

Supporting Information for

The genomic landscape of swine influenza A viruses in Southeast Asia

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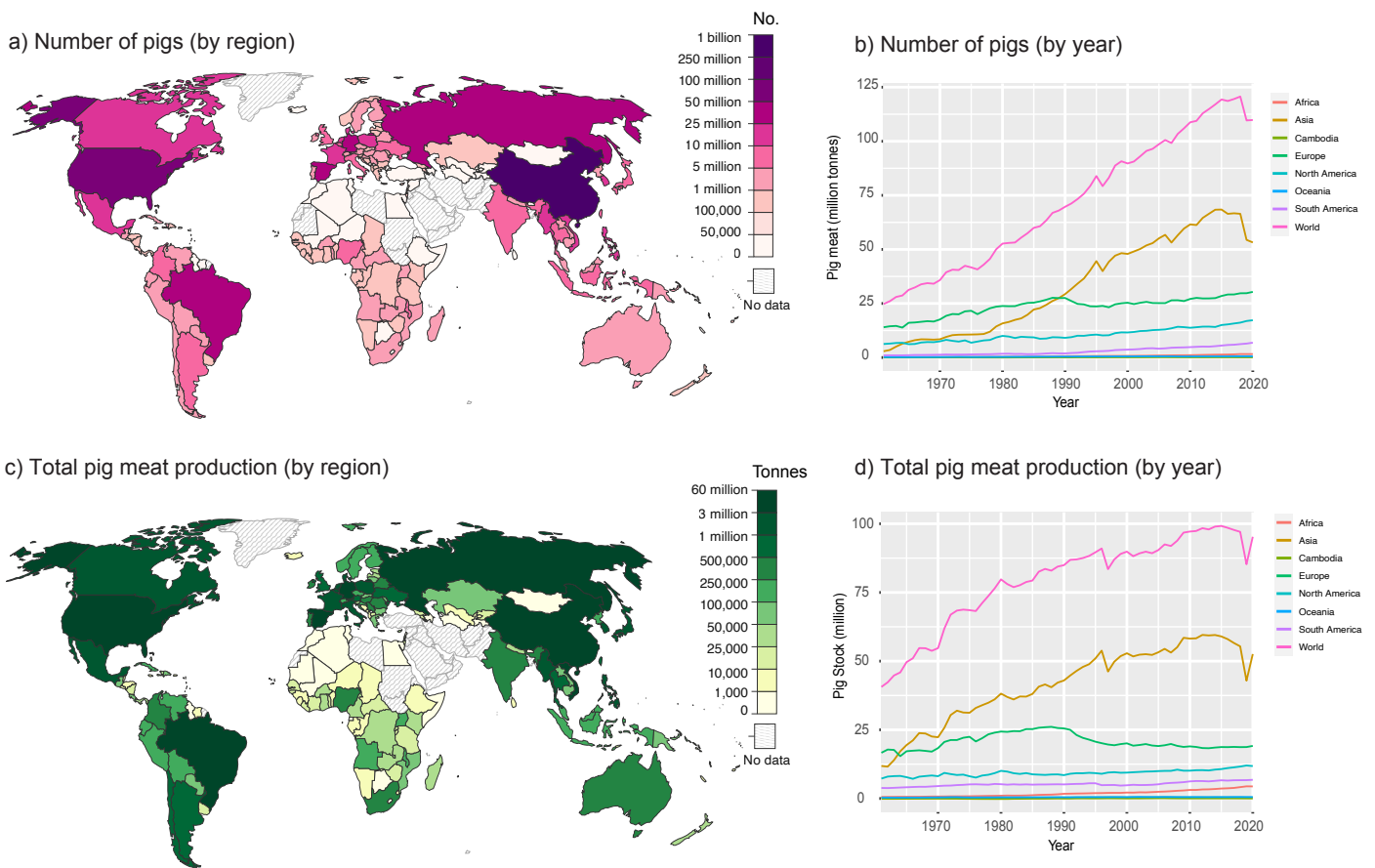


Fig. S1. Comparison of pig production in different geographic regions. (a) Global distribution of pig populations in 2020. (b) Number of pigs in the world by year. (c) Global distribution of total pig meat production in 2020. (d) Total pig meat production by year. Source: The United Nations Food and Agriculture Organization (FAO) and Our World in Data (OWID).

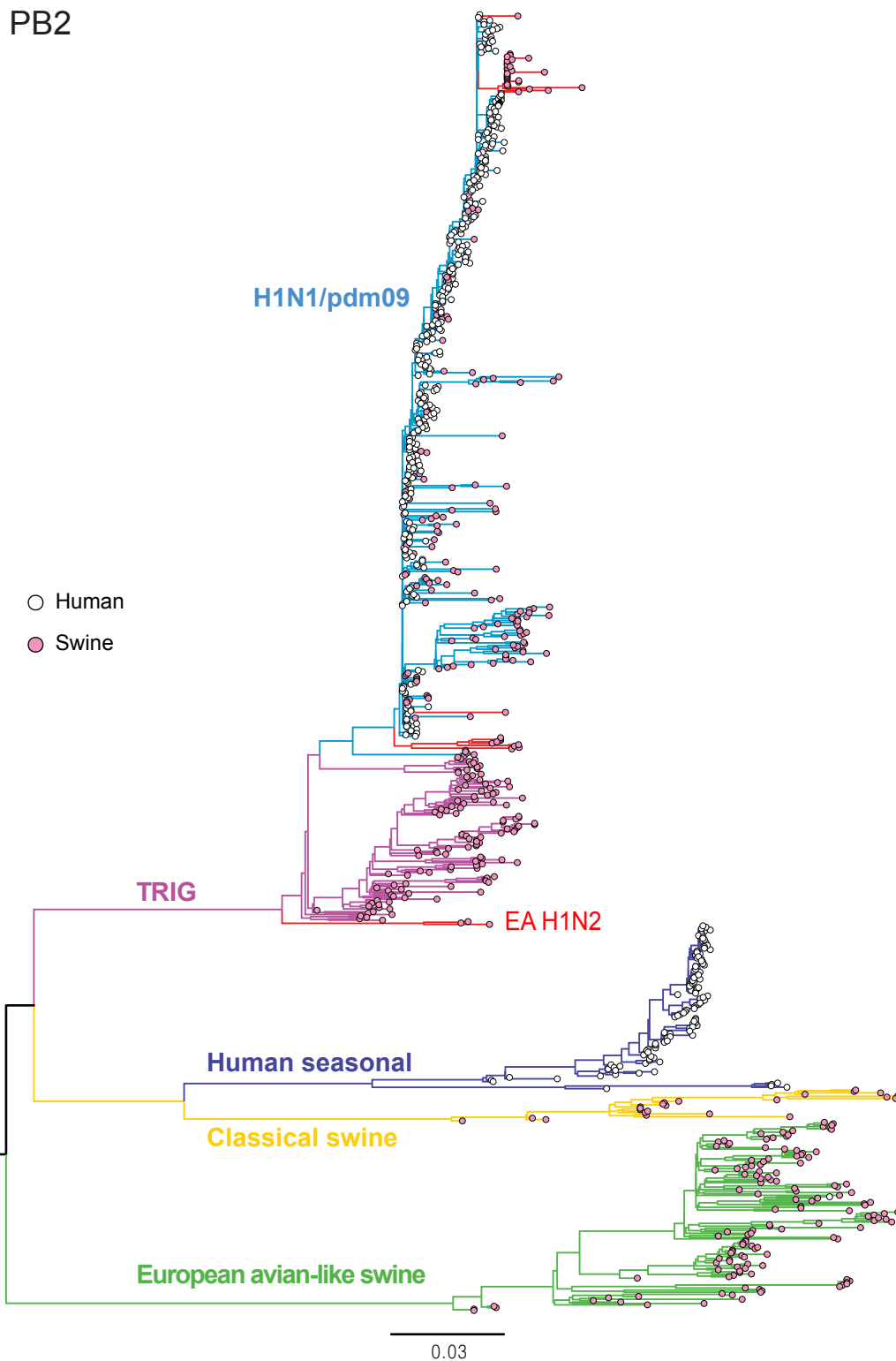


Fig. S2. Maximum likelihood phylogeny of the PB2 gene of human and swine influenza viruses. Coloured branches represent major lineages. Red branches denote swine sequences generated in this study. The novel EA H1N2 from pigs in Cambodia is indicated. Human and swine viruses are shown by pink and white tip circles. The scale bar represents the number of nucleotide substitutions per site.

PB1

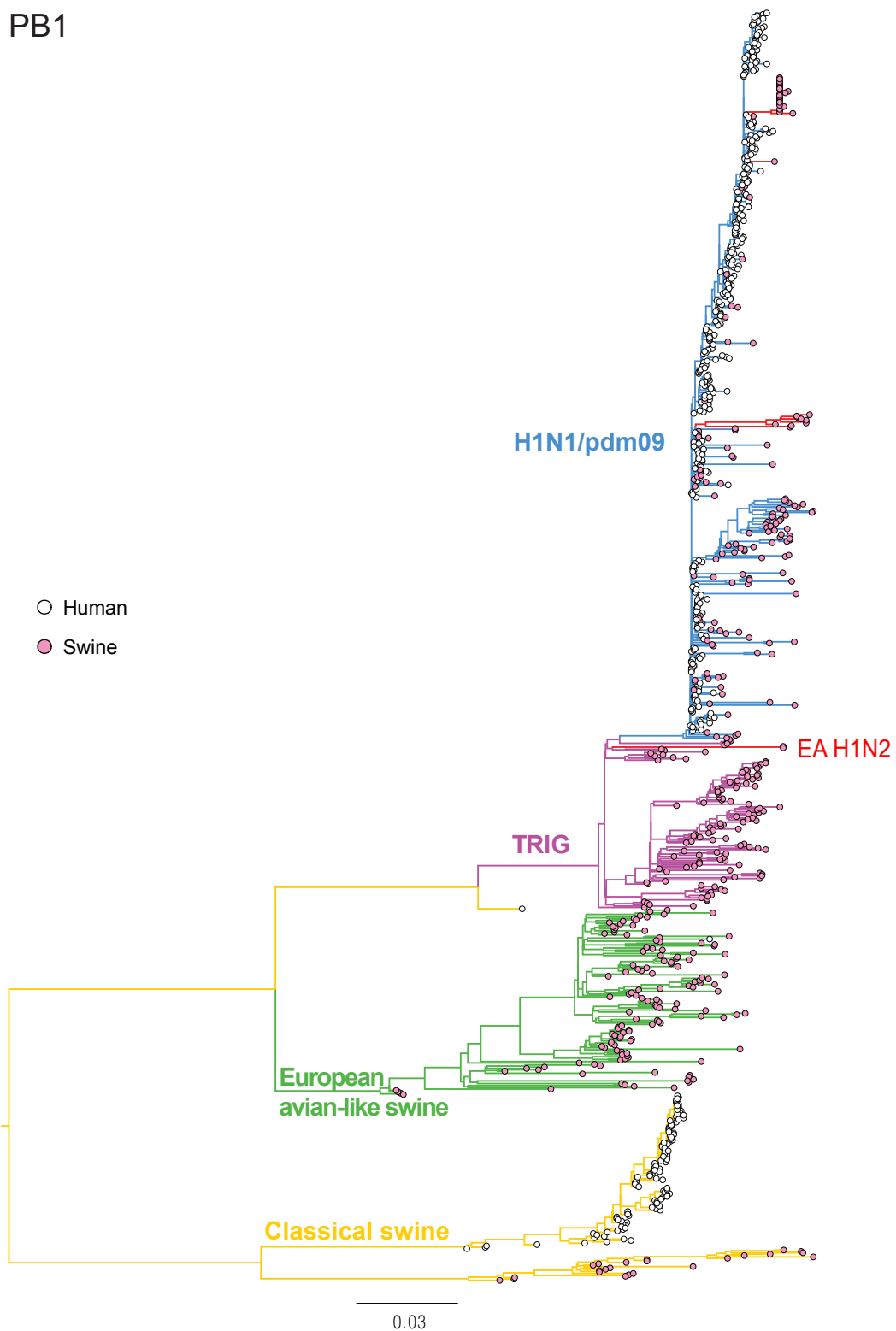


Fig. S3. Maximum likelihood phylogeny of the PB1 gene of human and swine influenza viruses. Coloured branches represent major lineages. Red branches denote swine sequences generated in this study. The novel EA H1N2 from pigs in Cambodia is indicated. Human and swine viruses are shown by pink and white tip circles. The scale bar represents the number of nucleotide substitutions per site.

PA

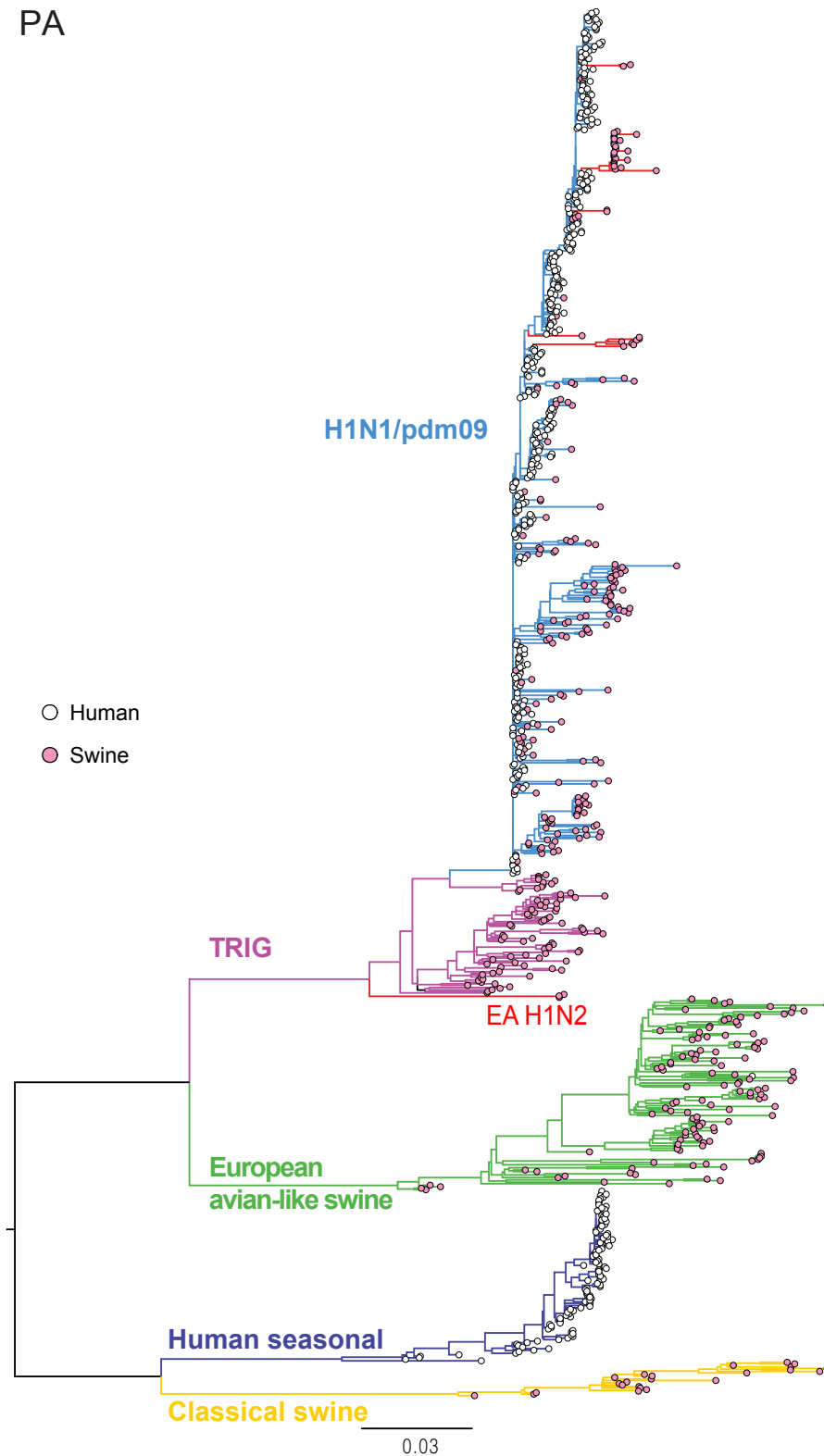


Fig. S4. Maximum likelihood phylogeny of the PA gene of human and swine influenza viruses. Coloured branches represent major lineages. Red branches denote swine sequences generated in this study. The novel EA H1N2 from pigs in Cambodia is indicated. Human and swine viruses are shown by pink and white tip circles. The scale bar represents the number of nucleotide substitutions per site.

NP

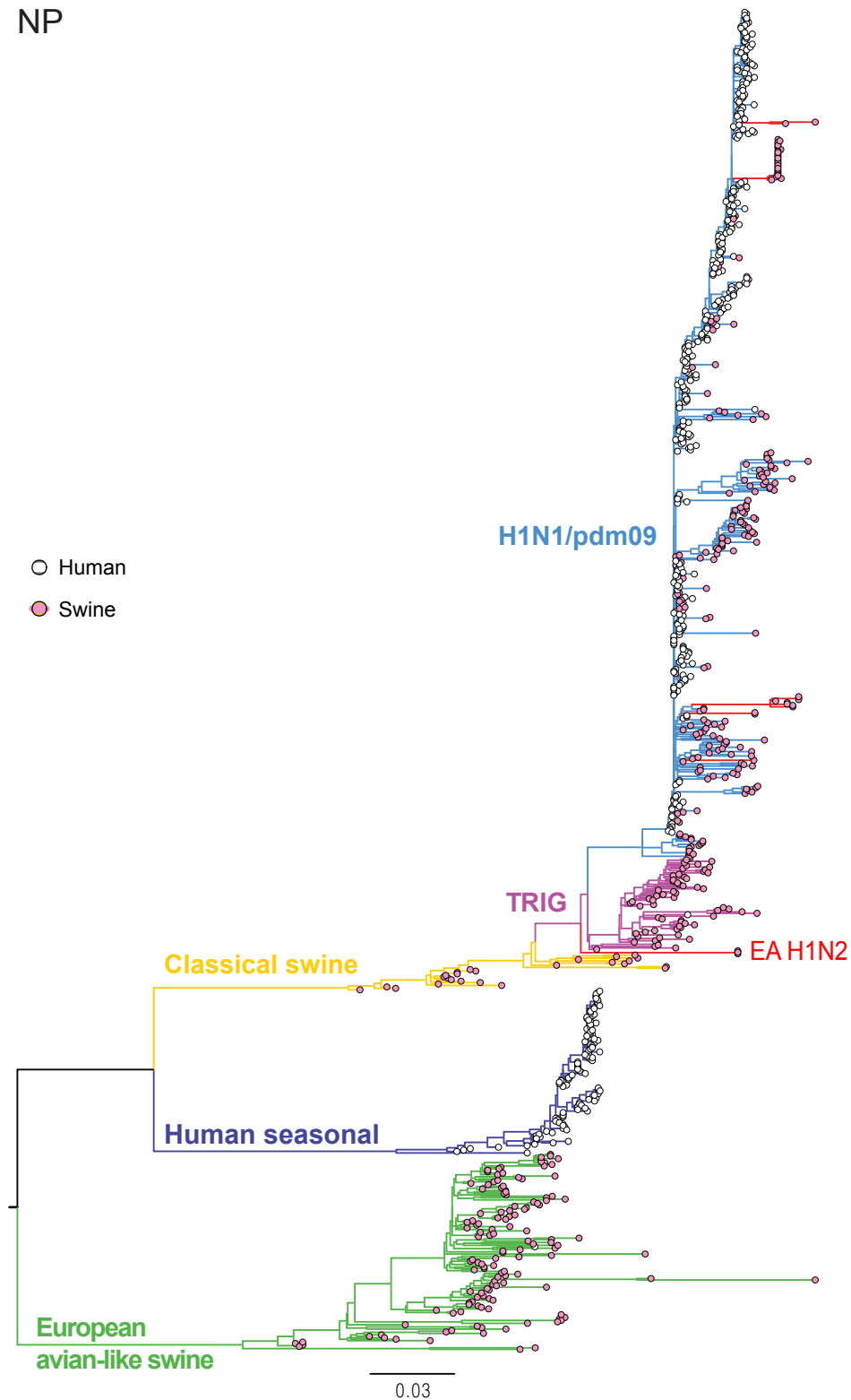


Fig. S5. Maximum likelihood phylogeny of the NP gene of human and swine influenza viruses. Coloured branches represent major lineages. Red branches denote swine sequences generated in this study. The novel EA H1N2 from pigs in Cambodia is indicated. Human and swine viruses are shown by pink and white tip circles. The scale bar represents the number of nucleotide substitutions per site.

MP

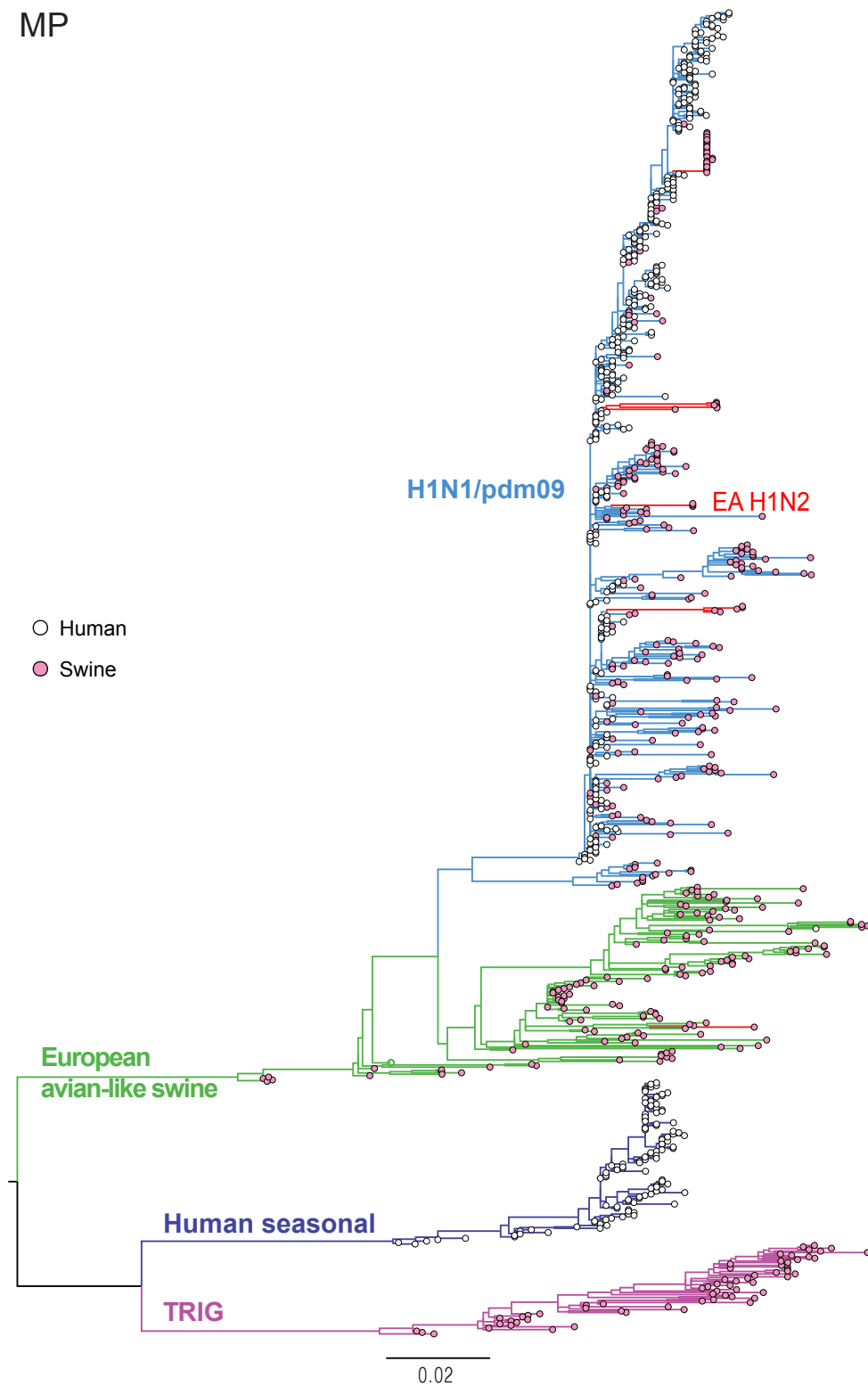


Fig. S6. Maximum likelihood phylogeny of the MP gene of human and swine influenza viruses. Coloured branches represent major lineages. Red branches denote swine sequences generated in this study. The novel EA H1N2 from pigs in Cambodia is indicated. Human and swine viruses are shown by pink and white tip circles. The scale bar represents the number of nucleotide substitutions per site.

NS

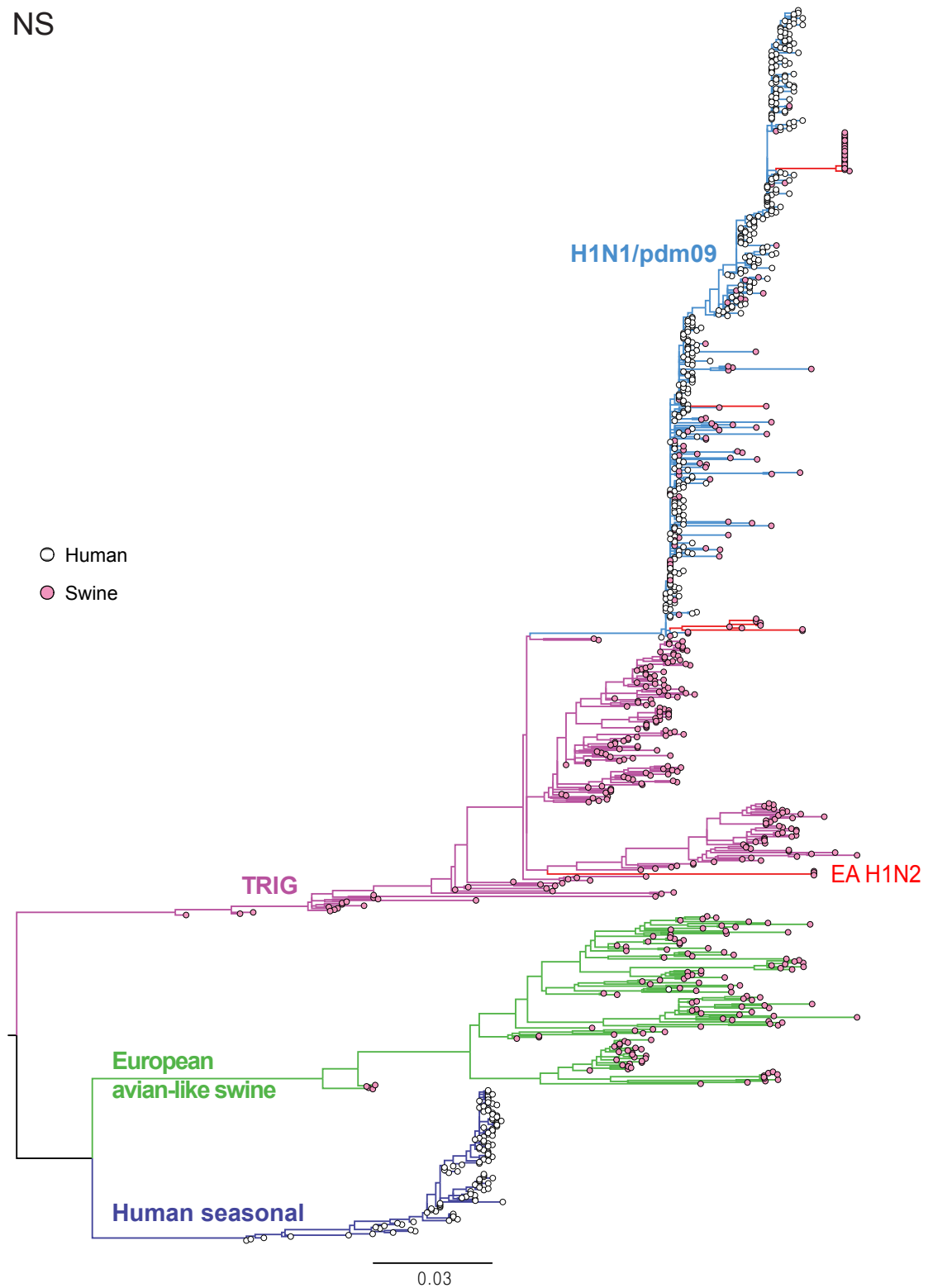


Fig. S7. Maximum likelihood phylogeny of the NS gene of human and swine influenza viruses. Coloured branches represent major lineages. Red branches denote swine sequences generated in this study. The novel EA H1N2 from pigs in Cambodia is indicated. Human and swine viruses are shown by pink and white tip circles. The scale bar represents the number of nucleotide substitutions per site.

H1-HA European avian-like swine

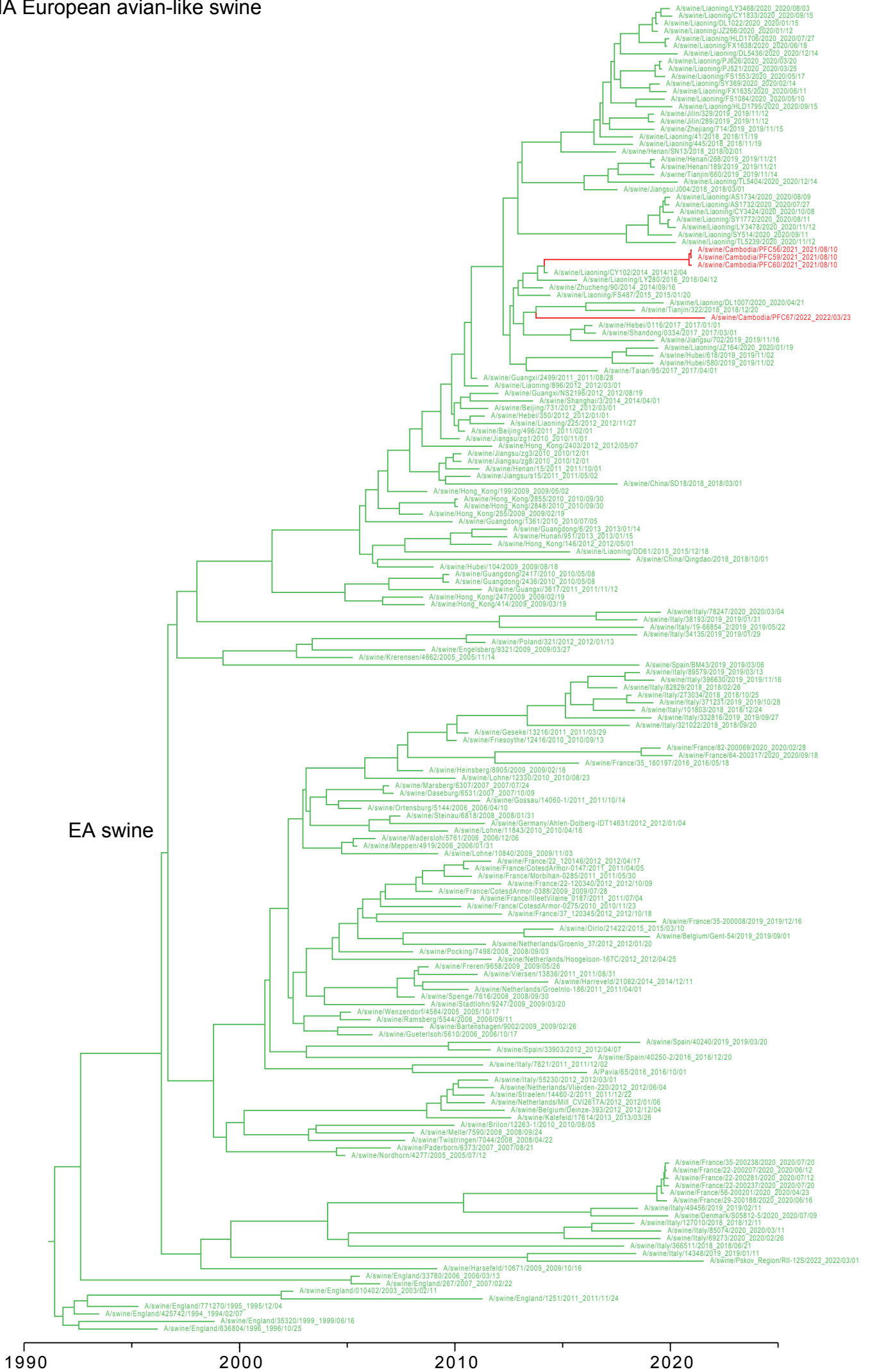


Fig. S8. Time scaled phylogeny of the H1-HA gene of European avian-like swine lineage. Red branches denote swine sequences generated in this study.

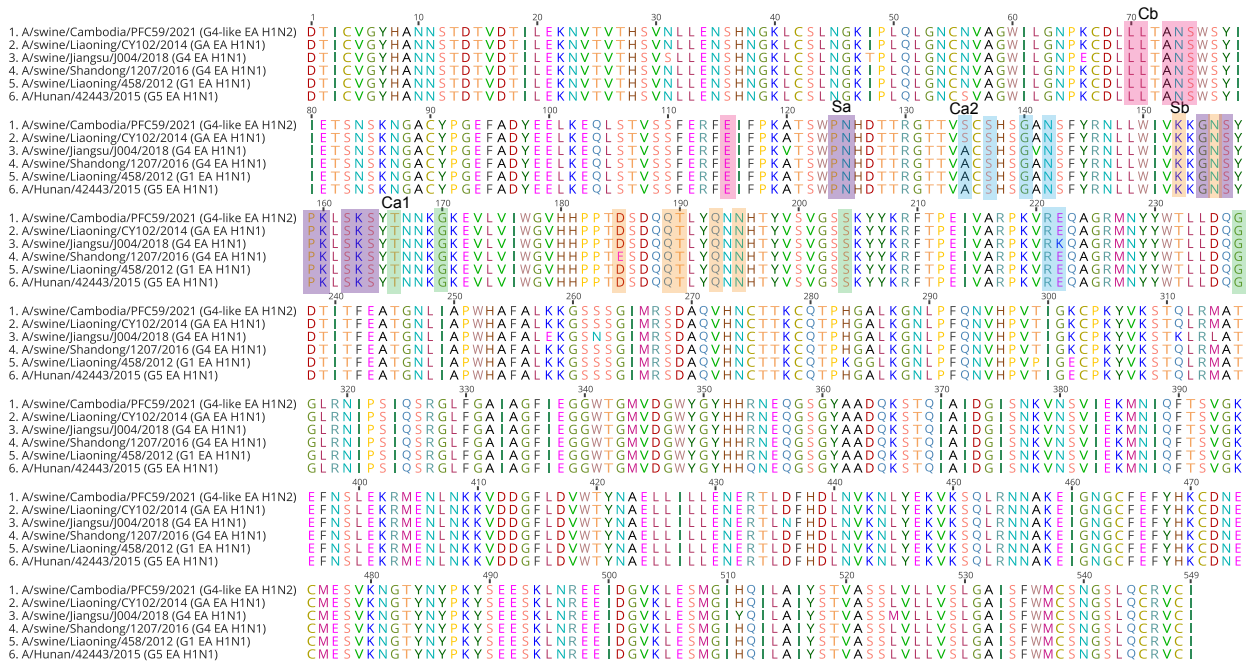
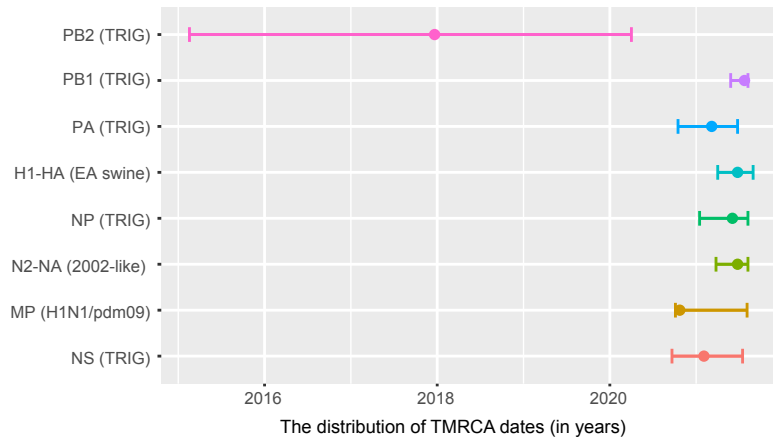


Fig. S9. Alignment of the full-length HA amino acid sequences of Cambodian EA H1N2 subtype and other representatives of European avian-like swine lineages. The highlighted amino acid sequences represent five antigenic sites: Ca1, Ca2, Cb, Sa and Sb.

a) European avian-like H1N2 swine



b) swine H1 and H3 lineages

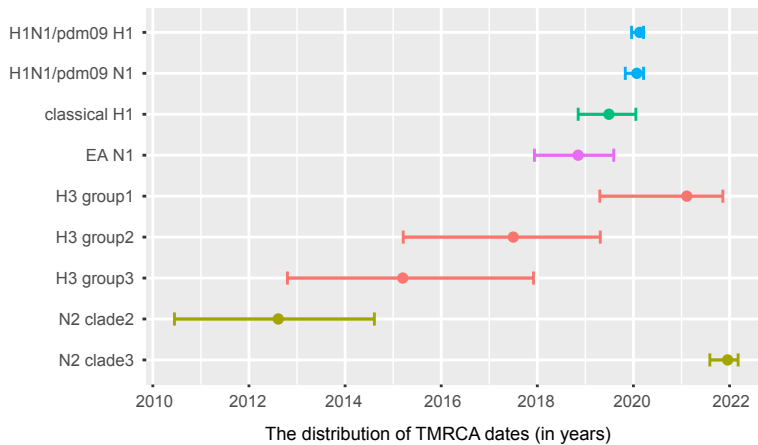
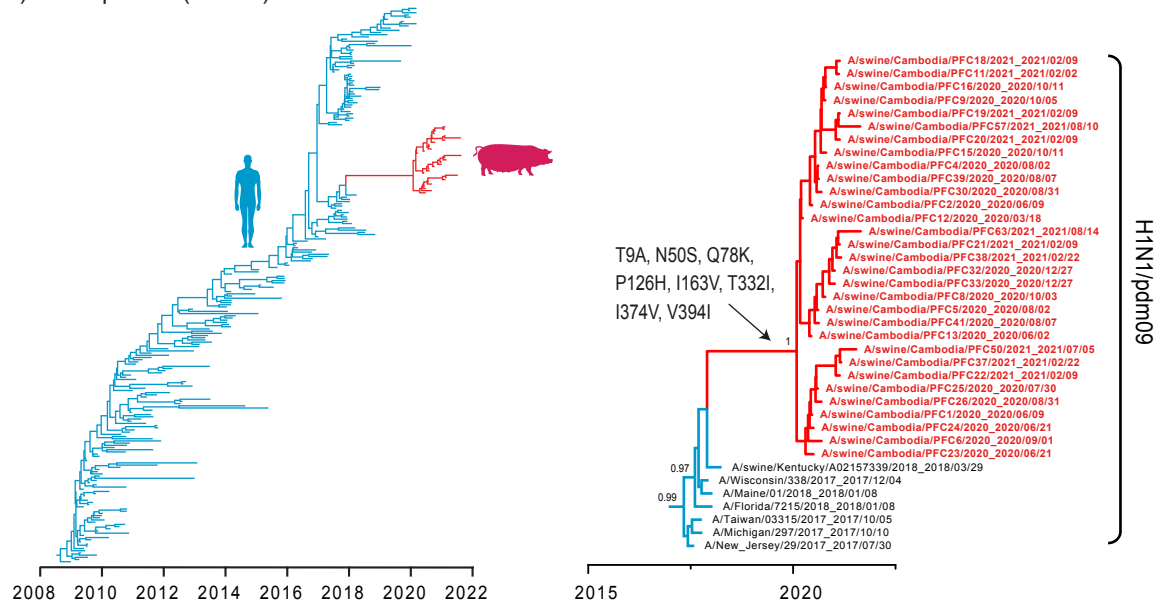


Fig. S10. The estimated time of the most recent common ancestors (TMRCA) of different swIAV lineages from pigs in Cambodia. (a) The distribution of TMRCA dates of the Cambodian EA-swine lineage. Lineage name in brackets represent lineage designation. (b) The distribution of TMRCA dates of Cambodian H1, N1, H3 and N2 swine influenza lineages.

a) H1N1/pdm09 (N1-NA)



b) European avian-like H1N1 swine (N1-NA)

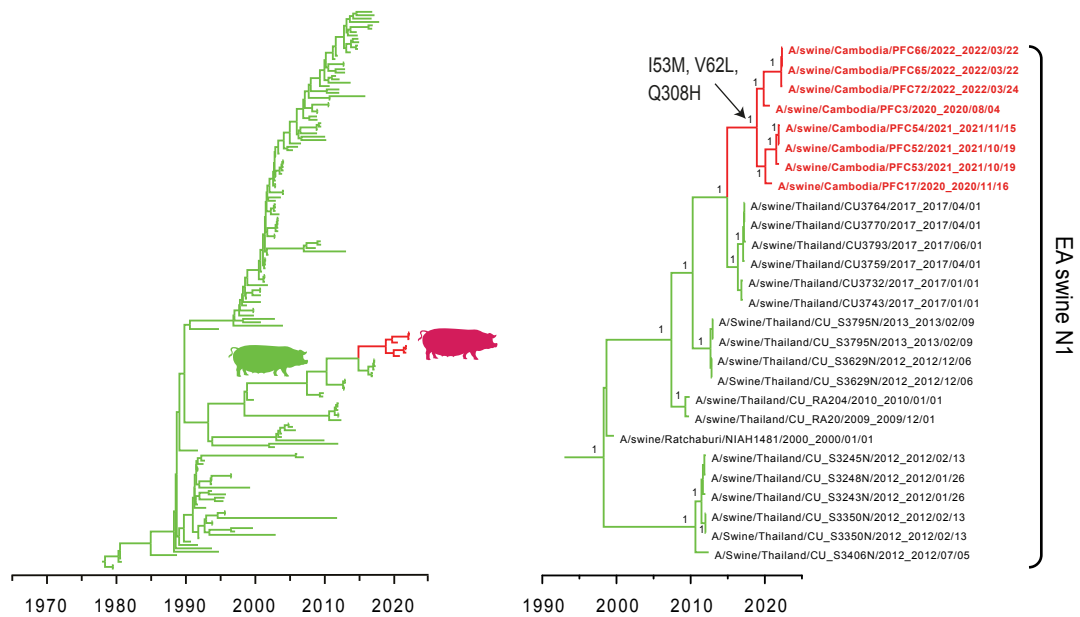


Fig. S11. Time scaled phylogenies of N1-NA genes. (a) human H1N1/pdm09 lineage. (b) European avian-like swine lineage. Red branches denote swine sequences generated in this study. Amino acid substitutions are indicated at the nodes of Cambodian swine influenza lineages. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

PB2

PB2

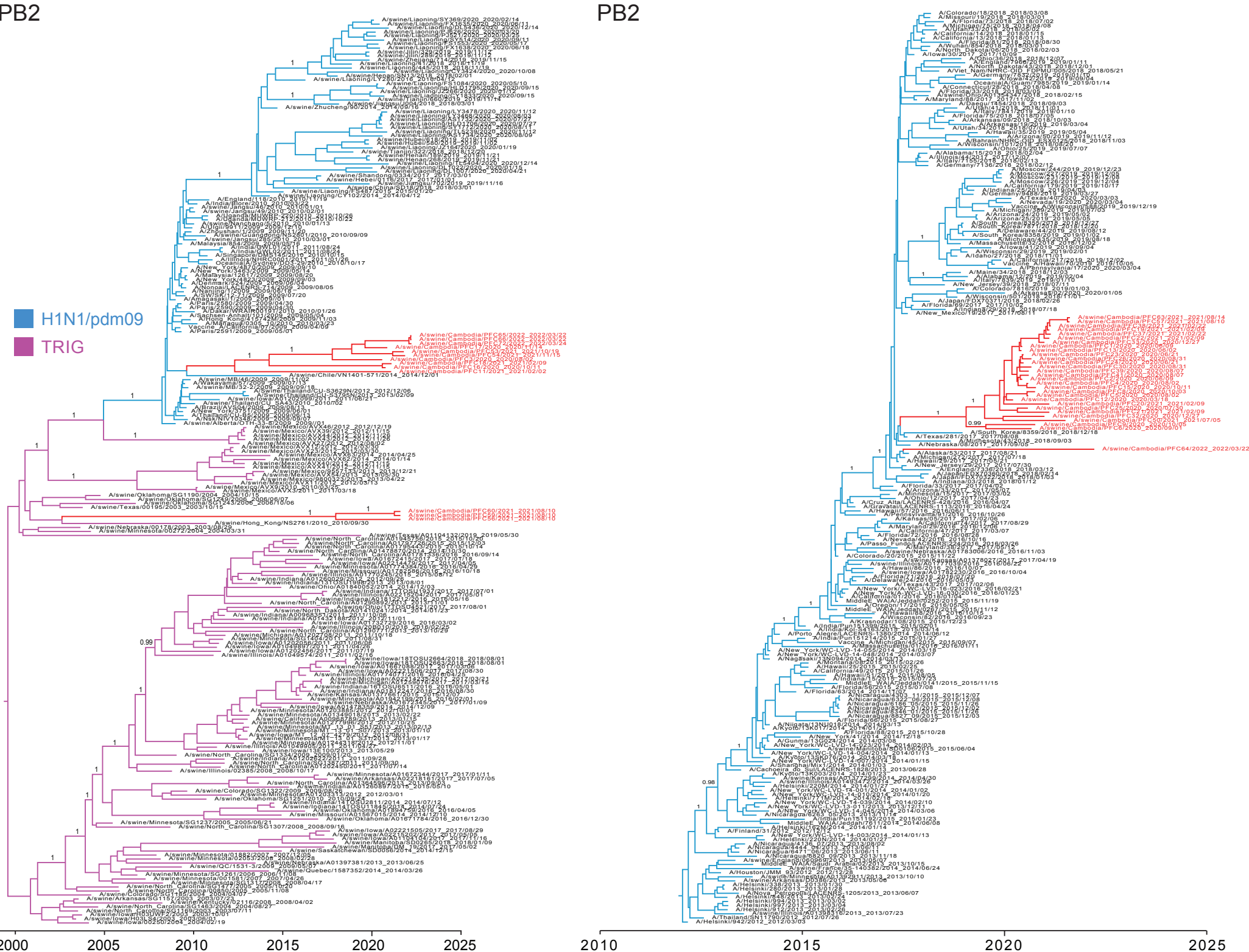


Fig. S12. Time scaled phylogenies of the PB2 gene of human and swine influenza viruses. The maximum clade credibility tree (MCC) on the right indicates swIAV sequences from Cambodian pigs are derived from H1N1/pdm09 viruses, and their closely related viruses. The MCC on the left indicates the origins of swIAV sequences from Cambodian pigs and their closely related viruses. Red branches denote swine sequences generated in this study. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

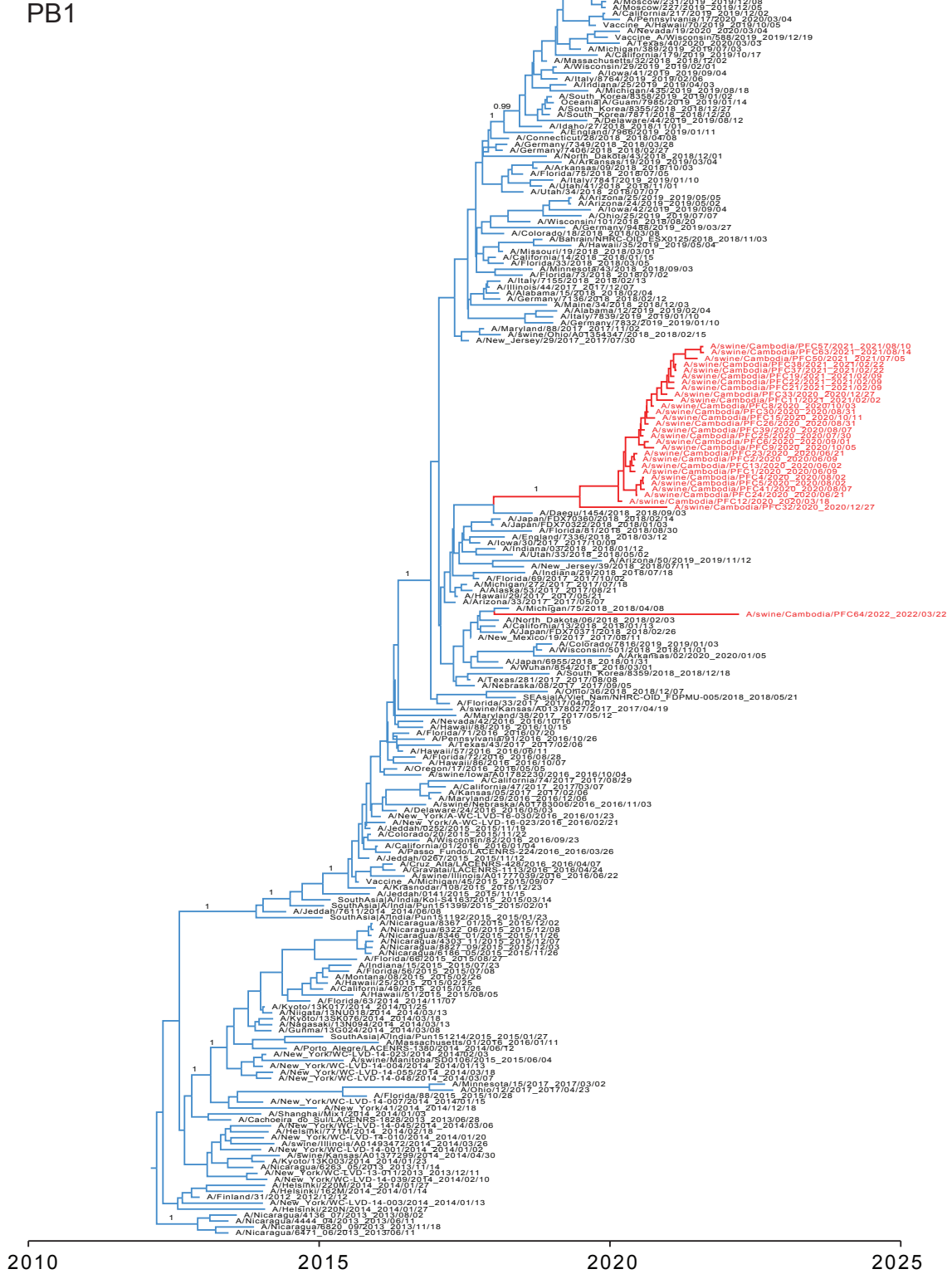
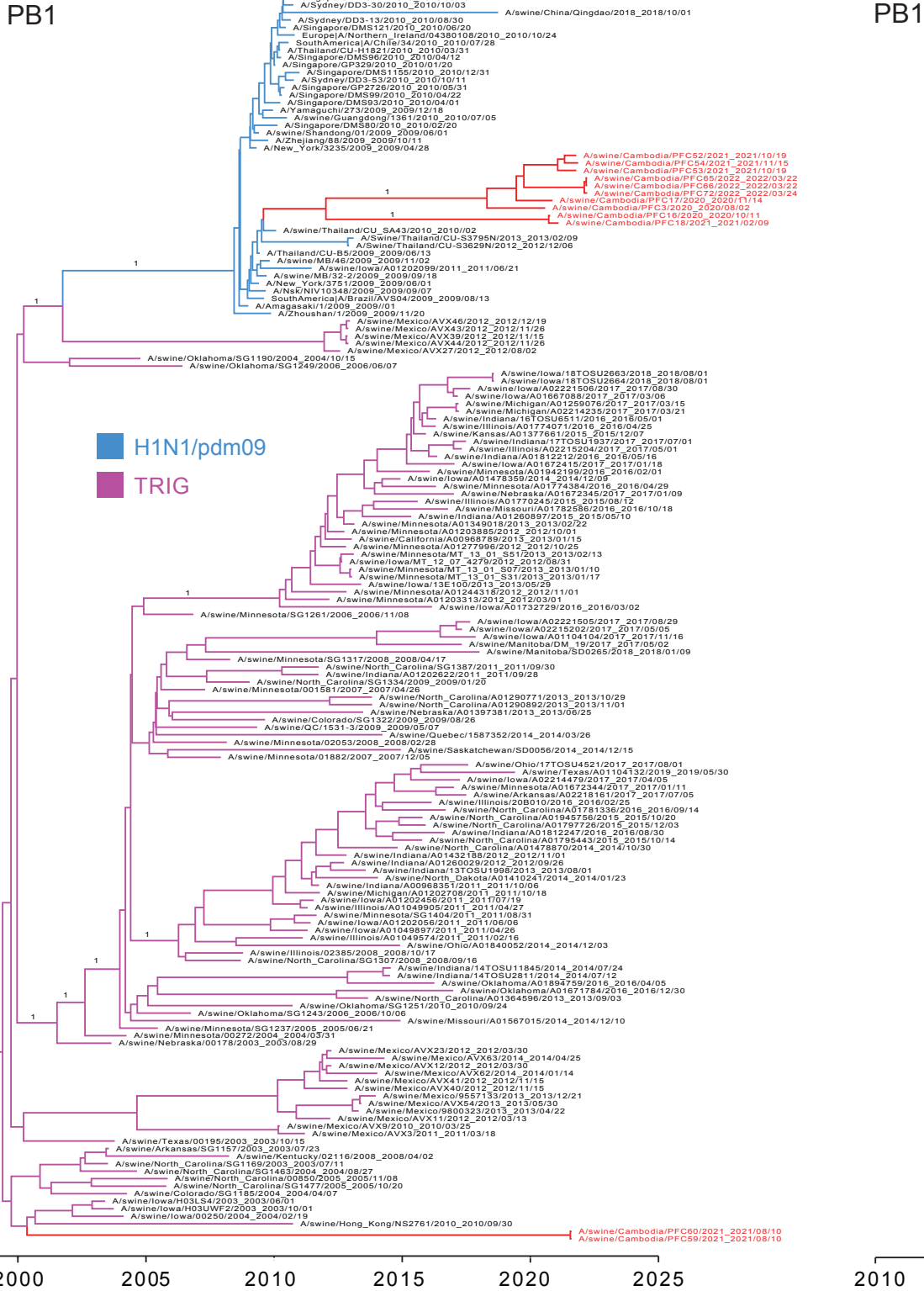


Fig. S13. Time scaled phylogenies of the PB1 gene of human and swine influenza viruses. The maximum credible tree (MCC) on the right indicates swIAV sequences from Cambodian pigs are derived from H1N1/pdm09 viruses, and their closely related viruses. The MCC on the left indicates the origins of swIAV sequences from Cambodian pigs and their closely related viruses. Red branches denote swine sequences generated in this study. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

PA

PA



Fig. S14. Time scaled phylogenies of the PA gene of human and swine influenza viruses. The maximum clade credibility tree (MCC) on the right indicates swIAV sequences from Cambodian pigs are derived from H1N1/pdm09 viruses, and their closely related viruses. The MCC on the left indicates the origins of swIAV sequences from Cambodian pigs and their closely related viruses. Red branches denote swine sequences generated in this study. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

NP

NP

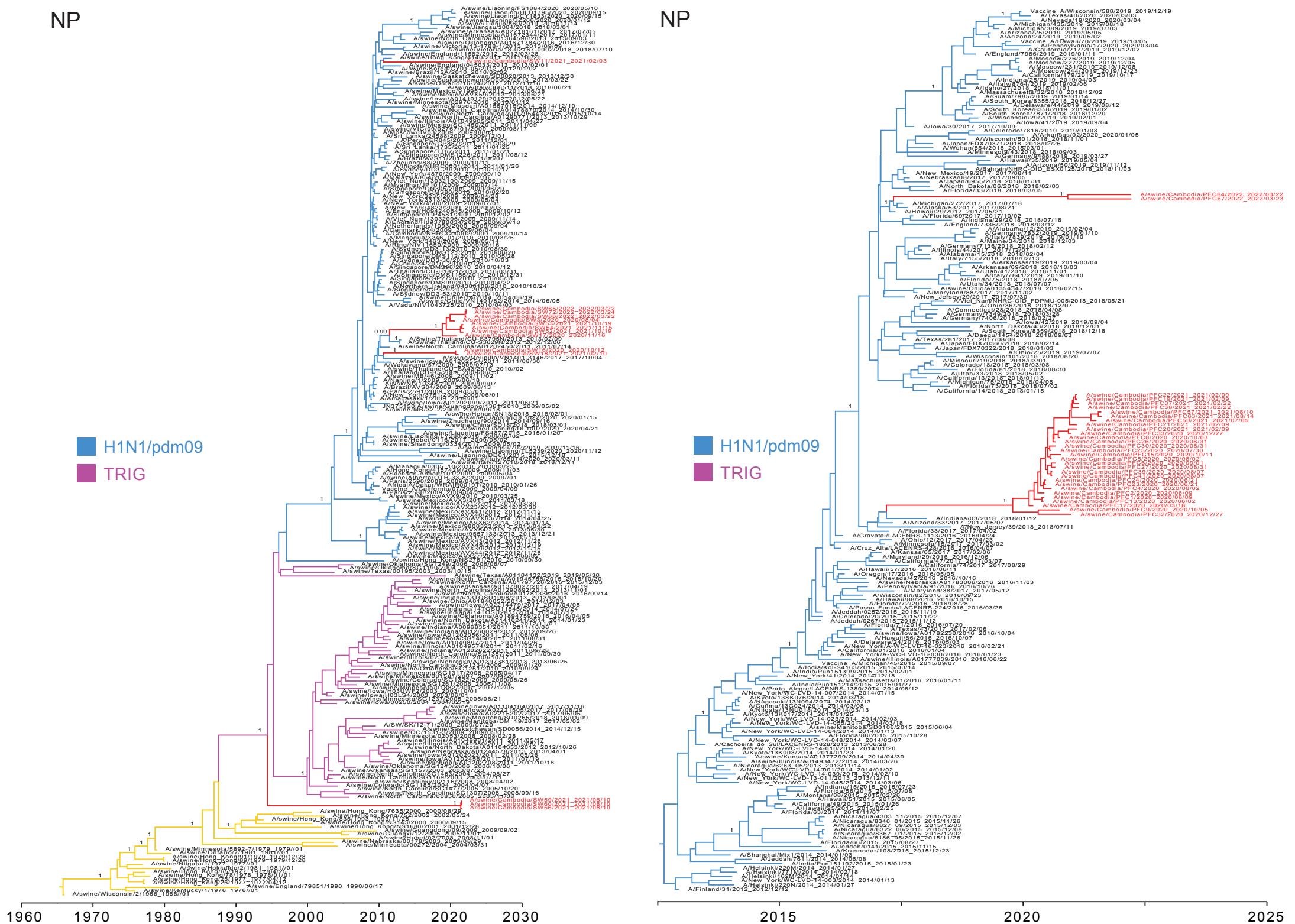


Fig. S15. Time scaled phylogenies of the NP gene of human and swine influenza viruses. The maximum clade credibility tree (MCC) on the right indicates swIAV sequences from Cambodian pigs are derived from H1N1/pdm09 viruses, and their closely related viruses. The MCC on the left indicates the origins of swIAV sequences from Cambodian pigs and their closely related viruses. Red branches denote swine sequences generated in this study. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

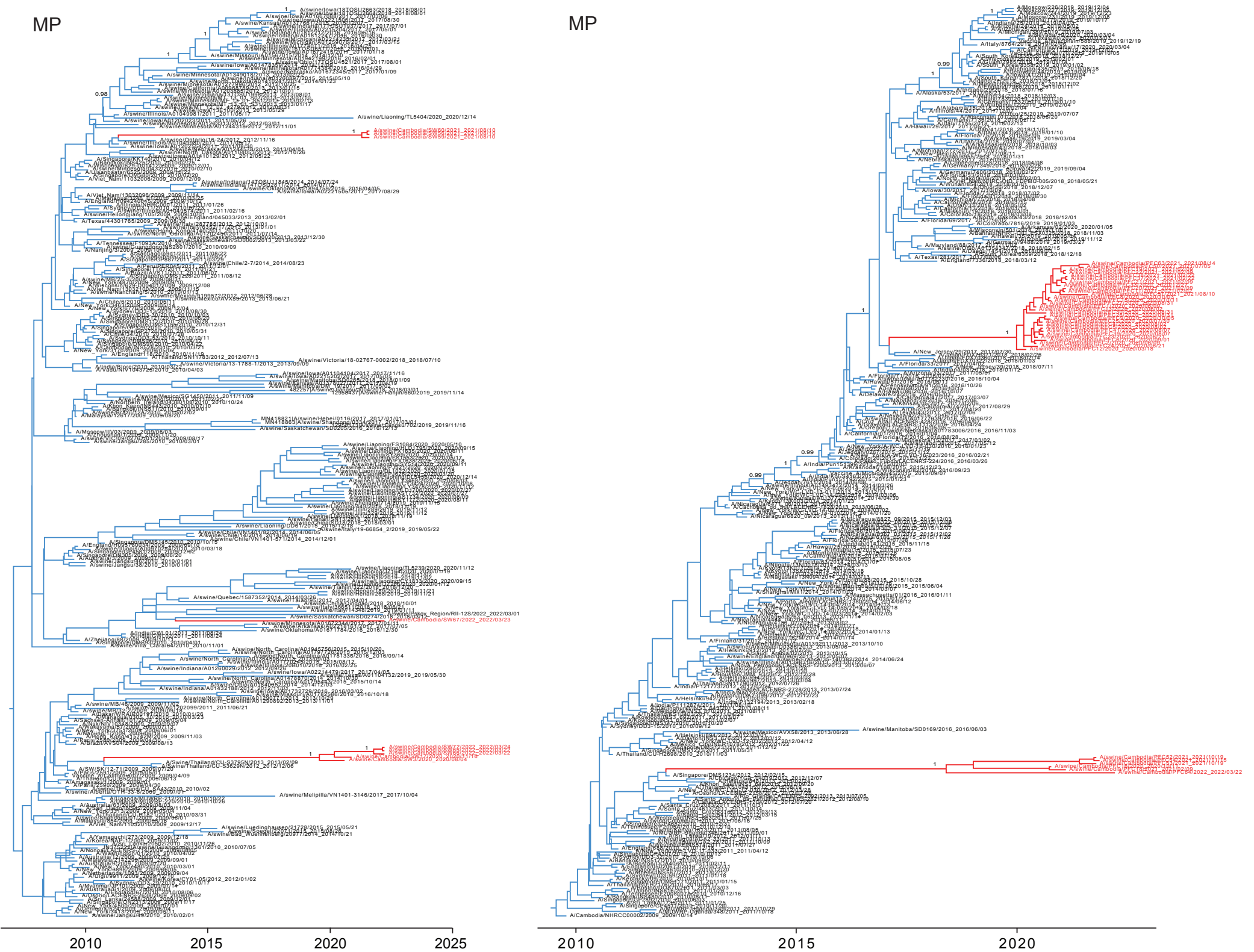


Fig. S16. Time scaled phylogenies of the MP gene of human and swine influenza viruses. The maximum clade credibility trees (MCC) indicate swIAV sequences from Cambodian pigs are derived from H1N1/pdm09 viruses, and their closely related viruses. Red branches denote swine sequences generated in this study. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

NS

NS

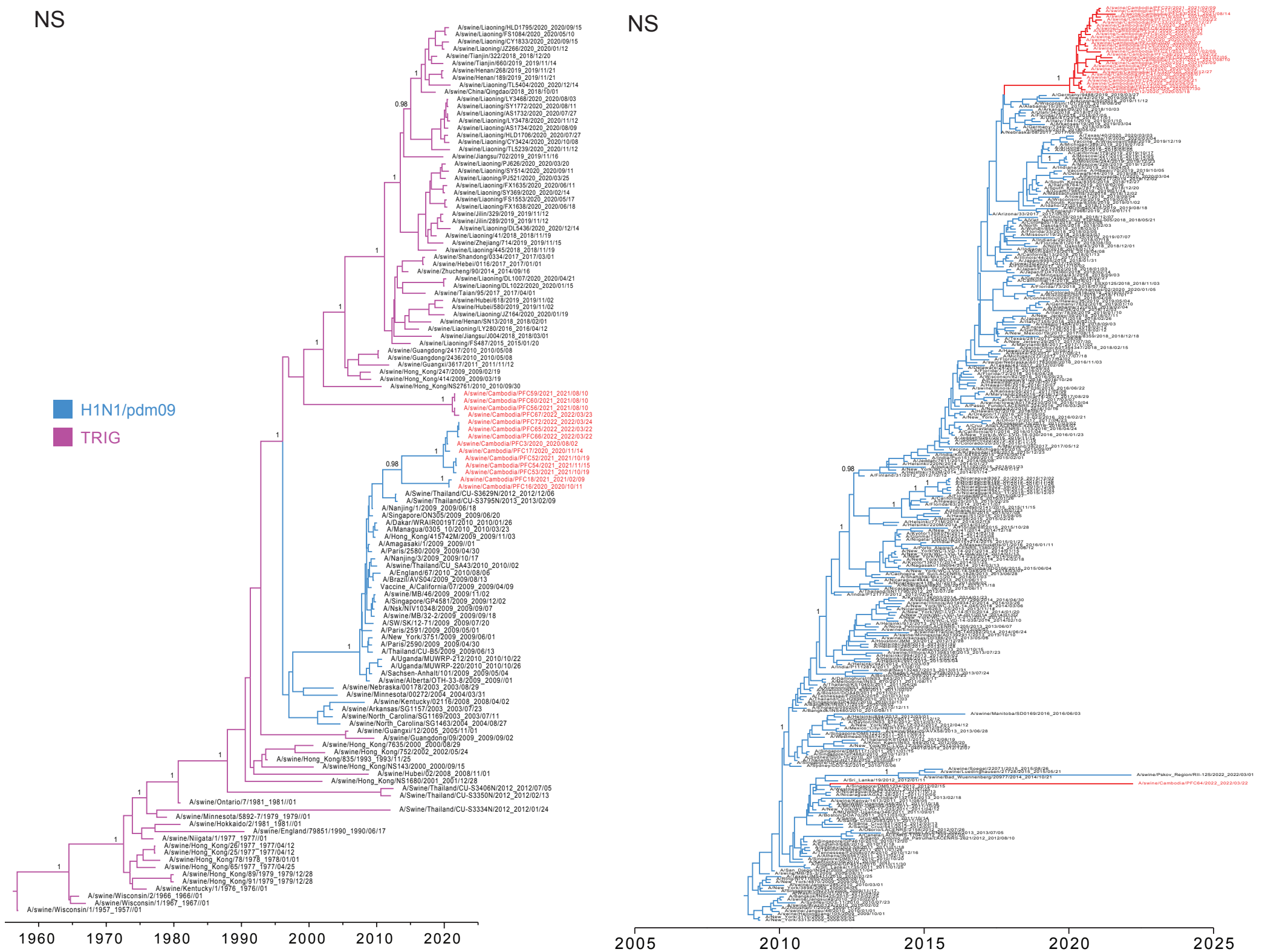


Fig. S17 Time scaled phylogenies of the NS gene of human and swine influenza viruses. The maximum clade credibility tree (MCC) on the right indicates swIAV sequences from Cambodian pigs are derived from H1N1/pdm09 viruses, and their closely related viruses. The MCC on the left indicates the origins of swIAV sequences from Cambodian pigs and their closely related viruses. Red branches denote swine sequences generated in this study. Bayesian posterior probability values (≥ 0.95) are shown at major nodes.

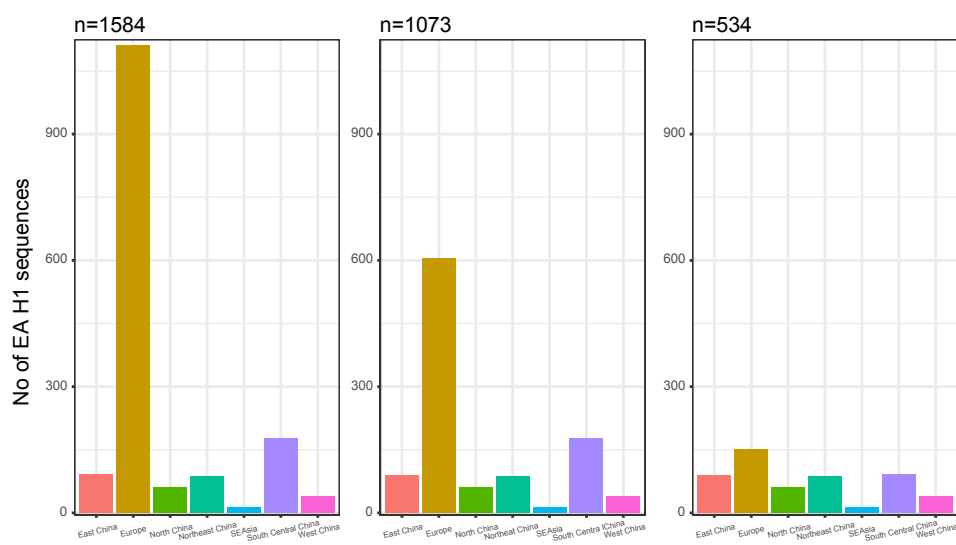
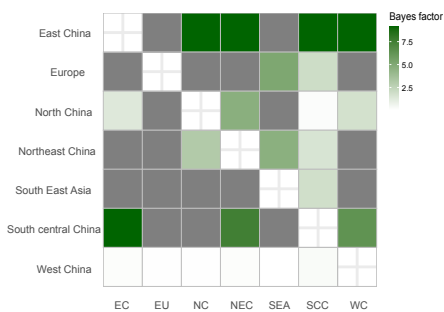
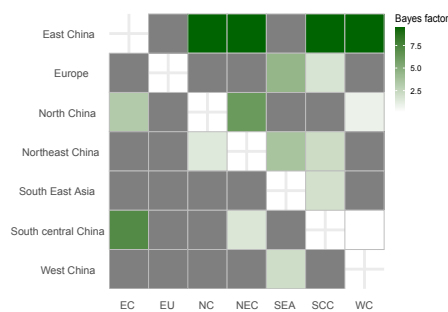


Fig. S18. Number of globally available HA-H1 sequences (n=1,584) for European avian-like swine lineages from 2005 to 2022. Two subsampled datasets (n=1,073 and n=534) were used for Bayesian discrete phylogeographic analyses.

(a) Migration support (n=1,073)



(b) Migration support (n=534)



(c) Diffusion pathways (n=534)

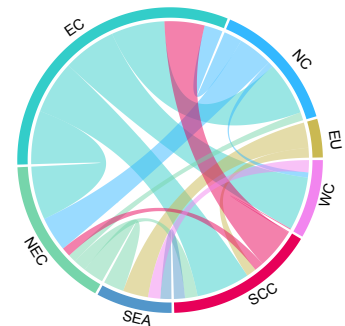


Fig. S19. Discrete phylogeographic reconstructions of European avian-like swine lineages. (a) heatmap showing asymmetric migration support matrix between locations, based on 1,073 sequences. (b) heatmap showing asymmetric migration support matrix between locations, based on 534 sequences. (c) Circular diffusion plot between locations, based on 534 sequences.

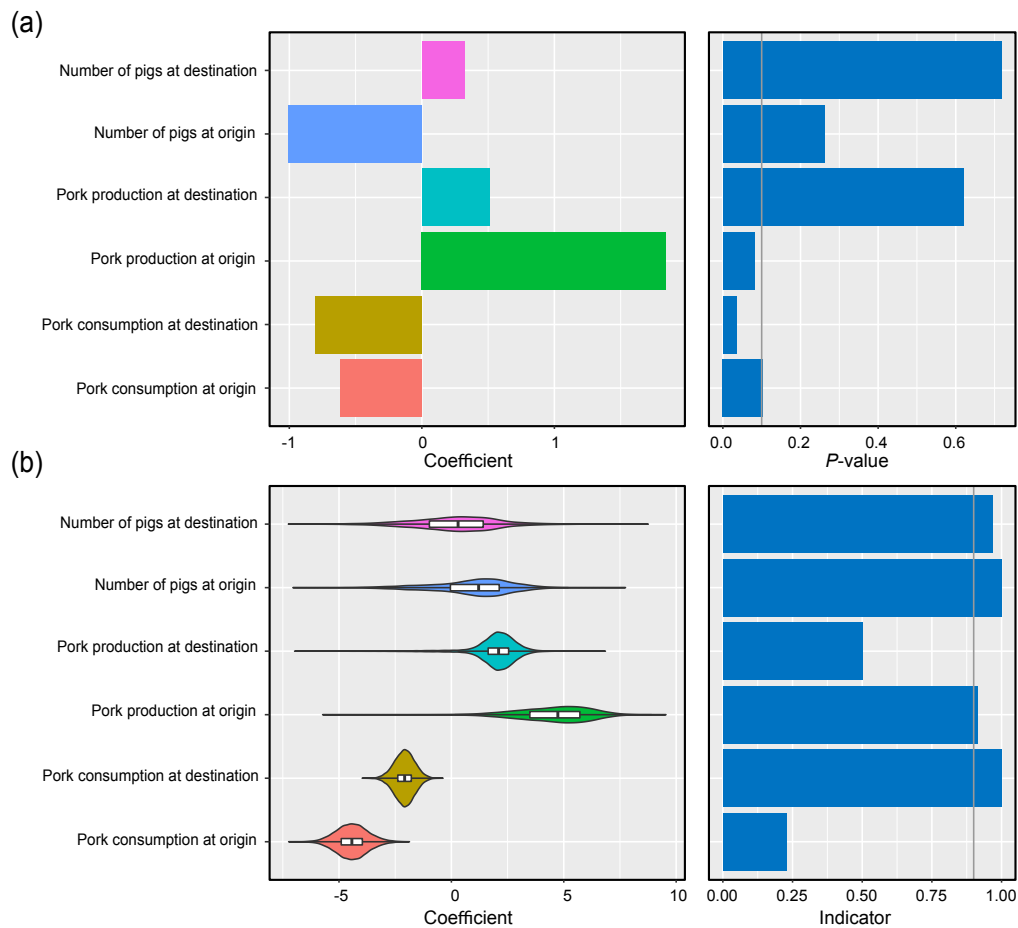


Fig. S20. Potential predictors and spatial spread of European avian-like swine lineages. (a) coefficients and support estimated using generalised least squares (GLS) model. Grey vertical line indicates the P -value of 0.1. (b) coefficients and support estimated using Bayesian generalised linear model (GLM). Grey vertical line indicates the posterior support at 0.9.

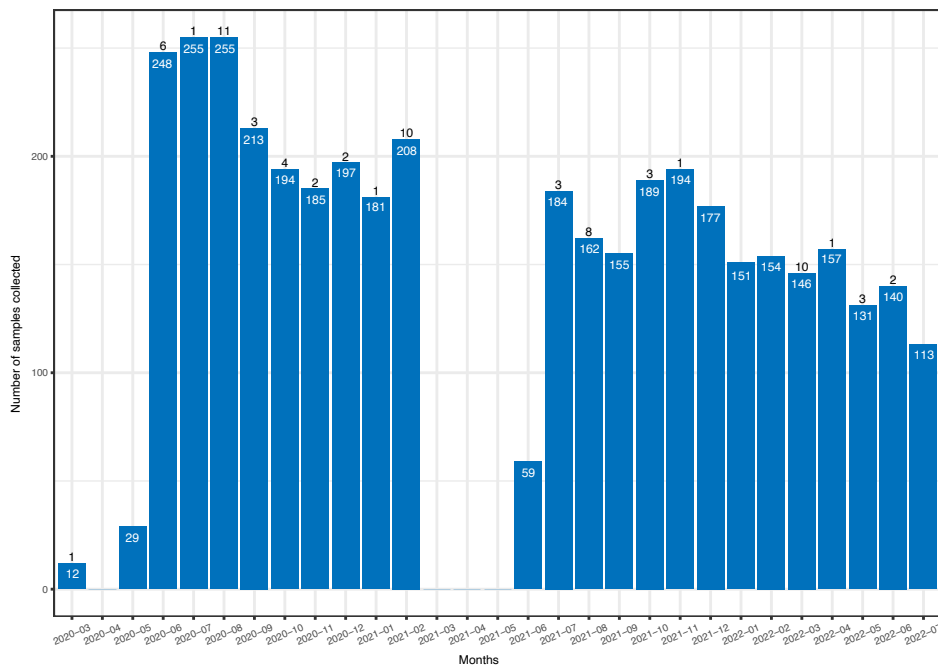


Fig. S21. Overview of the number of swab samples collected from pigs in Cambodia. The number above the bars indicate the number of IAV-positive samples by RT-qPCR, and the number below the bars indicate the number of samples collected. Sampling was suspended in April 2020 due to the COVID-19 pandemic and between April 2021 to May 2021 due to government imposed lockdowns.

Table S1. Sequenced swine influenza A strains collected from pig slaughterhouses in Cambodia, 2020–2022.

Strains	Province	District	Collection Date
A/swine/Cambodia/PFC1/2020 (H1N1)	Takeo	District 1	09 June 2020
A/swine/Cambodia/PFC2/2020 (H1N1)	Takeo	District 1	09 June 2020
A/swine/Cambodia/PFC3/2020 (H1N1)	Takeo	District 1	02 August 2020
A/swine/Cambodia/PFC4/2020 (H1N1)	Takeo	District 1	02 August 2020
A/swine/Cambodia/PFC5/2020 (H1N1)	Takeo	District 1	02 August 2020
A/swine/Cambodia/PFC6/2020 (H1N1)	Takeo	District 1	01 September 2020
A/swine/Cambodia/PFC8/2020 (H1N1)	Takeo	District 1	03 October 2020
A/swine/Cambodia/PFC9/2020 (H1N1, H3N2)	Takeo	District 1	05 October 2020
A/swine/Cambodia/PFC11/2021 (H1N1/H3)	Takeo	District 1	02 February 2021
A/swine/Cambodia/PFC12/2020 (H1N1)	Kandal	District 9	18 March 2020
A/swine/Cambodia/PFC13/2020 (H1N1)	Kandal	District 9	02 June 2020
A/swine/Cambodia/PFC15/2020 (H1N1)	Kandal	District 8	11 October 2020
A/swine/Cambodia/PFC16/2020 (H1N1, H3N2)	Kandal	District 8	11 October 2020
A/swine/Cambodia/PFC17/2020 (H1N1)	Kandal	District 8	14 November 2020
A/swine/Cambodia/PFC18/2021 (H1N1, H3N2)	Kandal	District 8	09 February 2021
A/swine/Cambodia/PFC19/2021 (H1N1)	Kandal	District 8	09 February 2021
A/swine/Cambodia/PFC20/2021 (H1N1/ H3)	Kandal	District 8	09 February 2021
A/swine/Cambodia/PFC21/2021 (H1N1)	Kandal	District 8	09 February 2021
A/swine/Cambodia/PFC22/2021 (H1N1, H3N2)	Kandal	District 8	09 February 2021
A/swine/Cambodia/PFC23/2020 (H1N1)	Phnom Penh	District 5	21 June 2020
A/swine/Cambodia/PFC24/2020 (H1N1)	Phnom Penh	District 5	21 June 2020
A/swine/Cambodia/PFC25/2020 (H1N1)	Phnom Penh	District 7	30 July 2020
A/swine/Cambodia/PFC26/2020 (H1N1/N2)	Phnom Penh	District 6	31 August 2020
A/swine/Cambodia/PFC27/2020 (H1Nx)	Phnom Penh	District 6	31 August 2020
A/swine/Cambodia/PFC30/2020 (H1N1, H3N2)	Phnom Penh	District 6	31 August 2020
A/swine/Cambodia/PFC32/2020 (H1N1, H3N2)	Phnom Penh	District 7	27 December 2020
A/swine/Cambodia/PFC33/2020 (H1N1)	Phnom Penh	District 7	27 December 2020
A/swine/Cambodia/PFC37/2021 (H1N1)	Phnom Penh	District 6	22 February 2021
A/swine/Cambodia/PFC38/2021 (H1N1/N2)	Phnom Penh	District 6	22 February 2021
A/swine/Cambodia/PFC39/2020 (H1N1)	Kampong Speu	District 3	07 August 2020
A/swine/Cambodia/PFC41/2020 (H1N1)	Kampong Speu	District 3	07 August 2020
A/swine/Cambodia/PFC50/2021 (HxN1)	Phnom Penh	District 7	05 July 2021
A/swine/Cambodia/PFC52/2021 (HxN1)	Takeo	District 1	19 October 2021
A/swine/Cambodia/PFC53/2021 (H1N1)	Takeo	District 1	19 October 2021
A/swine/Cambodia/PFC54/2021 (H1N1)	Takeo	District 1	15 November 2021
A/swine/Cambodia/PFC56/2021 (H1N2)	Kandal	District 8	10 August 2021
A/swine/Cambodia/PFC57/2021 (H1N1)	Kandal	District 8	10 August 2021
A/swine/Cambodia/PFC59/2021 (H1N2)	Kandal	District 8	10 August 2021
A/swine/Cambodia/PFC60/2021 (H1N2)	Kandal	District 8	10 August 2021
A/swine/Cambodia/PFC63/2021 (H1N1)	Kandal	District 9	14 August 2021
A/swine/Cambodia/PFC64/2022 (H3N2)	Kandal	District 9	22 March 2022

A/swine/Cambodia/PFC65/2022 (H1N1)	Kandal	District 9	22 March 2022
A/swine/Cambodia/PFC66/2022 (H1N1)	Kandal	District 9	22 March 2022
A/swine/Cambodia/PFC67/2022 (H1N2/H3)	Kandal	District 9	23 March 2022
A/swine/Cambodia/PFC72/2022 (H1N1/N2)	Kandal	District 8	24 March 2022

Table S2. Bayes factor of migration pathways of European avian-like H1 swine between geographic locations.

Location	East China	Europe	North China	Northeast China	South Central China	Southeast Asia	West China
East China		<3	22941.3	22941.3	22941.3	<3	22941.3
Europe	<3		<3	<3	9.2	288.9	<3
North China	4.5	<3		166	<3	<3	7.3
Northeast China	<3	<3	29.9		5.9	161	<3
South Central China	22941.3	<3	<3	3819.2		<3	1037.8
Southeast Asia	<3	<3	<3	<3	8		<3
West China	<3	<3	<3	<3	<3	<3	

Table S3. Asymmetric diffusion rates between geographic locations for the European avian-like H1 lineage based on 1,073 sequences.

Location	East China	Europe	North China	Northeast China	Southeast Asia	South Central China	West China
East China	-	0.14	2.11*	2.51*	0.17	3.83*	1.23*
Europe	0.07	-	0.04	0.05	0.13*	0.11*	0.03
North China	0.62*	0.23	-	0.93*	0.24	0.57	0.38*
Northeast China	0.30	0.26	0.53*	-	0.38*	0.50*	0.31
Southeast Asia	0.24	0.21	0.22	0.21	-	0.48*	0.23
South Central China	1.01*	0.13	0.25	1.04*	0.25	-	0.68*
West China	0.19	0.19	0.20	0.21	0.20	0.23	-

*indicates Bayes factor >3.

Table S4. Asymmetric diffusion rates between geographic locations for the European avian-like H1 lineage based on 534 sequences.

Location	East China	Europe	North China	Northeast China	Southeast Asia	South Central China	West China
East China	-	0.13	1.67*	2.62*	0.22	3.43*	1.48*
Europe	0.11	-	0.06	0.09	0.17*	0.15*	0.06
North China	0.71	0.19	-	1.13*	0.24	0.23	0.39*
Northeast China	0.35*	0.20	0.48*	-	0.42*	0.58*	0.40
Southeast Asia	0.27	0.23	0.21	0.23	-	0.52*	0.21
South Central China	0.76*	0.14	0.17	0.72*	0.34	-	0.33
West China	0.20	0.19	0.20	0.22	0.37*	0.32	-

*indicates Bayes factor >3.

Table S5. Pork production, number of pigs and pork consumption in different regions.

Regions	Pork production (tons)	Number of Pigs	Pork consumption (tons)
East China	13601621	92947000	7692865
Europe	29172533	187790934	25542933
North China	4694674	32997000	2224504
Northeast China	5163511	36530000	1818294
Southeast Asia	4745322	37191123	4524085
South Central China	18331176	157627000	8951773
West China	12726976	121487000	7249857

Table S6. GenBank accession numbers for influenza sequences generated in this study.**PB2**

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460074
A/swine/Cambodia/PFC2/2020	OQ460106
A/swine/Cambodia/PFC3/2020	OQ459860
A/swine/Cambodia/PFC4/2020	OQ460130
A/swine/Cambodia/PFC5/2020	OQ459861
A/swine/Cambodia/PFC6/2020	OQ460170
A/swine/Cambodia/PFC8/2020	OQ460218
A/swine/Cambodia/PFC9/2020	OQ459862
A/swine/Cambodia/PFC11/2021	OQ459863
A/swine/Cambodia/PFC12/2020	OQ460082
A/swine/Cambodia/PFC13/2020	OQ460090
A/swine/Cambodia/PFC15/2020	OQ459864
A/swine/Cambodia/PFC16/2020	OQ459865
A/swine/Cambodia/PFC17/2020	OQ459866
A/swine/Cambodia/PFC18/2021	OQ459867
A/swine/Cambodia/PFC19/2021	OQ460098
A/swine/Cambodia/PFC20/2021	OQ459868
A/swine/Cambodia/PFC21/2021	OQ459869
A/swine/Cambodia/PFC22/2021	OQ459870
A/swine/Cambodia/PFC23/2020	OQ460114
A/swine/Cambodia/PFC24/2020	OQ459871
A/swine/Cambodia/PFC25/2020	OQ459872
A/swine/Cambodia/PFC26/2020	OQ459873
A/swine/Cambodia/PFC30/2020	OQ459874
A/swine/Cambodia/PFC32/2020	OQ459875
A/swine/Cambodia/PFC33/2020	OQ459876
A/swine/Cambodia/PFC37/2021	OQ459877
A/swine/Cambodia/PFC38/2021	OQ459878
A/swine/Cambodia/PFC39/2020	OQ460122
A/swine/Cambodia/PFC41/2020	OQ459879
A/swine/Cambodia/PFC50/2021	OQ459880
A/swine/Cambodia/PFC53/2021	OQ460138
A/swine/Cambodia/PFC54/2021	OQ460146
A/swine/Cambodia/PFC56/2021	OQ459881
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A/swine/Cambodia/PFC59/2021	OQ460162
A/swine/Cambodia/PFC60/2021	OQ460178
A/swine/Cambodia/PFC63/2021	OQ460186
A/swine/Cambodia/PFC64/2022	OQ460194
A/swine/Cambodia/PFC65/2022	OQ460202
A/swine/Cambodia/PFC66/2022	OQ460210

PB1

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460075
A/swine/Cambodia/PFC2/2020	OQ460107
A/swine/Cambodia/PFC3/2020	OQ459883
A/swine/Cambodia/PFC4/2020	OQ460131
A/swine/Cambodia/PFC5/2020	OQ459884
A/swine/Cambodia/PFC6/2020	OQ460171
A/swine/Cambodia/PFC8/2020	OQ460219
A/swine/Cambodia/PFC9/2020	OQ459885
A/swine/Cambodia/PFC11/2021	OQ459886
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A/swine/Cambodia/PFC23/2020	OQ460115
A/swine/Cambodia/PFC24/2020	OQ459893
A/swine/Cambodia/PFC25/2020	OQ459894
A/swine/Cambodia/PFC26/2020	OQ459895
A/swine/Cambodia/PFC30/2020	OQ459896
A/swine/Cambodia/PFC32/2020	OQ459897
A/swine/Cambodia/PFC33/2020	OQ459898
A/swine/Cambodia/PFC37/2021	OQ459899
A/swine/Cambodia/PFC38/2021	OQ459900
A/swine/Cambodia/PFC39/2020	OQ460123
A/swine/Cambodia/PFC41/2020	OQ459901
A/swine/Cambodia/PFC50/2021	OQ459902
A/swine/Cambodia/PFC52/2021	OQ459903
A/swine/Cambodia/PFC53/2021	OQ460139
A/swine/Cambodia/PFC54/2021	OQ460147
A/swine/Cambodia/PFC57/2021	OQ460155
A/swine/Cambodia/PFC59/2021	OQ460163
A/swine/Cambodia/PFC60/2021	OQ460179
A/swine/Cambodia/PFC63/2021	OQ460187
A/swine/Cambodia/PFC64/2022	OQ460195
A/swine/Cambodia/PFC65/2022	OQ460203
A/swine/Cambodia/PFC66/2022	OQ460211
A/swine/Cambodia/PFC72/2022	OQ459904

PA

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460076
A/swine/Cambodia/PFC2/2020	OQ460108
A/swine/Cambodia/PFC3/2020	OQ459905
A/swine/Cambodia/PFC4/2020	OQ460132
A/swine/Cambodia/PFC5/2020	OQ459906
A/swine/Cambodia/PFC6/2020	OQ460172
A/swine/Cambodia/PFC8/2020	OQ460220
A/swine/Cambodia/PFC9/2020	OQ459907
A/swine/Cambodia/PFC11/2021	OQ459908
A/swine/Cambodia/PFC12/2020	OQ460084
A/swine/Cambodia/PFC13/2020	OQ460092
A/swine/Cambodia/PFC15/2020	OQ459909
A/swine/Cambodia/PFC16/2020	OQ459910
A/swine/Cambodia/PFC17/2020	OQ459911
A/swine/Cambodia/PFC18/2021	OQ459912
A/swine/Cambodia/PFC19/2021	OQ460100
A/swine/Cambodia/PFC20/2021	OQ459913
A/swine/Cambodia/PFC21/2021	OQ459914
A/swine/Cambodia/PFC22/2021	OQ459915
A/swine/Cambodia/PFC23/2020	OQ460116
A/swine/Cambodia/PFC24/2020	OQ459916
A/swine/Cambodia/PFC25/2020	OQ459917
A/swine/Cambodia/PFC26/2020	OQ459918
A/swine/Cambodia/PFC30/2020	OQ459919
A/swine/Cambodia/PFC32/2020	OQ459920
A/swine/Cambodia/PFC33/2020	OQ459921
A/swine/Cambodia/PFC37/2021	OQ459922
A/swine/Cambodia/PFC38/2021	OQ459923
A/swine/Cambodia/PFC39/2020	OQ460124
A/swine/Cambodia/PFC41/2020	OQ459924
A/swine/Cambodia/PFC53/2021	OQ460140
A/swine/Cambodia/PFC54/2021	OQ460148
A/swine/Cambodia/PFC56/2021	OQ459925
A/swine/Cambodia/PFC57/2021	OQ460156
A/swine/Cambodia/PFC59/2021	OQ460164
A/swine/Cambodia/PFC60/2021	OQ460180
A/swine/Cambodia/PFC63/2021	OQ460188
A/swine/Cambodia/PFC64/2022	OQ460196
A/swine/Cambodia/PFC65/2022	OQ460204
A/swine/Cambodia/PFC66/2022	OQ460212
A/swine/Cambodia/PFC67/2022	OQ459926
A/swine/Cambodia/PFC72/2022	OQ459927

H1-HA

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460077
A/swine/Cambodia/PFC2/2020	OQ460109
A/swine/Cambodia/PFC3_CS/2020	OQ459928
A/swine/Cambodia/PFC3/2020	OQ459929
A/swine/Cambodia/PFC4/2020	OQ460133
A/swine/Cambodia/PFC5/2020	OQ459930
A/swine/Cambodia/PFC6/2020	OQ460173
A/swine/Cambodia/PFC8/2020	OQ460221
A/swine/Cambodia/PFC9/2020	OQ459931
A/swine/Cambodia/PFC11/2021	OQ459932
A/swine/Cambodia/PFC12/2020	OQ460085
A/swine/Cambodia/PFC13/2020	OQ460093
A/swine/Cambodia/PFC15/2020	OQ459933
A/swine/Cambodia/PFC16/2020	OQ459934
A/swine/Cambodia/PFC17/2020	OQ459935
A/swine/Cambodia/PFC18/2021	OQ459936
A/swine/Cambodia/PFC19/2021	OQ460101
A/swine/Cambodia/PFC20/2021	OQ459937
A/swine/Cambodia/PFC21/2021	OQ459938
A/swine/Cambodia/PFC22/2021	OQ459939
A/swine/Cambodia/PFC23/2020	OQ460117
A/swine/Cambodia/PFC24/2020	OQ459940
A/swine/Cambodia/PFC25/2020	OQ459941
A/swine/Cambodia/PFC26/2020	OQ459942
A/swine/Cambodia/PFC27/2020	OQ459943
A/swine/Cambodia/PFC30/2020	OQ459944
A/swine/Cambodia/PFC32/2020	OQ459945
A/swine/Cambodia/PFC33/2020	OQ459946
A/swine/Cambodia/PFC37/2021	OQ459947
A/swine/Cambodia/PFC38/2021	OQ459948
A/swine/Cambodia/PFC39/2020	OQ460125
A/swine/Cambodia/PFC41/2020	OQ459949
A/swine/Cambodia/PFC53/2021	OQ460141
A/swine/Cambodia/PFC54/2021	OQ460149
A/swine/Cambodia/PFC56/2021	OQ459950
A/swine/Cambodia/PFC57/2021	OQ460157
A/swine/Cambodia/PFC59/2021	OQ460165
A/swine/Cambodia/PFC60/2021	OQ460181
A/swine/Cambodia/PFC63/2021	OQ460189
A/swine/Cambodia/PFC65/2022	OQ460205
A/swine/Cambodia/PFC66/2022	OQ460213
A/swine/Cambodia/PFC67/2022	OQ459951
A/swine/Cambodia/PFC72/2022	OQ459952

H3-HA

Strains	Accession number
A/swine/Cambodia/PFC9/2020	OQ459953
A/swine/Cambodia/PFC11/2021	OQ459954
A/swine/Cambodia/PFC16/2020	OQ459955
A/swine/Cambodia/PFC18/2021	OQ459956
A/swine/Cambodia/PFC20/2021	OQ459957
A/swine/Cambodia/PFC22/2021	OQ459958
A/swine/Cambodia/PFC30/2020	OQ459959
A/swine/Cambodia/PFC32/2020	OQ459960
A/swine/Cambodia/PFC64/2022	OQ460197
A/swine/Cambodia/PFC67/2022	OQ459961

NP

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460078
A/swine/Cambodia/PFC2/2020	OQ460110
A/swine/Cambodia/PFC3/2020	OQ459962
A/swine/Cambodia/PFC4/2020	OQ460134
A/swine/Cambodia/PFC5/2020	OQ459963
A/swine/Cambodia/PFC6/2020	OQ460174
A/swine/Cambodia/PFC8/2020	OQ460222
A/swine/Cambodia/PFC9/2020	OQ459964
A/swine/Cambodia/PFC11/2021	OQ459965
A/swine/Cambodia/PFC12/2020	OQ460086
A/swine/Cambodia/PFC13/2020	OQ460094
A/swine/Cambodia/PFC15/2020	OQ459966
A/swine/Cambodia/PFC16/2020	OQ459967
A/swine/Cambodia/PFC17/2020	OQ459968
A/swine/Cambodia/PFC18/2021	OQ459969
A/swine/Cambodia/PFC19/2021	OQ460102
A/swine/Cambodia/PFC20/2021	OQ459970
A/swine/Cambodia/PFC21/2021	OQ459971
A/swine/Cambodia/PFC22/2021	OQ459972
A/swine/Cambodia/PFC23/2020	OQ460118
A/swine/Cambodia/PFC24/2020	OQ459973
A/swine/Cambodia/PFC25/2020	OQ459974
A/swine/Cambodia/PFC26/2020	OQ459975
A/swine/Cambodia/PFC27/2020	OQ459976
A/swine/Cambodia/PFC30/2020	OQ459977
A/swine/Cambodia/PFC32/2020	OQ459978
A/swine/Cambodia/PFC33/2020	OQ459979
A/swine/Cambodia/PFC37/2021	OQ459980
A/swine/Cambodia/PFC38/2021	OQ459981
A/swine/Cambodia/PFC39/2020	OQ460126
A/swine/Cambodia/PFC41/2020	OQ459982
A/swine/Cambodia/PFC50/2021	OQ459983
A/swine/Cambodia/PFC52/2021	OQ459984

A/swine/Cambodia/PFC53/2021	OQ460142
A/swine/Cambodia/PFC54/2021	OQ460150
A/swine/Cambodia/PFC56/2021	OQ459985
A/swine/Cambodia/PFC57/2021	OQ460158
A/swine/Cambodia/PFC59/2021	OQ460166
A/swine/Cambodia/PFC60/2021	OQ460182
A/swine/Cambodia/PFC63/2021	OQ460190
A/swine/Cambodia/PFC64/2022	OQ460198
A/swine/Cambodia/PFC65/2022	OQ460206
A/swine/Cambodia/PFC66/2022	OQ460214
A/swine/Cambodia/PFC67/2022	OQ459986
A/swine/Cambodia/PFC72/2022	OQ459987

N1-NA

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460079
A/swine/Cambodia/PFC2/2020	OQ460111
A/swine/Cambodia/PFC3/2020	OQ459988
A/swine/Cambodia/PFC4/2020	OQ460135
A/swine/Cambodia/PFC5/2020	OQ459989
A/swine/Cambodia/PFC6/2020	OQ460175
A/swine/Cambodia/PFC8/2020	OQ460223
A/swine/Cambodia/PFC9/2020	OQ459990
A/swine/Cambodia/PFC11/2021	OQ459991
A/swine/Cambodia/PFC12/2020	OQ460087
A/swine/Cambodia/PFC13/2020	OQ460095
A/swine/Cambodia/PFC15/2020	OQ459992
A/swine/Cambodia/PFC16/2020	OQ459993
A/swine/Cambodia/PFC17/2020	OQ459994
A/swine/Cambodia/PFC18/2021	OQ459995
A/swine/Cambodia/PFC19/2021	OQ460103
A/swine/Cambodia/PFC20/2021	OQ459996
A/swine/Cambodia/PFC21/2021	OQ459997
A/swine/Cambodia/PFC22/2021	OQ459998
A/swine/Cambodia/PFC23/2020	OQ460119
A/swine/Cambodia/PFC24/2020	OQ459999
A/swine/Cambodia/PFC25/2020	OQ460000
A/swine/Cambodia/PFC26/2020	OQ460001
A/swine/Cambodia/PFC30/2020	OQ460002
A/swine/Cambodia/PFC32/2020	OQ460003
A/swine/Cambodia/PFC33/2020	OQ460004
A/swine/Cambodia/PFC37/2021	OQ460005
A/swine/Cambodia/PFC38/2021	OQ460006
A/swine/Cambodia/PFC39/2020	OQ460127
A/swine/Cambodia/PFC41/2020	OQ460007
A/swine/Cambodia/PFC50/2021	OQ460008

A/swine/Cambodia/PFC52/2021	OQ460009
A/swine/Cambodia/PFC53/2021	OQ460143
A/swine/Cambodia/PFC54/2021	OQ460151
A/swine/Cambodia/PFC57/2021	OQ460159
A/swine/Cambodia/PFC63/2021	OQ460191
A/swine/Cambodia/PFC65/2022	OQ460207
A/swine/Cambodia/PFC66/2022	OQ460215
A/swine/Cambodia/PFC72/2022	OQ460010

N2-NA

Strains	Accession number
A/swine/Cambodia/PFC9/2020	OQ460011
A/swine/Cambodia/PFC16/2020	OQ460012
A/swine/Cambodia/PFC18/2021	OQ460013
A/swine/Cambodia/PFC22/2021	OQ460014
A/swine/Cambodia/PFC26/2020	OQ460015
A/swine/Cambodia/PFC30/2020	OQ460016
A/swine/Cambodia/PFC32/2020	OQ460017
A/swine/Cambodia/PFC38/2021	OQ460018
A/swine/Cambodia/PFC56/2021	OQ460019
A/swine/Cambodia/PFC59/2021	OQ460167
A/swine/Cambodia/PFC60/2021	OQ460183
A/swine/Cambodia/PFC64/2022	OQ460199
A/swine/Cambodia/PFC67/2022	OQ460020
A/swine/Cambodia/PFC72/2022	OQ460021

MP

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460080
A/swine/Cambodia/PFC2/2020	OQ460112
A/swine/Cambodia/PFC3/2020	OQ460022
A/swine/Cambodia/PFC4/2020	OQ460136
A/swine/Cambodia/PFC5/2020	OQ460023
A/swine/Cambodia/PFC6/2020	OQ460176
A/swine/Cambodia/PFC8/2020	OQ460224
A/swine/Cambodia/PFC9/2020	OQ460024
A/swine/Cambodia/PFC11/2021	OQ460025
A/swine/Cambodia/PFC12/2020	OQ460088
A/swine/Cambodia/PFC13/2020	OQ460096
A/swine/Cambodia/PFC15/2020	OQ460026
A/swine/Cambodia/PFC16/2020	OQ460027
A/swine/Cambodia/PFC17/2020	OQ460028
A/swine/Cambodia/PFC18/2021	OQ460029
A/swine/Cambodia/PFC19/2021	OQ460104
A/swine/Cambodia/PFC20/2021	OQ460030

A/swine/Cambodia/PFC21/2021	OQ460031
A/swine/Cambodia/PFC22/2021	OQ460032
A/swine/Cambodia/PFC23/2020	OQ460120
A/swine/Cambodia/PFC24/2020	OQ460033
A/swine/Cambodia/PFC25/2020	OQ460034
A/swine/Cambodia/PFC26/2020	OQ460035
A/swine/Cambodia/PFC27/2020	OQ460036
A/swine/Cambodia/PFC30/2020	OQ460037
A/swine/Cambodia/PFC32/2020	OQ460038
A/swine/Cambodia/PFC33/2020	OQ460039
A/swine/Cambodia/PFC37/2021	OQ460040
A/swine/Cambodia/PFC38/2021	OQ460041
A/swine/Cambodia/PFC39/2020	OQ460128
A/swine/Cambodia/PFC41/2020	OQ460042
A/swine/Cambodia/PFC50/2021	OQ460043
A/swine/Cambodia/PFC52/2021	OQ460044
A/swine/Cambodia/PFC53/2021	OQ460144
A/swine/Cambodia/PFC54/2021	OQ460152
A/swine/Cambodia/PFC56/2021	OQ460045
A/swine/Cambodia/PFC57/2021	OQ460160
A/swine/Cambodia/PFC59/2021	OQ460168
A/swine/Cambodia/PFC60/2021	OQ460184
A/swine/Cambodia/PFC63/2021	OQ460192
A/swine/Cambodia/PFC64/2022	OQ460200
A/swine/Cambodia/PFC65/2022	OQ460208
A/swine/Cambodia/PFC66/2022	OQ460216
A/swine/Cambodia/PFC67/2022	OQ460046
A/swine/Cambodia/PFC72/2022	OQ460047

NS

Strains	Accession number
A/swine/Cambodia/PFC1/2020	OQ460081
A/swine/Cambodia/PFC2/2020	OQ460113
A/swine/Cambodia/PFC3/2020	OQ460048
A/swine/Cambodia/PFC4/2020	OQ460137
A/swine/Cambodia/PFC5/2020	OQ460049
A/swine/Cambodia/PFC6/2020	OQ460177
A/swine/Cambodia/PFC8/2020	OQ460225
A/swine/Cambodia/PFC9/2020	OQ460050
A/swine/Cambodia/PFC11/2021	OQ460051
A/swine/Cambodia/PFC12/2020	OQ460089
A/swine/Cambodia/PFC13/2020	OQ460097
A/swine/Cambodia/PFC15/2020	OQ460052
A/swine/Cambodia/PFC16/2020	OQ460053
A/swine/Cambodia/PFC17/2020	OQ460054

A/swine/Cambodia/PFC18/2021	OQ460055
A/swine/Cambodia/PFC19/2021	OQ460105
A/swine/Cambodia/PFC20/2021	OQ460056
A/swine/Cambodia/PFC21/2021	OQ460057
A/swine/Cambodia/PFC22/2021	OQ460058
A/swine/Cambodia/PFC23/2020	OQ460121
A/swine/Cambodia/PFC24/2020	OQ460059
A/swine/Cambodia/PFC25/2020	OQ460060
A/swine/Cambodia/PFC26/2020	OQ460061
A/swine/Cambodia/PFC27/2020	OQ460062
A/swine/Cambodia/PFC30/2020	OQ460063
A/swine/Cambodia/PFC32/2020	OQ460064
A/swine/Cambodia/PFC33/2020	OQ460065
A/swine/Cambodia/PFC37/2021	OQ460066
A/swine/Cambodia/PFC38/2021	OQ460067
A/swine/Cambodia/PFC39/2020	OQ460129
A/swine/Cambodia/PFC41/2020	OQ460068
A/swine/Cambodia/PFC50/2021	OQ460069
A/swine/Cambodia/PFC52/2021	OQ460070
A/swine/Cambodia/PFC53/2021	OQ460145
A/swine/Cambodia/PFC54/2021	OQ460153
A/swine/Cambodia/PFC56/2021	OQ460071
A/swine/Cambodia/PFC57/2021	OQ460161
A/swine/Cambodia/PFC59/2021	OQ460169
A/swine/Cambodia/PFC60/2021	OQ460185
A/swine/Cambodia/PFC63/2021	OQ460193
A/swine/Cambodia/PFC64/2022	OQ460201
A/swine/Cambodia/PFC65/2022	OQ460209
A/swine/Cambodia/PFC66/2022	OQ460217
A/swine/Cambodia/PFC67/2022	OQ460072
A/swine/Cambodia/PFC72/2022	OQ460073
