Animal and Plant Health Inspection Service

Veterinary Services

Center for Veterinary Biologics

1920 Dayton Avenue
PO Box 844
Ames, IA 50010

(515) 337-6100

CENTER FOR VETERINARY BIOLOGICS NOTICE NO. 16-02

TO: Biologics Licensees, Permittees, and Applicants
Directors, Center for Veterinary Biologics
Veterinary Services Leadership Team

FROM: Byron Rippke
Director

BYRON RIPPKE
Digitally signed by BYRON RIPPKE
DN: c=US, o=U.S. Government, ou=Department of Agriculture, cn=BYRON RIPPKE, 0.9.2342.19200300.100.1.1=12001000004093
Date: 2016.02.02 16:27:53 -06'00'

SUBJECT: Availability of Avian Influenza Isolate and Sequence Information

I. PURPOSE

The purpose of this notice is to furnish interested parties with the genetic sequences from the H7N8 highly pathogenic avian influenza (HPAI) virus and low pathogenic (LPAI) viruses isolated from turkeys in Indiana on January 15, 2016. The notice is also to inform interested parties that the HPAI isolate will be available for purchase from the National Veterinary Services Laboratories (NVSL) by mid-February 2016.

II. BACKGROUND

The National Veterinary Services Laboratories confirmed H7N8 HPAI in a commercial turkey flock experiencing significant mortality in Dubois County, Indiana, on January 15, 2016. Subsequent H7N8 detections were found to be H7N8 LPAI. Based upon the full genome sequence, the index HPAI case and subsequent LPAI viruses detected in turkeys are all of North American wild bird lineage with high similarity across all eight gene segments to other wild bird viruses collected from Midwest and western states between 2011 and 2013.

North American H7N8 LPAI virus has been detected previously in wild bird surveillance in the United States, but this is the first instance of H7N8 HPAI virus detection in any species.

Further information on the H7N8 findings is available in the Newsroom 2016 section at https://www.aphis.usda.gov/wps/portal/aphis/newsroom/news.

III. ACTION

Veterinary Services is making the HPAI genomic sequence, as well as the HPAI virus courtesy of the Indiana State Board of Animal Health, available to facilities to encourage disease research and development to benefit the U.S. poultry industry. The complete genomic sequence for the HPAI can be found in the attached file. Sequence information has also been submitted to GenBank and will be available for both HPAI and LPAI viruses soon under accessions as follows: H7N8 HPAI KU558903-8910; H7N8 LPAI KU585905-12 and KU585913-20.

Available isolate:

- A/turkey/Indiana/16-001403-1/2016 – courtesy of the Indiana State Board of Animal Health

Biologics firms that wish to obtain samples of these isolates for research purposes should:

A. Contact the NVSL Diagnostic Virology Laboratory at (515) 337-7551 for guidance regarding the appropriate forms and payments to submit.

B. Submit the completed forms and the payment associated with the order by one of the following methods:

1. Mail: NVSL User Fees, Box 844, Ames, Iowa 50010
2. Email: NVSL_concerns@aphis.usda.gov.

The NVSL will inform customers when the virus is ready to ship.

C. **Note that the HPAI isolate must be transferred in compliance with the Select Agent Regulations. No Material Transfer Agreement will be required. This isolate is a not pre-tested Master Seed; it is being made available for research and development. The availability of this isolate does not infer any impending change in vaccination policy.**

IV. IMPLEMENTATION/ APPLICABILITY

The HPAI sequence is posted in this announcement, and the referenced reagent will be available from the NVSL no later than February 15, 2016.

>Seq1 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 1, polymerase PB2 (PB2) gene, complete cds.

ATGGAGAGAATAAAAGAATTAAGAGATCTAATGTCACAGTCTCGCACTCGCGAGATACTAACCAAAACCACTGTT
GACCACATGGCCATAATCAAAAAGTACACATCGGGAAGGCAAGAGAAGAACCCCGCACTCAGGATGAAATGGAT
GATGGCAATGAAATATCCAATCACAGCAGATAAGCGAATAATGGAAATGATCCCTGAAAGGAATGAACAAGGGC
AAACCCTCTGGAGCAAAACAAACGATGCCGGATCAGACCGAGTGATGGTATCACCTCTGGCTGTGACATGGTGGA
ATAGGAATGGACCAACAACAAGTACAATTCACTACCCAAAGGTATATAAAACTTATTTCGAAAAAGTTGAAAGATT
GAAACACGGGACCTTTGGCCCTGTACACTTCAGAAACCAAGTTAAGATAAGACGGAGAGTCGACATAAACCCGGG
CCATGCTGACCTCAGTGCCAAAGAGGCGCAGGATGTAATCATGGAAGTTGTCTTTCCAAATGAAGTGGGAGCGAG
AATACTGACATCGGAGTCACAACTGACAATAACAAAGGAGAAGAAGGAAGAACTCCAGGACTGCAAAATCGCCC
CTCTGATGGTTGCATACATGCTAGAAAGAGAGTTGGTCCGCAAGACGAGGTTTCTCCCAGTGGCTGGTGGAACAA
GCAGTGTCTACATTGAGGTGCTGCATCTGACCCAGGGGACATGCTGGGAGCAGATGTATACTCCAGGAGGAGAA
GTGAGAAACGATGATGTAGACCAGAGCTTGATTATTGCTGCCAGGAACATAGTAAGAAGAGCAACAGTATCAGCA
GACCCACTAGCGTCTCTATTGGAGATGTGCCACAGCACACAAATTGGGGGAATAAGGATGGTAGACATTCTTCGG
CAAAATCCAACAGAGGAACAAGCCGTGGACATATGCAAGGCAGCAATGGGCCTGAGGATTAGCTCATCTTTCAGC
TTCGGTGGATTCACTTTTAAAAGAACAAGTGGATCGTCAGTCAAAAGAGAAGAAGAAGTGCTTACGGGCAACCTT
CAGACATTGAAAATAAGAGTACATGAGGGATATGAAGAGTTCACAATGGTTGGAAGAAGAGCAACGGCCATTCT
CAGGAAGGCAACCAGAAGGCTGGTCCAGCTAATAGTAAGTGGAAGAGACGAGCAGTCAATTGCTGAAGCAATAA
TTGTGGCCATGGTATTCTCACAAGAGGACTGCATGATTAAGGCAGTTCGAGGTGACCTGAATTTTGTCAATAGGGC
GAACCAGCGGCTGAACCCAATGCATCAACTCTTGCGACACTTCCAAAAGGATGCAAAAGTGCTTTTCCAAAATTGG
GGAATTGAACCCATTGACAATGTTATGGGAATGATCGGGATATTGCCCGACATGACCCCAAGTACTGAAATGTCG
CTGAGGGGAATAAGAGTCAGTAAGATGGGAGTAGATGAATACTCCAGTACAGAGCGGGTAGTAGTAAGCATCGA
CCGATTTTTAAGAGTTCGAGACCAACGGGGGAACGTACTATTGTCACCCGAGGAAGTCAGCGAGACACAAGGAAC
GGAGAAATTGACAATCACTTATTCGTCATCAATGATGTGGGAGATCAATGGTCCTGAGTCGGTGTTGGTCAATACC
TATCAGTGGATAATCAGAAACTGGGAAACTGTAAAAATTCAATGGTCACAGGATCCCACAATGTTGTATAATAAGA
TGGAGTTCGAGCCATTTCAGTCTCTAGTCCCTAAGGCAGCCAGAGGTCAATACAGTGGGTTCGTGAGGACACTATT
CCAGCAAATGCGAGATGTGCTTGGAACATTTGACACTGTTCAGATAATAAAACTCCTCCCCTTTGCTGCTGCCCCAC
CGGAGCAAAGTAGGATGCAGTTCTCCTCCCTGACTGTGAATGTGAGAGGATCAGGAATGAGAATACTGGTAAGA
GGCAATTCCCCGGTGTTCAATTACAACAAGGCCACCAAGAGGCTCACAGTTCTCGGGAAAGATGCAGGTGCATTG
ACCGAAGATCCAGATGAAGGCACAGCTGGAGTGGAGTCTGCTGTTTTAAGAGGATTCCTCATTTTGGGCAAAGAA
GACAAGAGATATGGCCCAGCACTGAGCATCAATGAGCTGAGCAATCTTGCAAAGGGAGAGAAGGCTAATGTGCT
AATTGGGCAAGGAGACGTAGTGTTGGTGATGAAACGGAAACGGAACTCTAGCATACTTACTGACAGCCAGACAG
CGACCAAAAGAATTCGGATGGCCATCAATTAGTGTCGAA

>Seq2 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 2, polymerase PB1 (PB1) gene, complete cds.

ATGGATGTCAATCCGACTTTACTTTTCTTGAAAGTTCCAGCGCAAAATGCCATAAGCACCACATTCCCGTATACTGG
AGATCCTCCATACAGCCATGGAACAGGAACAGGATATACCATGGACACGGTTAACAGAACACATCAATATTCAGA
AAAGGGGAAATGGACAACAAACTCAGAGACTGGAGCACCTCAGCTCAATCCAATTGATGGACCATTGCCTGAGGA
CAATGAACCAAGTGGATATGCACAAACAGACTGTGTCCTTGAAGCAATGGCTTTTCTTGAAGAGTCCCACCCAGGA
ATCTTTGAAAACTCGTGTCTTGAAACGATGGAAGTTGTTCAACAAACAAGAGTGGACAAATTGACCCAAGGTCGCC
AGACCTATGATTGGACATTAAACAGGAATCAGCCGGCTGCAACTGCATTAGCCAATACTATAGAGGTCTTCAGATC

GAACGGTCTTACAGCTAATGAATCAGGAAGACTAATAGATTTTCTCAAAGATGTGATGGAATCAATGGATAAAGA
GGAAATGGAAATAACAACGCATTTCCAAAGGAAAAGAAGAGTGAGAGACAACATGACCAAGAAAATGGTCACAC
AAAGGACAATAGGAAAGAAGAAGCAGAGGCTAAACAAAAAGAGCTATCTAATAAGAGCATTAACACTGAACACA
ATGACAAAAGACGCCGAAAGAGGCAAATTGAAGAGAAGAGCAATTGCAACACCCGGAATGCAAATCAGAGGGTT
TGTGTACTTTGTTGAAACATTAGCAAGGAGCATTTGTGAAAAGCTCGAACAATCTGGACTCCCAGTTGGAGGCAAT
GAAAAGAAGGCTAAACTGGCAAATGTTGTGAGAAAAATGATGACTAATTCGCAAGACACAGAGCTCTCTTTCACA
ATCACTGGAGACAACACCAAATGGAATGAAAACCAGAACCCTAGGATGTTTCTGGCAATGATAACGTATATAACA
AGAAACCAACCTGAATGGTTCAGGAATGTCTTGAGTATTGCACCTATAATGTTCTCAAATAAAATGGCAAGACTAG
GGAAAGGATACATGTTCGAAAGTAAGAGCATGAAGCTTCGAACACAAATACCGGCAGAAATGTTAGCAAGCATT
GATCTGAAGTATTTCAATGAGTCAACACGGAAGAAAATAGAAAAGATAAGACCTCTTCTAATAGATGGTACAGCC
TCATTGAGCCCTGGAATGATGATGGGCATGTTCAACATGTTGAGTACAGTTCTGGGAGTTTCGATTCTAAACCTAG
GGCAAAAGAGGTACACCAAAACAACATACTGGTGGGACGGACTCCAATCCTCTGATGACTTTGCCCTCATAGTGA
ATGCTCCGAATCATGAGGGAATACAAGCAGGTGTAGACAGATTCTACAGAACCTGCAAGCTGGTCGGAATCAACA
TGAGCAAAAAGAAGTCCTACATAAACAGAACAGGGACATTTGAATTCACAAGTTTTTTCTACCGCTATGGATTCGT
AGCCAACTTCAGCATGGAGTTGCCCAGCTTTGGAGTGTCCGGGATCAATGAATCTGCAGACATGAGCATTGGAGT
AACAGTGATAAAAAACAACATGATCAACAATGATCTTGGACCAGCAACAGCCCAAATGGCTCTTCAGCTATTCATC
AAGGATTACAGATACACGTATCGGTGTCACAGAGGAGACACACAAATTCAGACAAGGAGGTCATTCGAGCTGAA
GAAGCTATGGGAACAAACCCGTTCAAAGGCAGGACTACTGGTCTCCGATGGAGGGCCAAATCTATACAATATCCG
GAATCTCCACATTCCGGAAGTTTGCCTGAAATGGGAGCTAATGGATGAAGACTATCAGGGAAGGCTTTGTAACCC
CCTGAATCCGTTTGTCAGCCACAAAGAGATAGAGTCTGTAAACAATGCTGTAGTGATGCCAGCTCATGGTCCAGCC
AAGAGCATGGAATATGATGCTGTTGCCACCACGCATTCCTGGATACCTAAGAGGAACCGCTCCATTCTCAATACAA
GCCAAAGGGGAATCCTTGAAGACGAACAGATGTATCAAAAGTGCTGCAATTTATTCGAGAAATTCTTCCCTAGCAG
TTCATACAGGAGGCCGGTTGGAATTTCCAGCATGGTGGAGGCCATGGTTTCTAGGGCCCGAATTGATGCGCGAAT
TGACTTCGAATCTGGACGGATCAAGAAGGAGGAGTTTGCTGAGATCATGAAGATCTGTTCCACCATTGAAGAGCT
CAGACGGCAGAAATAGTGAATTTGGCTTGTCC

>Seq3 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 3, polymerase PA (PA) gene, complete cds.

ATGGAAGACTTTGTGCGACAATGCTTCAATCCAATGATCGTCGAGCTTGCGGAAAAGGCAATGAAAGAATATGGG
GAAGATCCGAAAATCGAAACTAACAAGTTCGCTGCAATATGCACTCATTTGGAAGTCTGTTTCATGTATTCGGATTT
CCATTTCATTGATGAACGGGGCGAATCAATAATTGTGGAATCTGGTGATCCAAATGCATTACTGAAGCATCGATTT
GAGATAATTGAAGGAAGAGACAGAACAATGGCCTGGACAGTGGTGAATAGCATCTGCAACACCACGGGGGTCGA
GAAGCCTAAGTTCCTTCCGGATCTGTATGATTACAAGGAGAACCGATTCATTGAAATTGGGGTGACACGGAGAGA
GGTCCATATATATTACCTAGAGAAAGCCAACAAGATAAAATCCGAGAAGACACACATTCACATCTTCTCATTCACT
GGAGAAGAGATGGCCACCAAAGCAGACTACACCCTTGACGAAGAAAGCAGAGCAAGGATTAAAACCAGACTATT
CACTATAAGACAAGAGATGGCCAGCAGAGGTCTATGGGATTCCTTTCGTCAGTCCGAAAGAGGCGAAGAGACAAT
TGAAGAAAGATTTGAAATCACAGGAACCATGCGCAGGCTTGCCGACCAAAGTCTCCCACCGAACTTCTCCAGCCTT
GAAAACTTTAGAGCCTATGTGGATGGATTCGAACCGAACGGCTGCATTGAGGGCAAGCTTTCTCAAATGTCCAAA
GAAGTGAACGCCAGAATTGAGCCATTTTTGAAAACAACACCACGCCCTCTCAAATTGCCTGATGGGCCCCCTTGCT
CTCAGCGGTCAAAATTCTTGCTGATGGATGCCTTGAAACTAAGCATTGAAGACCCAAGTCATGAGGGAGAGGGGA
TACCGCTGTACGATGCAATTAAATGCATGAAGACATTTTTCGGCTGGAAAGAGCCCAATATAATCAAACCACATGA
AAAGGGCATAAACCCTAACTATCTCCTGGCTTGGAAGCAAGTGCTAGCAGAACTCCAGGGCCTTGAAAATGAAGA
GAAAATTCCAAAGACGAAGAACATGAAGAAAACAAGTCAATTAAAGTGGGCACTTGGCGAGAATATGGCACCAG

AAAAAGTGGACTTTGAGGATTGCAAGGATGTTGGCGATCTAAAACAGTATGATAGCGATGAGCCAGAGCCTAGAT
CGCTAGCAAGCTGGATCCAGAGTGAATTCAACAAGGCATGTGAATTGACCGACTCAAGCTGGATAGAACTGGATG
AAATAGGGGAAGATGTTGCTCCGATTGAACACATTGCAAGTATGAGGAGGAATTATTTCACAGCAGAAGTGTCCC
ATTGCAGGGCCACTGAATACATAATGAAAGGAGTCTACATAAATACAGCTCTGCTCAATGCATCTTGCGCGGCCAT
GGATGACTTCCAGCTGATTCCAATGATAAGCAAATGTAGGACCAAAGAAGGAAGACGGAAAACAAACCTGTATG
GGTTCATCATAAAGGGAAGGTCTCATTTGAGGAATGATACCGATGTGGTAAATTTTGTAAGTATGGAGTTTTCTCT
CACCGACCCAAGGCTGGAACCACACAAATGGGAAAAGTACTGCGTTCTTGAGGTGGGAGATATGCTCCTGAGGAC
TGCAATAGGCCAAGTATCAAGACCCATGTTCCTGTATGTTAGGACCAACGGGACCTCCAAAATCAAGATGAAATG
GGGTATGGAGATGAGGCGTTGCCTTCTTCAGTCTCTTCAACAGATTGAAAGCATGATTGAGGCCGAGTCCTCAGTC
AAAGAAAAAGACATGACCAAAGAATTTTTTGAGAACAAGTCGGAAACGTGGCCAATTGGAGAGTCCCCCAGAGG
GGTAGAGGAAGGATCCATTGGGAAGGTATGCAGAACCCTGCTAGCAAAATCTGTGTTCAACAGTCTATATGCATC
CCCACAACTTGAGGGATTTTCAGCAGAATCGAgGAAACTGCTTCTCATTGTTCAGGCACTTAGGGACAACCTGGAA
CCTGGAACCTTCGATCTTGGAGGGCTATACGAAGCAATTGAGGAGTGCCTGATTAATGATCCCTGGGTTTTGCTTA
ATGCATCTTGGTTCAACTCCTTCCTCACACATGCACTGAAATAGTTGTGGCAATGCTACTATTTGCTATCCATAC

>Seq4 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 4, hemagglutinin (HA) gene, complete cds.

TACAAAATGAACACTCAAATTTTGGCACTCATTGCTTGTATGCTGATCGGAGCTAAAGGAGACAAAATATGTCTTG
GGCACCATGCTGTGGCAAATGGAACAAAAGTGAACACACTAACAGAGAGAGGAATCGAAGTGGTAAATGCCACA
GAAACGGTGGAGACTGCAAATATTAAGAAAATATGCACTCAGGGGAAAAGACCAACAGATCTGGGACAATGCGG
ACTTCTAGGAACCCTAATAGGACCTCCCCAATGCGATCAATTCCTGGAGTTTGACGCTGATTTAATAATTGAACGG
AGAGAAGGAACGGATGTGTGTTATCCTGGGAAGTTCACAAATAAAGAATCACTGAGGCAGATCCTCCGAGGGTC
AGGAGGAATTGATAAGGAATCAATGGGTTTCACTTATAGTGGAATAAGAACCAATGGGGCAACGAGTGCTTGCA
GAAGATCAGGTTCTTCCTTCTATGCGGAGATGAAGTGGTTATTGTCGAATTCAGACAATGCGGCTTTTCCCCAAAT
GACTAAGTCGTACAGAAATCCCAGGAGCAAACCAGCTCTAATAATTTGGGGAGTGCATCACTCTGGATCGGTTACT
GAACAGACCAAACTCTATGGGAGTGGAAACAAGTTGATAACAGTAGGAAGCTCGAAATACCAGCAGTCATTCACC
CCAAGCCCGGGGGCACGACCACAGGTGAATGGGCAATCAGGAAGGATTGATTTTCATTGGCTACTCCTTGACCCC
AACGACACAGTGACTTTCACTTTCAATGGGGCATTCATAGCTCCTGACAGAGCAAGTTTCCTTAGAGGGGAGTCAC
TAGGAGTTCAAAGTGACGTTCCTTTGGATTCTAGTTGCAAGGGGGATTGCTTCCACAATGGAGGTACGATAGTGA
GCTCACTGCCATTCCAGAACATCAACCCTAGAACAGTGGGAAAATGCCCTCGATATGTCAAACAGACAAGCCTCCT
CTTGGCTACAGGGATGAGGAACGTCCCAGAGAACCCCAAAAAAAGAAAGACCAGAGGTCTTTTTGGAGCGATTG
CTGGATTCATAGAGAATGGGTGGGAAGGCCTCATTGATGGATGGTACGGTTTCAGGCATCAAAATGCACAAGGA
GAAGGTACTGCAGCTGATTACAAAAGCACTCAATCTGCAATAGATCAGATCACAGGCAAATTGAATCGTCTAATTG
ACAAAACAAATCAGCAGTTTGAACTGATAGACAACGAATTCAGTGAAATAGAACAACAGATTGGGAATGTCATTA
ATTGGACACGAGATTCAATGACTGAAGTATGGTCGTATAATGCTGAACTGCTGGTAGCTATGGAAAATCAGCACA
CAATAGATCTTGCAGACTCAGAAATGAACAAACTTTACGAGCGTGTAAGGAAACAACTGAGGGAGAATGCTGAA
GAGGATGGGACTGGATGCTTTGAGATATTCCATAAGTGTGATGATCAATGCATGGAGAGCATAAGGAACAACACC
TACGACCATACCCAATACAGAGCAGAGTCATTGCAGAATAGAATACAGATAGACCCAGTGAAACTGAGTAGTGGA
TACAAAGACATAATCTTATGGTTTAGCTTCGGGGCATCATGTTTTCTTCTTCTAGCCATTGCAATGGGATTGGTCTT
CATTTGCATAAAGAATGGAAACATGCGGTGCACTATTTGTATATAGTTTGAGA

>Seq5 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 5, nucleoprotein (NP) gene, complete cds.

TCACTCACTGAGTGACATCCACATCATGGCGTCTCAAGGCACCAAACGATCTTACGAACAAATGGAAACTGGTGG
GGAACGCCAGAATGCCACTGAAATCAGAGCATCTGTTGGAAGAATGGTTGGCGGAATCGGGAGATTCTACATACA
GATGTGCACTGAGCTCAAACTCAGTGACTACGAAGGGAGACTGATCCAAAACAGCATTACCATAGAGAGGATGGT
TCTCTCAGCATTTGATGAGAGGAGAAACAAGTATCTGGAGGAGCATCCCAGTGCTGGGAAAGATCCCAAGAAGAC
TGGAGGCCCAATCTACAGAAGGAGAGATGGCAAATGGATGAGAGAGTTGATCCTATATGACAAAGAAGAGATCA
GAAGAATTTGGCGTCAAGCTAATAATGGGGAGGACGCAACTGCTGGTCTCACCCATATGATGATTTGGCATTCTA
ATCTGAATGATGCCACATACCAGAGAACAAGGGCACTTGTGCGTACTGGAATGGACCCCAGGATGTGCTCTCTGA
TGCAAGGCTCAACCCTCCCAAGGAGGTCTGGGGCTGCAGGAGCGGCAGTGAAAGGGGTTGGGACAATGGTGAT
GGAATTGATCCGGATGATCAAGCGAGGGATCAATGATCGGAATTTCTGGAGAGGCGAAAATGGACGGAGAACTA
GAATTGCCTACGAGAGAATGTGCAACATCCTCAAGGGAAAATTCCAAACAGCAGCACAACGAGCAATGATGGACC
AAGTGAGGGAAAGCCGGAATCCTGGGAACGCTGAAATTGAAGATCTCATCTTTCTCGCACGGTCTGCTCTCATTCT
GAGGGGATCAGTGGCTCATAAGTCCTGCCTGCCTGCTTGTGTGTATGGACTTGCTGTAGTCAGTGGATACGACTTT
GAGAGAGAGGGGTACTCTCTAGTCGGAATTGATCCTTTCCGTCTGCTCCAAAACAGCCAAGTCTTCAGTCTCATCA
GACCAAACGAAAATCCAGCGCACAAAAGTCAGCTGGTATGGATGGCATGCCACTCTGCAGCATTTGAAGATCTGA
GAGTGTCAAGCTTCATCAGAGGAACAAGAGTAGTCCCAAGAGGACAACTGTCCACCAGAGGAGTTCAGATTGCTT
CAAATGAGAACATGGAGACAATGGACTCCAATACTCTTGAATTGAGGAGCAGATACTGGGCTATAAGAACAAGAA
GCGGAGGGAACACCAACCAGCAGAGGGCATCTGCAGGACAAATCAGCGTACAGCCCACATTCTCTGTGCAGAGA
AACCTCCCATTCGAGAGAGCAACCATCATGGCAGCATTTACGGGAAACACTGAGGGCAGAACTTCAGACATGAGA
ACTGAGATCATAAGGATGATGGAAAATGCCAGACCTGAAGATGTGTCTTTCCAGGGGCGGGGAGTCTTCGAGCTC
TCGGACGAAAAGGCAACGAACCCGATCGTGCCTTCCTTTGACATGAGTAATGAAGGATCTTATTTCTTCGGAGACA
ATGCAGAGGAGTATGACAATTAAAG

>Seq6 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 6, neuraminidase (NA) gene, complete cds.

ATGAATCCAAATAAGAAAATAATAACCATTGGTTCAGTGTCCTTAGGATTGGTAGTCCTTAACATTCTCCTACATAT
AGTTAGCATTACAGTAACAGTGTTAGTTCTTCCTGGAAATGGAAATAACGGGAATTGCAATGAAACAGTCATTAGA
GAATACAATGAAACAGTAAGGATTGAGAAGGTAACACAATGGCACAATACCAATGTCATTGAGTATATAGAAAGG
CCAGAGAATGATCATTTCATGAACAATACAGAAGCATTGTGTGATGCCAAGGGGTTTGCACCCTTTTCCAAAGACA
ATGGAATAAGAATTGGATCGAGAGGTCATATTTTTGTTATAAGAGAACCATTTGTTTCTTGCTCTCCAACAGAGTG
CAGGACGTTCTTCCTTACTCAGGGTTCCTTACTCAATGACAAACACTCCAATGGCACAGTAAAAGACCGGAGCCCT
TATAGAACTCTAATGAGTGTAGAAATAGGGCAGTCACCCAATGTGTACCAGGCAAGGTTTGAGGCAGTAGCGTGG
TCAGCCACTGCATGTCATGATGGGAAGAAATGGATGACAATTGGAGTGACGGGCCCTGATGCCGAAGCAGTAGC
AGTAGTGCACTATGGGGGAATTCCTACTGATGTAATCAATTCCTGGGCAGGGGATATTCTAAGAACTCAGGAATC
ATCATGTACTTGCATTCAAGGTGAATGTTATTGGGTAATGACGGACGGACCAGCAAACAGACAAGCACAATATAG
AGCATTCAAGGCCAAGCAGGGGAAAATAGTTGGGCAAACTGAAATCAGTTTTAATGGAGGCCATATAGAAGAAT
GTTCATGCTACCCTAATGAAGGTAAAGTGGAATGTGTTTGTAGGGACAATTGGACTGGAACCAACAGACCAGTAT
TGGTGATTTCTCCAGATTTGTCTTACAGAGTCGGATACTTGTGTGCAGGTCTCCCCAGTGACACTCCAAGAGGAGA
AGATAGTCAGTTCACAGGATCCTGCACTAGCCCGATGGGAAATCAGGGATATGGAGTTAAGGGATTTGGATTCAG
GCAGGGCAATGATTTATGGATGGGAAGGACCATTAGCAGAACATCAAGATCAGGATTTGAAATCCTGAAAGTCAG
AAATGGCTGGGTACAAAATAGTAAAGAGCAGATCAAAAGGCAAGTTGTGGTCGATAACCTGAACTGGTCAGGAT

ACAGTGGTTCCTTCACACTACCGGTGGAGTTGACAAAAAGAAATTGTCTGGTTCCATGCTTTTGGGTTGAGATGAT
AAGGGGGAAGCCAGAAGAAAAGACTATATGGACCTCAAGTAGCTCCATTGTGATGTGTGGAGTAGACCATGAGA
TTGCCGACTGGTCATGGCACGATGGAGCTATTCTTCCTTTTGACATCGACAAGATGTAATTTACG

>Seq7 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 7, matrix protein 2 (M2) and matrix protein 1 (M1) genes, complete cds.

GAAAGATGAGTCTTCTAACCGAGGTAGAAACGTACGTTCTCTCTATCGTCCCGTCAGGCCCCCTCAAAGCCGAGAT
CGCGCAGAGACTTGAAGATGTGTTTGCAGGGAAAAACACCGACCTTGAGGCGCTCATGGAATGGCTAAAGACAA
GACCAATCCTGTCACCTCTGACTAAGGGGATTTTGGGATTTGTGTTCACGCTCACCGTGCCCAGTGAGCGAGGACT
GCAGCGTAGACGCTTTGTCCAAAATGCCCTTAATGGGAATGGGGATCCAAACAACATGGACAGAGCAGTTAAACT
GTACAGGAAGCTTAAAAGGGAAATAACATTCCATGGGGCAAAAGAGGTGGCACTCAGTTATTCGACTGGTGCACT
TGCCAGCTGCATGGGCCTCATATACAACAGAATGGGGACGGTGACCACTGAGGTGGCATTTGGCCTGGTGTGTGC
CACATGTGAGCAGATTGCTGATTCCCAGCATCGGTCTCACAGACAAATGGTGACAACAACCAACCCGCTGATCAG
GCACGAGAACAGGATGGTACTGGCCAGTACTACGGCTAAGGCCATGGAACAAATGGCAGGATCAAGTGAGCAGG
CAGCAGAGGCCATAGAGGTTGCTAGTCAGGCTAGGCAGATGGTGCAGGCAATGAGGACCATTGGGACTCATCCT
AGCTCCAGTGCTGGTCTGAAAGATGATCTTCTTGAAAATTTGCAGGCCTACCAGAAACGGATGGGAGTGCAAATG
CAACGATTCAAGTGATCCTCTCGTTATTGCCGCAAGTATCATTGGGATCTTGCACTTGATATTGTGGATTCTTGATC
GCCTTTTCTTCAAATGCATTTATCGTCGCCTTAAATACGGTTTGAAAAGAGGGCCTTCTACGGAAGGAGTGCCTGA
GTCTATGAGGGAAGAATATCGGCAGGAACAGCAGAGTGCTGTGGATGTTGACGATGGTCATTTTGTCAACATAGA
GCTGGAGTAA

>Seq8 [organism=Influenza A virus](A/turkey/Indiana/16-001403-1/2016(H7N8)) segment 8, non-structural protein NS1 and non-structural protein NS2 (NS) gene, complete cds.

TACATAATGGATTCCAACACGATAACCTCGTTTCAGGTAGATTGCTATCTATGGCACATAAGGAAGCTGCTCAGCA
TGAGAGACATGTGTGATGCTCCCTTTGATGACAGACTCAGGAGAGATCAAAAGGCATTAAAGGGAAGAGGTAGC
ACACTTGGGCTCGATCTGCGAGTGGCCACAATGGACGGTAAAAAGATTGTTGAAGACATCCTGAAAAGTGAGACT
GATGAAAATCTCAAAATTGCAATTGCATCCAGCCCTGCTCCTCGGTATATTACCGATATGAGTATAGAGGAAATAA
GTAGAGAATGGTACATGCTCATGCCAAGACAGAAGATAACAGGGGGTCTGATGGTGAAAATGGACCAGGCAATC
ATGGATAAGAGAATAATACTCAAAGCAAACTTTTCTGTCCTATTTGATCAATTGGAAACATTAGTCTCACTGAGGG
CTTTCACCGACGATGGCGCCATTGTAGCTGAAATATCTCCCATTCCTTCTATGCCAGGACATTCTACAGAGGATGTC
AAAGATGCAATTGGAATCCTCATCGGTGGACTTGAATGGAATGATAACTCAATTCGAGCGTCTGAAAATATACAG
AGATATGCTTGGGGAATCCGTGATGAGAATGGGGGATCTCCATTCCCTCCAAAGCAGAAACGCCACATGGCGAGA
AGAGTTGAGTCAGAAGTTTGAAGAGATCAGATGGCTGATTGCAGAGTGCAGGAACATATTAACCAAAACTGAAA
ACAGTTTCGAGCAGATAACGTTCTTGCAAGCATTGCAACTCTTACTTGAAGTTGAGAGTGAGATAAGAACATTTTC
TTTTCAGCTTATTTAATACTAA