

Reagents for Influenza Pandemic Preparedness

Robert G. Webster, PhD

Division of Virology

Department of Infectious Diseases

St. Jude Children's Research Hospital

**NIAID RESOURCES
FOR
INFLUENZA RESEARCH**



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Table 1

Antisera to Influenza A Virus Antigens Prepared in Goats
Summary of Reactions in Immunodiffusion Test

RRB Catalog Number	Antisera	Reference Strain of Virus	Antibodies to Matrix Protein Single Radial Diffusion	Antibodies to RNP Double Immunodiffusion	Reactions in double- immunodiffusion tests
V-314-511-157	H0 (H1)*	A/PR/8/34			H0 (H1)
V-314-521-157	H1	A/FM/147			H1
V-314-541-157	H2	A/Singapore/1/57			H2
V-314-591-157	H3	A/Hong Kong/1/68 (Labeled A/Aichi/ 2/68)			H3, Heq2, (H3) Hav7 ^c (H3)
V-317-501-157	Hsw1 (H1)	A/Swine/Iowa/15/30 (labeled A/Swine/ Wisconsin/15/30)			Hsw1
V-316-561-157	Heq1 (H7)	A/Equine/Prague/1/56			Heq1, (H7), Hav1 ^c (H7)
V-316-571-157	Heq2 (H3)	A/Equine/Miami/63			Heq2, (H3), Hav7 ^c (H3)
V-315-501-157	Hav1 (H7)	A/FPV/Dutch/27	-	±	Hav1 (H3), Heq1 ^c (H7)
V-315-511-157	Hav2 (H10)	A/Chick/Germ/"N"/ 49	+		
V-315-521-157	Hav3 (H11)	A/Duck/Eng/56			Hav3 (H11)
V-315-531-157	Hav4 (H4)	A/Duck/Czech/56			Hav4 (H4) very weak
V-315-541-157	Hav5 (H5)	A/Tern/S. Africa/61		+	Hav5, H5 H0 (H1), H1 ^c
V-315-552-157	Hav6 (H6)	A/Turkey/Mass/65			Hav6 (H6)
V-315-561-157	Hav7 (H3)	A/Duck/Ukr/1/63	-	-	Hav7 (H3) H3, Heq2 ^c (H3)
V-315-571-157	Hav8 (H8)	A/Turkey/Ont/6118/68		+	

Table 2

**Antisera to Influenza A Virus Antigens Prepared in Goats
Summary of Reactions in Immunodiffusion Test**

RRB Catalog Number	Antisera	Reference Strain of Virus	Antibodies to Matrix Protein Single Radial Diffusion	Antibodies to RNP Double Immunodiffusion	Reactions in double- immunodiffusion tests
V-308-513-157	N1	[A/New Jersey/8/76] ^e (Labeled A/Eql/Prague/ 1/56-NJ/8/76)	+	+	N1 [Heq1] ^d (H7)
V-308-541-157	N2	A/Singapore/1/57			N2
	Neq1 (N7)	A/Equine/Prague/1/56	±		
V-310-571-157		A/Equine/Miami/1/63		±	
V-309-521-157	Nav1 (N6)	A/Duck/England/56	+		Nav1 (N6)
		A/Tern/S. Africa/61	+	+	
V-309-581-157	Nav3 (N3)	A/Turkey/England/63	±		
V-309-571-157	Nav4 (N4)	A/Turkey/Ontario/6118/ 68		+	
V-309-592-157	Nav5 (N5)	A/Shearwater/Australia/ 72			Nav5 (N5)
V-304-501-157	A-RNP	A/Scotland/74	±	+	RNP
V-306-501-157	A-matrix		+		M

Antisera to Influenza A Virus Antigens Not Available from NIAID/NIH

HA subtype

Reference strain of virus

H9

A/turkey/WI/66

H11

A/duck/Memphis/546/74

H12

A/duck/Alberta/60/76

H13

A/gull/MD/704/77

H14

A/mallard/Astrakhan/263/82

H15

A/shearwater/Western Australia/2576/79

NA subtype

N9

A/duck/Memphis/546/74

Current Use of NIAID Reference Reagents

HI titers for H7 avian and human influenza viruses

Virus	antiserum to: FPV/Rost/34	α -H7 Monoclonal antibodies to:							
		Chicken/Victoria/85			Seal/MA/80				
		4/2	14/1	14/2	8/4	46/6	55/2	58/2	81/3
FPV/Rostock/34	20480	25600	25600	3200	<	12800	25600	12800	<
A/Mallard/Neth/12/2000	10240	12800	25600	1600	<	6400	12800	6400	<
A/Chick/Neth/1/2003	10240	25600	25600	3200	<	6400	6400	6400	<
A/Neth/231/2003	10240	12800	25600	3200	<	12800	6400	6400	<
A/Neth/219/2003	5120	12800	12800	1600	<	3200	6400	3200	<

<, less than 100

NIAID – WHO Influenza Surveillance Reagents

ANTISERA – HI TEST

	Abbreviation:	Subtype:
A/Puerto Rico/8/34 [Goat]		H1a
A/Fort Monmouth/1/47 [Goat]		H1b
A/Swine/Iowa/15/30 [Goat]	A/Swine/IA/15/30	H1c
A/Japan/305/57 [Goat]		H2a
A/Aichi/68 [Goat]		H3a
A/Equine/Miami/63 [Goat]		H3b
A/Duck/Ukraine/63 [Goat]		H3c
A/Duck/Czech/56 [Goat]		H4
A/Tern/South Africa/61 [Goat]		H5
A/Turkey/Massachusetts/65 [Goat]	A/Turkey/MA/65	H6a
A/Equine/Prague/56 [Goat]		H7a
A/Fowl Plague Virus/Rostock/34 [Goat]	A/FPV/Rostock/34	H7b
A/Turkey/Ontario/6118/68 [Goat]		H8
A/Turkey/Wisconsin/66 [Chicken]	A/Turkey/WI/66	H9 ₁
A/Hong Kong/1073/99 [Sheep]		H9 ₂
A/Chicken/Germany/N/49 [Goat]		H10
A/Duck/England/56 [Goat]		H11a
A/Duck/Memphis/546/74 [Rabbit]		H11b
A/Duck/Alberta/60/76 [Rabbit]		H12
A/Gull/Maryland/707/77 [Rabbit]	A/Gull/MD/707/77	H13
A/Mallard/Astrakhan/263/82 [Rabbit]		H14
A/Shearwater/Australia/2576/79 [Chicken]		H15

NIAID – WHO Influenza Surveillance Reagents

Antigens – HI Test

Antigens (Vol. 5.0ml):	Abbreviation:	Subtype:
A/Puerto Rico/8/34		H1a
A/Fort Monmouth/1/47		H1b
A/Swine/Iowa/15/30	A/Swine/IA/15/30	H1c
A/Singapore/1/57		H2a
A/Hong Kong/1/68		H3a
A/Equine/Miami/63		H3b
A/Duck/Ukraine/63		H3c
A/Duck/Czech/56		H4
A/Ruddy Turnstone/Delaware/244/91	A/RT/DE/244/91	H5
A/Turkey/Massachusetts/65	A/Turkey/MA/65	H6a
A/Equine/Prague/56		H7a
A/Ruddy Turnstone/New Jersey/65/85	A/RT/NJ/65/85	H7b
A/Turkey/Ontario/6118/68		H8
A/Turkey/Wisconsin/66	A/Turkey/WI/66	H9 ₁
A/Hong Kong/1073/99		H9 ₂
A/Chicken/Germany/N/49		H10
A/Duck/England/56		H11a
A/Duck/Memphis/546/74		H11b
A/Duck/Alberta/60/76		H12
A/Gull/Maryland/707/77	A/Gull/MD/707/77	H13
A/Mallard/Astrakhan/263/82		H14
A/Shearwater/Australia/2576/79		H15

NIAID – WHO Influenza Surveillance Reagents

Neuraminidase Inhibition Test

Antigens (Vol. 5.0ml):

A/New Jersey/8/76
A/Singapore/1/57
A/Tern/South Africa/61
A/Turkey/England/63
A/Turkey/Ontario/6118/68
A/Shearwater/Australia/73
A/Duck/England/56
A/Equine/Prague/56
A/Duck/Chabarovsk/1610/72
A/Duck/Memphis/546/74

Abbreviation:

A/NJ/8/76

Subtype:

N1
N2
N3a
N3b
N4
N5
N6
N7
N8
N9

Antiserum (Vol. 0.3ml):

A/New Jersey/8/76 [Goat]
A/Singapore/1/57 [Goat]
A/Tern/South Africa/61 [Goat]
A/Turkey/England/63 [Goat]
A/Turkey/Ontario/6118/68 [Goat]
A/Shearwater/Australia/73 [Goat]
A/Duck/England/56 [Goat]
A/Equine/Prague/56 [Goat]
A/Duck/Chabarovsk/1610/72 [Goat]
A/Duck/Memphis/546/74 [Goat]

Abbreviation:

A/NJ/8/76

Subtype:

N1
N2
N3a
N3b
N4
N5
N6
N7
N8
N9

Normal Serum Control (Vol. 0.3ml):

Goat
Rabbit
Chicken
Sheep

Current Reagent Preparation

NIAID Contract AI95357

- Baculovirus expressed HA and NA proteins
 - Antigens for monospecific antiserum preparation (sheep, goats)
 - Antigen for ELISA screening (eg human sera)
 - Antigens to “internal: proteins (NS, M, NP, PA, PB1, PB2

Preparation of Reference Reagents (Proteins)

Subtype	Reference Strain	Sent to NIAID Repository Date
H5	A/HK/156/97 (H5N1)	✓
H5	A/HK/213/03 (H5N1)	✓
H6	A/Teal/HK/W312/97 (H6N1)	✓
H9	A/HK/1073/99 (H9N2)	✓
H9	A/Ck/HK/G9/97 (H9N2)	
H14	A/Mallard/Astrakhan/263/82 (H14N5)	
H15	A/Duck/Australia/341/83 (H15N8)	✓
N2	A/Shorebird/DE/127/96 (H6N2)	✓
N4	A/Gray Teal/Australia/2/79 (h4N4)	✓

Preparation of Reference Reagents (Antiserum)

Subtype	Reference Strain	Specificity
H5	A/HK/483/97 (H5N1)	Specific to H5 HA subtype
H5	A/HK/213/03 (H5N1)	Specific to H5 HA subtype
H6	A/Teal/HK/W312/97 (H6N1)	Specific to H6 HA subtype
H9	A/HK/1073/99 (H9N2)	Specific to H9 HA subtype
H15	A/Duck/Australia/341/83 (H15N8)	Specific to H15 HA Subtype
N9	A/Tern/Australia/G70C/75 (H1N9)	Specific to N9

**2003 Hong Kong H5N1 Antigenicity -
HI titers for H5 avian and human influenza viruses**

virus name	antiserum (1:40) to:			MAb (1:100) to:		
	tern/SA/61 (G.51)	gs/HK437-4/99 (C.99-55)	HK/156/97 (S.5371)	cp24	chickenk/PA/83 cp46	364/1
ck/PA/1370/83	1280	640	1280	3200	12800	51200
HK/156/97	5120	2560	640	3200	25600	51200
gs/HK/437-4/99	5120	2560	320	3200	6400	51200
gs/HK/739.2/02	40	1280	<	200	<	200
HK/213/03	10240	2560	160	1600	100	12800
ck/HK/AP111/03	<	320	<	<	<	200
ck/HK/NT136/03	40	640	<	200	<	400
ck/HK/SF131/03	<	320	<	800	<	100
ck/HK/SSP171/03	40	640	<	400	<	400
sck/HK/SSP7/03	40	1280	<	200	<	1600
pigeon/HK/WF32/03	<	640	<	<	<	400
sck/HK/YU316/03	40	320	<	800	<	200
phs/HK/NT123/03	<	160	<	400	<	<
sck/HK/YU17/03	<	320	<	<	<	800



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