

2013001904
SEQUENCE LISTING

<110> CUREVAC GMBH
<120> Nucleic acid comprising or coding for a histone stem-loop and a poly(A) sequence or a polyadenylation signal for increasing the expression of an encoded allergenic antigen or an autoimmune self-antigen
<130> CU01P129W01
<140> PCT/EP2012/000672
<141> 2012-02-15
<160> 56
<170> PatentIn version 3.5
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<212> RNA
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<210> 2
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<213> artificial

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histone stem-loop consensus sequence without stem bordering
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16

<210> 6
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<212> RNA
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histone stem-loop consensus sequence with stem bordering elements

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<210> 8
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histone stem-loop consensus sequence with stem bordering elements

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nnnnnnnngnby ynnunuvndnc nnnnnn 26

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histone stem-loop consensus sequence without stem bordering
elements

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<210> 11

<211> 16

<212> RNA

<213> artificial

<220>

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histone stem-loop consensus sequence (*Homo sapiens*) without stem
bordering elements

<400> 11
dghycudyuh asrrcc 16

<210> 12

<211> 26

<212> RNA

<213> artificial

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according to formula (Ic)

<400> 13
vgyyyyhhth rvvrcb 16

<210> 14

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<211> 16
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according to formula (Ic)

<400> 14
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according to formula (Ic)

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according to formula (Ie)

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<400> 16
dgnnnbnnth vnnnch 16

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according to formula (Ie)

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<400> 18
rgndbyhyth rdhncy 16

<210> 19
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according to formula (If)

<400> 19
vgyyytyhth rvrrcb 16

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according to formula (Ig)

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ggyycttyth agrrcc 16

<210> 23
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according to formula (Ih)

<400> 25
dghyctdyth asrrcc 16

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according to formula (Ih)

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ggcyctttth agrgcc 16

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<210> 29
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<212> DNA
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according to formula (IIC)

<400> 29
mhmmmsgyyy ttytmarrrc smchhh 26

<210> 30
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according to formula (IIC)

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according to formula (IIf)

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<210> 35
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according to formula (IIg)

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according to formula (IIg)

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<210> 41
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<210> 42
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according to formula (IIh)

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ggugccggc	a cgaucgcc u cacccgacgc c cacaucgag gucgacauca ccuacgcg	180
guacuucgag	a augagcgugc g cccuggccga ggccaugaag c gguacggcc ugaacaccaa	240
ccaccggauc	g uggugugcu c ggagaacag ccugcaguuc uucaugccgg ugcugggcgc	300
ccucuucauc	g gcguggccg ucgc cccggc gaacgacauc uacaacgagc gggagcugcu	360
gaacagcaug	g ggaucagcc agccgaccgu gguguucgug agcaagaagg gccugcagaa	420
gauccugaac	g ug cagaaga agcugccau cauccagaag aucaucauca uggacagcaa	480
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cugcugcgc	u ucucgcacg c cccggaccc cauciu cggc a accagauca ucccggacac	720
cgc cauccug	agc guggugc c guuccacca c ggciucggc auguucacga c ccuuggcua	780
ccucaucugc	g gc uiuccgg ugguccugau guaccgguiuc gaggaggagc uguuuccugc	840
gagccugcag	g acuacaaga uccagagcgc gcugcucgug ccgacccugu ucagciucuu	900
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gaugauc	agcggcua c g ugaacaaccc ggaggccacc a acgccc uca ucaucgu	1260
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cgaccggcug	a agucgc uga ucaaguacaa g ggc uaccag g ug g c g c gg c c g a	1380
gagcauccug	cu caggc acc c ca aca u c u c g c g g c g ug g c c g g g c ug	1440
c gacgcccgc	g agcugccgg c c g c g g ug g c ug g ug g c a c g g a a g a	1500
gaaggagauc	g uc gac uac g ug g c a g c c a g g c a g g c a a g a g c ug c g g g	1560
cgugguguuc	g ug gac gagg ug c g a a g g c c u g a c g a c g c c g g a a g a	1620

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ccgcgagauc	cugaucaagg	1680
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gucgacauca	ccuacgcgga	
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ccaccggau	guggugugcu	
cggagaacag	ccugcaguuc	
uucaugccgg	ugcuggggcgc	
ccucuucauc	ggcguggccg	
ucgccccggc	gaacgacauc	
uacaacgagc	gggagcugcu	
gaacagcaug	ggaucagcc	
ggccgaccgu	gguguucgug	
agcaagaagg	agcugcagaa	
gcccugcag	gguguuucgug	
gacuacuac	agcggcacc	
cagggcuiucc	agucgaugua	
acguucug	cacguucug	
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cuucaacgag	uacgacuuucg	
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cuucgaccgg	gacaagacca	
ucgcccugau	ucgcccugau	
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ccggccugcc	ccggccugcc	
gaagggggug	gcccugccgc	
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cguuccacca	cggcuiucggc	
auguucacga	cccugggcua	
ccucaucugc	ggciuuccggg	
ugguccugau	ugguccugau	
guaccgguiuc	guaccgguiuc	
gaggaggagc	gaggaggagc	
uguuccugcg	uguuccugcg	
gagccugcag	gacuacaaga	
uccagagcgc	gcugcucug	
gcugcucug	ccgaccccug	
ucagciucuu	auguucacga	
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ccugucgaac	ccugucgaac	
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gguccccguic	uucgaggccca	
uucgaggccca	agguggugga	
ccuggacacc	ggcaagaccc	
ggcaagaccc	ugggcgugaa	
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ugaacaaccc	ugaacaaccc	
ggaggccacc	ggaggccacc	
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uciucaucgu	uciucaucgu	
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cacggcaaga	ccaugacgga	
ccaugacgga	gaaggagauc	
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uggccagcca	ggugaccacc	
gccaagaagc	gccaagaagc	
ugcggggcgg	ugcggggcgg	

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ccgcgagauc cugaucaagg ccaagaagg cgcaagauc gccguguaag acuaguaua	1680
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<212> RNA
<213> artificial

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guacuucgag augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa	240
ccaccggauc guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc	300
ccucuucauc ggcguggccg ucggccggc gaacgacauc uacaacgagc gggagcugcu	360
gaacagcaug gggaucagcc agccgaccgu gguguucug agcaagaagg gccugcagaa	420
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cuucaacgag uacgacuucg ucccgagag cuucgaccgg gacaagacca ucggccugau	600
caugaacagc agcggcagca ccggccugcc gaagggggug gcccugccgc accggaccgc	660
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cgc当地agagc acccugaucg acaaguacga ccugucgaac cugcacfagaga ucggccagcgg	960
gggc当地cccg cugagcaagg aggugggcga ggccguggcc aagcgguiucc accuccggg	1020
cauccggccag ggc当地acggcc ugaccgagac cacgagcgcg auccugauca ccccccggg	1080
ggacgacaag ccggccggcg uggaaggcaagg ggcccgguiuc uucgaggcca aggugggugga	1140
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cgugguguuc guggacgagg ucccgaaggg ccugaccggg aagcucgacg cccgaaagau	1620
ccgcgagauc cugaucaagg ccaagaaggg cggcaagauc gccguguaag acuaguua	1680
agacugacua gcccgauggg ccucccaacg gccccuccuc cccuccuugc accgagauua	1740
auagaucuca aaggcucuu ucagagccac ca	1772

<210> 46
<211> 1835
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of ppLuc(GC)-ag-A64-histoneSL

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ggugccgggc acgaucgccc ucaccgacgc ccacaucgag gucgacauca ccuacgcgga	180
guacuucgag augagcgugc gccuggccga ggccaugaag cgguaacggcc ugaacaccaa	240
ccaccggauc guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc	300
ccucuucauc ggcguggccg ucgccccggc gaacgacauc uacaacgagc gggagcugcu	360
gaacagcaug gggaucagcc agccgaccgu gguguucug agcaagaagg gccugcagaa	420
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gaccgacuac cagggcuiucc agucgaugua cacguucgug accagccacc ucccggcggg	540
ciucaacgag uacgacuucg ucccgagag ciuucgaccgg gacaagacca ucgcccugau	600
caugaacagc agcggcagca ccggccugcc gaagggggug gcccugccgc accggaccgc	660
cugcugcgc iucucgcacg cccgggaccc caucuucggc aaccagauca ucccggacac	720
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cgc当地 acccugaucg acaaguacga ccugucgaac cugcactgaga ucgcccagcgg	960
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cauccgc当地 ggc当地 cggg ugaccgagac cacgagcgcg auccugauca ccccccggg	1080
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c当地 accggcug aagucgc当地 ucaaguacaa gggcuaccag guggc当地 cccgagcugga	1380

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gaaggagauc	guccacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
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ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaaua	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuuccuc	cccuuccuugc	accgagauua	1740
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aaaaaaaaaugca	ucaaaggcuc	uuuucagagc	cacca			1835

<210> 47
<211> 1869
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of ppLuc(GC)-ag-A120

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	ggugccgggc	acgaucgccc	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgcgga	180
	guacuucgag	augagcgugc	gccuggccga	ggccaugaag	cgguacggcc	ugaacaccaa	240
	ccaccggauc	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugcuggggcgc	300
	ccucuucauc	ggcguggccg	ucgccccggc	gaacgacauc	uacaacgagc	gggagcugcu	360
	gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa	420
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	gaccgacuac	cagggciucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
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	caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccugccgc	accggaccgc	660
	cugcugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccgacac	720
	cgccauccug	agcguggugc	cgiuuccacca	cggciuucggc	auguucacga	cccuggggcua	780
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	cggcaagagc	acccugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgcccagcgg	960
	gggcgcggcg	cugagcaagg	aggugggcga	ggccguggcc	aagcggiuucc	accuccggg	1020
	cauccgcccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080
	ggacgacaag	ccgggcgccc	uggcaaggu	gguccccguuc	uucgaggcca	agguggugga	1140
	ccuggacacc	ggcaagaccc	uggcugugaa	ccagcggggc	gagcugugcg	ugcgggggccc	1200
	gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccua	ucgacaagga	1260

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gagcauccug	cuccagcacc	ccaacaucuu	cgacgcccgc	guggccgggc	ugccggacga	1440
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gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
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agacugacua	gcccgauggg	ccucccaacg	ggccuccuc	cccuccuugc	accgagauua	1740
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<211> 1858
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of ppLuc(GC)-ag-A64-ag

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ggugccgggc	acgaucgccc	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgcgga	180
guacuucgag	augagcgugc	gccuggccga	ggccaugaag	cgguacggcc	ugaacaccaa	240
ccaccggauc	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugcugggcgc	300
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gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa	420
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cgc当地	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua	780
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cgc当地	acccugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgcccagcgg	960
ggcgcccccg	cugagcaagg	aggugggcga	ggccguggcc	aagcgguiucc	accucccggg	1020
cauccgcccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080

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ggacgacaag	ccgggcgccc	ugggcaagg	guuccguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcgggc	gagcugugcg	ugcggggcc	1200
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agacugacua	ccccgauggg	ccucccaacg	ggcccuccuc	cccuuccuugc	accgagauua	1740
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aaaaaaaaugca	uccugcccg	ugggccuccc	aacggggccu	ccuccccucc	uugcaccg	1858

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<211> 1894
<212> RNA
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<220>
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ccaccggauc	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugcugggcgc	300
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gaccgacuac	cagggcuiucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
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cgc当地	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua	780
ccucaucugc	ggciuuccggg	ugguccugau	guaccgguiuc	gaggaggagc	uguuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucgug	ccgacccugu	ucagciuucuu	900
cgc当地	acccugau	acaaguacga	ccugucgaac	cugcactgaga	ucgcccagcgg	960

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gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaaua	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	ccuccuuugc	accgagauua	1740
auaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaaaugca	ucaauuccua	cacgugaggc	gcugugauuc	ccuaucffff	uucauuccu	1860
auacauuagc	acagcgccau	ugcauguagg	aauu			1894

<210> 50
<211> 1909
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of ppLuc(GC)-ag-A64-PolioCL

<400>	50					
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cccgcuggag	gacgggaccg	ccggcgagca	gcuccacaag	gccaugaagc	gguacgccc	120
ggugccgggc	acgaucgccc	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgcgga	180
guacuucgag	augagcgugc	gccuggccga	ggccaugaag	cgguacggcc	ugaacaccaa	240
ccaccggauc	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugcuggggcgc	300
ccucuucauc	ggcguggccg	ucgccccggc	gaacgacauc	uacaacgagc	gggagcugcu	360
gaacagcaug	gggaucagcc	agccgaccgu	gguguucug	agcaagaagg	gccugcagaa	420
gauccugaac	gugcagaaga	agcugcccau	cauccagaag	aucaucauca	uggacagcaa	480
gaccgacuac	cagggcuiucc	agucgaugua	cacguucug	accagccacc	ucccgccggg	540
ciucaacgag	uacgacuuucg	ucccgagag	ciucgaccgg	gacaagacca	ucgcccugau	600
caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccugccgc	accggaccgc	660
cugcugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccgacac	720
cgcaccaucug	agcguggugc	cguuccacca	cggciucggc	auguucacga	cccuggggcua	780

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ccucaucugc	ggcuuuccggg	ugguccugau	guaccgguuc	gaggaggagc	uguuuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucug	ccgacccugu	ucagciucuu	900
cgc当地	acccugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgccagcgg	960
gggc当地	cugagcaagg	aggugggcga	ggccguggcc	aagcgguucc	accucccggg	1020
cauccgcccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080
ggacgacaag	ccgggc当地	ugggcaaggu	gguccccguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggc当地	ccagc当地	gagcugugcg	ugccggggcc	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccua	ucgacaagga	1260
cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	uciucaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggc当地	guggc当地	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgccc当地	guggcc当地	ugccggacga	1440
cgacgccc当地	gagcugccgg	ccgc当地	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugccggccgg	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	ccc当地	1620
ccgc当地	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaua	1680
agacugacua	gccc当地	ccucccaacg	ggccc当地	cccuuuugc	accgagauua	1740
auaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaaaugca	ucaauucuaa	aacagcucug	ggguuguacc	caccccagag	gccc当地	1860
cggcuaguac	uccgguaauug	cgguaccuu	guacgccc当地	uuuagaauu		1909

<210> 51
<211> 1841
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of ppLUC(GC)-ag-A64-G30

<400> 51	gggagaaagc	uugaggaugg	aggacgccaa	gaacaucaag	aaggccc当地	cgccc当地	60
	ccc当地	cuggag	gacgggaccg	ccggc当地	gcuuccacaag	gc当地	120
	ggugcc当地	acgaucgcu	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgccc当地	180
	guacuu	cgag	gugc当地	gccuggccga	ggccaugaag	c当地	240
	ccaccggauc	guggugugcu	c当地	ggagaacag	ccugc当地	uucaugccgg	300
	ccucuu	cauc	ggc当地	ggc当地	ccuacgac	gggagcugcu	360
	gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugc当地	420
	gauccugaac	gugc当地	agcugccc当地	cauccagaag	aucauca	uggacagcaa	480
	gaccgacuac	cagggc当地	agucgaugua	cacguucgug	accagccacc	uccc当地	540
	ciucaacgag	uacgacuu	ucccggagag	cuucgaccgg	gacaagacca	ucgccc当地	600

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caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccuugccgc	accggaccgc	660
cugcgugcgc	uucucgcacg	cccgggaccc	caucuuucggc	aaccagauca	ucccgacac	720
cgccauccug	agcguggugc	cguuccacca	cggcuuucggc	auguucacga	cccugggcua	780
ccucaucugc	ggcuuuccggg	ugguccugau	guaccgguuc	gaggaggagc	uguuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucug	ccgacccugu	ucagcuuucuu	900
cgc当地行数>aaagc	acccugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgcccagcgg	960
gggc当地行数>cccc	cugagcaagg	aggugggcga	ggccguggcc	aagcgguucc	accuuccggg	1020
cauccgcccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080
ggacgacaag	ccggggcggcg	ugggcaaggu	ggucccgguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcgggggccc	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccua	ucgacaagga	1260
cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	ucuucaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggcuaccag	guggcgccgg	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgcccggc	guggccgggc	ugccggacga	1440
cgacgcccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaaagau	1620
ccgc当地行数>gagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaaua	1680
agacugacua	gcccgauggg	ccucccaacg	ggccuccuc	cccuuccuugc	accgagauua	1740
auaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaaaugca	ugggggggggg	gggggggggg	gggggggggg	g		1841

<210> 52
 <211> 1841
 <212> RNA
 <213> artificial

<220>
 <223> mRNA sequence of ppLuc(GC)-ag-A64-U30

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cccgcuggag	gacgggaccg	ccggcgagca	gcuccacaag	gccaugaagc	gguacgccc	120
ggugccgggc	acgaucgccc	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgcgga	180
guacuuucgag	augagcgugc	gccuggccga	ggccaugaag	cguacggcc	ugaacaccaa	240
ccaccggaua	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugcugggcgc	300
ccucuucauc	ggcguggccg	ucgccccggc	gaacgacaua	uacaacgagc	gggagcugcu	360
gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa	420
gauccugaac	gugcagaaga	agcugcccau	cauccagaag	aucaucaua	uggacagcaa	480

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gaccgacuac	cagggcuucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
cuucaacgag	uacgacuuucg	ucccggagag	cuucgaccgg	gacaagacca	ucgcccugau	600
caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccugccgc	accggaccgc	660
cugcgugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccgacac	720
cgc当地	agcguggugc	cguuccacca	cggciucggc	auguucacga	cccugggcua	780
ccucaucugc	ggciuuccggg	ugguccugau	guaccgguuc	gaggaggagc	uguuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucug	ccgacccugu	ucagciuucuu	900
cgc当地	acccugaucg	acaaguacga	ccugucgaac	cugcactgaga	ucgcccagcgg	960
gggc当地	cugagcaagg	aggugggcga	ggccguggcc	aagcgguiucc	accuuccggg	1020
cauccgcccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080
ggacgacaag	ccgggc当地	ugggcaaggu	gguccccguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggc当地	ccagc当地	gagcugugcg	ugc当地	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccua	ucgacaagga	1260
cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	uciuaaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggc当地	guggc当地	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgcccgc	guggcc当地	ugccggacga	1440
cgacgcccgc	gagcugccgg	ccgc当地	ggugc当地	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugc当地	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	ccc当地	1620
ccgc当地	cugaucagg	ccaagaaggg	cggcaagac	gccguguaag	acuaguuaaua	1680
agacugacua	gccc当地	ccucccaacg	ggccc当地	ccuccuugc	accgagauua	1740
auaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaaaaugca	uuuuuuuuuuu	uuuuuuuuuuu	uuuuuuuuuuu	uuuuuuuuuuu	u	1841

<210> 53
 <211> 1857
 <212> RNA
 <213> artificial

<220>
 <223> mRNA sequence of ppLUC(GC)-ag-A64-SL

<400>	53					
gggagaaaagc	uugaggaugg	aggacgccaa	gaacaucaag	aaggcccgg	cgc当地	60
cccgcuggag	gacggaccg	ccggc当地	gcuccacaag	gccaugaagc	gguacgccc	120
ggugccgggc	acgaucgccu	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgccc	180
guacuucgag	augagcgugc	gccuggccga	ggccaugaag	cgguaacggcc	ugaacaccaa	240
ccaccggau	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugc当地	300
ccucuucauc	ggcguggccg	ucgccccggc	gaacgacauc	uacaacgagc	gggagcugcu	360

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gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa	420
gauccugaac	gugcagaaga	agcugccau	cauccagaag	aucaucauca	uggacagcaa	480
gaccgacuac	cagggcuuucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
cuucaacgag	uacgacuuucg	ucccggagag	cuucgaccgg	gacaagacca	ucgcccugau	600
caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccugccgc	accggaccgc	660
cugcgugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccgacac	720
cgc当地	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua	780
ccucaucugc	ggcuuuccggg	ugguccugau	guaccgguuc	gaggaggagc	uguuuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucgug	ccgacccugu	ucagcuucuu	900
cgc当地	acccugaucg	acaaguacga	ccugucgaac	cugcactgaga	ucgcccagcgg	960
gggc当地	cugagcaagg	aggugggcga	ggccguggcc	aagcgguiucc	accuccccggg	1020
cauccgcccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080
ggacgacaag	ccgggc当地	ugggcaaggu	gguccccguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggc当地	ccagc当地	gagcugugcg	ugc当地	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccua	ucgacaagga	1260
cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgacgacu	uciuaaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	ggcuuaccag	guggc当地	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgcccgc	guggcc当地	ugccggacga	1440
cgacgcccgc	gagcugccgg	ccgccc当地	ggugc当地	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaaggc	ugc当地	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccgg	aagcucgacg	ccc当地	1620
ccgc当地	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaaua	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	ccuccuugc	accgagauua	1740
auaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaaaugca	uuuggcggc	cguguccacc	acggauauca	ccguggugga	cgccggcc	1857

<210> 54
<211> 1838
<212> RNA
<213> artificial

<220>
<223> ppLuc(GC)-ag-A64-N32

<400> 54
gggagaaaagc uugaggaugg aggacgccaa gaacaucaag aagggcccgg cgccciucua 60
cccgcuggag gacgggaccg ccggc当地 gcuuccacaag gccaugaagg gguacgccc 120
ggugccgggc acgaucgccc ucaccgacgc ccacauccag gucgacauca cnuacgccc 180
guacuucgag augagc当地 gccc当地 ggccaugaag cgguaacacc 240

<210> 55
<211> 945
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of MmMOG(wt)-ag-A64-c30

<400> 55 gggagaaaagc uuaccauggc cuguuugugg agcuuucuu ggcccagcug cuuuccucucc 60
cuuuccuccu 60-120

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ccaggguauc	ccauccgggc	uuuaguuggg	gaugaagcag	agcugccug	ccgcaucu	180
ccuggggaaaa	augccacggg	cauggaggug	gguugguacc	guucuccuu	cucaagagug	240
guucaccucu	accgaaaugg	caaggaccaa	gaugcagagc	aagcaccuga	auaccgggga	300
cgcacagagc	uucugaaaga	gacuaucagu	gagggaaagg	uuacccuuag	gauucagaac	360
gugagauucu	cagaugaagg	aggcuacacc	ugciuicu	gagaccacuc	uuaccaagaa	420
gagggcagcaa	uggaguugaa	aguggaagau	ccciuicu	gggucaaccc	cggugugcug	480
acucucaucg	caciugugcc	uacgauccuc	cugcaggucc	cuguaggccu	uguauiuccuc	540
uuccugcagc	acagacugag	aggaaaacuu	cgugcagaag	uagagaaucu	ccaucggacu	600
uuugauccuc	aciuuccugag	ggugcccugc	uggaagauaa	cacuguuugu	uaauugugccu	660
guucuuggac	ccciugguugc	ciugaucauc	ugcuacaacu	ggcugcaccg	aagacuggca	720
ggacaguuuc	uugaagagcu	aagaaacccc	uuuugaccac	uaguuuuaag	acugacuagc	780
ccgaugggcc	ucccaacggg	ccciuccuccc	cuccuugcac	cgagauuaau	aaaaaaaaaaa	840
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaauauucc	900
cccccccccc	cccccccccc	ccccccccuc	uagacaauug	gaauu		945

<210> 56
<211> 959
<212> RNA
<213> artificial

<220>
<223> mRNA sequence of MmMOG(wt)-ag-A64-C30-histoneSL

<400>	56					
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cuucuccucc	uucuccucca	guugucaugc	agcuaugcag	gacaauucag	agugauagga	120
ccaggguauc	ccauccgggc	uuuaguuggg	gaugaagcag	agcugccug	ccgcaucu	180
ccuggggaaaa	augccacggg	cauggaggug	gguugguacc	guucuccuu	cucaagagug	240
guucaccucu	accgaaaugg	caaggaccaa	gaugcagagc	aagcaccuga	auaccgggga	300
cgcacagagc	uucugaaaga	gacuaucagu	gagggaaagg	uuacccuuag	gauucagaac	360
gugagauucu	cagaugaagg	aggcuacacc	ugciuicu	gagaccacuc	uuaccaagaa	420
gagggcagcaa	uggaguugaa	aguggaagau	ccciuicu	gggucaaccc	cggugugcug	480
acucucaucg	caciugugcc	uacgauccuc	cugcaggucc	cuguaggccu	uguauiuccuc	540
uuccugcagc	acagacugag	aggaaaacuu	cgugcagaag	uagagaaucu	ccaucggacu	600
uuugauccuc	aciuuccugag	ggugcccugc	uggaagauaa	cacuguuugu	uaauugugccu	660
guucuuggac	ccciugguugc	ciugaucauc	ugcuacaacu	ggcugcaccg	aagacuggca	720
ggacaguuuc	uugaagagcu	aagaaacccc	uuuugaccac	uaguuuuaag	acugacuagc	780
ccgaugggcc	ucccaacggg	ccciuccuccc	cuccuugcac	cgagauuaau	aaaaaaaaaaa	840
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaugcauc	900

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cccccccccc cccccccccc cccccccccc aaaggcucuu uucagagcca ccaggaauu 959