

SEQUENCE LISTING

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aacatcgttg	ctgctgcgta	acatcgttgc	tgtccataaa	catcaaacat	cgacccacgg	5820
cgtaacgcgc	ttgctgcttg	gatgcccag	gcatagactg	tacaaaaaaa	cagtcataac	5880
aagccatgaa	aaccgccact	gcgcggttac	caccgctgcg	ttcggtcaag	gttctggacc	5940
agttgcgtga	gcgcatacgc	tacttgcatt	acagtttacg	aaccgaacag	gcttatgtca	6000
actgggttcg	tgcccttcac	cgtttccacg	gtgtgcgtca	cccggcaacc	ttgggcagca	6060
gcgaagtcga	ggcatttctg	tcctggctgg	cgaacgagcg	caagggttcg	gtctccacgc	6120
atcgtcaggc	attggcggcc	ttgctgttct	tctacggcaa	ggtgctgtgc	acggatctgc	6180
cctggcttca	ggagatcgga	agacctcggc	cgctcgggcg	cttgccgggtg	gtgctgaccc	6240
cggatgaagt	ggttcgcata	ctcggttttc	tgggaaggcg	gcatacgttg	ttcgcccagg	6300
actctagcta	tagttctagt	ggttggctac	gtatactccg	gaatattaat	agatcatgga	6360
gataattaaa	atgataacca	tctcgcaaat	aaataagtat	tttactgttt	tcgtaacagt	6420
tttgtaataa	aaaaacctat	aaatattccg	gattattcat	accgtcccac	catcgggcgc	6480
ggatcacc						6488

atcaccaacg	accagatcga	ggtcaccaac	gctaccgagc	tggtgcagtc	ctcctccacc	120
ggcgagatct	gcgactcccc	ccaccagatc	ctggacggcg	agaactgcac	cctgatcgac	180
gctctgctgg	gtgaccctca	gtgcgacggg	ttccagaaca	agaagtggga	cctgttcgtc	240
gagcgttcca	aggcttactc	caactgctac	ccctacgacg	tgcccgacta	cgcttccctg	300
cgttccctgg	tggttctctc	cggcaccctc	gagttcaaca	acgagtcctt	caactggacc	360
ggtgtcacc	agaacggcac	ctcttctctc	tgcatecgtg	gttccaacaa	ctccttcttc	420
tcccgtctga	actggctgac	ccacctgaag	ttcaagtacc	ccgctctgaa	cgtgaccatg	480
cccaacaacg	agaagttcga	caagctgtac	atctgggggtg	tccaccaccc	cggcaccgac	540
aacgacaaa	tcttccccta	cgctcagggt	tccggtcgta	tcaccgtgtc	caccaagcgt	600
tcccagcaga	ccgtgatccc	caacatcggt	tcccgtcccc	gtgtgcgtaa	catcccctcc	660
cgtatctcca	tctactggac	catcgtgaag	ccggcgaca	tctgtctgat	caactccacc	720
ggcaacctga	tcgctccccg	tggttacttc	aagatccgtt	ccggcaagtc	ctccatcatg	780
cgttccgacg	ctcccatcgg	caagtgcac	tccgagtgc	tcaccccaaa	cggttccatc	840
cccaacgaca	agcccttcca	gaacgtgaac	cgtatcacct	acggtgcttg	cccccggtac	900
gtgaagcaga	acaccctgaa	gctggctacc	ggcatgcgta	acgtgcccga	gaagcagacc	960
cgtgggtatct	tcgggtgctat	cgctgggtttc	atcgagaacg	gctgggaggg	catggtggac	1020
ggctgggtacg	gtttccgtca	ccagaactcc	gaggggtatcg	gccaggctgc	tgacctgaag	1080
tccaccagag	ctgctatcga	ccagatcaac	ggcaagctga	accgtctgat	cggcaagact	1140
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ctcgagaagt	acgtggagga	caccaagatc	gacctgtggt	cctacaacgc	cgagctgctg	1260
gtcgctctcg	agaaccagca	caccatcgac	ctgaccgact	ccgagatgaa	caagctgttc	1320
gagaaaacca	agaagcagct	gcgcgagaa	gctgaggaca	tgggcaacgg	ctgcttcaag	1380
atctaccaca	agtgcgacaa	cgcttgcatc	ggctccatcc	gtaacggcac	ctacgaccac	1440
gacgtgtacc	gtgacgaggg	tctgaacaac	cgtttccaga	tcaagggtgt	cggg	1494

SEQ ID NO:36 Insert of Plamid pFastBac1_GP67_HA_A_Viet_Nam

gatcccgatc	agatttgc	tggttaccat	gcaacaact	cgacagagca	ggttgacaca	60
ataatggaaa	agaacgttac	tggtacacat	gccaagaca	tactggaaaa	gaaacacaac	120
gggaagctct	gcgatctaga	tggagtgaag	cctctaattt	tgagagattg	tagcgtagct	180
ggatggctcc	tcggaaaccc	aatgtgtgac	gaattcatca	atgtgccgga	atggtcttac	240
atagtggaga	aggccaatcc	agtcaatgac	ctctgttacc	caggggattt	caatgactat	300
gaagaattga	aacacctatt	gagcagaata	aaccattttg	agaaaattca	gatcatcccc	360
aaaagttctt	ggtccagtc	tgaagcctca	ttaggggtga	gctcagcatg	tccataccag	420
ggaaagtcct	cctttttcag	aatgtgtgta	tggcttatca	aaaagaacag	tacataacca	480
acaataaaga	ggagctacaa	taataccaac	caagaagatc	ttttggtact	gtgggggatt	540
caccatccta	atgatgcggc	agagcagaca	aagctctatc	aaaacccaac	cacctatatt	600
tccgttgagg	catcaacact	aaaccagaga	ttggtaccaa	gaatagctac	tagatccaaa	660
gtaaacgggc	aaagtggaag	gatggagttc	ttctggacaa	ttttaagcc	gaatgatgca	720
atcaacttcg	agagtaattg	aaatttcatt	gctccagaat	atgcatacaa	aattgtcaag	780
aaaggggact	caacaattat	gaaaagtga	ttggaatatg	gtaactgcaa	caccaagtgt	840
caaactccaa	tgggggagat	aaactctagc	atgccattcc	acaatataca	ccctctcacc	900
attgggggaat	gccccaaata	tgtgaaatca	aacagattag	tccttgcgac	tgggctcaga	960
aatagccctc	aaagagagag	aagaagaaaa	aagagaggat	tatttgagc	tatagcaggt	1020
tttatagagg	gaggatggca	gggaatggta	gatggttggt	atgggtacca	ccatagcaat	1080
gagcagggga	gtgggtacgc	tgcagacaaa	gaatccactc	aaaaggcaat	agatggagtc	1140
accaataaag	tcaactcgat	cattgacaaa	atgaacactc	agtttgaggc	cgttgggaag	1200
gaatttaaca	acttagaaag	gagaatagag	aatttaaaaca	agaagatgga	agacgggttc	1260
ctagatgtct	ggacttataa	tgtgaactt	ctggttctca	tggaaaatga	gagaactcta	1320
gactttcatg	actcaaattg	caagaacctt	tacgacaagg	tccgactaca	gcttagggat	1380
aatgcaaagg	agctgggtta	cggttgtttc	gagttctatc	ataaatgtga	taatgaatgt	1440
atggaaagtg	taagaaatgg	aacgtatgac	taccgcagct	attcagaaga	agcgagacta	1500
aaaagagagg	aaataagtgg	agtaggg				1527

SEQ ID NO:37 Insert of Plasmid pFastBac1_GP67_HA_A_Indonesia

gatcccgatc	agatttgc	tggttaccat	gcaacaatt	caacagagca	ggttgacaca	60
atcatggaaa	agaacgttac	tggtacacat	gccaagaca	tactggaaaa	gacacacaac	120
gggaagctct	gcgatctaga	tggagtgaag	cctctaattt	taagagattg	tagtgtagct	180
ggatggctcc	tcgggaaccc	aatgtgtgac	gaattcatca	atgtaccgga	atggtcttac	240
atagtggaga	aggccaatcc	aaccaatgac	ctctgttacc	cagggagttt	caacgactat	300
gaagaactga	aacacctatt	gagcagaata	aaccattttg	agaaaattca	aatcatcccc	360
aaaagttctt	ggtccgatca	tgaagcctca	tcaggagtga	gctcagcatg	tccatacctg	420
ggaagtcctc	ccttttttag	aatgtgtgta	tggcttatca	aaaagaacag	tacataacca	480
acaataaaga	aaagctacaa	taataccaac	caagaagatc	ttttggtact	gtgggggaatt	540
caccatccta	atgatgcggc	agagcagaca	aggctatata	aaaacccaac	cacctatatt	600

tccattggga	catcaacact	aaaccagaga	ttggtaccaa	aaatagctac	tagatccaaa	660
gtaaacgggc	aaagtggaag	gatggagttc	ttctggacaa	ttttaaaacc	taatgatgca	720
atcaacttcg	agagtaatgg	aaatttcatt	gctccagaat	atgcatacaa	aattgtcaag	780
aaaggggact	cagcaattat	gaaaagtga	ttggaatatg	gtaactgcaa	caccaagtgt	840
caaactccaa	tgggggcat	aaactctagt	atgccattcc	acaacataca	ccctctcacc	900
atcggggaat	gccccaaata	tgtgaaatca	aacagattag	tccttgcaac	agggtcaga	960
aatagccctc	aaagagagag	cagaagaaaa	aagagaggac	tatttgagc	tatagcaggt	1020
tttatagagg	gaggatggca	gggaatggta	gatggttgg	atgggtacca	ccatagcaat	1080
gagcagggga	gtgggtacgc	tgacagacaa	gaatccactc	aaaaggcaat	agatggagtc	1140
accaataaag	tcaactcaat	cattgacaaa	atgaacactc	agtttgaggc	cgttggaagg	1200
gaatttaata	acttagaaag	gagaatagag	aatttaaaca	agaagatgga	agacgggttt	1260
ctagatgtct	ggacttataa	tgccgaactt	ctggttctca	tggaaaatga	gagaactcta	1320
gactttcatg	actcaaattg	taagaacctc	tacgacaagg	tccgactaca	gcttagggat	1380
aatgcaaagg	agctgggtta	cggttgtttc	gagttctatc	acaaatgtga	taatgaatgt	1440
atggaaagta	taagaaacgg	aacgtacaac	tatccgcagt	attcagaaga	agcaagatta	1500
aaaagagagg	aaataagtgg	ggtggggg				1527

SEQ ID NO:38 Insert of Plamid pFastBac1_GP67_HA_A_Egypt

gatcccgatc	aaatttgc	tggttaccat	gcaacaact	cgacagaaca	ggttgacaca	60
ataatggaaa	agaacgtcac	tggtacacac	gccaagaca	tactggaaaa	gacacacaac	120
gggaaactct	gcgatctaga	tggagtgaag	cctctaattt	taagagattg	tagtgtagct	180
ggatggctcc	tcgggaaccc	aatgtgtgac	gaattcctca	atgtgccgga	atgggtcttac	240
atagtggaga	agatcaatcc	agccaatgac	ctctgttacc	caggggattt	caacgactat	300
gaagaactga	aacacctatt	gagcagaata	aaccattttg	agaaaattca	gatcatcccc	360
aaaagttctt	ggtcagatta	tgaagcctca	tcaggagtga	gctcagcatg	tccataccag	420
ggaagatcct	ccttttttag	aaatgtggta	tggttatca	aaaagaacaa	tgcataccac	480
acaataaaga	gaagtataca	taataccaac	caagaggatc	ttttggtact	gtgggggatt	540
caccatccga	atgatgcggc	agagcagata	aggctctatc	aaaacccaac	tacctatatt	600
tccgttggga	catcaacact	aaaccagaga	ttggtaccaa	aaatagctac	tagatctaag	660
gtaaattggc	aaagtggaag	gatggagttc	ttttggacaa	ttttaaaatc	gaatgatgca	720
ataaactttg	agagtaatgg	aaatttcatt	gctccagaat	atgcatacaa	aattgtcaag	780
aaaggggact	caacaattat	gaaaagtga	ttggaatatg	gtaactgcaa	caccaaatgt	840
caaactccaa	taggggcat	aaactccagt	atgccattcc	acaacatcca	ccctctcacc	900
atcggggaat	gccccaaata	tgtgaaatca	aacagattag	tccttgctac	tgggtcaga	960
aatagccctc	aaggagagag	aagaagaaga	aagagaggac	tatttgagc	tatagcaggg	1020
tttatagagg	gaggatggca	gggaatggta	gatggttgg	atgggtacca	ccatagcaac	1080
gagcagggga	gtgggtacgc	tgacagacaa	gaatccactc	aaaaggcaat	agatggagtc	1140
accaataaag	tcaactcgat	cattaacaaa	atgaacactc	agtttgaggc	tggtggaagg	1200
gaatttaata	acttagaaag	gagaatagaa	aatttaaaca	agaagatgga	agacggattc	1260
ctagatgtct	ggacttataa	tgctgaactt	ctggttctca	tggaaaatga	gagaactcta	1320
gactttcatg	actcaaattg	caagaacctt	tacgacaagg	tcagactaca	gcttagggat	1380
aatgcaaagg	agcttggtaa	cggttgtttc	gagttctatc	acagatgtga	taatgaatgt	1440
atggaaagtg	taagaaacgg	aacgtatgac	taccgcagt	attcagaaga	agcaagatta	1500
aaaagagagg	aaataagtgg	agtaggg				1527

SEQ ID NO:39 Protein ecHA_A_PR8

DTICIGYHAN	NSTDTVDTVL	EKNVTVTHSV	NLLED SHNGK	LCRLKGIAPL	QLGKCNIAGW	60
LLGNPECDPL	LPVRSWSYIV	ETPNSENGIC	YPGDFIDYEE	LREQLSSVSS	FERFEIFPKE	120
SSWPNHNTNG	VTAACSHGK	SSFYRNLLWL	TEKEGSPYPL	KNSYVNKKGK	EVLVLWGIHH	180
PPNSKEQQNL	YQENAYVSV	VTSNYNRRFT	PEIAERP KVR	DQAGRMNYYW	TLLKPGDTII	240
FEANGNLIAP	MYAFALSRGF	GSGIITSNAS	MHECNTKQCT	PLGAINSSLP	YQNIHPVTIG	300
ECPKYVRSK	LRMVTGLRNI	PSIQYRGLFG	AIAGFIEGGW	TGMIDGWYGY	HHQNEQSGSY	360
AADQKSTQNA	INGITNKVNT	VIEKMNIQFT	AVGKEFNKLE	KRMENLNKKV	DDGFLDIWTY	420
NAELLVLLN	ERTLDFHDSN	VKNLYEKVKS	QLKNNAKEIG	NGCFEFYHKC	DNECMESVRN	480
GTYDYPKYSE	ESKLNREKVD	GV				502

SEQ ID NO:40 Protein ecHA_A Uruguay_716_2007_NYMC_X-175C

ATLCLGHHAV	PNGTIVKTIT	NDQIEVTNAT	ELVQSSSTGE	ICDSPHQILD	GENCTLIDAL	60
LGDPQCDGFQ	NKKWDLFVER	SKAYSNCYPY	DVPDYASLRS	LVASSGTLEF	NNESFNWTGV	120
TQNGTSSSCI	RGSNNSFFSR	LNWLTHLKF	YPALNVTMPN	NEKFDKLYIW	GVHHPGTDND	180
QIFPYAGSAG	RITVSTKRSQ	QTVIPNIGSR	PIVRNIPSRI	SIYWTIVKPG	DILLINSTGN	240
LIAPRGYFKI	RSKGSSIMRS	DAPIGKCNSR	CITPNGSIPN	DKPFQNVNRI	TYGACPRYVK	300
QNTLKLATGM	RNVPEKQTRG	IFGAIAGFIE	NGWEGMVDGW	YGFRHQNSEG	IGQAADLKST	360
QAAIDQINGK	LNRLIGKTNE	KFHQIEKEFS	EVEGRIQDLE	KYVEDTKIDL	WSYNAELLVA	420

LENQHTIDLT DSEMKNLF EK TKKQLRENAE DMGNGCFKIY HKCDNACIGS IRNGTYDHDV	480
YRDEALNNRF QIKGV	495
SEQ ID NO:41 Protein ecHA_A_Viet_Nam	
DQICIGYHAN NSTEQVDTIM EKNVTVTTHAQ DILEKKHNGK LCDLDGVKPL ILRDCSVAGW	60
LLGNPMCDEF INVPEWSYIV EKANPVNDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS	120
SWSSHEASLG VSSACPYQ GK SSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH	180
PNDAAEQTKL YQNPTTYISV GTSTLNQRLV PRIATRSKVN QSGRMEFFW TILKPNDAIN	240
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG	300
ECPKYVKS NR LVLATGLRNS PQRERRRKKR GLFGAIAGFI EGGWQGMVDG WYGYHHSNEQ	360
GSGYAADKES TQKAIDGVTN KVNSIIDKMN TQFEAVGREF>NNLERRIENL NKKMEDGFLD	420
VWTYNAELLV LMENERTLDF HDSNVKNLYD KVRQLQLRDNA KELGNGCFEF YHKCDNECME	480
SVRNGTYDYP QYSEEARLKR EEISGV	506
SEQ ID NO:42 Protein ecHA_A_Indonesia	
DQICIGYHAN NSTEQVDTIM EKNVTVTTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW	60
LLGNPMCDEF INVPEWSYIV EKANPTNDLC YPGSFNDYEE LKHLLSRINH FEKIQIIPKS	120
SWSDHEASSG VSSACP YLGS PSFFRNVVWL IKKNSTYPTI KRSYNNTNQE DLLVLWGIHH	180
PNDAAEQTRL YQNPTTYISI GTSTLNQRLV PKIATRSKVN QSGRMEFFW TILKPNDAIN	240
FESNGNFIAP EYAYKIVKKG DSAIMKSELE YGNCNTKCQT PMGAINSSMP FHNIHPLTIG	300
ECPKYVKS NR LVLATGLRNS PQRESRRKKR GLFGAIAGFI EGGWQGMVDG WYGYHHSNEQ	360
GSGYAADKES TQKAIDGVTN KVNSIIDKMN TQFEAVGREF>NNLERRIENL NKKMEDGFLD	420
VWTYNAELLV LMENERTLDF HDSNVKNLYD KVRQLQLRDNA KELGNGCFEF YHKCDNECME	480
SIRNGTYNYP QYSEEARLKR EEISGV	506
SEQ ID NO:43 Protein ecHA_A_Egypt	
DQICIGYHAN NSTEQVDTIM EKNVTVTTHAQ DILEKTHNGK LCDLDGVKPL ILRDCSVAGW	60
LLGNPMCDEF LNVPEWSYIV EKINPANDLC YPGDFNDYEE LKHLLSRINH FEKIQIIPKS	120
SWSDYEASSG VSSACPYQGR SSFFRNVVWL IKKNAYPTI KRSYNNTNQE DLLVLWGIHH	180
PNDAAEQIRL YQNPTTYISV GTSTLNQRLV PKIATRSKVN QSGRMEFFW TILKSNDAIN	240
FESNGNFIAP EYAYKIVKKG DSTIMKSELE YGNCNTKCQT PIGAINSSMP FHNIHPLTIG	300
ECPKYVKS NR LVLATGLRNS PQGERRRRKR GLFGAIAGFI EGGWQGMVDG WYGYHHSNEQ	360
GSGYAADKES TQKAIDGVTN KVNSIINKMN TQFEAVGREF>NNLERRIENL NKKMEDGFLD	420
VWTYNAELLV LMENERTLDF HDSNVKNLYD KVRQLQLRDNA KELGNGCFEF YHRCDCNECME	480
SVRNGTYDYP QYSEEARLKR EEISGV	506
SEQ ID NO:44 Protein C-terminus	
GRALVPRGSP GSGYIPEAPR DGQAYVRKDG EWVLLSTFLG HHHHHHGGAS GGC	53
SEQ ID NO:45 Oligo 42-1	
aactatagct taagttcgaa gacgtcgacg agctcattaa ctaatggatc	50
SEQ ID NO:46 Oligo 42-2	
cattagttaa tgagctcgtc gacgtcttcg aacttaagct ataggtat	48
SEQ ID NO:47 Oligo 42T-1	
tcgagcacca ccaccaccac cacggtgggt gctaataata attgattaat ac	52
SEQ ID NO:48 Oligo 42T-2	
ctaggtatta atcaattatt attagcaacc accgtgggtg tggtgggtg gc	52
SEQ ID NO:49 Oligo BM-HA-1	
tattcgtctc agggagcaaa agcagggg	28
SEQ ID NO:50 Oligo BM-NS-890R	
atcgtctc gtattagtag aaacaagggt gtttt	35
SEQ ID NO:51 Oligo JA35	
gagatcatat gagccataac ggcaaaactgt g	31
SEQ ID NO:52 Oligo JA40	
aaaaactcga ggcgcacata tttcgggcat tc	32
SEQ ID NO:53 Oligo JA37	

aatttcatat ggcgccgctg caactgggca	30
SEQ ID NO:54 Oligo JA39	
tttttctcga gttcatgcat gctcgcgttg	30
SEQ ID NO:55 Oligo JA36	
tattacatat gaaaggcatc gcgccgctgc	30
SEQ ID NO:56 Oligo JA39	
tttttctcga gttcatgcat gctcgcgttg	30
SEQ ID NO:57 Oligo JA36	
tattacatat gaaaggcatc gcgccgctgc	30
SEQ ID NO:58 Oligo JA38	
aaaaactcga ggctggtaaat aatgccgctg c	31
SEQ ID NO:59 Oligo JA37	
aatttcatat ggcgccgctg caactgggca	30
SEQ ID NO:60 Plasmid pET-42T(+)	
gtccgggcatc tcgacgctct cccttatgcg actcctgcat taggaagcag cccagtagta	60
ggttgaggcc gttgagcacc gccgccgcaa ggaatggtgc atgcaaggag atggcgccca	120
acagtcccc ggccacgggg cctgccacca taccacgcc gaaacaagcg ctcatgagcc	180
cgaagtggcg agcccgatct tccccatcgg tgatgtcggc gatataggcg ccagcaaccg	240
cacctgtggc gccggtgatg ccggccacga tgcgtccggc gtagaggatc gagatcgatc	300
tcgatcccg cgaatttaata cgactcata taggggaatt gtgagcggat aacaattccc	360
ctctagaaat aattttgttt aactttaaga aggagatata catatggata tcgaattcaa	420
gcttctgcag ctgctcgagc accaccacca ccaccacggt ggttgctaata aataattgat	480
taatacctag gctgctaatac aaagcccgaa aggaagctga gttggctgct gccaccgctg	540
agcaataact agcataaccc cttggggcct ctaaacgggt cttgaggggt tttttgctga	600
aaggaggaac tatatccgga ttggcgaaatg ggacgcgcc tgtagcggcg cattaagcgc	660
ggcgggtgtg gtggttacgc gcagcgtgac cgctacactt gccagcgccc tagcgcccg	720
tcctttcgtc ttcttccctt cctttctcgc cactgttcgc ggctttcccc gtcaagctct	780
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caaccctatc tcggtctatt cttttgattt ataagggatt ttgccgattt cggcctattg	1020
gttaaaaaat gagctgattt aacaaaaatt taacgcgaat ttaacaaaa tattaacgtt	1080
tacaatttca ggtggcactt ttccgggaaa tgtgcgcgga acccctattt gtttattttt	1140
ctaaatacat tcaaatatgt atccgctcat gaattaattc ttagaaaaac tcatcgagca	1200
tcaaatgaaa ctgcaattta ttcatatcag gattatcaat accatatttt tgaaaaagcc	1260
gtttctgtaa tgaaggagaa aactcaccga ggcagttcca taggatggca agatcctggt	1320
atcggatctgc gattccgact cgtccaacat caatacaacc tattaatttc cctcgtcaa	1380
aaataaggtt atcaagtga aaatcaccat gagtgcagc tgaatccggt gagaagcgca	1440
aaagtttatg catttctttt cagacttggt caacaggcca gccattacgc tcgtcatcaa	1500
aatcactcgc atcaacaaaa ccgttattca ttcgtgattg cgcctgagcg agacgaaata	1560
cgcgatcgct gttaaaagga caattacaaa caggaatcga atgcaaccgg cgcaggaaca	1620
ctgccagcgc atcaacaata ttttcacctg aatcaggata ttcttctaata acctggaatg	1680
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gctctgatgc	cgcatagtta	agccagtata	cactccgcta	tcgctacgtg	actgggtcat	3660
ggctgcgccc	cgacacccgc	caacacccgc	tgacgcgccc	tgacgggctt	gtctgctccc	3720
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accgtcatca	ccgaaacgcg	cgaggcagct	gcggtaaagc	tcacagcgt	ggtcgtgaag	3840
cgattcacag	atgtctgcct	gttcacccgc	gtccagctcg	ttgagtttct	ccagaagcgt	3900
taatgtctgg	cttctgataa	agcggggcat	gttaagggcg	gttttttctt	gtttggtcac	3960
tgatgcctcc	gtgtaagggg	gatttctgtt	catgggggta	atgataccga	tgaaacgaga	4020
gaggatgctc	acgatacggg	ttactgatga	tgaacatgcc	cggttactgg	aacgttgtga	4080
gggtaaaaca	ctggcggtat	ggatgcggcg	ggaccagaga	aaaatcactc	aggggtcaatg	4140
ccagcgcttc	gttaatacag	atgtaggtgt	tcacaggggt	agccagcagc	atcctgcgat	4200
gcagatccgg	aacataatgg	tcaggggcgc	tgacttccgc	gtttccagac	tttacgaaac	4260
acggaaaccg	aagaccattc	atgttggtgc	tcaggtcgca	gacgttttgc	agcagcagtc	4320
gcttcacgtt	cgctcgcgta	tcggtgattc	attctgctaa	ccagtaaggc	aaccccgcca	4380
gcctagccgg	gtcctcaacg	acaggagcac	gatcatgcta	gtcatgcccc	gcgcccaccg	4440
gaaggagctg	actgggttga	aggctctcaa	gggcacgggt	cgagatcccc	gtgcctaattg	4500
agtgaagctaa	cttacattaa	ttgcgtttcg	ctcactgccc	gctttccagt	cgggaaacct	4560
gtcgtgccag	ctgcattaat	gaatcggcca	acgcgcgggg	agaggcggtt	tgcgatattg	4620
gcgccagggt	ggtttttctt	ttcaccagtg	agacgggcaa	cagctgattg	cccttcaccg	4680
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gctgaatttg	attgcgagtg	agatatttat	gccagccagc	cagacgcaga	cgcgcccaga	5040
cagaacttaa	tgggcccgtc	aacagcgcga	tttgctgggtg	acccaatgcg	accagatgct	5100
ccagccccag	tcgcgtaccg	tcttcatggg	agaaaataat	actgttgatg	ggtgtctggt	5160
cagagacatc	aagaaataac	gccggaacat	tagtgcaggc	agcttccaca	gcaatggcat	5220
cctggctcatc	cagcggatag	ttaatgatca	gcccactgac	gcgttgccgc	agaagattgt	5280
gcaccgccgc	tttacaggct	tcgacgcgcg	ttcgtttctac	catcgacacc	accacgctgg	5340
cacccagttg	atcggcgcga	gatttaatcg	ccgcgacaat	ttgcgacggc	gcgtgcaggg	5400
ccagactgga	ggtggcaacg	ccaatcagca	acgactgttt	gcccgcagct	tggtgtgcca	5460
cgcgggttggg	aatgtaattc	agctccgcca	tcgcgccttc	cactttttcc	cgcgttttcg	5520
cagaaacgtg	gctggcctgg	ttcaccacgc	gggaaacggg	ctgataagag	acaccggcat	5580
actctgcgac	atcgtataac	gttactgggt	tcacattcac	caccctgaat	tgactctctt	5640
ccgggcgcta	tcatgccata	ccgcgaaagg	ttttgcgcga	ttcgatggt		5689

SEQ ID NO:67 Protein gdHA_PR8_42_310

MLLEDSHNGK	LCRLKGIAPL	QLGKCNIAGW	LLGNPECDPL	LPVRSWSYIV	ETPNSENGIC	60
YPGDFIDYEE	LREQLSSVSS	FERFEIFPKE	SSWPNHNTNG	VTAACSHGK	SSFYRNLLWL	120
TEKEGSYPKL	KNSYVNKKGK	EVLVLWGIHH	PPNSKEQQNL	YQENAYVSV	VTSNYNRRFT	180
PEIAERPKVR	DQAGRMYYW	TLLKPGDTII	FEANGNLIAP	MYAFALSRGF	GSGIITSNAS	240
MHECNTKCQT	PLGAINSSLP	YQNIHPVTIG	ECPKYVRLEH	HHHHHGGC		288

SEQ ID NO:68 Protein gdHA_PR8_46_310

MSHNGKLCRL	KGIAPLQLGK	CNIAGWLLGN	PECDDLPLPVR	SWSYIVETPN	SENGICYPGD	60
FIDYEELREQ	LSSVSSFERF	EIFPKESSWP	NHNTNGVTAA	CSHEGKSSFY	RNLLWLTEKE	120
GSYPKLKNSY	VNKKGKEVLV	LWGIHHPNS	KEQQNLYQNE	NAYVSVVTSN	YNRRFTPEIA	180
ERPKVRDQAG	RMNYYWTLLK	PGDTIIFEAN	GNLIAPMYAF	ALSRGFGSGI	ITSNASMHEC	240
NTKCQTPLGA	INSSLPYQNI	HPVTIGECPK	YVRLEHHHHH	HGGC		284

SEQ ID NO:69 Protein gdHA_PR8_57_276

MAPLQLGKCN	IAGWLLGNPE	CDPLLVPVRSW	SYIVETPNSE	NGICYPGDFI	DYEELREQLS	60
SVSSFERFEI	FPKESSWPNH	NTNGVTAACS	HEGKSSFYRN	LLWLTEKEGS	YPKLKNSYVN	120
KKGKEVLVLW	GIHHPNSKE	QQNLYQENEA	YVSVVTSNYN	RRFTPEIAER	PKVRDQAGRM	180
NYYWTLLKPG	DTIIFEANGN	LIAPMYAFAL	SRGFGSGIIT	SNASMHELEH	HHHHHGGC	238

SEQ ID NO:70 Protein gdHA_PR8_54a_276

MKGIAPLQLG	KCNIAGWLLG	NPECDPLLVP	RSWSYIVETP	NSENGICYPG	DFIDYEELRE	60
QLSSVSSFER	FEIFPKESSW	PNHNTNGVTA	ACSHEGKSSF	YRNLLWLTEK	EGSYPKLKNS	120
YVNKKGKEVL	VLWGIHHPN	SKEQQNLYQN	ENAYVSVVTS	NYNRRFTPEI	AERPKVRDQA	180
GRMNYWTLL	KPGDTIIFEA	NGNLIAPMYA	FALSRGFGSG	IITSNASMHE	LEHHHHHHGG	240
C						241

SEQ ID NO:71 Protein gdHA_PR8_54a_270

MKGIAPLQLG	KCNIAGWLLG	NPECDPLLVP	RSWSYIVETP	NSENGICYPG	DFIDYEELRE	60
QLSSVSSFER	FEIFPKESSW	PNHNTNGVTA	ACSHEGKSSF	YRNLLWLTEK	EGSYPKLKNS	120
YVNKKGKEVL	VLWGIHHPN	SKEQQNLYQN	ENAYVSVVTS	NYNRRFTPEI	AERPKVRDQA	180
GRMNYWTLL	KPGDTIIFEA	NGNLIAPMYA	FALSRGFGSG	IITSLEHHHH	HHGGC	235

SEQ ID NO:72 Protein gdHA_PR8_57_270

MAPLQLGKCN	IAGWLLGNPE	CDPLLVPVRSW	SYIVETPNSE	NGICYPGDFI	DYEELREQLS	60
SVSSFERFEI	FPKESSWPNH	NTNGVTAACS	HEGKSSFYRN	LLWLTEKEGS	YPKLKNSYVN	120
KKGKEVLVLW	GIHHPNSKE	QQNLYQENEA	YVSVVTSNYN	RRFTPEIAER	PKVRDQAGRM	180
NYYWTLLKPG	DTIIFEANGN	LIAPMYAFAL	SRGFGSGIIT	SLEHHHHHHG	GC	232

SEQ ID NO:73 ecHA A/Brisbane/59/2007_ACA28844.1

DTICIGYHAN	NSTDTVDTV	EKNVTVTHSV	NLLENSHNGK	LCLLKGIAPL	QLGNCSVAGW	60
ILGNPECELL	ISKESWSYIV	EKPNPENGTC	YPGHFADYEE	LREQSSSVSS	FERFEIFPKE	120
SSWPNTVTG	VSASCSHNGE	SSFYRNLLWL	TGKNGLYPNL	SKSYANNKEK	EVLVLWGVHH	180
PPNIGDQKAL	YHTENAYVSV	VSSHYSRKFT	PEIAKRPKVR	DQEGRINYW	TLLEPGDTII	240
FEANGNLIAP	RYAFALSRGF	GSGIINSNAP	MDKCDAKCQT	PQGAINSSLP	FQNVHPVTIG	300
ECPKYVRSK	LRMVTGLRNI	PSIQSRGLFG	AIAGFIEGGW	TGMVDGWYGY	HHQNEQGSYG	360
AADQKSTQNA	INGITNKVNS	VIEKMNTQFT	AVGKEFNKLE	RRMENLNKKV	DDGFIDIWTY	420
NAELLVLLEN	ERTLDFHDSN	VKNLYEKVKS	QLKNNAKEIG	NGCFEFYHKC	NDECMESVK	480
GTYDYPKYSE	ESKLNREKID	GVKLESMGV				509

SEQ ID NO:74 ecHA A/California/04/2009_ACP41105.1

DTLCIGYHAN	NSTDTVDTV	EKNVTVTHSV	NLLEDKHNGK	LCKLRGVAPL	HLGKCNIAGW	60
ILGNPECESL	STASSWSYIV	ETPSSDNGTC	YPGDFIDYEE	LREQSSSVSS	FERFEIFPKT	120
SSWPNHDSNK	GVTAACPHAG	AKSFYKNLIW	LVKKGNSYPK	LSKSYINDKG	KEVLVLWGIH	180
HPSTSADQQS	LYQNADTYVF	VGSSRYSKKF	KPEIAIRPKV	RDQEGRMNYY	WTLVEPGDKI	240
TFEATGNLVV	PRYAFAMERN	AGSGIISDT	PVHDCNTTCQ	TPKGAINDSL	PFQNIHPITI	300
GKCPKYVKST	KLRLATGLRN	IPSIQSRGLF	GAIAGFIEGG	WTGMVDGWYG	YHHQNEQGS	360
YAADLKSTQN	AIDEITNKVN	SVIEKMNTQF	TAVGKEFNHL	EKRIENLNKK	VDDGFLDIWT	420
YNAELLVLE	NERTLDYHDS	NVKNLYEKVR	SQLKNNAKEI	GNGCFEFYHK	CDNTCMESVK	480
NGTYDYPKYS	EEAKLNREEI	DGV				503

SEQ ID NO:75 HA1 (aa1-aa329) of HA of Influenza A virus A/Hong Kong/1968

QDLPGNDNST	ATLCLGHAV	PNGTLVKIT	DDQIEVTNAT	ELVQSSSTGK	ICNNPHRILD	60
GIDCTLIDAL	LGDPHCDVFQ	NETWDLFVER	SKAFSNCYPY	DVPDYASLRS	LVASSGTLEF	120
ITEGFTWTGV	TQNGGSNACK	RPGSGGFFSR	LNWLTKSGST	YPVLNVTMPN	NDNFDKLYIW	180
GIHHPSTNQE	QTSLYVQASG	RVTVSTRRSQ	QTIIPNIGSR	PWVRGLSSRI	SIYWTIVKPG	240
DVLVINSNGN	LIAPRGYFKM	RTGKSSIMRS	DAPIDTCISE	CITPNGSIPN	DKPFQNVNKI	300
TYGACPKYVK	QNTLKLATGM	RNVPEKQTR				329

SEQ ID NO:76 HA2 (aa1-aa176) of HA of Influenza A virus A/Hong Kong/1968

GLFGAIAGFI	ENGWEGMIDG	WYGFRHQNSE	GTGQAADLKS	TQAAIDQING	KLNRVIEKTN	60
EKFHQIEKEF	SEVEGRIQDL	EKYVEDTKID	LWSYNAELLV	ALENQHTIDL	TDSEMNKLFE	120
KTRRQLRENA	EEMGNGCFKI	YHKCDNACIE	SIRNGTYDHD	VYRDEALNNR	FQIKGV	176

SEQ ID NO:77 Insert for Plasmid pET42T_HA1_AC0409_42_310

tatgctgctg	gaagataaac	ataatggcaa	actgtgtaaa	ctgcgtggtg	ttgcaccgct	60
gcattctgggt	aaatgtaata	ttgccgggtt	gattctgggt	aatccggaat	gtgaaagcct	120
gagcaccgca	agcagctggt	cttatattgt	tgaacccccg	agcagcgata	atggcacctg	180
ttatccgggt	gattttattg	attatgaaga	actgcgcgaa	cagctgagca	gcgttagcag	240
ctttgaacgc	tttgaaattt	ttccgaaaac	cagcagctgg	ccgaatcatg	atagcaataa	300
agggtttacc	gcagcatgtc	cgcatgccgg	tgcataaagc	ttttacaaaa	atctgatttg	360
gctggtgaaa	aaaggtaata	gctatccgaa	actgagcaaa	agctatatca	atgataaagg	420
caaagaagtt	ctggttcttt	gggggtattc	tcatccgagc	accagcgagc	atcagcagag	480
cctgtatcag	aatgcagata	cctatgtttt	tgttggttagc	agccgctata	gcaaaaagtt	540
taaaccggaa	attgccattc	gtccgaaagt	tcgtgatcaa	gagggtcgca	tgaactatta	600
ttggaccctg	gttgaaccgg	gtgacaaaat	tacctttgaa	gccaccggca	atctggttgt	660
tccgcgttat	gcatttgcaa	tggaaacgta	tgcaggtagc	ggcattatca	ttagcgatac	720
accggtgcat	gatttgaata	ccacctgtca	gaccccgaaa	ggtgcaatta	ataccagcct	780
gccgtttcag	aatattcatc	cgattaccat	tggtaaatgc	ccgaaatatg	tgaaac	836

SEQ ID NO:78 Insert for Plasmid pET42T_HA1_AB5907_42_310

tatgctgctg	gaaaatagcc	ataatggtaa	actgtgtctg	ctgaaaggta	ttgcaccgct	60
gcagctgggt	aattgtagcg	ttgcagggtt	gattctgggt	aatccggaat	gtgaactgct	120
gattagcaaa	gaaagctggt	cctatattgt	ggaaaaaccg	aatccggaat	atggcacctg	180
ttatccgggt	cattttgccg	attatgaaga	actgcgtgaa	cagctgagca	gcgttagcag	240
ctttgaacgc	tttgaaattt	ttccgaaaga	aagcagctgg	ccgaatcata	ccgttaccgg	300
tgttagcgca	agctgttctc	ataatggcga	aagcagcttt	tatcgtaatc	tgtgtgggct	360
gaccggtaaa	aatggttctg	atccgaatct	gagcaaaagc	tatgccataa	ataaagaaaa	420
agaagtgtcg	gttctttggg	gtgttcatca	tcgcgcgaat	attggtgatc	agaaagccct	480
gtatcacacc	gaaaatgcct	atgttagcgt	tgttagcagc	cattatagcc	gtaaattttac	540
accggaaatt	gccaaacgtc	cgaaagtctg	tgatcaggaa	ggtcgcatta	attattattg	600
gacctgtctg	gaaccgggtg	ataccattat	ttttgaagcc	aatggcaatc	tgattgcacc	660
gcgttatgca	tttgcaactg	gccgtgggtt	tggtagcggt	attattaata	gcaatgcacc	720
gatggataaa	tgtgatgcca	aatgtcagac	accgcagggt	gcaattaata	gcagcctgcc	780
gtttcagaat	gttcatccgg	ttaccattgg	tgaatgtccg	aaatatgtgc	gcc	833

SEQ ID NO:79 Insert for Plasmid pET42T_HA1_AU71607_42_310

tatgctgggt	cagagcagca	gcaccgggtg	aatttgtgat	tctccgcatc	agattctgga	60
tggtgaaaa	tgcaccctga	ttgatgcact	gctgggtgat	ccgcagtggt	atggctttca	120
gaataaaaa	tgggacctgt	ttgtggaacg	tagcaaaagg	tatagcaatt	gctatccgta	180
tgatgttccg	gattatgcaa	gcctgcgtag	cctgggttgc	agcagcgcca	ccctggaatt	240
taataatgaa	agcttttaatt	ggaccgggtg	taccagcaat	ggcaccagca	gcagctgtat	300
tcgtggtagc	aataatagct	tttttagccg	tctgaattgg	ctgacccatc	tgaatttcaa	360
atatccggca	ctgaatgtta	ccatgccgaa	taatgaaaaa	tttgataaac	tgtatatattg	420
gggtgttcat	catccgggtc	cagataatga	tcagattttt	ccgtatgcac	aggcaagcgg	480
tcgtattacc	gttagcacca	aacgtagcca	gcagaccggt	attccgaata	ttggtagccg	540
tccgcgtggt	cgtaatatcc	cgagccgcat	tagcatttat	tggaccattg	tgaaccgggg	600
tgatattctg	ctgattaata	gcaccggtaa	tctgattgca	ccgcgtgggt	atttttaaat	660
tcgcagcggc	aaaagcagca	ttatgcgttc	tgatgcaccg	attggtaaat	gtaatagcga	720
atgcattacc	ccgaatggta	gcattccgaa	tgataaaccg	tttcagaatg	tgaatcgcat	780
tacctatggt	gcattgtccg	gttatgtgaa	ac			812

SEQ ID NO:80 Insert for Plasmid pET42T_HA1_BB307_42_310

tatgctgacc	accaccccca	ccaaaagcta	tttcgccaat	ctgaaaggca	ccaaaacccc	60
tggtaaaact	tgtccggatt	gtctgaattg	taccgatctg	gatgttgcac	tgggtcgtcc	120
gatgtgtgtt	ggcaccaccc	cgagcgccaa	agcaagcatt	ctgcatgaag	ttcgtccgggt	180
taccagcggg	tgttttccga	ttatgcatga	tcgtacccaa	attcgtcagc	tggcaaatct	240
gctgcgtggc	tatgaaaaca	ttcgtctgag	caccagcaat	gttattgatg	cagaaaaagc	300
accgggtggg	ccgtatcgtc	tgggcaccag	cggtagctgt	ccgaatgcaa	ccagcaaaaag	360
cggttttttt	gcaaccatgg	catgggcagt	tccgaaagat	aataataaaa	atgccaccaa	420
tccgctgacc	gttgaagtcc	cgtatatattg	caccgaaggc	gaagatcaga	ttaccggttg	480
gggttttcat	tccgatgata	aaaccagat	gaaaaatctg	tatggcgata	gcaatccgca	540
ggaatttacc	agcagcgcaa	atgggtgttac	caccattatg	gttagccaga	ttgggtgggtt	600
tccggatcag	accgaagatg	gtgggtctgcc	gcagagcggt	cgtattgttg	tggattacat	660

gatgcagaaa	ccgggtaaaa	ccggcaccat	tgtttatcag	cgtggtgttc	tgctgccgca	720
gaaagtttgg	tgtgcaagcg	gtcgtagcaa	agttattaaa	ggtagcctgc	cgctgattgg	780
tgaagcagat	tgccctgcatg	aaaaatatgg	tggcctgaat	aaaagcaaac	cgtattatac	840
cggatgaacat	gcaaaagcca	ttggtaattg	tccgatttgg	gttaaac		887

SEQ ID NO:81 Insert for Plasmid pET42T_HA1_AV120304_42_310

tatgattctg	gaaaaaaaaac	ataatggcaa	actgtgtgat	ctggatggtg	ttaaaccgct	60
gattctgctg	gattgtagcg	ttgcagggtt	gctgctgggt	aatccgatgt	gtgatgaatt	120
tattaatgtg	ccggaatggt	cctatatatt	ggaaaaagcc	aatccggtta	atgatctgtg	180
ttatccgggt	gattttaatg	attatgaaga	actgaaacat	ctgctgagcc	gcattaatca	240
ttttgaaaaa	attcagatta	ttccgaaaag	cagctgggtc	agccatgaag	caagcctggg	300
tgtagcagc	gcatgtccgt	atcagggtaa	aagcagcttt	tttcgcaatg	ttgtgtggct	360
gattaaaaaa	aatagcacct	atccgaccat	taaacgcagc	tataataata	ccaatcaaga	420
ggatctgctg	gttctgtggg	gtattcatca	tccgaatgat	gcagcagaac	agaccaaact	480
gtatcagaat	ccgaccacct	atattagcgt	tggcaccagc	accctgaatc	agcgtctggt	540
tccgcgtatt	gcaacccgta	gcaaagttaa	tggtcagagc	ggtcgcatgg	aatttttttg	600
gaccattctg	aaaccgaatg	atgccattaa	ttttgaaagc	aatggcaatt	ttattgcacc	660
ggaatatgcc	tataaaattg	tgaaaaaagg	cgatagcacc	attatgaaaa	gcgaactgga	720
atatggcaat	tgcaatacca	aatgtcagac	cccgatgggt	gcaattaata	gcagcatgcc	780
gtttcataac	attcatccgc	tgaccattgg	tgaatgtccg	aaatatgtga	aac	833

SEQ ID NO:82 Insert for Plasmid pET42T_HA1_AI505_42_310

tatgattctg	gaaaaaaccc	ataatggcaa	actgtgtgat	ctggatggtg	ttaaaccgct	60
gattctgctg	gattgtagcg	ttgcagggtt	gctgctgggt	aatccgatgt	gtgatgaatt	120
tattaatgtg	ccggaatggt	cctatatatt	ggaaaaagcc	aatccgacca	atgatctgtg	180
ttatccgggt	agctttaatg	attatgaaga	actgaaacat	ctgctgagcc	gcattaatca	240
ttttgaaaaa	attcagatta	ttccgaaaag	cagctgggtc	gatcatgaag	caagcagcgc	300
tgtagcagc	gcatgtccgt	atctgggtag	cccagctttt	tttcgtaatg	tggtgtggct	360
gattaaaaaa	aatagcacct	atccgaccat	taaaaaaagc	tataataata	ccaatcaaga	420
ggatctgctg	gttctgtggg	gtattcatca	tccgaatgat	gcagcagaac	agacccgtct	480
gtatcagaat	ccgaccacct	atattagcat	tggcaccagc	accctgaatc	agcgtctggt	540
tccgaaaatt	gcaacccgta	gcaaagttaa	tggtcagagc	ggtcgcatgg	aatttttttg	600
gaccattctg	aaaccgaatg	atgccattaa	ttttgaaagc	aatggcaatt	ttattgcacc	660
ggaatatgcc	tataaaattg	tgaaaaaagg	cgatagcgcc	attatgaaaa	gcgaactgga	720
atatggcaat	tgcaatacca	aatgtcagac	cccgatgggt	gcaattaata	gcagcatgcc	780
gtttcataac	attcatccgc	tgaccattgg	tgaatgtccg	aaatatgtga	aac	833

SEQ ID NO:83 Plasmid pET_HA1_AC0709_42_310

gtccgggcat	tcgacgtctt	cccttatgcg	actcctgcat	taggaagcag	cccagtagta	60
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acagtcccc	ggccacgggg	cctgccacca	taccacgcgc	gaaacaagcg	ctcatgagcc	180
cgaagtggcg	agcccgatct	tccccatcgg	tgatgtcggc	gatataggcg	ccagcaaccg	240
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aatgtgaaag	cctgagcacc	gcaagcagct	ggatcatatat	tggtgaaacc	ccgagcagcg	600
ataatggcac	ctgttatccg	ggtgatttta	ttgattatga	agaactgcgc	gaacagctga	660
gcagcgtag	cagctttgaa	cgttttgaaa	tttttccgaa	aaccagcagc	tgcccgaaatc	720
atgatagcaa	taaaggtggt	accgcagcat	gtccgcgatgc	cggtgcaaaa	agttttttata	780
aaaatctgat	ttggctgggt	aaaaaaggca	atagctatcc	gaaactgagc	aaaagctata	840
ttaatgataa	aggcaaagaa	gtgctgggtgc	tgtgggggtat	tcacatcccg	agcaccagcg	900
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gctatcatgc	cataccgcga	aaggttttgc	gccattcgat	ggt		5923

SEQ ID NO:84 Protein gdHA_AC0409_42_310

MLLEDKHNKG	LCKLRGVAPL	HLGKCNIAW	ILGNPECESL	STASSWSYIV	ETPSSDNGTC	60
YPGDFIDYEE	LREQLSSVSS	FERFEIFPKT	SSWPNHDSNK	GVTAACPHAG	AKSFYKNLIW	120
LVKKGNSYPK	LSKSYINDKG	KEVLVLWGIH	HPSTSADQQS	LYQNADTYVF	VGSSRYSKKF	180
KPEIAIRPKV	RDQEGRMNYY	WTLVEPGDKI	TFEATGNLVV	PRYAFAMERN	AGSGIIISDT	240
PVHDCNTTCQ	TPKGAINDSL	PFQNIHPITI	GKCPKYVK			278

SEQ ID NO:85 Protein gdHA_AB5907_42_310

MLLENSHNGK	LCLLKGIAPL	QLGNCSVAGW	ILGNPECELL	ISKESWSYIV	EKPNPENGTC	60
YPGHFADYEE	LREQLSSVSS	FERFEIFPKE	SSWPNHVTGT	VSASCSHNGE	SSFYRNLLWL	120
TGKNGLYPNL	SKSYANNKEK	EVLVLWGVHH	PPNIGDQKAL	YHTENAYVSV	VSSHYSRKFT	180
PEIAKRPKVR	DQEGRINYYW	TLLEPGDTII	FEANGNLIAP	RYAFALSRGF	GSGIINSNAP	240
MDKCDAKCQT	PQGAINSSLP	FQNVHPVTIG	ECPKYVR			277

SEQ ID NO:86 Protein gdHA_AU71607_42_310

MLVQSSSTGE	ICDSPHQILD	GENCTLIDAL	LGDPQCDGFQ	NKKWDLFVER	SKAYSNCYPY	60
DVPDYASLRS	LVASSGTLEF	NNESFNWTGV	TQNGTSSSCI	RGSNNSFFSR	LNWLTHLKFK	120
YPALNVTMPN	NEKFDKLYIW	GVHHPGTDND	QIFPYAQASG	RITVSTKRSQ	QTVIPNIGSR	180
PRVRNIPSRI	SIYWTIVKPG	DILLINSTGN	LIAPRGYFKI	RSGKSSIMRS	DAPIGKCENSE	240
CITPNGSIPN	DKPFQNVNRI	TYGACPRYVK				270

SEQ ID NO:87 Protein gdHA_BB307_42_310

MLTTTPTKSY	FANLKGTKTR	GKLCPDCLNC	TDLDVALGRP	MCVGTTPSAK	ASILHEVRPV	60
TSGCFPIHMD	RTKIRQLANL	LRGYENIRLS	TQNVIDAeka	PGGPYRLGTS	GSCPNATSKS	120
GFFATMAWAV	PKDNNKNATN	PLTVEVPYIC	TEGEDQITVW	GFHSDDKTQM	KNLYGDSNPQ	180
KFTSSANGVT	THYVSQIGGF	PDQTEDGGLP	QSGRIVVDYM	MQKPGKTGTI	VYQRGVLLPQ	240
KVWCASGRSK	VIKGSPLIG	EADCLHEKYG	GLNKSPPYIT	GEHAKAIGNC	PIWVK	295

SEQ ID NO:88 Protein gdHA_AV120304_42_310

MILEKKHNKG	LCDLDGVKPL	ILRDCSVAGW	LLGNPMCDEF	INVPEWSYIV	EKANPVNDLC	60
YPGDFNDYEE	LKHLLSRINH	FEKIQIIPKS	SWSSHEASLG	VSSACPYQ GK	SSFFRNVVWL	120
IKKNSTYPTI	KRSYNNTNQE	DLLVLWGIHH	PNDAAEQTKL	YQNPTTYISV	GTSTLNQRLV	180
PRIATRISKVN	GQSGRMEFFW	TILKPNDAIN	FESNGNFIAP	EYAYKIVKKG	DSTIMKSELE	240
YGNCNTKCQT	PMGAINSSMP	FHNIHPLTIG	ECPKYVK			277

SEQ ID NO:89 Protein gdHA_AI505_42_310

MILEKTHNGK	LCDLDGVKPL	ILRDCSVAGW	LLGNPMCDEF	INVPEWSYIV	EKANPTNDLC	60
YPGSFNDYEE	LKHLLSRINH	FEKIQIIPKS	SWSDHEASSG	VSSACPYLGS	PSFFRNVVWL	120
IKKNSTYPTI	KRSYNNTNQE	DLLVLWGIHH	PNDAAEQTRL	YQNPTTYISI	GTSTLNQRLV	180
PKIATRISKVN	GQSGRMEFFW	TILKPNDAIN	FESNGNFIAP	EYAYKIVKKG	DSAIMKSELE	240
YGNCNTKCQT	PMGAINSSMP	FHNIHPLTIG	ECPKYVK			277

SEQ ID NO:90 Protein gdHA_AC0709_42_310

MLLEDKHNKG	LCKLRGVAPL	HLGKCNIAW	ILGNPECESL	STASSWSYIV	ETPSSDNGTC	60
YPGDFIDYEE	LREQLSSVSS	FERFEIFPKT	SSWPNHDSNK	GVTAACPHAG	AKSFYKNLIW	120
LVKKGNSYPK	LSKSYINDKG	KEVLVLWGIH	HPSTSADQQS	LYQNADAYVF	VGSSRYSKKF	180
KPEIAIRPKV	RDREGRMNYY	WTLVEPGDKI	TFEATGNLVV	PRYAFAMERN	AGSGIIISDT	240
PVHDCNTTCQ	TPKGAINDSL	PFQNIHPITI	GKCPKYVK			278

SEQ ID NO:91 His-tag-Linker

LEHHHHHHGG	C	11
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SEQ ID NO:92 coat protein of bacteriophage Phi CB5 R21

ALGDTLTITL	GGSGGTAKVL	RKINQDGYTS	EYYLPETSSS	FRAKVRHTKE	SVKPNQVQYE	60
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RHNVEFTETV YASGSTPEFV RQAYVVIRHK VGDVSATVSD LGEALSFYLN EALYGKLIGW	120
ES	122
SEQ ID NO:93 coat protein of bacteriophage Phi CB5 K21	
ALGDTLTITL GSGGTAKVL KINQDGYTS EYYLPETSSS FRAKVRHTKE SVKPNQVQYE	60
RHNVEFTETV YASGSTPEFV RQAYVVIRHK VGDVSATVSD LGEALSFYLN EALYGKLIGW	120
ES	122
SEQ ID NO:94 coat protein of bacteriophage Phi CB5 K21 double Cys	
ALGDTLTITL GSGGTAKVL KINQDGYTS EYYLPETSSS FRAKVRHTKE SVKPNQVQYE	60
RHNVEFTETV YASCCTPEFV RQAYVVIRHK VGDVSATVSD LGEALSFYLN EALYGKLIGW	120
ES	122
SEQ ID NO:95 trimerization domain of bacteriophage T4 protein fibrin	
GSGYIPEAPR DGQAYVRKDG EWVLLSTFLG	30
SEQ ID NO:96 Palindromic sequence	
gacgatcgtc	10
SEQ ID NO:97 G6-6	
gggggggacg atcgtcgggg gg	22
SEQ ID NO:98 G7-7	
ggggggggac gatcgtcggg gggg	24
SEQ ID NO:99 G8-8	
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SEQ ID NO:100 G9-9	
gggggggggg acgatcgtcg gggggggg	28
SEQ ID NO:101 G10	
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