Whole-Genome Characterization of a Novel Human Influenza A(H1N2) Virus Variant, Brazil

Technical Appendix

Technical Appendix Figure (following pages). Maximum-likelihood (ML) trees of each gene segment (PB2, polymerase basic 2 gene; PB1, polymerase basic gene; PA, polymerase acid gene; HA, hemagglutinin gene; NP, nucleoprotein gene; NA, neuraminidase gene, M, matrix gene; NS, non-structural protein gene) were performed to reconstruct the phylogenetic profile of influenza A/Parana/720/2015 (H1N2)v (Figure, red). The dataset used includes H1N1 (orange) and H3N2 (blue) seasonal and H1N1pdm09 (pink) vaccine strains and all H1N2 whole genomes available in GenBank or the Global Initiative on Sharing All Influenza Data. The H1N2 subtype strains were classified as Brazilian swine H1N2 (green), worldwide swine and avian (black), human H1N2 and swine-origin H1N2v strains (purple). The Hasegawa-Kishino-Yano + gamma distribution among the sites was the best-fitting nucleotide substitution model and was used to reconstruct the trees. ML reliability of branches was evaluated using an approximate likelihood ratio test; the interior support branch cutoff value was ≥0.9.
H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case

A/Paranal/720/2015
H1N2v

PB2
PB1
HA
NP
NA
MP

Green human seasonal H3N2 lineage
Orange – North American lineage

North American Avian PB2
North American Avian PB1
North American Avian HA
North American Avian NP
North American Avian NA
North American Avian MP
North American Avian NS1
North American Avian NS2
H3N2 vaccine strains
H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case
Human H1N2 cases

A/Paranal/720/2015 H1N2v

PB1

H3N2 vaccine strains
H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case
Human H1N2 cases
H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case

A/Paranal/720/2015
H1N2v

PB2
PB1
PA
HA
NP
MP
NA
NS

Human seasonal H3N2 lineage
Avian — North American lineage
H1N1 vaccine strains
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case
Human H1N2 cases

A/Parana/720/2015
H1N2v

PB2
PB1
PA
HA
NP
NA
MP
NS

Human seasonal H3N2 lineage
Avian – North American lineage
Classical swine H1N1 – North American lineage

Human seasonal H1 lineage
Human seasonal H1 lineage (only swine)
Classical swine H1 lineage
Swine H1 Eurasian lineage
Avian H1 lineage
Avian H1 Eurasian lineage
NP

H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case

A/Parana/720/2015 H1N2v

PB2
PB1
PA
HA
NP
NA
MP
NS

Human seasonal H3N2 lineage
Avian – North American lineage
Classical swine H3N1 – North American lineage
H3N2 vaccine strains
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case
Human H1N2 cases

Human seasonal N2 lineage

Swine triple reassortant N2

Human seasonal H3N2 lineage
Avian – North American lineage
Classical swine H1N1 – North American lineage
H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v case

A/Parana/720/2015
H1N2v

Human seasonal H5N2 lineage
Avian – North American lineage
Classical swine H3N1 – North American lineage
Eurasian swine lineage
H1N1pdm09 vaccine strain
Swine and avian H1N2 strains
Brazil swine H1N2 cases
Brazil human H1N2v cases

A/Parana/720/2015 H1N2v

Human seasonal H3N2 lineage
Avian – North American lineage
Classical swine H1N1 – North American lineage
Eurasian swine lineage