

Figure 1a

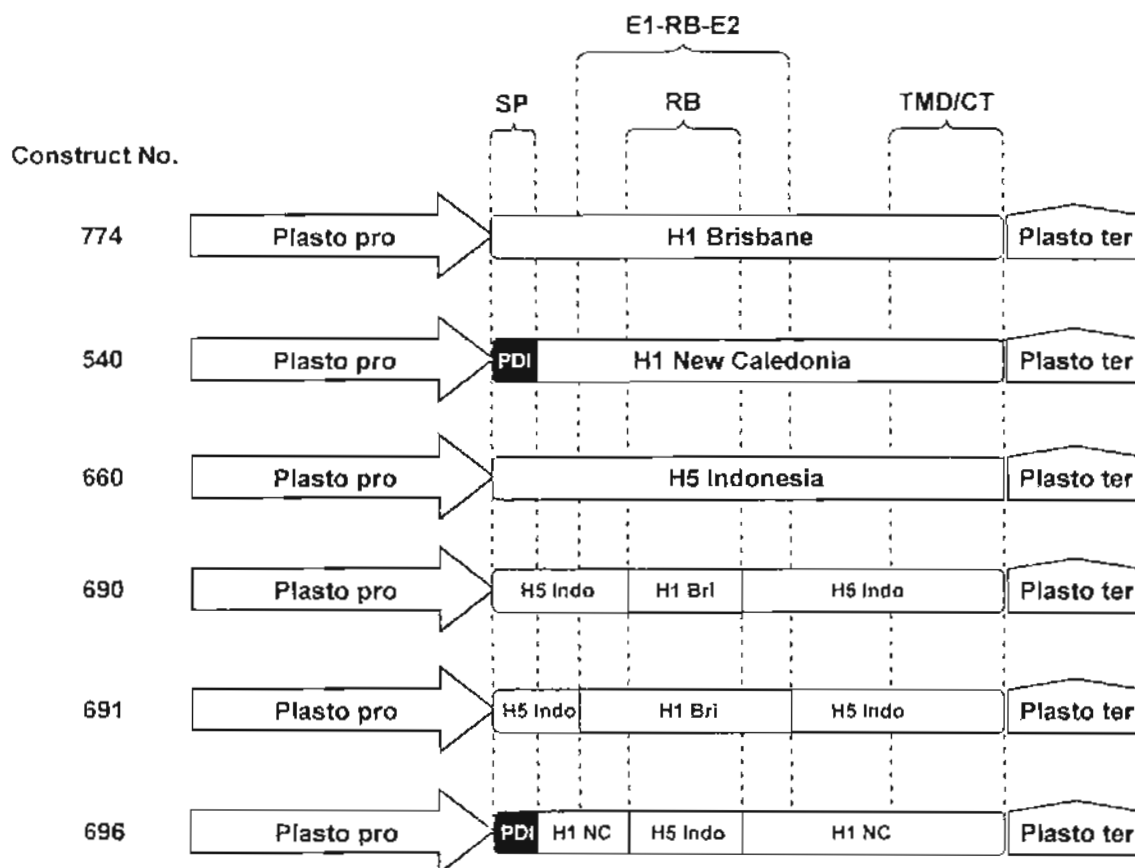


Figure 1b

779 B_Florida	L	S	T	Q	N	V	I	A	-	-	A	P	G	G	P	Y	L	G	T	S	G	S	C	P	N	A	T	S	-	S							
778 B_Malaysia	L	S	T	-	-	V	I	N	A	-	N	A	P	G	G	P	Y	I	G	T	S	G	S	C	P	N	V	T	N	G	N						
774 H1_Brisbane	I	F	P	-	-	S	S	W	P	N	-	T	V	T	-	-	-	G	V	S	A	S	C	S	-	N	G	-	-	S							
775 H1_Sol Isl	I	F	P	-	-	S	S	W	P	N	-	T	V	T	-	-	-	G	V	S	A	S	C	S	-	N	G	-	-	S							
840 H1 A_NewCal	I	F	P	-	-	S	S	W	P	N	-	T	V	T	-	-	-	G	V	S	A	S	C	S	-	N	G	-	-	S							
780 H2 A_Singapore	I	L	P	-	-	-	-	W	T	Q	-	T	T	T	-	-	-	G	G	S	-	A	C	A	V	S	G	N	-	P							
776 H3 A_Brisbane	-	-	-	-	N	N	-	S	F	N	W	T	G	V	T	Q	N	-	-	G	T	S	S	A	C	I	-	S	N	-	N						
777 H3 A_WCN	-	-	-	-	N	N	-	S	F	N	W	T	G	V	T	Q	N	-	-	G	T	S	S	A	C	I	-	S	N	-	N						
781 H5 A_Anhui	Q	I	I	P	-	-	S	S	W	S	-	A	S	S	-	-	-	G	V	S	S	A	C	P	Y	Q	G	T	-	P							
782 H5 A_Vietnam	Q	I	I	P	-	-	S	S	W	S	-	A	S	S	-	-	-	G	V	S	S	A	C	P	Y	Q	G	T	-	P							
860 H5_Indo	Q	I	I	P	-	-	S	S	W	S	-	A	S	S	-	-	-	G	V	S	S	A	C	P	Y	L	G	S	-	P							
	X	I	X	P	-	-	X	S	S	W	X	X	-	-	-	-	X	X	I	X	X	Y	X	X	G	V	S	X	A	C	X	X	X	G	X	X	X

779 B_Florida	G	F	E	A	T	M	A	W	A	V	P	-	-	N	N	-	N	A	T	N	-	I	P	-	L	T	V	-	V	P	Y	I	C	
778 B_Malaysia	G	F	E	A	T	M	A	W	A	V	P	-	-	N	N	-	N	A	T	N	-	I	P	-	L	T	V	-	V	P	Y	I	C	
774 H1_Brisbane	S	F	Y	-	N	L	L	W	L	T	G	-	-	-	-	-	N	G	L	-	Y	P	N	L	S	-	-	-	S	Y	A	N	-	-
775 H1_Sol Isl	S	F	Y	-	N	L	L	W	L	T	G	-	-	-	-	-	N	G	L	-	Y	P	N	L	S	-	-	-	S	Y	A	N	-	-
840 H1 A_NewCal	S	F	Y	-	N	L	L	W	L	T	G	-	-	-	-	-	N	G	L	-	Y	P	N	L	S	-	-	-	S	Y	A	N	-	-
780 H2 A_Singapore	S	F	E	-	N	M	V	W	L	T	-	-	-	-	-	-	S	N	-	Y	P	V	A	G	-	-	-	S	Y	-	N	-	-	
776 H3 A_Brisbane	S	F	E	S	-	L	N	W	L	T	-	-	-	-	-	-	E	-	-	Y	P	A	L	N	V	-	-	-	T	M	P	N	-	-
777 H3 A_WCN	S	F	E	S	-	L	N	W	L	T	-	-	-	-	-	-	E	-	-	Y	P	A	L	N	V	-	-	-	T	M	P	N	-	-
781 H5 A_Anhui	S	F	E	-	N	V	V	W	L	I	-	-	-	-	-	-	N	N	T	-	Y	P	T	I	-	-	-	S	Y	-	N	-	-	
782 H5 A_Vietnam	S	F	E	-	N	V	V	W	L	I	-	-	-	-	-	-	N	N	T	-	Y	P	T	I	-	-	-	S	Y	-	N	-	-	
860 H5_Indo	S	F	E	-	N	V	V	W	L	I	-	-	-	-	-	-	N	N	T	-	Y	P	T	I	-	-	-	S	Y	-	N	-	-	
	S	F	E	-	N	V	V	W	L	I	-	-	-	-	-	-	N	N	T	-	Y	P	T	I	-	-	-	S	Y	-	N	-	-	
	S	F	E	-	N	V	V	W	L	I	-	-	-	-	-	-	N	N	T	-	Y	P	T	I	-	-	-	S	Y	-	N	-	-	

779 B_Florida	T	-	G	-	Q	I	L	V	W	G	F	-	S	-	N	-	T	Q	M	-	N	L	-	Y	G	-	-	S	N	P	Q	-	-	
778 B_Malaysia	T	-	G	-	Q	I	L	V	W	G	F	-	S	-	N	-	T	Q	M	-	N	L	-	Y	G	-	-	S	N	P	Q	-	-	
774 H1_Brisbane	N	-	-	-	V	L	V	L	-	W	G	V	-	-	P	P	N	I	G	-	Q	-	A	L	Y	-	-	T	N	A	Y	V	-	-
775 H1_Sol Isl	N	-	-	-	V	L	V	L	-	W	G	V	-	-	P	P	N	I	G	-	Q	-	A	L	Y	-	-	T	N	A	Y	V	-	-
840 H1 A_NewCal	N	-	-	-	V	L	V	L	-	W	G	V	-	-	P	P	N	I	G	-	Q	-	A	L	Y	-	-	T	N	A	Y	V	-	-
780 H2 A_Singapore	N	T	S	G	-	Q	M	L	I	I	W	G	V	-	P	N	-	T	Q	-	-	T	L	Y	O	N	V	G	T	Y	V	-	-	
776 H3 A_Brisbane	N	-	-	-	L	Y	I	-	W	G	V	-	-	P	G	T	-	N	-	Q	I	F	L	Y	A	Q	A	S	G	-	-	-	-	
777 H3 A_WCN	N	-	-	-	L	Y	I	-	W	G	V	-	-	P	G	T	-	N	-	Q	I	F	L	Y	A	Q	A	S	G	-	-	-	-	
781 H5 A_Anhui	N	T	N	Q	-	L	L	L	L	W	G	I	-	-	S	N	-	A	A	-	Q	T	-	L	Y	Q	N	P	T	T	Y	I	-	-
782 H5 A_Vietnam	N	T	N	Q	-	L	L	L	L	W	G	I	-	-	P	N	-	A	A	-	Q	T	-	L	Y	Q	N	P	T	T	Y	I	-	-
860 H5_Indo	N	T	N	Q	-	L	L	L	L	W	G	I	-	-	P	N	-	A	A	-	Q	T	-	L	Y	Q	N	P	T	T	Y	I	-	-
	X	X	X	-	X	I	X	X	X	W	G	V	-	-	X	X	X	X	X	X	G	X	X	I	Y	X	X	X	X	Y	X	-	-	

779 B_Florida	R	T	S	S	A	N	G	V	T	T	-	Y	V	S	Q	I	G	S	P	P	-	Q	T	-	G	G	L	P	Q	S	G	-	-		
778 B_Malaysia	R	T	S	S	A	N	G	V	T	T	-	Y	V	S	Q	I	G	S	P	P	-	Q	T	-	G	G	L	P	Q	S	G	-	-		
774 H1_Brisbane	S	V	V	S	S	-	Y	S	-	-	F	T	P	-	I	A	-	P	-	V	-	-	-	-	-	-	-	Q	-	G	-	-	-		
775 H1_Sol Isl	S	V	V	S	S	-	Y	S	-	-	F	T	P	-	I	A	-	P	-	V	-	-	-	-	-	-	-	Q	-	G	-	-	-		
840 H1 A_NewCal	S	V	V	S	S	-	Y	S	-	-	F	T	P	-	I	A	-	P	-	V	-	-	-	-	-	-	-	Q	-	G	-	-	-		
780 H2 A_Singapore	S	V	G	T	S	T	L	N	Q	-	S	T	P	-	I	A	-	P	-	V	N	-	-	-	-	-	-	G	-	-	-	-	-		
776 H3 A_Brisbane	T	V	S	T	-	S	Q	O	T	V	I	P	N	I	G	S	-	P	-	V	N	-	-	-	-	-	-	-	I	P	S	-	-		
777 H3 A_WCN	T	V	S	T	-	S	Q	O	T	V	I	P	N	I	G	S	-	P	-	V	N	-	-	-	-	-	-	-	I	P	S	-	-		
781 H5 A_Anhui	S	V	G	T	S	T	L	N	Q	-	L	V	P	-	I	A	-	S	-	V	N	-	-	-	-	-	-	G	-	-	-	-	-		
782 H5 A_Vietnam	S	V	G	T	S	T	L	N	Q	-	L	V	P	-	I	A	-	S	-	V	N	-	-	-	-	-	-	G	-	-	-	-	-		
860 H5_Indo	S	I	G	T	S	T	L	N	Q	-	L	V	P	-	I	A	-	S	-	V	N	-	-	-	-	-	-	G	-	-	-	-	-		
	S	V	X	T	S	X	X	X	X	X	X	X	P	X	I	A	X	-	P	-	V	X	X	-	-	-	-	G	G	L	Q	X	G	-	-

Figure 1C-2

length: 609

270280290

779 B_Florida
773 B_Malaysia
774 H1_Brisbane
775 H1_Sol Isl
780 H1A_NewCal
780 H2A_Singapore
776 H3A_Brisbane
777 H3A_WCN
781 H5A_Anhui
782 H5A_Vietnam
780 H5_Indo

V	V	L	Y	M	M	Q	P	G	T	G	T	I	V	Y	Q	G	V	L	L	P	Q	V	W	C	A	S	T	
V	V	L	Y	M	M	Q	S	G	T	G	T	I	V	Y	Q	G	V	L	L	P	Q	V	W	C	A	S	T	
V	Y	Y	W	T	L	L	P	G	T	I	I	F	A	N	G	N	L	I	A	P	Y	A	F	A	L	S		
H	Y	Y	W	T	L	L	P	G	T	I	I	F	A	N	G	N	L	I	A	P	Y	A	F	A	L	S		
N	Y	Y	W	T	L	L	P	G	T	I	I	F	A	N	G	N	L	I	A	P	W	Y	A	F	A	L	S	
S	F	S	W	T	L	L	M	W	T	I	N	E	S	T	G	N	L	I	A	P	Y	G	F	I	S			
S	I	Y	W	T	I	V	P	G	T	I	L	L	I	N	S	T	G	N	L	I	A	P	G	Y	E	I	S	
S	I	Y	W	T	I	V	P	G	T	I	L	L	I	N	S	T	G	N	L	I	A	P	G	Y	E	I	S	
F	F	F	W	T	I	L	P	N	A	I	N	F	S	N	G	N	F	I	A	P	Y	A	Y	I	V			
F	F	F	W	T	I	L	P	N	A	I	N	F	S	N	G	N	F	I	A	P	Y	A	Y	I	V			
F	F	F	W	T	I	L	P	N	A	I	N	F	S	N	G	N	F	I	A	P	Y	A	Y	I	V			

X X X w l l X l X p l X X i X i s n g n G l l a p X y a l i s

length: 609

290 300 310 320 330

779 B_Florida
773 B_Malaysia
774 H1_Brisbane
775 H1_Sol Isl
780 H1A_NewCal
780 H2A_Singapore
776 H3A_Brisbane
777 H3A_WCN
781 H5A_Anhui
782 H5A_Vietnam
780 H5_Indo

T	G	S	V	I	G	S	L	P	L	I	G	A	C	L	Y	G	G	L	N	S	P						
T	G	S	V	I	G	S	L	P	L	I	G	A	C	L	Y	G	G	L	N	S	P						
G	F	G	S	G	I	I	N	S	N	A	P	M	C	A	C	Q	T	P	Q	G	A	I	N	S	S	L	P
G	F	G	S	G	I	I	N	S	N	A	P	M	C	A	C	Q	T	P	Q	G	A	I	N	S	S	L	P
G	F	G	S	G	I	I	N	S	N	A	P	M	C	A	C	Q	T	P	Q	G	A	I	N	S	S	L	P
G	S	S	G	I	M	T	G	T	L	N	C	T	C	Q	T	P	L	G	A	I	N	T	T	L	P		
S	G	S	S	I	M	S	A	P	I	G	C	N	S	C	I	T	P	N	G	S	I	P	N				
S	G	S	S	I	M	S	A	P	I	G	C	N	S	C	I	T	P	N	G	S	I	P	N				
G	S	S	A	I	V	S	V	Y	G	N	C	N	T	C	Q	T	P	I	G	A	I	N	S	S	M	P	
G	S	S	A	I	M	S	L	Y	G	N	C	N	T	C	Q	T	P	M	G	A	I	N	S	S	M	P	
G	S	S	A	I	M	S	L	Y	G	N	C	N	T	C	Q	T	P	M	G	A	I	N	S	S	M	P	

X g X S X l X X X p X X X C X X C Q T P X Y G a i n s s X P

340 350 360

779 B_Florida
773 B_Malaysia
774 H1_Brisbane
775 H1_Sol Isl
780 H1A_NewCal
780 H2A_Singapore
776 H3A_Brisbane
777 H3A_WCN
781 H5A_Anhui
782 H5A_Vietnam
780 H5_Indo

Y	Y	T	G	A	A	I	G	N	C	P	I	W	V	T	P	L	L	A	N	G	T	Y	P			
Y	Y	T	G	A	A	I	G	N	C	P	I	W	V	T	P	L	L	A	N	G	T	Y	P			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			
F	Q	N	V	P	V	T	I	G	C	P	Y	V	S	A	L	M	V	-	T	G	L	N	I			

I X n v p X l l i G C P v V s X l X i a n G t g i n X

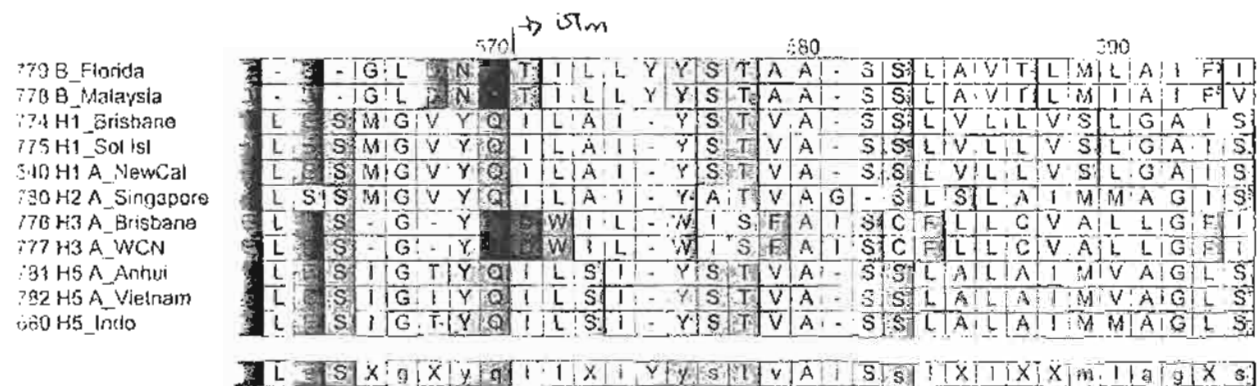
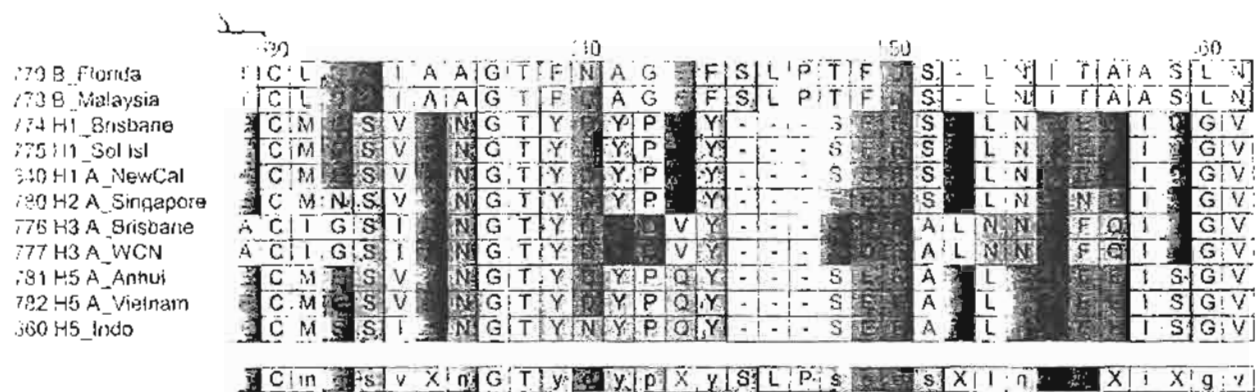
P12 370 380 390 Peptide fusion

779 B_Florida	P	A	L	I	-	-	L	G	E	F	G	A	I	A	G	F	L	G	G	W	G	M	I	A	G	W	G		
778 B_Malaysia	P	A	L	I	-	-	L	G	E	F	G	A	I	A	G	F	L	G	G	W	G	M	I	A	G	W	G		
774 H1_Brisbane	P	S	-	-	-	-	I	Q	S	G	L	F	G	A	I	A	G	F	I	G	G	W	T	G	M	V	G		
775 H1_Sol Isl	P	S	-	-	-	-	I	Q	S	G	L	F	G	A	I	A	G	F	I	G	G	W	T	G	M	V	G		
780 H1A_NewCal	P	S	-	-	-	-	I	Q	S	G	L	F	G	A	I	A	G	F	I	G	G	W	T	G	M	V	G		
780 H2A_Singapore	P	Q	-	-	-	-	I	S	G	L	F	G	A	I	A	G	F	I	G	G	W	Q	G	M	V	G			
776 H3A_Brisbane	P	-	-	-	-	-	Q	T	G	L	F	G	A	I	A	G	F	I	N	G	W	G	M	V	G	W	Y	G	
777 H3A_WCN	P	-	-	-	-	-	Q	T	G	L	F	G	A	I	A	G	F	I	N	G	W	G	M	V	G	W	Y	G	
781 H5A_Anhui	P	L	-	-	-	-	-	-	G	L	F	G	A	I	A	G	F	I	G	G	W	Q	G	M	V	G	W	Y	G
782 H5A_Vietnam	P	Q	-	-	-	-	-	-	G	L	F	G	A	I	A	G	F	I	G	G	W	Q	G	M	V	G	W	Y	G
780 H5_Indo	P	Q	-	-	-	-	S	-	G	L	F	G	A	I	A	G	F	I	G	G	W	Q	G	M	V	G	W	Y	G

	P	X	X	X	X	-	X	X	X	G	I	F	G	A	I	A	G	F	I	G	G	W	X	G	M	V	G	W	Y	G
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[illegible]

Figure 1C-4



Length: 609

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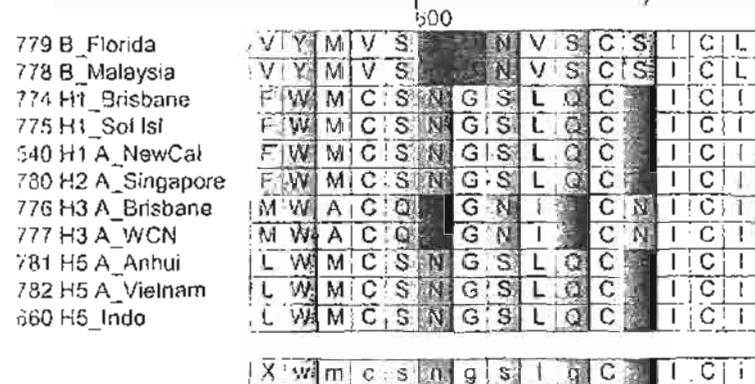


Figure 1C-5

Figure 2

Swapping of receptor binding subdomain on HA stem. Sequence of mature proteins.

Construct No.	N-terminal Stem: - F'1+E1	RB head	C-terminal Stem: E2+F'2-Stop
690 and 734	H5/Indo DQICIGYHANNSTEQVDTIMEKNV TVTHAQDILEKT HNGKLCDDLDGV KPLILRDCSVAG WLLGNPMCDEF INVPEWSYIVEK ANPTNDLCYP	H1/Brisbane GHFADYEELREQLSSVSSFERFEIF PKESSWPNHTVTGVSASCSHNGES SFYRNLLWLTGKNGLYPNLSKSYA NNKEKEVLVLWGVIHPPNIGDQKA LYHTENAYVSVVSSHYSRKFTPEIA KRPKVRDQEGRIINYWTLLPEGDTI IFEANGNLIAPRYAFALSRGFGSG	H5/Indo IMKSELEYGNCNTKCQTPMGAINSSM PFHNIHPLTIGCEPKYVKSRLVLATGL RNSPQRESRRKKRGLFGAIAGFIEGG WQGMVDGWYGYHHSNEQSGSYAAD KESTOKAIDGVTNKVNSIDKMNTQFE AVGREFNLERRIENLNKKMEDGFLDV WTYNAELLVLMENERTLDFHDSNVKN LYDKVRLQLRDNAKELGNGCFEYHK CONECMESIRNGTYNYPQYSEEARLK REEISGVKLESIGTYQILSIYSTVASSLA LAIMMAGLSLWMCNGLSQCRICI
696	H1/NC DTICIGYHANNSTDTVDTVLEKNV TVTHSVNLLDS HNGKLCCLKGIA PLOGNCSVAG WILGNPECELLI SKESWSYIVETP NPENGTCYP	H5/Indo GSFNDYEELKHLLSRINHFEKIQIP KSSWSOHEASSGVSSACPYLGSPS FFRNWVWLKKNSTYPTIKKSYNNT NQEDLLVLWGIHHPNDAAEQTRLY QNPTTYISIGTSTLNQRLVPKIATRS KVNGQSGRMEFFWTILKPNDAINF SNGNFIAPEYAYKIVKKGDSA	H1/NC IITSNAPMDECDACKQTPQGAINSSLP FQNVHPVTIGCEPKYVRSALRMVTL RNIPSIQSRGLFGAIAGFIEGGWGMV OGWYGYHHQNEQSGSYAADQKSTQ NAINGITNKVNSVIEKMNTQFTAVGKEF NKLERRMENLNKKVDDGFLDIWTYNA ELLVLENERTLDFHDSNVKNLYEKVK SQLKNAKEIGNGCFEYHKCNNECM ESVKNGTYPKYSEESKLNREKIOGV KLESMGVYQILAIYSTVASSLVLLVSLG AISFWMCNGLSQCRICI

Swapping of receptor binding and esterase subdomains on HA stem.
Sequence of mature protein.

Construct No.	N-terminal Stem: F'1	E1-RB-E2 head	C-terminal stem: F'2- Stop
691	H5/Indo DQICIGYHANNSTEQVDTIMEKNV TVTHAQDILEKT HNGKLC	H1/Brisbane LLKGIAPLQLGNCVAGWIL GNPECELLISKESWSYIVEK PNPENGTCYPGHFADYEEL REQLSSVSSFERFEIFPKES SWPNHTVTGVSASCSHNG ESSFYRNLLWLTGKNGLYP NLSKSYANNKEKEVLVLWG VHPPNIGDQKALYHTENA YVSVSSHYSRKFTPEIAKR PKVRDQEGRIINYWTLLPE GDTIIFEANGNLIAPRYAFAL SRGFGSGIINSNAPMDK	H5/Indo CNTKCQTPMGAINSSMPFHNIHPLTIGCEPKYVKS RLVLATGLRNSPQRESRRKKRGLFGAIAGFIEGGW QGMVDGWYGYHHSNEQSGSYAADKESTOKAIDG VTNKVNSIDKMNTQFEAVGREFNLERRIENLNKK MEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNL YDKVRLQLRDNAKELGNGCFEYHKCONECMESIR NGTYNYPQYSEEARLKREEISGVKLESIGTYQILSIY STVASSLALAIMMAGLSLWMCNGLSQCRICI

Figure 3

Amino acid translation of coding sequence in construct 690 and 734 expression cassette (SEQ ID NO: 80):

MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTTHAQDILEKTHNGKLCDLGDKPLILR
DCSVAGWLLGNPMCEFINVPEWSYIVEKANPTNDLCYPGHFADYEELREQLSSVSSFERFEIFPK
ESSWPNHHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGWHPPNI
GDQKALYHTENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYWTLLPEGDTIIFEANGNLIAPRY
AFALSRGFGSGIMKSELEYGNCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSRLVLTGLRN
SPQRESRRKKRGLFGAIAAGFIEGGWQGMVDGWYGYHHSNEQGSYAADKESTQKAIDGVTNKVN
SIIDKMNTQFEAVGREFNLERRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDFHDSNVKNLYD
KVRLQLRDNALGNGCFEFYHKCDNECMESIRNGTYNYPQYSEEARLKREEISGVKLESIGTYQIL
SIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI

Figure 4

Amino acid translation of coding sequence in construct 691 expression cassette (SEQ ID NO: 81):

MEKIVLLLAIVSLVKSDQICIGYHANNSTEQVDTIMEKNVTVTTHAQDILEKTHNGKLCCLKGIAPLQL
GNCSVAGWILGNPECELLISKESWSYIVEKPNPENGTCYPGHFADYEELREQLSSVSSFERFEIF
PKESSWPNHHTVTGVSASCSHNGESSFYRNLLWLTGKNGLYPNLSKSYANNKEKEVLVLWGWH
PPNIGDQKALYHTENAYVSVVSSHYSRKFTPEIAKRPKVRDQEGRINYWTLLPEGDTIIFEANGN
LIAPRYAFALSRGFGSGIINSNAPMDKCNTKCQTPMGAINSSMPFHNIHPLTIGECPKYVKSRLV
LATGLRNSPQRESRRKKRGLFGAIAAGFIEGGWQGMVDGWYGYHHSNEQGSYAADKESTQKA
IDGVTNKVNSIIDKMNTQFEAVGREFNLERRIENLNKKMEDGFLDVWTYNAELLVLMENERTLDF
HDSNVKNLYDKVRLQLRDNALGNGCFEFYHKCDNECMESIRNGTYNYPQYSEEARLKREEIS
GVKLESIGTYQILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI

Figure 5

Amino acid translation of coding sequence in construct 696 expression cassette (SEQ ID NO: 82):

MAKNVAIFGLLFSLLVLVPSQIFADTICIGYHANNSTDVDTVLEKNVTVTHSVNLLEDSSHNGKLCCLKGIA
PLQLGNCSVAGWILGNPECELLISKESWSYIVETPNPENGTCPGFSFNDYEELKHLISRINHFEEKIIPK
SSWSDHEASSGVSSACPYLGSPSFFRNWWLIKKNSTYPTIKKSYNNNTNQEDLLVLWGIHHPNDAAEQT
RLYQNPTTYISIGTSTLNQRLVPKIATRISKVNGQSGRMEFFWTILKPNDAINFESNGNFIAPEYAYKIVKK
GDSAIITSNAPMDECDKQTPQGAINSSLPFQNVHPVTIGECPKYVRSKLRMVTGLRNIPSIQSRGLF
GAIAAGFIEGGWTGMVDGWYGYHHQNEQGSYAADQKSTQNAINGITNKVNSVIEKMNTQFTAVGKEF
NKLERRMENLNKKVDDGFLDIWTYNAELLVLENERTLDFHDSNVKNLYEKVKSQKNNNAKEIGNGCFE
FYHKCNNECMESVKNGTYPKYSEESKLNREKIDGVKLESMGVYQILAIYSTVASSLVLVSLGAISFW
MCSNGSLQCRICI

Figure 6

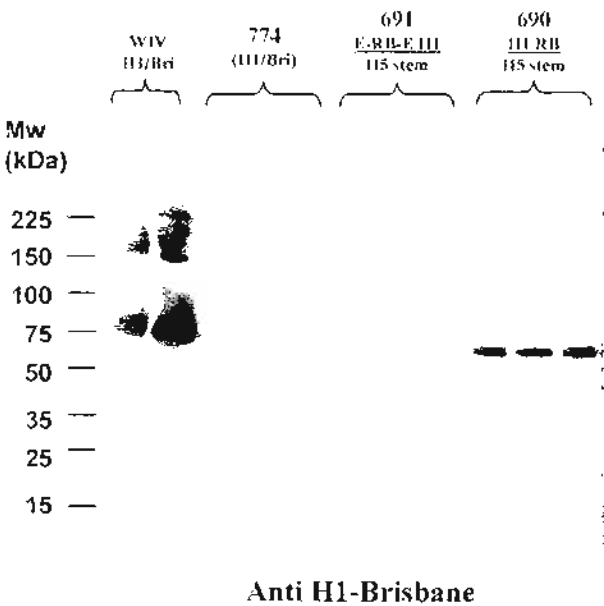


Figure 7

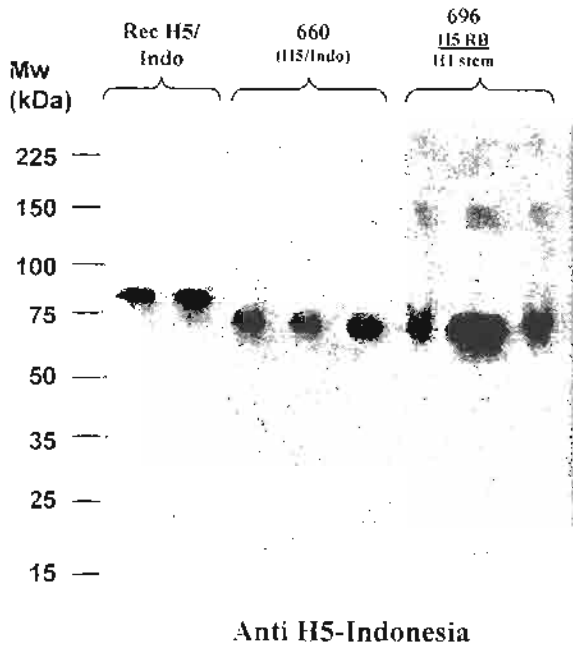


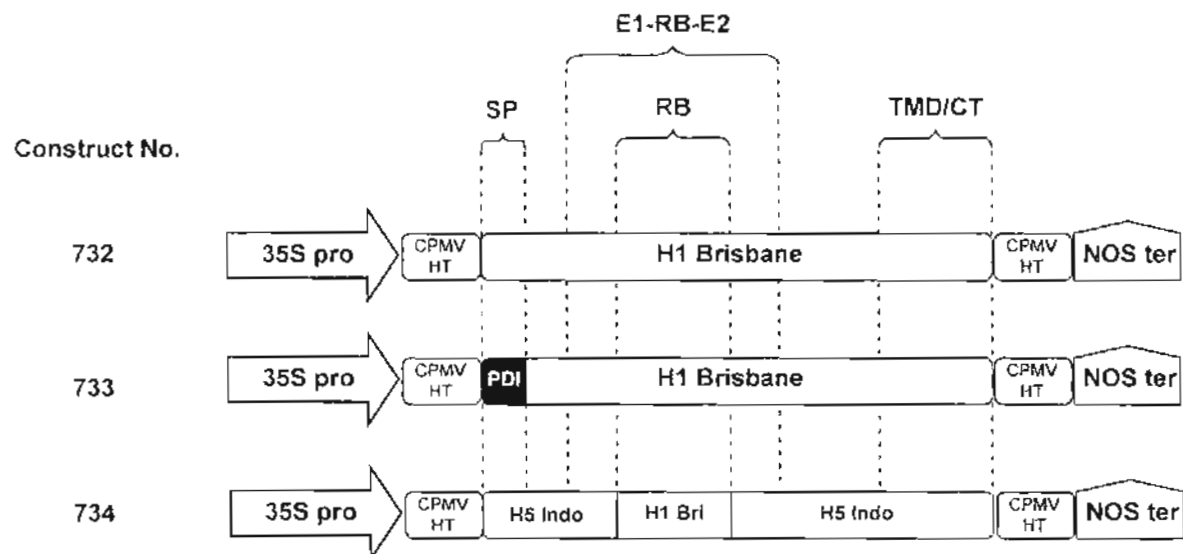
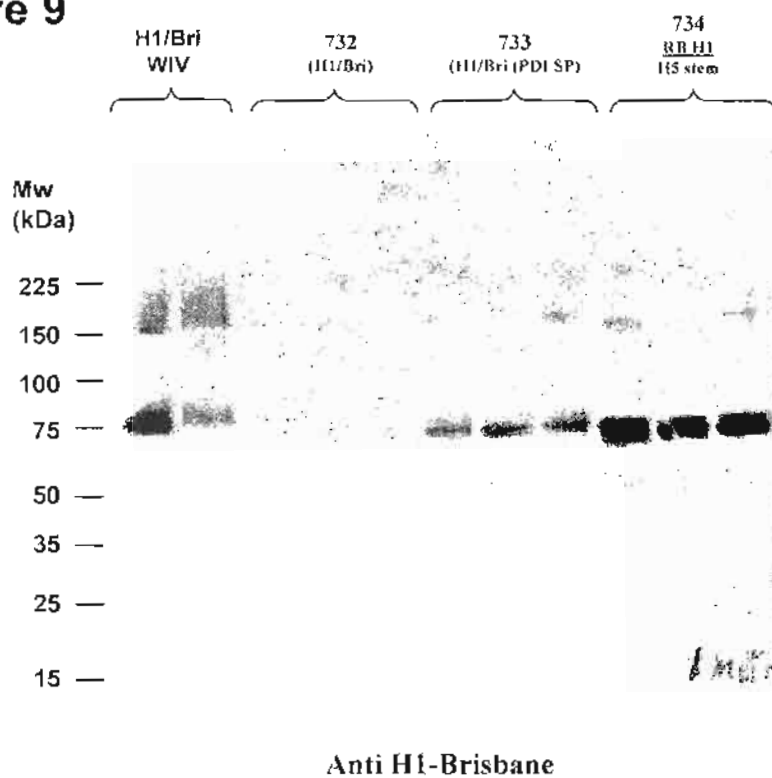
Figure 8**Figure 9**

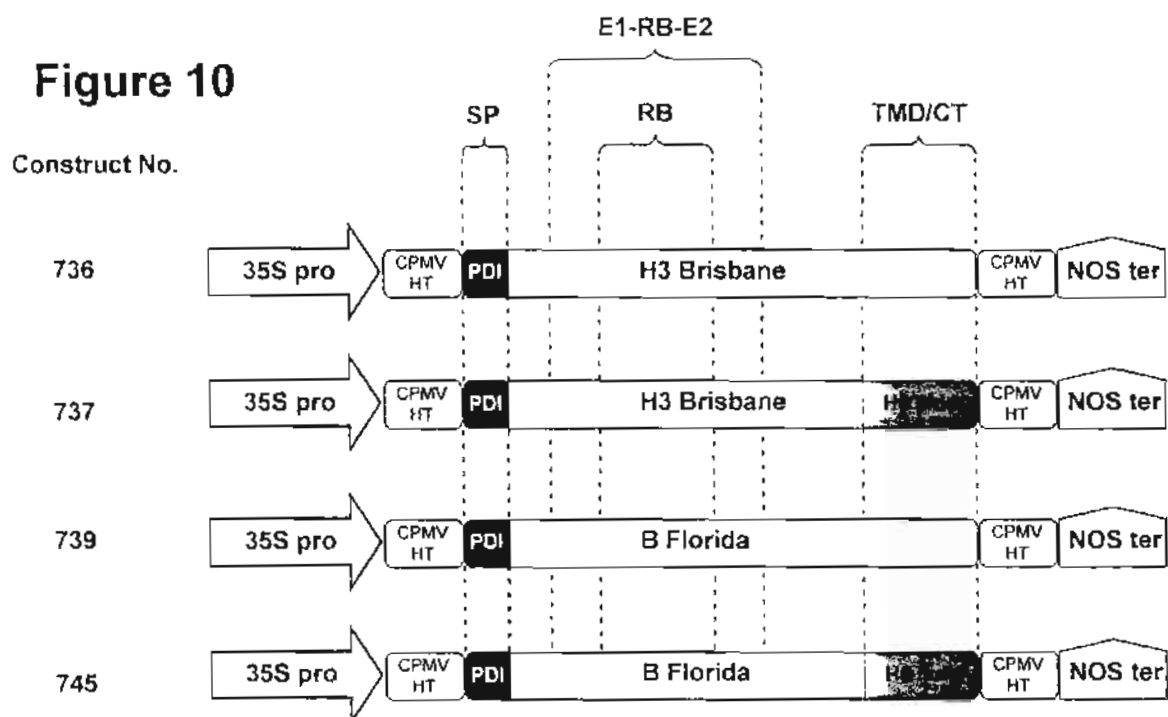
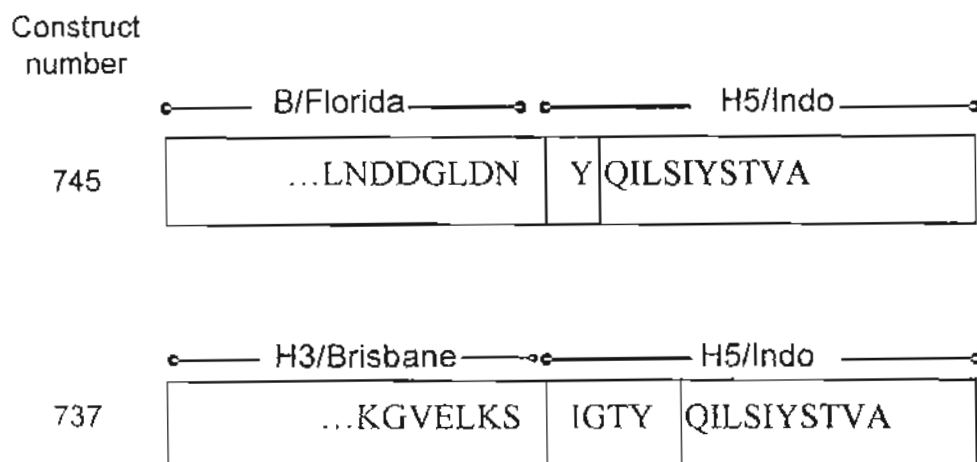
Figure 10**Figure 11**

Figure 12

Amino acid translation of coding sequence in construct 737 expression cassette (SEQ ID NO: 83):

MAKNVAIFGLLFSLVLVPSQIFAQKLPGNDNSTATLCLGHHAVPNGTIVKTITNDQIEVTNATELVQSS
STGEICDSPHQILDGENCTLIDALLGDPQCDGFQNKWDLFVERSKAYSNCYPYDVPDYASLRSLVA
SSGTLEFNNEFSNWTGVTQNGTSSACIRRSNNSFFSRLNWLTHLKFKYPALNVTMPNNEKFDKLYIW
GVHHPGTDNDQIFLYAQASGRITVSTKRSQQTVIPNIGSRPRVRNIPSRISIIYWTIVKPGDILLINSTGNL
IAPRGYFKIRSGKSSIMRSDAPIGKCNSECITPNGSIPNDKPFQNVNRITYGACPRYVKQNTLKLATGM
RNVPEKQTRGIFGAIAGFIENGWEGMVDGWYGRHQNSEGIGQAADLKSTQAAIDQINGKLNRLIGK
TNEKFHQIEKEFSEVEGRIQDLEKYVEDTKIDLWSYNAELLVALENQHTIDLTDSMNKLFKTKKQLR
ENAEDEMGNGCFKIYHKCDNACIGSIRNGTYDHDVYRDEALNNRFQIKGVELKSIGTYQILSIYSTVASS
LALAIMMAGLSLWMCSNGSLQCRICI

Figure 13

Amino acid translation of coding sequence in construct 745 expression cassette (SEQ IDNO: 84):

MAKNVAIFGLLFSLVLVPSQIFADRICTGITSSNSPHVVKATQGEVNVTVGIPLTTTPTKSYFANLKGTR
TRGKLCPCDCLNCTDLDAVALGRPMCVRGTTPSAKASILHEVKPVTSGCFPIIMHDKIRQLPNLLRGYENI
RLSTQNVIDAEKAPGGPYRLGTSGSCP NATSKSGFFATMAWAVPKDNNKNATNPLTVEVPYICTEGED
QITVWGFHSDNKTQMKNLYGDSNPQKFTSSANGVTTHYVSQIGSFDPQTEDGGLPQSGRIWVDYMMQ
KPGKTGTIVYQRGVLLPQKWCASGRSKVIKGSPLIGEADCLHEKYGGLNKSHPYYTGEHAKAIGNCP
IWWKTPLKLANGTKYRPPAKLLKERGFFGAIAGFLEGGWEGMIAGWHGYTSHGAHGVAVAADLKSTQE
AINKITKNLNSLSELEVKNLQRLSGAMDELHNEILELDEKVDDLADTSSQIELAVLLSNEGIINSEDEHLL
ALERKLLKMLGPSAVEIGNGCFETKHKCNQTCLDRIAAGTFNAGEFSLPTFDSL NITAASLNDGGLDNY
QILSIYSTVASSLALAIMMAGLSLWMCSNGSLQCRICI

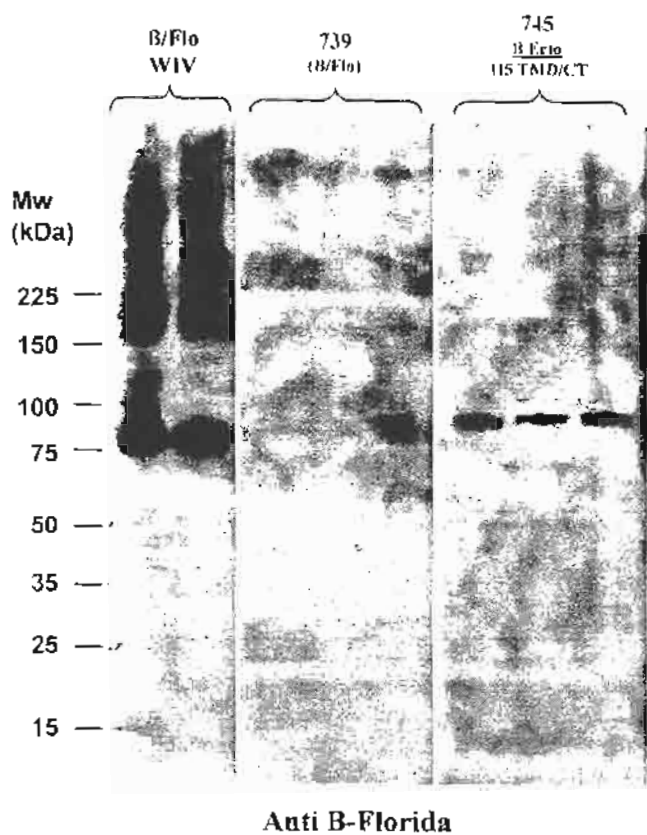
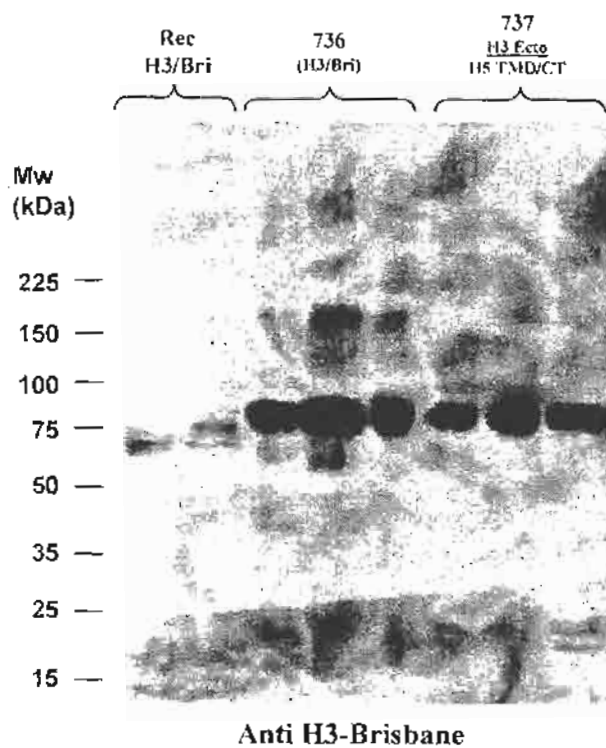
Figure 14**Figure 15**

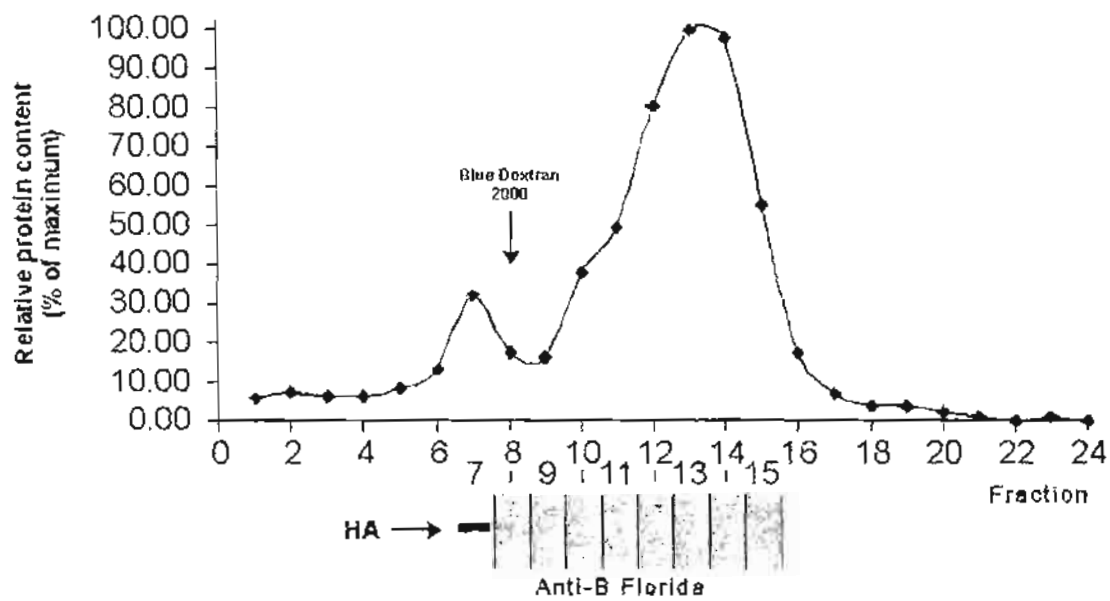
Figure 16

Figure 17

SEQ. ID. NO. 52.

B-Plasto-Native SP-H5 A/Indonesia/5/05 (HindIII-Native Sp-H5 A/Indo/5/05-SacI)

AAGCTTATGGAGAAAATAGTGCTTCTTCTTGCAATAGTCAGTCTTGTTAAAAGTGATCAGATT
 TGCATTGGTTACCATGCAAAACAATTCAACAGAGCAGGTTGACACAATCATGGAAAAGAAGCT
 TACTGTTACACATGCCCAAGACATACTGGAAAAGACACACAACGGGAAGCTCTGCGATCTAG
 ATGGAGTGAAGCCTCTAATTTTAAGAGATTGTAGTGTAGCTGGATGGCTCCTCGGGAACCCA
 ATGTGTGACGAATTCATCAATGTACCGGAATGGTCTTACATAGTGGAGAAGGCCAATCCAAC
 CAATGACCTCTGTTACCCAGGGAGTTTCAACGACTATGAAGAACTGAAACACCTATTGAGCA
 GAATAAACCATTTTGAGAAAATTCAAATCATCCCCAAAAGTTCTTGGTCCGATCATGAAGCCT
 CATCAGGAGTTAGCTCAGCATGTCCATACCTGGGAAGTCCCTCCTTTTTAGAAAATGTGGTA
 TGGCTTATCAAAAAGAACAGTACATACCCAACAATAAAGAAAAGCTACAATAATACCAACCAA
 GAGGATCTTTTGGTACTGTGGGGAATTCACCATCCTAATGATGCGGCAGAGCAGACAAGGC
 TATATCAAAAACCCAACCACCTATATTTCCATTGGGACATCAACACTAAACCAGAGATTGGTAC
 CAAAAATAGCTACTAGATCCAAAGTAAACGGGCAAGTGGAAGGATGGAGTTCTTCTGGACA
 ATTTTAAAACCTAATGATGCAATCAACTTCGAGAGTAATGGAAATTTCAATTGCTCCAGAATAT
 GCATACAAAATTGTCAAGAAAGGGGACTCAGCAATTATGAAAAGTGAATTGGAATATGGTAA
 CTGCAACACCAAGTGTCAAACCTCAATGGGGGCGATAAACTCTAGTATGCCATTCCACAACA
 TACACCCTCTCACCATCGGGGAATGCCCCAAATATGTGAAATCAAACAGATTAGTCCTTGCA
 ACAGGGCTCAGAAATAGCCCTCAAAGAGAGAGCAGAAGAAAAAGAGAGGACTATTTGGAG
 CTATAGCAGGTTTTATAGAGGGAGGATGGCAGGGAATGGTAGATGGTTGGTATGGGTACCA
 CCATAGCAATGAGCAGGGGAGTGGGTACGCTGCAGACAAAGAATCCACTCAAAGGCAATA
 GATGGAGTCACCAATAAGGTCAACTCAATCATTGACAAAATGAACACTCAGTTTGAGGCCGT
 TGGAAAGGAATTTAATAACTTAGAAAGGAGAATAGAGAATTTAAACAAGAAGATGGAAGACG
 GTTTTCTAGATGTCTGGACTTATAATGCCGAACCTCTGGTTCTCATGGAAAATGAGAGAACTC
 TAGACTTTTCATGACTCAAATGTAAAGAACCTCTACGACAAGGTCCGACTACAGCTTAGGGAT
 AATGCAAAGGAGCTGGGTAAACGGTTGTTTCGAGTTCTATCACAATGTGATAATGAATGTATG
 GAAAGTATAAGAAACGGAACGTACAACCTATCCGCAGTATTCAGAAGAAGCAAGATTAAGG
 AGAGGAAATAAGTGGGGTAAATTTGGAATCAATAGGAACCTACCAATACTGTCAATTTATTC
 AACAGTGGCGAGTTCCCTAGCACTGGCAATCATGATGGCTGGTCTATCTTTATGGATGTGCT
 CCAATGGATCGTTACAATGCAGAATTTGCATTTAAGAGCTC

Figure 18

SEQ. ID. NO. 53

660 expression cassette from HindIII (in the multiple cloning site, upstream of the Plastocyanin promoter) to EcoRI (immediately downstream of the Plastocyanin terminator). H5 from A/Indonesia/5/2005 coding sequence underlined.

AAGCTTGCTAGCGGCCTCAATGGCCCTGCAGGTCGACTCTAGAGGTACCCCGGGCTGGTATATTTATA
TGTGTGCAAACTCAAAAACCATAAAGTTTAAAGTTAGCAAGTGTGTACATTTTACTTGAACAAAAAT
ATTCACCTACTACTGTTATAAATCATTATTAAACATTAGAGTAAAGAAATATGGATGATAAGAACAGAGT
AGTGATATTTTGACAACAATTTTGTGCAACATTTGAGAAAATTTTGTGTTCTCTCTTTTATTGGTCAA
AAACAATAGAGAGAGAAAAAGGAAGAGGGAGAATAAAAAACATAATGTGAGTATGAGAGAGAAAGTTGTA
CAAAAGTTGTACCAAAATAGTTGTACAAATATCATTGAGGAATTTGACAAAAGCTACACAAATAAGGGTT
AATTGCTGTAAATAAATAAGGATGACGCAATTAGAGAGATGTACCATTAGAGAATTTTGGCAAGTCATTA
AAAAGAAAAGATAAATTATTTTAAATTTAAAGTTGAGTCATTTGATTAAACATGTGATTATTTAATGAAT
TGATGAAAGAGTTGGATTAAAGTTGTATTAGTAATTAGAATTTGGTGTCAAATTTAATTTGACATTTGATC
TTTTCTATATTTGGCCCATAGAGTCAGTTAACTCATTTTTATATTTTCATAGATCAAATAAGAGAAATAA
CGGTATATTAATCCCTCCAAAAAAGAGCGGTATTTACTAAAAATCTAAGCCACGTAGGAGGATA
ACAGGATCCCGTAGGAGGATAACATCCAATCCAACCAATCACAACAATCCTGATGAGATAACCCACTT
TAAGCCACGCATCTGTGGCACATCTACATTATCTAAATCACACATTTCTCCACACATCTGAGCCACACA
AAAACCAATCCACATCTTTATCACCATTCTATAAAAAATCACACTTTGTGAGTCTACACTTTGATTCCCT
TCAAACACATACAAAGAGAGAGACTAATTAATTAATTAATCATCTTGAGAGAAAATGGAGAAAATAGTG
CTTCTCTTGCAATAGTCAGTCTTGTTAAAGTGATCAGATTTGCATTGGTTACCATGCAACCAATTCAA
CAGAGCAGGTTGACACAATCATGGAAAAGAACGTTACTGTTACACATGCCAAGACATCGGAAAAGGA
CACACAACGGGAAGCTCTGCGATCTAGATGGAGTGAAGCCTCTAATTTTAAGAGATTGTAGTGTAGCTG
GATGGCTCCTCGGGAACCCAATGTGTGACGAATTCATCAATGTACCGGAATGGTCTTACATAGTGGAG
AAGGCCAATCCAACCAATGACCTCTGTTACCCAGGGAGTTTCAACGACTATGAAGAAGTGAACACCTA
TTGAGCAGAATAAACCAATTTGAGAAAATCAAATCATCCCCAAAAGTTCTTGGTCCGATCATGAAGCCT
CAACAGGAGTTAGCTCAGCATGTCCATACCTGGGAAGTCCCTCCTTTTJAGAAATGTGGTATGGCTTA
TCAAAAAGAACAGTACATACCCAAACAATAAAGAAAAGCTACAATAATACCAACCAAGAGGATCTTTGGT
ACTGTGGGAATTCACCATCCTAATGATGCGGCAGAGCAGACAAGGCTATATCAAAACCCAACACCT
ATATTTCCATTGGGACATCAACACTAAACCAGAGATTGGTACCAAAAAATAGCTACTAGATCCAAAGTAAA
CGGGCAAAGTGAAGGATGGAGTTCTTCTGGACAATTTTAAACCTAATGATGCAATCAACTTCGAGAG
TAATGGAAATTTTATTGCTCCAGAATATGCATACAAAATGTCAAGAAAGGGGACTCAGCAATTTGAAA
AGTGAATTTGGAATATGGTAACTGCAACACCAAGTGTCAAACCTCAATGGGGGCGATAAACTCTAGTATG
CCATTCCACAACATACACCTCTCACCATCGGGGAATGCCCAAAATATGTGAAATCAACAGATTAGTC
CTTGCAACAGGGCTCAGAAATAGCCCTCAAAGAGAGAGCAGAGAAGAAAAAGAGAGGACTATTTGGAGC
TATAGCAGGTTTATAGAGGGAGGATGGCAGGGAATGGTAGATGGTGGTATGGGTACCACCATAGCA
ATGAGCAGGGGAGTGGGTACGCTGCAGACAAAGAAATCCACTCAAAGGCAATAGATGGAGTCACCAAT
AAGGTCAACTCAATCATTGACAAAATGAACACTCAGTTTGAGGCCGTTGGAAGGGAATTTAATAACTTA
GAAAGGAGAATAGAGAATTTAAACAAGAAGATGGAAGACGGGTTTCTAGATGTCTGGACTTATAATGCC
CAACTTCTGGTTCTCATGGAAAATGAGAGAACTCTAGACTTTCATGACTCAAATGTTAAGAACCTCTACG
ACAAGGTCCGACTACAGCTTAGGGATAATGCAAGGAGCTGGGTAAACGGTTGTTTCGAGTTCTATCACA
AATGTGATAATGAATGTATGAAAGTATAAGAAACGGAACGTACAACCTATCCGCAGTATTGAGAAGAAG
CAAGATTAAGAAAGAGAGGAAATAAGTGGGGTAAATTTGGAATCAATAGGAACCTACCAAAATCTGTCAAT
TTATTCAACAGTGGCGAGTTCCCTAGCACTGGCAATCATGATGGCTGGTCTATCTTTATGGATGTGCTC
CAATGGATCGTTACAATGCAGAAATTTGCATTTAAGAGCTCTAAGTTAAATGCTTCTTCGTCTCCTATTTA
TAATATGGTTTGTATTGTTAAATTTGTTCTTGTAGAAGAGCTTAATTAATCGTTGTTGTTATGAAATACTA
TTTGTATGAGATGAAGTGGTGAATGTAATTCATTACATAAGTGGAGTCAGAATCAGAATGTTTCTCTCC
ATAACTAACTAGACATGAAGACCTGCCGCTGACAATTTGTTATATTTGAACAACATAAAATTTGAACATCT
TTTGCCACAACCTTTATAAGTGGTTAATATAGCTCAAATATATGGTCAAGTTCAATAGATTAATAATGGAAA
TATCAGTTATCGAAATTCATTAACAATCAACTTAACGTTATTAATACTACTAATTTTATATCATCCCTTTGAT
AAATGATAGTACCAATTAGGAAGGAGCATGCTCGAGGCCTGGCTGGCCGAATTC

Figure 19

SEQ. ID. NO. 54.

Wild-type H1/NC (H1N1) coding sequence lacking TmD and Ctail (GenBank acc. No. AY289929)

```
ATGAAAGCAAACTACTGGTCCTGTTATGTACATTTACAGCTACATATGCAGACACAATATGTAT
AGGCTACCATGCCAACAACTCAACCGACACTGTTGACACAGTACTTGAGAAAGAAATGTGACAGT
GACACACTCTGTCAACCTACTTGAGGACAGTCACAATGGAAAACCTATGTCTACTAAAAGGAATA
GCCCCACTACAATTGGGTAATTGCAGCGTTGCCGGATGGATCTTAGGAAACCCAGAATGCCGAA
TTACTGATTTCCAAGGAATCATGGTCCTACATTGTAGAAAACACCAAATCCTGAGAATGGAACAT
GTTACCCAGGGTATTTGCGCGACTATGAGGAACTGAGGGAGCAATTGAGTTCAGTATCTTCAT
TTGAGAGATTGCAAAATATTTCCCAAAGAAAGCTCATGGCCCAACCCACACCGTAACCCGGAGTAT
CAGCATCATGCTCCCATATGGGAAAAGCAGTTTTTACAGAAATTTGCTATGGCTGACGGGGA
AGAATGGTTTGTACCCAAACCTGAGCAAGTCTTATGTAACAACAAAGAGAAAGAAAGTCTTGT
ACTATGGGGTGTTTCATCACCCGCTAACATAGGGAACCAAAGGGCCCTCTATCATACAGAAAA
TGCTTATGTCTCTGTAGTGTCTTCACATTATAGCAGAAGATTCACCCAGAAAATAGCCAAAAGA
CCCAAAGTAAGAGATCAGGAAGGAAGAATCAACTACTACTGGACTCTGCTGGAACCTGGGGAT
ACAATAATATTTGAGGCAAATGGAAATCTAATAGCGCCATGGTATGCTTTTGCAGTGTAGTAG
GCTTTGGATCAGGAATCATCACCTCAAATGCACCAATGGATGAATGTGATGCGAAGTGTCAA
CACCTCAGGGAGCTATAAACAGCAGTCTTCTTTCCAGAATGTACACCCAGTCACAATAGGAG
AGTGTCCAAAGTATGTCAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCAT
CCATTCAATCCAGAGGTTTGTGTTGGAGCCATTGCCGGTTTCATTGAAGGGGGGTGGACTGGAA
TGGTAGATGGGTGGTATGGTTATCATCATCAGAATGAGCAAGGATCTGGCTATGCTGCAGATC
AAAAAAGTACACAAAATGCCATTAACGGGATTACAAACAAGGTGAATTCGTGAATTGAGAAAA
GAACACTCAATTCACAGCTGTGGGCAAGAATTCAACAAATTGGAAAGAAGGATGGAAAACCTTA
AATAAAAAAGTTGATGATGGGTTTCTAGACATTTGGACATATAATGCAGAATTGTTGGTTCTACT
GGAAAATGAAAGGACTTTGGATTTCCATGACTCCAATGTGAAGAATCTGTATGAGAAAGTAAAA
AGCCAATTAAAGAATAATGCCAAAGAAATAGGAAACGGGTGTTTTGAATTCATCACAAGTGTA
ACAATGAATGCATGGAGAGTGTGAAAAATGGAACCTTATGACTATCCAAAATATTCGAAGAATC
AAAGTTAAACAGGGAGAAAATTGATGGAGTGAATTTGGAATCAATGGGAGTCTATCAGATTCTG
GCGATCTACTCAACTGTCGCCAGTTCCCTGGTTCTTTTGGTCTCCCTGGGGGCAATCAGCTTC
TGGATGTGTTCCAATGGGTCTTTGCAGTGTAGAATATGCATCTGAGACCAGAAATTTCA
```

Figure 20

SEQ. ID. NO. 55.

Synthesized BglII-H1 A/NC/20/99-SacI/StuI.

```
AGATCTTCGCTGACACAATATGTATAGGCTACCATGCCAACAACTCAACCGACACTGTTGACAC
AGTACTTGAGAAGAATGTGACAGTGACACACTCTGTCAACCTACTTGAGGACAGTCACAATGGA
AAACTATGTCTACTAAAAGGAATAGCCCCACTACAATTGGGTAATTGCAGCGTTGCCGGATGGA
TCTTAGGAAACCCAGAATGCCAATTACTGATTTCCAAGGAATCATGGTCCTACATTGTAGAAACA
CCAAATCCTGAGAATGGAACATGTTACCCAGGGTATTTGCGCGACTATGAGGAACTGAGGGAGC
AATTGAGTTCAGTATCTTCATTTGAGAGATTCGAAATATTTCCCAAAGAAAGCTCATGGCCCAAC
CACACCGTAACCGGAGTATCAGCATCATGCTCCCATAAATGGGAAAAGCAGTTTTTACAGAAATTT
GCTATGGCTGACGGGGAAGAATGGTTTGTACCCAAACCTGAGCAAGTCCTATGTAAACAACAAA
GAGAAAGAAGTCCTTGTACTATGGGGTGTTCATCACCCGCCTAACATAGGGAACCAAAGGGCAC
TCTATCATACAGAAAATGCTTATGTCTCTGTAGTGTCTTCACATTATAGCAGAAGATTCACCCCA
GAAATAGCCAAAAGACCCAAAGTAAGAGATCAGGAAGGAAGAATCAACTACTACTGGACTCTGC
TGGAACCTGGGGATACAATAATTTGAGGCAAATGGAAATCTAATAGCGCCATGGTATGCTTTT
GCACTGAGTAGAGGCTTTGGATCAGGAATCATCACCTCAAATGCACCAATGGATGAATGTGATG
CGAAGTGTCAAACACCTCAGGGAGCTATAAACAGCAGTCTTCCTTTCCAGAATGTACACCCAGT
CACAATAGGAGAGTGTCCAAAGTATGTCAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGG
AACATCCCATCCATTCAATCCAGAGGTTTGTGGAGCCATTGCCGGTTTCATTGAAGGGGGGT
GGACTGGAATGGTAGATGGGTGGTATGGTTATCATCATCAGAATGAGCAAGGATCTGGCTATGC
TGCAGATCAAAAAAGTACACAAAATGCCATTAACGGGATTACAAACAAGGTCAATTCTGTAATTG
AGAAAAATGAACACTCAATTCACAGCTGTGGGCAAAGAGTTCAACAAATTGGAAAGAAGGATGGA
AACTTAAATAAAAAAGTTGATGATGGGTTTCTAGACATTTGGACATATAATGCAGAATTGTTGGT
TCTACTGGAAAATGAAAGGACTTTGGATTTCCATGACTCCAATGTGAAGAATCTGTATGAGAAAG
TAAAAAGCCAATTAAAGAATAATGCCAAAGAAATAGGAAACGGGTGTTTTGAGTCTATCACAAAG
TGTAACAATGAATGCATGGAGAGTGTGAAAAATGGTACCTATGACTATCCAAAATATTCCGAAGA
ATCAAAGTTAAACAGGGAGAAAATTTGATGGAGTGAAATTGGAATCAATGGGAGTATACTAAGAG
CTCAGGCCT
```

Figure 21

SEQ. ID. NO. 56

Synthesized KpnI-H1 A/NC/20/99 TmD+Ctail-SacI/StuI.

GGTACCTATGACTATCCAAAATATTCCGAAGAATCAAAGTTAAACAGGGAGAAAATTGATGGAGTG
AAATTGGAATCAATGGGAGTATACCAGATTCTGGCGATCTACTCAACTGTCGCCAGTTCCTTGGT
TCTTTTGGTCTCCCTGGGGGCAATCAGCTTCTGGATGTGTTCCAATGGGTCTTTGCAGTGTAGAA
TATGCATCTAAGAGCTCAGGCCT

Figure 22

SEQ. ID. NO. 57.

Signal peptide of alfalfa protein disulfide isomerase (PDI) gene (nucleotides 32-103; Accession No. Z11499).

CCAAATCCTTAACATTCTTTCAACACCAACAATGGCGAAAAACGTTGCGATTTTCGGTTTATTGTTT
TCTCTTCTTCTGTTGGTTCCTTCTCAGATCTTCGCTGAGGAATCATCAACTGACGCTAAGGAATTT
GTTCTTACATTGGATAACACTAATTTCCATGACACTGTTAAGAAGCACGATTTTCATCGTCGTTGAAT
TCTACGCACCTTGGTGTGGACACTGTAAGAAGCTAGCCCCAGAGTATGAGAAGGCTGCTTCTATC
TTGAGCACTCACGAGCCACCAGTTGTTTTGGCTAAAGTTGATGCCAATGAGGAGCACAAACAAAGA
CCTCGCATCGGAAAATGATGTTAAGGGATTCCCAACCATTAAAGATTTTAGGAATGGTGAAAGAA
CATTCAAGAATACAAAGGTCCCCGTGAAGCTGAAGGTATTGTTGAGTATTTGAAAAACAAAGTGG
CCCTGCATCCACAGAAATTAATCTGCTGATGATGCGACCGCTTTTGTGGTGACAACAAAGTTGT
TATTGTGCGAGTTTTCCCTAAATTTCTGGTGAGGAGTACGATAACTTCATTGCATTAGCAGAGAA
GTTGCGTTCTGACTATGACTTTGCTCACACTTTGAATGCCAAACACCTTCCAAAGGGAGACTCATC
AGTGTCTGGGCCTGTGGTTAGGTTATTTAAGCCATTTGACGAGCTCTTTGTTGACTCAAAGGATTT
CAATGTAGAAGCTCTAGAGAAATTCATTGAAGAATCCAGTACCCCAATTGTGACTGTCTTCAACAA
TGAGCCTAGCAATCACCTTTTGTGTCAAATTTCTTAACTCTCCCAACGCAAAGGCTATGTTGTT
CATCAACTTTACTACCGAAGGTGCTGAATCTTTCAAAACAAAATACCATGAAGTGGCTGAGCAATA
CAAACAACAGGGAGTTAGCTTTCTTGTGGAGATGTTGAGTCTAGTCAAGGTGCCTTCCAGTATTT
TGGACTGAAGGAAGAACAAGTACCTCTAATTATTATTACGCATAATGATGGCAAGAAGTTTTTCAA
ACCCAATTTGGAACCTTGATCAACTCCCAACTTGGTTGAAGGCATACAAGGATGGCAAGGTTGAAC
CATTTGTCAAGTCTGAACCTATTCTGAACTAACAACGAGCCTGTTAAAGTGGTGGTTGGGCAAA
CTCTTGAGGACGTTGTTTTCAAGTCTGGGAAGAATGTTTTGATAGAGTTTTATGCTCCTTGGTGTG
GTCAGTGAAGCAGTTGGCTCCAATCTTGGATGAAGTTGCTGTCTCATTCCAAAGCGATGCTGAT
GTTGTTATTGCAAACTGGATGCAACTGCCAACGATATCCCAACCGACACCTTTGATGTCCAAGG
CTATCCAACCTTGTAATTCAGGTCAGCAAGTGAAAACTATCACAATACGACGGTGGTAGGACAA
AGGAAGACATCATAGAATTCATTGAAAAGAACAAGGATAAACTGGTGCTGCTCATCAAGAAGTAG
AACAACCAAAAGCTGCTGCTCAGCCAGAAGCAGAACCAAAAGATGAGCTTTGAAAAGTCCG
CTTGAGGATATCGGCACACAGTCATCTGCGGGCTTTACAACTCTTTTGTATCTCAGAAATCAGAA
GTTAGGAAATCTAGTGCCAATCTATCTATTTTGCCTTTCATTTTATCTTTTGGTTTACTCTAATG
TATTACTGAATAATGTGAGTTTTGGCGGAGTTTAGTACTGGAACCTTTGTTTCTGTAAAAA
AA

Figure 23A

SEQ. ID. NO. 58.

PromPlasto-PDI SP-BgIII

CTGGTATATTTATATGTTGTCAAATAACTCAAAAACCATATAAAGTTTAAGTTAGCAAGTGTGTACATT
TTTACTTGAACAAAAATATTCACCTACTACTGTTATAAATCATTATTAACATTAGAGTAAAGAAATA
TGGATGATAAGAACAAGAGTAGTGATATTTTGACAACAATTTTGTTGCAACATTTGAGAAAAATTTG
TTGTTCTCTCTTTTCATTGGTCAAAAACAATAGAGAGAGAAAAAGGAAGAGGGAGAATAAAAAACATA
ATGTGAGTATGAGAGAGAAAAGTTGTACAAAAGTTGTACCAAAATAGTTGTACAAATATCATTGAGGA
ATTTGACAAAAGCTACACAAATAAGGGTTAATTGCTGTAAATAAATAAGGATGACGCATTAGAGAGA
TGTACCATTAGAGAATTTTGGCAAGTCATTAAGAAAGAAAGAAATAAATTATTTTAAAAATTAAAGTT
GAGTCATTTGATTAAACATGTGATTATTTAATGAATTGATGAAAGAGTTGGATTAAAGTTGTATTAGT
AATTAGAATTTGGTGTCAAATTTAATTTGACATTTGATCTTTTCCTATATATTGCCCATAGAGTCAG
TTAACTCATTTTTATATTTTCATAGATCAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAAA
AAAACGGTATATTTACTAAAAAATCTAAGCCACGTAGGAGGATAACAGGATCCCCGTAGGAGGATA
ACATCCAATCCAACCAATCACACAATCCTGATGAGATAACCCACTTTAAGCCACGCATCTGTGG
CACATCTACATTATCTAAATCACACATTCTTCCACACATCTGAGCCACACAAAAACCAATCCACATC
TTATCACCCATTCTATAAAAAATCACACTTTGTGAGTCTACACTTTGATTCCCTTCAAACACATACA
AAGAGAAGAGACTAATTAATTAATTAATCATCTTGAGAGAAAAATGGCGAAAAACGTTGCGATTTTCG
GCTTATTGTTTCTCTTCTTGTGTTGGTTCCCTCTCAGATCT

Figure 23B

SEQ. ID. NO. 85.

SacI-Plasto 3'UTR plasmid sequence

GAGCTCTAAGTTAAATGCTTCTTCGTCTCCTATTTATAATATGGTTTGTTATTGTTAATTTGTTCT
TGTAAGAGAGCTTAATTAATCGTTGTTGTTATGAAATACTATTTGTATGAGATGAACTGGTGTAAATG
TAATTCATTTACATAAGTGGAGTCAGAATCAGAATGTTTCCTCCATAACTAAGTACATGAAGACC
TGCCGCGTACAATTGTCTTATTTGAACAATAAAATTGAACATCTTTTGCCACAACCTTTATAAGT
GGTTAATATAGCTCAAATATATGGTCAAGTTCAATAGATTAATAATGGAAATATCAGTTATCGAAATT
CATTAACAATCAACTTAACGTTATTAATACTACTAATTTTATATCATCCCCCTTTGATAAATGATAGTACA

Figure 24

SEQ ID NO: 59.

540 expression cassette from HindIII (in the multiple cloning site, upstream of the Plastocyanin promoter) to EcoRI (immediately downstream of the Plastocyanin terminator). H1 from A/New Caledonia/20/1999 coding sequence underlined.

AAGCTTGCTAGCGGCCCTCAATGGCCCTGCAGGTCGACTCTAGAGGTACCCCGGGCTGGTATATTTATATGTTGT
 CAAATAACTCAAAAACCATAAAAGTTTAAAGTTAGCAAGTGTGTACATTTTACTTGAACAAAAATATTCACCTACTA
 CTGTTATAAATCATTATTAACATTAGAGTAAAGAAATATGGATGATAAGAACAAGAGTAGTGATATTTTGACAAC
 AATTTTGTGCAACATTTGAGAAAAATTTGTTGTTCTCTCTTTTTCATTGGTCAAAAACAATAGAGAGAGAAAAAGG
 AAGAGGGAGAAATAAAAACATAATGTGAGTATGAGAGAGAAAGTTGTACAAAAGTTGTACCAAAATAGTTGTACAA
 ATATCATTGAGGAATTTGACAAAAGCTACACAAATAAGGGTTAATTGCTGTAATAAATAAGGATGACGCATTAGA
 GAGATGTACCATTAGAGAATTTTGGCAAGTCATTAAGAAAGAAAGAAATAAATTTATTTTAAATTTAAAGTTGAGTC
 ATTTGATTAAACATGTGATTATTTAATGAATTGATGAAAGAGTTGGATTAAAGTTGATTAGTAATTAGAATTTGGT
 GTCAAAATTTAATTTGACATTTGATCTTTTCTATATATTGCCCATAGAGTCAGTTAACTCATTTTATATTTTCATAG
 ATCAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAAGGATATTTACTAAAAATCTAAGCCA
 CGTAGGAGGATAACAGGATCCCCGTAGGAGGATAACATCCAATCCAACCAATCACAACAATCCTGATGAGATAA
 CCCACTTTAAGCCACGCATCTGTGGCAGATCTACATTATCTAAATCACACATTTCTCCACACATCTGAGCCACA
 CAAAAACCAATCCACATCTTATCACCCATTCTATAAAAAATCACACTTTGTGAGTCTACACTTTGATTCCCTTCAA
 ACACATACAAAGAGAAGAGACTAATTAATTAATTAATCATCTTGAGAGAAAATGGCGAAAAACGTTGGCATTTCG
 GCTTATTTGTTTCTCTCTTCTGTGTTGGTTCCCTTCTCAGATCTTCGCTGACACAATATGTATAGGCTACCATGCCAA
 CAACTCAACCGACACTGTTGACACAGTACTTGAGAAGAATGTGACAGTGACACACTCTGTCAACCTACTTGAGG
 ACAGTCACAATGGAAAATCTGTCTACTAAAAGGAATAGCCCACTACAATTGGGTAATTTGCAGCGTTGCCGGAT
 GGATCTTAGGAAACCCAGAAATGCGAATTAAGGATTTCCAAAGGAATCATGGTCTTACATTGTAGAAACACCAATC
 CTGAGAATGGAACATGTTACCCAGGGTATTTCCGCGACTATGAGGAAGTGGGGAGCAATTGAGTTCAGTATCT
 TCATTTGAGAGATTGGAATATTTCCCAAGAAAGCTCATGGCCCAACCCACACCGTAACCGGAGTATCAGCATCA
 TGCTCCCATATATGGGAAAAGCAGTTTTTACAGAAATTTGCTATGGCTGACGGGGGAAGAAATGTTTTGTACCCAAAC
 CTGAGCAAGTCCATGTAAACAACAAGAGAGAAAGTCCCTTGTACTATGGGGTGTTCATCACCCCGCCTAACATA
 GGGAAACCAAGGGCACTCTATCATACAGAAAATGCTTATGTCTCTGTAGTGTCTTACATTATAGCAGAAAGATT
 ACCCCAGAAATAGCCAAAAGACCCAAAGTAAGAGATCAGGAAGGAAGAAATCAACTACTACTGGACTCTGCTGGA
 ACCTGGGGATACAATAATATTTGAGGCAATGGAATCTAATAGCGCCATGGTATGCTTTTGCAGTGTAGTAGAGG
 CTTTGGATCAGGAATCATCACCTCAAATGCACCAATGGATGAATGTGATGCGAAGTGTCAAACACCTCAGGGAG
 CTATAAACAGCAGTCTTCTTTCCAGAAATGTACACCCAGTCACAATAGGAGAGTGTCCAAAGTATGTCAGGAGTG
 CAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCATCCATTCAATCCAGAGGTTTGTGTTGGAGCCATTGCCG
 GTTTCATTGAAGGGGGGTGGACTGGAATGGTAGATGGGTGGTATGGTTATCATCATCAGAAATGAGCAAGGATCT
 GGCTATGCTGCAGATCAAAAAAGTACACAAAATGCCATTAAACGGGATTACAAACAAGGTCAATTCTGTAATTGAG
 AAAATGAACACTCAATTCACAGCTGTGGGCAAGAGTTCAACAAATTTGAAAGAAAGGATGGAAAATCTAAATAAA
 AAAGTTGATGATGGGTTTCTAGACATTTGGACATATAATGCAGAAATGTTGGTTCTACTGGAAAATGAAAGGACTT
 TGGATTTCCATGACTCCAATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAATTAAGAATAATGCCAAAGAAAT
 AGGAAACGGGTGTTTTGAGTTCTATCACAAGTGTAAACAATGAATGCATGGAGAGTGTGAAAAATGGTACCTATGA
 CTATCCAAAATATTCGAAGAATCAAAGTTAAACAGGGAGAAAAATGATGGAGTGAATTTGGAATCAATGGGAGT
 ATACCAGATTCTGGCGATCTACTCACTGTGCGCAGTTCCCTGGTTCTTTTGGTCTCCCTGGGGCAATCAGCTT
 CTGGATGTGTTCCAATGGGTCTTTGCAAGTGTAGAATATGCATCTAAGAGCTTAAGTTAAATGCTTCTTCTGCT
 CCTATTTATAATATGGTTTGTATTGTTAATTTTGTCTTGTAGAAGAGCTTAATTAATCGTTGTTGTATGAAATAC
 TATTTGTATGAGATGAAGTGGTGAATGTAATTCATTTACATAAGTGGAGTCAGAATCAGAATGTTTCTCCATAA
 CTAAGTAGACATGAAGACCTGCCGCGTACAATTTGCTTATATTTGAACAACATAAATGAACATCTTTTGGCACA
 CTTTATAAGTGGTTAATATAGCTCAAAATATATGGTCAAGTTCAATAGATTAAATGGAATATCAGTTATCGAAAT
 TCATTAACAATCAACTTAACGTTATTAATACTACTAATTTATATCATCCCTTTGATAAATGATAGTACACCAATTAG
 CAAGGAGCATGCTCGAGGCCTGGCTGGCCGAATTC

Figure 25

SEQ ID NO: 60

Synthesized fragment Dralll-Plasto(-84+1)-H1 A/Brisbane/59/07-SacI.

CACTTTGTGAGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAAT
TAATCATCTTGAGAGAAAATGAAAGTAAACTACTGGTCCTGTTATGCACATTTACAGCTACATAT
GCAGACACAATATGTATAGGCTACCATGCTAACAACCTGACCGACACTGTTGACACAGTACTTGA
AAAGAATGTGACAGTGACACACTCTGTCAACCTGCTTGAGAACAGTCACAATGGAAAACTATGTC
TATTAAGGAATAGCCCCACTACAATTGGGTAATTGCAGCGTTGCCGGGTGGATCTTAGGAAAC
CCAGAATGCGAATTACTGATTTCCAAGGAGTCATGGTCCTACATTGTAGAAAAACCAAATCCTGA
GAATGGAACATGTTACCCAGGGCATTTCCGCTGACTATGAGGAACTGAGGGAGCAATTGAGTTCA
GTATCTTCATTTGAGAGGTTGAAATATTCGCCAAAGAAAGCTCATGGCCCAACACACCGTAAC
CGGAGTGTGAGCATCATGCTCCCATATGGGGAAGCAGTTTTTACAGAAATTTGCTATGGCTGA
CGGGGAAGAATGGTTTGTACCCAAACCTGAGCAAGTCCTATGCAACAACAAAGAAAAAGAGT
CCTTGTACTATGGGGTGTTCATCACCCGCCAAACATAGGTGACCAAAAGGCCCTCTATCATACA
GAAAATGCTTATGTCTCTGTAGTGTCTTCACATTATAGCAGAAAAATTCACCCCAAGAAATAGCCAA
AGACCCAAAGTAAGAGATCAAGAAGGAAGAATCAATTACTACTGGACTCTGCTTGAACCCGGGG
ATACAATAATATTTGAGGCAATGGAAATCTAATAGCGCCAAGATATGCTTTGCACTGAGTAGA
GGCTTTGGATCAGGAATCATCAACTCAAATGCACCAATGGATAATGTGATGCGAAGTGCCAAAC
ACCTCAGGGAGCTATAAACAGCAGTCTTCCTTTCCAGAACGTACACCCAGTCACAATAGGAGAG
TGTCCAAAGTATGTCAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCATCCAT
TCAATCCAGAGGTTTGTGAGGCCATTGCCGGTTTCATTGAAGGGGGGTGGACTGGAATGGTA
GATGGTTGGTATGGTTATCATCATCAGAATGAGCAAGGATCTGGCTATGCTGCAGATCAAAAAAG
CACACAAAATGCCATTAATGGGATTACAAACAAGGTCAATTCTGTAATTGAGAAAATGAACACTCA
ATTCACAGCAGTGGGCAAGAGTTCAACAAATTGGAAAGAAGGATGGAAAACCTTGAATAAAAAAG
TTGATGATGGGTTTATAGACATTTGGACATATAATGCAGAACTGTTGGTTCTACTGGAAAATGAAA
GGACTTTGGATTTCCATGACTCCAATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAGTTAAAG
AATAATGCTAAAGAAATAGGAAATGGGTGTTTTGAGTTCTATCACAAAGTGTAAACGATGAATGCAT
GGAGAGTGTAAGAATGGAACCTTACTATCCAAAATATTCGAAGAATCAAAGTTAAACAGGG
AGAAAATTGATGGAGTGAAATTGGAATCAATGGGAGTCTATCAGATTCTGGCGATCTACTCAACA
GTCGCCAGTTCTCTGGTTCTTTGGTCTCCCTGGGGCAATCAGCTTCTGGATGTGTTCCAATG
GTCTTTACAGTGTAGAATATGCATCTAAGAGCTC

Figure 26

SEQ ID NO: 61

774 expression cassette from HindIII (in the multiple cloning site, upstream of the Plastocyanin promoter) to EcoRI (immediately downstream of the Plastocyanin terminator). H1 from A/Brisbane/59/2007 coding sequence underlined.

AAGCTTGCTAGCGGCCCTCAATGGCCCTGCAGGTCGACTCTAGAGGTACCCCGGGCTGGTATATTTATATGTT
 GTCAATAACTCAAAAACCATAAAGTTTAAAGTTAGCAAGTGTGTACATTTTACTTGAACAAAAATATTCACC
 TACTACTGTTATAAATCATTATTAACATTAGAGTAAAGAAATATGGATGATAAGAACAAAGAGTAGTGATATTTT
 GACAACAATTTTGTGCAACATTTGAGAAAATTTTGTGTTCTCTCTTTTATTGGTCAAAAAAATAGAGAGA
 GAAAAAGGAAGAGGGAGAAATAAAACATAATGTGAGTATGAGAGAGAAAGTTGTACAAAAGTTGTACCAAAA
 TAGTTGTACAAATATCATTGAGGAATTTGACAAAAGCTACACAAAATAAGGGTTAATTGCTGTAAATAAATAAGG
 ATGACGCATTAGAGAGATGTACCATAGAGAATTTTGGCAAGTCATTAAGAGAAAGAAATAAATTATTTTAA
 AATTAAGGTTGAGTCATTTGATTAAACATGTGATTATTTAATGAATTGATGAAAGAGTTGGATTAAAGTTGTAT
 TAGTAATTAGAATTTGGTGTCAAATTTAATTTGACATTTGATCTTTTCTATATATTGCCCATAGAGTCAGTTA
 ACTCATTTTTATATTTTATAGATCAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAATAACGGTAT
 ATTTACTAAAAATCTAAGCCACGTAGGAGGATAACAGGATCCCGTAGGAGGATAACATCCAATCCAACCA
 ATCACAACAATCCTGATGAGATAACCCACTTTAAGCCCCACGCATCTGTGGCACATCTACATTATCTAAATCAC
 ACATTTCTCCACACATCTGAGCCACACAAAAACCAATCCACATCTTTATCACCCATTCTATAAAAAATCACACT
 TTGTGAGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAATTAATCATCTTGA
 GAGAAAATGAAAGTAAACTACTGGTCTCTGTTATGCACATTTACAGCTACATATGCAGACACAATATGTATAG
 GCTACCATGCTAACAACCTGACCGACACTGTTGACACAGTACTTGAAAAGAATGTGACAGTGACACACTCTG
 TCAACCTGCTTGAGAACAGTCAATGGAAGAACTATGTCTATTAAGGAATAGCCCACTACAATTGGGTAA
 TTGCAGCGTTGCCGGGTGGATCTTAGGAAACCCAGAATGCCAATTACTGATTTCCAGGAGTCATGGTCTTA
 CATTGTAGAAAAACCAATCCTGAGAATGGAACATGTTACCCAGGGCATTTTCGCTGACTATGAGGAAGTGA
 GGAGCAATTTGAGTTGAGTATCTTCAATTTGAGAGGTTGGAATATTTCCCAAGAAAGCTCATGGCCCAACCA
 CACCGTAACCGGAGTGTGAGCATCATGCTCCCATATGGGGAAGCAGTTTTTACAGAAATTTGCTATGGCT
 GACGGGGAAGAATGGTTTGTACCCAAACCTGAGCAAGTCTATGCAACAACAAGAAAAAGAGTCTTGT
 ACTATGGGGTGTTCATCACCCGCCAAACATAGGTGACCAAAAGGCCCTCTATCATACAGAAAATGCTTATGT
 CTCTGTAGTGTCTTACATTATAGCAGAAAATTCACCCCAAGAAATAGCCAAAGACCCAAAGTAAGAGATCAA
 GAAGGAAGAATAATTACTACTGGACTCTGCTTGAACCCGGGGATACAATAATTTGAGGCCAAATGGAAAT
 CTAATAGCGCCAAGATATGCTTTCCGACTGAGTAGAGGCTTTGGATCAGGAATCATCAACTCAATGCACCA
 ATGGATAAATGTGATGCCAAGTGCCAAACACCTCAGGGAGCTATAAACAGCAGTCTTCTTTCCAGAACGTA
 CACCCAGTCACAATAGGAGAGTGTCCAAAGTATGTCAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGG
 AACATCCCATTCAATCCAGAGGTTTGTGTTGGAGCCATTGCCGGTTTCAATGAAGGGGGGTGGACTGGA
 ATGGTAGATGGTTGGTATGGTTATCATCATCAGAAATGAGCAAGGATCTGGCTATGCTGCAGATCAAAAAGC
 ACACAAAATGCCATTAATGGGATTACAAACAAGGTCAATTTCTGTAATTGAGAAAATGAACACTCAATTCACAG
 CAGTGGGCAAGAGTTCAACAAATTTGAAAGAAGGATGGAAAACCTGAATAAAAAAGTTGATGATGGGTTTAT
 AGACATTTGGACATATAATGCAGAACTGTGGTTCTACTGGAAAATGAAAGGACTTTGGATTCCATGACTCC
 AATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAGTTAAAGAATAATGCTAAAGAAATAGGAAATGGGTGTT
 TTGAGTTCTATCACAAGTGTAAAGATGAATGCATGGAGAGTGTAAAGAATGGAACCTATGACTATCCAAAATA
 TTCCGAAGAATCAAAGTTAAACAGGGAGAAAATTTGATGGAGTGAAATTTGGAATCAATGGGAGTCTATCAGATT
 CTGGCGTACTCAACAGTCCGCACTTCTGTTCTTTGGTCTCCCTGGGGCAATCAGCTTCTGGATG
 TGTTCGAATGGGTCTTTACAGTGTAGAATATGCATCTAAGAGCTCTAAGTTAAATGCTTCTTCGCTCCTATT
 TATAATATGGTTTGTATTGTTAATTTTGTCTTGTAGAAGAGCTTAATTAATCGTTGTTGTTATGAAATACTATT
 TGTATGAGATGAAGTGGTGAATGTAATTCATTACATAAGTGGAGTCAGAAATCAGAAATGTTTCTCCATAACT
 AACTAGACATGAAGACCTGCCGCTACAATTTGCTTATTTGAACAACATAAATTTGAACATCTTTTGCCACAA
 CTTTATAAGTGGTTAATATAGCTCAAAATATATGGTCAAGTTCAATAGATTAATAATGGAATATCAGTTATCGA
 AATTCATTAACAATCAACTTAACGTTATTAACCTAATTTTATATCATCCCTTTGATAAATGATAGTACACCA
 ATTAGGAAGGAGCAIGCTCAGGGCCTGGCTGGCCGAATTC

Figure 27

SEQ ID NO: 62

Expression cassette number 828, from PacI (upstream of the promoter) to AscI (immediately downstream of the NOS terminator). CPMV HT 3'UTR sequence underlined with mutated ATG in bold. ApaI restriction site (immediately downstream ATG for protein coding sequence, in this case C5-1 kappa light chain, is underlined italic).

TTAATTAAGAATTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTT
TATTGAGAAGATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGC
CATCGTTGAAGATGCCTCTGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCG
TGGAAAAAGAAGACGTTCCAACCACGTCTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGT
AAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTCTCTATATAAGGAAGTTCATTTTCAT
TTGGAGAGGTATTAATAATAGGTTTTGATAAAAGCGAACGTGGGGAAACCCGAACCAAACCT
TCTTCTAACTCTCTCTCATCTCTTAAAGCAAACCTTCTCTCTTGTCTTCTTGGCTGAGCGATCTT
CAACGTTGTGAGATCGTGTCTCGGCACCAAGTACAACGTTTTCTTCACTGAAGCGAAATCAAAGATC
TCTTTGTGGACACGTAGTGGCGGCCATTAAATAACGTGTACTTGTCTATTCTTGTCTGGTGTGGTC
TTGGGAAAAGAAAGCTTGCTGGAGGCTGCTGTTGAGCCCCATACATTACTTGTACGATTCTGCTGA
CTTTCGGCGGGTGCAATATCTCTACTTCTGCTTGACGAGGTATTGTTGCCTGTACTTCTTCTTCTT
CTTCTGTCTGATTGGTTCTATAAGAAATCTAGTATTTTTCTTGAACAGAGTTTTCCCGTGGTTTTCG
AACTTGGAGAAAGATTGTTAAGCTTCTGTATATTCTGCCCAAATTTGTGGGGCCCATGGTTTTTACA
CCTCAGATACTTGGACTTATGCTTTTTTGGATTTCAGCCTCCAGAGGTGATATTGTGCTAACTCAGT
CTCCAGCCACCCTGTCTGTGACTCCAGGAGATAGTGTGAGTCTTCTGTCAGGGCCAGCCAAAGTA
TTAGCAACAACCTACACTGGTTTTCAACAAAAATCGCATGAGTCTCCAAGGCTTCTCATCAAGTATGC
TTCCAGTCCATATCTGGGATCCCCTCCAGGTTCACTGGCAGTGGATCTGGGACAGATTTCACTCT
CAGTATCAACAGTGTGAAGACTGAAGATTTTGAATGTTTTCTGTCAACAGAGTAACAGCTGGCCT
CTCACGTTTCGGTGATGGGACAAAGCTGGAGCTGAAACGGGCTGATGCTGCACCAACTGTATCCAT
CTTCCCACCATCCAGTGAGCAGTTAACATCTGGAGGTGCCCTCAGTCGTGTGCTTCTTGAACAACCTT
CTACCCCAAAGACATCAATGTCAAGTGGAAAGATTGATGGCAGTGAACGACAAAATGGCGTCTCTGAA
CAGTTGGACTGATCAGGACAGCAAAGACAGCACCTACAGCATGAGCAGCACCCCTCACGTTGACCA
AGGACGAGTATGAACGACATAACAGCTATACCTGTGAGGCCACTCACAAGACATCAACTTCACCCA
TTGTCAAGAGCTTCAACAGGAATGAGTGTAGAGGCCCTATTTCTTTAGTTTGAATTTACTGTTATTC
GGTGTGCATTTCTATGTTTGGTGAGCGGTTTTCTGTGCTCAGAGTGTGTTTATTTATGTAATTTAAT
TTCTTTGTGAGCTCCTGTTTAGCAGGTCTGTCCTTCAGCAAGGACACAAAAGATTTAATTTTATTA
AAAAAAAAAAAAAAAAAGACCGGGAATTCGATATCAAGCTTATCGACCTGCAGATCGTTCAAACATT
TGGCAATAAAGTTTCTTAAGATTGAATCCTGTTGCCGGTCTTGGCATGATTATCATATAATTTCTGTT
GAATTACGTTAAGCATGTAATAATTAACATGTAATGCATGACGTTATTTATGAGATGGGTTTTTATGA
TTAGAGTCCCGCAATTATACATTTAATACGCGATAGAAAACAAAATATAGCGCGCAAACCTAGGATAA
ATTATCGCGCGCGGTGTCATCTATGTTACTAGATTCTAGAGTCTCAAGCTTCGGCGCGCC

Figure 28

SEQ. ID. NO. 63

Construct number 690, from HindIII (in the multiple cloning site, upstream of the Plastocyanin promoter) to EcoRI (immediately downstream of the Plastocyanin terminator). Chimeric HA coding sequence is underlined.

AAGCTTGTAGCGGCCTCAATGGCCCTGCAGGTGCGACTCTAGAGGTACCCCGGGCTGGTATATTTATATGTT
 GTCAAATAACTCAAAAACCATAAAAAGTTTAAAGTTAGCAAGTGTGTACATTTTACTTGAACAAAAATATTCACCT
 ACTACTGTTATAAATCATTATTAAACATTAGAGTAAAGAAATATGGATGATAAGAACAAGAGTAGTGATATTTTG
 ACAACAATTTTGTGCAACATTTGAGAAAATTTTGTGTTCTCTCTTTTCATTGGTCAAAAACAATAGAGAGAGA
 AAAAGGAAGAGGGAGAAATAAAAAACATAATGTGAGTATGAGAGAGAAAGTTGTACAAAAGTTGTACCAAAATAG
 TTGTACAAATATCATTGAGGAATTTGACAAAAGCTACACAAATAAGGGTTAATGCTGTAAATAAATAAGGATG
 ACGCATTAGAGAGATGTACCATTAGAGAATTTTGGCAAGTCATTAAAAAGAAAGAATAAATATTTTAAAAAT
 AAAAGTTGAGTCATTTGATTAAACATGTGATTATTTAATGAATTGATGAAAGAGTTGGATTAAAGTTGATTAGT
 AATTAGAATTTGGTGTCAAATTTAATTTGACATTTGATCTTTTCTATATATTGCCCATAGAGTCAGTTAATCT
 ATTTTATATTTTATAGATCAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAAGAAACGGTATATTT
 ACTAAAAATCTAAGCCACGTAGGAGGATAACAGGATCCCGTAGGAGGATAACATCCAATCCAACCAATCA
 CAACAATCCTGATGAGATAACCCACTTTAAGCCACGCATCTGTGGCACATCTACATTATCTAAATCACACATT
 CTTCACACATCTGAGCCACACAAAAACCAATCCACATCTTTATCACCCATTCTATAAAAAATCACACTTTGTG
 AGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAATTAATCATCTTGAGAGAA
 AATGGAGAAAATAGTGCTTCTTCTGCAATAGTCAGTCTTGTTAAAAGTGATCAGATTGCTTGGTTACCATG
 CAAACAATTCAACAGAGCAGGTTGACACAATCATGGAAAAAGAACGTTACTGTTACACATGCCCAAGACATACT
GGAAAAAGACACACAACGGGAAGCTCTGCGATCTAGATGGAGTGAAGCCTCTAATTTTAAAGAGATTGTAGTGT
AGCTGGATGGCTCCTCGGGAACCCAATGTGTGACGAATTCATCAATGTACCGGAATGGTCTTACATAGTGGA
GAAGGCCAATCCAACCAATGACCTCTGTTACCCAGGGCATTCGCTGACTATGAGGAAGTGAAGGAGCAATT
GAGTTCAGTATCTTCATTGAGAGGTTCCGAAATATCCCCAAAGAAAGCTCATGGCCCAACCAACCGTAACC
GGAGTGTGAGCATGCTCCCATATGGGGAAGCAGTTTACAGAAATTTGCTATGGCTGACGGGGAAG
AATGGTTTGTACCCAAACCTGAGCAAGTCTATGCAAAACAAGAAAGAAAGAGTCTTGTACTATGGGGTG
TTTCATCACCCGCCAAACATAGGTGACAAAAGGCCCTCTATCATACAGAAATGCTTATGTCTCTGTAGTGT
TTACATTATAGCAGAAAAATCACCCAGAAATAGCCAAAGACCCAAAGTAAGAGATCAAGAAGGAAGAATC
AATTACTACTGGACTCTGCTTGAACCCGGGGATACAATAATTTGAGGCCAATGGAAATCTAATAGCGCCAA
GATATGCTTTCGCACTGAGTAGAGGCTTTGGATCAGGAATTATGAAAAGTGAATTGGAATATGGTAAGTCAA
CACCAAGTGTCAAATCCAATGGGGGCGATAAACTCTAGTATGCCATTCACACATACACCCCTCTCACCATC
GGGGAATGCCCAAATATGTGAATCAAACAGATTAGTCTTGCACAGGGGCTCAGAAATAGCCCTCAAAGA
GAGAGCAGAAGAAAAAGAGAGGACTATTTGGAGCTATAGCAGTTTATAGAGGGAGGATGGCAGGGAAT
GGTAGATGGTTGGTATGGTACCACCATAGCAATGAGCAGGGGAGTGGGTACGCTGCAGACAAAGAATCCA
CTCAAAGGCCAATAGATGGAGTCACCAATAAGGTCAACTCAATCATTGACAAAATGAACACTCAGTTTGAGGC
CGTTGGAAGGGAATTAATAACTTAGAAAGGAGAATAGAGAATTTAAACAAGAAGATGGAAGACGGGTTCTA
GATGTCTGGACTTATAATGCCGAACCTCTGGTCTCATGGAAATGAGAGAACTCTAGACTTTTCATGACTCAA
ATGTTAAGAACCTCTACGACAAGGTCCGACTACAGCTTAGGGATAATGCAAGGAGCTGGGTAAACGGTTGTT
TCGAGTTCTATCAGAAATGTGATAATGAATGTATGGAAAGTATAAGAAACGGAACGTACAACATCCGCAGTA
TTTCAAGAAGCAAGATTAAAAAGAGAGGAAATAAGTGGGGTAAATTTGGAATCAATAGGAACTTACCAATA
CTGTCAATTTATTCAACAGTGGCGAGTTCCTTAGCACTGGCAATCATGATGGCTGGTCTATCTTATGGATGT
GCTCCAATGGATCGTTACAATGCAGAAATTTGCATTTAAGAGCTCTAAGTTAAATGCTTCTTCTCTCTATTT
ATAATATGGTTTGTATTGTTAATTTGTTCTTGTAGAAGAGCTTAATTAATCGTTGTTGTTATGAAATACTATTT
GTATGAGATGAAGTGGTGAATGTAATTCATTACATAAGTGGAGTCAGAAATCAGAAATGTTTCTCCATAACTA
ACTAGACATGAAGACCTGCCGCGTACAATTTGCTTATATTTGAACAATAAAATGAACATCTTTGCCACAAC
TTTATAAGTGGTTAATATAGCTCAAATATATGGTCAAGTTCAATAGATTATAATGGAATATCAGTTATCGAAA
TTTCAATAACAATCAACTAACGTTATTAACCTACTAATTTTATATCATCCCTTTGATAAATGATAGTACACCAAT
AGGAAGGAGCATGCTCGAGGCCTGGCTGGCCGAATTC

Figure 29

SEQ. ID. NO. 64

Construct number 691, from HindIII (in the multiple cloning site, upstream of the Plastocyanin promoter) to EcoRI (immediately downstream of the Plastocyanin terminator). Chimeric HA coding sequence is underlined.

AAGCTTGGCTAGCGGCCTCAATGGCCCTGCAGGTCGACTCTAGAGGTACCCCGGGCTGGTATATTTATATGTTGTC
 AAATAACTCAAAAACCATAAAGTTTAAAGTTAGCAAGTGTGTACATTTTTACTTGAACAAAAATATTCACCTACTACT
 GTTATAAATCATTATTAAACATTAGAGTAAAGAAATATGGATGATAAGAACAAGAGTAGTGATATTTTGACAACAATT
 TTGTTGCAACATTTGAGAAAATTTTGTGTTCTCTCTTTTCATTGGTCAAAAACAATAGAGAGAGAAAAAGGAAGAG
 GGAGAAATAAAAACATAATGTGAGTATGAGAGAGAAAGTTGTACAAAAGTTGTACCAAAATAGTTGTACAAATATCAT
 TGAGGAATTTGACAAAAGCTACACAAATAAGGGTTAATTGCTGTAATAAATAAGGATGACGCATTAGAGAGATGT
 ACCATTAGAGAATTTTTGGCAAGTCATTAAAAAGAAAGAATAAATATTTTTAAATTTAAAGTTGAGTCATTGATT
 AAACATGTGATTATTTAATGAATTGATGAAAGAGTTGGATTAAAGTTGTATTAGTAATTAGAATTTGGTGTCAAATTT
 AATTTGACATTTGATCTTTTCTATATATTGCCCATAGAGTCAGTTAACTCATTTTTATATTTTCATAGATCAAATAAG
 AGAAATAACGGTATATTAATCCCTCCAAAAAAGAAACGGTATATTTACTAAAAATCTAAGCCACGTAGGAGGAT
 AACAGGATCCCCGTAGGAGGATAACATCCAATCCAACCAATCACAACAATCCCTGATGATAACCCACTTTAAGCC
 CACGCATCTGTGGCAGATCTACATTATCTAAATCACACATCTTCCACACATCTGAGCCACACAAAAACCAATCCAC
 ATCTTTATCACCCATTCTATAAAAAATCACACTTTGTGAGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAA
 GAGACTAATTAAATTAATCATCTTGAGAGAAAATGGAGAAAATAGTGCTTCTTCTTGAATAGTCAGTCTTGTTA
 AAAGTGATCAGATTTGCATTGGTTACCATGCAACAATTCACAGAGCAGGTTGACACAATCATGGAAAAGAACGT
TACTGTTACACATGCCCAAGACATACTGGAAAAGACACACAACGGGAAGCTCTGCCTATTAAGGAATAGCCCC
ACTACAATTGGGTAATTGCAGCGTTGCCGGGTGGATCTTAGGAAACCCAGAATGCGAATTACTGATTTCCAAGGA
GTGATGGTCTACATTGTAGAAAAACCAATCCTGAGAATGGAACATGTTACCCAGGGCATTTGCTGACTATGAG
GAACTGAGGGAGCAATTGAGTTCAGTATCTTCATTTGAGAGGTTGCAATATTTCCCAAGAAAGCTCATGGCCCA
ACCACACCGTAACCGGAGTGTGAGCATCATGCTCCCATAAATGGGGAAAGCAGTTTTTACAGAAATTTGCTATGGCT
GACGGGGAAGAATGGTTTGTACCCAAACCTGAGCAAGTCTATGCAAAACAACAAAGAAAAAGAAAGTCTTGTA
ATGGGGTGTTCATCACCCGCCAAACATAGGTGACCAAAAGGCCCTCTATCATACAGAAAATGCTTATGTCTCTGTA
GTGCTTTCACATTATAGCAGAAAATTCACCCAGAAATAGCCAAAAGACCCAAAGTAAGAGATCAAGAAAGGAAGAA
TCAATTACTACTGGACTCTGCTTGAACCCGGGGATACAATAATTTGAGGCAAAATGGAAATCTAATAGCGCCAA
ATATGCTTTGCACTGAGTAGAGGCTTTGGATCAGGAATCATCAACTCAAATGCACCAATGGATAAATGCAACACC
AAGTGTCAAACCTCAATGGGGGCGATAAACTCTAGTATGCCATTCCACAACATACACCCCTCTCACCATCGGGGAAT
GCCCCAAATATGTGAAATCAAACAGATTAGTCTTGCACAGGGCTCAGAAATAGCCCTCAAAGAGAGAGCAGAA
GAAAAAGAGAGGACTATTTGGAGCTATAGCAGGTTTATAGAGGGAGGATGGCAGGGAATGGTAGATGGTTGGT
ATGGGTACCAACATAGCAATGAGCAGGGGAGTGGGTACGCTGCAGACAAAGAATCCACTCAAAGGCAATAGAT
GGAGTCACCAATAAGGTCAACTCAATCATTGACAAAATGAACACTCAGTTTGAGGCCGTTGGAAGGGAAATTAATA
ACTTAGAAAGGAGAAATAGAGAATTTAAACAAGAAGATGGAAGACGGGTTTCTAGATGTCTGGACTTATAATGCCGA
ACTTCTGGTCTCATGGAAAATGAGAGAACTCTAGACTTTCTAGACTCAAATGTTAAGAACCTCTACGACAAGGTC
CGACTACAGCTTAGGGATAATGCAAGGAGCTGGGTAAACGGTTGTTTCGAGTTCTATCAAAATGTGATAATGAAT
GTATGGAAAGTATAAGAAACGGAACGTACAACATATCCGCAGTATTCAGAAGAAGCAAGATTAAAAAGAGAGGAAAT
AAGTGGGGTAAATTTGAATCAATAGGAACCTACCAAACTCTGCAATTTATCAACAGTGGCGAGTTCCCTAGCA
CTGGCAATCATGATGGCTGGTCTATCTTTATGGATGTGCTCCAATGGATCGTTACAATGCAGAAATTTGCATTAAAG
AGCTCTAAGTTAAATGCTTCTCTGCTCTCTATTTATAATATGGTTTGTATTGTTAATTTTGTCTTGTAAGAGC
TTAATTAATCGTTGTTGTTATGAAATACTATTTGTATGAGATGAACCTGGTGAATGTAATTCATTTACATAAGTGGAG
TCAGAATCAGAATGTTTCTCCATAACTAACTAGACATGAAGACCTGCCGCTACAATTGTCTTATATTTGAACAAC
TAAATTTGAACATCTTTTGCCACAACCTTTATAAGTGGTTAATATAGCTCAAATATATGGTCAAGTTCAATAGATTAAT
AATGGAAATATCAGTTATCGAAATTCATTAACAATCAACTTAACGTTATTAATACTACTAATTTTATATCATCCCTTTGA
TAAATGATAGTACACCAATTAGGAAGGAGCATGCTCGAGGCCTGGCTGGCCGAATTC

Figure 30

SEQ. ID. NO. 65

Construct number 696, from HindIII (in the multiple cloning site, upstream of the Plastocyanin promoter) to EcoRI (immediately downstream of the Plastocyanin terminator). Chimeric HA coding sequence is underlined.

AAGCTTGCTAGCGGCCTCAATGGCCCTGCAGGTGCACTCTAGAGGTACCCCGGGCTGGTATATTTATATGTTG
TCAAATAACTCAAAAACCATATAAAGTTAAGTTAGCAAGTGTGTACATTTTACTTGAACAAAAATATTCACCTAC
TACTGTTATAAATCATTATTAACATTAGAGTAAAGAAATATGGATGATAAGAACCAAGAGTAGTGATATTTTGAC
AACAATTTTGTGCAACATTTGAGAAAATTTGTTGTTCTCTCTTTTTCATTGGTCAAAAACAATAGAGAGAGAAA
AAGGAAGAGGGAGAATAAAAACATAATGTGAGTATGAGAGAGAAAGTTGTACAAAAGTTGTACCAAAATAGTT
GTACAAATATCATTGAGGAATTTGACAAAAGCTACACAAATAAGGGTTAATTGCTGTAAATAAATAAGGATGAC
GCATTAGAGAGATGTACCATTAGAGAAATTTTGGCAAGTCATTAAGAAAGAAAGAAATAAATATTTTAAATTA
AAGTTGAGTCATTTGATTAAACATGTGATTATTAATGAATTGATGAAAGAGTTGGATTAAAGTTGTATTAGTAAT
TAGAATTTGGTGTCAAATTTAATTTGACATTTGATCTTTTCTATATATTGCCCATAGAGTCAGTTAACTCATTT
TTATATTTTCATAGATCAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAAGAAACGGTATATTTACTAA
AAAATCTAAGCCACGTAGGAGGATAACAGGATCCCGTAGGAGGATAACATCCAATCCAACCAATCACAACAA
TCCTGATGAGATAACCCACTTTAAGCCCACGCATCTGTGGCACATCTACATTATCTAAATCACACATTCTTCCA
CACATCTGAGCCACACAAAAACCAATCCACATCTTTATCACCCATTCTATAAAAAATCACACTTTGTGAGTCTAC
ACTTTGATTCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAATTAATCATCTTGAGAGAAAATGGCGA
AAACGTTGCGATTTTCGGCTTATTGTTTTCTCTTCTGTGTTGGTTCCTTCTCAGATCTTCGCTGACACAATAT
GTATAGGCTACCATGCCAACCACTCAACCGACACTGTTGACACAGTACTTGAGAAGAATGTGACAGTGACACA
CTCTGTCAACCTACTTGAGGACAGTCACAATGGAAAATATGTCTACTAAAAGGAATAGCCCCACTACAATTGG
GTAATTGCAGCGTTGCCGGATGGATCTTAGGAAACCCAGAATGCCAATTACTGATTTCCAAGGAATCATGGTC
CTACATTGTAGAAACACCAATCCTGAGAATGGAAATGTTACCCAGGGAGTTTCAACGAGTATGAAGAAGT
AAACACCTATTGAGCAGAATAAACCATTTTGAAGAAATTCAAATCATCCCCAAAAGTTCTTGGTCCGATCATGA
AGCCTCATCAGGAGTTAGCTCAGCATGTCCATACCTGGGAAGTCCCTCTTTTGAAGATGTGGTATGGCTTA
TCAAAAAGAACAGTACATACCCAACAATAAAGAAAAGCTACAATAATACCAACCAAGAGGATCTTTTGGTACTG
TGGGAATTCACCATCCTAATGATGCGGCAGAGCAGACAAGGCTATATCAAAACCAACCACTATATTTCCA
TTGGGACATCAACACTAAACCAGAGATTGGTACCAAAAAATAGCTACTAGATCCAAAGTAAACGGGCAAGTGG
AAGGATGGAGTTCTTCTGGACAATTTTAAACCTAATGATGCAATCAACTTCGAGAGTAAATGGAATTTTCATTG
CTCCAGAATATGCATACAAAATTTGTCAAGAAAGGGGACTCAGCAATCATCACCTCAAATGCACCAATGGATGA
ATGTGATGCGAAGTGTCAAACACCTCAGGGAGCTATAAACAGCAGTCTTCTTCCAGAATGTACACCCAGTC
ACAATAGGAGAGTGTCCAAAGTATGTCAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCAT
CCATTCAATCCAGAGGTTTGTGAGGCCATTGCCGGTTTCATTGAAGGGGGGTGGACTGGAATGGTAGATG
GGTGGTATGGTTATCATCATCAGAAATGAGCAAGGATCTGGCTATGCTGCAGATCAAAAAAGTACACAAAATGC
CATTAAACGGGATTACAAACAAGGTCAATTCTGTAATTGAGAAAATGAACACTCAATTCACAGCTGTGGGCAAG
AGTTCAACAAATGGAAAGAAGGATGGAAAATTAATAAAAAAGTTGATGATGGGTTTCTAGACATTTGGACA
TATAATGCAGAATTTGTTGTTCTACTGGAAAATGAAAGGACTTTGGATTTCCATGACTCCAATGTGAAGAATCT
GTATGAGAAAGTAAAAAGCCAATTAAGAATAATGCCAAAGAAATAGGAAACGGGTGTTTTGAGTTCTATCACA
AGTGTAACAATGAATGCATGGAGAGTGTGAAAAATGGTACCTATGACTATCCAAAATATCCGAAGAATCAAAG
TTAAACAGGGAGAAAATTTGATGGAGTGAATTTGGAATCAATGGAGTATACCAGATTCTGGCGATCTACTCAA
CTGTGCGCAGTTCCCTGGTTCTTTTGGTCTCCCTGGGGGCAATCAGCTTCTGGATGTGTTCCAATGGGTCTTT
GCAGTGTAGAATATGCATCTAAGAGCTCTAAGTTAAATGCTTCTTCGTCTCTATTTATAATATGGTTTGTAT
TGTTAATTTTGTCTGTAGAAGAGCTTAATTAATCGTTGTTGTTATGAAATACTATTTGTATGAGATGAACGGT
GTAATGTAATTCATTACATAAGTGGAGTCAGAATCAGAATGTTTCCCTCCATAACTAAGATGAGACCT
GCCGCGTACAATTTGTCTTATATTTGAACAACATAAATGAACATCTTTTCCACAACCTTATAAGTTGGTTAATAT
AGCTCAAAATATAGGTCAAGTTCAATAGATTAATAATGGAATATCAGTTATCGAAATTCATTAACAATCAACTTA
ACGTTATTAATACTAATTTTATATCATCCCTTTGATAAATGATAGTACACCAATTAGGAAGGAGCATGCTCGA
GGCTGGCTGGCCGAATTC

Figure 31

SEQ. ID. NO. 66

Construct 732, from PacI (upstream of the 35S promoter) to AscI (immediately downstream of the NOS terminator). Coding sequence of H1 A/Brisbane/59/2007 is underlined.

TTAATTAAGAATTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACCTTTATTGAGAA
 GATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTC
 TGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGAAAAAGAAGACGTTCCAACCACGT
 CTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGA
 CCGTTCTCTATATAAGGAAGTTCATTTCTTTGGAGAGGTATTAATACTTAATAGGTTTTGATAAAGCGAACGT
 GGGGAAACCCGAACCAACCTTCTTCTAACTCTCTCTCATCTCTCTTAAAGCAAACCTCTCTCTTGTCTTTCTTGC
 GTGAGCGATCTTCAACGTTGTGAGATCGTGCTTCGGCACCAGTACAACGTTTCTTCTCACTGAAGCGAAATCAAAG
 ATCTCTTTGTGGACACGTAGTGGCGGCCATTAAATAACGTGTACTTGTCTATTCTTGTCTGGTGTGGTCTTGGGA
 AAAGAAAGCTTGTCTGGAGGCTGTCTGTCAGCCCCATACATTACTTGTACGATTCTGTGACTTTCCGGCGGGTGCA
 ATATCTCTACTTCTGCTTGACGAGGTATTGTTGCCTGTACTTCTTCTTCTTCTTCTGCTGATTGGTCTATAAGAA
 ATCTAGTATTTCTTTGAAACAGAGTTTTCCCGTGGTTTTCGAACCTGGAGAAAGATTGTTAAGCTTCTGTATATTCT
 GCCCAAATTTGTGGGCCCCATGAAAGTAAACTACTGGTCTGTATGACATTTACAGCTACATATGCAGACACA
ATATGTATAGGCTACCATGCTAACTCGACCGACACTGTTGACACAGTACTTGAAAAGAATGTGACAGTGACAC
ACTCTGTCAACCTGCTTGAGAACAGTCACAATGGAAAATATGTCTATTAAAGGAATAGCCCCACTACAATTGGG
TAATTGCAGCGTTGCCGGGTGGATCTTAGGAAACCCAGAATGCGAATTACTGATTTCCAAGGAGTCATGGTCTAG
ATTGTAGAAAAACCAATCCTGAGAATGGAACATGTTACCCAGGGCATTTCGCTGACTATGAGGAAGTGGGGAG
CAATTGAGTTCAGTATCTTCATTTGAGAGGTTGAAATATTCCCAAAGAAAGCTCATGGCCCAACACACCGTAA
CCGGAGTGTGAGCATCATGCTCCCATATGGGAAAGCAGTTTTACAGAAATTTGCTATGGCTGACGGGGAAGA
ATGGTTTGTACCCAAACCTGAGCAAGTCTATGCAACAACAAAGAAAAAGAGTCTTGTACTATGGGGTGTTC
TCACCCGCCAAACATAGGTGACCAAAAGGCCCTCTATCATACAGAAAATGCTTATGTCTCTGTAGTGTCTTCACATT
ATAGCAGAAAATCACCCAGAAATAGCCAAAAGACCCAAAGTAAGAGATCAAGAAGGAAGAATCAATTACTACTG
GACTCTGCTTGAACCCGGGGATACAATAATTTAGGGCAAATGGAAATCTAATAGCGCCCAAGATATGCTTTCGCA
CTGAGTAGAGGCTTTGGATCAGGAATCATCAACTCAAATGCACCAATGGATAAATGTGATGCGAAGTGCCAAACAC
CTCAGGGAGCTATAAACAGCAGTCTTCTTTCCAGAACGTACACCCAGTCACAATAGGAGAGTGTCCAAAGTATGT
CAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCATCCATTCAATCCAGAGGTTTGTGGAGCC
ATTGCCGGTTTCATTGAAGGGGGGTGGACTGGAATGGTAGATGGTTGGTATGGTTATCATCATCAGAAATGAGCAA
GGATCTGGCTATGCTGCAGATCAAAAAGCACACAAATGCCATTAATGGGATTACAAACAAGGTCAATTCTGTAA
TTGAGAAAATGAACACTCAATTCACAGCAGTGGGCAAGAGTTCAACAAATTTGAAAGAAGGATGGAAAACCTTGAA
TAAAAAGTTGATGATGGGTTTATAGACATTTGGACATATAATGCAGAACTGTTGGTCTACTGGAAAATGAAAGGA
CTTTGGATTTCCATGACTCCAATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAGTTAAGAATAATGCTAAAGAA
ATAGGAAATGGGTGTTTTGAGTTCTATCACAAGTGTAAACGATGAATGCATGGAGAGTGTAAAGAATGGAACCTTATG
ACTATCCAAAATATCCGAAGAATCAAAGTTAAACAGGGAGAAAAATGATGGAGTGAAATGGAATCAATGGGAGT
CTATCAGATTCTGGCGATCTACTCAACAGTCGCCAGTCTCTGGTCTTTTGGTCTCCCTGGGGCAATCAGCTTC
TGGATGTGTTCCAATGGGTCTTTACAGTGTAGAATATGCATCTAAAGGCCTATTTCTTTAGTTTGAATTTACTGTTA
TTCCGGTGTGCATTTCTATGTTTGGTGAGCGGTTTTCTGTGCTCAGAGTGTGTTTATTTATGTAATTTAAATTTCTTTG
TGAGCTCCTGTTAGCAGGTCTGTCCTTCAGCAAGGACACAAAAAGATTTTAAATTTTATTAATAAAGGATTTTCTTAAGATTGAA
TCCTGTTGCCGGTCTTGCAGTATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAATAATTAACATGTAATG
CATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATACATTTAATACGCGATAGAAAACAAAT
ATAGCGCGCAAACTAGGATAAATATCGCGCGCGGTGTCATCTATGTTACTAGATTCTAGAGTCTCAAGCTTCGGC
GCGCC

Figure 32

SEQ. ID. NO. 67

Coding sequence, from ATG to stop, of intermediate construct number 787.

```
ATGGCGAAAAACGTTGCGATTTTCGGCTTATTGTTTTCTCTTCTTGTTGGTTCCCTCTCAGATCTTCG
CTGACACAATATGTATAGGCTACCATGCTAACAACTCGACCGACACTGTTGACACAGTACTTGAAAAGA
ATGTGACAGTGACACACTCTGTCAACCTGCTTGAGAACAGTCACAATGGAAAACCTATGTCTATTTAAAGG
AATAGCCCCACTACAATTGGGTAATTGCAGCGTTGCCGGGTGGATCTTAGGAAACCCAGAATGCGAATT
ACTGATTTCCAAGGAGTCATGGTCCTACATTGTAGAAAAACCAATCCTGAGAATGGAACATGTTACCCA
GGGCATTTGCTGACTATGAGGAACTGAGGGAGCAATTGAGTTCAGTATCTTCATTTGAGAGGTTGCGAA
ATATCCCCCAAAGAAAGCTCATGGCCCAACACACCGTAACCGGAGTGTGAGCATCATGCTCCCATAT
GGGGAAAGCAGTTTTTACAGAAATTTGCTATGGCTGACGGGGAAGAATGGTTTGTACCCAAACCTGAGC
AAGTCCTATGCAACAACAAAGAAAAAGAAGTCCTTGCTACTATGGGGTGTTCATCACCCGCCAACATA
GGTGACCAAAAGGCCCTCTATCATACAGAAAATGCTTATGTCTCTGTAGTGTCTTCACATTATAGCAGAA
AATTCACCCAGAAATAGCCAAAAGACCCAAAGTAAGAGATCAAGAAGGAAGAATCAATTACTACTGGA
CTCTGCTTGAACCCGGGGATACAATAATTTGAGGCAATGGAAATCTAATAGCGCCAAGATATGCTTT
CGCACTGAGTAGAGGCTTTGGATCAGGAATCATCAACTCAAATGCACCAATGGATAAATGTGATGCGAA
GTGCCAAACACCTCAGGGAGCTATAAACAGCAGTCTTCTTTCCAGAACGTACACCCAGTCACAATAGG
AGAGTGTCCAAAGTATGTCAGGAGTGCAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCATCCAT
TCAATCCAGAGGTTTGTGTTGGAGCCATTGCCGGTTTCATTGAAGGGGGGTGGACTGGAATGGTAGATG
GTTGGTATGGTTATCATCATCAGAATGAGCAAGGATCTGGCTATGCTGCAGATCAAAAAAGCACACAAA
ATGCCATTAATGGGATTACAAACAAGGTCAATTCTGTAATTGAGAAAATGAACACTCAATTACAGCAGT
GGGCAAAGAGTTCAACAAATGGAAAGAAGGATGGAAAACCTGAATAAAAAAGTTGATGATGGGTTTATA
GACATTTGGACATATAATGCAGAACTGTTGGTTCTACTGGAAAATGAAAGGACTTTGGATTTCCATGACT
CCAATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAGTTAAAGAATAATGCTAAAGAAATAGGAAATGG
GTGTTTTGAGTCTATCACAAGTGAACGATGAATGCATGGAGAGTGTAAGAATGGAACCTATGACTAT
CCAAAATATCCGAAGAATCAAAGTTAAACAGGGAGAAAATTTGATGGAGTGAAATGGAATCAATGGGA
GTCTATCAGATTCTGGCGATCTACTCAACAGTCGCCAGTTCTCTGGTTCTTTTGGTCTCCCTGGGGGCA
ATCAGCTTCTGGATGTGTTCCAATGGGTCTTACAGTGTAGAATATGCATCTAA
```

Figure 33

SEQ. ID. NO. 68

Construct number 733, from PacI (upstream of the 35S promoter) to AscI (immediately downstream of the NOS terminator). Coding sequence of SpPDI-H1 A/Brisbane/59/2007 is underlined.

TTAATTAAGAAATTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGAGAAG
ATAGTGGAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTG
CCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGGAAGAAAGACGTTCCAACCACGTCTT
CAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCT
TCTCTATATAAGGAAGTTCATTTTCTTTGGAGAGGTATTAAAACTTAAATAGGTTTTGATAAAAAGCGAACGTGGGA
AACCCGAACCAAACTTCTTCTAACTCTCTCTCATCTCTCTTAAAGCAAACCTCTCTCTTGTCTTTCTTGGTGAGC
GATCTTCAACGTTGTCAGATCGTGCTTCGGCACCAGTACAACGTTTTCTTCACTGAAGCGAAATCAAAGATCTCTT
GTGGACACGTAGTGCGGCGCCATTAAATAACGTGTACTTGTCTATTCTTGTCTGGTGTGGTCTTGGGAAAGAAAGC
TTGCTGGAGGCTGCTGTTCAGCCCCATACATTACTTGTACGATTCTGTGACTTTCGGCGGGTGCAATATCTCTAC
TTCTGCTTGACGAGGTATTGTTGCCTGTACTTCTTCTTCTTCTTCTTGTGATTGGTTCTATAAGAAATCTAGTATT
TCTTTGAAACAGAGTTTTCCCGTGGTTTTCAACTTGGAGAAAGATTGTTAAGCTTCTGTATATTCTGCCCAAATTTG
CGGGCCCATGGCGAAAAACGTTGCGATTTCGGCTTATTGTTTTCTCTCTTGTGTTGGTTCTTCTCAGATCTTCGC
TGACACAATATGTATAGGCTACCATGCTAACAACTCGACCGACACTGTTGACACAGTACTTGAAAAGAATGTGACAG
TGACACACTCTGTCAACCTGCTTGAGAACAGTCACAATGGAAAACTATGTCTATTAAAGGAATAGCCCCACTACAAT
TGGGTAAATGCAGCGTTGCCGGGTGGATCTTAGGAAACCCAGAATGCGAATTACTGATTTCCAAGGAGTCATGGTC
CTACATTGTAGAAAAACCAATCCTGAGAATGGAACATGTTACCCAGGGCATTTCGCTGACTATGAGGAACAGAGG
AGCAATTGAGTTCAGTATCTTCACTTGAGAGGTTTCAAAATATTTCCCAAAGAAAGCTCATGGCCCCAACACCGTA
ACCGGAGTGTGAGCATCATGCTCCCATAAATGGGAAAGCAGTTTTTACAGAAATTTGCTATGGCTGACGGGGAAGA
ATGGTTTGTACCCAAACCTGAGCAAGTCTATGCAACAACAAAGAAAAAGAGTCTTGTACTATGGGGTGTTCAT
CACCCGCCAAACATAGGTGACCAAAAGGCCCTCTATCATACAGAAAATGCTTATGTCTCTGTAGTGTCTTCACATTAT
AGCAGAAAATTCACCCAGAAAATAGCCAAAAGACCCAAAGTAAGAGATCAAGAAGGAAGAATCAATTACTACTGGAC
TCTGCTTGAACCCGGGGATACAATAATTTGAGGCAATGGAAATCTAATAGCGCCAAGATATGCTTTCGCACTGA
GTAGAGGCTTTGGATCAGGAATCATCAACTCAAATGCACCAATGGATAAATGTGATGCGAAGTGCCAAACACCTCAG
GGAGCTATAAACAGCAGTCTTCTTTCCAGAACGTACACCCAGTCACAATAGGAGAGTGTCCAAAGTATGTGAGGAG
TGCAAAATTAAGGATGGTTACAGGACTAAGGAACATCCCATCCATTCAATCCAGAGGTTTGTGAGGCCATTGCCG
GTTTCATTGAAGGGGGGTGGACTGGAATGGTAGATGGTTGGTATGGTTATCATCATCAGAATGAGCAAGGATCTGG
CTATGCTGCAGATCAAAAAAGCACACAAAATGCCATTAAATGGGATTACAAACAAGGTCAATTCTGTAAATGAGAAAAT
GAACACTCAATTACAGCAGTGGGCAAGAGTTCAACAAATTTGGAAGAAGGATGGAAAACCTGAATAAAAAGTTG
ATGATGGGTTTATAGACATTTGGACATATAATGCAGAACTGTTGGTTCTACTGGAAAATGAAAGGACTTTGGATTTC
ATGACTCCAATGTGAAGAATCTGTATGAGAAAGTAAAAAGCCAGTTAAAGAATAATGCTAAAGAAATAGGAAATGGGT
GTTTTGAGTTCTATCACAAGTGAACGATGAATGCATGGAGAGTGTAAAGAATGGAACCTATGACTATCCAAAATATT
CCGAAGAATCAAAGTTAAACAGGGAGAAAATTTGATGGAGTGAAATTTGGAATCAATGGGAGTCTATCAGATTCTGGCG
ATCTACTCAACAGTCGCCAGTCTCTGGTTCTTTGGTCTCCCTGGGGGCAATCAGCTTCTGGATGTGTTCCAATGG
GTCTTTACAGTGTAGAATATGCATCTAAAGGCCTATTTCTTTAGTTTGAATTTACTGTTATTCGGTGTGCATTTCTAT
GTTTGGTGAGCGTTTTCTGTGCTCAGAGTGTGTTTATTTATGTAATTTAATTTCTTGTGAGCTCCTGTTTAGCAGG
TCGTCCCTTCAGCAAGGACACAAAAAGATTTTAAATTTATTAAAAAAGACCGGGAATTCGATATCAA
GCTTATCGACCTGCAGATCGTTCAAACATTTGGCAATAAAGTTTCTTAAGATTGAATCCTGTGCGCGTCTTGGCATG
ATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAATAATTAACATGTAATGCATGACGTTATTTATGAGATGGG
TTTTATGATTAGAGTCCCGCAATTATACATTTAATACGCGATAGAAAACAAAATATAGCGCGCAAACTAGGATAAAT
ATCGCGCGCGGTGTCTATGTTACTAGATTCTAGAGTCTCAAGCTTCGGCGCGCC

Figure 34

SEQ. ID. NO. 69

Construct 734, from PacI (upstream of the 35S promoter) to AscI (immediately downstream of the NOS terminator). Coding sequence of chimeric HA is underlined.

TTAATTAAGAATTTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGAGAAG
 ATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTG
 CCGACAGTGGTCCCAAAGATGGACCCACCCACGAGGAGCATCGTGGAAAAAGAACGTTCCAACACAGTCTT
 CAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCC
 TTCTCTATATAAGGAAGTTCATTTCAATTTGGAGAGGTATTAATATAGGTTTGTATAAAGCGAACGTGGGG
 AAACCCGAACCAAACTTCTTCTAAACTCTCTCATCTCTCTTAAAGCAAACCTCTCTTGTCTTTCTTGGCTGAG
 CGATCTTCAACGTTTGCAGATCGTGGCTTCGGCACCAGTACAACGTTTTCTTCACTGAAGCGAAATCAAAGATCTCT
 TTGTGGACACGTAGTGGCGGCCATTAAATAACGTGTACTTGTCTATTCTTGTCTGGTGTGGTCTTGGGAAAAGAA
 AGCTTGTCTGGAGGCTGCTGTTGAGCCCCATACATTACTTGTACGATTCTGCTGACTTTCGGCGGGTGAATATCT
 CTACTTCTGCTTGCAGAGGTATTGTTGCTGTACTTCTTCTTCTTCTTCTGCTGATTGGTCTATAAGAAATCTAG
 TATTTCTTTGAAACAGAGTTTTCCCGTGGTTTTCGAACCTTGGAGAAAGATTGTTAAGCTTCTGTATATTCTGCCAA
 ATTTGTCTGGGCCCATTGGAGAAAATAGTGCTTCTTCTTGAATAGTCAGTCTTGTAAAAGTGATCAGATTGCAATTG
 GTTACCATTGCAAACTTCAACAGAGCAGGTTGACACAATCATGGAAAAGAACGTTACTGTTACACATGCCCAAGA
 CATACTGGAAAAGACACACAACGGGAAGCTCTGCGATCTAGATGGAGTGAAGCCTCTAATTTTAAGAGATTGTAGT
 GTAGCTGGATGGCTCCTCGGGAACCCAATGTGTGACGAATTCATCAATGTACCGGAATGGTCTTACATAGTGGAGA
 AGGCCAATCCAACCAATGACCTCTGTTACCCAGGGCATTTCTGCTGACTATGAGGAACTGAGGGAGCAATTGAGTTC
 AGTATCTTCAATTGAGAGGTTTGGAAATATCCCAAGAAAGCTCATGGCCCAACCACACCGTAACCGGAGTGTCA
 GCATCATGCTCCCATATGGGGAAGCAGTTTTTACAGAAATTTGCTATGGCTGACGGGGAAGAATGGTTGTACC
 CAAACCTGAGCAAGTCTATGCAACAACAAAGAAAAAGAGTCTTGTACTATGGGGTGTTCATCACCCGCCAA
 CATAGGTGACCAAAAGGCCCTCTATCATACAGAAAATGCTTATGTCTCTGTAGTGTCTTACATTATAGCAGAAAAT
 TCACCCAGAAATAGCCAAAGACCCAAAGTAAGAGATCAAGAAGGAAGAATCAATTACTACTGGACTCTGCTTGA
 ACCCGGGGATACAATAATATTTGAGGCAATGGAATCTAATAGCGCCAAGATATGCTTTCGCACTGAGTAGAGGC
 TTTGGATCAGGAATTATGAAAAGTGAATTGGAATATGGTAAGTCAACACCAAGTGTCAAACCTCAATGGGGGCGA
 TAAACTCTAGTATGCCATTCCACAACATACCCCTCTCACCATCGGGGAATGCCCAATATGTGAATCAAACAGA
 TTAGTCTTGAACAGGGCTCAGAAATAGCCCTCAAAGAGAGAGCAGAGAAGAAAAAGAGAGGACTATTTGGAGCTA
 TAGCAGGTTTTATAGAGGGAGGATGGCAGGGAATGGTAGATGGTTGGTATGGGTACCACCATAGCAATGAGCAGG
 GGAGTGGGTACGCTGCAGACAAAGAAATCCACTCAAAGGCAATAGATGGAGTCACCAATAAGGTCAACTCAATCAT
 TGACAAAATGAACACTCAGTTTGAGGCGGTTGGAAGGGAATTAATAACTTAGAAAGGAGAATAGAGAATTTAAACA
 AGAAGATGGAAGACGGGTTTCTAGATGTCTGGACTTATAATGCCGAACCTCTGGTCTCATGGAAAATGAGAGAAC
 TCTAGACTTTTCACTCAATGTTAAGAACCTCTACGACAAGGTCCGACTACAGCTTAGGGATAATGCAAAAGGAG
 CTGGGTAAACGGTTGTTTCGAGTTCTATCACAATGTGATAATGAATGTATGGAAAGTATAAGAAACCGGAACGTACA
 CTATCCGCAATTCAGAAAGCAAGATTAAAAAGAGAGGAAATAAGTGGGGTAAATTTGGAATCAATAGGAACT
 TACCAATACTGTCAATTTATTCAACAGTGGCGAGTTCCCTAGCACTGGCAATCATGATGGCTGGTCTATCTTTATG
 GATGTGCTCCAATGGATCGTTACAATGCAGAATTTGCATTTAAAGGCCTATTTCTTTAGTTTGAATTTACTGTTATT
 CGGTGTGCATTTCTATGTTGGTGAGCGGTTTTCTGTCTCAGAGTGTGTTTATTTTATGTAATTTAATTTCTTTGTG
 AGCTCCTGTTTAGCAGGTCTCCCTTCAGCAAGGACACAAAAAGATTTAATTTTATTAAGGATTAAGGATTAAGGAT
 CCGGGAATTCGATATCAAGCTTATCGACCTGCAGATCGTTCAAACATTTGGCAATAAGTTTCTTAAGATTGAATCC
 TGTTGCCGGTCTTGCAGATGATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAATAATTAACATGTAATGCAT
 GACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATACATTAATACGCGATAGAAAACAAAATATA
 GCGCGCAAACTAGGATAAATTATCGCGCGCGGTGTCATCTATGTTACTAGATTCTAGAGTCTCAAGCTTCGGCGCG
 CC

Figure 35

SEQ. ID. NO. 70

Synthesized fragment Drall-Plasto(-84+1)-H3 A/Brisbane/10/07-SacI

CACTTTGTGAGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAATTAAT
CATCTTGAGAGAAAATGAAGACTATCATTGCTTTGAGCTACATTCTATGTCTGGTTTTCACTCAAAAAC
TCCCGGAAATGACAACAGCACGGCAACGCTGTGCCCTTGGGCACCATGCAGTACCAAACGGAACGATA
GTGAAAACAATCACGAATGACCAAATGAAGTTACTAATGCTACTGAGCTGGTTTCAGAGTTCCTCAACA
GGTGAATATGCGACAGTCCCTCATCAGATCCTTGATGGAGAAAACGACACTAATAGATGCTCTATTG
GGAGACCCTCAGTGTGATGGCTTCCAAAATAAGAAATGGGACCTTTTTGTTGAACGCAGCAAAAGCCTA
CAGCAACTGTTACCTTATGATGTGCCGGATTATGCCTCCCTTAGGTCACTAGTTGCCTCATCCGGCA
CACTGGAGTTTAAACAATGAAAGTTTCAATTGGACTGGAGTCACTCAAAACGGAACAAGCTCTGCTTGC
ATAAGGAGATCTAATAACAGTTTCTTAGTAGATTGAATTGGTTGACCCACTTAAATTCAAATACCCAG
CATTGAACGTGACTATGCCAAACAATGAAAAATTTGACAAATTGTACATTTGGGGGGTTTACCACCCG
GGTACGGACAATGACCAAATCTTCTGTATGCTCAAGCATCAGGAAGAATCACAGTCTCTACCAAAAG
AAGCCAACAACTGTAATCCCGAATATCGGATCTAGACCCAGAGTAAGGAATATCCCCAGCAGAATAA
GCATCTATTGGACAATAGTAAACCGGGAGACATACTTTTGATTAACAGCACAGGGAATCTAATTGCTC
CTAGGGGTTACTTCAAAATACGAAGTGGGAAAAGCTCAATAATGAGATCAGATGCACCCATTGGCAAA
TGCAATTCTGAATGCATCACTCCAAACGGAAGCATTCCCAATGACAAACCATTCCAAAATGTAAACAGG
ATCACATACGGGGCCTGTCCCAGATATGTTAAGCAAAACACTCTGAAATTGGCAACAGGGATGCGAAA
TGTACCAGAGAAACAACTAGAGGCATATTTGGCGCAATCGCGGGTTTCATAGAAAATGGTTGGGAGG
GAATGGTGGATGGTTGGTATGGTTTCAGGCATCAAAATCTGAGGGAATAGGACAAGCAGCAGATCTC
AAAAGCACTCAAGCAGCAATCGATCAAAATCAATGGGAAGCTGAATAGGTTGATCGGGAAAACCAACGA
GAAATCCATCAGATTGAAAAAGAGTTCTCAGAAGTCGAAGGGAGAATCCAGGACCTTGAGAAATATG
TTGAGGACACCAAAATAGATCTCTGGTCATACAACGCGGAGCTTCTTGTGGCCTGGAGAACCAACAT
ACAATTGATCTAACTGACTCAGAAATGAACAACTGTTTGA AAAAACAAGAAAGCAACTGAGGGAAAT
GCTGAGGATATGGGCAATGGTTGTTTCAAAATATACCACAAATGTGACAATGCCTGCATAGGATCAATC
AGAAATGGAACCTATGACCACGATGTATACAGAGATGAAGCATTAAACAACCGGTTCCAGATCAAGGG
CGTTGAGCTGAAGTCAGGATACAAAGATTGGATACTATGGATTTCTTTGCCATATCATGTTTTTTGCT
TTGTGTTGCTTTGTTGGGGTTCATCATGTGGGCCTGCCAAAAGGCAACATTAGGTGCAACATTTGCA
TTTGAGAGCTC

Figure 36

SEQ. ID NO. 71

Construct 736, from PacI (upstream of the 35S promoter) to AclI (immediately downstream of the NOS terminator). Coding sequence of SpPDI-H3 A/Brisbane/10/2007 is underlined.

TTAATTAAGAATTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGAGAA
 GATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTC
 TGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGAAAAAGAAGACGTTCCAACCACGT
 CTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAG
 ACCCTTCCTCTATATAAGGAAGTTCATTTTCAATTTGGAGAGGTATTAAAACTTAATAGGTTTTGATAAAGCGAAGC
 TGGGGAACCCGAACCAACCTTCTCTAACTCTCTCTCATCTCTCTTAAGCAAACCTCTCTCTTGTCTTCTTG
 CGTGAGCGATCTCAACGTTGTGAGATCGTGCTTCGGCACCAGTACAACGTTTTCTTCACTGAAGCGAAATCAAA
 GATCTCTTTGTGGACACGTAGTGGCGGCCATTAAATAACGTGTACTTGTCTTCTTGTCTGCGGTGGTCTTGGG
 AAAAGAAAGCTTGTCTGGAGGCTGCTGTTGAGCCCCATACATTACTTGTACGATTCTGCTGACTTTCGGCGGGTG
 CAATATCTCTACTTCTGCTGACGAGGTATTGTTGCTGTACTTCTTCTTCTTCTTCTGCTGATTGGTCTATAAG
 AAATCTAGTATTTTCTTGAACAGAGTTTTCCCGTGGTTTTGCAACTTGGAGAAAGATGTGAAGCTTCTGTATATT
 CTGCCCCAAATTTGTCTGGGCCCATGGCGAAAAACGTTGCGATTTCGGCTTATTGTTTTCTCTTCTGTGTGGTTC
 CTTCTCAGATCTTCGCTCAAAAACCTCCCGGAAATGACAACAGCAGGCAACGCTGTGCTTGGGCACCATGCAG
TACCAACCGGAACGATAGTGAACAACATCACGAATGACCAATGAAGTTACTAATGCTACTGAGCTGTTTCAGAG
TTCTCTAACAGGTGAAATATGCGACAGTCTCTCATCAGATCCTTGATGGAGAAAACTGCACACTAATAGATGCTCTA
TTGGGAGACCCTCAGTGTGATGGCTTCCAAAAAAGAAATGGGACCTTTTTGTTGAACGCAGCAAGGCTACAGC
AACTGTTACCTTATGATGTGCGGGATTATGCCTCCCTTAGGTCACTAGTTGCCTCATCCGGCACACTGGAGTTTA
ACATGAAAGTTTCAATTGGACTGGAGTCACTCAAAACGGAACAAGCTCTGCTTGCATAAGGAGATCTAATAACAG
TTTCTTTAGTAGATTGAATTGGTTGACCCACTTAAATTCAAATACCCAGCATGAACGTGACTATGCCAAACAATG
AAAAATTTGACAAATTTGACATTTGGGGGGTTCAACACCCGGGTACGGACAATGACCAATCTTCTGTATGCTCA
AGCATCAGGAAGAATCACAGTCTCTACCAAAAAGAGCCAACTGTAATCCCGAATATCGGATCTAGACCCAG
AGTAAGGAATATCCCCAGCAGAATAAGCATCTATTGGACAATAGTAAACCGGGAGACATACTTTGATTAACAGC
ACAGGGAATCTAATTTGCTCCTAGGGGTTACTTCAAAATACGAAGTGGGAAAAGCTCAATAATGAGATCAGATGCAC
CCATTGGCAAATGCAATTTCTGAATGCATCACTCAAAACGGAAGCATTCCCAATGACAAACCATTCGAAATGTAAG
CAGGATCACATACGGGGCTGTCCAGATATGTTAAGCAAAACACTCTGAAATTTGGCAACAGGGATGCGAAATGT
ACCAGAGAAACAACTAGAGGCATATTTGGCGCAATCGCGGTTTCATAGAAAATGGTTGGGAGGGAATGGTGG
ATGGTTGGTATGGTTTCAGGCATCAAAATTTGAGGGAATAGGACAAGCAGCAGATCTCAAAAGCACTCAAGCAG
CAATCGATCAAAATCAATGGGAAGCTGAATAGTTGATCGGGAAAACCAACGAGAAATTCATCAGATTGAAAAAGA
GTTCTCAGAAGTCGAAGGGAGAATCCAGGACCTTGAGAAATATGTTGAGGACACCAAAATAGATCTCTGGTCATA
CAACGCGGAGCTTCTTGTGGCCTGGAGAACCAACATACAATTGATCTAAGTCACTCAGAAATGAACAACTGTT
GAAAAAACAAAGAGCAACTGAGGGAAAATGCTGAGGATATGGGCAATGGTTGTTTCAAAATATACCACAAATGTG
ACAATGCCTGCATAGGATCAATCAGAAATGGAACCTATGACCACGATGTATACAGAGATGAAGCATTAAACAACCG
GTTCCAGATCAAGGGCGTTGAGCTGAAGTCAGGATACAAAGATTGGATACTATGGATTTCTTGGCATATCATGT
TTTTTGCTTTGTGTGCTTTGTGGGGTTCATCATGTGGGCTGCCAAAAAGGCAACATTAGGTGCAACATTTGCA
TTTGAAGGCCTATTTCTTTAGTTTGAATTTACTGTTATTCGGTGTGCATTTCTATGTTGGTGAGCGGTTTTCTGTG
CTCAGAGTGTGTTATTTTATGTAATTTAATTTCTTTGTGAGCTCCTGTTAGCAGGTCGTCCCTTCAGCAAGGACA
CAAAAAGATTTTAAATTTTATTAATAAAAAAAAAAAAAAAAAAGACCGGGAATTCGATATCAAGCTTATCGACCTGCAGAT
CGTTCAAACATTTGGCAATAAAGTTTCTTAAGATTGAATCCTGTTGCCGGTCTTGCGATGATTATCATATAATTTCT
GTTGAATTACGTTAAGCATGTAATAATTAACATGTAATGCATGACGTTATTTATGAGATGGGTTTTTATGATTAGAGT
CCCGAATTATACATTTAATACGCGATAGAAAACAAATATAGCGCGCAAACTAGGATAAATTATCGCGCGCGGTG
TCATCTATGTTACTAGATTCTAGAGTCTCAAGCTTCGGCGCGCC

Figure 37

SEQ. ID. NO. 72

Construct 737, from PacI (upstream of the 35S promoter) to AclI (immediately downstream of the NOS terminator). Coding sequence of chimeric HA is underlined.

TTAATTAAGAATTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGAGAAGA
TAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTGC
CGACAGTGGTCCCAAAGATGGACCCCAACCCAGGAGCATCGTGGAAAAAGAACGTTCCAACCACGTCTTCA
AAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTC
CTCTATATAAGGAAGTTCATTTCACTTGGAGAGGTATTAATACTTAATAGGTTTGTATAAAGCGAACGTGGGGAAA
CCCGAACCAAACTCTCTCTCAAACTCTCTCTCATCTCTCTTAAGCAAACTTCTCTCTTGTCTTTCTTGGCTGAGCGAT
CTTCAACGTTGTGAGATCGTGCTTCGGCACCAGTACAACGTTTTCTTCACTGAAGCGAAATCAAAGATCTCTTGTG
GACACGTAGTGGCGGCCATTAAATAACGTGTACITGTCTATTCTTGTGCGGTGTGGTCTTGGGAAAAGAAAGCTTG
CTGGAGGCTGCTGTTGAGCCCATACATTACTTGTACGATTCTGCTGACTTTCGGCGGGTGCAATATCTCTACTTCT
GCTTGACGAGGTATTGTTGCTGTACTTCTTCTTCTTCTTCTGATTGGTCTATAAGAAATCTAGTATTTCTTT
GAAACAGAGTTTCCCGTGGTTTCGAACCTGAGAAAGATTGTAAGCTTCTGTATATTCTGCCAAATTTGTCGGG
CCCATGGCGAAAAACGTTGCGATTTCGGCTTATTGTTTCTCTTCTGTGTTGGTTCCTTCTCAGATCTTCGCTCAA
AACTTCCCGGAAATGACAACAGCAGCGCAACGCTGTGCTTGGGCACCATGCAGTACCAACCGGAACGATAGTGA
AAACAATCACGAATGACCAAAATGAAGTACTAATGCTACTGAGCTGGTTCAAGAGTTCCTCAACAGGTGAAATATGCG
ACAGTCTCATCAGATCCTTGATGGAGAAAACTGCACACTAATAGATGCTCTATTGGGAGACCCCTCAGTGTGATGGC
TTCCAAAATAGAAATGGGACCTTTTGTGAACGCAGCAAAAGCTTACAGCAACTGTTACCTTATGATGTGCCGGAT
TATGCCCTCCCTTAGGTCACTAGTTGCCTCATCCGGCAGCTGGAGTTTAACAATGAAAGTTCAATTGGACTGGAGT
CACTCAAAACGGAACAAGCTCTGCTTGCATAAGGAGATCTAATAACAGTTTCTTATGATAGATTGAATTGGTTGACCCA
CTTAAATTCAAATACCCAGCATTGAACGTGACTATGCCAAACAATGAAAAATTTGACAAATGTACATTTGGGGGGT
TCACCACCCGGGTACGGACAATGACCAAAATCTTCTGTATGCTCAAGCATCAGGAAGAAATCACAGTCTCTACCAAAA
GAAGCCAACAACTGTAATCCCGAATATCGGATCTAGACCCAGAGTAAGGAATATCCCGAGCAGAATAAGCATCTAT
TGGACAATAGTAAACCGGGAGACATATTTGATTAACAGCACAGGGAATCTAATTGCTCTAGGGGTTACTTCAAA
ATACGAAGTGGGAAAAGCTCAATAATGAGATCAGATGCACCCATTGGCAATGCAATTTGAATGCATCACTCCAAA
CGGAAGCATTCCTCAATGACAAACATTCCAAAATGTAAACAGGATCACATACGGGGCCTGTCCAGATATGTTAAGC
AAACACTCTGAAATTGGCAACAGGGATGCGAAATGTACCAGAGAAACAACTAGAGGCATATTTGGCGCAATCGCG
GGTTTCATAGAAAATGGTTGGGAGGGAATGGTGGATGGTTGGTATGGTTTCAGGCATCAAAATCTGAGGGAATAG
GACAAGCAGCAGATCTCAAAAGCACTCAAGCAGCAATCGATCAAAATCAATGGGAAGCTGAATAGGTTGATCGGGAA
AACCAACGAGAAATCCATCAGATTGAAAAAGAGTTCTCAGAAGTCGAAGGGGAGAATCCAGGACCTTGAGAAATATG
TTGAGGACACCAAAATAGATCTCTGGTCATACACCGCGGAGCTTCTTGTGCCCTGGAGAACCAACATACAATTGAT
CTAACTGACTCAGAAATGAACAACTGTTTGAAAAACAAAGAAGCAACTGAGGGAAAATGCTGAGGATATGGGCAA
TGGTTGTTTCAAAATATACCACAAATGTGACAATGCCTGCATAGGATCAATCAGAAATGGAACCTATGACCACGATGT
ATACAGAGATGAAGCATTAAACAACCGGTTCCAGATCAAGGGCGTTGAGCTGAAGTCAATAGGAACTTACCAATAC
TGTCAATTTATCAACAGTGGCGAGTTCCCTAGCACTGGCAATCATGATGGCTGGTCTATCTTTATGGATGTGCTCCA
ATGGATCGTTACAATGCAGAAATTCATTTAAAGGCCTATTTCTTTAGTTTGAATTTACTGTTATTCGGTGTGCATTT
CTATGTTTGGTGAGCGGTTTTCTGTGCTCAGAGTGTGTTATTTATGTAATTTAATTTCTTTGTGAGCTCCTGTTAG
CAGGTCGTCCCTTCAGCAAGGACACAAAAAGATTTAATTTTATTAATAAAAAAAAAAAAAAAAAAGACCGGAATTCGAT
ATCAAGCTTATCGACCTGCAGATCGTTCAACATTTGGCAATAAGTTTCTTAAGATTGAATCCTGTTGCCGGTCTTG
CGATGATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAATAATTAACATGTAATGCATGACGTTATTTATGAGA
TGGGTTTTTATGATTAGAGTCCCGCAATTATACATTTAATACGCGATAGAAAACAAATATAGCGCGCAAACTAGGAT
AAATTATCGCGCGCGGTGTCATCTATGTTACTAGATTCTAGAGTCTCAAGCTTCGGCGCGCC

Figure 38

SEQ. ID. NO. 73

Synthesized fragment Dralll-Plasto(-84+1)-HA B/Florida/4/06-SacI

CACTTTGTGAGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAATTAA
TCATCTTGAGAGAAAATGAAGGCAATAATTGTACTACTCATGGTAGTAACATCCAATGCAGATCGAAT
CTGCACTGGAATAACATCTTCAAACCTCACCTCATGTGGTCAAACAGCCACTCAAGGGGAGGTCAAT
GTGACTGGTGTGATACCACTAACAAACACCAACAAAATCTTATTTTGCAAATCTCAAAGGAACAAG
GACCAGAGGGAACTATGCCAGACTGTCTCAACTGCACAGATCTGGATGTGGCTTTGGGCAGACC
AATGTGTGTGGGGACCAACCTTCGGCGAAGGCTTCAATACTCCACGAAGTCAAACCTGTTACATCC
GGGTGCTTTCTTATAATGCACGACAGAACAAAAATCAGGCAACTACCCAATCTTCTCAGAGGATATGA
AAATATCAGGCTATCAACCCAAAACGTCATCGATGCGGAAAAGGCACAGGAGGACCCCTACAGACTT
GGAACCTCAGGATCTTGCCCTAACGCTACCAGTAAGAGCGGATTTTTTCGCAACAATGGCTTGGGCTG
TCCCAAAGGACAACAACAAAAATGCAACGAACCCACTAACAGTAGAAGTACCATACATTTGTACAGAA
GGGGAAGACCAAATCACTGTTTGGGGGTTCCATTCAGATAACAAAACCCAAATGAAGAACCTCTATG
GAGACTCAAATCCTCAAAGTTCACCTCATCTGCTAATGGAGTAACCACACACTATGTTTCTCAGATT
GGCAGCTTCCCAGATCAAACAGAAGACGGAGGACTACCACAAAGCGGCAGGATTGTTGTTGATTACA
TGATGCAAAAACCTGGGAAAACAGGAACAATTGTCTACCAAAGAGGTGTTTTGTTGCCTCAAAGGTG
TGGTGCGCGAGTGGCAGGAGCAAAGTAATAAAAGGGTCTTGCCTTTAATTGGTGAAGCAGATTGCC
TTCATGAAAAATACGGTGGATTAAACAAAAGCAAGCCTTACTACACAGGAGAACATGCAAAAGCCATA
GGAAATTGCCCAATATGGGTGAAAACACCTTTGAAGCTCGCCAATGGAACCAATATAGACCTCCTG
CAAACTATTAAAGGAAAGGGGTTTCTTCGGAGCTATTGCTGGTTTTCTAGAAGGAGGATGGGAAGG
AATGATTGCAGGCTGGCACGGATACACATCTCACGGAGCACATGGAGTGGCAGTGGCGGCGGACCT
TAAGAGTACGCAAGAAGCTATAAACAAGATAACAAAAATCTCAATTCTTTGAGTGAGCTAGAAGTAA
GAATCTTCAAAGACTAAGTGGTGGCATGGATGAATCCACAACGAAATACTCGAGCTGGATGAGAAA
GTGGATGATCTCAGAGCTGACACTATAAGCTCGCAAATAGAATTTGCAGTCTTGCTTTCCAACGAAG
GAATAATAAACAGTGAAGATGAGCATCTATTGGCACTTGAGAGAAAATAAAGAAAATGCTGGGTCCC
TCTGCTGTAGAGATAGGAAATGGATGCTTCGAAACCAACACAAGTGCAACCAGACCTGCTTAGACA
GGATAGCTGCTGGCACCTTTAATGCAGGAGAATTTTCTCTCCCACTTTTGATTCACTGAACATTACT
GCTGCATCTTTAAATGATGATGGATTGGATAACCATACTATACTGCTCTATTACTCAACTGCTGCTTCT
AGTTTGGCTGTAACATTGATGCTAGCTATTTTATTGTTTATATGGTCTCCAGAGACAACGTTTCATGC
TCCATCTGTCTATAAGAGCTC

Figure 39

SEQ. ID. NO. 74

Construct 739, from PacI (upstream of the 35S promoter) to AclI (immediately downstream of the NOS terminator). Coding sequence of SpPDI-HA B/Florida/4/2006 is underlined.

TTAATTAAGAATTCCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGAGAA
 GATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTC
 TGCCGACAGTGGTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGGAAAAAGAAGACGTTCCAACACCGT
 CTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAG
 ACCCTTCCTCTATATAAGGAAGTTCATTTTCATTTGGAGAGGTATTAAAATCTTAATAGGTTTGTATAAAGCGAAGC
 TGGGGAAACCCGAACCAAACTTCTCTAAACTCTCTCTCATCTCTCTTAAAGCAAACCTTCTCTTGTCTTTCTTG
 CGTGAGCGATCTTCAACGTTGTCAGATCGTGTTCGGCACCAGTACAACGTTTCTTCACTGAAGCGAAATCAAA
 GATCTCTTTGTGGACACGTAGTGGCGGCCATTAAATAACGTGTACTTGTCTATTCTTGTGGTGTGGTCTTGGG
 AAAAGAAAGCTTGTGGAGGCTGCTGTTACGCCCATACATTACTTGTACGATTCTGCTGACTTTCGGCGGGTG
 CAATATCTCTACTTCTGCTTGACGAGGTATTGTTGCCTGTACTTCTTCTTCTTCTTCTGCTGATTGGTCTATAAG
 AAATCTAGTATTTTCTTTGAAACAGAGTTTCCCGTGGTTTTCGAACCTTGGAGAAAGATTGTTAAGCTCTGTATATT
 CTGCCCAAATTTGTGGGCCCATGGCGAAAAAGCTTGCATTTCGGCTTATTGTTTCTCTTCTTGTGTTGTTG
CTTCTCAGATCTTCGCTGATCGAATCTGCACTGGAATAACATCTTCAAACCTCACCTCATGTGGTCAAAACAGCCAC
TCAAGGGGAGGTCAATGTGACTGGTGTGATACCACTAACAACAACACCAACAAAATCTTATTTCGAAATCTCAAA
GGAAACAAGGACGAGAGGGAAACTATGCCAGACTGTCTCAACTGCACAGATCTGGATGTGGCTTGGGCAGACC
AATGTGTGTGGGGACACACCTTCGGCGAAGGCTTCAATACTCCACGAAGTCAAACCTGTTACATCCGGGTGCTT
TCTATAATGCACGACAGAACAATAATCAGGCAACTACCAATCTTCTCAGAGGATATGAAATATCAGGCTATCA
ACCCAAAACGTCTATCGATGCGGAAAAGGCACCAAGGAGGACCTACAGACTTGGAACTCAGGATCTTGCCCTAA
CGCTACCAGTAAGAGCGGATTTTCGCAACAATGGCTTGGGCTGTCCCAAAGGACAACAACAATAATGCAACGAA
CCCACTAACAGTAGAAGTACCATACATTGTACAGAAGGGGAAGACCAAACTCACTGTTTGGGGTTCATTGAGAT
AACAAAACCCAAATGAAGAACCTCTATGGAGACTCAATCCTCAAAAGTTCACCTCATCTGCTAATGGAGTAACCA
CACACTATGTTTCTCAGATTGCCAGCTTCCAGATCAAAACAGAAGACGGAGGACTACCAAAAGCGGCAGGATTG
TTGTTGATTACATGATGCAAAAACCTGGGAAAACAGGAACAATTGTCTACCAAGAGGTGTTTGTGCTCAAAA
GGTGTGGTGGCGAGTGGCAGGAGCAAAAGTAATAAAGGGTCTTGCCCTTAATTGGTGAAGCAGATTGCCCTCA
TGAAAAATACGGTGGATTAAACAAAAGCAAGCCTTACTACACAGGAGAACATGCAAAAGCCATAGGAAATTGCC
AATATGGGTGAAAACACCTTTGAAGCTCGCCAATGGAACCAATATAGACCTCTGCAAAACTATTAAGGAAGG
GGTTTCTTCGGAGCTATTGCTGGTTTCTAGAAAGGAGGATGGGAAGGAATGATTGCAGGCTGGCACGGATACAC
ATCTCACGGAGCACATGGAGTGGCAGTGGCGGCGGACCTTAAGAGTACGCAAGAAGCTATAAACAAGATAACAA
AAAATCTCAATCTTTGAGTGAGCTAGAAGTAAAGAATCTTCAAAGACTAAGTGGTGCCATGGATGAACTCCACAA
CGAAATACTCGAGCTGGATGAGAAAGTGGATGATCTCAGAGCTGACACTATAAGCTCGCAAAATAGAACTGCAGT
CTTGCTTTCCAACGAAGGAATAATAACAGTGAAGATGAGCATCTATTGGCACTTGAGAGAAAACATAAGAAAATG
CTGGGTCCCTCTGCTGTAGAGATAGGAAATGGATGCTTCGAAACCAACACAAGTGCAACCAGACCTGCTTAGAC
AGGATAGCTGCTGGCACCTTAATGCAGGAGAATTTCTCTCCCACTTTTGATTCACTGAACATTACTGCTGCAT
CTTTAAATGATGATGGATTGGATAACCATACTATACTGCTCTATTACTCAACTGCTGCTTCTAGTTTGGCTGTAACA
TTGATGCTAGCTATTTTATTGTTTATATGGTCTCCAGAGACAACGTTTCATGCTCCATCTGTCTATAAAGGCCAT
TTTCTTTAGTTTGAATTTACTGTTATTCGGTGTGCATTTCTATGTTTGGTGAGCGGTTTCTGTGCTCAGAGTGTGT
TATTTTATGTAATTTAATTTCTTTGTGAGCTCCTGTTTAGCAGGTGCTCCCTTCAGCAAGGACACAAAAGATTTTA
ATTTTATTAATAAATAAATAAATAAAGACCGGGAATTCGATATCAAGCTTATCGACCTGCAGATCGTTCAACATTT
GGCAATAAAGTTTCTTAAGATTGAATCCTGTTGCCGGTCTTGGCATGATTATCATATAATTTCTGTTGAATTACGTT
AAGCATGTAATAATTAACATGTAATGCATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATA
CATTTAATACGCGATAGAAAACAAAATATAGCGCGCAAACTAGGATAAATTATCGCGCGCGGTGTCATCTATGTTA
 CTAGATTCTAGAGTCTCAAGCTTCGGCGCGCC

Figure 40

SEQ. ID. NO. 75

Construct 745, from PacI (upstream of the 35S promoter) to AclI (immediately downstream of the NOS terminator). Coding sequence of chimeric HA is underlined.

TTAATTAAGAATTCGAGCTCCACCGCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGAGAA
 GATAGTGGAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAAGGAAAGGCCATCGTTGAAGATGCCTC
 TGCCGACAGTGGTCCCAAGATGGACCCACCCAGGAGCATCTGGAAGAAAGACGTTCCAACCACGT
 CTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGA
 CCCTTCCTCTATATAAGGAAGTTCATTTTCAATTTGGAGAGGTATTAATAGGTTTTGATAAAGCGAAGCT
 GGGGAAACCCGAACCAACCTTCTTCTAACTCTCTCTCATCTCTCTTAAAGCAAACCTCTCTTGTCTTTCTTGC
 GTGAGCGATCTTCAACGTTGTGAGATCGTGCTTCGGCACCAGTACAACGTTTTCTTCACTGAAGCGAAATCAAAG
 ATCTCTTGTGGACACGTAGTGGCGGCCATTAAATAACGTGTACTTGTCTATTCTTGTCTGGTGTGGTCTTGGGA
 AAAGAAAGCTTGTCTGGAGGCTGCTGTTGAGCCCCATACATTACTTGTACGATCTGCTGACTTTGGCGGGTGCA
 ATATCTCTACTTCTGCTTGTGAGGATGTTGCTGTACTTCTTCTTCTTCTTCTTCTGCTGATTGGTCTATAAGAA
 ATCTAGTATTTCTTGAACAGAGTTTTCCCGTGGTTTTCGAACCTGGAGAAAGATTGTTAAGCTTCTGTATATTCT
 GCCCAATTTGTGGGCCCATGGCGAAAACGTTGCGATTTCGGCTTATTGTTTTCTCTTCTTGTGTGGTTCCTT
 CTGAGATCTTCTGCTGATCGAATCTGCACTGGAATAACATCTTCAAACTCACCTCATGTGGTCAAAAACGCCACTCA
AGGGGAGGTCAATGTGACTGGTGTGATACCACTAACAACAACACCAACAAAATCTTATTTGCAAACTCTCAAAGGA
ACAAGGACCAGAGGGAACTATGCCAGACTGTCTCAACTGCACAGATCTGGATGTGGCTTTGGGCAGACCAATG
TGTGTGGGGACCACACCTTCGGCGAAGGCTTCAACTCCACGAGTCAAACCTGTTACATCCGGGTGCTTTCTT
ATAATGCACGACAGAAACAAAATCAGGCAACTACCAATCTTCTCAGAGGATATGAAAATATCAGGCTATCAACCC
AAAACGTCATCGATGCGGAAAAGGCACCGAGGAGGCCCTACAGACTTGGAACTCAGGATCTTGCCCTAACGCTA
CCAGTAAGAGCGGATTTTCGCAACAATGGCTTGGGCTGTCCCAAAGGACAACAACAAAATGCAACGAACCCAC
TAACAGTAGAAGTACCATACTTTGTACAGAAAGGGGAAGACCAATCACTGTTTGGGGTTCCTTTCAGATAACAA
AACCCAAATGAAGAACCTCTATGGAGACTCAAATCCTCAAAAGTTCACCTCATCTGCTAATGGAGTAACACACAC
TATGTTTCTCAGATTGGCAGCTTCCAGATCAACAGAAAGACGGAGGACTACCACAAAGCGGCAGGAJTTGTTGT
GATTACATGATGCAAAAACCTGGGAAAACAGGAACAATGTCTACCAAGAGGTGTTTGTGCTCAAAAGGTGT
GGTGCAGGAGTGGCAGGAGCAAAAGTAATAAAGGGTCTTGCCTTAATTGGTGAAGCAGATTGCCTTCATGAAA
AATACGGTGGATTAACAAAAGCAAGCCTTACTACACAGGAGAACATGCAAAAGCCATAGGAAATGCCCCAATATG
GGTGAACACCTTTGAAGCTCGCCAATGGAACCAAAATATAGACCTCCTGCAAACTATTAAAGGAAAGGGTTTC
TTCCGAGCTATTGCTGGTTTCTAGAAGGAGGATGGGAAGGAATGATTGCAGGCTGGCACGGATACACATCTCAC
GGAGCACATGGAGTGGCAGTGGCGGCGGACCTTAAGAGTACGCAAGAAGCTATAAACAAGATAACAAAAATCTC
AATTCTTTGAGTGAGCTAGAAGTAAGAATCTTCAAAGACTAAGTGGTGCCATGGATGAACCTCCACAACGAAATAC
TCGAGCTGGATGAGAAAGTGGATGATCTCAGAGCTGACACTATAAGCTCGCAAAATAGAAGTTCAGTCTTCTTTC
CAACGAAGGAATAATAACAGTGAAGATGAGCATCTATTGGCACTTGAGAGAAAATAAAGAAAATGCTGGGTCCC
CTGCTGTAGAGATAGGAAATGGATGCTTCAAAACCAACACAAGTGCAACCAGACCTGCTTAGACAGGATAGCT
GCTGGCACCTTTAATGCAGGAGAAATTTCTCTCCCACTTTTGATTCACTGAACATTACTGCTGCATCTTAAATGA
TGATGGATTGGATAACTACCAATACTGTCAATTTATTCAACAGTGGCGAGTTCCTAGCACTGGCAATCATGATG
GCTGGTCTATCTTTATGGATGTGCTCCAATGGATCGTTACAATGCAGAATTTGCATTTAAAGGCCTATTTCTTTAG
TTTGAATTTACTGTTATTCGGTGTGCATTTCTATGTTTGGTGAGCGGTTTTCTGTGCTCAGAGTGTGTTATTTATG
TAATTTAATTTCTTTGTGAGCTCCTGTTTAGCAGGTCTGCTCCTTCAGCAAGGACACAAAAAGATTTTAAATTTATTA
AAAAAAAAAAAAAAAAAGACCGGAATTCGATATCAAGCTTATCGACCTGCAGATCGTTCAAACATTTGGCAATAAAG
TTTCTTAAGATTGAATCCTGTTGCCGGTCTTGGCATGATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAAT
AATTAACATGTAATGCATGACGTTATTTATGAGATGGGTTTTTATGATTAGAGTCCCGCAATTATACATTTAATACGC
GATAGAAAACAAAATATAGCGCGCAAACTAGGATAAATTATCGCGCGGGTGTCTATCTATGTTACTAGATTCTAGA
GTCTCAAGCTTCGGCGCGCC

Figure 41

SEQ. ID. NO. 76

Msj1 coding sequence.

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ATGTTTGGGCGCGGACCAACAAGGAAGAGTGATAACACCAAATATTACGATATTCTTGGTGTTCAAA
AAGTGCTAGTGAAGATGAAATCAAGAAAGCCTATAGAAAGGCAGCGATGAAGAACCATCCAGATAAG
GGTGGGGATCCTGAGAAGTTCAAGGAGTTGGGCCAAGCATATGAAGTGTTGAGCGATCCTGAAAAG
AAAGAACTGTATGATCAATATGGTGAAGATGCCCTTAAAGAAGGAATGGGGGGAGGCGCAGGAAGC
TCATTTTCATAATCCGTTTGATATTTTCGAATCATTTTTTGGTGCAGGCTTTGGTGGTGGTGGTCCCTCA
CGCGCAAGAAGACAGAAGCAAGGAGAAGATGTGGTGCATTCTATAAAGGTTTCCTTGGAGGATGTGT
ATAACGGCACTACAAAGAAGCTATCACTTTCTAGGAATGCACTGTGCTCAAAATGTAAAGGGAAAGGT
TCAAAAAGTGGAAGTGTGCTGGAAGGTGTTTTGGATGCCAGGGCACAGGTATGAAGATTACCAGAAGG
CAAATTGGACTGGGCATGATTCAACAAATGCAACACGTCTGTCTGACTGCAAAGGAACAGGCGAGG
TCATTAGTGAGAGAGATAGATGCCCTCAATGCAAGGGAAACAAGATTACTCAAGAAAAGAAGGTGCT
GGAGGTGCATGTGGAAAAGGGGATGCAGCAGGGTCACAAGATTGTATTCGAAGGACAAGCTGATGA
AGCTCCTGATACAATCACAGGAGACATAGTTTTTGTCTTGCAAGTAAAGGGACATCCGAAGTTTCGGA
GGGAGCGTGATGACCTCCACATTGAACACAATTTGAGCTTAAGTGAAGGCTCTCTGTGGCTTCCAGTT
TAATGTCACACATCTTGATGGAAGGCAACTATTGGTCAAATCGAACCCTCGGCGAAGTCATCAAGCCA
GGTCAACATAAAGCTATAAATGATGAGGGAATGCCACAACATGGTAGGCCGTTTCATGAAGGGACGCC
TATACATCAAGTTTAGTGTTGATTTCCCGGATTGCGGTTTTCTTTCCCAAGCCAAAGCCTGGAATTA
GAAAAGATATTACCTCAAAAGACAAGCAAGAAGTTGTCCCAAAAGGAGGTAGATGATTGTGAGGAGA
CCACCCTGCATGATGTCAATATTGCAGAGGAGATGAGTCGAAAGAAGCAACAATACCGTGAGGCATA
TGATGACGATGATGATGAAGATGATGAGCACTCGCAGCCTCGGGTGCAATGCGCTCAACAGTAG
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Figure 42

SEQ. ID. NO. 77.

Construct number R850, from HindIII (in the multiple cloning site, upstream of the promoter) to EcoRI (immediately downstream of the NOS terminator). HSP40 coding sequence underlined

AAGCTTGCATGCCTGCAGGTCGACTCTAGAGGATCCCCGGGCTGGTCTGTACATTCATCTTGCCGCCCTTTGCATT
CACTTGGCCACAAAGAGTAGAGAGAAGGAAGAGAAGAGCCAGACTTCAAGAAGCGACCTTGCAAGTGCACCTCG
AGGGTCAGAAACTGTATATCATATCTATGTGAGAGAAAGGGGAACATTTGAGATGGAGTCCATTTACTTGAGGTAT
ACTTATTATTTTGTATCAATAAATTTGTATACCTTCTATTAGATCAATAAATTTGTCAITTAAGCTATAATCCAAATAA
ATTACGATCAAATATGCAATGTTAGCCAGTACTTGTGTTAACTTGATGGCATCTCTTGGTTTCTTTGGCAATCAC
ATGCCAAGAAATAAATAGTATCATATGATTGTGTTTGGTCAGACTTCAGAGTCAGATGACTCTGTTTGGATAAAC
AGCTTAATTAAGCGCTTATAGAATATCATATGATTGTGTTTGGTCAGACTTCAGAGCATCTCTTGGTTTCTCTGGCA
ATCATATGCCAAGAAATAAATAGTATCATATGATTGTGTTTGGTCAGACTTCAGAGTCAGATGACCTGTTTGGG
TAAACAGCTTAATTAAGTGCCTTATAGAATAAGCGCTTATCATATAAGTGCCTTTTGTACAGTATTTCTATGAAAGTA
GAAGAAATAGTCATATTGTTTAAATAAGCTATCCTGGAGAGCTTGTGGAAATAACCAGTAAAGAACTTATGGAC
ACGTCATGAGCTGTTTACATAAGATCTCCCTAACAGTCTCAAAAGTGTATGSCAGTAGATAAATCAAATAAGTC
AATCTAAACAGACCCTAAATCCATTATGGTACCTATCATTTTAGCTTATCCATCTTTAATTAAGAATGTCATGAGATA
ACATAATGATAACACATTAATTTGACACAAATGGGCAGATCTAGCAATTTAACTCTGGAGTCTTCAAGACTGCTG
TTCTTACGAAGTTCACGTCCTGAATCATGTTCTGTATGGAAGCCTGAAAGACCTCAAATTTCAAAGGTGGCGA
TAAATTTGAAGTTTACAAATATACCCTGCGGGCTTGACACAGAGGCAAGCTCTTTATACCTTCAGTTCAACGG
GGATGTTGATTTGAGAAGTCACTTGGAGAGCAATCCTTGTGCCAAGTTGAAGTAATTTTGTGTAGCATATGTTG
AGCTACCTACAATTTACATGATCACCTAGCATTAGCTCTTTCACTTAACTGAGAGAATGAAGTTTAGGAATGAGTA
TGACCATGGAGTCGGCATGGCTTGTAAATGCCTACCCTACTTTGGCCAACCTCATCGGGGATTTACATTCAGAAAA
TATACATGACTTCAACCATACTTAAACCCCTTTTGTAAAGATAACTGAATGTTTCAATTTAATGTTGGGTTGTAGTG
TTTTACTTGAATATATCCAGACAGTTACAAGTTGGACAACAAGATTGTGGTCTGTACTGTTATTTATTTATTTT
TTTTAGCAGAAACACCTTATCTTTGTTTCTGTTTGAATGTAGAATGAAAATAAAAGAAAGAAAATATAACATCATCG
GCCGCGCTTGTCTAATTTCCGGCAGTTAGGATCCTCTCCGGTCACCGGAAAGTTTCAGTAGAAGAAACAAACAC
CGTGACTAAAATGATACTATTATTTATTTATTTGTGTTTTCTTTTTCTACCGGAACCTTTTGAACGGATCCCAAC
TCGTTCCGGGGCGCTACAACCTGAAACAAAAGAAGATATTTCTCTCTCTCAGAAATGAAGTTTCTTTACAG
ATACCATTCACCATTTGATTGATGATGTTGGTGACTAGAGATAAAGCATACTAATTTGACTCTTGGAAACCCATAAA
GTTTATGTTATCCGTGTTCTGGACCAATCCACTTGGGGGCATAACCTGTCTATGTGTGGTTTGGTTTCCATTCT
GATTTATGCGCGGACTTGTAAATTTAAATCTAGGAGGGGCAGACATTGAACAATCCCAATATTTAATAACTTATG
CAAGATTTTTTATTAATGAGATGATGTGTTTGTGACTGAGATTGAGTCATACATTTCACTAAGAAATGGTTCCAA
GTACCAACTATCATGACCCAGTTGCAAACTGACGTTGGGAGTGGTCACTTTGATAGTTCAATTTGATGTTGGC
TTCTTATTCCTTTTATAATTTCTAATTTCTTGTGTAAGTATTTTATGATTTATTTCTTTTAAATTTTACATGTCATT
TATTTTGCCTCACTAACTCAATTTTGCATATAACAATGATAAGTGAATTTTGAATCACAAAATTTACATCAAAATTC
GACATCGTTTATTTATGTTTCAATGGATGATTAACAATATAACAACCTTTGCAACTAATTAACCACCAACTGAATATAA
TTAACTATAACTGTGAAAGTAGTTAACTCATTTTTATTTTATATTTATAGATCAATAAGAGAAATAACGGTATATTAATCC
CTCCAAAAAAGGATATTTTACTAAAAATCTAAGCCAGTAGGAGGATAACAGGATCCCCGTAGGAGG
ATAACATCCAATCCAACCAATCACAACATCCTGATGAGATAACCCACTTTAAGCCACGCATCTGTGGCAGATCT
ACATTATCTAAATCACACATTTCTCCACACATCTGAGCCACACAAAACCAATCCACATCTTTATCACCCATTCTAT
AAAAAATCACACCTTTGTGAGTCTACACTTTGATTCCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTAATTA
ATCATCTTGAGAGAAATGTTTGGGCGCGGACCAACAAGGAAGAGTGATAACACCAATATTACGATATTTCTGG
TGTTTCAAAAGTGCTAGTGAAGATGAAATCAAGAAAGCCTATAGAAAGGCAGCGATGAAGAACCATCCAGATAA
GGGTGGGGATCTTGAGAAGTTCAAGGAGTTGGGCCAAGCATATGAAGTGTGAGCGATCTGAAAAGAAAGAAC
TGTATGATCAATATGGTGAAGATGCCCTTAAAGAAAGGAATGGGGGGAGGCGCAGGAAGCTCATTTTCAATCCGT
TTGATATTTTCAATCATTTTGGTGAGGCTTTGGTGGTGGTGGTCTTACGCGCAAGAGACAGAAGCAAG
GAGAAGATGTGGTGCATTTCTATAAAGGTTTCTTTGGAGGATGTGTATAACGGCACTACAAAGAAGCTATCACTTTC
TAGGAATGCACTGTGCTCAAAATGTAAGGGAAAGGTTCAAAAAGTGGAACTGCTGGAAGGTGTTTGGATGCCA
GGGCACAGGTATGAAGATTACCAGAAGGCCAATTTGACTGGGCATGATTCAACAATGCAACACGCTCTGTCTGTA
CTGCAAGGAACAGGCGAGGTCATTAGTGAGAGAGATAGATGCCCTCAATGCAAGGGAAACAAGATTACTCAAG
AAAAGAAGGTGCTGGAGGTGCATGTGGAAGGGGATGCAGCAGGGTCACAAGATTGTATTGGAAGGACAAGCT
GATGAAGCTCCTGATACAATCACAGGAGACATAGTTTGTCTTGCAGTAAAGGGACATCCGAAGTTTCCGAGG
GAGCGTGATGAGCTCCACATTTGAACACAATTTGAGCTTAACTGAGGCTCTCTGTGGCTTCAATTTAATGTCACA
CATCTTGATGGAAGGCAACTATTGTTCAAAATCGAACCCCGGCAAGTCAATCAAGCCAGGTCAACATAAAGCTATA
AATGATGAGGGAATGCCACAACATGGTAGGCCGTTTATGAAGGGACGCTATACATCAAGTTTATGTTGATTTC
CCGGATTCCGGTTTCTTTCCCAAGCCAAAGCCTGGAATTAGAAAAGATATTACCTCAAAAGACAAGCAAGAAC
TTGTCCCAAGGAGGTAGATGATTTGTGAGGAGACCACTTGCATGATGTCAATATTGCAGAGGAGATGAGTCCG
AAAGAAGCAACAATACCGTGAGGCATATGATGACATGATGAAGATGATGAGCACTCGCAGCTCGGGTGC
AATGCGCTCAACAGTAGGAGCTCAGCTCGAATTTCCCGATCGTTCAAAACATTTGGCAATAAAGTTTCTTAAGATT
GAATCCTGTTGCCGCTTGTGCGATGATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAATAATTACATGT
AATGCATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATACATTTAATACGCGATAGAAAAC
AAAATATAGCGCGCAAACTAGGATAAATTATCGCGCGCGGTGTCATCTATGTTACTAGATCGAATTC

Figure 43

SEQ. ID. NO. 78

Construct number R860, from HindIII (in the multiple cloning site, upstream of the promoter) to EcoRI (immediately downstream of the NOS terminator). HSP70 coding sequence underlined

AAGCTTGCATGCCTGCAGGTCGACTCTAGAGGATCCCCGGGCTGGTCTGTACATTCATCTTGCCGCCTTTGCATTCAGTTGGCCAC
AAAGGTGAGAGAGAAGGGAAGAGAGAGCCGACCTTCAAGAACGACCTTCAAGTGCCTCGAGGGTCAGAACTGTATATCATA
TCTATGTGAGAGAAAGGGGAACATTTGAGATGGAGTCCATTTACTTGAGGTATACCTATTATTTTATCAATAAAATTTGTATACCTCT
ATTTAGATCAATAAATTTGTCATTAAGCTATAATCCAAAATAAATACGATCAAAATATGCAAATGTTAGCCAGTACTTGTGTTAACTTG
ATGGCATCTCTTGGTTCTTTGGCAATCACATGCCAAGAAATAAATAGTATCATATGATTGTGTTTGGTCAGACTTCAGAGTCAGAT
GACTCTGTTTGGATAAACAGCTTAATTAAGCGCTTATAGAAATCATATGATTGTGTTTGGTCAGACTTCAGAGCATCTCTTGGTTTCT
CTGGCAATCATATGCCAAGAAATAAATAGTATCATATGATTGTGTTTGGTCAGACTTCAGAGTCAGATGACCCTGTTTGGGTAACA
GCTTAATTAAGTGCTTATAGAAATAAGCGCTTATCATATAAGTGCTTTTGTACAGTTATTTCTATGAAAGTAGAAGAAATAGTCATATTG
TTTAAATAAGCTATCCTGGAGAGCTTGTGGAAATAACCAAGAAAGAACTTATGGACAGCTCATGAGCTGTTTACATAAGATCTCCC
TAAGAGTCTCAAAAGTGTTTATGCCAGTAGATAAAATCAAAATAAGTCAATCTAAACAGACCTAAATCCATATGTTGATGATGATTTT
AGCTTATTCATCTTTATTAAGAAATGTCATGAGATAACATAATGATAACACATTATTTGACACAAATGGGCAGATCTAGCAATTAAC
TCTGGAGTCTTCAAGACTGCTGTTCTTACGAAGTTCACGTCCCTGAATCATGTTCCCTGTATGGAAGCCGTGAAAGACCTCAAAATCTA
AAAGGTGGCGATAAATGAAGGTTTACAAAATATACCTGCGGGCTTGACACAGAGGCAAGCTCTTTATACCTTCCAGTTCACCGGG
GATGTTGATTTCAGAAGTCACCTGGAGAGCAATCCTTGTGCCAAGTGTGAAGTAATTTTGTGTAGCATATGTTGAGTACCTACAAT
TTACATGATCACCTAGCATTAGCTCTTCACTTAACTGAGAGAAATGAAGTTTGAAGTAATTTTGTGTAGCATATGTTGAGTACCTACAAT
GTAATGCCATCCCTACTTTGGCCAACCTCATCGGGGATTACATTCAGAAAAATACATGACTTCAACCATACTTAAACCCCTTTTGTGTA
AGATAACTGAATGTTTATATTTAATGTTGGGTTGTAGTGTTTTACTTGATTATATCCAGACAGTTACAAGTTGGACAACAAGATTGTG
GGTCTGTACTGTTATTTATTTATTTTATTTTATGACAGAAACACCTTATCTTTTGTTCGTTTGAATGTAGAATGAAAAAAGAAAGAA
AATATAACATCATCGCCGCGCTTGTCTAATTTCCGGCAGTTAGGATCCTCTCCGGTACCCGGAAGTTTCAGTAGAAGAAACAAAA
CACCGTGACTAAATGATACTATTTATTTATTTATTTGTTTCTTTTCTACCGGAACCTTTTGAACGGATCCCAACTCGTTCCG
GGCCGCTACAACCTGAAACAAAAAGAGATATTTCTCTCTCTCAGAAATGTAAGTTTCTTTTACAGATACCCATTCACCATTTGATT
CAGATGTGGTGACTAGAGATAAAGCATACAAATTTGACTCTTGGAAACCCATAAAGTTTATGTTATCCGTGTTCTGGACCAATCCACT
TGGGGGCATAACCTGTGTCTATGTGTGTTTGGTTTCCATTTCTGATTATCGCGGACCTGTAATTTAAAACTAGGAGGGGCAAC
ATTGAACAATCCCAATTTTAAATAACTATGCAAGATTTTTTTATTAATGAGATGATGTGTTTGTGACTGAGATTGAGTCATACATTT
CATAAGAAATGGTTCCAAGTACCAACATATCATGACCCAGTTGCAACATGACGTTCCGGAGTGGTCACTTTGATAGTTCAATTTCT
ATCTTGGCTTCTTATTTCTTTTATAATTTCTAATTTCTTCTGTGTAACTATTTCTATGATTATTTTCTTTTAAATTTACATGCTAATTT
TGGCTCACTAATCAATTTTGCATATAACAATGATAAGTGATATTTTGACACAAAAATTTACATCAAAATTTGACATCGTTTATTATG
TTCAATGGATGATTACAAATATAACAACCTTGAACATAATTAACCACTGAATATAATTAACATAACTGTGAAAGTAGTTAAC
TCATTTTATATTTTATAGATCAAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAAGAAACGGTATATTTACTAAAAATCTA
AGCCACGTAGGAGGATAACAGGATCCCGTAGGAGGATAACATCCAATCCAACCAATCAACAATCCTGATGAGATAACCCACTT
TAAGCCACGCATCTGTGGCACATCTACATTTATCTAAATCACACATCTTCCACACATCTGAGCCACACAAAAACCAATCCACATCTT
TATCACCCATCTTATAAAAAATCACACTTTGTGAGTCTACACTTTGATTCCTTCAAACACATACAAAGAGAAGAGACTAATTAATTA
TTAATCATCTTGAGAGAAAAATGTGGGTAAGGAGAGGAGGACCTATCCGATTCGATCTTGGTACCCTTACTCTTGCCTCGGAGT
ATGGCAACAGACCGGTTGAGATCATTTGTAATGATCAAGGAACAGAACCCAGCTTCTTACGTTGCTTTTACCAGTCCGAGT
GGTTGATCGGTGACGCAGCTAAGAAATCAGGTGCCATGAACCCCGTTAACACCGTTTTCGACGCTAAGAGGTTGATCGGTCCGCT
TTCTCTGACAGCTCTGTTTCAAGTGCATGAAATTTGGGCCATTCAAGATTCAAGCCGACCTGCGGATAAGCCAATGATCTACGCTC
GAATACAAGGGTGAAGAGAAGAGTTCCGACCTGAGGAGATTCTTCCATGGTTCTTATTAAGATGCGTGAGATTGCTGAGGCTTA
CTTGGTGTGACAATCAAGAACCGCGTGTGTACCGTTCCAGCTTACTTCAACGACTCTCAGCGTCAAGGCTCAAAAGGATGCTGGTGT
CATCGCTGGTTTGAACGTTATGCGAATCATCAACGAGCCTACAGCCGCCGTATTCCTACGGTCTTGACAAAAAGGCTACCGCG
TTGGAGAGAAGATGTTCTTATCTTCGATCTTGGTGGTGGCACTTTTGTATGTCCTCTCTTACCATTGAAGAGGGTATCTTTGAGGT
GAAGGCAACTGCTGGTGCACCCCATCTTGGTGGGGAAGATTTGACAACAGAAATGGTTAACCACTTTTGTCCAAGAGTTCAAGAGGA
AGAGTAAGAAGGATATCACCGGTAACCAAGAGCTCTTAGGAGGTTGAGAACTTCTGTGAGAGAGCGAAGAGGACTCTTTCTTCC
ACTGCTCAGACCCATCGAGATTGACTCTCTATACGAGGGTATCGACTTCTACTCCACCATCACCCGTGCTAGATTGAGGAGCTC
AACATGGATCTCTTCAAGAGTGTATGGAGCCAGTTGAGAAGTGTCTCGTGATGCTAAGATGGACAAGAGCACTGTTTATGATGTT
GTCTTGTGTTGGTGTCTTACCCGTATCCCTAAGGTTACGAAATTCGTCAGGACTTCTTCAACGCGCAAAAGAGCTTTGCAAGTCTATT
ATCCCTGATGAGGCTGTTGCTACGGTGTCTGTCTCCAGGAGCTATTCTCAGCGGTGAAGGAACGAGAAGGTTCAAGATCTTCT
ATTGCTGATGTCACCTCTCTCTCCCTTGGTTTGGAAACTCCCGGTGGTGTCTGACCACTTTGATCCCAAGGAACACAAGCATCC
AACCAAGGAAGGAACAGCTTCTCCACCTACTCAGACAACCAACCGGTGTGTTGATCCAGGTGTACGAAGGAGAGAGAGCCAGAA
CCAAGGACAACAACCTTCTTGGTAAATTTGAGCTCTCCGGAATTCCTCCAGCTCTCTGGTGTCCCCAGATCACAGTCTGCTTTG
ACATTGATGCCAATGGTATCCTCAATGTCTCTGCTGAGGACAAGACCACCGGACAGAAGAAAGATCACCATCACCATGACAAG
GGTGGTCTCTCCAAGGATGAGATTGAGAAGATGGTTCAAGAGGCTGAGAAGTACAAGTCCGAAGACGAGGAGCACAAGAAAGG
TTGAAGCCGAAGAACCTCTCGAGAAGTACGCTTACAACATGAGGAACACCATCCGAAGACGAGAAGATTGGTGAGAAGCTCCCGGCT
GCAGACAAGAAGATCGAGGATTCTATTGAGCAGGCGATTCAATGGCTCGAGGGTAACCACTGGCTGAGGCTGATGAGTTCCG
AAGACAAGATGAAGGAATTCGAGAGCATCTGCAACCCATCAATTCGCAAGATGACCAAGAGGCTGGTGTGAAGCCGGTGGTCC
AGGTGGCTCTGGTATGGACGATGATGCTCCCTCTGCTCAGCGGTGCTGGACCTAAGATCGAGGAGGTGCACTAAGAGCTCAGC
TGCAATTTCCCGATGCTTCAAACTTTGGCAATAAAGTTTCTAAGATTGAATCCTGTTGCCGGTCTTGGATGATTATCATTAAT
TCTGTTGAATTACGTTAAGCATGTAATAAATACATGTAATGCATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAAT
TATACATTTAATACCGGATAGAAAACAAAATATAGCGCGCAACTAGGATAAATATCGCGCGGGTGTATCTATGTTACTAGATCG
AATTC

Figure 44a

SEQ. ID. NO. 79

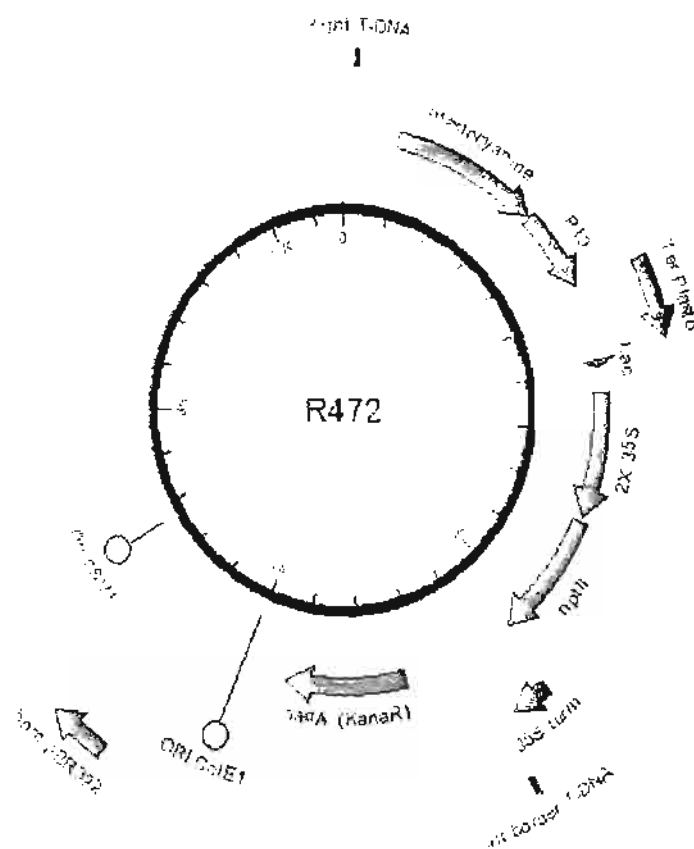
Construct number R870, from HindIII (in the multiple cloning site, upstream of the promoter) to EcoRI (immediately downstream of the NOS terminator). HSP40 coding sequence is in underlined italic and HSP70 coding sequence underlined

AAGCTTGCATGCCTGCAGGTCGACTCTAGAGGATCCCCGGGCTGGTCTGTACATTCATCTTGCCGCCCTTGCAATTCACCTTGGC
 CACAAAGAGTAGAGAGAAGGAAGAGAAGAGCCAGACTTCAAGAAGCGACCTTGCAAGTGCACCTCGAGGGTCAGAACTGT
 ATATCATATCTATGTGAGAGAAAGGGGAACATTTGAGATGGAGTCCAATTTACTTGAGGTATACCTTATTTTATTTGATCAATAAAT
 TGTATACCTCTTATTAGATCAATAAATTTGCTAATAGCTATAATCCAAATAAATACGATCAAAATATGCAAAATGTTAGCCAGT
 ACTTGTGTTAAACTTGTATGGCATCTCTGGTTCTTTGGCAATCACATGCCTAAGAAATAAATAGTATCATATGATTGTGTTTGG
 TCAGACTTCAGAGTCAGATGACTCTGTTTGGATAAACAGCTTAATTAAGCGCTTATAGAAATCATATGATTGTGTTTGGTCAG
 ACTTCAGAGCATCTCTGGTTCTCTGGCAATCATATGCCTAAGAAATAAATAGTATCATATGATTGTGTTTGGTCAGACTTCAG
 AGTCAGATGACCCGTGTTTGGGTAACAGCTTAATTAAGTGCCTTATAGAATAAGCGCTTATCATATAAGTGCTTTTGTACAGTTAT
 TTCTATGAAAGTAGAAGAAATAGTCATATGTTTAAATAAGCTATCCTGGAGAGCTTGTGGAAATAACCAAGAAAGAACTTAT
 GGACACGTCATGAGCTGTTTACATAAGATCTCCCTAACAGTCTCAAAAGTGTTTATGCCAGTAGATAAATCAAATAAGTCAAT
 CTAACACAGACCCATAATCCATTATGGTACCTATCATTTAGCTTATTCATCTTTATTAAGAATGTCATGAGATAACATAATGATA
 ACACATTTATTTGACACAAATGGGCAGATCTAGCAATTTAACTTCTGGAGTCCCTTCAAGACTGCTGTTTACGAAGTTCACGTC
 CCTGAATCATGTTCTGTATGGAAGCCTGAAAGACCTCAAATTTCTAAAGGTGGCGATAAATGAAGGTTTCAAAATATACCC
 TGGGGGCTTGACAGAGGGCAAGCTCTTTATACCTCCAGTTCAACGGGGATGTTGATTTGAGAAGTCACITGGAGAGCAATC
 CTGTGCGCAAGTTTGAAGTAATTTTGTGATCATATGTTGAGCTACCTACAATTTACATGATCACCTAGCATTAGCTCTTTTAC
 TTAAGTCAGAGAAATGAAGTTTAGGAATGAGTATGACCATGGAGTCGGCATGGCTTGTATGCTACCTACCTACTTTGGCCAAC
 TCATCGGGGATTTACATTCAGAAATATACATGACTTCAACCATACTTAAACCCCTTTTGTAGATAAGTGAATGTTTCATATTTA
 ATGTTGGGTGTAGTGTGTTTACTTGATTATATCCAGACAGTTACAAGTTGGACAACAAGATTTGGGTCTGTACTGTATTTAT
 TTATTTTGTGAGCAAAACACCTTATCTTTTGTGTTTGAATGTAGAATGAAATAAAGAAATATAACATCATCG
 GCCGGCTTGTCTAATTTCCGGCAGTTAGGATCCTCTCCGGTCACCGGAAAGTTTCAAGTAGAAGAAACAAACACCGTGACTA
 AATGATACTATTTATTTATTTATTTGTTTCTTTTCTACCGGAACCTTTTGAACGGATCCCAACTCGTTCGGGGGGCGCT
 ACAACTGAAACAAAGAGATATTTCTCTCTCTCAGAAATGAAGTTTCTTACAGATACCACTCACCATTTGATTGAGAT
 GTGGTGACTAGAGATAAGCATACTAATTTGACTCTTGGAAACCCATAAAGTTTATGTATCCGTGTTCTGGACCAATCCACTT
 GGGGGCATAACCTGTGTCTATGTGTGTTTGGTTTCCATTCTGATTATGCGGCGACTTGTAATTTAAATCTAGGAGGGGCA
 GACATTGAACAATCCCAATAATTAATAACTTATGCAAGATTTTATTAATGAGATGATGTGTTGTGACTGAGATTGAGTCA
 TACATTTTCAAGAAATGGTCCCAAGTACCAAACTATCATGACCCAGTTGCAAAACATGACGTTCCGGAGTGGTCACTTTGATA
 GTTCAATTTTCTGCTTGGCTTCTTATTTCTTTTATAATTTCTAATTTCTTCTGTGTAAACTATTTTATGATTTATTTTCTTAAATTT
 ACATGTCATTTATTTGCTTCACTAATCTAATTTTGCATATAACAATGATAAGTGATTTTGTACTCACAATTTTACATCAAATTT
 CGACATCGTTATTTATGTTTCAATGGATGATTAAACAAATATAACAACTTTGCAACTAATTAACCACTCACTGAATATAATTAACA
 TAACTGTGAAAGTAGTTAACTCATTTTATATTTTATAGATCAAATAAGAGAAATAACGGTATATTAATCCCTCCAAAAAATAA
 ACGGTATATTTACTAAAAATCTAAGCCACGTAGGAGGATACAGGATCCCGTAGGAGGATAACATCCATCCCAACCAATCA
 CAACAATCCTGATGAGATAACCCACTTAAAGCCACGCATCTGTGGACATCTACATTATCTAAATCACACATTTCTCCACACA
 TCTGAGCCACACAAAAACCAATCCACATCTTTATCACCATTTCTATAAAAAATCACACITTTGTAGTCTACACTTTGATTCCCTT
 CAAACACATTACAAAGAGAAGAGACTAATTAATTAATTAATCATCTTGAGAGAAATGTCCGGTAAAGGAGAAGGACAGCTATC
 GGTATCGATCTGGTACCCTTACTCTTGGTCCGGAGTATGGCAACACGACCGTGTGTAGATCATTTGCTAATGATCAAGGAAA
 GAGAACACGCGCATCTTACGTTGCTTACCGCATCCGAGAGTTGATCGGTGACGCGAGCTAAGATGAGTCCGCTGCAATGAAC
 CCGGTTAACACCGTTTTCGACGCTAAGAGGTTGATCGGTGCTGCTTCTCTGACAGCTCTGTTTCAAGTGTACATGAAATTTGTG
 GCCATTCAAGATTTCAAGCCGAGCTGCGGATAAGCCATGATCTACGTCGAATACAAGGGTGAAGAGAAAGAGTTCCGAGCT
 GAGGAGATTCTTCCATGGTTCTTATTAAGATGCGTGAGATTCTGAGGCTTACCCTTGTGTCAATCAAGAACGCGCTTGT
 ACCGTTCCAGCTTACTTCAACGACTCTCAGGCTCAGGCTACAAAGGATGCTGGTGTATCGCTGGTTTGAACGTTATGCGAAT
 CATCAACGAGCCTACAGCCGCGCTATTTGCTACGGCTTGTACAAAAAGGCTACCAAGCTTGGAGAGAAGATGTTCTTATCT
 TCGATCTTGGTGGTGGCACTTTGATGTCTCTTCTTACCATTGAAGAGGGTATCTTGAAGTGAAGGCACTGCTGGTGTAC
 ACCCATCTTGGTGGGGAAGATTTTGACAACAGAATGGTTAACCACTTTGCTCAAGAGTTCAAGAGGAAGAGTAAAGAGGATAT
 CACCGGTAACCAAGAGCTCTTAGGAGGTTGAGAAGTCTGCTGTGAGAGAGCGAAGAGGACTCTTCTTCCACTGCTCAGACC
 ACCATCGAGATTGACTCTCTATACGAGGGTATCGACTTCTACTCCACCATCACCGGTGCTAGATTGAGGAGCTCAACATGGA
 TCTCTTCAAGAGTGTATGGAGCCAGTTGAGAAGTGTCTGCTGATGCTAAGATGGACAAGAGCACITGTTATGATGTTGTCTC
 TTGTTGGTGGTCTACCCGTATCCCTAAGGTTTCAAGCAATGCTCCAGGACTTCTTCAACGGCAAGAGGCTTTGCAAGTCTATTA
 ACCCTGATGAGGCTGTGCTACGGTGTCTGCTCCAGGGAGCTATTTCTCAGCGGTGAAGGAAACGAGAAGGTTCAAGATCT
 TCTATTGCTCGATGTCACTCTCTCTCTCTCTGGTTTGGAACTGCCGGTGGTGTATGACCACTTTGATCCGAAGGAACACAA
 CCATCCCAACCAAGGAAGGAGTTTGAAGCCAGAAAGCTCTTCTCCACCTACTCAGACAACCAACCGGTGTGTTGATCCGAGGAGA
 GAGAGCCAGAACCAAGGACAACACCTTCTTGGTAAATTTGAGCTCTCCGGAATTTCTCCAGCTCTCTGTTGTTCCCTCCAG
 ATCAGAGTCTGCTTTGACATTGATGCCAATGGTATCCTCAATGTCTCTGCTGAGGACAAGACCGGACAGAGAAGAACAGAT
 CACCATCACCAATGACAAGGCTGCTCTCTCAAGGATGAGATTGAGAAGATGGTTCAAGAGGCTGAGAAGTACAAGTCCGAA
 CAGAGGAGCCACAGAAAGAGGTTGAAGCCAGAAAGCTCTCGAAGAACTACGCTTACAACATGAGGAAACACCAAGGACG
 AGAAGATTGGTGAGAAGCTCCCGCTGCAGACAAGAAAGATCGAGGATCTATTGAGGAGGCTTCAATGGCTCGAGG
 GTAAACAGTTGGCTGAGGCTGATGAGTTGGAAGACAAGATGAAGGAATTTGAGAGGATCTGCAACCAATCATTTGCCAAGAT
 GTACCAAGGAGCTGGTGTGAAGCGGTGGTCCAGGTGCTCTGGTATGGAAGATGATGCTCCCTCCCTTCCAGGCTGCTG
 TGGACCTAAGATCGAGGAGGTCGACTAAGAGCTCAGCTCGAATTTCCCGATCGTTCAACATTTGGCAATAAGTTTCTTAA
 GATTGAATCTGTTGCCGGCTTGCATGATTATCATATAATTTCTGTTGAATACGTTAAGCATGTAATAATTAACATGTAATG

Figure 44b

CATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATACATTTAATACGGGATAGAAAACAAAATATAGCGCGCA
 AACTAGGATAAAATATCGCGCGCGGTGTCATCTATGTTACTAGATCGAATTCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTG
 TTATCCGGGGCTGGTCTGTACATTCATCTTGCCGCTTTGCAATCACTTGGCCACAAAGAGTAGAGAGAAGGAAGAGAAGAGCCCA
 GACTTCAAGAAGCGACCTTGCAAGTGCACCTCGAGGGTCAGAACTGTATATCATATCTATGTGAGAGAAAAGGGAACATTTGAGATG
 GAGTCCATTTACTTGAGGTATACTTATTATTTGATCAATAAAATTTGTATACCTCTTATTTAGATCAATAAAATTTGTCATTAAGCTATAAT
 CCAAAATAAAATTCAGATCAAAATATGCAAAATGTTAGCCAGTACTTGTGTTAACTTGATGGCATCTCTTGTTTTCTTTGGCAATCACATG
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 AATAACCCAGAAAAGAACTTATGGACACGTCATGAGCTGTTTACATAAAGATCTCCCTAACAGTCTCAAAAAGTGTATGCGCAGTAGATA
 AATTCAAAATAAGTCAATCTAAACAGACCCCTAAATCCATTATGGTACCTATCATTTTAGCTTATCCATCTTTATTAAGAATGTCATGAGA
 TAACATAATGATAACACATTTATTTTACACAAATGGGCAGATCTAGCAATTTAACTCTGGAGTCCCTCAAGACTGCTGTTCTTACGAA
 GTTACGCTCCCTGAATCATGTTCTGTATGGAAGCCTGAAAGACCTCAAAATCTAAAAGGTGGCGATAAAATGAAGGTTTACAAAATA
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 ACTGAGAGAATGAAGTTTGAAGTATGAGTATGACCATGGAGTCCGCTGGCTTGTAAATGCCTACCTACTTTGGCCAACCTCATCGG
 GGATTTACATTCAGAAAATATACATGACTTCAACCATACCTTAAACCCCTTTTGTAAAGATAACTGAATGTTCAATTTAATGTTGGGTG
 TAGTGTTTTACTTGATTATATCCAGACAGTTACAAGTTGGACAACAAGATTGTTGGTCTGTACTGTTATTTATTTATTTTATTTTATG
 AGAAACACCTTATCTTTGTTTCTGTTGATGTAGAATGAAATAAAAGAAAGAAAATATAACATCATCGGCCCGCTTGTCTAATTTT
 GGGCAGTTAGGATCCTCTCGGTCACCGGAAAGTTTCACTAGAGAAACAAAACACCTGACTAAAATGATACTATTATTTATTTAT
 TGTGTTTTTCTTTTCTACCGGAACCTTTTGAACGGATCCCACTCGTTCCGGGGCCGTACAACCTGAAACAAAAGAAAGATTTT
 CTCTCTCTCAGAAATGTAAGTTTTCTTTACAGATACCCATTACCATTTGATTGAGATGTGGTACTAGAGATAAAGCATACTAATT
 TGACTCTTGGAAACCCATAAGTTTTATGTTATCCGTGTTCTGGACCAATCCACTTGGGGGCATAACCTGTGTCTATGTGTGGTTGGT
 TTCCATCTGATTTATGCGGCGACTTGAATTTAAATCTAGGAGGGGACACATTGAACAAATCCCAATATTTAATAACTTTATGCAAG
 ATTTTATTTAATGAGATGATGTTTGTGACTGAGATTGAGTCATACATTTCACTAAGAAATGGTTCCAAAGTACCAAACTATCATG
 ACCCAGTTGCAACATGACGTTCCGGAGTGGTCACTTTGATAGTTCAATTTATCTTTGCTTCTTATCTTTTATAATTTCTAATTTCT
 CTGTGTAACTATTTATGATTTATTTCTTTAAATTTACATGTCATTTATTTTGCCTCACTAACTCAATTTTGCATATAACATGAT
 AAGTGATATTTTGACTCACAAAATTTACATCAAAATTTGACATCGTTTATTTATGTTCAATTGGATGATTAAACAAATATAACAACTTTGCA
 ACTAATTAACCACTCACTGAATATAAATTAACATAAATGTAAGTAACTAATTTATTTATTTATTTATTTATTTATTTATTTATTTATTT
 CGGTATATTAATCCCTCCAAAAAATAAAGGTATATTTACTAAAAATCTAAGCCACGTAGGAGGATAACAGGATCCCGGTAGGA
 GGATAACATCCAATCCAACCAATCACAAACATCCTGATGAGATAACCCCTTTAAGCCCAACGCATCTGTGGCACATCTACATTATCTA
 AATCACACATTTCTCCACACATCTGAGCCACACAAAACCAATCCACATCTTTATCACCATTCTATAAAAAATCACACTTTGTGAGTC
 TACACTTTGATTTCCCTTCAACACATACAAAGAGAGAGACTAATTAATTAATTAATCATCTTTGAGAGAAAATGTTTGGGCGCGGAGCC
AACAAGGAAGAGTGATAACACCAAAATATACGATATCTTGGTGTTCAAAAGTGCTAGTGAAGATGAATGAAGAAAGCCTATAGA
AAGGCAGCGATGAAGAACCATCCAGATAAGGGTGGGGATCTGAGAAAGTTCAAGGAGTTGGGCCAAGCATATGAAGTGTGAGCG
ATCCTGAAAAGAAAGAACTGTATGATCAATATGGTGAAGATGCCCTTAAAGAAAGGAATGGGGGGAGGCGAGGAAGCTCAATTCAT
AATCCGTTGATATTTTGAATCAATTTTGGTGGAGGCTTGGTGGTGGTGGTCTTCACGCGCAAGAGACAGAAGCAAGGAGAA
GATGTGGTGCATTTCTATAAAGGTTTCTTGGAGGATGTGTATAACGGCACTACAAAGAAGCTATCACTTTCTAGGAATGCATGTGC
TCAAAATGTAAAGGGAAGGTTCAAAAAGTGAAGTCTGGAAGGTGTTTGGATGCCAGGGCACAGGTATGAAGATTACCAGAAG
GCAAAATGGACTGGGCATGATTCACAAATGCAACACGCTGTGCTGTACTGCAAGGAACAGGCGAGGTCAATAGTGAGAGAGATA
GATSCCTCAATGCAAGGGAACAAGATTACTCAAGAAAAGAGGTGCTGGAGGTGCATGTGGAAGGGGATGCAGCAGGGTCA
CAAGATTTGATTCGAAGGACAAGCTGATGAAGCTCTGATACAAATCACAGGAGACATAGTTTTGTCTTGAAGTAAAGGGACATCC
GAAGTTTGGAGGGAGCGTGTGACCTCCACATTTGAACACAATTTGAGCTTAAGTGAAGGCTCTGTGTGGCTTCCAGTTTAATGTAC
ACATCTTGTGGAAGGCACTATTGGTCAAAATCGAACCCCGGCAAGTCAATGAGCCAGGTCAACATAAAGCTATAAATGATGAGGG
AATGCCACAACATGGTAGGCGGTTTCAAGAGGACGCTATACATCAAGTTTGTAGTTGATTTTCCGGGATTCGGGTTTTCTTTCCCG
AAGCCAAAGCCTGGAATTAGAAAAGATATTACCTCAAAAGACAAGCAAGAACTTGTCCCAAGGAGGTAGATGATTTGTAGGAGAC
CAQCCCTGCATGATGTCAATTTGAGAGGAGATGAGTCGAAAGAGCAACAATACCCTGAGGCATATGATGACGATGATGAAG
ATGATGAGCACTCGCAGCCTCGGGTGCAATGCGCTCAACAGTAGGAGCTCAGCTCGAATTTCCCGATCGTTCAACATTTGGCAA
 TAAAGTTTCTTAAGATTGAATCCTGTTGCCGGTCTTGGCATGTTATCATATAATTTCTGTGAAATACGTTAAGCATGTAATAATTAAC
 ATGTAATGCATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATACATTTAATACGCGATAGAAAACAAAATATA
 GCGCGCAAACTAGGATAAATTATCGCGCGCGGTGTCATCTATGTTACTAGATCGAATTC

Figure 45



Disulfide bridge pattern of type A HAs

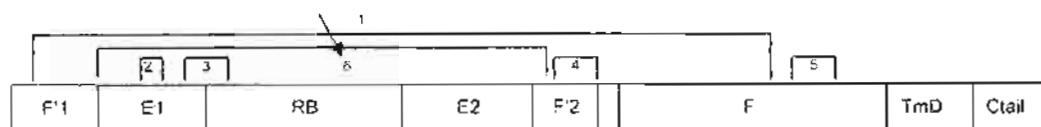


Figure 46

Disulfide bridge pattern of type B HAs

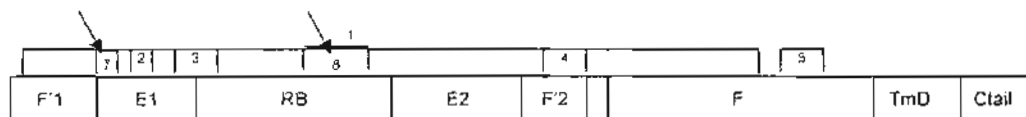
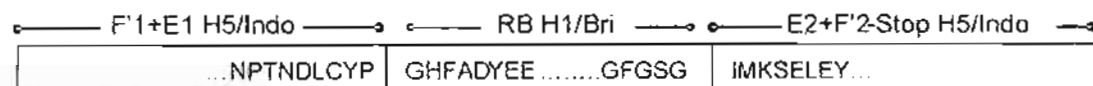


Figure 47

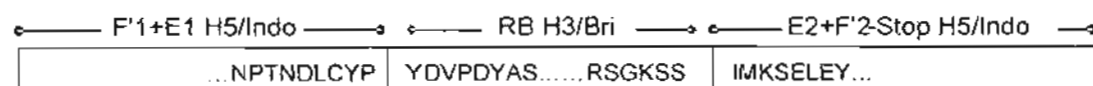
Figure 48

A

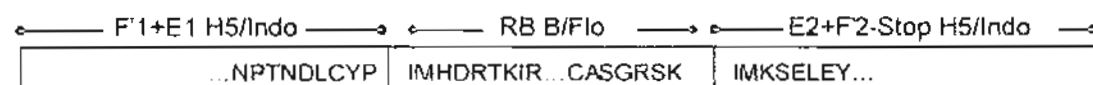
RB of H1/Brisbane on H5/Indo stem



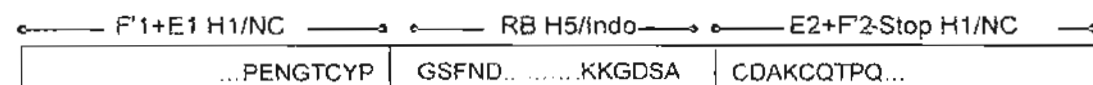
RB of H3/Brisbane on H5/Indo stem



RB of B/Florida on H5/Indo stem

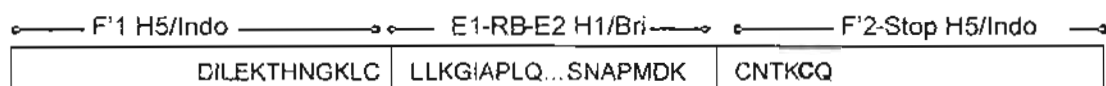


RB H5/Indo on H1/New Cal stem

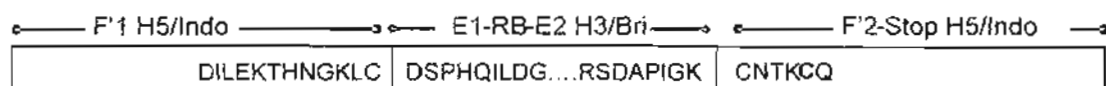


B

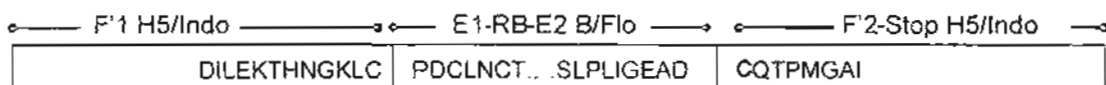
E1-RB-E2 of H1/Brisbane on H5/Indo stem



E1-RB-E2 of H3/Brisbane on H5/Indo stem



E1-RB-E2 of B/Florida on H5/Indo stem



E1-RB-E2 H5/Indo on H1/New Cal stem

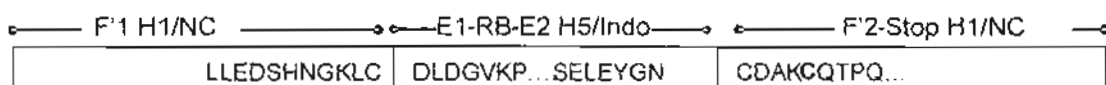


Figure 49A

SEQ ID NO:86

PDI sp - A/California/04/09

ATGGCGAAAAACGTTGCGATTTTCGGCTTATTGTTTTCTCTTCTTGTGTTGGTTCCT
 CTCAGATCTTCGCTGACACATTATGTATAGGTTATCATGCGAACAAATTCACAGAG
 CACTGTAGACACAGTACTAGAAAAGAATGTAACAGTAACACACTCTGTAACTT
 CTAGAAGACAAGCATAACGGGAACTATGCAAACTAAGAGGGGTAGCCCCATTG
 CATTTGGGTAAATGTAACATTGCTGGCTGGATCCTGGGAAATCCAGAGTGTGAAT
 CACTCTCCACAGCAAGCTCATGGTCCTACATTGTGGAAACACCTAGTTCAGACAA
 TGGAAACGTGTTACCCAGGAGATTTATCGATTATGAGGAGCTAAGAGAGCAATT
 AAGCTCAGTGTATCATTTGAAAGGTTTGAGATATTCCCCAAGACAAGTTCATGG
 CCAATCATGACTCGAACAAAGGTGTAACGGCAGCATGTCCTCATGCTGGAGCA
 AAAAGCTTCTACAAAAATTTAATATGGCTAGTTAAAAAAGGAAATTCATACCCAA
 AGCTCAGCAAATCCTACATTAATGATAAAGGGAAAGAAGTCTCTGCTGCTATGGG
 GCATTCACCATCCATCTACTAGTGTGACCAACAAAGTCTCTATCAGAATGCAGA
 TACATATGTTTTTGTGGGGTCATCAAGATACAGCAAGAAGTTCAGCCGGAAATA
 GCAATAAGACCCAAAGTGAGGGATCAAGAAGGGAGAATGAAGTATTACTGGAC
 ACTAGTAGAGCCGGGAGACAAAATAACATTCGAAGCAACTGGAAATCTAGTGGT
 ACCGAGATATGCATTTCGCAATGGAAAGAAATGCTGGATCTGGTATTATCATTTCA
 GATACACCAGTCCACGATTGCAATACAACCTGTCAAAACACCCAAGGGTGCTATA
 AACACGAGCCTCCCATTTTCAAGATATACATCCGATCACAATTGGAAAATGTCCAA
 AATATGTAAAAAGCACAAAATTGAGACTGGCCACAGGATTGAGGAATATCCCGT
 CTATTCAATCTAGAGGACTATTTGGGGCCATTGCCGGTTTCATTGAAGGGGGGTG
 GACAGGGATGGTAGATGGATGGTACGGTTATCACCATCAAAATGAGCAGGGGTG
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 CAAAGTAAATTCTGTTATTGAAAAGATGAATACACAGTTCACAGCAGTAGGTAAA
 GAGTTCAACCACCTGGAAAAAAGAATAGAGAATTTAAATAAAAAAGTTGATGAT
 GGTTTCTGGACATTTGGACTTACAATGCCGAAGTGTGGTTCTATTGGAAAATG
 AAAGAAGCTTTGGACTACCACGATTCAAATGTGAAGAAGTATATGAAAAGGTAAAG
 AAGCCAGCTAAAAACAATGCCAAGGAAATTTGGAAACGGCTGCTTTGAATTTA
 CCACAAATGCGATAACACGTGCATGGAAAGTGTCAAAAATGGGACTTATGACTA
 CCCAAAATACTCAGAGGAAGCAAAATTAACAGAGAGAAGAAATAGATGGGGTAAA
 GCTGGAATCAACAAGGATTTACCAGATTTTGGCGATCTATTCAACTGTCGCCAGT
 TCATTGGTACTGGTAGTCTCCCTGGGGGCAATCAGTTTCTGGATGTGCTCTAATG
 GGTCTCTACAGTGTAGAATATGTATT

Figure 49B

SEQ ID NO:87

PDI sp - A/California/04/09

MAKNVAIFGLLFSLLVLVPSQIFADTLICIGYHANNSTDVDTVLEKNVTVTHSVNLLDKHNGKLCKLRG
 VAPHLGKCNIAWILGNPECESLSTASSWSYIVETPSSDNGTCYPGDFIDYEELREQLSSVSSFERFEI
 FPKTSSWPNHDSNKGVTAAACPHAGAKSFYKNLIWLKKGNSYPKLSKSYINDKGKEVLVLWGIHHPST
 SADQOSLYQNAOTYVFGSSRYSKFKPEIAIRPKVRDQEGRMNYYWTLVEPGDKITFEATGNLVVPR
 YAFAMERNAGSGIIISDTPVHDCNTTCQTPKGAINSLPFQNIHPITIGKCPKYVKSTKLRLATGLRNIPSI
 QSRGLFGAIGFIEGGWTGMVDGWYGYHHQNEQSGSYAADLKSTQNAIDEITNKVNSVIEKMNTQFT
 AVGKEFNHLEKRIENLNKKVDDGFLDIWTYNAELLVLENERLTLDYHDSNVKNLYEKVRSQKLNNAKEI
 GNGCFEFYHKCDNTCMESVKNKGTYPKYSEEAKLNREEIDGVKLESTRIYQILAIYSTVASSLVLVVSL
 GAISFWMCNSGLQCRICI

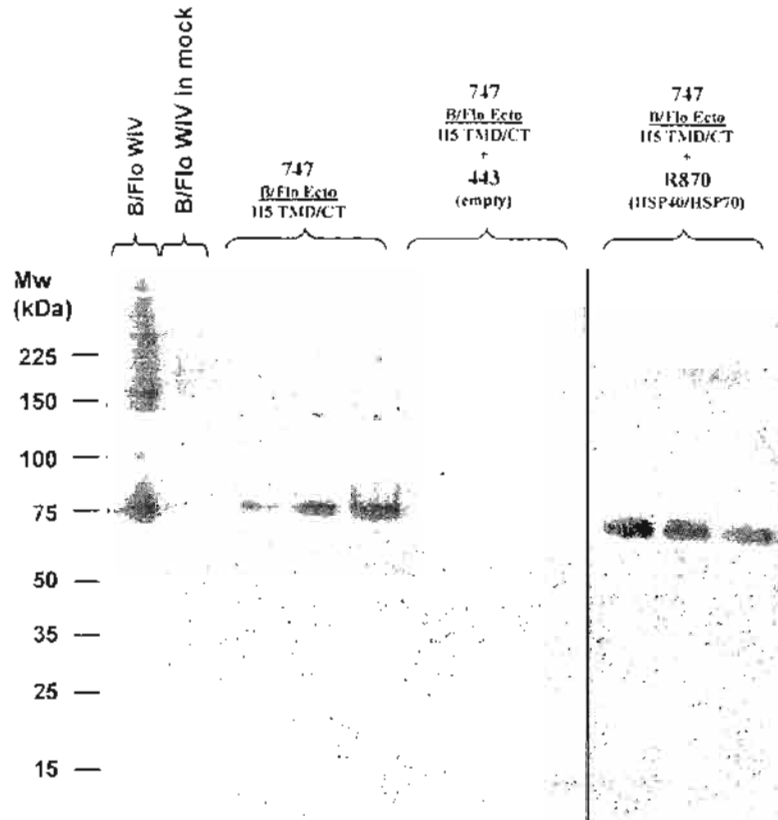


Figure 50

SEQ ID NO:88

2X35S promoter sequence

GTCAACATGGTGGAGCACGACACACTTGTCTACTCCAAAAATATCAAA
GATACAGTCTCAGAAGACCAAAGGGCAATTGAGACTTTTCAACAAAGG
GTAATATCCGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACT
TTATTGTGAAGATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATC
ATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTGCCGACAGTG
GTCCCAAAGATGGACCCCCACCCACGAGGAGCATCGTGGAAAAAGAA
GACGTTCCAACCACGTCTTCAAAGCAAGTGGATTGATGTGATAACATG
GTGGAGCACGACACACTTGTCTACTCCAAAAATATCAAAGATACAGTCT
CAGAAGACCAAAGGGCAATTGAGACTTTTCAACAAAGGGTAATATCCG
GAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGTGAA
GATAGTGGAAAAGGAAGGTGGCTCCTACAAATGCCATCATTGCGATAA
AGGAAAGGCCATCGTTGAAGATGCCTCTGCCGACAGTGGTCCCAAAG
ATGGACCCCCACCCACGAGGAGCATCGTGGAAAAAGAAGACGTTCCA
ACCACGTCTTCAAAGCAAGTGGATTGATGTGATATCTCCACTGACGTAA
GGGATGACGCACAATCCCACTATCCTTCGCAAGACCCTTCCTCTATAT
AAGGAAGTTCATTTCAATTTGGAGAGG

Figure 51A

SEQ ID NO:93

Construct 747, from PacI (upstream 35S promoter) to AscI (immediately downstream NOS terminator).
Coding sequence of chimeric HA is underlined. 2X35S promoter sequence is in italics.

TTAATTAAGTCGACAAGCTTGCATGCCTGCAGGTCAACATGGTGGAGCAGCAGACACTTGTCTACTC
CAAAAAATATCAAAAGATACAGTCTCAGAAGACCAAGGGCAATTGAGACTTTTCAACAAAGGGTAATATC
CGGAAACCTCCTCGGATTCCATTGCCAGCTATCTGTCACTTTATTGTGAAGATAGTGGAAAAGGAAG
GTGGCTCCTACAAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTGCCGACAGTGGTCCCAAG
TGGTCCCAAGATGGACCCCCACCCACGAGGAGCATCGTGGAAAAAGAAGACGTTCCAACCACGTCT
TCAAAGCAAGTGGATTGATGTGATAACATGGTGGAGCAGCAGACACTTGTCTACTCCAAAAATATCAA
AGATACAGTCTCAGAAGACCAAGGGCAATTGAGACTTTTCAACAAAGGGTAATATCCGGAAACCTCC
TGGATTCCATTGCCAGCTATCTGTCACTTTATTGTGAAGATAGTGGAAAAGGAAGGTGGCTCCTAC
AAATGCCATCATTGCGATAAAGGAAAGGCCATCGTTGAAGATGCCTCTGCCGACAGTGGTCCCAAG
ATGGACCCCCACCCACGAGGAGCATCGTGGAAAAAGAAGACGTTCCAACCACGTCTTCAAAGCAAGT
GGATTGATGTGATATCTCCACTGACGTAAGGGATGACGCACAATCCCACTATCCTTCGCAAGACCGCTT
CCTCTATATAAGGAAGTTCAATTCATTGGAGAGGTATTAATACTTAATAGGTTTGTATAAAGCGAAC
GTGGGAAACCCGAACCAAACTTCTTCTAAACTCTCTCATCTCTCTTAAAGCAAACTCTCTCTTG
TCTTTCTTGCCTGAGCGATCTTCAACGTTGTGAGATCGTGTCTCGGCACCAGTACAACGTTTCTTTTC
ACTGAAGCGAAATCAAAGATCTCTTGTGGACACGTAAGTGGCGGCCATTAAATAACGTGTACTTGTCT
CTATTCTTGTGGTGTGGTCTTGGGAAAGAAAGCTTGTCTGGAGGCTGCTGTTCAAGGCTATGATTA
CTTGTACGATTCTGCTGACTTTCGGCGGGTGAATATCTCTACTTCTGCTTGACGAGGTATTGTTGC
CTGTACTTCTTCTTCTTCTTCTTGTGATTTGGTCTATAAGAAATCTAGTATTTCTTTGAAACAGAGT
TTTCCCGTGGTTTTCAACTTGGAGAAAGATTGTAAGCTTCTGTATATTCTGCCAAATTTGTGGGC
CCATGGCGAAAAACGTTGCGATTTTCGGCTTATTGTTTCTCTTCTTGTGTTGGTTCTTCTCAGATCT
TGGCTGATCGAATCTGCACTGGAATAACATCTTCAAACTCACTCATGTGGTCAAACAGCCACTCAA
GGGAGGTCAATGTGACTGGTGTGATACCACTAACAACAACCAACCAAAATCTTATTTTGCAATCT
CAAAAGGAACAAGGACCAAGGAGGAAACTATGCCAGACTGTCTCAACTGCACAGATCTGGATGTGGCT
TTGGGCAGACCAATGTGTGTGGGGACCACACCTTCGGCGAAGGCTTCAATACTCCACGAAGTCAAAC
CTGTACATCCGGGTGCTTTCCTATAATGCAGCAGACGAACAAAAATCAGGCAACTACCCAATCTTCTC
AGAGGATGAAATATCAGGCTATCAACCCAAACGTCATCGATGCGGAAAGGCACCAAGGAGGAC
CTTACAGACTTGGAACTCAGGATCTTGGCTTAACGCTACCAGTAAGAGCGGATTTTCGCAACAATG
GCTTGGGCTGTCCCAAGGACAACAACAATAATGCAACGAACCCACTAACAGTAGAAGTACCATACAT
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TGATTACATGATGCAAAACCTGGGAAACAGGAACAATTTGCTACCAAGAGGTTGTTTGTGCTC
AAAAGGTGTGGTGGCGAGTGGCAGGAGCAAAAGTAATAAAAGGGTCTTGCCTTAAATGGTGAAGC
AGATTGCCTTCATGAAAAATACGGTGGATTAAACAAAAGCAAGCCTTACTACACAGGAGAACATGCAA
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CCTCCTGCAAACTATTAAGGAAAGGGGTTTCTTGGAGCTATTGCTGGTTTCTAGAGGAGGATG
GGAAGGAATGATTGCAGGCTGGCAGGATACACATCTCACGGAGCACATGGAGTGGCAGTGGCGGC
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AGTAAAGAAATCTTCAAAGACTAAGTGGTGGCATGGATGAACTCCACAACGAAATACTCGAGCTGGATG
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GAAGGAATAATAACAGTGAAGATGAGCATCTATTGGCACTTGAGAGAAAATAAGAAAAATGCTGGG
TCCCTCTGCTGTAGAGATAGGAAATGGATGCTTGGAAACCAAAACACAAGTGCAACCAAGACCTGCTTAG
ACAGGATAGCTGCTGGCACCTTTAATGCAGGAGAAATTTCTCTCCCCACTTTTGATTCACTGAACATTA
CTGCTGCATCTTTAAATGATGATGGATTGGATACTACCAATACTGTCAATTTATCAACAGTGGCGA
GTTCCCTAGCACTGGCAATCATGATGGCTGGTCTATCTTTATGGATGTGCTCCAATGGATCGTTACAA
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TTTGGTGAGCGGTTTCTGTGCTCAGAGTGTGTTTATTTATGTAATTTAATTTCTTTGTGAGCTCCTGT
TTAGCAGGTCTGCTCCTTTCAGCAAGGACACAAAAAGATTTTATTTATTAATAAAAAAAAAAAAAAAAAA
CCGGGAATTCGATATCAAGCTTATCGACCTGCAGATCGTTCAACATTTGGCAATAAAGTTTCTTAAGA
TTGAATCCTGTTGCCGGTCTTTCGATGATTATCATATAATTTCTGTTGAATTACGTTAAGCATGTAATAA
TTAACATGTAATGCATGACGTTATTTATGAGATGGGTTTTATGATTAGAGTCCCGCAATTATACATTTA
ATACGCGATAGAAAACAAATATAGCGCGCAAACTAGGATAAATTATCGCGCGCGGTGTCATCTATGT
TACTAGATTCTAGAGTCTCAAGCTTCGGCGCGCC

Figure 51B