

1

1.a

DNA Identity Matrix

	Bat CoV	Bat CoV RATG13	MERS CoV	P-CoV	SARS-CoV2	SARS-CoV
Bat CoV	-	25.51	23.29	41.77	24.56	25.45
Bat CoV RATG13	25.51	-	30.44	75.94	92.68	67.57
MERSCoV	23.39	30.44	-	48.10	29.46	30.84
P-CoV	41.77	75.94	48.10	-	82.28	62.02
SARS-CoV2	24.56	92.68	29.46	82.28	-	65.37
SARS-CoV	25.45	67.57	30.84	62.02	65.37	-

The closest relatives are:

- SARS-CoV2 with RATG13 (92.68%)
- SARS-CoV2 with P-CoV (82.28%)

Protein Identity Matrix

	Bat CoV	Bat CoV RATG13	MERS CoV	P-CoV	SARS-CoV	SARS-CoV2
Bat CoV	-	18.44	18.55	30.77	18.56	18.22
Bat CoV RATG13	18.44	-	23.40	84.61	74.58	97.47
MERSCoV	18.55	23.40	-	23.08	26.06	26.47
P-CoV	30.77	84.61	23.08	-	73.08	84.62
SARS-CoV	18.56	74.58	26.06	73.08	-	73.94
SARS-CoV2	18.22	97.47	26.47	84.62	73.94	-

The closest relatives are:

- SARS-CoV2 with RATG13 (97.47%)
- SARS-CoV2 with P-CoV (84.62%)

1.b

The possible source of origin could be deduced with the sequence having the highest level of percentage identity. Thus, we the possible source of origin of SARS-CoV2 and MERSCoV is RATG13.

2

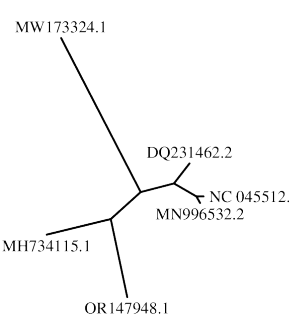


Figure 1: No bootstrap DNA pars tree

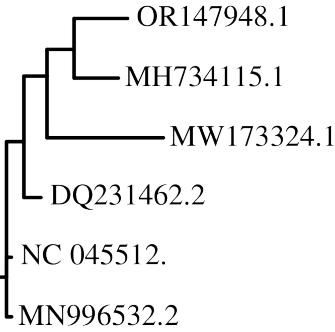


Figure 2: No bootstrap DNA pars gram

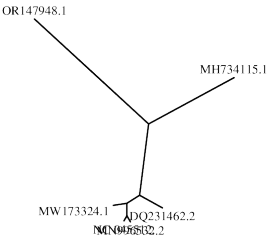


Figure 3: No bootstrap DNA ml tree



Figure 4: No bootstrap DNA ml gram

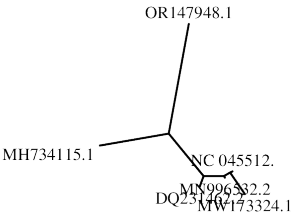


Figure 5: No bootstrap DNA dist tree



Figure 6: No bootstrap DNA dist gram

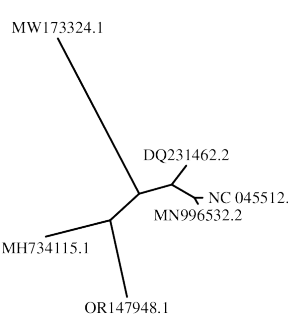


Figure 7: bootstrap DNA pars tree



Figure 8: bootstrap DNA pars gram

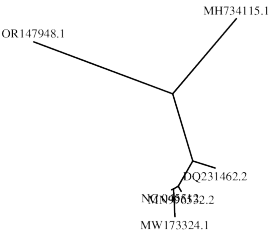


Figure 9: bootstrap DNA ml tree

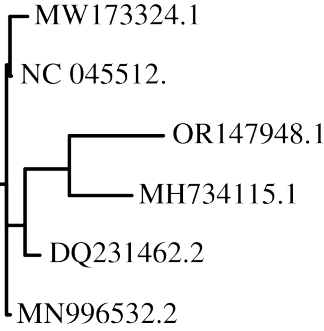


Figure 10: bootstrap DNA ml gram

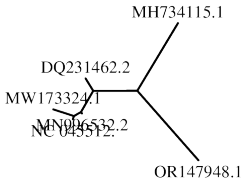


Figure 11: bootstrap DNA dist tree



Figure 12: bootstrap DNA dist gram

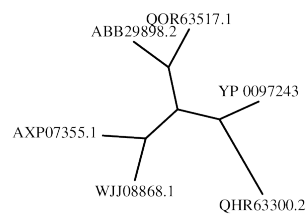


Figure 13: No bootstrap prot pars tree

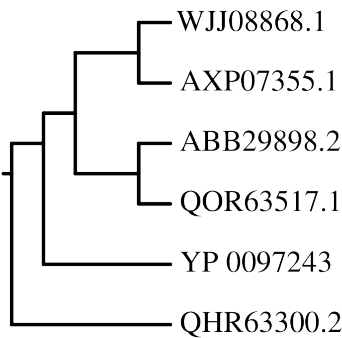


Figure 14: No bootstrap prot pars gram

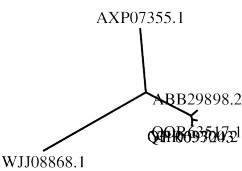


Figure 15: No bootstrap prot ml tree



Figure 16: No bootstrap prot ml gram

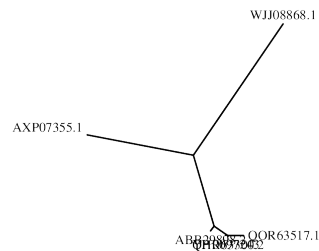


Figure 17: No bootstrap prot dist tree

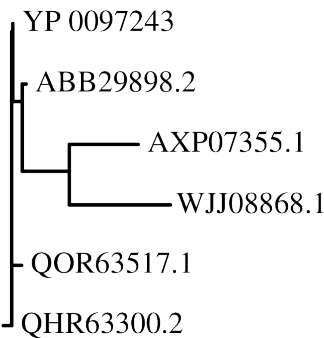


Figure 18: No bootstrap prot dist gram

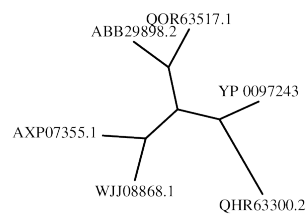


Figure 19: bootstrap prot pars tree

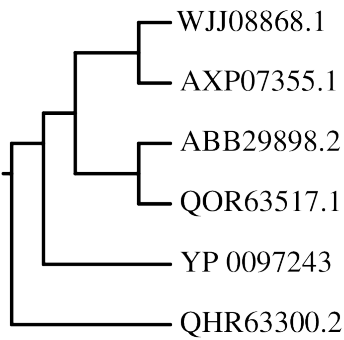


Figure 20: bootstrap prot pars gram

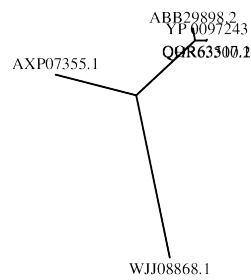


Figure 21: bootstrap prot ml tree



Figure 22: bootstrap prot ml gram

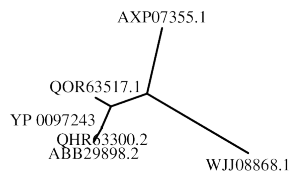


Figure 23: bootstrap prot dist tree



Figure 24: bootstrap prot dist gram

2.b