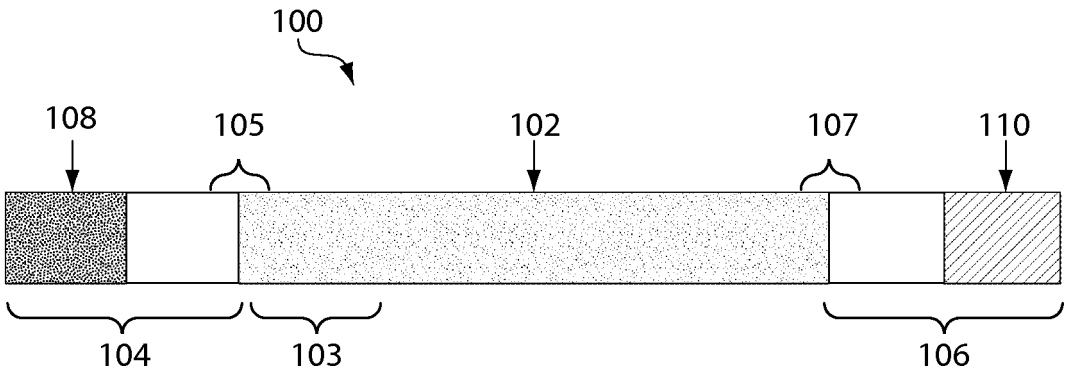


FIGURE 1A

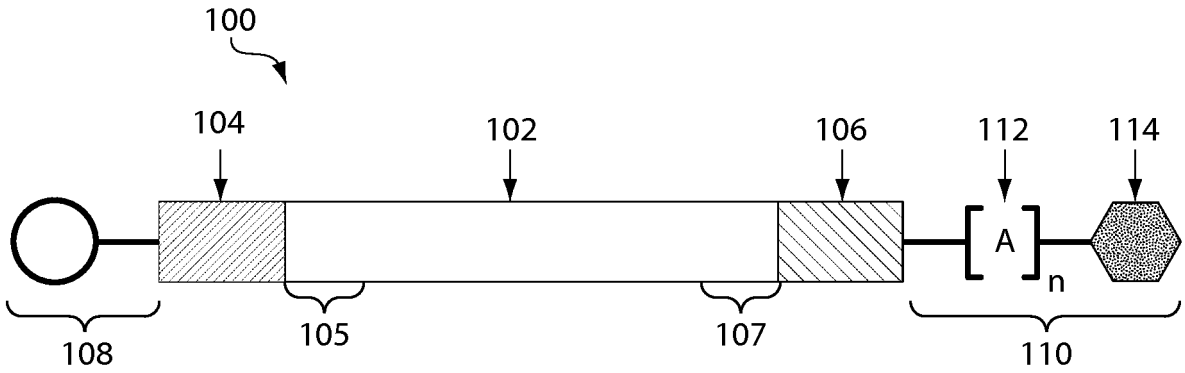


FIGURE 1B

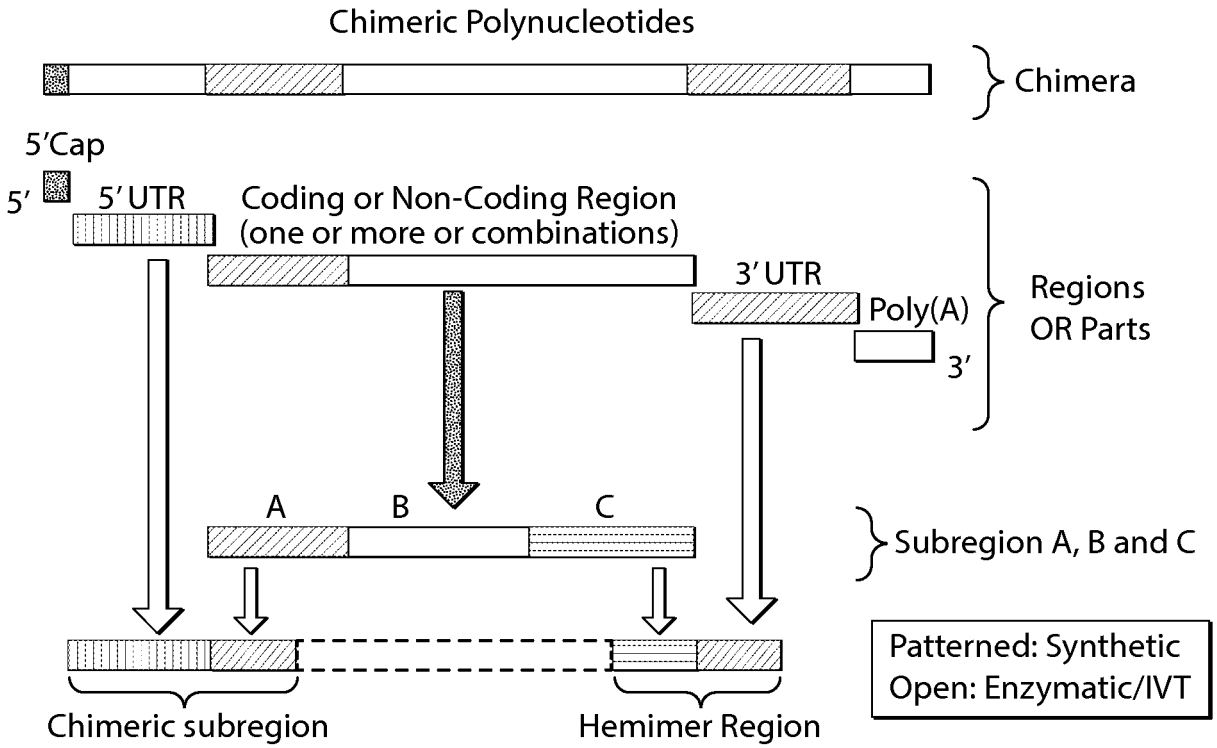

Chimeric Polynucleotides
Chimera
5'Cap
5'
5' UTR
Coding or Non-Coding Region
(one or more or combinations)
3' UTR
Poly(A)
3'
Regions
OR Parts
A
B
C
Subregion A, B and C
Patterned: Synthetic
Open: Enzymatic/IVT
Chimeric subregion
Hemimer Region

FIGURE 2

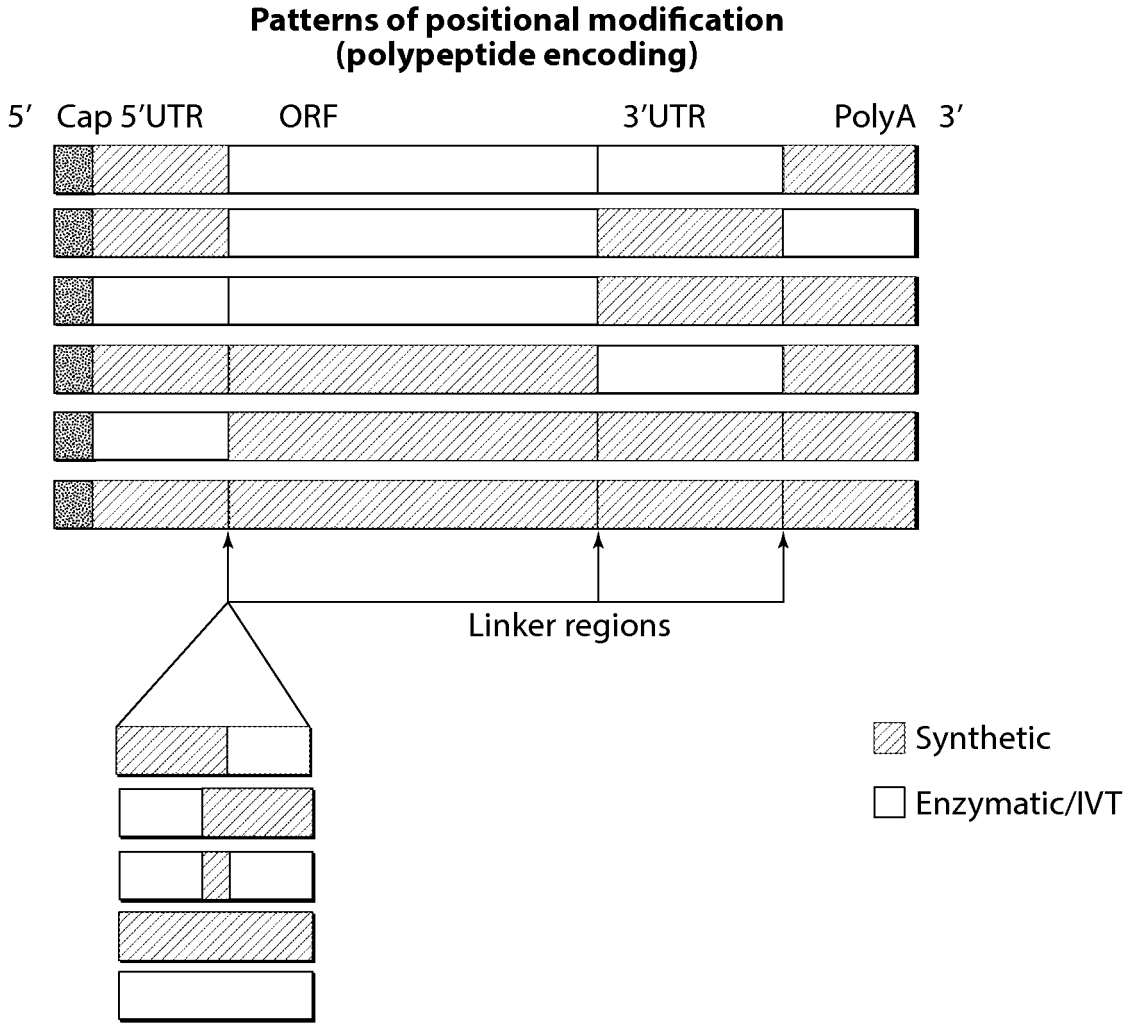

Patterns of positional modification
(polypeptide encoding)
5′
Cap
5′UTR
ORF
3′UTR
PolyA
3′
Linker regions
Synthetic
Enzymatic/IVT

FIGURE 3

Patterns of positional modification

A	(L)	B	(L)	C	(L)

$5'[NNNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 $[XXXXXXXXXXXX_p]_z$ L3 3'

$5'[NNNNN_n]_x$ L1 $[XXXXXXXXXXXXXXX_o]_y$ L2 $[XXXXXXXXXXXX_p]_z$ L3 3'

$5'[XXXXXX_n]_x$ L1 $[XXXXXXXXXXXXXXX_o]_y$ L2 $[XXXXXXXXXXXX_p]_z$ L3 3'

$5'[NNNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 $[XXXXXXXXXXXX_p]_z$ L3 3'

A, B, C- Region or Part of chimeric polynucleotide
N-nucleoside
n, o, p-number of nucleosides
x, y, z-number of regions
X-selective placement nucleoside
L-linker (optional)

FIGURE 4

Blocked or structured 3' termini

A	(L)	B	(L)	C	(L)

$5'[NNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 $[XXXXXXXXXXXX_p]_z$ L3 3'

$5'[NNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 $[XXXXXXXXXXXX_p]_z$ K 3'

$5'[NNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 [XXXXX**XX**XXXXXXXXX X_X

3' [XXXXXXXXXXX X

$5'[NNNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 [XXXX**XXX**XXXXXXXX $\begin{matrix} L & \\ & L \end{matrix}$ =L3

3' XXXXXXXXXX $\begin{matrix} & L \\ L & \end{matrix}$

$5'[NNNNN_n]_x$ L1 $[NNNNNNNNNNNN_o]_y$ L2 [XXXX**XXX**XXXXXXXX $\begin{matrix} L & \\ & L \end{matrix}$ =L3

X X XXXXXXXXXX $\begin{matrix} & L \\ L & \end{matrix}$

X X XXXXXXXXXX 3'

A, B, C- Region or Part of chimeric polynucleotide
N-nucleoside
n, o, p-number of nucleosides
x, y, z-number of regions
X-selective placement nucleoside
K-non-nucleosidic moiety or conjugate
L-linker (optional)

FIGURE 5

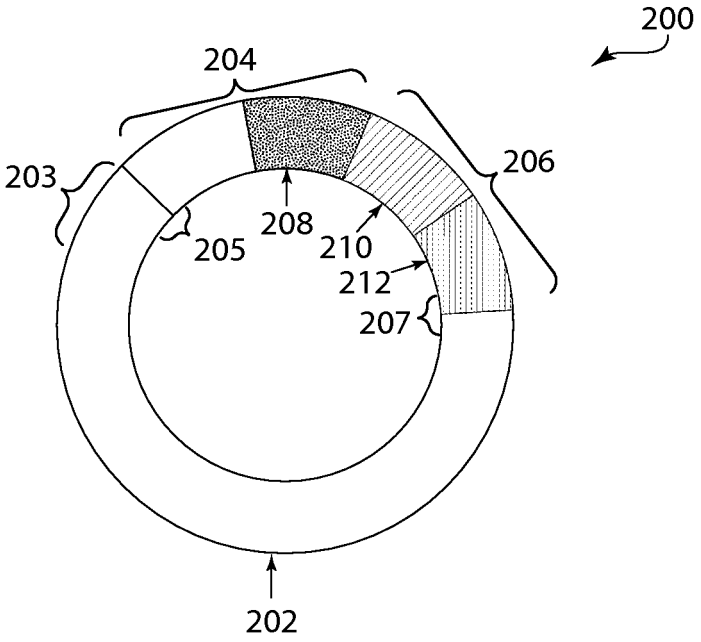


FIGURE 6A

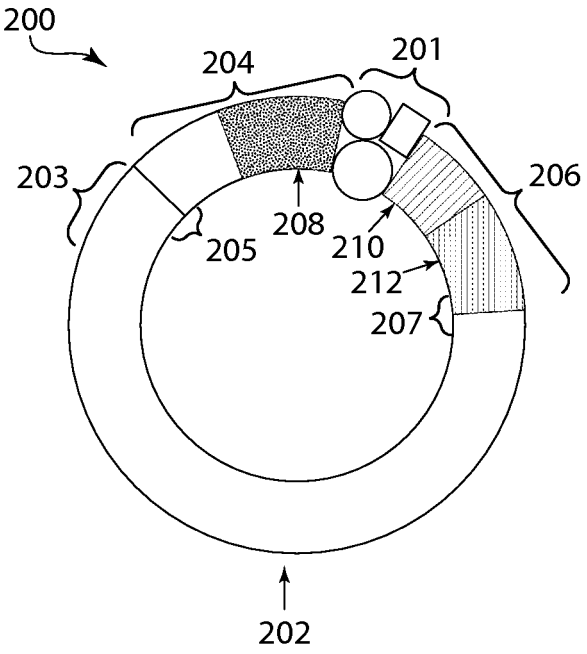


FIGURE 6B

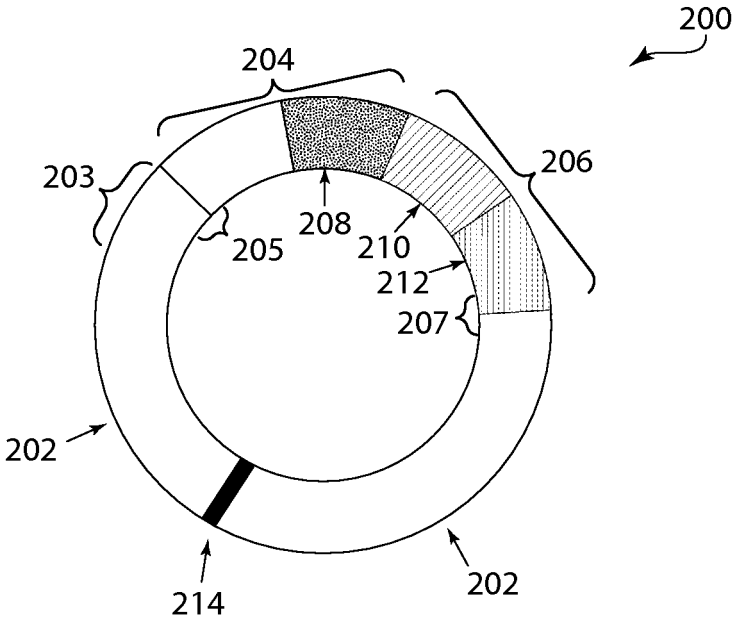


FIGURE 7A

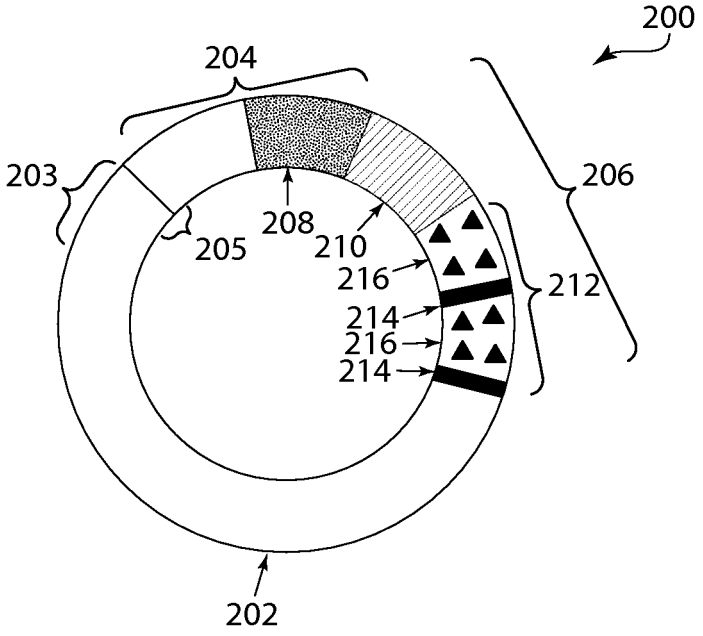


FIGURE 7B

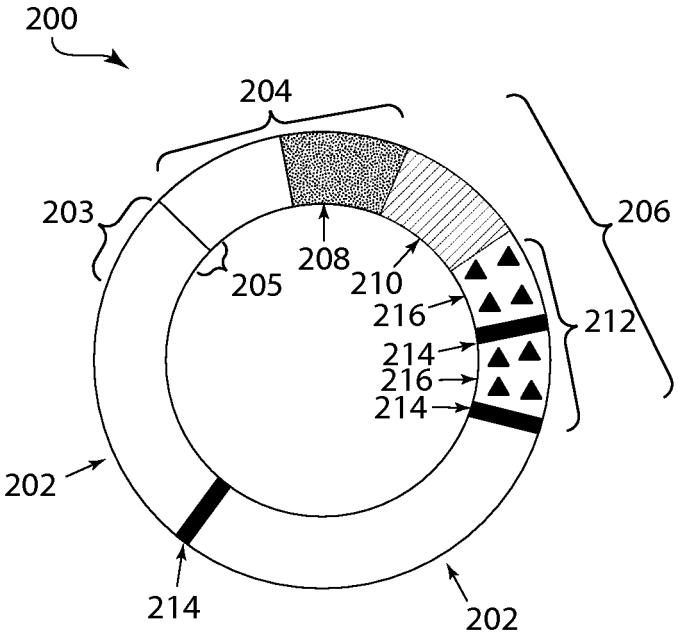


FIGURE 8A

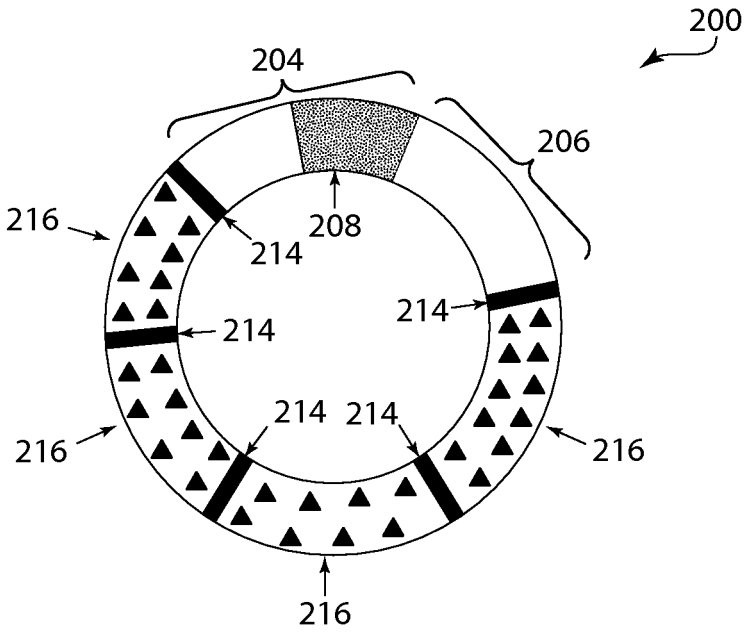


FIGURE 8B

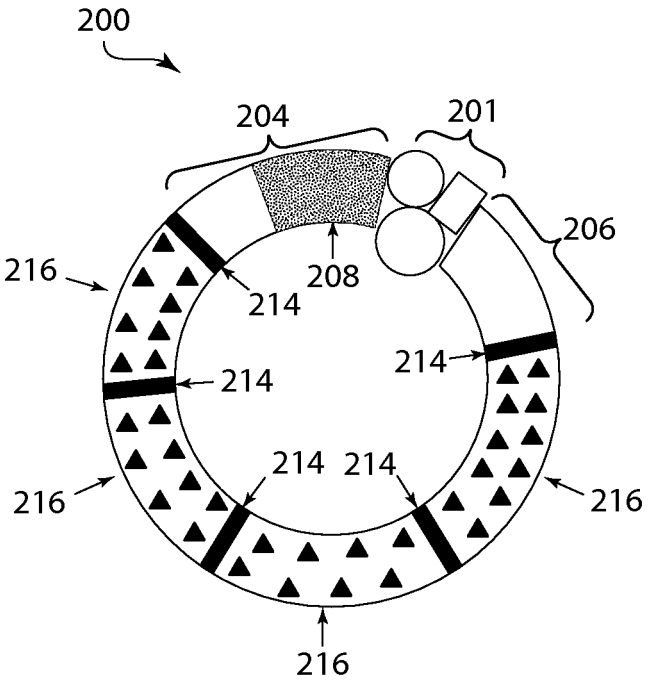


FIGURE 9

Dosing & Clinical assessment

	Control	Protein Vaccine	mRNA H1N1 IM	mRNA H1N1 ID	Positive control
mRNA dose	–	–	8-10µg	8-10µg	80µg
Health Score	7	2	1	2	2
Average weight loss	>25%	10%	<6%	8-10%	8-10%
Lethality	100%	0%	0%	0%	0%

HA neutralization titers

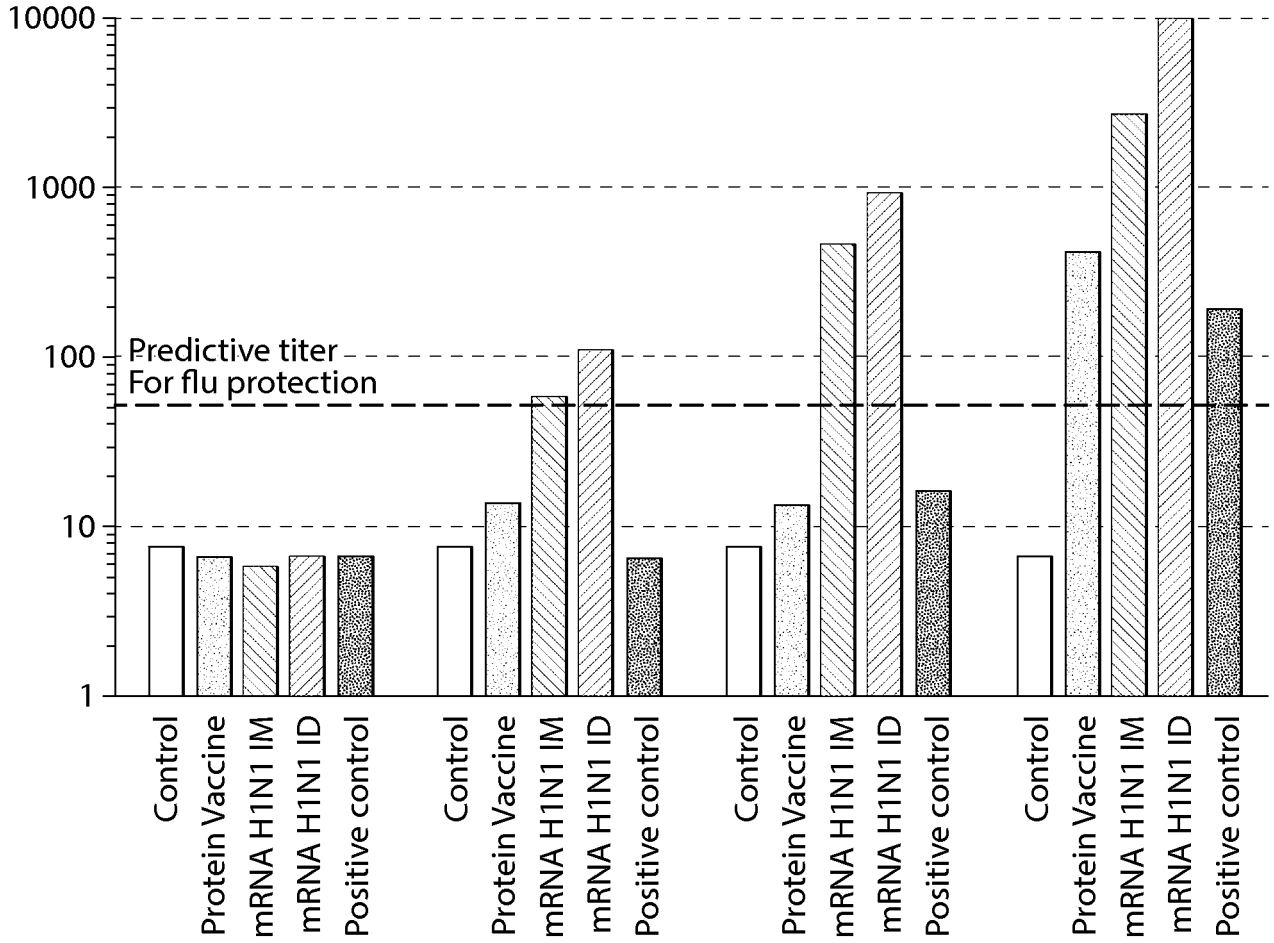


FIGURE 10

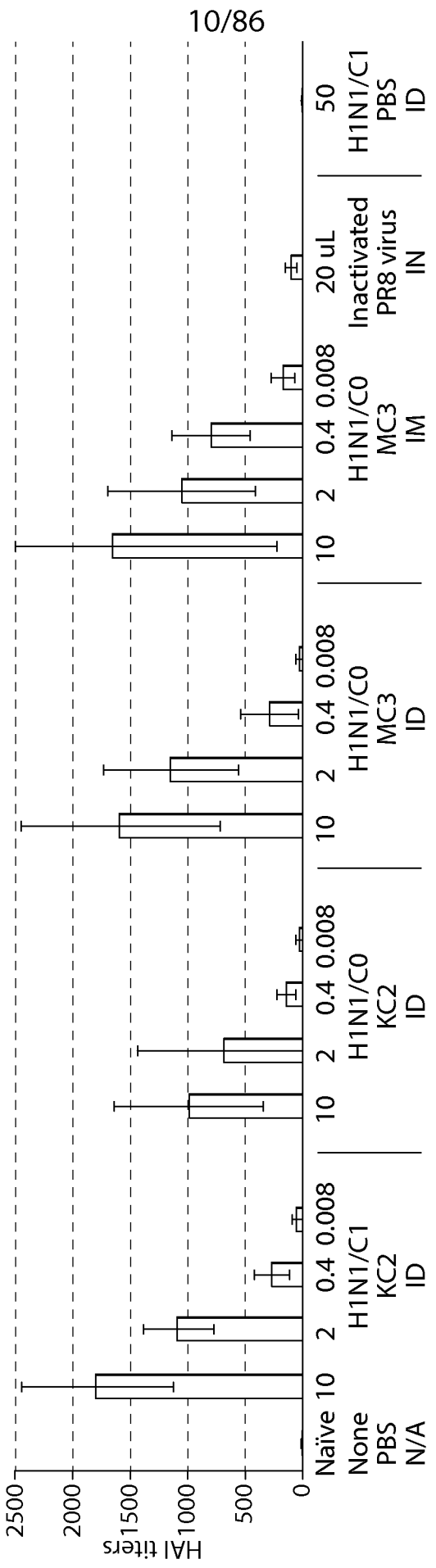

HAI titers
2500
2000
1500
1000
500
0
Naïve 10
None
PBS
N/A
2
H1N1/C1
KC2
ID
0.4 0.008
10
2
H1N1/C0
KC2
ID
0.4 0.008
10
2
H1N1/C0
MC3
ID
0.4 0.008
10
2
H1N1/C0
MC3
IM
0.4 0.008
20 uL
Inactivated
PR8 virus
IN
50
H1N1/C1
PBS
ID

FIGURE 11

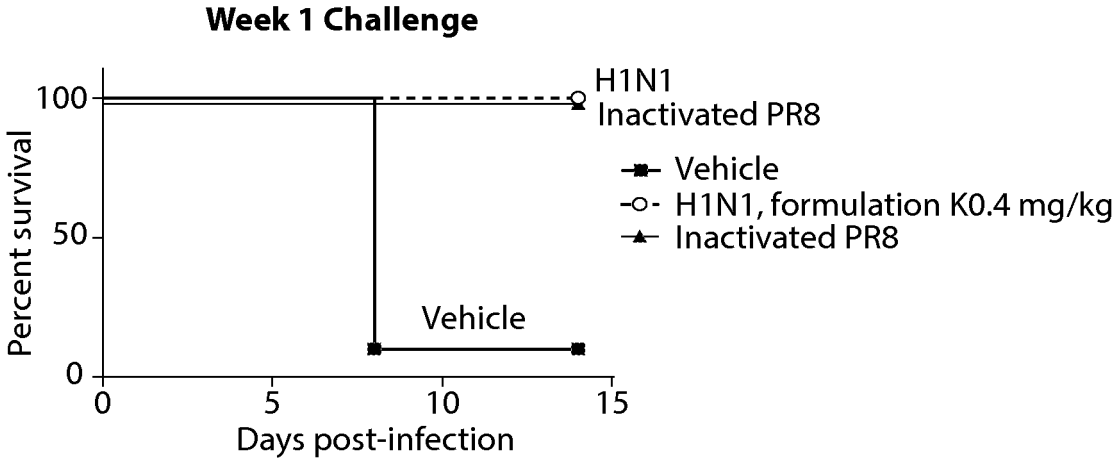


FIGURE 12A

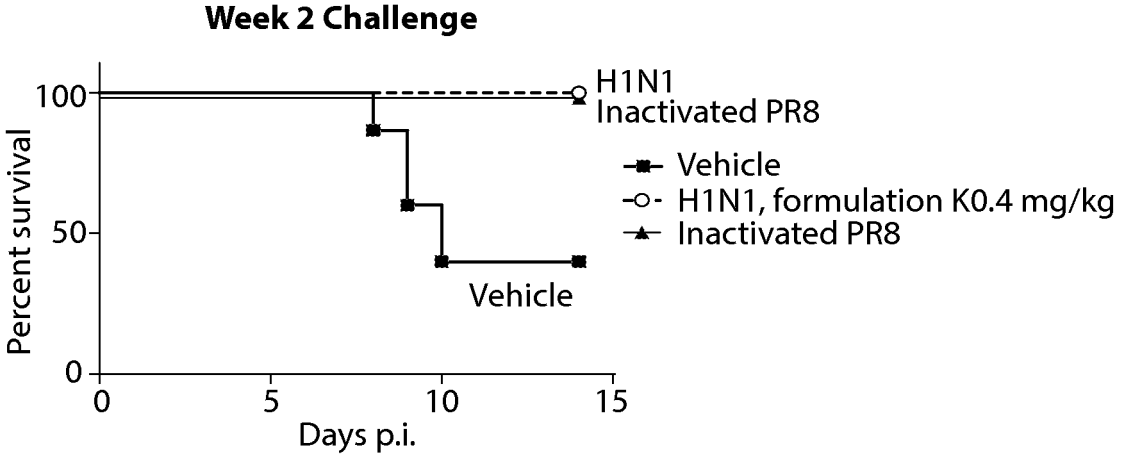


FIGURE 12B

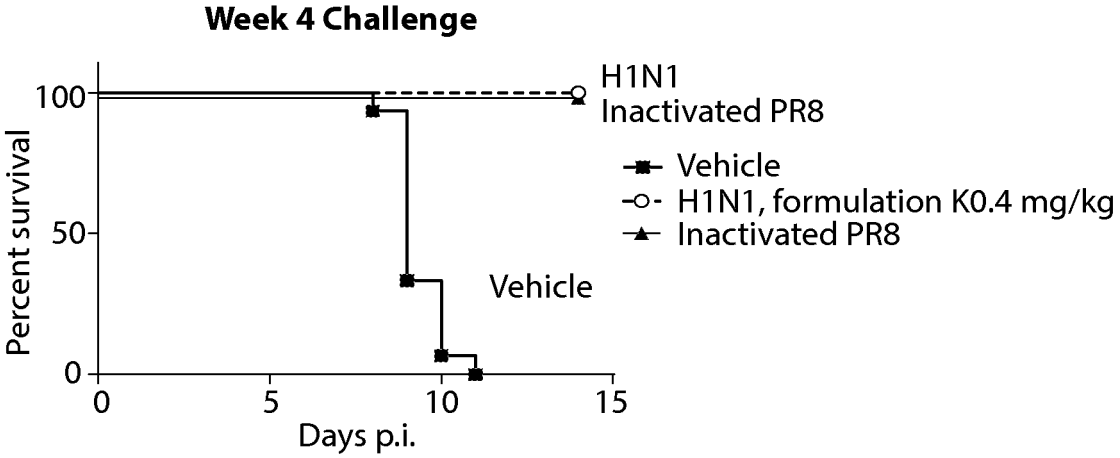


FIGURE 12C

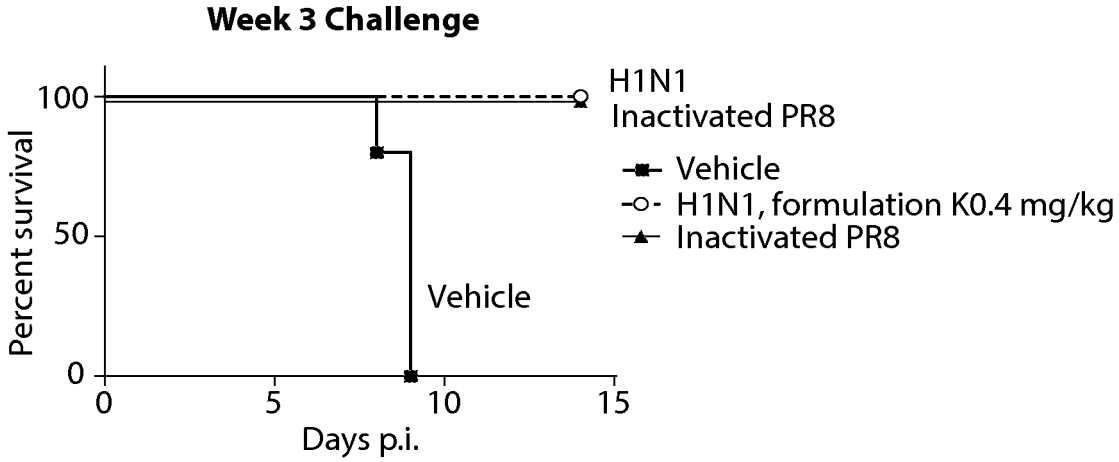


FIGURE 12D

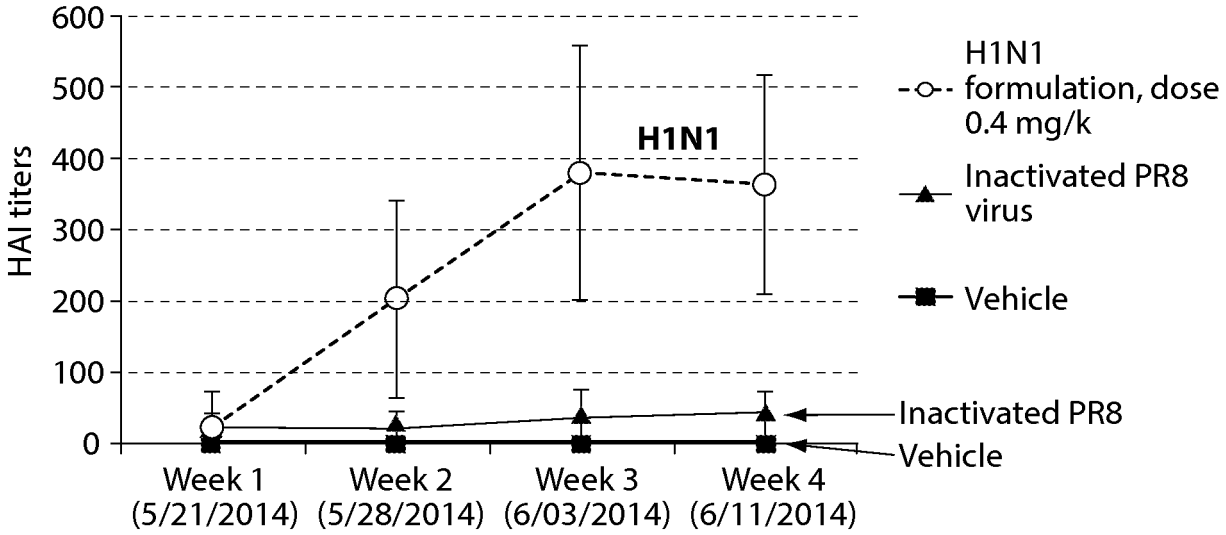

600
500
400
300
200
100
0
HAI titers
H1N1
Week 1 (5/21/2014)
Week 2 (5/28/2014)
Week 3 (6/03/2014)
Week 4 (6/11/2014)
H1N1 formulation, dose 0.4 mg/k
Inactivated PR8 virus
Vehicle
Inactivated PR8
Vehicle

FIGURE 13

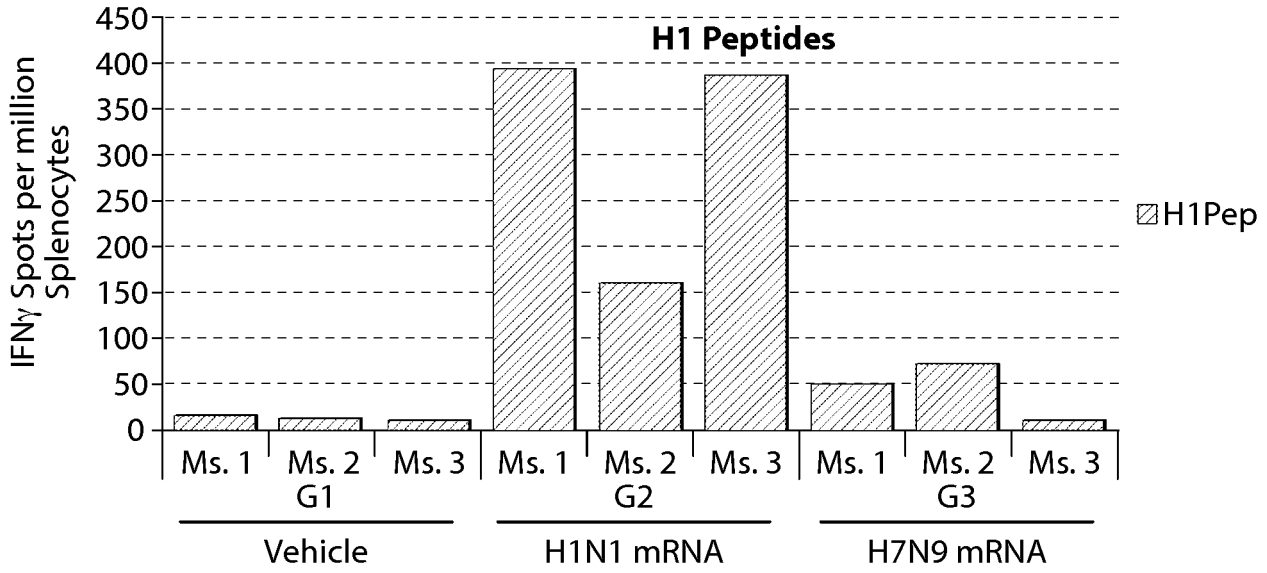


FIGURE 14A

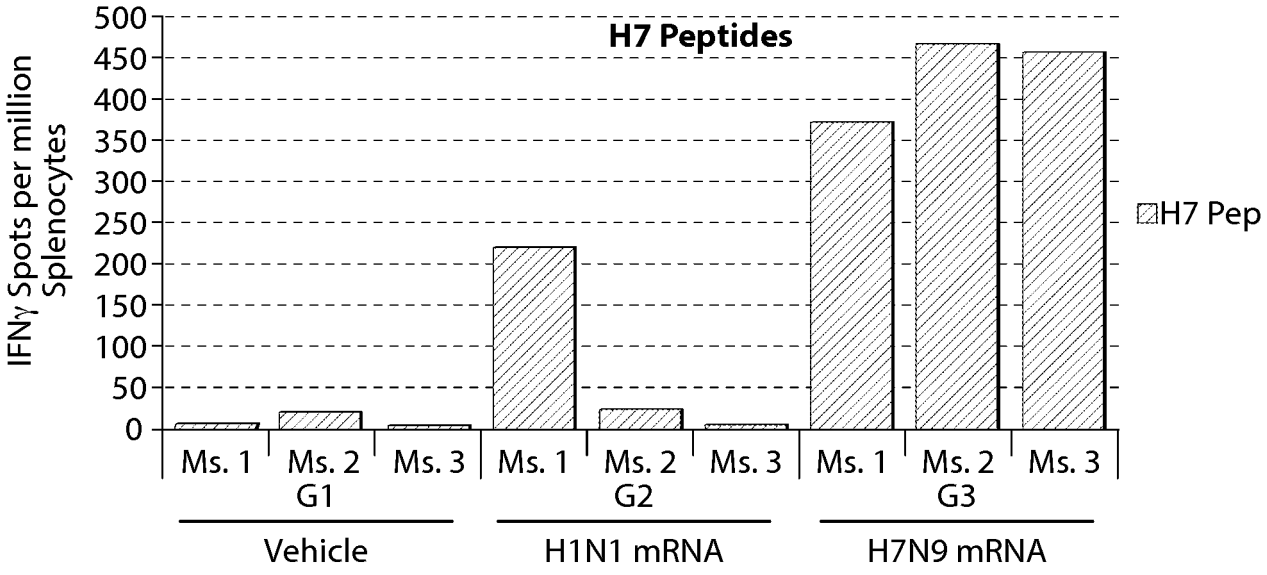


FIGURE 14B

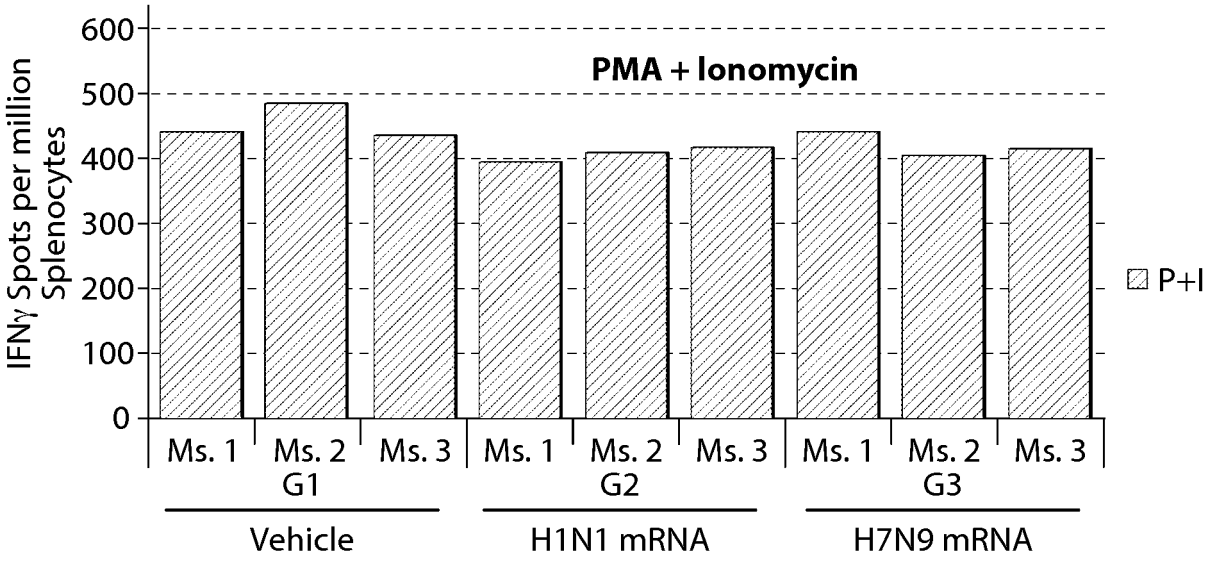

IFNγ Spots per million Splenocytes
600
500
400
300
200
100
0
PMA + Ionomycin
P+I
Ms. 1
Ms. 2
Ms. 3
G1
G2
G3
Vehicle
H1N1 mRNA
H7N9 mRNA

FIGURE 14C

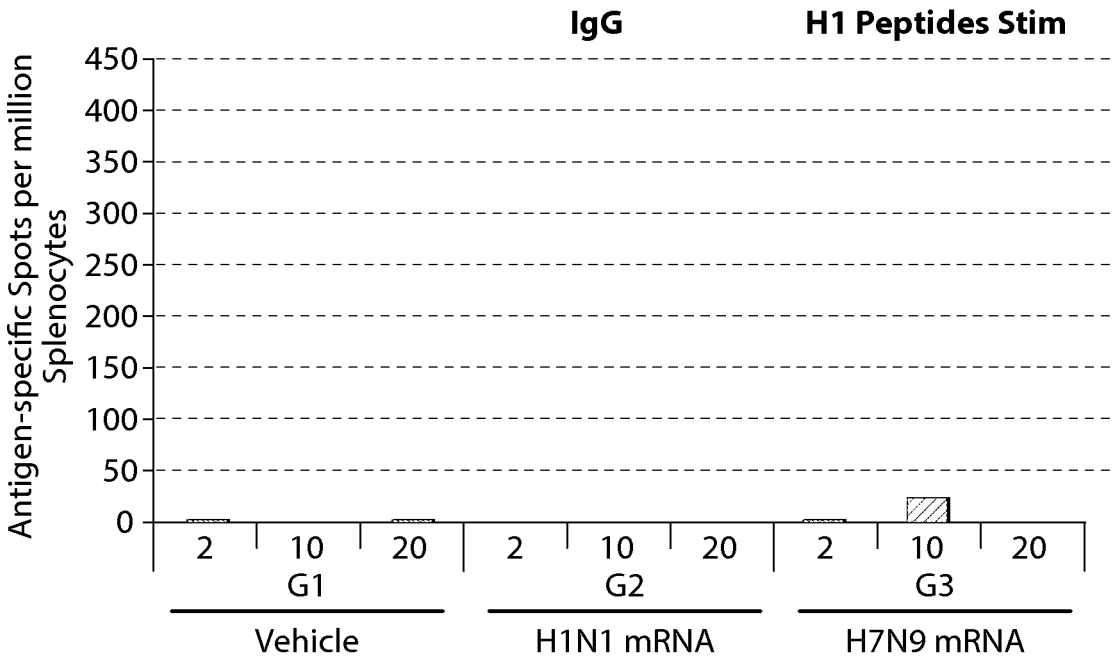


FIGURE 15A

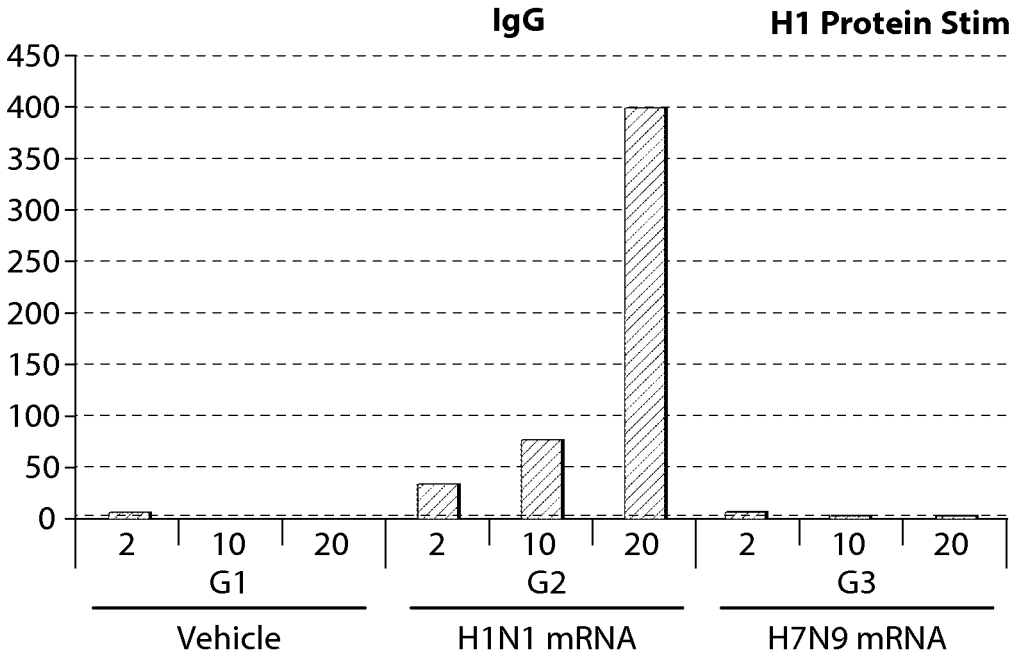


FIGURE 15B

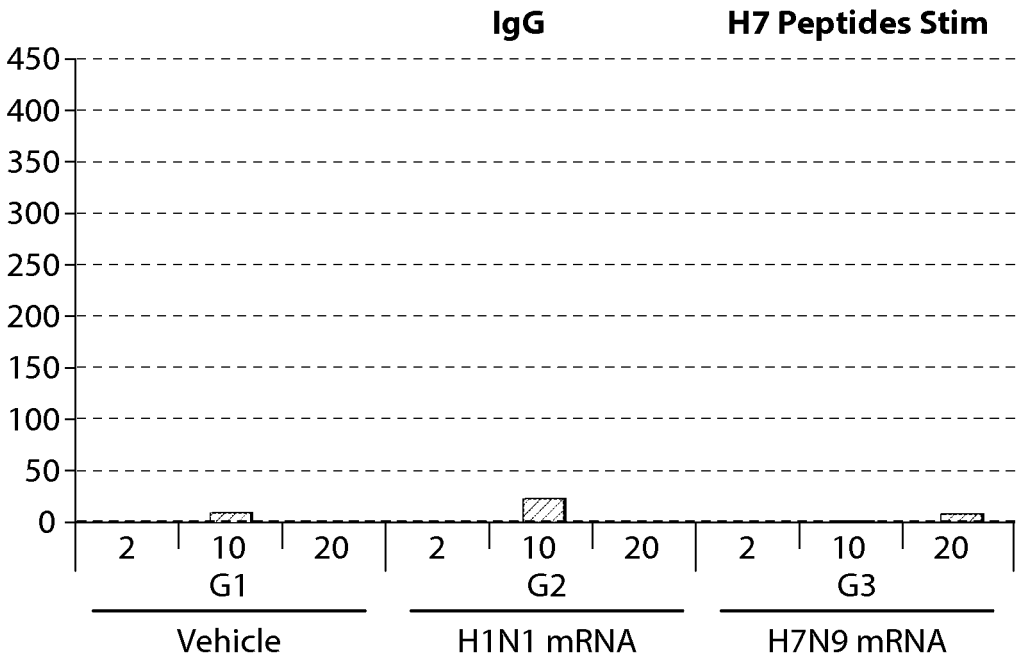


FIGURE 15C

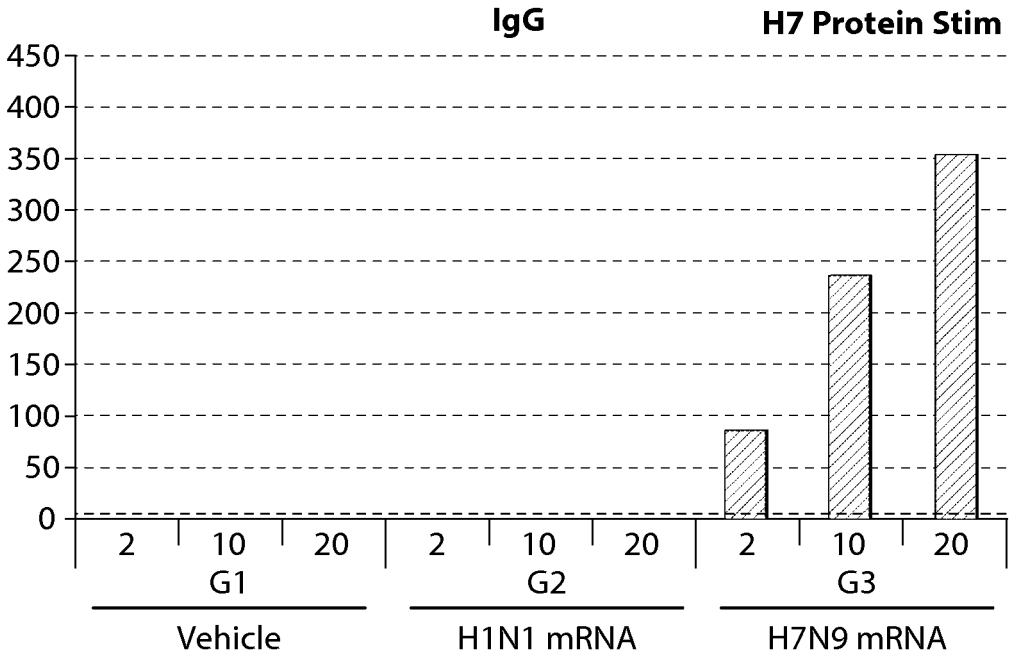


FIGURE 15D

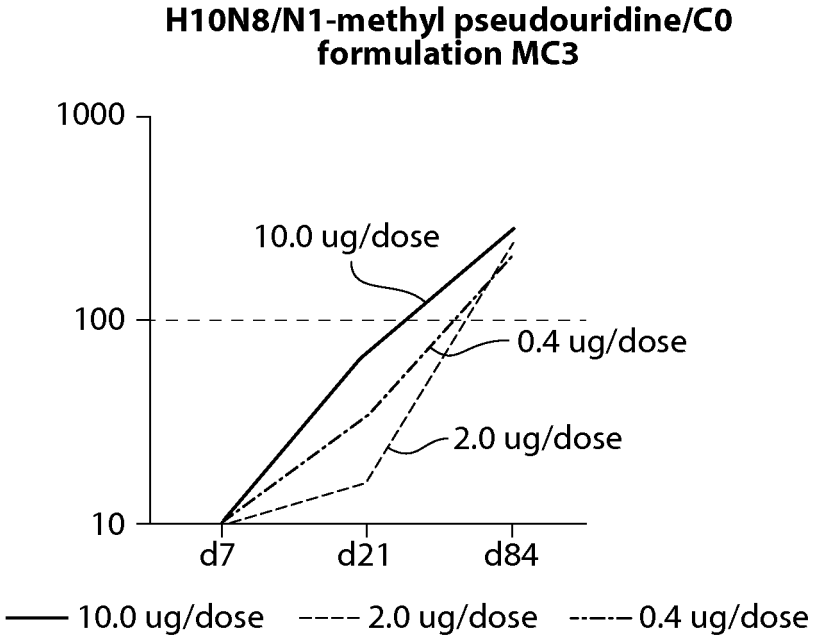


FIGURE 16

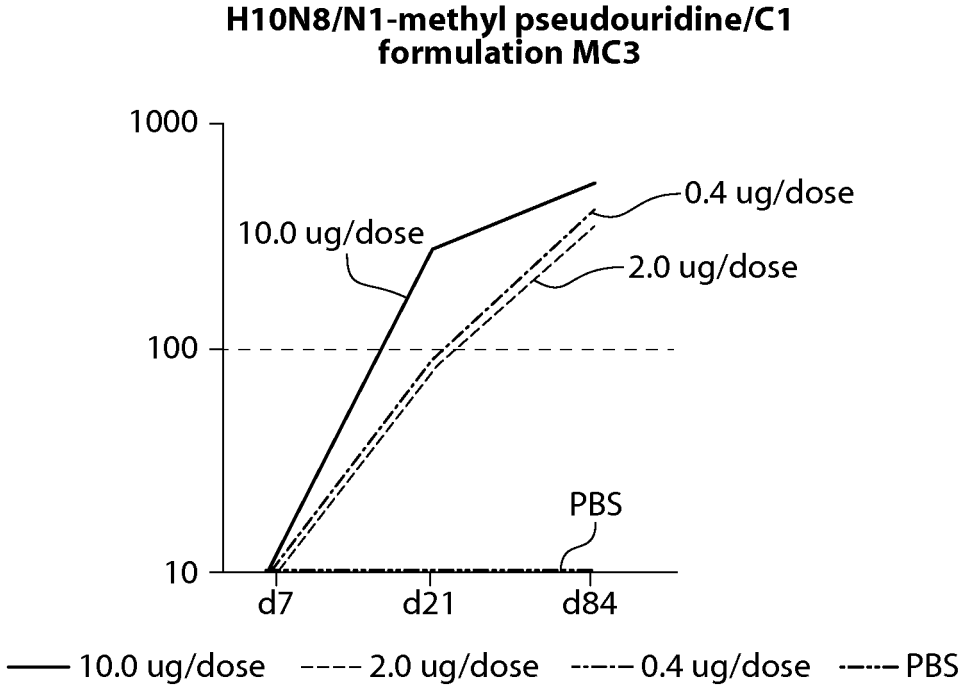


FIGURE 17

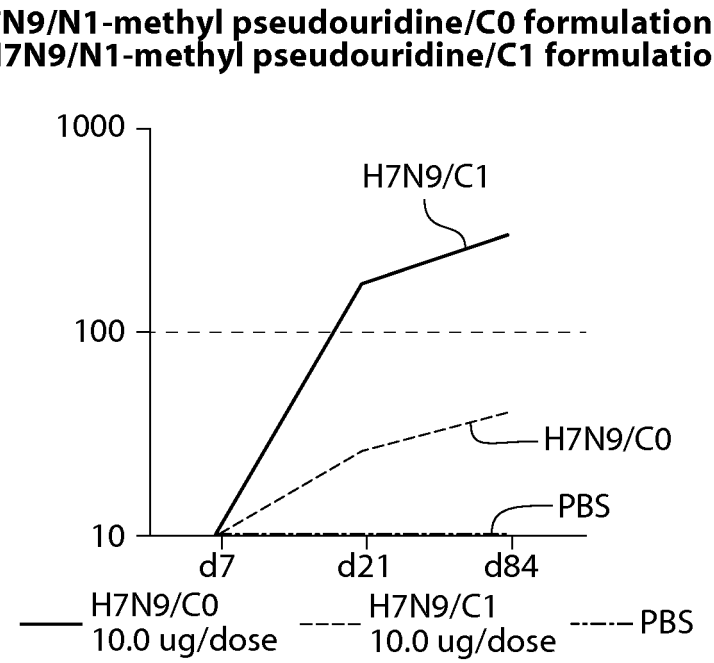


FIGURE 18

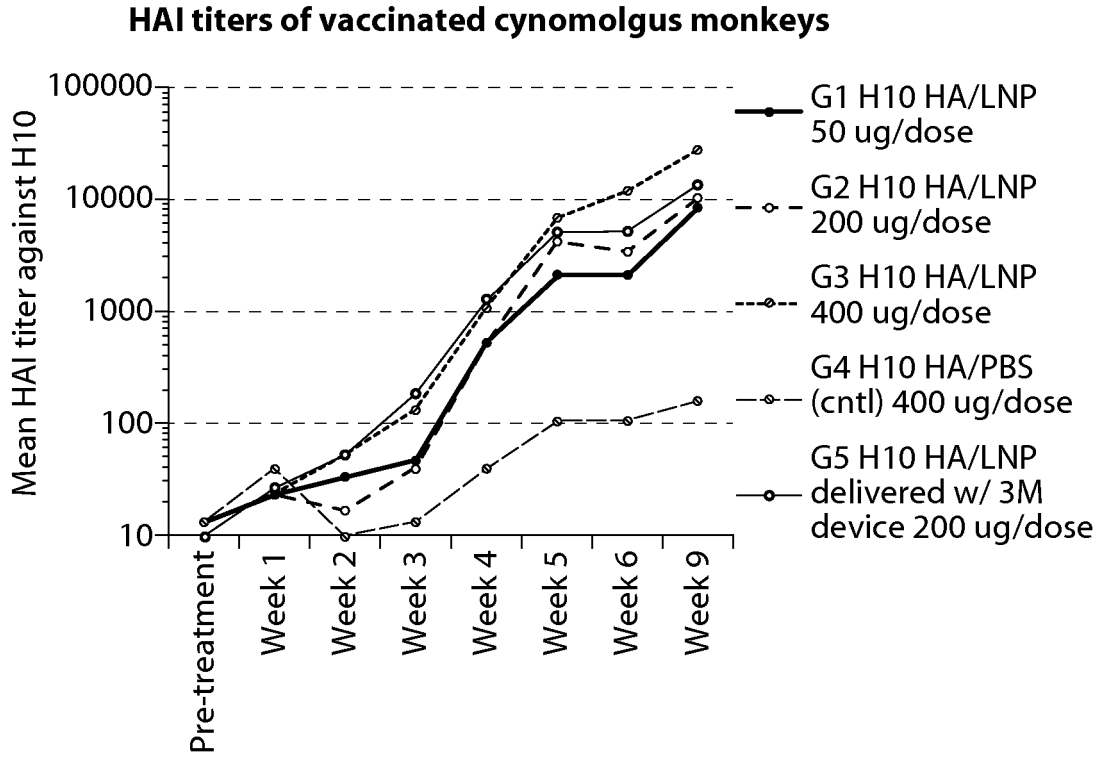


FIGURE 19

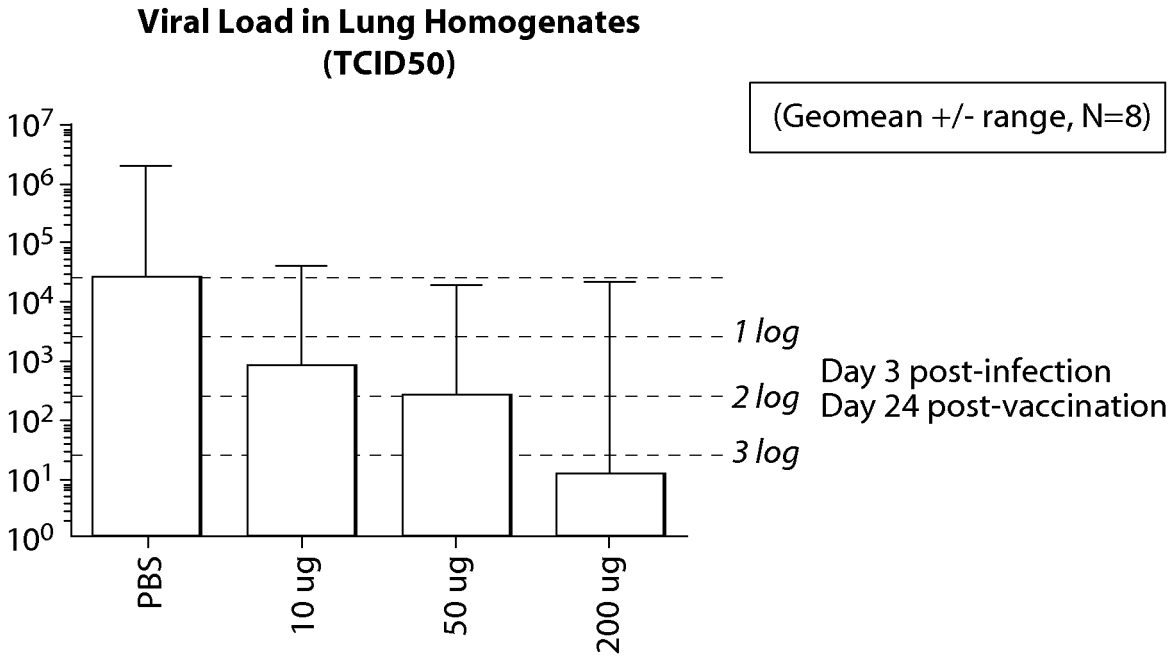

Viral Load in Lung Homogenates
(TCID50)
(Geomean +/- range, N=8)
10^7
10^6
10^5
10^4
10^3
10^2
10^1
10^0
1 log
2 log
3 log
Day 3 post-infection
Day 24 post-vaccination
PBS
10 ug
50 ug
200 ug

FIGURE 20

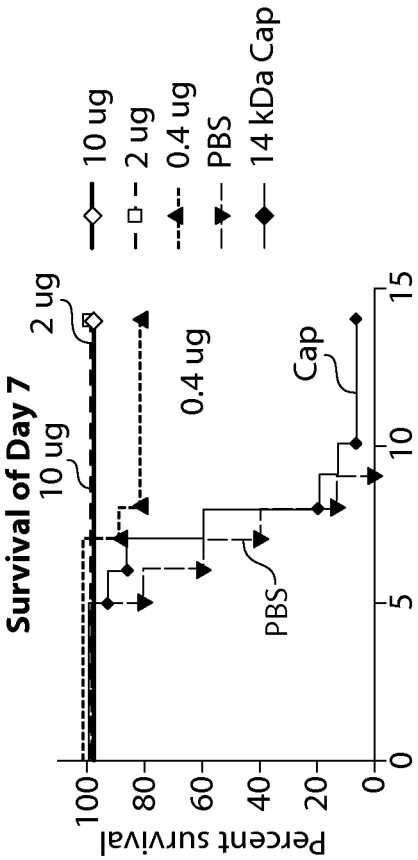


FIGURE 21A

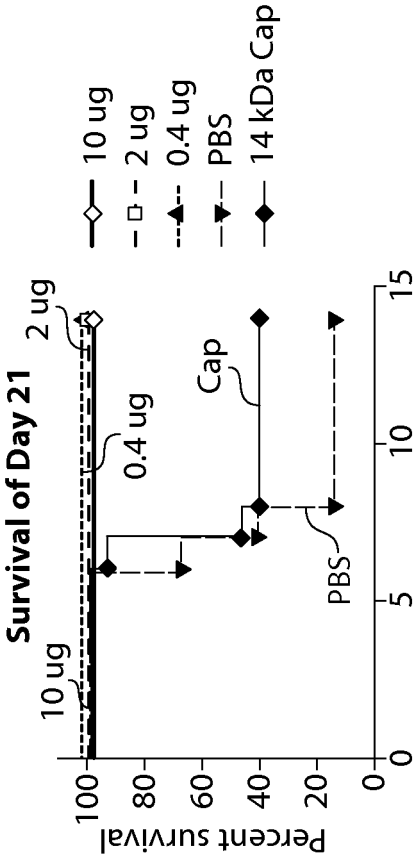


FIGURE 21B

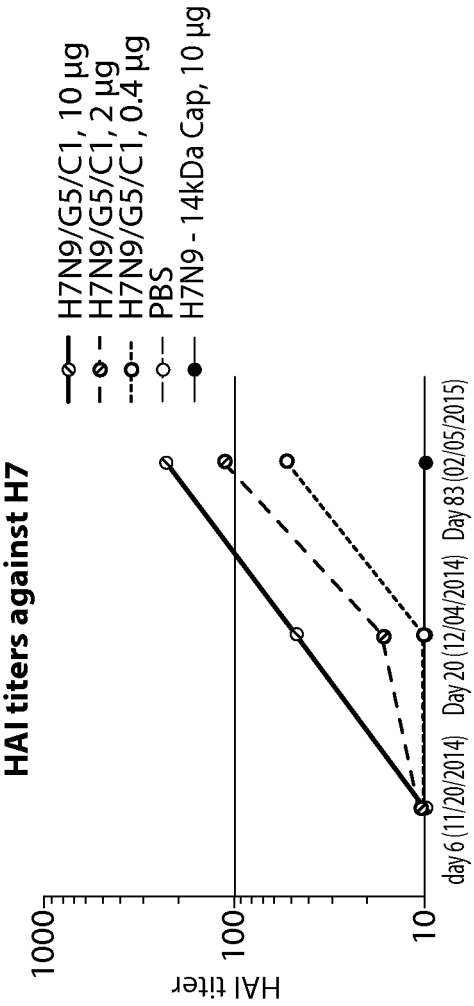


FIGURE 21D

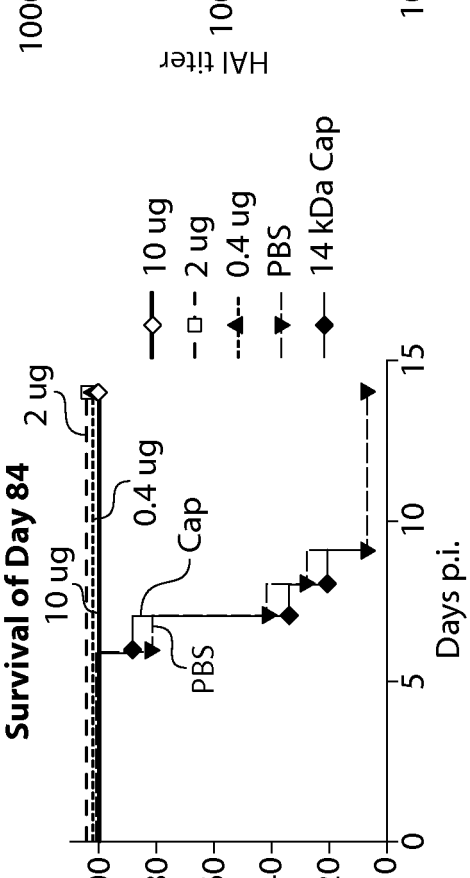


FIGURE 21C

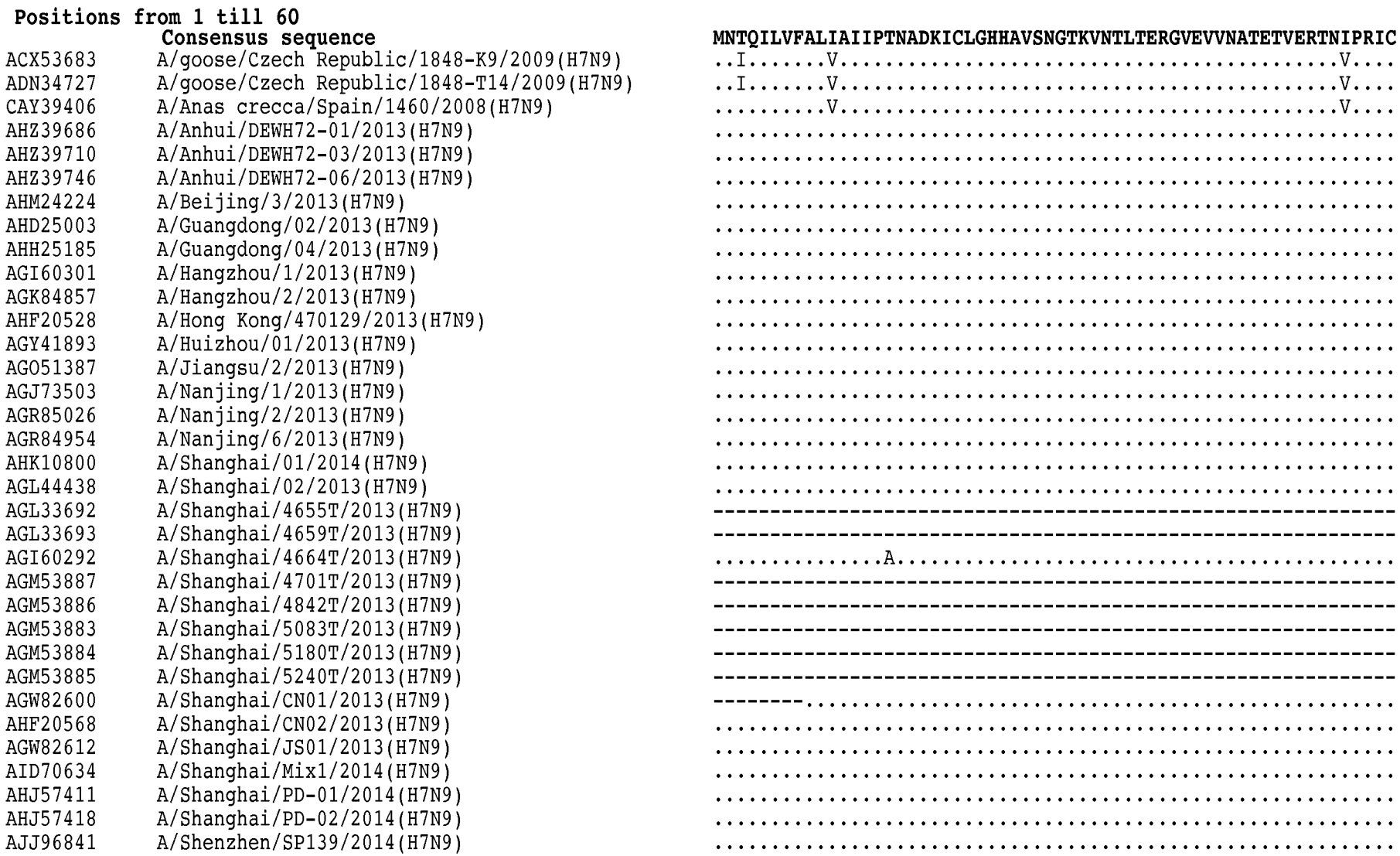

Positions from 1 till 60
Consensus sequence
MNTQILVFALIAIIPTNADKICLGHHAVSNGTKVNTLTERGVEVVNATETVERTNIPRIC
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)
AHM24224 A/Beijing/3/2013(H7N9)
AHD25003 A/Guangdong/02/2013(H7N9)
AHH25185 A/Guangdong/04/2013(H7N9)
AGI60301 A/Hangzhou/1/2013(H7N9)
AGK84857 A/Hangzhou/2/2013(H7N9)
AHF20528 A/Hong Kong/470129/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGO51387 A/Jiangsu/2/2013(H7N9)
AGJ73503 A/Nanjing/1/2013(H7N9)
AGR85026 A/Nanjing/2/2013(H7N9)
AGR84954 A/Nanjing/6/2013(H7N9)
AHK10800 A/Shanghai/01/2014(H7N9)
AGL44438 A/Shanghai/02/2013(H7N9)
AGL33692 A/Shanghai/4655T/2013(H7N9)
AGL33693 A/Shanghai/4659T/2013(H7N9)
AGI60292 A/Shanghai/4664T/2013(H7N9)
AGM53887 A/Shanghai/4701T/2013(H7N9)
AGM53886 A/Shanghai/4842T/2013(H7N9)
AGM53883 A/Shanghai/5083T/2013(H7N9)
AGM53884 A/Shanghai/5180T/2013(H7N9)
AGM53885 A/Shanghai/5240T/2013(H7N9)
AGW82600 A/Shanghai/CN01/2013(H7N9)
AHF20568 A/Shanghai/CN02/2013(H7N9)
AGW82612 A/Shanghai/JS01/2013(H7N9)
AID70634 A/Shanghai/Mix1/2014(H7N9)
AHJ57411 A/Shanghai/PD-01/2014(H7N9)
AHJ57418 A/Shanghai/PD-02/2014(H7N9)
AJJ96841 A/Shenzhen/SP139/2014(H7N9)

FIGURE 22-1

```
AJJ91909  A/Shenzhen/SP26/2014(H7N9)  ..........................................................
AJJ91945  A/Shenzhen/SP38/2014(H7N9)  .....A.....................................................
AJJ91885  A/Shenzhen/SP4/2014(H7N9)   ..........................................................
AJJ91957  A/Shenzhen/SP44/2014(H7N9)  ..........................................................
AJJ91969  A/Shenzhen/SP48/2014(H7N9)  ..........................................................
AJJ95596  A/Shenzhen/SP58/2014(H7N9)  .....A.....................................................
AJJ95632  A/Shenzhen/SP62/2014(H7N9)  ..........................................................
AJJ95620  A/Shenzhen/SP75/2014(H7N9)  ..........................................................
AGR84942  A/Suzhou/5/2013(H7N9)      ..........................................................
AGL43637  A/Taiwan/1/2013(H7N9)      ..........................................................
AGL95088  A/Taiwan/S02076/2013(H7N9) ------.....................................................
AGL95098  A/Taiwan/T02081/2013(H7N9) ------.....................................................
AGN69474  A/Wuxi/1/2013(H7N9)        ..........................................................
AGN69462  A/Wuxi/2/2013(H7N9)        ..........................................................
AGR84990  A/Wuxi/3/2013(H7N9)        ..........................................................
AGR84978  A/Wuxi/4/2013(H7N9)        ..........................................................
AGO02477  A/Xuzhou/1/2013(H7N9)      ..........................................................
AGU02230  A/Zhejiang/DTID-ZJU05/2013(H7N9) ----.....................G.....................
AGU02233  A/Zhejiang/DTID-ZJU08/2013(H7N9) ------.....................G.....F.....
AHA11500  A/Zhejiang/DTID-ZJU10/2013(H7N9) --.....................................
AIN76383  A/Zhejiang/LS01/2014(H7N9)  .....V.....................................
AGR85002  A/Zhenjiang/1/2013(H7N9)    ..........................................................
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ADK71148  A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9) .....ALIACML.GAKG.....A.....I....X.....TA..KK..
ABS89409  A/blue-winged teal/Ohio/566/2006(H7N9) .....ALIACML.GAKG.....A.....I.....TA..KK..
AJJ95048  A/chicken/Dongguan/1009/2014(H7N9) ..........................................................
AJJ94134  A/chicken/Dongguan/1051/2014(H7N9) .....L....................................................
AJJ94158  A/chicken/Dongguan/1075/2014(H7N9) ..........................................................
AJJ95572  A/chicken/Dongguan/1100/2014(H7N9) ..........................................................
AJJ94182  A/chicken/Dongguan/1177/2014(H7N9) ..........................................................
AJJ95171  A/chicken/Dongguan/1314/2014(H7N9) ..........................................................
AJJ94254  A/chicken/Dongguan/1374/2014(H7N9) ..........................................................
AJJ95227  A/chicken/Dongguan/1382/2014(H7N9) ..........................................................
AJJ95251  A/chicken/Dongguan/1401/2014(H7N9) ..........................................................
AJJ94356  A/chicken/Dongguan/1456/2014(H7N9) ..........................................................
AJJ94396  A/chicken/Dongguan/1494/2014(H7N9) ..........................................................
AJJ95346  A/chicken/Dongguan/1548/2014(H7N9) ..........................................................
AJJ93857  A/chicken/Dongguan/169/2014(H7N9)  ..........................................................
AJJ95382  A/chicken/Dongguan/1690/2014(H7N9) ..........................................................
```

FIGURE 22-2

```
AJJ93869  A/chicken/Dongguan/173/2014(H7N9)  ..................................................
AJJ93881  A/chicken/Dongguan/189/2014(H7N9)  ..................................................
AJJ94606  A/chicken/Dongguan/191/2014(H7N9)  ..................................................
AJJ90661  A/chicken/Dongguan/2912/2013(H7N9) ..................................................
AJJ90951  A/chicken/Dongguan/3544/2013(H7N9) ..................................................
AJJ91155  A/chicken/Dongguan/4037/2013(H7N9) ..................................................
AJJ92031  A/chicken/Dongguan/4064/2013(H7N9) ..................................................
AJJ91993  A/chicken/Dongguan/4119/2013(H7N9) ..................................................
AJJ93907  A/chicken/Dongguan/449/2014(H7N9)  ..................................................
AJJ93931  A/chicken/Dongguan/536/2014(H7N9)  ..................................................
AJJ93943  A/chicken/Dongguan/568/2014(H7N9)  ..................................................
AJJ94754  A/chicken/Dongguan/748/2014(H7N9)  ..................................................
AJJ94838  A/chicken/Dongguan/835/2014(H7N9)  ..................................................
AJJ94862  A/chicken/Dongguan/843/2014(H7N9)  ..................................................
AJJ94886  A/chicken/Dongguan/851/2014(H7N9)  .....A............................................
AJJ94910  A/chicken/Dongguan/874/2014(H7N9)  ..................................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)  ..................................................
AJJ91402 A/chicken/Huzhou/4045/2013(H7N9)   ..................................................
AJJ91476 A/chicken/Huzhou/4076/2013(H7N9)   ..................................................
AJJ93051 A/chicken/Jiangxi/10573/2014(H7N9)  ..............V...................................
AJJ96552 A/chicken/Jiangxi/12206/2014(H7N9)  ..................................................
AJJ96684 A/chicken/Jiangxi/13207/2014(H7N9)  ..........I.......................................
AJJ96720 A/chicken/Jiangxi/13220/2014(H7N9)  ..................................................
AJJ96732 A/chicken/Jiangxi/13223/2014(H7N9)  ..................................................
AJJ97267 A/chicken/Jiangxi/13252/2014(H7N9)  ..................................................
AJJ97291 A/chicken/Jiangxi/13493/2014(H7N9)  ..................................................
AJJ96889 A/chicken/Jiangxi/13496/2014(H7N9)  ..................................................
AJJ96901 A/chicken/Jiangxi/13502/2014(H7N9)  ..................................................
AJJ97331 A/chicken/Jiangxi/13512/2014(H7N9)  ..................................................
AJJ96925 A/chicken/Jiangxi/13513/2014(H7N9)  ..................................................
AJJ97373 A/chicken/Jiangxi/13521/2014(H7N9)  ..................................................
AJJ97443 A/chicken/Jiangxi/13530/2014(H7N9)  ..................................................
AJJ97582 A/chicken/Jiangxi/14023/2014(H7N9)  ..................................................
AJJ97697 A/chicken/Jiangxi/14517/2014(H7N9)  ..................................................
AJJ97709 A/chicken/Jiangxi/14518/2014(H7N9)  ..............A...................................
AJJ97745 A/chicken/Jiangxi/14554/2014(H7N9)  ..................................................
AJJ97899 A/chicken/Jiangxi/15524/2014(H7N9)  ..................................................
AJJ96817 A/chicken/Jiangxi/9513/2014(H7N9)   ..............V...................................
AJJ93027 A/chicken/Jiangxi/9558/2014(H7N9)   ..............V...................................
```

FIGURE 22-3

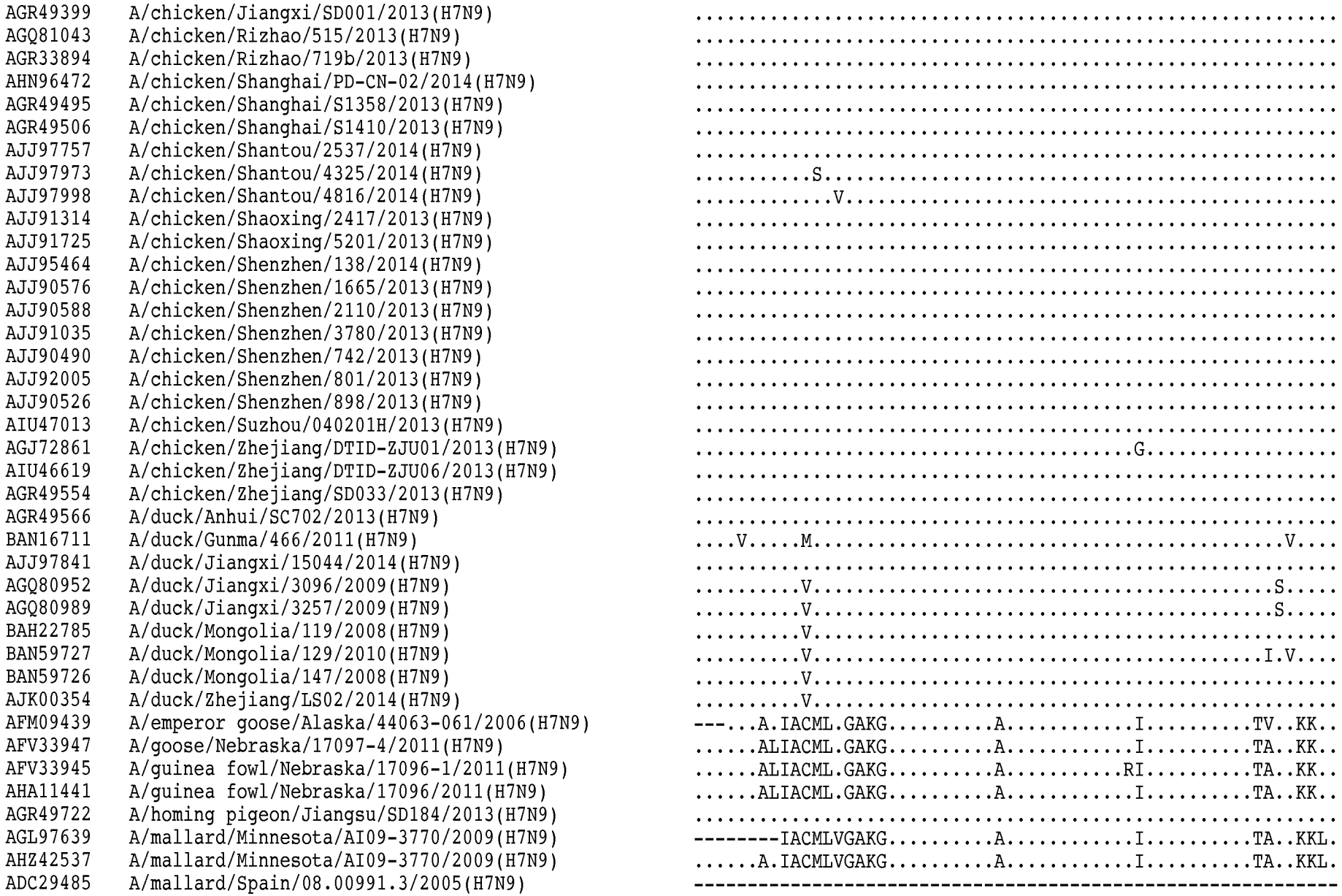

AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)
AJJ97757 A/chicken/Shantou/2537/2014(H7N9)
AJJ97973 A/chicken/Shantou/4325/2014(H7N9)
AJJ97998 A/chicken/Shantou/4816/2014(H7N9)
AJJ91314 A/chicken/Shaoxing/2417/2013(H7N9)
AJJ91725 A/chicken/Shaoxing/5201/2013(H7N9)
AJJ95464 A/chicken/Shenzhen/138/2014(H7N9)
AJJ90576 A/chicken/Shenzhen/1665/2013(H7N9)
AJJ90588 A/chicken/Shenzhen/2110/2013(H7N9)
AJJ91035 A/chicken/Shenzhen/3780/2013(H7N9)
AJJ90490 A/chicken/Shenzhen/742/2013(H7N9)
AJJ92005 A/chicken/Shenzhen/801/2013(H7N9)
AJJ90526 A/chicken/Shenzhen/898/2013(H7N9)
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJJ97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)

FIGURE 22-4

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AHZ41929 A/mallard/Sweden/1621/2002(H7N9)                    .........V....I.....................................V....
AAY46211 A/mallard/Sweden/91/2002(H7N9)                      .........V....I.....................................V....
AGY42258 A/mallard/Sweden/91/2002(H7N9)                      --------...V....I.....................................V....
AGE08098 A/northern shoverl/Mississippi/11OS145/2011(H7N9)   ......TLIACML.GAKG.........A...........I.........TA..KK..
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)                  ..................................................
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)                ......A.IACMLVGVRG.........A.........K.I.........SA..KK..
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)       ......A.IACML.GI.G.........A...........I.........TA..K...
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)     ......A.IACMLVGVRG.........A.........K.I.........SA..KK..
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)           ..................................................
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)           ..................................................
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)           ..............................................S.....
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)           ..................................................
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)            ..................................................
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)           ..........T.......................................
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)           ........................P.........................
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)           ..................................................
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)           ..................................................
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)            ..................................................
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)            ..................................................
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)            ............V.....................................
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)            ..................................................
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)            ..................................................
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)             -----.....V.....................................V....
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)               ..................................................
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                     ........IACVLVEAKG.........V.........K.I.........TA..GK..
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)               ......ALIACML.GAKG.........A...........I.........TA.VKK..
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)                 ......ALIACML.GAKG.........A...........I.........TA.VKK..
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)                 ......ALIACML.GAKG.........A...........I.........TA.VKK..
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)                 ......ALIACML.GAKG.........A...........I.........TA.VKK..
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)                 ......ALIACMLVG.KG.........A...........I.........TA..KK..
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)                 ......ALIACMLVG.KG.........A...........I.........TA..KK..
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)                 ---------ACVLVEAKG.........V.........K.I.........TA..GK..
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)                 ........IACVLVEAKG.........V.........K.I.........TA..GK..
AEK84760 A/wild bird/Korea/A14/2011(H7N9)                    --------------------------------------------------
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                     ----......V.......N..G.....................F.........V....
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                     ----......V.......N..G.....................FF.......P..V....
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)                ..........V.....................................V....
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)               ..........V.....................................V....
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)               ..........V.....................................V....
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)               ..........V.....................................V....
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FIGURE 22-5

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AGG53476  A/wild duck/Korea/SH19-27/2010(H7N9)              ..........V............................................V....
AGG53487  A/wild duck/Korea/SH19-50/2010(H7N9)              ..........V............................................V....
AGG53520  A/wild duck/Korea/SH20-27/2008(H7N9)              ---.......V............................................V....
AEM98291  A/wild duck/Mongolia/1-241/2008(H7N9)             ---S......V............................................V....
AGR49770  A/wild pigeon/Jiangsu/SD001/2013(H7N9)            ............................................................

Positions from 61 till 120
          Consensus sequence                                SKGKRTVDLGQCGLLGTITGPPQCDQFLEFSADLIIERREGSDVCYPGKFVNEEALRQIL
ACX53683  A/goose/Czech Republic/1848-K9/2009(H7N9)         .......................................G....................
ADN34727  A/goose/Czech Republic/1848-T14/2009(H7N9)        .......................................G....................
CAY39406  A/Anas crecca/Spain/1460/2008(H7N9)               ............................................................
AHZ39686  A/Anhui/DEWH72-01/2013(H7N9)                      ............................................................
AHZ39710  A/Anhui/DEWH72-03/2013(H7N9)                      ............................................................
AHZ39746  A/Anhui/DEWH72-06/2013(H7N9)                      ............................................................
AHM24224  A/Beijing/3/2013(H7N9)                            ...................................................K........
AHD25003  A/Guangdong/02/2013(H7N9)                         ....K.......................................................
AHH25185  A/Guangdong/04/2013(H7N9)                         ....K.......................................................
AGI60301  A/Hangzhou/1/2013(H7N9)                           ............................................................
AGK84857  A/Hangzhou/2/2013(H7N9)                           ............................................................
AHF20528  A/Hong Kong/470129/2013(H7N9)                     ............................................................
AGY41893  A/Huizhou/01/2013(H7N9)                           ....K.......................................................
AGO51387  A/Jiangsu/2/2013(H7N9)                            ....M.......................................................
AGJ73503  A/Nanjing/1/2013(H7N9)                            ....M.......................................................
AGR85026  A/Nanjing/2/2013(H7N9)                            ....M.......................................................
AGR84954  A/Nanjing/6/2013(H7N9)                            ............................................................
AHK10800  A/Shanghai/01/2014(H7N9)                          ............................................................
AGL44438  A/Shanghai/02/2013(H7N9)                          ............................................................
AGL33692  A/Shanghai/4655T/2013(H7N9)                       ------------------------------------------------------------
AGL33693  A/Shanghai/4659T/2013(H7N9)                       ------------------------------------------------------------
AGI60292  A/Shanghai/4664T/2013(H7N9)                       ............................................................
AGM53887  A/Shanghai/4701T/2013(H7N9)                       ------------------------------------------------------------
AGM53886  A/Shanghai/4842T/2013(H7N9)                       ------------------------------------------------------------
AGM53883  A/Shanghai/5083T/2013(H7N9)                       ------------------------------------------------------------
AGM53884  A/Shanghai/5180T/2013(H7N9)                       ------------------------------------------------------------
AGM53885  A/Shanghai/5240T/2013(H7N9)                       ------------------------------------------------------------
AGW82600  A/Shanghai/CN01/2013(H7N9)                        ............................................................
AHF20568  A/Shanghai/CN02/2013(H7N9)                        ............................................................
AGW82612  A/Shanghai/JS01/2013(H7N9)                        ............................................................
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FIGURE 22-6

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AID70634 A/Shanghai/Mix1/2014(H7N9)
AHU57411 A/Shanghai/PD-01/2014(H7N9)
AHU57418 A/Shanghai/PD-02/2014(H7N9)
AJU96841 A/Shenzhen/SP139/2014(H7N9)
AJU91909 A/Shenzhen/SP26/2014(H7N9)
AJU91945 A/Shenzhen/SP38/2014(H7N9)
AJU91885 A/Shenzhen/SP4/2014(H7N9)
AJU91957 A/Shenzhen/SP44/2014(H7N9)
AJU91969 A/Shenzhen/SP48/2014(H7N9)
AJU95596 A/Shenzhen/SP58/2014(H7N9)
AJU95632 A/Shenzhen/SP62/2014(H7N9)
AJU95620 A/Shenzhen/SP75/2014(H7N9)
AGR84942 A/Suzhou/5/2013(H7N9)
AGL43637 A/Taiwan/1/2013(H7N9)
AGL95088 A/Taiwan/S02076/2013(H7N9)
AGL95098 A/Taiwan/T02081/2013(H7N9)
AGN69474 A/Wuxi/1/2013(H7N9)
AGN69462 A/Wuxi/2/2013(H7N9)
AGR84990 A/Wuxi/3/2013(H7N9)
AGR84978 A/Wuxi/4/2013(H7N9)
AGO02477 A/Xuzhou/1/2013(H7N9)
AGU02230 A/zhejiang/DTID-ZJU05/2013(H7N9)
AGU02233 A/zhejiang/DTID-ZJU08/2013(H7N9)
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)
AIN76383 A/Zhejiang/LS01/2014(H7N9)
AGR85002 A/Zhenjiang/1/2013(H7N9)
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)
AJU94158 A/chicken/Dongguan/1075/2014(H7N9)
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)
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FIGURE 22-7

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AJU94396 A/chicken/Dongguan/1494/2014(H7N9)   ...K.....................................................
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)   ....K....................................................
AJU93857 A/chicken/Dongguan/169/2014(H7N9)    ....K....................................................
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)   ....K....................................................
AJU93869 A/chicken/Dongguan/173/2014(H7N9)    ....K.....V..............................................
AJU93881 A/chicken/Dongguan/189/2014(H7N9)    ....K.....V..............................................
AJU94606 A/chicken/Dongguan/191/2014(H7N9)    ....K....................................................
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)   ....K....................................................
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)   ....K....................................................
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)   ....K....................................................
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)   ....K....................................................
AJU91993 A/chicken/Dongguan/4119/2013(H7N9)   ....K....................................................
AJU93907 A/chicken/Dongguan/449/2014(H7N9)    ....K....................................................
AJU93931 A/chicken/Dongguan/536/2014(H7N9)    ....K....................................................
AJU93943 A/chicken/Dongguan/568/2014(H7N9)    ....K....................................................
AJU94754 A/chicken/Dongguan/748/2014(H7N9)    ....K....................................................
AJU94838 A/chicken/Dongguan/835/2014(H7N9)    ....K....................................................
AJU94862 A/chicken/Dongguan/843/2014(H7N9)    ....K....................................................
AJU94886 A/chicken/Dongguan/851/2014(H7N9)    ....K....................................................
AJU94910 A/chicken/Dongguan/874/2014(H7N9)    ....K....................................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)    ....K....................................................
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)     ........................................................
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)     .....K...................................................
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)   ....K....................................................
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)   ....K.I..................................................
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)   ....K....................................................
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)   ....K....................................................
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)   ....K....................................................
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)   ........................................................
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)   ........................................................
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)   ....K....................................................
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)   ....K....................................................
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)   ........................................................
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)   ........................................................
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)   ........................................................
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9)   ........................................................
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9)   ........................................................
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9)   ....K....................................................
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9)   ........................................................
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FIGURE 22-8

```
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9)                    ...K.....................................................
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9)                    ....................................................
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)                     ...K.....................................................
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)                     ...K.....................................................
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)                    ....................................................K....
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)                       ....................................................
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)                      ....................................................
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)                ...K.....................................................
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)                   ...M.....................................................
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)                   ....................................................
AJU97757 A/chicken/Shantou/2537/2014(H7N9)                     ...K.....................................................
AJU97973 A/chicken/Shantou/4325/2014(H7N9)                     ...K.....................................................
AJU97998 A/chicken/Shantou/4816/2014(H7N9)                     ...K.....................................................
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9)                    ....................................................
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9)                    ....................................................
AJU95464 A/chicken/Shenzhen/138/2014(H7N9)                     ...K.....................................................
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9)                    ...K.....................................................
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9)                    ...K.....................................................
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9)                    ...K.....................................................
AJU90490 A/chicken/Shenzhen/742/2013(H7N9)                     ...K.....................................................
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)                     ...K.....................................................
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)                     ...K.....................................................
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)                   ....................................................
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)              ...K.....G.PR...........................M...........
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)              ....................................................
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)                   ....................................................
AGR49566 A/duck/Anhui/SC702/2013(H7N9)                        ....................................................
BAN16711 A/duck/Gunma/466/2011(H7N9)                          ....................................................
AJU97841 A/duck/Jiangxi/15044/2014(H7N9)                       ....................................................
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)                        .....A..................................................
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)                        ....A...................................................
BAH22785 A/duck/Mongolia/119/2008(H7N9)                        ....................................................
BAN59727 A/duck/Mongolia/129/2010(H7N9)                        ....................................................
BAN59726 A/duck/Mongolia/147/2008(H7N9)                        ....................................................
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)                       ...K.....................................V..........
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)           TQ...PT.....................LL.....D.....K.T.....T...S.....
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)                   TQ...PT.....................LL.....D.....T.....T...S.....
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)             TQ...PT.....................LL.....D.....T.....T...S.....
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)               TQ...PT.....................LL.....D.....T.....T...S.....
```

FIGURE 22-9

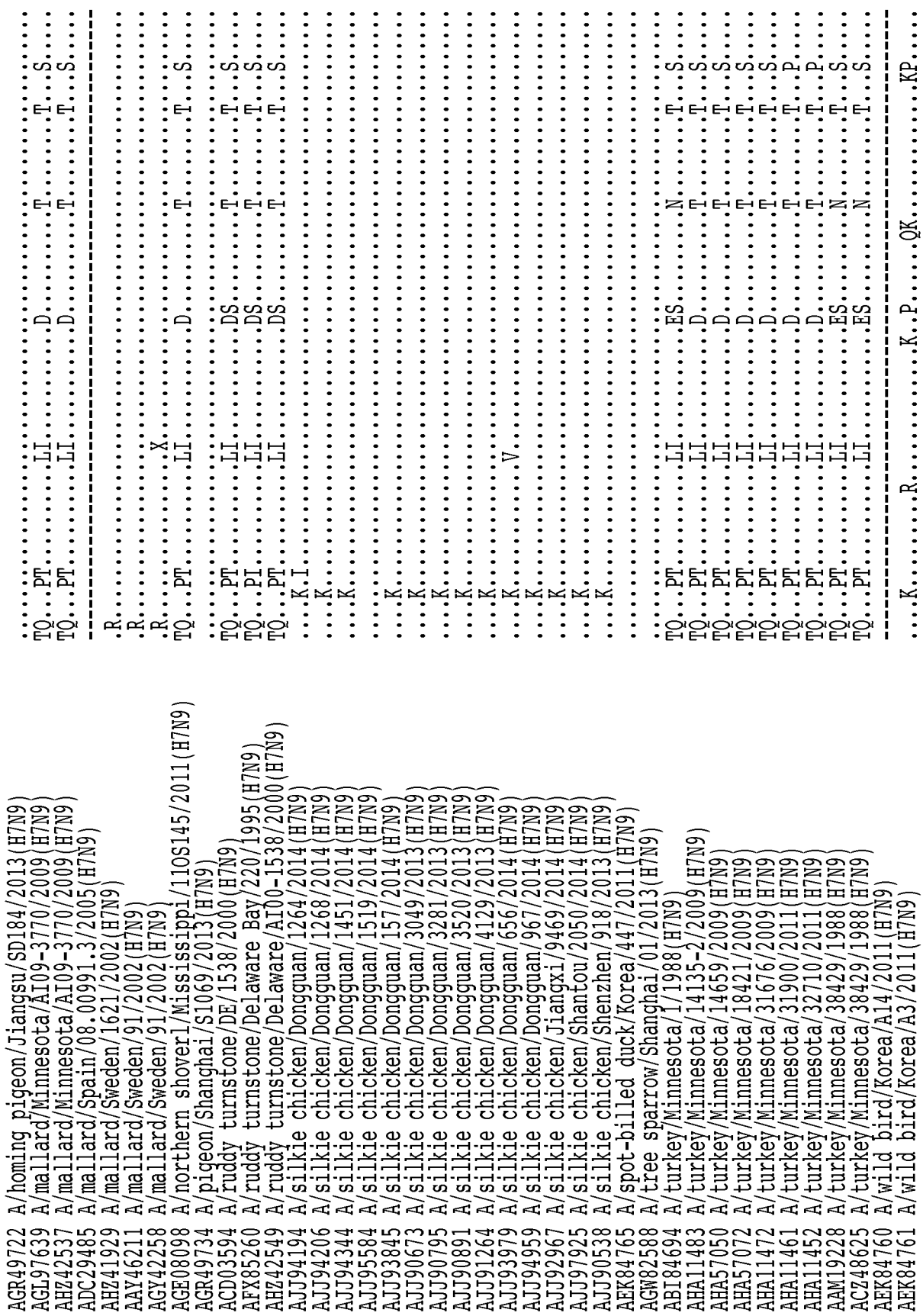

AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)
AJU94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJU94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJU94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
AJU95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJU93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJU90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJU90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
AJU90891 A/silkie chicken/Dongguan/3520/2013(H7N9)
AJU91264 A/silkie chicken/Dongguan/4129/2013(H7N9)
AJU93979 A/silkie chicken/Dongguan/656/2014(H7N9)
AJU94959 A/silkie chicken/Dongguan/967/2014(H7N9)
AJU92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)
AJU97925 A/silkie chicken/Shantou/2050/2014(H7N9)
AJU90538 A/silkie chicken/Shenzhen/918/2013(H7N9)
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)
ABI84694 A/turkey/Minnesota/1/1988(H7N9)
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)
AEK84760 A/wild bird/Korea/A14/2011(H7N9)
AEK84761 A/wild bird/Korea/A3/2011(H7N9)

FIGURE 22-10

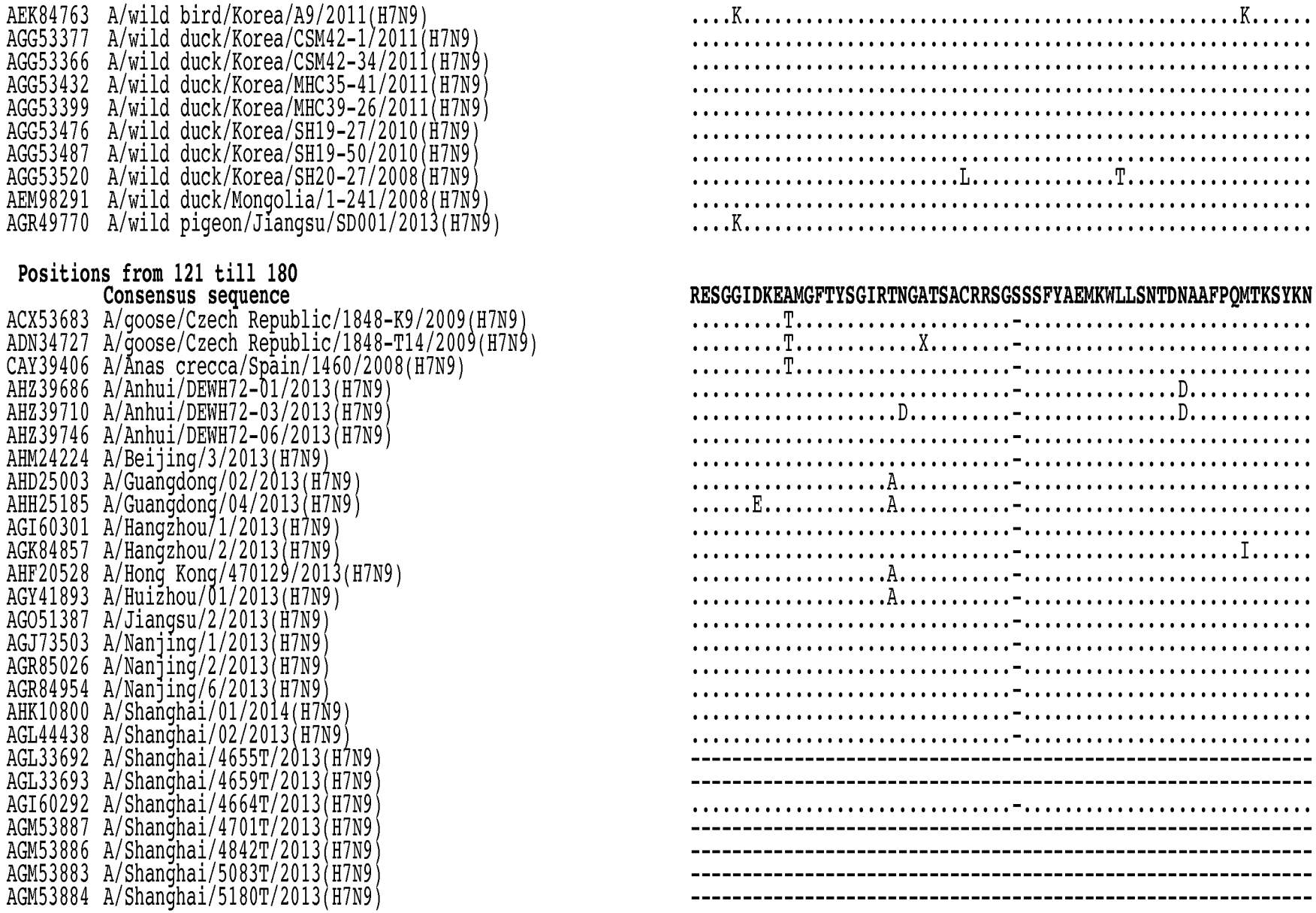

AEK84763 A/wild bird/Korea/A9/2011(H7N9)
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)
....K.....K.....
Positions from 121 till 180
Consensus sequence
RESGGIDKEAMGFTYSGIRTNGATSACRRSGSSSFYAEMKWLLSNTDNAAFPQMTKSYKN
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)
AHM24224 A/Beijing/3/2013(H7N9)
AHD25003 A/Guangdong/02/2013(H7N9)
AHH25185 A/Guangdong/04/2013(H7N9)
AGI60301 A/Hangzhou/1/2013(H7N9)
AGK84857 A/Hangzhou/2/2013(H7N9)
AHF20528 A/Hong Kong/470129/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGO51387 A/Jiangsu/2/2013(H7N9)
AGJ73503 A/Nanjing/1/2013(H7N9)
AGR85026 A/Nanjing/2/2013(H7N9)
AGR84954 A/Nanjing/6/2013(H7N9)
AHK10800 A/Shanghai/01/2014(H7N9)
AGL44438 A/Shanghai/02/2013(H7N9)
AGL33692 A/Shanghai/4655T/2013(H7N9)
AGL33693 A/Shanghai/4659T/2013(H7N9)
AGI60292 A/Shanghai/4664T/2013(H7N9)
AGM53887 A/Shanghai/4701T/2013(H7N9)
AGM53886 A/Shanghai/4842T/2013(H7N9)
AGM53883 A/Shanghai/5083T/2013(H7N9)
AGM53884 A/Shanghai/5180T/2013(H7N9)

FIGURE 22-11

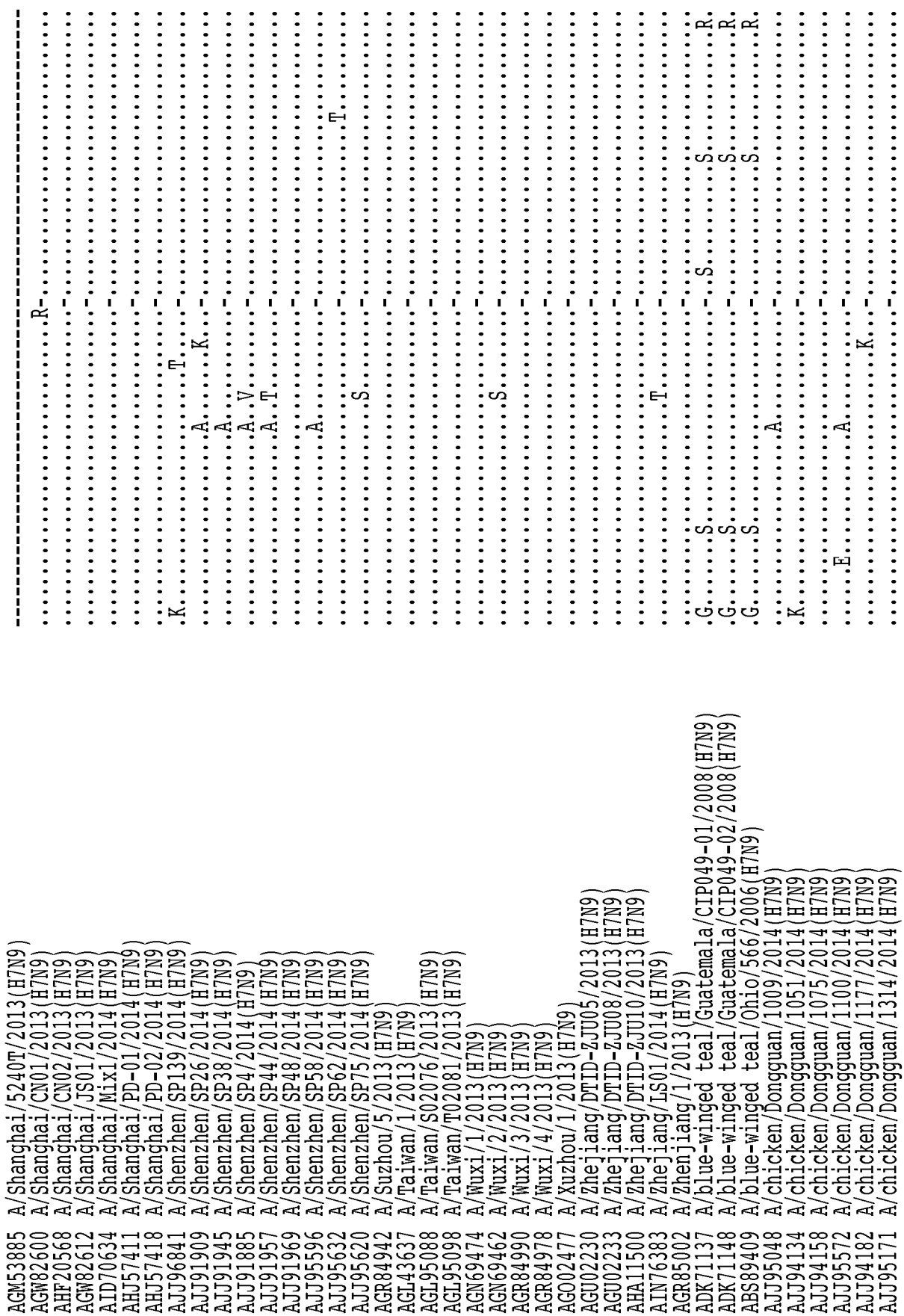

AGM53885 A/Shanghai/5240T/2013(H7N9)
AGW82600 A/Shanghai/CN01/2013(H7N9)
AHF20568 A/Shanghai/CN02/2013(H7N9)
AGW82612 A/Shanghai/JS01/2013(H7N9)
AID70634 A/Shanghai/Mix1/2014(H7N9)
AHJ57411 A/Shanghai/PD-01/2014(H7N9)
AHJ57418 A/Shanghai/PD-02/2014(H7N9)
AJU96841 A/Shenzhen/SP139/2014(H7N9)
AJU91909 A/Shenzhen/SP26/2014(H7N9)
AJU91945 A/Shenzhen/SP38/2014(H7N9)
AJU91885 A/Shenzhen/SP4/2014(H7N9)
AJU91957 A/Shenzhen/SP44/2014(H7N9)
AJU91969 A/Shenzhen/SP48/2014(H7N9)
AJU95596 A/Shenzhen/SP58/2014(H7N9)
AJU95632 A/Shenzhen/SP62/2014(H7N9)
AJU95620 A/Shenzhen/SP75/2014(H7N9)
AGR84942 A/Suzhou/5/2013(H7N9)
AGL43637 A/Taiwan/1/2013(H7N9)
AGL95088 A/Taiwan/S02076/2013(H7N9)
AGL95098 A/Taiwan/T02081/2013(H7N9)
AGN69474 A/Wuxi/1/2013(H7N9)
AGN69462 A/Wuxi/2/2013(H7N9)
AGR84990 A/Wuxi/3/2013(H7N9)
AGR84978 A/Wuxi/4/2013(H7N9)
AGO02477 A/Xuzhou/1/2013(H7N9)
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)
AIN76383 A/Zhejiang/LS01/2014(H7N9)
AGR85002 A/Zhejiang/1/2013(H7N9)
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)
AJU94158 A/chicken/Dongguan/1075/2014(H7N9)
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)

FIGURE 22-12

```
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)  ..........-..........
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)  .........A.....-.....
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)  ..........-..........
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)  ..........-..........
AJU94396 A/chicken/Dongguan/1494/2014(H7N9)  .........A.....-.....
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)  ..........-..........
AJU93857 A/chicken/Dongguan/169/2014(H7N9)   .........M...-.....
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)  .K.......-..........
AJU93869 A/chicken/Dongguan/173/2014(H7N9)   .K.......A.....-.....
AJU93881 A/chicken/Dongguan/189/2014(H7N9)   ..........-..........
AJU94606 A/chicken/Dongguan/191/2014(H7N9)   .K.......-..........
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)  .........A.....-.....
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)  .........A.....-....R
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)  .........A.....-.....
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)  .........A.....-.....
AJU91993 A/chicken/Dongguan/4119/2013(H7N9)  .........A.....-.....
AJU93907 A/chicken/Dongguan/449/2014(H7N9)   .K.......A.....-.....
AJU93931 A/chicken/Dongguan/536/2014(H7N9)   ..........-..........
AJU93943 A/chicken/Dongguan/568/2014(H7N9)   .....E...A.....-.....
AJU94754 A/chicken/Dongguan/748/2014(H7N9)   .....E...A.....-.....
AJU94838 A/chicken/Dongguan/835/2014(H7N9)   .....E...A.....-.....
AJU94862 A/chicken/Dongguan/843/2014(H7N9)   .....E...-.....-.....
AJU94886 A/chicken/Dongguan/851/2014(H7N9)   .........A.....-.....
AJU94910 A/chicken/Dongguan/874/2014(H7N9)   .........A.....-.....
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)   ..........-..........
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)    ..........-..........
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)    .K.......-..........
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)  .........V.....-....D.
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)  ..........-..........
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)  ..........-..........
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)  ..........-..........
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)  ..........-..........
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)  ..........-..........
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)  .........N.....-.....
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)  .......X...........-.
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)  ..........-..........
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)  .........N.....-.....
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)  .........N.....-.....
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)  .........N.....-.....
```

FIGURE 22-13

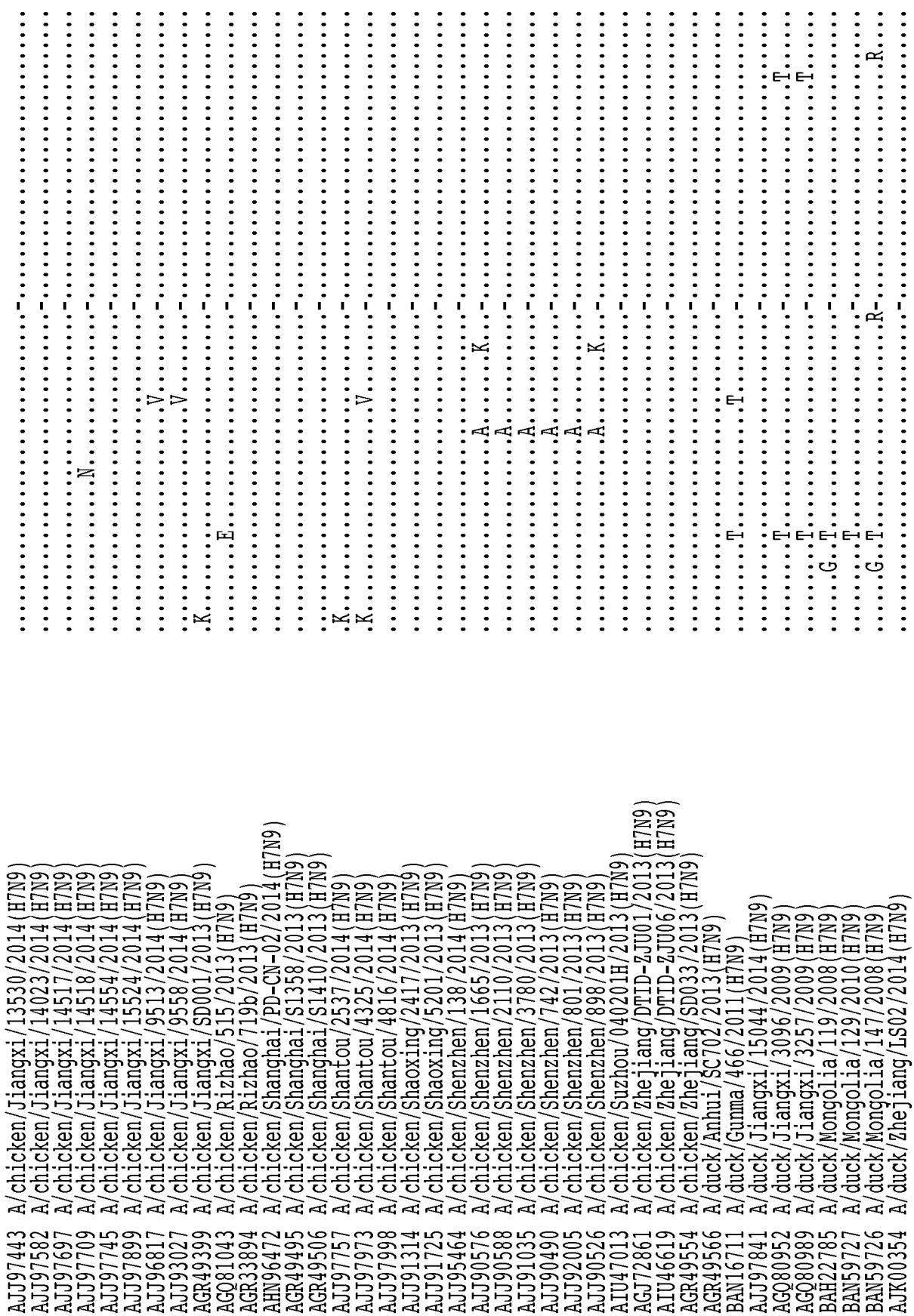

AJJ97443 A/chicken/Jiangxi/13530/2014(H7N9)
AJJ97582 A/chicken/Jiangxi/14023/2014(H7N9)
AJJ97697 A/chicken/Jiangxi/14517/2014(H7N9)
AJJ97709 A/chicken/Jiangxi/14518/2014(H7N9)
AJJ97745 A/chicken/Jiangxi/14554/2014(H7N9)
AJJ97899 A/chicken/Jiangxi/15524/2014(H7N9)
AJJ96817 A/chicken/Jiangxi/9513/2014(H7N9)
AJJ93027 A/chicken/Jiangxi/9558/2014(H7N9)
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)
AJJ97757 A/chicken/Shantou/2537/2014(H7N9)
AJJ97973 A/chicken/Shantou/4325/2014(H7N9)
AJJ97998 A/chicken/Shantou/4816/2014(H7N9)
AJJ91314 A/chicken/Shaoxing/2417/2013(H7N9)
AJJ91725 A/chicken/Shaoxing/5201/2013(H7N9)
AJJ95464 A/chicken/Shenzhen/138/2014(H7N9)
AJJ90576 A/chicken/Shenzhen/1665/2013(H7N9)
AJJ90588 A/chicken/Shenzhen/2110/2013(H7N9)
AJJ91035 A/chicken/Shenzhen/3780/2013(H7N9)
AJJ90490 A/chicken/Shenzhen/742/2013(H7N9)
AJJ92005 A/chicken/Shenzhen/801/2013(H7N9)
AJJ90526 A/chicken/Shenzhen/898/2013(H7N9)
AIU47013 A/chicken/Suzhou/04021H/2013(H7N9)
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJJ97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)

FIGURE 22-14

```
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)          .G.....S.....-.....S.....R.
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)                  .G.....S.....-.....S.....R.
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)            .G.....S.....-.....SN....R.
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)              .G.....S.....-.....SN....R.
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)             ..........E.....-.....R.
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)             .G.....S.....-.....S.....R.
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)             .G.....S.....-.....S.....R.
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)                ----------------------------------------
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)                     ..........T.....-.....
AAY46211 A/mallard/Sweden/91/2002(H7N9)                       ..........T.....P.....-.....
AGY42258 A/mallard/Sweden/91/2002(H7N9)                       ..........T.....X.....-.....
AGE08098 A/northern shover1/Mississippi/11OS145/2011(H7N9)    .G.....S.....-.....S.....R.
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)                   ..........-.....
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)                 .G.....S.....L.-.....S.....R.
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)        .G.....S.....I.L.-.....S.....R.
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)      .G.....S.....L.....S.....R.
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)            ..........-.....
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)            ..........A.....-.....
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)            .K.....-.....
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)            ..........-.....
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)             ..........A.....-.....
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)            ..........A.....-.....
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)            ..........A.....-.....
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)            ..........A.....-.....
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)            ..........A.....-.....
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)             ..........A.....-.....
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)             ..........A.....X...-.....
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)             ..........V.....-.....
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)             .K.....-.....
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)             ..........A.....-.....
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)              ..........T.....-.....
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)                ..........-.....
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                      .G.....S.....-.....S.....R.
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)                .G.....S.....-.....SN....R.
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)                  .G.....S.....-.....SN....R.
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)                  .G.....S.....-.....SND...R.
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)                  .G.....S.....E.....-.....SN....R.
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)                  .G.....S.....T.....-.....SN....R.
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)                  .G.....S.....T.....-.....SN....R.
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FIGURE 22-15

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AAM19228 A/turkey/Minnesota/38429/1988(H7N9)      .G.......S........I.............-.............S............R.
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)      .G.......S.....................-.............S............R.
AEK84760 A/wild bird/Korea/A14/2011(H7N9)         ------------------------------------------------------------
AEK84761 A/wild bird/Korea/A3/2011(H7N9)          .........T...A.N..K...PPI...K..-.....K.........K............
AEK84763 A/wild bird/Korea/A9/2011(H7N9)          .........T...A....K...PPI...K..-.....K.........K............
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)     .........T..L..................-.............................
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)    .........T..L..................-.............................
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)    .........T.....................-.............................
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)    .........T.....................-.............................
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)     .........T.....................-.............................
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)     .........T.....................-.............................
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)     ......E..T.....................-.............................
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)    .........T.....................-.............................
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)   ...............................-.............................

Positions from 181 till 240
Consensus sequence                                TRKSPALIVWGIHHSVSTAEQTKLYGSGNKLVTVGSSNYQQSFVPSPGARPQVNGLSGRI
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)...D....I......G..T.........S..I.....................Q....
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)...D....I......G..T.........S..I.....................Q....
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)      ...D....I......G..T.........S..I.....................Q....
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)             ............................................................
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)             ............................................................
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)             ...........................................................E........
AHM24224 A/Beijing/3/2013(H7N9)                   ............................................................
AHD25003 A/Guangdong/02/2013(H7N9)                ............................................................
AHH25185 A/Guangdong/04/2013(H7N9)                ............................................................
AGI60301 A/Hangzhou/1/2013(H7N9)                  ...........................................................I....
AGK84857 A/Hangzhou/2/2013(H7N9)                  ............................................................
AHF20528 A/Hong Kong/470129/2013(H7N9)            ............................................................
AGY41893 A/Huizhou/01/2013(H7N9)                  ............................................................
AGO51387 A/Jiangsu/2/2013(H7N9)                   ............................................................
AGJ73503 A/Nanjing/1/2013(H7N9)                   ............................................................
AGR85026 A/Nanjing/2/2013(H7N9)                   ............................................................
AGR84954 A/Nanjing/6/2013(H7N9)                   ............................................................
AHK10800 A/Shanghai/01/2014(H7N9)                 ............................................................
AGL44438 A/Shanghai/02/2013(H7N9)                 ............................................................
AGL33692 A/Shanghai/4655T/2013(H7N9)              ------------------------------------------------------------
AGL33693 A/Shanghai/4659T/2013(H7N9)              ------------------------------------------------------------
AGI60292 A/Shanghai/4664T/2013(H7N9)              ............................................................
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FIGURE 22-16

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AGM53887 A/Shanghai/4701T/2013(H7N9)  ----------------------------------------
AGM53886 A/Shanghai/4842T/2013(H7N9)  ----------------------------------------
AGM53883 A/Shanghai/5083T/2013(H7N9)  ----------------------------------------
AGM53884 A/Shanghai/5180T/2013(H7N9)  ----------------------------------------
AGM53885 A/Shanghai/5240T/2013(H7N9)  ----------------------------------------
AGW82600 A/Shanghai/CN01/2013(H7N9)   ........................................
AHF20568 A/Shanghai/CN02/2013(H7N9)   ...N.....G.....................A....T...Q....
AGW82612 A/Shanghai/JS01/2013(H7N9)   ........................................
AID70634 A/Shanghai/Mix1/2014(H7N9)   ..........................................S.....
AHU57411 A/Shanghai/PD-01/2014(H7N9)  ........................................
AHU57418 A/Shanghai/PD-02/2014(H7N9)  ........................................
AJU96841 A/Shenzhen/SP139/2014(H7N9)  ......I.................................
AJU91909 A/Shenzhen/SP26/2014(H7N9)   ........................................
AJU91945 A/Shenzhen/SP38/2014(H7N9)   ........................................
AJU91885 A/Shenzhen/SP4/2014(H7N9)    ........................................
AJU91957 A/Shenzhen/SP44/2014(H7N9)   ........I.......S.....................
AJU91969 A/Shenzhen/SP48/2014(H7N9)   ........................................
AJU95596 A/Shenzhen/SP58/2014(H7N9)   ........I.......S.....................
AJU95632 A/Shenzhen/SP62/2014(H7N9)   ........I.......S.....................
AJU95620 A/Shenzhen/SP75/2014(H7N9)   ........I.......S.....................
AGR84942 A/Suzhou/5/2013(H7N9)        ..........................S.....P.....
AGL43637 A/Taiwan/1/2013(H7N9)        ..........................S.....P.....
AGL95088 A/Taiwan/S02076/2013(H7N9)   ..........................S.....P.....
AGL95098 A/Taiwan/T02081/2013(H7N9)   ..........................S.....P.....
AGN69474 A/Wuxi/1/2013(H7N9)          ..........................S.....P.....
AGN69462 A/Wuxi/2/2013(H7N9)          ..........................S.....P.....
AGR84990 A/Wuxi/3/2013(H7N9)          ..........................S.....P.....
AGR84978 A/Wuxi/4/2013(H7N9)          ..........................S.....P.....
AGO02477 A/Xuzhou/1/2013(H7N9)        ..........................S.....P.....
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)  ....................................
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)  ....................................
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)  ....................................
AIN76383 A/Zhejiang/LS01/2014(H7N9)    ....................................
AGR85002 A/Zhenjiang/1/2013(H7N9)      ....................................
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)  P.NK....I..V...G.AT.....I.....K.....T....T.....Q....
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)  P.NK....I..V...G.AT.....I.....K.....T....T.....Q....
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)  P.NK....I..V...G.AT.....I.....K.....T.....Q....
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)  ....................................
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)  ......I.............................
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FIGURE 22-17

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AJU94158 A/chicken/Dongguan/1075/2014(H7N9)  ..................................................
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)  ..................................................
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)  .....................I........................
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)  ..................................................
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)  ..................................................
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)  ..................................................
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)  ..................................................
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)  ..................................................
AJU94396 A/chicken/Dongguan/1494/2014(H7N9)  ..................................................
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)  ..................................................
AJU93857 A/chicken/Dongguan/169/2014(H7N9)   .....I............................................
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)  .....I............................................
AJU93869 A/chicken/Dongguan/173/2014(H7N9)   ..................................................
AJU93881 A/chicken/Dongguan/189/2014(H7N9)   ..................................................
AJU94606 A/chicken/Dongguan/191/2014(H7N9)   ......I...........................................
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)  ..................................................
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)  ..................................................
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)  ..................................................
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)  ..........................E...................
AJU91993 A/chicken/Dongguan/4119/2013(H7N9)  ..................................................
AJU93907 A/chicken/Dongguan/449/2014(H7N9)   ..................................................
AJU93931 A/chicken/Dongguan/536/2014(H7N9)   .....I............................................
AJU93943 A/chicken/Dongguan/568/2014(H7N9)   ..................................................
AJU94754 A/chicken/Dongguan/748/2014(H7N9)   ..........................N...................
AJU94838 A/chicken/Dongguan/835/2014(H7N9)   ..........A...........................................
AJU94862 A/chicken/Dongguan/843/2014(H7N9)   ..................................................
AJU94886 A/chicken/Dongguan/851/2014(H7N9)   ..................................................
AJU94910 A/chicken/Dongguan/874/2014(H7N9)   ..........A...........................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)   ..................................................
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)    ..................................................
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)    ..................................................
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)  ..................................................
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)  ..................................................
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)  ..................................................
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)  ..................................................
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)  ..................................................
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)  ..................................................
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)  .....I............................................
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)  ..................................................
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FIGURE 22-18

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AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)  .....I.....E.....I.....
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)  .....I.....E.....I.....
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)  .....I.....E.....I.....
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)  .....I.....E.....I.....
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9)  .....I.....E.....I.....
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9)  .....I.....E.....I.....
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9)  .....I.....E.....I.....
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9)  .....I.....E.....I.....
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9)  .....I.....E.....I.....
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9)  .....I.....E.....I.....
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)   .....I.....E.....I.....
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)   .....I.....E.....I.....
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)  .....I.....E.....I.....
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)     .....I.....E.....I.....
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)    .....I.....E.....I.....
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)  .....I.....E.....I.....
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)  .....I.....E.....I.....
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)  .....I.....E.....I.....
AJU97757 A/chicken/Shantou/2537/2014(H7N9)   .....I.....E.....I.....
AJU97973 A/chicken/Shantou/4325/2014(H7N9)   .....I.....E.....I.....
AJU97998 A/chicken/Shantou/4816/2014(H7N9)   .....I.....E.....I.....
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9)  .....I.....E.....I.....
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9)  .....I.....E.....I.....
AJU95464 A/chicken/Shenzhen/138/2014(H7N9)   .....I.....E.....I.....
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9)  .....I.....E.....I.....
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9)  .....I.....E.....I.....
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9)  .....I.....E.....I.....
AJU90490 A/chicken/Shenzhen/742/2013(H7N9)   .....I.....E.....I.....
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)   .....I.....E.....I.....
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)   .....I.....E.....I.....
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)  .....I.....E.....I.....
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)  .....I.....E.....I.....
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)  .....I.....E.....I.....
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)  .....I.....E.....I.....
AGR49566 A/duck/Anhui/SC702/2013(H7N9)       .....I.....E.....I.....
BAN16711 A/duck/Gunma/466/2011(H7N9)         ..RD....A.....G..T.....S..I.....
AJU97841 A/duck/Jiangxi/15044/2014(H7N9)     ....I.....E.....I.....
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)      ..D....I.....G..T.....I.....
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)      ..D....I.....G..T.....I..X.....
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FIGURE 22-19

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BAH22785 A/duck/Mongolia/119/2008(H7N9)                ...D....I.....G..T.....................I.....................Q....
BAN59727 A/duck/Mongolia/129/2010(H7N9)                ...D....I.....G..T.....................S..I..................Q....
BAN59726 A/duck/Mongolia/147/2008(H7N9)                ...D....I.....G..T.....................I.....................Q....
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)               ...D....I.....G..T.....................I.....................L....Q....
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)   P.NK....I..V...G.AT.....................I.....K.....T.....Q....
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)           P.NK.....V...A.AT.....................S..I....K....T.....Q....
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)     P.NK.....V...G.AT.....................S..I....K....T.....Q....
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)       P.NK.....V...G.AT.....................S..I....K....T.....Q....
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)      .....................................................................
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)      P.NK....I..V...G.AT.....................I.....K.....T.....Q....
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)      P.NK....I..V...G.AT.....................I.....K.....T.....Q....
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)         ---------------------------------------------------------------------
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)              ..ND....I.....G..T.....................I.....................Q....
AAY46211 A/mallard/Sweden/91/2002(H7N9)                ..ND....I.....G..T.....................I.....................Q....
AGY42258 A/mallard/Sweden/91/2002(H7N9)                ..ND....I.....G..T.....................I.....................Q....
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)  P.NK....I..V...G.AT.....................I.....K.....T.....Q....
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)            .....................................................................
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)          P.NK....I..V...G.AN.....................I.....K.....T.....Q....
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9) P.NK....I..V...G.AN.....................I.....K.....T.....Q....
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)  P.NK....I..V...G.AN.....................I.....K.....T.....Q....
AJU94194 A/silkie chicken/Dongguan/1264/2014(H7N9)     .....................................................................
AJU94206 A/silkie chicken/Dongguan/1268/2014(H7N9)     .....................................................................
AJU94344 A/silkie chicken/Dongguan/1451/2014(H7N9)     .....I...............................................................
AJU95584 A/silkie chicken/Dongguan/1519/2014(H7N9)     .....................................................................
AJU93845 A/silkie chicken/Dongguan/157/2014(H7N9)      .....................................................................
AJU90673 A/silkie chicken/Dongguan/3049/2013(H7N9)     .....................................................................
AJU90795 A/silkie chicken/Dongguan/3281/2013(H7N9)     .....................................................................
AJU90891 A/silkie chicken/Dongguan/3520/2013(H7N9)     ...X.................................................................
AJU91264 A/silkie chicken/Dongguan/4129/2013(H7N9)     .....................................................................
AJU93979 A/silkie chicken/Dongguan/656/2014(H7N9)      .....................................................................
AJU94959 A/silkie chicken/Dongguan/967/2014(H7N9)      .....................................................................
AJU92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)      .....................................................................
AJU97925 A/silkie chicken/Shantou/2050/2014(H7N9)      .....I...............................................................
AJU90538 A/silkie chicken/Shenzhen/918/2013(H7N9)      .....................................................................
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)       .....................................................................
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)        .....RD.....G..T.....................S..I.....................Q....
ABI84694 A/turkey/Minnesota/1/1988(H7N9)               .....................................................................
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)         P.NK.....................G..T.....................I.....K.....T.....Q....
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)           P.DK....I..V...G.AT.....................I.....K.....T.....Q....
                                                       P.DK....I..V...G.AT.....................I.....K.....T.....Q....
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FIGURE 22-20

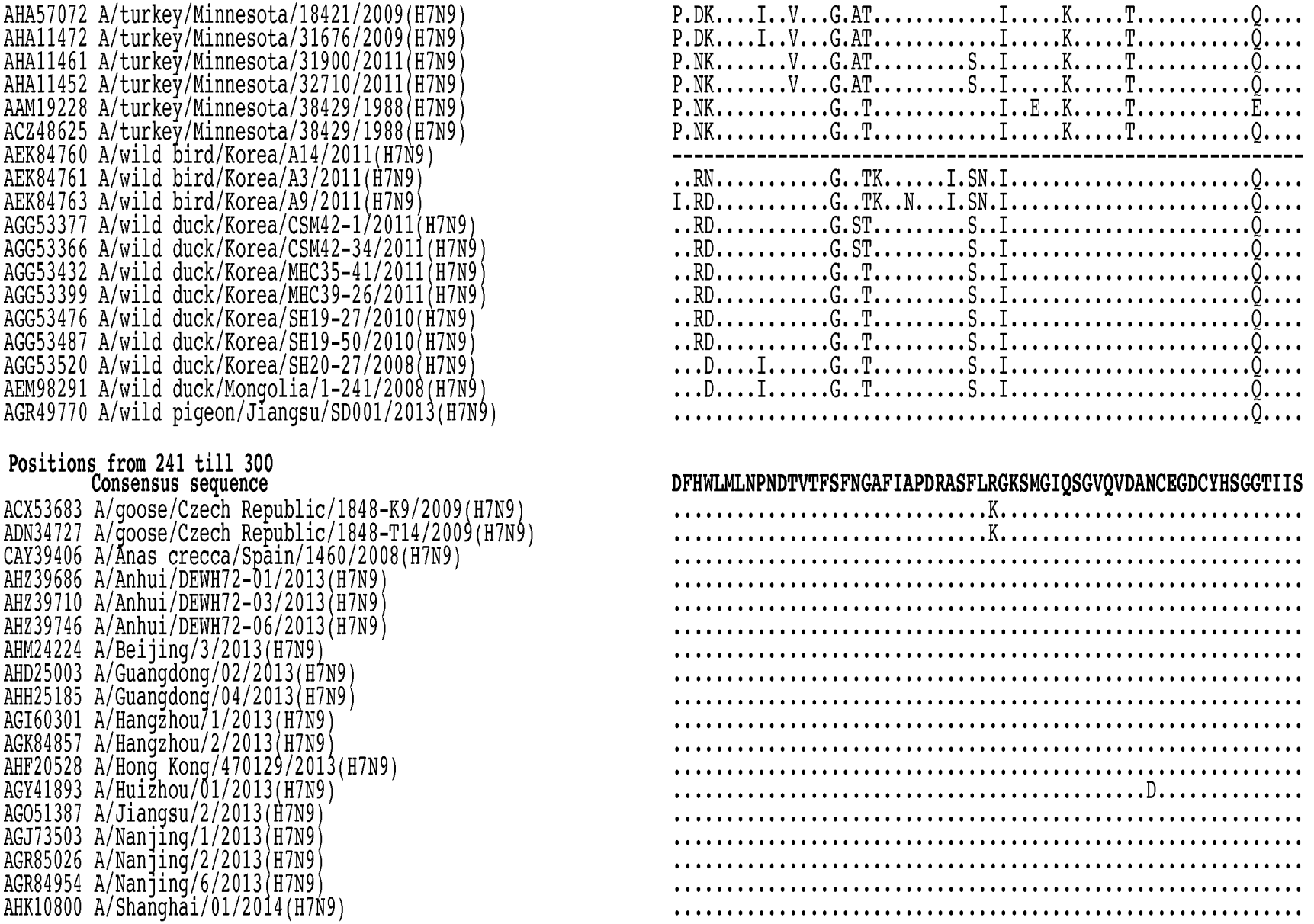

AHA57072 A/turkey/Minnesota/18421/2009(H7N9)
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)
AEK84760 A/wild bird/Korea/A14/2011(H7N9)
AEK84761 A/wild bird/Korea/A3/2011(H7N9)
AEK84763 A/wild bird/Korea/A9/2011(H7N9)
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)
P.DK....I..V...G.AT.....I.....K.....T.....Q....
P.DK....I..V...G.AT.....I.....K.....T.....Q....
P.NK.....V...G.AT.....S..I.....K.....T.....Q....
P.NK.....V...G.AT.....S..I.....K.....T.....Q....
P.NK.....G..T.....I..E..K.....T.....E....
P.NK.....G..T.....I.....K.....T.....Q....
..RN.....G..TK.....I.SN.I.....Q....
I.RD.....G..TK..N...I.SN.I.....Q....
..RD.....G.ST.....S..I.....Q....
..RD.....G.ST.....S..I.....Q....
..RD.....G..T.....S..I.....Q....
..RD.....G..T.....S..I.....Q....
..RD.....G..T.....S..I.....Q....
..RD.....G..T.....S..I.....Q....
...D....I.....G..T.....S..I.....Q....
...D....I.....G..T.....S..I.....Q....
.....Q....
Positions from 241 till 300
Consensus sequence
DFHWLMLNPNDTVTFSFNGAFIAPDRASFLRGKSMGIQSGVQVDANCEGDCYHSGGTIIS
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)
AHM24224 A/Beijing/3/2013(H7N9)
AHD25003 A/Guangdong/02/2013(H7N9)
AHH25185 A/Guangdong/04/2013(H7N9)
AGI60301 A/Hangzhou/1/2013(H7N9)
AGK84857 A/Hangzhou/2/2013(H7N9)
AHF20528 A/Hong Kong/470129/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGO51387 A/Jiangsu/2/2013(H7N9)
AGJ73503 A/Nanjing/1/2013(H7N9)
AGR85026 A/Nanjing/2/2013(H7N9)
AGR84954 A/Nanjing/6/2013(H7N9)
AHK10800 A/Shanghai/01/2014(H7N9)
.....K.....
.....K.....
.....D.....

FIGURE 22-21

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AGL44438  A/Shanghai/02/2013(H7N9)                               ............................................................
AGL33692  A/Shanghai/4655T/2013(H7N9)                            ------------------------------------------------------------
AGL33693  A/Shanghai/4659T/2013(H7N9)                            ------------------------------------------------------------
AGI60292  A/Shanghai/4664T/2013(H7N9)                            ...................................................H........
AGM53887  A/Shanghai/4701T/2013(H7N9)                            ------------------------------------------------------------
AGM53886  A/Shanghai/4842T/2013(H7N9)                            ------------------------------------------------------------
AGM53883  A/Shanghai/5083T/2013(H7N9)                            ------------------------------------------------------------
AGM53884  A/Shanghai/5180T/2013(H7N9)                            ------------------------------------------------------------
AGM53885  A/Shanghai/5240T/2013(H7N9)                            ------------------------------------------------------------
AGW82600  A/Shanghai/CN01/2013(H7N9)                             ..........................................................M.
AHF20568  A/Shanghai/CN02/2013(H7N9)                             ..........................................................M.
AGW82612  A/Shanghai/JS01/2013(H7N9)                             .............................................D..............
AID70634  A/Shanghai/Mix1/2014(H7N9)                             ............................................................
AHJ57411  A/Shanghai/PD-01/2014(H7N9)                            ...............................................K............
AHJ57418  A/Shanghai/PD-02/2014(H7N9)                            ..............................K.............................
AJJ96841  A/Shenzhen/SP139/2014(H7N9)                            ...........................C.................D..............
AJJ91909  A/Shenzhen/SP26/2014(H7N9)                             ............................................................
AJJ91945  A/Shenzhen/SP38/2014(H7N9)                             ............................................................
AJJ91885  A/Shenzhen/SP4/2014(H7N9)                              ............................................................
AJJ91957  A/Shenzhen/SP44/2014(H7N9)                             ............................................................
AJJ91969  A/Shenzhen/SP48/2014(H7N9)                             ............................................................
AJJ95596  A/Shenzhen/SP58/2014(H7N9)                             ............................................................
AJJ95632  A/Shenzhen/SP62/2014(H7N9)                             ............................................................
AJJ95620  A/Shenzhen/SP75/2014(H7N9)                             ............................................................
AGR84942  A/Suzhou/5/2013(H7N9)                                  ............................................................
AGL43637  A/Taiwan/1/2013(H7N9)                                  ...........................................................N
AGL95088  A/Taiwan/S02076/2013(H7N9)                             ............................................................
AGL95098  A/Taiwan/T02081/2013(H7N9)                             ............................................................
AGN69474  A/Wuxi/1/2013(H7N9)                                    ............................................................
AGN69462  A/Wuxi/2/2013(H7N9)                                    ............................................................
AGR84990  A/Wuxi/3/2013(H7N9)                                    ............................................................
AGR84978  A/Wuxi/4/2013(H7N9)                                    ............................................................
AGO02477  A/Xuzhou/1/2013(H7N9)                                  ............................................................
AGU02230  A/Zhejiang/DTID-ZJU05/2013(H7N9)                       ............................................................
AGU02233  A/Zhejiang/DTID-ZJU08/2013(H7N9)                       ............................................................
AHA11500  A/Zhejiang/DTID-ZJU10/2013(H7N9)                       ............................................................
AIN76383  A/Zhejiang/LS01/2014(H7N9)                             ............................................................
AGR85002  A/Zhenjiang/1/2013(H7N9)                               ............................................................
ADK71137  A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)      .....L.D.......T..................L....D.PL.SG.....F......V.
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FIGURE 22-22

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ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)      ....L.D.....T.....L....D.PL.SG....F.....V.
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)                 ....L.D.....T.....F.E.L.V..D.PL.SG....F.....V.
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)                     ..............................D.....
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)                     ..............................D.....
AJU94158 A/chicken/Dongguan/1075/2014(H7N9)                     ..........E...................D.....
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)                     ..............................D.....
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)                     ..............................D.....
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)                     ..........N.....E.............D.....
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)                     ..........E...................D.....
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)                     ..........E...................D.....
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)                     ..............................D.....
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)                     ..........E...................D.....
AJU94396 A/chicken/Dongguan/1494/2014(H7N9)                     ..............................D.....
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)                     ..............................D.....
AJU93857 A/chicken/Dongguan/169/2014(H7N9)                      ..............................D.....
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)                     ..........I...................D.....
AJU93869 A/chicken/Dongguan/173/2014(H7N9)                      ..............................D.....
AJU93881 A/chicken/Dongguan/189/2014(H7N9)                      ..............................D.....
AJU94606 A/chicken/Dongguan/191/2014(H7N9)                      ..............................D.....
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)                     ..............................D.....
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)                     ..............................D.....
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)                     ..............................D.....
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)                     ..............................D.....
AJU91993 A/chicken/Dongguan/4119/2013(H7N9)                     ..............................D.....
AJU93907 A/chicken/Dongguan/449/2014(H7N9)                      ..........E...................D.....
AJU93931 A/chicken/Dongguan/536/2014(H7N9)                      ..............................D.....
AJU93943 A/chicken/Dongguan/568/2014(H7N9)                      ..............................D.....
AJU94754 A/chicken/Dongguan/748/2014(H7N9)                      ..............................D.....
AJU94838 A/chicken/Dongguan/835/2014(H7N9)                      ..............................D.....
AJU94862 A/chicken/Dongguan/843/2014(H7N9)                      ..............................D.....
AJU94886 A/chicken/Dongguan/851/2014(H7N9)                      ..............................D.....
AJU94910 A/chicken/Dongguan/874/2014(H7N9)                      ..............................D.....
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)                      ..............................D.....
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)                       ..............................D.....
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)                       ..............................R.....
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)                     ..............................D.....
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)                     ..............................D.....
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)                     ..............................D.....
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)                     ..............................R.....
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FIGURE 22-23

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AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)  ..................................................
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)  ..................................................
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)  ..................................................
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)  ..................................................
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)  ..................................................
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)  ..................I...............................
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)  L.................................................
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)  ..................X.....X.....X.....X.....X.....
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9)  ..................................................
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9)  ..................................................
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9)  ..................................D...............
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9)  ..................................N...............
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9)  ..................................................
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9)  ..................................................
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)   ..................................................
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)   ..................................................
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)  ..................................................
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)     ..................................................
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)    ..................................................
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)  ..................................D...............
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)  ..................................D...............
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)  ..................................................
AJU97757 A/chicken/Shantou/2537/2014(H7N9)   ..................................................
AJU97973 A/chicken/Shantou/4325/2014(H7N9)   ..................E...............................
AJU97998 A/chicken/Shantou/4816/2014(H7N9)   ..................................................
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9)  ..................I...............................
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9)  ..................................................
AJU95464 A/chicken/Shenzhen/138/2014(H7N9)   ..................................................
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9)  ..................................E...............
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9)  ..................................................
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9)  ..................................................
AJU90490 A/chicken/Shenzhen/742/2013(H7N9)   ..................................................
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)   ..................................................
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)   ..................................................
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)  ..................................................
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)  ..................................................
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)  ..................................................
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)  ..................................................
AGR49566 A/duck/Anhui/SC702/2013(H7N9)      ..................................................
```

FIGURE 22-24

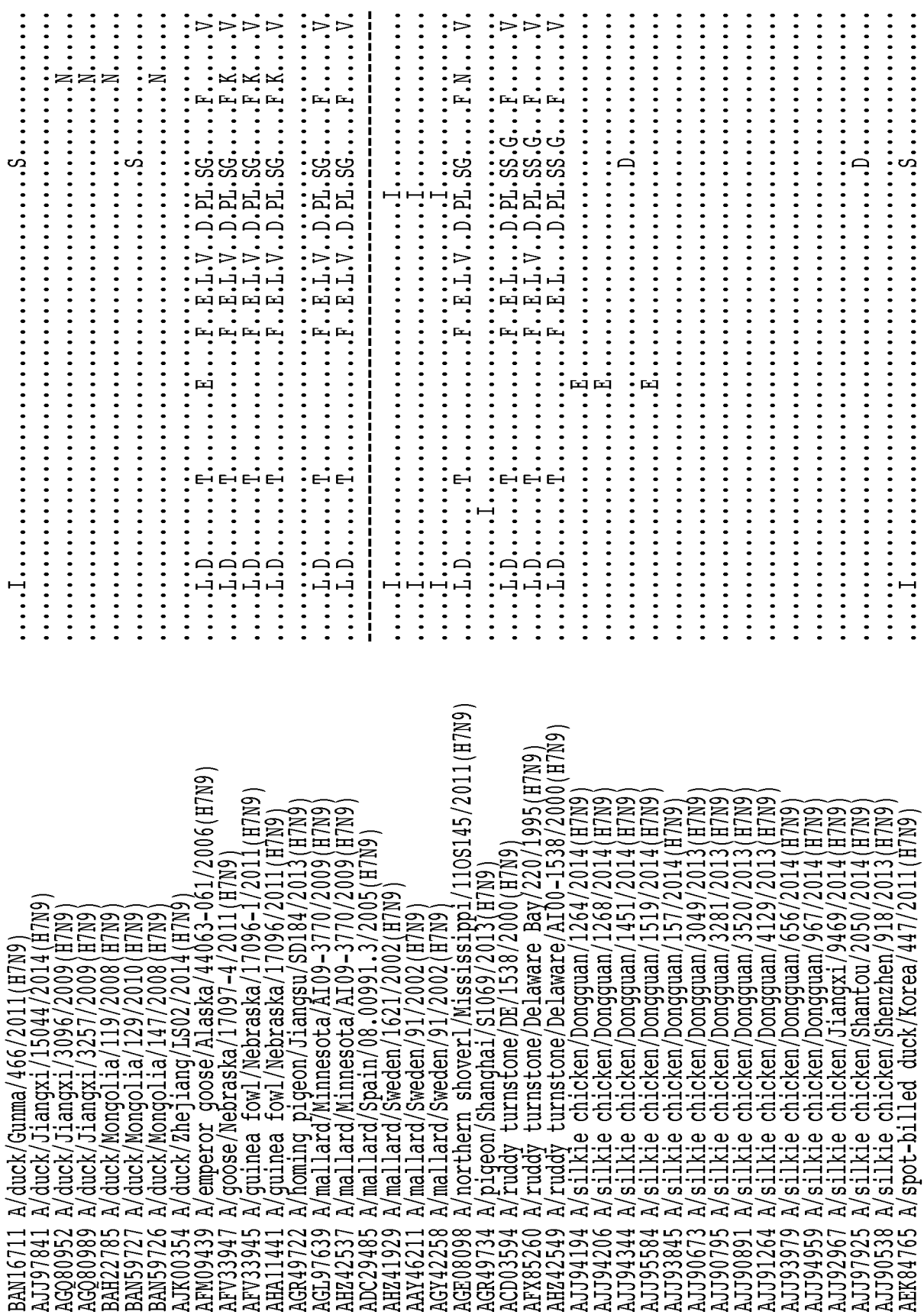

BAN16711 A/duck/Gunma/466/2011(H7N9)
AJU97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)
AJU94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJU94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJU94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
AJU95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJU93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJU90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJU90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
AJU90891 A/silkie chicken/Dongguan/3520/2013(H7N9)
AJU91264 A/silkie chicken/Dongguan/4129/2013(H7N9)
AJU93979 A/silkie chicken/Dongguan/656/2014(H7N9)
AJU94959 A/silkie chicken/Dongguan/967/2014(H7N9)
AJU92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)
AJU97925 A/silkie chicken/Shantou/2050/2014(H7N9)
AJU90538 A/silkie chicken/Shenzhen/918/2013(H7N9)
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)

FIGURE 22-25

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AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)          ............................................................
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                ....ML.D.......T.............FK.E.L.V..D.PL.SS.G...F......V.
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)          .....L.D.......T.............F..E.L.V..D.PL.SG.....F......V.
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)            .....L.D.......T.............F..E.L.V..D.PL.SG.....F......V.
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)            .....L.D.......T.............F..E.L.V..D.PL.SG.....F......V.
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)            .....L.D.......T.............F..E.L.V..D.PL.SG.....F......V.
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)            .....L.D.......T.............F..E.L.V..D.PL.SG.....F.K....V.
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)            .....L.D.......T.............F..E.L.V..D.PL.SG.....F.K....V.
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)            ....ML.D.......T.............FK.E.L.V..D.PL.SS.G...F......V.
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)            ....ML.D.......T.............FK.E.L.V..D.PL.SS.G...F......V.
AEK84760 A/wild bird/Korea/A14/2011(H7N9)               ------------------P.........................S...............
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                .....I................P.....................S...............
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                .....I.........I..............I.............S...............
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)           .....I......................................S...............
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)          .....I......................................S...............
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)          .....I......................................S...............
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)          .....I......................................S...............
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)           .....I......................................S...............
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)           .....I......................................S...............
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)           ............................................................
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)          ........................................................S...
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)         ............................................................
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Positions from 301 till 360

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         Consensus sequence                             NLPFQNIDSRAVGKCPRYVKQRSLLLATGMKNVPEIPKGRGLFGAIAGFIENGWEGLIDG
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)      .......N.............E..M..........L........................
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)     .......N.............E..M..........L........................
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)            .......N.............E..M...................................
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)                   ............................................................
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)                   ............................................................
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)                   ............................................................
AHM24224 A/Beijing/3/2013(H7N9)                         ............................................................
AHD25003 A/Guangdong/02/2013(H7N9)                      ............................................................
AHH25185 A/Guangdong/04/2013(H7N9)                      ............................................................
AGI60301 A/Hangzhou/1/2013(H7N9)                        ............................................................
AGK84857 A/Hangzhou/2/2013(H7N9)                        ............................................................
AHF20528 A/Hong Kong/470129/2013(H7N9)                  S...........................................................
AGY41893 A/Huizhou/01/2013(H7N9)                        ............................................................
AGO51387 A/Jiangsu/2/2013(H7N9)                         ............................................................
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FIGURE 22-26

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AGJ73503 A/Nanjing/1/2013(H7N9)               ............................................................
AGR85026 A/Nanjing/2/2013(H7N9)               ............................................................
AGR84954 A/Nanjing/6/2013(H7N9)               ............................................................
AHK10800 A/Shanghai/01/2014(H7N9)             ............................................................
AGL44438 A/Shanghai/02/2013(H7N9)             ............................................................
AGL33692 A/Shanghai/4655T/2013(H7N9)          -------------------------------------------------------.M...
AGL33693 A/Shanghai/4659T/2013(H7N9)          -------------------------------------------------------.M...
AGI60292 A/Shanghai/4664T/2013(H7N9)          ............................................................
AGM53887 A/Shanghai/4701T/2013(H7N9)          ------------------------------------------------------------
AGM53886 A/Shanghai/4842T/2013(H7N9)          ------------------------------------------------------------
AGM53883 A/Shanghai/5083T/2013(H7N9)          ------------------------------------------------------------
AGM53884 A/Shanghai/5180T/2013(H7N9)          ------------------------------------------------------------
AGM53885 A/Shanghai/5240T/2013(H7N9)          ------------------------------------------------------------
AGW82600 A/Shanghai/CN01/2013(H7N9)           ............................................................
AHF20568 A/Shanghai/CN02/2013(H7N9)           ............................................................
AGW82612 A/Shanghai/JS01/2013(H7N9)           ............................................................
AID70634 A/Shanghai/Mix1/2014(H7N9)           ............................................................
AHJ57411 A/Shanghai/PD-01/2014(H7N9)          ............................................................
AHJ57418 A/Shanghai/PD-02/2014(H7N9)          ............................................................
AJJ96841 A/Shenzhen/SP139/2014(H7N9)          ............................................................
AJJ91909 A/Shenzhen/SP26/2014(H7N9)           S...........................................................
AJJ91945 A/Shenzhen/SP38/2014(H7N9)           ..........................................................G.
AJJ91885 A/Shenzhen/SP4/2014(H7N9)            ............................................................
AJJ91957 A/Shenzhen/SP44/2014(H7N9)           S...........................................................
AJJ91969 A/Shenzhen/SP48/2014(H7N9)           ............................................................
AJJ95596 A/Shenzhen/SP58/2014(H7N9)           ............................................................
AJJ95632 A/Shenzhen/SP62/2014(H7N9)           ............................................................
AJJ95620 A/Shenzhen/SP75/2014(H7N9)           ............................................................
AGR84942 A/Suzhou/5/2013(H7N9)                ............................................................
AGL43637 A/Taiwan/1/2013(H7N9)                ............................................................
AGL95088 A/Taiwan/S02076/2013(H7N9)           ............................................................
AGL95098 A/Taiwan/T02081/2013(H7N9)           ............................................................
AGN69474 A/Wuxi/1/2013(H7N9)                  ..........................................................N.
AGN69462 A/Wuxi/2/2013(H7N9)                  ............................................................
AGR84990 A/Wuxi/3/2013(H7N9)                  ............................................................
AGR84978 A/Wuxi/4/2013(H7N9)                  ............................................................
AGO02477 A/Xuzhou/1/2013(H7N9)                ............................................................
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)     ............................................................
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)     ............................................................
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FIGURE 22-27

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AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)                    ............................................................
AIN76383 A/Zhejiang/LS01/2014(H7N9)                          .....................K......................................
AGR85002 A/Zhenjiang/1/2013(H7N9)                            ............................................................
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)   S......NP.T..........T........R....N..T.....................
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)   S......NP.T..........T........R....N..T.....................
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)              S......NP.T..........T........R....N..T.....................
AJJ95048 A/chicken/Dongguan/1009/2014(H7N9)                  ...................................T........................
AJJ94134 A/chicken/Dongguan/1051/2014(H7N9)                  ............................................................
AJJ94158 A/chicken/Dongguan/1075/2014(H7N9)                  ............................................................
AJJ95572 A/chicken/Dongguan/1100/2014(H7N9)                  ............................................................
AJJ94182 A/chicken/Dongguan/1177/2014(H7N9)                  .....................K......................................
AJJ95171 A/chicken/Dongguan/1314/2014(H7N9)                  ............................................................
AJJ94254 A/chicken/Dongguan/1374/2014(H7N9)                  ............................................................
AJJ95227 A/chicken/Dongguan/1382/2014(H7N9)                  ............................................................
AJJ95251 A/chicken/Dongguan/1401/2014(H7N9)                  ............................................................
AJJ94356 A/chicken/Dongguan/1456/2014(H7N9)                  ............................................................
AJJ94396 A/chicken/Dongguan/1494/2014(H7N9)                  ...................................T........................
AJJ95346 A/chicken/Dongguan/1548/2014(H7N9)                  ............................................................
AJJ93857 A/chicken/Dongguan/169/2014(H7N9)                   ............................................................
AJJ95382 A/chicken/Dongguan/1690/2014(H7N9)                  ............................................................
AJJ93869 A/chicken/Dongguan/173/2014(H7N9)                   .....................K......................................
AJJ93881 A/chicken/Dongguan/189/2014(H7N9)                   ................K....K......................................
AJJ94606 A/chicken/Dongguan/191/2014(H7N9)                   ............................................................
AJJ90661 A/chicken/Dongguan/2912/2013(H7N9)                  ............................................................
AJJ90951 A/chicken/Dongguan/3544/2013(H7N9)                  ............................................................
AJJ91155 A/chicken/Dongguan/4037/2013(H7N9)                  ............................................................
AJJ92031 A/chicken/Dongguan/4064/2013(H7N9)                  ............................................................
AJJ91993 A/chicken/Dongguan/4119/2013(H7N9)                  ..........................................L.................
AJJ93907 A/chicken/Dongguan/449/2014(H7N9)                   ............................................................
AJJ93931 A/chicken/Dongguan/536/2014(H7N9)                   K...........................................................
AJJ93943 A/chicken/Dongguan/568/2014(H7N9)                   ............................................................
AJJ94754 A/chicken/Dongguan/748/2014(H7N9)                   ............................................................
AJJ94838 A/chicken/Dongguan/835/2014(H7N9)                   .....................K......................................
AJJ94862 A/chicken/Dongguan/843/2014(H7N9)                   ............................................................
AJJ94886 A/chicken/Dongguan/851/2014(H7N9)                   ............................................................
AJJ94910 A/chicken/Dongguan/874/2014(H7N9)                   .....................K......................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)                   ............................................................
AJJ91402 A/chicken/Huzhou/4045/2013(H7N9)                    ............................................................
AJJ91476 A/chicken/Huzhou/4076/2013(H7N9)                    ............................................................
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FIGURE 22-28

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AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)  .....K.....
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)  .....K.....
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)  .....K.....
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)  .....K.....
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)  .....K.....
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)  .....K.....
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)  ..........
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)  .....K.....
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)  .....K.....
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)  ..........
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)  ..........
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)  ..........
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9)  .....K.....
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9)  ..........
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9)  .....K.....
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9)  ..........
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9)  .....K.....
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9)  ..........
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)   .....K.....
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)   .....K.....
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)  ..........
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)     ..........
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)    ..........
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)  .....K.....
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)  ..........
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)  ..........
AJU97757 A/chicken/Shantou/2537/2014(H7N9)    ..........
AJU97973 A/chicken/Shantou/4325/2014(H7N9)    .....V.....
AJU97998 A/chicken/Shantou/4816/2014(H7N9)    .....K.....
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9)   ..........
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9)   ..........
AJU95464 A/chicken/Shenzhen/138/2014(H7N9)    ..........
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9)   ..........
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9)   ..........
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9)   .....N.....
AJU90490 A/chicken/Shenzhen/742/2013(H7N9)    ..........
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)    ..........
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)    S.........
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)  ..........
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FIGURE 22-29

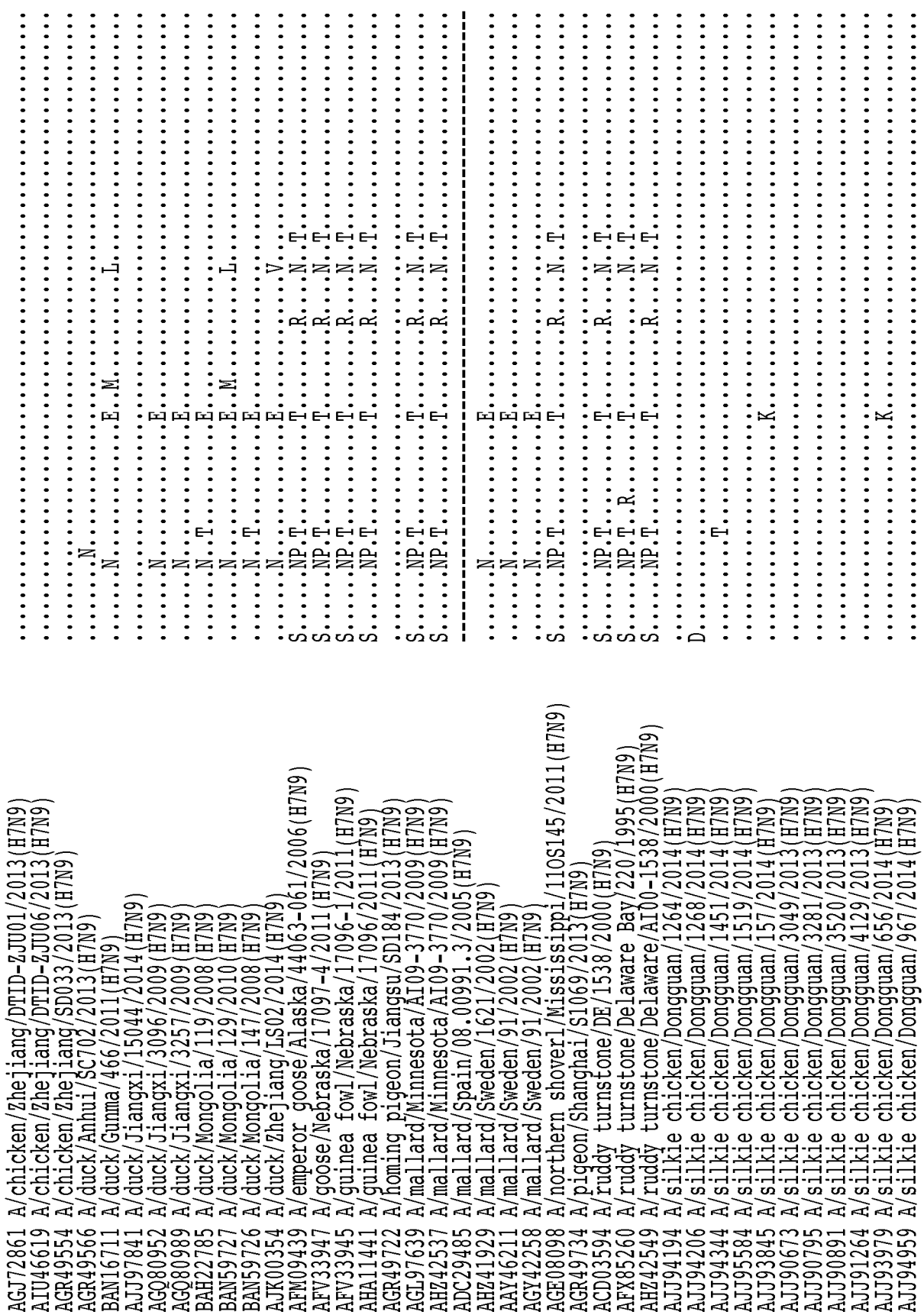

AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJJ97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)

FIGURE 22-30

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AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)                  .....................K.....................................
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)                  .....................................V.....................
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)                  ....................................................................
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)                   .......N............E..M.........P.....................
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)                     ....................................................................
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                           S......NP.T..........P........R....N..T.....................
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)                     S......NP.T..........T........R....K..T.....................
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)                       S......NP.T..........T........R....K..T.....................
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)                       S......NP.T..........T........R....K..T.....................
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)                       S......NP.T..........T........R....K..T.....................
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)                       S......NP.T..........T........R....N..T.....................
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)                       S......NP.T..........T........R....N..T.....................
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)                       S......NP.T..........P........R....N..T..........---------
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)                       S......NP.T..........P........R....N..T.....................
AEK84760 A/wild bird/Korea/A14/2011(H7N9)                          .......N............E..M.........L.....................
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                           .......N............E..M.........L...K.................
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                           .......N............E..M.........L.....................
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)                      .......N............E..M.........L.....................
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)                     .......N............E..M.........L.....................
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)                     .......N............E..M.........P.....................
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)                     .......N............E..M.........P.....................
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)                      .......N............E..M.........L.....................
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)                      .......N............E..M.........L.....................
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)                      .......N............E..M.........L.....................
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)                     .......N............E..M.........L.....................
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)                    ....................................................................

Positions from 361 till 420
         Consensus sequence                                        WYGFRHQNAQGEGTAADYKSTQSAIDQITGKLNRLIEKTNQQFELIDNEFNEVEKQIGNV
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)                 ...................................................T.........
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)                ...................................................T.........
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)                       ...................................................T.........
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)                              ....................................................................
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)                              ....................................................................
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)                              ....................................................................
AHM24224 A/Beijing/3/2013(H7N9)                                    ....................................................................
AHD25003 A/Guangdong/02/2013(H7N9)                                 ....................................................................
AHH25185 A/Guangdong/04/2013(H7N9)                                 ....................................................................
AGI60301 A/Hangzhou/1/2013(H7N9)                                   ....................................................................
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FIGURE 22-31

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AGK84857 A/Hangzhou/2/2013(H7N9)
AHF20528 A/Hong_Kong/47012g/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGO51387 A/Jiangsu/2/2013(H7N9)
AGJ73503 A/Nanjing/1/2013(H7N9)
AGR85026 A/Nanjing/2/2013(H7N9)
AGR84954 A/Nanjing/6/2013(H7N9)
AHK10800 A/Shanghai/01/2014(H7N9)
AGL44438 A/Shanghai/02/2013(H7N9)
AGL33692 A/Shanghai/4655T/2013(H7N9)
AGL33693 A/Shanghai/4659T/2013(H7N9)
AGI60292 A/Shanghai/4664T/2013(H7N9)
AGM53887 A/Shanghai/4701T/2013(H7N9)
AGM53886 A/Shanghai/4842T/2013(H7N9)
AGM53883 A/Shanghai/5083T/2013(H7N9)
AGM53884 A/Shanghai/5180T/2013(H7N9)
AGM53885 A/Shanghai/5240T/2013(H7N9)
AGW82600 A/Shanghai/CN01/2013(H7N9)
AHF20568 A/Shanghai/CN02/2013(H7N9)
AGW82612 A/Shanghai/JS01/2013(H7N9)
AID70634 A/Shanghai/Mix1/2014(H7N9)
AHJ57411 A/Shanghai/PD-01/2014(H7N9)
AHJ57418 A/Shanghai/PD-02/2014(H7N9)
AJJ96841 A/Shenzhen/SP139/2014(H7N9)
AJJ91909 A/Shenzhen/SP26/2014(H7N9)
AJJ91945 A/Shenzhen/SP38/2014(H7N9)
AJJ91885 A/Shenzhen/SP4/2014(H7N9)
AJJ91957 A/Shenzhen/SP44/2014(H7N9)
AJJ91969 A/Shenzhen/SP48/2014(H7N9)
AJJ95596 A/Shenzhen/SP58/2014(H7N9)
AJJ95632 A/Shenzhen/SP62/2014(H7N9)
AJJ95620 A/Shenzhen/SP75/2014(H7N9)
AGR84942 A/Suzhou/5/2013(H7N9)
AGL43637 A/Taiwan/1/2013(H7N9)
AGL95088 A/Taiwan/S02076/2013(H7N9)
AGL95098 A/Taiwan/T02081/2013(H7N9)
AGN69474 A/Wuxi/1/2013(H7N9)
AGN69462 A/Wuxi/2/2013(H7N9)
AGR84990 A/Wuxi/3/2013(H7N9)
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FIGURE 22-32

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AGR84978 A/Wuxi/4/2013(H7N9)                                   ............................................................
AGO02477 A/Xuzhou/1/2013(H7N9)                                 ............................................................
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)                      ............................................................
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)                      ............................................................
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)                      ............................................................
AIN76383 A/Zhejiang/LS01/2014(H7N9)                            ............................................................
AGR85002 A/Zhenjiang/1/2013(H7N9)                              ............................................................
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)     ....................................D....H........S.I.Q.....
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)     ....................................D.............S.I.Q.....
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)                ....................................D.............S.I.Q.....
AJJ95048 A/chicken/Dongguan/1009/2014(H7N9)                    ............................................................
AJJ94134 A/chicken/Dongguan/1051/2014(H7N9)                    ............................................................
AJJ94158 A/chicken/Dongguan/1075/2014(H7N9)                    ....K.................................................T.....
AJJ95572 A/chicken/Dongguan/1100/2014(H7N9)                    ............................................................
AJJ94182 A/chicken/Dongguan/1177/2014(H7N9)                    ............................................................
AJJ95171 A/chicken/Dongguan/1314/2014(H7N9)                    ....K.................................................T.....
AJJ94254 A/chicken/Dongguan/1374/2014(H7N9)                    ....K.................................................T.....
AJJ95227 A/chicken/Dongguan/1382/2014(H7N9)                    ............................................................
AJJ95251 A/chicken/Dongguan/1401/2014(H7N9)                    ......................................................T.....
AJJ94356 A/chicken/Dongguan/1456/2014(H7N9)                    ......................................................T.....
AJJ94396 A/chicken/Dongguan/1494/2014(H7N9)                    ............................................................
AJJ95346 A/chicken/Dongguan/1548/2014(H7N9)                    ......................................................T.....
AJJ93857 A/chicken/Dongguan/169/2014(H7N9)                     ............................................................
AJJ95382 A/chicken/Dongguan/1690/2014(H7N9)                    ............................................................
AJJ93869 A/chicken/Dongguan/173/2014(H7N9)                     ............................................................
AJJ93881 A/chicken/Dongguan/189/2014(H7N9)                     ............................................................
AJJ94606 A/chicken/Dongguan/191/2014(H7N9)                     ............................................................
AJJ90661 A/chicken/Dongguan/2912/2013(H7N9)                    ............................................................
AJJ90951 A/chicken/Dongguan/3544/2013(H7N9)                    ............................................................
AJJ91155 A/chicken/Dongguan/4037/2013(H7N9)                    ............................................................
AJJ92031 A/chicken/Dongguan/4064/2013(H7N9)                    ............................................................
AJJ91993 A/chicken/Dongguan/4119/2013(H7N9)                    ............................................................
AJJ93907 A/chicken/Dongguan/449/2014(H7N9)                     ............................................................
AJJ93931 A/chicken/Dongguan/536/2014(H7N9)                     ............................................................
AJJ93943 A/chicken/Dongguan/568/2014(H7N9)                     ............................................................
AJJ94754 A/chicken/Dongguan/748/2014(H7N9)                     ............................................................
AJJ94838 A/chicken/Dongguan/835/2014(H7N9)                     ............................................................
AJJ94862 A/chicken/Dongguan/843/2014(H7N9)                     ............................................................
AJJ94886 A/chicken/Dongguan/851/2014(H7N9)                     ............................................................
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FIGURE 22-33

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AJU94910 A/chicken/Dongguan/874/2014(H7N9)  ..................................................
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)  ..................................................
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)   ..................................................
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)   ..................................................
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9) ..................................................
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9) ..................................................
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9) ..................................................
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9) ..................................................
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9) ..................................................
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9) ..................................................
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9) .....A............................................
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9) ..................................................
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9) ..................................................
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9) .....A............................................
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9) .....A............................................
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9) .....A............................................
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9) ..................................................
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9) .....A............................................
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9) ..................................................
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9) .....A............................................
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9) .....M............................................
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9) .....A............................................
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)  ..................................................
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)  ..................................................
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9) ..................................................
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)    ..................................................
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)   ..................................................
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9) ..............................................
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9) ..................................................
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9) ..................................................
AJU97757 A/chicken/Shantou/2537/2014(H7N9)  ....K.............................................
AJU97973 A/chicken/Shantou/4325/2014(H7N9)  ..................................................
AJU97998 A/chicken/Shantou/4816/2014(H7N9)  .....V............................................
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9) ..................................................
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9) ..................................................
AJU95464 A/chicken/Shenzhen/138/2014(H7N9)  ....K.....................................T.....
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9) ..................................................
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9) ..................................................
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9) ..................................................
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FIGURE 22-34

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AJU90490 A/chicken/Shenzhen/742/2013(H7N9)
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)
AIU47013 A/chicken/Suzhou/0402011H/2013(H7N9)
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJU97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)
AJU94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJU94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJU94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
AJU95584 A/silkie chicken/Dongguan/1519/2014(H7N9)
AJU93845 A/silkie chicken/Dongguan/157/2014(H7N9)
AJU90673 A/silkie chicken/Dongguan/3049/2013(H7N9)
AJU90795 A/silkie chicken/Dongguan/3281/2013(H7N9)
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FIGURE 22-35

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AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)     ............................................................
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)     ...................................M........................
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)      ...........................................G................
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)      ............................................................
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)      ............................................................
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)      ............................................................
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)      ............................................................
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)       ..................................................T.........
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)         ............................................................
ABI84694 A/turkey/Minnesota/1/1988(H7N9)               ....K...............................D.............S.I.Q.....
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)         .............................S......D.............S.I.Q.....
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)           .............................S......D.............S.I.Q.....
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)           ....................................D.............S.I.Q.....
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)           .............................N......D.............S.I.Q.....
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)           ....................................D.............S.I.Q.....
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)           ....................................D.......M.....S.I.Q.....
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)           ------------------------------------------------------------
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)           ....K...............................D........---------------
AEK84760 A/wild bird/Korea/A14/2011(H7N9)              ..................................................T.........
AEK84761 A/wild bird/Korea/A3/2011(H7N9)               ..................................................T.........
AEK84763 A/wild bird/Korea/A9/2011(H7N9)               ..................................................T.........
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)          ..................................................T.........
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)         ..................................................T.........
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)         ..................................................T.........
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)         ..................................................T.........
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)          ..................................................T.........
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)          ..................................................T.........
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)          ..................................................T.........
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)         ..................................................T.........
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)        ............................................................
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Positions from 421 till 480

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         Consensus sequence                            INWTRDSITEVWSYNAELLVAMENQHTIDLADSEMDKLYERVKRQLRENAEEDGTGCFEI
ACX53683  A/goose/Czech Republic/1848-K9/2009(H7N9)    .......M...........................N........................
ADN34727  A/goose/Czech Republic/1848-T14/2009(H7N9)   .......M...........................N........................
CAY39406  A/Anas crecca/Spain/1460/2008(H7N9)          ...................................N........................
AHZ39686  A/Anhui/DEWH72-01/2013(H7N9)                 ............................................................
AHZ39710  A/Anhui/DEWH72-03/2013(H7N9)                 ............................................................
AHZ39746  A/Anhui/DEWH72-06/2013(H7N9)                 ............................................................
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FIGURE 22-36

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AHM24224 A/Beijing/3/2013(H7N9)
AHD25003 A/Guangdong/02/2013(H7N9)
AHH25185 A/Guangdong/04/2013(H7N9)
AGI60301 A/Hangzhou/1/2013(H7N9)
AGK84857 A/Hangzhou/2/2013(H7N9)
AHF20528 A/Hong_Kong/470129/2013(H7N9)
AGY41893 A/Huizhou/01/2013(H7N9)
AGO51387 A/Jiangsu/2/2013(H7N9)
AGJ73503 A/Nanjing/1/2013(H7N9)
AGR85026 A/Nanjing/2/2013(H7N9)
AGR84954 A/Nanjing/6/2013(H7N9)
AHK10800 A/Shanghai/01/2014(H7N9)
AGL44438 A/Shanghai/02/2013(H7N9)
AGL33692 A/Shanghai/4655T/2013(H7N9)
AGL33693 A/Shanghai/4659T/2013(H7N9)
AGI60292 A/Shanghai/4664T/2013(H7N9)
AGM53887 A/Shanghai/4701T/2013(H7N9)
AGM53886 A/Shanghai/4842T/2013(H7N9)
AGM53883 A/Shanghai/5083T/2013(H7N9)
AGM53884 A/Shanghai/5180T/2013(H7N9)
AGM53885 A/Shanghai/5240T/2013(H7N9)
AGW82600 A/Shanghai/CN01/2013(H7N9)
AHF20568 A/Shanghai/CN02/2013(H7N9)
AGW82612 A/Shanghai/JS01/2013(H7N9)
AID70634 A/Shanghai/Mix1/2014(H7N9)
AHJ57411 A/Shanghai/PD-01/2014(H7N9)
AHJ57418 A/Shanghai/PD-02/2014(H7N9)
AJU96841 A/Shenzhen/SP139/2014(H7N9)
AJU91909 A/Shenzhen/SP26/2014(H7N9)
AJU91945 A/Shenzhen/SP38/2014(H7N9)
AJU91885 A/Shenzhen/SP4/2014(H7N9)
AJU91957 A/Shenzhen/SP44/2014(H7N9)
AJU91969 A/Shenzhen/SP48/2014(H7N9)
AJU95596 A/Shenzhen/SP58/2014(H7N9)
AJU95632 A/Shenzhen/SP62/2014(H7N9)
AJU95620 A/Shenzhen/SP75/2014(H7N9)
AGR84942 A/Suzhou/5/2013(H7N9)
AGL43637 A/Taiwan/1/2013(H7N9)
AGL95088 A/Taiwan/S02076/2013(H7N9)
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FIGURE 22-37

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AGL95098 A/Taiwan/T02081/2013(H7N9)                              ............................................................
AGN69474 A/Wuxi/1/2013(H7N9)                                     ............................................................
AGN69462 A/Wuxi/2/2013(H7N9)                                     ............................................................
AGR84990 A/Wuxi/3/2013(H7N9)                                     ............................................................
AGR84978 A/Wuxi/4/2013(H7N9)                                     ............................................................
AGO02477 A/Xuzhou/1/2013(H7N9)                                   ............................................................
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)                        ............................................................
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)                        ............................................................
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)                        ............................................................
AIN76383 A/Zhejiang/LS01/2014(H7N9)                              ............................................................
AGR85002 A/Zhenjiang/1/2013(H7N9)                                ............................................................
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)       .......M...........................N......RK................
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)       .......M...........................N......RK................
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)                  .......M...........................N......RK................
AJJ95048 A/chicken/Dongguan/1009/2014(H7N9)                      ............................................................
AJJ94134 A/chicken/Dongguan/1051/2014(H7N9)                      ............................................................
AJJ94158 A/chicken/Dongguan/1075/2014(H7N9)                      ............................................................
AJJ95572 A/chicken/Dongguan/1100/2014(H7N9)                      ............................................................
AJJ94182 A/chicken/Dongguan/1177/2014(H7N9)                      ............................................................
AJJ95171 A/chicken/Dongguan/1314/2014(H7N9)                      ............................................................
AJJ94254 A/chicken/Dongguan/1374/2014(H7N9)                      ............................................................
AJJ95227 A/chicken/Dongguan/1382/2014(H7N9)                      ............................................................
AJJ95251 A/chicken/Dongguan/1401/2014(H7N9)                      .......................................K....................
AJJ94356 A/chicken/Dongguan/1456/2014(H7N9)                      ............................................................
AJJ94396 A/chicken/Dongguan/1494/2014(H7N9)                      ............................................................
AJJ95346 A/chicken/Dongguan/1548/2014(H7N9)                      .......................................K....................
AJJ93857 A/chicken/Dongguan/169/2014(H7N9)                       ............................................................
AJJ95382 A/chicken/Dongguan/1690/2014(H7N9)                      ............................................................
AJJ93869 A/chicken/Dongguan/173/2014(H7N9)                       ............................................................
AJJ93881 A/chicken/Dongguan/189/2014(H7N9)                       ............................................................
AJJ94606 A/chicken/Dongguan/191/2014(H7N9)                       ............................................................
AJJ90661 A/chicken/Dongguan/2912/2013(H7N9)                      ............................................................
AJJ90951 A/chicken/Dongguan/3544/2013(H7N9)                      ............................................................
AJJ91155 A/chicken/Dongguan/4037/2013(H7N9)                      ...................................N........................
AJJ92031 A/chicken/Dongguan/4064/2013(H7N9)                      ............................................................
AJJ91993 A/chicken/Dongguan/4119/2013(H7N9)                      ............................................................
AJJ93907 A/chicken/Dongguan/449/2014(H7N9)                       ............................................................
AJJ93931 A/chicken/Dongguan/536/2014(H7N9)                       ............................................................
AJJ93943 A/chicken/Dongguan/568/2014(H7N9)                       ............................................................
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FIGURE 22-38

AJU94754 A/chicken/Dongguan/748/2014(H7N9)
AJU94838 A/chicken/Dongguan/835/2014(H7N9)
AJU94862 A/chicken/Dongguan/843/2014(H7N9)
AJU94886 A/chicken/Dongguan/851/2014(H7N9)
AJU94910 A/chicken/Dongguan/874/2014(H7N9)
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9)
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9)
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9)
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9)
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9)
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9)
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)
AJU97757 A/chicken/Shantou/2537/2014(H7N9)
AJU97973 A/chicken/Shantou/4325/2014(H7N9)
AJU97998 A/chicken/Shantou/4816/2014(H7N9)
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9)
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9)

FIGURE 22-39

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AJU95464 A/chicken/Shenzhen/138/2014(H7N9)
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9)
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9)
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9)
AJU90490 A/chicken/Shenzhen/742/2013(H7N9)
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)
AGJ72861 A/chicken/zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJU97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)
AJU94194 A/silkie chicken/Dongguan/1264/2014(H7N9)
AJU94206 A/silkie chicken/Dongguan/1268/2014(H7N9)
AJU94344 A/silkie chicken/Dongguan/1451/2014(H7N9)
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FIGURE 22-40

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AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)       ............................................................
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)        ............................................................
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)       ............................................................
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)       ............................................................
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)       ............................................................
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)       ............................................................
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)        ............................................................
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)        ............................................................
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)        ............................................................
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)        ............................................................
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)        ............................................................
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)         .......M...........................N......R.................
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)           ............................................................
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                 .......M...........................N......R.................
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)           .......M...........................N......RK................
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)             .......M...........................N......RK................
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)             .......M...........................N......RK................
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)             .......M...........................N......RK................
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)             .......M..I........................N......RK................
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)             .......M..I........................N......RK................
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)             --------------------------------------------------.K..GSHYG-
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)             ------------------------------------------------------------
AEK84760 A/wild bird/Korea/A14/2011(H7N9)                .......M...........................N......R.................
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                 .......M...........................N......R.................
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                 .......M...........................N......R.................
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)            .......M...........................N......R.................
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)           .......M...........................N......R.................
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)           .......M...........................N......R.................
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)           .......M...........................N......R.................
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)            .......M...........................N......R.................
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)            .......M...........................N......R.................
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)            .......M...........................N........................
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)           .......M...........................N........................
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)          ............................................................

Positions from 481 till 540
         Consensus sequence                              FHKCDDDCMASIRNNTYDHSKYREEAMQNRIQIDPVKLSSGYKDVILWFSFGASCFILLA
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)       .................................N..........................
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9)      .................................N..........................
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FIGURE 22-41

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CAY39406  A/Anas crecca/Spain/1460/2008(H7N9)  ..................................................
AHZ39686  A/Anhui/DEWH72-01/2013(H7N9)  ..................................................
AHZ39710  A/Anhui/DEWH72-03/2013(H7N9)  ..................................................
AHZ39746  A/Anhui/DEWH72-06/2013(H7N9)  ..................................................
AHM24224  A/Beijing/3/2013(H7N9)  ..................................................
AHD25003  A/Guangdong/02/2013(H7N9)  ..................................................
AHH25185  A/Guangdong/04/2013(H7N9)  ..................................................
AGI60301  A/Hangzhou/1/2013(H7N9)  ..................................................
AGK84857  A/Hangzhou/2/2013(H7N9)  ..................................................
AHF20528  A/Hong Kong/470129/2013(H7N9)  ..................................................
AGY41893  A/Huizhou/01/2013(H7N9)  ..................................................
AGO51387  A/Jiangsu/2/2013(H7N9)  ..X..XBX.....XX..........
AGJ73503  A/Nanjing/1/2013(H7N9)  ..................................................
AGR85026  A/Nanjing/2/2013(H7N9)  ..................................................
AGR84954  A/Nanjing/6/2013(H7N9)  ..................................................
AHK10800  A/Shanghai/01/2014(H7N9)  ..................................................
AGL44438  A/Shanghai/02/2013(H7N9)  ..................................................
AGL33692  A/Shanghai/4655T/2013(H7N9)  ..................................................
AGL33693  A/Shanghai/4659T/2013(H7N9)  ..................................................
AGI60292  A/Shanghai/4664T/2013(H7N9)  ..................................................
AGM53887  A/Shanghai/4701T/2013(H7N9)  ..................................................
AGM53886  A/Shanghai/4842T/2013(H7N9)  ..................................................
AGM53883  A/Shanghai/5083T/2013(H7N9)  ..................................................
AGM53884  A/Shanghai/5180T/2013(H7N9)  ..................................................
AGM53885  A/Shanghai/5240T/2013(H7N9)  ..................................................
AGW82600  A/Shanghai/CN01/2013(H7N9)  ..................................................
AHF20568  A/Shanghai/CN02/2013(H7N9)  ..................................................
AGW82612  A/Shanghai/JS01/2013(H7N9)  ..................................................
AID70634  A/Shanghai/Mix1/2014(H7N9)  ..................................................
AHJ57411  A/Shanghai/PD-01/2014(H7N9)  ..................................................
AHJ57418  A/Shanghai/PD-02/2014(H7N9)  ..................................................
AJJ96841  A/Shenzhen/SP139/2014(H7N9)  ..................................................
AJJ91909  A/Shenzhen/SP26/2014(H7N9)  .....G.....R.....
AJJ91945  A/Shenzhen/SP38/2014(H7N9)  ..................................................
AJJ91885  A/Shenzhen/SP4/2014(H7N9)  .....R.....
AJJ91957  A/Shenzhen/SP44/2014(H7N9)  ..................................................
AJJ91969  A/Shenzhen/SP48/2014(H7N9)  ..................................................
AJJ95596  A/Shenzhen/SP58/2014(H7N9)  ..................................................
AJJ95632  A/Shenzhen/SP62/2014(H7N9)  ..................................................
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FIGURE 22-42

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AJU95620 A/Shenzhen/SP75/2014(H7N9)
AGR84942 A/Suzhou/5/2013(H7N9)
AGL43637 A/Taiwan/1/2013(H7N9)
AGL95088 A/Taiwan/S02076/2013(H7N9)
AGL95098 A/Taiwan/T02081/2013(H7N9)
AGN69474 A/Wuxi/1/2013(H7N9)
AGN69462 A/Wuxi/2/2013(H7N9)
AGR84990 A/Wuxi/3/2013(H7N9)
AGR84978 A/Wuxi/4/2013(H7N9)
AGO02477 A/Xuzhou/1/2013(H7N9)
AGU02230 A/Zhejiang/DTID-ZJU05/2013(H7N9)
AGU02233 A/Zhejiang/DTID-ZJU08/2013(H7N9)
AHA11500 A/Zhejiang/DTID-ZJU10/2013(H7N9)
AIN76383 A/Zhejiang/LS01/2014(H7N9)
AGR85002 A/Zhenjiang/1/2013(H7N9)
ADK71137 A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)
ADK71148 A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)
ABS89409 A/blue-winged teal/Ohio/566/2006(H7N9)
AJU95048 A/chicken/Dongguan/1009/2014(H7N9)
AJU94134 A/chicken/Dongguan/1051/2014(H7N9)
AJU94158 A/chicken/Dongguan/1075/2014(H7N9)
AJU95572 A/chicken/Dongguan/1100/2014(H7N9)
AJU94182 A/chicken/Dongguan/1177/2014(H7N9)
AJU95171 A/chicken/Dongguan/1314/2014(H7N9)
AJU94254 A/chicken/Dongguan/1374/2014(H7N9)
AJU95227 A/chicken/Dongguan/1382/2014(H7N9)
AJU95251 A/chicken/Dongguan/1401/2014(H7N9)
AJU94356 A/chicken/Dongguan/1456/2014(H7N9)
AJU94396 A/chicken/Dongguan/1494/2014(H7N9)
AJU95346 A/chicken/Dongguan/1548/2014(H7N9)
AJU93857 A/chicken/Dongguan/169/2014(H7N9)
AJU95382 A/chicken/Dongguan/1690/2014(H7N9)
AJU93869 A/chicken/Dongguan/173/2014(H7N9)
AJU93881 A/chicken/Dongguan/189/2014(H7N9)
AJU94606 A/chicken/Dongguan/191/2014(H7N9)
AJU90661 A/chicken/Dongguan/2912/2013(H7N9)
AJU90951 A/chicken/Dongguan/3544/2013(H7N9)
AJU91155 A/chicken/Dongguan/4037/2013(H7N9)
AJU92031 A/chicken/Dongguan/4064/2013(H7N9)
```

FIGURE 22-43

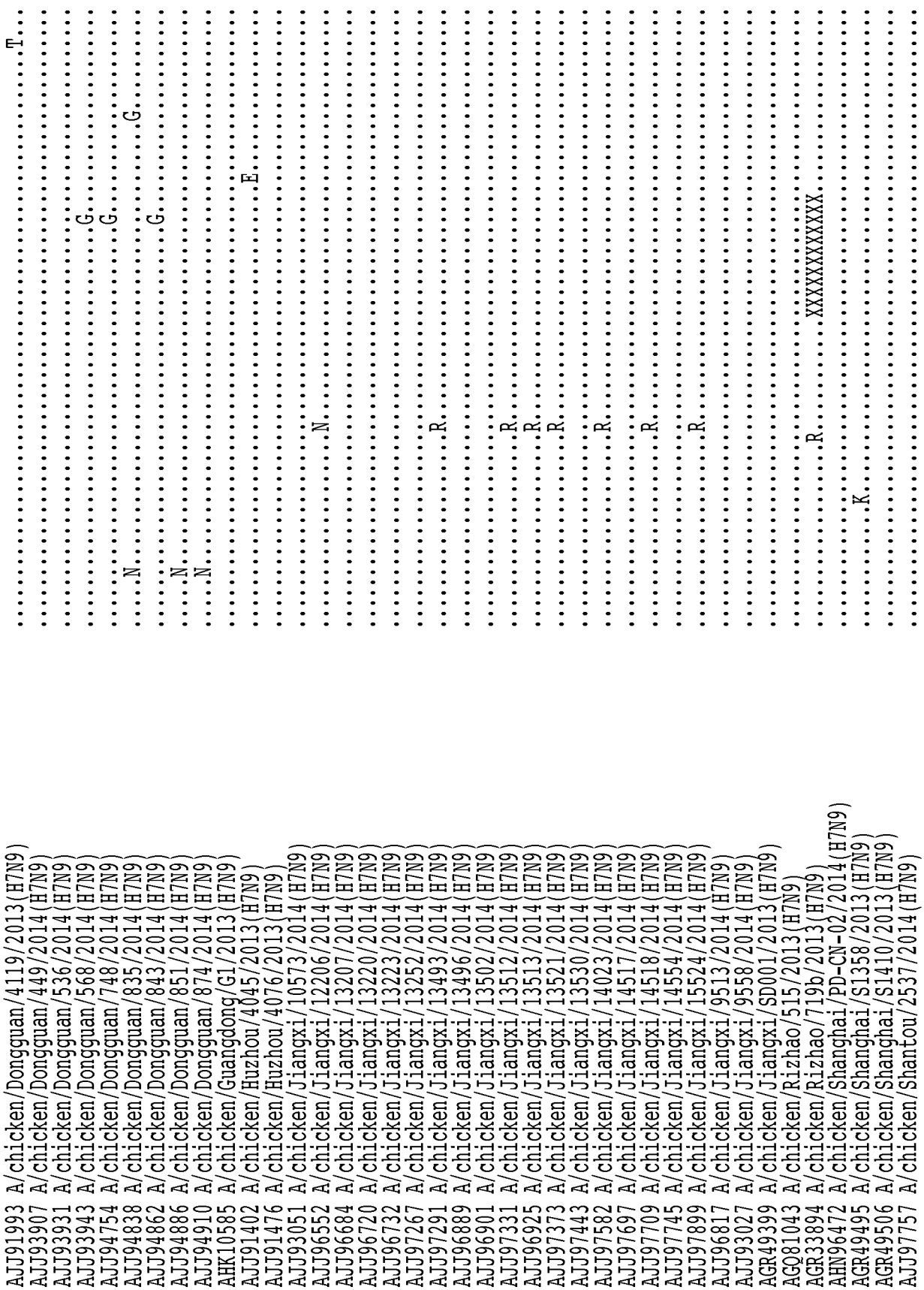

AJU91993 A/chicken/Dongguan/4119/2013(H7N9)
AJU93907 A/chicken/Dongguan/449/2014(H7N9)
AJU93931 A/chicken/Dongguan/536/2014(H7N9)
AJU93943 A/chicken/Dongguan/568/2014(H7N9)
AJU94754 A/chicken/Dongguan/748/2014(H7N9)
AJU94838 A/chicken/Dongguan/835/2014(H7N9)
AJU94862 A/chicken/Dongguan/843/2014(H7N9)
AJU94886 A/chicken/Dongguan/851/2014(H7N9)
AJU94910 A/chicken/Dongguan/874/2014(H7N9)
AHK10585 A/chicken/Guangdong/G1/2013(H7N9)
AJU91402 A/chicken/Huzhou/4045/2013(H7N9)
AJU91476 A/chicken/Huzhou/4076/2013(H7N9)
AJU93051 A/chicken/Jiangxi/10573/2014(H7N9)
AJU96552 A/chicken/Jiangxi/12206/2014(H7N9)
AJU96684 A/chicken/Jiangxi/13207/2014(H7N9)
AJU96720 A/chicken/Jiangxi/13220/2014(H7N9)
AJU96732 A/chicken/Jiangxi/13223/2014(H7N9)
AJU97267 A/chicken/Jiangxi/13252/2014(H7N9)
AJU97291 A/chicken/Jiangxi/13493/2014(H7N9)
AJU96889 A/chicken/Jiangxi/13496/2014(H7N9)
AJU96901 A/chicken/Jiangxi/13502/2014(H7N9)
AJU97331 A/chicken/Jiangxi/13512/2014(H7N9)
AJU96925 A/chicken/Jiangxi/13513/2014(H7N9)
AJU97373 A/chicken/Jiangxi/13521/2014(H7N9)
AJU97443 A/chicken/Jiangxi/13530/2014(H7N9)
AJU97582 A/chicken/Jiangxi/14023/2014(H7N9)
AJU97697 A/chicken/Jiangxi/14517/2014(H7N9)
AJU97709 A/chicken/Jiangxi/14518/2014(H7N9)
AJU97745 A/chicken/Jiangxi/14554/2014(H7N9)
AJU97899 A/chicken/Jiangxi/15524/2014(H7N9)
AJU96817 A/chicken/Jiangxi/9513/2014(H7N9)
AJU93027 A/chicken/Jiangxi/9558/2014(H7N9)
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9)
AGQ81043 A/chicken/Rizhao/515/2013(H7N9)
AGR33894 A/chicken/Rizhao/719b/2013(H7N9)
AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)
AJU97757 A/chicken/Shantou/2537/2014(H7N9)

FIGURE 22-44

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AJU97973 A/chicken/Shantou/4325/2014(H7N9)
AJU97998 A/chicken/Shantou/4816/2014(H7N9)
AJU91314 A/chicken/Shaoxing/2417/2013(H7N9)
AJU91725 A/chicken/Shaoxing/5201/2013(H7N9)
AJU95464 A/chicken/Shenzhen/138/2014(H7N9)
AJU90576 A/chicken/Shenzhen/1665/2013(H7N9)
AJU90588 A/chicken/Shenzhen/2110/2013(H7N9)
AJU91035 A/chicken/Shenzhen/3780/2013(H7N9)
AJU90490 A/chicken/Shenzhen/742/2013(H7N9)
AJU92005 A/chicken/Shenzhen/801/2013(H7N9)
AJU90526 A/chicken/Shenzhen/898/2013(H7N9)
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)
AGJ72861 A/chicken/zhejiang/DTID-ZJU01/2013(H7N9)
AIU46619 A/chicken/zhejiang/DTID-ZJU06/2013(H7N9)
AGR49554 A/chicken/zhejiang/SD033/2013(H7N9)
AGR49566 A/duck/Anhui/SC702/2013(H7N9)
BAN16711 A/duck/Gunma/466/2011(H7N9)
AJU97841 A/duck/Jiangxi/15044/2014(H7N9)
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)
BAH22785 A/duck/Mongolia/119/2008(H7N9)
BAN59727 A/duck/Mongolia/129/2010(H7N9)
BAN59726 A/duck/Mongolia/147/2008(H7N9)
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9)
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)
AAY46211 A/mallard/Sweden/91/2002(H7N9)
AGY42258 A/mallard/Sweden/91/2002(H7N9)
AGE08098 A/northern shover1/Mississippi/11OS145/2011(H7N9)
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)
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FIGURE 22-45

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AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)      .....Q..E.....TQ..T.SL.....I.....L...
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)            .....G.....M...
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)            ..........
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)            ..........
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)            .....G.....M...
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)             .....N.....
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)            .....N.....
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)            ..........
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)            .....N.....
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)            ..........
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)             .....N.....
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)             .....N.....
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)             ..........
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)             ..........
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)             ..........
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)              .....R.....
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)                ..........
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                      .....Q..E.....AQ..A.SL.....I.....L...
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)                .....Q..E.....TQ..K.SL.....I.....L...
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)                  .N...Q..E.....TQ..K.SL.....I.....L...
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)                  .....Q..E.....TQ..K.SL.....I.....L...
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)                  .....Q..E.....TQ..K.SL.....I.....L...
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)                  .....Q..E.....TQ..A.SL.....I.....L...
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)                  .....Q..E.....TQ..A.SL.....I.....L...
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)                  ----------
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)                  ..........
AEK84760 A/wild bird/Korea/A14/2011(H7N9)                     ..........
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                      ..........
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                      ..........
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)                 .....R.....
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)                .....R.....
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)                ..........
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)                ..........
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)                 ..........
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)                 ..........
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)                 .....N.....
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)                .....N.....
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)               ..........
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FIGURE 22-46

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Positions from 541 till 561
Consensus sequence                IVMGLVFICVKNGNMRCTICI
ACX53683 A/goose/Czech Republic/1848-K9/2009(H7N9)  .A.....................
ADN34727 A/goose/Czech Republic/1848-T14/2009(H7N9) .A.....................
CAY39406 A/Anas crecca/Spain/1460/2008(H7N9)        .A.....................
AHZ39686 A/Anhui/DEWH72-01/2013(H7N9)               ......................
AHZ39710 A/Anhui/DEWH72-03/2013(H7N9)               ......................
AHZ39746 A/Anhui/DEWH72-06/2013(H7N9)               ......................
AHM24224 A/Beijing/3/2013(H7N9)                     ......................
AHD25003 A/Guangdong/02/2013(H7N9)                  ..................-----
AHH25185 A/Guangdong/04/2013(H7N9)                  ......................
AGI60301 A/Hangzhou/1/2013(H7N9)                    ......................
AGK84857 A/Hangzhou/2/2013(H7N9)                    ......................
AHF20528 A/Hong Kong/470129/2013(H7N9)              ......................
AGY41893 A/Huizhou/01/2013(H7N9)                    ......................
AGO51387 A/Jiangsu/2/2013(H7N9)                     ......................
AGJ73503 A/Nanjing/1/2013(H7N9)                     ......................
AGR85026 A/Nanjing/2/2013(H7N9)                     ..................SR..
AGR84954 A/Nanjing/6/2013(H7N9)                     ..................R...
AHK10800 A/Shanghai/01/2014(H7N9)                   ......................
AGL44438 A/Shanghai/02/2013(H7N9)                   ......................
AGL33692 A/Shanghai/4655T/2013(H7N9)                .A....................
AGL33693 A/Shanghai/4659T/2013(H7N9)                ......................
AGI60292 A/Shanghai/4664T/2013(H7N9)                ......................
AGM53887 A/Shanghai/4701T/2013(H7N9)                ..................-...
AGM53886 A/Shanghai/4842T/2013(H7N9)                ..................---
AGM53883 A/Shanghai/5083T/2013(H7N9)                ..................---
AGM53884 A/Shanghai/5180T/2013(H7N9)                ......................
AGM53885 A/Shanghai/5240T/2013(H7N9)                ..................---
AGW82600 A/Shanghai/CN01/2013(H7N9)                 ......................
AHF20568 A/Shanghai/CN02/2013(H7N9)                 ......................
AGW82612 A/Shanghai/JS01/2013(H7N9)                 .A....................
AID70634 A/Shanghai/Mix1/2014(H7N9)                 ......................
AHJ57411 A/Shanghai/PD-01/2014(H7N9)                ......................
AHJ57418 A/Shanghai/PD-02/2014(H7N9)                ......................
AJJ96841 A/Shenzhen/SP139/2014(H7N9)                ......................
AJJ91909 A/Shenzhen/SP26/2014(H7N9)                 ......................
AJJ91945 A/Shenzhen/SP38/2014(H7N9)                 ......................
AJJ91885 A/Shenzhen/SP4/2014(H7N9)                  ......................
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FIGURE 22-47

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AJJ91957  A/Shenzhen/SP44/2014(H7N9)  ..............................
AJJ91969  A/Shenzhen/SP48/2014(H7N9)  ..............................
AJJ95596  A/Shenzhen/SP58/2014(H7N9)  ..............................
AJJ95632  A/Shenzhen/SP62/2014(H7N9)  ..............................
AJJ95620  A/Shenzhen/SP75/2014(H7N9)  V.............................
AGR84942  A/Suzhou/5/2013(H7N9)       ..............................
AGL43637  A/Taiwan/1/2013(H7N9)       ..............................
AGL95088  A/Taiwan/S02076/2013(H7N9)  ..............-----.....------
AGL95098  A/Taiwan/T02081/2013(H7N9)  ..............................
AGN69474  A/Wuxi/1/2013(H7N9)        ..............................
AGN69462  A/Wuxi/2/2013(H7N9)        ..............................
AGR84990  A/Wuxi/3/2013(H7N9)        ..........SR....--------------
AGR84978  A/Wuxi/4/2013(H7N9)        ..........SR..................
AGO02477  A/Xuzhou/1/2013(H7N9)      ..........SR..................
AGU02230  A/Zhejiang/DTID-ZJU05/2013(H7N9)  ..............------------
AGU02233  A/Zhejiang/DTID-ZJU08/2013(H7N9)  ..............------------
AHA11500  A/Zhejiang/DTID-ZJU10/2013(H7N9)  ..............------------
AIN76383  A/Zhejiang/LS01/2014(H7N9)  ..............................
AGR85002  A/Zhejiang/1/2013(H7N9)     ..........SR.K................
ADK71137  A/blue-winged teal/Guatemala/CIP049-01/2008(H7N9)  .A.....I.....
ADK71148  A/blue-winged teal/Guatemala/CIP049-02/2008(H7N9)  .A.....I.....
ABS89409  A/blue-winged teal/Ohio/566/2006(H7N9)  .A.....I.....
AJJ95048  A/chicken/Dongguan/1009/2014(H7N9)  ..............................
AJJ94134  A/chicken/Dongguan/1051/2014(H7N9)  ..............................
AJJ94158  A/chicken/Dongguan/1075/2014(H7N9)  ..............................
AJJ95572  A/chicken/Dongguan/1100/2014(H7N9)  ..............................
AJJ94182  A/chicken/Dongguan/1177/2014(H7N9)  ..............................
AJJ95171  A/chicken/Dongguan/1314/2014(H7N9)  ..............................
AJJ94254  A/chicken/Dongguan/1374/2014(H7N9)  ..............................
AJJ95227  A/chicken/Dongguan/1382/2014(H7N9)  ..............................
AJJ95251  A/chicken/Dongguan/1401/2014(H7N9)  ..............................
AJJ94356  A/chicken/Dongguan/1456/2014(H7N9)  ..............................
AJJ94396  A/chicken/Dongguan/1494/2014(H7N9)  ..............................
AJJ95346  A/chicken/Dongguan/1548/2014(H7N9)  ..............................
AJJ93857  A/chicken/Dongguan/169/2014(H7N9)   ..............................
AJJ95382  A/chicken/Dongguan/1690/2014(H7N9)  ..............................
AJJ93869  A/chicken/Dongguan/173/2014(H7N9)   ..............................
AJJ93881  A/chicken/Dongguan/189/2014(H7N9)   ..............................
AJJ94606  A/chicken/Dongguan/191/2014(H7N9)   ..............................
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FIGURE 22-48

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AJJ90661 A/chicken/Dongguan/2912/2013(H7N9) .....
AJJ90951 A/chicken/Dongguan/3544/2013(H7N9) .....
AJJ91155 A/chicken/Dongguan/4037/2013(H7N9) .....
AJJ92031 A/chicken/Dongguan/4064/2013(H7N9) .....
AJJ91993 A/chicken/Dongguan/4119/2013(H7N9) .....
AJJ93907 A/chicken/Dongguan/449/2014(H7N9) .....
AJJ93931 A/chicken/Dongguan/536/2014(H7N9) .....
AJJ93943 A/chicken/Dongguan/568/2014(H7N9) .....
AJJ94754 A/chicken/Dongguan/748/2014(H7N9) .....
AJJ94838 A/chicken/Dongguan/835/2014(H7N9) .....
AJJ94862 A/chicken/Dongguan/843/2014(H7N9) .....
AJJ94886 A/chicken/Dongguan/851/2014(H7N9) .....
AJJ94910 A/chicken/Dongguan/874/2014(H7N9) .....
AHK10585 A/chicken/Guangdong/G1/2013(H7N9) .....
AJJ91402 A/chicken/Huzhou/4045/2013(H7N9) .....
AJJ91476 A/chicken/Huzhou/4076/2013(H7N9) .....
AJJ93051 A/chicken/Jiangxi/10573/2014(H7N9) .....
AJJ96552 A/chicken/Jiangxi/12206/2014(H7N9) .....
AJJ96684 A/chicken/Jiangxi/13207/2014(H7N9) .....
AJJ96720 A/chicken/Jiangxi/13220/2014(H7N9) .....
AJJ96732 A/chicken/Jiangxi/13223/2014(H7N9) .....
AJJ97267 A/chicken/Jiangxi/13252/2014(H7N9) .....
AJJ97291 A/chicken/Jiangxi/13493/2014(H7N9) .....
AJJ96889 A/chicken/Jiangxi/13496/2014(H7N9) .....
AJJ96901 A/chicken/Jiangxi/13502/2014(H7N9) .....
AJJ97331 A/chicken/Jiangxi/13512/2014(H7N9) .....
AJJ96925 A/chicken/Jiangxi/13513/2014(H7N9) .....
AJJ97373 A/chicken/Jiangxi/13521/2014(H7N9) .....
AJJ97443 A/chicken/Jiangxi/13530/2014(H7N9) .....
AJJ97582 A/chicken/Jiangxi/14023/2014(H7N9) .....
AJJ97697 A/chicken/Jiangxi/14517/2014(H7N9) .....
AJJ97709 A/chicken/Jiangxi/14518/2014(H7N9) .....
AJJ97745 A/chicken/Jiangxi/14554/2014(H7N9) .....
AJJ97899 A/chicken/Jiangxi/15524/2014(H7N9) .....M.....
AJJ96817 A/chicken/Jiangxi/95113/2014(H7N9) .....
AJJ93027 A/chicken/Jiangxi/9558/2014(H7N9) .....
AGR49399 A/chicken/Jiangxi/SD001/2013(H7N9) .....
AGQ81043 A/chicken/Rizhao/515/2013(H7N9) .....
AGR33894 A/chicken/Rizhao/719b/2013(H7N9) .....
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FIGURE 22-49

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AHN96472 A/chicken/Shanghai/PD-CN-02/2014(H7N9)      .....................
AGR49495 A/chicken/Shanghai/S1358/2013(H7N9)         .....................
AGR49506 A/chicken/Shanghai/S1410/2013(H7N9)         .....................
AJJ97757 A/chicken/Shantou/2537/2014(H7N9)           .....................
AJJ97973 A/chicken/Shantou/4325/2014(H7N9)           .....................
AJJ97998 A/chicken/Shantou/4816/2014(H7N9)           .....................
AJJ91314 A/chicken/Shaoxing/2417/2013(H7N9)          .....................
AJJ91725 A/chicken/Shaoxing/5201/2013(H7N9)          .....................
AJJ95464 A/chicken/Shenzhen/138/2014(H7N9)           .....................
AJJ90576 A/chicken/Shenzhen/1665/2013(H7N9)          .....................
AJJ90588 A/chicken/Shenzhen/2110/2013(H7N9)          .....................
AJJ91035 A/chicken/Shenzhen/3780/2013(H7N9)          .....................
AJJ90490 A/chicken/Shenzhen/742/2013(H7N9)           .....................
AJJ92005 A/chicken/Shenzhen/801/2013(H7N9)           .....................
AJJ90526 A/chicken/Shenzhen/898/2013(H7N9)           .....................
AIU47013 A/chicken/Suzhou/040201H/2013(H7N9)         .....................
AGJ72861 A/chicken/Zhejiang/DTID-ZJU01/2013(H7N9)    .....................
AIU46619 A/chicken/Zhejiang/DTID-ZJU06/2013(H7N9)    .....................
AGR49554 A/chicken/Zhejiang/SD033/2013(H7N9)         .....................
AGR49566 A/duck/Anhui/SC702/2013(H7N9)               .....................
BAN16711 A/duck/Gunma/466/2011(H7N9)                 .A...................
AJJ97841 A/duck/Jiangxi/15044/2014(H7N9)             .....................
AGQ80952 A/duck/Jiangxi/3096/2009(H7N9)              .A...................
AGQ80989 A/duck/Jiangxi/3257/2009(H7N9)              .A...................
BAH22785 A/duck/Mongolia/119/2008(H7N9)              .A...................
BAN59727 A/duck/Mongolia/129/2010(H7N9)              .A...................
BAN59726 A/duck/Mongolia/147/2008(H7N9)              .A...................
AJK00354 A/duck/Zhejiang/LS02/2014(H7N9)             .....................
AFM09439 A/emperor goose/Alaska/44063-061/2006(H7N9) .A.......I.....I.....
AFV33947 A/goose/Nebraska/17097-4/2011(H7N9)         .A.......I.....I.....
AFV33945 A/guinea fowl/Nebraska/17096-1/2011(H7N9)   .A.......I.....I.....
AHA11441 A/guinea fowl/Nebraska/17096/2011(H7N9)     .A.......I.....I.....
AGR49722 A/homing pigeon/Jiangsu/SD184/2013(H7N9)    .....................
AGL97639 A/mallard/Minnesota/AI09-3770/2009(H7N9)    ---------------------
AHZ42537 A/mallard/Minnesota/AI09-3770/2009(H7N9)    .A.......I.....I.....
ADC29485 A/mallard/Spain/08.00991.3/2005(H7N9)       ---------------------
AHZ41929 A/mallard/Sweden/1621/2002(H7N9)            .A.....M.....M.....M.
AAY46211 A/mallard/Sweden/91/2002(H7N9)              .A.....M.....M.....M.
AGY42258 A/mallard/Sweden/91/2002(H7N9)              .A.....M.....M.....M.
```

FIGURE 22-50

```
AGE08098 A/northern shoveler/Mississippi/11OS145/2011(H7N9)      .A.......I.............
AGR49734 A/pigeon/Shanghai/S1069/2013(H7N9)                      .......................
ACD03594 A/ruddy turnstone/DE/1538/2000(H7N9)                    .A...I...I.............
AFX85260 A/ruddy turnstone/Delaware Bay/220/1995(H7N9)           .A...I...I.............
AHZ42549 A/ruddy turnstone/Delaware/AI00-1538/2000(H7N9)         .A...I...I.............
AJJ94194 A/silkie chicken/Dongguan/1264/2014(H7N9)               .......................
AJJ94206 A/silkie chicken/Dongguan/1268/2014(H7N9)               .......................
AJJ94344 A/silkie chicken/Dongguan/1451/2014(H7N9)               .......................
AJJ95584 A/silkie chicken/Dongguan/1519/2014(H7N9)               .......................
AJJ93845 A/silkie chicken/Dongguan/157/2014(H7N9)                .......................
AJJ90673 A/silkie chicken/Dongguan/3049/2013(H7N9)               .......................
AJJ90795 A/silkie chicken/Dongguan/3281/2013(H7N9)               .......................
AJJ90891 A/silkie chicken/Dongguan/3520/2013(H7N9)               .......................
AJJ91264 A/silkie chicken/Dongguan/4129/2013(H7N9)               .......................
AJJ93979 A/silkie chicken/Dongguan/656/2014(H7N9)                .......................
AJJ94959 A/silkie chicken/Dongguan/967/2014(H7N9)                .......................
AJJ92967 A/silkie chicken/Jiangxi/9469/2014(H7N9)                .......................
AJJ97925 A/silkie chicken/Shantou/2050/2014(H7N9)                .......................
AJJ90538 A/silkie chicken/Shenzhen/918/2013(H7N9)                .......................
AEK84765 A/spot-billed duck/Korea/447/2011(H7N9)                 .A.....................
AGW82588 A/tree sparrow/Shanghai/01/2013(H7N9)                   .....................G.
ABI84694 A/turkey/Minnesota/1/1988(H7N9)                         .A.....I...............
AHA11483 A/turkey/Minnesota/14135-2/2009(H7N9)                   .A.....I...............
AHA57050 A/turkey/Minnesota/14659/2009(H7N9)                     .A.....I...............
AHA57072 A/turkey/Minnesota/18421/2009(H7N9)                     .A.....I...............
AHA11472 A/turkey/Minnesota/31676/2009(H7N9)                     .A.....I...............
AHA11461 A/turkey/Minnesota/31900/2011(H7N9)                     .A.....I...............
AHA11452 A/turkey/Minnesota/32710/2011(H7N9)                     .A.....I...............
AAM19228 A/turkey/Minnesota/38429/1988(H7N9)                     ----------------------
ACZ48625 A/turkey/Minnesota/38429/1988(H7N9)                     ----------------------
AEK84760 A/wild bird/Korea/A14/2011(H7N9)                        .A.....................
AEK84761 A/wild bird/Korea/A3/2011(H7N9)                         .A.....................
AEK84763 A/wild bird/Korea/A9/2011(H7N9)                         .A.....................
AGG53377 A/wild duck/Korea/CSM42-1/2011(H7N9)                    .A.....................
AGG53366 A/wild duck/Korea/CSM42-34/2011(H7N9)                   .A.....................
AGG53432 A/wild duck/Korea/MHC35-41/2011(H7N9)                   .A.....................
AGG53399 A/wild duck/Korea/MHC39-26/2011(H7N9)                   .A.....................
AGG53476 A/wild duck/Korea/SH19-27/2010(H7N9)                    .A.....................
AGG53487 A/wild duck/Korea/SH19-50/2010(H7N9)                    .A.....................
AGG53520 A/wild duck/Korea/SH20-27/2008(H7N9)                    .A.....................
AEM98291 A/wild duck/Mongolia/1-241/2008(H7N9)                   .A.....................
AGR49770 A/wild pigeon/Jiangsu/SD001/2013(H7N9)                  .......................
```

FIGURE 22-51

Positions from 1 till 60

	Consensus sequence	**MYKIVVIIALLGAVKGLDKICLGHHAVANGTIVKTLTNEQEEVTNATETVESTGLNRLCM**
AHN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	.....LVL......H.....P.....K.....KS.DK...
AHM24205	A/Eurasian coot/Germany/R411/2010(H10N8)	.......VT.....R.....T.....S..K...
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	.....I.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....I.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	.....I.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	...V.....I.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....I.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....I.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	.....
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	.....
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	.....
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	.....
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....K.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....K.....
AJD10575	A/chicken/Jiangxi/23274/2013(H10N8)	.....I.....
AJD10587	A/chicken/Jiangxi/27600/2013(H10N8)	....I.....I.....
AJD10611	A/chicken/Jiangxi/28113/2013(H10N8)	.....I.....
AJD11595	A/chicken/Jiangxi/3152/2014(H10N8)	.....I.....
AJD10683	A/chicken/Jiangxi/34609/2013(H10N8)	.....I.....
AJD11271	A/chicken/Jiangxi/36229/2013(H10N8)	...V.....I.....
AIK26172	A/chicken/Jiangxi/JXA132717/2014(H10N8)	-----.....I.....
AFJ19053	A/duck/Guangdong/E1/2012(H10N8)	..........R.....S.....
BAG16719	A/duck/Hokkaido/W95/2006(H10N8)	----------
AJD14343	A/duck/Jiangxi/2039/2005(H10N8)	.....S.....
AJD14367	A/duck/Jiangxi/22960/2008(H10N8)	.....AS.....
AJD14379	A/duck/Jiangxi/4759/2009(H10N8)	.....I.....AS.....
AJD10887	A/duck/Jiangxi/6450/2013(H10N8)	.....
AJD10911	A/duck/Jiangxi/6474/2013(H10N8)	.....
AJD10923	A/duck/Jiangxi/6487/2013(H10N8)	.....I.....
AJD10971	A/duck/Jiangxi/6526/2013(H10N8)	.....
AJD10995	A/duck/Jiangxi/6544/2013(H10N8)	.....V.....
AJD11055	A/duck/Jiangxi/6602/2013(H10N8)	.....
AJD11091	A/duck/Jiangxi/6645/2013(H10N8)	.....X.....
AIK26225	A/duck/Jiangxi/JXA132712/2014(H10N8)	------.....I.....
AIK26196	A/duck/Jiangxi/JXA132727/2014(H10N8)	-------.....I.....
ABO52082	A/longtail duck/Maryland/295/2005(H10N8)	.....LVL......H.....P.....K.....KS.DK...
ADU16029	A/mallard/Interior Alaska/6MP0758/2006(H10N8)	.....LVL..F...H.....P.....K.....KS.DK...

FIGURE 23-1

AER09406	A/mallard/Korea/1041/2010(H10N8)	----------
AER09416	A/mallard/Korea/1203/2010(H10N8)	.....T.....KS.....
AHZ38995	A/mallard/Sweden/233/2002(H10N8)	...V.....R.....KS.GK...
ADE75294	A/mallard/Sweden/7/2003(H10N8)	.....I.....V.....H.....N.S..K...
AJD14391	A/migratory duck/Jiangxi/21248/2009(H10N8)	.....S.....
AJD14355	A/migratory duck/Jiangxi/593/2005(H10N8)	.....S.....
ACK43693	A/northern pintail/California/44221-656/2006(H10N8)	.....LVL.....H.....S.....K.....KS.DK...
AEK49546	A/northern shoveler/California/9235/2008(H10N8)	.....PVL.....H.....P.....K.....GS.DK...
ACZ48518	A/quail/Italy/1117/1965(H10N8)	----------.....T.....S..K...
ABI84499	A/quail/Italy/1117/1965(H10N8)	...V.....R.....T.....S..K...
AEA04419	A/quail/Italy/1117/1965(H10N8)	...V.....R.....T.....S..K...
AGU01953	A/ruddy shelduck/Mongolia/1602/2010(H10N8)	.D.K..V.....S.....
AGL58508	A/ruddy turnstone/New Jersey/1148668/2004(H10N8)	.....LVL.....H.....P.....K.....KS.DK...
AGG28633	A/shorebird/Delaware Bay/379/2008(H10N8)	.....LVL.....H.....S.....K.....KN.D....
AGU01957	A/surf scoter/Mongolia/878V/2009(H10N8)	.....V.....S.....
AGU01970	A/velvet scoter/Mongolia/879V/2009(H10N8)	.....V.....S.....

Positions from 61 till 120

	Consensus sequence	**KGRKHKDLGNCHPIGMLIGTPACDLHLTGTWDTLIERENAIAYCYPGATVNEEALRQKIM**
AHN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	.S.NY.....I.....D.S.....
AHM24205	A/Eurasian coot/Germany/R411/2010(H10N8)	R..SY....R.....I.L...V.E.....A.....I.....
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	.....M.....V.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....M.....V.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	.....V.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	.....V.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....A.V.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....V.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	.....
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	.....
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	.....
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	.....
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....S.....G.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....I.....
AJD10575	A/chicken/Jiangxi/23274/2013(H10N8)	.....V.....
AJD10587	A/chicken/Jiangxi/27600/2013(H10N8)	.....V.....
AJD10611	A/chicken/Jiangxi/28113/2013(H10N8)	.....V.....
AJD11595	A/chicken/Jiangxi/3152/2014(H10N8)	.....V.....
AJD10683	A/chicken/Jiangxi/34609/2013(H10N8)	.....S.....V.....
AJD11271	A/chicken/Jiangxi/36229/2013(H10N8)	.....V.....

FIGURE 23-2

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AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)                  .....V.....
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)                          ...N.....T.....V.....R..
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)                          ----------
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)                          ...S.....
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)                         ...R.....V.
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)                          ...R.....V.
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)                          ...N.....
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)                          ...N.....T.....
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)                          ...N.....
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)                          ...N.....
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)                          ...N.....
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)                          ...N.....T.....
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)                          ...N.....
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                     .....V.....
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)                     .....V.....
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)                 .N.NY.....VV.....D.S.....S.....
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)           .S.NY.....V.....D.S.....
AER09406  A/mallard/Korea/1041/2010(H10N8)                        ----------
AER09416  A/mallard/Korea/1203/2010(H10N8)                         ...N.....I.....
AHZ38995  A/mallard/Sweden/233/2002(H10N8)                        ...SYN.....I.....V.....
ADE75294  A/mallard/Sweden/7/2003(H10N8)                         ...S.....V.....
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)             ...N.....I.....
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)               ...S.....
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)    .S.NY.....V.....D.S.....
AEK49546  A/northern shoveler/California/9235/2008(H10N8)       .S.NY.....V.....D.S.....
ACZ48518  A/quail/Italy/1117/1965(H10N8)                        ...RY.....V.....T.....V.I.....
ABI84499  A/quail/Italy/1117/1965(H10N8)                        ...RY.....V.....T.....V.I.....
AEA04419  A/quail/Italy/1117/1965(H10N8)                        ...RY.....V.....T.....V.I.....
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)             ...N.....
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)      .S.NY.....V.....D.S.....
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)             .N.NY....S.....V.....D.S.....
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)               ...N.....I.....
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)            ...N.....I.....

Positions from 121 till 180
          Consensus sequence                                       ESGGIDKISTGFTYGSSINSAGTTRACMRNGGNSFYAELKWLVSKSKGQNFPQTTNTYRN
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)   .....K.....N.....
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)                 ....VS.....P..V.K..L...QS.....R.....TQ.....
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                            .....N.....
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                           .....N.....
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FIGURE 23-3

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AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)  ..................................................
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)  ..................................................N.............
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)  ..................................................
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)  .....................V............................
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)  ..................................................
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)  ..................................................
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)  ..................................................
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)  ..................S...............................
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)  ..........E.......................................
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)  ..................................................
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)  ..................................................
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)  ..................................................
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)  ..................................................
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)  ..................................................
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)  ....N.............................................
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)  ..................................................N.............
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)  ..................................................
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)  .....N.............K.............................M.....
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)  ----------------------------------------------------------
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)  ....S.............K.............................N.............
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)  ....S.............................................N.............
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)  ....S.............K.............................................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)  ....N.............................................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)  ....N.............................................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)  ....N.............................................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)  ....N.............................................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)  ....N.............................................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)  ....N.............................................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)  ....N.............................................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)  ..................................................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)  ..................................................
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)  ..............K.............S.....N.............
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)  ..............K.............N.............
AER09406  A/mallard/Korea/1041/2010(H10N8)  ----------------------------------------------------------
AER09416  A/mallard/Korea/1203/2010(H10N8)  ....S.............K.............................................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)  ....S.....T.....K.....................N.............
ADE75294  A/mallard/Sweden/7/2003(H10N8)  ....N.............K.....................I...
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)  ....S.............K.....................N.............
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)  ....S.............K.....................N.............
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)  ..............K.....................T.....
AEK49546  A/northern shoveler/California/9235/2008(H10N8)  .....G.....EP.....D.K.....R.....T.....
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FIGURE 23-4

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ACZ48518  A/quail/Italy/1117/1965(H10N8)                          .....S.MR......P.........S..................GT.............
ABI84499  A/quail/Italy/1117/1965(H10N8)                          .....S.MR......P.........S..................GT.............
AEA04419  A/quail/Italy/1117/1965(H10N8)                          .....S.MR......P.........S..................GT.............
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)              .....S.TN..............K.....................N.............
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)       ........................S...S..............N........A.....
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)               ..........................................................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)                .....S..................K........G...........N.............
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)              .....S..................K........G...........N.............

Positions from 181 till 240
          Consensus sequence                                      TDTAEHLIMWGIHHPSSTQEKNDLYGTQSLSISVGSSTYQNNFVPVVGARPQVNGQSGRI
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)  ..S.....I..................................................
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)                ........I.............K...A...Y..........S.T.............
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                            ..........................................R...............
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                           ..........................................R.........G.........
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                     ..........................................R...............
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)                     ..................I.......................R.S...............
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)                     ..................I.......................R...............
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)                     ..................I.......................R...............
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)                    ..........................................R...............
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)                    ..........................................R...............
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)                    ..........................................R...............
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)                    ..........................................R...............
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)                    ..........................................R...............
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)                    ..........................................R...............
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)                    ..........................................R...............
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)                    ..........................................R...............
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)                    ..........................................R...............
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)                     ..................I.......................R...............
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)                    ..........................................R...............
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)                    ..................I.......................R...............
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)                ..........................................R...............
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)                       ...V.............I..........................................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)                       ----------------------------------------------------------
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)                       ..........................................................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)                      ........I.................................................
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)                       ........I.................................................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)                       ..........................................................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)                       ..........................................................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)                       ..........................................................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)                       ..........................................................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)                       ..........................................................
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FIGURE 23-5

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AJD11055  A/duck/Jiangxi/6602/2013(H10N8)                          ..........................................................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)                          ..........................................................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                     ..........................................R.......
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)                     ..........................................R.......
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)                 ..SV....I..................................................
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)            ..S.....I..................................................
AER09406  A/mallard/Korea/1041/2010(H10N8)                        --.S.......................................................
AER09416  A/mallard/Korea/1203/2010(H10N8)                        ...S...........Y...........................................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)                        ........I..................................................
ADE75294  A/mallard/Sweden/7/2003(H10N8)                          .......V...................................................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)               ..............................I............................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)                 ..........................................................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)     ..S.....I..................................................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)         ..S.....I.........K........................................
ACZ48518  A/quail/Italy/1117/1965(H10N8)                         ........I.....................................I.............
ABI84499  A/quail/Italy/1117/1965(H10N8)                         ........I.....................................I.............
AEA04419  A/quail/Italy/1117/1965(H10N8)                         ........I.....................................I.............
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)              ..........................................S...............
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)       ..S.....I..................................................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)               ..S.....I..................................................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)                ..........................................I...............
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)              ..........................................I...............

Positions from 241 till 300
          Consensus sequence                                      DFHWTLVQPGDNITFSHNGGLIAPSRVSKLIGRGLGIQSDAPIDNNCESKCFWRGGSINT
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)  .....M.....................K........G.SV..D.......K......
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)                E...........................T........E.SV.................
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                            ..........................................................
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                          ..........................................................
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                    ..........................................................
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)                    ..........................................................
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)                    ..........................................................
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)                    ..........................................................
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)                   ..........................................................
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)                   ..........................................................
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)                   ..........................................................
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)                   ..........................................................
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)                   ..........................................................
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)                   ..........................................................
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FIGURE 23-6

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AJD10575 A/chicken/Jiangxi/23274/2013(H10N8) ..................................................
AJD10587 A/chicken/Jiangxi/27600/2013(H10N8) ..................................................
AJD10611 A/chicken/Jiangxi/28113/2013(H10N8) ..................................................
AJD11595 A/chicken/Jiangxi/3152/2014(H10N8) ...................................................
AJD10683 A/chicken/Jiangxi/34609/2013(H10N8) ..................................................
AJD11271 A/chicken/Jiangxi/36229/2013(H10N8) ..................................................
AIK26172 A/chicken/Jiangxi/JXA132717/2014(H10N8) ..............................................
AFJ19053 A/duck/Guangdong/E1/2012(H10N8) .....V.............................................
BAG16719 A/duck/Hokkaido/W95/2006(H10N8) ----------------------------------------------
AJD14343 A/duck/Jiangxi/2039/2005(H10N8) .....I.....V.........................................
AJD14367 A/duck/Jiangxi/22960/2008(H10N8) ..................V.....T.........................
AJD14379 A/duck/Jiangxi/4759/2009(H10N8) ...................V.....V.........................
AJD10887 A/duck/Jiangxi/6450/2013(H10N8) ..................................................
AJD10911 A/duck/Jiangxi/6474/2013(H10N8) ..................................................
AJD10923 A/duck/Jiangxi/6487/2013(H10N8) ..................................................
AJD10971 A/duck/Jiangxi/6526/2013(H10N8) ..................................Y.................
AJD10995 A/duck/Jiangxi/6544/2013(H10N8) ..................................................
AJD11055 A/duck/Jiangxi/6602/2013(H10N8) ..................................T.................
AJD11091 A/duck/Jiangxi/6645/2013(H10N8) ..................................................
AIK26225 A/duck/Jiangxi/JXA132712/2014(H10N8) ..............N.....K.....G.SV..D.......K.....
AIK26196 A/duck/Jiangxi/JXA132727/2014(H10N8) ..............M.....K.....GVSV..D.......K.....
ABO52082 A/longtail duck/Maryland/295/2005(H10N8) ..........................L.................
ADU16029 A/mallard/Interior Alaska/6MP0758/2006(H10N8) .....L.....K.....E.....G.......K.....
AER09406 A/mallard/Korea/1041/2010(H10N8) ..................................D.................
AER09416 A/mallard/Korea/1203/2010(H10N8) ..................................................
AHZ38995 A/mallard/Sweden/233/2002(H10N8) ..................................................
ADE75294 A/mallard/Sweden/7/2003(H10N8) ....R.....D.....K.I....G.V..KD.....I.
AJD14391 A/migratory duck/Jiangxi/21248/2009(H10N8) ....R.....D.....K.I....G.V..KD.....I.
AJD14355 A/migratory duck/Jiangxi/593/2005(H10N8) .....R.....D.....K.....G.SV..D.......K.....
ACK43693 A/northern pintail/California/44221-656/2006(H10N8) ....M.....K.....E.S..D.......K.....
AEK49546 A/northern shoveler/California/9235/2008(H10N8) ....M.....D.....N.....K.....G.SV..D.......K.....
ACZ48518 A/quail/Italy/1117/1965(H10N8) .....M.....K.....G.SV..D.......K.....
ABI84499 A/quail/Italy/1117/1965(H10N8) .....M.....K.....G.SV..D.......K.....
AEA04419 A/quail/Italy/1117/1965(H10N8) ..................M.N.....M.N.....
AGU01953 A/ruddy shelduck/Mongolia/1602/2010(H10N8) ..................M.N.....M.N.....
AGL58508 A/ruddy turnstone/New Jersey/1148668/2004(H10N8)
AGG28633 A/shorebird/Delaware Bay/379/2008(H10N8)
AGU01957 A/surf scoter/Mongolia/878V/2009(H10N8)
AGU01970 A/velvet scoter/Mongolia/879V/2009(H10N8)
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FIGURE 23-7

Positions from 301 till 360

	Consensus sequence	**RLPFQNLSPRTVGQCPKYVNKRSLMLATGMRNVPELMQGRGLFGAIAGFIENGWEGMVDG**
AHN97094	A/American green-winged teal/Ohio/13OS1869/2013(H10N8)	K.....L.....VV.....
AHM24205	A/Eurasian coot/Germany/R411/2010(H10N8)	K.....L.....V.....
AHK10761	A/Jiangxi/IPB13/2013(H10N8)	.....R.....I.....L.....
AHK10763	A/Jiangxi/IPB13b/2013(H10N8)	.....R.....I.....L.....
AJD10539	A/chicken/Jiangxi/1204/2014(H10N8)	K.....R.....I.....L.....
AJD11559	A/chicken/Jiangxi/1232/2014(H10N8)	.....R.....I.....L.....
AJD11571	A/chicken/Jiangxi/1270/2014(H10N8)	.....R.....I.....L.....
AJD11583	A/chicken/Jiangxi/1279/2014(H10N8)	.....R.....I.....L.....
AJD09903	A/chicken/Jiangxi/18399/2013(H10N8)	.....L.....
AJD09915	A/chicken/Jiangxi/18933/2013(H10N8)	.....I.....L.....
AJD09927	A/chicken/Jiangxi/19924/2013(H10N8)	.....L.....
AJD09939	A/chicken/Jiangxi/19960/2013(H10N8)	.....L.....
AJD10551	A/chicken/Jiangxi/23252/2013(H10N8)	.....L.....
AJD10563	A/chicken/Jiangxi/23259/2013(H10N8)	.....I.....L.....
AJD10575	A/chicken/Jiangxi/23274/2013(H10N8)	.....R.....I.....L.....
AJD10587	A/chicken/Jiangxi/27600/2013(H10N8)	.....R.....I.....L.....
AJD10611	A/chicken/Jiangxi/28113/2013(H10N8)	.....R.....I.....L.....
AJD11595	A/chicken/Jiangxi/3152/2014(H10N8)	.....R.....I.....L.....
AJD10683	A/chicken/Jiangxi/34609/2013(H10N8)	.....R.....I.....L.....
AJD11271	A/chicken/Jiangxi/36229/2013(H10N8)	.....R.....I.....L.....
AIK26172	A/chicken/Jiangxi/JXA132717/2014(H10N8)	K.....RK.....I.....L.....
AFJ19053	A/duck/Guangdong/E1/2012(H10N8)	K.....K.....IV.E.....
BAG16719	A/duck/Hokkaido/W95/2006(H10N8)	----------
AJD14343	A/duck/Jiangxi/2039/2005(H10N8)	.....K.....I.....
AJD14367	A/duck/Jiangxi/22960/2008(H10N8)	.....I.....
AJD14379	A/duck/Jiangxi/4759/2009(H10N8)	.....I.....
AJD10887	A/duck/Jiangxi/6450/2013(H10N8)	.....
AJD10911	A/duck/Jiangxi/6474/2013(H10N8)	.....
AJD10923	A/duck/Jiangxi/6487/2013(H10N8)	.....
AJD10971	A/duck/Jiangxi/6526/2013(H10N8)	.....
AJD10995	A/duck/Jiangxi/6544/2013(H10N8)	.....
AJD11055	A/duck/Jiangxi/6602/2013(H10N8)	.....
AJD11091	A/duck/Jiangxi/6645/2013(H10N8)	.....
AIK26225	A/duck/Jiangxi/JXA132712/2014(H10N8)	.....R.....I.....L.....
AIK26196	A/duck/Jiangxi/JXA132727/2014(H10N8)	K.....RK.....I.....L.....
ABO52082	A/longtail duck/Maryland/295/2005(H10N8)	K.....K..L.....VA.....
ADU16029	A/mallard/Interior Alaska/6MP0758/2006(H10N8)	K.....K..L.....VV.....
AER09406	A/mallard/Korea/1041/2010(H10N8)	.....K.....I.....
AER09416	A/mallard/Korea/1203/2010(H10N8)	.....K.....I.....

FIGURE 23-8

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AHZ38995  A/mallard/Sweden/233/2002(H10N8)                    K.....................................I.H.....................
ADE75294  A/mallard/Sweden/7/2003(H10N8)                      .....................K.............I.....................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)          .....................K.............I.....................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)            .....................K.............I.....................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8) K.....................K..L..........VV.....................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)     K.....................L..........VV.....................
ACZ48518  A/quail/Italy/1117/1965(H10N8)                     E..................K....L..........-----------------------
ABI84499  A/quail/Italy/1117/1965(H10N8)                     E..................K....L..........VV.....................
AEA04419  A/quail/Italy/1117/1965(H10N8)                     E..................K....L..........VV........K............
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)         .....................K.............I.....................
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)   K.....................K..L..........VV.....................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)          K.....................K..L..........VV.....................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)           .....................K.............I.....................
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)         .....................K.............I.....................

Positions from 361 till 420
          Consensus sequence                                  WYGFRHQNAQGTGQAADYKSTQAAIDQITGKLNRLIEKTNTEFESIESEFSEIEHQIGNV
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8) ..................................................................
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)            ..................................................N...............
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                        .....................................V............................
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                       .....................................V............................
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                 .....................................V............................
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)                 .....................................V............................
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)                 .....................................V............................
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)                 .....................................V............................
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)                .....................................V............................
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)                .....................................V............................
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)                .....................................V............................
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)                .....................................V............................
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)                .....................................V............................
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)                .....................................V............................
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)                .....................................V............................
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)                .....................................V............................
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)                .....................................V............................
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)                 .....................................V............................
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)                .....................................V............................
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)                .....................................V............................
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)            .....................................V............................
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)                    ......................T...............................................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)                    -------------------------------------.....................
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)                    ..................................................................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)                   ..................................................................
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FIGURE 23-9

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AJD14379  A/duck/Jiangxi/4759/2009(H10N8)                          ..................................................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)                          ..................................................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)                          ..................................................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)                          ..................................................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)                          ..................................................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)                          ..................................................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)                          ..................................................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)                          ..................................................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                     .................................V................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                     .................................V................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)                     .................................V................
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)                 ..................................................
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)            ..................................................
AER09406  A/mallard/Korea/1041/2010(H10N8)                         ...................T..............................
AER09416  A/mallard/Korea/1203/2010(H10N8)                         ...................T..............................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)                         ..................................................I
ADE75294  A/mallard/Sweden/7/2003(H10N8)                           ..................................................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)               ..................................................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)                 ..................................................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)      ..................................................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)         ......................V...........................
ACZ48518  A/quail/Italy/1117/1965(H10N8)                           --------------------------------------------------
ABI84499  A/quail/Italy/1117/1965(H10N8)                           ..........I.........T..........................
AEA04419  A/quail/Italy/1117/1965(H10N8)                           ..........I.........T..........................
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)               ..................................................D.....
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)        ..................................................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)                ..................................................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)                 ..................................................
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)               ..................................................

Positions from 421 till 480
          Consensus sequence                                       INWTKDSITDIWTYQAELLVAMENQHTIDMADSEMLNLYERVRKQLRQNAEEDGKGCFEI
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)   ............................V.....................
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)                 ........................................D.........
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                             ..................................................
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                            ..................................................
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                      ..................................................
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)                      ....M.............................................
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)                      ....M.............................................
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)                      ....M.............................................
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FIGURE 23-10

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AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)  ..................................................
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)  ..................................................
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)  ..................................................
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)  .....I............................................
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)  ..................................................
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)  ..................................................
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)  ..................................................
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)  ..................................................
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)  ..................................................
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)   ....M.............................................
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)  ..................................................
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)  ...M..............................................
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)  ..............................................
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)     ..................................................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)     ..................................................
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)     ..................................................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)    ..................................................
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)     ..................................................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)     ..................................................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)     ..................................................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)     ..................................................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)     ..................................................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)     ..................................................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)     ..................................................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)     ..................................................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)  ...M..............................................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)  ..................................................
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)  ..............................................
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)  .........................................
AER09406  A/mallard/Korea/1041/2010(H10N8)    ..................................................
AER09416  A/mallard/Korea/1203/2010(H10N8)    ..................................................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)    ..................................................
ADE75294  A/mallard/Sweden/7/2003(H10N8)      ..................................................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)  ..........................................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)  ............................................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)  ..............................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)  .....................................
ACZ48518  A/quail/Italy/1117/1965(H10N8)      ----------------------------------------------
ABI84499  A/quail/Italy/1117/1965(H10N8)      ..................................................
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FIGURE 23-11

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AEA04419  A/quail/Italy/1117/1965(H10N8)                                  ..................................................
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)                      ..................................................
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)                ..................................................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)                        ..................................................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)                         ..................................................
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)                       ..................................................

Positions from 481 till 540
          Consensus sequence                                              YHACDDSCMESIRNNTYDHSQYREEALLNRLNINPVTLSSGYKDIILWFSFGASCFVLLA
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)          ..K...N...........T.............K.......V.............
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)                        ..T..N...........................KF.....................
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                                     ..................................................
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                                   ..................................................
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                             ..................................................
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)                             ..................................................
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)                             ..................................................
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)                             ..................................................
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)                            ..................R...............................
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)                            ..................................................
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)                            ..................................................
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)                            ..................................................
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)                            ..................................................
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)                            ..................................................
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)                            ..................................................
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)                            ..................................................
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)                            .....N............................................
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)                             ..................................................
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)                            ..................................................
AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)                            ..................................................
AIK26172  A/chicken/Jiangxi/JXA132717/2014(H10N8)                        ..................................................
AFJ19053  A/duck/Guangdong/E1/2012(H10N8)                                ..................................................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)                                ..................H...............K.................
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)                                ..................................K.................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)                               ..................................K.................
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)                                ..................................K.................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)                                ..................................................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)                                ..................................................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)                                ..................................................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)                                ..................................................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)                                ..................................................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)                                ..................................................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)                                ..................................................
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FIGURE 23-12

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AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                  ..........................................................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)                  ..........................................................
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)              ..K...N..........T.............K.......V.....................
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)         ..K...N..........T.............K.......V.....................
AER09406  A/mallard/Korea/1041/2010(H10N8)                      ............................D.H...........................
AER09416  A/mallard/Korea/1203/2010(H10N8)                      ..........................................................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)                     ..................................K..................LI...
ADE75294  A/mallard/Sweden/7/2003(H10N8)                       ..................................K.......................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)           ..........................................................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)             ..................................K.......................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)  ..K...N..........A.............K.......V.....................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)      ..K.............A.............K.......V.....................
ACZ48518  A/quail/Italy/1117/1965(H10N8)                       ----------------------------------------------------------
ABI84499  A/quail/Italy/1117/1965(H10N8)                       ..T..N..........................K.......................
AEA04419  A/quail/Italy/1117/1965(H10N8)                       ..T..N..........................K.......................
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)           ..........................................................
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)    ..K...N..........T.............K.......V.....................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)            ..K...N..........T............S.K.......V.....................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)             ..............E...........................................
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)           ..............E...........................................

Positions from 541 till 561
          Consensus sequence                                    VVMGLVFFCLKNGNMRCTICI
AHN97094  A/American green-winged teal/Ohio/13OS1869/2013(H10N8)  .I..................
AHM24205  A/Eurasian coot/Germany/R411/2010(H10N8)              ..L..........Q..V..
AHK10761  A/Jiangxi/IPB13/2013(H10N8)                          .....F..............
AHK10763  A/Jiangxi/IPB13b/2013(H10N8)                         .....F..............
AJD10539  A/chicken/Jiangxi/1204/2014(H10N8)                   .....F..............
AJD11559  A/chicken/Jiangxi/1232/2014(H10N8)                   ....................
AJD11571  A/chicken/Jiangxi/1270/2014(H10N8)                   ....................
AJD11583  A/chicken/Jiangxi/1279/2014(H10N8)                   ....................
AJD09903  A/chicken/Jiangxi/18399/2013(H10N8)                  ....................
AJD09915  A/chicken/Jiangxi/18933/2013(H10N8)                  ....................
AJD09927  A/chicken/Jiangxi/19924/2013(H10N8)                  ....................
AJD09939  A/chicken/Jiangxi/19960/2013(H10N8)                  ....................
AJD10551  A/chicken/Jiangxi/23252/2013(H10N8)                  ....................
AJD10563  A/chicken/Jiangxi/23259/2013(H10N8)                  ....................
AJD10575  A/chicken/Jiangxi/23274/2013(H10N8)                  .....F..............
AJD10587  A/chicken/Jiangxi/27600/2013(H10N8)                  .....F..............
AJD10611  A/chicken/Jiangxi/28113/2013(H10N8)                  .....F..............
AJD11595  A/chicken/Jiangxi/3152/2014(H10N8)                   ....................
AJD10683  A/chicken/Jiangxi/34609/2013(H10N8)                  .....F..............
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FIGURE 23-13

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AJD11271  A/chicken/Jiangxi/36229/2013(H10N8)                    ..........................
AIK26172  A/chicken/Jiangxi/JXA13272717/2014(H10N8)              .....F....................-
AFU19053  A/duck/Guangdong/E1/2012(H10N8)                        I.........................
BAG16719  A/duck/Hokkaido/W95/2006(H10N8)                        ..........................
AJD14343  A/duck/Jiangxi/2039/2005(H10N8)                        ..........................
AJD14367  A/duck/Jiangxi/22960/2008(H10N8)                       ..........................
AJD14379  A/duck/Jiangxi/4759/2009(H10N8)                        ..........................
AJD10887  A/duck/Jiangxi/6450/2013(H10N8)                        ..........................
AJD10911  A/duck/Jiangxi/6474/2013(H10N8)                        ..........................
AJD10923  A/duck/Jiangxi/6487/2013(H10N8)                        ..........................
AJD10971  A/duck/Jiangxi/6526/2013(H10N8)                        ..........................
AJD10995  A/duck/Jiangxi/6544/2013(H10N8)                        ..........................
AJD11055  A/duck/Jiangxi/6602/2013(H10N8)                        ..........................
AJD11091  A/duck/Jiangxi/6645/2013(H10N8)                        ..........................
AIK26225  A/duck/Jiangxi/JXA132712/2014(H10N8)                   ..........................
AIK26196  A/duck/Jiangxi/JXA132727/2014(H10N8)                   .....F....................---
ABO52082  A/longtail duck/Maryland/295/2005(H10N8)               .I.........................
ADU16029  A/mallard/Interior Alaska/6MP0758/2006(H10N8)         .I.........................
AER09406  A/mallard/Korea/1041/2010(H10N8)                      ..................Q.......
AER09416  A/mallard/Korea/1203/2010(H10N8)                      ..........................
AHZ38995  A/mallard/Sweden/233/2002(H10N8)                      ..........................
ADE75294  A/mallard/Sweden/7/2003(H10N8)                        ..........................
AJD14391  A/migratory duck/Jiangxi/21248/2009(H10N8)            ..........................
AJD14355  A/migratory duck/Jiangxi/593/2005(H10N8)              ..........................
ACK43693  A/northern pintail/California/44221-656/2006(H10N8)  .I.........................
AEK49546  A/northern shoveler/California/9235/2008(H10N8)      .I.........................
ACZ48518  A/quail/Italy/1117/1965(H10N8)                       --------------------------
ABI84499  A/quail/Italy/1117/1965(H10N8)                       .I...G.....................
AEA04419  A/quail/Italy/1117/1965(H10N8)                       .I...G.....................
AGU01953  A/ruddy shelduck/Mongolia/1602/2010(H10N8)           ..........................
AGL58508  A/ruddy turnstone/New Jersey/1148668/2004(H10N8)    .I.........................
AGG28633  A/shorebird/Delaware Bay/379/2008(H10N8)           .I.........................
AGU01957  A/surf scoter/Mongolia/878V/2009(H10N8)             ..........................L.
AGU01970  A/velvet scoter/Mongolia/879V/2009(H10N8)           .A.........................
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FIGURE 23-14