

# Rapid Genotyping of Swine Influenza Viruses

## Technical Appendix

Technical Appendix Table 1. Genotyping results of contemporary (2007–2008) US swine influenza viruses.

Virus <sup>1</sup>	Subtype	PB2		PB1		PA		HA		NP		NA		M		NS	
		L	R <sup>2</sup>	L	R <sup>2</sup>	L	R <sup>2</sup>	L	R <sup>2</sup>	L	R <sup>2</sup>	L	R <sup>2</sup>	L	R <sup>2</sup>	L	R <sup>2</sup>
A/Sw/Oklahoma/ 008722/2007 (670136)	H3N2	TR	- +	TR	- +	TR	- +	H3	--	TR	- +	N2	--	TR	--	TR	- +
A/Sw/Oklahoma/ 011506/2007 (670139)	H3N2	TR	- +	TR	- +	TR	- +	H3	--	TR	- +	N2	--	TR	--	TR	- +
A/Sw/Texas/ 008648/2008 (670134)	H1N2	TR	- +	TR	- +	TR	- +	Human H1	--	TR	- +	N2	--	TR	--	TR	- +
A/Sw/Oklahoma/ 032726/2008 (670116)	H1N2	TR	- +	TR	- +	TR	- +	Human H1	--	TR	- +	N2	--	TR	--	TR	- +
A/Sw/Texas/ 050593/2008 (670115)	H1N2	TR	- +	TR	- +	TR	- +	Human H1	--	TR	- +	N2	--	TR	--	TR	- +
A/Sw/Texas/ 050625/2008 (670132)	H1N2	TR	- +	TR	- +	TR	- +	Human H1	--	TR	- +	N2	--	TR	--	TR	- +
A/Sw/Iowa/ 14-1010/2009	H1N1	pH1N1	+ +	pH1N1	+ +	pH1N1	+ +	pH1N1	+ +	pH1N1	+ +	pH1N1	+ +	pH1N1	+ +	pH1N1	+ +

\*L, lineage; R, results.

<sup>1</sup> All viruses were isolated from pigs in US. Except the pandemic H1N1 (A/Sw/Iowa/14-1010/2009; Webby RJ, unpublished data), the identity of each virus in the NCBI Taxonomy ID database is shown.

<sup>2</sup>Blue signs represent pandemic H1N1-specific probe results while black signs represent SYBR Green results.

Technical Appendix Table 2. Contemporary US swine viral sequences (2008-2010) downloaded from Influenza Virus Sequence Database (N=436)\*

<b>PB2 (N=40)</b>
Influenza A virus (A/swine/Illinois/Sg-00443/2008(H1N1))
Influenza A virus (A/swine/Illinois/Sg-00444/2008(H1N1))
Influenza A virus (A/swine/Illinois/Sg-00445/2008(H1N1))
Influenza A virus (A/swine/Iowa/02039/2008(H1N2))
Influenza A virus (A/swine/Iowa/02096/2008(H1N1))
Influenza A virus (A/swine/Kansas/015252/2009(H3N2))
Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))
Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))
Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))
Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))
Influenza A virus (A/swine/Missouri/02060/2008(H1N1))
Influenza A virus (A/swine/MN/23506/2009(H1N1))
Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))
Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))
Influenza A virus (A/swine/North Carolina/02084/2008(H1N1))
Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))
Influenza A virus (A/swine/Ohio/02026/2008(H1N1))
Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))
Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))
Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))
Influenza A virus (A/swine/Texas/008648/2008(H1N2))
Influenza A virus (A/swine/Texas/01976/2008(H1N2))
Influenza A virus (A/swine/Texas/050593/2008(H1N2))
Influenza_A_virus_(A/swine/Texas/050625/2008(H1N2))
<b>PA (N=38)</b>
Influenza A virus (A/swine/Illinois/Sg-00443/2008(H1N1))
Influenza A virus (A/swine/Illinois/Sg-00444/2008(H1N1))
Influenza A virus (A/swine/Illinois/Sg-00445/2008(H1N1))
Influenza A virus (A/swine/Iowa/02039/2008(H1N2))
Influenza A virus (A/swine/Iowa/02096/2008(H1N1))
<b>Influenza A virus (A/swine/Kansas/015252/2009(H3N2))</b>
Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))
<b>Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))</b>
Influenza A virus (A/swine/Missouri/02060/2008(H1N1))
Influenza A virus (A/swine/MN/23506/2009(H1N1))
Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))
Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))
Influenza A virus (A/swine/North Carolina/02084/2008(H1N1))

Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))

Influenza A virus (A/swine/Ohio/02026/2008(H1N1))

**Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))**

**Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))**

Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))

**Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))**

Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))

Influenza A virus (A/swine/Texas/008648/2008(H1N2))

Influenza A virus (A/swine/Texas/01976/2008(H1N2))

Influenza A virus (A/swine/Texas/050593/2008(H1N2))

Influenza A virus (A/swine/Texas/050625/2008(H1N2))

---

**PB1 (N=35)**

**Influenza A virus (A/swine/Illinois/Sg-00443/2008(H1N1))**

Influenza A virus (A/swine/Iowa/02039/2008(H1N2))

Influenza A virus (A/swine/Kansas/015252/2009(H3N2))

Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))

Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))

Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))

Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))

**Influenza A virus (A/swine/Missouri/02060/2008(H1N1))**

Influenza A virus (A/swine/MN/23506/2009(H1N1))

Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))

**Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))**

Influenza A virus (A/swine/North Carolina/02084/2008(H1N1))

**Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))**

**Influenza A virus (A/swine/Ohio/02026/2008(H1N1))**

Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))

Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))

Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))  
Influenza A virus (A/swine/Texas/008648/2008(H1N2))  
Influenza A virus (A/swine/Texas/050625/2008(H1N2))

---

**NP (N=35)**

Influenza A virus (A/swine/Iowa/02039/2008(H1N2))  
Influenza A virus (A/swine/Kansas/015252/2009(H3N2))  
Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))  
Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))  
Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))  
Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))  
Influenza A virus (A/swine/Missouri/02060/2008(H1N1))  
Influenza A virus (A/swine/MN/23506/2009(H1N1))  
Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))  
Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))  
Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))  
Influenza A virus (A/swine/Ohio/02026/2008(H1N1))  
Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))  
Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))  
Influenza A virus (A/swine/Texas/008648/2008(H1N2))  
Influenza A virus (A/swine/Texas/01976/2008(H1N2))  
Influenza A virus (A/swine/Texas/050593/2008(H1N2))  
Influenza A virus (A/swine/Texas/050625/2008(H1N2))

---

**HA (N=87)**

Influenza A virus (A/swine/IL/10-001550/2009(H1N1))  
Influenza A virus (A/swine/IL/3910/2010(H1N1))  
Influenza A virus (A/swine/Iowa/03032/2010(H1N1))  
Influenza A virus (A/swine/IL/12660/2010(H1N1))  
Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))  
Influenza A virus (A/swine/MN/8762-1/2010(H1N1))  
Influenza A virus (A/swine/Illinois/03037/2010(H1N1))  
Influenza A virus (A/swine/OR/10-004060/2009(H1N1))  
Influenza A virus (A/swine/Minnesota/02976/2010(H1N1))  
Influenza A virus (A/swine/IL/27486-1/2010(H1N1))  
Influenza A virus (A/swine/Iowa/02096/2008(H1N1))  
Influenza A virus (A/swine/IL/25399-3/2010(H1N1))  
Influenza A virus (A/swine/Iowa/02999/2010(H1N1))  
Influenza A virus (A/swine/IL/35573/2009(H1N1))  
Influenza A virus (A/swine/Iowa/03031/2010(H1N1))

Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))  
Influenza A virus (A/swine/MN/23506/2009(H1N1))  
Influenza A virus (A/swine/MN/8761/2010(H1N1))  
Influenza A virus(A/swine/Iowa/46519-2/2008(H1N1))  
Influenza A virus (A/swine/MN/8762-2/2010(H1N1))  
Influenza A virus (A/swine/SD/1/2010(H1N1))  
Influenza A virus(A/swine/Iowa/46519-4/2008(H1N1))  
Influenza A virus (A/swine/MO/23881/2010(H1N1))  
Influenza A virus(A/swine/Iowa/46519-3/2008(H1N1))  
Influenza A virus (A/swine/NC/19646/2010(H1N1))  
Influenza A virus (A/swine/Minnesota/03025/2010(H1N1))  
Influenza A virus (A/swine/NC/34752/2009(H1N1))  
Influenza A virus (A/swine/Missouri/02060/2008(H1N1))  
Influenza A virus (A/swine/IL/32974/2009(H1N1))  
Influenza A virus (A/swine/IL/5265-2/2010(H1N1))  
Influenza A virus (A/swine/Ohio/02026/2008(H1N1))  
Influenza A virus (A/swine/IL/17315-3/2010(H1N1))  
Influenza A virus (A/swine/IL/5265-1/2010(H1N1))  
**Influenza A virus (A/swine/IN/17311/2010(H1N1))**  
Influenza A virus (A/swine/IL/25399-4/2010(H1N1))  
Influenza A virus (A/swine/IL/17315-1/2010(H1N1))  
Influenza A virus (A/swine/IL/10-001551-2/2009(H1N1))  
Influenza A virus (A/swine/IL/25399-2/2010(H1N1))  
Influenza A virus(A/swine/Missouri/46519-5/2009(H1N1))  
Influenza A virus (A/swine/Indiana/27007/2009(H1N1))  
Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))  
**Influenza A virus (A/swine/NC/13598/2010(H1N1))**  
Influenza A virus (A/swine/MO/15534/2010(H1N1))  
Influenza A virus (A/swine/IL/35572/2009(H1N1))  
Influenza A virus (A/swine/MO/17314/2010(H1N1))  
Influenza A virus (A/swine/IL/27486-2/2010(H1N1))  
Influenza A virus (A/swine/IL/10-001551-1/2009(H1N1))  
Influenza A virus (A/swine/NC/34543/2009(H1N1))  
Influenza A virus (A/swine/Iowa/02039/2008(H1N2))  
Influenza A virus (A/swine/Iowa/02998/2010(H1N2))  
Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))  
Influenza A virus (A/swine/Minnesota/03043/2010(H1N2))  
Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))  
Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))  
Influenza A virus (A/swine/Minnesota/03023/2010(H1N2))  
Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))  
Influenza A virus (A/swine/Minnesota/03000/2010(H1N1))  
Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))  
Influenza A virus (A/swine/Texas/01976/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))  
Influenza A virus (A/swine/SD/31813/2009(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))  
Influenza A virus (A/swine/Illinois/03036/2010(H1N2))  
Influenza A virus (A/swine/Illinois/03033/2010(H1N2))

Influenza A virus (A/swine/Iowa/03026/2010(H1N2))  
Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))  
Influenza A virus (A/swine/Texas/050593/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))  
Influenza A virus (A/swine/Missouri/03035/2010(H1N2))  
Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))  
Influenza A virus (A/swine/Texas/008648/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))  
Influenza A virus (A/swine/Texas/050625/2008(H1N2))  
Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))  
Influenza A virus (A/swine/Kansas/015252/2009(H3N2))  
Influenza A virus (A/swine/Minnesota/03008/2010(H3N2))  
Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))

---

**NA (N=73)**

---

Influenza A virus (A/swine/IL/10-001550/2009(H1N1))  
Influenza A virus (A/swine/IL/10-001551-1/2009(H1N1))  
Influenza A virus (A/swine/IL/10-001551-2/2009(H1N1))  
**Influenza A virus (A/swine/IL/12660/2010(H1N1))**  
Influenza A virus (A/swine/IL/17315-1/2010(H1N1))  
Influenza A virus (A/swine/IL/17315-3/2010(H1N1))  
Influenza A virus (A/swine/IL/25399-2/2010(H1N1))  
Influenza A virus (A/swine/IL/25399-3/2010(H1N1))  
Influenza A virus (A/swine/IL/25399-4/2010(H1N1))  
Influenza A virus (A/swine/IL/27486-1/2010(H1N1))  
Influenza A virus (A/swine/IL/27486-2/2010(H1N1))  
Influenza A virus (A/swine/IL/32974/2009(H1N1))  
Influenza A virus (A/swine/IL/35572/2009(H1N1))  
Influenza A virus (A/swine/IL/35573/2009(H1N1))  
**Influenza A virus (A/swine/IL/3910/2010(H1N1))**  
Influenza A virus (A/swine/IL/5265-1/2010(H1N1))  
Influenza A virus (A/swine/IL/5265-2/2010(H1N1))  
Influenza A virus (A/swine/IN/17311/2010(H1N1))  
Influenza A virus (A/swine/Indiana/27007/2009(H1N1))  
Influenza A virus (A/swine/MO/17314/2010(H1N1))  
Influenza A virus (A/swine/MO/23881/2010(H1N1))  
Influenza A virus (A/swine/NC/13598/2010(H1N1))  
Influenza A virus (A/swine/NC/19646/2010(H1N1))  
**Influenza A virus (A/swine/MN/8761/2010(H1N1))**  
**Influenza A virus (A/swine/MN/8762-1/2010(H1N1))**  
**Influenza A virus (A/swine/MN/8762-2/2010(H1N1))**  
Influenza A virus (A/swine/MO/15534/2010(H1N1))  
Influenza A virus (A/swine/NC/34543/2009(H1N1))  
Influenza A virus (A/swine/NC/34752/2009(H1N1))  
Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))  
Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))  
Influenza A virus (A/swine/Iowa/46519-3/2008(H1N1))  
Influenza A virus (A/swine/OR/10-004060/2009(H1N1))  
Influenza A virus (A/swine/SD/1/2010(H1N1))  
Influenza A virus (A/swine/Missouri/02060/2008(H1N1))  
Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))  
Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))  
Influenza A virus (A/swine/MN/23506/2009(H1N1))  
Influenza A virus (A/swine/Iowa/46519-2/2008(H1N1))  
Influenza A virus (A/swine/Ohio/02026/2008(H1N1))  
Influenza A virus (A/swine/Missouri/46519-5/2009(H1N1))

Influenza A virus(A/swine/Iowa/46519-4/2008(H1N1))  
Influenza A virus (A/swine/North Carolina/02084/2008(H1N1))  
Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))  
Influenza A virus (A/swine/Iowa/02096/2008(H1N1))  
Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))  
Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))  
Influenza A virus (A/swine/Texas/01976/2008(H1N2))  
Influenza A virus (A/swine/Texas/008648/2008(H1N2))  
Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))  
Influenza A virus (A/swine/Kansas/015252/2009(H3N2))  
Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))  
Influenza A virus (A/swine/Texas/050593/2008(H1N2))  
Influenza A virus (A/swine/Texas/050625/2008(H1N2))  
Influenza A virus (A/swine/SD/31813/2009(H1N2))  
Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))  
Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))  
Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))  
Influenza A virus (A/swine/Iowa/02039/2008(H1N2))

---

**M (N=73)**

---

Influenza A virus (A/swine/IL/10-001550/2009(H1N1))  
**Influenza A virus (A/swine/IL/10-001551-1/2009(H1N1))**  
**Influenza A virus (A/swine/IL/10-001551-2/2009(H1N1))**  
Influenza A virus (A/swine/IL/12660/2010(H1N1))  
**Influenza A virus (A/swine/IL/17315-1/2010(H1N1))**  
**Influenza A virus (A/swine/IL/17315-3/2010(H1N1))**  
Influenza A virus (A/swine/IL/25399-2/2010(H1N1))  
Influenza A virus (A/swine/IL/25399-3/2010(H1N1))  
Influenza A virus (A/swine/IL/25399-4/2010(H1N1))  
Influenza A virus (A/swine/IL/27486-1/2010(H1N1))  
Influenza A virus (A/swine/IL/27486-2/2010(H1N1))  
Influenza A virus (A/swine/IL/32974/2009(H1N1))  
Influenza A virus (A/swine/IL/35572/2009(H1N1))  
Influenza A virus (A/swine/IL/35573/2009(H1N1))  
Influenza A virus (A/swine/IL/3910/2010(H1N1))  
Influenza A virus (A/swine/IL/5265-1/2010(H1N1))  
Influenza A virus (A/swine/IL/5265-2/2010(H1N1))  
Influenza A virus (A/swine/IN/17311/2010(H1N1))  
Influenza A virus (A/swine/Indiana/27007/2009(H1N1))  
Influenza A virus (A/swine/MN/8761/2010(H1N1))  
Influenza A virus (A/swine/MN/8762-1/2010(H1N1))  
Influenza A virus (A/swine/MN/8762-2/2010(H1N1))  
**Influenza A virus (A/swine/MO/15534/2010(H1N1))**  
Influenza A virus (A/swine/MO/17314/2010(H1N1))

Influenza A virus (A/swine/MO/23881/2010(H1N1))  
**Influenza A virus (A/swine/NC/13598/2010(H1N1))**  
 Influenza A virus (A/swine/NC/19646/2010(H1N1))  
 Influenza A virus (A/swine/NC/34543/2009(H1N1))  
 Influenza A virus (A/swine/NC/34752/2009(H1N1))  
 Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/02084/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))  
 Influenza A virus (A/swine/Ohio/02026/2008(H1N1))  
 Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))  
 Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))  
 Influenza A virus (A/swine/Iowa/02039/2008(H1N2))  
 Influenza A virus (A/swine/Iowa/02096/2008(H1N1))  
 Influenza A virus (A/swine/Kansas/015252/2009(H3N2))  
 Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))  
 Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))  
 Influenza A virus (A/swine/Missouri/02060/2008(H1N1))  
 Influenza A virus (A/swine/MN/23506/2009(H1N1))  
 Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))  
 Influenza A virus (A/swine/OR/10-004060/2009(H1N1))  
 Influenza A virus (A/swine/SD/1/2010(H1N1))  
 Influenza A virus (A/swine/SD/31813/2009(H1N2))  
 Influenza A virus (A/swine/Texas/008648/2008(H1N2))  
 Influenza A virus (A/swine/Texas/01976/2008(H1N2))  
 Influenza A virus (A/swine/Texas/050593/2008(H1N2))  
 Influenza A virus (A/swine/Texas/050625/2008(H1N2))  
 Influenza A virus (A/swine/Iowa/46519-2/2008(H1N1))  
 Influenza A virus (A/swine/Iowa/46519-3/2008(H1N1))  
 Influenza A virus (A/swine/Iowa/46519-4/2008(H1N1))  
 Influenza A virus (A/swine/Missouri/46519-5/2009(H1N1))

---

**NS (N=55)**

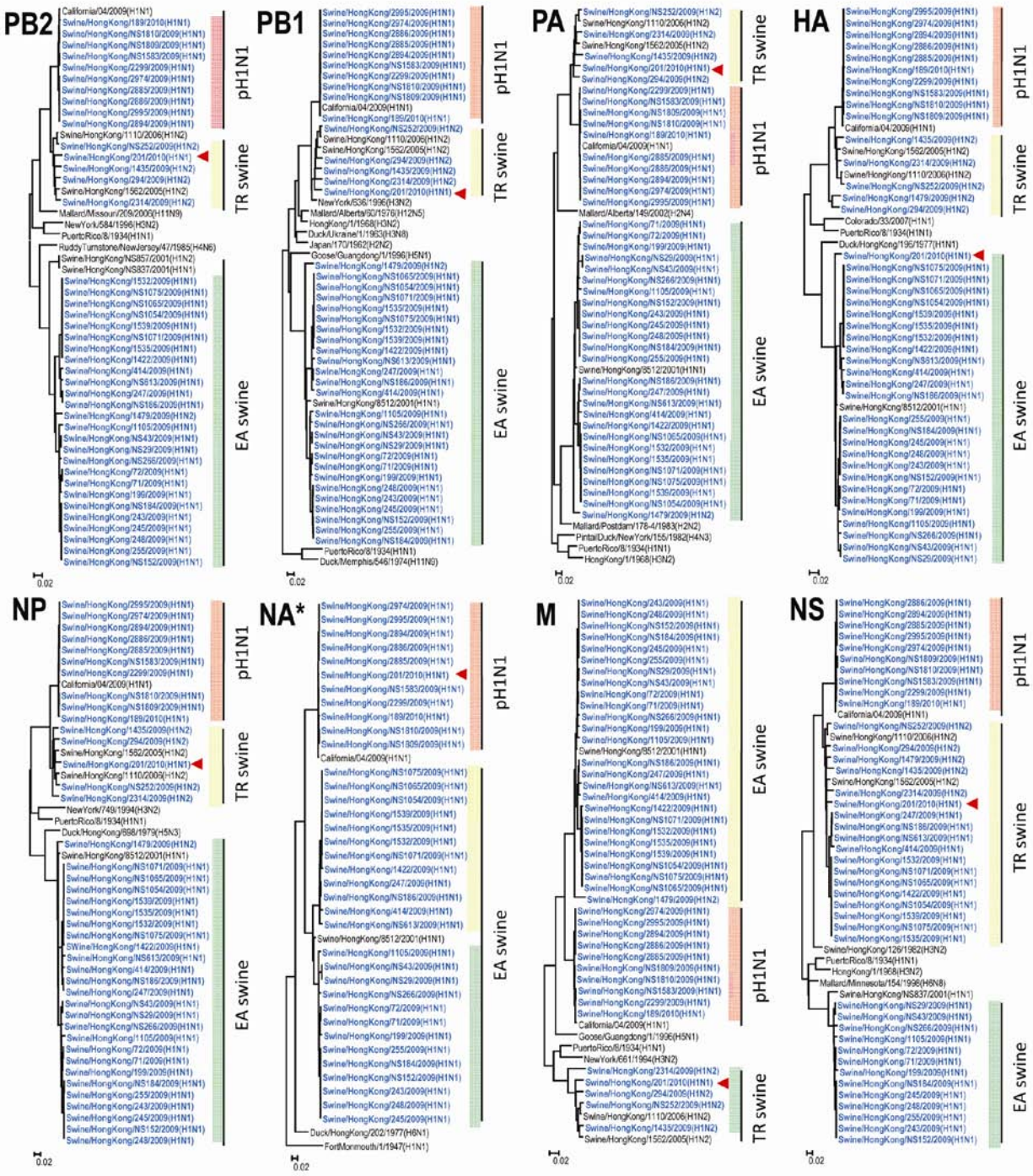
---

Influenza A virus (A/swine/Arkansas/25294.25/2008(H3N2))  
 Influenza A virus (A/swine/Illinois/02238/2008(H1N1))  
 Influenza A virus (A/swine/Illinois/02251/2009(H1N1))  
 Influenza A virus (A/swine/Illinois/225-1/2008(H1N1))  
 Influenza A virus (A/swine/Iowa/02039/2008(H1N2))  
 Influenza A virus (A/swine/Iowa/02096/2008(H1N1))  
 Influenza A virus (A/swine/Iowa/225-8/2008(H1N1))



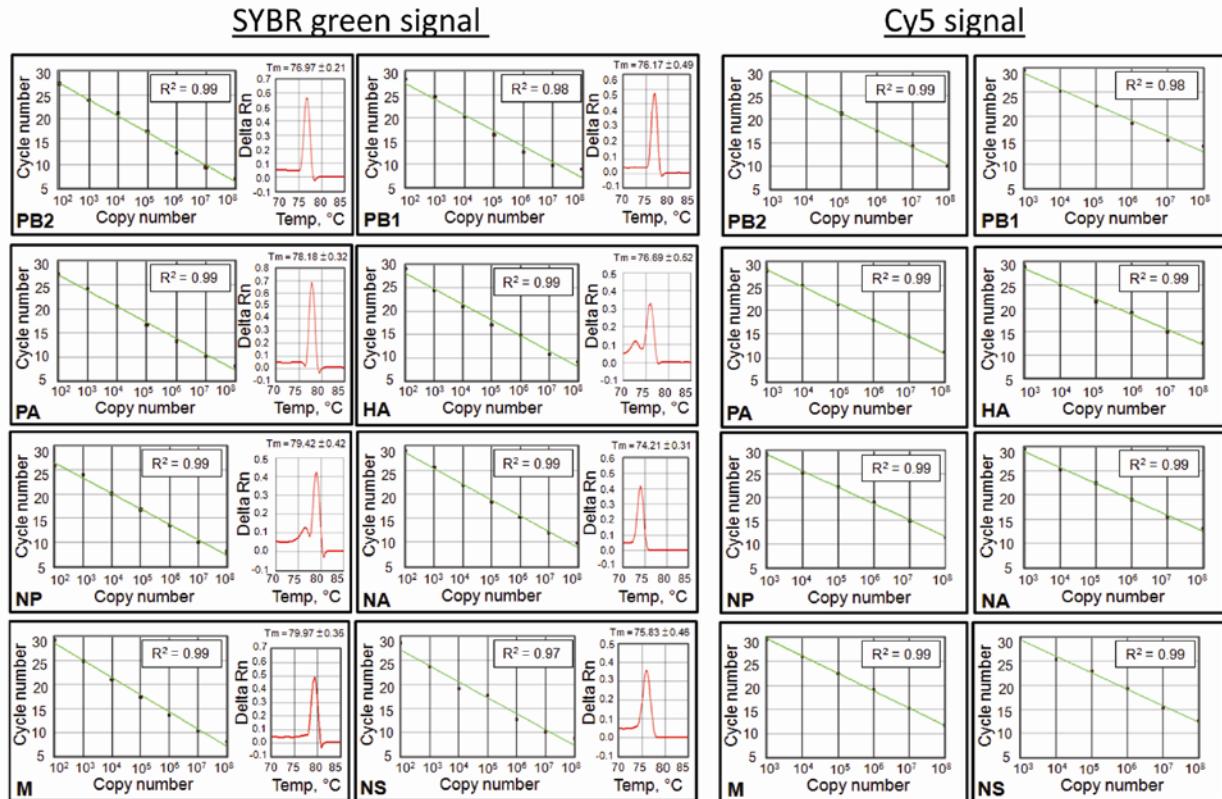
Influenza A virus (A/swine/Kansas/015252/2009(H3N2))  
 Influenza A virus (A/swine/Kentucky/02086/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/02011/2008(H1N2))  
 Influenza A virus (A/swine/Minnesota/02053/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/02093/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/225-11/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/225-3/2008 (H1N1))  
 Influenza A virus (A/swine/Minnesota/225-4/2008(H1N1))  
 Influenza A virus (A/swine/Minnesota/225-5/2008 (H1N1))  
 Influenza A virus (A/swine/Minnesota/61598.3/2008(H1N1))  
 Influenza A virus (A/swine/Missouri/02060/2008(H1N1))  
 Influenza A virus (A/swine/MN/23506/2009(H1N1))  
 Influenza A virus (A/swine/Nebraska/02013/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/02023/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/02084/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/225-12/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/225-13/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/225-2/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/225-6/2008(H1N1))  
 Influenza A virus (A/swine/North Carolina/225-7/2008(H3N2))  
 Influenza A virus (A/swine/North Carolina/R08-001877-D08-013371/2008 (H3N2))  
 Influenza A virus (A/swine/Ohio/02026/2008(H1N1))  
 Influenza A virus (A/swine/Ohio/02090/2008(H1N1))  
 Influenza A virus (A/swine/Oklahoma/001142/2009(H3N2))  
 Influenza A virus (A/swine/Oklahoma/010226-16/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/010226-17/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/010710-8/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/010710-9/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011289-10/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011289-8/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011289-9/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011521-4/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/011521-5/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/016179-8/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/016179-9/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020734-2/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020734-3/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020736-1/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/020736-2/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/02530/2009(H3N2))  
 Influenza A virus (A/swine/Oklahoma/032726/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/042169/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/053259/2008(H1N2))  
 Influenza A virus (A/swine/Oklahoma/225-14/2008(H3N2))  
 Influenza A virus (A/swine/Texas/008648/2008(H1N2))  
 Influenza A virus (A/swine/Texas/01976/2008(H1N2))  
 Influenza A virus (A/swine/Texas/050593/2008(H1N2))  
 Influenza A virus (A/swine/Texas/050625/2008(H1N2))

<sup>\*</sup>[www.ncbi.nlm.nih.gov/genomes/FLU/FLU.html](http://www.ncbi.nlm.nih.gov/genomes/FLU/FLU.html); Date: 28<sup>th</sup> Oct 2010. Based on the primer and probe sequences, no false positive samples is expected to be observed, and viral sequences predicted to have false negative results (N=23) are in **boldface**.



Technical Appendix Figure 1. Genotyping of swine influenza viruses. Swine influenza viruses tested by the genotyping assays. Swine influenza viruses tested in this study are highlighted in blue. Representative human, avian, classical swine, Eurasian avian-like (EA) swine and triple reassortant (TR) swine influenza virus sequences from GenBank (black) are included as references. Sequences from viruses determined in this study were described elsewhere (5,6). Viruses yielding double positive, double negative and SYBR green-positive/cyanine 5-negative signals are highlighted in red, green, and yellow,

respectively. The reassortant of pandemic (H1N1) (A/swine/Hong Kong/201/2010) is highlighted by an arrow in each tree. \*N2 sequences were excluded from the analysis. Phylogenetic trees of swine influenza viruses were constructed by the neighbor-joining method. Scale bar indicates estimated genetic distance of these viruses.



Technical Appendix Figure 2. Combined SYBR green/hydrolysis probe quantitative RT-PCR assays for genotyping of swine influenza virus. Dynamic ranges of the segment-specific assays deduced from the SYBR green signal (left) and Cy5 (right) signals are shown. The square of correlation coefficient ( $R^2$ ) of the standard curves are indicated. The melting curves observed from the SYBR signals are shown (left) and the melting temperature ( $T_m$ , average  $\pm$  SD) of pandemic H1N1 gene segments were deduced from  $\geq 20$  independent reactions.