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**Figure 1.1.** UPGMA phylogenetic tree constructed using the translated amino acid sequence of a 1350 nt. sequence of the N gene for a representative sample of the seven lyssavirus genotypes - Smith, J. S., 2002. Molecular Epidemiology. In, *Rabies*. A. C. and W. H. Jackson (Eds), Elsevier Science, London pp. 79-106. – reprinted with permission from Elsevier Science

**Figure 1.2.** Schematic presentation of the rabies virus particle - Tordo, N. and Poch, O., 1988. Understanding the Nature of Rabies: A Historical Perspective. In, *Rabies*. J. B. Campbell and K. M. Charlton (Eds), Kluwer Academic, Boston, pp. 25-45. – reprinted with permission from Alice Essepreis Springer

**Figure 1.7.** Global distribution of the primary host species responsible for the maintenance of rabies and rabies related - Rupprecht, C. E., Hanlon, C. A. and Hemachudha, T., 2002. Rabies re-examined. *Lancet Infectious Diseases*, **2**: 327-343 – reprinted with permission from the Lancet Neurology

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## **Communications**

P. Coetzee, L. H. Nel, J. Randles. Molecular epidemiology of rabies in KwaZulu Natal, South Africa. 8<sup>th</sup> Meeting of the South and East African Rabies Group (SEARG), Windhoek, Namibia, February 2006.

## Appendix

**Appendix A.** Multiple sequence alignment of a 591 nt. sequence, encompassing the glycoprotein cytoplasmic domain and the G-L intergenic region for 58 isolates, obtained from KZN, and other rabies endemic regions of Southern Africa and Zimbabwe. The sequence m669.90 (mongoose biotype) was used as reference sequence, with dots indicating the positions of identity between the aligned sequences. The PVG-L sequence which was included in the alignment corresponds to the G-L intergenic region and glycoprotein cytoplasmic domain region of the Pasteur virus. Isolates sequences during the course of this project are preceded by a prefix, indicating the province (i.e. KZN, KwaZulu Natal, EC, Eastern Cape) and host species of isolation (i. e. dg, dog, hm, human, cw, cow, gt, goat, shp, sheep, O, *O. megalotis*, j, *C. mesomelas* and m, *C. penicillata*). Any gaps or ambiguous nucleotide positions were deleted from the alignment. The color scheme which was applied to the alignment, corresponds to the major groupings identified in the phylogenetic tree presented in figure 2.7. Red corresponds to subcluster 1-1, green corresponds to subcluster 1-2, and blue corresponds to cluster 2. Nucleotide positions highlighted in red in the reference sequence, refer to character sites, in which a particular nucleotide substitution was responsible for one of the main observable groupings that could be identified from the phylogeny presented in section 2.4.4 (A) (also see table 2.5.).



```

m669.90      TCAGTCGACC AGAGTCCACA CAACACAGTC TCAGGGGAAC AGGGATGAAG GTGTCAATCA CCTCTCAAAG T [ 71]
PVG-L       ...A...T. G..AC.T... ..A.. ..A..G.. ..G.G.. ..G... ..TC.C.... C [ 71]
KZNcw03.620 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.463 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNhmSPU272.03 ..A..... ..T..G A..G... ..G.A..G... T...G... ..GG... ..TT.C.... C [ 71]
KZNdq03.169 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNgt03.330 ..A..A.T. ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.200 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.236 ..A..... ..T..G A..G... ..G.A..G... ..G... ..A.GG... ..T.C.... C [ 71]
KZNSPU326.02 ..A..... ..T..G A..G... ..G.A..G... ..G... ..A.GG... ..T.C.... C [ 71]
KZNdq03.474 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNhmSPU77.03 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
dgA95.755   ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.299 ..A..... ..T..A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.455 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.589 ..A..... ..T..G A..G... ..G.A..G... ..G... ..A.GG... ..T.C.... C [ 71]
KZNdq03.417 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNhmSPU15.03 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.230 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.470 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.308 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.509 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
EChmSPU48.03 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.336 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
dgA90.57   ..A..... ..T..G AC.G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j101.90    ..A..... ..T..G AC..... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j378.90    ..A..... ..T..G ..G... ..AG.A..G... ..G... ..GG... ..T.C.... C [ 71]
dg373.97   ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.407 ..A..... ..T..AG A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
dg224.98   ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.170 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j596.99    ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
KZNdq03.389 ..A..... ..T..G A..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d21057     ..A..... ..T..G G.C.G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d21869     ..A..... ..T..G G.C.G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d22547     ..A..... ..T..G G.C.G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d19385     ..A..... ..T..G G..G... ..G.A..G... G...A... ..GG... ..T.C.... C [ 71]
j19273     ..A..... ..T..G G..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d24505     ..A..... ..T..G G..G... ..G.A..G... T...G... ..GG... ..T.C.... C [ 71]
d16387     ..A..... ..T..G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d21428     ..A..... ..T..G G..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j23275     ..A..... ..T..G G..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
d24465     ..A..... ..T..G G..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j22642     ..A..... ..T..G G..G... T..G.A..G... ..G... ..GG... ..T.GGG... C [ 71]
j19301     ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j19319     ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j17711     ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j306.98    ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
j673.99    ..A..... ..A.T.G ..TG... ..G.A..G... ..G... ..G... ..GG... ..T.C.... C [ 71]
j717.99    ..A..... ..A.T.G ..TG... ..G.A..G... ..G... ..G... ..GG... ..T.C.... C [ 71]
j23374     ..A..... ..A.T.G ..TG... ..G.A..G... ..G... ..G... ..GG... ..T.C.... C [ 71]
j631       ..A..... ..A.T.G ..TG... G..G.A..G... ..G... ..G... ..GG... ..T.C.... C [ 71]
o377.99    ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
o414.96    ..A..... ..A.T.G ..G... ..G.A..G... ..TG... ..GG... ..T.C.... C [ 71]
o469.99    ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
o491.98    ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]
o578.95    ..A..... ..A.T.G ..G... ..GG.A..G... ..G... ..GG... ..TC.C.... C [ 71]
o774.95    ..A..... ..A.T.G ..G... ..G.A..G... ..G... ..GG... ..T.C.... C [ 71]

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m669.90      GGAAAGGCCA TACCTTCATG GGAGTCATAT AAGAGCAGAA ATGAGACCAA AATGTGAGGA CCAGTCCTCC T [142]
PVG-L       ..G...AT...T.....A.....C.....G.GG G.....GG C.....AG .TG.C.G... [142]
KZNcw03.620 ..G...T.G...T.....T.....A..TG.GG G...A..T.G C...A.AAG .TG...A... [142]
KZNdg03.463 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNhmSPU272.03 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.169 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNgT03.330 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.200 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.236 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNSPU326.02 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.474 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNhmSPU77.03 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
dgA95.755   ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.299 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.455 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.589 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.417 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNhmSPU15.03 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.230 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.470 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.308 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.509 ..G...T...T.....T.....A.ATG.GG G.....T.G C...A.AAG .TG...A... [142]
EChmSPU48.03 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.336 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
dgA90.57    ..G...T...T.....T.C..A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
j101.90     ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
j378.90     ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
dg373.97    ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.407 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
dg224.98    ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.170 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
j596.99     ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
KZNdg03.389 ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
d21057      ..G...T...T.....T.....TG.GG G.....T.G T...A.AAG .TG...A... [142]
d21869      ..G...T...T.....T.....TG.GG G.....T.G T...A.AAG .TG...A... [142]
d22547      ..T...T...T.....T.....TG.GG G.....T.G T...A.AAG .TG...A... [142]
d19385      ..G...T...T.....T.....A.TGAGG G.....T.G T...A.AA .TTG...A..T [142]
j19273      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A... [142]
d24505      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A..T [142]
d16387      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A... [142]
d21428      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A... [142]
j23275      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A... [142]
d24465      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A... [142]
j22642      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AA .TTG...A... [142]
j19301      ..G...T...T.....T.....A.TG.GG G.....G C...A.AAG .TG...A... [142]
j19319      ..G...T...T.....T.....A.TG.GG G.....G C...A.AAG .TG...A... [142]
j17711      ..G...T...T.....T.....A.TG.GG G.....G C...A.AAG .TG...A... [142]
j306.98     ..G...T...T.....T.....A.TG.GG G.....T.G C...A.AAG .TG...A... [142]
j673.99     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]
j717.99     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]
j23374      ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TTG...A... [142]
j631        ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]
o377.99     ..G...T...T.....T.....A.TG.GG GC.....T.G C...A.AAG .TG...A... [142]
o414.96     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]
o469.99     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AG .TG...A... [142]
o491.98     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]
o578.95     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]
o774.95     ..G...T...T.....T.....A.TG.GG G.....T.G T...A.AAG .TG...A... [142]

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m669.90      TTCACGCTTT AGTCCTGGAG ATCACCTCCC CATGGGTAAG GGGGTCTAAG TTCAAAGGCC TCCTCAATCT C [213]
PVG-L        .....A.CC .....A.. .....T...TT. AAAAAACCG. ....T..T.. ....TG.CTC . [213]
KZNcw03.620 .....C...T..A.. G.....T....CG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.463 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNhmSPU272.03 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.169 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNGt03.330 .....C...T..A.. G.A...T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.200 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.236 .....C...T..A.. G.....T....TG. ....G..C...C..T... ..TG.CTC . [213]
KZNSPU326.02 .....C...T..A.. G.....T....TG. ....G..C...C..T... ..TG.CTC . [213]
KZNdg03.474 .....C...T..A.. G.....T..A..TG. ....G..C...C..T... ..TG.CTC . [213]
KZNhmSPU77.03 .....C...T..A.. G.....T....TG. ....G..C...C..T... ..TG.CTC . [213]
dgA95.755    .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.299 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.455 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.589 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.417 .....C...T..A.. G.....T....TG. ....C...C..T... ..TGGCTC . [213]
KZNhmSPU15.03 .....C...T..A.. G.....T....TG. ....C...C..T... ..TGGCTC . [213]
KZNdg03.230 .....C...T..A.. G.....T....TG. ....C...C..T... ..TGGCTC . [213]
KZNdg03.470 .....C...T..A.. G.....T....TG. ....C...C..T... ..TGGCTC . [213]
KZNdg03.308 .....C...T..A.. G..T...T....TG. ....C...C..T... ..TGGCTC . [213]
KZNdg03.509 .....C...T..A.. G.....T....TG. ....C...C..T... ..TGGCTC . [213]
EChmSPU48.03 .....C...T..A.. G.....T....TG. ....C...C..T... ..G.CTC . [213]
KZNdg03.336 .....C...T..A.. G.....T....TG. ....C...C..T... ..CTC . [213]
dgA90.57     .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
j101.90      .....C...T..A.. G.....T....TG. ....CGT...C..T... ..TG.CTC . [213]
j378.90      .....C...T..A.. G.....T....TG. ....C...CGAT... ..TG.CTC . [213]
dg373.97     .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.407 .....C...T..A.. G.....T....TG. ....C.A...C..T... ..TG.CTC . [213]
dg224.98     .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
KZNdg03.170 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
j596.99      .....C...T..A.. G.....T....TG. ....C...C..TT... ..TG.CTC . [213]
KZNdg03.389 .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
d21057       .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
d21869       .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
d22547       .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
d19385       .....C...T..A.. G.....T....TG. ....C...C..T... ..T.TG.CTC . [213]
j19273       .....C...T..A.. GG.....TTG..T.GG. ....C...C..T... ..T.TG.CT. . [213]
d24505       .C.....C...T..A.. G.....T....TG. ....C...C..T... ..T.TG.CTC . [213]
d16387       C.....C...T..A.. G.....T....TG. ....C...C..T... ..T.TG.CTC . [213]
d21428       .....C..C..TT..A.. G.....T....CG. ....C...C..T... ..T.TG.CTC . [213]
j23275       .....C..C..TT..A.. G.....T....CG. ....C...C..T... ..T.TG.CTC . [213]
d24465       .....C..C..TT..A.. G.....T....CG. ....C...C..T... ..T.TG.CTC . [213]
j22642       .....C..C..TT..A.. G.....T....CG. ....C...C..T... ..T.TG.CTC . [213]
j19301       .....C...T..C.A.. G.....C....TG. ....T...CG..T... ..TG.CTC . [213]
j19319       .....C...T..C.A.. G.....C....TG. ....T...CG..T... ..TG.CTC . [213]
j17711       .....C...T..C.A.. G.....C....TG. ....T...CG..T... ..TG.CTC . [213]
j306.98      .....C...T..A.. G.....T....TG. ....T...T..CG..T... ..TG.CTC . [213]
j673.99      .....C...T..A.. G...T...T....TG. ....C...C..T... ..TG.CTC . [213]
j717.99      .....C...T..A.. G...T...T....TG. ....C...C..T... ..TG.CTC . [213]
j23374       .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
j631         ..A.....A...T..A.. G.....T....TG. ....C.A...C..TA... ..TG.CTC . [213]
o377.99      .....C...T..A.. G.....T....TG. ....C...C..T... ..C...TG.CGC . [213]
o414.96      .....CC...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
o469.99      ...C...C.C...T..A.. G.....T....TG. ....C...C..T... ..CTG..TC . [213]
o491.98      ...C...CA...T..A.. G.....T....TG. ....C...C..T... ..CTG.CTC . [213]
o578.95      .....C...T..A.. G.....T....TG. ....C...C..T... ..TG.CTC . [213]
o774.95      .....C...T..A.A.G.....T....TG. ....C...C..T... ..TG.CTC . [213]

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m669.90	GTGTACAGGG	TAGGCAGAGT	CACAAGGTTA	GCATTCATAT	CTCATTGATC	AGACAAGGTC	ATGTAGATTC	T	[284]
PVG-L	A..C..T...	..AA.....	..TG..A..T	T...A..C.	.....	.AG....A..	.....		[284]
KZNcw03.620	A..C.....	..A.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.463	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNhmSPU272.03	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.169	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNgt03.330	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.200	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.236	A..C.....	..AA.....	..TG..AC.T	T...A.....	..C.....	.A..G.....	..T.....		[284]
KZNSPU326.02	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A..G.....	..T.....		[284]
KZNdq03.474	A..C.....	..AA.....	..TG..AC.T	T...A.....	A.....	.A.....	..T.....		[284]
KZNhmSPU77.03	A..C.....	..AA.....	..TG..AC.T	T...A.....	A.....	.A.....	..T.....		[284]
dgA95.755	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.299	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.455	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.589	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.417	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNhmSPU15.03	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.230	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.470	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.308	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.509	A..C.....	..AA.....	..TG..C.T	T...A.....	.....	.A.....	..T.....		[284]
EChmSPU48.03	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.336	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
dgA90.57	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j101.90	A..C.....	..CAA.....	..TG..CAC.T	T...A.....	.....	.C...C.....	..C.....		[284]
j378.90	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
dg373.97	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.407	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
dg224.98	A.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
KZNdq03.170	A.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.A.....	..T.....		[284]
j596.99	A.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.A.....	..T.....		[284]
KZNdq03.389	A.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.A.....	..T.....		[284]
d21057	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
d21869	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
d22547	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
d19385	A.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j19273	A..C.....	..AA.....	..TG..AC.T	T...A.....	..G.....	.A.....	..T.....		[284]
d24505	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
d16387	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
d21428	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j23275	A..C.....	..AA.....	..TG..AC.T	T...A..TC	T.....	.A.....	..T.....		[284]
d24465	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j22642	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j19301	A..C.....	..AA..G..	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j19319	A..C.....	..AA..G..	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j17711	A..C.....	..AA..G..	..TG..AC.T	T...A.....	.....	.A.....	..C.....		[284]
j306.98	A..C.....	..AA..G..	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
j673.99	A..C.....	G..AAG.G..	..TG..AAC.T	T...A.....	.....	.A.....	..T.....		[284]
j717.99	A..C.....	G..AAG.G..	..TG..AAC.T	T...A.....	.....	.A.....	..T.....		[284]
j23374	A..C.....	G..AAG.....	..TG..AAC.T	T...A.....	.....	.A.....	..T.....		[284]
j631	A..C...A..	..AAG.....	..TG..AAC.T	T...A.....	.....	.A.....	..T.....		[284]
o377.99	A..C.....	..AA.....	..TG..AC.T	T...A.....	..C..C..	.A.....	..G.....		[284]
o414.96	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
o469.99	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
o491.98	A..C.....	..AA.....	..TG..AC.C	T...A.....	.....	.A.....	..T.....		[284]
o578.95	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]
o774.95	A..C.....	..AA.....	..TG..AC.T	T...A.....	.....	.A.....	..T.....		[284]

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m669.90      ATATAGAAAG TCTCACAGTT CGTGATCAGT GCTTTATGCT AGGGCTAAGG CAAGGTCGCG GCAAGCGGGG A [355]
PVG-L        .....GG. ....G.....CT.....T... ..A..G.CA ...A..T.TA ....AT.... G [355]
KZNcw03.620  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG..TA... [355]
KZNdg03.463  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNhmSPU272.03 ..C.CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.169  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNgt03.330  ....CGG.A ...G.....C.....T... ..T.G.TA .....T.TA ..GG...A... [355]
KZNdg03.200  ....CGG.A ...G.....C.....T... T...G.TA .....T.TA ..GG...A... [355]
KZNdg03.236  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNSPU326.02  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.474  ....CGG.A ...G.....C.....T... ..G.TA T.....T.TA ..GG...A... [355]
KZNhmSPU77.03 ..CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
dgA95.755    ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.299  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.455  ....C.G.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.589  ....C.G.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.417  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNhmSPU15.03 ..CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.230  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.470  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.308  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
KZNdg03.509  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
EChmSPU48.03 ..CGG.A ...G.....C.....T... ..G.TA .....T.TA ..TG...A... [355]
KZNdg03.336  ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..TG...A... [355]
dgA90.57     ....CGG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
j101.90      ....CGG.A ...G.....C.....T... ..G.TA .....T.TA A.GG...A... [355]
j378.90      ....GG.A ...G.....C.....T... ..G.TA .....T.TA ..GG...A... [355]
dg373.97     ....CGG.A ...G.....C.....T... ..G.TA ..G...TA ..GG...A... [355]
KZNdg03.407  ....CGG.A ...G.....C.....T... ..G.TA ..G...TA ..GG...A... [355]
dg224.98     ....CGG.A ...G.....C.....T... ..G.TA ..G...TA ..GG...A... [355]
KZNdg03.170  ....CGG.A ...G.....C.....T... ..G.TA ..G...TA ..GG...A... [355]
j596.99      ....CGG.A ...G.....C.....T... ..G.TA ..G...TA ..GG...A... [355]
KZNdg03.389  ....CGG.A ...G.....C.....T... ..G.TA ..G...TA ..GG...A... [355]
d21057       ....CGG.A ...C.....A...CC.....T... ..A.AT.G.TA .....T.TA ..GG...A... [355]
d21869       ....CGG.A ...G.....A...C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
d22547       ....CGG.A ...G.....A...C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
d19385       ....CGG.A ...G.....C.....T... G.AA.G.TA A.....T.TA ..GG...A... [355]
j19273       ....CGG.A ...G.....C...G.....T... ..AA.G.TA A.....T.TA ..GG...A... [355]
d24505       ....CGG.A ...C.....C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
d16387       ....CGG.A ...G.....C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
d21428       ....CTG.A ...C.....C.....C.T... ..A.G.TA .....T.TA ..GG...A... [355]
j23275       ....CGG.A ...G.....C.....C.T... ..A.G.TA .....T.TA ..GG...A... [355]
d24465       ....C.G.A ...G.....C.....C.T... ..A.G.TA .....T.TA ..GG...A... [355]
j22642       ....CGG.A ...G.....C.....C.T... ..A.G.TA .....T.TA ..GG...A... [355]
j19301       ....CGG.A ...G.....C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
j19319       ....GCGG.A ...G.....C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
j17711       ....CGG.A ...G.....C.....T... ..A.G.TA .....T.TA ..GG...A... [355]
j306.98      ....CGG.A ...G.....C.G.....T... ..A.GGT. ....T.TA ..GG...A... [355]
j673.99      ....CGG.A ...G.....C.....T... ..A.G.A ..C...T.TA ..GG...A... [355]
j717.99      ....CGG.A ...G.....C.....T... ..A.G.A ..C...T.TA ..GG...A... [355]
j23374       ....CGG.A ...G.....C.....T... ..A.G.A ..C...T.TA ..GG...A... [355]
j631         ....CGG.A ...G.....C.....T.C.T... ..A.G.A AC...T.TA ..GG...A... [355]
o377.99      ....CGG.A ...G.....C.....T.G.A.G.A .....T.TA ..GG...A... [355]
o414.96      ....CGG.A ...G.....C.T.....T... G.A.G.A .....T.TA ..GG...A... [355]
o469.99      ....C.G.A ...G.....C.T.....T... G.A.G.A .....T.TA T.GG...A... G [355]
o491.98      ....C.G.A ...G.....C.T.....T... G.A.G.A .....T.TA T.GG...A... G [355]
o578.95      ....CGG.A ...G.....C.T.....T... G.A.G.A .....T.TA ..GG...A... [355]
o774.95      ....CGG.A ...G.....C.T.....T... G.A.G.A .....T.TA ..GG...A... [355]

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m669.90      TTGGGGTGT CACATTTGAG CACAGACAGA GGTTCATAATG CACCCCTGAT GGCAAGAACA ACACGAGTCA G [426]
PVG-L        .CTA..... .T.GC...G. .......A. ....GG.. TGTT..... A..GGACT.. GG.T...T. A [426]
KZNcw03.620  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...T.G A [426]
KZNdg03.463  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNhmSPU272.03 ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.169  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNgt03.330  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.200  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.236  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNSPU326.02  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.474  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNhmSPU77.03 ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
dgA95.755    ....A.C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.299  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.455  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.589  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.417  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNhmSPU15.03 ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.230  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.470  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.308  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.509  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
EChmSPU48.03 ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.336  ..T.A..CC .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
dgA90.57     ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
j101.90      ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
j378.90      ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GGACT.. .G.T...G A [426]
dg373.97     ..T.A..C. .CTGC.A.G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.407  ..T.A..C. .CTGC.A.G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
dg224.98     ..T.A..C. .CTGC...G. .......G.G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.170  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
j596.99      ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
KZNdg03.389  ..T.A..C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. .G.T...G A [426]
d21057       ..T.A..C. .CGGCG..G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
d21869       ..T.A..C. .CGGCG..G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
d22547       ..T.A..C. .CGGCG..G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
d19385       ..T.A.AC. .CGGC...G. .......G.A. .GT...A. .A..GACT.. ..T...TG A [426]
j19273       ..T.A.AC. .CGGC...G. .......G.A. TGT...A. .A..GACT.. ..T...G A [426]
d24505       ..T.A.AC. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
d16387       ..T.A.AC. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
d21428       ..T.A.AC. .CGGC...G. .......G.A. .GT...A. .A..GACTT. ..T...G A [426]
j23275       ..T.A.AC. .CGGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
d24465       ..T.A.AC. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j22642       ..T.A.AC. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j19301       ..T....C. .CGGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j19319       ..T....C. .CGGC...GT .....G.A. .GT...A. .A..GACT.. ..T...G A [426]
j17711       ..T....C. .CGGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j306.98      ..T....C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j673.99      ..T....CC .CTGC..AG. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j717.99      ..T....C. .CTGC..AG. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j23374       ..T....C. .CTGC..AG. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
j631         ..T....C. .CGGC..AG. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
o377.99      ..T....C. .CTGC...G. .......G.A. .GT...AC. .A..GACT.. ..T...G A [426]
o414.96      ..T....C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
o469.99      ..T....C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
o491.98      ..T....C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...G A [426]
o578.95      ..T....C. .CTGC...G. .......G.A. .GT...A. .A..GACT.. ..T...TG A [426]
o774.95      ..T....C. .CTGC...G. .......G.C. .GT...A. .A..GACT.. ..T...G A [426]

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m669.90      ATGAAAGGGC ACCCTGCCTC CCATGAAGGA CGTAAGCCAT AGACCATAAT CAGCCTGCAT CTCATCAGGT G [497]
PVG-L        T...GA...AT..T....G.....AC...AG..CT..C...T.TC.TG. T...G..A... [497]
KZNcw03.620  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.463  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNhmSPU272.03  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.169  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNg03.330   T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.200  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.236  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNSPU326.02 T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.474  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNhmSPU77.03  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
dgA95.755    T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.299  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.455  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.589  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.417  T...TA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNhmSPU15.03  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.230  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.470  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.308  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
KZNdq03.509  T...GA...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
EChmSPU48.03  T...A...AT.....A.....A.....A.....CT...G...T.....G..A... [497]
KZNdq03.336  T...A...AT.....A.....A.....A.....CT...G...T.....G..A... [497]
dgA90.57     T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j101.90      T...A...AT.....A.....A.....A.....CT...G...T.T.....G..A... [497]
j378.90      T...GA...AT.....A.....A.....A.....CT..CG..T.TC.....G..A... [497]
dg373.97     T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
KZNdq03.407  T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
dg224.98     T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
KZNdq03.170  T...A..T..AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j596.99      T...A..T..AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
KZNdq03.389  T...A..T..AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
d21057       T...A...AT.....A.....A.....A.....TT..CG..T.T.....G..A... [497]
d21869       T...A...AT.....A.....A.....A.....TT.GCG..T.T.....G..A... [497]
d22547       T...A...AT.....A.....A.....A.....TT..CG..T.T.....G..A... [497]
d19385       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j19273       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
d24505       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
d16387       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
d21428       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j23275       T...A...AT.....A.C.....A.....A.....CT..CG..T.T.....G..A... [497]
d24465       T...A...AT.....A.C.....A.....A.....CT..CG..T.T.....G..A... [497]
j22642       T...A...AT.....A.C.....A.....A.....CT..CG..T.T.....G..A... [497]
j19301       T...A...AT.....A.....A.....A.....CT..CG..T.T..G.....G..A... [497]
j19319       T...A...AT.....A.....A.....A.....CT..CG..T.T..G.....G..A... [497]
j17711       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j306.98      T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j673.99      T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j717.99      T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j23374       T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
j631         T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
o377.99      T...A...AT.....A.....A.....A.....CT..CG..T.T.....G..A... [497]
o414.96      T...A...AT.....A.....A.....A.....CT..CG..TAT.....G..A... [497]
o469.99      T...A...AT.....A.....A.....A.....CT..CG..TAT.....G..A... [497]
o491.98      T...A...AT.....A.....A.....A.....CT..CG..TAT.....G..A... [497]
o578.95      T...A...AT.....A.....A.....A.....CT..CG..TAT.....G..A... [497]
o774.95      T...A...AT.....A.....A.....A.....CT..CG..TAT.....G..A... [497]

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m669.90 CACAACCATA AAGGGCTAAG ATCTGAACTT TTCAATCAAG AAAAAA [543]  
 PVG-L ..T..TT... ..T...GG. ....A.G... ..G..G... .. [543]  
 KZNcw03.620 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.463 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNhmSPU272.03 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.169 ..T..TT... ..GG. ...A.A.G... ..G..G... .. [543]  
 KZNgt03.330 ..T..T... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.200 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.236 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNSPU326.02 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.474 ..T..TT... ..GG. ...CA.G... ..G..G... .. [543]  
 KZNhmSPU77.03 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 dgA95.755 ..T..T... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.299 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.455 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.589 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.417 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNhmSPU15.03 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.230 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.470 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.308 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.509 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 EChmSPU48.03 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.336 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 dgA90.57 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j101.90 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j378.90 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 dg373.97 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.407 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 dg224.98 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.170 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j596.99 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 KZNdq03.389 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 d21057 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 d21869 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 d22547 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 d19385 T.TT.TT... ..GG. ....A.G... ..G..G... .. [543]  
 j19273 T.TT.TT... ..GG. ....A.G... ..G..G... .. [543]  
 d24505 TTTT.TT... ..GG. ....A.G... ..G..G... .. [543]  
 d16387 T.TT.TT... ..GG. ....A.G... ..G..G... .. [543]  
 d21428 T.T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j23275 T.T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 d24465 T.T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j22642 T.T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j19301 ..TC.TT... ..GG. ....A.G... ..G..G... .. [543]  
 j19319 ..TC.TT... ..GG. ....A.G... ..G..G... .. [543]  
 j17711 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j306.98 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j673.99 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j717.99 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j23374 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 j631 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 o377.99 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 o414.96 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 o469.99 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 o491.98 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 o578.95 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]  
 o774.95 ..T..TT... ..GG. ....A.G... ..G..G... .. [543]



**Appendix B.** Multiple sequence alignment of a 591 nt. sequence encompassing the cytoplasmic domain of the glycoprotein, and the G-L intergenic region, for 128 isolates obtained from KZN. A corresponding sequence obtained from a bat eared fox (o03/179) is used as a reference sequence, with dots indicating positions of identity between the aligned sequences (Tordo *et al.*, 1986). Sequence names are preceded by a prefix, indicating the province (i.e. KZN, KwaZulu Natal, EC, Eastern Cape) and host species of isolation (i. e. dg, dog, hm, human, cw, cow, gt, goat, shp, sheep, O, *O. megalotis*, j, *C. mesomelas* and m, *C. penicillata*). Any gaps or ambiguous nucleotide positions were deleted from the alignment. The color scheme which was applied to the alignment, corresponds to the identified viral groupings as presented in figure 2.8 and 2.9., and table 2.8., respectively. Nucleotide positions highlighted in red in the reference sequence, refer to character sites in which a particular nucleotide substitution was responsible for a major grouping in the NJ phylogenetic tree as presented in section 2.4.4. (B) (also see table 2.7.)

	TCAATCGACC	AGAATCTCGC	AACGCAGTCT	CGGAGGGAAG	GGAGGAAGGT	GTCGGTCACT	TCCCAAGCGG	G	[ 74]
o03.179									
KZNdg03.306	.....G.....A.....								[ 74]
KZNdg03.513	.....G.....A.....								[ 74]
KZNdg03.470	.....G.....A.....								[ 74]
KZNdg03.518	.....G.....A.....								[ 74]
KZNdg03.475	.....G.....A.....								[ 74]
KZNdg03.514	.....G.....A.....								[ 74]
KZNdg03.509	.....G.....A.....								[ 74]
KZNdg03.215	.....G.....A.....								[ 74]
KZNdg03.307	.....G.....A.....								[ 74]
KZNdg03.417	.....G.....A.....								[ 74]
KZNdg03.588	.....G.....A.....								[ 74]
KZNdg03.314	.....G.....A.....								[ 74]
KZNdg03.309	.....G.....A.....								[ 74]
KZNdg03.292	.....G.....A.....								[ 74]
KZNdg03.241	.....G.....A.....								[ 74]
KZNdg03.343	.....G.....A.....								[ 74]
KZNdg03.340	.....G.....A.....								[ 74]
KZNdg03.209	.....G.....A.....								[ 74]
KZNdg03.359	.....G.....A.....								[ 74]
KZNhmSPU15.03	.....G.....A.....								[ 74]
KZNdg03.621	.....G.....A.....								[ 74]
KZNdg03.494	.....G.....A.....								[ 74]
KZNdg03.672	.....G.....A.....								[ 74]
KZNdg03.507	.....G.....A.....								[ 74]
KZNdg03.230	.....G.....A.....								[ 74]
KZNdg03.425	.....G.....A.....								[ 74]
KZNgt03.358	.....G.....A.....								[ 74]
KZNdg03.400	.....G.....A.....								[ 74]
KZNdg03.430	.....G.....A.....								[ 74]
KZNdg03.594	.....G.....A.....								[ 74]
KZNdg03.308	.....G.....A.....								[ 74]
KZNdg03.368	.....G.....A.....								[ 74]
KZNdg03.568	.....G.....A.....								[ 74]
KZNdg03.254	.....G.....A.....								[ 74]
KZNdg03.264	.....G.....A.....								[ 74]
KZNdg03.265	.....G.....A.....								[ 74]
KZNdg03.180	.....G.....A.....								[ 74]
KZNdg03.589	.....G.....A.....				.....A.....				[ 74]
KZNshp03.433	.....G.....A.....								[ 74]
KZNdg03.455	.....G.....A.....								[ 74]
KZNdg03.583	.....G.....A.....								[ 74]
KZNdg03.276	.....G.....A.....								[ 74]
KZNdg03.485	.....G.....A.....								[ 74]
KZNdg03.133	.....G.....A.....								[ 74]
KZNdg03.129	.....G.....A.....								[ 74]
KZNdg03.461	.....G.....A.....								[ 74]
KZNdg03.326	.....G.....A.....								[ 74]
KZNdg03.235	.....G.....A.....								[ 74]
KZNdg03.410	.....G.....A.....								[ 74]
KZNdg03.437	.....G.....A.....								[ 74]
KZNdg03.251	.....G.....A.....								[ 74]
KZNdg03.293	.....G.....A.....								[ 74]
KZNdg03.478	.....G.....A.....								[ 74]
KZNdg03.105	.....G.....A.....								[ 74]
KZNdg03.106	.....G.....A.....								[ 74]
KZNdg03.169	.....G.....A.....								[ 74]
KZNdg03.302	.....G.....A.....								[ 74]
KZNdg03.316	.....G.....A.....								[ 74]
KZNdg03.237	.....G.....A.....								[ 74]
KZNdg03.510	.....G.....A.....								[ 74]
KZNdg03.205	.....G.....A.....			.....T.....		.....T.....			[ 74]
KZNdg03.270	.....G.....A.....				.....T.....				[ 74]
KZNdg03.149	.....G.....A.....				.....T.....				[ 74]
KZNhmSPU272.03	.....G.....A.....				.....T.....				[ 74]
KZNdg03.204	.....G.....A.....								[ 74]
KZNdg03.378	.....G.....A.....						.....T.....		[ 74]
KZNdg03.256	.....G.....A.....						.....T.....		[ 74]
KZNdg03.142	.....G.....A.....						.....T.....		[ 74]
KZNdg03.453	.....G.....A.....						.....T.....		[ 74]
KZNdg03.406	.....G.....A.....						.....T.....		[ 74]
KZNdg03.263	.....G.....A.....						.....T.....		[ 74]
KZNdg03.152	.....G.....A.....						.....T.....		[ 74]
KZNdg03.299	.....G.....AA.....						.....T.....		[ 74]
KZNdg03.194	.....G.....A.....								[ 74]
KZNdg03.463	.....G.....A.....								[ 74]
KZNdg03.200	.....G.....A.....								[ 74]
KZNCw03.620	.....G.....A.....								[ 74]



o03.179	AAGGTCATAT	CTTCATGGGA	GTCATATAAA	AGTGGGGGTG	AGACTAGATT	GTAAAAGCTG	GTCATCCTTT	C	[145]
KZNdg03.306	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.513	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.470	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.518	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.475	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.514	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.509	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.215	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.307	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.417	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.588	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.314	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.309	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.292	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.241	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.343	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.340	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.209	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.359	.....	.....	..T.....	..A.....	.....C.	.....G.	.....	.....	[145]
KZNhmSPU15.03	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.621	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.494	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.672	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.507	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.230	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.425	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNgt03.358	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.400	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.430	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.594	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.308	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.368	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.568	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.254	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.264	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.265	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.180	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.589	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNshp03.433	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.455	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.583	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.276	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.485	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.133	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.129	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.461	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.326	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.235	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.410	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.437	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.251	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.293	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.478	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.105	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.106	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.169	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.302	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.316	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.237	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.510	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.205	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.270	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.149	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNhmSPU272.03	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.204	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.378	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.256	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.142	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.453	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.406	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.263	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.152	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.299	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.194	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.463	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNdg03.200	.....	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]
KZNCw03.620	.....G.	.....	..T.....	..A.....	.....C.	.....	.....	.....	[145]

o03.179	AAGGTCATAT	CTTCATGGGA	GTCATATAAA	AGTGGGGGTG	AGACTAGATT	GTAAAAGCTG	GTCATCCTTT	C	[145]
KZNdg03.360	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.328	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNgt03.330	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNgt03.364	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.120	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.474	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.491	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.418	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNhmSPU77.03	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNcw03.83	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.121	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.502	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNhmSPU326.02	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.399	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.192	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.492	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.382	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.213	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.391	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.409	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.387	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.147	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.404	.....	.....	..T	.....	.....	..T.C	.....	.....	[145]
KZNdg03.225	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.127	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.236	.....	.....	..T	.....	.....	..C	.....	.....	[145]
EChmSPU48.03	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.114	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.336	.....	.....	..T	.....	.....	..C	.....	..C	[145]
KZNdg03.366	.....	.....	..T	.....	.....	..C	.....	.....	[145]
KZNdg03.407	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNgt03.467	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.454	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.137	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.214	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.503	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.89	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNcw03.103	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.431	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.170	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.176	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.247	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.253	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.269	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.290	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.315	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.321	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.335	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.375	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.389	.....	.....	.....	.....	.....	..C	.....	.....	[145]
KZNdg03.411	.....	.....	.....	.....	.....	..C	.....	.....	[145]

o03.179	GACGCTTCAA	GTTCTGAAGG	TCACCTCCCC	TTGGGGTTGG	GGGGATCTCT	GGGTTACACAG	TCCTCCTFGA	A	[218]
KZNdg03.306				A		A		G	[218]
KZNdg03.513				A		A		G	[218]
KZNdg03.470				A		A		G	[218]
KZNdg03.518				A		A		G	[218]
KZNdg03.475						A		G	[218]
KZNdg03.514				A		A		G	[218]
KZNdg03.509						A		G	[218]
KZNdg03.215						A		G	[218]
KZNdg03.307						A		G	[218]
KZNdg03.417						A		G	[218]
KZNdg03.588						A		G	[218]
KZNdg03.314						A		G	[218]
KZNdg03.309						A		G	[218]
KZNdg03.292						A		G	[218]
KZNdg03.241						A		G	[218]
KZNdg03.343						A		G	[218]
KZNdg03.340						A		G	[218]
KZNdg03.209						A		G	[218]
KZNdg03.359						A		G	[218]
KZNhmSPU15.03						A		G	[218]
KZNdg03.621						A		G	[218]
KZNdg03.494						A		G	[218]
KZNdg03.672						A		G	[218]
KZNdg03.507						A		G	[218]
KZNdg03.230	A					A		G	[218]
KZNdg03.425	A					A		G	[218]
KZNgt03.358						A		G	[218]
KZNdg03.400						A		G	[218]
KZNdg03.430						A		G	[218]
KZNdg03.594						A		G	[218]
KZNdg03.308			T			A		G	[218]
KZNdg03.368			T			A		G	[218]
KZNdg03.568						A		G	[218]
KZNdg03.254						A		G	[218]
KZNdg03.264						A		G	[218]
KZNdg03.265						A		G	[218]
KZNdg03.180						A		G	[218]
KZNdg03.589						A		G	[218]
KZNshp03.433						A		G	[218]
KZNdg03.455						A		G	[218]
KZNdg03.583						A		G	[218]
KZNdg03.276						A		G	[218]
KZNdg03.485						A		G	[218]
KZNdg03.133						A		G	[218]
KZNdg03.129						A		G	[218]
KZNdg03.461						A		G	[218]
KZNdg03.326						A		G	[218]
KZNdg03.235						A		G	[218]
KZNdg03.410						A		G	[218]
KZNdg03.437						A		G	[218]
KZNdg03.251						A		G	[218]
KZNdg03.293						A		G	[218]
KZNdg03.478						A		G	[218]
KZNdg03.105						A		G	[218]
KZNdg03.106						A		G	[218]
KZNdg03.169						A		G	[218]
KZNdg03.302						A		G	[218]
KZNdg03.316					T	A		G	[218]
KZNdg03.237						A		G	[218]
KZNdg03.510						A		G	[218]
KZNdg03.205						A		G	[218]
KZNdg03.270						A		G	[218]
KZNdg03.149						A		G	[218]
KZNhmSPU272.03						A		G	[218]
KZNdg03.204						A		G	[218]
KZNdg03.378						A		G	[218]
KZNdg03.256						A		G	[218]
KZNdg03.142						A		G	[218]
KZNdg03.453						A		G	[218]
KZNdg03.406						A		G	[218]
KZNdg03.263						A		G	[218]
KZNdg03.152						A		G	[218]
KZNdg03.299						A		G	[218]
KZNdg03.194						A		G	[218]
KZNdg03.463						A		G	[218]
KZNdg03.200						A		G	[218]
KZNCw03.620				C		A		G	[218]

o03.179	GACGCTTCAA	GTTCTGAAGG	TCACCTCCCC	TTGGGGTTGG	GGGGATCTCT	GGGTTACAG	TCCTCCTGA	A	[218]
KZNdg03.360	.....	.....	.A.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.328	.....	.....	.A.....	.....	.....	.A.....	.....	.....	[218]
KZNgt03.330	.....	.....	.A.....	.....	.....	.A.....	.....	.....	[218]
KZNgt03.364	.....	.....	.A.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.120	.....	.....	.....	.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.474	.....	.....	.....	.A.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.491	.....	.....	.....	.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.418	.....	.....	.....	.....	.G.....	.A.....	.....	.....	[218]
KZNhmSPU77.03	.....	.....	.....	.....	.G.....	.A.....	.....	.....	[218]
KZNcw03.83	.....	.....	.....	.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.121	.....	.....	.....	.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.502	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNhmSPU326.02	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.399	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.192	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.492	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.382	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.213	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.391	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.409	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.387	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.147	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.404	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.225	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.127	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
KZNdg03.236	.....	.....	.....	.T.....	.G.....	.A.....	.....	.....	[218]
EChmSPU48.03	.....	.....	.....	.T.....	.G.....	.A.....	.....	.C.....	[218]
KZNdg03.114	.....	.....	.....	.T.....	.....	.A.....	.....	.CA.....	[218]
KZNdg03.336	.....	.....	.....	.T.....	.....	.A.....	.....	.CA.....	[218]
KZNdg03.366	.....	.....	.....	.T.....	.....	.A.....	.....	.CA.....	[218]
KZNdg03.407	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNgt03.467	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.454	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.137	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.214	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.503	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.89	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNcw03.103	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.431	.....	.....	.....	.....	.....	.AA.....	.....	.....	[218]
KZNdg03.170	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.176	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.247	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.253	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.269	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.290	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.315	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.321	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.335	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.375	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.389	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]
KZNdg03.411	.....	.....	.....	.....	.....	.A.....	.....	.....	[218]

o03.179	CTCCGTGCAA	CAGGGTAGAT	TCAAGAGTCA	TGAGACTTTC	ATTAATCATC	TCAGTTGATC	AAACAAGGTC	A	[289]
KZNdg03.306	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.513	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.470	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.518	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.475	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.514	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.509	.A.	.	.	.G.	.	.	.	.	[289]
KZNdg03.215	.A.	.	.	.G.	.	.	.	.	[289]
KZNdg03.307	.A.	.	.	.G.	.	.	.	.	[289]
KZNdg03.417	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.588	.A.	.T.	.	.	.	.	.	.	[289]
KZNdg03.314	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.309	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.292	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.241	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.343	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.340	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.209	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.359	.A.	.	.	.	.	.	.	.	[289]
KZNhmSPU15.03	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.621	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.494	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.672	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.507	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.230	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.425	.A.	.	.	.	.	.	.	.	[289]
KZNgt03.358	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.400	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.430	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.594	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.308	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.368	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.568	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.254	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.264	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.265	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.180	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.589	.A.	.	.	.	.	.	.	.	[289]
KZNshp03.433	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.455	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.583	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.276	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.485	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.133	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.129	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.461	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.326	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.235	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.410	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.437	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.251	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.293	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.478	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.105	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.106	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.169	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.302	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.316	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.237	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.510	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.205	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.270	.A.	.	.	.C.	.	.	.	.	[289]
KZNdg03.149	.A.	.	.	.	.	.	.	.	[289]
KZNhmSPU272.03	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.204	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.378	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.256	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.142	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.453	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.406	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.263	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.152	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.299	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.194	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.463	.A.	.	.	.	.	.	.	.	[289]
KZNdg03.200	.A.	.	.	.	.	.	.	.	[289]
KZNCw03.620	.A.	.C.	.	.	.	.	.	.	[289]



o03.179	CTCCGTGCAA	CAGGGTAGAT	TCAAGAGTCA	TGAGACTTTC	ATTAATCATC	TCAGTTGATC	AAACAAGGTC	A	[289]
KZNdg03.360	...	A	...	...	...	...	...	...	[289]
KZNdg03.328	...	A	...	...	...	...	...	...	[289]
KZNgt03.330	...	A	...	...	...	...	...	...	[289]
KZNgt03.364	...	A	...	...	...	...	...	...	[289]
KZNdg03.120	...	A	...	...	...	A	...	...	[289]
KZNdg03.474	...	A	...	...	...	A	...	...	[289]
KZNdg03.491	...	A	...	...	...	A	...	G	[289]
KZNdg03.418	...	A	...	...	...	A	...	...	[289]
KZNhmSPU77.03	...	A	...	...	...	A	...	...	[289]
KZNcw03.83	...	A	...	...	...	A	...	...	[289]
KZNdg03.121	...	A	...	...	...	A	...	...	[289]
KZNdg03.502	...	A	...	...	...	...	...	G	[289]
KZNhmSPU326.02	...	A	...	...	...	...	...	G	[289]
KZNdg03.399	...	A	...	...	...	...	...	G	[289]
KZNdg03.192	...	A	...	...	...	...	...	G	[289]
KZNdg03.492	...	A	...	...	...	...	...	G	[289]
KZNdg03.382	...	A	...	...	...	...	...	G	[289]
KZNdg03.213	...	A	...	...	...	...	...	G	[289]
KZNdg03.391	...	A	...	...	...	...	...	G	[289]
KZNdg03.409	...	A	...	...	...	...	...	G	[289]
KZNdg03.387	...	A	...	...	...	...	...	G	[289]
KZNdg03.147	...	A	...	...	...	...	...	G	[289]
KZNdg03.404	...	A	T	...	...	...	...	G	[289]
KZNdg03.225	...	A	...	...	...	C	...	G	[289]
KZNdg03.127	...	A	...	...	...	C	...	G	[289]
KZNdg03.236	...	A	...	...	...	C	...	G	[289]
EChmSPU48.03	...	A	...	...	...	...	...	...	[289]
KZNdg03.114	...	A	...	...	...	...	...	...	[289]
KZNdg03.336	...	A	...	...	...	...	...	...	[289]
KZNdg03.366	...	A	...	...	...	...	...	...	[289]
KZNdg03.407	...	A	...	...	...	...	...	...	[289]
KZNgt03.467	...	A	...	...	...	...	...	...	[289]
KZNdg03.454	...	A	...	...	...	...	...	...	[289]
KZNdg03.137	...	A	...	...	...	...	...	...	[289]
KZNdg03.214	...	A	...	...	...	...	...	...	[289]
KZNdg03.503	...	A	...	...	...	...	...	...	[289]
KZNdg03.89	...	A	...	...	...	...	...	...	[289]
KZNcw03.103	...	A	...	...	...	...	...	...	[289]
KZNdg03.431	...	A	...	...	...	...	...	...	[289]
KZNdg03.170	...	A	T	...	...	...	...	A	[289]
KZNdg03.176	...	A	T	...	...	...	...	A	[289]
KZNdg03.247	...	A	T	...	...	...	...	A	[289]
KZNdg03.253	...	A	T	...	...	...	...	A	[289]
KZNdg03.269	...	A	T	...	...	...	...	A	[289]
KZNdg03.290	...	A	T	...	...	...	...	A	[289]
KZNdg03.315	...	A	T	...	...	...	...	A	[289]
KZNdg03.321	...	A	T	...	...	...	...	A	[289]
KZNdg03.335	...	A	T	...	...	...	...	A	[289]
KZNdg03.375	...	A	T	...	...	...	...	A	[289]
KZNdg03.389	...	A	T	...	...	...	...	A	[289]
KZNdg03.411	...	A	T	...	...	...	...	A	[289]

o03.179	TGTTGGTTCT	CATAATACGG	GAAATCTTCT	AGCAGTTTCA	GTAACCAACG	GTGCTTTCAT	TCTTCGGGAA	C	[360]
KZNdg03.306	A			G	G		C.A.G.		[360]
KZNdg03.513	A			G	G		C.A.G.		[360]
KZNdg03.470	A			G	G		C.A.G.		[360]
KZNdg03.518	A			G	G		C.A.G.		[360]
KZNdg03.475	A		G	G	G		C.A.G.		[360]
KZNdg03.514	A			G	G		C.A.G.		[360]
KZNdg03.509	A			G	G		C.A.G.		[360]
KZNdg03.215	A			G	G		C.A.G.		[360]
KZNdg03.307	A			G	G		C.A.G.		[360]
KZNdg03.417	A			G	G		C.A.G.		[360]
KZNdg03.588	A			G	G		C.A.G.		[360]
KZNdg03.314	A			G	G		C.A.G.		[360]
KZNdg03.309	A			G	G		C.A.G.		[360]
KZNdg03.292	A			G	G		C.A.G.		[360]
KZNdg03.241	A			G	G		C.A.G.		[360]
KZNdg03.343	A			G	G		C.A.G.		[360]
KZNdg03.340	A			G	G		C.A.G.		[360]
KZNdg03.209	A			G	G		C.A.G.		[360]
KZNdg03.359	A			G	G		C.A.G.		[360]
KZNhmSPU15.03	A			G	G		C.A.G.		[360]
KZNdg03.621	A			G	G		C.A.G.		[360]
KZNdg03.494	A			G	G		C.A.G.		[360]
KZNdg03.672	A			G	G		C.A.G.		[360]
KZNdg03.507	A			G	G		C.A.G.		[360]
KZNdg03.230	A			G	G		C.A.G.		[360]
KZNdg03.425	A			G	G		C.A.G.		[360]
KZNgt03.358	A			G	G		C.A.G.		[360]
KZNdg03.400	A			G	G		C.A.G.		[360]
KZNdg03.430	A			G	G		C.A.G.		[360]
KZNdg03.594	A			G	G		C.A.G.		[360]
KZNdg03.308	A			G	G		C.A.G.		[360]
KZNdg03.368	A			G	G		C.A.G.		[360]
KZNdg03.568	A			G	G		C.A.G.		[360]
KZNdg03.254	A			G	G		C.A.G.		[360]
KZNdg03.264	A			G	G		C.A.G.		[360]
KZNdg03.265	A			G	G		C.A.G.		[360]
KZNdg03.180	A			G	G		C.A.G.		[360]
KZNdg03.589	A	A		G	G		C.A.G.		[360]
KZNshp03.433	A	A		G	G		C.A.G.		[360]
KZNdg03.455	A	A		G	G		C.A.G.		[360]
KZNdg03.583	A	A		G	G		C.A.G.		[360]
KZNdg03.276	A			G	G		C.A.G.		[360]
KZNdg03.485	A			G	G		C.A.G.		[360]
KZNdg03.133	A			G	G		C.A.G.		[360]
KZNdg03.129	A			G	G		C.A.G.		[360]
KZNdg03.461	A			G	G		C.A.G.		[360]
KZNdg03.326	A			G	G		C.A.G.		[360]
KZNdg03.235	A			G	G		C.A.G.		[360]
KZNdg03.410	A			G	G		C.A.G.		[360]
KZNdg03.437	A			G	G		C.A.G.		[360]
KZNdg03.251	A			G	G		C.A.G.		[360]
KZNdg03.293	A			G	G		C.A.G.		[360]
KZNdg03.478	A			G	G		C.A.G.		[360]
KZNdg03.105	A			G	G		C.A.G.		[360]
KZNdg03.106	A			G	G		C.A.G.		[360]
KZNdg03.169	A			G	G		C.A.G.		[360]
KZNdg03.302	A			G	G		C.A.G.		[360]
KZNdg03.316	A			G	G		C.A.G.		[360]
KZNdg03.237	A			G	G	T	C.A.G.		[360]
KZNdg03.510	A		A	G	G		C.A.G.		[360]
KZNdg03.205	A	C		G	G		C.A.G.		[360]
KZNdg03.270	A	C		G	G		C.A.G.		[360]
KZNdg03.149	A	C		G	G		C.A.G.		[360]
KZNhmSPU272.03	A	C		G	G		C.A.G.		[360]
KZNdg03.204	A			G	G		C.A.G.		[360]
KZNdg03.378	A			G	G		C.A.G.		[360]
KZNdg03.256	A			G	G		C.A.G.		[360]
KZNdg03.142	A			G	G		C.A.G.		[360]
KZNdg03.453	A			G	G		C.A.G.		[360]
KZNdg03.406	A			G	G		C.A.G.		[360]
KZNdg03.263	A			G	G		C.A.G.		[360]
KZNdg03.152	A			G	G		C.A.G.		[360]
KZNdg03.299	A			G	G		C.A.G.		[360]
KZNdg03.194	A			G	G		C.A.G.		[360]
KZNdg03.463	A			G	G		C.A.G.		[360]
KZNdg03.200	A			G	G		C.T.G.		[360]
KZNCw03.620	A			G	G		C.A.G.		[360]

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o03.179      TGTTGGTTCT CATAATACGG GAAATCTTCT AGCAGTTTCA GTAACCAACG GTGCTTTCAT TCTTCGGGAA C [360]
KZNdg03.360  ....A.....G.....C.A.G.T [360]
KZNdg03.328  ....A.....G.....C.A.G.T [360]
KZNgt03.330  ....A.....G.....C.A.G.T [360]
KZNgt03.364  ....A.....G.....C.A.G.T [360]
KZNdg03.120  ....A.....G.....C.A.G. [360]
KZNdg03.474  ....A.....G.....C.A.G. [360]
KZNdg03.491  ...C.A.....G.....C.A.G. [360]
KZNdg03.418  ....A.....G.....C.A.G. [360]
KZNhmSPU77.03  ....A.....G.....C.A.G. [360]
KZNcw03.83   ....A.....G.....C.A.G. [360]
KZNdg03.121  ....A.....G.....C...G. [360]
KZNdg03.502  ....A.....G.....C.A.G. [360]
KZNhmSPU326.02  ....A.....G.....C.A.G. [360]
KZNdg03.399  ....A.....G.....C.A.G. [360]
KZNdg03.192  ....A.....G.....C.A.G. [360]
KZNdg03.492  ....A.....G.....C.A.G. [360]
KZNdg03.382  ....A.....G.....C.A.G. [360]
KZNdg03.213  ....A.....G.....C.A.G. [360]
KZNdg03.391  ....A.....G.....C.A.G. [360]
KZNdg03.409  ....A.....G.....C.A.G. [360]
KZNdg03.387  ....A.....G.....C.A.G. [360]
KZNdg03.147  ....A.....G.....C.A.G. [360]
KZNdg03.404  ....A.....G.....C.A.G. [360]
KZNdg03.225  ....A.....G.....C.A.G. [360]
KZNdg03.127  ....A.....G.....C.A.G. [360]
KZNdg03.236  ....A.....G.....C.A.G. [360]
EChmSPU48.03  ....A.....G.....C.A.G. [360]
KZNdg03.114  ....A.....G.....C.A.G. [360]
KZNdg03.336  ....A.....G.....C.A.G. [360]
KZNdg03.366  ....A.....G.....C.A.G. [360]
KZNdg03.407  ....A.....G.....C.A.G. [360]
KZNgt03.467  ....A.....G.....C.A.G. [360]
KZNdg03.454  ....A.....G.....C.A.G. [360]
KZNdg03.137  ....A.....G.....C.A.G. [360]
KZNdg03.214  ....A.....G.....C.A.G. [360]
KZNdg03.503  ....A.....G.....C.A.G. [360]
KZNdg03.89   ....A.....G.....C.A.G. [360]
KZNcw03.103  ....A.....G.....C.A.G. [360]
KZNdg03.431  ....A.....G.....C.A.G. [360]
KZNdg03.170  ....A.....G.....C.A.G. [360]
KZNdg03.176  ....A.....G.....C.A.G. [360]
KZNdg03.247  ....A.....G.....C.A.G. [360]
KZNdg03.253  ....A.....G.....C.A.G. [360]
KZNdg03.269  ....A.....G.....C.A.G. [360]
KZNdg03.290  ....A.....G.....C.A.G. [360]
KZNdg03.315  ....A.....G.....C.A.G. [360]
KZNdg03.321  ....A.....G.....C.A.G. [360]
KZNdg03.335  ....A.....G.....C.A.G. [360]
KZNdg03.375  ....A.....G.....C.A.G. [360]
KZNdg03.389  ....A.....G.....C.A.G. [360]
KZNdg03.411  ....A.....G.....C.A.G. [360]

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o03.179      TGAGATCAA GGTGTAGAC GGGCCAAGAG GTATTTCGGG TGACTCCGTG CTTGGGCACA GACAGAGGTT A [431]
KZNdg03.306  ...T.....          .....A.....          .....C..... [431]
KZNdg03.513  ...T.....          .....A.....          .....C..... [431]
KZNdg03.470  ...T.....          .....A.....          .....C..... [431]
KZNdg03.518  ...T.....          .....A.....          .....C..... [431]
KZNdg03.475  ...T.....          .....A.....          .....C..... [431]
KZNdg03.514  ...T.....          .....A.....          .....C..... [431]
KZNdg03.509  ...T.....          .....C.....          .....C..... [431]
KZNdg03.215  ...T.....          .....A.....          .....C..... [431]
KZNdg03.307  ...T.....          .....A.....          .....C..... [431]
KZNdg03.417  ...T.....          .....A.....          .....C..... [431]
KZNdg03.588  ...T.....          .....A.....          .....C..... [431]
KZNdg03.314  ...T.....          .....A.....          .....C..... [431]
KZNdg03.309  ...T.....          .....A.....          .....C..... [431]
KZNdg03.292  ...T.....          .....A.....          .....C..... [431]
KZNdg03.241  ...T.....          .....A.....          .....C..... [431]
KZNdg03.343  ...T.....          .....A.....          .....C..... [431]
KZNdg03.340  ...T.....          .....A.....          .....C..... [431]
KZNdg03.209  ...T.....          .....A.....          .....C..... [431]
KZNdg03.359  ...T.....          .....A.....          .....C..... [431]
KZNhmSPU15.03 ...T.....          .....A.....          .....C..... [431]
KZNdg03.621  ...T.....          .....A.....          .....C..... [431]
KZNdg03.494  ...T.....          .....A.....          .....C..... [431]
KZNdg03.672  ...T.....          .....A.....          .....C..... [431]
KZNdg03.507  ...T.....          .....A.....          .....C..... [431]
KZNdg03.230  ...T.....          .....A.....          .....C..... [431]
KZNdg03.425  ...T.....          .....A.....          .....C..... [431]
KZNgt03.358  ...T.....          .....A.....          .....C..... [431]
KZNdg03.400  ...T.....          .....A.....          .....C..... [431]
KZNdg03.430  ...T.....          .....A.....          .....C..... [431]
KZNdg03.594  ...T.....          .....A.....          .....C..... [431]
KZNdg03.308  ...T.....          .....A.....          .....C..... [431]
KZNdg03.368  ...T.....          .....A.....          .....C..... [431]
KZNdg03.568  ...T.....          .....A.....          .....C..... [431]
KZNdg03.254  ...T.....          .....A.....          .....C..... [431]
KZNdg03.264  ...T.....          .....A.....          .....C..... [431]
KZNdg03.265  ...T.....          .....A.....          .....C..... [431]
KZNdg03.180  ...T.....          .....A.....          .....C..... [431]
KZNdg03.589  ...T.....          .....A.....          .....C..... [431]
KZNshp03.433 ...T.....          .....A.....          .....C..... [431]
KZNdg03.455  ...T.....          .....A.....          .....C..... [431]
KZNdg03.583  ...T.....          .....A.....          .....C..... [431]
KZNdg03.276  ...T.....          .....A.....          .....C..... [431]
KZNdg03.485  ...T.....          .....A.....          .....C..... [431]
KZNdg03.133  ...T.....          .....A.....          .....C..... [431]
KZNdg03.129  ...T.....          .....A.....          .....C..... [431]
KZNdg03.461  ...T.....          .....A.....          .....C..... [431]
KZNdg03.326  ...T.....          .....A.....          .....C..... [431]
KZNdg03.235  ...T.....          .....A.....          .....C..... [431]
KZNdg03.410  ...T.....          .....A.....          .....C..... [431]
KZNdg03.437  ...T.....          .....A.....          .....C..... [431]
KZNdg03.251  ...T.....          .....A.....          .....C..... [431]
KZNdg03.293  ...T.....          .....A.....          .....C..... [431]
KZNdg03.478  ...T.....          .....A.....          .....C..... [431]
KZNdg03.105  ...T.....          .....A.....          .....C..... [431]
KZNdg03.106  ...T.....          .....A.....          .....C..... [431]
KZNdg03.169  ...T.....          .....A.....          .....C..... [431]
KZNdg03.302  ...T.....          .....A.....          .....C..... [431]
KZNdg03.316  ...T.....          .....A.....          .....C..... [431]
KZNdg03.237  ...T.....          .....A.....          .....C..... [431]
KZNdg03.510  ...T.....          .....A.....          .....C..... [431]
KZNdg03.205  ...T.....          .....A.....          .....C..... [431]
KZNdg03.270  ...T.....          .....A.....          .....C..... [431]
KZNdg03.149  ...T.....          .....A.....          .....C..... [431]
KZNhmSPU272.03 ...T.....          .....A.....          .....C..... [431]
KZNdg03.204  ...T.....          .....A.....          .....C..... [431]
KZNdg03.378  ...T.....          .....A.....          .....C..... [431]
KZNdg03.256  ...T.....          .....A.....          .....C..... [431]
KZNdg03.142  ...T.....          .....A.....          .....C..... [431]
KZNdg03.453  ...T.....          .....A.....          .....C..... [431]
KZNdg03.406  ...T.....          .....A.....          .....C..... [431]
KZNdg03.263  ...T.....          .....A.....          .....C..... [431]
KZNdg03.152  ...T.....          .....A.....          .....C..... [431]
KZNdg03.299  ...T.....          .....A.....          .....C..... [431]
KZNdg03.194  ...T.....          .....A.....          .....C..... [431]
KZNdg03.463  ...T.....          .....A.....          .....C..... [431]
KZNdg03.200  ...T.....          .....A.....          .....C..... [431]
KZNCw03.620  ...T.....          .....T.....          .....C..... [431]

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o03.179	TGAGATCAA	GGTGTAGAC	GGGCCAAGAG	GTATTCGGG	TGACTCCGTG	CTTGGGCACA	GACAGAGGTT	A	[431]
KZNdg03.360	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.328	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNgt03.330	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNgt03.364	..T.....	.....	..G.....	.....	A.....	.....	.....	C	[431]
KZNdg03.120	..T.....	.....	.....	.....	A.....	.....	A.....	C	[431]
KZNdg03.474	..T..T...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.491	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.418	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNhmSPU77.03	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNcw03.83	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.121	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.502	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNhmSPU326.02	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.399	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.192	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.492	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.382	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.213	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.391	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.409	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.387	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.147	..T.....	.....	.....	.....	A.....	..T...	.....	C	[431]
KZNdg03.404	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.225	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.127	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.236	..T.....	.....	.....	.....	A.....	.....	.....	C	[431]
EChmSPU48.03	..T.....	..T.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.114	..T.....	.....	..T.....	.....	A.....	..C...	.....	C	[431]
KZNdg03.336	..T.....	.....	..T.....	.....	A.....	..C...	.....	C	[431]
KZNdg03.366	..T.....	.....	..T.....	.....	A.....	..C...	.....	C	[431]
KZNdg03.407	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNgt03.467	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.454	..TG...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.137	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.214	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.503	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.89	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNcw03.103	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.431	..T...G...C...	.....	.....	.....	A.....	..A.....	.....	C	[431]
KZNdg03.170	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.176	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.247	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.253	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.269	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.290	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.315	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.321	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.335	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.375	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.389	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]
KZNdg03.411	..T...G...C...	.....	.....	.....	A.....	.....	.....	C	[431]

o03.179	TAGTACGTCC	CATAATAGCA	GACTCAACAT	GAGTCGATTG	AGAAGGCAA	TCTGCCTCCA	ATGAAGGACA	T	[502]
KZNdg03.306	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.513	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.470	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.518	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.475	.....	.....	.....G.....	.....	.....G.....	.....C.....	.....	.....	[502]
KZNdg03.514	.....	.....	.....G.....	.....	.....G.....	.....C.....	.....	.....	[502]
KZNdg03.509	.....	.....	.....G.....	.....	.....G.....	.....C.....	.....	.....	[502]
KZNdg03.215	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.307	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.417	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.588	.....	.....	.....G.....	.....	.....T.....	.....C.....	.....	.....	[502]
KZNdg03.314	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.309	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.292	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.241	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.343	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.340	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.209	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.359	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNhmSPU15.03	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.621	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.494	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.672	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.507	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.230	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.425	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNgt03.358	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.400	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.430	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.594	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.308	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.368	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.568	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.254	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.264	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.265	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.180	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.589	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNshp03.433	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.455	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.583	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.276	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.485	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.133	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.129	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.461	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.326	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.235	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.410	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.437	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.251	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.293	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.478	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.105	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.106	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.169	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.302	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.316	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.237	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.510	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.205	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.270	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.149	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNhmSPU272.03	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.204	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.378	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.256	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.142	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.453	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.406	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.263	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.152	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.299	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.194	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.463	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.200	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]

o03.179	TAGTACGTCC	CATAATAGCA	GA	CTCAACAT	GAGTCGATTG	AGAAAGGCAA	TCTGCCTCCA	ATGAAGGACA	T	[502]
KZNcw03.620	.....	.....	.....	.....G.....	.....T.....	.....G.....	.....	.....	.....	[502]
KZNdg03.360	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.328	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNgt03.330	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNgt03.364	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.120	.....	.....T.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.474	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.491	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.418	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNhmSPU77.03	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNcw03.83	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.121	.....	.....	.....	.....G.....	.....	.....G.....	.....	.....	.....	[502]
KZNdg03.502	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNhmSPU326.02	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.399	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.192	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.492	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.382	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.213	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.391	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.409	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.387	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.147	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.404	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.225	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.127	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
KZNdg03.236	.....	.....	.....	.....G.....	.....	.....G.....	.....A.....	.....	.....	[502]
EChmSPU48.03	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.114	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.336	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.366	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.407	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNgt03.467	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.454	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.137	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.214	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.503	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.89	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNcw03.103	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.431	.....	.....	.....	.....G.....	.....	.....	.....	.....	.....	[502]
KZNdg03.170	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.176	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.247	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.253	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.269	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.290	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.315	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.321	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.335	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.375	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.389	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]
KZNdg03.411	.....	.....	.....	.....G.....	.....	.....T.....	.....	.....	.....	[502]

o03.179	AAGCAATAGC	TCA <b>C</b> GATCAT	CTTG <b>C</b> ATCTC	AGCAA <b>A</b> ATTGT	GCATA <b>A</b> TTAT	AAAGG <b>G</b> CTGG	GTCAT <b>C</b> TAAG	C	[573]
KZNdg03.306	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.513	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.470	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.518	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.475	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.514	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.509	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.215	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.307	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.417	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.588	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.314	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.309	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.292	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.241	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.343	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.340	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.209	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.359	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNhmSPU15.03	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.621	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.494	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.672	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.507	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.230	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.425	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNgt03.358	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.400	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.430	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.594	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.308	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.368	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.568	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.254	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.264	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.265	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.180	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.589	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNshp03.433	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.455	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.583	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.276	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.485	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.133	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.129	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.461	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.326	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.235	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.410	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.437	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.251	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.293	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.478	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.105	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.106	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.169	.....	..T.....	.....	.....	.....	.....	.....A.....	.....	[573]
KZNdg03.302	.....	..T.....	.....	.....	.....	.....	.....A.....	.....	[573]
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KZNdg03.149	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
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KZNdg03.502	.....	..T.....	.....	.....	.....	.....	.....	.....	[573]
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KZNgt03.467	.....	.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.454	.....	.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.137	.....	.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.214	.....	.....	.....	.....	.....	.....	.....	.....	[573]
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KZNdg03.269	.....	.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.290	.....	.....	.....	.....	.....	.....	.....	.....	[573]
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KZNdg03.321	.....	.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.335	.....	.....	.....	.....	.....	.....	.....	.....	[573]
KZNdg03.375	.....	.....	.....	.....	.....	.....	.....	.....	[573]
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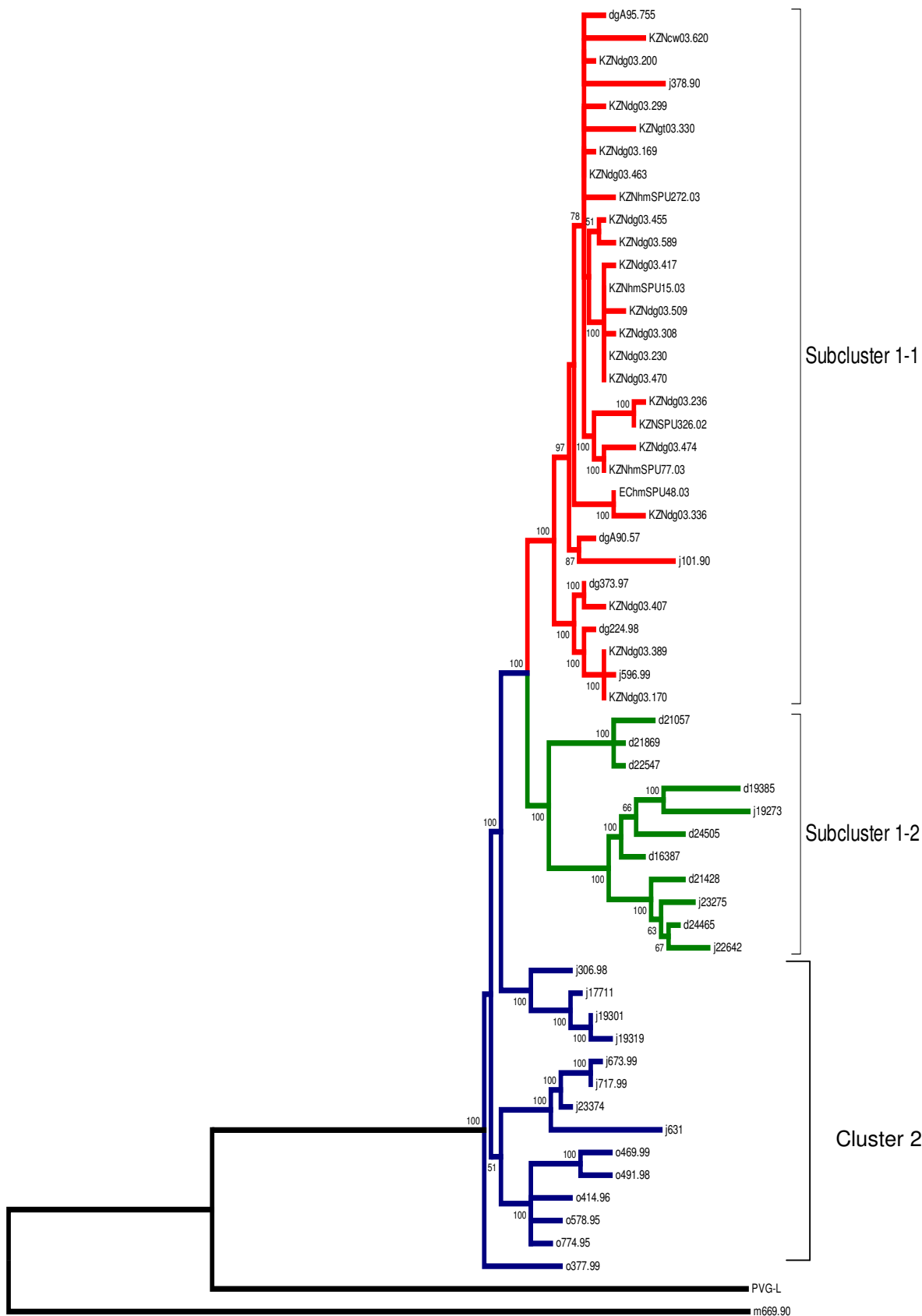
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KZNdg03.335 ..... [591]
KZNdg03.375 ..... [591]
KZNdg03.389 ..... [591]
KZNdg03.411 ..... [591]

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**Appendix C.** Maximum parsimony tree constructed from a 591 nt. sequence encompassing the glycoprotein cytoplasmic domain and the G-L intergenic region, for 58 isolates obtained from KZN, and other rabies endemic regions of Southern Africa and Zimbabwe (appendix A). The sequence m669.90 was used as outgroup to root the tree. Sequences from KwaZulu Natal are preceded by a prefix KZN, while host species of isolation are indicated by the following prefixes (dg, dog, cw, cow, gt, goat, shp, sheep, hm, human, o, *O. megalotis*, j, *C. mesomelas*, m, *C. penicillata*). The vertical lines have no meaning, and are supplied for purposes of clarity only, while the horizontal branch lengths are proportional to the similarity of the sequences within and between clusters. Numbered nodes indicate the number of times a specific tree topology was reconstructed in the total number of MP trees, which were identified from the CNI search.

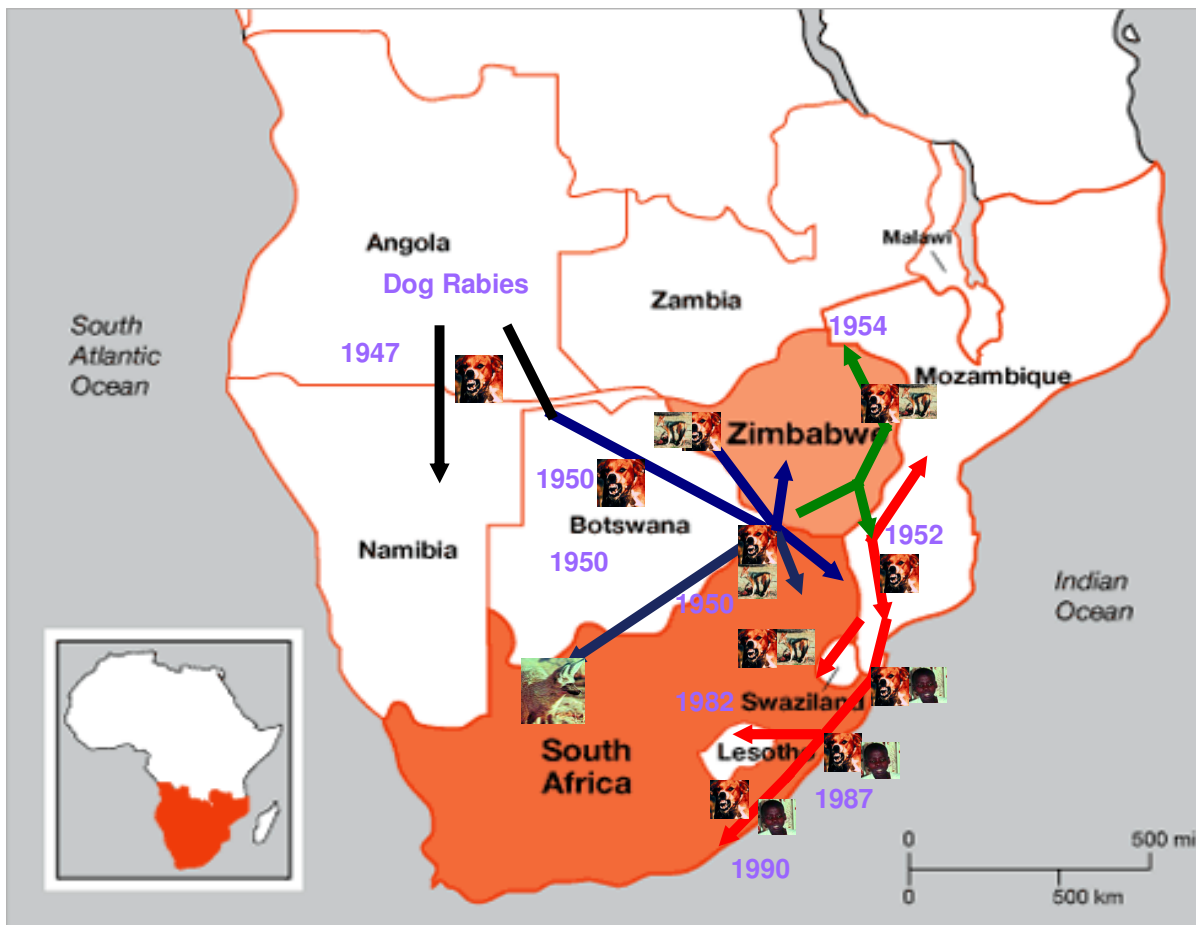


**Appendix D.** Maximum parsimony tree constructed from a 591 nt. sequence encompassing the glycoprotein cytoplasmic domain, and the G-L intergenic region, for 128 isolates obtained from KZN (appendix B). The sequence o03.179 was used as outgroup to root the tree. Sequences from KwaZulu Natal and the Eastern Cape are preceded by a prefix KZN and EC respectively, while host species of isolation are indicated by the following prefixes (dg, dog, cw, cow, gt, goat, shp, sheep, hm, human, o, *O. megalotis*, j, *C. mesomelas*). The vertical lines have no meaning, and are supplied for purposes of clarity only, while the horizontal branch lengths are proportional to the similarity of the sequences within and between clusters. Numbered nodes indicate the number of times a specific tree topology was reconstructed in the total number of MP trees, which were identified from the CN1 search.

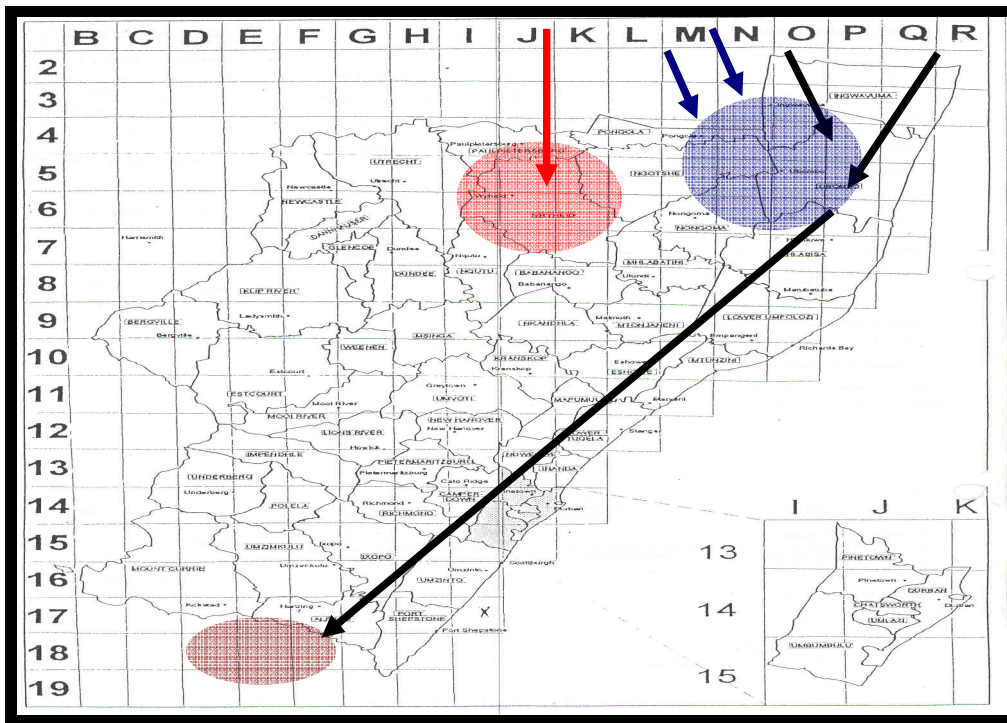


**Appendix E.** The proposed regional path of spread of the epidemic throughout the South African subcontinent, which led to the introduction, and establishment, of the different canid rabies virus variants, which were identified from KZN, Zimbabwe and northern Limpopo province of South Africa, during the course of this investigation.

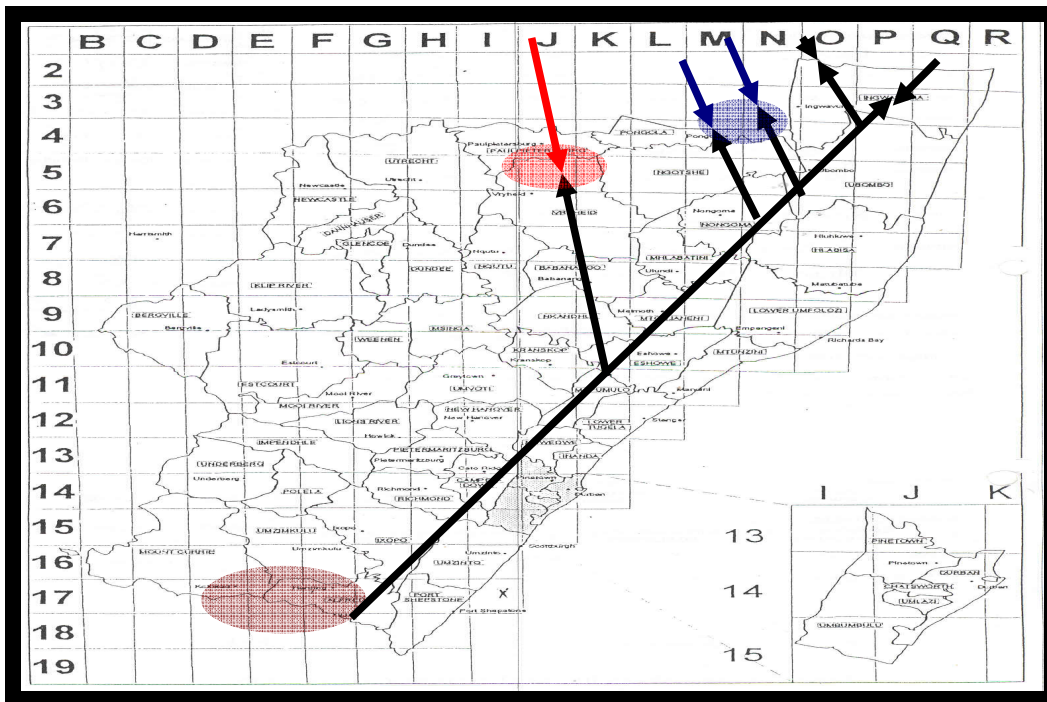




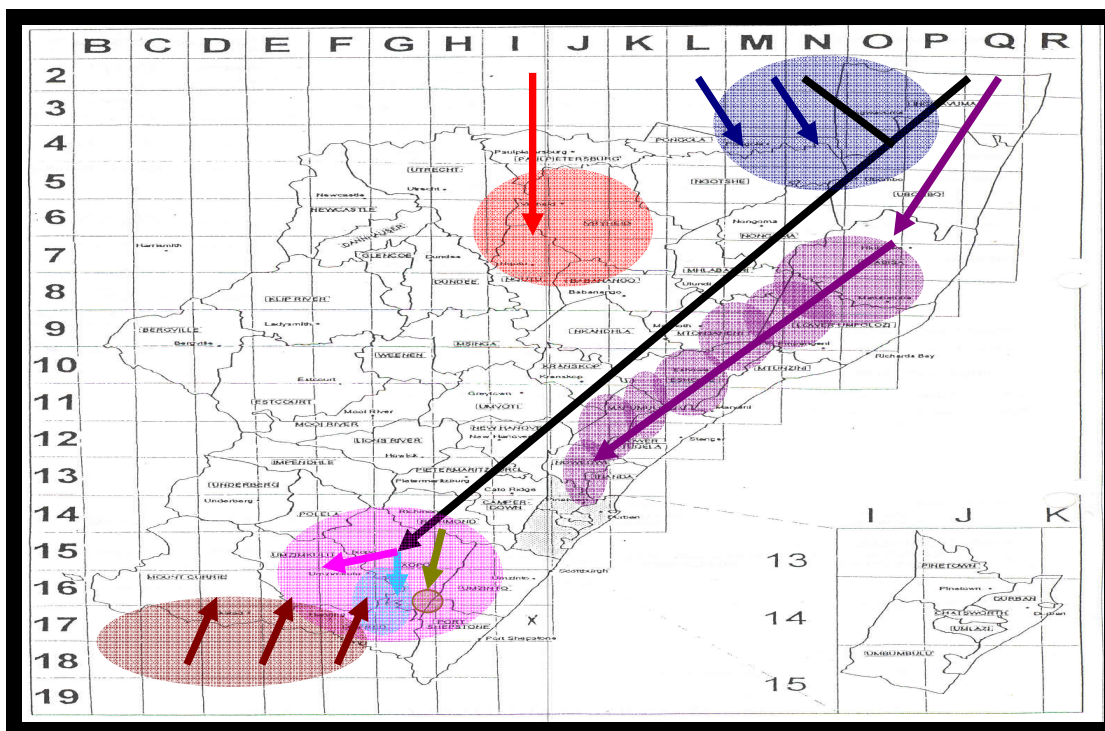
**Appendix F.** The proposed path of spread of the epidemic which led to the introduction, and establishment, of the different rabies virus variants which were identified from KZN during the course of this investigation.



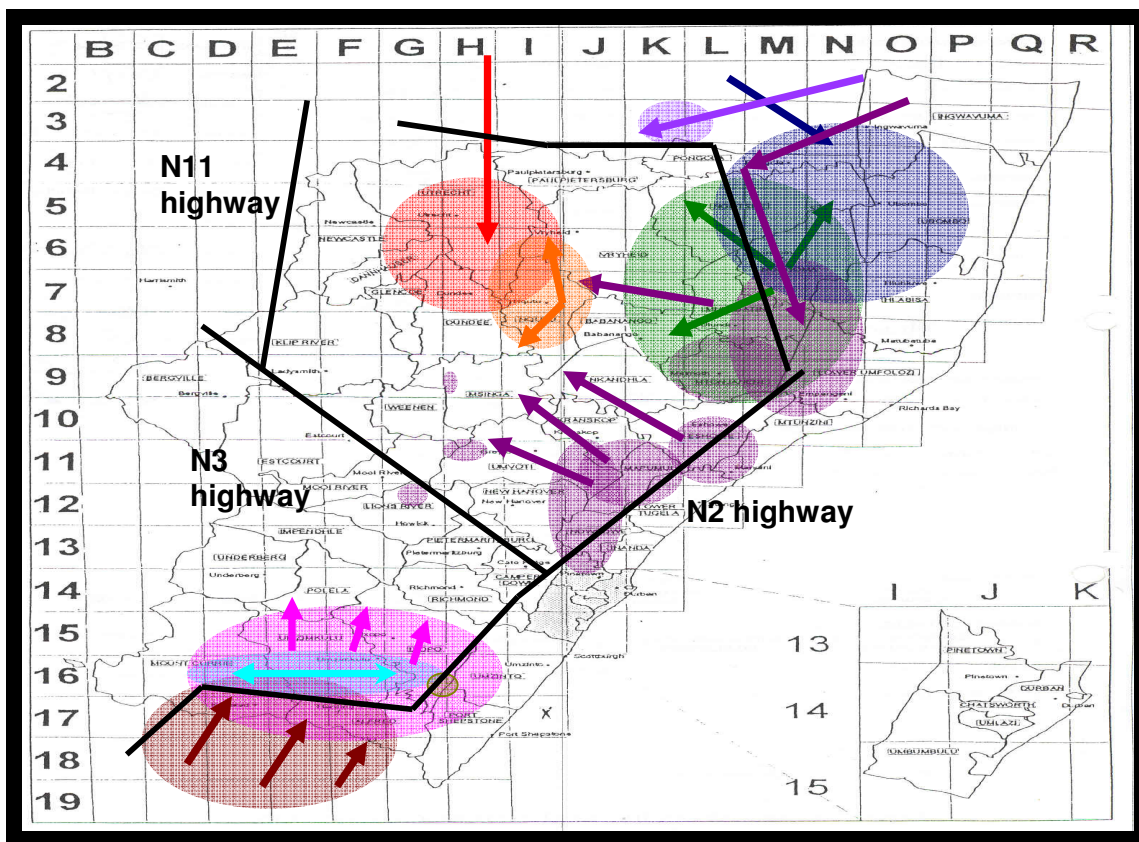
(A) Epidemic entered KZN in 1964 from southern Swaziland and Mozambique. It spread southwards, leading to the establishment of cluster 4A (brown), 1B (dark blue) and 2B (red) in their respective geographic regions.



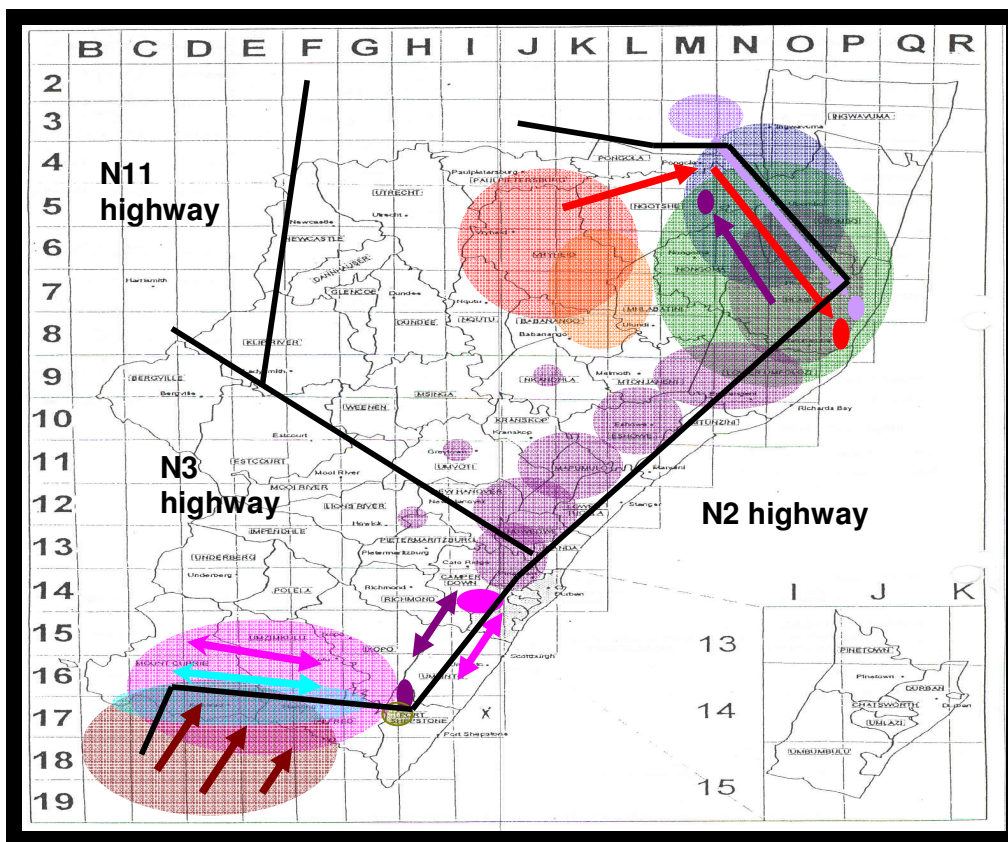
(B) Vigorous control measures, applied in KZN between the periods of 1964-1968, brings the epidemic under control, however cluster 4A viruses (brown) continue to persist in northern regions of the Eastern Cape province.



(C) In 1976 a new epidemic started in KZN. Three epidemic fronts enter the province, one represented by subfamily B (cluster B1 and B2) possibly entered the province from southern Swaziland, while the other, represented by subfamily A (cluster 3A) enters the northeastern coastal regions of the province, from southeastern Swaziland and the southern regions of Mozambique, from where it spread rapidly southwards along the coastal regions. Separate introduction events, possibly by the transportation of infected dogs from southern Mozambique, leads to the establishment and evolution of cluster 4A, 5A and 6A in the southern districts of the province. At the same time group C viruses represented by cluster 8A reenter the province from the south. (Key - cluster 1B, blue; cluster 2B, red; cluster 3A, purple; cluster 7A, pink; cluster 6A, light blue; cluster 4A, dark yellow; and brown, cluster 8A).



(D) Cluster 5A spreads southwards from south eastern Swaziland and becomes established in the district of Pongola (purple). The establishment of cluster 3A along the coast, leads to the regional evolution, and spread of viruses from cluster 1A, in the northeastern districts of the province (green). A further incursion of the common ancestor of cluster 1A (derived from cluster 3A) into the western district of Vryheid, leads to the regional evolution of cluster 2A viruses (orange). The spread of cluster 3A viruses inland, possibly via the N2 and N3 highway, also leads to the emergence of this variants in the internal districts of Pietermaritzburg, Umvoti, Msinga and Nkandhla. The distribution of cluster 6A and 7A enlarges as they spread northwards and eastwards (light blue and pink). Eastwards spread is probably facilitated by transport of infected animals along a stretch of the N2 highway, lying between Richards Bay and Kokstad. Cluster 8A viruses furthermore, also continue to intrude into the province from the northern regions of the Eastern Cape (brown). The black line running from the top to bottom on this figure, represents the approximate route of the N2 highway as it runs along the coastal regions of the province, while the black line that lies skewed over the central districts of the province, represents the approximate route of N3 highway. The line that runs north from Ladysmith along the western districts of the province, represents the approximate route of the N11 highway.



(E) Inter-regional spread of identified variants probably occurred via the N2 highway. Isolates of cluster 7A (pink) circulating primarily in Port Shepstone, are isolated from the Durban district, while an isolate belonging to cluster 3A (purple) which primarily circulates in the regions surrounding Durban northwards up to Richard Bay, is found in Port Shepstone. Furthermore, viral isolates belonging to cluster 5A (light purple) and 2B (red) which circulates in Pongola and Vryheid, respectively, are isolated from the eastern coastal districts of Hlabisa and the Lower Umfolozi. Similarly a single isolate belonging to cluster 3A, is isolated from the internal northeastern district of Ngotshe. The black line running from the top to bottom on this figure, represents the approximate route of the N2 highway as it runs along the coastal regions of the province, while the black line that lies skewed over the central districts of the province, represents the approximate route of N3 highway. The line that runs north from Ladysmith along the western districts of the province, represents the approximate route of the N11 highway.

**Appendix G.** Magisterial districts, towns and cities of KZN. Numbers under the specific headings refer to the magisterial districts (red) and cities or towns (blue) of the province, as supplied on the map.

**Magisterial districts**

1. Ingwavuma
2. Ubobombo
3. Hlabisa
4. Nongoma
5. Ngotshe
6. Pongola
7. Paul-Pietersburg
8. Vryheid
9. Mhlabatini
10. Lower-Umfolozi
11. Utrecht
12. Nqutu
13. Banbanango
14. Mtonlaneni
15. New-Castle
16. Danhauser
17. Glencoe
18. Dundee
19. Nkhandla
20. Eshowe
21. Mtunzini
22. Klip Rivier
23. Msinga
24. Kranskop
25. Mapumolo
26. Lower-Tugela
27. Weenen
28. Umvoti
29. Bergville
30. Estcourt
31. Mooi Rivier
32. New Hanover
33. Ndwedwe
34. Inanda
35. Lions River
36. Pietermaritzburg
37. Camper Down
38. Pinetown
39. Durban
40. Chatsworth
41. Umlazi
42. Umbumbulu
43. Durban (CBD)
44. Underberg
45. Polela
46. Ixopo
47. Umzinto
48. Mount Currie
49. Umzimkulu
50. Alfred
51. Port Shepstone



**Towns and cities**

1. Ingwavuma
2. Pongola
3. Ubombo
4. Paulpietersburg
5. Nongoma
6. Hluhluwe
7. Matubatube
8. Ulundi
9. Utricht
10. Vryheid
11. Dundee
12. Nqutu
13. Banbanango
14. Melmoth
15. Empangeni
16. Ladysmith
17. Eshowe
18. Kranskop
19. Manzini
20. Stanger
21. Bergville
22. Estcourte
23. Mooi Rivier
24. Graytown
25. New Hanover
26. Pietermaritzburg
27. Cato Ridge
28. Pinetown
29. Durban
30. Scottburgh
31. Richmond
32. Underberg
33. Ixopo
34. Umzinto
35. Umzimkulu
36. Port Shepstone
37. Harding
38. Kokstad

