PB1 (2341 bp)

Nature: cRNA

Source: NC_002021.1 Influenza A virus (A/Puerto Rico/8/1934(H1N1)) segment 2

AGCGAAAGCAGGCAAACCATTTGAATGGATGTCAATCCGACCTTACTTTTCTTAAAAGTGCCAGCACAAA
ATGCTATAAGCACAACTTTCCCTTATACCGGAGACCCTCCTTACAGCCATGGGACAGGAACAGGATACAC
CATGGATACTGTCAACAGGACACATCAGTACTCAGAAAAGGCAAGATGGACAACAAACACCGAAACTGGA
GCACCGCAACTCAACCCGATTGATGGGCCACTGCCAGAAGACAATGAACCAAGTGGTTATGCCCAAACAG
ATTGTGTATTGGAAGCAATGGCTTTCCTTGAGGAATCCCATCCTGGTATTTTTGAAAACTCGTGTATTGA
AACGATGGAGGTTGTTCAGCAAACACGAGTAGACAAGCTGACACAAGGCCGACAGACCTATGACTGGACT
TTAAATAGAAACCAGCCTGCTGCAACAGCATTGGCCAACACAATAGAAGTGTTCAGATCAAATGGCCTCA
CGGCCAATGAGTCTGGAAGGCTCATAGACTTCCTTAAGGATGTAATGGAGTCAATGAAAAAAGAAGAAAT
GGGGATCACAACTCATTTTCAGAGAAAGAGACGGGTGAGAGACAATATGACTAAGAAAATGATAACACAG
AGAACAATAGGTAAAAGGAAACAGAGATTGAACAAAAGGAGTTATCTAATTAGAGCATTGACCCTGAACA
CAATGACCAAAGATGCTGAGAGAGGGAAGCTAAAACGGAGAGCAATTGCAACCCCAGGGATGCAAATAAG
GGGGTTTGTATACTTTGTTGAGACACTGGCAAGGAGTATATGTGAGAAACTTGAACAATCAGGGTTGCCA
GTTGGAGGCAATGAGAAGAAAGCAAAGTTGGCAAATGTTGTAAGGAAGATGATGACCAATTCTCAGGACA
CCGAACTTTCTTTGACCATCACTGGAGATAACACCAAATGGAACGAAAATCAGAATCCTCGGATGTTTTT
GGCCATGATCACATATATGACCAGAAATCAGCCCGAATGGTTCAGAAATGTTCTAAGTATTGCTCCAATA
ATGTTCTCAAACAAAATGGCGAGACTGGGAAAAGGGTATATGTTTGAGAGCAAGAGTATGAAACTTAGAA
CTCAAATACCTGCAGAAATGCTAGCAAGCATTGATTTGAAATATTTCAATGATTCAACAAGAAAGAAGAT
TGAAAAAATCCGACCGCTCTTAATAGAGGGGACTGCATCATTGAGCCCTGGAATGATGATGGGCATGTTC
AATATGTTAAGCACTGTATTAGGCGTCTCCATCCTGAATCTTGGACAAAAGAGATACACCAAGACTACTT
ACTGGTGGGATGGTCTTCAATCCTCTGACGATTTTGCTCTGATTGTGAATGCACCCAATCATGAAGGGAT
TCAAGCCGGAGTCGACAGGTTTTATCGAACCTGTAAGCTACATGGAATCAATATGAGCAAGAAAAAGTCT
TACATAAACAGAACAGGTACATTTGAATTCACAAGTTTTTTCTATCGTTATGGGTTTGTTGCCAATTTCA
GCATGGAGCTTCCCAGTTTTGGTGTGTCTGGGAGCAACGAGTCAGCGGACATGAGTATTGGAGTTACTGT
CATCAAAAACAATATGATAAACAATGATCTTGGTCCAGCAACAGCTCAAATGGCCCTTCAGTTGTTCATC
AAAGATTACAGGTACACGTACCGATGCCATAGAGGTGACACACAAATACAAACCCGAAGATCATTTGAAA
TAAAGAAACTGTGGGAGCAAACCCGTTCCAAAGCTGGACTGCTGGTCTCCGACGGAGGCCCAAATTTATA
CAACATTAGAAATCTCCACATTCCTGAAGTCTGCCTAAAATGGGAATTGATGGATGAGGATTACCAGGGG
CGTTTATGCAACCCACTGAACCCATTTGTCAGCCATAAAGAAATTGAATCAATGAACAATGCAGTGATGA
TGCCAGCACATGGTCCAGCCAAAAACATGGAGTATGATGCTGTTGCAACAACACACTCCTGGATCCCCAA
AAGAAATCGATCCATCTTGAATACAAGTCAAAGAGGAGTACTTGAAGATGAACAAATGTACCAAAGGTGC
TGCAATTTATTTGAAAAATTCTTCCCCAGCAGTTCATACAGAAGACCAGTCGGGATATCCAGTATGGTGG
AGGCTATGGTTTCCAGAGCCCGAATTGATGCACGGATTGATTTCGAATCTGGAAGGATAAAGAAAGAAGA
GTTCACTGAGATCATGAAGATCTGTTCCACCATTGAAGAGCTCAGACGGCAAAAATAGTGAATTTAGCTT
GTCCTTCATGAAAAAATGCCTTGTTCCTACT

PB1 protein

Source: NP_040985.1 polymerase PB1 (757 aa)

Sequence: 25 - 2298

MDVNPTLLFLKVPAQNAISTTFPYTGDPPYSHGTGTGYTMDTVNRTHQYSEKARWTTNTETGAPQLNPID
GPLPEDNEPSGYAQTDCVLEAMAFLEESHPGIFENSCIETMEVVQQTRVDKLTQGRQTYDWTLNRNQPAA
TALANTIEVFRSNGLTANESGRLIDFLKDVMESMKKEEMGITTHFQRKRRVRDNMTKKMITQRTIGKRKQ
RLNKRSYLIRALTLNTMTKDAERGKLKRRAIATPGMQIRGFVYFVETLARSICEKLEQSGLPVGGNEKKA
KLANVVRKMMTNSQDTELSLTITGDNTKWNENQNPRMFLAMITYMTRNQPEWFRNVLSIAPIMFSNKMAR
LGKGYMFESKSMKLRTQIPAEMLASIDLKYFNDSTRKKIEKIRPLLIEGTASLSPGMMMGMFNMLSTVLG
VSILNLGQKRYTKTTYWWDGLQSSDDFALIVNAPNHEGIQAGVDRFYRTCKLHGINMSKKKSYINRTGTF
EFTSFFYRYGFVANFSMELPSFGVSGSNESADMSIGVTVIKNNMINNDLGPATAQMALQLFIKDYRYTYR
CHRGDTQIQTRRSFEIKKLWEQTRSKAGLLVSDGGPNLYNIRNLHIPEVCLKWELMDEDYQGRLCNPLNP
FVSHKEIESMNNAVMMPAHGPAKNMEYDAVATTHSWIPKRNRSILNTSQRGVLEDEQMYQRCCNLFEKFF
PSSSYRRPVGISSMVEAMVSRARIDARIDFESGRIKKEEFTEIMKICSTIEELRRQK

PB1-F2 protein

Source: YP_418248.1 (87 aa)

Sequence: 119- 382

MGQEQDTPWILSTGHISTQKRQDGQQTPKLEHRNSTRLMGHCQKTMNQVVMPKQIVYWKQWLSLRNPILV
FLKTRVLKRWRLFSKHE

PB1 (2341 bp)

Nature: vRNA

Source: Illumina sequences from virus stocks_RPS2022

NNNNNAAGCAGGCAAACCATTTGAATGGATGTCAATCCGACCTTACTTTTCTTAAAAGTGCC
AGCACAAAATGCTATAAGCACAACTTTCCCTTATACTGGAGACCCTCCTTACAGCCATGGGA
CAGGAACAGGATACACCATGGATACTGTCAACAGGACACATCAGTACTCAGAAAAGGGAAGA
TGGACAACAAACACCGAAACTGGAGCACCGCAACTCAACCCGATTGATGGGCCACTGCCAGA
AGACAATGAACCAAGTGGTTATGCCCAAACAGATTGTGTATTGGAGGCGATGGCTTTCCTTG
AGGAATCCCATCCTGGTATTTTTGAAAACTCGTGTATTGAAACGATGGAGGTTGTTCAGCAA
ACACGAGTAGACAAGCTGACACAAGGCCGACAGACCTATGACTGGACTCTAAATAGAAACCA
ACCTGCTGCAACAGCATTGGCCAACACAATAGAAGTGTTCAGATCAAATGGCCTCACGGCCA
ATGAGTCTGGAAGGCTCATAGACTTCCTTAAGGATGTAATGGAGTCAATGAACAAAGAAGAA
ATGGGGATCACAACTCATTTTCAGAGAAAGAGACGGGTGAGAGACAATATGACTAAGAAAAT
GATAACACAGAGAACAATGGGTAAAAAGAAGCAGAGATTGAACAAAAGGAGTTATCTAATTA
GAGCATTGACCCTGAACACAATGACCAAAGATGCTGAGAGAGGGAAGCTAAAACGGAGAGCA
ATTGCAACCCCAGGGATGCAAATAAGGGGGTTTGTATACTTTGTTGAGACACTGGCAAGGAG
TATATGTGAGAAACTTGAACAATCAGGGTTGCCAGTTGGAGGCAATGAGAAGAAAGCAAAGT
TGGCAAATGTTGTAAGGAAGATGATGACCAATTCTCAGGACACCGAACTTTCTTTCACCATC
ACTGGAGATAACACCAAATGGAACGAAAATCAGAATCCTCGGATGTTTTTGGCCATGATCAC
ATATATGACCAGAAATCAGCCCGAATGGTTCAGAAATGTTCTAAGTATTGCTCCAATAATGT
TCTCAAACAAAATGGCGAGACTGGGAAAAGGGTATATGTTTGAGAGCAAGAGTATGAAACTT
AGAACTCAAATACCTGCAGAAATGCTAGCAAGCATCGATTTGAAATATTTCAATGATTCAAC
AAGAAAGAAGATTGAAAAAATCCGACCGCTCTTAATAGAGGGGACTGCATCATTGAGCCCTG
GAATGATGATGGGCATGTTCAATATGTTAAGCACTGTATTAGGCGTCTCCATCCTGAATCTT
GGACAAAAGAGATACACCAAGACTACTTACTGGTGGGATGGTCTTCAATCCTCTGACGATTT
TGCTCTGATTGTGAATGCACCCAATCATGAAGGGATTCAAGCCGGAGTCGACAGGTTTTATC
GAACCTGTAAGCTACTTGGAATCAATATGAGCAAGAAAAAGTCTTACATAAACAGAACAGGT
ACATTTGAATTCACAAGTTTTTTCTATCGTTATGGGTTTGTTGCCAATTTCAGCATGGAGCT
TCCCAGTTTTGGGGTGTCTGGGATCAACGAGTCAGCGGACATGAGTATTGGAGTTACTGTCA
TCAAAAACAATATGATAAACAATGATCTTGGTCCAGCAACAGCTCAAATGGCCCTTCAGTTG
TTCATCAAAGATTACAGGTACACGTACCGATGCCATATAGGTGACACACAAATACAAACCCG
AAGATCATTTGAAATAAAGAAACTGTGGGAGCAAACCCGTTCCAAAGCTGGACTGCTGGTCT
CCGACGGAGGCCCAAATTTATACAACATTAGAAATCTCCACATTCCTGAAGTCTGCCTAAAA
TGGGAATTGATGGATGAGGATTACCAGGGGCGTTTATGCAACCCACTGAACCCATTTGTCAG
CCATAAAGAAATTGAATCAATGAACAATGCAGTGATGATGCCAGCACATGGTCCAGCCAAAA
ACATGGAGTATGATGCTGTTGCAACAACACACTCCTGGATCCCCAAAAGAAATCGATCCATC
TTGAATACAAGTCAAAGAGGAGTACTTGAGGATGAACAAATGTACCAAAGGTGCTGCAATTT
ATTTGAAAAATTCTTCCCCAGCAGTTCATACAGAAGACCAGTCGGGATATCCAGTATGGTGG
AGGCTATGGTTTCCAGAGCCCGAATTGATGCACGGATTGATTTCGAATCTGGAAGGATAAAG
AAAGAAGAGTTCACTGAGATCATGAAGATCTGTTCCACCATTGAAGAGCTCAGACGGCAAAA
ATAGTGAATTTAGCTTGTCCTTCATGAAAAAATGCCTTGNNNNNNNN

PB1 (2341 bp)

Nature: cDNA_pHW2000

Source: GATC sequences from Maxiprep_ACJ_2023

AGCGAAAGCAGGCAAACCATTTGA**ATG**GATGTCAATCCGACCTTACTTTTCTTAAAAGTGCC
AGCACAAAATGCTATAAGCACAACTTTCCCTTATACTGGAGACCCTCCTTACAGCC**ATG**GGA
CAGGAACAGGATACACCATGGATACTGTCAACAGGACACATCAGTACTCAGAAAAGGGAAGA
TGGACAACAAACACCGAAACTGGAGCACCGCAACTCAACCCGATTGATGGGCCACTGCCAGA
AGACAATGAACCAAGTGGTTATGCCCAAACAGATTGTGTATTGGAGGCGATGGCTTTCCTTG
AGGAATCCCATCCTGGTATTTTTGAAAACTCGTGTATTGAAACGATGGAGGTTGTTCAGCAA
ACACGAGTAGACAAGCTGACACAAGGCCGACAGACCTATGACTGGACTCTAAATAGAAACCA
ACCTGCTGCAACAGCATTGGCCAACACAATAGAAGTGTTCAGATCAAATGGCCTCACGGCCA
ATGAGTCTGGAAGGCTCATAGACTTCCTTAAGGATGTAATGGAGTCAATGAACAAAGAAGAA
ATGGGGATCACAACTCATTTTCAGAGAAAGAGACGGGTGAGAGACAATATGACTAAGAAAAT
GATAACACAGAGAACAATGGGTAAAAAGAAGCAGAGATTGAACAAAAGGAGTTATCTAATTA
GAGCATTGACCCTGAACACAATGACCAAAGATGCTGAGAGAGGGAAGCTAAAACGGAGAGCA
ATTGCAACCCCAGGGATGCAAATAAGGGGGTTTGTATACTTTGTTGAGACACTGGCAAGGAG
TATATGTGAGAAACTTGAACAATCAGGGTTGCCAGTTGGAGGCAATGAGAAGAAAGCAAAGT
TGGCAAATGTTGTAAGGAAGATGATGACCAATTCTCAGGACACCGAACTTTCTTTCACCATC
ACTGGAGATAACACCAAATGGAACGAAAATCAGAATCCTCGGATGTTTTTGGCCATGATCAC
ATATATGACCAGAAATCAGCCCGAATGGTTCAGAAATGTTCTAAGTATTGCTCCAATAATGT
TCTCAAACAAAATGGCGAGACTGGGAAAAGGGTATATGTTTGAGAGCAAGAGTATGAAACTT
AGAACTCAAATACCTGCAGAAATGCTAGCAAGCATCGATTTGAAATATTTCAATGATTCAAC
AAGAAAGAAGATTGAAAAAATCCGACCGCTCTTAATAGAGGGGACTGCATCATTGAGCCCTG
GAATGATGATGGGCATGTTCAATATGTTAAGCACTGTATTAGGCGTCTCCATCCTGAATCTT
GGACAAAAGAGATACACCAAGACTACTTACTGGTGGGATGGTCTTCAATCCTCTGACGATTT
TGCTCTGATTGTGAATGCACCCAATCATGAAGGGATTCAAGCCGGAGTCGACAGGTTTTATC
GAACCTGTAAGCTACTTGGAATCAATATGAGCAAGAAAAAGTCTTACATAAACAGAACAGGT
ACATTTGAATTCACAAGTTTTTTCTATCGTTATGGGTTTGTTGCCAATTTCAGCATGGAGCT
TCCCAGTTTTGGGGTGTCTGGGATCAACGAGTCAGCGGACATGAGTATTGGAGTTACTGTCA
TCAAAAACAATATGATAAACAATGATCTTGGTCCAGCAACAGCTCAAATGGCCCTTCAGTTG
TTCATCAAAGATTACAGGTACACGTACCGATGCCATATAGGTGACACACAAATACAAACCCG
AAGATCATTTGAAATAAAGAAACTGTGGGAGCAAACCCGTTCCAAAGCTGGACTGCTGGTCT
CCGACGGAGGCCCAAATTTATACAACATTAGAAATCTCCACATTCCTGAAGTCTGCCTAAAA
TGGGAATTGATGGATGAGGATTACCAGGGGCGTTTATGCAACCCACTGAACCCATTTGTCAG
CCATAAAGAAATTGAATCAATGAACAATGCAGTGATGATGCCAGCACATGGTCCAGCCAAAA
ACATGGAGTATGATGCTGTTGCAACAACACACTCCTGGATCCCCAAAAGAAATCGATCCATC
TTGAATACAAGTCAAAGAGGAGTACTTGAGGATGAACAAATGTACCAAAGGTGCTGCAATTT
ATTTGAAAAATTCTTCCCCAGCAGTTCATACAGAAGACCAGTCGGGATATCCAGTATGGTGG
AGGCTATGGTTTCCAGAGCCCGAATTGATGCACGGATTGATTTCGAATCTGGAAGGATAAAG
AAAGAAGAGTTCACTGAGATCATGAAGATCTGTTCCACCATTGAAGAGCTCAGACGGCAAAA
ATAGTGAATTTAGCTTGTCCTTCATGAAAAAATGCCTTGTTTCTACT

```
CLUSTAL O(1.2.4) multiple sequence alignment


PR8_PB1_NCBI          AGCGAAAGCAGGCAAACCATTTGAATGGATGTCAATCCGACCTTACTTTTCTTAAAAGTG      60
PR8_PB1_Illumina      NNNNNAAGCAGGCAAACCATTTGAATGGATGTCAATCCGACCTTACTTTTCTTAAAAGTG      60
PR8_PB1_pHW2000       AGCGAAAGCAGGCAAACCATTTGAATGGATGTCAATCCGACCTTACTTTTCTTAAAAGTG      60
                           ********************************************************

PR8_PB1_NCBI          CCAGCACAAAATGCTATAAGCACAACTTTCCCTTATACCGGAGACCCTCCTTACAGCCAT      120
PR8_PB1_Illumina      CCAGCACAAAATGCTATAAGCACAACTTTCCCTTATACTGGAGACCCTCCTTACAGCCAT      120
PR8_PB1_pHW2000       CCAGCACAAAATGCTATAAGCACAACTTTCCCTTATACTGGAGACCCTCCTTACAGCCAT      120
                      ************************************ **********************

PR8_PB1_NCBI          GGGACAGGAACAGGATACACCATGGATACTGTCAACAGGACACATCAGTACTCAGAAAAG      180
PR8_PB1_Illumina      GGGACAGGAACAGGATACACCATGGATACTGTCAACAGGACACATCAGTACTCAGAAAAG      180
PR8_PB1_pHW2000       GGGACAGGAACAGGATACACCATGGATACTGTCAACAGGACACATCAGTACTCAGAAAAG      180
                      ************************************************************

PR8_PB1_NCBI          GCAAGATGGACAACAAACACCGAAACTGGAGCACCGCAACTCAACCCGATTGATGGGCCA      240
PR8_PB1_Illumina      GGAAGATGGACAACAAACACCGAAACTGGAGCACCGCAACTCAACCCGATTGATGGGCCA      240
PR8_PB1_pHW2000       GGAAGATGGACAACAAACACCGAAACTGGAGCACCGCAACTCAACCCGATTGATGGGCCA      240
                      * ************************************************************

PR8_PB1_NCBI          CTGCCAGAAGACAATGAACCAAGTGGTTATGCCCAAACAGATTGTGTATTGGAAGCAATG      300
PR8_PB1_Illumina      CTGCCAGAAGACAATGAACCAAGTGGTTATGCCCAAACAGATTGTGTATTGGAGGCGATG      300
PR8_PB1_pHW2000       CTGCCAGAAGACAATGAACCAAGTGGTTATGCCCAAACAGATTGTGTATTGGAGGCGATG      300
                      ************************************************** ** ***

PR8_PB1_NCBI          GCTTTCCTTGAGGAATCCCATCCTGGTATTTTTGAAAACTCGTGTATTGAAACGATGGAG      360
PR8_PB1_Illumina      GCTTTCCTTGAGGAATCCCATCCTGGTATTTTTGAAAACTCGTGTATTGAAACGATGGAG      360
PR8_PB1_pHW2000       GCTTTCCTTGAGGAATCCCATCCTGGTATTTTTGAAAACTCGTGTATTGAAACGATGGAG      360
                      ************************************************************

PR8_PB1_NCBI          GTTGTTCAGCAAACACGAGTAGACAAGCTGACACAAGGCCGACAGACCTATGACTGGACT      420
PR8_PB1_Illumina      GTTGTTCAGCAAACACGAGTAGACAAGCTGACACAAGGCCGACAGACCTATGACTGGACT      420
PR8_PB1_pHW2000       GTTGTTCAGCAAACACGAGTAGACAAGCTGACACAAGGCCGACAGACCTATGACTGGACT      420
                      ************************************************************

PR8_PB1_NCBI          TTAAATAGAAACCAGCCTGCTGCAACAGCATTGGCCAACACAATAGAAGTGTTCAGATCA      480
PR8_PB1_Illumina      CTAAATAGAAACCAACCTGCTGCAACAGCATTGGCCAACACAATAGAAGTGTTCAGATCA      480
PR8_PB1_pHW2000       CTAAATAGAAACCAACCTGCTGCAACAGCATTGGCCAACACAATAGAAGTGTTCAGATCA      480
                       ************* ********************************************

PR8_PB1_NCBI          AATGGCCTCACGGCCAATGAGTCTGGAAGGCTCATAGACTTCCTTAAGGATGTAATGGAG      540
PR8_PB1_Illumina      AATGGCCTCACGGCCAATGAGTCTGGAAGGCTCATAGACTTCCTTAAGGATGTAATGGAG      540
PR8_PB1_pHW2000       AATGGCCTCACGGCCAATGAGTCTGGAAGGCTCATAGACTTCCTTAAGGATGTAATGGAG      540
                      ************************************************************

PR8_PB1_NCBI          TCAATGAAAAAAGAAGAAATGGGGATCACAACTCATTTTCAGAGAAAGAGACGGGTGAGA      600
PR8_PB1_Illumina      TCAATGAACAAAGAAGAAATGGGGATCACAACTCATTTTCAGAGAAAGAGACGGGTGAGA      600
PR8_PB1_pHW2000       TCAATGAACAAAGAAGAAATGGGGATCACAACTCATTTTCAGAGAAAGAGACGGGTGAGA      600
                      ******** ***************************************************

PR8_PB1_NCBI          GACAATATGACTAAGAAAATGATAACACAGAGAACAATAGGTAAAAGGAAACAGAGATTG      660
PR8_PB1_Illumina      GACAATATGACTAAGAAAATGATAACACAGAGAACAATGGGTAAAAAGAAGCAGAGATTG      660
PR8_PB1_pHW2000       GACAATATGACTAAGAAAATGATAACACAGAGAACAATGGGTAAAAAGAAGCAGAGATTG      660
                      ************************************ ******* *** *********

PR8_PB1_NCBI          AACAAAAGGAGTTATCTAATTAGAGCATTGACCCTGAACACAATGACCAAAGATGCTGAG      720
PR8_PB1_Illumina      AACAAAAGGAGTTATCTAATTAGAGCATTGACCCTGAACACAATGACCAAAGATGCTGAG      720
PR8_PB1_pHW2000       AACAAAAGGAGTTATCTAATTAGAGCATTGACCCTGAACACAATGACCAAAGATGCTGAG      720
                      ************************************************************

PR8_PB1_NCBI          AGAGGGAAGCTAAAACGGAGAGCAATTGCAACCCCAGGGATGCAAATAAGGGGGTTTGTA      780
PR8_PB1_Illumina      AGAGGGAAGCTAAAACGGAGAGCAATTGCAACCCCAGGGATGCAAATAAGGGGGTTTGTA      780
PR8_PB1_pHW2000       AGAGGGAAGCTAAAACGGAGAGCAATTGCAACCCCAGGGATGCAAATAAGGGGGTTTGTA      780
                      ************************************************************

PR8_PB1_NCBI          TACTTTGTTGAGACACTGGCAAGGAGTATATGTGAGAAACTTGAACAATCAGGGTTGCCA      840
PR8_PB1_Illumina      TACTTTGTTGAGACACTGGCAAGGAGTATATGTGAGAAACTTGAACAATCAGGGTTGCCA      840
PR8_PB1_pHW2000       TACTTTGTTGAGACACTGGCAAGGAGTATATGTGAGAAACTTGAACAATCAGGGTTGCCA      840
                      ************************************************************

PR8_PB1_NCBI          GTTGGAGGCAATGAGAAGAAAGCAAAGTTGGCAAATGTTGTAAGGAAGATGATGACCAAT      900
PR8_PB1_Illumina      GTTGGAGGCAATGAGAAGAAAGCAAAGTTGGCAAATGTTGTAAGGAAGATGATGACCAAT      900
PR8_PB1_pHW2000       GTTGGAGGCAATGAGAAGAAAGCAAAGTTGGCAAATGTTGTAAGGAAGATGATGACCAAT      900
                      ************************************************************

PR8_PB1_NCBI          TCTCAGGACACCGAACTTTCTTTGGACCATCACTGGAGATAACACCAAATGGAACGAAAAT      960
PR8_PB1_Illumina      TCTCAGGACACCGAACTTTCTTTCACCATCACTGGAGATAACACCAAATGGAACGAAAAT      960
PR8_PB1_pHW2000       TCTCAGGACACCGAACTTTCTTTCACCATCACTGGAGATAACACCAAATGGAACGAAAAT      960
                      ********************** ***********************************

PR8_PB1_NCBI          CAGAATCCTCGGATGTTTTTGGCCATGATCACATATATGACCAGAAATCAGCCCGAATGG      1020
PR8_PB1_Illumina      CAGAATCCTCGGATGTTTTTGGCCATGATCACATATATGACCAGAAATCAGCCCGAATGG      1020
PR8_PB1_pHW2000       CAGAATCCTCGGATGTTTTTGGCCATGATCACATATATGACCAGAAATCAGCCCGAATGG      1020
                      ************************************************************

PR8_PB1_NCBI          TTCAGAAATGTTCTAAGTATTGCTCCAATAATGTTCTCAAACAAAATGGCGAGACTGGGA      1080
PR8_PB1_Illumina      TTCAGAAATGTTCTAAGTATTGCTCCAATAATGTTCTCAAACAAAATGGCGAGACTGGGA      1080
PR8_PB1_pHW2000       TTCAGAAATGTTCTAAGTATTGCTCCAATAATGTTCTCAAACAAAATGGCGAGACTGGGA      1080
                      ************************************************************

PR8_PB1_NCBI          AAAGGGTATATGTTTGAGAGCAAGAGTATGAAACTTAGAACTCAAATACCTGCAGAAATG      1140
PR8_PB1_Illumina      AAAGGGTATATGTTTGAGAGCAAGAGTATGAAACTTAGAACTCAAATACCTGCAGAAATG      1140
PR8_PB1_pHW2000       AAAGGGTATATGTTTGAGAGCAAGAGTATGAAACTTAGAACTCAAATACCTGCAGAAATG      1140
                      ************************************************************

PR8_PB1_NCBI          CTAGCAAGCATTGATTTGAAATATTTCAATGATTCAACAAGAAAGAAGATTGAAAAAATC      1200
PR8_PB1_Illumina      CTAGCAAGCATCGATTTGAAATATTTCAATGATTCAACAAGAAAGAAGATTGAAAAAATC      1200
PR8_PB1_pHW2000       CTAGCAAGCATCGATTTGAAATATTTCAATGATTCAACAAGAAAGAAGATTGAAAAAATC      1200
                      *********** ************************************************

PR8_PB1_NCBI          CGACCGCTCTTAATAGAGGGGACTGCATCATTGAGCCCTGGAATGATGATGGGCATGTTC      1260
PR8_PB1_Illumina      CGACCGCTCTTAATAGAGGGGACTGCATCATTGAGCCCTGGAATGATGATGGGCATGTTC      1260
PR8_PB1_pHW2000       CGACCGCTCTTAATAGAGGGGACTGCATCATTGAGCCCTGGAATGATGATGGGCATGTTC      1260
                      ************************************************************

PR8_PB1_NCBI          AATATGTTAAGCACTGTATTAGGCGTCTCCATCCTGAATCTTGGACAAAAGAGATACACC      1320
PR8_PB1_Illumina      AATATGTTAAGCACTGTATTAGGCGTCTCCATCCTGAATCTTGGACAAAAGAGATACACC      1320
PR8_PB1_pHW2000       AATATGTTAAGCACTGTATTAGGCGTCTCCATCCTGAATCTTGGACAAAAGAGATACACC      1320
                      ************************************************************

PR8_PB1_NCBI          AAGACTACTTACTGGTGGGATGGTCTTCAATCCTCTGACGATTTTGCTCTGATTGTGAAT      1380
PR8_PB1_Illumina      AAGACTACTTACTGGTGGGATGGTCTTCAATCCTCTGACGATTTTGCTCTGATTGTGAAT      1380
PR8_PB1_pHW2000       AAGACTACTTACTGGTGGGATGGTCTTCAATCCTCTGACGATTTTGCTCTGATTGTGAAT      1380
                      ************************************************************

PR8_PB1_NCBI          GCACCCAATCATGAAGGGATTCAAGCCGGAGTCGACAGGTTTTATCGAACCTGTAAGCTA      1440
PR8_PB1_Illumina      GCACCCAATCATGAAGGGATTCAAGCCGGAGTCGACAGGTTTTATCGAACCTGTAAGCTA      1440
PR8_PB1_pHW2000       GCACCCAATCATGAAGGGATTCAAGCCGGAGTCGACAGGTTTTATCGAACCTGTAAGCTA      1440
                      ************************************************************

PR8_PB1_NCBI          CATGGAATCAATATGAGCAAGAAAAAGTCTTACATAAACAGAACAGGTACATTTGAATTC      1500
PR8_PB1_Illumina      CTTGGAATCAATATGAGCAAGAAAAAGTCTTACATAAACAGAACAGGTACATTTGAATTC      1500
PR8_PB1_pHW2000       CTTGGAATCAATATGAGCAAGAAAAAGTCTTACATAAACAGAACAGGTACATTTGAATTC      1500
                      * ************************************************************

PR8_PB1_NCBI          ACAAGTTTTTTCTATCGTTATGGGTTTGTTGCCAATTTCAGCATGGAGCTTCCCAGTTTT      1560
PR8_PB1_Illumina      ACAAGTTTTTTCTATCGTTATGGGTTTGTTGCCAATTTCAGCATGGAGCTTCCCAGTTTT      1560
PR8_PB1_pHW2000       ACAAGTTTTTTCTATCGTTATGGGTTTGTTGCCAATTTCAGCATGGAGCTTCCCAGTTTT      1560
                      ************************************************************

PR8_PB1_NCBI          GGTGTGTCTGGGAGCAACGAGTCAGCGGACATGAGTATTGGAGTTACTGTCATCAAAAAC      1620
PR8_PB1_Illumina      GGGGTGTCTGGGATCAACGAGTCAGCGGACATGAGTATTGGAGTTACTGTCATCAAAAAC      1620
PR8_PB1_pHW2000       GGGGTGTCTGGGATCAACGAGTCAGCGGACATGAGTATTGGAGTTACTGTCATCAAAAAC      1620
                      ** ********** ************************************************

PR8_PB1_NCBI          AATATGATAAACAATGATCTTGGTCCAGCAACAGCTCAAATGGCCCTTCAGTTGTTCATC      1680
PR8_PB1_Illumina      AATATGATAAACAATGATCTTGGTCCAGCAACAGCTCAAATGGCCCTTCAGTTGTTCATC      1680
PR8_PB1_pHW2000       AATATGATAAACAATGATCTTGGTCCAGCAACAGCTCAAATGGCCCTTCAGTTGTTCATC      1680
                      ************************************************************

PR8_PB1_NCBI          AAAGATTACAGGTACACGTACCGATGCCATAGAGGTGACACACAAATACAAACCCGAAGA      1740
PR8_PB1_Illumina      AAAGATTACAGGTACACGTACCGATGCCATATAGGTGACACACAAATACAAACCCGAAGA      1740
PR8_PB1_pHW2000       AAAGATTACAGGTACACGTACCGATGCCATATAGGTGACACACAAATACAAACCCGAAGA      1740
                      ****************************** ***************************

PR8_PB1_NCBI          TCATTTGAAATAAAGAAACTGTGGGAGCAAACCCGTTCCAAAGCTGGACTGCTGGTCTCC      1800
PR8_PB1_Illumina      TCATTTGAAATAAAGAAACTGTGGGAGCAAACCCGTTCCAAAGCTGGACTGCTGGTCTCC      1800
PR8_PB1_pHW2000       TCATTTGAAATAAAGAAACTGTGGGAGCAAACCCGTTCCAAAGCTGGACTGCTGGTCTCC      1800
                      ************************************************************

PR8_PB1_NCBI          GACGGAGGCCCAAATTTATACAACATTAGAAATCTCCACATTCCTGAAGTCTGCCTAAAA      1860
PR8_PB1_Illumina      GACGGAGGCCCAAATTTATACAACATTAGAAATCTCCACATTCCTGAAGTCTGCCTAAAA      1860
PR8_PB1_pHW2000       GACGGAGGCCCAAATTTATACAACATTAGAAATCTCCACATTCCTGAAGTCTGCCTAAAA      1860
                      ************************************************************

PR8_PB1_NCBI          TGGGAATTGATGGATGAGGATTACCAGGGGCGTTTATGCAACCCACTGAACCCATTTGTC      1920
PR8_PB1_Illumina      TGGGAATTGATGGATGAGGATTACCAGGGGCGTTTATGCAACCCACTGAACCCATTTGTC      1920
PR8_PB1_pHW2000       TGGGAATTGATGGATGAGGATTACCAGGGGCGTTTATGCAACCCACTGAACCCATTTGTC      1920
                      ************************************************************

PR8_PB1_NCBI          AGCCATAAAGAAATTGAATCAATGAACAATGCAGTGATGATGCCAGCACATGGTCCAGCC      1980
PR8_PB1_Illumina      AGCCATAAAGAAATTGAATCAATGAACAATGCAGTGATGATGCCAGCACATGGTCCAGCC      1980
PR8_PB1_pHW2000       AGCCATAAAGAAATTGAATCAATGAACAATGCAGTGATGATGCCAGCACATGGTCCAGCC      1980
                      ************************************************************

PR8_PB1_NCBI          AAAAACATGGAGTATGATGCTGTTGCAACAACACACTCCTGGATCCCCAAAAGAAATCGA      2040
PR8_PB1_Illumina      AAAAACATGGAGTATGATGCTGTTGCAACAACACACTCCTGGATCCCCAAAAGAAATCGA      2040
PR8_PB1_pHW2000       AAAAACATGGAGTATGATGCTGTTGCAACAACACACTCCTGGATCCCCAAAAGAAATCGA      2040
                      ************************************************************

PR8_PB1_NCBI          TCCATCTTGAATACAAGTCAAAGAGGAGTACTTGAAGATGAACAAATGTACCAAAGGTGC      2100
PR8_PB1_Illumina      TCCATCTTGAATACAAGTCAAAGAGGAGTACTTGAGGATGAACAAATGTACCAAAGGTGC      2100
PR8_PB1_pHW2000       TCCATCTTGAATACAAGTCAAAGAGGAGTACTTGAGGATGAACAAATGTACCAAAGGTGC      2100
                      ********************************** ***********************

PR8_PB1_NCBI          TGCAATTTATTTGAAAAATTCTTCCCCAGCAGTTCATACAGAAGACCAGTCGGGATATCC      2160
PR8_PB1_Illumina      TGCAATTTATTTGAAAAATTCTTCCCCAGCAGTTCATACAGAAGACCAGTCGGGATATCC      2160
PR8_PB1_pHW2000       TGCAATTTATTTGAAAAATTCTTCCCCAGCAGTTCATACAGAAGACCAGTCGGGATATCC      2160
                      ************************************************************

PR8_PB1_NCBI          AGTATGGTGGAGGCTATGGTTTCCAGAGCCCGAATTGATGCACGGATTGATTTCGAATCT      2220
PR8_PB1_Illumina      AGTATGGTGGAGGCTATGGTTTCCAGAGCCCGAATTGATGCACGGATTGATTTCGAATCT      2220
PR8_PB1_pHW2000       AGTATGGTGGAGGCTATGGTTTCCAGAGCCCGAATTGATGCACGGATTGATTTCGAATCT      2220
                      ************************************************************

PR8_PB1_NCBI          GGAAGGATAAAGAAAGAAGAGTTCACTGAGATCATGAAGATCTGTTCCACCATTGAAGAG      2280
PR8_PB1_Illumina      GGAAGGATAAAGAAAGAAGAGTTCACTGAGATCATGAAGATCTGTTCCACCATTGAAGAG      2280
PR8_PB1_pHW2000       GGAAGGATAAAGAAAGAAGAGTTCACTGAGATCATGAAGATCTGTTCCACCATTGAAGAG      2280
                      ************************************************************

PR8_PB1_NCBI          CTCAGACGGCAAAAATAGTGAATTTAGCTTGTCCTTCATGAAAAAATGCCTTGTTCCTAC      2340
PR8_PB1_Illumina      CTCAGACGGCAAAAATAGTGAATTTAGCTTGTCCTTCATGAAAAAATGCCTTGNNNNNNN      2340
PR8_PB1_pHW2000       CTCAGACGGCAAAAATAGTGAATTTAGCTTGTCCTTCATGAAAAAATGCCTTGTTTCTAC      2340
                      ************************************************** ***********

PR8_PB1_NCBI          T 2341
PR8_PB1_Illumina      N 2341
PR8_PB1_pHW2000       T 2341
```