

Highly Pathogenic Avian Influenza A(H5N1) Virus in Poultry, Nigeria, 2015

Technical Appendix

Technical Appendix Table 1. Amino acid comparison among A/chicken/Nigeria/15VIR339-2/2015, A/Alberta/01/2014 and the 2.3.2.1c vaccine candidate A/duck/Vietnam/NCVD-1584/2012*

Protein	Position	H5N1 Nigeria	H5N1 Alberta	2.3.2.1c vaccine candidate
HA1	68	G	D	D
	189	K	K	R
	221	G	R	G
	235	T	P	P
HA2	48	I	V	V
	68	K	R	R
	183	V	I	I
NA	267	E	G	-
	398	M	I	-
PA	319	D	E	-
	369	V	A	-
	474	S	C	-
NS1	59	S	R	-
	72	G	E	-
	124	L	I	-
	134	D	N	-
	166	S	G	-
NS2	36	E	G	-
PB1	179	I	M	-
	384	S	L	-
	744	I	M	-
	758	Q	*	-
PB1-F2	34	S	N	-
	45	T	I	-
	58	W	*	-
PB2	187	K	R	-
	196	C	S	-
	292	V	I	-
	464	M	L	-
	495	A	V	-
	598	T	M	-
	660	R	K	-
	677	G	E	-

*World Health Organization. Antigenic and genetic characteristics of zoonotic influenza viruses and development of candidate vaccine viruses for pandemic preparedness (http://www.who.int/influenza/vaccines/virus/characteristics_virus_vaccines/en/).

Technical Appendix Table 2. Sequences from GISAID's EpiFlu™ Database on which this research is based*

Segment ID	Segment	Country	Collection date	Isolate name	Originating Lab	Submitting Laboratory	Authors
EPI500778	PB2	Canada	2014-01-03	A/Alberta/01/2014	Provincial Laboratory of Public Health for Southern Alberta	Public Health Agency of Canada (PHAC)	Li, Yan; Bastien, Nathalie; Fonseca, Kevin; Tipples, Graham; Pabbaraju, Kanti; Tellier, Raymond; Wong, Sallene; Tang, Julian W.; Drews, Steven J. Daxin, P
EPI466327	PB2	China	2012-03-24	A/chicken/Jiangsu/CZLJG/2012	Yangzhou University	Chinese Academy of Sciences	Daxin, P
EPI466359	PB2	China	2012-02-12	A/chicken/Jiangsu/DT0112/2012	Yangzhou University	Chinese Academy of Sciences	Daxin, P
EPI466536	PB2	China	2012-09-24	A/chicken/Jiangsu/GY64/2012	Yangzhou University	Chinese Academy of Sciences	Daxin, P
EPI466235	PB2	China	2012-03-24	A/chicken/Jiangsu/WJHDL/2012	Yangzhou University	Chinese Academy of Sciences	Daxin, P
EPI466520	PB2	China	2012-11-09	A/chicken/Jiangsu/YZ4/2012	Yangzhou University	Chinese Academy of Sciences	Daxin, P
EPI466311	PB2	China	2011-05-21	A/chicken/Jiangsu/ZJDT/2011	Yangzhou University	Chinese Academy of Sciences	Daxin, P
EPI425173	PB2	Vietnam	2012-09-01	A/chicken/Vietnam/NCVD-1942/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425597	PB2	Vietnam	2012-09-21	A/duck/Vietnam/NCVD-1463/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425920	PB2	Vietnam	2012-07-16	A/duck/Vietnam/NCVD-1547/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425677	PB2	Vietnam	2012-07-15	A/duck/Vietnam/NCVD-1593/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425621	PB2	Vietnam	2012-08-18	A/duck/Vietnam/NCVD-1930/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425181	PB2	Vietnam	2012-09-09	A/duck/Vietnam/NCVD-1944/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI468343	PB2	China	2013-04-12	A/environment/Hangzhou/109-2/2013	Hangzhou Center for Disease Control and Prevention	Hangzhou Center for Disease Control and Prevention	Li, J; Jin, T; Yu, XF; Pu, XY; Pan, JC
EPI423876	PB2	China	2013-02-08	A/Guizhou/1/2013	WHO Chinese National Influenza Center	China National Influenza Centre	
EPI375501	PB2	China	2012-05-28	A/Hong Kong/5923/2012	Public Health Laboratory Services Branch, Centre for Health Protection	Public Health Laboratory Services Branch, Centre for Health Protection	Mak,G.C.; Cheng,P.K.C.; Lo,J.Y.C.
EPI375432	HA	China	2012-05-28	A/Hong Kong/5923/2012	Public Health Laboratory Services Branch,	Public Health Laboratory Services Branch, Centre for	Mak,G.C.; Cheng,P.K.C.; Lo,J.Y.C.

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EPI407283	HA	Nepal	2012-10-16	A/chicken/Nepal/PT-16/12	Centre for Health Protection Central Veterinary Laboratory	Health Protection Animal Health and Veterinary Laboratories Agency (AHVLA)	Puranik, A; Hanna, A; Essen, S; Focosi-Snyman, R; Manvell, R; Bahadur Singh, D; Chapagain, S; Manandhar, S; Bahadur Air, T; Bahadur Kunwar, B; Reid, S
EPI420386	HA	China	2013-02-08	A/Guizhou/1/2013	WHO Chinese National Influenza Center	China National Influenza Centre	
EPI424704	HA	Vietnam	2012-08-20	A/duck/Vietnam/ NCVD-1869/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI424720	HA	Vietnam	2012-08-23	A/duck/Vietnam/ NCVD-1897/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI424728	HA	Vietnam	2012-08-27	A/duck/Vietnam/ NCVD-1898/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425184	HA	Vietnam	2012-09-09	A/duck/Vietnam/N CVD-1944/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425600	HA	Vietnam	2012-09-21	A/duck/Vietnam/ NCVD-1463/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI442759	HA	Indonesia	2012-06-29	A/Indonesia/ NIHRD12377/2012	National Institute of Health Research and Development	National Institute of Health Research and Development	Pawestri, HA; Ikawati, HD; Setiawaty, V
EPI454493	HA	China	2013-04-12	A/environment/ Hangzhou/109-2/2013	Hangzhou Center for Disease Control and Prevention	Hangzhou Center for Disease Control and Prevention	Li, J; Jin, T; Yu, XF; Pu, XY; Pan, JC
EPI463648	HA	Indonesia	2013-06-18	A/Indonesia/ NIHRD13157/2013	National Institute of Health Research and Development	National Institute of Health Research and Development	HA, Pawestri; AA, Nugraha; V, Setiawaty
EPI475764	HA	Nepal	2013-04-21	A/chicken/Nepal/T-272/13	Central Veterinary Laboratory	Animal Health and Veterinary Laboratories Agency (AHVLA)	Collins, S; Hanna, A; Essen, S; Focosi-Snyman, R; Manvell, R; Jha, VC; Chapagain, S; Koirala, P; Air, TB; Reid, S
EPI448063	HA	Bangladesh	2011-02-15	A/crow/Bangladesh/ 1061/2011	Institute of Epidemiology Disease Control and Research (IEDCR) & Bangladesh National Influenza Centre (NIC)	Centers for Disease Control and Prevention	Gerloff, Nancy; Simpson, Natosha; Poh, Mee;Davis, Todd
EPI353379	HA	Bangladesh	2011-07-17	A/waterfowl/Bangladesh/31935/2011	Institute of Epidemiology Disease Control and Research	Centers for Disease Control and Prevention	Gerloff, Nancy; Simpson, Natosha; Poh, Mee;Davis, Todd

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EPI448263	HA	Bangladesh	2012-02-28	A/environment/Bangladesh/1019-G/2012	(IEDCR) & Bangladesh National Influenza Centre (NIC) Institute of Epidemiology Disease Control and Research (IEDCR) & Bangladesh National Influenza Centre (NIC)	Centers for Disease Control and Prevention	Gerloff, Nancy; Simpson, Natosha; Poh, Mee; Davis, Todd
EPI448271	HA	Bangladesh	2012-01-08	A/chicken/Bangladesh/42010/2012	Institute of Epidemiology Disease Control and Research (IEDCR) & Bangladesh National Influenza Centre (NIC)	Centers for Disease Control and Prevention	Gerloff, Nancy; Simpson, Natosha; Poh, Mee; Davis, Todd
EPI448279	HA	Bangladesh	2012-02-20	A/duck/Bangladesh/32077/2012	Institute of Epidemiology Disease Control and Research (IEDCR) & Bangladesh National Influenza Centre (NIC)	Centers for Disease Control and Prevention	Gerloff, Nancy; Simpson, Natosha; Poh, Mee; Davis, Todd
EPI425200	HA	Vietnam	2011-11-22	A/duck/Vietnam/NCVD129-7/2011	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI425232	HA	Vietnam	2011-12-30	A/duck/Vietnam/NCVD-1160/2011	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI375432	HA	China	2012-05-28	A/Hong Kong/5923/2012	Public Health Laboratory Services Branch, Centre for Health Protection	Public Health Laboratory Services Branch, Centre for Health Protection	Mak, G.C.; Cheng, P.K.C.; Lo, J.Y.C.
EPI330995	HA	Vietnam	2011-01	A/duck/Vietnam/NCVD-672/2011	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	Davis, Todd; Rivailler, Pierre; Nguyen, Tung
EPI267032	HA	China	2010-06-01	A/Hubei/1/2010		WHO Chinese National Influenza Center	Yu Lan, Wei Wang, Shumei Zou, Zi Li, Leying Wen, Xiaodan Li, Libo Dong, Dexin Li, Yuelong Shu
EPI425312	HA	Vietnam	2012-08-30	A/duck/Vietnam/NCVD-1904/2012	National Centre of Veterinary Diagnostics	Centers for Disease Control and Prevention	
EPI462795	HA	Austria	2013-06-12	A/mynah/Austria-quarantine/13064792-010/13	Institute for Veterinary Disease	Animal Health and Veterinary	Collins, S; Hanna, A; Essen, S; Focosi-Snyman, R; Manvell, R;

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EPI462793	HA	Austria	2013-06-07	A/mynah/Austria-quarantine/13063485-026/13	Control Moedling, Austrian Agency for Health and Food Safety Institute for Veterinary Disease Control Moedling, Austrian Agency for Health and Food Safety	Laboratories Agency (AHVLA)	Wodak, E; Revilla-Fernandez, S; Bago, Z; Schmoll, F; Reid, S
EPI462791	HA	Austria	2013-06-07	A/mynah/Austria-quarantine/13063485-025/13	Control Moedling, Austrian Agency for Health and Food Safety Institute for Veterinary Disease Control Moedling, Austrian Agency for Health and Food Safety	Laboratories Agency (AHVLA)	Collins, S; Hanna, A; Essen, S; Focosi-Snyman, R; Manvell, R; Wodak, E; Revilla-Fernandez, S; Bag?, Z; Schmoll, F; Reid, S
EPI464565	HA	China	2013-04-16	A/Environment/Huzhou/C291-7/2013	Huzhou Center for Disease Control and Prevention	Jiangsu University	Han, J. ; Wang, L. ; Liu, J. ; Jin, M. ; Zhang, C. ; Lan, K
EPI464564	HA	China	2013-04-16	A/Environment/Huzhou/C291-6/2013	Huzhou Center for Disease Control and Prevention	Jiangsu University	Han, J. ; Wang, L. ; Liu, J. ; Jin, M. ; Zhang, C. ; Lan, K
EPI464558	HA	China	2013-04-16	A/Environment/Huzhou/C291-10/2013	Huzhou Center for Disease Control and Prevention	Jiangsu University	Han, J. ; Wang, L. ; Liu, J. ; Jin, M. ; Zhang, C. ; Lan, K
EPI500771	HA	Canada	2014-01-03	A/Alberta/01/2014	Provincial Laboratory of Public Health for Southern Alberta	Public Health Agency of Canada (PHAC)	Li, Yan; Bastien, Nathalie; Fonseca, Kevin; Tipples, Graham; Pabbaraju, Kanti; Tellier, Raymond; Wong, Sallene; Tang, Julian W.; Drews, Steven J.

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