

Figure S1. The complete phylogenetic tree of *KolobokP* DDD/E transposases. The families with ~660-bp LTDRs are highlighted in orange. The numbers at branches indicate the posterior probabilities. *Kolobok-5_TV* and *Kolobok-6_TV* were used as the outgroup. The sequence alignment is provided as **Additional file 3: Data S3**.



Figure S2. Complete, soloLTD, and tandem insertions of *KolobokP* families in the genome of *Mytilus corus*. LTDs are highlighted in yellow, while internal portions are in cyan. TSDs are colored in red.

KolobokP-1_MyCo

CAGCCTCTTA**GGCCCGAGAC**//GTCTTGGGCCAGTTCATCGG
 TGCACG**GTCTGGCCTGAGAC**//GTCTTGGGCC**GTCTT**CATG
 AAGTAATTGTGGCCCGAGAC//ATCTTGGGCCAGTAAACT
 GTAGCT**GTATGGCCCGAGAC**//GTCTTGGGCC**GTAT**ATTCA
 TAGCCTACATGGCCCGAGAC//GTCTTGGGCCACGAACGGCA
 TCACGT**AACAGGCCGAGAC**//GTCTTGGGCC**TATTAGACC**//CAGCCTCTTA**GGCCCGAGAC**//GTCTTGGGCC**AAGAG**GTAA
 TCACAT**TACAGGCCGAGAC**//GTCTTGGGCC**TATTAGACC**//CAGCCTCTTA**GGCCCGAGAC**//GTCTTGGGCC**TACACA**ATTG
 TCACAT**TATACGGCCGAGAC**//GTCTTGGGCC**TATTAGACC**//CAGCCTCTTA**GGCCCGAGAC**//GTCTTGGGCC**TACACA**ATTG

KolobokP-2_MyCo

TAACCT**GTACTGGCCTGAGAA**//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCCGAGAA**//TCCTCGGACC**TACTGATGAC**
 ATTAT**AAAGTGGCCTGAGAA**//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCCGAGAA**//TCCTCGGACC**AAGTACGTGG**//
 GACAA**CACTAGGCC**-GAGAA//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCCGAGAA**//TCCTCGGACC**ACTAGTGTAA**
 AGTGAC**AGTGGCCCGAGAA**//TCCTCGGACC**AGCTACTACTAA**
 TCTGTCAAGTGGCCCGAGAA//TCCTCGGACC**AAGCATGTGT**
 GACCC**TACAGGCCGAGAA**//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCCGAGAA**//TCCTCGGACC**TACGTATGC**
 CGATTT**GTACTGGCC**-GAGAA//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCTGAGAA**//TCCTCGGACC**TACTCCCGGT**
 CTTTT**TATATGGCCCGAGAA**//TCCTCGGACC**ATTATGTATG**
 ATCTTT**TATATGGCCCGAGAA**//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCCGAGAA**//TCCTCGGACC**TATAGGAA**
 ACCTCT**TACTGGCCCGAGAA**//TCCTCGGACC**TAATAGGACC**//CAGCCTCTTA**GGCCCGAGAA**//TCCTCGGACC**ACTGGCTAA**

KolobokP-3_MyCo

CGCTCT**GTAGGTTGCACCT**//AAGTGCAAC**TATACTGTAC**//TTACCTTATAGGTTGCACCT//AAGTGCAAC**GTAA**TGTCT
 AGCTTT**GTAGGTTGCACCT**//AAGTGCAAC**TATACTGTAC**//TTACCTTATAGGTTGCACCT//AAGTGCAAC**GTATAGGTT**
 GAGTAT**TAATAGGTTGCACCT**//AAGTGCAAC**TATACTGTAC**
 ACCTAT**TATAGGTTGCACCT**//AAGTGCAAC**TATACTGTAC**//TTACCTTATAGGTTGCACCT//AAGTGCAAC**GTATTTGTT**
 AGCTTT**GTAGGTTGCACCT**//AAGTGCAAC**TATACTGTAC**//TTACCTTATAGGTTGCACCT//AAGTGCAAC**GTATAGGTT**

KolobokP-4_MyCo

AAACCAT**TTTGGTAAATTC**//TGAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GAATTTAC**CTATAATAGA**//CAAATTTCT**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GA
ATTACCCATTAGTCA
 ACTCGT**GTAGGGTAAATTC**//TGAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GAATTTAC**CTAGTATAT**
 TTACAT**TTGTGTAAATTC**//GAATTTAC**CTGTGTAG**
 TCAATCTATAGGGTAAATTC//GAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GAATTTAC**CTAAATAAT**
 TGCAT**TATAGGGTAAATTC**//GAATTTAC**CTATAATAGA**//CTCCCTATAGGGTAAATTC//GAATTTAC**CTATAATAT**
 CTTTCTGAAGGGTAAATTC//TGAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//TGAATTTAC**CTATAATAGA**//
TTCTCTATAGGGTAAATTC//TGAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GAATTTAC**CTAGAACGCT**
 ACTGCT**ATCGGGTAAATTC**//GAATTTAC**CTATAATAGA**
 AATGCATAAGGGTAAATTC//TGAATTTAC**CTATAATAGA**//TTCTCTATAGGGTAAATTC//GAATTTAC**CTATAGTAAAA**

KolobokP-5_MyCo

TAGATCAT**GTGGAACGGGGA**//ATCCTATTCC**TGTCAGACTT**
 GACTGA**AACTGGAACGGGGA**//ATCCTATTCC**AACTAAATAGC**
 GATA**AGTAATGGAACGGGGA**//ATCCTATTCC**AGTAATGAGC**
 TCTTT**TATATGGAACGGGGA**//ATCCTATTCC**ATATGCTGAA**
 GATGGA**ATATGGAACGGGGA**//ATCCTATTCC**ATATGCTCGT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCGACTT**
 TTATATGTATGGAACGGGGA//ATCCTATTCC**TGTCGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**ATTTTCACTT**
 ATTTGT**AAATGGAACGGGGA**//ATCCTATTCC**AAATCAAAAG**
 CTCAT**CAACGGAACGGGGA**//ATCCTATTCC**CAACAGGCAAC**
 ACTAATAGCTGGAACGGGGA//ATCCTATTCC**CGCTCACACC**
 CCTGCC**AACTGGAACGGGGA**//ATCCTATTCC**AACTAGCAGC**
 AATATCATCTGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
 TCAATA**AGTTGGAACGGGGA**//ATCCTATTCC**TGTCAGACTT**//CCCTCTGAC**AGGAACGGGGA**//ATCCTGT**TCAGTT**GAAATG
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**ACCTGCTGTG**
 TAACRA**ACTGGAACGGGGA**//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**ATATATATCT**
 CTATCA**ACTGGAACGGGGA**//ATCCTATTCC**ATCTTCAAA**
 ATACAGAT**ATGGAACGGGGA**//ATCCTATTCC**ATATCTCTCA**
 AGTACA**ACTTGAACGGGGA**//ATCCTATTCC**TGTCAGACTT**//CCCTCTGAC**AGGAACGGGGA**//ATCCTATTCC**ACTGTTTCA**
 GTTGA**ATAGTGAACGGGGA**//ATCCTATTCC**AGTCCTTTA**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**AGACTATAAC**
 TTATA**AGACTGGAACGGGGA**//ATCCTATTCC**TGTAAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**AACTCTTGCT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
 CTCTT**AGTTGGAACGGGGA**//ATCCTATTCC**TGTCAGACTT**//CCCTCTGAC**AGGAACGGGGA**//ATCCTATTCC**AGTTCTAGTT**
 CGTGTGATATGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**ATGCTGTCA**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
 GTACT**TATGGAACGGGGA**//ATCCTATTCC**ATGATTCCG**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**
CCCTCTGACAGGAACGGGGA//ATCCTATTCC**TGTCAGACTT**

KolobokP-1 MeMe

[illegible]

KolobokP-3_MeMe

KolobokP-4_MeMe

KolobokP-5_MeMe

KolobokP-6_MeMe

KolobokP-7_MeMe

[illegible]

Figure S4. Complete, soloLTD, and tandem insertions of *KolobokP* families in the genome of *Gigantopelta aegis*. LTDs are highlighted in yellow, while internal portions are in cyan. TSDs are colored in red.

KolobokP-1 GiAe

AGCACATATGGTCTCACTA//TTGTGAGACCTATGTTCAAA
 CAGTGGCTTAGGTCTCACTA//TAGTGAGACCTTACCCCTAAA
 ATTTAACTTAGGTCTCACTA//TTGTGAGACCTTACACACCA
 CACCAGCATAGGTCTCACTA//TAGTGAGACCTTAAACAAAA//GTTACATTATGGTCTCACTA//TAGTGAGACCTATAGATGAAT
 TTCCCTCTGAGGTCTCACTA//TTGTGAGACCTTAAACAAAA//GTTACATTATGGTCTCACTA//TTGTGAGACCTTAAACAAAA//GTTACATTATGGTCTCACTA//TTGTGAGACCTGATACCGAT
 CTTGAATTAGGTCTCACTA//TAGTGAGACCTTAAAGGAGAT
 TGGCAGTTAGGTCTCACTA//TAGTGAGACCTTAAACAATA
 ACCGACTATAGGTCTCACTA//TTGTGAGACCTTAAACAAAA//GTTACATTATGGTCTCACTA//TTGTGAGACCTATAGACTAAA
 CTGCCCTTAGGTCTCACTA//TAGTGAGACCTTAAACGTTT
 TGCAGGTAGGTCTCACTA//TTGTGAGACCTTAGAAAAAT
 TGAGACCTAGGTCTCACTA//TTGTGAGACCTTAAATTAAAC//GTTACATTATGGTCTCACTA//TTGTGAGACCTTAAATTAAAC
 TCACCACATAGGTCTCACTA//TTGTGAGACCTTAAACAAAA//GTTACATTATGGTCTCACTA//TTGTGAGACCTATAGTGCTT

KolobokP-2 GiAe

TAAAAATATAGGTTGGACTA//GAGTACTACCAATCAGTCA
 ATCCGTATCAGGTTAGACTA//GAGTACTACCATCAGGAGCA
 AATACTACTAGATTGGACTA//GAGTACTACCATGTTATCA
 TGTCTGTATAGTTGGACTA//GAGTACTATCACATACAGCC
 CTCATGTATAGGTTGGACTA//GAGTACTACCTATAAGCAGA//TTTCTCTATAGGTTGGACTA//GAGTACTACCTTAAATATTA
 GATTATATCAGGTTGGACTA//GAGTACTACCTATAAGCAGA//TTTCTCTATAGGTTGGACTA//GAGTACTACCATCAGCAACG
 TGACCTTGTGGTTGGACTA//GAGTACTACCTATAAGCAGA//TTTCTCTATAGGTTGGACTA//GAGTACTACCTGTTATGGAA
 TACTACTAATAGGTGGACTA//GAGTACTACCTATAGGCGAG
 TTTCTCTATAGGTTGGACTA//GAGTACTACCTGTAGGCGTC
 GATACCTTACAGGTTGGACTA//GAGTACTACCTATAAGCAGA//TTTCTCTATAGGTTGGACTA//GAGTACTACCTTACAGTTTAA
 AGTAGTTAAGGTTGGACTA//GAGTACTACCTTAAAGGAAA
 TACTATTAAAGGTTGGACTA//GAGTACTACCTATAAAATC
 ACACGTTTATGTTGGACTA//GAGTACTACCTATAAGCAGA
 TTCTTCTGTAGGTTGGACTA//GAGTACTACCTATAAGCAGA
 TTCTTCTGTAGGTTGGACTA//GAGTACTACCTATAAGCAGA
 AGCATGACACGTTGGACTA//GAGTACTACCTATAAGCAGA//TTTCTCTATAGGTTGGACTA//GAGTACTACCTAGACAGGGGC
 CGACCATATAGGTTGGACTA//GAGTACTACCTATAGCTATA
 GTTTACTATAGGTTGGATT//GAGTACTACCTATAGTCCGC
 ACGTGAACGAGGTTGGACTA//GAGTACTACCAACTCTGACA
 AACAAATATAGGTTGGACTA//GAGTACTACCTATAGGATGA
 GAGTTCTAAGGTTGGACTA//GAGTACTACCTTAAACGACTC
 ATAGCTTATAGGTTGGACTA//GAGTACTACCTATAAGCAGA//TTTCTCTATAGGTTGGACTA//GTTACTACCTTAAATATT
 CAATGATGTTGGTTGGACTA//GAGTACTACCTGTAAATATCA
 GCGCGTTCTGGTTGGACTA//GAGTACTACCTTCTGGGTTA
 TACATGAGTAGGTTGGACTA//GAGTACTACCTAGTAGTGCA
 TAACAATGTAGGTTGGACTA//GAGTACTACCTGTAACTGA
 CTGGATTATAGGTTGGACTA//GAGTACTACCTATATGTGCC
 TTCCCTTAAAGGTTGGGCTA//GAGTACTACCTTAAAGAGCTC
 TTCCCTTAAAGGTTGGGCTA//GAGTACTACCTTAAAGAGCTC
 TTTCTCTATAGGTTGGACTA//GAGTACTACCTATAAGCAGA

KolobokP-3 GiAe

TAAAGTTTACAGGTTCCATTA//CATTACAACCTTACAGTTTGG
 CACTTGTATAGGTTCCATTA//CATTACAACCTATATTGAAA//TTGCTGTATAGGTTCCATTA//CATTACAACCTTATAGTGGTT
 GATGGTTATAGGTTCCATTA//CATTACAACCTCTACGTCCT
 GGGTGTGAGGTTCCATTA//CATTACAACCTGAAACGACCC
 ACAGTCTGGAGGTTCCATTA//CATTACAACCTATATTGAAA//TTGCTGTATAGGTTCCATTA//CATTACAACCTATATTGAAA//TTGCTGTATAGGTTCCATTA//CATTACAACCTGAGATGGT
 TATGGATAGAGGTTCCATTA//CATTACAACCTAGATGTGTT
 CACCACCTCATGGTTCCATTA//CATTACAACCTATATTGAAA
 CTGTACTACAGGTTCCATTA//CATTACAACCTATATTGAAA//TTGCTGTATAGGTTCCATTA//CATTACAACCTTACACAACAT
 ACCCTCTCTGGTTCCATTA//CATTACAACCTTCTCTCTCA
 CAGACCAATAGGTTCCATTA//CATTACAACCTATATTGAAA//TTGCTGTATAGGTTCCATTA//CATTACAACCTATACACAAT
 CGAGGTTGTAGGTTCCATTA//CATTACAACCTCTAGCTGT
 TGGCAGCAGGTTCCATTA//CATTACAACCTATATTGAAA//TTGCTGTATAGGTTCCATTA//CATTACAACCTAGCAGATGTA
 GCTCCAGTAGGTTCCATTA//CATTACAACCTAGTAGGCACG
 CGGTGGTATAGGTTCCATTA//CATTACAACCTATAGCTTAG

KolobokP-4 GiAe

ACACACTGAGGTTATCTCAC//GTGTGATCCCTGAATAGGAA
 ATGTGCTGAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTGCAACCCAGC
 ACGGGTTTACAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTTCAACACAC
 TTCCCTTGTAGGTTATCTCAC//GTGTGATCCCTGTACTACTC
 GCAGCCTTACAGGTTATCTCAC//GTGTGATCCCTTCAAGAACTC
 CTCGCCGTAGGTTATCTCAC//GTTTGTATCCCTGATGCGTGG
 GAGCATATAGGTTATCTCAC//GTGTGATCCCTTAAAGGATC
 ACAGTGTAAAGGTTATCTCAC//GTGTGATCCCTTAAACATAAT
 TTGTCTTGGAGTTATCTCAC//GTGTGATCCCTTGAACAGACA
 TGTACCTACAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//-----//GTGTGATCCCTACAGCCTCA
 ATTTCTGTTAGGTTATCTCAC//GTGTGATCCCTTCAATCAGG
 ATTTCTGTTACGTTATCTCAC//GTGTGATCCCTTCAATCAGG
 TGAAGTTACAGGTTATCTCAC//GTGTGATCCCTTATACATATT
 GGTAGTTATAGGTTATCTCAC//GTGTGATCCCTTATAGTTTA
 AAGAGGTTACAGGTTATCTCAC//GTGTGATCCCTTAAAGGCTGG
 GTCCATTTACAGGTTATCTCAC//GTGTGATCCCTTCAATAGA
 TGTCTGTTAGGTTATCTCAC//GTGTGATCCCTGTAGCGTGT
 GTTCTGCAATGGTATCTCAC//GTGTGATCTCTAATAATATA
 ATACATTTTAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTTAAACATTTC
 TATACCTTACAGGTTATCTCAC//GTGTGATCCCTTGAAGCTAG
 AAAAATCTTAAAGGTTATCTCAC//GTGTGATCCCTTAAAGACTT
 AAACCTGTTAAAGGTTATCTCAC//GTGTGATCCCTTAAATAACT
 AAGCATTTAGGTTATCTCAC//GTGTGATCCCTGTAGTCACA
 ATTTACCTGACGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTAAC//GTGTGATCCCTGCAATGTC
 TTAAACTTTAGGTTATCTCAC//GTGTGATCCCTTAAAGTATT
 TAGCAGTTACGTTATCTCAC//GTGTGATCCCTTAAAGGTCGA
 GAAATGTGAGGTTATCTCAC//GTGTGATCCCTTGAAGGTTT
 GAACGCTGGAAGGTTATTACC//GTGTGTTCCCTTGAACGTTT
 CCAGCCTGATGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTGTAGGGTCT
 TGCTATACAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTCAAGGACAG
 TTGAACCTTAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTTAAATGACGA
 GCAATATACAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTTACACTGAAG
 GGTGGATTAAAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTGTAAGTTAGA
 TGTGATTTAGGTTATCTCAC//GTGTGATCCCTGTTTGTGTG
 GGCCACAGTAGGTTATCTCAC//GTGTGATCCCTTAAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTAGTAAGCTTT
 ATGTGTTACAGGTTATCTCAC//GTGTGATCCCTTACACACCAA
 TACGCATGACAGGATCTCAC//GTGTGATCCCTGCAATGGC
 TAAACCTGAGGTTATCTCAC//GTGTGATCCCTTGAACATCAT

TGATCTTATAGGTTATCTCAC//GTGTGATCCCTTAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTATATCTGCCC
TAAGTAATTTGGTATCTCTCAC//GTGTGATCCCTTAAACGGGT
CCGATGTGCGGTTATCTCTCAC//GTGTGATCCCTTAAGAGGGG-----//GTGTGATCTCTGCACCCAAA
CGAACCTTAAGGTTATCTCTCAC//GTGTGATCCCTTAATTTTGG
TATCAGTTTAGGTTATCTCTCAC//GTGTGATCCCTTAAGAGGGG//ATAGTGTTTAGGTATCTCAC//GTGTGATCCCTTAACTCGAA
GTCCATTTCAGGTTATCTCTCAC//GTGTGATCCCTTCACATAGA

KolobokP-5 GiAe

GTATATTATAGGGTTATATA//GACTACTACCTTACAGCAAT
TAAAGTACTGGTTACAA//GACTACTACCTAGTAGT
TTACATTATAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGGTTATATA//GACTACTACCTATAAAAGTC
CTCTGCTATAGGGTTATATA//GACTACTACCTCCAGAACCA
TTCCTGTATAGGGTTATATA//GACTACTACCTAGTAATGGAG
CGGTCCTATAGGGTTATATA//GACTACTACCTTTAAAGAAA
TTTTGTATTAGGGTTATATA//GACTACTACCTAATAATATGC
CCCAATATAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGGTTATATA//GACTACTACCTATAACAAGC
TAAGGCTTCAGGGTTATATA//GACTACTACCTTCAGATCAA
ATACCTTTAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGGTTATATA//GACTACTACCTTTAAGATAT
AAGTGTATAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGTATATA//GACTACTACCTATATGTTA

CCTCTCTTTAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGGTTATATA//GACTACTACCTTTAGGTTCC
GATGTCTATAGGGTTATATA//GACTACTACCTATAGCATT
TAACCTTTAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGGTTATAG//GACTACTACCTTAAATGTTT
TTCCTGTATAGGGTTATATA//GACTACTACCTATGCGCTGG
GGCCACTAAGGGTTATATA//GACTACTACCTATACGCTCG
AATCCCTATAGGGTTATATA//GACTACTACCTATAGACAAG
AATGTCTATAGGGTTATATA//GACTACTACCTATACACAGA
AGATAGTATAGGGTTATATA//GACTACTACCTATATGCTA//TTCCTGTATAGGTATATA//GACTACTACCTATATGAATA
AAGCACCTCAGGGTTATATA//GACTACTACCTTCAGGTGAA

KolobokP-6 GiAe

CGCTCTATCTGGCCTCAGAC//GTCTGATGCCATCTTGCGAG
CTCAAAAGCTGGCCTCAGAC//-----//TACTATATCAGGCCTCAGAC//GTCTAATGCCAGCTTACATG
TACCGGATGAGGCCTCAGAC//GTCTGATGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGATGCCAGTAATGTGC
GACGTGAGCTGGCCTCAGAC//GTCTGAGGCCAGCTCCTGAC
GTGTTTATCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGA---ATGAATGAAT
TGTGAGACTGGCCTCAGAC//GTCTAATGCCAACTCCTCAG
TTTCATATATGGCCTCAGAC//GTCTGAGGCCATATCATAGC
GACAAAGCTGGCCTCAGAC//GTCTGAGGCCAGGTTGTCAT
TGGACCAGCTGGCCTCAGAC//GTCTGAGGCCAGCTTGCCCA
TCAAAAGTATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCGTATACGCTT
TTTACTAATAGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAATAAGTAT
AAATGGAGCTGGCCTCAGAC//GTCTGAGGCCAGCTGCTTGA
CGCCAGAGAGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGACCGGTGT
TACAATATTTGGCCTCAGAC//GTCTGAGGCCATCTTGGGG
GGCTCGTGTGGCCTCAGAC//GTCTGAGGCCGTGTGCCATT
CATACCATATGGCCTCAGAT//GTCTGATGCCATATTTACTC//TACTATATCAGGCCTCAGAC//GTCTGATGCCATATTTACTC
ATTAGCTCAGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGGCTAACAG
TGCCATATCTGGCCTCAGAC//GTCTGATGCCAAGTGGTGC
CTCTGAATCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATCTGGGCAC
TTGTTTAGATGGCCTCAGAC//GTCTGATGCCAGATATATCCA
TTTTACAGCCGGCCTCAGAC//GTCTGAGGCCAGCCGTTCCA
TCAGACAGTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGTTCGGGGT
GTCGTATATGGCCTCAGAC//GTCTGAGGCCATATGGAGAT
GACGTAGTGGCCTCAGAC//GTCTGAGGCCAGTGTGTGT
ACCGCGAGTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAAGTCGTACA
ACGGATATCAGGCCTCAGAC//GTCTGAGGCCAGAACCAAT
TCTGGAGTATGGCCTCAGAC//GTCTGATGCCATCAGACCA//-----//GTCTGATGCCGTATGTCGT
GCTGCCAGCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGCTGCCAGG
GACCAAGTGGCCTCAGAC//GTCTGAGGCCAGTTGTTGT
TGTTGAATATGGCCTCAGAC//GTCTGAGGCCATATAGTACA
TTTCACACCTGGCCTCAAA//GTCTGATGCCAAGCTGACCTG
ACTACGAGTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGTTAAAAAT
TTGGGTACCTGGCCTCAGAC//GTCTGAGGCCACCTCCCTAT
CCTACTGCTGGCCTCAGAC//GTCTGAGGCCGTCTGCCAGT
GACTGAGCTGGCCTCAGAC//GTCTGAGGCCAGGTGTCGTT
GATTGACACCGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGCTCAAACA
CGGCGCGGATGGCCTCAGAC//GTCTGAGGCCATCAGCCAA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCGGATGGTTGA
TACTGTAGATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGATGAATA
TATTACATGTCCTCAGAC//GTCTGAGGCCATGTGGATCT
TGTTTATATGGCCTCAGAC//GTCTGAGGCCATATAAGCT
ACCTGGATGTCCTCGGAC//GTCTGAGGCCATCAGACCA//GTATCAAAGTTATATCAATG//GTCTGAGGCCATGTAGCGAT
GACTTTAGCTGGCCTCAGAC//GTCTGATGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGATGCCAGTATGGAC
CAATCCACCTGGCCTCAGAC//GTCTGAGGCCAAGTGGGAA
GGTGTGCTGGCCTCAGAC//GTCTGAGGCCGTCTGCCTCT
ACGAGCAGATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGACTATGTG
GTCTCGAATGGCCTCAGAC//GTCTGAGGCCAATAGGTCG
TCAGCTATATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATATAGACTG
CCTAAGAGATGGCCTCAGAC//GAATGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGATCATATG
TCTGCTGATGGCCTCAGAC//GTCTGAGGCCGATCATGTA
GGGGGAGATGGCCTCAGAC//GTCTGAGGCCAGATGGAGTA
TCGACAGAGGGCCTCAGAC//GTCTGAGGCCAGAGGTTGCA
TGAGGAGACTGGCCTCAGAC//GTCTGAGGCCAAGTATTGA
GGTTTGTGATGACCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGATTGTTTA
TATAGACATGGCCTCAGAC//GTCTGAGGCCACATATGACT
TGCAGCTGCTGGCCTCAGAC//GTCTGAGGCCGTCTCACTGC
CGCACTAAGTGGCCTCAGAC//GTCTGAGGCCATCAGACCC//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAAGTGATGCA
TGAACAATCTGGCCTCAGAC//GTCTGAGGCCATCTAGAAAT
CCCAAACTGGCCTCAGAC//GTCTGATGCCAAGCTAAGACG
AGTGAATATGGCCTCAGAC//GTCTGATGCCATATAATGAA
CATGCTAAGTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAAGTACCTAT
TGGCATGACTGGCCTCAGAC//GTCTGAGGCCATAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGCTGGTCGC
CGATTACCAAGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCACACGCCGGG
TTCAACATTTGGCCTCAGAC//GTCTGAGGCCATTCCAGCTT
TGTTTTAATGGCCTCAGAC//GTCTGAGGCCAATGTGACA
ACCGTGAACGGCCTCAGAC//GTCTGATGCCAAGATTGAT
GATATCATCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCGGAC//GTCTGAGGCCATCTTCGGTT
ACGTTTGGTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCGGAC//GTCTGAGGCCGGTGACCGA
GCTGGCACCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCAGCTGGTTCT
TGGAAAGTGGCCTCAGAC//GTCTGAGGCCAGTTAATAAT
CTTGACAGTGGCCTCGGAC//GTCTGAGGCCAGTAATAATA
CACTACAAGTGGCCTCAGAC//GTCTGATGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATGCTGTTT
CAAAAATCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATGTGATTAA
TGTTACTACTGGCCTCAGAC//GTCTGAGGCCACTCACTGG
GGACGGAGCTGGCCTCAGAC//GTCTGAGGCCAGCTGACGAC
TGCTACATCCGGCCTCAGAC//GTCTGAGGCCATCCAGTAAA
TCGACATGTCCTCAGAC//GTCTGAGGCCATCATGTCTG
GTGATGAGATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATTGCTAAC
GCATATATCAGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCGGAC//GTCTGAGGCCACATCTTGG
ATGCTCATCTGGCCTCAGAC//-----TATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGATGCCATGTGTGTTT

CCGCAATATCAGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTTTGAGGCCATACCAAGGC
ACCGATAACTGGCCTCAGAC//GTCTGAGGCCACTGCTGGC
CAGTCAAGCTGGCCTCAGAC//GTCTGAGGCCAGCTTGGGGC
GTAGCAGACGGCCTCAGAC//GTCTGAGGCCAGACGACAAA
TTTGGCATGTGGCCTCAGAC//GTCTGATGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGATGCCATGTTTAAAA
TTACACATATGGCCTCAGAC//GTCTGATGCCATATCAAGTG
ATATATATCAGGCCTCAGAC//GTCTGAGGCCATCAGACCC//TACTATATCAGGCCTCAGAC//GTCTGAGGCCGTATGTCCTT
AAAAACAGTTGGCCTCAGAC//GTCTGATGCCAGTTCATCGT
GCCGCCATATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATATGGCACA
TGAACCTCCCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCCTCTAGAATA
TAGCCTACATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCACATGTATGT
ACCGACTCTGGCCTCAGAC//GTCTGAGGCCCTTACCAGG
GCTATATATCAGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATTAAGGCCAA
TGCGTCATGGGCCTCAGAC//GTCTGAGGCCATGATGAT
CTATGGAACCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCACTGCTACA
GATACCATTTGGCCTCAGAC//GTCTGAGGCCATTATCATA
ACAGCGATTAGGCCTCAGAC//GTCTGAGGCCATTACAAGAT
TGACGGTAATGGCCTCAGAA//GTCTGAGGCCTAATGAGGGC
TTATATATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATTGTTTCAT
GAGACGTTATGACCTCAGAC//GTCTGAGGCCTTATGGCCCT
AGATATATCAGGCCTCAGAC//GTCTGATGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGATGCCAAATGTTGCT
GCCCATATCAGGCCTCAGAC//GTCTGAGGCCATAGGCATTG
GTCGAGACTGGCCTCAGAC//GTCTGATGCCACTGTTGAA
ACCACATGCTGGCCTCAGAC//GTCTGACGCTGCTGCTGGA
TAGCTCTCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTCTATCAGGCCTCAGAC//GTCTGAGGCCCTCTGTTTA
TAGCTCTCTGGCCTCAGAC//GTCTTAGGCCATCATAACCA
GACTACATGTGGCCTCAGAC//GTCTGAGGCCATGTATCAAG
AACGAGAGATGGCCTCAGAC//GTCTGAGGCCTAAGCCAAAT
TACTATATCAGGCCTCAGAC//GTCTGATGCCGTATCAACC
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ACAGTATATGGCCTCAGAC//GTCTGAGGCCATATGCGACA
CACGTAATATGGCCTCAGAC//GTCTGAGTCCACATGACGCC
TCGTGATTTGGCCTCAGAC//GTCTGAGGCCATTTACAGC
CGGCTATATGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCATATCAGGGA
AAATAGACCTGGCCTCAGAC//GTCTGAGGCCATCAGACCA//TACTATATCAGGCCTCAGAC//GTCTGAGGCCACTGTGGA
GACCGTTCTGGCCTCAGAC//GTCTGAGGCCCTCTGCTTTC

KolobokP-7. G1a

TCGTCGTCTAGGTAGCAGCG//CTCTGCAACCTCTAGTGTGT
CAGTGTGTAAGGTAGCAGAG//CTCTGCAACCCAAAGCGCTC
CTATGCTCCAGGTAGCAGCG//CTCTGCAACCTCCATATGGA
GGAGGCTAATGGTAACAGCG//CTCTGCAACCTAATGATAGC
GAAGCCTTCAGGTAGCAGCG//CTCTGCAACCTTCAGTGGTT
CGCCTCTAAAGGTAGCAGCG//CTCTGCAACCTAAAGCACA
ACAGGTTTTGGTAGCAGCG//CTCTGCAACCTTTTATGGGC
TTCTGCCCCAGGTAGCAGTG//CTCTGCAACCCCAAGGCAAC
GGTCTTTTGGTAGCAGTG//CTCTGCAACCTTGTGACCA
CTAAGCTATAGGTAGCAGCG//CTCTGCAACCTATAGTACCG
CACAACTACAGGTAGCAGCG//CTCTGCAACCTACAGTTGT
TGTCCTCTATGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTATTGCTCTA
GGCATGTATGGTAGCAGCG//CTCTGCAACCTTATCACAGT
CTCCTGTCTGGTAGCAGAG//CTCTGCAACCTCTTCTCCA
CCAAGCTATAGGTAGCAGAG//CTCTGCAACCTATAGGCCA
AGCGGTACCAGGTAGCAACG//CTCTGCAACCAAGATGAA
AGAAGCTGTTGGTAGCAGAG//CTCTGCAACCTTAATGTTGT
CCCTGTTCAGGTAGCAGCG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGCG//CTCTGCAACCTCCAAGCTAC
GCTGCTAGAAGGTAGCAGCG//CTCTGCAACCAAGATACTCT
ACTACGTAAAGGTAGCAGCG//CTCTGCAACCTAATTAGAAC
ATGATATAAAGGTAGCAGCG//CTCTGCAACCTAAATAGATA
TTTTTGTATTAGGTAGCAGAG//CTCTGCAACCTTAAGAACA
CCTGCTTTCAGGTAGCAGCG//CTCTGCAACCTACAGTCTCT
CGTCATTTCAGGTAGCAGAG//CTCTGCAACCTACAGTGAGA
CATACATACAGGTAGCAGCG//CTCTGCAACCTACATACACA
ACACTGTTTCAGGTAGCAGCG//CTCTGCATCCTTCAATTATG
AGCTGTTGTAGGTAGCAGCG//CTCTGCAACCTGTAGCGTAC
CGGACCAGATGGTAGCAGCG//CTCTGCAACCAAGATAAATGT
AAAGGTTAAAGGTAGCAGAG//CTCTGCAACCTAAACAGTCG
TTAATGTGCAAGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTGCAAGTGGAT
CCATCTCGCAGGTAGCAGCG//GTCTGCAACCTCCAGAACGC
CATGGCTGAAGGTAGCAGCG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGCG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGCG//CTCTGCAACCTGAAGAGTAG
AGCGACTTCAGGTAGCAGAG//CTCTGCAACCTTAAGAACA
TATATATTATGGTAGCAGCG//CTCTGCAACCTTATATAGGC
AGACATAGAAAGGTAGCAGCG//CTCTGCAACCTTAAGAACA
ATTATATACAGGTAGCAGCG//CTCTGCAACCTACAGACGCT
AGGCTTTACAGGTAGCAGAG//CTCTGCAACCTACAGACGCT
ACATCGTAACGGTAGCAGCG//CTCTGCAACCTGAAGAACA//AATGTCTTCAGGTAGCAGCG//TTCTGCAACCTTAACCAACAC
GTTGCTTTATGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTG
TCTTCAGGTAGCAGAG//CTCTGCAACCTTATCGTCTG
ACATTGTATGGTAGCAGCA//CTCTGCAACCTTATACTTTA
GTCCCTTCAGGTAGCAGCG//CTCTGCAACCTTTAGCACTC
TGCTGCTTTGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTTTTCCATCC
CGGCTCATAGGTAGCAGAG//CTCTGCAACCTTATACCTA
AGTATCTTCAGGTAGCAGCA//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGCG//CTCTGCAACCTTCTGTGTTG
CCTTGATCTGGTAGCAGCG//CTCTGCAACCTGATTGTTCT
GTTATATTCAGGTAGCAGCG//CTCTGCAACCTTTATGGGAA
GCCCCCTGAAGGTAGCAGCG//CTCTGCCACCTGAAGCGCGG
GGTGCCTGAAGGTAGCAGTG//CTCTGCAACCTTAAGAACA
ACTCTCTTTGGTAGCAGCG//CTCTGCAACCTTTTATCCCA
AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTTAAGAACA//AGTGTCTTCAGGTAGCAGAG//CTCTGCAACCTTTCATCGGAG

Figure S5. Junction sequences of solo LTDR excision. The inferred likely TSDs are highlighted in yellow. The internal sequences of *KolobokP* families are omitted.

Case_1, LTDR-INT, KolobokP-7N2_CorFlu

>LG08 14733476 -> 14735329
>LG02 47074796 -> 47074865

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                                KolobokP-7N2_CorFlu LTDR-INT
                                GCGGCAGTAAAC//ACAAATTCAGCGATATCCTTAA
                                |||
GAAAGAGGTCAAATCTATTTTAGCTATCAGTGTAGTGGCGGCAGTAAAC//ACAAATTCAGCGATATCCTTAAATATATGAACCAAGTGAAGGCAATCCAAATCAG
|||||:|||||
GAAAGAGGTCAAATCTATTTTAGCTGTCAGTGTAGTA-----TATACGAACCAAGTGAAGGCAATCCAAATCAG

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; FRAGMENT 14733476 -> 14735329
LG08
GAAAGAGGTCAAATCTATTTTAGCTATCAGTGTAGTGGCGGCAGTAAACACTTATTTTGAATATTTTG
GACTTTCAACCCGACGCCAAACACTTGCCACTCTTGCACTGTCTAACAACTTGAACCTGAAATAAAAAGA
TGATATAACACATACAATTTCAGTATTTAAAAACAATAATCATATTGTTAATAAACCATGACTTCAAATTT
TCTTAAGAATTCAAATTTGGGGCTTGGTCGCGAAATTCATGGCAATTTAGAGTCGGTTTGCACTTTTTT
TAACAGTCATAGCTTTCTTATGGCAACGACTGATACTTGAACCTGTAAAAATGCTTTTCTCATTTCCCT
AGTGATAACAAGCAGCTAAAAACAAATATGTTCAATAACCGATAAGATTTTGCAGTATTCAGCAAAATCTGT
ATGCCCTGAAAACTTGCCGGTAAAAATGGCTCCGAGCAGACGTTGCATCACTTCCGTTTCCACTTCC
TCAAAATGATGTAAGCTAGCAAGTTCAGATATTTGTCATTTTCTTATTTCTCAAACTTCATATTTGGC
AGCAAGAAATCAAATTTTGATAAAACAATTACTAGTTAGTCAACAAGCTACCTAAATCTGCAACTTACCT
CTTATCTTATATTTTGACCGGGGCCAATTCGCATCTATGGCTAAAAAGTCTTTACTAGTCCCTTAAGAG
CAGAGAGATGTTTTCCCTTTAAGCCATGAACCTCATCTCTGTTCAAATTTAGAACCATTCTTGAGCAAATTA
AGACCAAAACCAAGCCAGTATCATCATCTTGTCTGGTTTTAAGAGCAAATGACTACCACTCACTTTTC
TAAAAATGGCCAATTTTGCTCCATTACAGTCAAGGAAATTTATACAGTGTCTTAAGAAATGCTATTA
AACAGACAAATGGAACCAAGATACCTGACATTCATTACCACATAAAAGAAGACAAGACAGAAGATGATCA
ATGAAAAATGCTGTACAGCACTCATTTTGTAAATAAAATAGGTCAGGCAAGCAAATGTATCAGTC
AAACAGGCAAAACTGGCCATTCTCACTTTCATCACTCACTACCATGTTGCCATCATGTTTCACTTGTCT
CATATGGACCATGTGCATACCTTCTGCTAATGAAGTGCCTTTTCAACAAATACACACATCACACTTT
ATGTTTATGCTTGTCTTAATGTCAACAAATAATGATTGAATCAAAAAATGGCCAAGAAACAAATAGCAAA
TGATGAAATTTCTACCTCTGGCTGCAGAAAGGAATAAACAGCTAAGCTAACATAACAGACTACAGCTGAA
GGCCAAATCCTGCCTATCTGGGCTAAAACTACTTAACTGATAACAGTGTTCATGGCAAAACCTACAC
AGTTCTAGAAGTGTATTTCAATGGTCGACCAAGATTTACATCTCGGTTGCAAGAGCTCGGACTGTGGAA
ATCTGCTTGCCGAGCTTAATTTTCTTAATTTATTTTATCGGCTTGATTTCTGGCAGATCTTATGCCA
AATGCTCTTTCGTAATCATCTGAGAGCTTTTCATGATGATTTGATGGCCTTTCATAAAAATCTGCATT
TCTGACATTTACGACTCGTTTTTATGGCTCGATGGAGATTTTTTCTAATAAACTGTAATTTACCTCC
CTTTATTTGTAACCTCAGCTTGTAAGCAAGTATGTAACAGCATAAAAATGATGTCATTTGCAAAATATAG
CAGTCCAATACAGCATCTAGACCAAAATATGACATAATGAACACTTACAAATTCAGCGATATCCTTTA
AATATATGAACCAAGTGAAGCAATCCAAATCAG

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; FRAGMENT 47074796 -> 47074865
LG02
GAAAGAGGTCAAATCTATTTTAGCTGTCAGTGTAGTATATACGAACCAAGTGAAGGCAATCCAAATCAG

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Case_2, INT-LTDR, KolobokP-7N2_CorFlu

>LG07 61998071 -> 61999928
>LG07 62512633 -> 62512564

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                                KolobokP-7N2_CorFlu INT-LTDR
                                TTAAGAGCAGAGAGATGTTT//AAAAGTCTTTACTAGTCCC
                                |||
CTTTGCAGAGCAGAACACACAATTTTATCATTTGATATAAGAGCAGAGAGATGTTT//AAAAGTCTTTACTAGTCCCAGCTTTAAATAACCCGTCTTACATCTAAACTC
|||||:|||||
CTTTGCAGAGCAGAACACACAATTTTATCATTTGTA-----TAAGCTTTAAATAACCCGTCTTACATCTAAACTC

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; 61998071 -> 61999928
LG07
CTTTGCAGAGCAGAACACACAATTTTATCATTTGATATAAGAGCAGAGAGATGTTTCTTTAAGCCATGA
ACTCATCTCTGTTCAAATTTAGAACCATTCTGAGCAAAATGAAGACCAAAACCAAGCCAGTATCATCATC
CTTGCTGGTTTTAAGAGCAATGACTACCACTCACTTTCTAAAAATGGCCAATTTTGCTCCATTTA
CAGTCAAGGAAATTTATACAGTGCTTTAAGAAATGCTATAAAACAGACAAATGGAACCAAGATACATGAC
ATTCATTTACCAATAAAAGCTCACAGAAGATGATCAATGAAAAATATGCTGTTACAAGCACTCATTTTT
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CATGATGATTTGATGGCCTTTCTATAAAAACTGCATTTCTGACATTTACGACTCGTTTTTATGGCTC
GATGGAGGATTTTTTCTAAAAACTGTAATTACCTCCCTTTATTTGTAAACCTCAGCTTGTAAGCAAGT
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GACATAATGAACACTTACAAATTCAGCGATATCCTTAAGGCGGAGTAAACACTTATTTTGAATATTTT

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GGACTTTTCAACCCGACGCCAAACACTTGCCACTCTGGCACTGTCTAAACAACTTGAACTGAAATAAAAAG
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TTCATATTTTCTTAAAGAAATCAATTTTGGGGCTGGGTCGCGAAATTCATGACAATTTAGAGTCAGTTTG
CACTTTTTTTTAAACAGTCATAGCTTTCTTATTGCCAACGACTGATACTTGAAACCTGTAAAAATGCTTTT
CTCATTTACCTAGTGATAACAAAGCAGCTAAAACAAATATGTTTATAACCGATAAGATTTTGCAGTATTTCCA
GCAAATCTGTATGCCCTGAAAAACTTACCGGTAAATGGCTTCGAGCAGACATTTGCATCACTTCCGT
TTCCACTTCTCTCAAAATGATGTAAGCTAGCAAGTTCAAGATATTGTGCATTTTCTTATTTCTCAAACTT
CATATTTGGCAGCAAGAAATCAAAATTTGATAAAACAATTACTAGTTAGTCAAAACAAGCTACTTAAATCT
GCAACTTACCTCTTATCTTATATTTTGACCGGGGCCAATTCGCATCTATGACTAAAAAAGTCTTTACTAG
TCCC**TAA**GCCTTTAAATAACCCGTCTTACATCTAAACTC

; 62512633 -> 62512564
LG07
CTTTCAGAGCAGAACACACAATTTTATCATTTGTTA**TAA**GCCTTTAAATAACCCGTCTAACATCTAAACTC

Case_3, INT-LTDR, KolobokP-4N1_CorFlu

>Contig4291 14634 -> 16855
>LG01_1 76171507 -> 76171573

KolobokP-4N1_CorFlu INT-LTDR
TATAAGAGAACTT//AGTTTAATACAACC
||||||| |||||||
TGTAGAAGGTACCTTCTGCGTTGTTAACTTGTA**T**TATAAGAGAACTT//AGTTTAATACAACC**TAAT**GACTTGTACTGTATTTAAGACACGCATACC
||||||| |||||||
TGTAGAAGGTACCTTTTGCCTTGTTAACTTGTA-----TAATGACTTGTACTGTATTTAAGACACGCATACC

; FRAGMENT 14634 -> 16855
Contig4291
TGTAGAAGGTACCTTCTGCGTTGTTAACTTGTAATTATAAGAGAACTTAATTTTTTTTAAATATCTCTATA
TTTGTCTACACATAGCTGCACCTTTTGTAAAGAAATGTTTAAACAATTTTAAAGCACTCAGACTACCCAT
TCCATGAAAAACACCATATCTATACAGCTAGTGTCATGGCCTCGGCCAAGCGATTTTAGGCTCATTTTA
TATATCCGAACATTTTGGCTGCCATTTTAAAAACGCGTTACTTTTTCATGTCATATTGACTTTTTTGATT
GCATAAGAAGTTACTTTTATACGATTACACTACAATAGTCTGTTTATTTTACCAAAGCGCCAGGCAAGT
GCAATTACTTCAATTTTTTCTAAAAATGCTGACTTATTTTTTCAATTTTCACATTCACCTCAAACCTT
TTAACCCAAACATCACAAAATACTGACTAAAACTCACTTATTTTATCAAAAAATAATATTACAAACACA
CTTTGATCAGTAGATTTAATAATAAGCTGATTTGAGTGGCTAACCCAGTCAATTAAGGCCCTACAGTGCT
GTTATGCGCATTGACAGCACCTTAACACCTATGTGTGATTGCAGCACCTTAACATAACAAAGTTGCCTAT
AAAAAAGTCAGCTAAATGTTCCCAAGGTGTGTGTATTCCTAAGCCACACTAGTGTATGTTTAACTCA
CAAAATATGGTGCTTATAGGAAACGAGAAAAACATAGGCGCTAAAACTGGGTTTGAAAAAGGCCAGCCG
AGTGCTATGAAGGGAAGTCATTTGAAAATGAGGAAACTACCTCTGAATCCAAATTTACATGCTTGCCCA
AACAACCTTACTATGATCAAAATAGTAGAGGATGGAGGAATCTTACTTTTGAAGATGTTGATGGTTCAAA
TACCAATGTGAAACCACTCTGCAGTCTGTCAATCCAAAACCTCGGTTGAGGAGTGACACACCCCTAAAAGT
TGACTCTGGTTACTACCACCTGACTTGCTTGTTAACATGATTACAGGCTTTTGGATGTCGTCTAATG
TTCAACTCTGAAATGAGGAAGCATATGCTTTAAAGCCTCCGTTGCAATGGATATATCATGATTGATGCT
GCCAACTCAAGCATATTTCTGACTTGTCGACTGTAGTTTTCACCGACAGAATGCTGACAAATGAATTG
TTGTATATACTGTACATAGTGTAATATGTTATAGTTGTTCTTATCCTATTTTAAACATCTAGTTATTTA
AATAAAATTAATACATACAAAATGTACACTTTGGCAACATCTCCCATTTATAATATGCCCATACACA
ACGAGCAGGTCTGCCTTTGATTGTTTACCCACTGAGGCTCTACAGTCAATAACTGAAATTGCAACATAA
AGAATAATGACACAGATGTGACACATGCATCCTCTGGTAGTCTTCCATGTTCTGGTGATTTTGATAGA
CTAGCCCTTTGAACATAATAGTATCTGCTAACTGAGTCCTCTGGAAATTTAACTCTCATTTCTGCCATACCT
CATGCCCTTTTGGTCCCTAAGTGTCCACCCCTATCTAATACACACCCGTGTTGCCAAATACTTCACATTTA
GATTCATTTCTTCTTGAATGCTGATAAAAAAGTGATTTAAAGTCATTTGACTGCAGACGACCAAAAGT
AGACAGGTAACCGGATGTTGTCAATTTTCTTATAGGTTGAACCAAACTAAAACAATTTCCATAGACGCT
AATGTTAAATAAATGATTTTCAATTGCATCTTGTCAATTTTATTTATGTCCTTAATCCAGCAAAACCTGGT
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ATTCTTAACGATGCTTGATCATATAATGAACACAAAATAACCAATTTCTGAAGTATTTTATGTCCTTTACA
TACAAAAGGAAAAATGAACATTTTAGCAATTGCACTACATTCGAATGGACCAAGGAGGAATACTGGGTG
ATTAGCTTTAATACAACC**TAAAT**GACTTGTACTGTATTTAAGACACGCATACC

; FRAGMENT 76171507 -> 76171573
LG01
TGTAGAAGGTACCTTTTGCCTTGTTAACTTGTA**TAAAT**GACTTGTACTGTATTTAAGACACGCATACC

Case_4, INT-LTDR, KolobokP-4N1_CorFlu

>LG11 25854663 -> 25856886
>LG01 101591680 -> 101591620

KolobokP-4N1_CorFlu INT-LTDR
TATAAGAGAACTT//AGTTTAATACAACC
||||||| |||||||
TTAATTAGTTTTGTGCGCTAGAATTGGCCCT**TTTA**AGAGAACTT//AGTTTAATACAACC**TTTA**ATCAACGGGGGATAACTGGTAAAAAT
||||||| |||||||
TTAATTAGTTTTGTGCGCTAGAATTGGCCCT-----TTTAATCAACGGGGGATAACTGGTAAAAAT

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; FRAGMENT 25854663 -> 25856886
LG11
TTAATTAGTTTTGTGCGCTAGAAATTGGCCCTTTTAAGAGAACTTAATTTTTTTTAAATATCTCTATATTT
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ATGAAAAACACCATATCTATACAGCTAGTGTCCATGGCCTCGGCCAAGCGATTTTAGCCGCAATTTATAT
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CCCCAACATCAGAAAATAGTACTAAAACCTCACTTATTTTATCAAAAAATATATTATTACACACACTTT
GATCAGTAGCTTTAATAATAAGCTGATTTGAGTGGCTAACCCAGTCAATTAAAGGCCTACAGTGCTGTTA
ACTGCCATTGACAGCACCTTAACACCTATGTGTGATTGCAGCACCTTAACATAACAAGTTGCCTACAAAA
AAGTCAGCTAAATGTTCCCAAGGTGTGTGTATTCCCTAAGCCACACTAGTGTATGTTTAACTCACAAA
TATGGTGTCTTTATAGGAAACGAGAAAAACATAGGCGCTAAACAGGGTTCGAAAAAGGCCAGCCGAGTG
CTATGAAAGGGAAGTCATTTGAAAAATGAGGAACTACCTCTGAATCCAAATTTACATGCTTGCCCAACA
AACTTACTATGATCAAAATAGTAGAGGATGGAGGAATCTTACTTTTGAAGATGTTGATGGTTCAAATACC
AATGTGAAACCACTCTGCAGTCTGTCAATCCAAAACCTCTGGTTGAGGAGTGACACACCCCTAAAGTTGAC
TCTGGTTACTACCACCTGACTTGCTTGTAAACATGATTTACAGGCTTTTGGATGTCTGTCTAATATTCA
ACTCTGAAATGAGGAAGCACATGTCTTTAAAGCCTCCGTTGCAATGGATATATCATGATTGATGCTGCCA
ACTCAAAGCATATTCTGACTTTGTCGGACTGTTAGTTTTTACCAGACAGAATGCTGACAAATGAATGTTGT
ATATACTGTACATACCGTAAATATGTTATAGTTGTTTTATCATATTTTAAACATCTAGTTATTTAAATA
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AACATAAAGAAATAATGACACAGATGTGACACATGCATCCATCTGGTAGTCTTTCCATGTTCTGGTGATT
TGATAGACTAGCCTTTGAACATAATAGTATCTGCTAACTGAGTCTCTGGAATTTAACCCCTCATCTGC
CATACCTCATGCCCTTTTGGTCCCTAAGTGTCCCACCCCATCTAATACACACCTGTTGCCAAATACTTC
ACATTAGATTCTATTCTTTTGAATGCTGATAAAAAGTGATTAAAGACATTCTGACTGCAGACGAC
CAAAATAGACAGGTAAACGGATGTTGTCATTTTCTTATAGGTTGAACCAAATAAAACAATTTCCATA
GACGTTAATGTTAAATAAATGATTTTCAATTGCATCTTGTCATTTTATTTATGTCTTAATCCCAGCAAAA
CCTGGTATCAGTTTTGAAGTTCATCTATCTCTTTTGTCTAAAATAAAGCAAAATGGCATGTTAACTTACT
TGTAAGAAATCCCAAGTGACCGAATGACGTCACTCAATTTGTCTAGTATCCATACCGGGGATTTCCCT
CAACTACCTACTTTTCACTTTTCCAATTAACTGATCATCCATTTTCTGTCTGATTCTTCTATTTTATGTCT
CAAAATGATTCCATAATGATTGCTTGTATCATAATGAACACAAATAACCACATTCTGAAGTATTTTATGTCT
TTTACATACAGAAGGAAAAATGAATATTTAGCAATTGCGACTACATTTCGAATGGACACGGAGGAATAC
TGGGTGATTTAGTTTAAATACAACCTTTAATCAACGGGGGATAACTGGTAAAAAT
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; FRAGMENT 101591680 -> 101591620
LG01
TTAATTAGTTTTGTGCGCTAGAAATTGGCCCTTTTATCAACGGGGGATAACTGGTAAAAAT
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Case_5, INT-LTDR, KolobokP-4N1_CorFlu

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>Contig4074 75588 -> 73366
>Contig4074 54690 -> 54637
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KolobokP-4N1_CorFlu INT-LTDR
TATAAGAGAACTT//AGTTTAATACAACC
||||| |||||
ATCAGGTTTCGATTTAAAGAGGCCAAACTTTATAAGAAAACCTT//AGTTTAATACAACCTTAGCTAGATGAAACTTCCATCCCC
||||| |||||
ATCAGGTTTCGTTTTAAAGAGGCCAAAC-----TTTATAGTTAGATGAAACTTCCATCCCC
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; FRAGMENT 75588 -> 73366
Contig4074_1
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TGAAAAACACCATATCTATACAGCCAGTGCCATGGCCTCGGCCAAGCGATTTTAGGCTCATTTTATATA
TCGCAACATTTTGGCTGCCATTTTAAATAACGCGTTACTTTTTCATGTCATATTAACCTTTTTTGATTGCAT
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TTAATTCAAATTTTTTCTAAAATTGCTGACTTATTTTTCAATTTTCACATTCACCTTCAAACCTTTTTAA
CCCCAACATCAGAAAATAGTACTAAAACCTCACTTATTTTATCAAAAATAATATTATTACAACACACTTT
GATCAGTAGCTTTAATAATAAGCTGATTTGAGTGGCTAACCCAGTCAATTAAAGGCCTACAGTGCTGTTA
ACTGCCATTGACAGCACCTTAACACCTATGTGTGATTGCAGCACCTTAACATAACAAGTTGCCTATAAAA
AAAGTCAGCTAAATGTTCCCAAGGTGTGTGTATTCCCTAAGCCACACTAGTGTATGTTTAACTCACAG
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GCTATGAAAGGGAAGTCATTTGAAAAATGAGGAAACTACCTCTGAATCCAAATTTACATGCTTGCCCAAAC
AACTTACTATGATCAAATAGTAGAGGAAGGAGGAATTTCTTACTTTTGAAGATGTTGATGGTTCAAATAC
CAATGTGAAACCACTCTGCACTCTGTCAATCCAAAACCTCTGGTTGAGGAGTGACACACCCCTAAAGTTGA
CTCTGGTTACTACCACCTGACTTGCTTGTAAACATGATTTACAGGCTTTTGGATGTCTGTCTAATGTTC
AACTCTGAAATGAGGAAGCACATGTCTTTAAAGCCTCAATGCAATGGATATATCATGATTGATGCTGCCA
ACTCAAAGCATATTCGACTTGACTTGTGCGACTGTAGTTTTTTCACCGACAGAATGCTGACAAATGA
ATTGTTGATATAGTGACATAGTGTAAATATGTTACAGTGTGTTTTATCATATTTTAAACATCTAGTTA
TTTTAATAAAAAATTAATACATACCAAAATATACACTTTGGCAACATCTCCCATTTTATGACATGCCCA
TACAACAGCTCTATCCCTGCAGGTCTGCTTTTGTGTTTCAACACCTGAGGCTCTCAAGTCAAATGACT
GAAATTTGCAACATAAAGAAATAATGACACAGATGTGACACATGCATGCCATCTGGTAGCTTTCCATGTTC
TGGTGATTTGACAGACTAGCCTGTGAACATGGCTAATAGTATCTGCTAACTGGAATTTAACTCATCTT
GCCATACCTCATGCCCTTTTGGTCCCTAAGTGTCCACCCCATCTAATACACACCTGTTGCCAAATACT
TCACATTTAGATTCTATTCTTTTGAATGCTGATAAAAAGTGATTTAAAGTCATTCTTACTGCAGACG
ACCAAAGTAGACAGGTACCCGGATGTTGTCAATTTTCTTATAGGTTGAACCAAATAAACAATTTCCA
TAGACCCATAATGTTAAATAAATGATTTTCAATGCACTTTGTCAATTTTATTTATGCTCTAATCCAGCAA
AACCTGGTATCAGTTTGAAGTCTATCTATCTCTCTTTTGTCTAAAATAAAGCAAAATGCGATGTTAACTTA
CTTTGAAGAAAATCCAGTGACCCGAATGACGTCACTCAATTTGTCTAGTATTCATACGCGGGATTTTC
CTCAACTTACCTACTTTCACTTTTCAATTAACATGATCATCCATTTTCTGTCTGATTTTCTATTTTATGT
CTCAAAATGATTTCTCAATGATTTGCTTGTATCATAATGAACACAAATAACCACATTCTGAAGTATTTCTATG
TCTTTACATACAGAAGGAAAAATGAATATTTAGCAATTGCGACTACATTTCGAATGGACACGGAGGAAT
ACTGGGTGATTTAGTTTAAATACAACCTTTTATAGCTAGATGAAACTTCCATCCCC
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; FRAGMENT 54690 -> 54637
Contig4074
ATCAGGTTCTGTTTTAAAGAGGCCAAAC**TTT**TAGTTAGATGAAACTTCCATCCCG

Case_6, Solo INT, KolobokP-4N1_CorFlu

>LG03 76820672 -> 76818934
>LG03 77366061 -> 77366121

KolobokP-4N1_CorFlu INT
TATAAGAGAACTTAATT//TCATTTTTTCTTATA
|||||
ATCACGAATCTTCTCATAATTTCTGT**TTTA**GAGAACTTAATT//TCATTTTTTCTTATAGTGAGAGTATTATGTGTGTAATATAAGG
|||||:|||||
ATCACGAATCTTCTCATAATTTCTGTTTA-----GTGAGAGTATTATGTATGTAATATAAGG

; FRAGMENT 76820672 -> 76818934
LG03
ATCACGAATCTTCTCATAATTTCTGT**TTTA**GAGAACTTAATTTTTTAAAGTATATTTGTTCTACACATA
GCTGCACCTTTTGTAAGAAATGTTTTAACAAATTTAAAGCACTCAGACTACCCATTCCATGAAAAACACC
ATATGTATACAGCCAGTGTCCATGGCCTCGGCCAAGCGATTTTAGGCTCATTTTATATATCGCAATATTT
TGGCTGCCATTTTAAAAACGCGTTACTTGTTCATGTATTTGGCTTTTTTGATTGCATAAGAAGTTACT
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TTTTCTAAAAATGCTGACTTATTTTTCAATTTTCACATTCACTTCAAACCTTTTAAACCCTAACATCAC
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TGTTCCCAAGGTGTGTGTATTCCCTAAGCCACACTAGTGTATGTTTAACTCACAAATATGGTGTCTTA
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AGTCATTTGAAATGAGGAACTACCTCTGAATCCAATTTACATGCTTGCCCAACAACTTACTATGA
GCAATAGTAGAGGAAGGGAATCTTACTTTTGAAGATGTTGATGTTCAAATACCAATGTGARACCA
CTCTGCAGTCTGCAATCCAAAACCTCTGGTTGAGGATTGCACACACCCTAACGTTGACTCTGGTTACTAC
CACCTGACTTGCTTGTTAACATGATTTACAGGCTTTTGGATGTCTGTCTAATGTTCAACTCTGAAATGA
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TCTGACTTGTCCGACTGTAGTTTTACCCGACAGAATGCTGACAAATGAATTGTTGTGTATCTGTACAT
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AGGTCTGCCTTTGATTGTTTACCACCTGAGGCTCTAAAGTCAAATAACTGAAATTGCAACATAAGAATA
ATGACACAGATGTGACACATGCGATCTGCTAGTCTTCTATGTTCTGGTGTATTTGATAGACTAGC
CTGTAACATAATAGTATCTGCTAACTGAGTCCTCTGGAAATTTAACTCTCATTCTGCCATACCTCATGC
CCTTTTGGTCCCTAAGTGTCCACCTCATCTAATACACACCCTGTTGCCAAATACTTCACATTTAGATTC
TATTCTCTTTGCAATGCTGATAAAAGTGATTTAAAGTCATTCTGACTTCAGACGACCAAAGTAGACAG
GTACCCGGATGTTGTCATTTTTTCTTATAGTGAGAGTATTATGTGTGTAATATAAGG

; FRAGMENT 77366061 -> 77366121
LG03
ATCACGAATCTTCTCATAATTTCTGT**TTTA**GTGAGAGTATTATGTATGTAATATAAGG

Figure S6. Protein alignment of the cytoplasmic ballast domains of P2X7 purinoceptors, *Nanor* from zebrafish, and KolX proteins of *Kolobok* families.

P2RX7_Human	PVWCQCGSCL	PSQ--LPESH	RCLEELCCR	-----	-----	KKPGACIT	TSELFRLVL
P2RX7_Opossum	LKWCCCGHCR	PSQ--LPEGT	RCLEELCCR	-----	-----	RKGGPCIT	TSALFELVL
P2RX7_Platypus	PHWCHCGNCS	QSQ--LPKN	RCLEELCCR	-----	-----	EKKGPCIT	ISALFQELVL
P2RX7_Chicken	PKWCCCGRCQ	VAQ--KHH	-----	EQLCCR	-----	KKEGQCIT	TTYWFAQLVL
P2RX7_Fugu	PAWCKCACCV	LTS--VPH	-----	EELCCR	-----	RSDGACIT	SSPLFELLVL
P2XR7_Polypterus	PSWCHCGHCS	SAP--TNH	-----	EQLCCR	-----	RSNGQCIT	TSELFRLVL
Kolobok-1_NV2p	PDWCKCGNCR	EMP--QOI	-----	ENVCCG	-----	KR--NCES	TKARFGKCL
Kolobok-1_SKow_2p	PPWCKCGQCI	NMP--TQI	-----	ENKCCV	-----	VRQGQECIT	GSWLFOHLVL
Kolobok-1_AP_1p	KDWCLCNKCI	RFT--TDQ	-----	ECICCFE	LEKL-HK-LL	PQSNKKTCIT	EISSFSKII
Kolobok-1_BF2p	FLWCRCTNCR	PMT--TVR	-----	ECVCCHD	LTEAETK-GV	GQWDGIHCLR	DHPDFSAVVL
Kolobok-1_CTe_2p	NTWCRCGMCE	SETLGDEK	-----	EAICCLE	VPNCVKMIAA	EASADKQCIT	LHPDFDVLCL
Kolobok-1_XT2p	TDWCQCSNCS	PMP--TVI	-----	ECVCCHE	EPLI---KA	LIPDDASCI	EWHRFKSDII
Kolobok-1_Aqu_2p	TTWCQCGHCV	PMP--TCM	-----	ECVCCCE	IQQVVAK-KN	HLQSPVVCIT	LHPGFHNVCL
Nanor_Zebrafish	SQRCS CGNCR	LTP--E	-----	ENVCCRD	IPOVKHK	CGQVNVCCIT	NHPGFELVTL

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P2RX7_Human	SRHVL-----	QFLLLYOEPL	LALD--VDST	--NSRLRHCA	YRCYATWR--	FGSQDMADFA
P2RX7_Opossum	SRATL-----	RFILLYOEPL	LEMD--AATL	--NNRLRRCA	YERYIDWR--	FGSEDMAGFA
P2RX7_Platypus	SRPTL-----	QFMLFYRDPL	MTLD--SDAL	--TRELRHCA	YKRYIDWR--	FGSEDMVDFA
P2RX7_Chicken	SRDTL-----	NKALLYEDPF	LDLT--GHSS	--NSQLRRIA	YKOYIHWL	FGSFELEDRA
P2RX7_Fugu	RRSTL-----	EAALLYRDPL	DPPT--GPGQ	--TTTLRHCA	YRQYIFWR	FGEQADGSH
P2XR7_Polypterus	DRRTL-----	ELTLLYENPL	LDLS--NENI	--ICKLRHCA	YRQYVEWR	FGSISPGGIA
Kolobok-1_NV2p	DVEVL-----	SLGIRSSADI	RNDW--HDSS	--ARAFRKAG	YRNYILDK	HGYLGKGRRL
Kolobok-1_SKow_2p	DGDVL-----	EVAMRVVADV	YAEN--PLRD	--NACFRHYA	YRQFIYWQ	YGRLGKGNRR
Kolobok-1_AP_1p	DEEVLNITRQ	QIIVKSKNKS	KKKT--LCSSQ	PTNKMWRYIC	YKQFTHWINS	WNSIGKGNRI
Kolobok-1_BF2p	NKAVL-----	DAALNFRVDI	KLEP--LRDE	YPPRTYRLQA	YRQCTAWL	HQRLGRKIRR
Kolobok-1_CTe_2p	HTTVL-----	RNVLVSLNHT	RMDD--WNISN	LDNRSYRWAA	YRQFTWWV	YAVLGARIRR
Kolobok-1_XT2p	DPERA-----	DCALKLTNSK	KKKK--PNTAA	AYMRAIRKAA	YRCFTVWV	YGYLGTGVRK
Kolobok-1_Aqu_2p	DMWVL-----	QASVYVYR	-----	QHQMRRHTA	YRQLVSWC	WQWLGRNNRV
Nanor_Zebrafish	NPDVL-----	QVSYCRYQDV	YGKT--LPDL	--NSRNRHLA	CLNFIFLC	WSDVGQOTRA

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P2RX7_Human	ILPSCCRWRI	RKEFPKSE-G	QYSGFK
P2RX7_Opossum	ILPSCCRWMI	RDHFPKQD-G	KYTGFK
P2RX7_Platypus	ILPSCCRWRI	RKEFPKPG-G	QYSGYK
P2RX7_Chicken	IIPSCCRRLI	RSTYPKEN-G	NYTGFN
P2RX7_Fugu	VIPSCCVWRI	REEYPSLD-R	RYSGFR
P2XR7_Polypterus	VVPRCCVNKV	RHKFPNAS-G	HYKGLC
Kolobok-1_NV2p	VAPSCIVWQI	RHHYPTRT-G	IYMGRF
Kolobok-1_SKow_2p	VVPSCCVWAV	RRRFPPSPN-N	VYVGFK
Kolobok-1_AP_1p	VIPSCVWNKI	RQKYPEQD-G	CYVGYK
Kolobok-1_BF2p	VLPSCAVWAI	REAYPEPAGG	NYRGFL
Kolobok-1_CTe_2p	VVPACAVNAI	RKAFFEVS-G	DYTGYY
Kolobok-1_XT2p	VIPACVVTAV	REAFPDPK-G	KYVGFL
Kolobok-1_Aqu_2p	VLPACAVAKI	RETFFS-N-G	NYVGFE
Nanor_Zebrafish	VIPSCVAGRM	ROKLPEGN-E	NYNGLF