SARS-CoV-2 transmission dynamics in Belarus revealed by genomic and incidence data analysis.

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Supplemental Information.

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1 Supplemental Information

Model	**Parameter**	**Prior distribution**
Strict clock	Clock rate	Gamma(2.56,3200)
HKY	Kappa Gamma shape	Lognormal(1,1.25) Exponential(1,0)
Birth-death skyline	$\mathcal{R}_e$ Uninfectious rate Sampling proportion Time of origin	Lognormal(0.8,0.5) Fixed to 36.5 per year Beta(1,99999) Normal(0.89,0.01) for cluster 1, Normal(0.919,0.01) for cluster 2

Table S1: BDSKY model parameters used for $\mathcal{R}_e$ estimation.

	Before quarantine	After quarantine
Australia [6]	1.63	0.48
Russia (hospital settings) [3]	3	1.76
Russia (hospital settings) [3]	3.64	1.85
New Zealand [2]	7	0.2
Israel [4]	2.1	0.525
France [1]	2.56	1.38
France [5]	3	
Germany [5]	1.75	
Italy [5]	2.4	
Belarus (this study)	**1.95**	**1.59**

Table S2: Estimations for the effective reproduction number $\mathcal{R}_e$ for different countries reported in the literature.

Cluster name	Sequence Name	Country Name
Cluster 1	Ukraine/203100356/2020—2020-05-28 Ukraine/203100318/2020—2020-06-23 Ukraine/203100333/2020—2020-06-24 Ukraine/203100319/2020—2020-06-23 Ukraine/203100335/2020—2020-06-26 Ukraine/203100336/2020—2020-06-23 Ukraine/Rivne_55/2020—2020-06-04 Ukraine/ChVir23535_80/2021—2021-01-10 Ukraine/ChVir23535_23/2021—2021-01-10 Ukraine/203100348/2020—2020-05-16 Ukraine/Vinnytsia_12/2020—2020-05-27 Ukraine/203100339/2020—2020-07-11 Ukraine/ChVir23535_35/2021—2021-01-12 Ukraine/203100320/2020—2020-06-23	Ukraine
Cluster 2	Ukraine/203100361/2020—2020-04-24 Ukraine/Kharkiv-877/2020—2020-08-07 Ukraine/Kharkiv-782/2020—2020-07-31 Ukraine/Kharkiv-705/2020—2020-07-28 Ukraine/ChVir23535_53/2021—2021-01-11 Ukraine/ChVir23535_21/2021—2021-01-09 Ukraine/ChVir23535_77/2021—2021-01-09 Ukraine/ChVir23535_79/2021—2021-01-09 Ukraine/ChVir23535_42/2021—2021-01-12 Ukraine/ChVir23535_29/2021—2021-01-11 Ukraine/ChVir23535_3/2021—2021-01-11 Ukraine/ChVir23535_51/2021—2021-01-12 Ukraine/Kharkiv-879/2020—2020-08-07 Ukraine/ChVir23535_4/2021—2021-01-11	Ukraine
Cluster 1	hCoV-19/Belarus/MN-RRCEM-Sars-Cov-2-sp-7/2021—EPI_ESL_1138983—2021-01-26 Belarus/MI-RII-MH11337S/2020—2020-04-24 Belarus/MI-RII-MH11351S/2020—2020-07-06 Belarus/ChVir21882/2020—2020-10-30 Belarus/ChVir21837/2020—2020-11-07 Belarus/ChVir21840/2020—2020-11-30 Belarus/ChVir21846/2020—2020-11-04 Belarus/ChVir21895/2020—2020-10-26 Belarus/ChVir21845/2020—2020-11-06 Belarus/ChVir21863/2020—2020-11-04 Belarus/ChVir21835/2020—2020-11-07	Belarus
Cluster 5	hCoV-19/Belarus/Gomel/2021—EPI_ISL_1222766—2021-02-26 Belarus/HO-RII-MH11354S/2020—2020-11-24 Belarus/MI-RII-MH11355S/2020—2020-11-23 Belarus/MA-RII-MH11359S/2020—2020-10-11 Belarus/ChVir21894/2020—2020-10-26 Belarus/ChVir21848/2020—2020-11-09 Belarus/ChVir21841/2020—2020-10-21 Belarus/HO-RRCEM-MOZ11874S/2020—2020-12-08	Belarus

Table S3: Analyzed sequences and their sampling times.

Cluster name	Sequence Name	Calendar Date Time of MRCA	Number of Sequences
1	Belarus/MN-RRCEM-Sars-Cov2-sp-7 Belarus/ChVir21835 Belarus/ChVir21863 Belarus/ChVir21845 Belarus/ChVir21895 Belarus/ChVir21846 Belarus/ChVir21882 Belarus/MI-RII-MH11351S Belarus/ChVir21840 Belarus/ChVir21837 Belarus/MI-RII-MH11337S	April 5, 2020	11
2	Belarus/ChVir21877 Belarus/ChVir21898 Belarus/ChVir21897 Belarus/ChVir21859	July 9, 2020	4
3	Belarus/ChVir21884	May 4, 2020	1
4	Belarus/ChVir21890	April 4, 2020	1
5	Belarus/HO-RII-MH11354S Belarus/MI-RII-MH11355 Belarus/HO-RRCEM-MOZ11874S Belarus/ChVir21848 Belarus/ChVir21894 Belarus/ChVir21841 Belarus/MA-RII-MH11359S Belarus/Gomel/2021	March 28, 2020	8
6	Belarus/MI-RII-MH11353S	February 13, 2020	1
7	Belarus/ChVir21891 Belarus/ChVir21892	October 19, 2020	2
8	Belarus/VI-RII-MH11358S Belarus/HM-RRCEM-Sars-CoV2-sp-1	September 27, 2020	2
9	Azerbaijan/RRCEM-sp_3/2021	April 30, 2020	1
10	Belarus/ChVir21888	April 30, 2020	1
11	Belarus/ChVir21832	April 30, 2020	1
12	Belarus/ChVir21843	April 30, 2020	1
13	Belarus/ChVir21842	April 8, 2020	1
14	Belarus/ChVir21889	April 8, 2020	1
15	Belarus/MI-RRCEM-Sars_Cov_Vis_68/2021	April 5, 2020	1
16	Belarus/ChVir2073	January 30, 2020	1
17	Belarus/ChVir21878	April 8, 2020	1
18	Belarus/ChVir2072 Belarus/ChVir2070	February 21, 2020	2

Table S4: Inferred clusters and their times of MRCA.

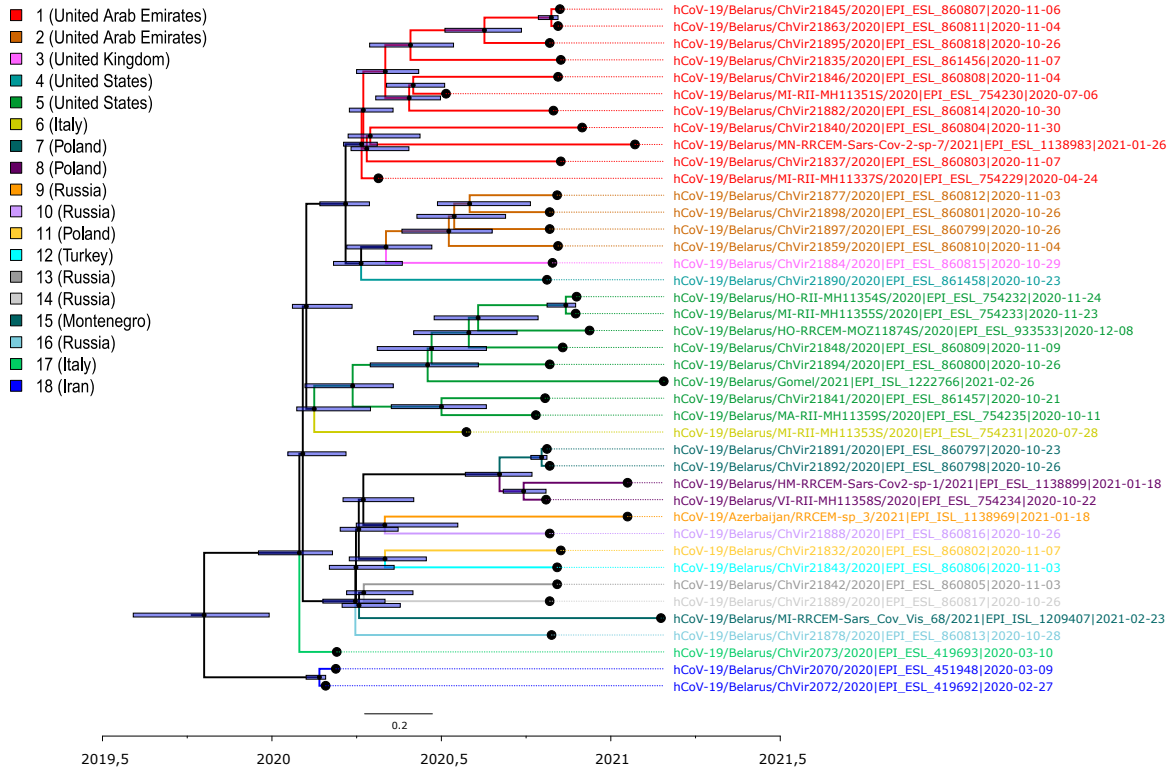

Figure S1: The annotated maximum clade credibility tree with sequence names and visualized 95 HPD in blue: clusters/local lineages numbered from one to eighteen, tree branches and sequence names color-coded by cluster IDs; cluster sources added in parentheses.

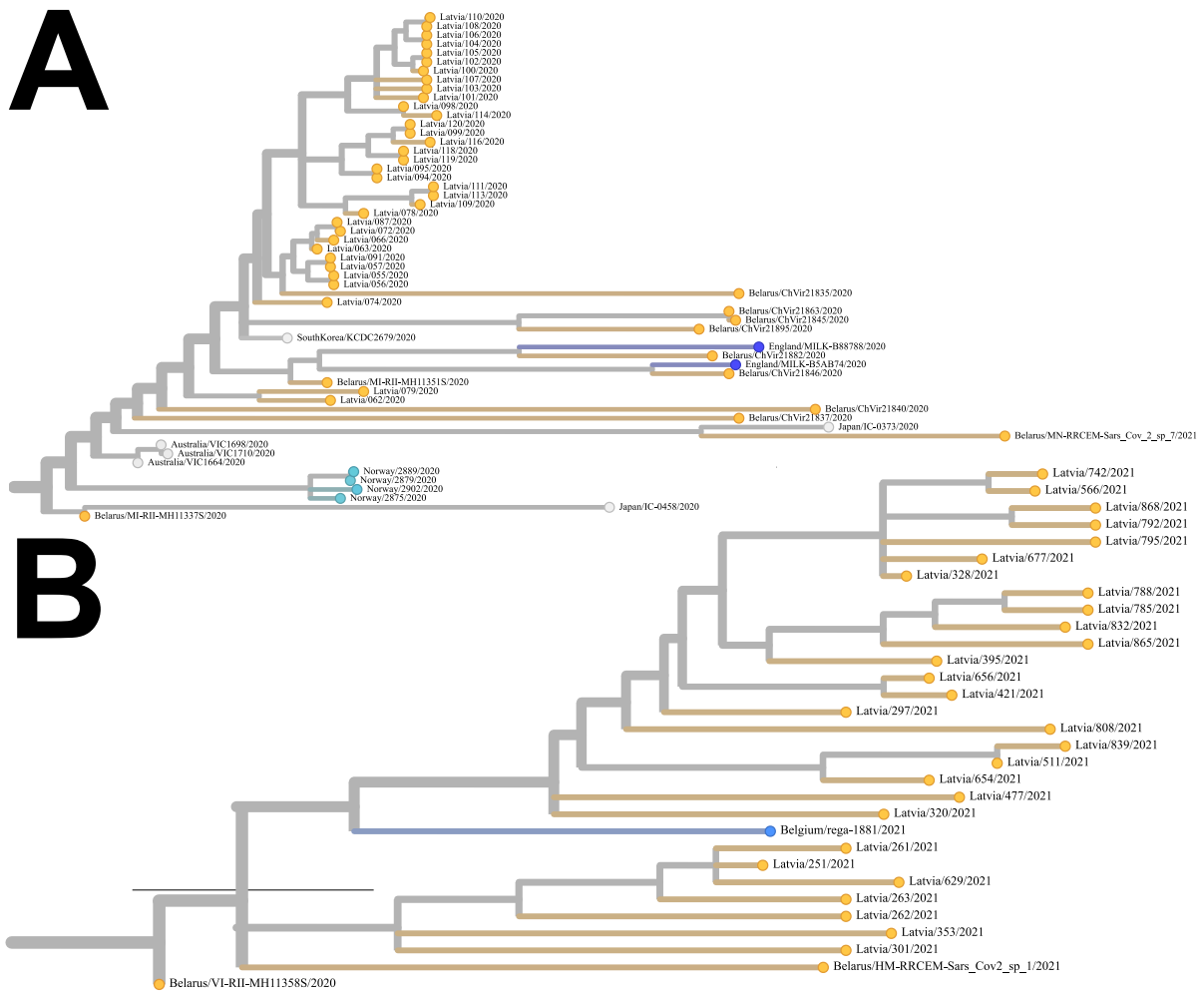

Figure S2: Latvian lineages originated from two alleged introductions from Belarus. Trees were visualized by Nextstrain

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