Technical Appendix Table 2: *Per cent nucleotide and amino acid similarity of the different genes of Sant Kabir Nagar, UP SARS-CoV-2 sequences retrieved in this study along with representative GISAID SARS-CoV-2 sequences with respect to the NC\_045512.2\_Sars-CoV\_2\_isolate\_Wuhan-Hu-1(Abbreviation: PNS- percent nucleotide similarity; PAS-percent amino acid similarity.*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **NC\_045512.2\_SARS-Cov-2\_isolate\_Wuhan-Hu-1** | **ORF1ab** | **S** | **ORF3a** | **E** | **M** | **ORF6** | **ORF7a** | **ORF8** | **N** | **ORF10** |
| **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** | **PNS** | **PAS** |
| hCoV-19/India/NIV-QA-710/2020|EPI\_ISL\_454565| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.5 | 100.0 | 100.0 |
| hCoV-19/India/NIV-65813/2020|EPI\_ISL\_479565| | 100.0 | 99.9 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.5 | 100.0 | 100.0 |
| hCoV-19/India/NIV-64478/2020|EPI\_ISL\_479555| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.5 | 100.0 | 100.0 |
| hCoV-19/India/NIV-20134/2020|EPI\_ISL\_479513| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.5 | 100.0 | 100.0 |
| hCoV-19/India/NCDC-4874/2020|EPI\_ISL\_436459| | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 99.3 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/NCDC-3264/2020|EPI\_ISL\_436432| | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.6 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/NCDC-02252/2020|EPI\_ISL\_435097| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/NCDC-01604/2020|EPI\_ISL\_435103| | 100.0 | 99.9 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/NCDC-01457/2020|EPI\_ISL\_435108| | 100.0 | 99.9 | 100.0 | 99.9 | 99.9 | 99.6 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/NCDC-01444/2020|EPI\_ISL\_435102| | 100.0 | 99.9 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GMC-TC469/2020|EPI\_ISL\_431117| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.5 | 100.0 | 100.0 |
| hCoV-19/India/GMC-RR1191/2020|EPI\_ISL\_438138| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GMC-RK1090/2020|EPI\_ISL\_438139| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GMC-RK100/2020|EPI\_ISL\_431101| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GMC-KP1125/2020|EPI\_ISL\_437626| | 100.0 | 100.0 | 100.0 | 99.9 | 99.9 | 99.6 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GBRC91/2020|EPI\_ISL\_447553| | 100.0 | 100.0 | 100.0 | 99.9 | 99.9 | 99.6 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GBRC90/2020|EPI\_ISL\_447552| | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 99.3 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GBRC9/2020|EPI\_ISL\_435056| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GBRC49/2020|EPI\_ISL\_444480| | 100.0 | 100.0 | 100.0 | 99.9 | 99.9 | 99.6 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 100.0 | 100.0 | 99.8 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GBRC254b/2020|EPI\_ISL\_483841| | 100.0 | 100.0 | 99.9 | 99.8 | 99.8 | 99.3 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GBRC254a/2020|EPI\_ISL\_483840| | 100.0 | 100.0 | 99.9 | 99.8 | 99.9 | 99.6 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GBRC25/2020|EPI\_ISL\_444456| | 100.0 | 100.0 | 100.0 | 99.9 | 99.9 | 99.6 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GBRC24b/2020|EPI\_ISL\_437454| | 100.0 | 99.9 | 99.9 | 99.9 | 99.8 | 99.3 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GBRC24a/2020|EPI\_ISL\_437453| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/GBRC21/2020|EPI\_ISL\_437450| | 100.0 | 100.0 | 100.0 | 99.8 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/GBRC113/2020|EPI\_ISL\_451158| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/c32/2020|EPI\_ISL\_420555| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.5 | 100.0 | 100.0 |
| hCoV-19/India/781/2020|EPI\_ISL\_420553| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/777/2020|EPI\_ISL\_420551| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/773/2020|EPI\_ISL\_420549| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/772/2020|EPI\_ISL\_420547| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/770/2020|EPI\_ISL\_420545| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/763/2020|EPI\_ISL\_420543| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/3239/2020|EPI\_ISL\_424365| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.6 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/3118/2020|EPI\_ISL\_424364| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.6 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1652/2020|EPI\_ISL\_424363| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1644/2020|EPI\_ISL\_421672| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1621/2020|EPI\_ISL\_421671| | 100.0 | 99.9 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1617/2020|EPI\_ISL\_421670| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.4 | 98.4 | 99.8 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/1616/2020|EPI\_ISL\_421669| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1-31/2020|EPI\_ISL\_413523| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1-27/2020|EPI\_ISL\_413522| | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1135/2020|EPI\_ISL\_424362| | 100.0 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1125/2020|EPI\_ISL\_421668| | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 99.6 | 100.0 | 100.0 | 100.0 | 100.0 | 99.5 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1115/2020|EPI\_ISL\_421667| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1111/2020|EPI\_ISL\_421666| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1104/2020|EPI\_ISL\_421665| | 100.0 | 99.9 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1100/2020|EPI\_ISL\_421664| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1093/2020|EPI\_ISL\_421663| | 100.0 | 99.9 | 100.0 | 100.0 | 99.8 | 99.3 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| hCoV-19/India/1073/2020|EPI\_ISL\_421662| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 |
| MCL-20-H-2349 F1.4 RNA 2137 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2347 F2.2 RNA 2135 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2345 F3.1 RNA 2133 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2340 F4W RNA 2128 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2339\_F2 RNA 2127 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2346\_F3\_RNA 2134 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2343\_F4.1 RNA 2131 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| MCL-20-H-2337\_F2W\_RNA 2125 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 100.0 | 99.9 | 99.8 | 100.0 | 100.0 |
| hCoV-19/India/1063/2020|EPI\_ISL\_424361| | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.7 | 99.2 | 100.0 | 100.0 | 99.8 | 100.0 | 100.0 | 100.0 |