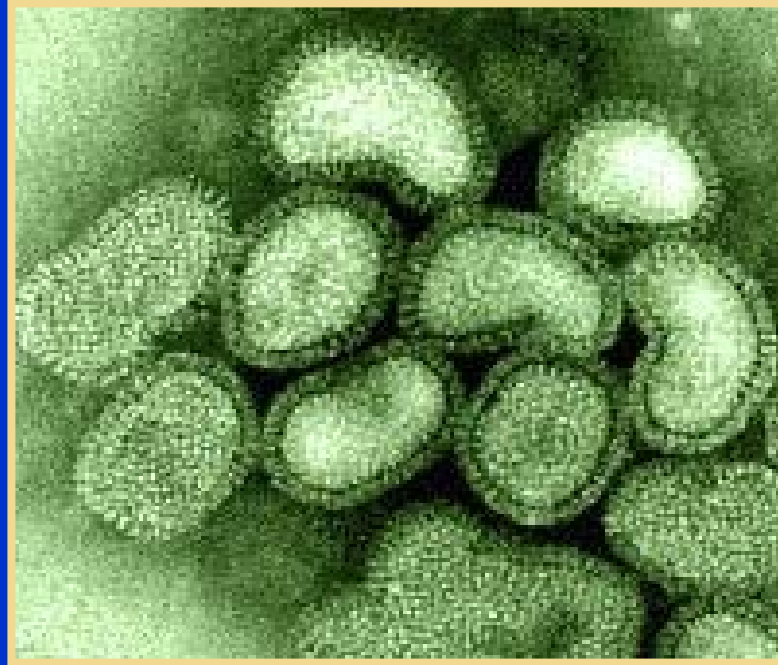
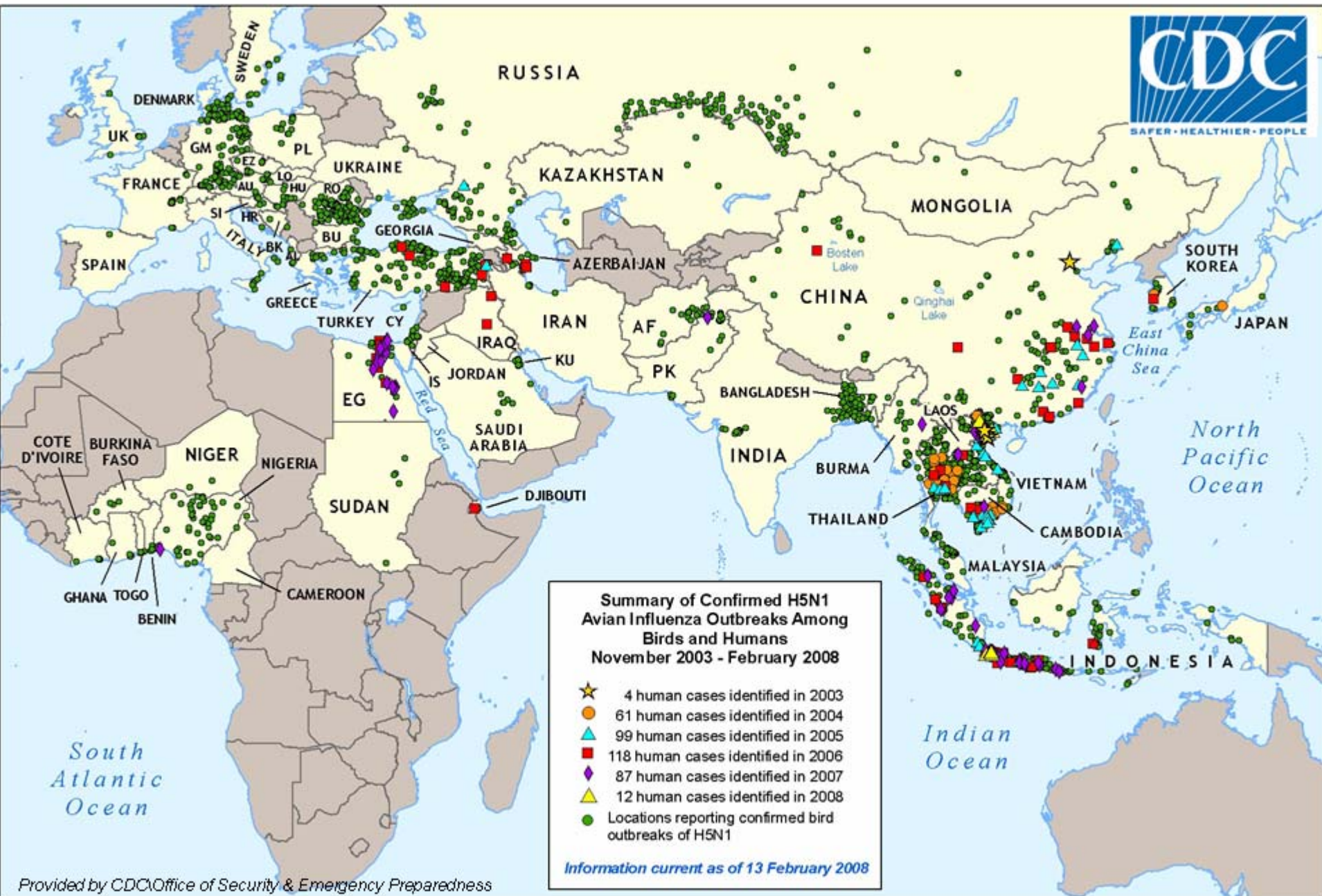


# Update on H5N1 Cases, Viruses and Vaccine Candidates

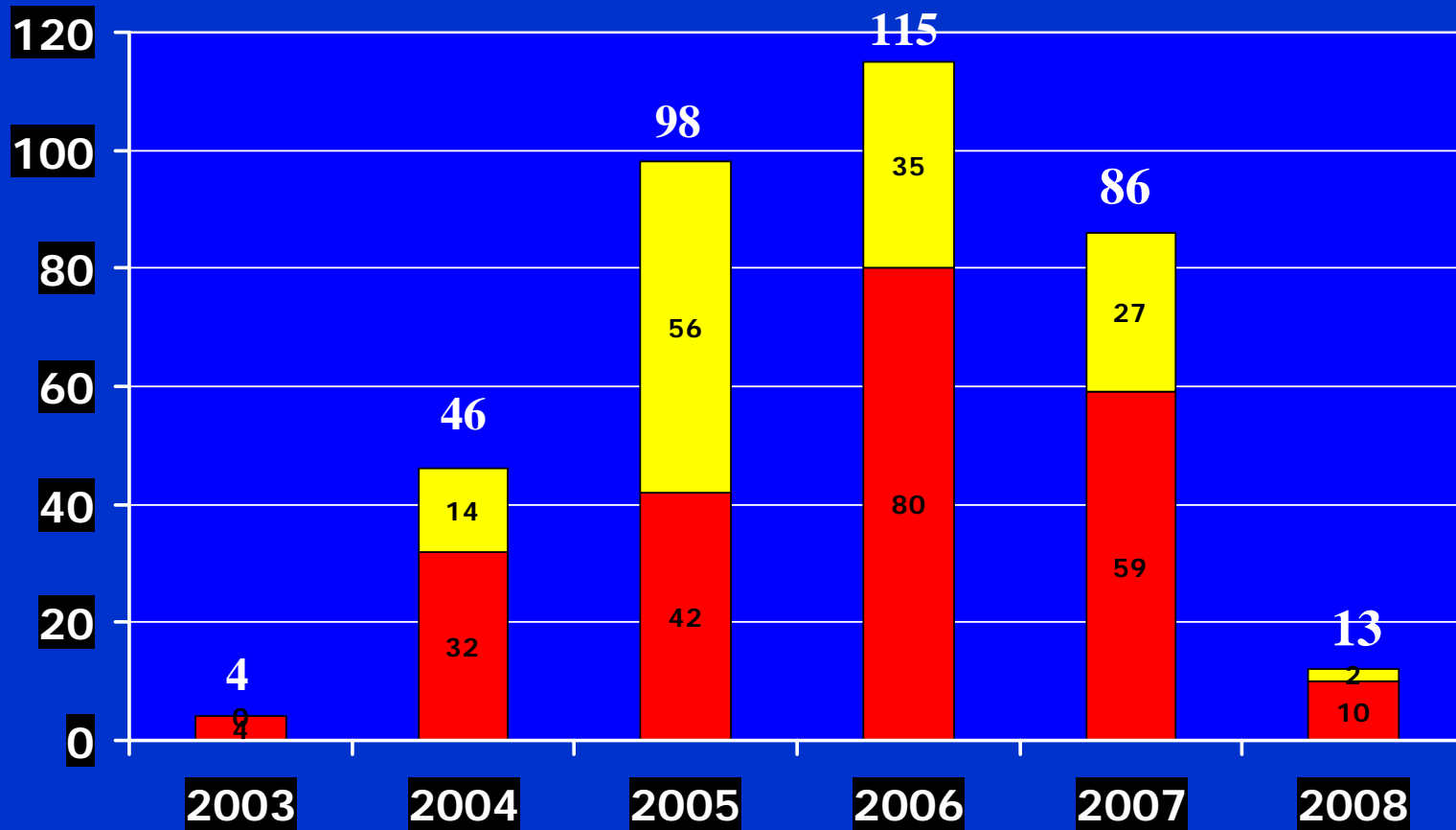


**Nancy J. Cox, Ph.D.**  
**Director, Influenza Division**  
**Director, WHO Collaborating Center for Influenza**  
**Centers for Disease Control and Prevention**  
**February 21, 2008**



# Human Cases of Avian Influenza H5N1 2003-2007\*

■ Fatal ■ Non-Fatal



\*WHO, February 20, 2008: 362 cases total, 228 fatal (63%)



# Avian Influenza

Updated February 20, 2008

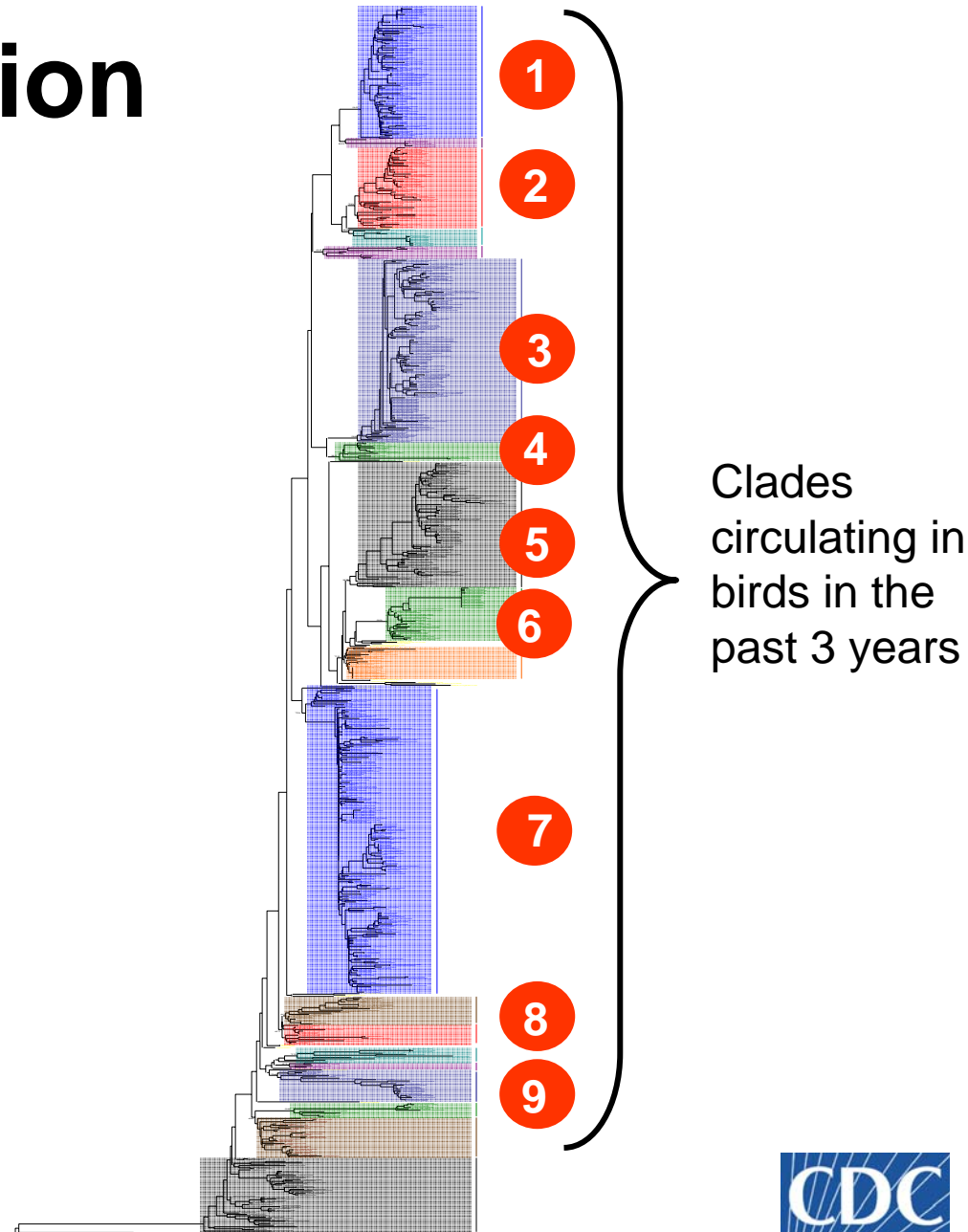
## Human Situation Update:

- On February 15, Viet Nam announced a new human case of H5N1. A 40 year-old male from Gia Loc District, Hai Duong Province developed symptoms on February 2, was hospitalized on February 8, and died on February 13. The case had exposure to sick and dead poultry prior to symptom onset. Control measures have been implemented. Close contacts have been identified and all remain healthy under monitoring.
- On February 20, China reported a new H5N1 case in a 22 year-old male from Hunan Province. He developed symptoms on 16 Jan, was hospitalized on 23 Jan and died on 24 January. The source of infection is being examined.



# H5N1 circulation in birds

- Multiple clades circulate in birds
- Extensive genetic divergence since 1997

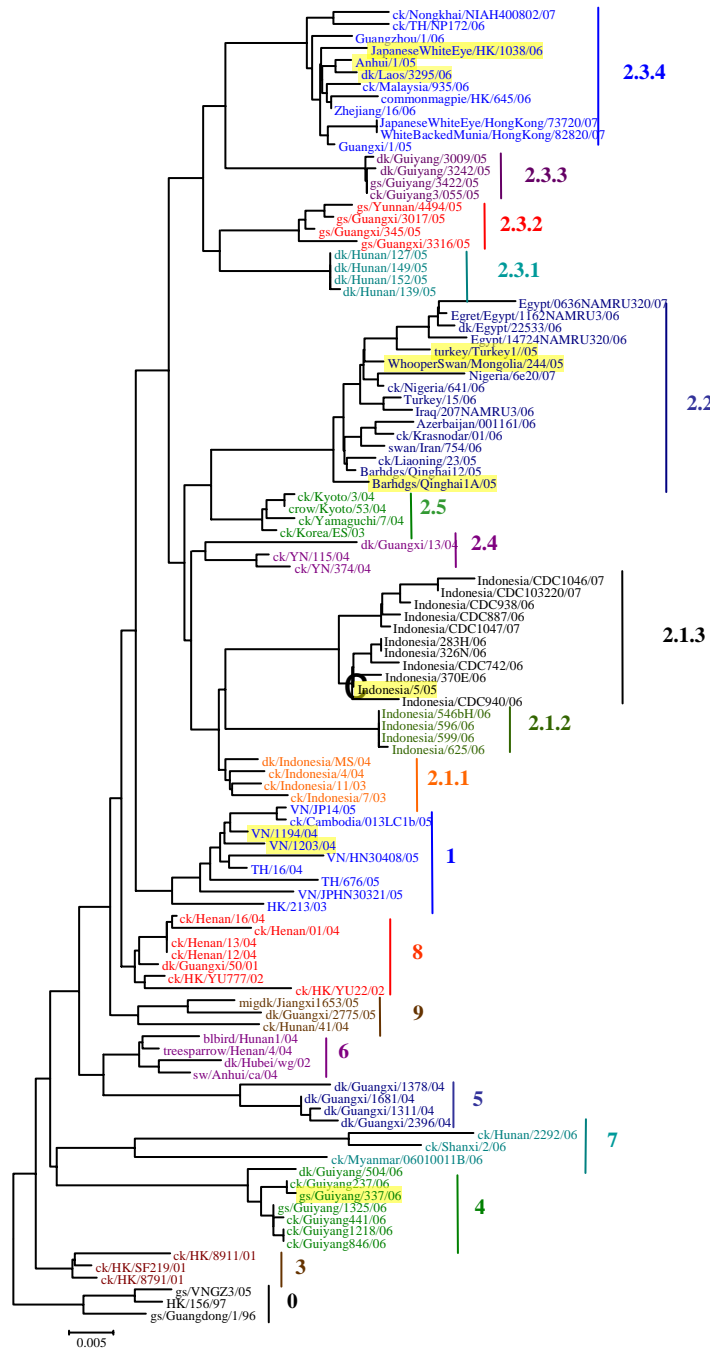




# WHO/OIE/FAO nomenclature tree (trimmed version)

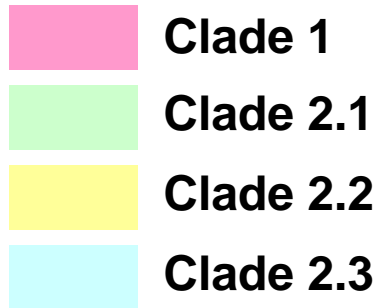
Including previously  
undefined clades of  
H5N1

Pre-pandemic vaccine  
candidates in yellow



# HI Reactions of Influenza H5 Viruses

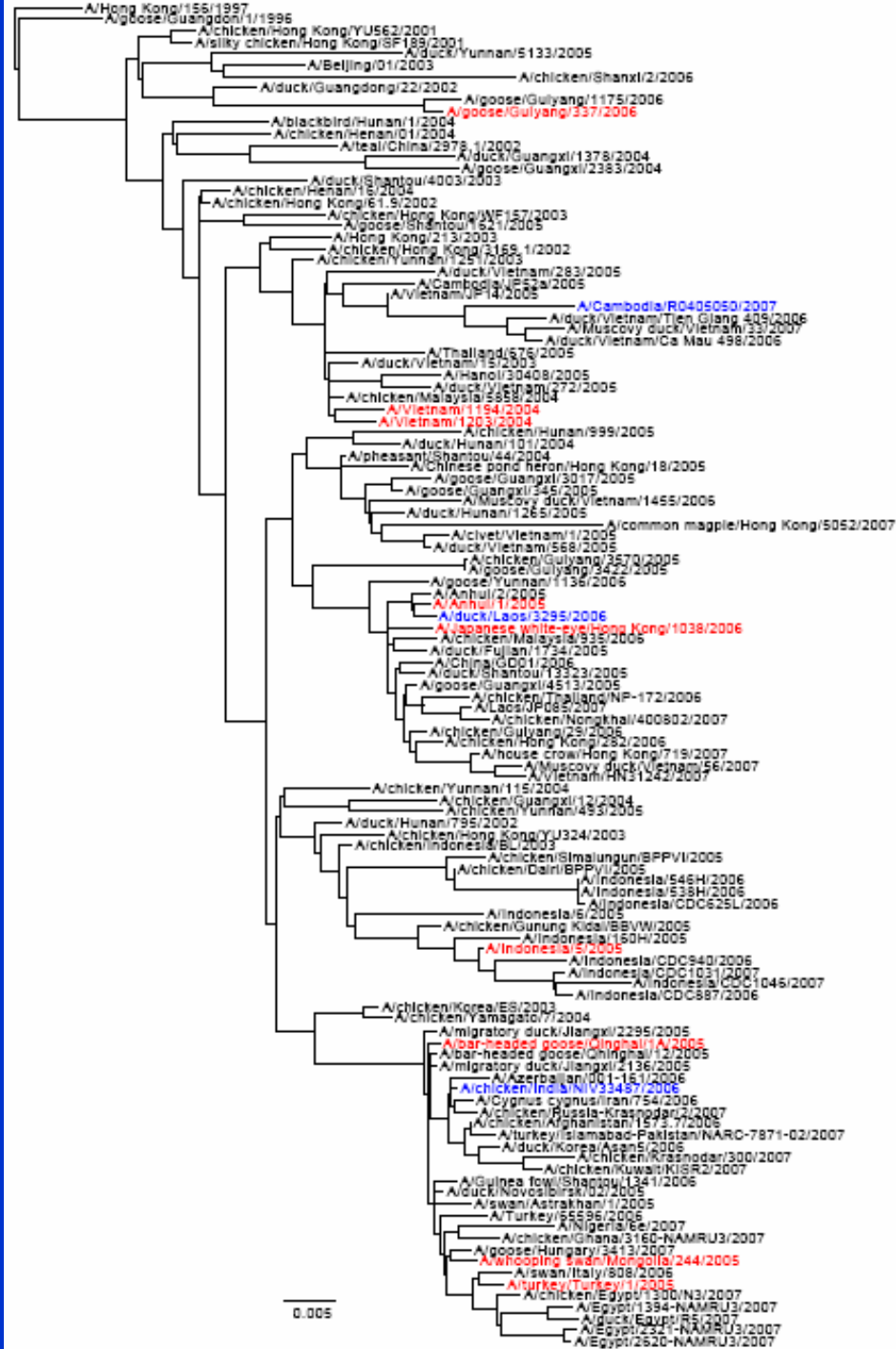
## Reference Ferret Antisera



	A/VN/1194/04	A/VN/1203/04	A/TH/16/04	A/INDO/5/05	A/INDO/357/06	A/INDO/625/06	A/TURKEY/15/05	A/ws/MG/244/05	A/bhg/QINGHAI/1/05	A/ty/TURKEY/1/05	A/dk/HUNAN/15/04	A/ANHUI/1/05	A/GUANGXI/1/05
1 A/VIETNAM/1194/04	640	nd	nd	20	nd	nd	nd	20	20	<20	nd	nd	nd
2 A/VIETNAM/1203/04	320	160	160	10	<10	80	<10	<10	40	<20	160	10	20
3 A/THAILAND/16/04	nd	160	160	10	<10	40	<10	<10	40	nd	80	<10	10
4 A/INDONESIA/5/05	80	<10	<10	320	320	160	40	20	80	40	40	40	20
5 A/INDONESIA/CDC357/06	nd	40	20	320	640	80	40	40	80	nd	20	20	10
6 A/INDONESIA/CDC625/06*	nd	40	10	80	40	1280	40	40	160	nd	40	40	20
7 A/TURKEY/15/05	80	20	<10	40	40	1280	640	640	1280	320	20	40	40
8 A/w.swan/MG/244/05 RG	80	20	10	40	80	640	320	320	640	320	20	10	10
9 A/b-h gs/QINGHAI/1/05	80	10	<10	40	80	320	80	1260	320	160	40	20	20
10 A/turkey/TURKEY/1/05	80	nd	nd	80	nd	nd	nd	160	160	320	nd	nd	nd
11 A/duck/HUNAN/15/04	nd	80	80	20	20	20	<10	<10	20	nd	160	160	nd
12 A/ANHUI/1/05	nd	40	20	<10	<10	20	10	10	40	nd	160	640	160
13 A/GUANGXI/1/05	nd	10	20	20	10	10	<10	<10	40	nd	nd	320	160

	REFERENCE FERRET ANTISERA						
REFERENCE ANTIGENS	CLADE	VN/1203	IND/5	MG/244	II/33487	ANH/1	JP/HK
A/VIETNAM/1203/2004 (VN/1203)	1	320	20	<10	40	-	-
A/INDONESIA/5/2005 (IND/5)	2.1	10	640	80	40	-	-
A/WHOOOPER SWAN/MG/244/05 (MG/244)	2.2	20	160	320	320	-	-
A/CHICKEN/INDIA/NIV-33487/2006 (II/33487)	2.2	-	320	320	320	20	80
A/ANHUI/1/05 (ANH/1)	2.3.4	40	320	<10	20	640	
A/JAPAN. WHITE EYE/HK/1038/06 (JP/HK)	2.3.4	20	640	40	640	1280	1280
TEST ANTIGENS							
A/THAILAND/676/05	1	160	20	<10	-	40	-
A/DUCK/VN/NCVD16/2007	1	40	<10	<10	-	<10	-
A/MUSCKOVY DUCK/VIETNAM/33/07	1	40	40	-	-	<40	-
A/DUCK/HUNAN/795/02	2.1	80	2560	-	-	40	-
A/INDONESIA/6/05	2.1	<10	640	80	-	-	-
A/INDONESIA/CDC1031/07	2.1	<10	640	160	-	160	10
A/INDONESIA/CDC625L/06 (Medan)	2.1	40	80	20	40	<10	20
A/TURKEY/65-596/06	2.2	160	2560	5120	2560	320	320
A/EGRET/EGYPT/NAMRU-3-1162/06	2.2	<10	80	640	-	10	40
A/CHICKEN/EGYPT/9402NAMRU3/07	2.2	<10	320	160	80	80	-
A/CHICKEN/EGYPT/9403NAMRU3/07	2.2	<10	160	40	80	40	-
A/CHINESE POND HERON/HONG KONG/18/05	2.3.2	80	40	-	-	<40	-
A/COMMON MAGPIE/HONG KONG/5052/07	2.3.2	80	320	-	-	<40	-
A/ANHUI/2/05	2.3.4	10	160	<10	-	320	
A/DUCK/LAOS/3295/06	2.3.4	10	160	<10	-	320	80
A/HOUSE CROW/HK/719/2007	2.3.4	<10	80	<10	10	320	80
A/LAOS/JP085/2007	2.3.4	<10	80	-	-	160	40
A/CHICKEN/VN/NCVD74/2007	2.3.4	20	<10	<10	-	40	-
A/DUCK/VN/NCVD81/2007	2.3.4	<10	<10	<10	-	80	-
A/VIETNAM/HN31203I/2007	2.3.4	<10	<10	<10	-	80	-
A/CHICKEN/MALAYSIA/935/06	2.3.4	<10	80	<10	10	160	40





**Reassortants with completed regulatory approval**

<b>Virus</b>	<b>Clade</b>	<b>Institution</b>	<b>Availability</b>
<i>A/Vietnam/1203/2004</i>	1	CDC and SJ/NIAID	Yes
<i>A/Vietnam/1194/2004</i>	1	NIBSC	Yes
<i>A/Indonesia/5/2005</i>	2.1	CDC	Requires Indonesian Government permission
<i>A/Bar-headed goose/Qinghai/1A/2005</i>	2.2	SJ/NIAID	Yes
<i>A/Whooper swan/Mongolia/244/2005</i>	2.2	SJ/NIAID	Yes
<i>A/turkey/Turkey/1/2005</i>	2.2	NIBSC	Yes
<i>A/Anhui/1/2005</i>	2.3.4	CDC	Yes
<i>A/Japanese white-eye/Hong Kong/1038/2006</i>	2.3.4	SJ/NIAID	Yes

**Reassortants prepared and awaiting regulatory approval**

<b>Virus</b>	<b>Clade</b>	<b>Institution</b>	<b>Availability</b>
<i>A/Chicken/India/NIV33487/2006</i>	2.2	CDC/NIV	Pending
<i>A/goose/Guiyang/337/2006</i>	4	SJ/NIAID	May 2008
<i>A/duck/Laos/3295/2006</i>	2.3.4	FDA	May 2008
<i>A/Cambodia/R0405050/2007</i>	1	NIBSC	May 2008

**Viruses Recommended by WHO**

	<b>Clade</b>	<b>Institution</b>
<i>A/duck/Hunan/795/2002-like</i>	2.1	SJ/NIAID
<i>A/egret/Egypt/1162/2007- or A/Egypt/2321/2007-like</i>	2.2	CDC
<i>A/Xinjiang/1/2006</i>	2.2	CDC
<i>A/Common Magpie/Hong Kong/5052/2007</i>	2.3.2	SJ/NIAID



伊藤若冲の『動植綵絵』

目次



**WHO Collaborating Centers,  
WHO H5 Reference Laboratories,  
National Influenza Centers, MoH, MoAg  
and WHO/FAO/OIE Working Group on  
H5N1 Nomenclature**

