

Molecular analysis of the avian H7 influenza viruses circulating in South Korea during 2018–2019: Evolutionary significance and associated zoonotic threats

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SUPPLEMENTARY TABLES

Table Legends:

Tables S1-S13. Individual gene segments of H7 AIV isolates from Republic of Korea during 2018-2019 with the highest nucleotide identity with respective strains obtained through nucleotide sequence blast in the influenza isolates database (GISAID). S1-S13 represent the specific information about the H7 AIV isolates from Republic of Korea during 2018-2019

Table S1**KNU2019-14 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MW391557	A/duck/Jiangsu/SE0261/2018(H5N3)	People's Republic of China	99.12
PB1	MW391558	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.64
PA	MW391559	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.44
HA	MW391560	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.51
NP	MW391561	A/duck/Viet Nam/QN-2623/2016(H6)	Vietnam	98.80
NA	MW391562	A/mallard duck/Georgia/10/2016(H7N7)	Georgia	97.88
M1/M2	MW391563	A/Duck/Mongolia/652/2017(H7N3)	Mongolia	99.12
NS1/NS2	MW391564	A/wild goose/dongting lake/121/2018(H6N2))	People's Republic of China	99.53

Table S2**KNU2019-33 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MW391497	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.37
PB1	MW391498	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.82
PA	MW391499	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.77
HA	MW391500	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.63
NP	MW391501	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.67
NA	MW391502	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.63
M1/M2	MW391503	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.90
NS1/NS2	MW391504	A/duck/Jiangxi/4.30_NCNP85N2-OC/2017(mixed)	People's Republic of China	99.77

Table S3

KNU2019-33 (H7N7)				
Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MW391497	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.37
PB1	MW391498	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.82
PA	MW391499	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.77
HA	MW391500	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.63
NP	MW391501	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.67
NA	MW391502	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.63
M1/M2	MW391503	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.90
NS1/NS2	MW391504	A/duck/Jiangxi/4.30_NCNP85N2-OC/2017(mixed)	People's Republic of China	99.77

Table S4

KNU2019-25 (H7N3)				
Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MW391567	A/duck/Jiangsu/SE0261/2018(H5N3)	People's Republic of China	99.12
PB1	MW391568	A/duck/Cambodia/C8W6M1/2018(H10N7)	Cambodia	98.68
PA	MW391569	A/wild goose/dongting lake/121/2018(H6N2)	People's Republic of China	98.91
HA	MW391570	A/Jiangsu/1/2018(H7N4)	People's Republic of China	98.22
NP	MW391571	A/duck/Cambodia/12T-24-1-D17/2018(H7N4)	Cambodia	98.88
NA	MW391572	A/pintail/Taiwan/WB2478/2017(H1N3)	Taiwan	99.23
M1/M2	MW391573	A/duck/Hokkaido/OBF2/2018(H3N2)	Japan	99.49
NS1/NS2	MW391574	A/duck/Mongolia/520/2015(H1N1)	Mongolia	99.43

Table S5

KNU2019-30 (H7N7)				
Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MW404521	A/duck/Mongolia/30/2015 (A/H3N8) segment 1 (PB2)	Mongolia	97
PB1	MW404522	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99
PA	MW404523	A/eurasian wigeon/Kagoshima/KU-20/2016 (A/H5N6) segment 3 (PA))	Japan	97
HA	MW404524	A/common teal/Shanghai/CM1216/2017(H7N7))	People's Republic of China	99.63
NP	MW404525	A/duck/Hokkaido/WZ1/2014(H11N2)	Japan	99.27
NA	MW404526	A/common teal/Shanghai/CM1216/2017(H7N7)	People's Republic of China	99.63
M1/M2	MW404527	A/duck/Akita/51019/2017(H5N3)	Japan	99.69
NS1/NS2	MW404528	A/wild goose/dongting lake/121/2018(H6N2)	People's Republic of China	99.19

Table S6**KNU2018-104 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483242	A/duck/Miyazaki/450307/2016 (A/H1N1) segment 1 (PB2)	Mongolia	98
PB1	MN483243	A/wild bird feces/Korea/H189-1/2016 (A/H5N3) segment 2 (PB1)	Republic of Korea	99
PA	MN483244	A/duck/Mongolia/543/2015 (A/H4N6) segment 3 (PA)	Mongolia	99
HA	MN483245	A/duck/Ibaraki/1/2015 (A/H7N2) segment 4 (HA)	Japan	98
NP	MN483246	A/mallard/Korea/H15-1/2017 (A/H5N2) segment 5 (NP)	Republic of Korea	99
NA	MN483247	A/mallard/Korea/A15/2016 (A/H7N7) segment 6 (NA)	Republic of Korea	98
M1/M2	MN483248	A/duck/Viet Nam/HN-2634/2016 (A/H6N6) segment 7 (MP)	Vietnam	99
NS1/NS2	MN483249	A/spot-billed duck/Korea/H422-7/2016 (A/H5N3) segment 8 (NS)	Republic of Korea	99

Table S7

KNU2018-106 (H7N7)				
Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483208	A/duck/Mongolia/769/2015 (A/H4N6) segment 1 (PB2)	Mongolia	98
PB1	MN483209	A/mallard/Korea/WA245/2017 (A/H7N7) segment 2 (PB1)	Republic of Korea	98
PA	MN483210	A/duck/Ibaraki/F10-2-5/2017 (A/H7N7) segment 3 (PA)	Japan	99
HA	MN483211	A/environment/Korea/MA-478/2016 (A/H7N7) segment 4 (HA)	Republic of Korea	98
NP	MN483212	A/duck/Assam/DUOR1512100028/2015 (A/H3N8) segment 5 (NP)	India	98
NA	MN483213	A/mallard/Korea/A15/2016 (A/H7N7) segment 6 (NA)	Republic of Korea	98
M1/M2	MN483214	A/duck/Bangladesh/26980/2015 (A/H7N9) segment 7 (MP)	Bangladesh	99
NS1/NS2	MN483215	A/spot-billed duck/Korea/H422-7/2016 (A/H5N3) segment 8 (NS)	Republic of Korea	99

Table S8**KNU2018-107 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483250	A/duck/Mongolia/769/2015 (A/H4N6) segment 1 (PB2)	Mongolia	98
PB1	MN483251	A/mallard/Korea/WA245/2017 (A/H7N7) segment 2 (PB1)	Republic of Korea	98
PA	MN483252	A/duck/Ibaraki/F10-2-5/2017 (A/H7N7) segment 3 (PA)	Japan	99
HA	MN483253	A/environment/Korea/MA-478/2016 (A/H7N7) segment 4 (HA)	Republic of Korea	97
NP	MN483254	A/duck/Assam/DUOR1512100028/2015 (A/H3N8) segment 5 (NP)	India	98
NA	MN483255	A/mallard/Korea/A15/2016 (A/H7N7) segment 6 (NA)	Republic of Korea	98
M1/M2	MN483256	A/duck/Bangladesh/26980/2015 (A/H7N9) segment 7 (MP)	Bangladesh	99
NS1/NS2	MN483257	A/wild bird feces/Korea/H49/2017 (A/H5N2) segment 8 (NS)	Republic of Korea	99

Table S9**KNU2018-108 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483215	A/duck/Mongolia/769/2015 (A/H4N6) segment 1 (PB2)	Mongolia	96
PB1	MN483216	A/mallard/Korea/WA245/2017 (A/H7N7) segment 2 (PB1)	Republic of Korea	98
PA	MN602497	A/duck/Ibaraki/F10-2-5/2017 (A/H7N7) segment 3 (PA)	Japan	99
HA	MN483217	A/environment/Korea/MA-478/2016 (A/H7N7) segment 4 (HA)	Republic of Korea	97
NP	MN483218	A/duck/Assam/DUOR1512100028/2015 (A/H3N8) segment 5 (NP)	India	98
NA	MN483219	A/mallard/Korea/A15/2016 (A/H7N7) segment 6 (NA)	Republic of Korea	98
M1/M2	MN483220	A/duck/Bangladesh/26980/2015 (A/H7N9) segment 7 (MP)	Bangladesh	99
NS1/NS2	MN602498	A/teal/Egypt/MB-D-698C/2016 (A/H7N3) segment 8 (NS)	Egypt	99

Table S10**KNU2018-109 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483221	A/duck/Mongolia/769/2015 (A/H4N6) segment 1 (PB2)	Mongolia	98
PB1	MN483222	A/mallard/Korea/WA245/2017 (A/H7N7) segment 2 (PB1)	Republic of Korea	98
PA	MN602499	A/duck/Ibaraki/F10-2-5/2017 (A/H7N7) segment 3 (PA)	Japan	99
HA	MN483223	A/environment/Korea/MA-478/2016 (A/H7N7) segment 4 (HA)	Republic of Korea	98
NP	MN602500	A/duck/Assam/DUOR1512100028/2015 (A/H3N8) segment 5 (NP)	India	98
NA	MN483224	A/mallard/Korea/A15/2016 (A/H7N7) segment 6 (NA)	Republic of Korea	98
M1/M2	MN483220	A/duck/Bangladesh/26980/2015 (A/H7N9) segment 7 (MP)	Bangladesh	99
NS1/NS2	MN602501	A/teal/Egypt/MB-D-698C/2016 (A/H7N3) segment 8 (NS)	Egypt	99

Table S11**KNU2018-110 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483226	A/duck/Mongolia/769/2015 (A/H4N6) segment 1 (PB2)	Mongolia	98
PB1	MN483227	A/mallard/Korea/WA245/2017 (A/H7N7) segment 2 (PB1)	Republic of Korea	98
PA	MN602502	A/duck/Ibaraki/F10-2-5/2017 (A/H7N7) segment 3 (PA)	Japan	99
HA	MN483228	A/environment/Korea/MA-478/2016 (A/H7N7) segment 4 (HA)	Republic of Korea	97
NP	MN483229	A/duck/Assam/DUOR1512100028/2015 (A/H3N8) segment 5 (NP)	India	98
NA	MN602503	A/mallard/Korea/A15/2016 (A/H7N7) segment 6 (NA)	Republic of Korea	98
M1/M2	MN483230	A/duck/Bangladesh/26980/2015 (A/H7N9) segment 7 (MP)	Bangladesh	99
NS1/NS2	MN602504	A/teal/Egypt/MB-D-698C/2016 (A/H7N3) segment 8 (NS)	Egypt	99

Table S12**KNU2018-114 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483231	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 1 (PB2)	People's Republic of China	99
PB1	MN602505	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 2 (PB1)	People's Republic of China	99
PA	MN602506	A/mallard/Korea/H836-10/2017 (A/H7N3) segment 3 (PA)	Japan	99
HA	MN483232	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 4 (HA)	People's Republic of China	99
NP	MN483233	A/teal/Chany/324/2017 (A/H12N5) segment 5 (NP)	Russia	99
NA	MN483234	A/duck/Bangladesh/18D769/2017 (A/H6N7) segment 6 (NA)	Bangladesh	98
M1/M2	MN483235	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 7 (MP)	People's Republic of China	99
NS1/NS2	MN602507	A/teal/Egypt/MB-D-698C/2016 (A/H7N3) segment 8 (NS)	Egypt	99

Table S13**KNU2018-119 (H7N7)**

Gene segment	Genebank ID	Reference strain	Country	Percent identity
PB2	MN483236	A/duck/Bangladesh/18D770/2017 (A/H6N7) segment 1 (PB2)	Bangladesh	98
PB1	MN602508	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 2 (PB1)	People's Republic of China	99
PA	MN602509	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 3 (PA)	People's Republic of China	99
HA	MN483237	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 4 (HA)	People's Republic of China	99
NP	MN483238	A/mallard/Korea/F94-16/2017 (A/H4N6) segment 5 (NP)	Republic of Korea	97
NA	MN483239	A/duck/Bangladesh/18D769/2017 (A/H6N7) segment 6 (NA)	Bangladesh	98
M1/M2	MN483240	A/common teal/Shanghai/CM1216/2017 (A/H7N7) segment 7 (MP)	People's Republic of China	99
NS1/NS2	MN483241	A/teal/Egypt/MB-D-698C/2016 (A/H7N3) segment 8 (NS)	Egypt	99