*Fig. 1A-1*

ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATT
GGCACAGCCCAAAACTTGCTGCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCA
CCTTGCTTCCGGAGTTGCACTGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTA
CCCCCAATGCCAGGGTGTTTATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTG
AACCTCCAGGTTTCTGAGCTCGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGC
ATTCCCCACTGTTGAGTGCTCCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAA
ACCTGAACTTCCAACAAAGAATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAG
GCTCTACAAGTTTATGAACGGGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTC
CCTACATGTGAGTGATAAACCCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTG
AAGACTTTTGCCCCTTTGAGTGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGG
AAAGTCTCCTGGGCCCCTCGTGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCG
GCTCCGCACCTCCTTCCCGCCCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTA
TGCGGGTCGAACGCCAACACGGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTG
CTTCCACTGGAAGTTCAGAACAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAA
GTACCTGCAGCGGAGGCTGCAAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCT
CCGTTAAGGAGAGTTGGATCCGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATA
AGGGTTGAGCCTAACACGTCGCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGC
TGGAAAGAGAGCAAGAAAAGCACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGC
AGGCCAAGGAGCACGAGGTTGCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGT
GGTTGGCACTGCATTTCCGCCATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACC
TCCAGATGACTGGGCTACTGACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACG
GTGCTTGTACTAGCGCCAAGTACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCT
TCTTTGCTCCCTCTTGAATGTGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTC
CGGATTTGACCCTGCCTGCCTTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCG
AAATGTCTGGCGATTCCGATCGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGC
GGAGGGAATCACCCTGACCAAGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCA
GAACAAAACCAACCGGGTCACCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAG
AATGCTTGGCCAGGCTTGAGAAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGG
GTTGAGGCGGCAACCCAGACGATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTC
CTTGGACAACAACTCGGTCCCCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTC
ACCGTGAAAGACTAACCGCCGTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCT
GGTCCACGGCCCACACTGCCACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGC
CCAGACGACTTCGGACATGATGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGA
CACCACCACCCCCTCCGCCAAAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCC
GCCCCGCGCAGGAAGGTTGGGTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTT
GGCTGTTAGTAGCCCCTTTGATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCAC
CGCAATGCATCTTCAGGCCGGCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCG
GTGACACCCTTGAGTGAGCCGATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGC
GGCAATCCCACCGTACCAGGACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCAC
CGCCGCAGAGCGGGGGCGTTCTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGT
AACATTAAACCTGCGTCCGTGTCATCAAGCAGCTCCTTGTCCAGCGTGAGAATCACACGCCCAAAATACTCAGCTCAAGC
CATCATCGACTCGGGCGGGCCCTGCAGTGGGCATCTCCAAGAGGTAAAGGAAACATGCCTTAGTGTCATGCGCGAGGCAT
GTGATGCGACTAAGCTTGATGACCCTGCTACGCAGGAATGGCTTTCTCGCATGTGGGATCGGGTGGACATGCTGACTTGG
CGCAACACGTCTGTTTACCAGGCGATTTGCACCTTAGATGGCAGGTTAAAGTTCCTCCCAAAAATGATACTCGAGACACC
GCCGCCCTATCCGTGTGAGTTTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGCGGAGAGCGACCTTACCATTG
GCTCAGTTGCTACTGAAGATGTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGATGGCCAACCAGGGACCCTTG
GCCTTCTCCGAGGATAAACCGGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCGCGGAGGCCTGACGAGAGCAC
ATCAGCTCCGTCCGCAGGCACAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGG
GGGGGCCGTTTCGGACGGTAAAAAGAAAAGCTGAAAGGCTCTTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCC
CATCTCCCTGTTTTCTTCTCACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTAC
TCTATTGTGCCTCTTTTTATGTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTC
GGCGCGTTCGAATGGGGGTTTTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGC
GCTGCTTGTGAGTTTGACTCGCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCG
CAGCCTTGTTGTGGGCCCCGTCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACT
TTTTGCTTAGGCTTGGCATTGTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGC

*Fig. 1A-2*

TGGGGATCTTGTATAAGAACTGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACT
TATCGACCTGTGCGATCGGTTTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGG
CCGGCCGAAGCCCCATTGAGCAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGG
ACTGTGGTCGCCCAGCCTTATGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGC
TAAGGCGGTCCCAAAAGTGGTCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACC
CTGATTGCAGGGTCGTGGTTGACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTT
GGTGTGGGGGACTTTGCCCAGCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCAT
GGCTGCCCTGCATGTTGCCTGCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCA
CCGGCACCAACGACCCGTGGTGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTG
TGCATTTCCCAACACGGCCTTACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGT
TTTGATTTTTGTTTCCATCGGAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTG
CCAGCTATGTTTGGGTACCTCTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTC
ACCATCCTATGGTTGGTGTTTTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCT
TTGGCTTCTTGGTCGTTATACTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCG
GTGTTGCCGCCTTGGCTACCGCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATG
CTGTTTACCCCGTCCCAGCTTGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGT
GATCGGGTCCTCCATGGGCTCTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTA
CGGGCAATTCAGCTCGGGTTTCCGGGGTCGGCTTCAATCAAATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCT
GATTGCCCGAATTGGCAAGGGGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGCTGGCCGTGCCTATTGGCTAAC
ATCCTCTGGCGTCGAACCCGGCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAG
TGATCACCGAGGCCGGTGAGCTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCA
GGCCAGTTTTGTAATGTGGCACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGA
TGTGAAGGTCGGCAGCCACATAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTG
AACTGGAAGGAGGCCTCTCCACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACG
CCCTTGGTTGCTGTGAGTTTCTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAAT
GTTTGTGCTATCCTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACA
GATGGTCACTTGCCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTG
CAGGCAGTGATGAATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTG
TGGTGTCGTGCACCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAG
TGTTCTCTGCGGCTTTCTTCTTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAAT
CATGAGTCTCTGACTGGTGCCCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAA
GTGCTTTGTTTCTGCGTCCAACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAG
AACTGGCCCAGTTGGTGCAGGTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCT
CAACTCTCGCCCGGTGACATTGTTGTCGCTCTCGGCCACACGCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCAC
CAAGCATACCCTCCAAGCCATTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCC
CCACGCCCCCACCCGCACCCGTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAG
GACCGTTTGAATAAGAAGAAGAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATT
TTGGGACAAGAATTCCGGTGATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCG
ACCCTGCCGACTTTGACCCTGAGAAGGGAACTCTGTGTGGACATGTCACCATTGAAAACAAGGCTTACCATGTTTACACC
TCCCCATCTGGTAAGAAGTTCTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGT
GGAGCAGGCCCTAGGTATGATGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACA
AACTCCAGGGCCTGACTAAGGAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGG
TTGTTACTGAAACAGCGGTAAAAATAGTCAAATTTCACAACCGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCC
AGTGAGGTTGAGCTAAAAGACGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCT
GCGTTCCGCGGTTCCTTCGCTTATAGACGTCTTGATCTCCGGTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGC
CGGGAAACACTGGGATCGATGGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAA
ATAATACAGGCTTGTGACATTAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAA
CCCTGAGCGGGTGAAAGGAGTTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCC
CAGTGCACGCGGCTGCCTGCCTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCC
CCCGGGTTTGAGTTATATGTACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACA
GCTGACAGAGCACGGCTGCGAAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTAC
CTGGAGTTCTTCGCCTTGTGCGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTAC
CCTGCTAAGAATTCTATGGCTGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGT
TCTGTGCGCACAGGCTGTGCGAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGA
AGACTAGGACCATACTCGGCACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTC
ATGAAAAAGGCGTTTAACTCGCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTG
CCTTGAAGCTGATCTCGCATCCTGCGATCGATCCACGCCTGCAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAAC
TTGCCTGTGCTGAAGAGCATCTACCGTCGTACGTGCTGAACTGCTGCCACGACTTACTGGTCACGCAGTCCGGCGCAGTG

*Fig. 1A-3*

ACTAAGAGAGGTGGCCTGTCGTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACA
GCATATGGTGCTTAGTTACTTCAAAAGTGGTCACCCCCATGGCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACA
TGCTCAAGGTTCAACCCCTGATCGTCTATTCGGACGACCTCGTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCAC
TGGTGGGTTGAACATCTGAATTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATT
TCTAGGCTGTAGAATAATAAATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGA
AGGCGAGTAATGTTTCTGAATACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCT
GAATGGTTTGAAGAACTTGTAGTTGGAATAGCGCAGTGCGCCCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTT
CATGTCCATGTGGGAAAAACTCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCC
CGTACGCTACTGCCTGTGGCCTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGT
GGCCATCCAGCGGGTTCTGGTTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCT
GGAACAAGTCCCGTATAAGCCCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGAT
ACCAAACTCGCCGCGGATTAGTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCT
AGCACCGCCTTGCTCCCTACCTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCAT
CGGCCCACCCGGTGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTTATTTACACACCAACTCACC
AGACCATGCTTGACATGATTAGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTC
CCCTCCCGCACCGGTCCGTGGGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGC
GTATTGCAATCACCTTGATGTTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACC
CAGTGGGTTTTGATTCTCATTGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAG
AATATCTGTGATGCCATTCAGCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGA
AAAACCTGTCAGGTATGGGCAGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTC
AAGGCGCCACATTCGATGTGGTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATC
ACCAGGGCAAGACACGCTATCTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCAC
GCCCGTCAACCTCGCAGTGCACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGG
CTCTAGGCAACGGGGATAAATTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAA
GGGTCGAGCTCTCCGCTCCCCAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACT
CCCAGTAGAACTTGCACCTCACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCC
TTCGCCCTATCCATAAATACAGCCGCGCGTGCATCGGTGCCGGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCT
GGGGTCGTGTCATACTATCTCACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCG
AATTGAGGTAGACTGCCGGGAATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCG
ACGTCAAAGGCACTACCGTTGGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTT
GCGGTAGTCGGGGTTTCAAGCCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGA
AGCCTATCTCCACCCGGAGACCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGA
AAGACAAAACAGCCTATTTCCAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGT
GTTCCCGTCAACTCTACGGTGTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCA
CTGGGGGGCTGACCTCGCGGTCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGC
CCCCCGGATACAAAATTCTGGCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACAAACATACCTGGGGGTTTGAA
TCGGATACAGCGTATCTGTATGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCA
GGAAGGGAAAATTTATAAGGCCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAG
GCCTGAATTGAAATGAAATGGGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAG
TTCTTGGTGTCCATTGTTGATATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTT
TTGCATCAGATTGGTTTGCTCCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAG
GCCTTTCTTTCCCAGTGCCAAGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGT
GTCAACCCTGATTGATGAAATGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGG
TGGTGAGCGAGGCTACGCTGTCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCC
GAGACCTGTAAATATTTGGCCTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTA
TAATAGCACTTTGAATCAGGTGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGT
TAATAGCTGTACATTCCTCCATATTTTCCTCTGTTGCAGCTTCTTGTACTCTTTTTGTTGTGCTGTGGTTGCGGGTTCCA
ATACTACGTACTGTTTTTGGTTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCA
CCTTGCCTCACCCGGCAAGCAGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATG
TGGGGAGGACGATCATGACGAGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACG
CCTGGTTGGCGTTCTTGTCCTTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTT
TATGTTGACATCAAACATCAACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTC
AGCCGTGTTTCAGACCTATTACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGAATGGCTTCGTCCCTTCTTTT
CCTCGTGGTTGGTTTTAAATGTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAGATA
TTAAGACCAACACCACCGCAGCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCT
GAGGCGATTCGCAAAATCCCTCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACCATCACAGCCAATGTGACAGA
TGAGAATTATTTACATTCTTCTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGAT
TTAAGGTGGTATTTGGCAATGTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAG

*Fig. 1A-4*

TTTACCCAACGCTCCCTGGTGGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGT
TTTAGCCTGTCTTTTTGCCATTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGC
TCGCGATTGCTTTCTTTGTGGTGTATCGTGCCGTTCTGTTTTGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCA
TCTACAGCTGATTTACAACTTGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGG
AGAGTTTTGTCATCTTTCCCGTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTC
GCTTTAGTCACTGTGTCTACCGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGC
TGCGTTGACTTGCTTCGTCATTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTC
TTCTGGACACTAAGGGCAGACTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGT
CATCTGATCGACCTCAAAAGAGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGG
TCGTCCTTAGATGACTTCTGTCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGT
GATGATATATGCCCTAAAGGTGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCA
CCTTCGGGTACATGACTTTCGCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTT
TGGGGGGTGTACTCAGCCATAGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACAT
TCTGGCCCCTGCCCACCACGTTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCC
GGCGTCCCGGCTCCACTACGGTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTT
AAACAGGGAGTGGTAAACCTTGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGC
CAGTCAATCAGCTGTGCCAGATGCTGGGTAAGATCATCGCTCAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAA
AATAAGAAGAAAAACCCGGAGAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGA
GCGGCAATTGTGTCTGTCGTCAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGA
TAAGTTACACTGTGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGA
TGGGCTGGCATTCTTGAGGCATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCT
AAGTCACCTATTCAATTAGGGCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAA

*Fig. 1B-1*

>VR-V5.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGG
ACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTT
CTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGTAACATTAAACCTGCGTCCGT
GTCATCAAGCAGCTCCTTGTCCAGCGTGAGAATCACACGCCCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGC
CCTGCAGTGGGCATCTCCAAGAGGTAAAGGAAACATGCCTTAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGAT
GACCCTGCTACGCAGGAATGGCTTTCTCGCATGTGGGATCGGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCA
GGCGATTTGCACCTTAGATGGCAGGTTAAAGTTCCTCCCAAAAATGATACTCGAGACACCGCCGCCCTATCCGTGTGAGT
TTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGCGGAGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGAT
GTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGATGGCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACC
GGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCGCGGAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCA

*Fig. 1B-2*

CAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTCGGACGGTA
AAAAGAAAAGCTGAAAGGCTCTTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTC
ACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTAT
GTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTT
TTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTC
GCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCG
TCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATT
GTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAAC
TGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGT
TTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAG
CAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTA
TGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGG
TCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTT
GACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCA
GCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCT
GCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGG
TGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCT
TACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCG
GAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCT
CTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTT
TTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATA
CTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACC
GCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCT
TGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCT
CTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTT
TCCGGGGTCGGCTTCAATCAAATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGG
GGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCG
GCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAG
CTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGC
ACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACA
TAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCC
ACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTT
CTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCA
CGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTC
AGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAG
CACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTG
CCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTC
TTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGC
CCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCA
ACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAG
GTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACAT
TGTTGTCGCTCTCGGCCACACGCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCA
TTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCC
GTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAA
GAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTG
ATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCT
GAGAAGGGAACTCTGTGTGGACATGTCACCATTGGAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTT
CTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGA

*Fig. 1B-3*

TGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAG
GAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTA
AAAATAGTCAAATTTCACAACCGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGA
CGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGC
TTATAGACGTCTTGATCTCCGGTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGAT
GGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACAT
TAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAG
TTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGC
CTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGT
ACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCG
AAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTG
CGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGC
TGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGC
GAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGC
ACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTC
GCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCAT
CCTGCGATCGATCCACGCCTGCAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCAT
CTACCGTCGTACGTGCTGAACTGCTGCCACGACTTACTGGTCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTC
GTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACT
TCAAAAGTGGTCACCCCCATGGCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTG
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TTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAA
ATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAA
TACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGT
AGTTGGAATAGCGCAGTGCGCCCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAAC
TCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGC
CTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGG
TTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGC
CCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTA
GTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTAC
CTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGA
AAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTGACATGATT
AGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTG
GGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATG
TTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCAT
TGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCA
GCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGC
AGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTG
GTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTAT
CTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGC
ACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAA
TTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCC
CAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTC
ACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATAC
AGCCGCGCGTGCATCGGTGCCGGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCT
CACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGG
AATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTT
GGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAG

*Fig. 1B-4*

CCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGA
CCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTC
CAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGT
GTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGG
TCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTG
GCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACAAACATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTA
TGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGG
CCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATG
GGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGA
TATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCT
CCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCA
AGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAA
TGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTG
TCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGC
CTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGG
TGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCC
ATATTTTCCTCTGTTGCAGCTTCTTGTACTCTTTTTGTTGTGCTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGG
TTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGC
AGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACG
AGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCC
TTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCA
ACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATT
ACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGAATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAAT
GTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCA
GCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCC
TCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACCATCACAGCCAATGTGACAGATGAGAATTATTTACATTCTT
CTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAAT
GTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGT
GGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCA
TTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTG
GTGTATCGTGCCGTTCTGTCTTGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACT
TGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCC
GTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTAC
CGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCA
TTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGA
CTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAG
AGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTG
TCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGG
TGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTC
GCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCAT
AGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACG
TTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACG
GTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCT
TGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAG
ATGCTGGGTAAGATCATCACTCAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGA
GAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGT
CAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTT
AGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGC

*Fig. 1B-5*

ATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGG
GCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAA

*Fig. 1C-1*

>VR-V5G7475A.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCGCAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGG
ACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTT
CTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGTAACATTAAACCTGCGTCCGT
GTCATCAAGCAGCTCCTTGTCCAGCGTGAGAATCACACGCCCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGC
CCTGCAGTGGGCATCTCCAAGAGGTAAAGGAAACATGCCTTAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGAT
GACCCTGCTACGCAGGAATGGCTTTCTCGCATGTGGGATCGGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCA
GGCGATTTGCACCTTAGATGGCAGGTTAAAGTTCCTCCCAAAAATGATACTCGAGACACCGCCGCCCTATCCGTGTGAGT
TTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGCGGAGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGAT
GTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGATGGCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACC
GGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCGCGGAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCA

*Fig. 1C-2*

CAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTCGGACGGTA
AAAAGAAAAGCTGAAAGGCTCTTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTC
ACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTAT
GTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTT
TTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTC
GCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCG
TCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATT
GTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAAC
TGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGT
TTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAG
CAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTA
TGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGG
TCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTT
GACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCA
GCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCT
GCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGG
TGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCT
TACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCG
GAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCT
CTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTT
TTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATA
CTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACC
GCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCT
TGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCT
CTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTT
TCCGGGGTCGGCTTCAATCAAATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGG
GGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCG
GCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAG
CTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGC
ACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACA
TAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCC
ACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTT
CTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCA
CGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTC
AGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAG
CACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTG
CCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTC
TTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGC
CCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCA
ACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAG
GTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACAT
TGTTGTCGCTCTCGGCCACACGCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCA
TTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCC
GTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAA
GAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTG
ATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCT
GAGAAGGGAACTCTGTGTGGACATGTCACCATTGAAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTT
CTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGA

*Fig. 1C-3*

TGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAG
GAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTA
AAAATAGTCAAATTTCACAACCGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGA
CGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGC
TTATAGACGTCTTGATCTCCGGTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGAT
GGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACAT
TAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAG
TTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGC
CTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGT
ACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCG
AAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTG
CGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGC
TGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGC
GAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGC
ACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTC
GCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCAT
CCTGCGATCGATCCACGCCTGCAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCAT
CTACCGTCGTACGTGCTGAACTGCTGCCACGACTTACTGGTCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTC
GTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACT
TCAAAAGTGGTCACCCCCATGGCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTG
ATCGTCTATTCGGACGACCTCGTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAA
TTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAA
ATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAA
TACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGT
AGTTGGAATAGCGCAGTGCGCCCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAAC
TCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGC
CTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGG
TTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGC
CCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTA
GTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTAC
CTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGA
AAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTGACATGATT
AGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTG
GGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATG
TTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCAT
TGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCA
GCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGC
AGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTG
GTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTAT
CTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGC
ACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAA
TTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCC
CAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTC
ACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATAC
AGCCGCGCGTGCATCGGTGCCGGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCT
CACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGG
AATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTT
GGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAG

*Fig. 1C-4*

CCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGA
CCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTC
CAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGT
GTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGG
TCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTG
GCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACAAACATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTA
TGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGG
CCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATG
GGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGA
TATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCT
CCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCA
AGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAA
TGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTG
TCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGC
CTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGG
TGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCC
ATATTTTCCTCTGTTGCAGCTTCTTGTACTCTTTTTGTTGTGCTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGG
TTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGC
AGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACG
AGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCC
TTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCA
ACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATT
ACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGAATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAAT
GTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAAATATTAAGACCAACACCACCGCA
GCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCC
TCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACCATCACAGCCAATGGGACAGATGAGAATTATCTACATTCTT
CTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAAT
GTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGT
GGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCA
TTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTG
GTGTATCGTGCCGTTCTGTCTTGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACT
TGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCC
GTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTAC
CGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCA
TTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGA
CTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAG
AGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTG
TCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGG
TGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTC
GCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCAT
AGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACG
TTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACG
GTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCT
TGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAG
ATGCTGGGTAAGATCATCACTCAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGA
GAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGT
CAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTT
AGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGC

*Fig. 1C-5*

ATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGG
GCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAACCC

*Fig. 1D-1*

>VR-V6.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGG
ACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTT
CTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGTAACATTAAACCTGCGTCCGT
GTCATCAAGCAGCTCCTTGTCCAGCGTGAGAATCACACGCCCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGC
CCTGCAGTGGGCATCTCCAAGAGGTAAAGGAAACATGCCTTAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGAT
GACCCTGCTACGCAGGAATGGCTTTCTCGCATGTGGGATCGGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCA
GGCGATTTGCACCTTAGATGGCAGGTTAAAGTTCCTCCCAAAAATGATACTCGAGACACCGCCGCCCTATCCGTGTGAGT
TTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGCGGAGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGAT
GTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGATGGCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACC
GGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCGCGGAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCA

*Fig. 1D-2*

CAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTCGGACGGTA
AAAAGAAAAGCTGAAAGGCTCTTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTC
ACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTAT
GTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTT
TTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTC
GCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCG
TCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATT
GTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAAC
TGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGT
TTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAG
CAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTA
TGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGG
TCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTT
GACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCA
GCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCT
GCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGG
TGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCT
TACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCG
GAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCT
CTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTT
TTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATA
CTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACC
GCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCT
TGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCT
CTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTT
TCCGGGGTCGGCTTCAATCAAATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGG
GGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCG
GCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAG
CTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGC
ACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACA
TAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCC
ACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTT
CTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCA
CGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTC
AGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAG
CACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTG
CCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTC
TTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGC
CCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCA
ACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAG
GTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACAT
TGTTGTCGCTCTCGGCCACACGCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCA
TTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCC
GTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAA
GAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTG
ATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCT
GAGAAGGGAACTCTGTGTGGACATGTCACCATTGGAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTT
CTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGA

*Fig. 1D-3*

TGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAG
GAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTA
AAAATAGTCAAATTTCACAACCGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGA
CGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGC
TTATAGACGTCTTGATCTCCGGTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGAT
GGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACAT
TAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAG
TTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGC
CTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGT
ACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCG
AAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTG
CGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGC
TGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGC
GAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGC
ACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTC
GCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCAT
CCTGCGATCGATCCACGCCTGCAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCAT
CTACCGTCGTACGTGCTGAACTGCTGCCACGACTTACTGGTCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTC
GTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACT
TCAAAAGTGGTCACCCCCATGGCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTG
ATCGTCTATTCGGACGACCTCGTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAA
TTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAA
ATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAA
TACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGT
AGTTGGAATAGCGCAGTGCGCCCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAAC
TCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGC
CTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGG
TTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGC
CCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTA
GTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTAC
CTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGA
AAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTGACATGATT
AGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTG
GGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATG
TTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCAT
TGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCA
GCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGC
AGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTG
GTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTAT
CTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGC
ACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAA
TTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCC
CAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTC
ACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATAC
AGCCGCGCGTGCATCGGTGCCGGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCT
CACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGG
AATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTT
GGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAG

*Fig. 1D-4*

CCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGA
CCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTC
CAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGT
GTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGG
TCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTG
GCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACAAACATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTA
TGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGG
CCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATG
GGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGA
TATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCT
CCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCA
AGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAA
TGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTG
TCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGC
CTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGG
TGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCC
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TTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGC
AGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACG
AGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCC
TTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCA
ACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATT
ACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGAATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAAT
GTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCA
GCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCC
TCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACCATCACAGCCAATGTGACAGATGAGAATTATTTACATTCTT
CTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAAT
GTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGT
GGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCA
TTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTG
GTGTATCGTGCCGTTCTGTTTTGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACT
TGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCC
GTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTAC
CGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCA
TTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGA
CTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAG
AGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTG
TCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGG
TGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTC
GCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCAT
AGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACG
TTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACG
GTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCT
TGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAG
ATGCTGGGTAAGATCATCGCTCAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGA
GAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGT
CAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTT
AGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGC

*Fig. 1D-5*

ATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGG
GCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAA

*Fig. 1E-1*

>MN184A_DQ176019.seq
ATGACGTATAGGTGTTGGCTCTATGCCACGACATTTGTATTGTCAGGAGCTGTGACCACTGGCACAGCCCAAAGCTTGCT
GCACAGAAACACCCTTCTGTGACGGCCTCCTTCAGGGGAGTTTAGGGGTTTATCCCTAGCACCTTGTTTCTGGAGTTGCA
CTGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATTCTTGATCGGTGCACGTGCACCCCCAATGCCAGGGTGTT
TATGGCAGAGGGCCAAGTCTACTGCACACGATGTCTCAGTGCACGGTCCCTCCTTCCCCTGAATCTCCAAGTCCCTGAGC
TCGGAGTGTTGGGCTTGTTTTATAGGCCCGAAGAGCCGCTCCGGTGGACGTTGCCACGCGCATTCCCCACTGTTGAGTGC
TCCCCTGCTGGGGCTTGTTGGCTTTCTGCAATTTTTCCAATTGCACGAATGACCAGTGGAAACCTGAACTTTCAACAAAG
ATTAGTGCGGGTCGCAGCTGAGCTTTACAAAGCCGGCTGCCTCACCCCTATAGTCCTAAAGAATCTACAAGTCTATGAAC
GGGGTTGCCGATGGTACCCCATCGTTGGACCTGTCCCTGGAGTTGCCGTTTTCGCCAACTCCCTACATGTGAGTGATAGA
CCTTTCCCAGGGGSTACTCACGTGCTAACCAACCTGCCGCTCCCGCAGAGACCTAAGCCTGAAGATTTTTGCCCCTTTGA
GTGTGCTATGGCTGMCGTCTATGAYATTGGTCATGACGCCGTTATGTTCGTGGCCGAAGGGAGAGTCTCCTGGGCTCCGC
GTGGTGGGGGAAAAGGAAAATTTGAAACTGTTCCCGAGGAGTTGAGGTTGATTGCAGAGCAACTTTATACCTCCTTCCCG
CCCCACCACGTGGTGGACATGTCGAAATTCACCTTTACGGCCCCTGAGTGTGGTGCTTCCATGCGAGTCGAACGCCATTA
TGGCTGCCTCCCCGCCGGCACTGTCCCTGACGGCAATTGCTGGTGGAGTTTGTTTAGCTCGCTCCCATTGGAAATCCAGT
ACAAAGAAATTCGCCACGCCACCCAATTTGGCTATCAAACTAAGCATGGCGTTGCTGGCAAGTACCTACAGCGGAGGCTG
CAAGTTAATGGTCTCCGAGCAGTGGTTGACTCGAATGGACCTATCGTCATACAGTACTTCTCTGTTAAGGAGAGCTGGAT
CCGCCACGTGAAACTGGCGGAAGAGTTTGACTACCCTGGGTTTGAGGATCTCCTCAGGATAAGAGTCGAGCCCAACACGT
TGCCATTGTCCAACAAGGACGAGAAAATCTTCCGGTTTGGTGGGTGCAAGTGGTACGGTGCTGGGAAGAGGGCAAGGAGG
GCACGTGCAAGTGCAGTCACCGCAGTCGCCGGTCACGCTCCGCCTACTCGTGAAACCCAGCAAGCCAAGAAACACGAGGC
TGCTAGTGCCAACAAGGCTGAGCTTCTTGAACGCTACTCCCCGCCTGCTGAAGGGAATTGCGGCTGGCACTGTATTTCCG
CCATCGCCAATCGGATGGTAAATTCTAAGTTTGAGACTGCCCTTCCCGAAAGAGTGAGATCCCCAGAAGACTGGGCTACT
GATGAGGATCTTGTGAATACTATCCARATCCTCAGGCTCCCYGCGGCCTTAGACAGGAACGGCGCCTGTGCAAGCGCCAA
GTACATCCTTAAGCTGGAAGGTGAGCACTGGACTGTTTCAGTGATTCCCGGAATGYCCCCTTCCTTGCTCCCCCTTGAAT
GCGTTCAGGGTTGCTGTGAGCATAAGGGTAATCTTGGTTCTCCGAACGCGGTCGGGGTTTTTGGATTCGACCCTGCCAGC
CTTGACCGACTTGCTGGGGTGATGCACCTGCCCAGCAGTGCCATCCCAGCCGCTCTGGCCGAGTTGTCTGGCGACCTTGA
TCGTCCAACTTCCCCGGCCGCCACTGTGTGGACTGTCTCGCAGTTTTATGCTCGTCATAGTGGAGGRGAGCATCCTGATC
AAAAGTGTTTAAAAAAAATTATCAGTCTCTGTGAGGTGATCGAGAGTTGTTGCTGTTCTCRGAACAAAACTAACCGGGTC
ACCCCGGAAGAGGTCACAGCAAAGATTGATCTGTACCTTTTTGGTGCAGCAAGTCTTGAAGAATGCTTGGCCAGGCTTGA
RAAAGCTCGCCCGCCAAGCGTATTARACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGTGTTGGGRCGGCTGCTCAAG
CAGCAAAACTGCCCCTCACCAACCAGCGTCACGCTCTAGCCACTGTTGTGACYCAAAGGTCTTTGCCGAAATTTCAACCT
CGAAAAGCGGAGTCTGTCAAGAGCCTACCAGAGAGCAGGCCACTCCCTGCCCCGCGCAAAAAGATTAGGTCCAGGTGTGG
TAGTCCGATTTCATTGGGCGGCAATCTCCCTGACAGCCAGGAAGACTTGGCCGGTGGTTCCTTTGATTTCCCAACCCTAC
CTGAGTTGGTGGTAAGCTCGAGTGAGTCTGTGCCTGTCCCTGCACCGCGCAGGGTTGTGTCCCGATTAGTGTCGTCTCCG
ATAGTGTCGACCCCTGTGCCCGCACCACGACGTGGGCTTCGGCAGGTGGAGGGAATGAATTTGGCGGCAGTGACTCTAGC
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AGGATGTCCTGGCGGTGGAGAGACGAGAAGTTGAAGAAGTCCTGAGCGGAATATCGGGCATGTCAGATGACATCAGGTTG
GCGCCCGTGTCATCAAGTAGCTCCCTGTCAAGCATAGAGATCACACGTCCAAAGTACTCAGCTCAAGCCATCATTAACTC
AGGTGGGCCCTGTTGTGGGCACCTCCAGGAGGTGAAAGAGAAATACCTTAATGTGATGCGTGAGGCATGTGATGCGACCA
AGCTTGATGACCCTGCCACGCAAGAATGGCTTTCCCGTATGTGGGATAGGGTAGACATGCTAACCTGGCGCAACACGTCC
ATTTTTCAGGCGCCTTTCACCTTGGCTGACAAGTTTAAGTCCCTCCCGAAGATGATACTCGAAACACCGCCGCCCTACCC
TTGTGGGTTTGTGATGATGCCCCGCACGCCTGCACCTTCTGTAGGTGCGGAGAGCGACCTCACCGTTGGCTCAGTTGCTA
CTGAAGATGTCCCGCGCATTCTCGGGAAGGTACAAGGTGTTGGCGAAACGACCGACCAGGGACCCTTGGCACTCTTCGCA
GATGAATTGGCAGATGACCAACCTGCTAGAGAACCCCGGACACAAACCCCTCCTGCAAGCGCAGGTGGCGCCGGCTTAGT
TTTGGATTCTGGAGGGTCGCCGGAGCTCACTGACCTGCCGCTTCCARACGGTACAGACGCGGGCGGAGGGGGACCGTTAC
ACACGGTCAAGAAGAAAGCTGAGAGGTGCTTTGACCAGCTGAGCCGTCGGGTTTTTGACATTGTCTCCCATCTCCCTGTC
TTCTTCTCACGCCTTTTCAAGCCTGACAGTCACTACTCTTCGGGTGACTGGAGTTTTGCAGCTTTTACTTTATTGTGCCT
CTTTCTATGTTACAGTTACCCGGCCTTTGGTGTTGCTCCCCTATTGGGTGTATTTTCTGGGTCTTCTCGGCGCGTTCGCA
TGGGGGTTTTTGGCTGCTGGTTGGCTTTCGCTGTTGGTTTGTTCAAGCCTGCACCCGACCCAGTCGGTGCTGCTTGTGAG

*Fig. 1E-2*

TTTGATTCGCCAGAGTGTAGAGACATCCTTCATTCTTTTGAGCTCCTGCAACCTTGGGATCCTGTTCGCAGCCTTGTGGT
GGGACCCGTCGGTCTCGGTCTTGCCATTATTGGCAGGTTACTGGGCGGGGCACGCTACGTCTGGCTGCTTTTGCTTAGGC
TTGGCATCGTTTCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCGCAAGGTAGGTGTAAAAAGTGTTGGGGATCTTGT
ATAAGAACTGCCCCCAGTGAGGTCGCCTTCAATGTGTTTCCCTTCACACGTGCAACCAGATCGTCACTTGTCGACCTGTG
CGACCGGTTTTGTGCGCCCAAGGGCATGGACCCCATCTTCCTCGCCACTGGATGGCGCGGATGCTGGTCCGGCCAGAGCC
CCGTTGAGCAACCCACTGAGAAACCCATTGCATTCGCCCAGTTGGATGAGAAGAAAATCACGGCAAGGACTGTGGTTGCC
CAACCTTATGACCCCAACCAAGCTGTGAAGTGCTTACGAGTCTTGCAGGCGGGTGGGGCGATGGTGGCTGAGGCGATTCC
AAAAGTGGTTAAGGTCTCTGCTGTCCCATTTCGAGCCCCCTTCTTCCCCACCGGAGTGAAAGTTGATCCTGAATGCAGGG
TCGTGGTTGACCCAGACACCTTCACAACTGCTCTCCGGTCCGGCTACTCCACCACAAACCTCATTCTTGGTGTGGGGGAT
TTTGCCCAGCTGAATGGGTTGAAAATCAGACAAATTTCCAAGCCTTCAGGAGGAGGCCCATACCTCATGGCGGCCTTACA
TGTCGCTTGCTCGATGGCCTTGCACATGCTCGTTGGGATTTATGTTACCGCGGTGGGTTCTTGTGGTTCTGGCACTAACG
ATCCGTGGTGCACTAACCCGTTTGCCGTCCCTGTCTACGGGCCTGGCTCTCTTTGCACGTCCAGGTTGTGCATCTCCCAG
CATGGCCTTACTCTGCCTTTAACAGCGCTTGTGGCGGGGTTTGGTATTCAGGAAGTTGCTTTGGTTGTTTTAATCTTTGC
TTCCATCGGGGGTATGGCTCACAGGTTGAGTTGCAAGGCCGATGTGCTGTGCATTCTGCTTGCAATTGCCAGCTATGTTT
GGGTACCCTTCACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGGTTTTCTTTGCATCCCCTCACCATTCTATGG
TTGGTGTTTTTTTTGATTTCTGTGAACATGCCCTCAGGAATCTTGGCTTTAGTGTTGTTGATCTCTCTCTGGCTCCTTGG
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TGGCCACTGCCCCGGATGGGACCTATTTGGCTGCTGTCCGCCGCGCTGCGTTGACTGGCCGTACCATGCTGTTTACCCCG
TCTCAACTTGGGTCACTCCTTGAGGGCGCCTTTAGAACCCAAAAGCCTTCACTGAATACCGTCAATGTGGTTGGGTCCTC
CATGGGCTCCGGCGGGGTGTTCACCATTGACGGGAAAATTAAATGCGTGACCGCCGCACATATCCTCACGGGTAACTCTG
CTAGGGTCTCTGGGGTTGGCTTCAATCAAATGTTGGATTTTGATGTAAAAGGGGATTTTGCCATAGCCGATTGTCCGGGT
TGGCAAGGAGTCGCTCCCAAGTCCCAGATCTGCAAGGATGGGTGGACTGGCCGCGCTTATTGGCTAACGTCCTCTGGCGT
CGAACCCGGCGTCATTGGTAGGGGATTCGCCTTTTGTTTCACCGCGTGCGGCGATTCCGGGTCCCCAGTGATCACCGAGG
CCGGAGAGCTTGTCGGAGTCCACACGGGATCAAACAAACAAGGAGGAGGCATTGTCACGCGCCCTTCAGGCCAGTTTTGT
AATGTGACACCCACCAAACTAAGTGAATTGAGTGAATTCTTCGCCGGACCCAGGGTCCCGCTTGGTGATGTGAAGGTTGG
CAACCACATAATCAAAGATACAGATGAGGTGCCCTCAGATCTTTGCGCCTTGCTTGCTGCCAAGCCCGAGTTGGAAGGAG
GCCTCTCCACCGTTCAACTTCTGTGCGTGTTTTTTCTCCTATGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCT
GTTGGTTTTTTCATCTTGAATGARATCCTCCCAGCGGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTYGYKCTRTC
YTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTG
CCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATG
AATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCA
CCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGG
CTTTCTTCTTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTG
ACTGGTGCCCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTC
TGCGTCCAACATGAGGAATGCGGCGGGTCAGTTTATCGAGGCCGCTTATGCGAAAGCGATCAGGGTGGAACTTGCCCAGT
TAGTGCAGGTCGACAAGGTTCGGGGTGTTTTAGCCAAACTTGAAGCTTTTGCTGACACCGTGGCGCCCCATCTTTCACCC
GGCGACATTGTTGTTGTTCTTGGTCATACGCCCGTTGGCAGCATCTTTGACTTAAAGATTGGCRATGCCAAGCACACCCT
ACAAGCCATCGAGACCAGAGTCCTTGCTGGGTCCAGGATGACCGTGGCGCGTGTCGTTGATCCGACTCCCGCGCCGCCAC
CCGTACCCGTGCCCGTTCCTCTCCCACCGAAAGTTTTAGAGAACGGCCCCAGTGCCTGGGGGGATGAAGACCGCCTGAAC
AAAAAGAAGCGGCGCAAGATGGAAGCCGTTGGCGTTTACGTCATGGGCGGGAAAAAGTACCAGAAATTTTGGGATAAGAA
TTCTGGTGATGTGTTCTATGAGGAAGTCCACGACAACACAGATGCGTGGGAATGCCTTAGAGCTGACGACCCTGCCGACT
TGGATCCTGAGAGGGGAACCTTGTGTGGACACGTCACCATAGAGAATAGGCCTTACCATGTTTACGCCTCCCCGTCTGGT
AGGAAGTTCCTGGTCCCTGCCGACCCAGAGAATGGGAAAGCCCAGTGGGAAGCTGCAAAGCTTTCCATAGAGCAGGCCCT
TGGTATGATGAACGTTGACGGCGAGCTGACCGCCAAAGAACTGGAGAAATTGAAGAGAATAATTGACAAACTCCAGGGCC
TGACTAAGGAGCAGTGTTTAAACTGTTAGCCGCCAGCGGCTTGACCCGCTGTGGTCGCGGCGGCTTGGTTATTACTGAGA
CAGCGGTAAAAATAGTCAGATTCCACAATCGGACCTTCACCCTGGGGCCTGTGAATTTGAAAGTGGCCAGCGAAGTTGAG
TTGAAAGACGCCGTCGAGCACAACCAACACCCGGTTGCAAGACCAGTTGACGGTGGCGTTGTGCTCCTGCGCTCTGCAGT
TCCTTCGCTTATAGACGTCTTGATCTCCGGTGCCGACGCATCTCCCCAGTTGCTCGCCCATCACGGTCCAGGAAACACTG

*Fig. 1E-3*

GGATTGATGGCACGCTCTGGGATTTTGAGTCCGTAGCCACTAAAGAGGAAGTCGCACTTAGTGCACAAATAATACAGGCT
TGTGGCATTAGGCGTGGCGATGCTCCTGAGATTGGCCTCCCTTACAAGCTGCACCCTGTTAGGGACAACCCTGAACGTGT
AAAAGGGGTTTTGAAAAACACAAGGTTTGGAGACATACCTTACAAGACCCCTAGCGACACTGGGAGCCCAGTACATGCGG
CCGCCTGCCTTACGCCTAATGCCACCCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACTATGCCCTCCGGGTTTGAG
TTGTATGTGCCGACCATTCCAGCGTCTGTCCTTGATTACCTTGATTCCAGGCCAGACTGCCCTAAACAGTTGACGGAGCA
CGGGTGTGAAAATGCTGCATTGAGAGACCTCTCCAAATATGACTTGTCCACCCAAGGTTTTGTTTTGCCCGGAGTCCTCC
GCCTCGTGCGGAAATACTTGTTTGCCCACGTGGGCAAGTGCCCACCTGTCCATCGGCCCTCCACCTACCCGGCCAAGAAT
TCCATGGCTGGAATAAACGGGAATAGGTTCCCGACCAAGGACATTCAGAGCATCCCTGAGATCGACGTTCTGTGTGCACA
GGCTGTACGAGAGAACTGGCAGACCGTTACCCCTTGCACCCTCAAGAAGCAGTATTGCGGGAAGAAGAAAACCAGGACCA
TACTCGGTACCAATAACTTCATTGCGCTGGCCCACCGGGCAGCACTGAGTGGTGTCACCCAGGGCTTCATGAAAAAGGCG
TTTAACTCGCCCATCGCCCTCGGGAAGAACAAATTCAAGGAGCTACAGACTCCGGTCCTGGGCAGATGTCTTGAGGCTGA
TCTTGCCTCTTGCGATCGGTCCACTCCCGCGATTGTCCGCTGGTTTGCCGCCCATCTCCTTTATGAACTTGCCTGCGCTG
AGGAGCACCTACCGTCGTATGTGCTGAATTGCTGCCATGACCTATTGGTCACGCAGTCCGGTGCGGTGACTAAGAGAGGT
GGCCTGTCATCTGGTGATCCGATCACCTCTGTATCCAACACCATTTACAGTCTGGTAATTTATGCGCAGCACATGGTGCT
CAGTTACTTCAAAAGTGGTCACCCACATGGTCTCCTGTATCTCCAGGACCAGCTAAAGTTTGAGGACATGCTTAAGGTTC
AGCCCCTGATYGTCTACTCGGATGATCTTGTGCTGTATGCCGAGTCCCCCACCATGCCAAACTACCACTGGTGGGTTGAG
CATCTGAACTTGATGCTAGGGTTTCAGACGGACCCAAAGAAGACAACCATTACTGACTCGCCATCTTTTCTGGGCTGTAG
GATAATGAATGGGCGTCAGCTAGTCCCAAACCGTGACAGGATTCTCGCAGCTCTTGCCTACCACATGAAGGCGAATAATG
TTTCTGAGTACTACGCCTCCGCTGCTGCAATACTCATGGACAGTTGTGCTTGTCTGGAGTACGACCCTGAATGGTTTGAA
GAACTTGTGGTTGGAATGGCGCTATGCGCCCGCAAGGACGGCTATAGCTTCCCCGGCCCGCCGTTCTTCTTATCCATGTG
GGAGAAACTTAAGTCCAATTATGAGGGGAAGAAGTCAAGGGTATGTGGGTACTGCGGAGCTTCGGCCCCGTATGCCACTG
CCTGTGGTCTTGACGTCTGTGTTTACCACACTCACTTTCACCAGCATTGTCCAGTCATAATCTGGTGTGGCCACCCTGCA
GGTTCCAGGTCCTGTGATGAGTGCAAATCCCCCATAGGGAAAGGCACAAGCCCTCTGGATGAGGTTTTGAGACAAGTCCC
GTATAAGCCTCCACGGACCGTCCTCATGCATGTGGAGCAGGGCCTCACCCCCCTTGACCCAGGCAGATATCAGACCCGCC
GTGGGTTGGTTGCCGTTAGGCGCGGGATCAGGGGAAATGAAGTTGACCTACCAGATGGTGATTATGCTAGCACCGCCTTA
CTCCCAACCTGTAAAGAGATCAACATGGTTGCTGTTGCTTCTAATGTGTTGCGCAGCAGATTTATCATCGGTCCACCCGG
TGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTCATATACACACCGACCCATCAGACCATGCTTG
ACATGATCAAAGCTTTRGGGACGTGCCGGTTTAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACC
GGTCCGTGGGTTCGCATCCTGGCCGGCGGGTGGTGTCCTGGCAAAAACTCCTTCCTGGACGAAGCTGCGTATTGTAATCA
TCTTGATGTCTTGAGGCTTCTTAGCAAAACCACTCTCACCTGTTTGGGGGACTTCAAACAACTCCACCCAGTGGGTTTTG
ATTCTCATTGCTATGTCTTTGACATTATGCCTCAGACTCAATTGAAGACCATCTGGAGATTTGGACAGAACATCTGTGAT
GCCATCCAACCAGACTACAGAGACAAGCTTATGTCCATGGTCAACACAACTCGTGTAACTTATGTGGAAAAACCTGTCAA
ATATGGGCAAGTCCTCACCCCTTACCATAGGGACCGAGAGGATAGCGCCATTACCATTGACTCCAGTCAAGGCGCCACAT
TTGATGTGGTTACACTGCATTTGCCCACGAAAGATTCACTCAACAAACAAAGGGCCCTTGTTGCTATTACCAGGGCAAGA
CATGCCATCTTTGTGTATGACCCATATAGGCAACTGCAGAGCCTATTTGATCTTCCTGCAAAAAGCACGCCCGTCAACTT
GGCCGTGCACCACGATGGGCAACTGATTGTGCTAGATAGAAATAACAAAGAATGCACGGTTGCCCAAGCTCTGGGTAATG
GTGACAAATTTAGGGCCACAGACAAGCGCGTTGTGGATTCTCTCCGCGCCATTTGTGCTGACCTAGAAGGGTCGAGCTCT
CCACTCCCCAAGGTTGCACATAATTTGGGGTTTTATTTCTCACCTGATTTGATACAGTTTGCCAAGCTTCCAATAGAACT
TGCGCCACACTGGCCAGTAGTGACGACCCAAGACAATAAAAACTGGCCAGATCGGCTGGTTGCCAGCCTACGCCCTATTC
ACAAACATAGCCGTGCGTGTATCGGTGCCGGCTATATGGTGGGCCCCTCGGTGTTTTTAGGCACCCCTGGGGTTGTGTCA
TACTATCTTACAAAATTTGTTAAGGGCGAGGCTCAAGTGCTTCCGGAAACGGTCTTCAGTACCGGCCGAATTGAGGTGGA
TTGCCGGGAATATCTTGACGACCGGGAGCGGGAAGTTGCAGCGTCCCTCCCACACGCCTTTATCGGCGACGTCAAAGGCA
CTACCGTCGGAGGGTGTCATCACATCACCTCCAAATACCTTCCGCGCTTCCTCCCCAAGGAATCAGTTGCGGTAGTCGGG
GTTTCAAGCCCCGGAAAAGCAGCGAAAGCAGTGTGTACATTGACAGATGTGTACCTCCCAGACCTTGAAGCTTACCTCCA
TCCTAAGACCCTGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGGCTGATGGTCTGGAAGGACAAGACGG
CCTATTTCCAACTCGAAGGTCGCCATTTCACCTGGTATCAACTTGCTAGCTATGCCTCGTACATCCGTGTTCCTTTAAAC
TCCACGGTGTACCTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGAAAAGTTGTTGGGTCCACTCATTGGGGAGCTGA
CCTCGCAGTCACCCCTTATGATTATGGGGCAAGAATTATTTTGTCTAGTGCGTACCATGGTGAGATGCCTCCTGGGTACA

*Fig. 1E-4*

AGATTCTGGCGTGCGCGGAGTTCTCGCTGGACGACCCAGTCAGATACAAGCACACTTGGGGGTTTGAGTCGGATACAGCG
TACTTGTACGAGTTCACTGGAAACGGTGAGGACTGGGAGGATTATAACGACGCGTTTCGTGCGCGACAGAAAGGAAAGAT
TTACAAGGCCACTGCCACCAGCCTGAAGTTCCATTTTCCTCCGGGTCATACCGTTGAACCAACTTTGGGCCTAGACTGAA
ATGAAATGGGGGCTGTGCAGAGCCTATTTGATAAAATTGGCCAACTGTTTGTGGACGCTTTCACGGAGTTCTTGGTGTCC
ATTGTTGATATCATCATATTTTTGGCCATTTTGTTCGGCTTCACAATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATT
GGTTTGCTCCGCGATACTCCGTTCGCGCTCTGCCGTTCACCCTGAGCAATTACAGAAGATCCTATGAGGCATTTCTCTCC
CAGTGCCGGACGGAYATTCCCACCTGGGGAACTAAACATCCCTTGGGGATGCTCTGGCACCACAAGGTGTCGACCCTAAT
TGATGAAATGGTGTCGCGTCGAATGTACCGCATCATGGAACAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGACCGAGG
CAACGTTGTCTCGTATTAGTAGCTTGGATGTGGTGGCTCATTTCCAGCACCTTGCCGCCATAGAAGCCGAGACTTGTAAA
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AGAACAGGTGTTTGCTGTTTTCCCGACCCTCAGTTCCCGGCCAAAGCTTCATGATTTTCGGCAATGGCTAATAGCTGTGC
ATTCCTCCATATTCTCTTCTGTTGCGGCTTCCTGTACCCTTTTCGTCGTGCTGTGGTTGCGGCTTCCAATAATACGTACT
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CGGCAGGCGGCCGCAGAGATCTACGAACCTAGTGGGTCTCTTTGGTGCAGGATAGGGCACGATCGATGCTCGGAGGACGA
TCACGACGAGCTAGGATTTCTGGTGCCGCCTGGCCTCTCCAGCGAAGGCCACTTGACCAGTGTTTACGCCTGGTTGGCGT
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AAGCATCAATTTATTTGCGCTGTTCATGACGGGCAAAACACCACCTTGCCTCGCCATGACAACGTCTCAGCCGTGTTCCA
GACTTATTACCAGCATCAGGTCGACGGCGGCAATTGGTTTCACCTGGAATGGCTGCGCCCCTTCTTCTCCTCCTGGTTGG
TTTTGAACGTCTCTTGGTTTCTCAGGCGTTCGCCTGTAAGCCGTGTTTCAGTTCGAGTCTCTCAGACATTAAGACCAACA
CCACCGCAGCTGCAGGCTTTGCTGTCCTCCAAGACATCAGTTGTCTTAGGCATGGCCACTCGTCCTCTGAGGCGACTCGC
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GCATTCCTCTGACCTTCTCATGCTTTCCTCTTGCCTTTTCTACGCTTCCGAGATGAGTGAAAAGGGATTTGAAGTGATAT
TTGGCAATGTGTCAGGCATAGTGGCTGTGTGTGTCAACTTTACCAGCTATGTCCAACATGTCAAGGAGTTCACCCAGCGC
TCCTTGGTGGTTGACCATGTGCGGTTACTTCATTTTATGACACCTGAGACTATGAGGTGGGCGACCGTTTTAGCCTGTCT
TTTTGCCATTCTGTTGGCCATTTGAATGTTCAGATATGTTGGGGAAATGCTTGACCGCGGGCTATTGCTCGCAATTGCTT
TTTTTGTGGTGTATCGTGCCGTTCTGTCTTGCTGCGCTCGTCAACGCCGACAGCAACAGCAGCTCCCATTTACAGTTGAT
TTATAAMTTAACGATATGTGAGCTGAATGGCACAGACTGGCTGAACAATCATTTTAGTTGGGCAGTGGAGACTTTCGTTA
TCTTTCCTGTGTTGACTCATATTGTTTCCTACGGCGCCCTCACTACCAGCCACCTCCTTGACACGGTCGGCCTGATCACT
GTGTCCACCGCCGGATACTGCCATAAGCGGTATGTCTTGAGTAGCATCTATGCTGTCTGCGCCCTGGCTGCGCTGATTTG
CTTCGTCATCAGGTTGACGAAAAATTGTATGTCCTGGCGCTACTCATGTACCAGATATACCAACTTTCTTCTGGACACCA
AGGGCAGACTCTATCGCTGGCGGTCACCCGTCATCATAGAGAAAAGGGGTAAAATTGAGGTTGGAGGTGACCTGATCGAC
CTCAAGAGAGTTGTGCTTGATGGTTCCGCGGCAACCCCTGTAACCAAAGTTTCAGCGGAACAATGGGGTCGTCCTTAGAC
GACTTCTGCAATGACAGCACGGCTCCACAAAAGGTGATCTTGGCATTTTCTATCACCTACACACCAGTGATGATATATGC
CCTAAAGGTGAGTCGTGGCCGGCTGCTAGGGCTTTTACACCTTTTGATTTTTYTAAACTGTGCTTTTACCTTCGGGTATA
TGACATTTGTGCACTTTCAGAGCACAAACAGAGTTGCACTCACTATGGGAGCAGTAGTCGCGCTCCTTTGGGGGGTGTAC
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CCACTACGGTTAACGGCACATTGGTGCCCGGGTTGAAAAGCCTCGTGTTGGGTGGCAGAAGAGCTGTCAAACGGGGAGTG
GTAAACCTCGTTAAATATGCCAAATAACAACGGCAGGCAGCAGAAGAAAAAGAAAGGGGACGGCCAGCCAGTCAATCAGC
TGTGCCAAATGTTGGGCAGGATCATCGCCCAGCAAAACCAGTCCAGAGGTAAGGGACCGGGGAAGAAAAGTAAGAAGAAA
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TGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTAATTCGCGTCACAGCATCACCCTCAGCATGATGAGCTGGCATT
CTTGAGACATCCCAGTGTTTGAATTGGAAGGATGTGTGGTGAATGGCACTGATTGATATTGTGCCTYTAAGTCACCTATT
CAATTAGGGCGACCGTATGGGGGTAATATTTAATTGGCGTGAACCATGCGGCCGAAATT

*Fig. 1F-1*

>MN184B_DQ176020.seq
ATGACGTATAGGTGTTGGCTCTATGCCACGACATTTGTATTGTCAGGAGCTGTGACCACTGGCACAGCCCAAAGCTTGCT
GCACAGAAACACCCTTCTGTGACGGCCTCCTTCAGGGGAGTTTAGGGGTTTGTCCCTAGCACCTTGTTTCTGGAGTTGCA
CTGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATTCTTGATCGGTGCACGTGCACCCCCAATGCCAGGGTGTT
TATGGCAGAGGGCCAAGTCTACTGCACACGATGTCTCAGTGCACGGTCCCTCCTTCCCCTGAATCTCCAAGTCTCTGAGC
TCGGAGTGTTGGGCTTGTTTTATAGGCCTGAAGAGCCGCTCCGGTGGACGTTGCCACGCGCATTCCCCACTGTTGAGTGC
TCCCCTGCTGGGGCTTGTTGGCTTTCTGCAATTTTTCCAATTGCACGAATGACCAGTGGAAACCTGAACTTTCAACAAAG
ATTAGTGCGGGTCGCAGCTGAGCTTTACAAAGCCGGCTGCCTCACCCCTACAGTCCTAAAGAGTCTACAAGTCTATGAAC
GGGGTTGCCGCTGGTACCCCATCGTTGGACCTGTCCCTGGAGTTGCCGTTTTCGCCAACTCCCTACATGTGAGTGATAGA
CCTTTCCCAGGTGCTACTCACGTGCTAACCAACCTGCCGCTCCCGCAGAGACCTAAGCCTGAAGATTTTTGCCCCTTTGA
GTGTGCTATGGCTGCCGTCTATGACATTGGTCATGACGCCGTTATGTTCGTGGCCGAAGGGAGAGTCTCTTGGGCTCCGC
GTGGTGGGGAAAAAGGAAAATTTGAAACTGTTCCCGAGGAGTTGGGGTTGATTGCAGAGCAACTTTATACCTCCTTCCCG
CCCCACCACTTGGTGGACATGTCGAAATTCACCTTTACGGCCCCTGAGTGTGGTGCTTCCATGCGAGTCGAACGCCAGTA
TGGCTGCCTCCCCGCTGGCACTGTCCCTGACGGCAATTGCTGGTGGAGCTTGTTTAGCTCGCTCCCATTGGAAGTCCAGT
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CAAATTAATGGTCTCCGAGCAGTGGTTGACTCGAATGGACCCATCGTCATACAGTACTTCTCTGTTAAGGAGAGCTGGAT
CCGCCACGTGAAACTGGCGGAAGAGTTTGACTACCCTGGGTTTGAGGATCTCCTCAGGATAAGAGTCGAGCCCAACACGT
TGCCATTGTCCAACAAGGACGAGAAAATCTTCCGGTTTGGTGGGTGCAAGTGGTACGGTGCTGGGAAGAGGGCAAGGAGG
GCACGTGCAAGTGCAGTCACCGCAGTCGCCGGTCACGCTCCGCCTACTCGTGAAACCCAGCAAGCCAAGAAACACGAAGC
TGCTAGTGCCAACAAGGCTGAGCTTCTTGAACGCTACTCCCCGCCTGCTGAAGGGAATTGCGGCTGGCACTGTATCTCCG
CCATCGCCAACCGGATGGTRAATTCYAARTTTGAAACYRCCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACT
GACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAA
GTACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAAT
GTGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGC
CTTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGA
TCGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACC
AAGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTC
ACCCCGGAGGAGGTCGCAGCAAAGATTGAYCAGTACCTTTTTGGTGCAGCAAGTCTTGAAGAATGCTTGGCCAGGCTTGA
RAAAGCTCGCCCGCCAAGCGTATTARACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGTGTCGGGGCGGCTGCTCAAG
CAGCAAAACTGCCCCTCACCAACCAGCGTCACGCTCTAGCCACTGTTGTGACTCAAAGGTCTTTGCCGAAATTTCAACCT
CGAAAAGCGGAGTCTGTCAAGAGCCTACCAGAGAGCAGGCCCCTCCCTGCCCCGCGCAAAAAGATTGGGTCCAGGTGTGG
TAGTCCGATTTCATTGGGCGGCAATCTCCCTGACAGCCGGGAAGACTTGGCCGGTGGTTCCTTTGATTTCCCAACCCTAC
CTGAGTTGGTGGCAAGCTCGAGCGAGCCTGTGCCTGTCCCTGCACCGCGCAGGGTTGTGTCCCGATTAGTGTCGTCTCCG
ATAGTGTCGACCCCTGTGCCCGCACCACGACGTGGGCTTCGGCAGGTGGAGGGAATGAATTTGGCGGCGGTGACTCTAGC
GTGCCAGGACGAGCCCCTCGATTTGTCTGCGTCCTCGCAGACTGAATATGAGGCGTCCCCCTTGGCATTGCCGCTGAGTG
AGGATGTCCTGGCGGTGGAGAGACGAGAAGTTGAAGAAGTCCTGAGCGGAATATCGGGCATGCCAGATGACATCAGGTTG
GCGCCCGTGTCATCAAGTAGCTCCCTGTCAAGCATAGAGATCACACGTCCAAAGTACTCAGCTCAAGCCATCATTAACTC
AGGTGGGCCCTGTTGTGGGCACCTCCAGGAGGTAAAAGAGAAATACCTTAATGTGATGCGTGAGGCATGTGATGCGACCA
AGCTTGATGACCCTGCCACGCAAGAATGGCTTTCCCGCATGTGGGATAGGGTAGACATGCTAACCTGGCGCAACACGTCC
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TTGTGGGTTTGTGATGATGCCCCGCACGCCTGCACCTTCTGTAGGTGCGGAGAGCGACCTCACCGTTGGCTCAGTTGCTA
CTGAGGATGTCCCGCGCATTCTCGGGAATGTACAAGGTGTTGGCGAAACGACCGACCAGGGACCCTTGGCACCCTTCGCA
GACGAATTGGCAGATGACCAACTTGCTAGAGAACCCCGGACACAAACCCCTCCTGCAAGCACAGGTGGCGCCGGCTTGGT
TTCGGATTCTGGAAGGTCGCCGGAGCTCACTGACCTGCCGCTTTCAAACGGTACAGACGCGGGCGGAGGGGGGCCGTTAC
ACACGGTCAAGAAGAAAGCTGAGAGGTGCTTTGACCAGCTGAGCCGTCGGGTTTTTGACATTGTCTCCCATCTCCCTGTT
TTCTTCTCACGCCTTTTCAAGCCTGACAGTCACTACTCTTCGGGTGACTGGAGTTTTGCAGCTTTTACTTTATTGTGCCT
CTTTCTATGTTACAGTTACCCAGCCTTTGGTGTTGCTCCCCTATTGGGTGTATTTTCTGGGTCTTCTCGGCGCGTTCGCA
TGGGGGTTTTTGGCTGCTGGTTGGCTTTCGCTGTTGGTTTGTTCAAGCCTGCACCCGACCCAGTCGGTGCTGCTTGTGAG

*Fig. 1F-2*

TTTGATTCGCCAGAGTGTAGAGACATCCTTCATTCTTTTGAGCTTCTGCAACCTTGGGACCCTGTTCGCAGCCTTGTGGT
GGGGCCCGTCGGTCTCGGTCTTGCCATTATTGGCAGGTTACTGGGCGGGGCACGCTACGTCTGGCTGCTTTTGCTTAGGC
TTGGCATCGTTTCAGACTGTATCTTGGCTGGAGCTTATGTGCTTTCGCAAGGTAGGTGTAAAAAGTGTTGGGGATCTTGT
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CCATTGAGCAACCCACTGAGAAACCCATTGCGTTCGCCCAGTTGGATGAAAAGAAAATCACGGCAAGGACTGTGGTTGCC
CAACCTTATGACCCCAACCAAGCTGTGAAGTGCTTACGAGTCTTGCAGGCGGGTGGGGCGATGGTGGCTGAGGCGGTTCC
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TCGTGGTTGACCCAGACACCTTCACAACTGCTCTCCGGTCCGGCTACTCCACCACAAACCTCATTCTTGGTATGGGGGAT
TTTGCCCAACTGAATGGGTTGAAAATCAGACAAATTTCCAAGCCTTCAGGAGGTGGTCCATACCTCATGGCGGCCTTACA
TGTCGCTTGCTCGATGGCCTTGCACATGCTCGTTGGGATTTATGTTACCGCGGTGGGTTCTTGTGGTTCTGGCACTAACG
ATCCGTGGTGCACTAACCCGTTTGCCGTCCCTGTCTACGGGCCTGGCTCTCTTTGCACGTCCAGGTTGTGCATCTCCCAG
CATGGCCTTACTCTGCCTTTAACAGCGCTTGTGGCGGGGTTTGGCATTCAGGAAGTTGCTTTGGTTGTTTTAATCTTTAC
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GGGTACCCTTCACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGGTTTTCTTTGCATCCCCTCACCATTCTATGG
TTGGTGTTTTTCTTGATTTCTGTGAACATGCCCTCAGGAATCTTGGCTTTAGTGTTGTTGATCTCTCTCTGGCTCCTTGG
TCGCTATACCAATGTCGCTGGCCTTGTCACCCCTTATGACATTCACCATTACACCAACGGCCCCCGCGGCGTTGCCGCCT
TGGCCACTGCCCCGGATGGGACCTATTTGGCTGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCG
TCTCAACTTGGGTCACTCCTTGAGGGCGCCTTTAGAACCCAAAAGCCTTCACTGAATACCGTCAATGTGGTTGGGTCCTC
CATGGGCTCCGGCGGGGTGTTCACCATTGACGGGAAAATTAAGTGCGTGACCGCCGCACATATCCTCACGGGTAACTCTG
CTAGGGTCTCTGGGGTTGGCTTCAATCARATGTTGGATTTTGATGTAAAAGGGGATTTTGCCATAGCCGATTGTCCGGGT
TGGCAGGGAGTCGCTCCCAAGTCCCAGTTCTGCAAGGATGGGTGGACTGGCCGCGCTTATTGGCTAACGTCCTCTGGCGT
CGAACCCGGCGTCATTGGTAGGGGATTCGCCTTTTGTTTCACCGCGTGCGGCGATTCCGGGTCCCCAGTGATCACCGAGG
CCGGAGAGCTTGTCGGAGTCCACACGGGATCAAACAAACAAGGAGGAGGCATTGTCACGCGCCCTTCAGGCCAGTTTTGT
AATGTGRCACCCAYCAARYTAAGYGAATTRAGTGAATTCTTYGCYGGRCCTARGGTCCCGCTYGGTGAYGTGAAGGTCGG
CAGCCACATAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAG
GCCTCTCCACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCT
GTGAGTTTCTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATC
CTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTG
CCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATG
AATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCA
CCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGG
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TGCGTCCAACATGAGGAATGCAGCGGGTCARTTTATCGAGGCYGCCTATGCGAAAGCGATCAGGGTGGAACTTGCCCAGT
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GGCGACATTGTTGTTGTTCTTGGTCATACGCCCGTTGGCAGCATCTTTGACTTAAAGATTGGCAATGCCAAGCACACCCT
ACAAGCCATCGAGACCAGAGTCCTTGCTGGGTCCAGGATGACCGTGGCGCGTGTCGTTGATCCGACTCCCGCGCCGCCAC
CCGTACCCGTGCCCGTTCCTCTCCCACCGAAAGTTTTAGAGAACGGCCCCAGTGCCTGGGGGGATGAAGACCGCCTGAAC
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TTCTGGTGATGTGTTCTATGAGGAAGTCCACGACAACACAGATGCGTGGGAATGCCTTAGAGCTGACGACCCCGCCGACT
TGGATCCTGAGAGGGGAACCTTGTGTGGACACGTCACCATAGAGAATAGGCCTTACCATGTTTATGCCTCCCCGTCTGGT
AGGAAGTTCCTGGTCCCTGCCGACCCAGAGAATGGGAAAGCCCAGTGGGAAGCTGCAAAGCTTTCCATGGAGCAGGCCCT
TGGTATGATGAACGTTGACGGCGAGCTGACCGCCAAAGAACTGGAGAAATTGAAGAGAATAATTGACAAACTCCAGGGCC
TGACTAAGGAGCAGTGTTTAAACTGTTAGCCGCCAGCGGCTTGACCCGCTGTGGTCGCGGCGGCTTGGTTATTACTGAGA
CAGCGGTAAAAATAGTCAGATTCCACAATCGGACCTTCACCCTGGGGCCTGTGAATTTGAAAGTGGCCAGCGAAGTTGAG
TTGAAAGACGCCGTCGAGCACAACCAACACCCGGTTGCAAGACCAGTTGACGGTGGCGTTGTGCTCCTGCGCTCTGCAGT
TCCTTCGCTTATAGACGTCTTGATCTCCGGTGCCGACGCATCTCCCCAGTTGCTCGCCCATCACGGGCCAGGAAACACTG

*Fig. 1F-3*

GGATTGATGGCACGCTCTGGGATTTTGAGTCCGTAGCCACTAAAGAGGAAGTCGCACTTAGTGCACAAATAATACAGGCT
TGTGGCATTAGGCGTGGCGATGCTCCTGAGATTGGCCTCCCTTACAAGCTGCACCCTGTTAGGGGCAACCCTGAACGTGT
GAAAGGGGTTTTGAAAAACACAAGGTTTGGAGACATACCTTACAGGACCCCTAGCGACACTGGGAGCCCAGTACATGCGG
CCGCCTGCCTTACGCCTAACGCCACCCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACTATGCCCTCCGGGTTTGAG
TTGTATGTGCCGACCATTCCAGCATCTGTCCTTGATTACCTTGATTCCAGGCCAGACTGCCCTAAACAGTTGACGGAGCA
CGGGTGTGAAGATGCTGCATTGAGAGACCTCTCCAAATATGACTTGTCCRCCCAAGGTTTTGTTTTGCCCGGAGTCCTCC
GCCTCGTGCGGAAATACTTGTTTGCCCACGTGGGCAAGTGCCCACCTGTCCATCGGCCCTCCACCTACCCGGCCAAGAAT
TCCATGGCTGGAATAAACGGGAATAGGTTCCCAACCAAGGACATTCAGAGCATCCCTGAGATCGACGTTCTGTGTGCACA
GGCTGTACGAGAGAACTGGCAGACCGTTACCCCTTGCACCCTCAAGAAGCAGTATTGCGGGAAGAAGAAAACCAGGACCA
TACTCGGTACCAATAACTTCATTGCGCTGGCCCACCGGGCAGCACTGAGTGGTGTCACCCAGGGCTTCATGAAAAAGGCG
TTTAACTCGCCCATCGCCCTCGGGAAGAACAAATTCAAGGAGCTACAGACTCCGGTCCTGGGCAGATGCCTTGAGGCTGA
TCTTGCCTCTTGCGATCGATCCACTCCCGCGATTGTCCGCTGGTTTGCCGCCCATCTCCTTTATGAACTTGCCTGCGCTG
AGGAACACCTACCGTCGTATGTGCTGAATTGCTGCCATGACCTATTGGTCACGCAGTCCGGTGCGGTGACTAAGAGAGGT
GGCCTGTCATCTGGTGATCCGATCACCTCGGTATCCAACACCATTTACAGTCTGGTGATTTATGCGCAGCACATGGTGCT
CAGTTATTTCAAAAGTGGTCACCCACATGGTCTCCTGTTTCTCCAGGACCAGCTAAAGTTTGAGGACATGCTTAAGGTTC
AGCCCCTGATTGTCTACTCGGATGATCTTGTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAG
CATCTGAACTTGATGCTAGGGTTTCAGACGGACCCAAAGAAGACAACCATTACTGACTCGCCATCTTTTCTGGGCTGTAG
GATAATGAATGGGCGTCAGCTAGTCCCAAACCGTGATAGGATTCTCGCAGCTCTTGCCTACCACATGAAGGCGAATAATG
TTTCTGAGTACTACGCCTCCGCTGCTGCAATACTCATGGACAGTTGTGCTTGTCTGGAGTACGACCCTGAATGGTTTGAA
GAACTTGTGGTTGGAATGGCGCAATGCGCCCGCAAGGACGGCTATAGCTTCCCCGGCCCGCCGTTCTTCTTATCCATGTG
GGAGAAACTCAGGTCCAATTATGAGGGGAAGAAGTCAAGGGTGTGTGGGTACTGCGGAGCTTCGGCCCCGTATGCCACTG
CCTGTGGTCTTGACGTCTGTGTTTACCACACTCACTTTCACCAGCATTGTCCAGTCATAATCTGRTGTGGCCACCCTGCA
GGTTCCAGGTCCTGTGATGAGTGCAAATCCCCCATAGGGAAAGGTACAAGCCCTCTGGATGAGGTTTTAAGACAAGTCCC
GTATAAGCCTCCACGGACCGTCCTCATGCATGTGGAGCAGGGCCTCACCCCCCTTGACCCAGGCAGATATCAGACCCGCC
GTGGGTTGGTTGCCGTTAGGCGCGGGATCAGGGGAAATGAAGTTGACCTACCAGATGGTGATTATGCTAGCACCGCCTTA
CTCCCAACCTGTAAAGAGATCAACATGGTTGCTGTTGCTTCTAATGTGTTGCGCAGCAGATTTATCATCGGTCCACCCGG
TGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTCATATACACACCGACCCATCAGACCATGCTTG
ACATGATCAAAGCTTTGGGGACGTGCCGGTTTAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGCCCCTTCCCGCACT
GGCCCGTGGGTTCGCATCCTGGCCGGCGGGTGGTGTCCTGGCAAAAACTCCTTCCTGGACGAAGCTGCGTATTGTAATCA
TCTTGATGTCTTGAGGCTTCTTAGCAAAACCACTCTCACCTGTTTAGGGGACTTCAAACAACTCCACCCAGTGGGTTTTG
ATTCTCATTGCTATGTCTTTGACATTATGCCTCAGACTCAACTGAAGACCATCTGGAGATTTGGACAGAACATCTGTGAT
GCCATCCAACCAGACTACAGAGACAAGCTTATGTCCATGGTCAACACAACTCGTGTAACTTATGTGGAAAAACCTGTCAA
ACATGGGCAAGTCCTCACCCCTTACCATAGGGACCGAGAGGATAGCGCCATTACCATTGACTCCAGTCAAGGCGCCACAT
TTGATGTGGTTACACTGCATTTGCCCACGAAAGATTCACTCAACAAACAAAGGGCCCTTGTTGCTATTRCCAGGGCAAGA
CATGCCATCTTTGTGTATGACCCACATAGGCAACTGCAGAGCCTATTTGATCTTCCTGCAAAAAGCACGCCCGTCAACTT
GGCCGTGCACCACGATGGRCAACTGATTGTGCTAGATAGAAATAACAAAGAATGCACGGTTGCCCAAGCTCTGGGTAATG
GTGACAAATTTAGGGCCACAGACAAGCGCGTTGTGGATTCTCTCCGCGCCATTTGTGCTGACCTAGAAGGGTCGAGCTCT
CCACTCCCCAAGGTTGCACATAATTTGGGGTTTTATTTCTCACCTGATTTGACACAGTTTGCCAAGCTTCCAATAGAACT
TGCGCCACACTGGCCAGTAGTGACGACCCAAGACAATAAAAACTGGCCAGATCGGCTGGTTGCCAGCCTGCGCCCTATTC
ACAAACATAGCCGTGCGTGCATCGGTGCCGGCTATATGGTGGGCCCCTCGGTGTTTTTAGGCACCCCTGGGGTTGTGTCA
TACTATCTTACAAAATTTGTTAAGGGCGAGGCTCAAGTGCTTCCGGAAACGGTCTTCAGTACTGGCCGAATTGAGGTAGA
TTGCCGGGAATATCTTGACGACCGGGAGCGGGAAGTTGCAGCGTCCCTCCCACACGCCTTTATCGGCGACGTCAAAGGCA
CTACCGTCGGAGGGTGTCATCACATCACCTCCAAATACCTTCCGCGCTTCCTCCCCAAGGAATCAGTTGCGGTAGTCGGG
GTTTCAAGCCCCGGAAAAGCAGCGAAAGCAGTGTGTACATTGACAGATGTGTACCTCCCAGACCTTGAAGCTTACCTCCA
TCCTAAGACCCTGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGGCTGATGGTCTGGAAGGACAAGACGG
CCTATTTCCAACTCGAAGGTCGCCATTTCACCTGGTATCAACTTGCTAGCTATGCCTCGTACATCCGTGTTCCTTTAAAC
TCCACGGTGTACCTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGAAAAGTCGTTGGGTCCACTCATTGGGGAGCTGA
CCTCGCAGTCACCCCTTATGATTATGGGGCAAGAATTATTTTGTCTAGTGCGTACCATGGTGAGATGCCTCCTGGGTACA

*Fig. 1F-4*

AGATTCTGGCGTGCGCGGAGTTCTCGCTGGACGACCCAGTCAGATACAAGCACACTTGGGGGTTTGAGTCGGATACAGCG
TACTTGTACGAGTTCACTGGAAACGGTGAGGACTGGGAGGATTATAACGACGCGTTTCGTGCGCGACAGAAAGGAAAGAT
TTACAAGGCCACTGCCACCAGCCTGAAGTTCCATTTTCCTCCGGGTCATACCGTTGAACCAACTTTGGGCTTAGACTGAA
ATGAAATGGGGGCTGTGCAGAGCCTATTTGATAAAATTGGCCAACTGTTTGTGGACGCTTTCACGGAGTTCTTGGTATCC
ATTGTTGATATCATCATATTTTTGGCCATTTTGTTCGGCTTCACAATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATT
GGTTTGCTCCGCGATACTCCGTTCGCGCTCTGCCGTTCACCCTGAGCAATTACAGAAGATCCTATGAGGCATTTCTCTCC
CAGTGCCGGACGGACATTCCCACCTGGGGAACTAAACATCCCTTGGGGATGCTCTGGCACCACAAGGTGTCGACCCTAAT
TGATGAAATGGTGTCGCGTCGAATGTACCGCACCATGGAACAAGCAGGGCAGGCTGCCTGGAGACAGGTGGTGACCGAGG
CAACGTTGTCTCGTATTAGTAACTTGGATGTGGTGGCTCATTTCCAGCACCTTGCCGCCATAGAAGCCGAGACTTGTAAA
TACTTGGCCTCCCGGCTGCCAATGCTGCACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCTCTCT
AGAACAGGTGTTTGCTATTTTCCCGACCCTCGATTCCCGGCCAAAGCTTCATGATTTTCGGCAATGGCTAATAGCTGTGC
ATTCCTCCATATTCTCTTCTGTTGCGGCTTCCTGTACCCTTTTCGTCGTGCTGTGGTTGCGGCTTCCAATAATACGTACT
GTTTTTGGTTTCCACTGGTCAGGGGCAATTTTTCCTTCGAGCTCACAGTGAACTACACGGTGTGTCCTCCCTGCCTCACC
CGGCAGGCGGCCGCAGAGATCTACGAACCTGGTGGGTCTCTTTGGTGCAGGATAGGGCACGATCGATGCTCGGAGGACGA
TCACGACGAGCTAGGATTTCTGGTGCCGCCTGGCCTCTCCAGCGAAGGCCACTTGACCAGTGTTTACGCCTGGTTGGCGT
TCTTGTCCTTCAGTTACACGGCCCAGTTTCACCCCGAGATATTCGGAATAGGGAATGTGAGCCAAGTTTATGTTGACATC
AAGCATCAATTTATTTGTGCTGTTCATGACGGGCAAAACACCACCTTGCCTCGCCATGACAACGTCTCAGCCGTGTTCCA
GACTTATTACCAGCATCAGGTCGACGGCGGCAATTGGTTTCACCTGGAATGGCTGCGCCCCTTCTTCTCCTCCTGGTTGG
TTTTGAACGTCTCTTGGTTTCTCAGGCGTTCGCCTGTAAGCCGTGTTTCAGTTCGAGTCTTTCAGACATTAAGACCAACA
CCACCGCAGCTGCAGGCTTTGCTGTCCTCCAAGACATCAGCTGTCTTAGGCATGGCCACTCGTCCTCTGAGGCGACTCGC
AAAGGCCGCCAATGCCGCACGGCGATAGGAACGCCCGTATACATTACTGTCACAGCCAATGTAACAGATGAGAATTATTT
GCATTCCTCTGACCTTCTCATGCTTTCCTCTTGCCTTTTCTACGCTTCCGAGATGAGTGAAAAGGGATTTGAGGTGATAT
TTGGCAATGTGTCAGGCATAGTGGCTGTGTGTGTCAACTTTACCAGCTATGTCCAACATGTTAAGGAGTTCACCCAGCGC
TCCTTGGTGGTTGACCATGTGCGGTTACTTCATTTTGTGACACCTGAGACTATGAGGTGGGCGACCGTTTTAGCCTGTCT
TTTTGCCATTCTGTTGGCCATTTGAATGTTCAGATATGTTGGGGAAATGCTTGACCGCGGGCTATTGCTCGCAATTGCCT
TTTTTGTGGTGTATCGTGCCGTTCTGTCTTGCTGCGCTCGTCAACGCCAGCAGCAACAGCAGCTCCCACTTACAGTTGAT
TTATAACTTAACGATATGTGAGCTGAATGGCACAGACTGGCTGAATGATCATTTTAGTTGGGCAGTGGAGACTTTCGTTA
TCTTTCCTGTGTTGACTCACATTGTTTCCTACGGCGCCCTCACTACCAGCCACTTCCTTGACACGGTCGGCCTGATCACT
GTGTCCACCGCCGGATACTACCATGCGCGGTATGTCTTGAGTAGCATCTATGCCGTCTGCGCCCTGGCTGCGCTGATTTG
CTTCGTCATCAGGTTGACGAAAAATTGTATGTCCTGGCGCTACTCATGTACCAGATATACCAACTTTCTTCTGGACACCA
AGGGCAGACTCTATCGCTGGCGGTCACCCGTCATCATAGAGAAAAGGGGTAAAATTGAGGTTGGAGGTGACCTGATCGAC
CTCAAGAGAGTTGTGCTTGATGGCTCCGCGGCAACCCCTGTAACCAAAGTTTCAGCGGAACAATGGGGTCGTCCTTAGAC
GACTTCTGCAATGACAGCACGGCTCCACAAAAGGTGATCTTGGCATTTTCTATCACCTACACTCCAGTGATGATATATGC
CCTAAAGGTGAGTCGTGGCCGGCTGCTAGGGCTTTTACACCTTTTGATTTTTCTAAACTGTGCTTTTACCTTCGGGTATA
TGACATTTGTGCACTTTCAGAGCACAAACAGAGTTGCACTCACTATGGGAGCAGTAGTCGCGCTCCTTTGGGGGGTGTAC
TCAGCTATAGAAACCTGGAAATTCATCACTTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGC
CCACCACGTTGAGAGTGCCGCAGGCTTTCATCCGATTGCGGCAAGTGATAACCACGCATTTGTCGTCCGGCGTCCCGGTT
CCACTACGGTTAACGGCACATTGGTTCCCGGGTTGAAAAGCCTCGTGTTGGGTGGCAGAAGAGCTGTCAAACGGGGAGTG
GTAAACCTCGTTAAATATGCCAAATAACAACGGCAGGCAGCAGAAGAAGAAGAAAGGGGACGGCCAGCCAGTCAATCAGC
TGTGCCAAATGTTGGGCAGGATCATCGCCCAGCAAAACCAGTCCAGAGGTAAGGGACCGGGGAAGAAAAGTAAGAAGAAA
AGCCTGGAGAAGCCCCATTTTCCTCTCGCGACTGAAGATGACGTTAGACATCACTTCACCCCTAGTGAGCGGCAATTGTG
TCTGTCGTCAATCCAGACTGCCTTTAACCAAGGCGCTGGAACTTGTACCCTGTCGGATTCAGGGAGAATAAGTTACACTG
CGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTAATTCGCGTCACAGCATCACCCTCAGCATGATGAGCTGGCATT
CTTGAGACATCCCAGTGTTTGAATTGGAAGGATGTGTGGTGAATGGCACTGATTGATATTGTGCCTYTAAGTCACCTATT
CAATTAGGGCGACCGTATGGGGGTAATATTTAATTGGCGTGAACCATGCGGCCGAAAYT

*Fig. 1G-1*

>V7-Nsp2d324-434.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGCCAAAAGTTCAGCCTC
GAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGGGTCCGATTGTGGC
AGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTGATCTCCCGACCCC
ACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCGGCGACACCCTTGA
GTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCCGATCCCTGTGCCC
GCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGGACGAGCCCCTGGA
TTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTTCTGGGAGTAGAGG
GGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGTAACATTAAACCTGCGTCCGTGTCATCAAGCAGC
TCCTTGTCCAGCGTGAGAATCACACGCCCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGCCCTGCAGTGGGCA
TCTCCAAGAGGTAAAGGAAACATGCCTTAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGATGACCCTGCTACGC
AGGAATGGCTTTCTCGCATGTGGGATCGGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCAGGCGATTTGCACC
TTAGATGGCAGGTTAAAGTTCCTCCCAAAAATGATACTCGAGACACCGCCGCCCTATCCGTGTGAGTTTGTGATGATGCC
TCACACGCCTGCACCTTCCGTAGGTGCGGAGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGATGTTCCACGCATCC
TCGAGAAAATAGAAAATGTCGGCGAGATGGCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACCGGTAGATGACCAA
CTTGTCAACGACCCCCGGATATCGTCGCGGAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCACAGGTGGCGCCGG
CTCTTTTACCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTCGGACGGTAAAAAGAAAAGCTG
AAAGGCTCTTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTCACGCCTTTTCTAC
CCTGGCGGTGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTATGTTACAGTTACCC
AGCCTTTGGTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTTTTTGGCTGCTGGT
TGGCTTTTGCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTCGCCAGAGTGTAGA
AACATCCTTCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCGTCGGTCTCGGTCT

*Fig. 1G-2*

TGCCATTCTTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATTGTTGCAGACTGTA
TCTTGGCTGGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAACTGCTCCCAATGAG
GTCGCTTTTAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGTTTTGTGCGCCAAA
AGGAATGGACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAGCAACCCTCTGAAA
AACCCATCGCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTATGACCCCAACCAA
GCCGTAAAGTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGGTCAAGGTTTCCGC
TGTTCCATTCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTTGACCCTGACACTT
TCACTGCAGCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCAGCTGAATGGATTA
AAAATCAGGCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCTGCTCGATGGCTCT
GCACATGCTTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGGTGCGCTAACCCGT
TTGCCGTCCCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCTTACCCTGCCCTTG
ACAGCACTTGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCGGAGGCATGGCTCA
TAGGTTGAGCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCTCTTACCTGGTTGC
TTTGTGTGTTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTTTTTCTTGATTTCT
GTGAATATGCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATACTAATGTTGCTGG
CCTTGTCACCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACCGCACCAGATGGGA
CCTACTTGGCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCTTGGGTCTCTTCTT
GAGGGTGCTTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCTCTGGCGGGGTGTT
TACCATCGACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTTTCCGGGGTCGGCT
TCAATCAAATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGGGGCTGCCCCCAAG
ACCCAATTCTGCACGGATGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCGGCGTCATTGGAAA
AGGATTCGCCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAGCTTGTCGGCGTTC
ACACGGGATCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGCACCCATCAAGCTA
AGCGAATTAAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACATAATTAAAGACAT
AAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCCACCGTCCAACTTC
TTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTTCTTTATTTTGAAT
GAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCACGCCATGGTCTGC
GCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTCAGCCTCGGTGCAG
TGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAGCACCTATGCATTC
CTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTGCCATCATTTTGTA
CTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTCTTGAGATACTTTG
CCGAGGGAAAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGCCCTCGCTATGAGA
CTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCAACATGAGGAATGC
AGCGGGTCAATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAGGTTGATAAAGTTC
GAGGTACTTTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACATTGTTGTCGCTCTC
GGCCACACGCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCATTGAGACCAGAGT
CCTTGCTGGGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCCGTGCCCATCCCCC
TCCCACCGAAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAAGAGGCGCAGGATG
GAAGCCCTCGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTGATGTGTTTTATGA
GGAGGTCCATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCTGAGAAGGGAACTC
TGTGTGGACATGTCACCATTGAAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTTCTTGGTCCCCGTC
AACCCAGAGAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGATGAATGTCGACGG
CGAACTGACTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAGGAGCAGTGTTTAA
ACTGCTAGCCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTAAAAATAGTCAAAT
TTCACAACCGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGACGCGGTTGAGCAC
AACCAACACCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGCTTATAGACGTCTT
GATCTCCGGTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGATGGCACGCTCTGGG
ATTTTGAGTCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACATTAGGCGCGGCGAC
GCTCCTGAAATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAGTTCTGCAGAATAC
AAGGTTTGGAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGCCTTACGCCCAACG

*Fig. 1G-3*

CCACTCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGTACCGACCATACCA
GCGTCTGTCCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCGAAGATGCCGCACT
GAAAGACCTCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTGCGGAAATACCTGT
TTGCCCATGTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGCTGGAATAAATGGG
AACAGGTTCCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGCGAGAAAACTGGCA
AACTGTCACCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGCACCAATAACTTCA
TCGCACTAGCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTCGCCCATCGCCCTC
GGAAAGAACAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCATCCTGCGATCGATC
CACGCCTGCAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCATCTACCGTCGTACG
TGCTGAACTGCTGCCACGACTTACTGGTCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTCGTCTGGCGACCCG
ATCACCTCTGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACTTCAAAAGTGGTCA
CCCCCATGGCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTGATCGTCTATTCGG
ACGACCTCGTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAATTTGATGCTGGGG
TTTCAGACGGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAAATGGGCGCCAGCT
AGTCCCCAACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAATACTATGCCTCAG
CGGCTGCAATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGTAGTTGGAATAGCG
CAGTGCGCCCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAACTCAGGTCCAATTA
TGAGGGGAAGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGCCTCGACGTCTGCA
TTTACCACACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGGTTCTTGTAGTGAG
TGCAAATCCCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGCCCCCACGGACCGT
TATCATGCATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTAGTCTCTGTCAGGC
GTGGAATTAGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTACCTGCAAAGAGATC
AACATGGTCGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGAAAACATACTGGCT
CCTTCAACAGGTCCAGGATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTGACATGATTAGGGCTTTGGGGA
CGTGCCGGTTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTGGGTTCGCATCCTA
GCCGGCGGTTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATGTTTTGAGGCTTCT
TAGTAAAACTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCATTGCTATGTTTTTG
ACATCATGCCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCAGCCAGATTACAGG
GACAAACTCATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGCAGGTCCTCACCCC
CTACCACAGGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTGGTTACATTGCATT
TGCCCACTAAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTATCTTTGTGTATGAC
CCACACAGGCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGCACTGCGACGGGCA
GCTGATCGTGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAATTTAGGGCCACAG
ACAAGCGTGTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCCCAAGGTCGCACAC
AACTTGGGATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTCACTGGCCCGTGGT
GTCAACCCAGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATACAGCCGCGCGTGCA
TCGGTGCCGGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCTCACAAAATTTGTT
AAGGGCGGGGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGGAATATCTTGATGA
TCGGGAGCGAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTTGGAGGATGTCATC
ATGTCACCTCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAGCCCCGGAAAAGCC
GCGAAAGCATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGACCCAGTCCAAGTG
CTGGAAAATGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTCCAACTTGAAGGTC
GCTATTTCACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGTGTACTTGGACCCC
TGCATGGGCCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGGTCACCCCTTATGA
TTACGGCGCTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTGGCGTGCGCGGAGT
TCTCGTTGGATGACCCAGTTAAGTACAAACATACCTGGGGGGTTTGAATCGGATACAGCGTATCTGTATGAGTTCACCGGA
AACGGTGAGGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGGCCACTGCCACCAG
CTTGAAGTTTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATGGGGTCCATGCAAA
GCCTTTTTGACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGATATCATTATATTT
TTGGCCATTTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCTCCGCGATACTCCG

*Fig. 1G-4*

TACGCGCCCTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCAAGTGGACATTCCC
ACCTGGGGAACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAATGGTGTCGCGTCG
AATGTACCGCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTGTCTCGCATTAGTA
GTTTGGATGTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGCCTCCCGGCTGCCC
ATGCTACACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGGTGTTTGCTATTTT
TCCAACCCCTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCCATATTTTCCTCTG
TTGCAGCTTCTTGTACTCTTTTTGTTGTGCTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGGTTTCCGCTGGTTA
GGGGCAATTTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGCAGCCACAGAGATC
TACGAACCCGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACGAGCTAGGGTTTAT
GATACCGCCTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCCTTCAGCTACACGG
CCCAGTTCCATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCAACTCATCTGCGCC
GAACATGACGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATTACCAACATCAAGT
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TCAGGCGTTCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCAGCGGCAAGCTTTG
CTGTCCTCCAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCCTCAGTGCCGTACG
GCGATAGGGACACCCGTGTATGTTACCATCACAGCCAATGTGACAGATGAGAATTATTTACATTCTTCTGATCTCCTCAT
GCTTTCTTCTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAATGTGTCAGGCATCG
TGGCTGTGTGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGTGGTCGACCATGTG
CGGTTGCTCCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCATTCTGTTGGCAAT
TTGAATGTTTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTGGTGTATCGTGCCG
TTCTGTTTTGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACTTGACGCTATGTGA
GCTGAATGGCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCCGTTTTGACTCACA
TTGTCTCCTATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTACCGCCGGGTTTGTT
CACGGGCGGTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCATTAGGTTTGCAAA
GAATTGCATGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGACTCTATCGTTGGC
GGTCGCCTGTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAGAGTTGTGCTTGAT
GGCTCCGTGGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTGTCACGATAGCACG
GCTCCACAAAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGGTGAGTCGCGGCCG
ACTGCTAGGGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTCGCGCACTTTCAGA
GTACAAATAAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCATAGAAACCTGGAAA
TTCATCACCTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACGTTGAAAGTGCCGC
AGGCTTTCATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACGGTCAACGGCACAT
TGGTGCCCGGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCTTGTCAAATATGCC
AAATAACAACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAGATGCTGGGTAAGA
TCATCGCTCAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGAGAAGCCCCATTTT
CCTCTAGCGACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGTCAATCCAGACCGC
CTTTAATCAAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTTAGTTTGCCTACGC
ATCATACTGTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGCATCTCAGTGTTTG
AATTGGAAGAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGGGCGACCGTGTGGG
GGTGAGATTTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAA

*Fig. 1H-1*

>V7-Nsp2d324-523.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
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TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGCCAATTCCCGCACCTC
GCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCCGATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTG
AAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGGACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATA
TGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTTCTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTG
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CCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGCCCTGCAGTGGGCATCTCCAAGAGGTAAAGGAAACATGCCT
TAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGATGACCCTGCTACGCAGGAATGGCTTTCTCGCATGTGGGATC
GGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCAGGCGATTTGCACCTTAGATGGCAGGTTAAAGTTCCTCCCA
AAAATGATACTCGAGACACCGCCGCCCTATCCGTGTGAGTTTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGC
GGAGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGATGTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGA
TGGCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACCGGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCG
CGGAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCACAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGA
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AGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTCACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGAT
TGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTATGTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGG
TGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTTTTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGC
CTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTCGCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTC
AAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCGTCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGG
GGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATTGTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTC
AAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAACTGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACA
CGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGTTTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCAC

*Fig. 1H-2*

TGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAGCAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATG
AAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTATGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAG
GCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGGTCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCC
CACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTTGACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACT
CCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCAGCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCA
GGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCTGCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGAC
TGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGGTGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCT
CTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCTTACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATT
CAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCGGAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCT
GTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCTCTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCT
GTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTTTTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCC
ATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATACTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCA
TTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACCGCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTG
CGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCTTGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCC
TCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCTCTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGT
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AGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGGGGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGACT
GGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCGGCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATG
TGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAGCTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGG
GCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGCACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGG
CCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACATAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGC
CTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCCACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAA
TGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTTCTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGG
AGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGAC
AGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGG
CCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCA
CCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCA
TATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTCTTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGT
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ATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCAACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTA
TGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAGGTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTT
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GACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCATTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGC
GCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCCGTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCC
CCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAAGAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGC
GGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTGATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTG
GGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCTGAGAAGGGAACTCTGTGTGGACATGTCACCATTGAAAACA
AGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTTCTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGG
GAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGATGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAA
ACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAGGAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCG
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CTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGACGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATC
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GTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGATGGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGG
AAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACATTAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAG
CTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAGTTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAAC
CCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGCCTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCG
TCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGTACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCT
AGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCGAAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTC
CACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTGCGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCG

*Fig. 1H-3*

TTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGCTGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAG
AGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGCGAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAA
ACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGCACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGA
GTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTCGCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAG
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CGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCATCTACCGTCGTACGTGCTGAACTGCTGCCACGACTTACTGG
TCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTCGTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTAT
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CCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTGATCGTCTATTCGGACGACCTCGTGCTGTATGCCGAGTCTC
CCACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAATTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCA
ATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAAATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGC
GGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAATACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTG
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TTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAACTCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGG
GTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGCCTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATT
GTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGGTTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACA
AGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGCCCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCAC
CCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTAGTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGAC
TACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTACCTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTA
TTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGT
TATTTACACACCAACTCACCAGACCATGCTTGACATGATTAGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCA
CAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTGGGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAAT
TCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATGTTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGG
AGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCATTGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGA
CCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCAGCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACA
ACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGCAGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGC
CATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTGGTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGC
AAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTATCTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTT
GATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGCACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAA
AGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAATTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCG
CCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCCCAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGAT
TTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTCACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCC
GGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATACAGCCGCGCGTGCATCGGTGCCGGCTATATGGTGGGCCCTT
CGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCTCACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAG
ACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGGAATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCT
CCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTTGGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCG
TCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAGCCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGAT
GTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGACCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGA
AGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTCCAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCA
GCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGTGTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGG
AGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGGTCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAG
CGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTGGCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACA
AACATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTATGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAAT
GATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGGCCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCC
TGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATGGGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTT
TTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGATATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATC
GCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCTCCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCA
ATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCAAGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGG
ATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAATGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGG
GCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTGTCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGC

*Fig. 1H-4*

ATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGCCTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGG
TCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGGTGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCT
TCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCCATATTTTCCTCTGTTGCAGCTTCTTGTACTCTTTTTGTTG
TGCTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGGTTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAG
TGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGCAGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGC
AGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACGAGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGG
CCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCCTTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGA
TAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCAACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTG
CCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATTACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGA
ATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAATGTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTT
CAGTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCAGCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTA
GGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCCTCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACC
ATCACAGCCAATGTGACAGATGAGAATTATTTACATTCTTCTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTC
TGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAATGTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCT
ACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGTGGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAG
ACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCATTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAAT
GCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTGGTGTATCGTGCCGTTCTGTTTTGCTGTGCTCGCCAACGCC
AGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACTTGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAA
CAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCCGTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCA
GCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTACCGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATC
TACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCATTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTG
TACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGACTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGG
GCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAGAGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGA
GTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTGTCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTT
TCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGGTGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGAT
CTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTCGCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGG
GAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCATAGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGC
TTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACGTTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGA
TAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACGGTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGT
TGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCTTGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAG
AAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAGATGCTGGGTAAGATCATCGCTCAGCAAAACCAGTCCAGAG
GCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGAGAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGA
CATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGTCAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCAC
CCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCA
CAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGCATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCA
CTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGGGCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATG
CGGCCGAAATTAAAAAAAA

*Fig. 1I-1*

>V7-Nsp2d543-632.seq

ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GATCACACGCCCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGCCCTGCAGTGGGCATCTCCAAGAGGTAAAGG
AAACATGCCTTAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGATGACCCTGCTACGCAGGAATGGCTTTCTCGC
ATGTGGGATCGGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCAGGCGATTTGCACCTTAGATGGCAGGTTAAA
GTTCCTCCCAAAAATGATACTCGAGACACCGCCGCCCTATCCGTGTGAGTTTGTGATGATGCCTCACACGCCTGCACCTT
CCGTAGGTGCGGAGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGATGTTCCACGCATCCTCGAGAAAATAGAAAAT
GTCGGCGAGATGGCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACCGGTAGATGACCAACTTGTCAACGACCCCCG
GATATCGTCGCGGAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCACAGGTGGCGCCGGCTCTTTTACCGATTTGC
CGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTCGGACGGTAAAAAGAAAAGCTGAAAGGCTCTTTGACCAA
CTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTCACGCCTTTTCTACCCTGGCGGTGGTTATTC
TCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTATGTTACAGTTACCCAGCCTTTGGTATTGCTC
CCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTTTTTGGCTGCTGGTTGGCTTTTGCTGTTGGT
CTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTCGCCAGAGTGTAGAAACATCCTTCATTCTTT

*Fig. 1I-2*

TGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCGTCGGTCTCGGTCTTGCCATTCTTGGCAGGT
TACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATTGTTGCAGACTGTATCTTGGCTGGAGCTTAC
GTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAACTGCTCCCAATGAGGTCGCTTTTAACGTGTT
TCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGTTTTGTGCGCCAAAAGGAATGGACCCCATTT
TTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAGCAACCCTCTGAAAAACCCATCGCGTTTGCC
CAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTATGACCCCAACCAAGCCGTAAAGTGCTTGCG
GGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGGTCAAGGTTTCCGCTGTTCCATTCCGAGCCC
CCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTTGACCCTGACACTTTCACTGCAGCTCTCCGG
TCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCAGCTGAATGGATTAAAAATCAGGCAAATTTC
CAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCTGCTCGATGGCTCTGCACATGCTTGCTGGGA
TTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGGTGCGCTAACCCGTTTGCCGTCCCTGGCTAC
GGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCTTACCCTGCCCTTGACAGCACTTGTGGCGGG
ATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCGGAGGCATGGCTCATAGGTTGAGCTGTAAGG
CTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCTCTTACCTGGTTGCTTTGTGTGTTTCCTTGC
TGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTTTTTCTTGATTTCTGTGAATATGCCTTCAGG
AATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATACTAATGTTGCTGGCCTTGTCACCCCCTACG
ACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACCGCACCAGATGGGACCTACTTGGCCGCTGTC
CGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCTTGGGTCTCTTCTTGAGGGTGCTTTCAGAAC
TCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCTCTGGCGGGGTGTTTACCATCGACGGGAAAG
TCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTTTCCGGGGTCGGCTTCAATCAAATGCTTGAC
TTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGGGGCTGCCCCCAAGACCCAATTCTGCACGGA
TGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCGGCGTCATTGGAAAAGGATTCGCCTTCTGCT
TCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAGCTTGTCGGCGTTCACACGGGATCGAATAAA
CAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGCACCCATCAAGCTAAGCGAATTAAGTGAATT
CTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACATAATTAAAGACATAAGCGAGGTGCCTTCAG
ATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCCACCGTCCAACTTCTTTGTGTGTTTTTTCTC
CTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTTCTTTATTTTGAATGAGGTTCTCCCAGCCGT
CCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCA
GGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCA
GATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGT
TGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTG
GCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTCTTGAGATACTTTGCCGAGGGAAAGTTGAGG
GAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGCCCTCGCTATGAGACTCAATGACGAGGACTT
GGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCAACATGAGGAATGCAGCGGGTCAATTTATCG
AGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAGGTTGATAAAGTTCGAGGTACTTTGGCCAAA
CTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACATTGTTGTCGCTCTCGGCCACACGCCTGTTGG
CAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCATTGAGACCAGAGTCCTTGCTGGGTCCAAAA
TGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCCGTGCCCATCCCCCTCCCACCGAAAGTTCTG
GAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAAGAGGCGCAGGATGGAAGCCCTCGGCATCTA
TGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTGATGTGTTTTATGAGGAGGTCCATAATAACA
CAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCTGAGAAGGGAACTCTGTGTGGACATGTCACC
ATTGAAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTTCTTGGTCCCCGTCAACCCAGAGAATGGAAG
AGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGATGAATGTCGACGGCGAACTGACTGCCAAAG
AACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAGGAGCAGTGTTTAAACTGCTAGCCGCCAGCG
ACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTAAAAATAGTCAAATTTCACAACCGGACCTTC
ACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGACGCGGTTGAGCACAACCAACACCCGGTTGC
GAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGCTTATAGACGTCTTGATCTCCGGTGCTGATG
CATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGATGGCACGCTCTGGGATTTTGAGTCCGAAGCC
ACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACATTAGGCGCGGCGACGCTCCTGAAATTGGTCT
CCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAGTTCTGCAGAATACAAGGTTTGGAGACATAC

*Fig. 1I-3*

CTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGCCTTACGCCCAACGCCACTCCGGTGACTGAT
GGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGTACCGACCATACCAGCGTCTGTCCTTGATTA
CCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCGAAGATGCCGCACTGAAAGACCTCTCTAAAT
ATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTGCGGAAATACCTGTTTGCCCATGTAGGTAAG
TGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGCTGGAATAAATGGGAACAGGTTCCCAACCAA
GGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGCGAGAAAACTGGCAAACTGTCACCCCTTGTA
CTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGCACCAATAACTTCATCGCACTAGCCCACCGA
GCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTCGCCCATCGCCCTCGGAAAGAACAAGTTTAA
GGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCATCCTGCGATCGATCCACGCCTGCAATTGTCC
GCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCATCTACCGTCGTACGTGCTGAACTGCTGCCAC
GACTTACTGGTCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTCGTCTGGCGACCCGATCACCTCTGTGTCTAA
CACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACTTCAAAAGTGGTCACCCCCATGGCCTTCTGT
TCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTGATCGTCTATTCGGACGACCTCGTGCTGTAT
GCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAATTTGATGCTGGGGTTTCAGACGGACCCAAA
GAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAAATGGGCGCCAGCTAGTCCCCAACCGTGACA
GGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAATACTATGCCTCAGCGGCTGCAATACTCATG
GACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGTAGTTGGAATAGCGCAGTGCGCCCGCAAGGA
CGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAACTCAGGTCCAATTATGAGGGGAAGAAGTCGA
GAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGCCTCGACGTCTGCATTTACCACACCCACTTC
CACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGGTTCTTGTAGTGAGTGCAAATCCCCTGTAGG
GAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGCCCCCACGGACCGTTATCATGCATGTGGAGC
AGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTAGTCTCTGTCAGGCGTGGAATTAGGGGAAAT
GAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTACCTGCAAAGAGATCAACATGGTCGCTGTCGC
TTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGG
ATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTGACATGATTAGGGCTTTGGGGACGTGCCGGTTCAACGTC
CCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTGGGTTCGCATCCTAGCCGGCGGTTGGTGTCC
TGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATGTTTTGAGGCTTCTTAGTAAAACTACCCTCA
CCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCATTGCTATGTTTTTGACATCATGCCTCAAACT
CAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCAGCCAGATTACAGGGACAAACTCATGTCCAT
GGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGCAGGTCCTCACCCCCTACCACAGGGACCGAG
AGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTGGTTACATTGCATTTGCCCACTAAAGATTCA
CTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTATCTTTGTGTATGACCCACACAGGCAGCTGCA
GGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGCACTGCGACGGGCAGCTGATCGTGCTGGATA
GAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAATTTAGGGCCACAGACAAGCGTGTTGTAGAT
TCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCCCAAGGTCGCACACAACTTGGGATTTTATTT
CTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTCACTGGCCCGTGGTGTCAACCCAGAACAATG
AAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATACAGCCGCGCGTGCATCGGTGCCGGCTATATG
GTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCTCACAAAATTTGTTAAGGGCGGGGCTCAAGT
GCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGGAATATCTTGATGATCGGGAGCGAGAAGTTG
CTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTTGGAGGATGTCATCATGTCACCTCCAGATAC
CTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAGCCCCGGAAAAGCCGCGAAAGCATTGTGCAC
ACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGACCCAGTCCAAGTGCTGGAAAATGATGTTGG
ACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTCCAACTTGAAGGTCGCTATTTCACCTGGTAT
CAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGTGTACTTGGACCCCTGCATGGGCCCCGCCCT
TTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGGTCACCCCTTATGATTACGGCGCTAAAATTA
TCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTGGCGTGCGCGGAGTTCTCGTTGGATGACCCA
GTTAAGTACAAACATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTATGAGTTCACCGGAAACGGTGAGGACTGGGA
GGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGGCCACTGCCACCAGCTTGAAGTTTTATTTTC
CCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATGGGGTCCATGCAAAGCCTTTTTGACAAAATT
GGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGATATCATTATATTTTTGGCCATTTTGTTTGG

*Fig. 1I-4*

CTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCTCCGCGATACTCCGTACGCGCCCTGCCATTC
ACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCAAGTGGACATTCCCACCTGGGGAACTAAACA
TCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAATGGTGTCGCGTCGAATGTACCGCATCATGG
AAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTGTCTCGCATTAGTAGTTTGGATGTGGTGGCT
CATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGCCTCCCGGCTGCCCATGCTACACAACCTGCG
CATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGGTGTTTGCTATTTTTCCAACCCCTGGTTCCC
GGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCCATATTTTCCTCTGTTGCAGCTTCTTGTACT
CTTTTTGTTGTGCTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGGTTTCCGCTGGTTAGGGGCAATTTTTCTTTC
GAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGCAGCCACAGAGATCTACGAACCCGGTAGGTC
TCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACGAGCTAGGGTTTATGATACCGCCTGGCCTCT
CCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCCTTCAGCTACACGGCCCAGTTCCATCCCGAG
ATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCAACTCATCTGCGCCGAACATGACGGGCAGAA
CACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATTACCAACATCAAGTCGACGGCGGCAATTGGT
TTCACCTAGAATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAATGTCTCTTGGTTTCTCAGGCGTTCGCCTGCA
AACCATGTTTCAGTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCAGCGGCAAGCTTTGCTGTCCTCCAAGACATC
AGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCCTCAGTGCCGTACGGCGATAGGGACACCCGT
GTATGTTACCATCACAGCCAATGTGACAGATGAGAATTATTTACATTCTTCTGATCTCCTCATGCTTTCTTCTTGCCTTT
TCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAATGTGTCAGGCATCGTGGCTGTGTGTGTCAAT
TTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGTGGTCGACCATGTGCGGTTGCTCCATTTCAT
GACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCATTCTGTTGGCAATTTGAATGTTTAAGTATG
TTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTGGTGTATCGTGCCGTTCTGTTTTGCTGTGCT
CGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACTTGACGCTATGTGAGCTGAATGGCACAGATT
GGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCCGTTTTGACTCACATTGTCTCCTATGGTGCC
CTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTACCGCCGGGTTTGTTCACGGGCGGTATGTCCT
AAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCATTAGGTTTGCAAAGAATTGCATGTCCTGGC
GCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGACTCTATCGTTGGCGGTCGCCTGTCATCATA
GAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAGAGTTGTGCTTGATGGCTCCGTGGCAACCCC
TATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTGTCACGATAGCACGGCTCCACAAAAGGTGCT
TTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGGTGAGTCGCGGCCGACTGCTAGGGCTTCTGC
ACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTCGCGCACTTTCAGAGTACAAATAAGGTCGCG
CTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCATAGAAACCTGGAAATTCATCACCTCCAGATG
CCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACGTTGAAAGTGCCGCAGGCTTTCATCCGATTG
CGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACGGTCAACGGCACATTGGTGCCCGGGTTAAAA
AGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCTTGTCAAATATGCCAAATAACAACGGCAAGC
AGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAGATGCTGGGTAAGATCATCGCTCAGCAAAAC
CAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGAGAAGCCCCATTTTCCTCTAGCGACTGAAGA
TGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGTCAATCCAGACCGCCTTTAATCAAGGCGCTG
GGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTG
ATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGCATCTCAGTGTTTGAATTGGAAGAATGTGTG
GTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGGGCGACCGTGTGGGGGTGAGATTTAATTGGC
GAGAACCATGCGGCCGAAATTAAAAAAAA

*Fig. 1J-1*

>V7-Nsp2d633-726.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGG
ACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTT
CTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGTAACATTAAACCTGCGTCCGT
GTCATCAAGCAGCTCCTTGTCCAGCGTGAGATGTGAGTTTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGCGG
AGAGCGACCTTACCATTGGCTCAGTTGCTACTGAAGATGTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGATG
GCCAACCAGGGACCCTTGGCCTTCTCCGAGGATAAACCGGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCGCG
GAGGCCTGACGAGAGCACATCAGCTCCGTCCGCAGGCACAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGATG
GCGCGGATGCGGACGGGGGGGGCCGTTTCGGACGGTAAAAAGAAAAGCTGAAAGGCTCTTTGACCAACTGAGCCGTCAG
GTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTCACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGATTG
GGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTATGTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGGTG

*Fig. 1J-2*

TGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTTTTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGCCT
GTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTCGCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTCAA
ACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCGTCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGGGG
CACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATTGTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTCAA
GGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAACTGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACACG
TGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGTTTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCACTG
GGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAGCAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATGAA
AAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTATGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAGGC
GGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGGTCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCCCA
CTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTTGACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACTCC
ACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCAGCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCAGG
GGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCTGCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGACTG
CGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGGTGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCTCT
CTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCTTACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATTCA
AGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCGGAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCTGT
GTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCTCTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGT
TTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTTTTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCCAT
GGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATACTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCATT
ACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACCGCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTGCG
TTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCTTGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCCTC
ACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCTCTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGTAA
CTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTTTCCGGGGTCGGCTTCAATCAAATGCTTGACTTTGACGTAAAG
GGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGGGGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGACTGG
CCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCGGCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATGTG
GCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAGCTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGGGC
ATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGCACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGGCC
TAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACATAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCT
TGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCCACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATG
ATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTTCTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAG
TGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAG
CAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCC
ACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACC
AGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATA
TCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTCTTGAGATACTTTGCCGAGGGAAAGTTGAGGGAAGGGGTGTCG
CAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGCCCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTAT
GAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCAACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTATG
CTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAGGTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTTTT
GCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACATTGTTGTCGCTCTCGGCCACACGCCTGTTGGCAGTATCTTCGA
CCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCATTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGCGC
GCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCCGTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCCCC
AACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAAGAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGCGG
GAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTGATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTGGG
AGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCTGAGAAGGGAACTCTGTGTGGACATGTCACCATTGAAAACAAG
GCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTTCTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGGGA
AGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGATGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAAAC
TGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAGGAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCGCT
GTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTAAAAATAGTCAAATTTCACAACCGGACCTTCACCCTGGGACCT
GTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGACGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATCGA

*Fig. 1J-3*

TGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGCTTATAGACGTCTTGATCTCCGGTGCTGATGCATCTCCCAAGT
TACTTGCCCATCACGGGCCGGGAAACACTGGGATCGATGGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGGAA
GTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACATTAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAGCT
GTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAGTTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAACCC
CCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGCCTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCGTC
TTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGTACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCTAG
GCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCGAAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTCCA
CCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTGCGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCGTT
CATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGCTGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAGAG
CGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGCGAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAAAC
AGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGCACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGAGT
GGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTCGCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAGAC
TCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCATCCTGCGATCGATCCACGCCTGCAATTGTCCGCTGGTTTGCCG
CCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCATCTACCGTCGTACGTGCTGAACTGCTGCCACGACTTACTGGTC
ACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTCGTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTATAG
TTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACTTCAAAAGTGGTCACCCCCATGGCCTTCTGTTCTTACAAGACC
AGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTGATCGTCTATTCGGACGACCTCGTGCTGTATGCCGAGTCTCCC
ACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAATTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCAAT
AACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAAATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGCGG
CCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAATACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTGCT
TGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGTAGTTGGAATAGCGCAGTGCGCCCGCAAGGACGGCTACAGCTT
TCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAACTCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGGGT
ACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGCCTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATTGT
CCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGGTTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACAAG
CCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGCCCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCACCC
CCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTAGTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGACTA
CCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTACCTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTATT
GCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTTA
TTTACACACCAACTCACCAGACCATGCTTGACATGATTAGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCACA
ACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTGGGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAATTC
CTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATGTTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGGAG
ACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCATTGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGACC
ATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCAGCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACAAC
CCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGCAGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGCCA
TCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTGGTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGCAA
AGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTATCTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTTGA
TCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGCACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAAAG
AATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAATTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCGCC
ATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCCCAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGATTT
AACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTCACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCCGG
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GTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCTCACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAGAC
GGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGGAATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCTCC
CACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTTGGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCGTC
CTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAGCCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGATGT
GTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGACCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAG
TTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTCCAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCAGC
TATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGTGTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGGAG

*Fig. 1J-4*

AGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGGTCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAGCG
CGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTGGCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACAAA
CATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTATGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAATGA
TGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGGCCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCCTG
TCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATGGGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTTTT
GTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGATATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATCGC
CGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCTCCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCAAT
TACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCAAGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGGAT
GCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAATGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGGGC
AGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTGTCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGCAT
CTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGCCTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGGTC
AAATGTAACCATAGTGTATAATAGCACTTTGAATCAGGTGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCTTC
ATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCCATATTTTCCTCTGTTGCAGCTTCTTGTACTCTTTTTGTTGTG
CTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGGTTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAGTG
AATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGCAGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGCAG
GATAGGGTATGACCGATGTGGGGAGGACGATCATGACGAGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGGCC
ACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCCTTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGATA
GGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCAACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTGCC
TCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATTACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGAAT
GGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAATGTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTTCA
GTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCAGCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTAGG
CATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCCTCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACCAT
CACAGCCAATGTGACAGATGAGAATTATTTACATTCTTCTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTCTG
AGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAATGTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCTAC
GTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGTGGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAGAC
CATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCATTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAATGC
TTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTGGTGTATCGTGCCGTTCTGTTTTGCTGTGCTCGCCAACGCCAG
CAACGACAGCAGCTCCCATCTACAGCTGATTTACAACTTGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAACA
AATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCCGTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCAGC
CATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTACCGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATCTA
CGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCATTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTGTA
CCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGACTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGGGC
AAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAGAGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGAGT
TTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTGTCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTTTC
TATTACCTACACGCCAGTGATGATATATGCCCTAAAGGTGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGATCT
TCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTCGCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGGGA
GCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCATAGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGCTT
GCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACGTTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGATA
ACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACGGTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGTTG
GGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCTTGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAGAA
AGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAGATGCTGGGTAAGATCATCGCTCAGCAAAACCAGTCCAGAGGC
AAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGAGAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGACA
TCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGTCAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCACCC
TGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCACA
GCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGCATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCACT
GATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGGGCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATGCG
GCCGAAATTAAAAAAAA

*Fig. 1K-1*

>V7-Nsp2d543-726.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GTGTGAGTTTGTGATGATGCCTCACACGCCTGCACCTTCCGTAGGTGCGGAGAGCGACCTTACCATTGGCTCAGTTGCTA
CTGAAGATGTTCCACGCATCCTCGAGAAAATAGAAAATGTCGGCGAGATGGCCAACCAGGGACCCTTGGCCTTCTCCGAG
GATAAACCGGTAGATGACCAACTTGTCAACGACCCCCGGATATCGTCGCGGAGGCCTGACGAGAGCACATCAGCTCCGTC
CGCAGGCACAGGTGGCGCCGGCTCTTTTACCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTC
GGACGGTAAAAAGAAAAGCTGAAAGGCTCTTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTT
TTCTTCTCACGCCTTTTCTACCCTGGCGGTGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCT
CTTTTTATGTTACAGTTACCCAGCCTTTGGTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAA
TGGGGGTTTTTGGCTGCTGGTTGGCTTTTGCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAG
TTTGACTCGCCAGAGTGTAGAAACATCCTTCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGT
GGGCCCCGTCGGTCTCGGTCTTGCCATTCTTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGC

*Fig. 1K-2*

TTGGCATTGTTGCAGACTGTATCTTGGCTGGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGT
ATAAGAACTGCTCCCAATGAGGTCGCTTTTAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTG
CGATCGGTTTTGTGCGCCAAAAGGAATGGACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCC
CCATTGAGCAACCCTCTGAAAAACCCATCGCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCC
CAGCCTTATGACCCCAACCAAGCCGTAAAGTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCC
AAAAGTGGTCAAGGTTTCCGCTGTTCCATTCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGG
TCGTGGTTGACCCTGACACTTTCACTGCAGCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGAC
TTTGCCCAGCTGAATGGATTAAAAATCAGGCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCA
TGTTGCCTGCTCGATGGCTCTGCACATGCTTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACG
ACCCGTGGTGCGCTAACCCGTTTGCCGTCCCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAA
CACGGCCTTACCCTGCCCTTGACAGCACTTGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGT
TTCCATCGGAGGCATGGCTCATAGGTTGAGCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTT
GGGTACCTCTTACCTGGTTGCTTTGTGTGTTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGG
TTGGTGTTTTTCTTGATTTCTGTGAATATGCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGG
TCGTTATACTAATGTTGCTGGCCTTGTCACCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCT
TGGCTACCGCACCAGATGGGACCTACTTGGCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCG
TCCCAGCTTGGGTCTCTTCTTGAGGGTGCTTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTC
CATGGGCTCTGGCGGGGTGTTTACCATCGACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAG
CTCGGGTTTCCGGGGTCGGCTTCAATCAAATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAAT
TGGCAAGGGGCTGCCCCCAAGACCCAATTCTGCACGGATGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGT
CGAACCCGGCGTCATTGGAAAAGGATTCGCCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGG
CCGGTGAGCTTGTCGGCGTTCACACGGGATCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGT
AATGTGGCACCCATCAAGCTAAGCGAATTAAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGG
CAGCCACATAATTAAAGACATAAGCGAGGTGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAG
GCCTCTCCACCGTCCAACTTCTTTGTGTGTTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCT
GTGAGTTTCTTTATTTTGAATGAGGTTCTCCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATC
CTGGCTCACGCCATGGTCTGCGCAAGTTCTGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTG
CCTTTTTCAGCCTCGGTGCAGTGACCGGTTTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATG
AATTTGAGCACCTATGCATTCCTGCCTCGGATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCA
CCTACTTGCCATCATTTTGTACTTGTTTAAGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGG
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ACTGGTGCCCTCGCTATGAGACTCAATGACGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTC
TGCGTCCAACATGAGGAATGCAGCGGGTCAATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGT
TGGTGCAGGTTGATAAAGTTCGAGGTACTTTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCC
GGTGACATTGTTGTCGCTCTCGGCCACACGCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCT
CCAAGCCATTGAGACCAGAGTCCTTGCTGGGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCAC
CCGCACCCGTGCCCATCCCCCTCCCACCGAAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAAT
AAGAAGAAGAGGCGCAGGATGGAAGCCCTCGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAA
TTCCGGTGATGTGTTTTATGAGGAGGTCCATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACT
TTGACCCTGAGAAGGGAACTCTGTGTGGACATGTCACCATTGAAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGT
AAGAAGTTCTTGGTCCCCGTCAACCCAGAGAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCT
AGGTATGATGAATGTCGACGGCGAACTGACTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCC
TGACTAAGGAGCAGTGTTTAAACTGCTAGCCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAA
CAGCGGTAAAAATAGTCAAATTTCACAACCGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAG
CTAAAAGACGCGGTTGAGCACAACCAACACCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGT
TCCTTCGCTTATAGACGTCTTGATCTCCGGTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTG
GGATCGATGGCACGCTCTGGGATTTTGAGTCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCT
TGTGACATTAGGCGCGGCGACGCTCCTGAAATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGT

*Fig. 1K-3*

GAAAGGAGTTCTGCAGAATACAAGGTTTGGAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGG
CTGCCTGCCTTACGCCCAACGCCACTCCGGTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAG
TTATATGTACCGACCATACCAGCGTCTGTCCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCA
CGGCTGCGAAGATGCCGCACTGAAAGACCTCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTC
GCCTTGTGCGGAAATACCTGTTTGCCCATGTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAAT
TCTATGGCTGGAATAAATGGGAACAGGTTCCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACA
GGCTGTGCGAGAAAACTGGCAAACTGTCACCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCA
TACTCGGCACCAATAACTTCATCGCACTAGCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCG
TTTAACTCGCCCATCGCCCTCGGAAAGAACAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGA
TCTCGCATCCTGCGATCGATCCACGCCTGCAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTG
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GGCCTGTCGTCTGGCGACCCGATCACCTCTGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCT
TAGTTACTTCAAAAGTGGTCACCCCCATGGCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTC
AACCCCTGATCGTCTATTCGGACGACCTCGTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAA
CATCTGAATTTGATGCTGGGGTTTCAGACGGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAG
AATAATAAATGGGCGCCAGCTAGTCCCCAACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATG
TTTCTGAATACTATGCCTCAGCGGCTGCAATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAA
GAACTTGTAGTTGGAATAGCGCAGTGCGCCCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTG
GGAAAAACTCAGGTCCAATTATGAGGGGAAGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTG
CCTGTGGCCTCGACGTCTGCATTTACCACACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCG
GGTTCTGGTTCTTGTAGTGAGTGCAAATCCCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCC
GTATAAGCCCCCACGGACCGTTATCATGCATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCC
GCGGATTAGTCTCTGTCAGGCGTGGAATTAGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTG
CTCCCTACCTGCAAAGAGATCAACATGGTCGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGG
TGCTGGGAAAACATACTGGCTCCTTCAACAGGTCCAGGATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTG
ACATGATTAGGGCTTTGGGGACGTGCCGGTTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACC
GGTCCGTGGGTTCGCATCCTAGCCGGCGGTTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCA
CCTTGATGTTTTGAGGCTTCTTAGTAAAACTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTG
ATTCTCATTGCTATGTTTTTGACATCATGCCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGAT
GCCATTCAGCCAGATTACAGGGACAAACTCATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAG
GTATGGGCAGGTCCTCACCCCCTACCACAGGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACAT
TCGATGTGGTTACATTGCATTTGCCCACTAAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGA
CACGCTATCTTTGTGTATGACCCACACAGGCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCT
CGCAGTGCACTGCGACGGGCAGCTGATCGTGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACG
GGGATAAATTTAGGGCCACAGACAAGCGTGTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCT
CCGCTCCCCAAGGTCGCACACAACTTGGGATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACT
TGCACCTCACTGGCCCGTGGTGTCAACCCAGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCC
ATAAATACAGCCGCGCGTGCATCGGTGCCGGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCA
TACTATCTCACAAAATTTGTTAAGGGCGGGGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGA
CTGCCGGGAATATCTTGATGATCGGGAGCGAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCA
CTACCGTTGGAGGATGTCATCATGTCACCTCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGG
GTTTCAAGCCCCGGAAAAGCCGCGAAAGCATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCA
CCCGGAGACCCAGTCCAAGTGCTGGAAAATGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAG
CCTATTTCCAACTTGAAGGTCGCTATTTCACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAAC
TCTACGGTGTACTTGGACCCCTGCATGGGCCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGA
CCTCGCGGTCACCCCTTATGATTACGGCGCTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACA
AAATTCTGGCGTGCGCGGAGTTCTCGTTGGATGACCCAGTTAAGTACAAACATACCTGGGGGTTTGAATCGGATACAGCG
TATCTGTATGAGTTCACCGGAAACGGTGAGGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAAT

*Fig. 1K-4*

TTATAAGGCCACTGCCACCAGCTTGAAGTTTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAA
ATGAAATGGGGTCCATGCAAAGCCTTTTTGACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCC
ATTGTTGATATCATTATATTTTTGGCCATTTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATT
GGTTTGCTCCGCGATACTCCGTACGCGCCCTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCC
CAGTGCCAAGTGGACATTCCCACCTGGGGAACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGAT
TGATGAAATGGTGTCGCGTCGAATGTACCGCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGG
CTACGCTGTCTCGCATTAGTAGTTTGGATGTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAA
TATTTGGCCTCCCGGCTGCCCATGCTACACAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTT
GAATCAGGTGTTTGCTATTTTTCCAACCCCTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTAC
ATTCCTCCATATTTTCCTCTGTTGCAGCTTCTTGTACTCTTTTTGTTGTGCTGTGGTTGCGGGTTCCAATACTACGTACT
GTTTTTGGTTTCCGCTGGTTAGGGGCAATTTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACC
CGGCAAGCAGCCACAGAGATCTACGAACCCGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGA
TCATGACGAGCTAGGGTTTATGATACCGCCTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGT
TCTTGTCCTTCAGCTACACGGCCCAGTTCCATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATC
AAACATCAACTCATCTGCGCCGAACATGACGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCA
GACCTATTACCAACATCAAGTCGACGGCGGCAATTGGTTTCACCTAGAATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGG
TTTTAAATGTCTCTTGGTTTCTCAGGCGTTCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAGATATTAAGACCAACA
CCACCGCAGCGGCAAGCTTTGCTGTCCTCCAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGC
AAAATCCCTCAGTGCCGTACGGCGATAGGGACACCCGTGTATGTTACCATCACAGCCAATGTGACAGATGAGAATTATTT
ACATTCTTCTGATCTCCTCATGCTTTCTTCTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTAT
TTGGCAATGTGTCAGGCATCGTGGCTGTGTGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGC
TCCCTGGTGGTCGACCATGTGCGGTTGCTCCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCT
TTTTGCCATTCTGTTGGCAATTTGAATGTTTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTT
TCTTTGTGGTGTATCGTGCCGTTCTGTTTTGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGAT
TTACAACTTGACGCTATGTGAGCTGAATGGCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCA
TCTTTCCCGTTTTGACTCACATTGTCTCCTATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACT
GTGTCTACCGCCGGGTTTGTTCACGGGCGGTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTG
CTTCGTCATTAGGTTTGCAAAGAATTGCATGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTA
AGGGCAGACTCTATCGTTGGCGGTCGCCTGTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGAC
CTCAAAAGAGTTGTGCTTGATGGCTCCGTGGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGAT
GACTTCTGTCACGATAGCACGGCTCCACAAAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGC
CCTAAAGGTGAGTCGCGGCCGACTGCTAGGGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACA
TGACTTTCGCGCACTTTCAGAGTACAAATAAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTAC
TCAGCCATAGAAACCTGGAAATTCATCACCTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGC
CCACCACGTTGAAAGTGCCGCAGGCTTTCATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCT
CCACTACGGTCAACGGCACATTGGTGCCCGGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTG
GTAAACCTTGTCAAATATGCCAAATAACAACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGC
TGTGCCAGATGCTGGGTAAGATCATCGCTCAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAA
AACCCGGAGAAGCCCCATTTTCCTCTAGCGACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTG
TCTGTCGTCAATCCAGACCGCCTTTAATCAAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTG
TGGAGTTTAGTTTGCCTACGCATCATACTGTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATT
CTTGAGGCATCTCAGTGTTTGAATTGGAAGAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATT
CAATTAGGGCGACCGTGTGGGGGTGAGATTTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAA

*Fig. 1L-1*

>V7-Nsp2d727-813.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
AAAGCGCGCCCGCCACGCGTAATCGACACCTCCTTTGATTGGGATGTTGTGCTCCCTGGGGTTGAGGCGGCAACCCAGAC
GATCAAGCTGCCCCAGGTCAACCAGTGTCGTGCTCTGGTCCCTGTTGTGACTCAAAAGTCCTTGGACAACAACTCGGTCC
CCCTGACCGCCTTTTCACTGGCTAACTACTACTACCGTGCGCAAGGTGACGAAGTTCGTCACCGTGAAAGACTAACCGCC
GTGCTCTCCAAGTTGGAAAAGGTTGTTCGAGAAGAATATGGGCTCATGCCAACCGAGCCTGGTCCACGGCCCACACTGCC
ACGCGGGCTCGACGAACTCAAAGACCAGATGGAGGAGGACTTGCTGAAACTGGCTAACGCCCAGACGACTTCGGACATGA
TGGCCTGGGCAGTCGAGCAGGTTGACCTAAAAACTTGGGTCAAGAACTACCCGCGGTGGACACCACCACCCCCTCCGCCA
AAAGTTCAGCCTCGAAAAACGAAGCCTGTCAAGAGCTTGCCGGAGAGAAAGCCTGTCCCCGCCCCGCGCAGGAAGGTTGG
GTCCGATTGTGGCAGCCCGGTTTCATTAGGCGGCGATGTCCCTAACAGTTGGGAAGATTTGGCTGTTAGTAGCCCCTTTG
ATCTCCCGACCCCACCTGAGCCGGCAACACCTTCAAGTGAGCTGGTGATTGTGTCCTCACCGCAATGCATCTTCAGGCCG
GCGACACCCTTGAGTGAGCCGGCTCCAATTCCCGCACCTCGCGGAACTGTGTCTCGACCGGTGACACCCTTGAGTGAGCC
GATCCCTGTGCCCGCACCGCGGCGTAAGTTTCAGCAGGTGAAAAGATTGAGTTCGGCGGCGGCAATCCCACCGTACCAGG
ACGAGCCCCTGGATTTGTCTGCTTCCTCACAGACTGAATATGAGGCCTCTCCCCCAGCACCGCCGCAGAGCGGGGGCGTT
CTGGGAGTAGAGGGGCATGAAGCTGAGGAAACCCTGAGTGAAATCTCGGACATGTCGGGTAACATTAAACCTGCGTCCGT
GTCATCAAGCAGCTCCTTGTCCAGCGTGAGAATCACACGCCCAAAATACTCAGCTCAAGCCATCATCGACTCGGGCGGGC
CCTGCAGTGGGCATCTCCAAGAGGTAAAGGAAACATGCCTTAGTGTCATGCGCGAGGCATGTGATGCGACTAAGCTTGAT
GACCCTGCTACGCAGGAATGGCTTTCTCGCATGTGGGATCGGGTGGACATGCTGACTTGGCGCAACACGTCTGTTTACCA
GGCGATTTGCACCTTAGATGGCAGGTTAAAGTTCCTCCCAAAAATGATACTCGAGACACCGCCGCCCTATCCGTCTTTTA
CCGATTTGCCGCCTTCAGATGGCGCGGATGCGGACGGGGGGGGGCCGTTTCGGACGGTAAAAAGAAAAGCTGAAAGGCTC
TTTGACCAACTGAGCCGTCAGGTTTTTGACCTCGTCTCCCATCTCCCTGTTTTCTTCTCACGCCTTTTCTACCCTGGCGG
TGGTTATTCTCCGGGTGATTGGGGTTTTGCAGCTTTTACTCTATTGTGCCTCTTTTTATGTTACAGTTACCCAGCCTTTG
GTATTGCTCCCCTCTTGGGTGTGTTTTCTGGGTCTTCTCGGCGCGTTCGAATGGGGGTTTTTGGCTGCTGGTTGGCTTTT

*Fig. 1L-2*

GCTGTTGGTCTGTTCAAGCCTGTGTCCGACCCAGTCGGCGCTGCTTGTGAGTTTGACTCGCCAGAGTGTAGAAACATCCT
TCATTCTTTTGAGCTTCTCAAACCTTGGGACCCTGTTCGCAGCCTTGTTGTGGGCCCCGTCGGTCTCGGTCTTGCCATTC
TTGGCAGGTTACTGGGCGGGGCACGCTGCATCTGGCACTTTTTGCTTAGGCTTGGCATTGTTGCAGACTGTATCTTGGCT
GGAGCTTACGTGCTTTCTCAAGGTAGGTGTAAAAAGTGCTGGGGATCTTGTATAAGAACTGCTCCCAATGAGGTCGCTTT
TAACGTGTTTCCTTTCACACGTGCGACCAGGTCGTCACTTATCGACCTGTGCGATCGGTTTTGTGCGCCAAAAGGAATGG
ACCCCATTTTTCTCGCCACTGGGTGGCGCGGGTGCTGGGCCGGCCGAAGCCCCATTGAGCAACCCTCTGAAAAACCCATC
GCGTTTGCCCAGTTGGATGAAAAGAAGATTACGGCTAGGACTGTGGTCGCCCAGCCTTATGACCCCAACCAAGCCGTAAA
GTGCTTGCGGGTATTGCAGGCGGGTGGGGCGATGGTGGCTAAGGCGGTCCCAAAAGTGGTCAAGGTTTCCGCTGTTCCAT
TCCGAGCCCCCTTCTTTCCCACTGGAGTGAAAGTTGACCCTGATTGCAGGGTCGTGGTTGACCCTGACACTTTCACTGCA
GCTCTCCGGTCTGGCTACTCCACCACAAACCTCGTCCTTGGTGTGGGGGACTTTGCCCAGCTGAATGGATTAAAAATCAG
GCAAATTTCCAAGCCTTCAGGGGGAGGCCCACATCTCATGGCTGCCCTGCATGTTGCCTGCTCGATGGCTCTGCACATGC
TTGCTGGGATTTATGTGACTGCGGTGGGTTCTTGCGGCACCGGCACCAACGACCCGTGGTGCGCTAACCCGTTTGCCGTC
CCTGGCTACGGACCTGGCTCTCTCTGCACGTCCAGATTGTGCATTTCCCAACACGGCCTTACCCTGCCCTTGACAGCACT
TGTGGCGGGATTCGGTATTCAAGAAATTGCCTTGGTCGTTTTGATTTTTGTTTCCATCGGAGGCATGGCTCATAGGTTGA
GCTGTAAGGCTGACATGCTGTGTGTCTTGCTTGCAATTGCCAGCTATGTTTGGGTACCTCTTACCTGGTTGCTTTGTGTG
TTTCCTTGCTGGTTGCGCTGTTTTTCTTTGCACCCCCTCACCATCCTATGGTTGGTGTTTTTCTTGATTTCTGTGAATAT
GCCTTCAGGAATCTTGGCCATGGTGTTGTTGGTTTCTCTTTGGCTTCTTGGTCGTTATACTAATGTTGCTGGCCTTGTCA
CCCCCTACGACATTCATCATTACACCAGTGGCCCCCGCGGTGTTGCCGCCTTGGCTACCGCACCAGATGGGACCTACTTG
GCCGCTGTCCGCCGCGCTGCGTTGACTGGCCGCACCATGCTGTTTACCCCGTCCCAGCTTGGGTCTCTTCTTGAGGGTGC
TTTCAGAACTCGAAAGCCCTCACTGAACACCGTCAATGTGATCGGGTCCTCCATGGGCTCTGGCGGGGTGTTTACCATCG
ACGGGAAAGTCAAGTGCGTAACTGCCGCACATGTCCTTACGGGCAATTCAGCTCGGGTTTCCGGGGTCGGCTTCAATCAA
ATGCTTGACTTTGACGTAAAGGGAGATTTCGCTATAGCTGATTGCCCGAATTGGCAAGGGGCTGCCCCCAAGACCCAATT
CTGCACGGATGGATGGACTGGCCGTGCCTATTGGCTAACATCCTCTGGCGTCGAACCCGGCGTCATTGGAAAAGGATTCG
CCTTCTGCTTCACCGCATGTGGCGATTCCGGGTCCCCAGTGATCACCGAGGCCGGTGAGCTTGTCGGCGTTCACACGGGA
TCGAATAAACAAGGGGGGGGCATTGTTACGCGCCCCTCAGGCCAGTTTTGTAATGTGGCACCCATCAAGCTAAGCGAATT
AAGTGAATTCTTTGCTGGGCCTAAGGTCCCGCTCGGTGATGTGAAGGTCGGCAGCCACATAATTAAAGACATAAGCGAGG
TGCCTTCAGATCTTTGTGCCTTGCTTGCTGCCAAACCTGAACTGGAAGGAGGCCTCTCCACCGTCCAACTTCTTTGTGTG
TTTTTTCTCCTGTGGAGAATGATGGGACATGCCTGGACGCCCTTGGTTGCTGTGAGTTTCTTTATTTTGAATGAGGTTCT
CCCAGCCGTCCTGGTCCGGAGTGTTTTCTCCTTTGGAATGTTTGTGCTATCCTGGCTCACGCCATGGTCTGCGCAAGTTC
TGATGATCAGGCTTCTGACAGCAGCTCTTAACAGGAACAGATGGTCACTTGCCTTTTTCAGCCTCGGTGCAGTGACCGGT
TTTGTCGCAGATCTTGCGGCCACTCAGGGGCATCCGTTGCAGGCAGTGATGAATTTGAGCACCTATGCATTCCTGCCTCG
GATGATGGTTGTGACCTCACCAGTCCCAGTGATCACGTGTGGTGTCGTGCACCTACTTGCCATCATTTTGTACTTGTTTA
AGTACCGTGGCCTGCACCATATCCTTGTTGGCGATGGAGTGTTCTCTGCGGCTTTCTTCTTGAGATACTTTGCCGAGGGA
AAGTTGAGGGAAGGGGTGTCGCAATCCTGCGGAATGAATCATGAGTCTCTGACTGGTGCCCTCGCTATGAGACTCAATGA
CGAGGACTTGGATTTCCTTATGAAATGGACTGATTTTAAGTGCTTTGTTTCTGCGTCCAACATGAGGAATGCAGCGGGTC
AATTTATCGAGGCTGCCTATGCTAAAGCACTTAGAGTAGAACTGGCCCAGTTGGTGCAGGTTGATAAAGTTCGAGGTACT
TTGGCCAAACTTGAAGCTTTTGCTGATACCGTGGCACCTCAACTCTCGCCCGGTGACATTGTTGTCGCTCTCGGCCACAC
GCCTGTTGGCAGTATCTTCGACCTAAAGGTTGGTAGCACCAAGCATACCCTCCAAGCCATTGAGACCAGAGTCCTTGCTG
GGTCCAAAATGACCGTGGCGCGCGTCGTCGACCCGACCCCCACGCCCCCACCCGCACCCGTGCCCATCCCCCTCCCACCG
AAAGTTCTGGAGAATGGCCCCAACGCTTGGGGGGATGAGGACCGTTTGAATAAGAAGAAGAGGCGCAGGATGGAAGCCCT
CGGCATCTATGTTATGGGCGGGAAAAAATACCAGAAATTTTGGGACAAGAATTCCGGTGATGTGTTTTATGAGGAGGTCC
ATAATAACACAGATGAGTGGGAGTGTCTCAGAGTTGGCGACCCTGCCGACTTTGACCCTGAGAAGGGAACTCTGTGTGGA
CATGTCACCATTGAAAACAAGGCTTACCATGTTTACACCTCCCCATCTGGTAAGAAGTTCTTGGTCCCCGTCAACCCAGA
GAATGGAAGAGTCCAATGGGAAGCTGCAAAGCTTTCCGTGGAGCAGGCCCTAGGTATGATGAATGTCGACGGCGAACTGA
CTGCCAAAGAACTGGAGAAACTGAAAAGAATAATTGACAAACTCCAGGGCCTGACTAAGGAGCAGTGTTTAAACTGCTAG
CCGCCAGCGACTTGACCCGCTGTGGTCGCGGCGGCTTGGTTGTTACTGAAACAGCGGTAAAAATAGTCAAATTTCACAAC
CGGACCTTCACCCTGGGACCTGTGAATTTAAAAGTGGCCAGTGAGGTTGAGCTAAAAGACGCGGTTGAGCACAACCAACA
CCCGGTTGCGAGACCGATCGATGGTGGAGTTGTGCTCCTGCGTTCCGCGGTTCCTTCGCTTATAGACGTCTTGATCTCCG
GTGCTGATGCATCTCCCAAGTTACTTGCCCATCACGGGCCGGGAAACACTGGGATCGATGGCACGCTCTGGGATTTTGAG

*Fig. 1L-3*

TCCGAAGCCACTAAAGAGGAAGTCGCACTCAGTGCGCAAATAATACAGGCTTGTGACATTAGGCGCGGCGACGCTCCTGA
AATTGGTCTCCCTTACAAGCTGTACCCTGTTAGGGGTAACCCTGAGCGGGTGAAAGGAGTTCTGCAGAATACAAGGTTTG
GAGACATACCTTACAAAACCCCCAGTGACACTGGAAGCCCAGTGCACGCGGCTGCCTGCCTTACGCCCAACGCCACTCCG
GTGACTGATGGGCGCTCCGTCTTGGCCACGACCATGCCCCCCGGGTTTGAGTTATATGTACCGACCATACCAGCGTCTGT
CCTTGATTACCTTGACTCTAGGCCTGACTGCCCTAAACAGCTGACAGAGCACGGCTGCGAAGATGCCGCACTGAAAGACC
TCTCTAAATATGACTTGTCCACCCAAGGCTTTGTTTTACCTGGAGTTCTTCGCCTTGTGCGGAAATACCTGTTTGCCCAT
GTAGGTAAGTGCCCACCCGTTCATCGGCCTTCTACTTACCCTGCTAAGAATTCTATGGCTGGAATAAATGGGAACAGGTT
CCCAACCAAGGACATTCAGAGCGTCCCTGAAATCGACGTTCTGTGCGCACAGGCTGTGCGAGAAAACTGGCAAACTGTCA
CCCCTTGTACTCTTAAGAAACAGTATTGCGGGAAGAAGAAGACTAGGACCATACTCGGCACCAATAACTTCATCGCACTA
GCCCACCGAGCAGTGTTGAGTGGTGTTACCCAGGGCTTCATGAAAAAGGCGTTTAACTCGCCCATCGCCCTCGGAAAGAA
CAAGTTTAAGGAGCTACAGACTCCGGTCCTGGGCAGGTGCCTTGAAGCTGATCTCGCATCCTGCGATCGATCCACGCCTG
CAATTGTCCGCTGGTTTGCCGCCAACCTTCTTTATGAACTTGCCTGTGCTGAAGAGCATCTACCGTCGTACGTGCTGAAC
TGCTGCCACGACTTACTGGTCACGCAGTCCGGCGCAGTGACTAAGAGAGGTGGCCTGTCGTCTGGCGACCCGATCACCTC
TGTGTCTAACACCATTTATAGTTTGGTGATCTATGCACAGCATATGGTGCTTAGTTACTTCAAAAGTGGTCACCCCCATG
GCCTTCTGTTCTTACAAGACCAGCTAAAGTTTGAGGACATGCTCAAGGTTCAACCCCTGATCGTCTATTCGGACGACCTC
GTGCTGTATGCCGAGTCTCCCACCATGCCAAACTATCACTGGTGGGTTGAACATCTGAATTTGATGCTGGGGTTTCAGAC
GGACCCAAAGAAGACAGCAATAACAGACTCGCCATCATTTCTAGGCTGTAGAATAATAAATGGGCGCCAGCTAGTCCCCA
ACCGTGACAGGATCCTCGCGGCCCTCGCCTATCACATGAAGGCGAGTAATGTTTCTGAATACTATGCCTCAGCGGCTGCA
ATACTCATGGACAGCTGTGCTTGTTTGGAGTATGATCCTGAATGGTTTGAAGAACTTGTAGTTGGAATAGCGCAGTGCGC
CCGCAAGGACGGCTACAGCTTTCCCGGCACGCCGTTCTTCATGTCCATGTGGGAAAAACTCAGGTCCAATTATGAGGGGA
AGAAGTCGAGAGTGTGCGGGTACTGCGGGGCCCCGGCCCCGTACGCTACTGCCTGTGGCCTCGACGTCTGCATTTACCAC
ACCCACTTCCACCAGCATTGTCCAGTCACAATCTGGTGTGGCCATCCAGCGGGTTCTGGTTCTTGTAGTGAGTGCAAATC
CCCTGTAGGGAAAGGCACAAGCCCTTTAGACGAGGTGCTGGAACAAGTCCCGTATAAGCCCCCACGGACCGTTATCATGC
ATGTGGAGCAGGGTCTCACCCCCCTTGATCCAGGTAGATACCAAACTCGCCGCGGATTAGTCTCTGTCAGGCGTGGAATT
AGGGGAAATGAAGTTGGACTACCAGACGGTGATTATGCTAGCACCGCCTTGCTCCCTACCTGCAAAGAGATCAACATGGT
CGCTGTCGCTTCCAATGTATTGCGCAGCAGGTTCATCATCGGCCCACCCGGTGCTGGGAAAACATACTGGCTCCTTCAAC
AGGTCCAGGATGGTGATGTTATTTACACACCAACTCACCAGACCATGCTTGACATGATTAGGGCTTTGGGGACGTGCCGG
TTCAACGTCCCGGCAGGCACAACGCTGCAATTCCCCGTCCCCTCCCGCACCGGTCCGTGGGTTCGCATCCTAGCCGGCGG
TTGGTGTCCTGGCAAGAATTCCTTCCTAGATGAAGCAGCGTATTGCAATCACCTTGATGTTTTGAGGCTTCTTAGTAAAA
CTACCCTCACCTGTCTAGGAGACTTCAAGCAACTCCACCCAGTGGGTTTTGATTCTCATTGCTATGTTTTTGACATCATG
CCTCAAACTCAACTGAAGACCATCTGGAGGTTTGGACAGAATATCTGTGATGCCATTCAGCCAGATTACAGGGACAAACT
CATGTCCATGGTCAACACAACCCGTGTGACCTACGTGGAAAAACCTGTCAGGTATGGGCAGGTCCTCACCCCCTACCACA
GGGACCGAGAGGACGACGCCATCACTATTGACTCCAGTCAAGGCGCCACATTCGATGTGGTTACATTGCATTTGCCCACT
AAAGATTCACTCAACAGGCAAAGAGCCCTTGTTGCTATCACCAGGGCAAGACACGCTATCTTTGTGTATGACCCACACAG
GCAGCTGCAGGGCTTGTTTGATCTTCCTGCAAAAGGCACGCCCGTCAACCTCGCAGTGCACTGCGACGGGCAGCTGATCG
TGCTGGATAGAAATAACAAAGAATGCACGGTTGCTCAGGCTCTAGGCAACGGGGATAAATTTAGGGCCACAGACAAGCGT
GTTGTAGATTCTCTCCGCGCCATTTGTGCTGATCTAGAAGGGTCGAGCTCTCCGCTCCCCAAGGTCGCACACAACTTGGG
ATTTTATTTCTCACCTGATTTAACACAGTTTGCTAAACTCCCAGTAGAACTTGCACCTCACTGGCCCGTGGTGTCAACCC
AGAACAATGAAAAGTGGCCGGATCGGCTGGTTGCCAGCCTTCGCCCTATCCATAAATACAGCCGCGCGTGCATCGGTGCC
GGCTATATGGTGGGCCCTTCGGTGTTTCTAGGCACTCCTGGGGTCGTGTCATACTATCTCACAAAATTTGTTAAGGGCGG
GGCTCAAGTGCTTCCGGAGACGGTTTTCAGCACCGGCCGAATTGAGGTAGACTGCCGGGAATATCTTGATGATCGGGAGC
GAGAAGTTGCTGCGTCCCTCCCACACGCTTTCATTGGCGACGTCAAAGGCACTACCGTTGGAGGATGTCATCATGTCACC
TCCAGATACCTCCCGCGCGTCCTTCCCAAGGAATCAGTTGCGGTAGTCGGGGTTTCAAGCCCCGGAAAAGCCGCGAAAGC
ATTGTGCACACTGACAGATGTGTACCTCCCAGATCTTGAAGCCTATCTCCACCCGGAGACCCAGTCCAAGTGCTGGAAAA
TGATGTTGGACTTCAAAGAAGTTCGACTAATGGTCTGGAAAGACAAAACAGCCTATTTCCAACTTGAAGGTCGCTATTTC
ACCTGGTATCAGCTTGCCAGCTATGCCTCGTACATCCGTGTTCCCGTCAACTCTACGGTGTACTTGGACCCCTGCATGGG
CCCCGCCCTTTGCAACAGGAGAGTCGTCGGGTCCACCCACTGGGGGGCTGACCTCGCGGTCACCCCTTATGATTACGGCG
CTAAAATTATCCTGTCTAGCGCGTACCATGGTGAAATGCCCCCCGGATACAAAATTCTGGCGTGCGCGGAGTTCTCGTTG
GATGACCCAGTTAAGTACAAACATACCTGGGGGTTTGAATCGGATACAGCGTATCTGTATGAGTTCACCGGAAACGGTGA

*Fig. 1L-4*

GGACTGGGAGGATTACAATGATGCGTTTCGTGCGCGCCAGGAAGGGAAAATTTATAAGGCCACTGCCACCAGCTTGAAGT
TTTATTTTCCCCCGGGCCCTGTCATTGAACCAACTTTAGGCCTGAATTGAAATGAAATGGGGTCCATGCAAAGCCTTTTT
GACAAAATTGGCCAACTTTTTGTGGATGCTTTCACGGAGTTCTTGGTGTCCATTGTTGATATCATTATATTTTTGGCCAT
TTTGTTTGGCTTCACCATCGCCGGTTGGCTGGTGGTCTTTTGCATCAGATTGGTTTGCTCCGCGATACTCCGTACGCGCC
CTGCCATTCACTCTGAGCAATTACAGAAGATCTTATGAGGCCTTTCTTTCCCAGTGCCAAGTGGACATTCCCACCTGGGG
AACTAAACATCCTTTGGGGATGCTTTGGCACCATAAGGTGTCAACCCTGATTGATGAAATGGTGTCGCGTCGAATGTACC
GCATCATGGAAAAAGCAGGGCAGGCTGCCTGGAAACAGGTGGTGAGCGAGGCTACGCTGTCTCGCATTAGTAGTTTGGAT
GTGGTGGCTCATTTTCAGCATCTAGCCGCCATTGAAGCCGAGACCTGTAAATATTTGGCCTCCCGGCTGCCCATGCTACA
CAACCTGCGCATGACAGGGTCAAATGTAACCATAGTGTATAATAGCACTTTGAATCAGGTGTTTGCTATTTTTCCAACCC
CTGGTTCCCGGCCAAAGCTTCATGATTTTCAGCAATGGTTAATAGCTGTACATTCCTCCATATTTTCCTCTGTTGCAGCT
TCTTGTACTCTTTTTGTTGTGCTGTGGTTGCGGGTTCCAATACTACGTACTGTTTTTGGTTTCCGCTGGTTAGGGGCAAT
TTTTCTTTCGAACTCACAGTGAATTACACGGTGTGTCCACCTTGCCTCACCCGGCAAGCAGCCACAGAGATCTACGAACC
CGGTAGGTCTCTTTGGTGCAGGATAGGGTATGACCGATGTGGGGAGGACGATCATGACGAGCTAGGGTTTATGATACCGC
CTGGCCTCTCCAGCGAAGGCCACTTGACTGGTGTTTACGCCTGGTTGGCGTTCTTGTCCTTCAGCTACACGGCCCAGTTC
CATCCCGAGATATTCGGGATAGGGAATGTGAGTCGAGTTTATGTTGACATCAAACATCAACTCATCTGCGCCGAACATGA
CGGGCAGAACACCACCTTGCCTCGTCATGACAACATTTCAGCCGTGTTTCAGACCTATTACCAACATCAAGTCGACGGCG
GCAATTGGTTTCACCTAGAATGGCTTCGTCCCTTCTTTTCCTCGTGGTTGGTTTTAAATGTCTCTTGGTTTCTCAGGCGT
TCGCCTGCAAACCATGTTTCAGTTCGAGTCTTGCAGATATTAAGACCAACACCACCGCAGCGGCAAGCTTTGCTGTCCTC
CAAGACATCAGTTGCCTTAGGCATCGCGACTCGGCCTCTGAGGCGATTCGCAAAATCCCTCAGTGCCGTACGGCGATAGG
GACACCCGTGTATGTTACCATCACAGCCAATGTGACAGATGAGAATTATTTACATTCTTCTGATCTCCTCATGCTTTCTT
CTTGCCTTTTCTATGCTTCTGAGATGAGTGAAAAGGGATTTAAGGTGGTATTTGGCAATGTGTCAGGCATCGTGGCTGTG
TGTGTCAATTTTACCAGCTACGTCCAACATGTCAAGGAGTTTACCCAACGCTCCCTGGTGGTCGACCATGTGCGGTTGCT
CCATTTCATGACACCTGAGACCATGAGGTGGGCAACTGTTTTAGCCTGTCTTTTTGCCATTCTGTTGGCAATTTGAATGT
TTAAGTATGTTGGAGAAATGCTTGACCGCGGGCTGTTGCTCGCGATTGCTTTCTTTGTGGTGTATCGTGCCGTTCTGTTT
TGCTGTGCTCGCCAACGCCAGCAACGACAGCAGCTCCCATCTACAGCTGATTTACAACTTGACGCTATGTGAGCTGAATG
GCACAGATTGGCTAGCTAACAAATTTGATTGGGCAGTGGAGAGTTTTGTCATCTTTCCCGTTTTGACTCACATTGTCTCC
TATGGTGCCCTCACTACCAGCCATTTCCTTGACACAGTCGCTTTAGTCACTGTGTCTACCGCCGGGTTTGTTCACGGGCG
GTATGTCCTAAGTAGCATCTACGCGGTCTGTGCCCTGGCTGCGTTGACTTGCTTCGTCATTAGGTTTGCAAAGAATTGCA
TGTCCTGGCGCTACGCGTGTACCAGATATACCAACTTTCTTCTGGACACTAAGGGCAGACTCTATCGTTGGCGGTCGCCT
GTCATCATAGAGAAAAGGGGCAAAGTTGAGGTCGAAGGTCATCTGATCGACCTCAAAAGAGTTGTGCTTGATGGCTCCGT
GGCAACCCCTATAACCAGAGTTTCAGCGGAACAATGGGGTCGTCCTTAGATGACTTCTGTCACGATAGCACGGCTCCACA
AAAGGTGCTTTTGGCGTTTTCTATTACCTACACGCCAGTGATGATATATGCCCTAAAGGTGAGTCGCGGCCGACTGCTAG
GGCTTCTGCACCTTTTGATCTTCCTGAATTGTGCTTTCACCTTCGGGTACATGACTTTCGCGCACTTTCAGAGTACAAAT
AAGGTCGCGCTCACTATGGGAGCAGTAGTTGCACTCCTTTGGGGGGTGTACTCAGCCATAGAAACCTGGAAATTCATCAC
CTCCAGATGCCGTTTGTGCTTGCTAGGCCGCAAGTACATTCTGGCCCCTGCCCACCACGTTGAAAGTGCCGCAGGCTTTC
ATCCGATTGCGGCAAATGATAACCACGCATTTGTCGTCCGGCGTCCCGGCTCCACTACGGTCAACGGCACATTGGTGCCC
GGGTTAAAAAGCCTCGTGTTGGGTGGCAGAAAAGCTGTTAAACAGGGAGTGGTAAACCTTGTCAAATATGCCAAATAACA
ACGGCAAGCAGCAGAAGAGAAAGAAGGGGGATGGCCAGCCAGTCAATCAGCTGTGCCAGATGCTGGGTAAGATCATCGCT
CAGCAAAACCAGTCCAGAGGCAAGGGACCGGGAAAGAAAAATAAGAAGAAAAACCCGGAGAAGCCCCATTTTCCTCTAGC
GACTGAAGATGATGTCAGACATCACTTTACCCCTAGTGAGCGGCAATTGTGTCTGTCGTCAATCCAGACCGCCTTTAATC
AAGGCGCTGGGACTTGCACCCTGTCAGATTCAGGGAGGATAAGTTACACTGTGGAGTTTAGTTTGCCTACGCATCATACT
GTGCGCCTGATCCGCGTCACAGCATCACCCTCAGCATGATGGGCTGGCATTCTTGAGGCATCTCAGTGTTTGAATTGGAA
GAATGTGTGGTGAATGGCACTGATTGACATTGTGCCTCTAAGTCACCTATTCAATTAGGGCGACCGTGTGGGGGTGAGAT
TTAATTGGCGAGAACCATGCGGCCGAAATTAAAAAAAA

*Fig. 1M-1*

>V7-Nsp2d324-726.seq
ATGACGTATAGGTGTTGGCTCTATGCCTTGGCATTTGTATTGTCAGGAGCTGTGACCATTGGCACAGCCCAAAACTTGCT
GCACAGAAACACCCTTCTGTGATAGCCTCCTTCAGGGGAGCTTAGGGTTTGTCCCTAGCACCTTGCTTCCGGAGTTGCAC
TGCTTTACGGTCTCTCCACCCCTTTAACCATGTCTGGGATACTTGATCGGTGCACGTGTACCCCCAATGCCAGGGTGTTT
ATGGCGGAGGGCCAAGTCTACTGCACACGATGCCTCAGTGCACGGTCTCTCCTTCCCCTGAACCTCCAGGTTTCTGAGCT
CGGGGTGCTAGGCCTATTCTACAGGCCCGAAGAGCCACTCCGGTGGACGTTGCCACGTGCATTCCCCACTGTTGAGTGCT
CCCCCGCCGGGGCCTGCTGGCTTTCTGCAATCTTTCCAATCGCACGAATGACCAGTGGAAACCTGAACTTCCAACAAAGA
ATGGTACGGGTCGCAGCTGAGCTTTACAGAGCCGGCCAGCTCACCCCTGCAGTCTTGAAGGCTCTACAAGTTTATGAACG
GGGTTGCCGCTGGTACCCCATTGTTGGACCTGTCCCTGGAGTGGCCGTTTTCGCCAATTCCCTACATGTGAGTGATAAAC
CCTTCCCGGGAGCAACTCACGTGTTGACCAACCTGCCGCTCCCGCAGAGACCCAAGCCTGAAGACTTTTGCCCCTTTGAG
TGTGCTATGGCTACTGTCTATGACATTGGTCATGACGCCGTCATGTATGTGGCCGAAAGGAAAGTCTCCTGGGCCCCTCG
TGGCGGGGATGAAGTGAAATTTGAAGCTGTCCCCGGGGAGTTGAAGTTGATTGCGAACCGGCTCCGCACCTCCTTCCCGC
CCCACCACACAGTGGACATGTCTAAGTTCGCCTTCACAGCCCCTGGGTGTGGTGTTTCTATGCGGGTCGAACGCCAACAC
GGCTGCCTTCCCGCTGACACTGTCCCTGAAGGCAACTGCTGGTGGAGCTTGTTTGACTTGCTTCCACTGGAAGTTCAGAA
CAAAGAAATTCGCCATGCTAACCAATTTGGCTACCAGACCAAGCATGGTGTCTCTGGCAAGTACCTGCAGCGGAGGCTGC
AAGTTAATGGTCTCCGAGCAGTAACTGACCTAAACGGACCTATCGTCGTACAGTACTTCTCCGTTAAGGAGAGTTGGATC
CGCCATTTGAAACTGGCGGGAGAACCCAGCTACTCTGGGTTTGAGGACCTCCTCAGAATAAGGGTTGAGCCTAACACGTC
GCCATTGGCTGACAAGGAAGAAAAAATTTTCCGGTTTGGCAGTCACAAGTGGTACGGCGCTGGAAAGAGAGCAAGAAAAG
CACGCTCTTGTGCGACTGCTACAGTCGCTGGCCGCGCTTTGTCCGTTCGTGAAACCCGGCAGGCCAAGGAGCACGAGGTT
GCCGGCGCCAACAAGGCTGAGCACCTCAAACACTACTCCCCGCCTGCCGAAGGGAATTGTGGTTGGCACTGCATTTCCGC
CATCGCCAACCGGATGGTGAATTCCAAATTTGAAACCACCCTTCCCGAAAGAGTGAGACCTCCAGATGACTGGGCTACTG
ACGAGGATCTTGTGAATGCCATCCAAATCCTCAGACTCCCTGCGGCCTTAGACAGGAACGGTGCTTGTACTAGCGCCAAG
TACGTACTTAAGCTGGAAGGTGAGCATTGGACTGTCACTGTGACCCCTGGGATGTCCCCTTCTTTGCTCCCTCTTGAATG
TGTTCAGGGCTGTTGTGGGCACAAGGGCGGTCTTGGTTCCCCAGATGCAGTCGAGGTCTCCGGATTTGACCCTGCCTGCC
TTGACCGGCTGGCTGAGGTGATGCACCTGCCTAGCAGTGCTATCCCAGCCGCTCTGGCCGAAATGTCTGGCGATTCCGAT
CGTTCGGCTTCTCCGGTCACCACCGTGTGGACTGTTTCGCAGTTCTTTGCCCGTCACAGCGGAGGGAATCACCCTGACCA
AGTGCGCTTAGGGAAAATTATCAGCCTTTGTCAGGTGATTGAGGACTGCTGCTGTTCCCAGAACAAAACCAACCGGGTCA
CCCCGGAGGAGGTCGCAGCAAAGATTGACCTGTACCTCCGTGGTGCAACAAATCTTGAAGAATGCTTGGCCAGGCTTGAG
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*Fig. 1M-2*

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*Fig. 1M-3*

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*Fig. 1M-4*

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*Fig. 2*

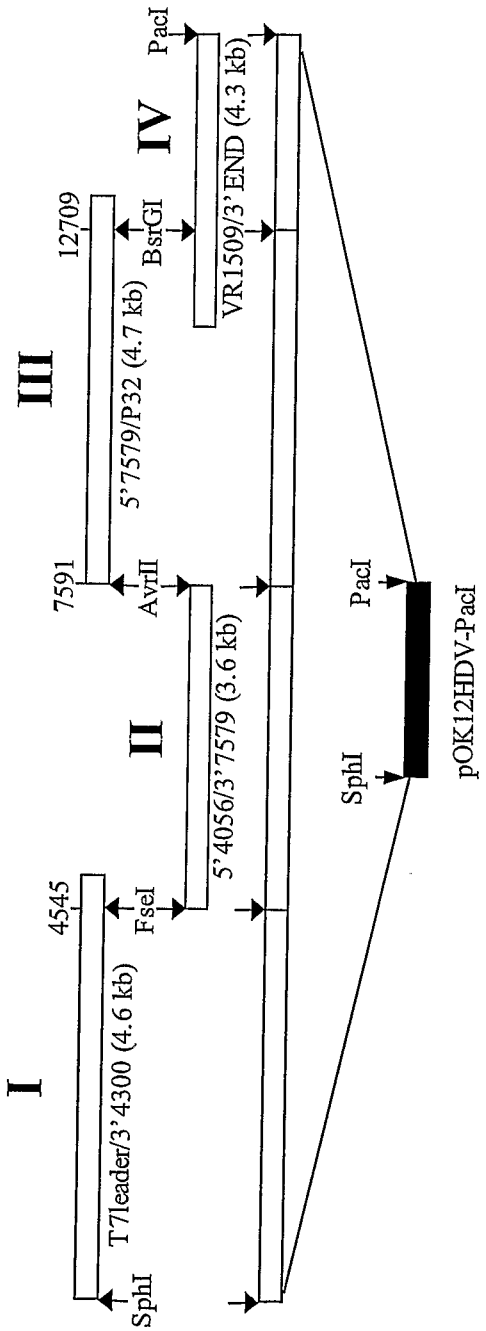

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IV
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PacI
PacI
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pOK12HDV-PacI

*Fig. 3*

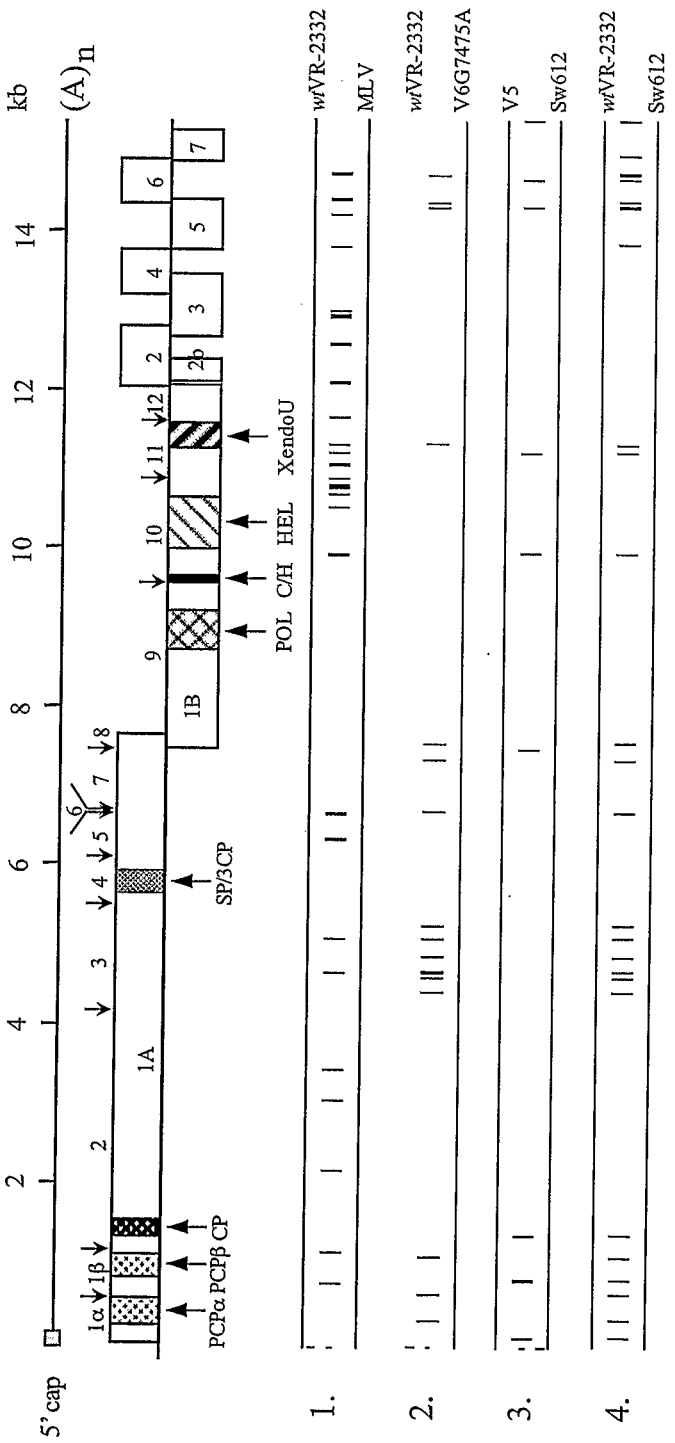
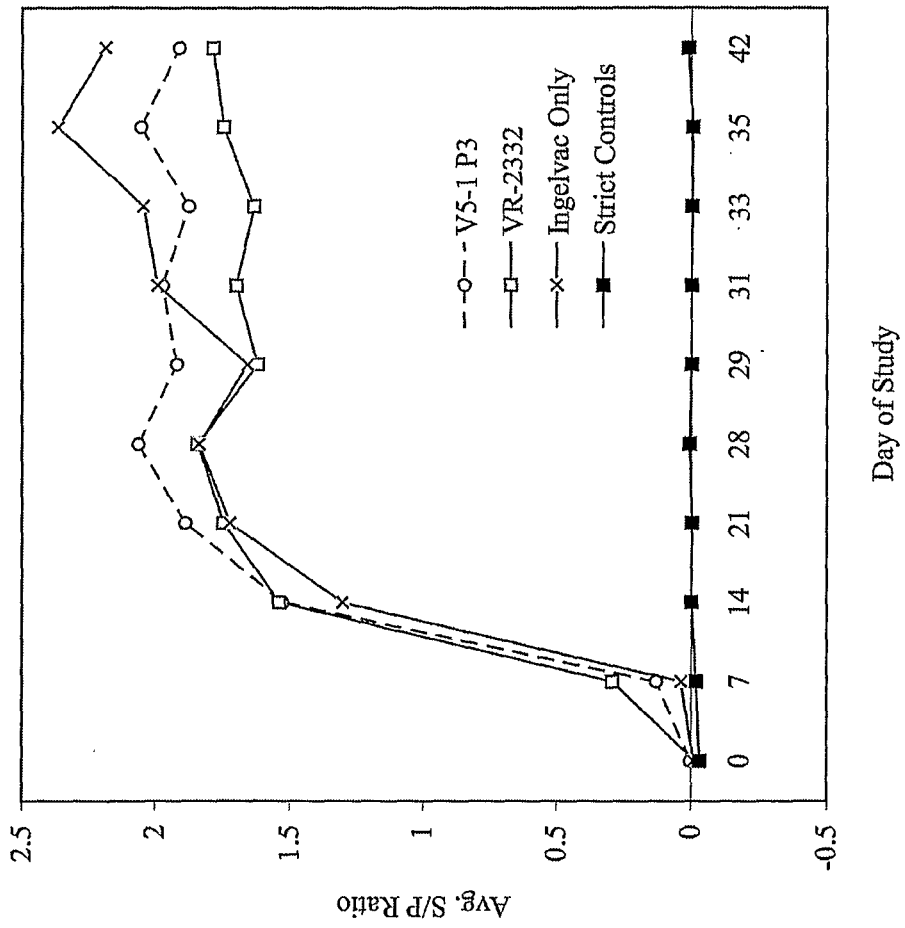

kb
(A)n
5' cap
1α
1β
PCPα
PCPβ
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1A
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POL
C/H
HEL
XendoU
wtVR-2332
MLV
wtVR-2332
V6G7475A
V5
Sw612
wtVR-2332
Sw612
1.
2.
3.
4.

*Fig. 4*


Avg. S/P Ratio
2.5
2
1.5
1
0.5
0
-0.5
0
7
14
21
28
29
31
33
35
42
Day of Study
V5-1 P3
VR-2332
Ingelvac Only
Strict Controls

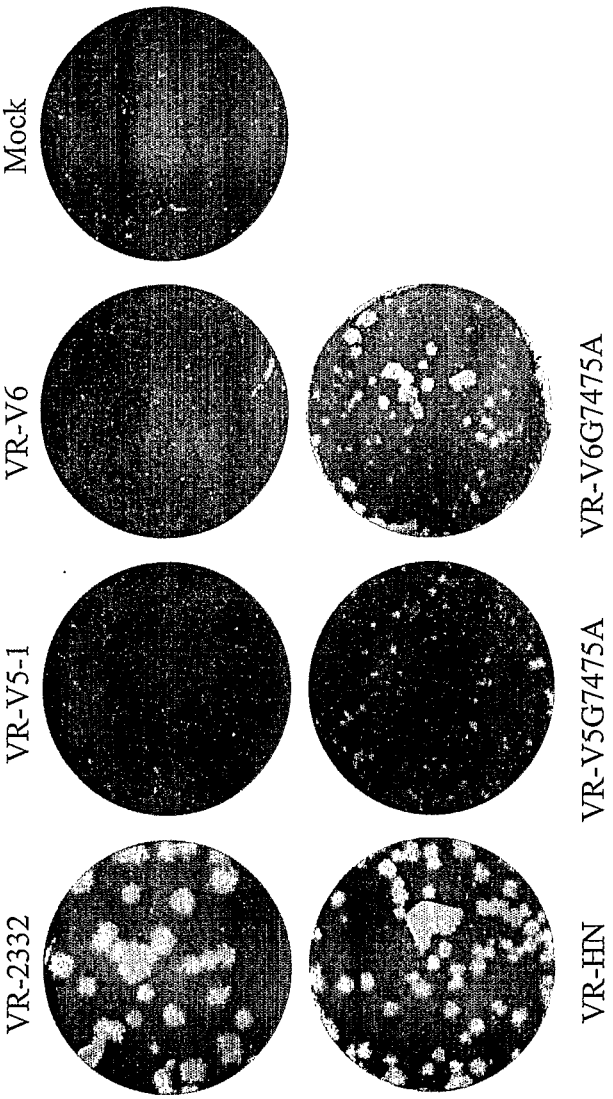

Mock
VR-V6
VR-V5-1
VR-2332
VR-V6G7475A
VR-V5G7475A
VR-HN

*Fig. 5A*

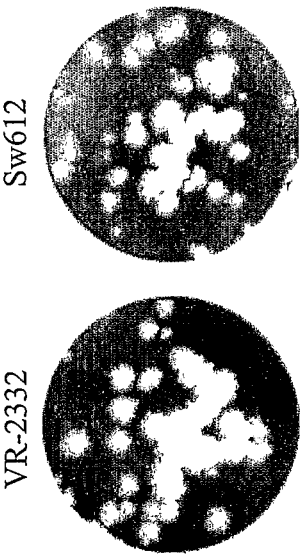

Sw612
VR-2332

*Fig. 5B*

*Fig. 6A*




*Fig. 6B*

| | *wt* VR2332 | Sw612 | VR-HN | VR-V5-2 | VR-V5G7475A | VR-V6 | VR-V6G7475A | Mock |
|---|---|---|---|---|---|---|---|---|
| Viral Titer | $2.5 \times 10^5$ | $9.8 \times 10^4$ | $1.5 \times 10^4$ | $9.8 \times 10^3$ | $2 \times 10^3$ | $1.5 \times 10^3$ | $3.25 \times 10^3$ | - |

*Fig. 7A*

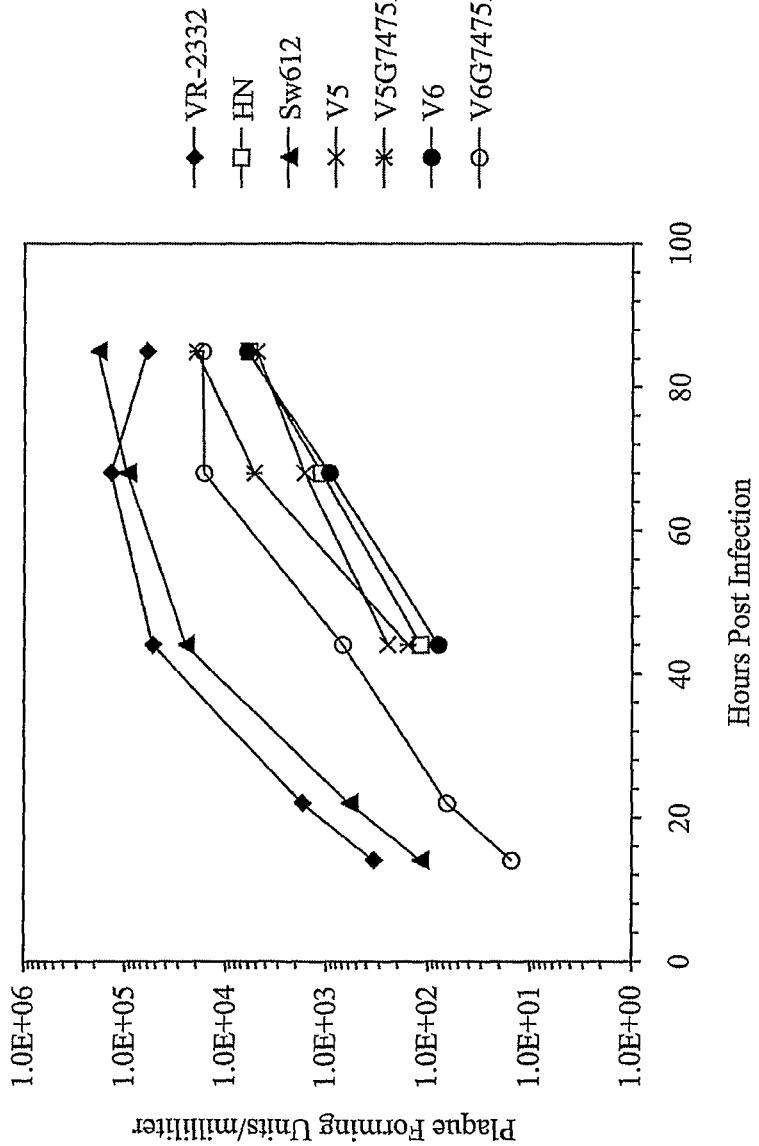
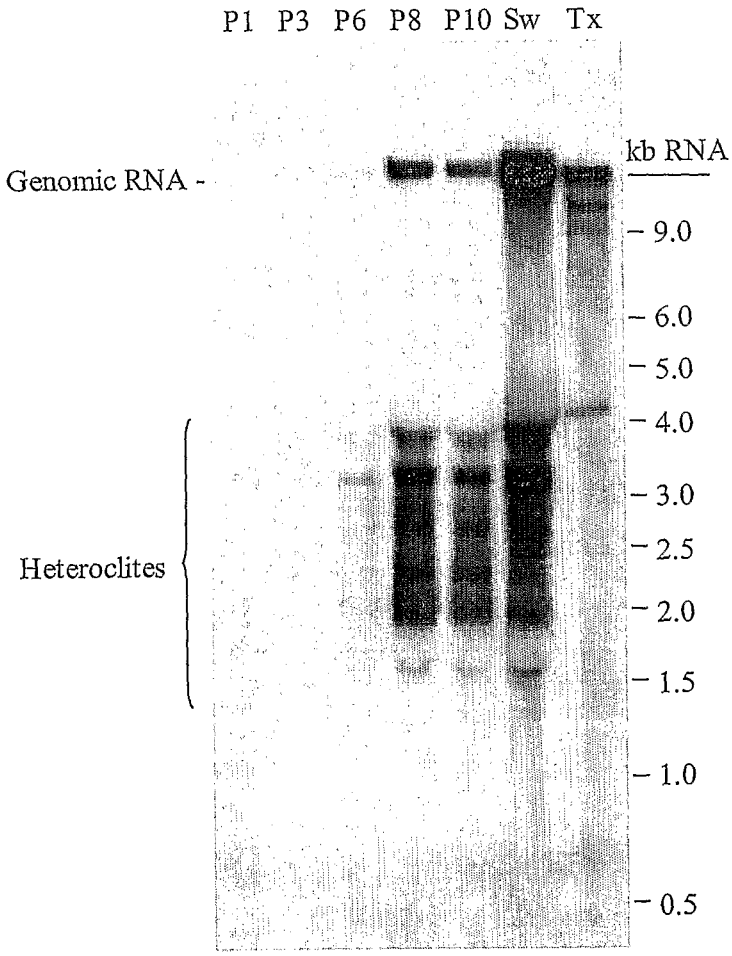



*Fig. 7B*

| Viral Titer | *wt* VR2332 | Sw612 | VR-HN | VR-V5 | VR-V5G7475A | VR-V6 | VR-V6G7475A | Mock |
|---|---|---|---|---|---|---|---|---|
| | $8.12 \times 10^4$ | $2.0 \times 10^5$ | $5.5 \times 10^3$ | $5.0 \times 10^3$ | $2.5 \times 10^4$ | $4.4 \times 10^3$ | $1.9 \times 10^4$ | |

*Fig. 8*


P1
P3
P6
P8
P10
Sw
Tx
kb RNA
Genomic RNA
9.0
6.0
5.0
4.0
3.0
2.5
2.0
1.5
1.0
0.5
Heteroclites

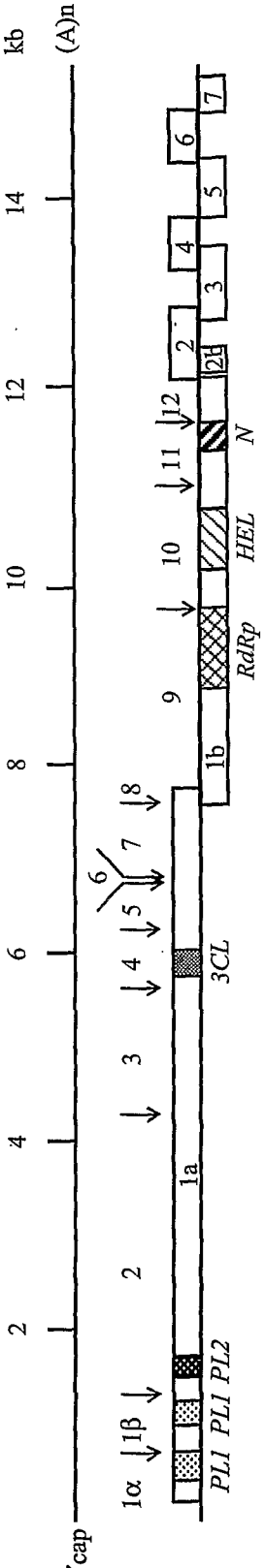



Fig. 9A

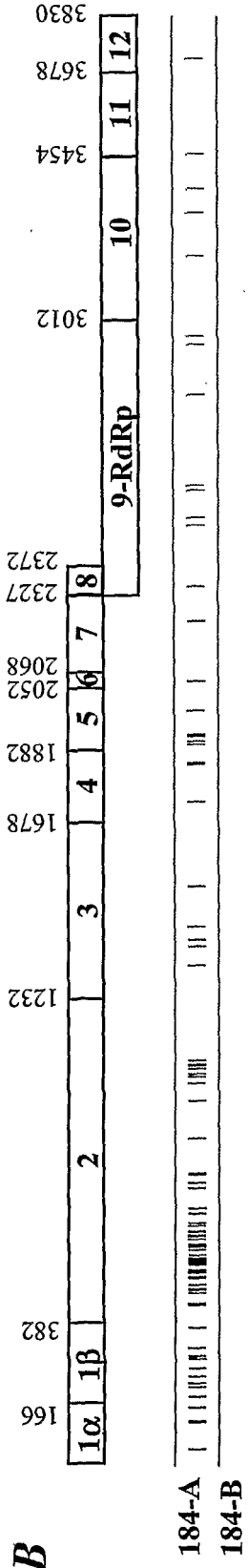



Fig. 9B

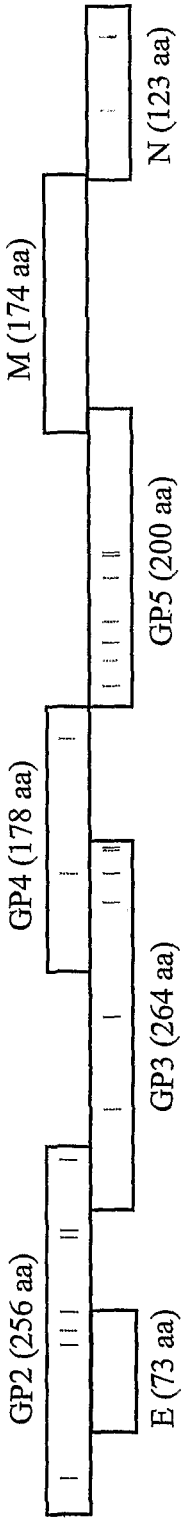



Fig. 9C

**Fig. 10**

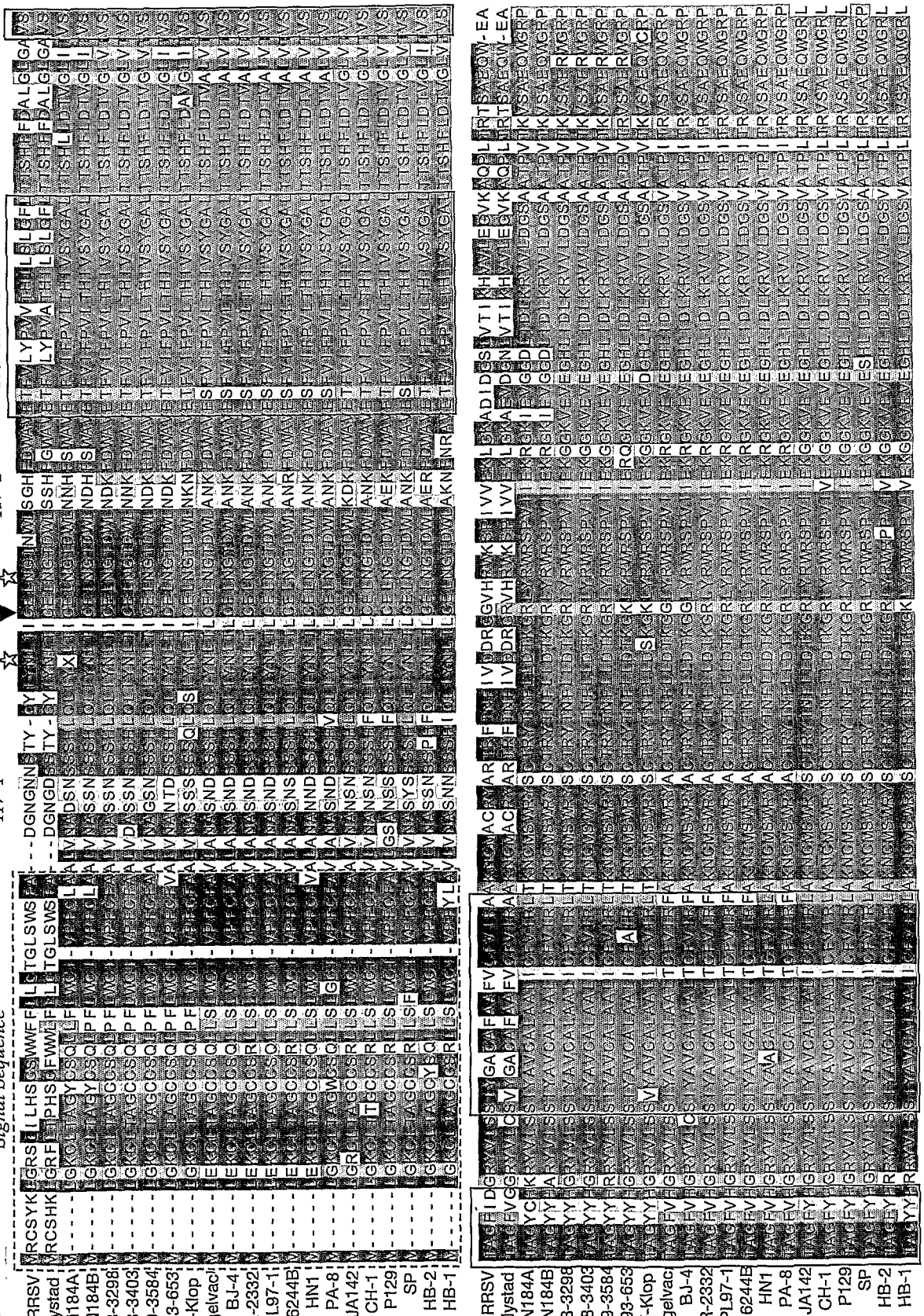
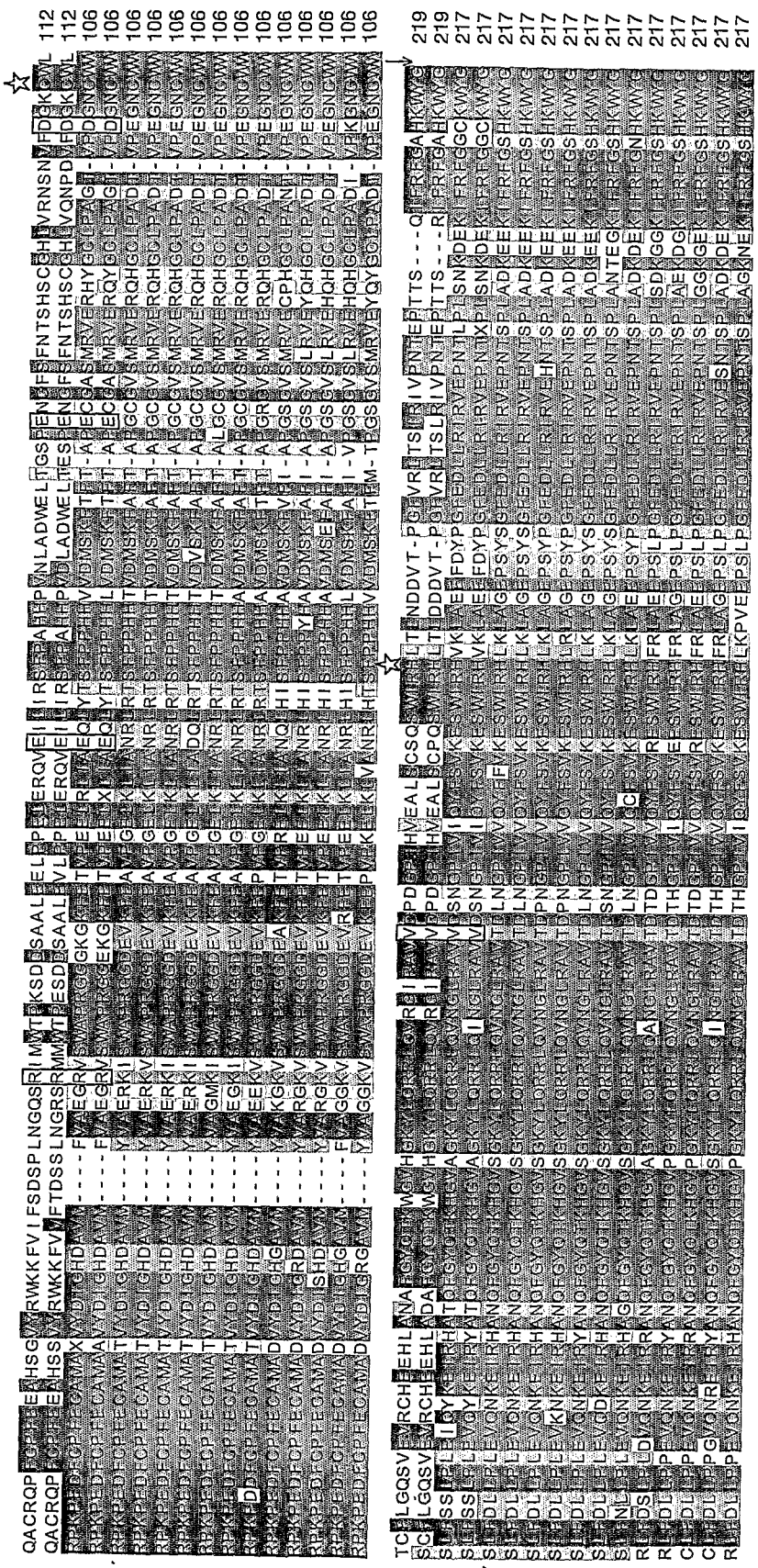

Signal Sequence
HV-1
Extravirion
HV-2
Transmembrane 1
Intravirion
Transmembrane 2
Transmembrane 3
Extravirion
Intravirion

*Fig. 11*


EuroPRRSV
Lelystad
MN184A
MN184B
Ingelvac
VR-2332
PL97-1
HN1
16244B
PA-8
SP
JA142
CH-1
P129
HB-2
HB-1

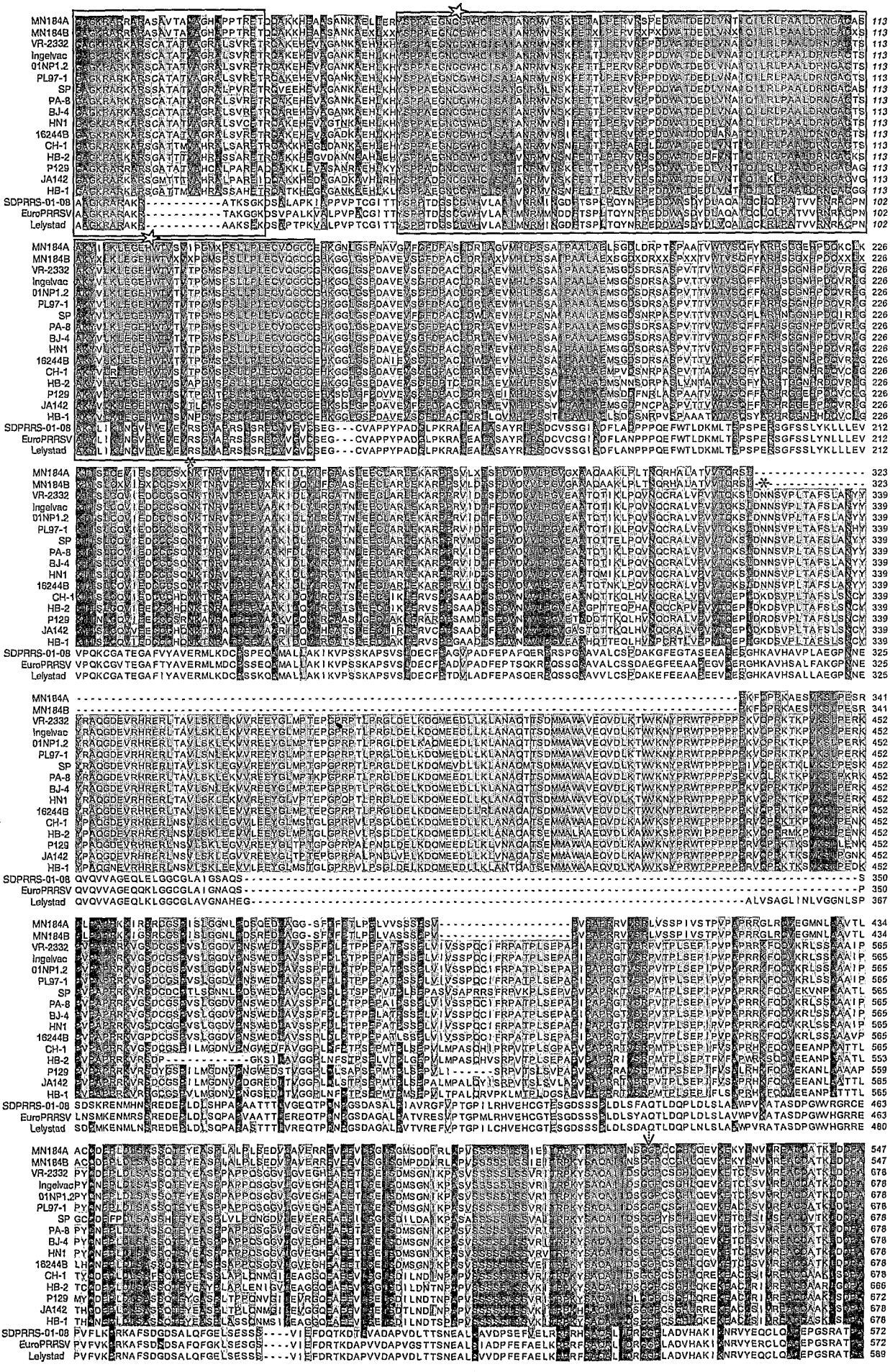


Fig. 12A

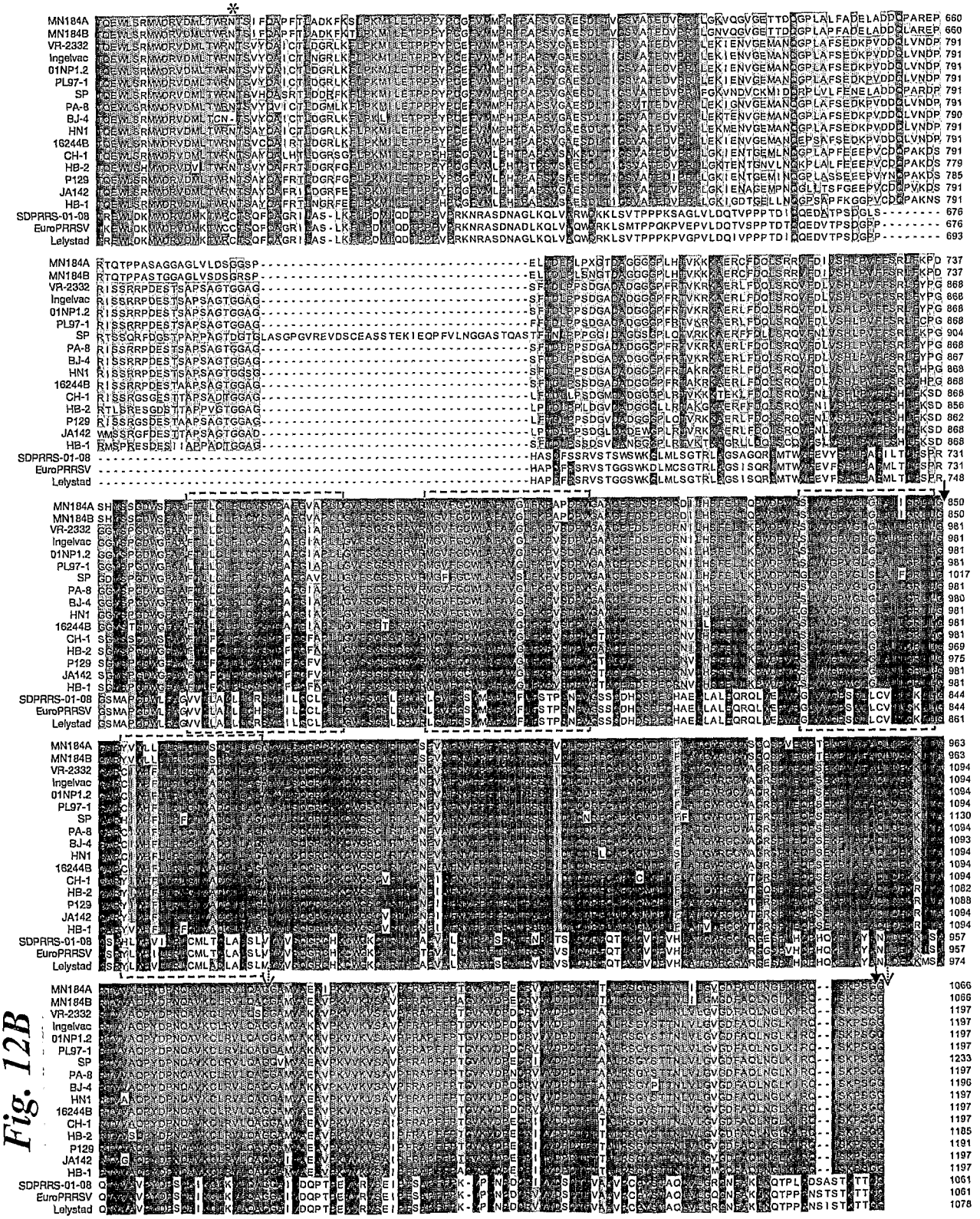

MN184A
MN184B
VR-2332
Ingelvac
01NP1.2
PL97-1
SP
PA-8
BJ-4
HN1
16244B
CH-1
HB-2
P129
JA142
HB-1
SDPRRS-01-08
EuroPRRSV
Lelystad

Fig. 12B