

PA subunit

1 10 20 30 40 50
 A/NT/60/1968 (H3N2) ... MEDFV RQC FNP MIV ELAEKAM KE YGED LKIETN KFAA TCTHLE VCFMYS DFHFINE
 A/duck/Fujian/01/2002 (H5N1) ... MEDFV RQC FNP MIV ELAEKAM KE YGED PKIETN KFAA TCTHLE VCFMYS DFHFIDE
 A/bat/Guatemala/060/2010 (H17N10) ... MENFVRTN FNP MIV ELAEKTM KE YGEPNQNEGN KFAA TCTHMB VCFMYS DFHFIDL
 B/Panama/45/1990 ... MDTFTIRN FQT TI IQAKNTMA EFSEDPQLQPA MLENT CVHLE VCFYVIS DMNFDLDE
 C/Johannesburg/1/1966 MSKTFAE LAEAFLEP AVRI AKEAVE YGDH... ERKILQ TGIHFV GCMFCDE YLST.

60 70 80 90 100 110
 A/NT/60/1968 (H3N2) QGESIVV E LDDPNAL LKH RFEI IEG RD RIMAWTV VNSICN TTGA EKPKFLP DLYDYKEN
 A/duck/Fujian/01/2002 (H5N1) RGE SIVV E SGGPNAL LKH RFEI IEG RD RTMAWTV VNSICN TTGA EKPKFLP DLYDYKEN
 A/bat/Guatemala/060/2010 (H17N10) EGN TIVK E ENDDDNAL LKH RFEI IEG QERN IAWTV VNSICN MTNSK PRFLP DLYDYKTN
 B/Panama/45/1990 EGKSYTAL EGGQKEQLR P QYEVIEGMP RT IAWMV QRSLAQ EHGIE TPKYLADLDFYKTK
 C/Johannesburg/1/1966 N GSD R FV L I E G R K R G T A V S L Q N E L C K S Y D L E P L F L C D I F D R E E K

120 130 140 150 160 170
 A/NT/60/1968 (H3N2) R F I E I G V T R R E V H I Y Y L E K A N K I K S E N T H I H I F S F T G E M A T K A D Y T L D E E S R A R I K T R L
 A/duck/Fujian/01/2002 (H5N1) R F I E I G V T R R E V H I Y Y L E K A N K I K S E K T H I H I F P F T G E M A T K A D Y T L D E E S R A R I K T R L
 A/bat/Guatemala/060/2010 (H17N10) R F I E I G V T R R K V E D Y Y E K A S K L K G E N V Y I H I F S F D G E M A T D D E Y L D E E S R A R I K T R L
 B/Panama/45/1990 R F I E V G I T R K L A D D Y F W K K E K L G . N S M E L M I F S Y N Q D . Y S L S N E S S L D E E G K G R V L S R L
 C/Johannesburg/1/1966 Q F V E I G I T R K A D D S Y Q F K S F G K L G . N S C K I F V S Y D G R L D . K N C E . G P M E E O K L R I F S F L

180 190 200 210 220 230
 A/NT/60/1968 (H3N2) F T I R Q E M A N R G L W D S F R Q S E R G E E T I E E R F E I T G T M R R L A D Q S L P P N F S C L E N F R A Y V D G
 A/duck/Fujian/01/2002 (H5N1) F T I R Q E M A S R G L W D S F R Q S E R G E E T I E E R F E I T G T M R R L A D Q S L P P N F S S L E N F R A Y V D G
 A/bat/Guatemala/060/2010 (H17N10) F V L R Q E L A T A G L W D S F R Q S E K G E T I L E E E F S Y P P T F O R L A N Q S L P P S F K D Y H O F K A Y V S S
 B/Panama/45/1990 T E L Q A E L S L K N L W Q V L T G E D V E K G I . . D F K L G Q T I S R L R D I S P A G S N F E G M R S Y I D N
 C/Johannesburg/1/1966 A T A A D F L R K E N M F N E I F L P D N E E T I I . . E M K K G K T F L E L R D E S V P L P E Q T Y E Q M K D Y C E K

240 250 260 270 280
 A/NT/60/1968 (H3N2) F E P N G . Y T E G K L S O M K E V N A K T E F F L K T T P R P I R L P D G G P C F Q R S K F L L M D A
 A/duck/Fujian/01/2002 (H5N1) F E P N G . C I E G K L S O M K E V N A R I E P F L K T T P R P L R L P D G P C S Q R S K S L M D A
 A/bat/Guatemala/060/2010 (H17N10) F K A N G . N I E A K L G A M E K V N A Q I E S F D P R T I R E L E L P E G K F C T Q R S K F L L M D A
 B/Panama/45/1990 I D P K G . A I E R N L A R M S P L V S A T P K K L K W E D L R P I G P H I Y N H E L P E V P Y N A F L L M S D
 C/Johannesburg/1/1966 E K G N P R E L A S K V S O M S N I K L P I H Y E Q N K F R O I R L P K G M A P Y T H K F L M E E A

290 300 310 320 330
 A/NT/60/1968 (H3N2) L K L S . I E D P S H E G E G I P L Y D A I K C M R T F F G W K . . . E P Y I V K P H E K G I N P . . . N Y L L S W K
 A/duck/Fujian/01/2002 (H5N1) L K L S . I E D P S H E G E G I P L Y D A I K C M K T F F G W K . . . E P N I I K P H E K G I N P . . . N Y L L A W K
 A/bat/Guatemala/060/2010 (H17N10) M K L S . V L N P A H E G E G I P M K D A K A C L D F W G W K . . . K A T I I K H E K G V N T . . . N Y L M I W E
 B/Panama/45/1990 . E L G . L A N M T E G K S K F P K T L A K E C L E K Y S T L R D Q T D P I L I M K S E K A N E N . . . F W K L W R
 C/Johannesburg/1/1966 W M F T K I S D E E R S R A G E L I I I D F F K K G . . . N L S A I R P K D K P L Q G K Y P I H Y R N L W N

340 350 360 370 380 390
 A/NT/60/1968 (H3N2) Q V L A E L Q I E N E E K I P R T K N M K K T S Q L K W A L G E N M A P E K V D F D N C R D V S D L K Q Y D S
 A/duck/Fujian/01/2002 (H5N1) Q V L A E L Q I E N E E K I P K R K N M K K T S Q L K W A L G E N M A P E K V D F E D C K D V S D L K Q Y D S
 A/bat/Guatemala/060/2010 (H17N10) Q L L E S I K M E G K F L N L K T N H L K W G L G H G Q A P E K M D F D C K D V S D L K Q Y K S
 B/Panama/45/1990 D C V N T I S . . . N E E . . . M S N E L Q K T N Y A K W A T G D G L T Y Q K I M K V A I D D E T M C O E P E
 C/Johannesburg/1/1966 Q I K A A I A R T M V I N E N D H S E F L G I G R A S K K I P E I S L T Q D V I T T E G C K Q S E N

400 410 420 430 440 450
 A/NT/60/1968 (H3N2) D E P E L R S T S S W I Q N E F N K A C E L . T D S T W I E L D E I C E D V A P I E Y I A S M R R N Y F T A E V S H C R
 A/duck/Fujian/01/2002 (H5N1) D E P E R S L A S W I Q S E F N K A C E L . T D S S W I E L D E I C E D V A P I E H I A S M R R N Y F T A E V S Q C R
 A/bat/Guatemala/060/2010 (H17N10) E P P E K R K L A S W I Q S E F N K A S E L . T N S N W I E F D E L G N D V A P I E H I A S R R R N Y F T A E V S Q C R
 B/Panama/45/1990 K I P N K C R V A A W V Q T E M N L L S T L . T S K R A L D L P E I G P D V A P V E H V G S E R R K Y F V E I N Y C K
 C/Johannesburg/1/1966 K L P E P R S E P R F N A E M W A I K D S L T G W V P M A E Y P P A D N E L E D Y A E H L N K T M E G V L Q G T N

460 470 480 490 500
 A/NT/60/1968 (H3N2) A T E Y I M K G V Y I N T A L L N A S C A A M D D F Q L I P M I S C R T K E G R R K T N L Y G F I I K
 A/duck/Fujian/01/2002 (H5N1) A T E Y I M K G V Y I N T A L L N A S C A A M D D F Q L I P M I S C R T K E G R R K T N L Y G F I I K
 A/bat/Guatemala/060/2010 (H17N10) A S E Y I M K A V Y I N T A L L N S C T A M E E Y Q V I P I I T K C R D T S G R R K T N L Y G F I I K
 B/Panama/45/1990 A S T V M M K V L F H T S L N E S N A S M G K Y K V I P I T A S V V N E K G E S F D M L Y G L A V K
 C/Johannesburg/1/1966 C A R E M G K C I L T V G A L M T E C R L F M P G K I K V V P I Y A S K E R K S M Q E G L P V P S E M D C L E G C V K

510 520 530 540 550 560
 A/NT/60/1968 (H3N2) G R S H L R N D T D V V N F V S M E F S L T D P R L E P H K W E K Y C V L E I G D M L L R S A I G Q M S R P M F
 A/duck/Fujian/01/2002 (H5N1) G R S H L R N D T D V V N F V S M G F S L T D P R L E P H K W E K Y C V L E I G D M L L R T A I G Q V S R P M F
 A/bat/Guatemala/060/2010 (H17N10) G R S H L R N D T D V V N F I S L E F S L T D P R N E I H K W E K Y C V L E I G D M E I R T S I S T I M K P V Y
 B/Panama/45/1990 G Q S H L R G D T D V V T V I F E F S S T D P R V D S G K W K Y T V F R I G S L F V S G R E K S V Y
 C/Johannesburg/1/1966 S K S H L N K D D G M Y T I I T F E F S I R E P N L E K H O K Y T V F E A G H T V R M K K G E S V I G R E V P L Y

570 580 590 600 610
 A/NT/60/1968 (H3N2) L Y V R T N G T S K I K M K W G M E M R R C L L Q S L Q Q I E S M I E A E S S V K E K D M T K E F F E N K S E T
 A/duck/Fujian/01/2002 (H5N1) L Y V R T N G T S K I K M K W G M E M R R C L L Q S L Q Q I E S M I E A E S S V K E K D M T K E F F E N K S E T
 A/bat/Guatemala/060/2010 (H17N10) L Y V R T N G T S K I K M K W G M E M R R C L L Q S L Q Q V E S M I E A E S A V K E K D M T E F F F R N R E N D
 B/Panama/45/1990 L Y C R V N G T N K I Q M K W G M E A R R C L L Q S M Q Q M E A I V E Q E S S I Q G Y D M T K A C F K G D R V N S P K T
 C/Johannesburg/1/1966 L Y C R T T A L S K I K N D W L S K A R R C F I T T M D T V E I C L R E S A R A E N L V E K T L N E K Q

620 630 640 650 660 670
 A/NT/60/1968 (H3N2) W F I G E S P K G V E D G S I G K V C R T L L A K S V F N S L Y A S P O L E G F S A E S R R L L V V Q A L R D N L E P
 A/duck/Fujian/01/2002 (H5N1) W F I G E S P K G V E E G S I G K V C R T L L A K S V F N S L Y A S P O L E G F S A E S R R L L V I V Q A L R D N L E P
 A/bat/Guatemala/060/2010 (H17N10) W F I G E S P Q I E E K T I G K V C R T L L A K S V F N S I Y A S A O L E G F S A E S R R L L L I Q A L R D N L D P
 B/Panama/45/1990 F S I G T Q E G K L V K G S F G A L R V I F T K L M H Y V F G N A O L E G F S A E S R R L L L I Q A L K D R K G P
 C/Johannesburg/1/1966 M W I G K K N G E L I A Q P L R E A L R V Q L V Q Q F Y F C I Y N D S O L E G F C N E O K K I T M A L E G D K R N K S S

680 690 700 710
 A/NT/60/1968 (H3N2) G T F D L E G L Y E A I E E C L I N D P V V L L N A S W F N S F I T H A . L R
 A/duck/Fujian/01/2002 (H5N1) G T F D L G L Y E A I E E C I I N D P V V L L N A S W F N S F I T H A . L R
 A/bat/Guatemala/060/2010 (H17N10) G T F D L G L Y E A I E E C I I N D P V V L L N A S W F N S F I K A V . Q L S M
 B/Panama/45/1990 W V F D L E G M Y S G I E E C S N N P V V I Q S A Y W F N E L G F E . K E G S K V L E S V D E I M D E
 C/Johannesburg/1/1966 F G F N P E G L L E K I E E C L I N N P M C L F M A O R L N E L V I E A S K R G A K F F K T D

b

PB1 subunit

1 10 20 30 40 50 60

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

70 80 90 100 110

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

120 130 140 150 160 170

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

180 190 200 210 220 230

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

240 250 260 270 280 290

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

300 310 320 330 340 350

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

360 370 380 390 400 410

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

420 430 440 450 460 470

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

480 490 500 510 520 530

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

540 550 560 570 580 590

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

600 610 620 630 640 650

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

660 670 680 690 700 710

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

720 730 740 750

A/NT/60/1968 (H3N2)
A/duck/Fujian/01/2002 (H5N1)
A/bat/Guatemala/060/2010 (H17N10)
B/Panama/45/1990
C/Johannesburg/1/1966

PB2 subunit

A/NT/60/1968 (H3N2) M E R I K E L R N L M S Q S R T R E I L T K T T V D H M A I I K K Y T S G R Q E K N P S L R M K W M M A M Y P
A/duck/Fujian/01/2002 (H5N1) M E R I K E L R L D M S Q S R T R E I L T K T T V D H I A I I K K Y T S G R Q E K N P A L R M K W M M A M Y P
A/bat/Guatemala/060/2010 (H17N10) M E R I K E L M E M V K N S R M R E I L T T S V D H M A V I K K Y T S G R Q E K N P A L R M K W M M A M Y P
B/Panama/45/1990 . . . M T L A K E L L K Q L L R D N E A K T V L K Q T T V D Q Y N I I R K F N T S R I E K N P S L R M K W M M C S N F P
C/Johannesburg/1/1966 M S L L T L T I A K E Y K R L C Q D A K A A O M M T V G T V S N Y T F K K W T T S R K E K N P S L R M R W A M S S F P

A/NT/60/1968 (H3N2) I T A D K R I T E . M V P E N E Q G Q T L W S K M S D A G S . D R V M V S P L A V T W W N R N G P M T S . T V H Y P P K
A/duck/Fujian/01/2002 (H5N1) I T A D K R I M E . M I P E R N E Q G Q T L W S K T N D A G S . D R V M V S S L A V T W W N R N G P T T S . T V H Y P P K
A/bat/Guatemala/060/2002 (H17N10) I S A S S R I R E . M I P E K D E D G N T L W T N T K D A G S . N R V L V S P N A V T W W N R A G P V S D . V V H Y P P R
B/Panama/45/1990 L A L T K G D M A . N R I P L E Y K G I O L K T N A E D I G T . K G Q M C S I A A V T W W N T Y G P I G D . T E G F E K
C/Johannesburg/1/1966 I I A N K R M L E A Q I P E H N N V A L W E D T E D V S K R D H V L A S A S C I N Y W N F G P C V N N S E V I K E

A/NT/60/1968 (H3N2) V Y K T Y F E K V E R L K H G T F G P V H F R N Q V K I R R R V D I N P G H A D I S A K E A Q D V I M E V V F P N E V G
A/duck/Fujian/01/2002 (H5N1) V Y K T Y F E K V E R L K H G T F G P V H F R N Q V K I R R R V D V N P G H A D I S A K E A Q D V I M E V V F P N E V G
A/bat/Guatemala/060/2010 (H17N10) V Y K M Y F D R L E R L T H G T F G P V K F Y N Q V K V R K R V D I N P G H K D L T S R E A Q E V I M E V V F P N E V G
B/Panama/45/1990 V Y E S F L R K M R L D N A T W G R I T F G P V E R V R K R V L L N P L T K M P P D E A S N V I M E I L F P K E A G
C/Johannesburg/1/1966 V Y K S R F G R L E R R K E I M W K E L R F T L V D Q R R R V D T Q P V E Q R L R T G E I K D L Q M W T I L F E D E A P

A/NT/60/1968 (H3N2) A R I L T S E S Q L T I T K E K K E L Q D C K I S P L M V A Y M L E R E L V R K T R F L P V A G G T S S V Y I E V L H
A/duck/Fujian/01/2002 (H5N1) A R I L T S E S Q L T I T K E K K E L Q D C K I A P L M V A Y M L E R E L V R K T R F L P V A G G T S S V Y I E V L H
A/bat/Guatemala/060/2010 (H17N10) A R T L S S D A Q L T I T K E K K E L K N C K I S P I M V A Y M L E R E L V R R T R F L P I A G A T S T V Y E V L H
B/Panama/45/1990 I P R E S T W I H R E L I T K E K R E K L K G T M I T P I V L A Y M L E R E L V R R T R F L P V A G A T S A E F I E M L H
C/Johannesburg/1/1966 L A S K F I L D N Y G L V K E M R S K F A N K P L N K E V V A H M L E K Q F N P E S R F L P V F G A I R P E R M E L I H

A/NT/60/1968 (H3N2) I T Q G T C W B Q M Y T P G G E V R N D D V D Q S L I I A A R N I V R R A A V S A . D P L A S L L E M C H S T O I G . .
A/duck/Fujian/01/2002 (H5N1) L T Q G T C W B Q M Y T P G G E V R N D D V D Q S L I I A A R N I V R R A T V S T . D P L A S L L E M C H S T O I G . .
A/bat/Guatemala/060/2010 (H17N10) L T Q G T C W B Q M Y T P G G E A E N D D L D Q L I I A S R N I V R R S I V A I . D P L A S L L S M C H T T S I S . .
B/Panama/45/1990 C L Q G E N W R Q I Y H P G G N K L T E S R S Q S M I V A C R K I I R R S I V A S . N P L E A V E I A N K T V I D . .
C/Johannesburg/1/1966 A L G G E T W I Q E A N T A G I S N V D Q R K N D I R A V C R K V C L A A N A S I M N A K S R L V E Y I K S T S M R I G

A/NT/60/1968 (H3N2) . . . G T R M V D I L R Q N P T E F Q A V D I C K A A M G L R I S S S F S F G G T F F K R T S G S S I K R E E E L L T G N
A/duck/Fujian/01/2002 (H5N1) . . . G I R M V D I L R Q N P T E F Q A V D I C K A A M G L R I S S S F S F G G T F F K R T S G S S I K R E E E L L T G N
A/bat/Guatemala/060/2010 (H17N10) . . . S E P L V E I L R S N P T D E Q A V N I C K A A L G I R I N N S F S F G G Y N F K R V K G S S Q R T E K A V L T G N
B/Panama/45/1990 . . . T E P L K S C L T I D G G V E A C D I I R A A L G L K I R Q R Q R F G R E L L K R I S R G F K N D E E I L I G N
C/Johannesburg/1/1966 E T E R K L E E L I L E T D D V S P E V T L C K S A L G G Q L G K T L S F G P M L L K R I S G S G V K V K D V Y I Q G

A/NT/60/1968 (H3N2) L Q T L K I R V H D G Y E E F T M V G R R A T A I L R K A T R R L I Q L I V S G R D E Q S V A E A I I V A M V F S Q E D
A/duck/Fujian/01/2002 (H5N1) L Q T L K I R V H E G Y E E F T M V G R R A T A I L R K A T R R L I Q L I V S G R D E Q S I A E A I I V A M V F S Q E D
A/bat/Guatemala/060/2010 (H17N10) L Q T L T M T I F E G Y E E F N V S G R R A S A V L K K G A Q R L I Q A I I G R T L E D I L N L M I T M V F S Q E E
B/Panama/45/1990 G T I Q K I G W D G E E F F V R C K E A G L L K K S M K R M E K L L I N S A K K E D K D L I L C M V F S Q D T
C/Johannesburg/1/1966 V R A V Q F E Y W S E Q E E F Y G E Y K S A T A L F S R K E R S L E W I T I G G I N E D R K L L A M C M I F C R D G

A/NT/60/1968 (H3N2) C M I K A V R G D L N F V N R A . . . N Q R L N P M H Q L L R H F Q K D A K . . . V L F Q N W G E H I D N V M G M I G
A/duck/Fujian/01/2002 (H5N1) C M I K A V R G D L N F V N R A . . . N Q R L N P M H Q L L R H F Q K D A K . . . V L F Q N W G E P I D N V M G M I G
A/bat/Guatemala/060/2010 (H17N10) K M L K A V R G D L N F V N R A . . . N Q R L N P M Y Q L L R H F Q K D S S . . . T L K N W G T E E I D P I M G M I G
B/Panama/45/1990 R M F Q G V R G E I N F L N R A . . . G O L L S P M Y Q L Q R Y F L N R S N . . . D L F D Q W G Y E S P K A S E L H G
C/Johannesburg/1/1966 D Y F K D A P A T I T M A D L S T K L G R E I P Y Q Y V M M N W I Q K S E D N L E A L L Y S R G I V E T N P G K M G S

A/NT/60/1968 (H3N2) V L P D M T P S T E M S M R G I R V S K M G V D E Y S S T E R V V S I D R F L R V R D Q R G N V L L S P E V S E T Q
A/duck/Fujian/01/2002 (H5N1) I L P D M T P S T E M S L R G V R V S K M G V D E Y S S T E R V V S I D R F L R V R D Q R G N V L L S P E V S E T Q
A/bat/Guatemala/060/2010 (H17N10) I M P D G T I N K T Q T L M G V R L S Q G G V D E Y S F N E R I R V N I D K Y I R V R E K G E L L I S P E V S E A Q
B/Panama/45/1990 I N E L . M N A S D Y T L K G V V T K N V I D F S S T E T E K V S I T K N I S L I K R T G E V I M G A N D V S E L E
C/Johannesburg/1/1966 M G I D G S K R A I K S L R A V T I Q S G K I D M P E S K E K I H L E L S D N I E A F D S S G R V A T I L D L P S D K

A/NT/60/1968 (H3N2) G T E K L T I T Y S S M M W E I N G P E S V I V N T Y Q W I I R N W E T V K I Q W S Q N P T M L Y N K M E F
A/duck/Fujian/01/2002 (H5N1) G T E R L T I T Y S S M M W E I N G P E S V I V N T Y Q W I I R N W E T V K I Q W S Q D P T M L Y N K M E F
A/bat/Guatemala/060/2010 (H17N10) G Q E K L P I N Y N S L M W E V N G P E S I L T N T Y H W I I K N W E L L K T Q W M T D P T V L Y N R I E F
B/Panama/45/1990 S Q A Q L M I T Y D T P K M W E M G T T K E L V Q N T Y Q W V L K N L V T L K A Q F L L G K E D M F Q W D A F
C/Johannesburg/1/1966 K V T F Q D V S F Q H P D L A V L R D E K T A I T K G Y E A L I K R L G T G D N D I P S L I A K K D Y L S L Y N L P E V

A/NT/60/1968 (H3N2) E P F Q S L V K A I R G Q Y S G F V R T L F Q O M R D V L G T F D T Q I I K L L P F A A A E P K Q S R M Q . . F S S
A/duck/Fujian/01/2002 (H5N1) E P F Q S L I P K A A R G O Y S G F V R T L F Q O M R D V V G T F D T V Q I I K L L P F T A A E P Q S R M Q . . F S S
A/bat/Guatemala/060/2010 (H17N10) E P F Q T L I P K G N R A I Y S G F R T L F Q O M R D V E G T F D S I Q I I K L L P F S A H P S L G R T Q . . F S S
B/Panama/45/1990 E A F E S I I P Q K M A G Q Y S F A R A V L K Q M R D Q E . V M K T D Q F I K L L P F C F S P P K L R S N G E P Y Q F
C/Johannesburg/1/1966 K L M A P L I R P N R K G V S R V A R K L V S T Q . V T T G H Y S L H E L I K V L P F T Y F A P K Q G M F E G R L F F

A/NT/60/1968 (H3N2) L T V N V R G S G . M R I L V R G N S P A F N Y N K T T K R L T I L G K D A G . T L I E D P . D E G T S G V E S A V L R
A/duck/Fujian/01/2002 (H5N1) L T V N V R G S G . M R I L V R G N S P A F N Y N K A T K R L T I L G K D A G . A L T E D P . D E G T A G V E S A V L R
A/bat/Guatemala/060/2010 (H17N10) F T L N I R G A F . L R L I I R G N S Q V F N Y N Q M E N V I I V L G K S V G . S P E R S I . L T E S S I E S A V L R
B/Panama/45/1990 L R L V L K G G G E N F I E V R K G S P L F S Y N P Q T E V L T I C G R M M S . L P K G I E D E R N R S M G N A V L A
C/Johannesburg/1/1966 S N D S F V E P G V N N V F S W S K A D S S K I Y C H G I A I R V P L V V . . G E H M D T S L A L L E

A/NT/60/1968 (H3N2) G F L I L G K E D R R Y G P A L S I N E L S N A K G E K A N V L I G Q G D V L V M K R R R D S S I L T D S Q T A T K
A/duck/Fujian/01/2002 (H5N1) G F L I L G K E D K R Y G P A L S I N E L S N A K G E K A N V L I G Q G D V L V M K R R R D S S I L T D S Q T A T K
A/bat/Guatemala/060/2010 (H17N10) G F L I L G K A N S Y G P V L T I G E L D K L G R G E K A N V L I G Q G D V L V M K R R R D S S I L T D S Q T A T K
B/Panama/45/1990 G F L V S G R Y D P D L G P F K T I E L E K L K P G E K A N I L L Y Q G K P V V K R R R Y S A L S N D S Q G I K
C/Johannesburg/1/1966 G F S V C E . . N D P R A P M Y T R Q D L I D V G F G Q K V R L F V G Q G S V R T E K R T A S Q R A S D V N K N V K

A/NT/60/1968 (H3N2) R I R M A I N
A/duck/Fujian/01/2002 (H5N1) R I R M A I N
A/bat/Guatemala/060/2010 (H17N10) R I R L E E S K
B/Panama/45/1990 R Q R M T V E S M G W A L S
C/Johannesburg/1/1966 K I K M S N

Supplementary Fig. 1 Sequence similarity of Flu polymerases from different influenza virus genera. a - c, Sequence alignment of polymerase subunits (a, PA; b, PB1, and c, PB2) from A/NT/60/1968 (H3N2), A/duck/Fujian/01/2002 (H5N1), A/bat/Guatemala/060/2010 (H17N10), B/Panama/45/1990, and C/Johannesburg/1/1966. Residues involved in hydrogen bonding interactions for FluPol heterotrimeric dimers are indicated in cyan, for the 3' cRNA promoter binding site are in orange, and for the Nb8205 binding site are in pink. The figure was prepared with Esript 3.0 (<http://esript.ibcp.fr/ESPript/cgi-bin/ESPript.cgi>).