

Supplementary information

Circulation of low pathogenic avian influenza (LPAI) viruses in wild birds and poultry in the Netherlands, 2006-2016

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Supplementary Table S1. Genbank accession numbers of wild bird virus sequences.

Genbank accession numbers of hemagglutinin (HA) and neuraminidase (NA) gene segment sequences of low pathogenic avian influenza (LPAI) viruses from wild birds detected as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016.

Isolate name	Collection date	Genbank HA segment ID	Genbank NA segment ID
A/Barnacle goose/Netherlands/1/2006 (H1N1)	2006-01-09	KX979589	KX977747
A/Barnacle goose/Netherlands/1/2010 (H6N8)	2010-01-08	KX977787	KX979558
A/Barnacle goose/Netherlands/1/2011 (H6N8)	2011-01-06	KX979107	KX979461
A/Barnacle goose/Netherlands/1/2014 (H6N8)	2014-12-15	KX978284	KX978681
A/Bean goose/Netherlands/1/2007 (H1N1)	2007-01-15	KX978559	KX978842
A/Bean goose/Netherlands/1/2008 (H6N8)	2008-01-22	KX977816	KX978984
A/Bean goose/Netherlands/1/2009 (H7N1)	2009-01-21	KX979368	KX979548
A/Bean goose/Netherlands/2/2009 (H7N1)	2009-01-21	KX978247	KX978908
A/Bewicks swan/Netherlands/2/2007 (H4N6)	2007-12-06	KX978511	KX977631
A/Bewicks swan/Netherlands/3/2006 (H1N1)	2006-11-17	KX978266	KX977791
A/Bewicks swan/Netherlands/3/2007 (H4N6)	2007-12-06	KX978846	KX979193
A/Bewicks swan/Netherlands/4/2006 (H9N2)	2006-11-17	KX977700	KX979422
A/Bewicks swan/Netherlands/5/2008 (H5N2)	2008-12-17	KX979015	KX978975
A/Bewicks swan/Netherlands/6/2006 (H1N1)	2006-11-22	KX978574	KX978892
A/Bewicks swan/Netherlands/7/2008 (H7N1)	2008-12-24	KX978000	KX978951
A/Bewicks swan/Netherlands/8/2009 (H6N8)	2008-01-04	KX977884	KX978281
A/Brent goose/Netherlands/1/2006 (H1N1)	2006-01-10	KX979392	KX979523
A/Dunlin/Netherlands/2/2007 (H3N8)	2007-07-31	KX978538	KX979291
A/Dunlin/Netherlands/3/2007 (H3N8)	2007-07-31	KX979366	KX978457
A/Eurasian teal/Netherlands/1/2008 (H6N1)	2008-09-22	KX978922	KX978742
A/Eurasian teal/Netherlands/1/2011 (H3N8)	2011-10-15	KX979458	KX979211
A/Eurasian teal/Netherlands/3/2008 (H6N1)	2008-09-22	KX978950	KX979001
A/Eurasian wigeon/Netherlands/1/2006 (H6N2)	2007-12-21	KX979500	KX978832
A/Eurasian wigeon/Netherlands/1/2008 (H6N1)	2008-09-22	KX978248	KX978405
A/Eurasian wigeon/Netherlands/1/2009 (H5N2)	2009-09-11	KX979575	KX977926
A/Eurasian wigeon/Netherlands/1/2010 (H5N2)	2010-09-27	KX977950	KX978397
A/Eurasian wigeon/Netherlands/2/2007 (H1N1)	2007-10-20	KX978381	KX977776
A/Eurasian wigeon/Netherlands/2/2008 (H7N4)	2008-12-29	KX978318	KX977640
A/Eurasian wigeon/Netherlands/6/2007 (H1N1)	2007-11-15	KX979129	KX977745
A/Gadwall duck/Netherlands/1/2011 (H6N2)	2011-11-04	KX978389	KX977644
A/Gadwall duck/Netherlands/2/2006 (H9N2)	2006-01-01*	KX978145	KX979196
A/Gadwall duck/Netherlands/3/2006 (H3N8)	2006-09-03	KX978829	KX979428
A/Greater white-fronted goose/Netherlands/1/2006 (H6N2)	2006-01-14	KX979150	KX978480
A/Greater white-fronted goose/Netherlands/1/2007 (H1N1)	2007-01-23	KX977711	KX977666
A/Greater white-fronted goose/Netherlands/1/2009 (H6N8)	2009-01-20	KX978830	KX979241
A/Greater white-fronted goose/Netherlands/1/2010 (H6N1)	2010-01-20	KX977696	KX978928
A/Greater white-fronted goose/Netherlands/1/2011 (H6N8)	2011-01-04	KX977775	KX978983
A/Greater white-fronted goose/Netherlands/1/2012 (H1N1)	2012-11-20	KX978558	KX978251
A/Greater white-fronted goose/Netherlands/11/2009 (H6N1)	2009-12-09	KX977968	KX978797
A/Greater white-fronted goose/Netherlands/2/2007 (H6N8)	2007-12-12	KX979168	KX978521
A/Greater white-fronted goose/Netherlands/2/2008 (H6N8)	2008-01-22	KX979494	KX978669
A/Greater white-fronted goose/Netherlands/2/2009 (H5N3)	2009-12-14	KX977974	KX979382
A/Greater white-fronted goose/Netherlands/2/2010 (H5N2)	2010-01-29	KX978688	KX978932
A/Greater white-fronted goose/Netherlands/2/2011 (H6N2)	2011-01-13	KX977613	KX978753
A/Greater white-fronted goose/Netherlands/3/2006 (H6N8)	2006-01-01*	KX979190	KX979264

A/Greater white-fronted goose/Netherlands/3/2007 (H6N5)	2007-12-18	KX978034	KX978798
A/Greater white-fronted goose/Netherlands/3/2011 (H6N2)	2011-01-11	KX978988	KX978364
A/Greater white-fronted goose/Netherlands/4/2006 (H6N8)	2006-01-01*	KX978498	KX979449
A/Greater white-fronted goose/Netherlands/4/2008 (H6N8)	2008-01-22	KX979397	KX979084
A/Greater white-fronted goose/Netherlands/4/2009 (H5N2)	2009-02-21	KX978287	KX978719
A/Greater white-fronted goose/Netherlands/4/2010 (H6N8)	2010-02-04	KX978377	KX978184
A/Greater white-fronted goose/Netherlands/4/2011 (H1N1)	2011-01-17	KX978591	KX978181
A/Greater white-fronted goose/Netherlands/5/2008 (H5N2)	2008-12-30	KX979073	KX978387
A/Greater white-fronted goose/Netherlands/5/2010 (H5N3)	2010-11-13	KX978851	KX979439
A/Greater white-fronted goose/Netherlands/6/2008 (H5N2)	2008-12-30	KX978329	KX978609
A/Greater white-fronted goose/Netherlands/6/2009 (H6N8)	2009-01-04	KX978349	KX977708
A/Greater white-fronted goose/Netherlands/6/2010 (H6N2)	2010-11-23	KX978734	KX978786
A/Greater white-fronted goose/Netherlands/6/2011 (H6N8)	2011-12-14	KX978828	KX977722
A/Greater white-fronted goose/Netherlands/8/2009 (H6N2)	2009-12-30	KX978319	KX978626
A/Greater white-fronted goose/Netherlands/9/2009 (H6N2)	2009-12-30	KX978339	KX978180
A/Mallard duck/Netherlands/1/2007 (H10N7)	2007-01-01*	KX978192	KX977605
A/Mallard duck/Netherlands/1/2008 (H5N3)	2008-01-30	KX977798	KX978667
A/Mallard duck/Netherlands/1/2009 (H10N7)	2009-02-04	KX977889	KX979271
A/Mallard duck/Netherlands/1/2011 (H7N7)	2011-02-23	KX979524	KX978358
A/Mallard duck/Netherlands/1/2012 (H10N7)	2012-01-14	KX979240	KX978542
A/Mallard duck/Netherlands/1/2013 (H7N7)	2013-01-26	KX978524	KX978579
A/Mallard duck/Netherlands/1/2014 (H10N7)	2014-02-17	KX979229	KX978673
A/Mallard duck/Netherlands/10/2012 (H6N1)	2012-09-05	KX979411	KX978507
A/Mallard duck/Netherlands/12/2006 (H5N2)	2006-09-16	KX977669	KX979415
A/Mallard duck/Netherlands/12/2009 (H11N9)	2009-09-02	KX978958	KX978900
A/Mallard duck/Netherlands/12/2012 (H6N1)	2012-10-18	KX978330	KX979308
A/Mallard duck/Netherlands/13/2007 (H6N5)	2007-11-01	KX977641	KX977833
A/Mallard duck/Netherlands/13/2012 (H3N8)	2012-10-01	KX979517	KX979121
A/Mallard duck/Netherlands/13/2013 (H7N7)	2013-12-10	KX979399	KX978080
A/Mallard duck/Netherlands/14/2006 (H8N4)	2006-01-01*	KX977927	KX979046
A/Mallard duck/Netherlands/15/2007 (H6N8)	2007-11-09	KX979354	KX979328
A/Mallard duck/Netherlands/15/2009 (H6N8)	2009-10-02	KX978489	KX978378
A/Mallard duck/Netherlands/15/2011 (H6N8)	2011-09-14	KX978593	KX978920
A/Mallard duck/Netherlands/16/2006 (H10N7)	2006-01-14	KX978236	KX978605
A/Mallard duck/Netherlands/16/2007 (H6N8)	2007-11-15	KX978196	KX978905
A/Mallard duck/Netherlands/16/2009 (H1N1)	2009-09-30	KX978081	KX977672
A/Mallard duck/Netherlands/17/2009 (H6N8)	2009-10-06	KX978322	KX978549
A/Mallard duck/Netherlands/17/2011 (H3N8)	2011-09-20	KX978036	KX978560
A/Mallard duck/Netherlands/18/2007 (H4N6)	2007-11-22	KX979234	KX978376
A/Mallard duck/Netherlands/18/2009 (H6N2)	2009-10-08	KX978564	KX979049
A/Mallard duck/Netherlands/18/2010 (H6N8)	2010-09-03	KX979113	KX977957
A/Mallard duck/Netherlands/19/2007 (H6N2)	2007-12-07	KX978966	KX978008
A/Mallard duck/Netherlands/19/2009 (H5N3)	2009-10-26	KX978032	KX978963
A/Mallard duck/Netherlands/19/2012 (H4N6)	2012-09-07	KX979134	KX978671
A/Mallard duck/Netherlands/2/2007 (H10N7)	2007-01-01*	KX978494	KX979021
A/Mallard duck/Netherlands/2/2008 (H10N7)	2008-01-07	KX978964	KX978237
A/Mallard duck/Netherlands/2/2009 (H7N7)	2009-01-09	KX978114	KX978763
A/Mallard duck/Netherlands/2/2011 (H10N7)	2011-03-08	KX978624	KX979161
A/Mallard duck/Netherlands/2/2015 (H7N7)	2015-01-16	KX979185	KX978353
A/Mallard duck/Netherlands/20/2009 (H5N3)	2009-10-26	KX978388	KX977757
A/Mallard duck/Netherlands/20/2011 (H6N8)	2011-09-24	KX978022	KX979447

A/Mallard duck/Netherlands/22/2010 (H10N7)	2010-09-07	KX978006	KX978632
A/Mallard duck/Netherlands/23/2006 (H1N1)	2006-08-25	KX979325	KX978811
A/Mallard duck/Netherlands/23/2012 (H11N9)	2012-09-27	KX977778	KX977684
A/Mallard duck/Netherlands/24/2009 (H6N1)	2009-12-01	KX978844	KX978238
A/Mallard duck/Netherlands/24/2013 (H4N6)	2013-09-16	KX978385	KX978890
A/Mallard duck/Netherlands/26/2010 (H4N6)	2010-09-13	KX979423	KX979292
A/Mallard duck/Netherlands/26/2011 (H11N9)	2011-10-10	KX979452	KX978692
A/Mallard duck/Netherlands/27/2009 (H4N6)	2009-12-21	KX978295	KX978169
A/Mallard duck/Netherlands/28/2008 (H5N6)	2008-09-22	KX977852	KX978060
A/Mallard duck/Netherlands/28/2009 (H1N1)	2009-12-21	KX977807	KX978631
A/Mallard duck/Netherlands/28/2010 (H5N2)	2010-09-17	KX979224	KX977947
A/Mallard duck/Netherlands/29/2008 (H11N9)	2008-09-22	KX978267	KX978971
A/Mallard duck/Netherlands/29/2009 (H11N9)	2009-12-21	KX977705	KX977840
A/Mallard duck/Netherlands/3/2008 (H6N2)	2008-01-07	KX977797	KX978336
A/Mallard duck/Netherlands/3/2015 (H7N7)	2015-01-24	KX978067	KX979143
A/Mallard duck/Netherlands/30/2008 (H5N3)	2008-09-23	KX978877	KX978452
A/Mallard duck/Netherlands/30/2010 (H3N8)	2010-09-21	KX978097	KX979363
A/Mallard duck/Netherlands/30/2011 (H6N4)	2011-10-19	KX979356	KX979148
A/Mallard duck/Netherlands/30/2014 (H4N6)	2014-07-21	KX978886	KX979350
A/Mallard duck/Netherlands/31/2008 (H6N1)	2008-09-22	KX978655	KX978400
A/Mallard duck/Netherlands/31/2012 (H7N1)	2012-01-10	KX977922	KX978711
A/Mallard duck/Netherlands/31/2013 (H10N7)	2013-05-20	KX978193	KX977867
A/Mallard duck/Netherlands/32/2011 (H5N2)	2011-10-20	KX979009	KX978469
A/Mallard duck/Netherlands/32/2013 (H10N7)	2013-08-05	KX977924	KX978875
A/Mallard duck/Netherlands/33/2014 (H10N7)	2014-12-16	KX978314	KX979578
A/Mallard duck/Netherlands/34/2006 (H3N8)	2006-09-11	KX979215	KX979577
A/Mallard duck/Netherlands/36/2006 (H5N3)	2006-09-11	KX979003	KX979553
A/Mallard duck/Netherlands/36/2008 (H11N9)	2008-09-23	KX978075	KX978903
A/Mallard duck/Netherlands/37/2011 (H1N1)	2011-12-08	KX977882	KX979536
A/Mallard duck/Netherlands/40/2006 (H6N8)	2006-09-16	KX977839	KX978188
A/Mallard duck/Netherlands/43/2006 (H5N2)	2006-09-18	KX979501	KX978545
A/Mallard duck/Netherlands/43/2011 (H7N1)	2011-12-24	KX977677	KX978462
A/Mallard duck/Netherlands/44/2011 (H7N1)	2011-12-24	KX978740	KX977735
A/Mallard duck/Netherlands/47/2010 (H10N7)	2010-11-26	KX978640	KX977904
A/Mallard duck/Netherlands/5/2008 (H6N8)	2008-09-10	KX979551	KX977649
A/Mallard duck/Netherlands/5/2009 (H5N2)	2009-02-02	KX977767	KX978896
A/Mallard duck/Netherlands/5/2012 (H10N7)	2012-05-12	KX978848	KX979065
A/Mallard duck/Netherlands/5/2013 (H1N1)	2013-09-16	KX979268	KX978982
A/Mallard duck/Netherlands/51/2010 (H1N1)	2010-12-03	KX978723	KX978328
A/Mallard duck/Netherlands/52/2008 (H5N2)	2008-10-09	KX979499	KX977925
A/Mallard duck/Netherlands/53/2010 (H1N1)	2010-12-08	KX978255	KX977899
A/Mallard duck/Netherlands/55/2008 (H4N6)	2008-10-06	KX978110	KX978178
A/Mallard duck/Netherlands/6/2006 (H4N6)	2006-06-03	KX977697	KX979028
A/Mallard duck/Netherlands/6/2013 (H3N8)	2013-10-01	KX979335	KX979409
A/Mallard duck/Netherlands/6/2015 (H10N7)	2015-03-04	KX978577	KX978040
A/Mallard duck/Netherlands/60/2008 (H7N1)	2008-10-15	KX978337	KX979011
A/Mallard duck/Netherlands/64/2006 (H1N1)	2006-09-22	KX978552	KX977762
A/Mallard duck/Netherlands/67/2008 (H10N7)	2008-12-13	KX979437	KX977963
A/Mallard duck/Netherlands/7/2008 (H3N8)	2008-08-22	KX978132	KX978054
A/Mallard duck/Netherlands/7/2009 (H7N7)	2009-02-02	KX977692	KX978598
A/Mallard duck/Netherlands/7/2011 (H4N6)	2011-08-15	KX978670	KX977749

A/Mallard duck/Netherlands/7/2012 (H1N1)	2012-07-09	KX978074	KX978447
A/Mallard duck/Netherlands/7/2014 (H6N2)	2014-10-01	KX978776	KX979466
A/Mallard duck/Netherlands/76/2008 (H6N8)	2008-11-27	KX978130	KX978245
A/Mallard duck/Netherlands/77/2008 (H7N1)	2008-12-29	KX977881	KX978814
A/Mallard duck/Netherlands/78/2006 (H6N8)	2006-10-21	KX978159	KX977724
A/Mallard duck/Netherlands/8/2008 (H6N1)	2008-09-27	KX978779	KX977984
A/Mallard duck/Netherlands/8/2012 (H1N1)	2012-10-23	KX979169	KX977770
A/Mallard duck/Netherlands/82/2008 (H7N7)	2008-12-17	KX979315	KX979225
A/Mallard duck/Netherlands/9/2013 (H6N8)	2013-10-15	KX979493	KX979138
A/Mute swan/Netherlands/2/2006 (H4N6)	2006-01-01*	KX978073	KX979448
A/Mute swan/Netherlands/3/2006 (H4N6)	2006-01-01*	KX977958	KX978909
A/Turnstone/Netherlands/1/2010 (H3N8)	2010-10-09	KX979124	KX977713
A/Turnstone/Netherlands/2/2007 (H3N8)	2007-07-31	KX979144	KX978279
A/Turnstone/Netherlands/3/2008 (H3N8)	2008-10-31	KX978665	KX979101
A/Turnstone/Netherlands/4/2008 (H3N8)	2008-11-01	KX978661	KX979097

* date unknown, set to 1st of January

Supplementary Table S2. GISAID accession numbers of poultry virus sequences.

GISAID's EpiFlu database accession numbers of hemagglutinin (HA) and neuraminidase (NA) gene segment sequences of low pathogenic avian influenza (LPAI) viruses from poultry, detected as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016.

Isolate name	Collection date	GISAID HA segment ID	GISAID NA segment ID
A/Chicken/Netherlands/06022003/2006 (H7N7)	2006-08-01	EPI1229818	EPI1229817
A/Chicken/Netherlands/09006942/2009 (H10N7)	2009-04-15	EPI1229826	EPI1229825
A/Chicken/Netherlands/10007882/2010 (H7N4)	2010-05-14	EPI1229834	EPI1229833
A/Chicken/Netherlands/10008427/2010 (H10N7)	2010-05-20	EPI966037	EPI966050
A/Chicken/Netherlands/10009401/2010 (H8N4)	2010-06-04	EPI1229842	EPI1229841
A/Chicken/Netherlands/10010413/2010 (H6N1)	2010-06-21	EPI1229850	EPI1229849
A/Chicken/Netherlands/10012103/2010 (H6N1)	2010-07-19	EPI1229858	EPI1229857
A/Chicken/Netherlands/10020245/2010 (H9N2)	2010-12-10	EPI1229866	EPI1229865
A/Chicken/Netherlands/11004004/2011 (H8N4)	2011-03-09	EPI1229874	EPI1229873
A/Chicken/Netherlands/11004875/2011 (H7N1)	2011-03-22	EPI1229882	EPI1229881
A/Chicken/Netherlands/11008325/2011 (H8N4)	2011-05-10	EPI1229890	EPI1229889
A/Chicken/Netherlands/11008327/2011 (H7N7)	2011-05-12	EPI1230758	EPI1230760
A/Chicken/Netherlands/11009919/2011 (H1N1)	2011-05-30	EPI1229898	EPI1229897
A/Chicken/Netherlands/11011392/2011 (H7N7)	2011-06-22	EPI1229906	EPI1229905
A/Chicken/Netherlands/12002495-001-005/2012 (H10N9)	2012-02-06	EPI1229914	EPI1229913
A/Chicken/Netherlands/12014794/2012 (H7N7)	2012-08-09	EPI1229922	EPI1229921
A/Chicken/Netherlands/13003601/2013 (H7N7)	2013-03-12	EPI1229930	EPI1229929
A/Chicken/Netherlands/13003983/2013 (H7N7)	2013-03-18	EPI1229938	EPI1229937
A/Chicken/Netherlands/13015884/2013 (H5N3)	2013-11-29	EPI1229946	EPI1229945
A/Chicken/Netherlands/13016263-031-035/2013 (H5N3)	2013-12-10	EPI1229954	EPI1229953
A/Chicken/Netherlands/14002541/2014 (H5N1)	2014-02-25	EPI1229962	EPI1229961
A/Chicken/Netherlands/14003005/2014 (H2N7)	2014-03-05	EPI1229970	EPI1229969
A/Chicken/Netherlands/14003323/2014 (H5N2)	2014-03-12	EPI1229978	EPI1229977
A/Chicken/Netherlands/14004070/2014 (H9N1)	2014-03-26	EPI1229986	EPI1229985
A/Chicken/Netherlands/15005968-056060/2015 (H5N2)	2015-04-02	EPI1230063	EPI1230062
A/Chicken/Netherlands/15007212/2015 (H10N7)	2015-04-28	EPI774514	EPI774516
A/Chicken/Netherlands/16007311-037041/2016 (H7N9)	2016-06-08	EPI773765	EPI773767
A/Chicken/Netherlands/16010778-021-025/2016 (H2N3)	2016-08-30	EPI1230079	EPI1230078
A/Chicken/NL-Barneveld/15004745-001-005/2015 (H7N7)	2015-03-11	EPI629344	EPI629341
A/Duck/Netherlands/06027358/2006 (H3N8)	2006-09-27	EPI1230087	EPI1230086
A/Duck/Netherlands/14015610/2014 (H6N2)	2014-11-17	EPI1230095	EPI1230094
A/Duck/Netherlands/14016168/2014 (H6N8)	2014-11-25	EPI1230103	EPI1230102
A/Duck/Netherlands/14016396/2014 (H6N2)	2014-11-25	EPI1230111	EPI1230110
A/Turkey/Netherlands/06001571/2006 (H6N5)	2006-01-24	EPI1229994	EPI1229993
A/Turkey/Netherlands/07014290/2007 (H1N5)	2007-05-31	EPI1230002	EPI1230001
A/Turkey/Netherlands/07016245/2007 (H1N5)	2007-06-22	EPI1230010	EPI1230009
A/Turkey/Netherlands/09006938/2009 (H10N7)	2009-04-14	EPI1230018	EPI1230017
A/Turkey/Netherlands/11011530/2011 (H7N7)	2011-06-25	EPI1230026	EPI1230025
A/Turkey/Netherlands/11015452/2011 (H9N2)	2011-08-31	EPI1230034	EPI1230033
A/Turkey/Netherlands/12004763-001-004/2012 (H10N9)	2012-03-05	EPI1230042	EPI1230041
A/Turkey/Netherlands/12005615/2012 (H10N9)	2012-03-13	EPI1230050	EPI1230049
A/Turkey/Netherlands/13001007/2013 (H8N4)	2013-01-18	EPI1230127	EPI1230126

Supplementary Table S3. Collection and subtyping of wild bird samples.

Number of wild birds sampled and number of subtyped cases of low pathogenic avian influenza (LPAI) virus detections per wild bird species as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016. A case is considered subtyped if the hemagglutinin (HA) or neuraminidase (NA) subtype of the virus is determined.

Order	Group	Species	Latin name	Number of birds sampled	Number of subtyped cases	
Anseriformes	Ducks	Mallard	<i>Anas platyrhynchos</i>	46939	446	
		Eurasian Wigeon	<i>Anas penelope</i>	10039	22	
		Gadwall	<i>Anas strepera</i>	1317	5	
		Common Teal	<i>Anas crecca</i>	1209	8	
		Northern Pintail	<i>Anas acuta</i>	372	0	
		Northern Shoveler	<i>Anas clypeata</i>	355	1	
		Common Eider	<i>Somateria mollissima</i>	99	2	
		Other ducks		312	0	
	Geese	White-fronted Goose	<i>Anser albifrons</i>	12001	31	
		Barnacle Goose	<i>Branta leucopsis</i>	4933	8	
		Greylag Goose	<i>Anser anser</i>	1924	1	
		Egyptian Goose	<i>Alopochen aegyptiacus</i>	1159	0	
		Bean Goose	<i>Anser fabalis</i>	1095	3	
		Brent Goose	<i>Branta bernicla</i>	858	1	
		Canada Goose	<i>Branta canadensis</i>	326	0	
		Pink-footed Goose	<i>Anser brachyrhynchus</i>	206	1	
		Other geese		110	0	
		Swans	Mute Swan	<i>Cygnus olor</i>	2126	3
	Bewick's Swan		<i>Cygnus bewickii</i>	250	14	
	Other swans			46	0	
	Charadriiformes	Gulls	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	14170	401
			Common Gull	<i>Larus canus</i>	2087	0
			Herring Gull	<i>Larus argentatus</i>	1024	10
			Lesser Black-backed Gull	<i>Larus fuscus</i>	894	4
			Mediterranean Gull	<i>Larus Melanocephalus</i>	207	1
			Great Black-backed Gull	<i>Larus marinus</i>	31	1
			Other gulls		51	0
Waders		Turnstone	<i>Arenaria interpres</i>	911	14	
		Dunlin	<i>Calidris alpina</i>	654	4	
		Oystercatcher	<i>Haematopus ostralegus</i>	724	0	
		Red Knot	<i>Calidris canutus</i>	163	0	
		Other waders		177	0	
Other Charadriiformes				351	0	
Other				2172	0	
Unknown				1822	0	
Total				111114	981	

Supplementary Table S4. Collection and subtyping of poultry samples.

Number of serologically tested poultry farms and number of subtyped cases of low pathogenic avian influenza (LPAI) virus detections per poultry type as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016. A case is considered if the hemagglutinin (HA) or neuraminidase (NA) subtype of the virus or the subtype-specificity of the influenza virus-specific antibodies is determined.

Poultry type	Housing system	Number of farms tested	Number of subtyped cases	
Chicken	Layer	Indoor	18883	20
		Outdoor	11797	120
		Unknown		8
	Broiler	7309	9	
	Unknown		10	
Turkey		2269	33	
Duck		889	13	
Unknown		662	7	
Total		41769	220	

Supplementary Table S5. Poultry viruses and their most identical wild bird virus.

Low pathogenic avian influenza (LPAI) viruses isolated from poultry, detected as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016, with their genetically most identical wild bird virus based on the hemagglutinin (HA) and neuraminidase (NA) gene segment sequences as determined by BLAST. The time interval between collection days and the percentage of nucleotide (nt) sequence identity between the poultry virus and the most identical wild bird virus are shown. We gratefully acknowledge the authors, originating and submitting laboratories of the sequences from GISAID's EpiFlu database ²⁸ on which this research is based. All submitters of data may be contacted directly via the GISAID website (<http://www.gisaid.org>).

Year	Poultry virus	Location poultry virus (province – city)	Segment	Most identical wild bird virus	Location wild bird virus (continent – country – province)	Time interval (days)	Sequence identity (%)
2006	A/Turkey/Netherlands/06001571/2006 (H6N5)	Noord Brabant - Dinteloord	HA	A/Greater white-fronted goose/Netherlands/ 1/2006 (H6N2)	EU - NL - Noord Brabant	10	99.5%
			NA	A/Mallard/Sweden/343/2002 (H12N5)	EU - Sweden	1181	98.7%
	A/Chicken/Netherlands/06022003/2006 (H7N7)	Gelderland - Voorthuizen	HA	A/Mallard Duck/Netherlands/ 60/2008 (H7N1)	EU - NL - Noord Holland	-806	99.5%
			NA	A/Mallard/Sweden/5927/2005 (H7N7)	EU - Sweden	251	98.7%
			NA	A/Mallard/Sweden/5944/2005 (H7N7)	EU - Sweden	248	
			NA	A/Mallard/Sweden/95/2005 (H7N7)	EU - Sweden	577	
	A/Duck/Netherlands/06027358/2006 (H3N8)	Gelderland - Nijmegen	HA	A/Mallard Duck/Netherlands/ 60/2006 (H3N8)	EU - NL - Noord Holland	9	99.8%
			NA	A/Mallard Duck/Netherlands/ 60/2006 (H3N8)	EU - NL - Noord Holland	9	99.8%
2007	A/Turkey/Netherlands/07014290/2007 (H1N5)	Limburg - Nederweert	HA	A/Bewicks swan/Netherlands/ 1/2007 (H1N5)	EU - NL - Friesland	150	98.9%
			NA	A/Black-headed gull/Netherlands/ 1/2006 (H4N5)	EU - NL - Gelderland	515	98.5%
	A/Turkey/Netherlands/07016245/2007 (H1N5)	Limburg - Weert	HA	A/Bewicks swan/Netherlands/ 1/2007 (H1N5)	EU - NL - Friesland	172	99.0%
			NA	A/Black-headed gull/Netherlands/ 1/2006 (H4N5)	EU - NL - Gelderland	537	98.5%
2009	A/Turkey/Netherlands/09006938/2009 (H10N7)	Noord Brabant - Deurne	HA	A/Mallard/Sweden/64476/2007 (H10N4)	EU - Sweden	677	98.9%
			NA	A/Anas_platyrhynchos/Camargue/091863/09 (H10N7)	EU - France	-36	99.8%
	A/Chicken/Netherlands/09006942/2009 (H10N7)	Noord Brabant - Deurne	HA	A/Mallard/Sweden/64476/2007 (H10N4)	EU - Sweden	678	98.8%
			NA	A/Mallard/Sweden/93475/2009 (H10N6)	EU - Sweden	-130	
			NA	A/Anas_platyrhynchos/Camargue/091863/09 (H10N7)	EU - France	-35	99.8%
			NA	A/Mallard Duck/Netherlands/ 82/2008 (H7N7)	EU - NL - Zuid Holland	119	
2010	A/Chicken/Netherlands/10007882/2010 (H7N4)	Noord Brabant - Deurne	HA	A/Mallard Duck/Netherlands/ 60/2008 (H7N1)	EU - NL - Noord Holland	576	99.1%
			NA	A/Teal/Chany/7119/2008 (H15N4)	EU - Russia	622	99.1%
	A/Chicken/Netherlands/10008427/2010 (H10N7)	Friesland – Drachtstercompagnie	HA	A/Mallard/Netherlands/ 67/2008 (H10N7)	EU - NL - Friesland	523	99.0%
			NA	A/Mallard/Netherlands/ 67/2008 (H10N7)	EU - NL - Friesland	523	99.0%
			NA	A/Mallard/Netherlands/ 82/2008 (H10N7)	EU - NL - Friesland	519	
			NA	A/Mallard/Netherlands/ 1/2009 (H10N7)	EU - NL - Friesland	470	
	A/Chicken/Netherlands/10009401/2010 (H8N4)	Friesland - Hiaure	HA	A/Mallard/Sweden/99377/2009 (H8N4)	EU - Sweden	274	98.5%
			NA	A/Teal/Chany/7119/2008 (H15N4)	EU - Russia	643	99.2%

	A/Chicken/Netherlands/10010413/2010 (H6N1)	Friesland - Idsegahuizum	HA	A/Mallard Duck/Netherlands/ 18/2010 (H6N8)	EU - NL - Zuid Holland	-74	98.8%
			NA	A/Mallard/Bavaria/185-8/2008 (H1N1)	EU - Germany	637	99.2%
	A/Chicken/Netherlands/10012103/2010 (H6N1)	Friesland - Parrega	HA	A/Mallard Duck/Netherlands/ 18/2010 (H6N8)	EU - NL - Zuid Holland	-46	98.8%
			NA	A/Mallard/Bavaria/185-8/2008 (H1N1)	EU - Germany	665	99.1%
	A/Chicken/Netherlands/10020245/2010 (H9N2)	Zuid Holland - Pijnacker	HA	A/Bewicks swan/Netherlands/ 4/2006 (H9N2)	EU - NL - Noord Holland	1484	96.6%
			NA	A/Mallard Duck/Netherlands/ 53/2006 (H4N2)	EU - NL - Noord Holland	1544	98.0%
				A/Mallard/Netherlands/ 7/2007 (H4N2)	EU - NL - Zuid Holland	1439	
2011	A/Chicken/Netherlands/11004004/2011 (H8N4)	Utrecht - Vreeland	HA	A/Common Teal/Netherlands/ 12002960/2012 (H8N4)	EU - NL - Noord Holland	-359	99.2%
			NA	A/Common Teal/Netherlands/ 12002960/2012 (H8N4)	EU - NL - Noord Holland	-359	99.5%
	A/Chicken/Netherlands/11004875/2011 (H7N1)	Zeeland - Schore	HA	A/Swan/Czech Republic/5416/2011 (H7N7)	EU - Czech Republic	-15	99.5%
			NA	A/Mallard Duck/Netherlands/ 51/2010 (H1N1)	EU - NL - Zuid Holland	109	99.6%
	A/Chicken/Netherlands/11008325/2011 (H8N4)	Gelderland - Lunteren	HA	A/Mallard/Sweden/101165/2009 (H8N4)	EU - Sweden	551	99.2%
			NA	A/Mallard/Sweden/133546/2011 (H10N4)	EU - Sweden	-197	99.4%
	A/Chicken/Netherlands/11008327/2011 (H7N7)	Gelderland - Kootwijkerbroek	HA	A/Mallard Duck/Netherlands/ 1/2011 (H7N7)	EU - NL - Noord Holland	78	99.4%
			NA	A/Mallard Duck/Netherlands/ 1/2011 (H7N7)	EU - NL - Noord Holland	78	98.8%
	A/Chicken/Netherlands/11009919/2011 (H1N1)	Zuid Holland - Stolwijk	HA	A/Greater white-fronted goose/Netherlands/ 4/2011 (H1N1)	EU - NL - Noord Brabant	133	98.8%
			NA	A/Greater white-fronted goose/Netherlands/ 4/2011 (H1N1)	EU - NL - Noord Brabant	133	99.9%
	A/Chicken/Netherlands/11011392/2011 (H7N7)	Flevoland - Creil	HA	A/Mallard Duck/Netherlands/ 1/2011 (H7N7)	EU - NL - Noord Holland	120	99.3%
	A/Chicken/Netherlands/11011326/2011 (H7N7)*		NA	A/Mallard Duck/Netherlands/ 1/2011 (H7N7)	EU - NL - Noord Holland	120	98.8%
	A/Turkey/Netherlands/11011530/2011 (H7N7)	Flevoland - Creil	HA	A/Mallard Duck/Netherlands/ 1/2011 (H7N7)	EU - NL - Noord Holland	122	99.3%
			NA	A/Mallard Duck/Netherlands/ 1/2011 (H7N7)	EU - NL - Noord Holland	122	98.7%
	A/Turkey/Netherlands/11015452/2011 (H9N2)	Noord Brabant - Deurne	HA	A/Anas platyrhynchos/Belgium/24311pcs5/2012 (H9N2)	EU - Belgium	-375	99.2%
			NA	A/Mallard Duck/Netherlands/ 16/2012 (H3N2)	EU - NL - Zuid Holland	-352	99.1%
2012	A/Chicken/Netherlands/12002495-001-005/2012 (H10N9)	Noord Brabant - Heusden	HA	A/Mallard/Sweden/105186/2009 (H10N1)	EU - Sweden	800	98.2%
				A/Mallard/Sweden/105254/2009 (H10N1)	EU - Sweden	799	
				A/Mallard/Sweden/105259/2009 (H10N1)	EU - Sweden	799	
				A/Mallard/Sweden/105364/2009 (H10N1)	EU - Sweden	798	
				A/Mallard/Sweden/105365/2009 (H10N1)	EU - Sweden	798	
				A/Mallard/Sweden/105474/2009 (H10N1)	EU - Sweden	796	
				A/Mallard/Sweden/107688/2009 (H10N1)	EU - Sweden	794	
			NA	A/Mallard/Sweden/100878/2009 (H11N9)	EU - Sweden	827	99.0%
				A/Mallard/Sweden/101011/2009 (H11N9)	EU - Sweden	825	
				A/Mallard/Sweden/50980/2006 (H11N9)	EU - Sweden	1946	
	A/Turkey/Netherlands/12004763-001-004/2012 (H10N9)	Limburg - Ospel	HA	A/Mallard/Sweden/105186/2009 (H10N1)	EU - Sweden	828	98.2%
				A/Mallard/Sweden/105254/2009 (H10N1)	EU - Sweden	827	
				A/Mallard/Sweden/105259/2009 (H10N1)	EU - Sweden	827	
				A/Mallard/Sweden/105364/2009 (H10N1)	EU - Sweden	826	
				A/Mallard/Sweden/105365/2009 (H10N1)	EU - Sweden	826	

			A/Mallard/Sweden/105474/2009 (H10N1)	EU - Sweden	824		
			A/Mallard/Sweden/107688/2009 (H10N1)	EU - Sweden	822		
		NA	A/Mallard/Sweden/100878/2009 (H11N9)	EU - Sweden	855	98.9%	
			A/Mallard/Sweden/101011/2009 (H11N9)	EU - Sweden	853		
			A/Mallard/Sweden/50980/2006 (H11N9)	EU - Sweden	1974		
A/Turkey/Netherlands/12005615/2012 (H10N9)	Limburg - Nederweert	HA	A/Mallard/Sweden/105186/2009 (H10N1)	EU - Sweden	836	98.2%	
			A/Mallard/Sweden/105254/2009 (H10N1)	EU - Sweden	835		
			A/Mallard/Sweden/105259/2009 (H10N1)	EU - Sweden	835		
			A/Mallard/Sweden/105364/2009 (H10N1)	EU - Sweden	834		
			A/Mallard/Sweden/105365/2009 (H10N1)	EU - Sweden	834		
			A/Mallard/Sweden/105474/2009 (H10N1)	EU - Sweden	832		
			A/Mallard/Sweden/107688/2009 (H10N1)	EU - Sweden	830		
		NA	A/Mallard/Sweden/100878/2009 (H11N9)	EU - Sweden	863	98.8%	
			A/Mallard/Sweden/101011/2009 (H11N9)	EU - Sweden	861		
			A/Mallard/Sweden/50980/2006 (H11N9)	EU - Sweden	1982		
A/Chicken/Netherlands/12014794/2012 (H7N7)	Utrecht - Hagestein	HA	A/Anas platyrhynchos/Belgium/23852cls33/2012 (H7N7)	EU - Belgium	-34	99.4%	
		NA	A/Swan/Czech Republic/5416/2011 (H7N7)	EU - Czech Republic	491	98.7%	
2013	A/Turkey/Netherlands/13001007/2013 (H8N4)	Noord Brabant - Helmond	HA	A/Mallard/Sweden/101165/2009 (H8N4)	EU - Sweden	1170	98.2%
			NA	A/Mallard/Sweden/99377/2009 (H8N4)	EU - Sweden	1233	98.4%
	A/Chicken/Netherlands/13003601/2013 (H7N7)	Gelderland - Lochem	HA	A/Anas platyrhynchos/Belgium/23852cls33/2012 (H7N7)	EU - Belgium	181	99.2%
			NA	A/Swan/Czech Republic/5416/2011 (H7N7)	EU - Czech Republic	706	
			NA	A/Anas platyrhynchos/Belgium/23852cls33/2012 (H7N7)	EU - Belgium	181	99.2%
	A/Chicken/Netherlands/13003983/2013 (H7N7)	Flevoland - Zeewolde	HA	A/Swan/Czech Republic/5416/2011 (H7N7)	EU - Czech Republic	712	98.9%
			NA	A/Mallard Duck/Netherlands/ 5/2012 (H10N7)	EU - NL - Zuid Holland	310	98.7%
	A/Chicken/Netherlands/13015884/2013 (H5N3)	Groningen - Sint Annen	HA	A/Razorbill/Scotland/7343/14 (H5Nx)	EU - United Kingdom	-94	98.5%
			NA	A/Mallard/Netherlands/ 29/2010 (H2N3)	EU - NL - Noord Holland	1428	98.7%
			A/Mallard/Sweden/101900/2009 (H4N3)	EU - Sweden	1476		
	A/Chicken/Netherlands/13016263-031-035/2013 (H5N3)	Groningen - Scheemda	HA	A/Razorbill/Scotland/7343/14 (H5Nx)	EU - United Kingdom	-83	98.5%
			NA	A/Mallard/Netherlands/ 29/2010 (H2N3)	EU - NL - Noord Holland	1439	98.8%
			A/Mallard/Sweden/101900/2009 (H4N3)	EU - Sweden	1487		
2014	A/Chicken/Netherlands/14002541/2014 (H5N1)	Flevoland - Swifterbant	HA	A/Razorbill/Scotland/7343/14 (H5Nx)	EU - United Kingdom	-6	98.8%
			NA	A/Mallard/Republic of Georgia/4/2012 (H1N1)	EU - Georgia	433	98.7%
	A/Chicken/Netherlands/14003005/2014 (H2N7)	Overijssel - Witharen	HA	A/Great black-backed gull/Iceland/1395/2011 (H2N5)	EU - Iceland	862	98.3%
			A/Herring gull/Iceland/1320/2011 (H2N5)	EU - Iceland	864		
			A/Herring gull/Iceland/1342/2011 (H2N5)	EU - Iceland	862		
			A/Iceland gull/Iceland/1124/2011 (H2N5)	EU - Iceland	871		
		NA	A/Mallard Duck/Netherlands/ 21/2010 (H10N7)	EU - NL - Noord Holland	1275	98.3%	
	A/Chicken/Netherlands/14003323/2014 (H5N2)	Gelderland - Bruchem	HA	A/Duck/Hunan/S4120/2011 (H5N2)	AS - China	852	97.6%
		NA	A/Wild bird/Korea/L60-2/2008 (H5N2)	AS - Republic of Korea	1924	97.7%	

	A/Chicken/Netherlands/14004070/2014 (H9N1)	Groningen - Uithuizermeeden	HA	A/Teal/Finland/10529/2010 (H9N2)	EU - Finland	1545	99.3%
			NA	A/Mallard/Sweden/816/2014 (H1N1)	EU - Sweden	-264	99.4%
	A/Duck/Netherlands/14015610/2014 (H6N2)	Utrecht - Lopik	HA	A/Mallard Duck/Netherlands/ 10/2012 (H6N1)	EU - NL - Noord Holland	803	99.0%
			NA	A/Swan/Netherlands/ 14000281/2014 (H5N2)	EU - NL - Zuid Holland	313	99.7%
	A/Duck/Netherlands/14016396/2014 (H6N2)	Gelderland - Hierden	HA	A/Mallard Duck/Netherlands/ 10/2012 (H6N1)	EU - NL - Noord Holland	811	99.0%
			NA	A/Swan/Netherlands/ 14000281/2014 (H5N2)	EU - NL - Zuid Holland	321	99.6%
	A/Duck/Netherlands/14016168/2014 (H6N8)	Gelderland - Putten	HA	A/Mallard Duck/Netherlands/ 15/2011 (H6N8)	EU - NL - Noord Holland	1168	97.8%
				A/Mallard Duck/Netherlands/ 20/2011 (H6N8)	EU - NL - Noord Holland	1158	
			NA	A/Mallard Duck/Netherlands/ 15/2011 (H6N8)	EU - NL - Noord Holland	1168	98.2%
2015	A/Chicken/NL-Barneveld/15004745-001-005/2015 (H7N7)	Gelderland - Barneveld	HA	A/Mallard Duck/Netherlands/ 23/2013 (H7N3)	EU - NL - Zuid Holland	701	98.5%
			NA	A/Mallard Duck/Netherlands/ 13/2013 (H7N7)	EU - NL - Zuid Holland	456	98.8%
	A/Chicken/Netherlands/15005968-056060/2015 (H5N2)	Noord Brabant - Milheeze	HA	A/Razorbill/Scotland/7343/14 (H5Nx)	EU - United Kingdom	395	96.6%
			NA	A/Mallard Duck/Netherlands/ 9/2014 (H6N2)	EU - NL - Zuid Holland	156	99.4%
	A/Chicken/Netherlands/15007212/2015 (H10N7)	Noord Brabant - Heusden	HA	A/Mallard Duck/Netherlands/ 31/2013 (H10N7)	EU - NL - Zuid Holland	708	97.9%
				A/Mallard Duck/Netherlands/ 32/2013 (H10N7)	EU - NL - Zuid Holland	631	
			NA	A/Mallard Duck/Netherlands/ 5/2012 (H10N7)	EU - NL - Zuid Holland	1081	98.1%
2016	A/Chicken/Netherlands/16007311-037041/2016 (H7N9)	Friesland - Hiaure	HA	A/Mallard Duck/Netherlands/ 24/2014 (H7N3)	EU - NL - Noord Holland	617	99.4%
			NA	A/Duck/Bangladesh/26980/2015 (H7N9)	AS - Bangladesh	181	97.3%
				A/Duck/Bangladesh/26992/2015 (H7N9)	AS - Bangladesh	181	
				A/Duck/Bangladesh/27042/2015 (H7N9)	AS - Bangladesh	181	
	A/Chicken/Netherlands/16010778-021-025/2016 (H2N3)	Overijssel - Bathmen	HA	A/Tufted Duck/Georgia/1/2012 (H2N3)	EU - Georgia	1347	97.2%
			NA	A/Mallard Duck/Netherlands/ 24/2014 (H7N3)	EU - NL - Noord Holland	700	98.9%

AS, Asia; EU, Europe; NL, The Netherlands

* two viruses were isolated from a single poultry farm

Supplementary Figure S1. Phylogenetic trees of HA genes.

Neighbour joining (NJ) phylogenetic trees of the hemagglutinin (HA) gene segments of low pathogenic avian influenza (LPAI) viruses from poultry, detected as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016. Nucleotide (nt) sequences of cluster representatives, poultry viruses and top 50 BLAST hits were aligned for each HA separately: H1 (1659 nt), H2 (1679 nt), H3 (1699 nt), H5 (1571 nt), H6 (1596 nt), H7 (1494 nt), (H8 1626 nt), H9 (1567 nt) and H10 (1585 nt). Phylogenetic trees were generated using the Tamura-Nei substitution model with a gamma distribution (shape parameter = 1) for rate variation within the MEGA7 software package. Bootstrap support values above 70 (1,000 replicates) are shown at the branches. Colours represent cluster representatives (blue), poultry viruses (red), and most identical wild bird viruses as determined by BLAST (red). Symbols represent poultry viruses most identical to wild bird viruses isolated in the Netherlands (dots), other European countries (squares) and Asia (triangles). We gratefully acknowledge the authors, originating and submitting laboratories of the sequences from GISAID's EpiFlu database²⁸ on which this research is based. All submitters of data may be contacted directly via the GISAID website (<http://www.gisaid.org>).

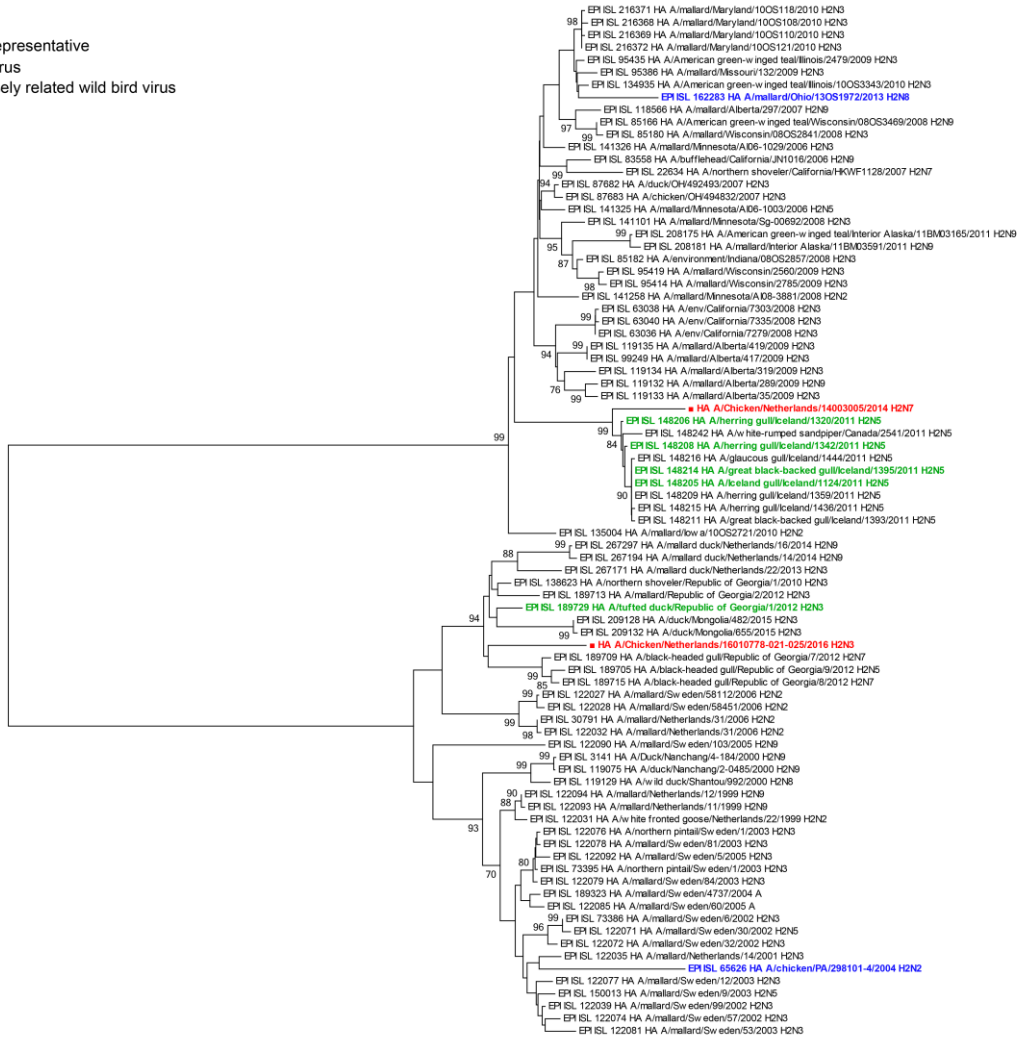
H1

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



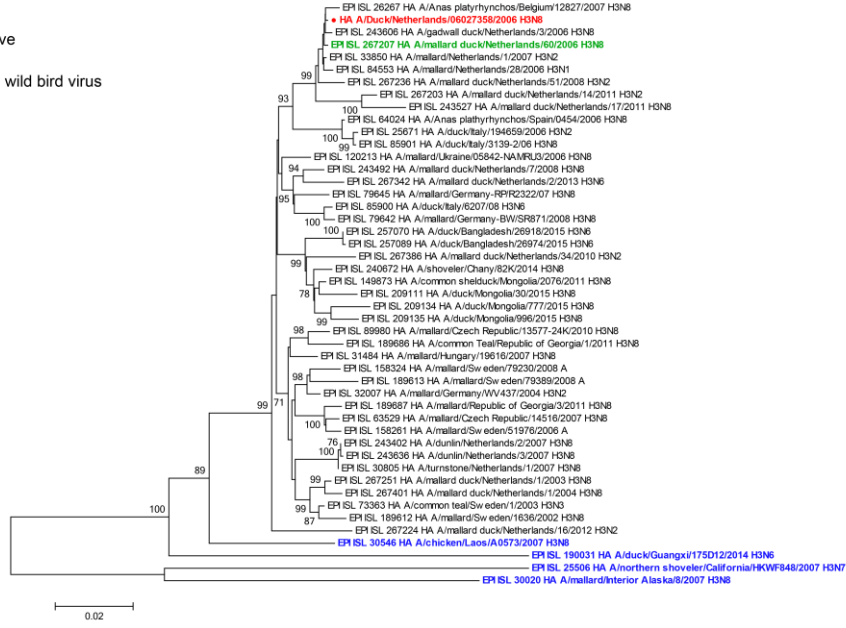
H2

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



H3

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



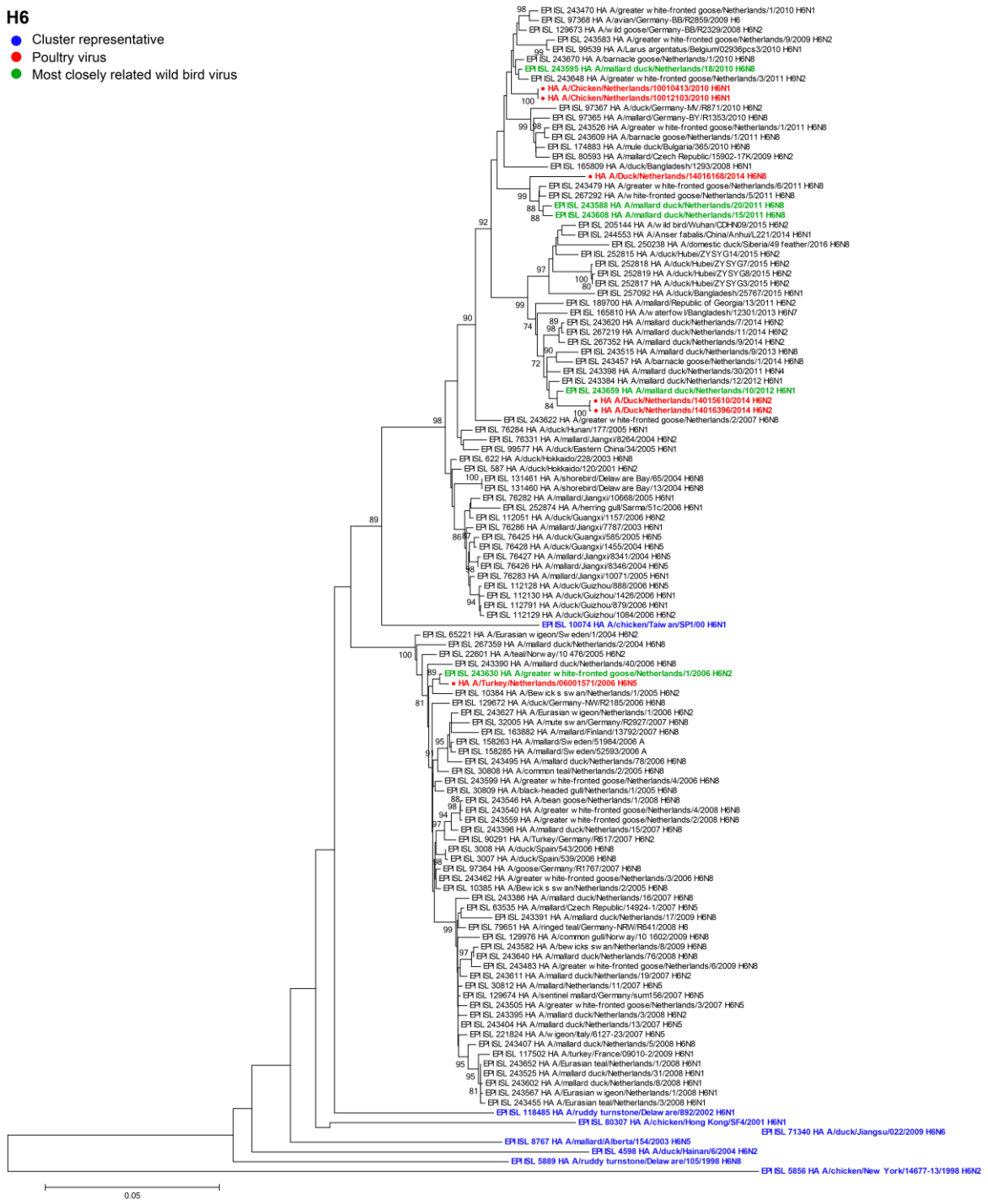
H5

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



H6

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



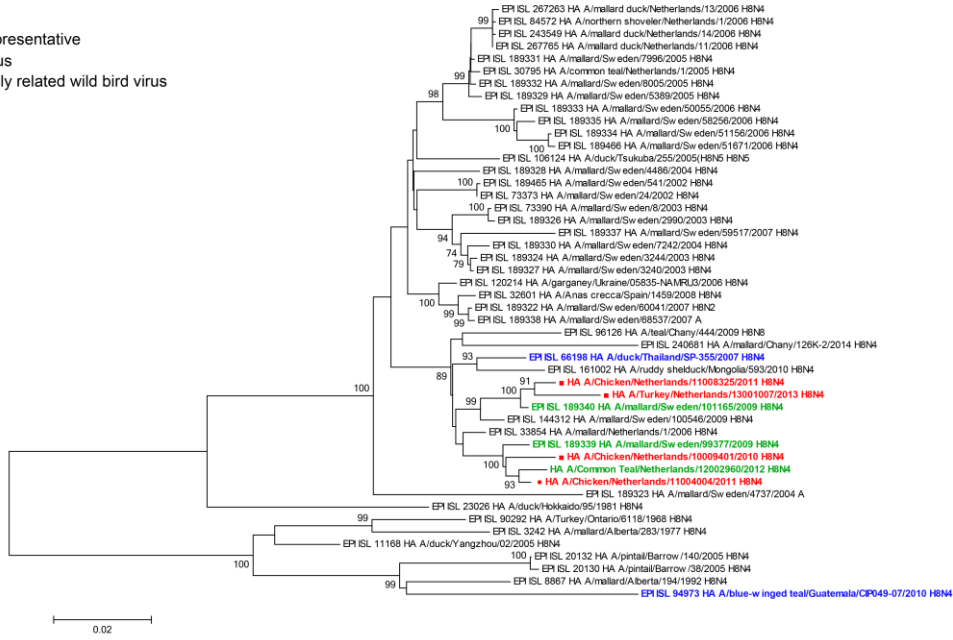
H7

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



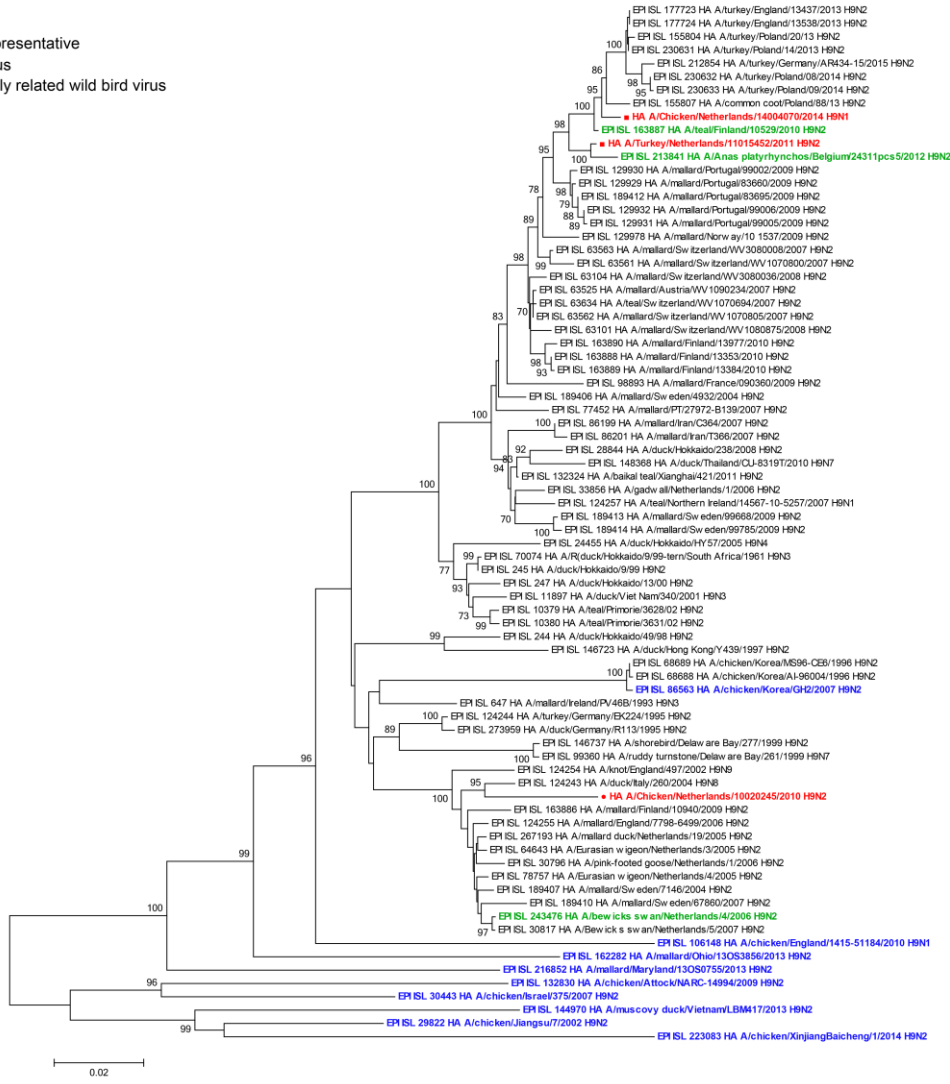
H8

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



H9

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



H10

- Cluster representative
- Poultry virus
- Most closely related wild bird virus

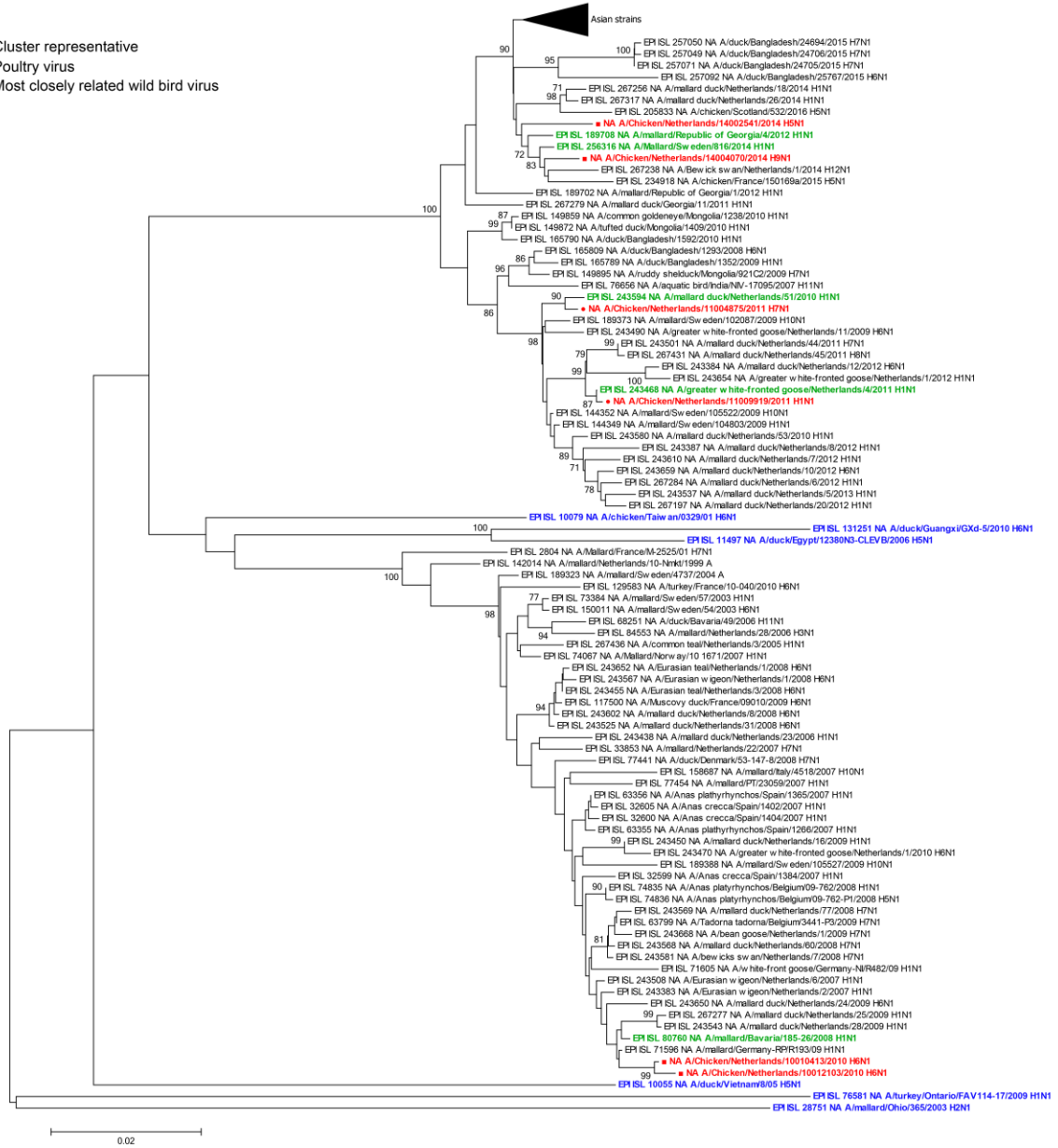


Supplementary Figure S2. Phylogenetic trees of NA genes.

Neighbour joining (NJ) phylogenetic trees of the neuraminidase (NA) gene segments of low pathogenic avian influenza (LPAI) viruses from poultry, detected as part of the national avian influenza (AI) surveillance program in the Netherlands, January 2006-September 2016. Nucleotide (nt) sequences of cluster representatives, poultry viruses and top 50 BLAST hits were aligned for each NA gene segment separately: N1 (1221 nt), N2 (1245 nt), N3 (1343 nt), N4 (1337 nt), N5 (1232 nt), N7 (1225 nt), N8 (1376 nt) and N9 (1342 nt). Phylogenetic trees were generated using the Tamura-Nei substitution model with a gamma distribution (shape parameter = 1) for rate variation within the MEGA7 software package. Bootstrap support values above 70 (1,000 replicates) are shown at the branches. Colours represent cluster representatives (blue), poultry viruses (red), and most identical wild bird viruses as determined by BLAST (red). Symbols represent poultry viruses most identical to wild bird viruses isolated in the Netherlands (dots), other European countries (squares) and Asia (triangles). We gratefully acknowledge the authors, originating and submitting laboratories of the sequences from GISAID's EpiFlu database ²⁸ on which this research is based. All submitters of data may be contacted directly via the GISAID website (<http://www.gisaid.org>).

N1

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



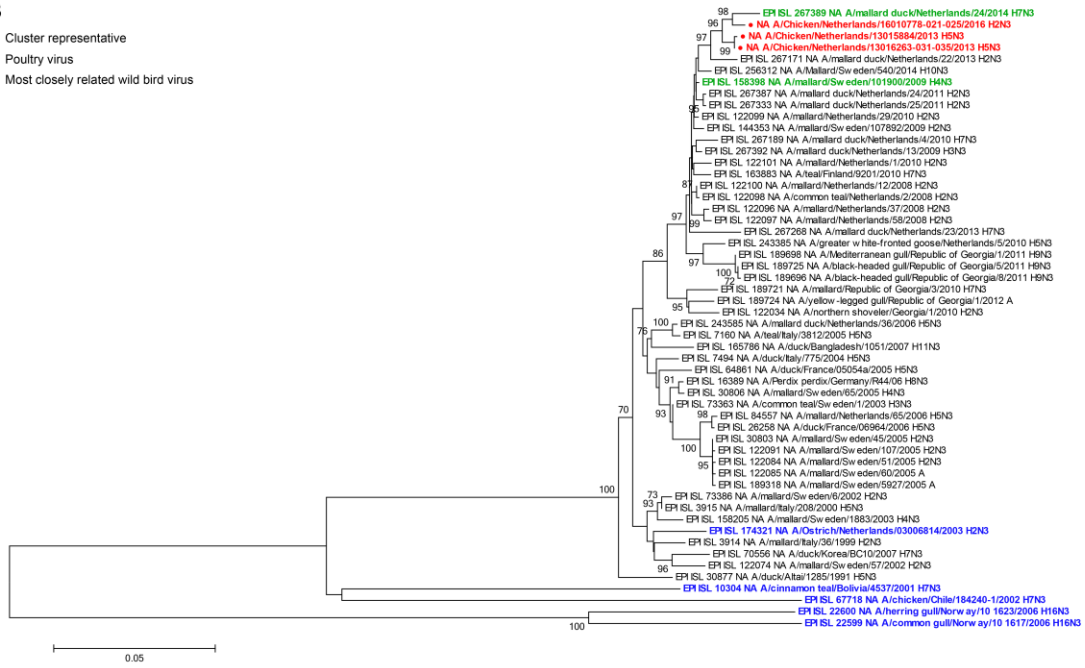
N2

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



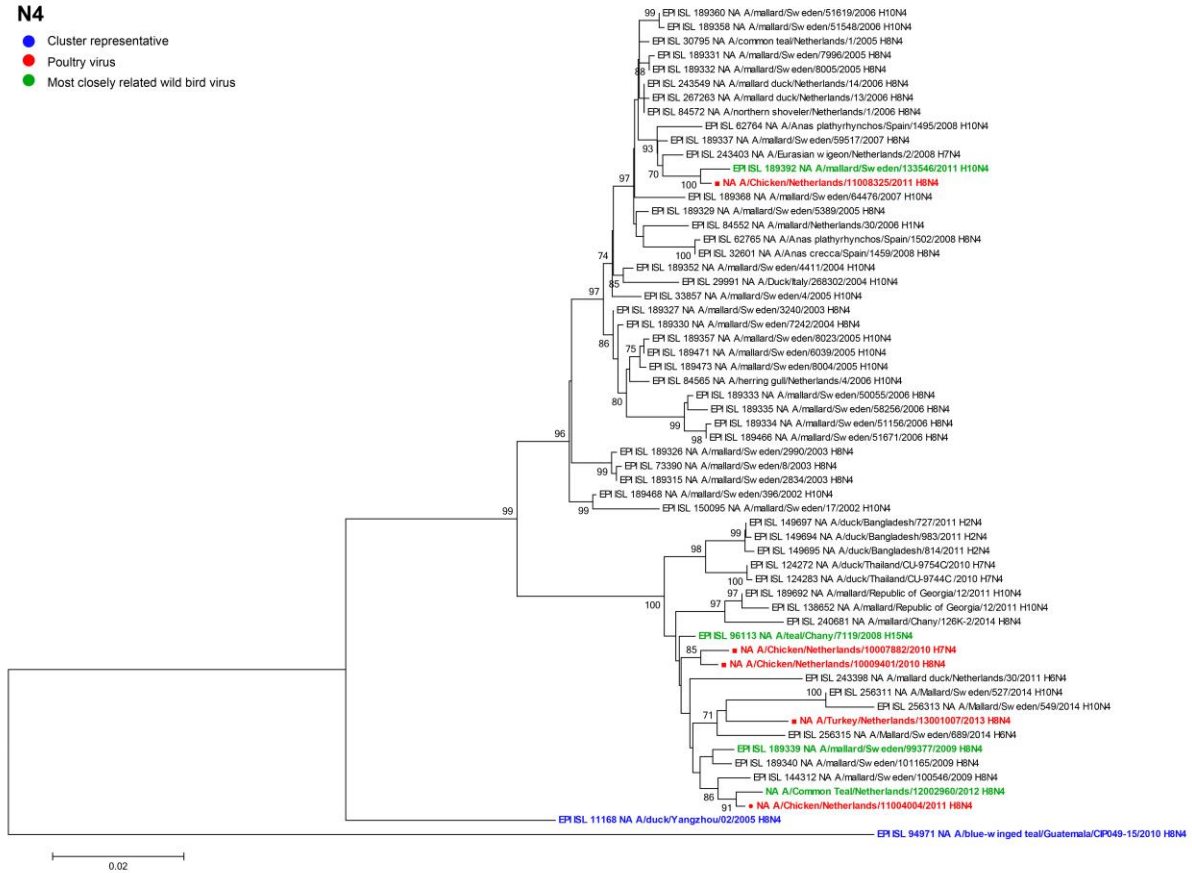
N3

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



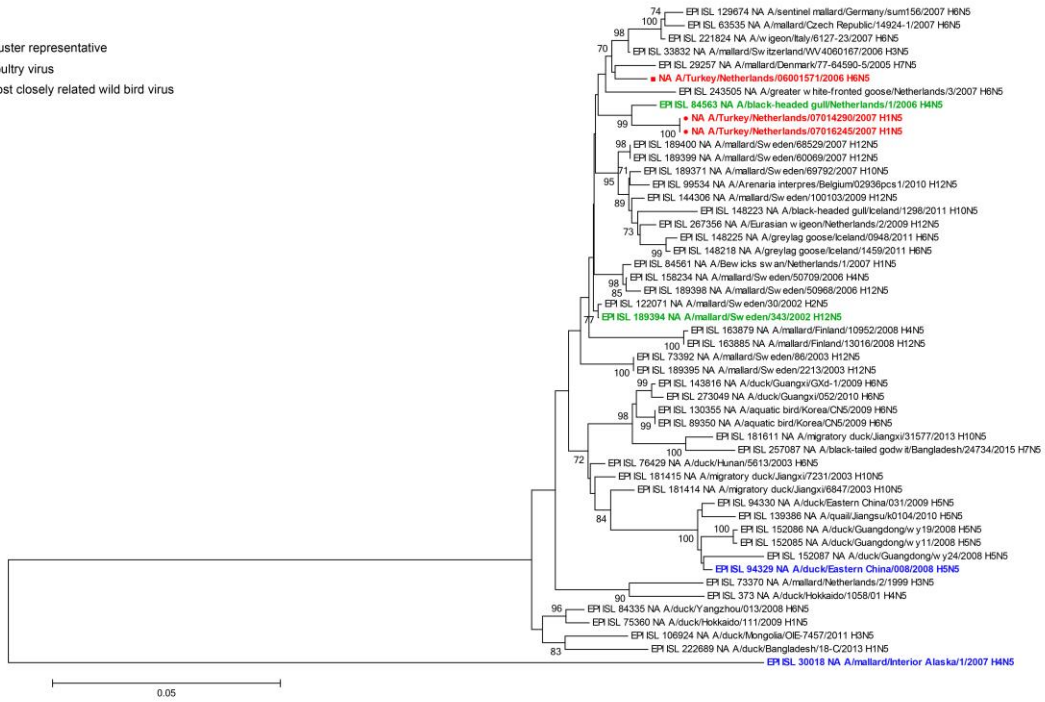
N4

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



N5

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



N8

- Cluster representative
- Poultry virus
- Most closely related wild bird virus



N9

- Cluster representative
- Poultry virus
- Most closely related wild bird virus

