

# PB1 (2341 bp)

Nature: cRNA 5' → 3'

Source: DQ487328.1 Influenza A virus (A/Moscow/10/99(H3N2)) segment 2

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AGCGAAAGCAGGCAAACCATTTGAATGGATGTCAATCCGACTCTACTTTTCTAAAGGTTCCAGCGCAAA
ATGCCATAAGCACCACATTCCCTTATACTGGAGATCCTCCATACAGCCATGGAACAGGAACAGGGTACAC
CATGGACACAGTCAACAGAACACACCAATATTGAGAAAAAGGGGAAGTGGACGACAAATACAGAAACTGGG
GCACCCCAACTCAACCCAATTGATGGACCACTACCTGAGGATAATGAGCCAAGTGGATATGCACAAACAG
ACTGTGTCCTGGAGGCTATGGCCTTCCTTGAAGAATCCCACCCAGGGATCTTTGAGAACTCATGCCTTGA
AACAATGGAAGTCGTTCAACAAACAAGGGTGGACAACTAACTCAAGGTCGCCAGACTTATGATTGGACA
TTAAACAGAAATCAACCGGCAGCAACTGCATTAGCCAACACCATAGAAGTTTTTAGATCGAATGGTCTAA
CAGCTAATGAATCAGGAAGGCTAATAGATTTTCTCAAGGATGTGATGGAATCAATGGATAAAGAGGAAAT
GGAGATAACAACACACTTTCAAAGAAAAAGGAGAGTAAGAGACAACATGACCAAGAAAAATGGTCACACAA
AGAACAATAGGGAAGAAAAAACAAAGAGTGAATAAGAGAGGCTATCTAATAAGAGCTTTGACATTGAACA
CGATGACCAAAGATGCAGAGAGAGGTAATTAAGGAAGGGCTATTGCAACACCCGGGATGCAAAATTAG
AGGGTTTCGTGTAATTCGTTGAACTTTAGCTAGAAGCATTTGCGAAAAAGCTTGAACAGTCTGGACTTCCG
GTTGGGGGTAATGAAAAGAAGGCCAACTGGCAAATGTTGTGAGAAAAATGATGACTAATTCACAAGACA
CAGAGCTTTCTTTCACAATCACTGGGGACAACACTAAGTGAATGAAAATCAAAACCCCTCGAATGTTTTT
GGCGATGATTACATATATCACAAAAAATCAACCTGAGTGGTTCAGAAACATCCTGAGCATAGCACCATA
ATGTTCTCAAACAAAATGGCAAGACTAGGAAAAGGATACATGTTGAGAGTAAGAGAATGAAGCTCCGAA
CACAAATACCCGCAGAAATGCTAGCAAGCATCGACCTGAAGTATTTCAATGAATCAACAAGGAAGAAAAA
TGAGAAAAATAAGGCCTCTTCTAATAGATGGCACAGCATCATTGAGCCCTGGGATGATGATGGGCATGTTT
AACATGCTAAGTACGGTTTTTAGGAGTCTCGATACTGAATCTTGGGCAAAAGAAAATACACCAAGACAACAT
ACTGGTGGGATGGGCTCCAATCCTCCGACGATTTTGCCCTCATAGTGAATGCACCAAATCATGAGGGAAT
ACAAGCAGGAGTGGATAGATTCTACAGGACCTGCAAGTTGGTGGGAATCAACATGAGCAAAAAGAAGTCC
TATATAAATAAAACAGGGACATTTGAATTCACAAGCTTTTTTTATCGCTATGGATTTGTGGCTAATTTTA
GCATGGAGCTGCCCAGTTTTGGAGTGTCTGGAATAAATGAGTCAGCTGATATGAGCATTGGAGTAACAGT
GATAAAGAACAACATGATAAACAATGACCTTGGACCAGCAACAGCCCAGATGGCTCTTCAATTGTTTCATC
AAAGACTACAGATATACATATAGGTGCCATAGAGGAGACACACAAATTCAGACGAGAAGATCATTCGAGC
TAAAGAAGCTGTGGGATCAAACCCAATCAAGGGCAGGACTATTGGTATCAGATGGGGGACCAAACCTTATA
CAATATCCGGAATCTTTCACATTCCTGAAGTCTGCTTAAAGTGGGAGCTAATGGATGAGGATTATCGGGGA
AGACTTTGTAATCCCCTGAATCCCCTTTGTGAGCCATAAAGAAAATTGAGTCTGTAAACAATGCTGTAGTGA
TGCCAGCCCATGGTCCAGCCAAAAGTATGGAATATGATGCCGTTGCAACTACACACTCCTGGATTCCCAA
GAGGAACCGCTCTATTCTAAACACAAGCCAAAGGGGAATTCTTGAGGATGAACAGATGTACCAGAAGTGC
TGCAACTTGTTTCGAGAAATTTTTCCCTAGTAGTTCATATAGGAGACCGGTTGGAATTTCTAGCATGGTGG
AGGCCATGGTGTCTAGAGCCCGATTGATGCCAGAATTGACTTCGAGTCTGGACGGATTAAGAAGGAAGA
GTTCTCTGAGATCATGAAGATCTGTTCCACCATTGAAGAACTCAGACGGCAAAAATAATGAATTTAGCTT
GTCCTTCATGAAAAAATGCCTTGTTTCTACT
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# PB1 protein

Source: ABE73096.1 (757 aa) polymerase PB2

Sequence: 25- 2298

MDVNPTLLFLKVPAQNAISTTFPYTGDPYPYSHGTGTGYTMDTVNRTHQYSEKKGWTTNTETGAPQLNPID  
GPLPEDNEPSGYAQTDCVLEAMAFLEESHPIGFENSCLTMEVVQQTRVDKLTQGRQTYDWTNLNRNPAA  
TALANTIEVFRSNGLTANESGRLIDFLKDVMEESMDKEEMEITTHFQRKRRVRDNMTKKMVTQRTIGKKKQ  
RVNKRGYLIRALTTLNMTKDAERGKLRRAIATPGMQIRGFVYFVETLARSICEKLEQSGLPVGGNEKKA  
KLANVVRKMMTNSQDTELSFTITGDNTKWNENQNPRMFLAMITYITKNQPEWFRNLSIAPIMFSNKMAR  
LGKGYMFESKRMKLRTQIPAEMLASIDLKYFNESTRKKIEKIRPLLIDGTASLSPGMMMGFMNMLSTVLG  
VSILNLGQKKYTKTTYWWDGLQSSDDFALIVNAPNHEGIQAGVDRFYRTCKLVGINMSKKKSYINKTGTF  
EFTSFFYRYGFVANFSMELPSFGVSGINESADMSIGVTVIKNNMINNDLGPATAQMALQLFIKDYYRYTYR  
CHRGDTQIQTRRSFELKKLWDQTQSRAGLLVSDGGPNLYNIRNLHIPEVCLKWELMDEDYRGRLCNPLNP  
FVSHKEIESVNNAVVMFAHGPASMEYDAVATTHSWIPKRNRSILNTSQRGILEDEQMYQKCCNLFEKFF  
PSSSYRRPVGISSMVEAMVSRARIDARIDFESGRIKKEEFSEIMKICSTIEELRRQK

# PB1-F2 protein

Source: ABE73097.1 (90 aa) polymerase PB2

Sequence: 119 - 391

MEQEQQTPWTQSTEHTNIQKRGSGRQIQKLGHPNSTQLMDHYLRIMSQVDMHKQTVSWRLWPSLKNPTQG  
SLRTHALKQWKSFNKQGWTN

# PB1 (2314 bp)

Nature: vRNA

Source: Illumina sequences from virus stocks\_RPS2022

NNNNNNAGCAGGCAAACCATTTGAATGGATGTCAATCCGACTCTACTTTTCCTAAAGGTTCC  
AGCGCAAAATGCCATAAGCACCACATTCCTTTATACTGGAGATCCTCCATACAGCCATGGAA  
CAGGAACAGGGTACACCATGGACACAGTCAACAGAACACACCAATATTCAGAAAAGGGGAAG  
TGGACGACAAATACAGAACTGGGGCACCCTCAACCAATTGATGGACCACTACCTGA  
GGATAATGAGCCAAGTGGATATGCACAAACAGACTGTGTCTGGAGGCTATGGCCTTCCTTG  
AAGAATCCCACCCAGGGATCTTTGAGAACTCATGCCTTGAAACAATGGAAGTCGTTCAACAA  
ACAAGGGTGGACAAACTAAGTCAAGGTCGCCAGACTTATGATTGGACATTAAACAGAAATCA  
ACGGGCAGCAACTGCATTAGCCAACACCATAGAAGTTTTTAGATCGAATGGTCTAACAGCTA  
ATGAATCAGGAAGGCTAATAGATTTCTCTCAAGGATGTGATGGAATCAATGGATAAAGAGGAA  
ATGGAGATAACAACACACTTTCAAAGAAAAAGGAGAGTAAGAGACAACATGACCAAGAAAAT  
GGTCACACAAAGAACAATAGGGAAGAAAAACAAGAGTGAATAAGAGAGGCTATCTAATAA  
GAGCTTTGACATTGAACACGATGACCAGATGCAGAGAGAGGTAAATTAAAAAGAAGGGCT  
ATTGCAACACCCGGGATGCAAAATTAGAGGGTTCGTGTACTTCGTTGAACTTTAGCTAGAAG  
CATTTGCGAAAAGCTTGAACAGTCTGGACTTCCGGTTGGGGGTAATGAAAAGAAGGCCAAAC  
TGGCAATGTTGTGAGAAAAATGATGACTAATTCACAAGACACAGAGCTTCTTTTACAATC  
ACTGGGGACAACACTAAGTGAATGAAAATCAAAACCCTCGAATGTTTTTGGCGATGATTAC  
ATATATCACAAAAAATCAACCTGAGTGGTTCAGAAACATCCTGAGCATCGCACCAATAATGT  
TCTCAAAACAAATGGCAAGACTAGGAAAAGGATACATGTTGAGAGTAAGAGAATGAAGCTC  
CGAACACAAATACCCGCAGAAATGCTAGCAAGCATCGACCTGAAGTATTTCAATGAATCAAC  
AAGGAAGAAAATTGAGAAAATAAGGCCTCTTCTAATAGATGGCACAGCATCATTGAGCCCTG  
GGATGATGATGGGCATGTTCAACATGCTAAGTACGGTTTTTAGGAGTCTCGATACTGAATCTT  
GGGCAAAAGAAATACACCAAGACAACATACTGGTGGGATGGGCTCCAATCCTCCGACGATTT  
TGCCCTCATAGTGAATGCACCAATCATGAGGGAATACAAGCAGGAGTGGATAGATTCTACA  
GGACCTGCAAGTTGGTGGGAATCAACATGAGCAAAAAGAAGTCCTATATAAATAAAACAGGG  
ACATTTGAATTCACAAGCTTTTTTTTATCGCTATGGATTTGTGGCTAATTTTAGCATGGAGCT  
GCCCAGTTTTTGGAGTGTCTGGAATAAATGAGTCAGCTGATATGAGCATTGGAGTAACAGTGA  
TAAAGAACAACATGATAAACAATGACCTTGGACCAGCAACAGCCCAGATGGCTCTTCAATTG  
TTCATCAAAGACTACAGATATACATATAGGTGCCATAGAGGAGACACACAAATTCAGACGAG  
AAGATCATTTCGAGCTAAAGAAGCTGTGGGATCAAACCAATCAAGGGCAGGACTATTGGTAT  
CAGATGGGGGACCAAACCTTATACAATATCCGGAATCTTCACATTCCTGAAGTCTGCTTAAAG  
TGGGAGCTAATGAATGAGGATTATCGGGGAAGACTTTGTAATCCCCTGAATCCCTTTGTCAG  
CCATAAAGAGATTGAGTCTGTAAACAATGCTGTAGTGATGCCAGCCCATGGTCCAGCCAAAA  
GTATGGAATATGATGCCGTTGCAACTACACACTCCTGGATTCCCAAGAGGAACCGCTCTATT  
CTCAACACAAGCCAAAGGGGAATTCTTGAGGATGAACAGATGTACCAGAAGTGCTGCAACTT  
GTTTCGAGAAATTTTTCCCTAGCAGTTCATATAGGAGACCGGTTGGAATTTCTAGCATGGTGG  
AGGCCATGGTGTCTAGGGCCCGGATTGATGCCAGAATTGACTTCGAGTCTGGACGGATTAAG  
AAGGAAGAGTTCTCTGAGATCATGAAGATCTGTTCCACCATTGAAGAAGTCAAGACGGCAAAA  
ATAATGAATTTAGCTTGTCTTCATGAAAAAATGCCNNNNNNNNNNNN

# PB1 (2341 bp)

Nature: cDNA\_pHW2000

Source: GATC sequences from Maxiprep\_RPS\_2023

AGCGAAAGCAGGCAAACCATTTGA**ATG**GATGTCAATCCGACTCTACTTTTCCTAAAGGTTCC  
AGCGCAAAATGCCATAAGCACCACATTCCCTTATACTGGAGATCCTCCATACAGCCATGGAA  
CAGGAACAGGGTACACCATGGACACAGTCAACAGAACACACCAATATTCAGAAAAGGGGAAG  
TGGACGACAAATACAGAACTGGGGCACCCCACTCAACCCAATTGATGGACCACTACCTGA  
GGATAATGAGCCAAGTGGATATGCACAAACAGACTGTGTCCTGGAGGCTATGGCCTTCCTTG  
AAGAATCCCACCCAGGGATCTTTGAGAACTCATGCCTTGAAACAATGGAAGTCGTTCAACAA  
ACAAGGGTGGACAAACTAACTCAAGGTCGCCAGACTTATGATTGGACATTAAACAGAAATCA  
ACGGGCAGCAACTGCATTAGCCAACACCATAGAAGTTTTTAGATCGAATGGTCTAACAGCTA  
ATGAATCAGGAAGGCTAATAGATTTCTCAAGGATGTGATGGAATCAATGGATAAAGAGGAA  
ATGGAGATAACAACACACTTTCAAAGAGAAAAGGAGAGTAAGAGACAACATGACCAAGAAAAT  
GGTCACACAAAGAACAATAGGGAAGAAAAACAAGAGTGAATAAGAGAGGCTATCTAATAA  
GAGCTTTGACATTGAACACGATGACCAAAGATGCAGAGAGAGGTAATTAAGAAAGAGGGCT  
ATTGCAACACCCGGGATGCAAATTAGAGGGGTCGTGTACTTCGTTGAACTTTAGCTAGAAG  
CATTTGCGAAAAGCTTGAACAGTCTGGACTTCCGGTTGGGGGTAATGAAAAGAAGGCCAAAC  
TGGCAATGTTGTGAGAAAAATGATGACTAATTCACAAGACACAGAGCTTCTTTTACAATC  
ACTGGGGACAACACTAAGTGGAAATGAAAATCAAACCCTCGAATGTTTTTGGCGATGATTAC  
ATATATCACAAAAAATCAACCTGAGTGGTTCAGAAACATCCTGAGCATCGCACCAATAATGT  
TCTCAAAACAAATGGCAAGACTAGGAAAAGGATACATGTTGAGAGTAAGAGAATGAAGCTC  
CGAACACAAATACCCGCAGAAATGCTAGCAAGCATCGACCTGAAGTATTTCAATGAATCAAC  
AAGGAAGAAAATTGAGAAAATAAGGCCTCTTCTAATAGATGGCACAGCATCATTGAGCCCTG  
GGATGATGATGGGCATGTTCAACATGCTAAGTACGGTTTTTAGGAGTCTCGATACTGAATCTT  
GGGCAAAAGAAATACACCAAGACAACATACTGGTGGGATGGGCTCCAATCCTCCGACGATTT  
TGCCCTCATAGTGAATGCACCAATCATGAGGGAATACAAGCAGGAGTGGATAGATTCTACA  
GGACCTGCAAGTTGGTGGGAATCAACATGAGCAAAAAGAAGTCCTATATAAATAAAACAGGG  
ACATTTGAATTCACAAGCTTTTTTTTATCGCTATGGATTTGTGGCTAATTTTAGCATGGAGCT  
GCCCAGTTTTTGAGTGTCTGGAATAAATGAGTCAGCTGATATGAGCATTGGAGTAACAGTGA  
TAAAGAACAACATGATAAACAATGACCTTGGACCAGCAACAGCCCAGATGGCTCTTCAATTG  
TTCATCAAAGACTACAGATATACATATAGGTGCCATAGAGGAGACACACAAATTCAGACGAG  
AAGATCATTTCGAGCTAAAGAAGCTGTGGGATCAAACCCAATCAAAGGCAGGACTATTGGTAT  
CAGATGGGGGACCAAACCTTATACAATATCCGGAATCTTCACATTCCTGAAGTCTGCTTAAAA  
TGGGAGCTAATGAATGAGGATTATCGGGGAAGACTTTGTAATCCCCTGAATCCCTTTGTCAG  
CCATAAAGAGATTGAGTCTGTAAACAATGCTGTAGTGATGCCAGCCCATGGTCCAGCCAAAA  
GTATGGAATATGATGCCGTTGCAACTACACACTCCTGGATTCCCAAGAGGAACCGCTCTATT  
CTCAACACAAGCCAAAGGGGAATTCTTGAGGATGAACAGATGTACCAGAAGTGCTGCAACTT  
GTTTCGAGAAATTTTTCCCTAGCAGTTCATATAGGAGACCGGTTGGAATTTCTAGCATGGTGG  
AGGCCATGGTGTCTAGGGCCCGGATTGATGCCAGAATTGACTTCGAGTCTGGACGGATTAAG  
AAGGAAGAGTTCTCTGAGATCATGAAGATCTGTTCCACCATTGAAGAACTCAGACGGCAAAA  
**ATAA**TGAATTTAGCTTGTCCCTTCATGAAAAAATGCCTTGTTTCTACT

LUSTAL O(1.2.4) multiple sequence alignment		
MO_PB1_Virus	NNNNNNAGCAGGCAAAACCATTTGAATGGATGTCAATCCGACTCTACTTTTTCCTAAAGGTT	60
MO_PB1_NCB1	AGCGAAAGCAGGCAAAACCATTTGAATGGATGTCAATCCGACTCTACTTTTTCCTAAAGGTT	60
MO_PB1_pHW2000	AGCGAAAGCAGGCAAAACCATTTGAATGGATGTCAATCCGACTCTACTTTTTCCTAAAGGTT	60
*****		
MO_PB1_Virus	CCAGCGCAAAATGCCATAAGCACCACATTTCCCTTTATACTGGAGATCCTCCATACAGCCAT	120
MO_PB1_NCB1	CCAGCGCAAAATGCCATAAGCACCACATTTCCCTTTATACTGGAGATCCTCCATACAGCCAT	120
MO_PB1_pHW2000	CCAGCGCAAAATGCCATAAGCACCACATTTCCCTTTATACTGGAGATCCTCCATACAGCCAT	120
*****		
MO_PB1_Virus	GGAACAGGAACAGGGTACACCATGGACACAGTCAACAGAACACACCAATATTTCAGAAAAG	180
MO_PB1_NCB1	GGAACAGGAACAGGGTACACCATGGACACAGTCAACAGAACACACCAATATTTCAGAAAAG	180
MO_PB1_pHW2000	GGAACAGGAACAGGGTACACCATGGACACAGTCAACAGAACACACCAATATTTCAGAAAAG	180
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MO_PB1_Virus	GGGAAGTGGACGACAAATACAGAAACTGGGGCACCCCAACTCAACCCAATTGATGGACCA	240
MO_PB1_NCB1	GGGAAGTGGACGACAAATACAGAAACTGGGGCACCCCAACTCAACCCAATTGATGGACCA	240
MO_PB1_pHW2000	GGGAAGTGGACGACAAATACAGAAACTGGGGCACCCCAACTCAACCCAATTGATGGACCA	240
*****		
MO_PB1_Virus	CTACCTGAGGATAATGAGCCAAGTGGATATGCACAAACAGACTGTGTCTTGGAGGCTATG	300
MO_PB1_NCB1	CTACCTGAGGATAATGAGCCAAGTGGATATGCACAAACAGACTGTGTCTTGGAGGCTATG	300
MO_PB1_pHW2000	CTACCTGAGGATAATGAGCCAAGTGGATATGCACAAACAGACTGTGTCTTGGAGGCTATG	300
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MO_PB1_Virus	GCCTTCCTTGAAGAATCCCACCCAGGGATCTTTGAGAACTCATGCCTTGAAACAATGGAA	360
MO_PB1_NCB1	GCCTTCCTTGAAGAATCCCACCCAGGGATCTTTGAGAACTCATGCCTTGAAACAATGGAA	360
MO_PB1_pHW2000	GCCTTCCTTGAAGAATCCCACCCAGGGATCTTTGAGAACTCATGCCTTGAAACAATGGAA	360
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MO_PB1_Virus	GTCGTTCAACAAACAAGGTTGGACAAACTAACTCAAGGTCGCCAGACTTATGATTGGACA	420
MO_PB1_NCB1	GTCGTTCAACAAACAAGGTTGGACAAACTAACTCAAGGTCGCCAGACTTATGATTGGACA	420
MO_PB1_pHW2000	GTCGTTCAACAAACAAGGTTGGACAAACTAACTCAAGGTCGCCAGACTTATGATTGGACA	420
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MO_PB1_Virus	TTAAACAGAAATCAACCGGCAGCAACTGCATTAGCCAACACCATAGAAGTTTTTAGATCG	480
MO_PB1_NCB1	TTAAACAGAAATCAACCGGCAGCAACTGCATTAGCCAACACCATAGAAGTTTTTAGATCG	480
MO_PB1_pHW2000	TTAAACAGAAATCAACCGGCAGCAACTGCATTAGCCAACACCATAGAAGTTTTTAGATCG	480
*****		
MO_PB1_Virus	AATGSGTCTAACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCTCAAGGATGTGATGGAA	540
MO_PB1_NCB1	AATGSGTCTAACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCTCAAGGATGTGATGGAA	540
MO_PB1_pHW2000	AATGSGTCTAACAGCTAATGAATCAGGAAGGCTAATAGATTTCTCTCAAGGATGTGATGGAA	540
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MO_PB1_Virus	TCAATGGATAAAGAGGAAATGGAGATAACAACACACTTTCAACAGAAAGGAGAGCTAAGA	600
MO_PB1_NCB1	TCAATGGATAAAGAGGAAATGGAGATAACAACACACTTTCAACAGAAAGGAGAGCTAAGA	600
MO_PB1_pHW2000	TCAATGGATAAAGAGGAAATGGAGATAACAACACACTTTCAACAGAAAGGAGAGCTAAGA	600
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MO_PB1_Virus	GACAACATGACCAAGAAAAATGGTCACACAAAGAACAAATAGGGAAGAAAAACAAAGAGTG	660
MO_PB1_NCB1	GACAACATGACCAAGAAAAATGGTCACACAAAGAACAAATAGGGAAGAAAAACAAAGAGTG	660
MO_PB1_pHW2000	GACAACATGACCAAGAAAAATGGTCACACAAAGAACAAATAGGGAAGAAAAACAAAGAGTG	660
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MO_PB1_Virus	AATAAGAGAGGCTATCTAATAAGAGCTTTGACATTGAACACGATGACCAAGATGCAGAG	720
MO_PB1_NCB1	AATAAGAGAGGCTATCTAATAAGAGCTTTGACATTGAACACGATGACCAAGATGCAGAG	720
MO_PB1_pHW2000	AATAAGAGAGGCTATCTAATAAGAGCTTTGACATTGAACACGATGACCAAGATGCAGAG	720
*****		
MO_PB1_Virus	AGAGGTAAAATAAAAAGAAGGGCTATTGCAACACCCGGGATGCAAAATTAGAGGGTTCGTG	780
MO_PB1_NCB1	AGAGGTAAAATAAAAAGAAGGGCTATTGCAACACCCGGGATGCAAAATTAGAGGGTTCGTG	780
MO_PB1_pHW2000	AGAGGTAAAATAAAAAGAAGGGCTATTGCAACACCCGGGATGCAAAATTAGAGGGTTCGTG	780
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MO_PB1_Virus	TACTTCGTTGAAACTTTAGCTAGAAGCATTTGCGAAAAGCTTGAACAGTCTGGACTTCCG	840
MO_PB1_NCB1	TACTTCGTTGAAACTTTAGCTAGAAGCATTTGCGAAAAGCTTGAACAGTCTGGACTTCCG	840
MO_PB1_pHW2000	TACTTCGTTGAAACTTTAGCTAGAAGCATTTGCGAAAAGCTTGAACAGTCTGGACTTCCG	840
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MO_PB1_Virus	GTTGGGGGTAATGAAAAGAAGGCCAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAAT	900
MO_PB1_NCB1	GTTGGGGGTAATGAAAAGAAGGCCAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAAT	900
MO_PB1_pHW2000	GTTGGGGGTAATGAAAAGAAGGCCAAACTGGCAAAATGTTGTGAGAAAAATGATGACTAAT	900
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MO_PB1_Virus	TCACAAGACACAGAGCTTTCTTTTCAACATCACTGGGGACAACACTAAGTGAATGAAAAT	960
MO_PB1_NCB1	TCACAAGACACAGAGCTTTCTTTTCAACATCACTGGGGACAACACTAAGTGAATGAAAAT	960
MO_PB1_pHW2000	TCACAAGACACAGAGCTTTCTTTTCAACATCACTGGGGACAACACTAAGTGAATGAAAAT	960
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MO_PB1_Virus	CAAAACCCCTCGAATGTTTTTGGCGATGATTACATATATCACAAAAAATCAACCTGAGTGG	1020
MO_PB1_NCB1	CAAAACCCCTCGAATGTTTTTGGCGATGATTACATATATCACAAAAAATCAACCTGAGTGG	1020
MO_PB1_pHW2000	CAAAACCCCTCGAATGTTTTTGGCGATGATTACATATATCACAAAAAATCAACCTGAGTGG	1020
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MO_PB1_Virus	TTCAGAAACATCCTGAGCATCGCACCAATAATGTTCTCAAACAAAATGGCAAGACTAGGA	1080
MO_PB1_NCB1	TTCAGAAACATCCTGAGCATCGCACCAATAATGTTCTCAAACAAAATGGCAAGACTAGGA	1080
MO_PB1_pHW2000	TTCAGAAACATCCTGAGCATCGCACCAATAATGTTCTCAAACAAAATGGCAAGACTAGGA	1080
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MO_PB1_Virus	AAAGGATACATGTTTCGAGAGTAAGAGAATGAAGCTCCGAACACAAATACCCGCAGAAATG	1140
MO_PB1_NCB1	AAAGGATACATGTTTCGAGAGTAAGAGAATGAAGCTCCGAACACAAATACCCGCAGAAATG	1140
MO_PB1_pHW2000	AAAGGATACATGTTTCGAGAGTAAGAGAATGAAGCTCCGAACACAAATACCCGCAGAAATG	1140
*****		
MO_PB1_Virus	CTAGCAAGCATCGACCTGAAGTATTTCAATGAATCAACAAGGAAGAAAAATTGAGAAAAATA	1200
MO_PB1_NCB1	CTAGCAAGCATCGACCTGAAGTATTTCAATGAATCAACAAGGAAGAAAAATTGAGAAAAATA	1200
MO_PB1_pHW2000	CTAGCAAGCATCGACCTGAAGTATTTCAATGAATCAACAAGGAAGAAAAATTGAGAAAAATA	1200
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MO_PB1_Virus	AGGCCTCTTCTAATAGATGGCACAGCATCATTGAGCCCTGGGATGATGATGGGCATGTTTC	1260
MO_PB1_NCB1	AGGCCTCTTCTAATAGATGGCACAGCATCATTGAGCCCTGGGATGATGATGGGCATGTTTC	1260
MO_PB1_pHW2000	AGGCCTCTTCTAATAGATGGCACAGCATCATTGAGCCCTGGGATGATGATGGGCATGTTTC	1260
*****		
MO_PB1_Virus	AACATGCTAAGTACGGTTTTTAGGAGTCTCGATACTGAATCTTGGCAAAAGAAATACACC	1320
MO_PB1_NCB1	AACATGCTAAGTACGGTTTTTAGGAGTCTCGATACTGAATCTTGGCAAAAGAAATACACC	1320
MO_PB1_pHW2000	AACATGCTAAGTACGGTTTTTAGGAGTCTCGATACTGAATCTTGGCAAAAGAAATACACC	1320
*****		
MO_PB1_Virus	AAGACAACATACCTGTTGGGATGGGCTCCAATCCTCCGACGATTTTGCCTCATAGTGAAT	1380
MO_PB1_NCB1	AAGACAACATACCTGTTGGGATGGGCTCCAATCCTCCGACGATTTTGCCTCATAGTGAAT	1380
MO_PB1_pHW2000	AAGACAACATACCTGTTGGGATGGGCTCCAATCCTCCGACGATTTTGCCTCATAGTGAAT	1380
*****		
MO_PB1_Virus	GCACCAAAATCATGAGGGAATACAAGCAGGACTGGATAGATTCTACAGGACCTGCAAGTTG	1440
MO_PB1_NCB1	GCACCAAAATCATGAGGGAATACAAGCAGGACTGGATAGATTCTACAGGACCTGCAAGTTG	1440
MO_PB1_pHW2000	GCACCAAAATCATGAGGGAATACAAGCAGGACTGGATAGATTCTACAGGACCTGCAAGTTG	1440
*****		
MO_PB1_Virus	GTGGGAATCAACATGAGCAAAAAGAAGTCCTATATAAAATAAACAGGGACATTTGAATTC	1500
MO_PB1_NCB1	GTGGGAATCAACATGAGCAAAAAGAAGTCCTATATAAAATAAACAGGGACATTTGAATTC	1500
MO_PB1_pHW2000	GTGGGAATCAACATGAGCAAAAAGAAGTCCTATATAAAATAAACAGGGACATTTGAATTC	1500
*****		
MO_PB1_Virus	ACAAGCTTTTTTTATCGCTATGGATTGTGGCTAATTTTAGCATGGAGCTGCCAGTTTTT	1560
MO_PB1_NCB1	ACAAGCTTTTTTTATCGCTATGGATTGTGGCTAATTTTAGCATGGAGCTGCCAGTTTTT	1560
MO_PB1_pHW2000	ACAAGCTTTTTTTATCGCTATGGATTGTGGCTAATTTTAGCATGGAGCTGCCAGTTTTT	1560
*****		
MO_PB1_Virus	GGAGTGTCTGGAATAAATGAGTCAGCTGATATGAGCATTGGAGTAACAGTGATAAAGAAC	1620
MO_PB1_NCB1	GGAGTGTCTGGAATAAATGAGTCAGCTGATATGAGCATTGGAGTAACAGTGATAAAGAAC	1620
MO_PB1_pHW2000	GGAGTGTCTGGAATAAATGAGTCAGCTGATATGAGCATTGGAGTAACAGTGATAAAGAAC	1620
*****		
MO_PB1_Virus	AACATGATAAACAATGACCTTGGACCAGCAACAGCCAGATGGCTCTTCAATTGTTTCATC	1680
MO_PB1_NCB1	AACATGATAAACAATGACCTTGGACCAGCAACAGCCAGATGGCTCTTCAATTGTTTCATC	1680
MO_PB1_pHW2000	AACATGATAAACAATGACCTTGGACCAGCAACAGCCAGATGGCTCTTCAATTGTTTCATC	1680
*****		
MO_PB1_Virus	AAAGACTACAGATATACATATAGTGCATAGAGGAGACACACAAATTCAGACGAGAAGA	1740
MO_PB1_NCB1	AAAGACTACAGATATACATATAGTGCATAGAGGAGACACACAAATTCAGACGAGAAGA	1740
MO_PB1_pHW2000	AAAGACTACAGATATACATATAGTGCATAGAGGAGACACACAAATTCAGACGAGAAGA	1740
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MO_PB1_Virus	TCATTTCGAGCTAAAGAAGCTGTGGGATCAAACCCAATCAAGGGCAGGACTATTGGTATCA	1800
MO_PB1_NCB1	TCATTTCGAGCTAAAGAAGCTGTGGGATCAAACCCAATCAAGGGCAGGACTATTGGTATCA	1800
MO_PB1_pHW2000	TCATTTCGAGCTAAAGAAGCTGTGGGATCAAACCCAATCAAGGGCAGGACTATTGGTATCA	1800
*****		
MO_PB1_Virus	GATGGGGGACCAAACTTATACAAATATCCGGAATCTTCACATTCTGSAAGTCTGCTTAAAG	1860
MO_PB1_NCB1	GATGGGGGACCAAACTTATACAAATATCCGGAATCTTCACATTCTGSAAGTCTGCTTAAAG	1860
MO_PB1_pHW2000	GATGGGGGACCAAACTTATACAAATATCCGGAATCTTCACATTCTGSAAGTCTGCTTAAAG	1860
*****		
MO_PB1_Virus	TGGGAGCTAATGAATGAGGATTATCGGGGAAGACTTTGTAATCCCCTGAATCCCTTTGTC	1920
MO_PB1_NCB1	TGGGAGCTAATGAATGAGGATTATCGGGGAAGACTTTGTAATCCCCTGAATCCCTTTGTC	1920
MO_PB1_pHW2000	TGGGAGCTAATGAATGAGGATTATCGGGGAAGACTTTGTAATCCCCTGAATCCCTTTGTC	1920
*****		
MO_PB1_Virus	AGCCATAAAGAATTGAGTCTGTAAACAATGCTGTAGTGATGCCAGCCCATGGTCCAGCC	1980
MO_PB1_NCB1	AGCCATAAAGAATTGAGTCTGTAAACAATGCTGTAGTGATGCCAGCCCATGGTCCAGCC	1980
MO_PB1_pHW2000	AGCCATAAAGAATTGAGTCTGTAAACAATGCTGTAGTGATGCCAGCCCATGGTCCAGCC	1980
*****		
MO_PB1_Virus	AAAAGTATGGAATATGATGCCGTTGCAACTACACACTCTGGATTCCCAAGAGGAACCGC	2040
MO_PB1_NCB1	AAAAGTATGGAATATGATGCCGTTGCAACTACACACTCTGGATTCCCAAGAGGAACCGC	2040
MO_PB1_pHW2000	AAAAGTATGGAATATGATGCCGTTGCAACTACACACTCTGGATTCCCAAGAGGAACCGC	2040
*****		
MO_PB1_Virus	TCTATTCTCTAACACAAGCCAAGGGGAATTCTTGAGGATGAACAGATGTACCAGAAGTGC	2100
MO_PB1_NCB1	TCTATTCTCTAACACAAGCCAAGGGGAATTCTTGAGGATGAACAGATGTACCAGAAGTGC	2100
MO_PB1_pHW2000	TCTATTCTCTAACACAAGCCAAGGGGAATTCTTGAGGATGAACAGATGTACCAGAAGTGC	2100
*****		
MO_PB1_Virus	TGCAACTTGTTCGAGAAATTTTCCCTAGCAGTTTCATATAGGAGACCGGTTGGAATTTCT	2160
MO_PB1_NCB1	TGCAACTTGTTCGAGAAATTTTCCCTAGTAGTTTCATATAGGAGACCGGTTGGAATTTCT	2160
MO_PB1_pHW2000	TGCAACTTGTTCGAGAAATTTTCCCTAGCAGTTTCATATAGGAGACCGGTTGGAATTTCT	2160
*****		
MO_PB1_Virus	AGCATGTGTGGAGGCCATGGTGTCTAGGGCCCCGGATTGATGCCAGAATTGACTTCGAGTCT	2220
MO_PB1_NCB1	AGCATGTGTGGAGGCCATGGTGTCTAGGGCCCCGGATTGATGCCAGAATTGACTTCGAGTCT	2220
MO_PB1_pHW2000	AGCATGTGTGGAGGCCATGGTGTCTAGGGCCCCGGATTGATGCCAGAATTGACTTCGAGTCT	2220
*****		
MO_PB1_Virus	GGACGGATTAAGAAGGAAGAGTTCTCTGAGATCATGAAGATCTGTTCACCACTTGAAGAA	2280
MO_PB1_NCB1	GGACGGATTAAGAAGGAAGAGTTCTCTGAGATCATGAAGATCTGTTCACCACTTGAAGAA	2280
MO_PB1_pHW2000	GGACGGATTAAGAAGGAAGAGTTCTCTGAGATCATGAAGATCTGTTCACCACTTGAAGAA	2280
*****		
MO_PB1_Virus	CTCAGACGCGCAAAAAATGAATTTAGCTTGTCTCTTCATGAAAAATGCCNNNNNNNNNN	2340
MO_PB1_NCB1	CTCAGACGCGCAAAAAATGAATTTAGCTTGTCTCTTCATGAAAAATGCCCTTGTCTCTAC	2340
MO_PB1_pHW2000	CTCAGACGCGCAAAAAATGAATTTAGCTTGTCTCTTCATGAAAAATGCCCTGTGTCTAC	2340
*****		
MO_PB1_Virus	N 2341	
MO_PB1_NCB1	T 2341	
MO_PB1_pHW2000	T 2341	

PB1_NCB1	-----MDVNPTLLFLKVPQAQAISTTFPYTGDPPTYSHGTGTGYTMDTVNRTHQYSEK	52
PB1_pHW2000	SESQRQTI*MDVNPTLLFLKVPQAQAISTTFPYTGDPPTYSHGTGTGYTMDTVNRTHQYSEK	59
	*****	
PB1_NCB1	GKWTNTNTETGAPQLNPIDGPLPEDNEPSGYAQTDVCLEAMAFLEESHPGIFENSCLETME	112
PB1_pHW2000	GKWTNTNTETGAPQLNPIDGPLPEDNEPSGYAQTDVCLEAMAFLEESHPGIFENSCLETME	119
	*****	
PB1_NCB1	VVQQQTRVDKLTQGRQTYDWTNLNRNQPAATALANTIEVFRSNGLTANESGRLIDFLKDVME	172
PB1_pHW2000	VVQQQTRVDKLTQGRQTYDWTNLNRNQPAATALANTIEVFRSNGLTANESGRLIDFLKDVME	179
	*****	
PB1_NCB1	SMDKEEMEITTHFQRKRRVRDNMTKKMVTQRTIGKKKQRVNKRGYLIRALTLNMTMKDAE	232
PB1_pHW2000	SMDKEEMEITTHFQRKRRVRDNMTKKMVTQRTIGKKKQRVNKRGYLIRALTLNMTMKDAE	239
	*****	
PB1_NCB1	RGKLKRRAIATPGMQIRGFVYFVETLARSICEKLEQSGLPVGGNEKKAKLANVVRKMMTN	292
PB1_pHW2000	RGKLKRRAIATPGMQIRGFVYFVETLARSICEKLEQSGLPVGGNEKKAKLANVVRKMMTN	299
	*****	
PB1_NCB1	SQDTELSFTITGDNTKWNENQNPRMFLAMITYITKNQPEWFRNILSIAPIMFSNKMARLG	352
PB1_pHW2000	SQDTELSFTITGDNTKWNENQNPRMFLAMITYITKNQPEWFRNILSIAPIMFSNKMARLG	359
	*****	
PB1_NCB1	KGYMFESKRMKLRTQIPAEMLASIDLKYFNESTRKKIEKIRPLLIDGTASLSPGMMMGMF	412
PB1_pHW2000	KGYMFESKRMKLRTQIPAEMLASIDLKYFNESTRKKIEKIRPLLIDGTASLSPGMMMGMF	419
	*****	
PB1_NCB1	NMLSTVLGVSILNLGQKKYTKTTYWWDGLQSSDDFALIVNAPNHEGIQAGVDRFYRTCKL	472
PB1_pHW2000	NMLSTVLGVSILNLGQKKYTKTTYWWDGLQSSDDFALIVNAPNHEGIQAGVDRFYRTCKL	479
	*****	
PB1_NCB1	VGINMSKKKSYINKTGTFEFTSFFYRYGVFVANFSMELPSFGVSGINESADMSIGVTVIKN	532
PB1_pHW2000	VGINMSKKKSYINKTGTFEFTSFFYRYGVFVANFSMELPSFGVSGINESADMSIGVTVIKN	539
	*****	
PB1_NCB1	NMINNDLGPATAMALQLFIKDYRYTYRCHRGDTQIQTRRSFELKKLWDQTQSRAGLLVS	592
PB1_pHW2000	NMINNDLGPATAMALQLFIKDYRYTYRCHRGDTQIQTRRSFELKKLWDQTQSRAGLLVS	599
	*****	
PB1_NCB1	DGGPNLYNIRNLHIPEVCLKWELMEDYRGRLCNPLNPFVSHKEIESVNNAVVMPAHGPA	652
PB1_pHW2000	DGGPNLYNIRNLHIPEVCLKWELMEDYRGRLCNPLNPFVSHKEIESVNNAVVMPAHGPA	659
	*****	
PB1_NCB1	KSMEYDAVATTHSWIPKRNRSILNTSQRGILEDEQMYQKCCNLFEKFFPSSSYRRPVGIS	712
PB1_pHW2000	KSMEYDAVATTHSWIPKRNRSILNTSQRGILEDEQMYQKCCNLFEKFFPSSSYRRPVGIS	719
	*****	
PB1_NCB1	SMVEAMVSRARIDARIDFESGRIKKEEFSEIMKICSTIEELRRQK-----	757
PB1_pHW2000	SMVEAMVSRARIDARIDFESGRIKKEEFSEIMKICSTIEELRRQK**I*LVLHEKMPCFY	776
	*****	