

Supporting Information

Supporting Information Corrected March 18, 2015

Pu et al. 10.1073/pnas.1422456112

Table S1. Isolation rates of H9N2 influenza viruses on farms reporting illness in vaccinated chickens during 2010–2013

Year	Month	Number of H9N2-positive farms	Number of investigated farms	Isolation rate (%)
2010	Jan.	12	32	37.50
	Feb.	3	19	15.79
	Mar.	6	38	15.79
	Apr.	11	33	33.33
	May.	8	28	28.57
	Jun.	4	19	21.05
	Jul.	2	27	7.41
	Aug.	2	28	7.14
	Sep.	0	16	0.00
	Oct.	11	43	25.58
	Nov.	7	40	17.50
	Dec.	19	62	30.65
		Whole year	85	385
2011	Jan.	12	29	41.38
	Feb.	16	33	48.48
	Mar.	13	58	22.41
	Apr.	27	82	32.93
	May.	21	65	32.31
	Jun.	6	44	13.64
	Jul.	7	42	16.67
	Aug.	12	38	31.58
	Sep.	12	38	31.58
	Oct.	8	47	17.02
	Nov.	8	25	32.00
	Dec.	9	70	12.86
		Whole year	151	571
2012	Jan.	6	21	28.57
	Feb.	5	53	9.43
	Mar.	19	57	33.33
	Apr.	12	47	25.53
	May.	12	35	34.29
	Jun.	26	49	53.06
	Jul.	5	18	27.78
	Aug.	2	17	11.76
	Sep.	2	35	5.71
	Oct.	25	75	33.33
	Nov.	35	62	56.45
	Dec.	26	70	37.14
		Whole year	175	539
2013	Jan.	19	40	47.50
	Feb.	17	42	40.48
	Mar.	23	48	47.92
	Apr.	14	44	31.82
	May.	33	47	70.21
	Jun.	1	24	4.17
	Jul.	6	25	24.00
	Aug.	3	10	30.00

Table S1. Cont.

Year	Month	Number of H9N2-positive farms	Number of investigated farms	Isolation rate (%)
	Sep.	13	36	36.11
	Oct.	13	36	36.11
	Nov.	36	54	66.67
	Dec.	48	74	64.86
	Whole year	226	480	47.08
2010–2013	Four years	637	1,975	32.25

Viral detection was conducted on vaccinated chickens from farms with disease symptoms from 19 provinces. Isolation rate is calculated as the number of H9N2-positive farms relative to the number of investigated farms. The number of investigated chicken farms in each province is as follows: Anhui $n = 7$, Beijing $n = 57$, Guangdong $n = 4$, Guangxi $n = 2$, Fujian $n = 1$, Hebei $n = 129$, Heilongjiang $n = 14$, Henan $n = 26$, Hubei $n = 7$, Jiangsu $n = 7$, Jiangxi $n = 7$, Jilin $n = 66$, Liaoning $n = 151$, Neimenggu $n = 18$, Shaanxi $n = 9$, Shandong $n = 1468$, Sichuan $n = 2$, Tianjin $n = 4$, and Xinjiang $n = 2$.

Table S2. HI tests of chicken H9N2 influenza viruses against vaccine antisera

Virus	Polyclonal antisera against vaccine strains		Clade	Genotype
	Ck/SD/6/96	Ck/SH/F/98		
A/chicken/Shandong/6/1996	320	320	2	G02
A/chicken/Shanghai/F/1998	160	320	2	G08
A/chicken/Beijing/3/1999* [†]	320	640	2	G02
A/chicken/Hebei/0617/2007* [†]	80	80	9	G51
A/chicken/Shandong/ZB/2007* [†]	20	40	8	G60
A/chicken/Shandong/JL/2008	20	20	8	G58
A/chicken/Beijing/HD/2008	20	<	8	G58
A/chicken/HB/DF/2008	40	20	8	G61
A/chicken/Shandong/22/2008*	80	80	9	G49
A/chicken/Shandong/ZC2/2009	<	<	9	G49
A/chicken/Shandong/ZC12/2009	40	40	9	G57
A/chicken/Henan/DY/2009	20	20	9	G57
A/chicken/Hebei/TY/2010*	<	<	9	G57
A/chicken/Hebei/ZR/2010	<	<	9	G57
A/chicken/Shandong/HL/2010	<	20	9	G57
A/chicken/Shandong/01/2010*	20	20	9	G57
A/chicken/Shandong/10/2010	40	40	9	G57
A/chicken/Beijing/HD/2010	20	20	9	G57
A/chicken/Jiangsu/TS/2010*	40	20	9	G57
A/chicken/Shandong/11/2010	20	20	9	G57
A/chicken/Hebei/FL/2011	<	20	9	G57
A/chicken/Guangdong/01/2011* [†]	20	20	6	G68
A/chicken/Shandong/05/2011	<	<	9	G57
A/chicken/Shandong/03/2011	40	40	9	G57
A/chicken/SC/02/2011	20	<	9	G57
A/chicken/Shandong/06/2011*	20	20	9	G57

Data represent HI titers. Homologous titers are indicated in bold, and titers less than 20 are indicated with a less than sign (<).

*Viruses that were selected for the infection study.

[†]Viruses identified previously (20) that were selected as reference strains.

Table S3. Accession numbers for new sequences generated in this study

Strain name	PB2	PB1	PA	HA	NP	NA	M	NS
A/chicken/hebei/TS/2008(H9N2)	KC821029	KC821070	KC821103	KC820992	KC821140	KC821214	KC821177	KC821251
A/chicken/shandong/JL/2008(H9N2)	KC821030	KC821067	KC821105	KC820995	KC821142	KC821216	KC821179	KC821253
A/chicken/beijing/HD/2008(H9N2)	KC821031	KC821068	KC821106	KC820994	KC821144	KC821218	KC821180	KC821254
A/chicken/shandong/LY/2008(H9N2)	KC821032	KC821069	KC821107	KC820993	KC821143	KC821217	KC821181	KC821255
A/chicken/hebei/DF/2008(H9N2)	KC821033	KC821066	KC821104	KC820996	KC821141	KC821215	KC821178	KC821252
A/chicken/henan/DY/2009(H9N2)	KC821034	KC821071	KC821108	KC820997	KC821145	KC821219	KC821182	KC821256
A/chicken/shandong/zc2/2009(H9N2)	KC821035	KC821072	KC821109	KC820998	KC821146	KC821220	KC821183	KC821257
A/chicken/shandong/zc11/2009(H9N2)	KC821036	KC821073	KC821110	KC821000	KC821147	KC821221	KC821184	KC821258
A/chicken/shandong/zc12/2009(H9N2)	KC821037	KC821074	KC821111	KC820999	KC821148	KC821222	KC821185	KC821259
A/chicken/shandong/sd02/2010(H9N2)	KC821038	KC821082	KC821117	KC821010	KC821152	KC821224	KC821187	KC821261
A/chicken/shandong/05/2010(H9N2)	KC821039	KC821083	KC821118	KC821009	KC821153	KC821225	KC821188	KC821262
A/chicken/shandong/HL/2010(H9N2)	KC821040	KC821078	KC821126	KC821004	KC821158	KC821233	KC821196	KC821270
A/chicken/shandong/11/2010(H9N2)	KC821041	KC821079	KC821122	KC821003	KC821155	KC821229	KC821192	KC821266
A/chicken/shandong/sd01/2010(H9N2)	KC821042	KC821075	KC821116	KC821001	KC821151	KC821223	KC821186	KC821260
A/chicken/jiangsu/TS/2010(H9N2)	KC821043	KC821076	KC821127	KC821007	KC821159	KC821234	KC821197	KC821271
A/chicken/beijing/HD/2010(H9N2)	KC821044	KC821080	KC821124	KC821005	KC821157	KC821231	KC821194	KC821268
A/chicken/hebei/ZR/2010(H9N2)	KC821045	KC821084	KC821123	KC821011	KC821156	KC821230	KC821193	KC821267
A/chicken/shandong/10/2010(H9N2)	KC821046	KC821077	KC821121	KC821008	KC821154	KC821228	KC821191	KC821265
A/chicken/shandong/06/2010(H9N2)	KC821047	KC821081	KC821120	KC821002	KC821150	KC821227	KC821190	KC821264
A/chicken/hebei/fx05/2010(H9N2)	KC821048	KC821085	KC821119	KC821006	KC821149	KC821226	KC821189	KC821263
A/chicken/hebei/YT/2010(H9N2)	KC821049	KC821086	KC821125	KC821012	KC821160	KC821232	KC821195	KC821269
A/chicken/shandong/02/2011(H9N2)	KC821050	KC821092	KC821129	KC821013	KC821162	KC821238	KC821208	KC821275
A/chicken/shandong/11/2011(H9N2)	KC821051	KC821097	KC821136	KC821024	KC821167	KC821248	KC821201	KC821281
A/chicken/shandong/06/2011(H9N2)	KC821052	KC821098	KC821133	KC821021	KC821165	KC821244	KC821200	KC821279
A/chicken/shandong/07/2011(H9N2)	KC821053	KC821099	KC821134	KC821022	KC821166	KC821245	KC821199	KC821280
A/chicken/hebei/01/2011(H9N2)	KC821054	KC821087	KC821113	KC821018	KC821173	KC821236	KC821209	KC821274
A/chicken/hebei/02/2011(H9N2)	KC821055	KC821090	KC821112	KC821016	KC821170	KC821241	KC821205	KC821277
A/chicken/hebei/03/2011(H9N2)	KC821056	KC821089	KC821114	KC821017	KC821172	KC821242	KC821207	KC821276
A/chicken/shandong/09/2011(H9N2)	KC821057	KC821095	KC821135	KC821023	KC821174	KC821246	KC821210	KC821272
A/chicken/shandong/01/2011(H9N2)	KC821058	KC821088	KC821115	KC821019	KC821171	KC821237	KC821211	KC821278
A/chicken/guangdong/01/2011(H9N2)	KC821059	KC821091	KC821128	KC821025	KC821161	KC821235	KC821198	KC821273
A/chicken/shandong/03/2011(H9N2)	KC821060	KC821093	KC821131	KC821014	KC821164	KC821240	KC821203	KC821283
A/chicken/shandong/05/2011(H9N2)	KC821061	KC821094	KC821132	KC821015	KC821168	KC821243	KC821204	KC821284
A/chicken/sichuan/02/2011(H9N2)	KC821062	KC821096	KC821130	KC821026	KC821163	KC821239	KC821202	KC821282
A/chicken/hebei/FL/2011(H9N2)	KC821063	KC821100	KC821137	KC821020	KC821169	KC821247	KC821206	KC821285
A/chicken/Beijing/HD06/2012(H9N2)	KF059344	KF059334	KF059324	KF059274	KF059304	KF059294	KF059284	KF059314
A/chicken/Shandong/zc4/2012(H9N2)	KF059345	KF059335	KF059325	KF059275	KF059305	KF059295	KF059285	KF059315
A/chicken/Tianjin/61/2012(H9N2)	KF059346	KF059336	KF059326	KF059276	KF059306	KF059296	KF059286	KF059316
A/chicken/Tianjin/614/2012(H9N2)	KF059347	KF059337	KF059327	KF059277	KF059307	KF059297	KF059287	KF059317
A/chicken/Tianjin/120/2013(H9N2)	KF059348	KF059338	KF059328	KF059278	KF059308	KF059298	KF059288	KF059318
A/chicken/Beijing/F1/2012(H9N2)	KF059349	KF059339	KF059329	KF059279	KF059309	KF059299	KF059289	KF059319
A/chicken/Beijing/L2/2012(H9N2)	KF059350	KF059340	KF059330	KF059280	KF059310	KF059300	KF059290	KF059320
A/chicken/Beijing/11/2013(H9N2)	KF059351	KF059341	KF059331	KF059281	KF059311	KF059301	KF059291	KF059321
A/chicken/Beijing/324/2013(H9N2)	KF059352	KF059342	KF059332	KF059282	KF059312	KF059302	KF059292	KF059322
A/chicken/Beijing/325/2013(H9N2)	KF059353	KF059343	KF059333	KF059283	KF059313	KF059303	KF059293	KF059323
A/chicken/Shanxi/0703/2012(H9N2)	KM609840	KM609800	KM609760	KM609560	KM609680	KM609640	KM609600	KM609720
A/chicken/Shandong/zc0606/2012(H9N2)	KM609841	KM609801	KM609761	KM609561	KM609681	KM609641	KM609601	KM609721
A/chicken/Shandong/yf0711/2013(H9N2)	KM609842	KM609802	KM609762	KM609562	KM609682	KM609642	KM609602	KM609722
A/chicken/Shandong/yf0106/2012(H9N2)	KM609843	KM609803	KM609763	KM609563	KM609683	KM609643	KM609603	KM609723
A/chicken/Shandong/wf1206/2012(H9N2)	KM609844	KM609804	KM609764	KM609564	KM609684	KM609644	KM609604	KM609724
A/chicken/Shandong/wf12010/2012(H9N2)	KM609845	KM609805	KM609765	KM609565	KM609685	KM609645	KM609605	KM609725
A/chicken/Shandong/wf0712/2013(H9N2)	KM609846	KM609806	KM609766	KM609566	KM609686	KM609646	KM609606	KM609726
A/chicken/Shandong/wf0514/2013(H9N2)	KM609847	KM609807	KM609767	KM609567	KM609687	KM609647	KM609607	KM609727
A/chicken/Shandong/wf0202/2012(H9N2)	KM609848	KM609808	KM609768	KM609568	KM609688	KM609648	KM609608	KM609728
A/chicken/Shandong/qd1224/2012(H9N2)	KM609849	KM609809	KM609769	KM609569	KM609689	KM609649	KM609609	KM609729
A/chicken/Shandong/qd1115/2012(H9N2)	KM609850	KM609810	KM609770	KM609570	KM609690	KM609650	KM609610	KM609730
A/chicken/Shandong/qd1013/2012(H9N2)	KM609851	KM609811	KM609771	KM609571	KM609691	KM609651	KM609611	KM609731
A/chicken/Shandong/qd0920/2012(H9N2)	KM609852	KM609812	KM609772	KM609572	KM609692	KM609652	KM609612	KM609732
A/chicken/Shandong/qd0917/2013(H9N2)	KM609853	KM609813	KM609773	KM609573	KM609693	KM609653	KM609613	KM609733
A/chicken/Shandong/qd0808/2013(H9N2)	KM609854	KM609814	KM609774	KM609574	KM609694	KM609654	KM609614	KM609734
A/chicken/Shandong/qd0516/2012(H9N2)	KM609855	KM609815	KM609775	KM609575	KM609695	KM609655	KM609615	KM609735
A/chicken/Shandong/qd0427/2012(H9N2)	KM609856	KM609816	KM609776	KM609576	KM609696	KM609656	KM609616	KM609736
A/chicken/Shandong/qd0312/2013(H9N2)	KM609857	KM609817	KM609777	KM609577	KM609697	KM609657	KM609617	KM609737

Table S3. Cont.

Strain name	PB2	PB1	PA	HA	NP	NA	M	NS
A/chicken/Shandong/qd0307/2013(H9N2)	KM609858	KM609818	KM609778	KM609578	KM609698	KM609658	KM609618	KM609738
A/chicken/Shandong/qd0225/2013(H9N2)	KM609859	KM609819	KM609779	KM609579	KM609699	KM609659	KM609619	KM609739
A/chicken/Shandong/qd01417/2013(H9N2)	KM609860	KM609820	KM609780	KM609580	KM609700	KM609660	KM609620	KM609740
A/chicken/Shandong/qd0107/2013(H9N2)	KM609861	KM609821	KM609781	KM609581	KM609701	KM609661	KM609621	KM609741
A/chicken/Shandong/lc0903/2013(H9N2)	KM609862	KM609822	KM609782	KM609582	KM609702	KM609662	KM609622	KM609742
A/chicken/Shandong/lc0830/2012(H9N2)	KM609863	KM609823	KM609783	KM609583	KM609703	KM609663	KM609623	KM609743
A/chicken/Shandong/lc0523/2013(H9N2)	KM609864	KM609824	KM609784	KM609584	KM609704	KM609664	KM609624	KM609744
A/chicken/Shaanxi/xa0414/2013(H9N2)	KM609865	KM609825	KM609785	KM609585	KM609705	KM609665	KM609625	KM609745
A/chicken/Liaoning/1116/2012(H9N2)	KM609866	KM609826	KM609786	KM609586	KM609706	KM609666	KM609626	KM609746
A/chicken/Liaoning/0704/2012(H9N2)	KM609867	KM609827	KM609787	KM609587	KM609707	KM609667	KM609627	KM609747
A/chicken/Liaoning/0517/2013(H9N2)	KM609868	KM609828	KM609788	KM609588	KM609708	KM609668	KM609628	KM609748
A/chicken/Jilin/1031/2012(H9N2)	KM609869	KM609829	KM609789	KM609589	KM609709	KM609669	KM609629	KM609749
A/chicken/Jilin/0519/2012(H9N2)	KM609870	KM609830	KM609790	KM609590	KM609710	KM609670	KM609630	KM609750
A/chicken/Hebei/1024/2012(H9N2)	KM609871	KM609831	KM609791	KM609591	KM609711	KM609671	KM609631	KM609751
A/chicken/Hebei/0721/2013(H9N2)	KM609872	KM609832	KM609792	KM609592	KM609712	KM609672	KM609632	KM609752
A/chicken/Hebei/0109/2013(H9N2)	KM609873	KM609833	KM609793	KM609593	KM609713	KM609673	KM609633	KM609753
A/chicken/Beijing/16/2013(H9N2)	KM609874	KM609834	KM609794	KM609594	KM609714	KM609674	KM609634	KM609754
A/chicken/Beijing/1115/2013(H9N2)	KM609875	KM609835	KM609795	KM609595	KM609715	KM609675	KM609635	KM609755
A/chicken/Beijing/0512/2013(H9N2)	KM609876	KM609836	KM609796	KM609596	KM609716	KM609676	KM609636	KM609756
A/chicken/Beijing/0331/2013(H9N2)	KM609877	KM609837	KM609797	KM609597	KM609717	KM609677	KM609637	KM609757
A/chicken/Beijing/0311/2013(H9N2)	KM609878	KM609838	KM609798	KM609598	KM609718	KM609678	KM609638	KM609758
A/chicken/Beijing/0309/2013(H9N2)	KM609879	KM609839	KM609799	KM609599	KM609719	KM609679	KM609639	KM609759

Table S4. Accession numbers of the previously published sequences included in the phylogenetic analysis

PB2		PB1		PA		HA	
Accession	Source	Accession	Source	Accession	Source	Accession	Source
AF156435	NCBI	AF156421	NCBI	AF156449	NCBI	AF156378	NCBI
AF222816	NCBI	AF222818	NCBI	AF222820	NCBI	AF222810	NCBI
AF222817	NCBI	AF523431	NCBI	AF523454	NCBI	AF222811	NCBI
AF523464	NCBI	DQ064516	NCBI	CY005516	NCBI	AF461515	NCBI
CY005518	NCBI	DQ064535	NCBI	DQ064489	NCBI	AY036880	NCBI
DQ064543	NCBI	DQ064542	NCBI	DQ064508	NCBI	AY664671	NCBI
DQ064562	NCBI	DQ226165	NCBI	DQ064515	NCBI	CY006021	NCBI
DQ064569	NCBI	GU086063	NCBI	DQ226154	NCBI	DQ064354	NCBI
DQ226176	NCBI	KC261457	NCBI	GU086064	NCBI	DQ064373	NCBI
GU086062	NCBI	JQ041392	NCBI	KC261462	NCBI	DQ064380	NCBI
KC261452	NCBI	JQ638685	NCBI	JQ041396	NCBI	EU216092	NCBI
JQ041388	NCBI	KC261456	NCBI	JQ638683	NCBI	KF313568	NCBI
JQ638687	NCBI	JX565017	NCBI	KC261461	NCBI	GU086065	NCBI
KC261451	NCBI	JX304768	NCBI	JX565018	NCBI	KC261467	NCBI
JX565016	NCBI	JQ638686	NCBI	JX304767	NCBI	JQ041400	NCBI
JX304769	NCBI	KF013916	NCBI	JQ638684	NCBI	JQ638673	NCBI
JQ638688	NCBI	CY146706	NCBI	KF013915	NCBI	KC261466	NCBI
KF013909	NCBI	JX534579	NCBI	CY146707	NCBI	JX565019	NCBI
CY146705	NCBI	KF150632	NCBI	JX534580	NCBI	JX304762	NCBI
JX534578	NCBI	KJ406535	NCBI	KF150633	NCBI	JQ638674	NCBI
KF150631	NCBI	KF260658	NCBI	KJ406539	NCBI	KF013910	NCBI
KJ406531	NCBI	KF260659	NCBI	KF260414	NCBI	CY146708	NCBI
KF260902	NCBI	KF260660	NCBI	KF260415	NCBI	JX534581	NCBI
KF260903	NCBI	KF260661	NCBI	KF260416	NCBI	KF150634	NCBI
KF260904	NCBI	KF260662	NCBI	KF260417	NCBI	KJ406543	NCBI
KF260905	NCBI	KF260663	NCBI	KF260418	NCBI	KF259010	NCBI
KF260906	NCBI	KF260664	NCBI	KF260419	NCBI	KF259011	NCBI
KF260907	NCBI	KF260665	NCBI	KF260420	NCBI	KF259012	NCBI
KF260908	NCBI	KF260666	NCBI	KF260421	NCBI	KF259013	NCBI
KF260909	NCBI	KF260667	NCBI	KF260422	NCBI	KF259014	NCBI
KF260910	NCBI	KF260668	NCBI	KF260423	NCBI	KF259015	NCBI
KF260911	NCBI	KF260669	NCBI	KF260424	NCBI	KF259016	NCBI
KF260912	NCBI	KF260670	NCBI	KF260425	NCBI	KF259017	NCBI
KF260913	NCBI	KF260671	NCBI	KF260426	NCBI	KF259018	NCBI
KF260914	NCBI	KF260672	NCBI	KF260427	NCBI	KF259019	NCBI
KF260915	NCBI	KF260673	NCBI	KF260428	NCBI	KF259020	NCBI
KF260916	NCBI	KF260674	NCBI	KF260429	NCBI	KF259021	NCBI
KF260917	NCBI	KF260675	NCBI	KF260430	NCBI	KF259022	NCBI
KF260918	NCBI	KF260676	NCBI	KF260431	NCBI	KF259023	NCBI
KF260919	NCBI	KF260677	NCBI	KF260432	NCBI	KF259024	NCBI
KF260920	NCBI	KF260678	NCBI	KF260433	NCBI	KF259025	NCBI
KF260921	NCBI	KF260679	NCBI	KF260434	NCBI	KF259026	NCBI
KF260922	NCBI	KF260680	NCBI	KF260435	NCBI	KF259027	NCBI
KF260923	NCBI	KF260681	NCBI	KF260436	NCBI	KF259028	NCBI
KF260924	NCBI	KF260682	NCBI	KF260437	NCBI	KF259029	NCBI
KF260925	NCBI	KF260683	NCBI	KF260438	NCBI	KF259030	NCBI
KF260926	NCBI	KF260684	NCBI	KF260439	NCBI	KF259031	NCBI
KF260927	NCBI	KF260685	NCBI	KF260440	NCBI	KF259032	NCBI
KF260928	NCBI	KF260686	NCBI	KF260441	NCBI	KF259033	NCBI
KF260929	NCBI	KP055059	NCBI	KF260442	NCBI	KF259034	NCBI
KF260930	NCBI	AY180844	FluDB	KP055060	NCBI	KF259035	NCBI
KP055058	NCBI	AY664775	FluDB	AY664761	FluDB	KF259036	NCBI
AY664792	FluDB	AY664785	FluDB	CY005522	FluDB	KF259037	NCBI
AY664793	FluDB	CY005523	FluDB	CY147123	FluDB	KF259038	NCBI
AY664794	FluDB	CY147122	FluDB	DQ064491	FluDB	KP055061	NCBI
AY664806	FluDB	DQ226165	FluDB	DQ226154	FluDB	AF461516	FluDB
CY005524	FluDB	DQ226170	FluDB	DQ465399	FluDB	AF461522	FluDB
CY147121	FluDB	DQ465398	FluDB	KF021596	FluDB	AY513715	FluDB
DQ226176	FluDB	KF021595	FluDB	KF835981	FluDB	AY664660	FluDB
DQ226181	FluDB	KF972003	FluDB	KF835983	FluDB	AY664661	FluDB
DQ465397	FluDB	KF972011	FluDB	KF835985	FluDB	AY664662	FluDB

Table S4. Cont.

PB2		PB1		PA		HA	
Accession	Source	Accession	Source	Accession	Source	Accession	Source
KF001518	FluDB	KF972019	FluDB	KF972004	FluDB	AY664666	FluDB
KF021594	FluDB	KF972027	FluDB	KF972012	FluDB	AY664667	FluDB
KF500921	FluDB	KF972035	FluDB	KF972020	FluDB	AY664668	FluDB
KF500924	FluDB	KF972043	FluDB	KF972028	FluDB	AY664669	FluDB
KF500927	FluDB			KF972036	FluDB	AY664671	FluDB
KF972002	FluDB			KF972044	FluDB	AY664672	FluDB
KF972010	FluDB					AY664674	FluDB
KF972018	FluDB					AY664675	FluDB
KF972026	FluDB					CY006023	FluDB
KF972034	FluDB					CY014613	FluDB
KF972042	FluDB					DQ226110	FluDB
						DQ226115	FluDB
						DQ465400	FluDB
						KF188389	FluDB
						KF835982	FluDB
						KF835984	FluDB
						KF835986	FluDB
						KF972005	FluDB
						KF972013	FluDB
						KF972021	FluDB
						KF972029	FluDB
						KF972037	FluDB
						KF972045	FluDB
NP		NA		M		NS	
Accession	Source	Accession	Source	Accession	Source	Accession	Source
AF156407	NCBI	AF156396	NCBI	AF156463	NCBI	AF156477	NCBI
AF222618	NCBI	AF222812	NCBI	AF222666	NCBI	AF222824	NCBI
AF222814	NCBI	AF222813	NCBI	AF222822	NCBI	AF222825	NCBI
AF523412	NCBI	AF508583	NCBI	AF222823	NCBI	AF508725	NCBI
AY664728	NCBI	AF523394	NCBI	AF523484	NCBI	AF523514	NCBI
DQ064435	NCBI	AY180821	NCBI	DQ064381	NCBI	AY664747	NCBI
DQ064454	NCBI	AY664709	NCBI	DQ064407	NCBI	AY966002	NCBI
DQ064461	NCBI	DQ064408	NCBI	DQ226099	NCBI	DQ064462	NCBI
GU086066	NCBI	DQ064427	NCBI	GU086068	NCBI	DQ064488	NCBI
KC261472	NCBI	EU644489	NCBI	KC261482	NCBI	GU086069	NCBI
JQ041404	NCBI	GU086067	NCBI	JQ041412	NCBI	KC261487	NCBI
JQ638679	NCBI	KC261477	NCBI	JQ638675	NCBI	JQ041416	NCBI
KC261471	NCBI	JQ041408	NCBI	KC261481	NCBI	JQ638681	NCBI
JX565020	NCBI	JQ638677	NCBI	JX565022	NCBI	KC261486	NCBI
JX304765	NCBI	KC261476	NCBI	JX304763	NCBI	JX565023	NCBI
JQ638680	NCBI	JX565021	NCBI	JQ638676	NCBI	JX304766	NCBI
KF013913	NCBI	JX304764	NCBI	KF013911	NCBI	JQ638682	NCBI
CY146709	NCBI	JQ638678	NCBI	CY146711	NCBI	KF013914	NCBI
JX534582	NCBI	KF013912	NCBI	JX534584	NCBI	CY146712	NCBI
KF150635	NCBI	CY146710	NCBI	KF150637	NCBI	JX534585	NCBI
KJ406547	NCBI	JX534583	NCBI	KJ406555	NCBI	KF150638	NCBI
KF259926	NCBI	KF150636	NCBI	KF259407	NCBI	KJ406559	NCBI
KF259927	NCBI	KJ406551	NCBI	KF259408	NCBI	KF260170	NCBI
KF259928	NCBI	KF259642	NCBI	KF259409	NCBI	KF260171	NCBI
KF259929	NCBI	KF259643	NCBI	KF259410	NCBI	KF260172	NCBI
KF259930	NCBI	KF259644	NCBI	KF259411	NCBI	KF260173	NCBI
KF259931	NCBI	KF259645	NCBI	KF259412	NCBI	KF260174	NCBI
KF259932	NCBI	KF259646	NCBI	KF259413	NCBI	KF260175	NCBI
KF259933	NCBI	KF259647	NCBI	KF259414	NCBI	KF260176	NCBI
KF259934	NCBI	KF259648	NCBI	KF259415	NCBI	KF260177	NCBI
KF259935	NCBI	KF259649	NCBI	KF259416	NCBI	KF260178	NCBI
KF259936	NCBI	KF259650	NCBI	KF259417	NCBI	KF260179	NCBI
KF259937	NCBI	KF259651	NCBI	KF259418	NCBI	KF260180	NCBI
KF259938	NCBI	KF259652	NCBI	KF259419	NCBI	KF260181	NCBI
KF259939	NCBI	KF259653	NCBI	KF259420	NCBI	KF260182	NCBI

Table S4. Cont.

NP		NA		M		NS	
Accession	Source	Accession	Source	Accession	Source	Accession	Source
KF259940	NCBI	KF259654	NCBI	KF259421	NCBI	KF260183	NCBI
KF259941	NCBI	KF259655	NCBI	KF259422	NCBI	KF260184	NCBI
KF259942	NCBI	KF259656	NCBI	KF259423	NCBI	KF260185	NCBI
KF259943	NCBI	KF259657	NCBI	KF259424	NCBI	KF260186	NCBI
KF259944	NCBI	KF259658	NCBI	KF259425	NCBI	KF260187	NCBI
KF259945	NCBI	KF259659	NCBI	KF259426	NCBI	KF260188	NCBI
KF259946	NCBI	KF259660	NCBI	KF259427	NCBI	KF260189	NCBI
KF259947	NCBI	KF259661	NCBI	KF259428	NCBI	KF260190	NCBI
KF259948	NCBI	KF259662	NCBI	KF259429	NCBI	KF260191	NCBI
KF259949	NCBI	KF259663	NCBI	KF259430	NCBI	KF260192	NCBI
KF259950	NCBI	KF259664	NCBI	KF259431	NCBI	KF260193	NCBI
KF259951	NCBI	KF259665	NCBI	KF259432	NCBI	KF260194	NCBI
KF259952	NCBI	KF259666	NCBI	KF259433	NCBI	KF260195	NCBI
KF259953	NCBI	KF259667	NCBI	KF259434	NCBI	KF260196	NCBI
KF259954	NCBI	KF259668	NCBI	KF259435	NCBI	KF260197	NCBI
KP055062	NCBI	KF259669	NCBI	KP055064	NCBI	KF260198	NCBI
AY664717	FluDB	KF259670	NCBI	AY180461	FluDB	KP055065	NCBI
AY664718	FluDB	KP055063	NCBI	AY664679	FluDB	AY180615	FluDB
AY664719	FluDB	AF536717	FluDB	AY664680	FluDB	AY631868	FluDB
AY664723	FluDB	AY180827	FluDB	AY664681	FluDB	AY664736	FluDB
AY664724	FluDB	AY664698	FluDB	AY664685	FluDB	AY664737	FluDB
AY664725	FluDB	AY664699	FluDB	AY664686	FluDB	AY664738	FluDB
AY664726	FluDB	AY664700	FluDB	AY664687	FluDB	AY664742	FluDB
AY664728	FluDB	AY664704	FluDB	AY664688	FluDB	AY664743	FluDB
AY664729	FluDB	AY664705	FluDB	AY664690	FluDB	AY664744	FluDB
AY664731	FluDB	AY664706	FluDB	AY664691	FluDB	AY664745	FluDB
AY664732	FluDB	AY664707	FluDB	AY664693	FluDB	AY664747	FluDB
CY005521	FluDB	AY664709	FluDB	AY664694	FluDB	AY664748	FluDB
CY147125	FluDB	AY664710	FluDB	AY664695	FluDB	AY664750	FluDB
DQ226143	FluDB	AY664712	FluDB	CY005519	FluDB	AY664751	FluDB
DQ226148	FluDB	AY664713	FluDB	CY147127	FluDB	AY664752	FluDB
DQ465401	FluDB	CY005520	FluDB	DQ226099	FluDB	CY006024	FluDB
KF021598	FluDB	DQ226132	FluDB	DQ226104	FluDB	CY147128	FluDB
KF972006	FluDB	DQ226137	FluDB	DQ465403	FluDB	DQ226121	FluDB
KF972014	FluDB	DQ465402	FluDB	KF021600	FluDB	DQ226126	FluDB
KF972022	FluDB	DQ874395	FluDB	KF193405	FluDB	DQ465404	FluDB
KF972030	FluDB	KF188390	FluDB	KF972008	FluDB	KF021601	FluDB
KF972038	FluDB	KF972007	FluDB	KF972016	FluDB	KF193406	FluDB
KF972046	FluDB	KF972015	FluDB	KF972024	FluDB		
		KF972023	FluDB	KF972032	FluDB		
		KF972031	FluDB	KF972040	FluDB		
		KF972039	FluDB	KF972048	FluDB		
		KF972047	FluDB	NC_004907	FluDB		

Fig. S1. Genetic diversity of H9N2 chicken viruses has decreased during recent years in China. Boxplot showing the pairwise sequence identity at nucleotide level for all genes. In each gene, percentage of difference was calculated for all pairs of the sequences of two strains isolated from the same year, if their sequences shares >50% of the total gene length. For each boxplot, central bar indicates the median value, error bars indicate first and third quartiles respectively, whiskers indicate 1.5 IQR, and outliers are plotted as circles.

[Fig. S1](#)

Fig. S2. Phylogenies of HA, NA, PB2, PB1, PA, NP, M, and NS genes. Starting from two sets of phylogenetic trees described in *Materials and Methods*, the phylogenetic subtrees of surface genes include the H9N2 chicken viruses isolated in China from 1994 through 2013; those of internal genes include the above chicken H9N2 viruses and the novel H7N9 viruses isolated during the first 2 wk of the 2013 outbreak. Internal gene trees with only H9N2 viruses are not shown here due to the same topology. Posterior values are shown for selected clade/lineages. Timescale is in years. Color of node branches indicates clade. Color of line at right of each leaf node indicates year of isolation (see color bar). Vertical black lines mark major/minor prevalence groups or clades. Asterisks mark the representative H9N2 vaccine strains in HA tree. Arrows mark the position of H7N9 viruses in the phylogenies.

[Fig. S2](#)

Fig. S3. Contribution of the predominant genotype (G57) of H9N2 viruses in farm chickens to the genesis of the novel H7N9 viruses. As G57 appears in 2007 and gradually become predominant on chicken farms since 2010, it provided an ideal opportunity for the triple reassortment of H7, N9, and H9N2 viruses, leading to generation of the novel pathogenic H7N9 viruses.

[Fig. S3](#)

Other Supporting Information Files

[Dataset S1 \(XLSX\)](#)

[Dataset S2 \(XLSX\)](#)