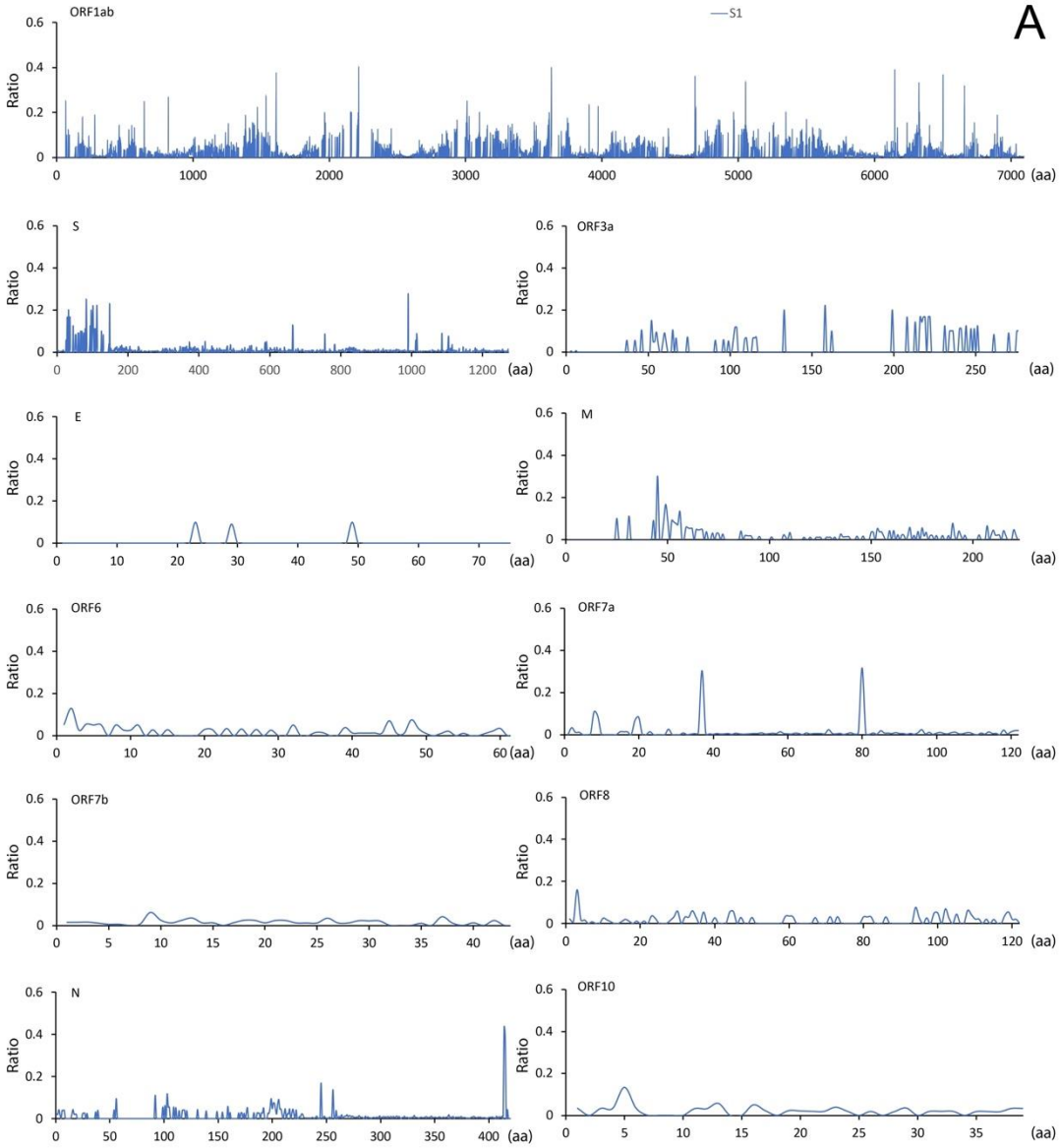
Supplementary information

Fig. S1-S5


A
ORF1ab
S1
Ratio
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0.4
0.2
0
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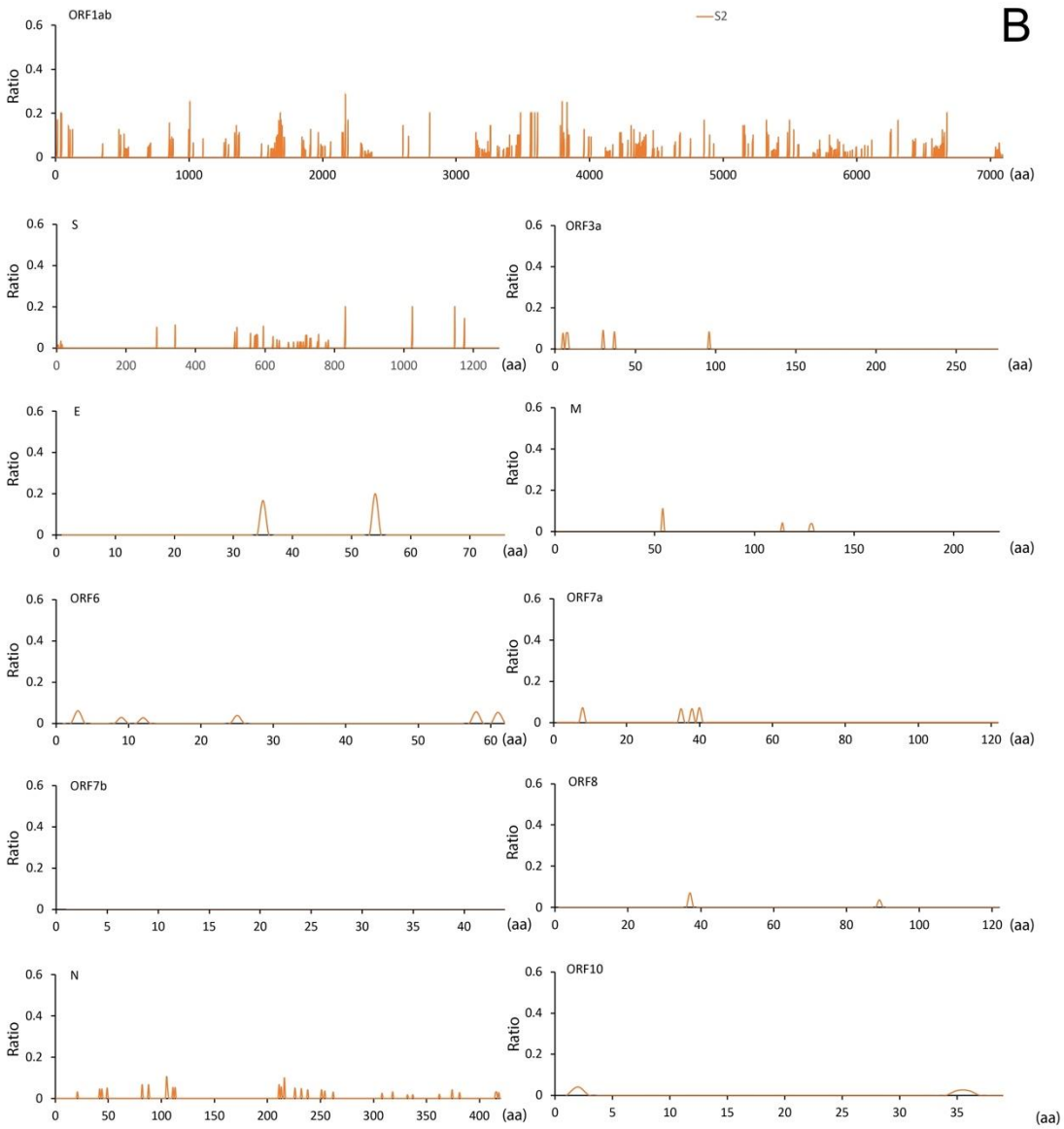
S
0 200 400 600 800 1000 1200 (aa)
ORF3a
0 50 100 150 200 250 (aa)
E
0 10 20 30 40 50 60 70 (aa)
M
0 50 100 150 200 (aa)
ORF6
0 10 20 30 40 50 60 (aa)
ORF7a
0 20 40 60 80 100 120 (aa)
ORF7b
0 5 10 15 20 25 30 35 40 (aa)
ORF8
0 20 40 60 80 100 120 (aa)
N
0 50 100 150 200 250 300 350 400 (aa)
ORF10
0 5 10 15 20 25 30 35 (aa)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Ratio
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0.2
0
0
1000
2000
3000
4000
5000
6000
7000
(aa)
S
0
200
400
600
800
1000
1200
(aa)
ORF3a
0
50
100
150
200
250
(aa)
E
0
10
20
30
40
50
60
70
(aa)
M
0
50
100
150
200
(aa)
ORF6
0
10
20
30
40
50
60
(aa)
ORF7a
0
20
40
60
80
100
120
(aa)
ORF7b
0
5
10
15
20
25
30
35
40
(aa)
ORF8
0
20
40
60
80
100
120
(aa)
N
0
50
100
150
200
250
300
350
400
(aa)
ORF10
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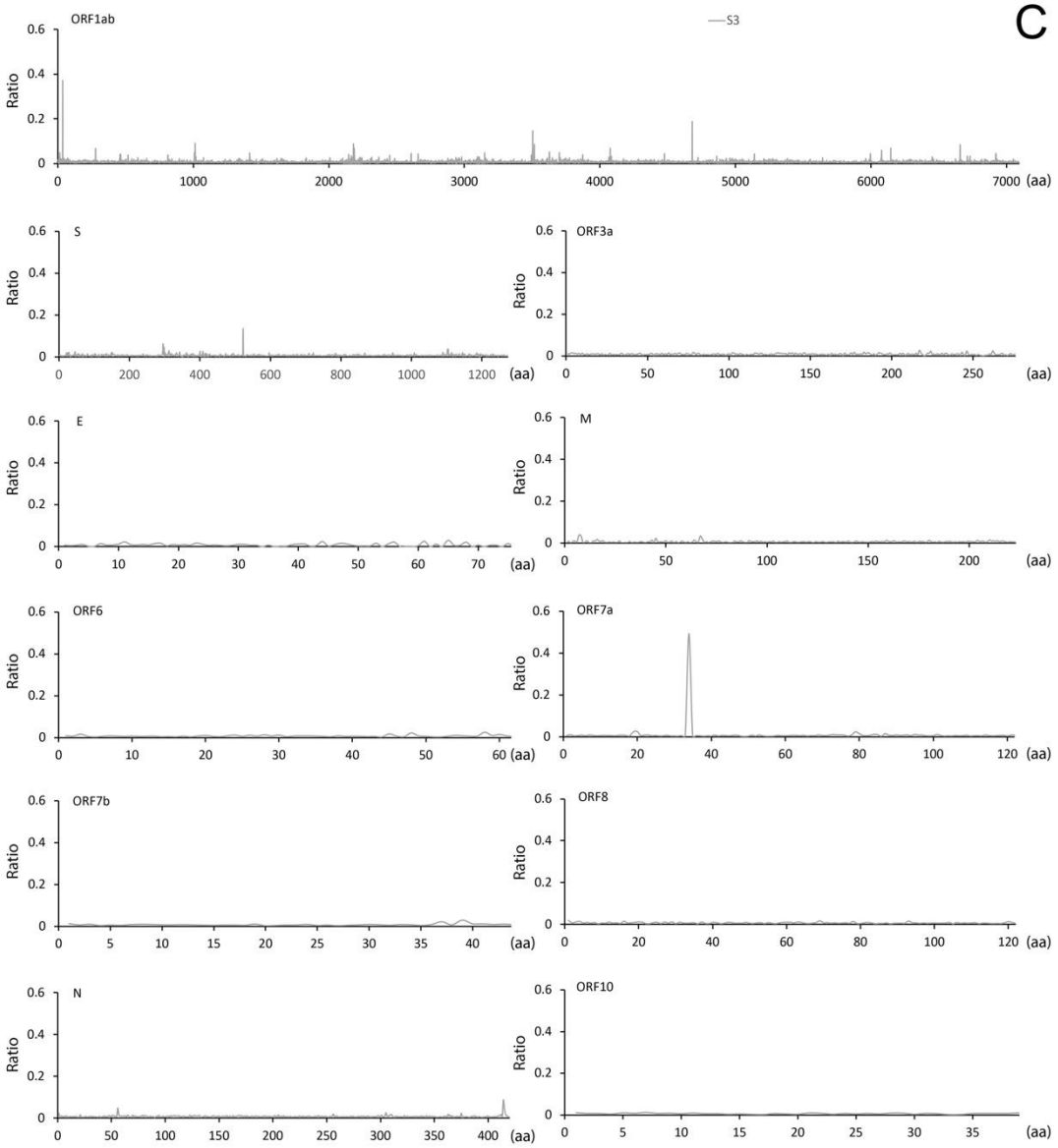
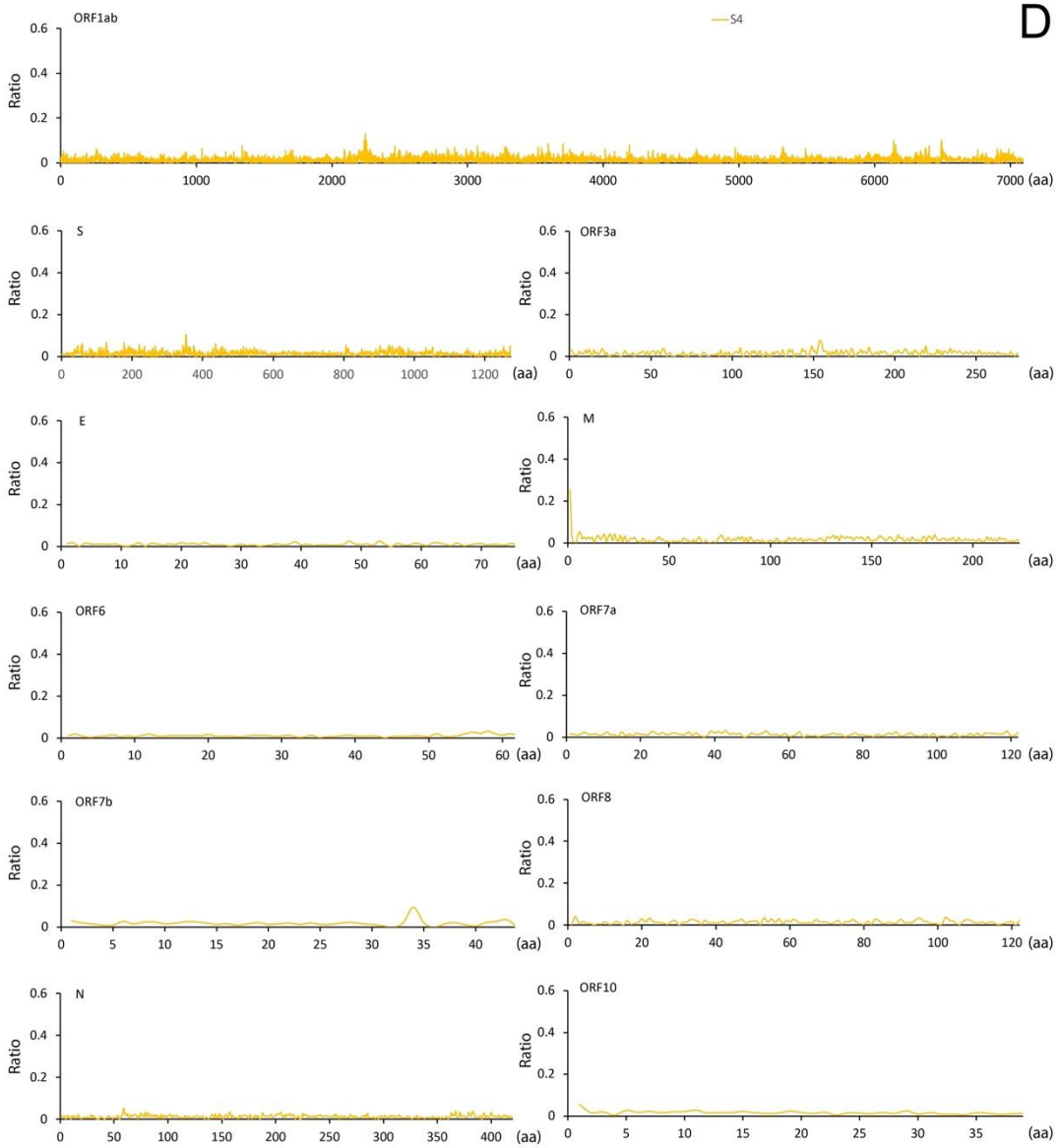
5
10
15
20
25
30
35
(aa)


C
ORF1ab
S3
Ratio
(aa)
S
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10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Ratio
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5000
6000
7000
(aa)
S
0
200
400
600
800
1000
1200
(aa)
ORF3a
0
50
100
150
200
250
(aa)
E
0
10
20
30
40
50
60
70
(aa)
M
0
50
100
150
200
(aa)
ORF6
0
10
20
30
40
50
60
(aa)
ORF7a
0
20
40
60
80
100
120
(aa)
ORF7b
0
5
10
15
20
25
30
35
40
(aa)
ORF8
0
20
40
60
80
100
120
(aa)
N
0
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100
150
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300
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400
(aa)
ORF10
0
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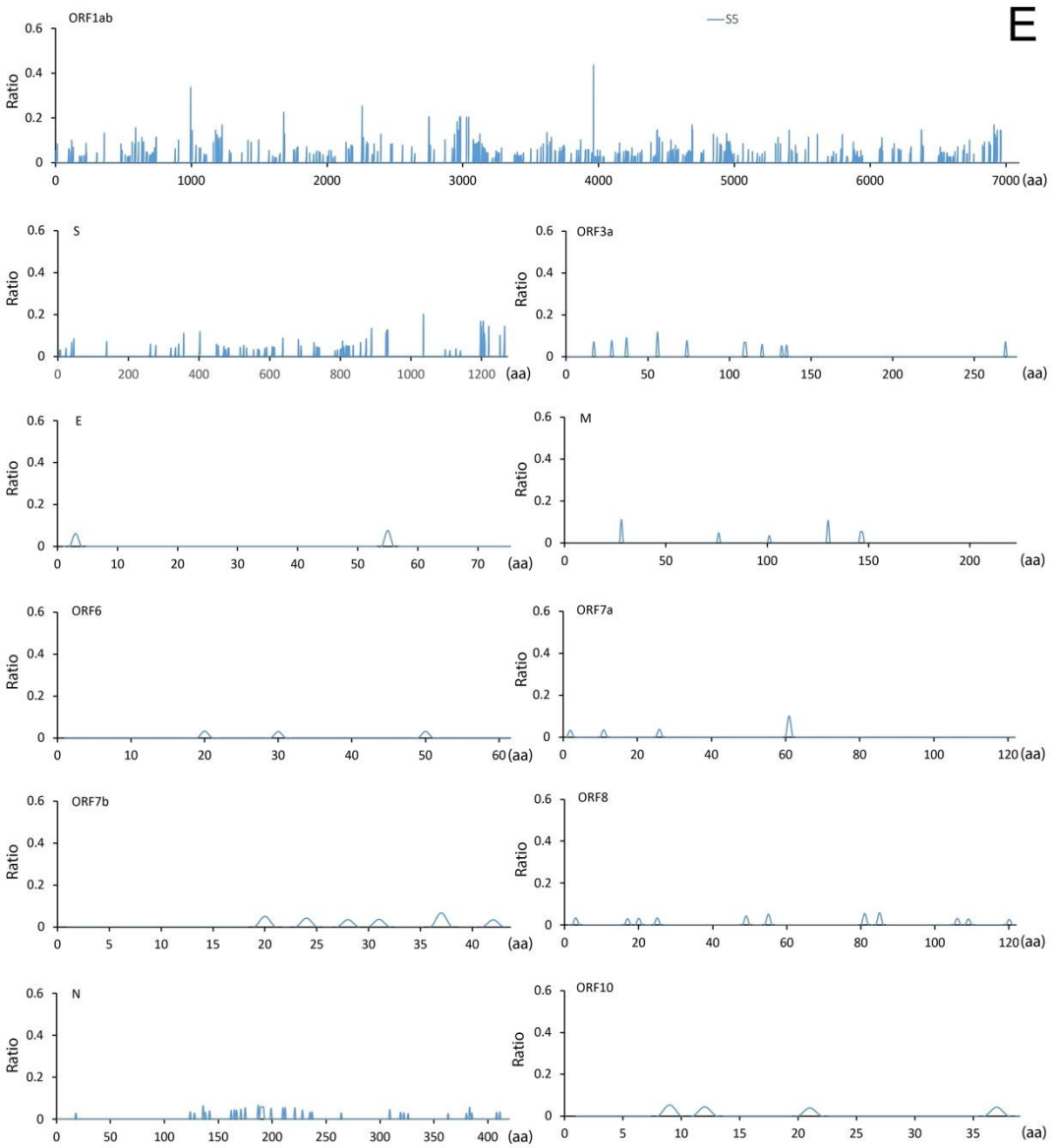
10
15
20
25
30
35
(aa)


E
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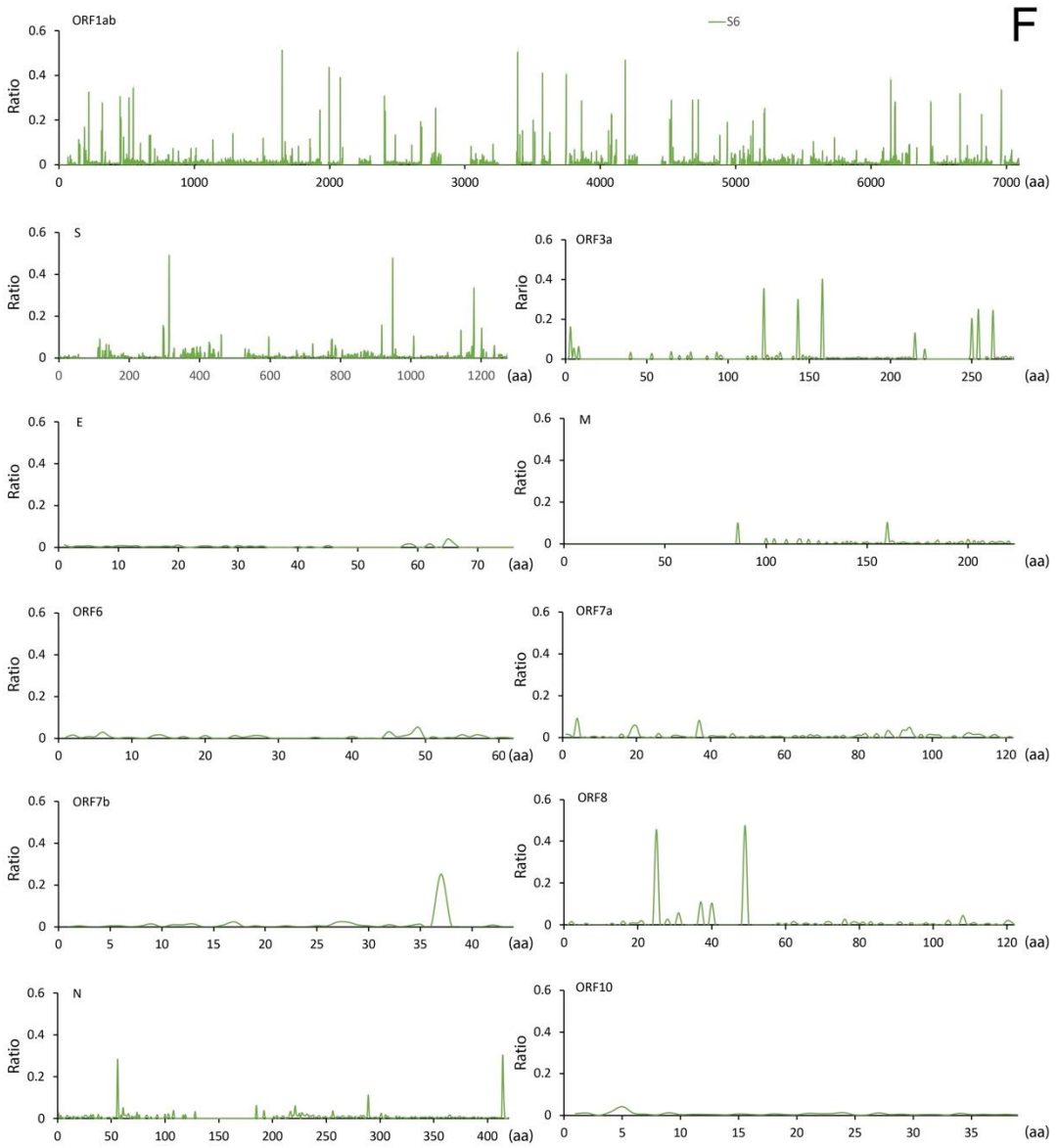
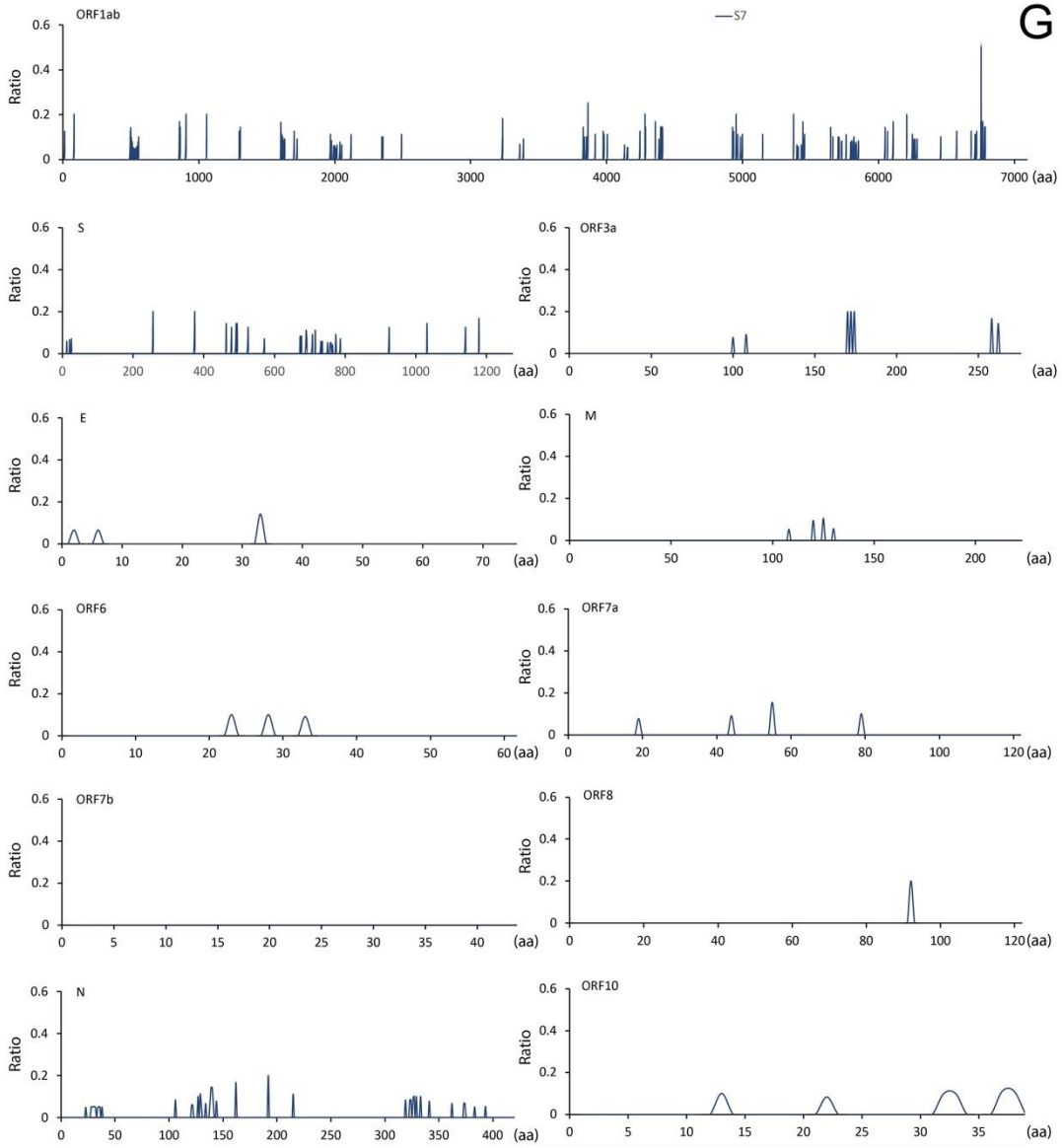
S5
S
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10
Ratio
(aa)


F
ORF1ab
S6
Ratio
(aa)
S
ORF3a
Rario
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10


G
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S7
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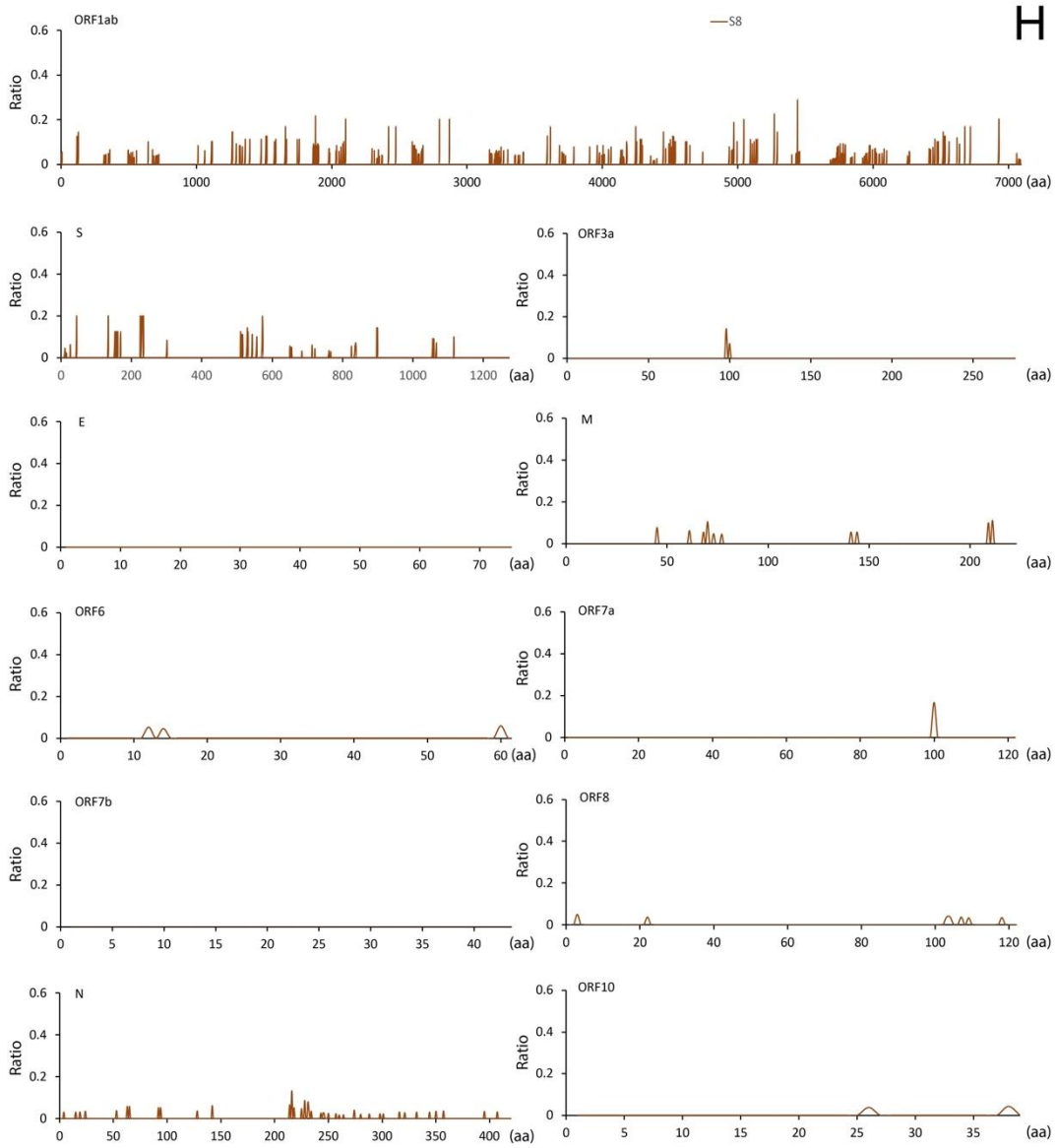
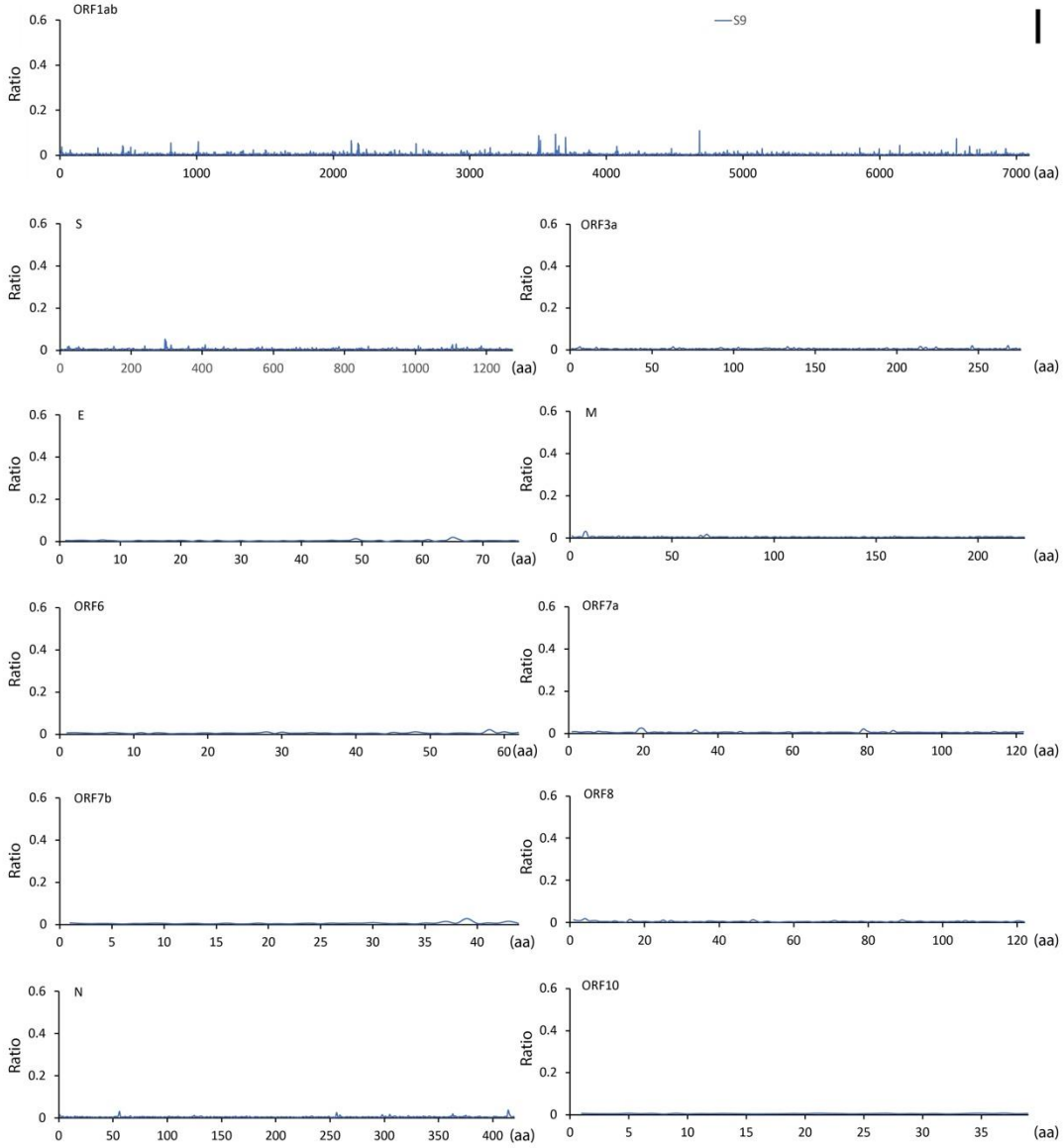
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10
Ratio
(aa)


H
ORF1ab
S8
Ratio
(aa)
S
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10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0.4
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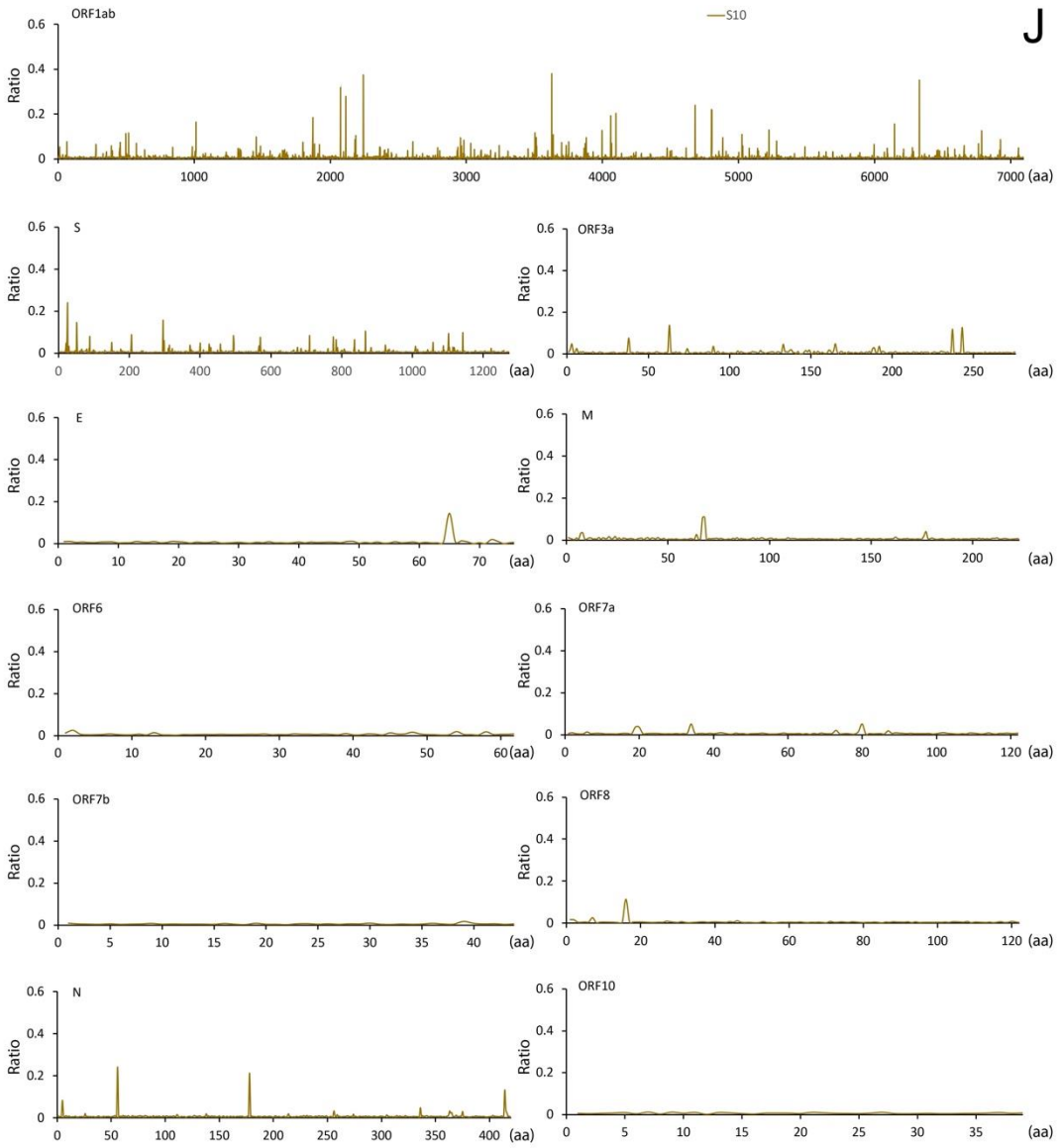
0 200 400 600 800 1000 1200 (aa)
ORF3a
0 50 100 150 200 250 (aa)
E
0 10 20 30 40 50 60 70 (aa)
M
0 50 100 150 200 (aa)
ORF6
0 10 20 30 40 50 60 (aa)
ORF7a
0 20 40 60 80 100 120 (aa)
ORF7b
0 5 10 15 20 25 30 35 40 (aa)
ORF8
0 20 40 60 80 100 120 (aa)
N
0 50 100 150 200 250 300 350 400 (aa)
ORF10
0 5 10 15 20 25 30 35 (aa)


J
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S10
Ratio
(aa)
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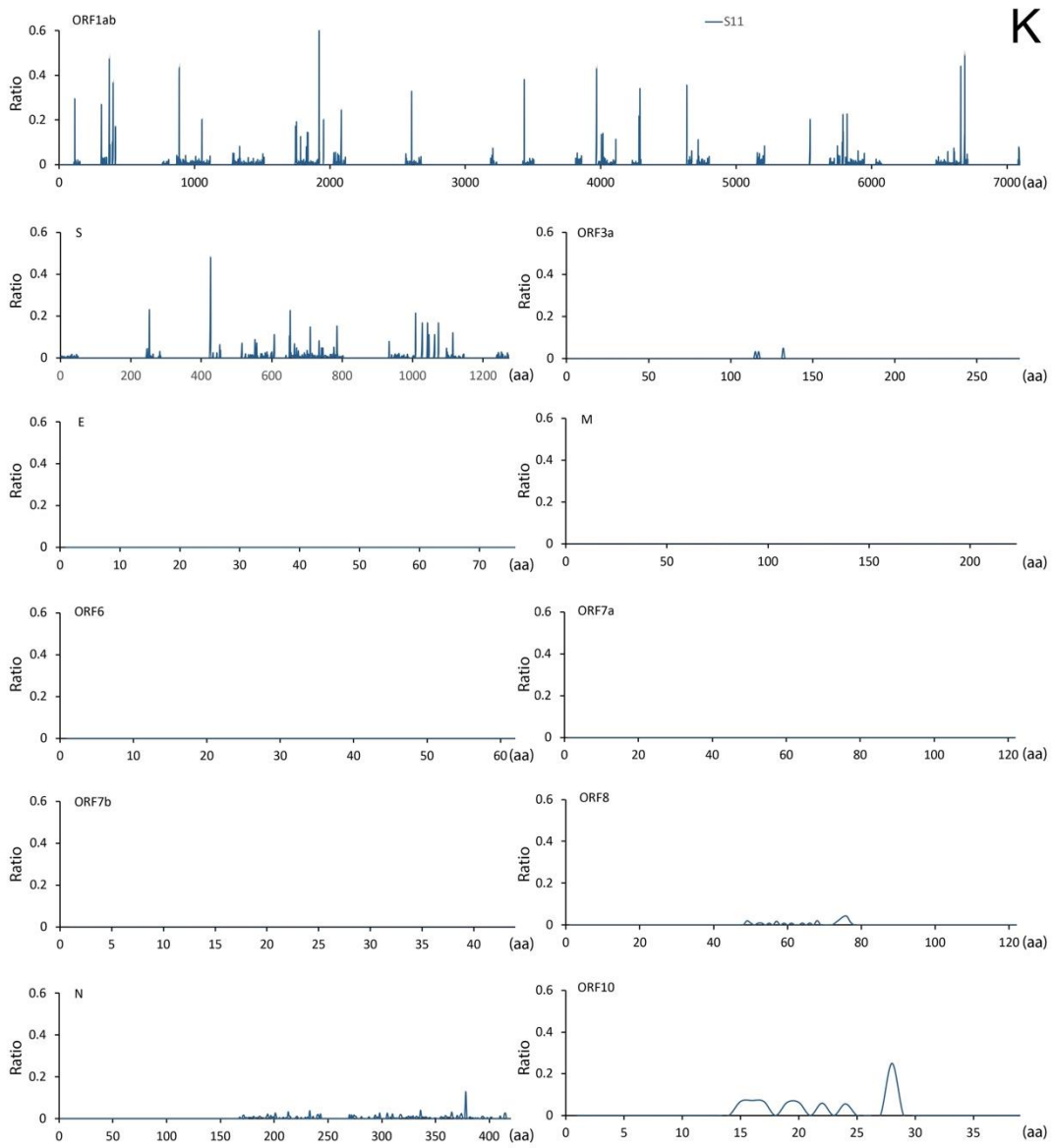
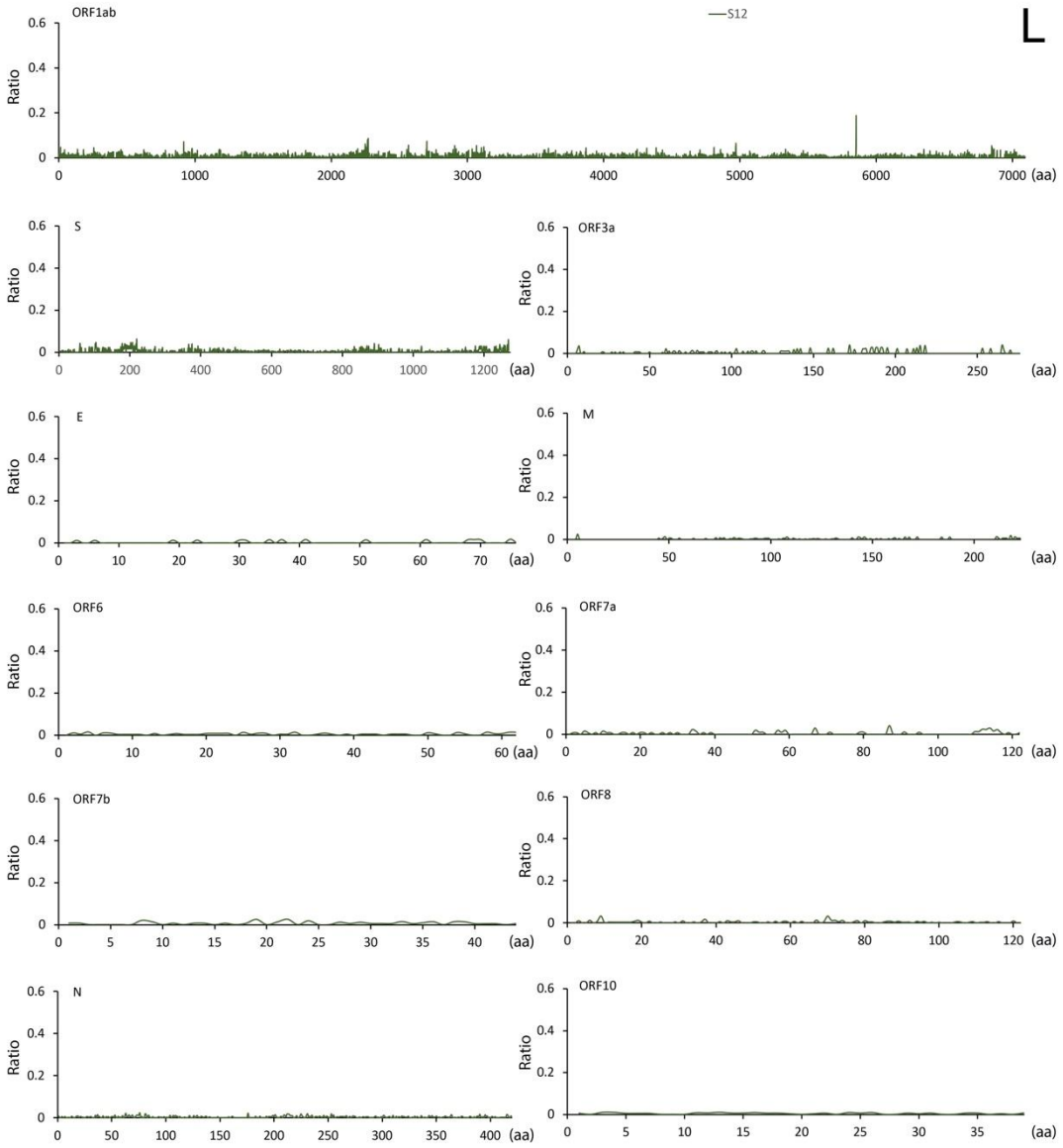
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10


K
ORF1ab
S11
S
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10
Ratio
(aa)


L
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S12
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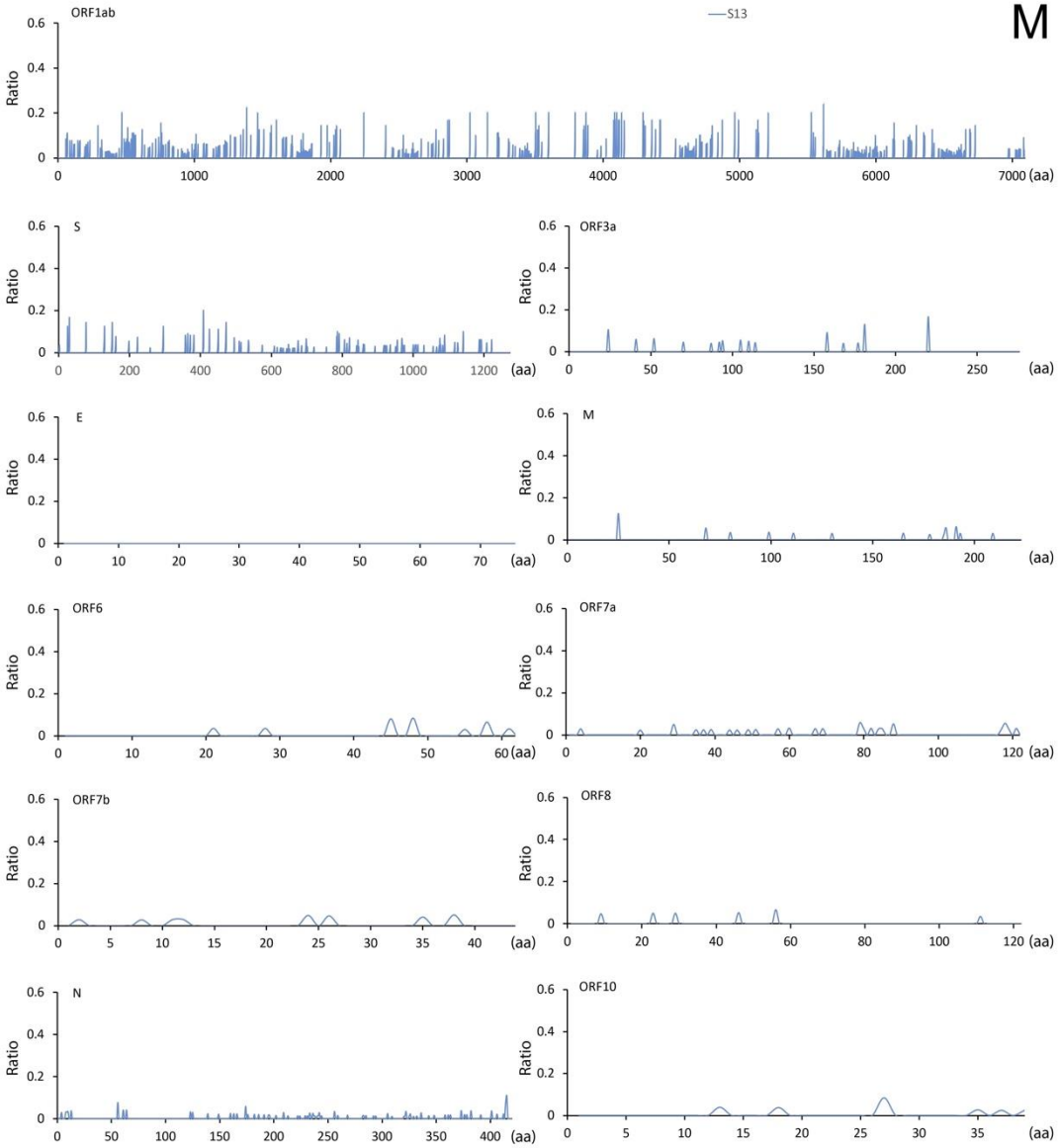
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10
Ratio
(aa)


M
ORF1ab
S13
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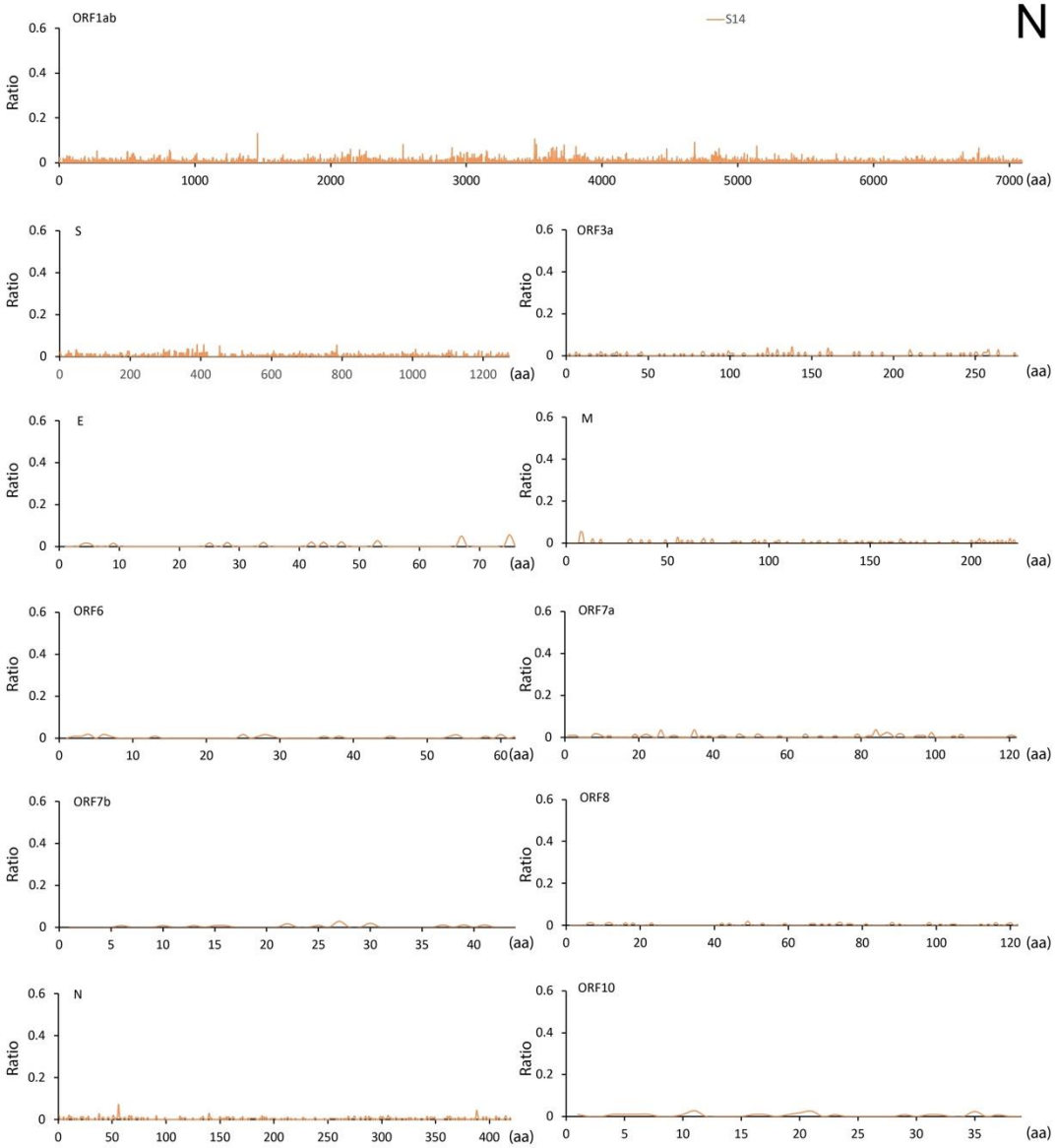
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10
Ratio
(aa)


N
ORF1ab
S14
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ORF3a
E
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ORF6
ORF7a
ORF7b
ORF8
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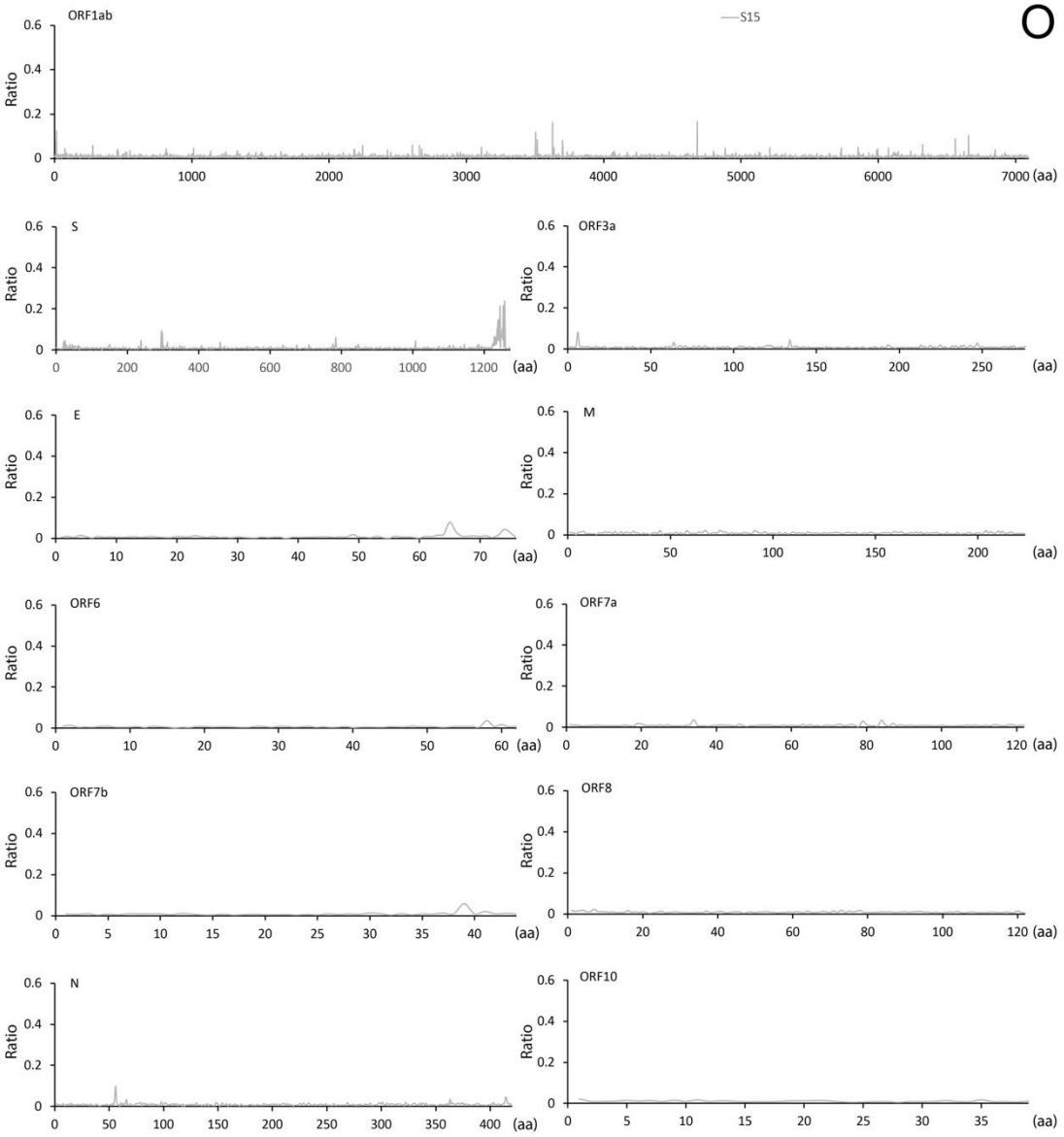
ORF10
Ratio
(aa)


O
ORF1ab
S15
Ratio
(aa)
S
ORF3a
E
M
ORF6
ORF7a
ORF7b
ORF8
N
ORF10

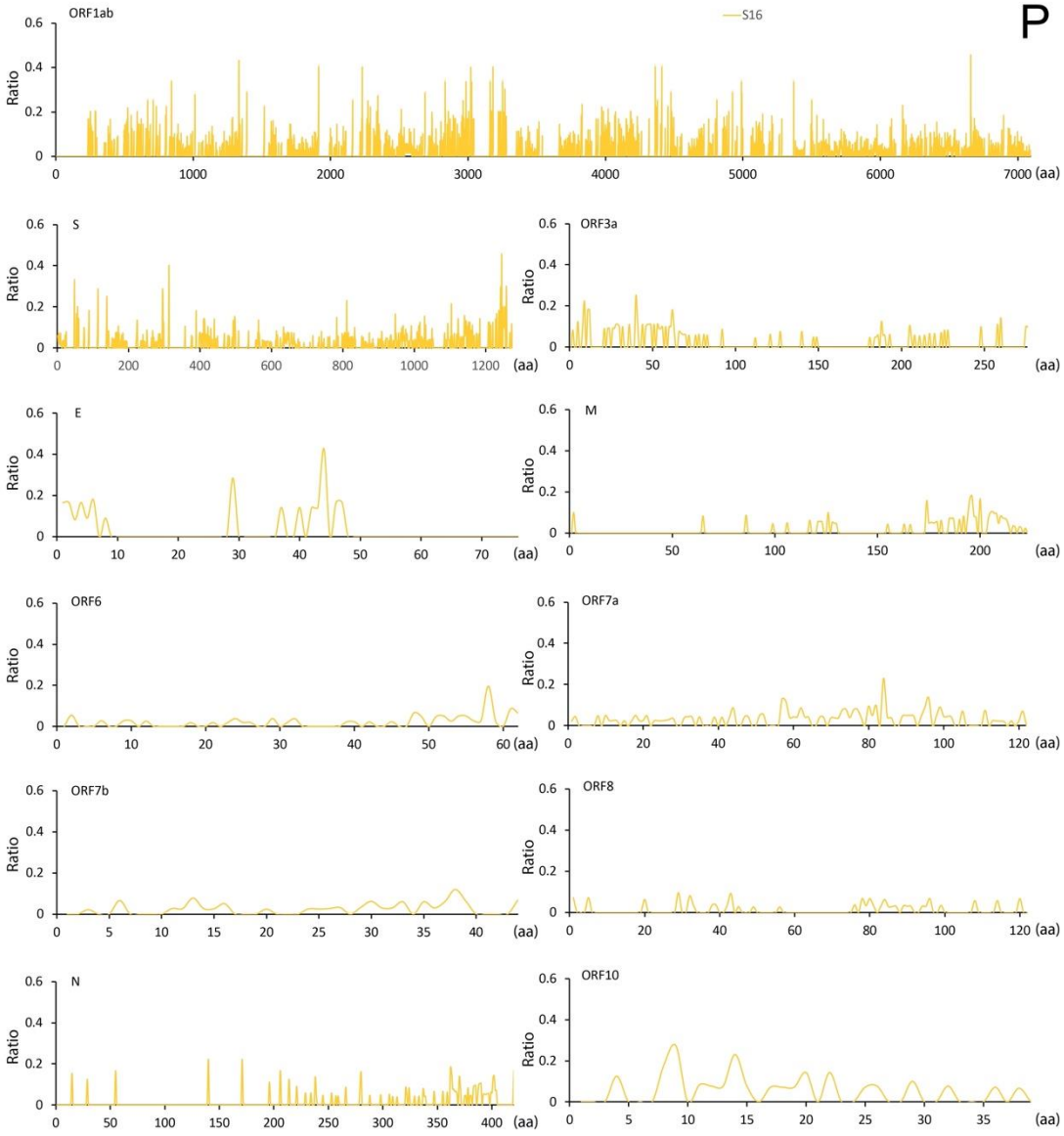


Fig. S1. Individual map of minor variant genomes across the SARS-CoV-2 genome for S1 (A), S2 (B), S3 (C), S4 (D), S5 (E), S6 (F), S7 (G), S8 (H), S9 (I), S10 (J), S11 (K), S12 (L), S13 (M), S14 (N), S15 (O), and S16 (P) in Fig. 1. The amino acid site with coverage >= 10 were showed.

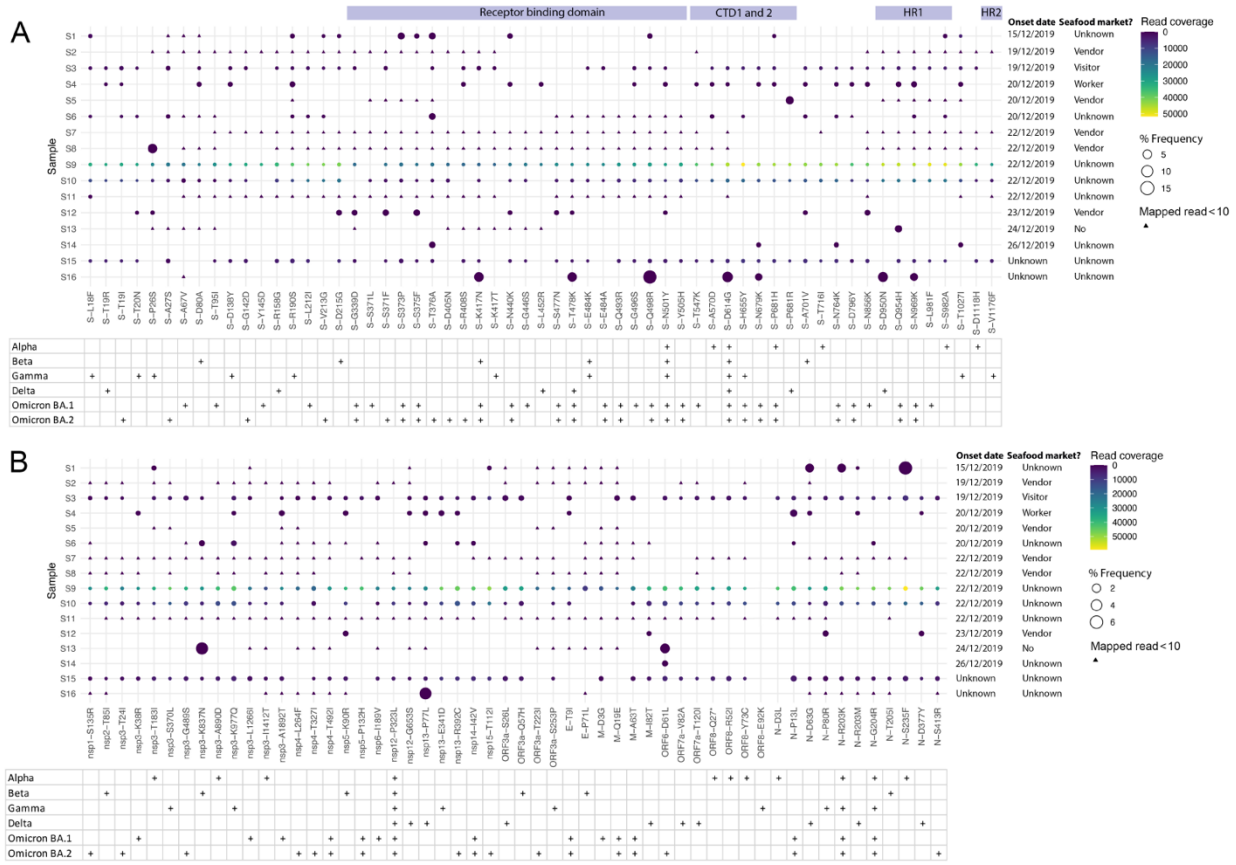


Fig. S2. Non-synonymous substitutions in the minor genomic variants of SARS-CoV-2 from each of the 16 down selected patients focusing on sites that define VoCs (https://covariants.org/variants) in the spike protein (A) and other regions of the genome (B). The amino acid site with coverage >= 10 were showed.

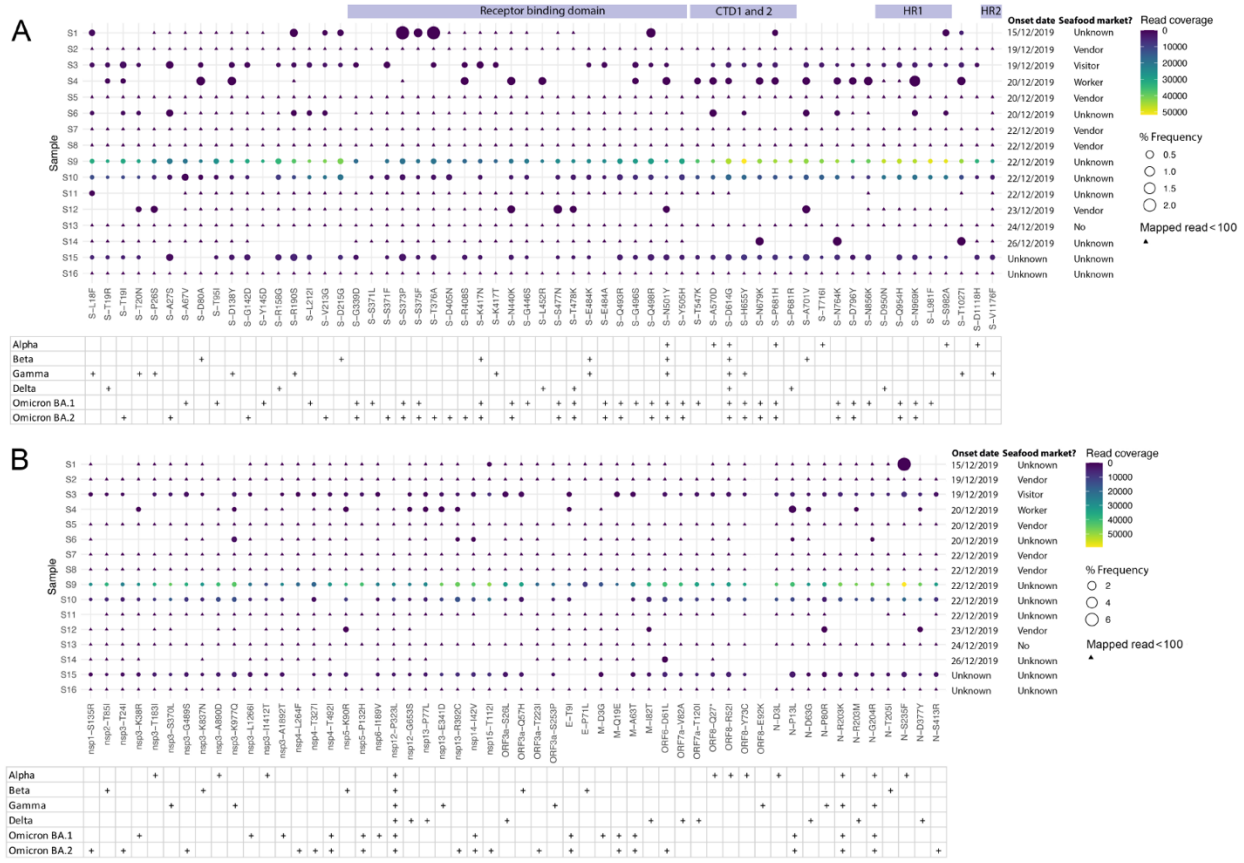


Fig. S3. Non-synonymous substitutions in the minor genomic variants of SARS-CoV-2 from each of the 16 down selected patients focusing on sites that define VoCs (https://covariants.org/variants) in the spike protein (A) and other regions of the genome (B). The amino acid site with coverage >= 100 were showed.

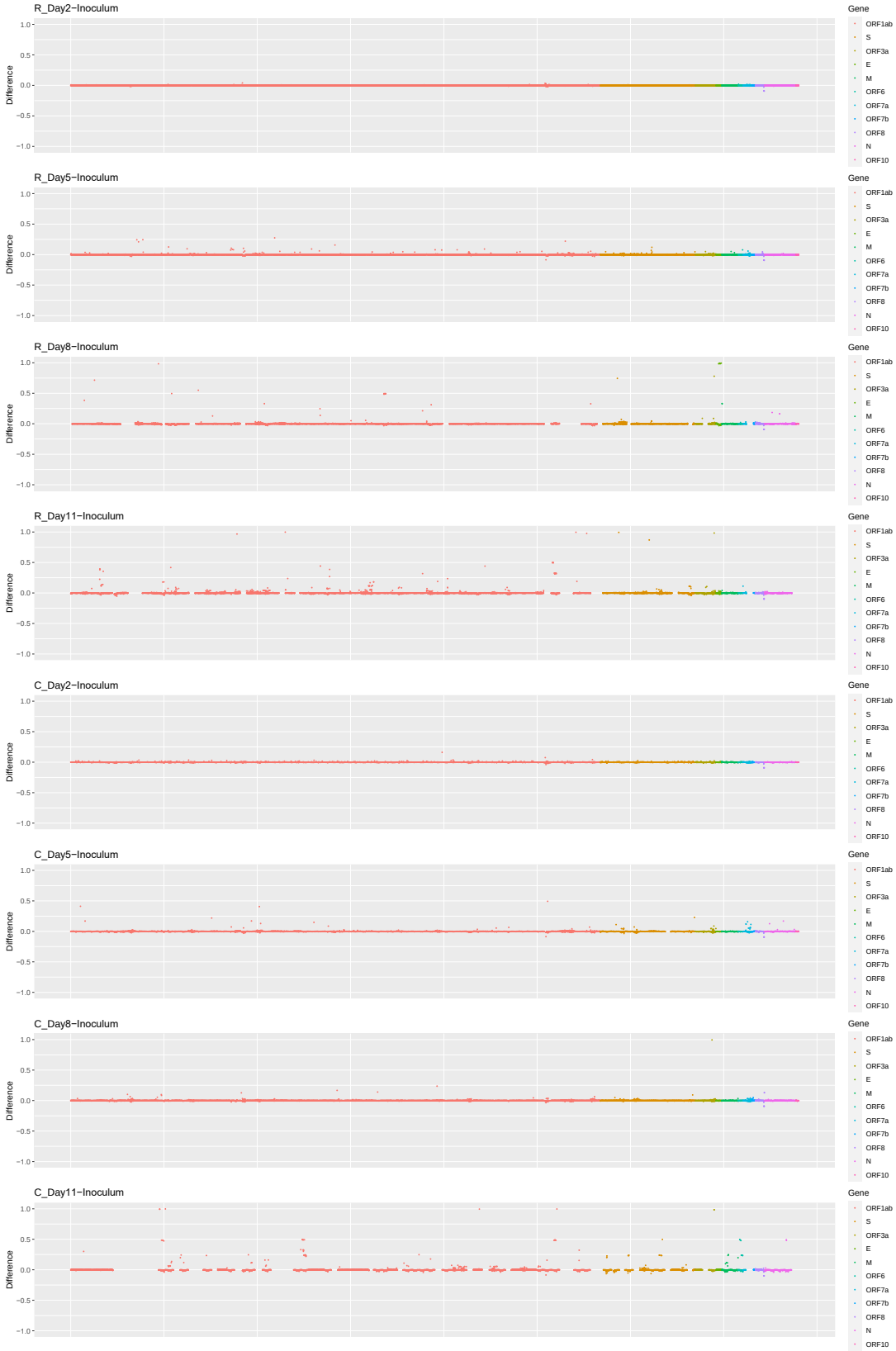


Fig. S4. The difference in non-synonymous mutation frequencies between the inoculum and the days post-infection was examined in two non-human primate models: rhesus (R) and cynomolgus (C) macaques. Each dot represents an amino acid site. Positive values indicate an increase in mutation frequencies compared to the inoculum during the days post-infection. The data were extracted from a published paper (DOI: 10.1186/s13059-023-02881-5).

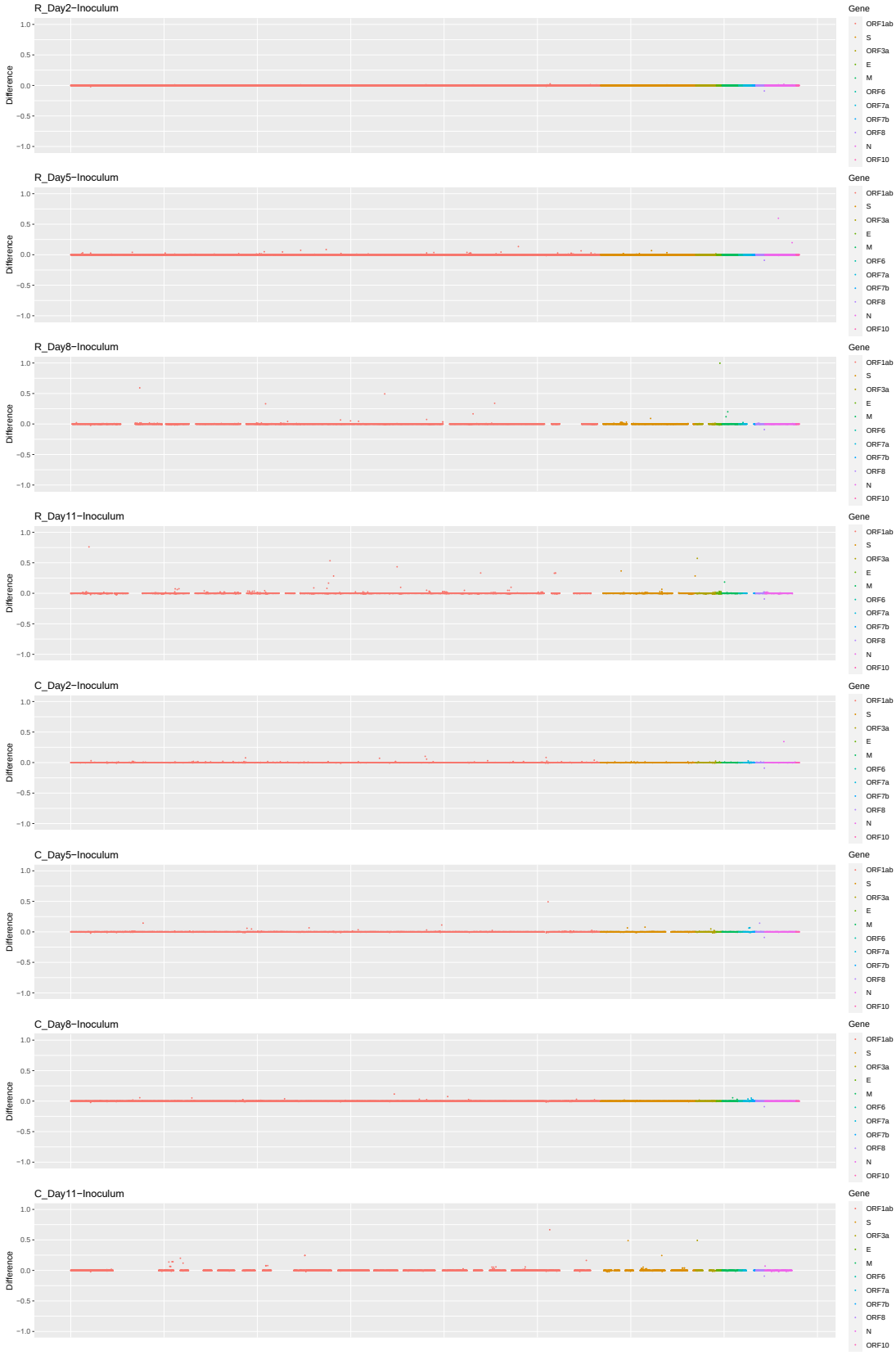


Fig. S5. The difference in synonymous mutation frequencies between the inoculum and the days post-infection was examined in two non-human primate models: rhesus (R) and cynomolgus (C) macaques. Each dot represents an amino acid site. Positive values indicate an increase in mutation frequencies compared to the inoculum during the days post-infection. The data were extracted from a published paper (DOI: 10.1186/s13059-023-02881-5).