.1.1.306
GSEQ-295|Maharashtra|Aurangabad|Feb-21|B.1.36.22	GSEQ-295	Maharashtra	Aurangabad	Feb-21	B.1.36.22
GSEQ-286|Maharashtra|Latur|Feb-21|B.1.1.306	GSEQ-286	Maharashtra	Latur	Feb-21	B.1.1.306
GSEQ-380|Maharashtra|Thane|Feb-21|B.1.1.306	GSEQ-380	Maharashtra	Thane	Feb-21	B.1.1.306
GSEQ-377|Maharashtra|Thane|Feb-21|B.1.1.216	GSEQ-377	Maharashtra	Thane	Feb-21	B.1.1.216
GSEQ-372|Maharashtra|Thane|Feb-21|B.1.1.216	GSEQ-372	Maharashtra	Thane	Feb-21	B.1.1.216
GSEQ-425|Maharashtra|Gadchiroli|Feb-21|B.1.335	GSEQ-425	Maharashtra	Gadchiroli	Feb-21	B.1.335
GSEQ-432|Maharashtra|Bhandara|Feb-21|B.1.596	GSEQ-432	Maharashtra	Bhandara	Feb-21	B.1.596
GSEQ-431|Maharashtra|Bhandara|Feb-21|B.1.596	GSEQ-431	Maharashtra	Bhandara	Feb-21	B.1.596
GSEQ-413|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-413	Maharashtra	Sevagram	Feb-21	B.1.617

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GSEQ-424|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-424	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-403|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-403	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-419|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-419	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-420|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-420	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-422|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-422	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-423|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-423	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-374|Maharashtra|Thane|Feb-21|B.1.617	GSEQ-374	Maharashtra	Thane	Feb-21	B.1.617
GSEQ-406|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-406	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-365|Maharashtra|Navi_Mumbai|Feb-21|B.1.617	GSEQ-365	Maharashtra	Navi_Mumbai	Feb-21	B.1.617
GSEQ-387|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-387	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-402|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-402	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-388|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-388	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-394|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-394	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-400|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-400	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-414|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-414	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Wardha	Feb-	B.1.617

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395|Maharashtra|Wardha|Feb-21|B.1.617	395	ra		21	
GSEQ-405|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-405	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-417|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-417	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-410|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-410	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-416|Maharashtra|Sevagram|Feb-21|B.1.36.29	GSEQ-416	Maharashtra	Sevagram	Feb-21	B.1.36.29
GSEQ-407|Maharashtra|Sevagram|Feb-21|B.1.36.29	GSEQ-407	Maharashtra	Sevagram	Feb-21	B.1.36.29
GSEQ-428|Maharashtra|Bhandara|Feb-21|B.1.36.29	GSEQ-428	Maharashtra	Bhandara	Feb-21	B.1.36.29
GSEQ-396|Maharashtra|Wardha|Feb-21|B.1.1.7	GSEQ-396	Maharashtra	Wardha	Feb-21	B.1.1.7
GSEQ-427|Maharashtra|Gadchiroli|Feb-21|B.1.1.7	GSEQ-427	Maharashtra	Gadchiroli	Feb-21	B.1.1.7
GSEQ-404|Maharashtra|Sevagram|Feb-21|B.1.1.306	GSEQ-404	Maharashtra	Sevagram	Feb-21	B.1.1.306
GSEQ-356|Maharashtra|Vasai_Virar|Feb-21|B.1.1.306	GSEQ-356	Maharashtra	Vasai_Virar	Feb-21	B.1.1.306
GSEQ-358|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.306	GSEQ-358	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.306
GSEQ-362|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.306	GSEQ-362	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.306
GSEQ-364|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.306	GSEQ-364	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.306
GSEQ-412|Maharashtra|Sevagram|Feb-21|B.1.36	GSEQ-412	Maharashtra	Sevagram	Feb-21	B.1.36
GSEQ-465|Maharashtra|Aurangabad|Mar-	GSEQ-465	Maharashtra	Aurangabad	Mar-21	B.1.596

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21|B.1.596					
GSEQ-471|Maharashtra|Aurangabad|Mar-21|B.1.596	GSEQ-471	Maharashtra	Aurangabad	Mar-21	B.1.596
GSEQ-483|Maharashtra|Gondia|Feb-21|B.1.617	GSEQ-483	Maharashtra	Gondia	Feb-21	B.1.617
GSEQ-482|Maharashtra|Gondia|Feb-21|B.1.617	GSEQ-482	Maharashtra	Gondia	Feb-21	B.1.617
GSEQ-463|Maharashtra|Aurangabad|Feb-21|B.1.617	GSEQ-463	Maharashtra	Aurangabad	Feb-21	B.1.617
GSEQ-478|Maharashtra|Gondia|Feb-21|B.1.617	GSEQ-478	Maharashtra	Gondia	Feb-21	B.1.617
GSEQ-481|Maharashtra|Gondia|Feb-21|B.1.617	GSEQ-481	Maharashtra	Gondia	Feb-21	B.1.617
GSEQ-468|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-468	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-464|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-464	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-470|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-470	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-480|Maharashtra|Gondia|Feb-21|B.1.617	GSEQ-480	Maharashtra	Gondia	Feb-21	B.1.617
GSEQ-473|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-473	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-474|Maharashtra|Nanded|Feb-21|B.1.617	GSEQ-474	Maharashtra	Nanded	Feb-21	B.1.617
GSEQ-469|Maharashtra|Aurangabad|Mar-21|B.1.36.29	GSEQ-469	Maharashtra	Aurangabad	Mar-21	B.1.36.29
GSEQ-476|Maharashtra|Nanded|Feb-21|B.1.36.29	GSEQ-476	Maharashtra	Nanded	Feb-21	B.1.36.29
GSEQ-475|Maharashtra|Nanded|Feb-21|B.1.36.29	GSEQ-475	Maharashtra	Nanded	Feb-21	B.1.36.29

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GSEQ-472|Maharashtra|Nanded|Mar-21|B.1.1.306	GSEQ-472	Maharashtra	Nanded	Mar-21	B.1.1.306
GSEQ-430|Maharashtra|Bhandara|Feb-21|B.1.596	GSEQ-430	Maharashtra	Bhandara	Feb-21	B.1.596
GSEQ-467|Maharashtra|Aurangabad|Mar-21|B.1.596	GSEQ-467	Maharashtra	Aurangabad	Mar-21	B.1.596
GSEQ-421|Maharashtra|Gadchiroli|Feb-21|B.1.241	GSEQ-421	Maharashtra	Gadchiroli	Feb-21	B.1.241
GSEQ-426|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-426	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-462|Maharashtra|Aurangabad|Feb-21|B.1.617	GSEQ-462	Maharashtra	Aurangabad	Feb-21	B.1.617
GSEQ-418|Maharashtra|Gadchiroli|Feb-21|B.1.617	GSEQ-418	Maharashtra	Gadchiroli	Feb-21	B.1.617
GSEQ-355|Maharashtra|Vasai_Virar|Feb-21|B.1.617	GSEQ-355	Maharashtra	Vasai_Virar	Feb-21	B.1.617
GSEQ-408|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-408	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-415|Maharashtra|Sevagram|Feb-21|B.1.617	GSEQ-415	Maharashtra	Sevagram	Feb-21	B.1.617
GSEQ-411|Maharashtra|Sevagram|Feb-21|B.1.36.29	GSEQ-411	Maharashtra	Sevagram	Feb-21	B.1.36.29
GSEQ-409|Maharashtra|Sevagram|Feb-21|B.1.36.29	GSEQ-409	Maharashtra	Sevagram	Feb-21	B.1.36.29
GSEQ-354|Maharashtra|Vasai_Virar|Feb-21|B.1.1.7	GSEQ-354	Maharashtra	Vasai_Virar	Feb-21	B.1.1.7
GSEQ-353|Maharashtra|Vasai_Virar|Feb-21|B.1.1.306	GSEQ-353	Maharashtra	Vasai_Virar	Feb-21	B.1.1.306
GSEQ-351|Maharashtra|Vasai_Virar|Feb-21|B.1.1.306	GSEQ-351	Maharashtra	Vasai_Virar	Feb-21	B.1.1.306
GSEQ-	GSEQ-	Maharasht	Vasai_Virar	Feb-	AE.7

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352|Maharashtra|Vasai_Virar|Feb-21|AE.7	352	ra		21	
GSEQ-477|Maharashtra|Gondia|Feb-21|B.1.1.306	GSEQ-477	Maharashtra	Gondia	Feb-21	B.1.1.306
GSEQ-357|Maharashtra|Navi_Mumbai|Feb-21|B.1.1.306	GSEQ-357	Maharashtra	Navi_Mumbai	Feb-21	B.1.1.306
GSEQ-680|Maharashtra|Thane|Mar-21|B.1.1.214	GSEQ-680	Maharashtra	Thane	Mar-21	B.1.1.214
GSEQ-799|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-799	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-623|Maharashtra|Parbhani|Feb-21|B.1	GSEQ-623	Maharashtra	Parbhani	Feb-21	B.1
GSEQ-811|Maharashtra|Wardha|Mar-21|B.1.596	GSEQ-811	Maharashtra	Wardha	Mar-21	B.1.596
GSEQ-757|Maharashtra|Aurangabad|Mar-21|B.1.596	GSEQ-757	Maharashtra	Aurangabad	Mar-21	B.1.596
GSEQ-703|Maharashtra|Posheri_Palghar|Mar-21|B.1	GSEQ-703	Maharashtra	Palghar	Mar-21	B.1
GSEQ-745|Maharashtra|Jalna|Mar-21|B.1.617	GSEQ-745	Maharashtra	Jalna	Mar-21	B.1.617
GSEQ-684|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-684	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-665|Maharashtra|Thane|Jan-21|B.1	GSEQ-665	Maharashtra	Thane	Jan-21	B.1
2019nCoV-294622|Maharashtra|Pune|Feb-21|B.1.617	2019nCoV-294622	Maharashtra	Pune	Feb-21	B.1.617
2019nCoV-295035|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-295035	Maharashtra	Pune	Mar-21	B.1.617
2019nCoV-294309|Maharashtra|Pune|Feb-21|B.1.617	2019nCoV-294309	Maharashtra	Pune	Feb-21	B.1.617
2019nCoV-294402|Maharashtra|Pune|Feb-21|B.1.617	2019nCoV-294402	Maharashtra	Pune	Feb-21	B.1.617

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GSEQ-782|Maharashtra|Sevagram|Mar-21|B.1.617	GSEQ-782	Maharashtra	Sevagram	Mar-21	B.1.617
GSEQ-754|Maharashtra|Aurangabad|Mar-21|B.1	GSEQ-754	Maharashtra	Aurangabad	Mar-21	B.1
GSEQ-838|Maharashtra|Gadchiroli|Mar-21|B.1.617	GSEQ-838	Maharashtra	Gadchiroli	Mar-21	B.1.617
GSEQ-755|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-755	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-795|Maharashtra|Sevagram|Mar-21|B.1.617	GSEQ-795	Maharashtra	Sevagram	Mar-21	B.1.617
GSEQ-743|Maharashtra|Jalna|Mar-21|B.1.617	GSEQ-743	Maharashtra	Jalna	Mar-21	B.1.617
GSEQ-749|Maharashtra|Jalna|Mar-21|B.1.617	GSEQ-749	Maharashtra	Jalna	Mar-21	B.1.617
GSEQ-793|Maharashtra|Sevagram|Mar-21|B.1.617	GSEQ-793	Maharashtra	Sevagram	Mar-21	B.1.617
2019nCoV-294251|Maharashtra|Pune|Feb-21|B.1.617	2019nCoV-294251	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-694|Maharashtra|Thane|Mar-21|B.1.93	GSEQ-694	Maharashtra	Thane	Mar-21	B.1.93
GSEQ-760|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-760	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-759|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-759	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-762|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-762	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-758|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-758	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-763|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-763	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Hingoli	Feb-	B.1.617

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638|Maharashtra|Hingoli|Feb-21|B.1.617	638	ra		21	
GSEQ-702|Maharashtra|Posheri_Palghar|Mar-21|B.1.617	GSEQ-702	Maharashtra	Palghar	Mar-21	B.1.617
GSEQ-812|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-812	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-742|Maharashtra|Jalna|Mar-21|B.1.617	GSEQ-742	Maharashtra	Jalna	Mar-21	B.1.617
2019nCoV-294340|Maharashtra|Pune|Feb-21|B.1.617	2019nCoV-294340	Maharashtra	Pune	Feb-21	B.1.617
GSEQ-787|Maharashtra|Sevagram|Mar-21|B.1.617	GSEQ-787	Maharashtra	Sevagram	Mar-21	B.1.617
GSEQ-814|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-814	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-649|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-649	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-756|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-756	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-836|Maharashtra|Gadchiroli|Mar-21|B.1.617	GSEQ-836	Maharashtra	Gadchiroli	Mar-21	B.1.617
GSEQ-786|Maharashtra|Sevagram|Mar-21|B.1.617	GSEQ-786	Maharashtra	Sevagram	Mar-21	B.1.617
GSEQ-804|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-804	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-803|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-803	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-808|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-808	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-699|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-699	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-813|Maharashtra|Wardha|Mar-	GSEQ-813	Maharashtra	Wardha	Mar-21	B.1.617

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21|B.1.617					
GSEQ-792|Maharashtra|Sevagram|Mar-21|B.1.36.29	GSEQ-792	Maharashtra	Sevagram	Mar-21	B.1.36.29
GSEQ-806|Maharashtra|Wardha|Mar-21|B.1.36.29	GSEQ-806	Maharashtra	Wardha	Mar-21	B.1.36.29
GSEQ-697|Maharashtra|Thane|Mar-21|B.1.1.7	GSEQ-697	Maharashtra	Thane	Mar-21	B.1.1.7
2019nCoV-294645|Maharashtra|Pune|Feb-21|B.1.1.7	2019nCoV-294645	Maharashtra	Pune	Feb-21	B.1.1.7
GSEQ-698|Maharashtra|Thane|Mar-21|B.1.1.216	GSEQ-698	Maharashtra	Thane	Mar-21	B.1.1.216
GSEQ-700|Maharashtra|Thane|Mar-21|B.1.1	GSEQ-700	Maharashtra	Thane	Mar-21	B.1.1
GSEQ-674|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-674	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-783|Maharashtra|Sevagram|Mar-21|B.1.1.306	GSEQ-783	Maharashtra	Sevagram	Mar-21	B.1.1.306
GSEQ-788|Maharashtra|Sevagram|Mar-21|B.1.1.306	GSEQ-788	Maharashtra	Sevagram	Mar-21	B.1.1.306
2019nCoV-293269|Maharashtra|Pune|Feb-21|B.1.1.306	2019nCoV-293269	Maharashtra	Pune	Feb-21	B.1.1.306
GSEQ-720|Maharashtra|Mumbai|Mar-21|B.1.1	GSEQ-720	Maharashtra	Mumbai	Mar-21	B.1.1
GSEQ-752|Maharashtra|Jalna|Mar-21|B.1.540	GSEQ-752	Maharashtra	Jalna	Mar-21	B.1.540
GSEQ-744|Maharashtra|Jalna|Mar-21|B.1.1.216	GSEQ-744	Maharashtra	Jalna	Mar-21	B.1.1.216
GSEQ-696|Maharashtra|Thane|Mar-21|B.1.36	GSEQ-696	Maharashtra	Thane	Mar-21	B.1.36
2019nCoV-294575|Maharashtra|Pune|Feb-21|B.1.617	2019nCoV-294575	Maharashtra	Pune	Feb-21	B.1.617

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2019nCoV-295647|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-295647	Maharashtra	Pune	Mar-21	B.1.617
2019nCoV-295545|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-295545	Maharashtra	Pune	Mar-21	B.1.617
2019nCoV-296386|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-296386	Maharashtra	Pune	Mar-21	B.1.617
2019nCoV-296092|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-296092	Maharashtra	Pune	Mar-21	B.1.617
GSEQ-635|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-635	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-846|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-846	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-622|Maharashtra|Parbhani|Feb-21|B.1.617	GSEQ-622	Maharashtra	Parbhani	Feb-21	B.1.617
GSEQ-850|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-850	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-800|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-800	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-704|Maharashtra|Palghar|Mar-21|B.1.617	GSEQ-704	Maharashtra	Palghar	Mar-21	B.1.617
2019nCoV-295702|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-295702	Maharashtra	Pune	Mar-21	B.1.617
GSEQ-723|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-723	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-847|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-847	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-643|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-643	Maharashtra	Hingoli	Feb-21	B.1.617
2019nCoV-296597|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-296597	Maharashtra	Pune	Mar-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Parbhani	Feb-	B.1.617

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626|Maharashtra|Parbhani|Feb-21|B.1.617	626	ra		21	
2019nCoV-296989|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-296989	Maharashtra	Pune	Mar-21	B.1.617
GSEQ-640|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-640	Maharashtra	Hingoli	Feb-21	B.1.617
2019nCoV-295874|Maharashtra|Pune|Mar-21|B.1.36.29	2019nCoV-295874	Maharashtra	Pune	Mar-21	B.1.36.29
GSEQ-845|Maharashtra|Nanded|Mar-21|B.1.36.29	GSEQ-845	Maharashtra	Nanded	Mar-21	B.1.36.29
2019nCoV-292717|Maharashtra|Pune|Feb-21|B.1.36.29	2019nCoV-292717	Maharashtra	Pune	Feb-21	B.1.36.29
GSEQ-717|Maharashtra|Boisar|Mar-21|B.1.36.29	GSEQ-717	Maharashtra	Boisar	Mar-21	B.1.36.29
GSEQ-693|Maharashtra|Thane|Mar-21|B.1.1.7	GSEQ-693	Maharashtra	Thane	Mar-21	B.1.1.7
GSEQ-816|Maharashtra|Alibag|Feb-21|B.1.1.306	GSEQ-816	Maharashtra	Alibag	Feb-21	B.1.1.306
GSEQ-820|Maharashtra|Alibag|Mar-21|B.1.1.372	GSEQ-820	Maharashtra	Alibag	Mar-21	B.1.1.372
2019nCoV-296531|Maharashtra|Pune|Mar-21|B.1.1	2019nCoV-296531	Maharashtra	Pune	Mar-21	B.1.1
GSEQ-679|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-679	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-666|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-666	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-667|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-667	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-676|Maharashtra|Thane|Feb-21|B.1.1.306	GSEQ-676	Maharashtra	Thane	Feb-21	B.1.1.306
GSEQ-721|Maharashtra|Mumbai|Mar-	GSEQ-721	Maharashtra	Mumbai	Mar-21	B.1.1

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21|B.1.1					
GSEQ-719|Maharashtra|Mumbai|Mar-21|B.1.1	GSEQ-719	Maharashtra	Mumbai	Mar-21	B.1.1
GSEQ-923|Maharashtra|Chandrapur|Mar-21|B.1.617	GSEQ-923	Maharashtra	Chandrapur	Mar-21	B.1.617
SEQ-739|Maharashtra|Nagpur|Dec-20|B.1.617	SEQ-739	Maharashtra	Nagpur	Dec-20	B.1.617
GSEQ-880|Maharashtra|Chandrapur|Feb-21|B.1.617	GSEQ-880	Maharashtra	Chandrapur	Feb-21	B.1.617
GSEQ-927|Maharashtra|Chandrapur|Mar-21|B.1.617	GSEQ-927	Maharashtra	Chandrapur	Mar-21	B.1.617
GSEQ-875|Maharashtra|Chandrapur|Mar-21|B.1	GSEQ-875	Maharashtra	Chandrapur	Mar-21	B.1
GSEQ-928|Maharashtra|Chandrapur|Mar-21|B.1.617	GSEQ-928	Maharashtra	Chandrapur	Mar-21	B.1.617
GSEQ-925|Maharashtra|Chandrapur|Mar-21|B.1.617	GSEQ-925	Maharashtra	Chandrapur	Mar-21	B.1.617
GSEQ-922|Maharashtra|Chandrapur|Mar-21|B.1.617	GSEQ-922	Maharashtra	Chandrapur	Mar-21	B.1.617
GSEQ-1014|Maharashtra|Aurangabad|Feb-21|B.1.617	GSEQ-1014	Maharashtra	Aurangabad	Feb-21	B.1.617
GSEQ-1015|Maharashtra|Aurangabad|Feb-21|B.1.617	GSEQ-1015	Maharashtra	Aurangabad	Feb-21	B.1.617
GSEQ-877|Maharashtra|Chandrapur|Feb-21|B.1.617	GSEQ-877	Maharashtra	Chandrapur	Feb-21	B.1.617
GSEQ-929|Maharashtra|Chandrapur|Mar-21|B.1	GSEQ-929	Maharashtra	Chandrapur	Mar-21	B.1
GSEQ-924|Maharashtra|Chandrapur|Mar-21|B.1	GSEQ-924	Maharashtra	Chandrapur	Mar-21	B.1
GSEQ-876|Maharashtra|Chandrapur|Feb-21|B.1	GSEQ-876	Maharashtra	Chandrapur	Feb-21	B.1

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GSEQ-886|Maharashtra|Chandrapur|Feb-21|B.1.617	GSEQ-886	Maharashtra	Chandrapur	Feb-21	B.1.617
SEQ-724|Maharashtra|Nagpur|Dec-20|B.1.36.29	SEQ-724	Maharashtra	Nagpur	Dec-20	B.1.36.29
GSEQ-881|Maharashtra|Chandrapur|Feb-21|B.1.36.29	GSEQ-881	Maharashtra	Chandrapur	Feb-21	B.1.36.29
GSEQ-1013|Maharashtra|Aurangabad|Feb-21|B.1.1.306	GSEQ-1013	Maharashtra	Aurangabad	Feb-21	B.1.1.306
SEQ-735|Maharashtra|Nagpur|Dec-20|B.1.1.306	SEQ-735	Maharashtra	Nagpur	Dec-20	B.1.1.306
GSEQ-1017|Maharashtra|Aurangabad|Mar-21|B.1.36	GSEQ-1017	Maharashtra	Aurangabad	Mar-21	B.1.36
GSEQ-882|Maharashtra|Chandrapur|Feb-21|B.1.1.354	GSEQ-882	Maharashtra	Chandrapur	Feb-21	B.1.1.354
GSEQ-1016|Maharashtra|Aurangabad|Feb-21|B.1.1	GSEQ-1016	Maharashtra	Aurangabad	Feb-21	B.1.1
SEQ-664|Maharashtra|Nagpur|Sep-20|B.1	SEQ-664	Maharashtra	Nagpur	Sep-20	B.1
2019nCoV-297093|Maharashtra|Pune|Mar-21|B.1.241	2019nCoV-297093	Maharashtra	Pune	Mar-21	B.1.241
GSEQ-1129|Maharashtra|Palghar|Mar-21|B.1.617	GSEQ-1129	Maharashtra	Palghar	Mar-21	B.1.617
GSEQ-926|Maharashtra|Chandrapur|Mar-21|B.1.617	GSEQ-926	Maharashtra	Chandrapur	Mar-21	B.1.617
GSEQ-884|Maharashtra|Chandrapur|Feb-21|B.1.617	GSEQ-884	Maharashtra	Chandrapur	Feb-21	B.1.617
2019nCoV-297094|Maharashtra|Pune|Mar-21|B.1.617	2019nCoV-297094	Maharashtra	Pune	Mar-21	B.1.617
GSEQ-852|Maharashtra|Nanded|Feb-21|B.1.617	GSEQ-852	Maharashtra	Nanded	Feb-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Chandrapur	Feb-	B.1.617

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883|Maharashtra|Chandrapur|Feb-21|B.1.617	883	ra		21	
GSEQ-878|Maharashtra|Chandrapur|Feb-21|B.1.617	GSEQ-878	Maharashtra	Chandrapur	Feb-21	B.1.617
GSEQ-1140|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-1140	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-1131|Maharashtra|Palghar|Mar-21|B.1.1.306	GSEQ-1131	Maharashtra	Palghar	Mar-21	B.1.1.306
SEQ-259|Maharashtra|Mumbai|Dec-20|B.1.210	SEQ-259	Maharashtra	Mumbai	Dec-20	B.1.210
GSEQ-1301|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1301	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1302|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1302	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1308|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1308	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1315|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1315	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1300|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1300	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1312|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1312	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1297|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1297	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1320|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1320	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1318|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1318	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1303|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1303	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1304|Maharashtra|Nanded|Mar-	GSEQ-1304	Maharashtra	Nanded	Mar-21	B.1.617

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21|B.1.617					
GSEQ-1296|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1296	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1311|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1311	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1316|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1316	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1161|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-1161	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-1162|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-1162	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-1164|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-1164	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-1294|Maharashtra|Nanded|Mar-21|B.1.596	GSEQ-1294	Maharashtra	Nanded	Mar-21	B.1.596
GSEQ-1307|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1307	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1295|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1295	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1309|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1309	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1163|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-1163	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-1165|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-1165	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-1306|Maharashtra|Nanded|Mar-21|B.1.617	GSEQ-1306	Maharashtra	Nanded	Mar-21	B.1.617
GSEQ-1299|Maharashtra|Nanded|Mar-21|B.1.177.42	GSEQ-1299	Maharashtra	Nanded	Mar-21	B.1.177.42
GSEQ-1313|Maharashtra|Nanded|Mar-21|B.1.177.17	GSEQ-1313	Maharashtra	Nanded	Mar-21	B.1.177.17

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GSEQ-771|Maharashtra|Mumbai|Mar-21|B.1.36.29	GSEQ-771	Maharashtra	Mumbai	Mar-21	B.1.36.29
GSEQ-901|Maharashtra|Hingoli|Feb-21|B.1.36.29	GSEQ-901	Maharashtra	Hingoli	Feb-21	B.1.36.29
GSEQ-634|Maharashtra|Hingoli|Feb-21|B.1.36	GSEQ-634	Maharashtra	Hingoli	Feb-21	B.1.36
GSEQ-668|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-668	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-673|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-673	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-681|Maharashtra|Thane|Mar-21|B.1.1.306	GSEQ-681	Maharashtra	Thane	Mar-21	B.1.1.306
GSEQ-692|Maharashtra|Thane|Mar-21|B.1.1	GSEQ-692	Maharashtra	Thane	Mar-21	B.1.1
GSEQ-768|Maharashtra|Mumbai|Mar-21|B.1.1.216	GSEQ-768	Maharashtra	Mumbai	Mar-21	B.1.1.216
GSEQ-810|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-810	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-639|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-639	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-892|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-892	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-900|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-900	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-904|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-904	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-899|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-899	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-894|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-894	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Hingoli	Feb-	B.1.617

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897|Maharashtra|Hingoli|Feb-21|B.1.617	897	ra		21	
GSEQ-650|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-650	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-636|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-636	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-766|Maharashtra|Aurangabad|Mar-21|B.1.617	GSEQ-766	Maharashtra	Aurangabad	Mar-21	B.1.617
GSEQ-794|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-794	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-890|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-890	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-778|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-778	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-637|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-637	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-651|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-651	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-727|Maharashtra|Thane|Feb-21|B.1.617	GSEQ-727	Maharashtra	Thane	Feb-21	B.1.617
GSEQ-731|Maharashtra|Jalna|Feb-21|B.1.617	GSEQ-731	Maharashtra	Jalna	Feb-21	B.1.617
GSEQ-775|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-775	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-687|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-687	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-891|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-891	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-732|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-732	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-889|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-889	Maharashtra	Hingoli	Feb-21	B.1.617

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GSEQ-653|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-653	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-790|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-790	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-896|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-896	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-807|Maharashtra|Wardha|Mar-21|B.1.617	GSEQ-807	Maharashtra	Wardha	Mar-21	B.1.617
GSEQ-776|Maharashtra|Mumbai|Mar-21|B.1.596	GSEQ-776	Maharashtra	Mumbai	Mar-21	B.1.596
GSEQ-785|Maharashtra|Wardha|Mar-21|B.1.596	GSEQ-785	Maharashtra	Wardha	Mar-21	B.1.596
GSEQ-773|Maharashtra|Mumbai|Mar-21|B.1.596	GSEQ-773	Maharashtra	Mumbai	Mar-21	B.1.596
GSEQ-764|Maharashtra|Aurangabad|Mar-21|B.1	GSEQ-764	Maharashtra	Aurangabad	Mar-21	B.1
GSEQ-734|Maharashtra|Thane|Mar-21|B.1.596	GSEQ-734	Maharashtra	Thane	Mar-21	B.1.596
GSEQ-777|Maharashtra|Mumbai|Mar-21|B.1.596	GSEQ-777	Maharashtra	Mumbai	Mar-21	B.1.596
GSEQ-733|Maharashtra|Thane|Mar-21|B.1	GSEQ-733	Maharashtra	Thane	Mar-21	B.1
GSEQ-902|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-902	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-730|Maharashtra|Jalna|Mar-21|B.1.617	GSEQ-730	Maharashtra	Jalna	Mar-21	B.1.617
GSEQ-685|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-685	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-672|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-672	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-	GSEQ-	Maharasht	Hingoli	Feb-	B.1.36.29

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893|Maharashtra|Hingoli|Feb-21|B.1.36.29	893	ra		21	
GSEQ-663|Maharashtra|Thane|Mar-21|B.1.1.7	GSEQ-663	Maharashtra	Thane	Mar-21	B.1.1.7
GSEQ-840|Maharashtra|Bhandara|Mar-21|B.1.1.7	GSEQ-840	Maharashtra	Bhandara	Mar-21	B.1.1.7
GSEQ-682|Maharashtra|Thane|Mar-21|B.1.1.216	GSEQ-682	Maharashtra	Thane	Mar-21	B.1.1.216
GSEQ-784|Maharashtra|Wardha|Mar-21|B.1.1.354	GSEQ-784	Maharashtra	Wardha	Mar-21	B.1.1.354
GSEQ-686|Maharashtra|Thane|Mar-21|B.1.177.42	GSEQ-686	Maharashtra	Thane	Mar-21	B.1.177.42
GSEQ-772|Maharashtra|Mumbai|Mar-21|B.1.36.29	GSEQ-772	Maharashtra	Mumbai	Mar-21	B.1.36.29
GSEQ-842|Maharashtra|Bhandara|Mar-21|B.1.617	GSEQ-842	Maharashtra	Bhandara	Mar-21	B.1.617
GSEQ-887|Maharashtra|Hingoli|Feb-21|B.1.1.354	GSEQ-887	Maharashtra	Hingoli	Feb-21	B.1.1.354
GSEQ-781|Maharashtra|Wardha|Mar-21|B.1.474	GSEQ-781	Maharashtra	Wardha	Mar-21	B.1.474
GSEQ-767|Maharashtra|Aurangabad|Mar-21|B.1.1.216	GSEQ-767	Maharashtra	Aurangabad	Mar-21	B.1.1.216
GSEQ-797|Maharashtra|Wardha|Feb-21|B.1.617	GSEQ-797	Maharashtra	Wardha	Feb-21	B.1.617
GSEQ-644|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-644	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-888|Maharashtra|Hingoli|Feb-21|B.1.617	GSEQ-888	Maharashtra	Hingoli	Feb-21	B.1.617
GSEQ-798|Maharashtra|Wardha|Feb-21|B.1.1.306	GSEQ-798	Maharashtra	Wardha	Feb-21	B.1.1.306
GSEQ-843|Maharashtra|Bhandara|Mar-	GSEQ-843	Maharashtra	Bhandara	Mar-21	B.1.617

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21|B.1.617					
GSEQ-854|Maharashtra|Nanded|Feb-21|B.1.617	GSEQ-854	Maharashtra	Nanded	Feb-21	B.1.617
GSEQ-690|Maharashtra|Thane|Feb-21|B.1.617	GSEQ-690	Maharashtra	Thane	Feb-21	B.1.617
GSEQ-1087|Maharashtra|Thane|Mar-21|B.1	GSEQ-1087	Maharashtra	Thane	Mar-21	B.1
GSEQ-1105|Maharashtra|Thane|Mar-21|B.1.617	GSEQ-1105	Maharashtra	Thane	Mar-21	B.1.617
GSEQ-1185|Maharashtra|Alibag|#N/A|B.1.617	GSEQ-1185	Maharashtra	Alibag	#N/A	B.1.617
GSEQ-954|Maharashtra|#N/A|Nov-20|B.1.36.29	GSEQ-954	Maharashtra	NA	Nov-20	B.1.36.29
GSEQ-956|Maharashtra|#N/A|Nov-20|B.1.36	GSEQ-956	Maharashtra	NA	Nov-20	B.1.36
GSEQ-955|Maharashtra|#N/A|Nov-20|B.1.36	GSEQ-955	Maharashtra	NA	Nov-20	B.1.36
GSEQ-959|Maharashtra|#N/A|Nov-20|B.1.36	GSEQ-959	Maharashtra	NA	Nov-20	B.1.36
GSEQ-958|Maharashtra|#N/A|Nov-20|B.1.36.29	GSEQ-958	Maharashtra	NA	Nov-20	B.1.36.29
GSEQ-957|Maharashtra|#N/A|Nov-20|B.1.36.29	GSEQ-957	Maharashtra	NA	Nov-20	B.1.36.29
GSEQ-1079|Maharashtra|Mumbai|Mar-21|B.1.1.306	GSEQ-1079	Maharashtra	Mumbai	Mar-21	B.1.1.306
GSEQ-1080|Maharashtra|Mumbai|Mar-21|B.1.617	GSEQ-1080	Maharashtra	Mumbai	Mar-21	B.1.617
GSEQ-1081|Maharashtra|Mumbai|Mar-21|B.1.1.306	GSEQ-1081	Maharashtra	Mumbai	Mar-21	B.1.1.306
GSEQ-2712|Maharashtra|Yavatmal|Feb-21|B.1.36.29	GSEQ-2712	Maharashtra	Yavatmal	Feb-21	B.1.36.29

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VOC-1121|Maharashtra|Mumbai|Dec-20|B.1.36.29	VOC-1121	Maharashtra	Mumbai	Dec-20	B.1.36.29
GSEQ-6571|Maharashtra|Mumbai|Mar-21|B.1.1.306	GSEQ-6571	Maharashtra	Mumbai	Mar-21	B.1.1.306
SEQ-29188TCM|Maharashtra|Melghat|Jan-21|B.1.1.421	SEQ-29188TCM	Maharashtra	Melghat	Jan-21	B.1.1.421

Supplementary Table2: Intra and inter-molecular interactions of wild and mutant spike RBD of SARS-CoV-2 with ACE2. The bonds that are highlighted indicate those that are disrupted in the mutant strain

Spike RBD with ACE2 (6LZG.pdb) (wild)			
Interactions			
Sr. No.	**RBD-Wild Type**	**ACE2**	**Type**
1	K417	D30	Hydrogen Bond; Electrostatic
2	**E484**	**K31**	**Electrostatic**
3	A475	S19	Hydrogen Bond
4	N487	Q24	Hydrogen Bond
5	T500	Y41	Hydrogen Bond
6	G496	K353	Hydrogen Bond
7	Y449	D38	Hydrogen Bond
8	Y449	Q42	Hydrogen Bond
9	N487	Y83	Hydrogen Bond
10	Q493	E35	Hydrogen Bond
11	Q498	Q42	Hydrogen Bond
12	Q498	Q42	Hydrogen Bond
13	G502	K353	Hydrogen Bond
14	Y453	H34	Hydrogen Bond
15	F486	Y83	Hydrogen Bond
16	N501	Y41	Hydrogen Bond
17	L455	H34	Hydrophobic
18	F486	Y83	Hydrophobic
19	Y505	K353	Hydrophobic
20	F486	M82	Hydrophobic
21	Y489	K31	Hydrophobic
22	Y505	K353	Hydrophobic
23	**L452-L492**	**-**	**Hydrophobic**

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24	F490-L492	-	Hydrophobic

Spike RBD with ACE2 (6LZG.pdb) (L452R & E484Q Mutant)

Interactions			
Sr. No.	**RBD-Mutant Type**	**ACE2**	**Type**
1	K417	D30	Hydrogen Bond; Electrostatic
2	A475	S19	Hydrogen Bond
3	N487	Q24	Hydrogen Bond
4	T500	Y41	Hydrogen Bond
5	G496	K353	Hydrogen Bond
6	Y449	D38	Hydrogen Bond
7	Y449	Q42	Hydrogen Bond
8	N487	Y83	Hydrogen Bond
9	Q493	E35	Hydrogen Bond
10	Q498	Q42	Hydrogen Bond
11	Q498	Q42	Hydrogen Bond
12	G502	K353	Hydrogen Bond
13	Y453	H34	Hydrogen Bond
14	F486	Y83	Hydrogen Bond
15	N501	Y41	Hydrogen Bond
16	L455	H34	Hydrophobic
17	F486	Y83	Hydrophobic
18	Y505	K353	Hydrophobic
19	F486	M82	Hydrophobic
20	Y489	K31	Hydrophobic
21	Y505	K353	Hydrophobic
22	F490-L492	-	Hydrophobic

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Supplementary Table3: Intermolecular interaction of neutralizing antibodies with wild and mutant spike RBD of SARS-CoV-2

A	**Spike RBD with Antibody REGN10933 (Wild)**		
	Interactions		
	RBD	**Antibody**	**Type**
1	GLU484	H: TYR53	Hydrogen Bond
		H:SER56	
2	LYS417	H:ASP31	Hydrogen Bond
		H:THR28	
3	PHE486	L: LEU94	Hydrophobic
		H: ARG100	Electrostatic
		H:TYR59	Hydrogen bond
4	TYR489	H: TYR53	Hydrophobic
	TYR489	H:TYR33	Hydrogen Bond
5	TYR453	H:ASP31	Hydrogen Bond
6	LYS417	H:ASP31	Hydrogen Bond
7	ALA475	H:MET104	Hydrophobic bond
B	**Spike RBD with Antibody REGN10933 (Mutant)**		
	Interactions		
	RBD	**Antibody**	**Type**
1	LYS417	H:ASP31	Hydrogen Bond
		H: THR28	
2	TYR453	H :ASP31	Hydrogen Bond
3	PHE486	H: ARG100	Hydrogen Bond
		L: LEU94	
		H:TYR59	
4	ALA475	H:MET104	Hydrophobic bond
5	TYR489	H:TYR53	Hydrophobic
6	GLN484	H:SER56	Hydrogen bond

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7	CYS488	H:TYR33	Hydrogen bond
C	**Spike RBD with Antibody P2B-2F6(Wild)**		
	Interactions		
	RBD	**Antibody**	**Type**
1	LEU452	H: ILE103	Hydrophobic
		H:VAL105	
2	GLU484	L: ASN33	Hydrogen bond
		L:TYR34	
3	GLU484	H:ARG112	Hydrogen bond; Electrostatic
4	PHE490	H: VAL106	Hydrophobic
		H:PRO107	
5	TYR449	H: SER31	Hydrogen bond
6	ASN450	H: SER30	Hydrogen bond
		H:SER31	
7	GLY447	H: TYR27	Hydrogen bond
D	**Spike RBD with Antibody P2B-2F6 A(Mutant)**		
	Interactions		
	RBD	**Antibody**	**Type**
1	GLN484	L: ASN33	Hydrogen bond
		L: TYR34	
2	ASN450	H: SER30	Hydrogen bond
		H:SER31	
3	PHE490	H: VAL106	Hydrophobic
		H: PRO107	