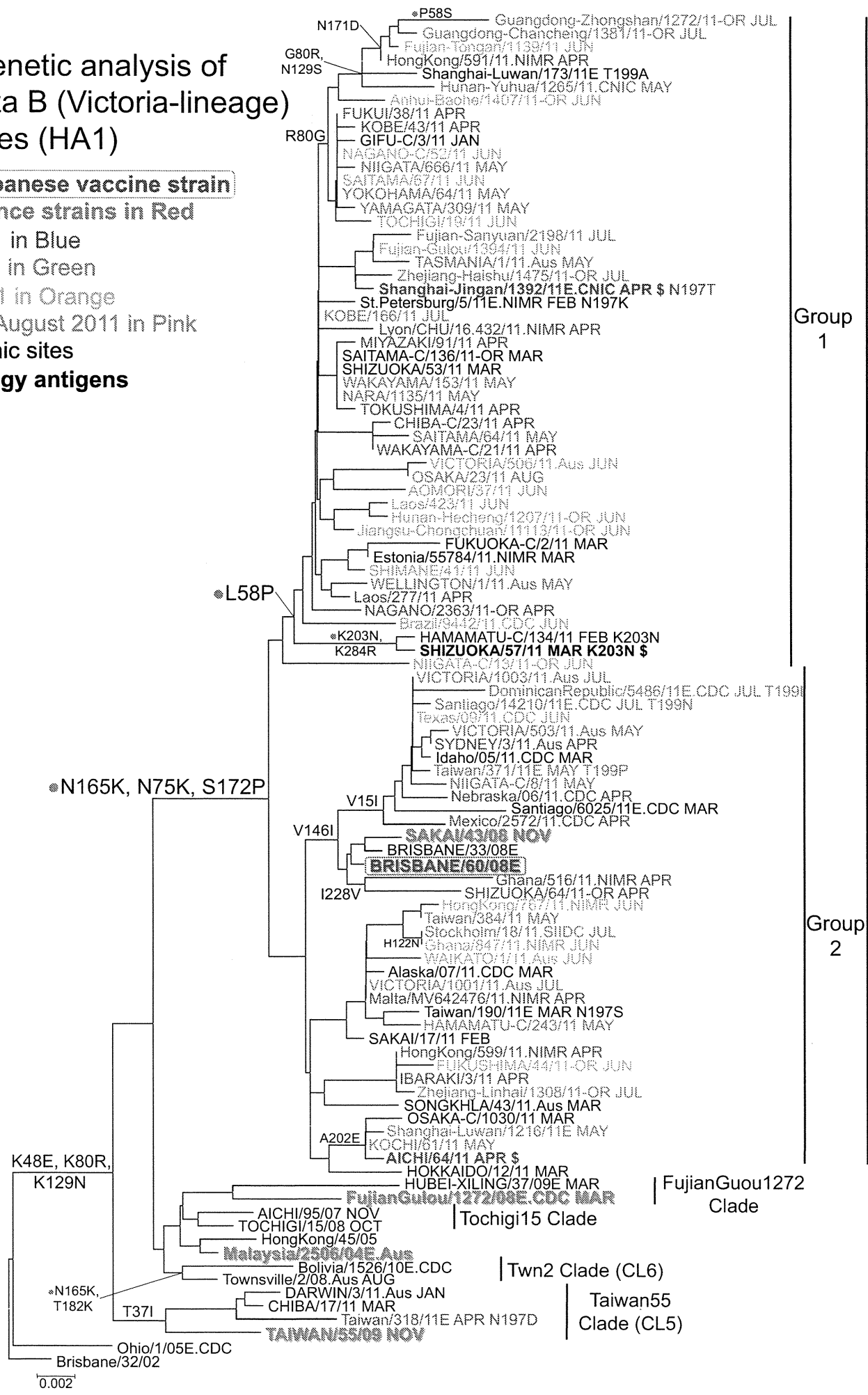


Phylogenetic analysis of influenza B (Victoria-lineage) HA genes (HA1)

10/11 Japanese vaccine strain
 HI reference strains in Red
 April 2011 in Blue
 May 2011 in Green
 June 2011 in Orange
 July and August 2011 in Pink
 * : Antigenic sites
 \$: Serology antigens



Group 1
 Bri60 clade

Group 2

FujianGuo1272 Clade

Tochigi15 Clade

Twn2 Clade (CL6)

Taiwan55 Clade (CL5)

Phylogenetic analysis of influenza B (Victoria-lineage) NA genes

10/11 Japanese vaccine strain

HI reference strains in Red

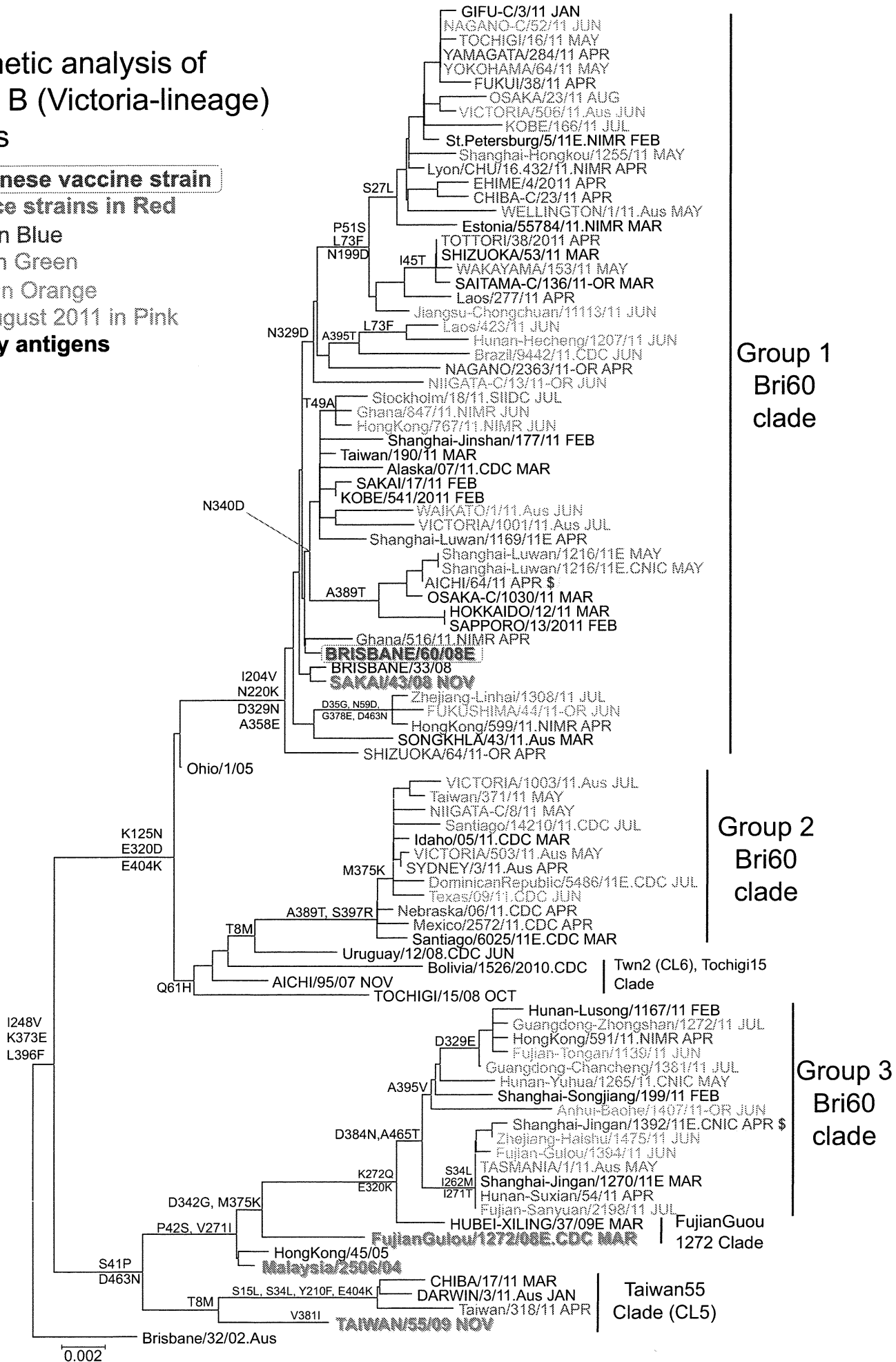
April 2011 in Blue

May 2011 in Green

June 2011 in Orange

July and August 2011 in Pink

\$: Serology antigens



Influenza B (Victoria-lineage) HA1 amino acid comparison

	BVic_HA_AA_consensus (N=308)	1	DRICTGITSSNSPHVVKATQGEVNVTVGVIPLTTTPTKSHFANLKGTETRGKLCPKCLNC	60
Epidemic strains	KOBE/166/2011_JUL	1	.....P..	60
	Guangdong-Chancheng/1381/2011-OR_JUL	1	.....P..	60
	YOKOHAMA/64/2011_MAY	1	.....P..	60
	HOKKAIDO/12/2011_MAR	1	.....	60
	NIIGATA-C/13/2011-OR_JUN	1	.....	60
	FUKUSHIMA/44/2011-OR_JUN	1	.....	60
	Taiwan/384/2011_MAY	1	.....	60
	CHIBA/17/2011_MAR	1	.....I.....	60
Serology antigens	Shanghai-Jingan/1392/2011E.CNIC_APR	1	.....P..	60
	SHIZUOKA/57/2011_MAR_K203N	1	.....P..	60
	AICHI/64/2011_APR	1	.....	60
Reference strains	BRISBANE/60/08E	1	.....	60
	SAKAI/43/08_NOV	1	.....	60
	BRISBANE/33/08E	1	.....	60
	FujianGulou/1272/08E.CDC_MAR	1	.....	60
	TAIWAN/55/09_NOV	1	.....I.....P..	60
	Malaysia/2506/04E.Aus	1	.....	60
	B-Vic AG site.seq	1	-----	1
	10aa	1	-----X-----X-----X-----X-----X-----X-----X	6
			
	BVic_HA_AA_consensus (N=308)	61	TDLDVALGRPKCTGKIP SARVSI LHEVRPVTSGCFPIIMHDRTKIRQLPNLLRGYEHIRLS	120
Epidemic strains	KOBE/166/2011_JUL	61	.....	120
	Guangdong-Chancheng/1381/2011-OR_JUL	61	.....I.....	120
	YOKOHAMA/64/2011_MAY	61	.....G.....	120
	HOKKAIDO/12/2011_MAR	61	.....	120
	NIIGATA-C/13/2011-OR_JUN	61	.....	120
	FUKUSHIMA/44/2011-OR_JUN	61	.....	120
	Taiwan/384/2011_MAY	61	.....	120
	CHIBA/17/2011_MAR	61	.....N.....	120
Serology antigens	BRISBANE/60/08E	61	.....	120
	Shanghai-Jingan/1392/2011E.CNIC_APR	61	.....	120
	SHIZUOKA/57/2011_MAR_K203N	61	.....	120
Reference strains	AICHI/64/2011_APR	61	.....	120
	BRISBANE/60/08E	1	.....	60
	SAKAI/43/08_NOV	61	.....	120
	BRISBANE/33/08E	61	.....	120
	FujianGulou/1272/08E.CDC_MAR	61	.....N.....	120
	TAIWAN/55/09_NOV	61	.....N.....	120
	Malaysia/2506/04E.Aus	61	.....N.....	120
	B-Vic AG site.seq	1	-----	1
10aa	7	-----X-----X-----X-----X-----X-----X-----X	12	
			

Influenza B (Victoria-lineage) HA1 amino acid comparison

	BVic_HA_AA_consensus (N=308)	241	PQSGRIVVDYMVQKSGKTGTITYQRGILLPQKVWCASGRSKVIKGSPLLIGEADCLHEKY	300
	KOBE/166/2011_JUL	241	.....	300
	Guangdong-Chancheng/1381/2011-OR_JUL	241	.....	300
	YOKOHAMA/64/2011_MAY	241	.....	300
Epidemic strains	HOKKAIDO/12/2011_MAR	241	.....	300
	NIIGATA-C/13/2011-OR_JUN	241	.....	300
	FUKUSHIMA/44/2011-OR_JUN	241	.....	300
	Taiwan/384/2011_MAY	241	.....	300
	CHIBA/17/2011_MAR	241	.....	300
		Shanghai-Jingan/1392/2011E.CNIC_APR	241	.....	300
Serology antigens	SHIZUOKA/57/2011_MAR_K203N	241	.....V.....R.....	300
	AICHI/64/2011_APR	241	.....	300
Reference strains	BRISBANE/60/08E	241	.....	300
	SAKAI/43/08_NOV	241	.....	300
	BRISBANE/33/08E	241	.....	300
	FujianGulou/1272/08E.CDC_MAR	241	.....	300
	TAIWAN/55/09_NOV	241	.....	300
	Malaysia/2506/04E.Aus	241	.....	300
	B-Vic AG site.seq	34	-----X-----X-----X-----X-----X-----X-----X	36
	10aa	25	-----X-----X-----X-----X-----X-----X-----X	30
	BVic_HA_AA_consensus (N=308)	301	GGLNKSHPYYTGEHAKAIGNCPIWVKTPLKLANGTKYRPPAKLLKER	347
	KOBE/166/2011_JUL	301	.....	347
	Guangdong-Chancheng/1381/2011-OR_JUL	301	.....	347
	YOKOHAMA/64/2011_MAY	301	.....	347
Epidemic strains	HOKKAIDO/12/2011_MAR	301	.....	347
	NIIGATA-C/13/2011-OR_JUN	301	.....V.....	347
	FUKUSHIMA/44/2011-OR_JUN	301	.....	347
	Taiwan/384/2011_MAY	301	.....	347
	CHIBA/17/2011_MAR	301	.....	347
		Shanghai-Jingan/1392/2011E.CNIC_APR	301	.....	347
Serology antigens	SHIZUOKA/57/2011_MAR_K203N	301	.....	347
	AICHI/64/2011_APR	301	.....	347
Reference strains	BRISBANE/60/08E	301	.....	347
	SAKAI/43/08_NOV	301	.....	347
	BRISBANE/33/08E	301	.....	347
	FujianGulou/1272/08E.CDC_MAR	301	.....	347
	TAIWAN/55/09_NOV	301	.....	347
	Malaysia/2506/04E.Aus	301	.....	347
	B-Vic AG site.seq	37	-----X-----X-----X-----X-----X-----X-----X	36
	10aa	31	-----X-----X-----X-----X-----X-----X-----X	34

Hemagglutination inhibition tests of influenza B viruses (Yamagata lineage)-0.5%TRBCs

HI test date:2011/9/15

Strains	Passage History	Sample date	Florida/04/06 Egg No.08-1	Sendai-H/114/07 Egg No.08-2	Bangladesh/3333/07 Egg No.2	Hubei-Wujiagang/158/09 Egg No.2	Wisconsin/1/10 Egg No.2	Sakai/68/09 Cell No.1	Sichuan-Anyue/139/11 Egg CNIC#2011-001	Sakai/43/08 Cell No.2 Boosted	Remarks
REF.Ag											
B/Florida/04/2006	E2 /E1+1	2006/12/15	640	640	640	320	320	160	2560	< 10	CL 1
B/Sendai-H/114/2007	E1 +3	2007/01/26	320	640	160	320	80	40	1280	< 10	CL 2
B/Bangladesh/3333/2007	E4 +2	2007/08/19	320	160	640	160	320	160	2560	< 10	CL 3
Wujiagang/158/2009	E2/E2 +1		40	80	160	160	80	80	640	< 10	CL3, N202S
B/Wisconsin/01/2010	E3 +1		40	80	160	80	160	80	640	< 10	CL3, N202S
B/SAKAI/68/2009	MDCK 1 +1	2009/11/18	40	20	160	80	80	160	320	< 10	CL3, N202S
B/Sichuan-Anyue/139/2011	E3 +1		40	80	160	80	80	40	640	< 10	CL3, N202S, N116K
B/SAKAI/43/2008	MDCK 1 +2	2008/11/24	< 10	< 10	< 10	< 10	< 10	< 10	< 10	160	Victoria-lineage
TEST.Ag											
B/Hunan-Beihu/1374/2011	C 2 +1	2011/07/05	20	10	160	80	80	160	320	< 10	CL3, N202S, N116K

Hemagglutination inhibition tests of influenza B viruses (Yamagata lineage)-0.5%TRBCs

HI test date:2011/7/28

Strains	Passage History	Sample date	Florida/04/06 Egg No.08-1	Sendai-H/114/07 Egg No.08-2	Bangladesh/3333/07 Egg No.2	Hubei-Wujiagang/158/09 Egg No.2	Wisconsin/1/10 Egg No.2	Sakai/68/09 Cell No.1	Fujian-Gulou/1790/10 Egg CNIC #2010-019	Guangdong-Luohu/1512/10 Egg CNIC #2010-020	Sichuan-Anyue/139/11 Egg CNIC #2011-001	Brisbane/60/08 Cell NIID No.4	Remarks
REF.Ag													
B/Florida/04/2006	E2 /E1+1	2006/12/15	1280	640	640	320	320	160	1280	640	2560	< 10	CL 1
B/Sendai-H/114/2007	E1 +3	2007/01/26	320	640	160	320	80	80	320	320	1280	< 10	CL 2
B/Bangladesh/3333/2007	E4 +2	2007/08/19	320	160	640	160	320	160	640	320	2560	< 10	CL 3
B/Hubei-Wujiagang/158/2009	E2/E2 +1		40	80	80	160	80	80	80	160	640	< 10	CL3, N202S
B/Wisconsin/01/2010	E3 +1		40	80	80	80	80	80	80	160	640	< 10	CL3, N202S
B/SAKAI/68/2009	MDCK 1 +1	2009/11/18	80	20	80	40	80	160	160	160	320	80	CL3, N202S
B/Fujian-Gulou/1790/2010	E3 +1		20	40	40	40	40	40	40	40	320	< 10	CL3, N202S
B/Guangdong-Luohu/1512/2010	E3 +1		40	80	80	40	80	40	160	80	640	< 10	CL3, N202S
B/Sichuan-Anyue/139/2011	E3 +1		40	40	80	40	80	40	160	80	640	< 10	CL3, N202S, N116K
B/Brisbane/60/2008	MDCKx/1 +2	2008/08/04	80	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	160	Victoria-lineage
TEST.Ag													
B/Taiwan/289/2011	MDCK 3 +1	2011/03/29	320	320	320	320	320	640	640	640	1280	< 10	CL3, N202S, N116K
B/KAWASAKI/1/2011	MDCK 1 +1	2011/01/20	320	160	320	160	320	320	640	640	1280	< 10	ND
B/Taiwan/352/2011	MDCK 2 +1	2011/04/27	160	80	80	80	160	160	160	160	640	< 10	CL 2
B/SAITAMA/18/2011	MDCK 1 +1	2011/03/02	160	40	160	80	160	160	160	160	320	< 10	CL 3, N202S, N116K
B/Shanghai-Huangpu/1158/2011	C 1 +1	2011/04/05	160	40	160	80	160	80	160	160	320	< 10	CL 3, N202S, N116K
B/SAITAMA/13/2011	MDCK 1 +1	2011/02/08	160	20	160	40	160	160	160	160	320	< 10	CL 3, N202S, N116K
B/HYOGO/1051/2011	MDCK 1 +1	2011/04/09	160	20	160	80	160	80	160	160	320	< 10	CL 3, N202S, N116K
B/HYOGO/1053/2011	MDCK 1 +1	2011/04/13	160	20	160	40	160	80	160	160	320	< 10	ND
B/Taiwan/381/2011	MDCK 2 +1	2011/05/13	160	40	20	40	80	80	80	80	320	< 10	CL 2
B/Taiwan/288/2011	MDCK 2 +1	2011/04/01	80	40	160	80	160	160	160	160	640	< 10	CL 3, N202S, N116K
B/YOKOHAMA/54/2011	MDCK 1 +1	2011/04/18	80	10	80	40	80	80	80	80	160	< 10	CL 3, M251V
B/Hunan-Hecheng/1151/2011	C 2 +1	2011/04/24	80	20	80	40	80	80	160	160	320	< 10	CL 3, N202S, N116K
B/Hunan-Lusong/1295/2011	C 1 +1	2011/04/20	80	20	80	40	80	80	160	160	320	< 10	CL 3, N202S, N116K
B/Taiwan/344/2011	MDCK 2 +1	2011/04/25	80	40	10	40	40	80	40	40	160	< 10	CL 2
B/SAITAMA/63/2011	MDCK 1 +1	2011/04/25	40	20	80	40	80	80	80	80	320	< 10	CL 3, T181K
B/SAITAMA/65/2011	MDCK 1 +1	2011/05/10	40	20	80	40	80	80	80	80	160	< 10	CL 3, T181K
B/SAPPORO/34/2011	MDCK 1 +1	2011/03/24	40	10	80	40	40	80	80	80	160	< 10	CL 3
B/Fujian-Gulou/1269/2011	E3 +1	2011/04/18	40	40	40	40	40	40	80	40	320	< 10	CL 3, N202S, N116K
B/Zhejiang-Dinghai/1114/2011	C 4 +1	2011/04/06	20	10	80	40	40	80	80	80	160	< 10	CL 3, N202S, N116K

Phylogenetic analysis of influenza B (Yamagata-lineage) HA genes (HA1)

08/09 Japanese vaccine strain

HI reference strains in Red

April 2011 in Blue

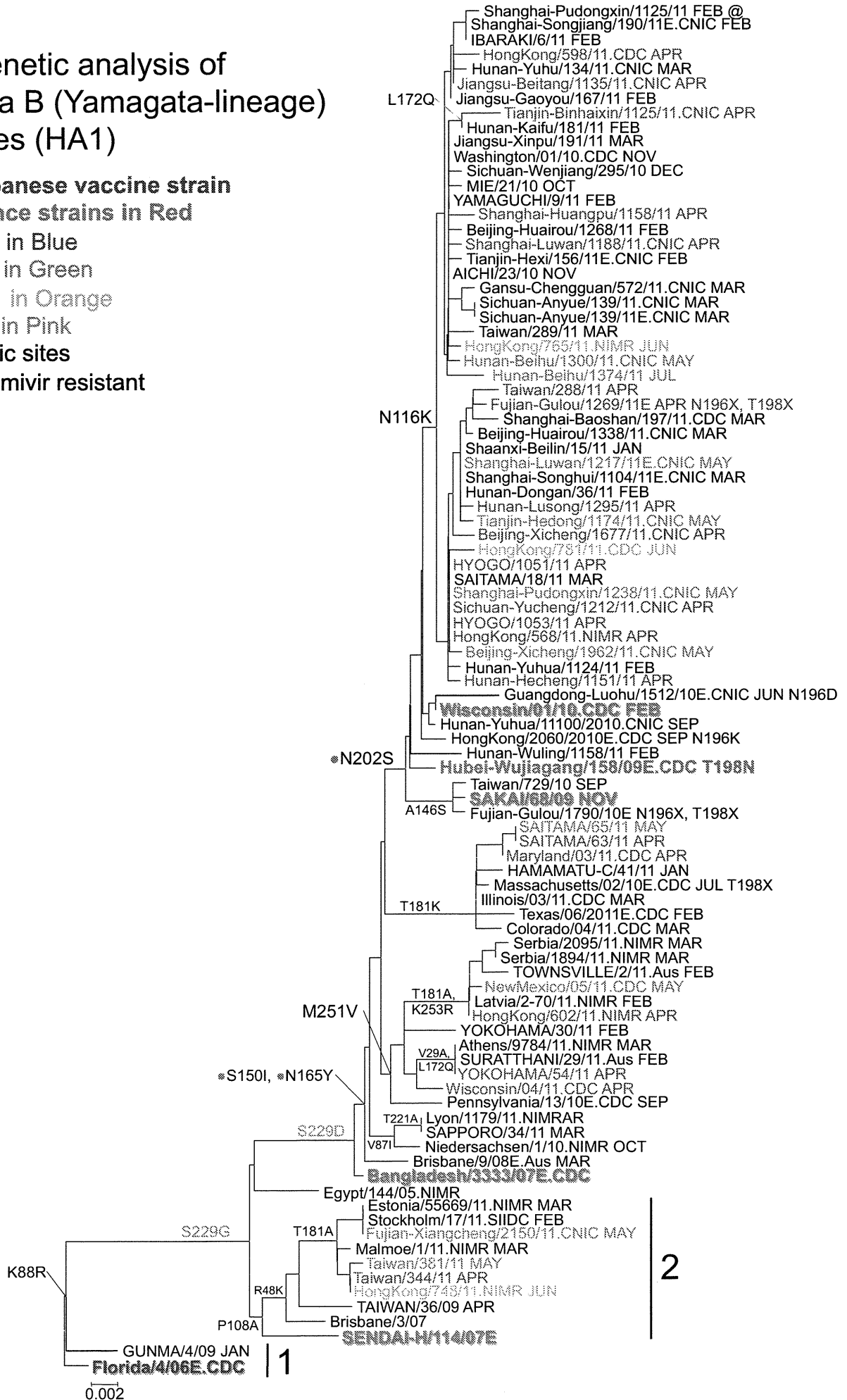
May 2011 in Green

June 2011 in Orange

July 2011 in Pink

*: Antigenic sites

@: Oseltamivir resistant



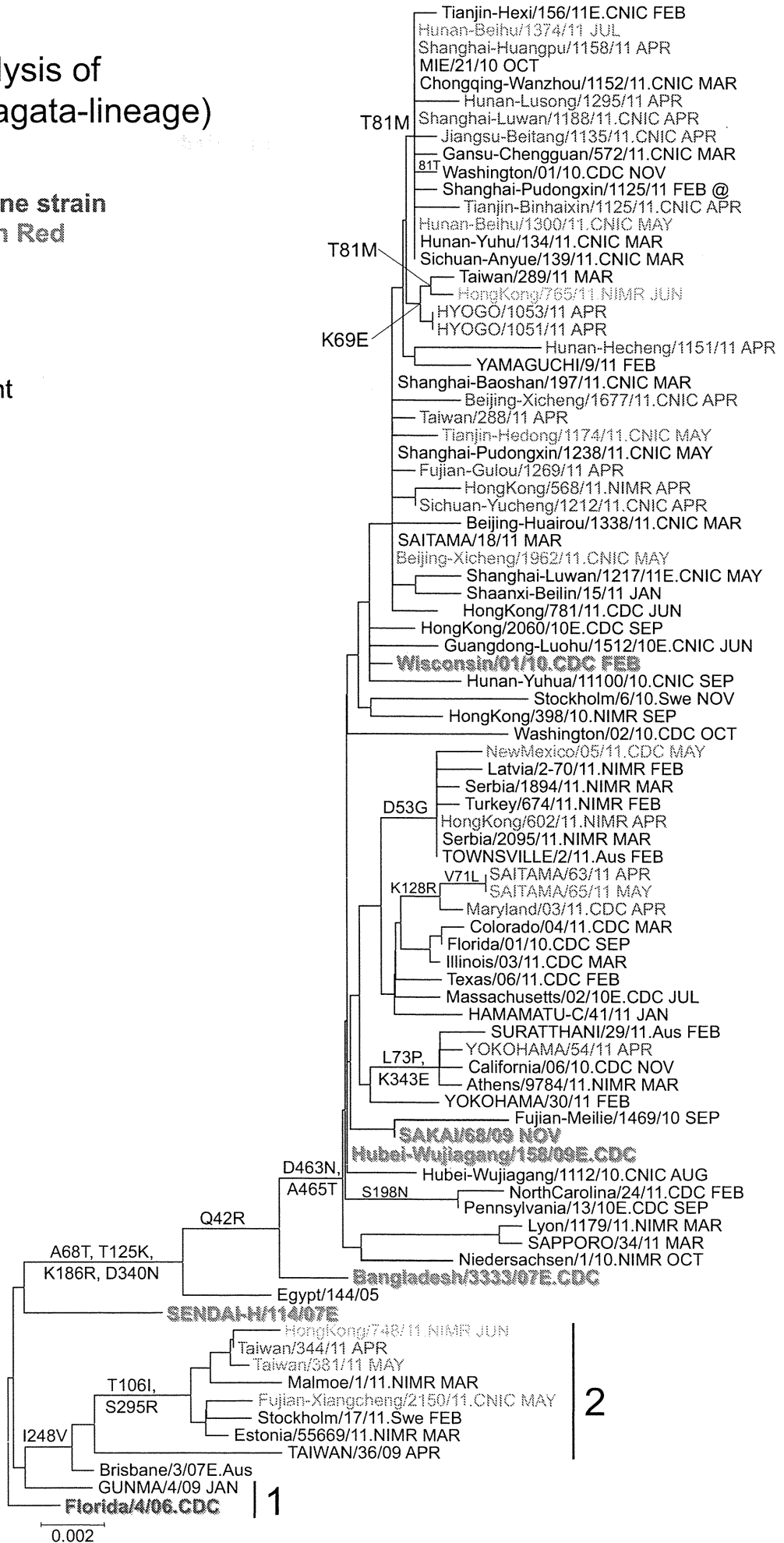
3

2

1

Phylogenetic analysis of influenza B (Yamagata-lineage) NA genes

08/09 Japanese vaccine strain
 HI reference strains in Red
 April 2011 in Blue
 May 2011 in Green
 June 2011 in Orange
 July 2011 in Pink
 @: Oseltamivir resistant



Influenza B (Yamagata-lineage) HA1 amino acid comparison

	BYam-HA-consensus (n=186) .txt	1	DRICTGITSSNSPHVVKATQGEVNVTVGIPLTTPTKSYFANLKGTRTRGKLCPCDCLNC	60	
	Shanghai-Pudongxin/1125/11_FEB	1	.....	60
	Taiwan/289/11_MAR	1	.....	60
	SAITAMA/18/11_MAR	1	.....	60
Epidemic strains	HYOGO/1053/11_APR	1	.....	60
	Fujian-Gulou/1269/11E_APR	1	.....	60
	YOKOHAMA/54/11_APR	1	.....A.....	60
	SAPPORO/34/11_MAR	1	.....	60
	Taiwan/381/11_MAY	1	.....K.....	60
	Florida/4/06E.CDC	1	.....	60
	SENDAI-H/114/07E	1	.....	60
	Reference strains	Bangladesh/3333/07E.CDC	1	60
Hubei-Wujiagang/158/09E.CDC		1	.....	60
SAKAI/68/09_NOV		1	.....	60
Wisconsin/01/10.CDC_FEB		1	.....	60
B-Yam AG site (FL:4:06E) .seq		1	-----	3	
10aa		1	-----X-----X-----X-----X-----X-----X-----X	6	
				
				
	BYam-HA-consensus (n=186) .txt	61	TDLVALGRPMCVGTTTPSAKASILHEVPRVTSVSGCFPIIMHDRTKIRQLPNLLRGYENIRLS	120	
	Shanghai-Pudongxin/1125/11_FEB	61	.....K...	120
	Taiwan/289/11_MAR	61	.....K...	120
	SAITAMA/18/11_MAR	61	.....K...	120
Epidemic strains	HYOGO/1053/11_APR	61	.....K...	120
	Fujian-Gulou/1269/11E_APR	61	.....K...	120
	YOKOHAMA/54/11_APR	61	.....	120
	SAPPORO/34/11_MAR	61	.....I.....	120
	Taiwan/381/11_MAY	61	.....A.....	120
	Florida/4/06E.CDC	61	.....K.....	120
	SENDAI-H/114/07E	61	.....A.....	120
	Reference strains	Bangladesh/3333/07E.CDC	61	120
Hubei-Wujiagang/158/09E.CDC		61	.....	120
SAKAI/68/09_NOV		61	.....	120
Wisconsin/01/10.CDC_FEB		61	.....	120
B-Yam AG site (FL:4:06E) .seq		4	-----	10	
10aa		7	-----X-----X-----X-----X-----X-----X-----X	12	
				
				
	BYam-HA-consensus (n=186) .txt	121	TQNVIDAEKAPGGPYRLGTSGSCP NATSKIGFFATMAWAVPKDNYKNATNPLTVEVPYIC	180	
	Shanghai-Pudongxin/1125/11_FEB	121	.....	180
	Taiwan/289/11_MAR	121	.....	180
	SAITAMA/18/11_MAR	121	.....	180
Epidemic strains	HYOGO/1053/11_APR	121	.....	180
	Fujian-Gulou/1269/11E_APR	121	.....	180
	YOKOHAMA/54/11_APR	121	.....Q.....	180
	SAPPORO/34/11_MAR	121	.....	180
	Taiwan/381/11_MAY	121	.....S.....N.....	180
	Florida/4/06E.CDC	121	.....S.....N.....	180
	SENDAI-H/114/07E	121	.....S.....N.....	180
	Reference strains	Bangladesh/3333/07E.CDC	121	180
Hubei-Wujiagang/158/09E.CDC		121	.....	180
SAKAI/68/09_NOV		121	.....S.....	180
Wisconsin/01/10.CDC_FEB		121	.....	180
B-Yam AG site (FL:4:06E) .seq		11	-----S-----N-----	27	
10aa		13	-----X-----X-----X-----X-----X-----X-----X	18	
				
				

Influenza B (Yamagata-lineage) HA1 amino acid comparison

		196	198	
Epidemic strains	BYam-HA-consensus (n=186) .txt	181	TEGEDQITVWGFHSLNKTKOMKSLYGDSNPQKFTSSANGVTHYVVSQIGDFPDQTEDGGLP	240
	Shanghai-Pudongxin/1125/11_FEB	181	.....P.....	240
	Taiwan/289/11_MAR	181	.....	240
	SAITAMA/18/11_MAR	181	.....	240
	HYOGO/1053/11_APR	181	.....	240
	Fujian-Gulou/1269/11E_APR	181	.....X.X.....	240
	YOKOHAMA/54/11_APR	181	.....N.....	240
	SAPPORO/34/11_MAR	181	.....N.....A.....	240
	Taiwan/381/11_MAY	181	A.....N.....G.....	240
	Reference strains	Florida/4/06E.CDC	181I.....N.....S.....	240
SENDAI-H/114/07E		181	.....X.....N.....G.....	240
Bangladesh/3333/07E.CDC		181	.....X.....N.....	240
Hubei-Wujiagang/158/09E.CDC		181	.....N.....	240
SAKAI/68/09_NOV		181	.....	240
Wisconsin/01/10.CDC_FEB		181	.....	240
B-Yam AG site (FL:4:06E) .seq		28	-----I.....N.....-----	46
10aa		19	-----X-----X-----X-----X-----X-----X-----	24
			
			
Epidemic strains	BYam-HA-consensus (n=186) .txt	241	QSGRIVVDYMMQKPGKGTGTIVYQRGVLLPQKVVWCASGRSKVIKGSPLIGEADCLHEKYG	300
	Shanghai-Pudongxin/1125/11_FEB	241	.....	300
	Taiwan/289/11_MAR	241	.....	300
	SAITAMA/18/11_MAR	241	.....	300
	HYOGO/1053/11_APR	241	.....	300
	Fujian-Gulou/1269/11E_APR	241	.....	300
	YOKOHAMA/54/11_APR	241	.....V.....	300
	SAPPORO/34/11_MAR	241	.....	300
	Taiwan/381/11_MAY	241	.....	300
	Reference strains	Florida/4/06E.CDC	241	.....	300
SENDAI-H/114/07E		241	.....	300
Bangladesh/3333/07E.CDC		241	.....	300
Hubei-Wujiagang/158/09E.CDC		241	.....	300
SAKAI/68/09_NOV		241	.....	300
Wisconsin/01/10.CDC_FEB		241	.....	300
B-Yam AG site (FL:4:06E) .seq		47	-----	51
10aa		25	-----X-----X-----X-----X-----X-----X-----	30
			
			
Epidemic strains	BYam-HA-consensus (n=186) .txt	301	GLNKSPPYYTGEHAKAIGNCPIWVKTPCLKLANGTKYRPPAKLLKER	346
	Shanghai-Pudongxin/1125/11_FEB	301	.....	346
	Taiwan/289/11_MAR	301	.....	346
	SAITAMA/18/11_MAR	301	.....	346
	HYOGO/1053/11_APR	301	.....	346
	Fujian-Gulou/1269/11E_APR	301	.....	346
	YOKOHAMA/54/11_APR	301	.....	346
	SAPPORO/34/11_MAR	301	.....	346
	Taiwan/381/11_MAY	301	.....	346
	Reference strains	Florida/4/06E.CDC	301	.....	346
SENDAI-H/114/07E		301	.....	346
Bangladesh/3333/07E.CDC		301	.....	346
Hubei-Wujiagang/158/09E.CDC		301	.....	346
SAKAI/68/09_NOV		301	.....	346
Wisconsin/01/10.CDC_FEB		301	.....	346
B-Yam AG site (FL:4:06E) .seq		52	-----	51
10aa		31	-----X-----X-----X-----X-----	34
			
			

Detection of neuraminidase inhibitor-resistant influenza viruses in East Asian countries during Sep 2010 – Aug 2011

Country	Viruses tested n	A/H1N1pdm			A/H3N2			B		
		n	Resistant (%)		n	Resistant (%)		n	Resistant (%)	
			Oseltamivir Peramivir	Zanamivir Laninamivir		Oseltamivir Peramivir	Zanamivir Laninamivir		Oseltamivir Peramivir	Zanamivir Laninamivir
Japan	3,993	3,748	78 (2.1%)	0	122	1 (0.8%)	0	123	1 (0.8%)	0
China	119	0	0	0	57	0	0	62	1 (1.6%)	0
Korea	10	5	0	0	5	0	0	0	0	0
Laos	30	7	0	0	4	0	0	19	0	0
Mongol	8	0	0	0	8	0	0	0	0	0
Myanmar	18	8	0	0	0	0	0	10	0	0
Taiwan	43	9	0	0	15	0	0	19	0	0
Total	4,221	3,777	78 (2.1%)	0	211	1 (0.5%)	0	233	2 (0.9%)	0

Viruses were examined by chemiluminescent-based NA-Star assay, fluorescence-based NA-Fluor assay, TaqMan RT-PCR and/or NA sequencing.

Neuraminidase inhibitors susceptibility

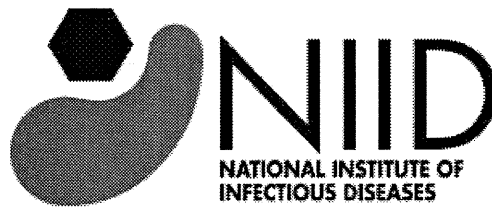
NIID-ID	Strains	Subtype	Sample date	Resistant marker	IC ₅₀ (nM)*			
					Oseltamivir	Peramivir	Zanamivir	Laninamivir
10/11 - 603	B/Shanghai-Pudongxin/1125/2011	B Yamagata	2011/02/28	I221T	32.34	3.79	14.36	12.54
10/11 - 689	B/KOCHI/61/2011	B Victoria	2011/05/12	Under investigation	19.39	85.56	31.30	19.15
09/10-1224	B/Perth/211/2001 (Resistant reference strain)	B Yamagata		D197E	29.12	4.35	10.18	5.65
09/10-1225	B/Perth/211/2001 (Sensitive reference strain)	B Yamagata		197D	2.65	0.35	1.62	3.28
	Average IC ₅₀ in 2010/11 season (Oseltamivir-sensitive B viruses)				4.90 ± 1.19	0.71 ± 0.27	3.16 ± 1.74	5.04 ± 1.69

*The susceptibility of viruses to NAIs were examined by chemiluminescent-based NA-Star assay.

Information for WHO Annual Consultation on
the Composition of Influenza Vaccine
in the Southern Hemisphere

September 26-29, 2011, Geneva, Switzerland

Serologic Response to Influenza Virus Vaccines



WHO Collaborating Center for Reference and Research on Influenza at Laboratory of
Influenza Virus Surveillance, Center for Influenza Virus Research,
National Institute of Infectious Diseases, Tokyo, Japan

Antigen panel for human serology in Japan (2010/11 Southern hemisphere)

Type/Subtype/ Lineage	Viruses	Collection date	Passage history	Remarks
A/H1N1pdm09	A/California/7/2009	2009.4.9	E2+3	Wild type, Common
	A/Sapporo/163/2011	2011.3.4	MDCK2+1	Common, Variant: 16-64-fold low to A/Cal/7-like ref sera, K154E, S190R, S185I changes, A197T clade (S143G major subclade)
	A/Miyagi/32/2011	2011.2.22	MDCK2+2	Recent A/Cal/7-like, A197T clade (S143G major subclade)
A/H3N2	A/Victoria/210/2009	2009.6.2	E2+2	Wild type, Common
	A/Montana/05/2011	2011.3.11	E2+1	Common, Vic/210 & Perth/16-like, Vic208 clade
	A/Sakai/20/2011	2011.2.15	MDCK2+2	Common, Variant: 4-8-fold low to Vic/210 & Perth/16-like ref, I192T change, Vic 208 clade (D53N, Y94H, I230V, E280A major subclade)
	A/Yamagata/285/2011	2011.3.17	MDCK2+2	Variant: 4-8-fold low to Vic/210 & Perth/16-like ref, H156R change, Vic 208 clade (T48A, K92R minor subclade)
	A/Kumamoto-C/36/2011	2011.4.15	Caco2 2+2	Recent Vic/210 and Perth/16-like, Perth/16 clade (P162S+E50K subclade)
B/Vic	B/Brisbane/60/2008	2008.8.4	E4+1	Vaccine, Common
	B/Shanghai-Jingan/1392/2011	2011.4.11	E2+1	Common, Variant: Low to Bris/60-like sera, N197T change, Bris/60 clade (L58P major subclade)
	B/Shizuoka/57/2011	2011.3.14	MDCK1+1	Variant: low reactor to Bris/60-like sera, K203N change, Bris/60 clade (L58P major subclade)
	B/Aichi/64/2011	2011.4.4	MDCK1+2	Recent Bris/60-like, Bris/60 clade (minor subclade)

Serum panel for human serology in Japan (10/11 Southern hemisphere)

Serum provided by	Population details (yrs)		No. of sera	Vaccine components
WHO, Australia (I. Barr)	<u>Adults</u>		24	A/California/7/2009 X-181 (H1N1)pdm09 A/Victoria/210/2009 X-187 (H3N2)
	Age range 24-58	Mean age 39.4		
	<u>Elderly</u>		20	B/Brisbane/60/2008
Niigata Univ., Japan (R. Saito)	<u>Adults</u>		24	A/California/7/2009 X-179A (H1N1)pdm09 A/Victoria/210/2009 X-187 (H3N2)
	Age range 20-58	Mean age 38.1		
	<u>Elderly</u>		24	B/Brisbane/60/2008
	Age range 62-100	Mean age 82.3		

Supplemental data by NIID



1. Antigenic analysis of influenza A/H3N2 viruses P 2
2. Antiviral resistance of influenza B viruses P 3
3. Serologic response to influenza virus vaccines P 6

Hemagglutination inhibition tests of influenza A/H3 viruses-1%Guinea Pig RBCs

Strains	Passage History	Sample date	Brisbane-lineage	Perth16 group				Victoria208 group		HK2000 group	HI test date:2011/9/22	Remarks
			Uruguay/716/07 Egg No.2	Victoria/ 210/09 (X-187) Egg No.1	Victoria/ 210/09 (X-187) Egg No.1	Perth/ 16/09 Egg No.2	Niigata/ 403/09 Cell No.1	Brisbane/ 11/10 Egg No.1	Shizuoka/ 736/09 Cell No.2	Hunan- beihu/1313/09 Cell No.1		
REF.Ag												
A/Uruguay/716/2007	SpfCk1E3 +3	2007/06/21	640	40	10	40	20	80	80	160		
A/Victoria/210/2009	E2 +2	2009/06/02	10	640	640	320	640	160	320	40	P*	
A/Victoria/210/2009 (X-187)	E7/E2+1		10	1280	1280	320	640	160	160	20	P*	
A/Perth/16/2009	E3 +2		10	640	80	320	320	80	160	20	P*	
A/NIIGATA/403/2009	MDCK 2 +2	2009/03/12	20	320	80	80	160	80	80	40	P*	
A/Brisbane/11/2010	E4 +2		20	320	80	160	320	640	320	80	V*, N312S	
A/SHIZUOKA/736/2009	MDCK 1 +3	2009/05/23	80	640	80	320	320	160	320	160	V*	
A/Hunan-beihu/1313/2009	C 3 +1	2009/05/07	80	40	10	20	40	20	20	320	HK/2000 CL	
TEST.Ag												
A/OKAYAMA/29/2011	MDCK 3 +1	2011/06/02	40	1280	320	640	1280	640	640	80	V*, (1)	
A/OKAYAMA/28/2011	MDCK 3 +1	2011/05/24	20	640	40	160	160	160	160	80	V*, (1)	
A/WAKAYAMA/154/2011	MDCK 3 +2	2011/06/13	10	320	80	160	320	320	320	80	V*, (1), I192T**	
A/Myanmar/I-182/2011	MDCK 1 +1	2011/07/23	20	320	20	80	80	80	40	80	V*, N312S	
A/HYOGO/1068/2011	MDCK 1 +1	2011/07/22	20	320	20	40	40	80	80	80	V*, N312S	

*: P: Perth/16 CL, V: Vic/208 CL, (1): D53N, Y94H, I230V, E280A

** : Antigenic site

Susceptibility assay against neuraminidase inhibitors (2nd exp.)

NIID-ID	Strains	Subtype	Sample date	Resistant marker	IC ₅₀ (nM)*			
					Oseltamivir	Peramivir	Zanamivir	Laninamivir
10/11 - 603	B/Shanghai-Pudongxin/1125/2011	B Yamagata	2011/02/28	I221T	32.34	3.79	14.36	12.54
10/11 - 689	B/KOCHI/61/2011	B Victoria	2011/05/12	Under investigation	22.04	145.74	66.17	28.78
09/10-1224	B/Perth/211/2001 (Resistant reference strain)	B Yamagata		D197E	38.13	4.80	13.7	5.34
09/10-1225	B/Perth/211/2001 (Sensitive reference strain)	B Yamagata		197D	2.51	0.34	1.12	2.44
	Average IC ₅₀ in 2010/11 season (Oseltamivir-sensitive B viruses)				4.90 ± 1.19	0.71 ± 0.27	3.16 ± 1.74	5.04 ± 1.69

*The susceptibility of viruses to NAIs were examined by chemiluminescent-based NA-Star assay.

B Victoria-lineage
NA genes

