```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

.DNSTATLCLGHHAVPNGTIVKTITNDQ 27 ME.KIVLLFAIVSLVKSD<mark>QICIGYHANNST</mark>KQVDTIMEKN 39 <u>MKAILVVLLYTFATANADTL</u>CIGYHANNST<u>DT</u>VDT<u>VL</u>EKN 40 MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40 MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40 MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40 40 MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40 MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40 MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40 MKAIL<mark>G</mark>VLLYTFATANADTLCIGYHANNSTDTVDTVLEKN 40

VILYANI I EDKANIKI CKI DUVVDI MI UKUNI VUNI U

 $\mathtt{MKAIL}\overline{\mathtt{V}}\mathtt{VLLYTFATANADTLCIGYHANNSTDTVDTVLEKN}$

MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN

MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN

MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN

MKAILVVLLYTFATANADTLCIGYHANNSTDTVDTVLEKN

40

40

40

40

40

66 79

80

80

80

80

80

80

80

80

80

80

80

80

80

80

IEVTNATELVQNSSTGEICDSPHQ.IIDGENCTLIDALLG <u>VTVTHAQDILEKTHNGKLCDLDGVRPLILRDCSVAGWLLG</u> <u>VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGK<mark>R</mark>NI</u>AGWILG ${ t VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGK\overline{ t C}NIAGWILG}$ VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRG<mark>I</mark>APLHLGKCNIAGWILG ${ t VTVTHSVNLLEDKHNGKLCKLRG\overline{ t V}}$ ${ t APLHLGKCNIAGWILG}$ VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG VTVTHSVNLLEDKHNGKLCKLRGVAPLHLGKCNIAGWILG **!!*********!**!***********

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

```
DPQCDGFQN.KKWDLFVERSK.AYSNCYPYDVPDYASLRS
NPMCDEFINVPEWSYIVEKANPVNDLCYPGVFNDYEELKH
                                                 104
                                                 119
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
                                                 120
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
                                                 120
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECES<mark>P</mark>STASSWSYIVETSSSDNGTCYPGDFIDYEELRE
\mathtt{NPECES}\overline{\mathsf{L}}\mathtt{STASSWSYIVETSSSDNGTCYPGDFIDYEELRE}
                                                 120
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
                                                 120
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
NPECESLSTASSWSYIVETSSSDNGTCYPGDFIDYEELRE
                                                 120
*!*!******!!***!!****!!!****
```

120

120

120

120

120

120

120

120

120

140

158

160

160

160

160

160

160

160

160

160

160

160

160

160

```
LVASSGTLE...FNNESFNWTGV.TQNGTSSACIRRSNNS
LLSRINHFEKIQTIPK.SSWPSHEASLGVSAACPYQGKSS
QLSSVSSFERFEIFPKTSSWPNHDSNKGVTAACPHAGAKS
QLSSVSSFERFEIFPKTSSWPNHDSNKGVTAACPHAGAKS
QLSSVSSFERFEIFPKTSSWPNHDSNKGVTAACPHAGAKS
QLSSVSSFERFEMFPKTSSWPNHDSNKGVTAACPHAGAKS
QLSSVSSFERFE<mark>M</mark>FPKTSSWPNHDSNKGVTAACPHAGAKS
QLSSVSSFERFE\(\overline{\text{IFPKTSSWPD}}\)HDSNKGVTAACPHAGAKS
QLSSVSSFERFEIFPKTSSWPNHD<mark>P</mark>NKGVTAACPHAGAKS
QLSSVSSFERFEIFPKTSSWPDHDSNKGVTAACPHAGAKS
{	t QLSSVSSFERFEIFPKTSSWP\overline{	t N}} {	t HDSNKGVTAACPHAGAKS}
QLSSVSSFERFEIFPKTSSWPNHD<mark>L</mark>NKGVTAACPHAGAKS
QLSSVSSFERFEIFPKTSSWPNHDSNKGVTAACPHAGAKS
<u>QLSSVSSFERFEIFPKTSSWPNHDLNKGVTAACPHAGAKS</u>
QLSSVSSFERFEIFPKTSSWPNHDSNKGVTAACPHAGAKS
QLSSVSSFERFEIFPKTSSWPNHDSNKGVTAACPHAGAKS
```

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

:*****!!*****!!*****!****!**!!* Tsanoos|YonadayveVgTsryskkekPe|A|RPKVRdo

WLTHLNFKYPALNVTMPNNEQFDKLYIWGVHHPG

FRNVVWLIKKNSTYPTIKRSYNNTNQEDLLVMWGIHHPN

<u>FYKNLIWLVKKGNSYPKLSKSYINDKGKEVLVL</u>WGIHHP<u>S</u>

FYKNLIWLVKKGNSYPKLSKSYINDKGKEVLVLWGIHHP<mark>P</mark>

FYKNLIWLVKKGNSYPKLSKSYINDKGKEVLVLWGIHHPS

FYKNLIWLVKKGNSYPKLSKSYINDKGKEVLVLWGIHHPS

180

198

200

200

200

200 200

200

200

200

200

200

200

200

200

200

220

238

240

240

240

240

240

240

240

240

240

240

240

240

240

240

```
TDKDQIFLYAQASGRITVSTKRSQQAVIPNIGSRPRVRNI
DAAEQTKLYQNPTTYIS<mark>VGTS</mark>TLNQRLTPRIATRSKVNGQ
<u>TSADQQSLYQNADAYVFVGTSRYSKKFKPEIAIRPKVR<mark>G</mark>Q</u>
T<mark>T</mark>ADQQSLYQNAD<mark>T</mark>YVFVGTSRYSKKFKPEIAIRPKVR<del>D</del>Q
T<mark>T</mark>ADQQSLYQNAD<mark>T</mark>YVFVGTSRYSKKFKPEIAIRPKVRDQ
oldsymbol{\mathsf{GS}}\mathsf{ADQQSLYQNAD}\overline{\mathsf{A}}\mathsf{YVFVGTSRYSKKFKPEIAIRPKVRDQ}
rsadqqslyqnadayvfvgtsryskkfkpeiairpkvrdq
T<mark>T</mark>ADQQSLYQNAD<mark>T</mark>YVFVGTSRYSKKFKPEIAIRPKVRDQ
ſ<mark>S</mark>ADQQ<mark>G</mark>LYQNAD<del>A</del>YVFVGTSRYSKKFKPEIAIRPKVRDQ
TSADQQSLYQNADAYVFVGTSRYSKKFKPEIAIRPKVRDQ
TSADQQSLYQNADAYVFVGTSRYSKKFKPEIAIRPKVRDQ
rsadqqslyqnadayvfvgtsryskkfkpeiairpkvrdq
TSADQQSLYQNADAYVFVGTSRYSKKFKPEIAIRPKVRDQ
TSADQQSLYQNADAY<mark>VFVGTSRYSK</mark>KFKPEIAIRP<u>KVRDQ</u>
TSADQQSLYQNADAYVFVGTSRYSKKFKPEIAIRPKVRDQ
TSADQQSLYQNADAYVFVGTSRYSKKFKPEIAIRPKVRDQ
```

****!**!!*******!*!*******!*!**!**!**

logo

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

ADV19280.1	hemagglutinin	, partial In	fluenza	A Virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1	hemagglutinin	Influenza A	virus	(A/Cambodia/U0417030/2010(H5N1))
AHB59383.1	hemagglutinin	Influenza A	virus	(A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1	hemagglutinin	Influenza A	virus	(A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1	hemagglutinin	Influenza A	virus	(A/Thailand/SirirajICRC BKK 1/2010(H1N1))
				(A/Cambodia/U216/2010(H1N1))
AEN68920.1	hemagglutinin	Influenza A	virus	(A/Cambodia/U127/2010(H1N1))
AHB59392.1	hemagglutinin	Influenza A	virus	(A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1	hemagglutinin	Influenza A	virus	(A/Anhui/1225/2010(H1N1))
AEN68927.1	hemagglutinin	Influenza A	virus	(A/Cambodia/U302/2010(H1N1))
				(A/Cambodia/U045/2010(H1N1))
AHB59385.1	hemagglutinin	Influenza A	virus	(A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
				(A/Cambodia/U308/2010(H1N1))
				(A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1	hemagglutinin	Influenza A	virus	(A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1	hemagglutinin	Influenza A	virus	(A/Cambodia/U219/2010(H1N1))
consensus				

259 SGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKKGDS 278 <u>EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAG</u>S 280 EGRMNYYWTLV<mark>G</mark>PGDKITFEATGNLVVPRYAFAMERNAGS 280 $\mathtt{EGRMNYYWTLV\overline{E}PGDKITFEATGNLVVPRYAFAMERNAGS}$ 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS 280 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS 280 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS 280 280 EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS

280

280

299

318

320

320 320

320

320

320 320

320

320

320

320

320

320

320

<u>GIJJSDTPVHDONTTOQTPKGAINTSLPFQNJHPJTJGKO</u>

EGRMNYYWTLVEPGDKITFEATGNLVVP<mark>K</mark>YAFAMERNAGS

EGRMNYYWTLVEPGDKITFEATGNLVVPRYAFAMERNAGS

|**||***|*|******||***|*********

```
SIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGAC
TIMKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGEC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPI<mark>I</mark>IGKC
{	t GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC}
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHP<mark>V</mark>TIGKC
GIIISD<mark>I</mark>PVHDCNTTCQTPKGAINTSLPFQNIHP<mark>I</mark>TIGKC
{	t GIIISD\overline{	t T}	t PVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC}
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
GIIISDTPVHDCNTTCQTPKGAINTSLPFQNIHPITIGKC
```

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

GUTGMDGWYGYHHONFOGSGYAADI KSTONA IDKITNKV

PRYVKQNTLKLATGMRNVPEK....QTRGIFGAIAGFIEN PKYVKST<mark>R</mark>LVLATGLRN<mark>S</mark>PQREGRRKKRGLFGAIAGFIEG

PKYVKSTKLRLATGLRNVPSI

PKYVKSTKLRLATGLRNVPSI

PKYVKSTKLRLATGLRNVPSI

PKYVKSTKLRLATGLRNVPSI

PKYVKSTKLRLATGLRNVPSI

PKYVKSTKLRLATGLRNVPSI.

!*!!!***!*!!!*!!*!

PKYVKSTKLRLATGLRNVPSI..

PKYVKSTKLRLATGLRNVPSI...

PKYVKSTKLRLATGLRNVPSI...

PKYVKSTKLRLATGLRNVPSI..

PKYVKSTKLRLATGLRNVPSI...

PKYVKSTKLRLATGLRNVPSI..

PKYVKSTKLRLATGLRNVPSI...

PKYVKSTKLRLATGLRNVPSI...

335

358

356

356

356

356

356

356

356

356

356

356

356

356

356

356

QSRGLFGAIAGFIEG

**!|*|!!!!!!!

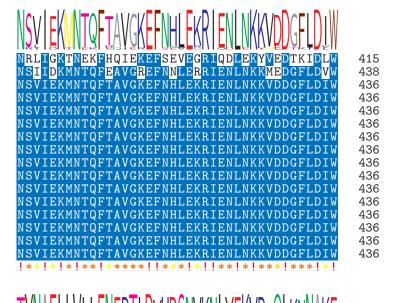
	<u> </u>
GWEGMVDGWYGFRHQNSEGRGQAADLKSTQAAIDQ	INGKL
GWQGMVDGWYGYHHSNEQGSGYAADKESTQKAIDG	VTNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDK:	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDKI	ITNKV
GWTGMV <mark>G</mark> GWYG <mark>F</mark> HHQNEQGSGYAADLKSTQNAIDK:	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAID <mark>E</mark>	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAID <mark>E</mark>	ITNKV
${ t GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAID\overline{K}}$	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAID <mark>E</mark> .	ITNKV
${ t GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAID\overline{K}}$	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDKI	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAID <mark>E</mark> .	
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDK:	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDK	ITNKV
GWTGMVDGWYGYHHQNEQGSGYAADLKSTQNAIDK	
GWTGMVDGWYGYHHONEOGSGYAADLKSTONAIDK	ITNKV

logo

ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))	
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))	
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))	
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))	
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))	
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))	
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))	
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))	
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))	
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))	
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))	
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))	
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))	
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))	
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))	
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))	
Consensus	

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

ADV19280.1	hemagglutinin	, partial I	nfluenza	A A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1	hemagglutinin	Influenza A	A virus	(A/Cambodia/U0417030/2010(H5N1))
AHB59383.1	hemagglutinin	Influenza A	A virus	(A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1	hemagglutinin	Influenza I	A virus	(A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1	hemagglutinin	Influenza A	A virus	(A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1	hemagglutinin	Influenza A	A virus	(A/Cambodia/U216/2010(H1N1))
				(A/Cambodia/U127/2010(H1N1))
				(A/Thailand/SirirajICRC BKK 7/2010(H1N1))
				(A/Anhui/1225/2010(H1N1))
AEN68927.1	hemagglutinin	Influenza A	A virus	(A/Cambodia/U302/2010(H1N1))
				(A/Cambodia/U045/2010(H1N1))
				(A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
				(A/Cambodia/U308/2010(H1N1))
AHB59386.1	hemagglutinin	Influenza A	A virus	(A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1	hemagglutinin	Influenza A	A virus	(A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1	hemagglutinin	Influenza I	A virus	(A/Cambodia/U219/2010(H1N1))
consensus				



SYNAELLVLENERTLDYHDSNVKNLYEKVRSQLKNNAKE TYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKE TYNAELLVLLENERTLDYHDSNVKNLYEKVRNQLKNNAKE TYNAELLVLLENERTLDYHDSNVKNLYEKVRNQLKNNAKE TYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKE TYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKE

TYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKE

TYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKE

TYNAELLVLLENERTLDYHDSNVKNLYEKVRSQLKNNAKE

*!!!!!**!!**!!**!***!***!**

455 478

476

476

476

476

476

476 476

476

476

476

476

476

476

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
consensus
```

ADV19280.1	hemagglutinin	, partial I	nfluenza	a A virus (A/Peru/CIS1578/2010(H3N2))
AEN68933.1	hemagglutinin	Influenza	A virus	(A/Cambodia/U0417030/2010(H5N1))
				(A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
AHB59388.1	hemagglutinin	Influenza	A virus	(A/Thailand/SirirajICRC NSN 1/2010(H1N1))
AHB59390.1	hemagglutinin	Influenza	A virus	(A/Thailand/SirirajICRC BKK 1/2010(H1N1))
AEN68922.1	hemagglutinin	Influenza	A virus	(A/Cambodia/U216/2010(H1N1))
				(A/Cambodia/U127/2010(H1N1))
AHB59392.1	hemagglutinin	Influenza	A virus	(A/Thailand/SirirajICRC BKK 7/2010(H1N1))
AFM78646.1	hemagglutinin	Influenza	A virus	(A/Anhui/1225/2010(H1N1))
				(A/Cambodia/U302/2010(H1N1))
AEN68917.1	hemagglutinin	Influenza	A virus	(A/Cambodia/U045/2010(H1N1))
				(A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
				(A/Cambodia/U308/2010(H1N1))
				(A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
				(A/Tianjinnankai/SWL49/2010(H1N1))
AEN68923.1	hemagglutinin	Influenza	A virus	(A/Cambodia/U219/2010(H1N1))
consensus				



DGVKLESTRLYQILAIYSTVASSLVLVVSLGALSEWCS

534 558

556

556

556

556

556

556 556

556

556

556

556

556

556

556

TKGVELKSGYKDWILWI.SFAISCFLLCVALLGFIMWACQ
ISGVKLESIGVYQILSIYSTVASSLALAIMVAGLSLWMCS
IDGVKLESTRIYQILAIYSTVASSLVLAVSLGAISFWMCS
IDGVKLESTRIYQILAIYSTVASSLVLVVSLGAISFWMCS

```
ADV19280.1 hemagglutinin, partial Influenza A virus (A/Peru/CIS1578/2010(H3N2))
                                                                                              KGNIRCNICI
                                                                                                            544
                                                                                              NGSLQCRICI
                                                                                                            568
AEN68933.1 hemagglutinin Influenza A virus (A/Cambodia/U0417030/2010(H5N1))
AHB59383.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-002(34)/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AHB59388.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC NSN 1/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AHB59390.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 1/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AEN68922.1 hemagglutinin Influenza A virus (A/Cambodia/U216/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AEN68920.1 hemagglutinin Influenza A virus (A/Cambodia/U127/2010(H1N1))
                                                                                                            566
                                                                                              NGSLQCRICI
AHB59392.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC BKK 7/2010(H1N1))
                                                                                                            566
                                                                                              NGSLQCRICI
AFM78646.1 hemagglutinin Influenza A virus (A/Anhui/1225/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AEN68927.1 hemagglutinin Influenza A virus (A/Cambodia/U302/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AEN68917.1 hemagglutinin Influenza A virus (A/Cambodia/U045/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AHB59385.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-003(34)/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AEN68929.1 hemagglutinin Influenza A virus (A/Cambodia/U308/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AHB59386.1 hemagglutinin Influenza A virus (A/Thailand/SirirajICRC SEA-001(34)/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AFE11277.1 hemagglutinin Influenza A virus (A/Tianjinnankai/SWL49/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
AEN68923.1 hemagglutinin Influenza A virus (A/Cambodia/U219/2010(H1N1))
                                                                                              NGSLQCRICI
                                                                                                            566
                                                                                              *!***!*!!!
consensus
```

non-conserved>50% conserved