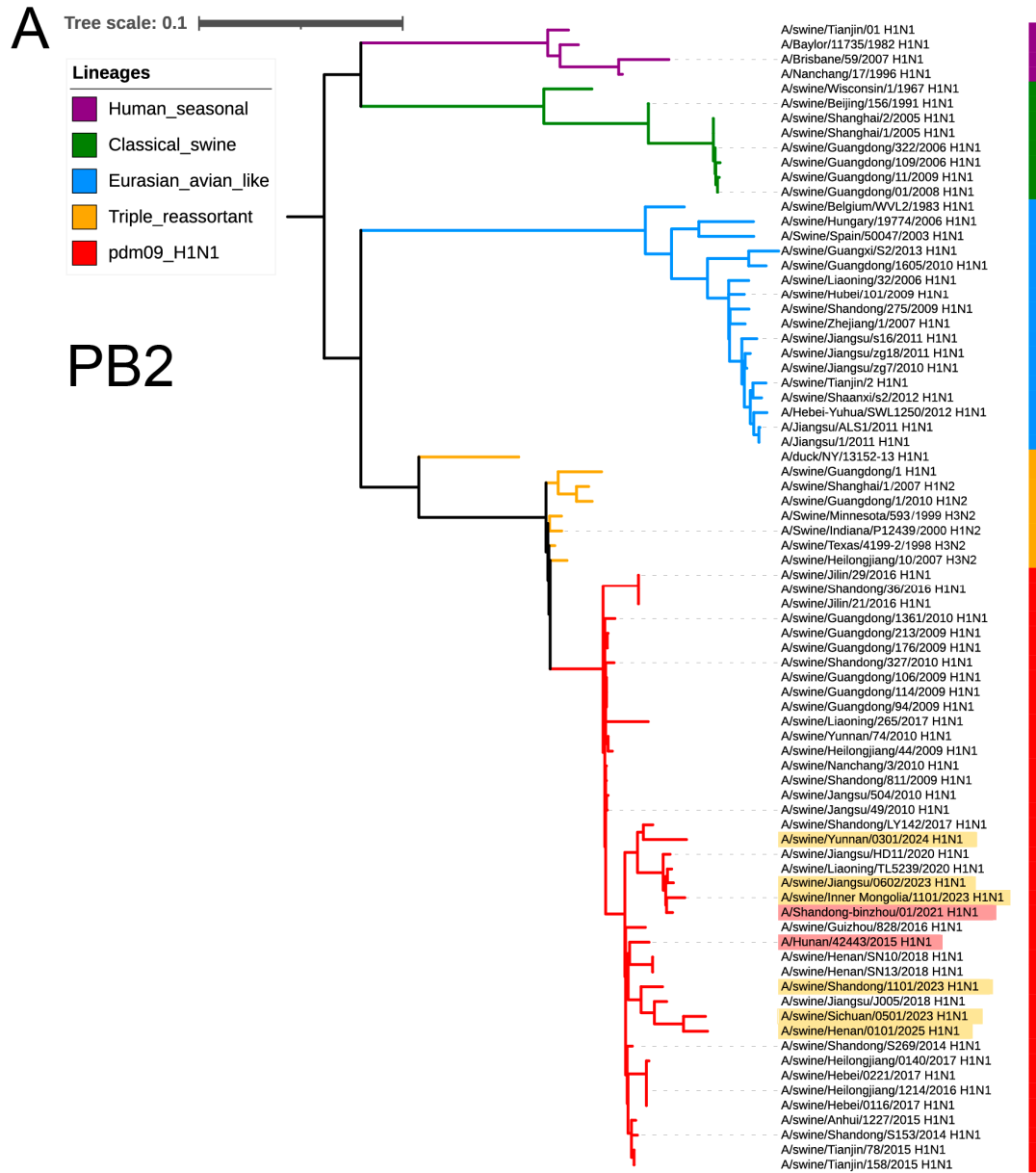


Supplementary Materials

Supplementary Figure S1. Phylogenetic analysis of the internal gene segments. Maximum-likelihood phylogenetic trees are shown for PB2 (A), PB1 (B), PA (C), NP (D), M (E), and NS (F). Study isolates are highlighted in yellow. Three human-origin reference viruses retrieved from public databases are highlighted in red.

Supplementary Figure S2. Amino acid variation at key functional regions of HA among recent G4 EA-H1N1 viruses. Amino acid residues at selected HA positions are compared among six swine H1N1 isolates and three human-origin reference strains (HN42443, TJ1606, and SD01). Positions are grouped into the HA1 N-terminal region, HA1 receptor-binding interface, HA1 C-terminal region, and HA2/stalk region. Residues identical to the reference strains are shown in black, and substitutions are highlighted in red.

Supplementary Figure S3. Structural superposition of HA-receptor complexes for six swine H1N1 isolates. Superposition of docking models of hemagglutinin (HA) bound to 3'SLN (α 2,3-linked) and 6'SLN (α 2,6-linked) receptor analogs with the corresponding template HA-receptor complex structures. Root mean square deviation (RMSD) values are indicated in each panel.



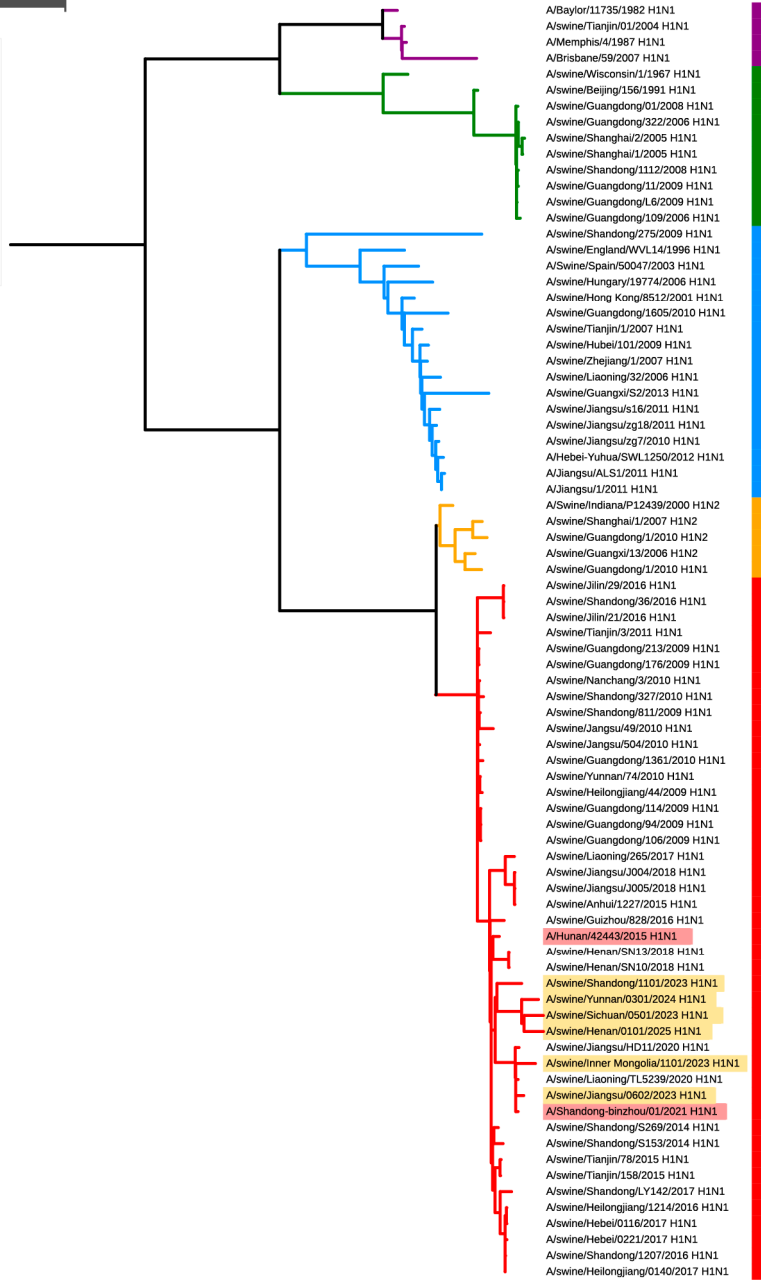
B

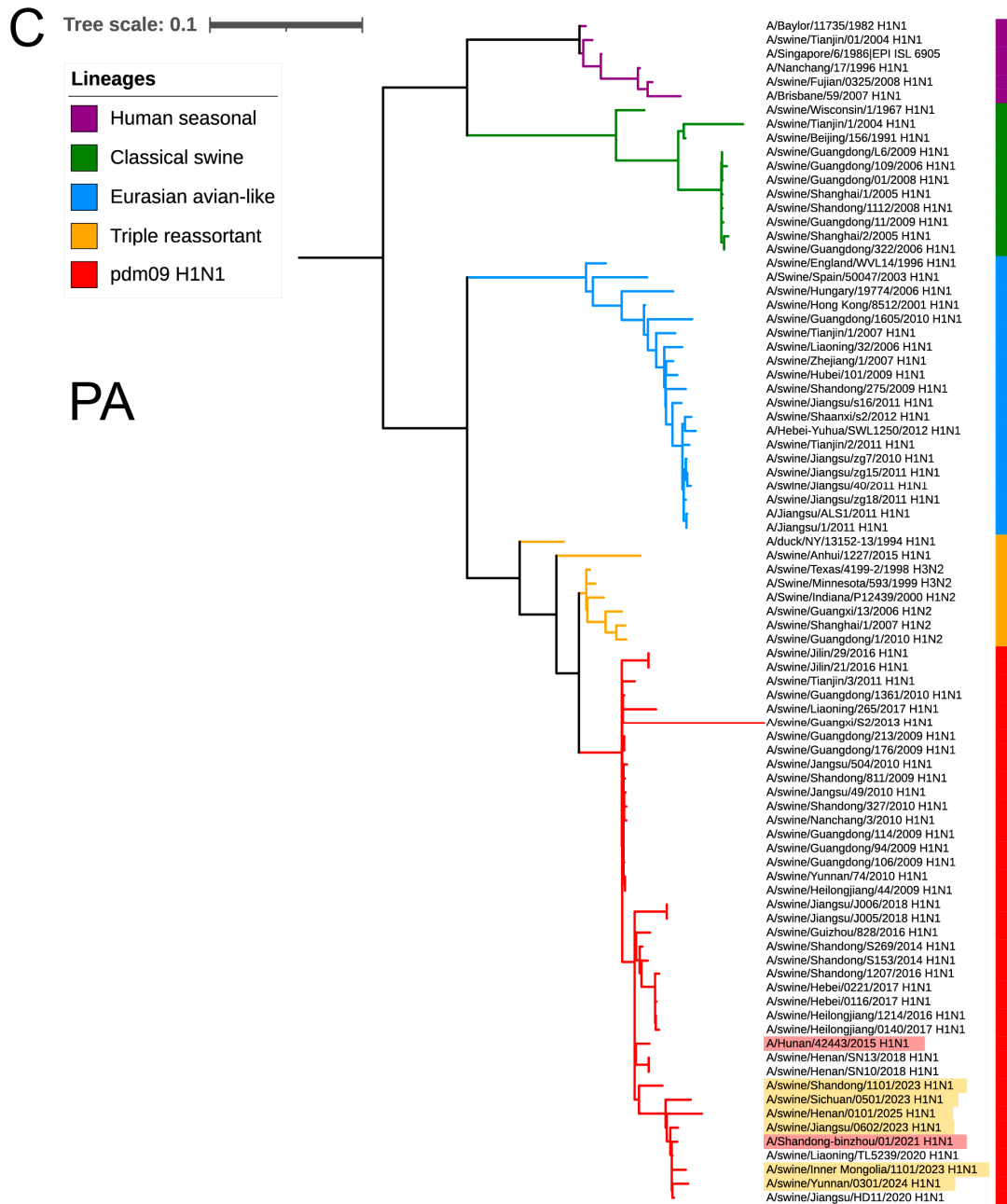
Tree scale: 0.1

Lineages

- Human seasonal
- Classical swine
- Eurasian avian-like
- Triple reassortant
- pdm09 H1N1

PB1





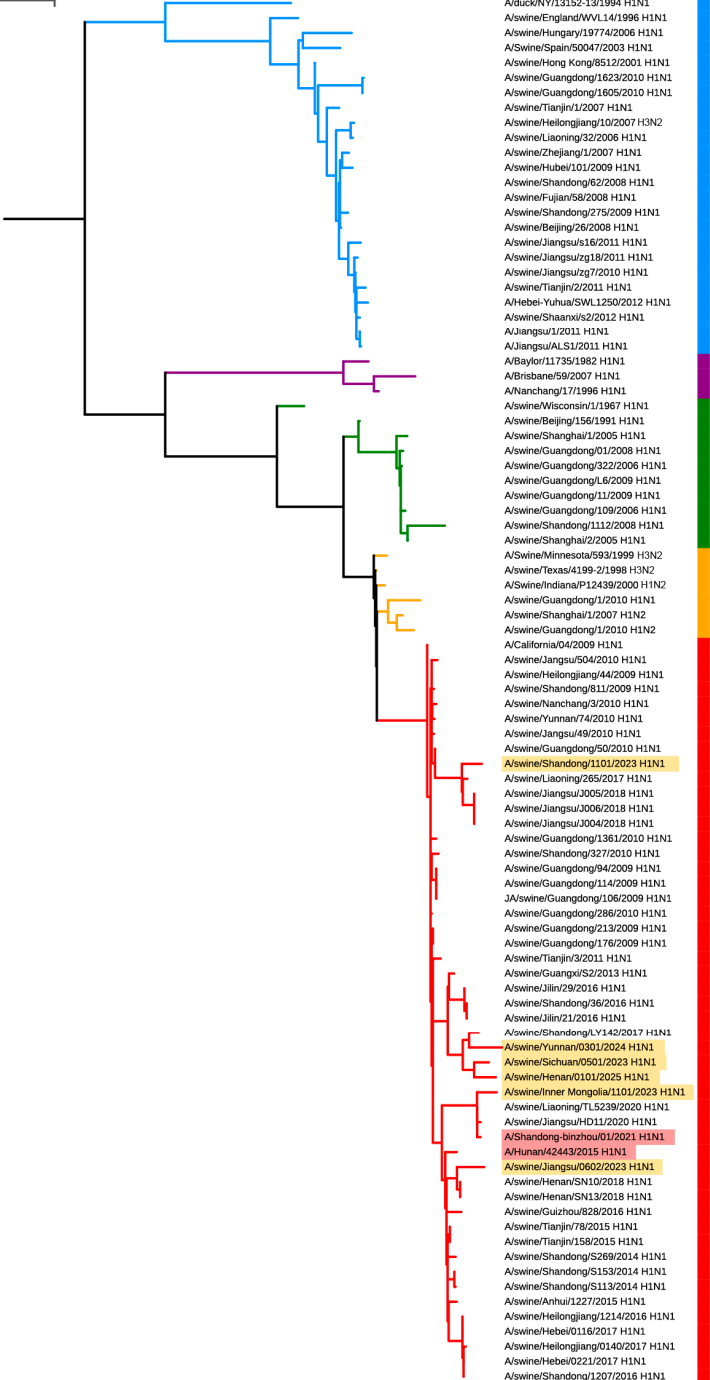
D

Tree scale: 0.1

Lineages

- Human seasonal
- Classical swine
- Eurasian avian-like
- Triple reassortant
- pdm09 H1N1

NP



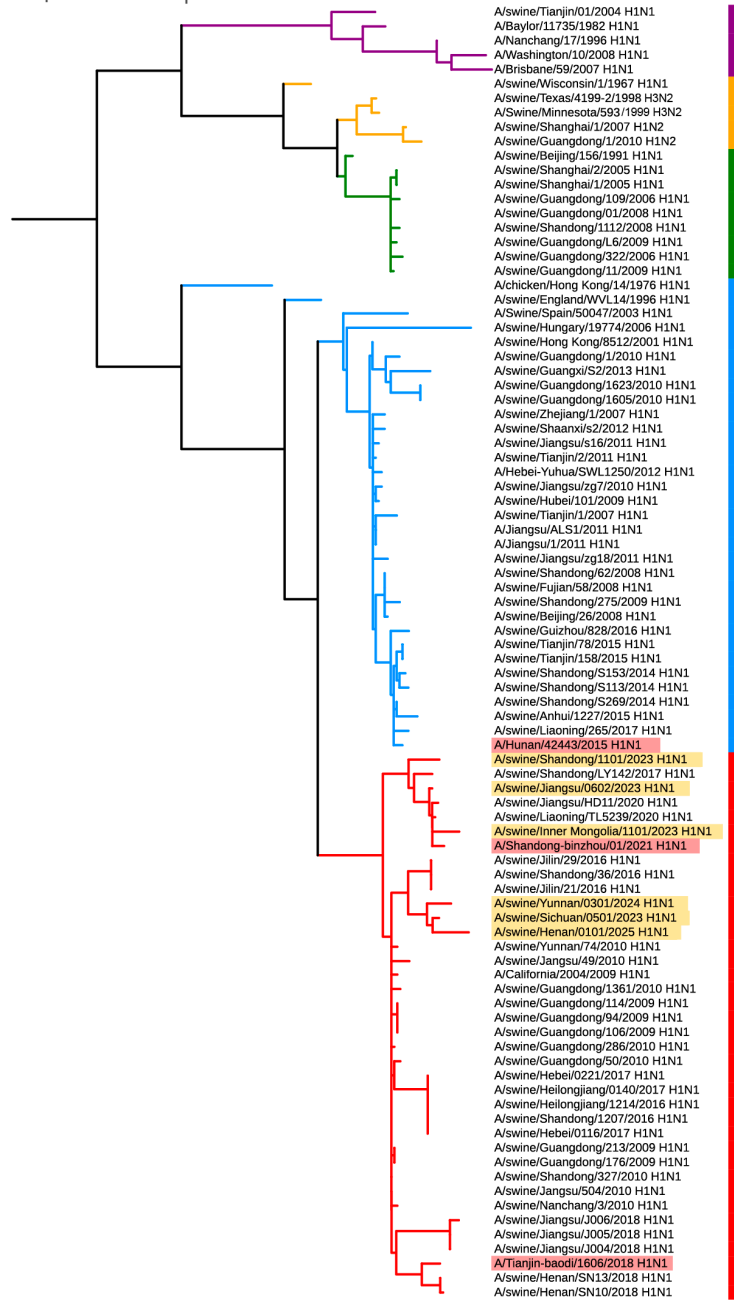
E

Tree scale: 0.1

Lineages

- Human seasonal
- Classical swine
- Eurasian avian-like
- Triple reassortant
- pdm09 H1N1

M



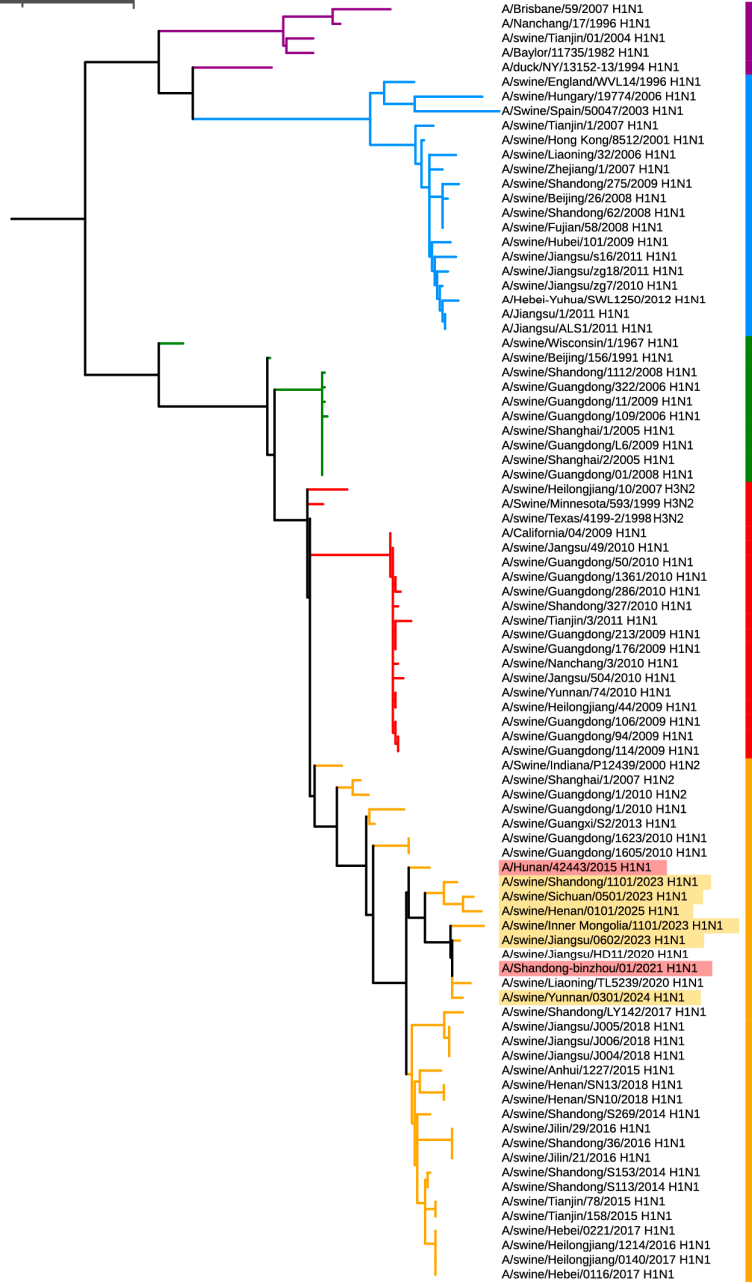
F

Tree scale: 0.1

Lineages

- Human seasonal
- Classical swine
- Eurasian avian-like
- Triple reassortant
- pdm09 H1N1

NS



	HA1 side/ N-term									HA1 interface							HA1 C-term			HA2/stalk				
	14	31	61	68	84	85	86	97	108	258	259	260	267	270	278		296	302	311		404	433	458	496
HN42443	D	N	I	D	N	S	K	D	V	K	K	G	R	A	K		H	E	Q		M	R	K	N
TJ1606	D	N	I	D	N	S	K	D	V	K	K	G	R	A	K		H	K	Q		M	R	K	N
SD01	D	N	I	D	N	S	I	D	V	K	K	G	R	V	K		H	N	Q		M	K	R	N
SC0501	D	D	I	D	N	S	I	D	I	R	K	S	K	V	K		H	K	Q		M	R	K	N
JS0602	D	N	V	D	N	S	K	D	V	K	E	G	R	V	K		N	N	Q		V	R	R	N
SD1101	D	S	I	S	N	S	K	N	V	E	K	G	R	A	K		H	K	Q		M	R	K	N
IM1101	D	N	I	D	N	S	K	D	V	K	K	G	R	V	R		H	N	H		M	K	R	N
YN0301	D	N	I	G	K	P	K	D	V	K	K	G	R	V	K		H	N	Q		M	K	R	S
HN0101	N	D	V	D	N	S	I	D	I	R	K	G	K	A	K		H	K	Q		M	R	K	N

