Moida Praneeth Jain 2022101093

Question 1



SARS-CoV2 is similar to MERS-COV rather than SARS-CoV1. This can be observed from the plots below.



It is easier to identify the similarity using protein sequences rather than DNA sequences. DNA only consists of 4 components, so the chance of accidentally being similar is much higher. On the other hand, there are 20 amino acids. Thus, only similar proteins will have similar protein sequences.

(iii)

Dottup Parameters

• Word Size (k-tuple) = 10

Dotmatcher Parameters

- Window Size = 15
- Threshold Value = 50

Plots

Dottup: fasta::emboss-dottup-120240405-110400-0199-84057...

Dotmatcher: fasta::emboss-dotmatcher-I20240405-113246-04...

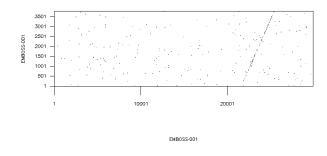


Figure 1: Dottup SARSCoV-SARSCoV2 DNA

Dottup: fasta::emboss-dottup-120240405-111050-0221-87833... Fri 5 Apr 2024 11:1058

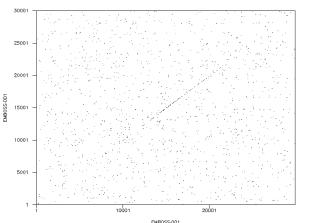


Figure 3: Dottup MERSCoV-SARSCoV2 DNA

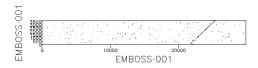


Figure 2: Dotmatcher SARSCoV-SARSCoV2 DNA

Dotmatcher: fasta::emboss-dotmatcher-|20240405-113455-02... (windowstre = 15, threshold = 50.00 05/04/24)

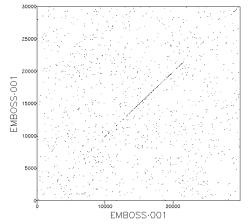


Figure 4: Dotmatcher MERSCoV-SARSCoV2 DNA

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Dottup: fasta::emboss-dottup-120240405-111618-0525-84245...

Dotmatcher: fasta::emboss:dotmatcher-|20240405-113124-00... (windowsize = 15, threshold = 50.00 05/04/24)

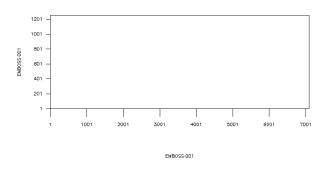


Figure 5: Dottup SARSCoV-SARSCoV2 Protein

Dottup: fasta::emboss-dottup-120240405-111324-0030-40482... Fri 5 Apr 2024 11:13:34

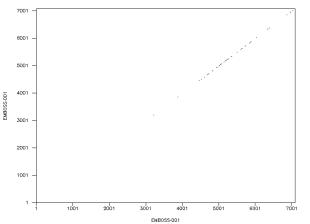


Figure 6: Dotmatcher SARSCoV-SARSCoV2 Protein

Dotmatcher: fasta::emboss-dotmatcher-|20240405-112752-08...

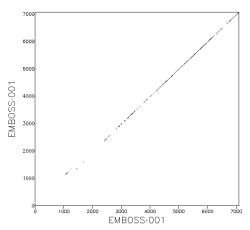


Figure 7: Dottup MERSCoV-SARSCoV2 Protein

Figure 8: Dotmatcher MERSCoV-SARSCoV2 Protein

Question 2

Question 3

Question 4

Question 5