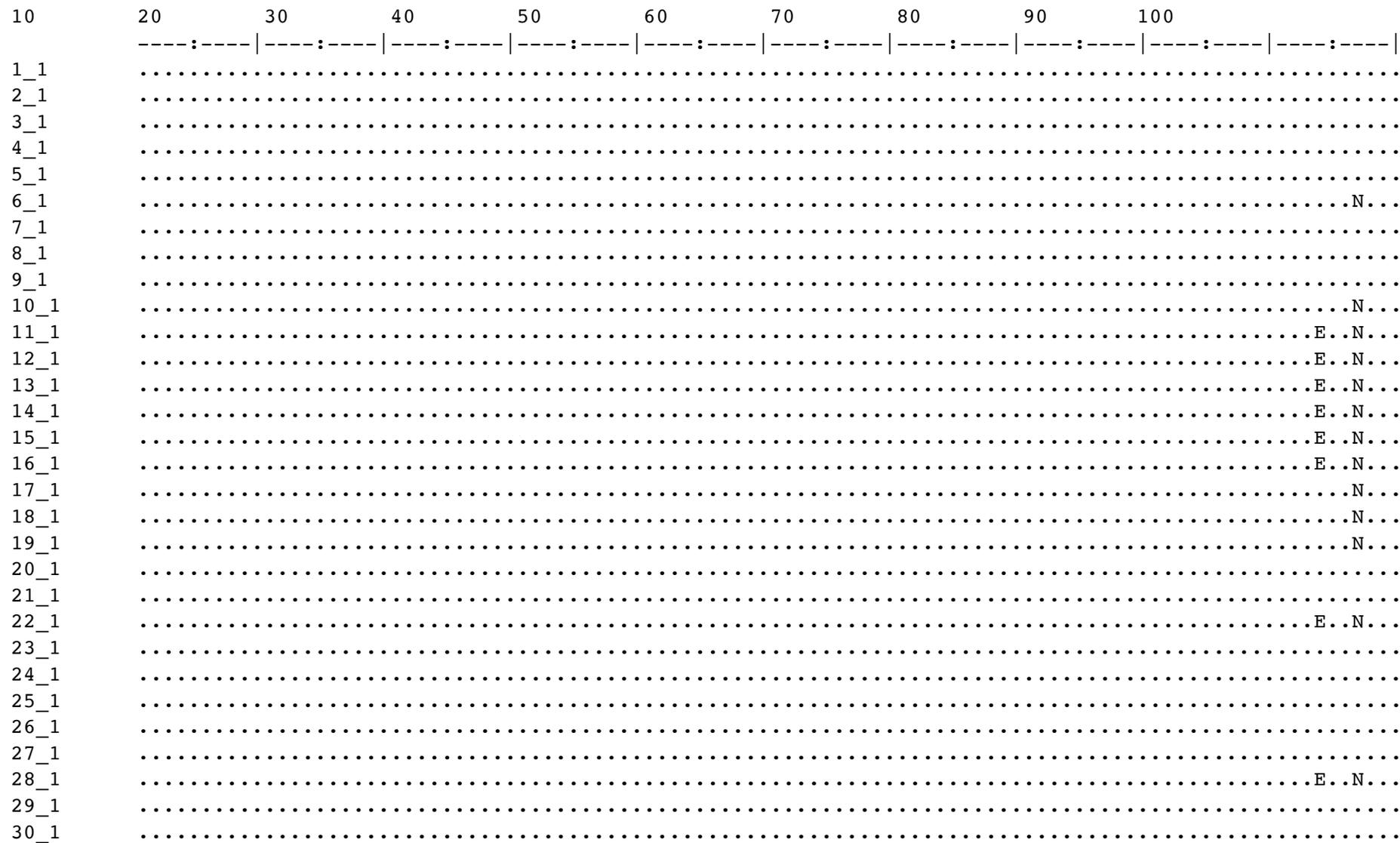


**Supplementary Figure 1:** Translate - aligned protein sequences BORD005031 (*cyaA*), Obtained from Locus Explorer - Bordetella MLST locus/sequence definitions (<https://pubmlst.org/bordetella/>)



```

31_1 .....E..N...
32_1 .....E..N...
33_1 .....N...
34_1 .....E..N...
35_1 .....N...
36_1 .....E..N...
37_1 .....
38_1 .....
39_1 .....
40_1 .....N...
41_1 .....E..N...
42_1 .....
43_1 .....
44_1 .....
45_1 .....
46_1 .....
47_1 .....
Consensus MQQSHQAGYANAADRESGIPAAVLDGIKAVAKEKNATLMFRLVNPSTSLIAEGVATKGLGVHAKSSDWGLQAGYIPVNPNSKLFGRAPVVIARADNDV
          110      120      130      140      150      160      170      180      190      200
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....
2_1 .....
3_1 .....
4_1 .....
5_1 .....
6_1 .....D.....
7_1 .....

```

[PubMLST Database home Contents](#)

8\_1 .....  
9\_1 .....  
10\_1 .....  
11\_1 .....  
12\_1 .....  
13\_1 .....  
14\_1 .....  
15\_1 .....  
16\_1 .....  
17\_1 .....  
18\_1 .....  
19\_1 .....  
20\_1 .....  
21\_1 .....  
22\_1 .....  
23\_1 .....  
24\_1 .....  
25\_1 .....  
26\_1 .....  
27\_1 .....  
28\_1 .....  
29\_1 .....  
30\_1 .....  
31\_1 .....  
32\_1 .....  
33\_1 .....  
34\_1 .....  
35\_1 .....D.....  
36\_1 .....  
37\_1 .....  
38\_1 .....  
39\_1 .....  
40\_1 .....D.....  
41\_1 .....

```

42_1 .....
43_1 .....
44_1 .....
45_1 .....
46_1 .....
47_1 .....
Consensus NSSLAHGHTAVDLTLSKERLDYLRQAGLVTGMADGVVASNHAGYEQFEFRVKETSDGRYAVQYRRKGGDDFEAVKVVIGNAAGIPLTADIDMFAIMPHLSN
          210      220      230      240      250      260      270      280      290      300
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....
2_1 .....
3_1 .....
4_1 .....
5_1 .....
6_1 .....E.....
7_1 .....
8_1 .....
9_1 .....
10_1 .....P.....Q.....
11_1 .....E.....G.....
12_1 .....E.....G.....
13_1 .....E.....
14_1 .....E.....G.....
15_1 .....E.....
16_1 .....E.....G.....
17_1 .....P.....
18_1 .....P.....Q.....
19_1 .....P.....Q.....
20_1 .....
21_1 .....
22_1 .....E.....G.....
23_1 .....
24_1 .....
25_1 .....

```

```

26_1 .....
27_1 .....
28_1 .....E.....G.....
29_1 .....
30_1 .....
31_1 .....E.....G.....
32_1 .....E.....
33_1 .....E.....

```

[https://pubmlst.org/bigbdb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigbdb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 2 sur 13

Locus Explorer - Bordetella MLST locus/sequence definitions 05/07/2017 12:36

```

34_1 .....E.....
35_1 .....E.....
36_1 .....E.....G.....
37_1 .....M.....
38_1 .....
39_1 .....
40_1 .....E.....
41_1 .....E.....
42_1 .....
43_1 .....
44_1 .....
45_1 .....V.....
46_1 .....
47_1 .....

```

Consensus FRDSARSSVTS GDSVTDYLARTRRRAASEATGGLDRERIDLLWKIARAGARSAVGTEARRQFRYDGMNIGVITDFELEV RNALNRRRAHAVGAQDVVQHGT  
                  310          320          330          340          350          360          370          380          390          400

```

-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....F.....
2_1 .....G.....
3_1 .....G.....
4_1 .....F.....
5_1 .....G.....

```

6\_1 .....T.....  
7\_1 .....F.....  
8\_1 .....F.....  
9\_1 .....F.....  
10\_1 .....T.....  
11\_1 .....T.....S.....  
12\_1 .....T.....S.....  
13\_1 .....T.....I.....  
14\_1 .....T.....S.....  
15\_1 .....T.....  
16\_1 .....T.....S.....  
17\_1 .....G.....  
18\_1 .....T.....  
19\_1 .....T.....  
20\_1 .....G.....  
21\_1 .....G.....  
22\_1 .....T.....S.....  
23\_1 .....  
24\_1 .....  
25\_1 .....G.....  
26\_1 .....  
27\_1 .....G.....  
28\_1 .....T.....S.....  
29\_1 .....  
30\_1 .....G.....  
31\_1 .....T.....S.....  
32\_1 .....T.....  
33\_1 .....T.....  
34\_1 .....T.....  
35\_1 .....T.....  
36\_1 .....T.....S.....  
37\_1 .....G.....  
38\_1 .....  
39\_1 .....G.....

```

40_1      .....T.....
41_1      .....I.....
42_1      .....F.....
43_1      .....F.....
44_1      .....F.....
45_1      .....
46_1      .....G.....
47_1      .....F.....
Consensus EQNNPFPEADEKIFVVSATGESQMLTRGQLKEYIGQQRGEGYVFFYENRAYGVAGKSLFDDGLGAAPGVPSGRSKSSPDVLETVPASPGLRRPSLGAVERQ
          410      420      430      440      450      460      470      480      490      500
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1      .....
2_1      .....
3_1      .....
4_1      .....
5_1      .....
6_1      .....V.....P.....L.....S.K.V.....
7_1      .....
8_1      .....

```

[https://pubmlst.org/bigsdbs?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigsdbs?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 3 sur 13

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```

9_1      .....
10_1     .....K...T.....
11_1     .....L.....M.D.....V.....P.....L.....K.V.....G.....
12_1     .....L.....D.....V.....V.....P.....L.....K.V.....G.....
13_1     .....V.....P.....L.....S.K.V.....
14_1     .....L.....D.....V.....V.....P.....L.....K.V.A.....G.....
15_1     .....G.....V.....P.....L.....S.K.V.....A.....
16_1     .....L.....M.D.....V.....P.....L.....K.V.....G.....
17_1     .....
18_1     .....K...T.....
19_1     .....K...T.....

```



4_1	.....
5_1	.....V.....
6_1	.....
7_1	.....
8_1	.....
9_1	.....
10_1	.....L.....
11_1	.....
12_1	.....
13_1	.....
14_1	.....
15_1	.....
16_1	.....
17_1	.....
18_1	.....L.....
19_1	.....L.....
20_1	.....
21_1	.....
22_1	.....
23_1	.....
24_1	.....L.....
25_1	.....
26_1	.....
27_1	.....
28_1	.....
29_1	.....
30_1	.....
31_1	.....
32_1	.....
33_1	.....
34_1	.....

[https://pubmlst.org/bigssdb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigssdb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 4 sur 13

35\_1 .....  
36\_1 .....  
37\_1 .....S.....  
38\_1 .....  
39\_1 .....V.....  
40\_1 .....  
41\_1 .....  
42\_1 .....  
43\_1 .....  
44\_1 .....  
45\_1 .....  
46\_1 .....  
47\_1 .....

Consensus SAAVFGLGEASSAVAETVSGFFRGSSRWAGGFVAGGAMALGGGIAAAVGAGMSLTDDAPAGQKAAAGAEIALQLTGGTVELASSIALALAAARGVTSGL

610 620 630 640 650 660 670 680 690 700

----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|

1\_1 .....  
2\_1 .....  
3\_1 .....  
4\_1 .....  
5\_1 .....  
6\_1 .....  
7\_1 .....  
8\_1 .....  
9\_1 .....  
10\_1 .....S.....  
11\_1 .....  
12\_1 .....  
13\_1 .....  
14\_1 .....  
15\_1 .....  
16\_1 .....A.....  
17\_1 .....  
18\_1 .....S.....



3\_1 .....A  
4\_1 .....  
5\_1 .....A  
6\_1 .....  
7\_1 .....  
8\_1 .....  
9\_1 .....

[https://pubmlst.org/bigbdb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigbdb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 5 sur 13

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10\_1 .....A  
11\_1 .....  
12\_1 .....  
13\_1 .....  
14\_1 .....  
15\_1 .....  
16\_1 .....  
17\_1 .....A  
18\_1 .....S.....  
19\_1 .....S.....  
20\_1 .....A  
21\_1 .....A  
22\_1 .....  
23\_1 .....A  
24\_1 .....S.....  
25\_1 .....A  
26\_1 .....A  
27\_1 .....A  
28\_1 .....  
29\_1 .....A  
30\_1 .....A  
31\_1 .....  
32\_1 .....

33\_1 .....  
 34\_1 .....  
 35\_1 .....  
 36\_1 .....  
 37\_1 .....A  
 38\_1 .....A  
 39\_1 .....A  
 40\_1 .....  
 41\_1 .....  
 42\_1 .....  
 43\_1 .....  
 44\_1 .....  
 45\_1 .....A  
 46\_1 .....A  
 47\_1 .....

Consensus LLTGALNGILRGVQQPIIEKLANDYARKIDELGGPQAYFEKNLQARHEQLANS DGLRKMLADLQAGWNASSVIGVQTTEISKSALELAAITGNADNLKSV

810            820            830            840            850            860            870            880            890            900

----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|

1\_1 .....  
 2\_1 .....I.....  
 3\_1 .....I.....  
 4\_1 .....  
 5\_1 .....I.....  
 6\_1 .....  
 7\_1 .....  
 8\_1 .....  
 9\_1 .....M.....  
 10\_1 .....I.....  
 11\_1 .....  
 12\_1 .....  
 13\_1 .....  
 14\_1 .....  
 15\_1 .....  
 16\_1 .....

17\_1 .....I.....  
18\_1 .....I.....  
19\_1 .....I.....  
20\_1 .....I.....  
21\_1 .....I.....  
22\_1 .....  
23\_1 .....I.....  
24\_1 .....I.....  
25\_1 .....I.....  
26\_1 .....I.....  
27\_1 .....I.....  
28\_1 .....  
29\_1 .....I.....  
30\_1 .....I.....  
31\_1 .....  
32\_1 .....  
33\_1 .....  
34\_1 .....  
35\_1 .....

[https://pubmlst.org/bigsdbs/db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigsdbs/db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 6 sur 13

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36\_1 .....  
37\_1 .....I.....  
38\_1 .....I.....  
39\_1 .....I.....  
40\_1 .....  
41\_1 .....  
42\_1 .....  
43\_1 .....  
44\_1 .....  
45\_1 .....I.....  
46\_1 .....I.....

```

47_1 .....
Consensus DVFVDRFVQGERVAGQPVVLDVAAGGIDIASRKGERPALTFITPLAAPGEEQRRRTKTGKSEFTTFVEIVGKQDRWRIRDGAADTTIDLAKVVSQQLVDAN
          910      920      930      940      950      960      970      980      990     1000
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....
2_1 .....E.....K.....
3_1 .....E.....K.....
4_1 .....
5_1 .....E.....K.....
6_1 .....
7_1 .....
8_1 .....
9_1 .....
10_1 .....I.....E.....K.....
11_1 .....
12_1 .....
13_1 .....S.....
14_1 .....
15_1 .....S.....
16_1 .....
17_1 .....E.....K.....
18_1 .....I.....E.....K.....
19_1 .....I.....E.....K.....
20_1 .....E.....K.....
21_1 .....E.....K.....
22_1 .....S.....
23_1 .....E.....K.....
24_1 .....I.....E.....K.....
25_1 .....E.....K.....
26_1 .....E.....K.....
27_1 .....E.....K.....
28_1 .....
29_1 .....E.....K.....
30_1 .....E.....K.....

```

```

31_1 .....
32_1 .....S.....
33_1 .....S.....
34_1 .....
35_1 .....
36_1 .....
37_1 .....K.....
38_1 .....E.....K.....
39_1 .....E.....K.....
40_1 .....
41_1 .....S.....
42_1 .....
43_1 .....
44_1 .....
45_1 .....E.....K.....
46_1 .....E.....K.....
47_1 .....

```

Consensus GVLKHSIKLDVIGGDGDDVVLANASRIHYDGGAGTNTVSYAALGRQDSITVSADGERFNVRKQLNNANVYREGVATQTTAYGKRTENVQYRHVELARVGQ

1010 1020 1030 1040 1050 1060 1070 1080 1090 1100

----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|

```

1_1 V.....Q.....
2_1 .....A.....H..V.....
3_1 .....A.....H..V.....
4_1 .....Q.....
5_1 .....A.....H..V.....
6_1 .....Q.....
7_1 .....Q.....
8_1 .....Q.....
9_1 .....Q.....
10_1 .....A.....A..H.....

```

11\_1 .....Q.....  
12\_1 .....Q.....  
13\_1 .....Q.....  
14\_1 .....Q.....  
15\_1 .....Q.....  
16\_1 .....Q.....  
17\_1 .....A.....H..V.....  
18\_1 .....A.....A...H.....  
19\_1 .....A.....A...H.....  
20\_1 .....A.....H..V.....  
21\_1 .....A.....H..V.....  
22\_1 .....Q.....  
23\_1 .....A.....H..V.....  
24\_1 .....A.....A...H.....  
25\_1 .....A.....H..V.....  
26\_1 .....A.....H..V.....  
27\_1 .....A.....H..V.....  
28\_1 .....Q.....  
29\_1 .....A.....H..V.....  
30\_1 .....A.....H..V.....  
31\_1 .....Q.....L.....  
32\_1 .....Q.....  
33\_1 .....Q.....  
34\_1 .....Q.....  
35\_1 .....Q.....  
36\_1 .....Q.....  
37\_1 .....A.....H..V.....N.....  
38\_1 .....A.....H..V.....  
39\_1 .....A.....H..V.....  
40\_1 .....Q.....  
41\_1 .....Q.....  
42\_1 .....Q.....  
43\_1 .....G.....Q.....  
44\_1 .....Q.....

```

45_1      .....A.....H..V.....
46_1      .....A.....H..V.....
47_1      .....Q.....
Consensus LVEVDTLEHVQHIIGGAGNDSITGNAHDNFLAGGSGDDRLDGGAGNDTLVGGEGxNTVIGGAGDDVFLQDLGVWSNQLDGGAGVDTVKYNVHQPSEERLE
          1110      1120      1130      1140      1150      1160      1170      1180      1190      1200
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1      .....Q.....
2_1      .....S..S.....D...H.....
3_1      .....S..S.....D...H.....
4_1      .....Q.....
5_1      .....TS..S.....D...H.....
6_1      .....
7_1      .....Q.....
8_1      .....Q.....
9_1      .....Q.....
10_1     .....N.....L.....S..S.....D.....
11_1     .....V.....
12_1     .....V.....
13_1     .....Q.....
14_1     .....V.....
15_1     .....Q.....
16_1     .....V.....W.....
17_1     ..E.....S..S.....D...H.....
18_1     .....N.....L.....S..S.....D.....
19_1     .....L.....S..S.....D...H.....
20_1     .....S..S.....D...H.....D.....
21_1     ..E.....S..S.....D...H.....
22_1     .....V.....
23_1     ..E.....S..S.....D...H.....
24_1     .....N.....L.....S..S.....D.....
25_1     .....S..S.....D...H.....
26_1     ..E.....S..S.....D...H.....
27_1     ..E.....S..S.....D...H.....
28_1     .....V.....

```



9\_1 .....  
10\_1 .....A.K.....S.....  
11\_1 .....  
12\_1 .....S.....D.....  
13\_1 .....  
14\_1 .....S.....D.....  
15\_1 .....  
16\_1 .....S.....  
17\_1 .....A.K.....S.....  
18\_1 .....A.K.....S.....  
19\_1 .....A.K.....S.....  
20\_1 .....Q.....T.L.A.E.....EG.....ARR.M.....S.S.....  
21\_1 .....A.K.....S.....  
22\_1 .....  
23\_1 .....A.K.....S.....  
24\_1 .....A.K.....S.....  
25\_1 .....A.K.....EG.....ARR.M.....S.S.....  
26\_1 .....A.K.....S.....  
27\_1 .....A.K.....S.....  
28\_1 .....  
29\_1 .....A.K.....S.....  
30\_1 .....A.K.....S.....  
31\_1 .....  
32\_1 .....  
33\_1 .....  
34\_1 .....  
35\_1 .....  
36\_1 .....  
37\_1 .....T.L.A.E.....EG.....ARR.M.....S.S.....  
38\_1 .....A.K.....S.....  
39\_1 .....A.K.....S.....  
40\_1 .....  
41\_1 .....  
42\_1 .....

```

43_1 .....
44_1 .....K.....
45_1 .....A.K.....S.....
46_1 .....A.K.....S.....
47_1 .....
Consensus IDGGAGLDTVDYSAMIHPGRIVAPHEYGFIEADLSREWVRKASALGVDYYDNVRNVENVIGTSMKDVLIGDAQANTLMGQGGDDTVRGGDGDLLFGGD
          1310      1320      1330      1340      1350      1360      1370      1380      1390      1400
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....Q.....
2_1 .....P.....A.....A.....V.T.....
3_1 .....P.....A.....A.....V.T.....
4_1 .....Q.....
5_1 .....P.....A.....A.....V.T.....
6_1 .....Q.....
7_1 .....Q.....
8_1 .....Q.....
9_1 .....Q.....
10_1 .....P.....A.....A.....V.T.....
11_1 .....Q.....

```

[https://pubmlst.org/bigsgdb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigsgdb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 9 sur 13

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```

12_1 .....Q.....T.....
13_1 .....Q.....
14_1 .....Q.....T.....
15_1 .....Q.....T.....
16_1 .....Q.....A.....
17_1 .....P.....A.....A.....V.T.....
18_1 .....P.....A.....A.....V.T.....
19_1 .....P.....A.....A.....V.T.....
20_1 .....P.....A.....A.....V.T.....
21_1 .....P.....A.....A.....V.T.....
22_1 .....Q.....

```

```

23_1 .....P.....A.....A.....V.T.....
24_1 .....P.....A.....A.....V.T.....
25_1 .....P.....A.....A.....V.T.....
26_1 .....P.....A.....A.....V.T.....
27_1 .....P.....A.....A.....V.T.....
28_1 .....Q.....
29_1 .....P.....A.....A.....V.T.....
30_1 .....P.....A.....A.....V.T.....
31_1 .....Q.....T.....
32_1 .....Q.....
33_1 .....Q.....A.....T.....
34_1 .....Q.....T.....
35_1 .....Q.....
36_1 .....Q.....
37_1 .....P.....A.....A.....V.T.....
38_1 .....P.....A.....A.....V.T.....
39_1 .....P.....A.....A.....V.T.....
40_1 .....Q.....
41_1 .....P.....
42_1 .....Q.....
43_1 .....Q.....
44_1 .....Q.....
45_1 .....P.....A.....A.....V.T.....
46_1 .....P.....A.....A.....V.T.....
47_1 .....Q.....

```

Consensus GNDMLYGDAGNDTLYGGLGDDTLEGGAGNDWFGQTxAREHDVLRGGDGVDTVDYSQTGAHAGIAAGRIGLGILADLGAGRVDKLGEGSSAYDTVSGIEN

```

          1410      1420      1430      1440      1450      1460      1470      1480      1490      1500
----:----|----:----|----:----|----:----|----:----|----:----|----:----|----:----|

```

```

1_1 .....
2_1 .....N.....
3_1 .....E.....N.....
4_1 .....
5_1 .....E.....N.....
6_1 .....

```



```

38_1 .....E.....N.....
39_1 .....E.....N.....
40_1 .....G.....
41_1 .....
42_1 .....
43_1 .....
44_1 .....
45_1 .....E.....N.....
46_1 .....E.....N.....
47_1 .....
Consensus VVGTELADRITGDAQANVLRGAGGADVLAGGEGDDVLLGGDGDDQLSGDAGRDRLYGEAGDDWFFQDAANAGNLLDGGDGRDRTVDFSGPGRGLDAGAKGV
          1510      1520      1530      1540      1550      1560      1570      1580      1590      1600
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....N.....
2_1 .....V.....A.....
3_1 .....V.....A.....
4_1 .....N.....
5_1 .....V.....A.....
6_1 .....
7_1 .....N.....
8_1 .....N.....
9_1 .....N.....
10_1 .....V.....A.....
11_1 .....
12_1 .....N.....
13_1 .....
14_1 .....N.....
15_1 .....
16_1 .....
17_1 .....V.....A.....
18_1 .....V.....A.....
19_1 .....V.....A.....
20_1 .....V.....A.....
21_1 .....V.....A.....

```

```

22_1 .....
23_1 .....V.....A.....
24_1 .....V.....A.....
25_1 .....V.....A.....
26_1 .....V.....T.....A.....
27_1 .....V.....A.....
28_1 .....
29_1 .....V.....A.....
30_1 .....V.....A.....
31_1 .....
32_1 .....
33_1 .....N.....
34_1 .....
35_1 .....
36_1 .....
37_1 .....V.....A.....
38_1 .....V.....A.....
39_1 .....V.....T.....A.....
40_1 .....L.....
41_1 .....
42_1 .....N.....
43_1 .....N.....
44_1 .....N.....
45_1 .....V.....A.....
46_1 .....V.....A.....
47_1 .....N.....
Consensus FLSLGKGFASLMDEPETS NVL RH IENAVGSARDDV LIGDAGANV LNGLAGNDV LSGGAGDDV LLGDEGS DLLSGDAGNDDL FGGQGGDDTYLFGVGYGHDT
          1610      1620      1630      1640      1650      1660      1670      1680      1690      1700
-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|-----:-----|
1_1 .....I.....Q.....
2_1 .....I.....
3_1 .....I.....
4_1 .....I.....Q.....
5_1 .....I.....

```

6_1	.....
7_1	.....I.....Q.....
8_1	.....I.....Q.....
9_1	.....I.....Q.....
10_1	.....T.....
11_1	.....
12_1	.....

[https://pubmlst.org/bigbdb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigbdb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 11 sur 13

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13_1	.....
14_1	.....
15_1	.....
16_1	.....
17_1	.....I.....
18_1	.....T.....
19_1	.....I.....
20_1	.....I.....
21_1	.....I.....
22_1	.....
23_1	.....I.....
24_1	.....T.....
25_1	.....I.....
26_1	.....I.....
27_1	.....I.....
28_1	.....
29_1	.....I.....
30_1	.....I.....
31_1	.....R.....
32_1	.....
33_1	.....
34_1	.....
35_1	.....

36\_1 .....  
37\_1 .....I.....P.....  
38\_1 .....I.....  
39\_1 .....I.....  
40\_1 .....  
41\_1 .....  
42\_1 .....I.....Q.....  
43\_1 .....I.....Q.....  
44\_1 .....I.....Q.....  
45\_1 .....I.....  
46\_1 .....I.....  
47\_1 .....I.....Q.....

Consensus IYESGGGHD TIRINAGADQLW FARQGN DLEIRILGTDDAL TVHDWYRDADHRVEAIHAANQAVDPAGIEKLVEAMAQYPDPGAAAAAPPAARVPDTLMQS

----:-

1\_1 .....  
2\_1 .....  
3\_1 .....  
4\_1 .....  
5\_1 .....  
6\_1 .....  
7\_1 .....  
8\_1 .....  
9\_1 .....  
10\_1 .....  
11\_1 .....  
12\_1 .....  
13\_1 .....  
14\_1 .....  
15\_1 .....  
16\_1 .....  
17\_1 .....  
18\_1 .....  
19\_1 .....  
20\_1 .....

21\_1 .....  
22\_1 .....  
23\_1 .....  
24\_1 .....  
25\_1 .....  
26\_1 .....  
27\_1 .....  
28\_1 .....  
29\_1 .....  
30\_1 .....  
31\_1 .....  
32\_1 .....  
33\_1 .....  
34\_1 .....  
35\_1 .....  
36\_1 .....  
37\_1 .....  
38\_1 .....

[https://pubmlst.org/bigstodb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigstodb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 12 sur 13

Locus Explorer - Bordetella MLST locus/sequence definitions 05/07/2017 12:36

39\_1 .....  
40\_1 .....  
41\_1 .....  
42\_1 .....  
43\_1 .....  
44\_1 .....  
45\_1 .....  
46\_1 .....  
47\_1 .....

**Consensus** LAVNWR

[https://pubmlst.org/bigstodb?db=pubmlst\\_bordetella\\_seqdef&page=alleleQuery&locus=BORD005031&submit=1](https://pubmlst.org/bigstodb?db=pubmlst_bordetella_seqdef&page=alleleQuery&locus=BORD005031&submit=1) Page 13 sur 13

