

# Supplementary material of “Inferring Genetic Variability in Indian SARS-CoV-2 Genomes using Consensus of Multiple Sequence Alignment Techniques”

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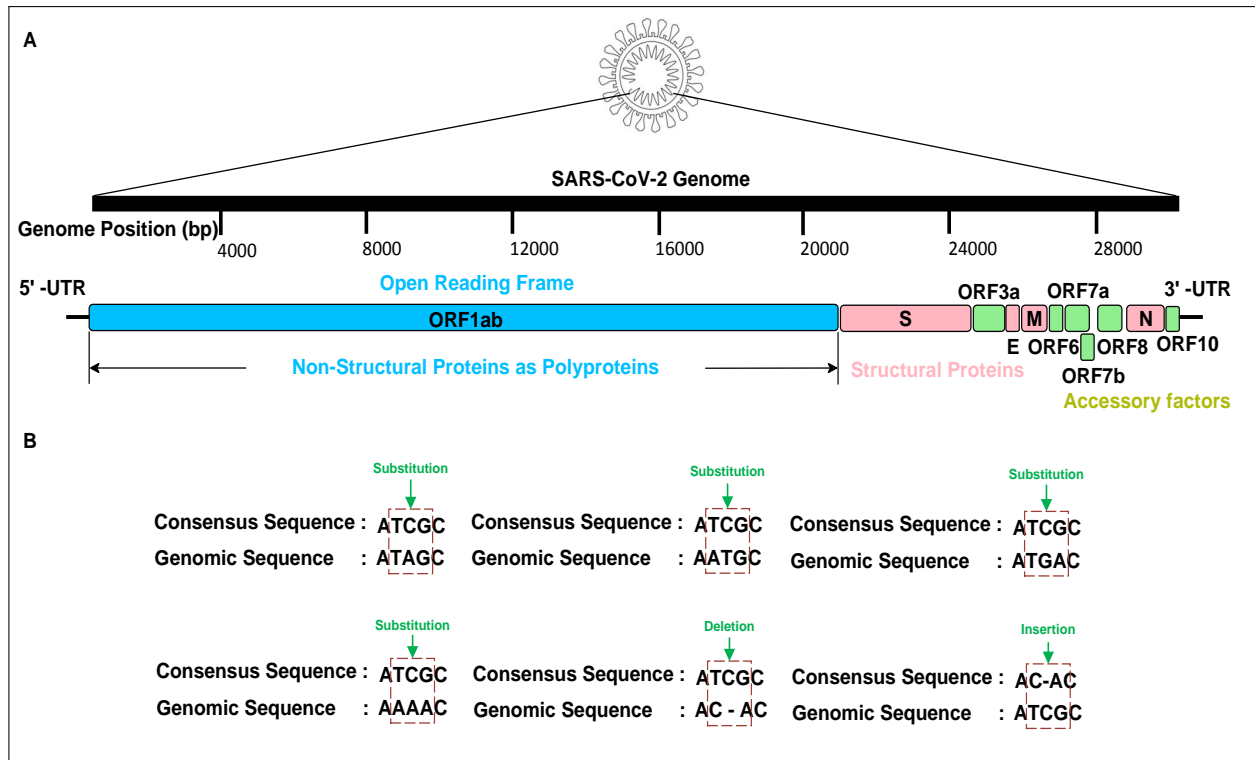


Figure S1: (A) Genomic orientation of SARS-CoV-2 virus (B) Different types of mutations considered during identification of substitution, deletion and insertion in Indian SARS-CoV-2 genomes

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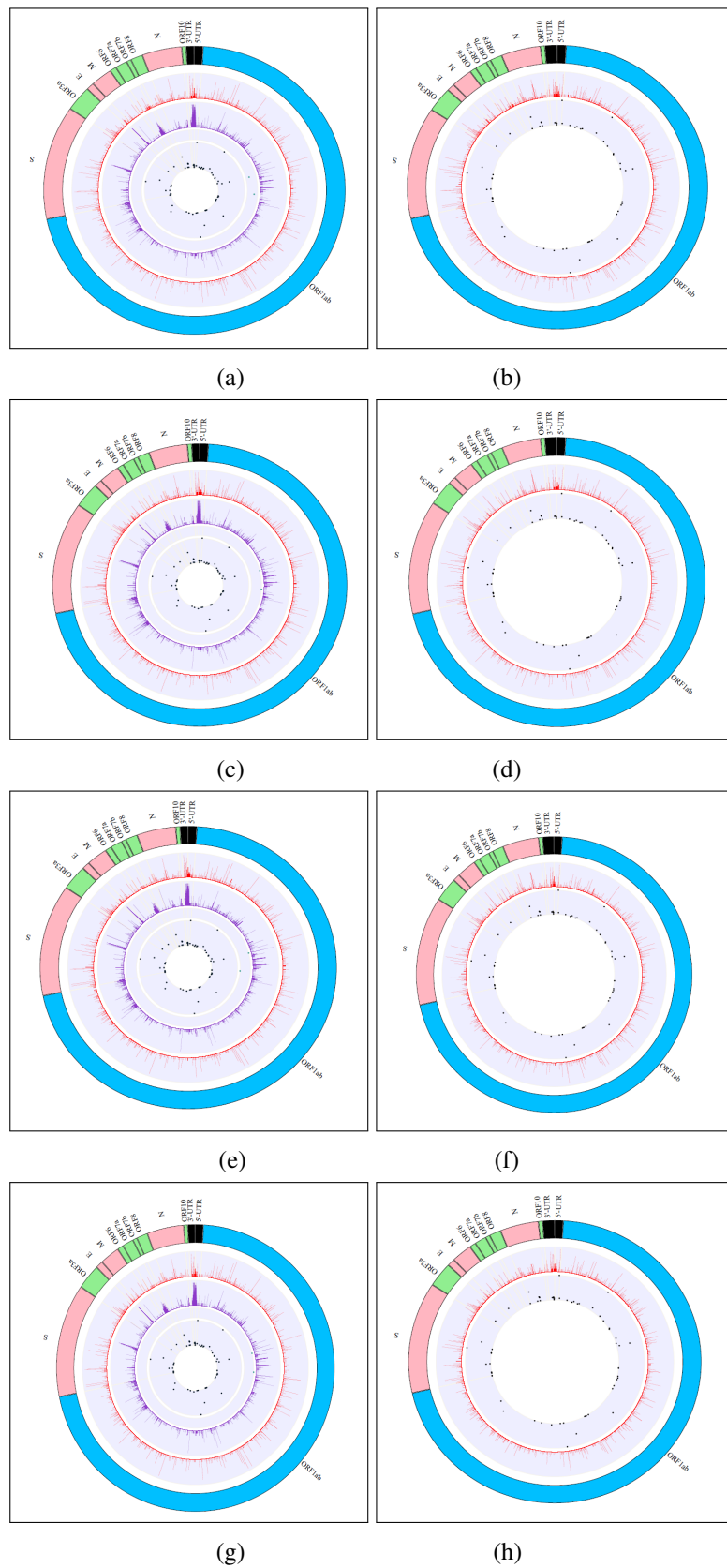


Figure S2: BioCircos plots to illustrate the frequency of mutations across the Indian SARS-CoV-2 genomes identified after performing (a)-(b) ClustalW (c)-(d) MUSCEL (e)-(f) ClustalO (g)-(h) MAFFT through different tracks e.g., Substitution (outer track 1), Deletion (track 2), Insertion (track 3) and SNPs (inner track 4) in (a),(c),(e) and (g) while Substitution (outer track 1) and SNPs (inner track 2) in (b),(d),(f) and (h)

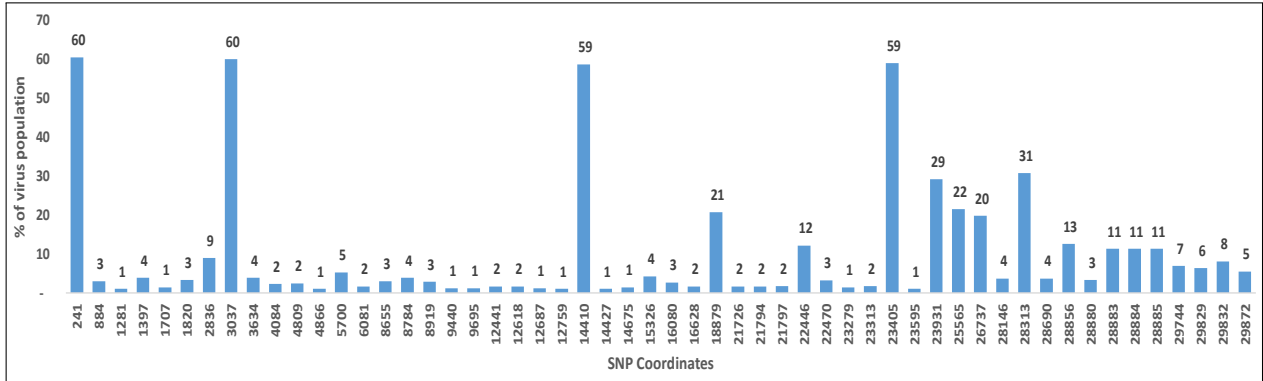


Figure S3: SNPs present in more than 1% of population of Indian SARS-CoV-2 genome

Start Coordinate of Coding Region	End Coordinate of Coding Region	Length of Coding Region	Name of the Coding Region
1	265	265	5'-UTR (Non-coding Region)
266	21555	21290	ORF1ab
21563	25385	3823	Spike
25393	26221	829	ORF3a
26245	26473	229	Envelope
26523	27192	670	Membrane
27202	27388	187	ORF6
27394	27760	367	ORF7a
27756	27888	133	ORF7b
27894	28260	367	ORF8
28274	29534	1261	
29558	29675	118	ORF10
29676	29905	230	3'-UTR (Non-coding Region)

Table S1: Coding Regions of SARS-CoV-2 genome after mapping the collected coding regions from NCBI with the Reference Sequence of SARS-CoV-2 genome

Method	Mutation	Web Link
ClustalW	All Mutations	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/All-Mutations-3384.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/All-Mutations-3384.csv</a>
	Substitution	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/Substitutions-933.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/Substitutions-933.csv</a>
	Deletions	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/Deletions-2449.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/Deletions-2449.csv</a>
	Insertion	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/Insertions-2.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/Insertions-2.csv</a>
	SNP	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/SNPs-64.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalW/SNPs-64.csv</a>
MUSCLE	All Mutations	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/All-Mutations-3344.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/All-Mutations-3344.csv</a>
	Substitution	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/Substitutions-848.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/Substitutions-848.csv</a>
	Deletion	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/Deletions-2494.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/Deletions-2494.csv</a>
	Insertion	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/Insertions-2.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/Insertions-2.csv</a>
	SNP	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/SNPs-65.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MUSCLE/SNPs-65.csv</a>
ClustalO	All Mutations	<a href="http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/All-Mutations-3397.csv">http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/All-Mutations-3397.csv</a>
	Substitution	<a href="http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/Substitutions-893.csv">http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/Substitutions-893.csv</a>
	Deletion	<a href="http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/Deletions-2502.csv">http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/Deletions-2502.csv</a>
	Insertion	<a href="http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/Insertions-2.csv">http://http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/Insertions-2.csv</a>
	SNP	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/SNPs-66.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/ClustalO/SNPs-66.csv</a>
MAFFT	All Mutations	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/All-Mutations-3396.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/All-Mutations-3396.csv</a>
	Substitution	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/Substitutions-888.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/Substitutions-888.csv</a>
	Deletion	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/Deletions-2506.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/Deletions-2506.csv</a>
	Insertion	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/Insertions-2.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/Insertions-2.csv</a>
	SNP	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/SNPs-66.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/MAFFT/SNPs-66.csv</a>
CMSA	All Mutations	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/All-Mutations-2792.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/All-Mutations-2792.csv</a>
	Substitution	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/Substitutions-767.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/Substitutions-767.csv</a>
	Deletion	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/Deletions-2025.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/Deletions-2025.csv</a>
	Insertion	Zero consensus insertion identified
	SNP	<a href="http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/SNPs-54.csv">http://www.nittrkol.ac.in/indrajit/projects/COVID-ConsensusMutation-India/downloads/supplementary/CMSA/SNPs-54.csv</a>

Table S2: Link to the mutation results of different methods on Indian SARS-CoV-2 Genomes