

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

<210> 1

<211> 16

<212> RNA

<213> artificial

<220>

<223> histone stem-loop sequence according to formula (Ic): metazoan and protozoan histone stem-loop consensus sequence without stem bordering elements

<220>

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<222> (1)..(1)

<223> n is selected from a nucleotide selected from A, U, T, G and C, or a nucleotide analogue thereof

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<222> (3)..(8)

<223> n is selected from a nucleotide selected from A, U, T, G and C, or a nucleotide analogue thereof

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<222> (10)..(14)

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<222> (16)..(16)

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<400> 1
ngnnnnnnnun nnnncn

16

<210> 2

<211> 26

<212> RNA

<213> artificial

<220>

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<400> 2
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<210> 3
 <211> 16
 <212> RNA
 <213> artificial

<220>
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 stem bordering elements

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<400> 3
 ncnnnnnnun nnnngn 16

<210> 4
 <211> 26

<212> RNA
<213> artificial

<220>
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<400> 4
nnnnnnncnnn nnnunnnnnng nnnnnn

26

<210> 5
<211> 16
<212> RNA
<213> artificial

<220>
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<400> 5
dgnnnnnnnun nnnnch

16

<210> 6
<211> 26
<212> RNA
<213> artificial

<220>
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 histone stem-loop consensus sequence with stem bordering elements

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<400> 6
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26

<210> 7
 <211> 16
 <212> RNA
 <213> artificial

<220>
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 histone stem-loop consensus sequence without stem bordering
 elements

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<220>
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<400> 7
 ngnbyynnun vndncn 16

<210> 8
 <211> 26
 <212> RNA
 <213> artificial

<220>
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 histone stem-loop consensus sequence with stem bordering elements

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<220>
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<400> 8
 nnnnnngnby ynnunvndhc nnnnnn 26

<210> 9
 <211> 16
 <212> RNA
 <213> artificial

<220>
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 histone stem-loop consensus sequence without stem bordering
 elements

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<220>
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<220>
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<400> 9
 nghyyydnuh abrdcn 16

<210> 10
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 <212> RNA
 <213> artificial

<220>
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 histone stem-loop consensus sequence with stem bordering elements

<220>
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<223> n is selected from a nucleotide selected from A, U, T, G and C,
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<220>

<221> misc_feature

<222> (21)..(25)

<223> n is selected from a nucleotide selected from A, U, T, G and C,
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<400> 10

nnhnnnghyy ydnuhabrdc nnnnnh

26

<210> 11

<211> 16

<212> RNA

<213> artificial

<220>

<223> histone stem-loop sequence according to formula (Ih): humane
histone stem-loop consensus sequence (Homo sapiens) without stem
bordering elements

<400> 11

dghycudyuh asrrcc

16

<210> 12

<211> 26

<212> RNA

<213> artificial

<220>

<223> histone stem-loop sequence according to formula (IIh): human
histone stem-loop consensus sequence (Homo sapiens) with stem
bordering elements

<220>

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<222> (1)..(1)

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<222> (25)..(25)

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<400> 12

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26

<210> 13

<211> 16

<212> DNA

<213> artificial

<220>

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according to formula (Ic)

<400> 13

vgyyyyhhth rvvrch

16

<210> 14

<211> 16
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ic)

<400> 14
 sgyytitym arrrcs

16

<210> 15
 <211> 16
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ic)

<400> 15
 sgyycttttm agrrcs

16

<210> 16
 <211> 16
 <212> DNA
 <213> artificial

<220>
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 according to formula (Ie)

<220>
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 <222> (3)..(5)
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<220>
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 or a nucleotide analogue thereof

<220>
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 <223> n is selected from a nucleotide selected from A, U, T, G and C,
 or a nucleotide analogue thereof

<400> 16
 dgnnnbnnth vnnnch

16

<210> 17
 <211> 16
 <212> DNA
 <213> artificial

<220>
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 according to formula (Ie)

<220>

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<220>
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 or a nucleotide analogue thereof

<400> 17
 rgnnnyhbth rdnnncy 16

<210> 18
 <211> 16
 <212> DNA
 <213> artificial

<220>
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 according to formula (Ie)

<220>
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<220>
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 or a nucleotide analogue thereof

<400> 18
 rgndbyhyth rdhncy 16

<210> 19
 <211> 16
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (If)

<400> 19
 vgyyytyhth rvrrcb 16

<210> 20
 <211> 16
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (If)

<400> 20
 sgyycttytm agrrcs 16

<210> 21

<211> 16
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (If)

 <400> 21
 sgyycttttm agrrcs 16

 <210> 22
 <211> 16
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ig)

 <400> 22
 ggyycttyth agrrc 16

 <210> 23
 <211> 16
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ig)

 <400> 23
 ggcyccttytm agrgcc 16

 <210> 24
 <211> 16
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ig)

 <400> 24
 ggctcttttm agrgcc 16

 <210> 25
 <211> 16
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ih)

 <400> 25
 dghyctdyth asrrcc 16

 <210> 26
 <211> 16
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ih)

<400> 26
 ggcycytttth agrgcc 16

<210> 27
 <211> 16
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequences (without stem-bordering elements)
 according to formula (Ih)

<400> 27
 ggcycyttttm agrgcc 16

<210> 28
 <211> 26
 <212> DNA
 <213> artificial

<220>
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 according to formula (IIC)

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 <222> (25)..(26)
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<400> 28
 hhhhvvgyyy yhhthrvvrc bvhhnn 26

<210> 29
 <211> 26
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequence (with stem bordering elements)
 according to formula (IIC)

<400> 29
 mhmhmsgyyy ttytmarrrc smchhh 26

<210> 30
 <211> 26
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequence (with stem bordering elements)
 according to formula (IIC)

<400> 30
 mmmmsggyyc tttmagrrc sachmh 26

<210> 31
 <211> 26
 <212> DNA
 <213> artificial

<220>
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 according to formula (IIe)

<220>
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<220>
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<220>
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 <223> n is selected from a nucleotide selected from A, U, T, G and C,
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<220>
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<220>
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<400> 31
 nnnnndgnnn bnnthvnnnc hnhnnn

26

<210> 32
 <211> 26
 <212> DNA
 <213> artificial

<220>
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 according to formula (IIe)

<220>
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<220>
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 <222> (18)..(19)
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- <220>
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 <222> (25)..(26)
 <223> n is selected from a nucleotide selected from A, U, T, G and C,
 or a nucleotide analogue thereof
- <400> 32
 nnhhnrgnnn yhbthrdnnc ydhnnn 26
- <210> 33
 <211> 26
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- <220>
 <223> histone stem-loop sequence (with stem bordering elements)
 according to formula (IIe)
- <220>
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 <223> n is selected from a nucleotide selected from A, U, T, G and C,
 or a nucleotide analogue thereof
- <400> 33
 nhhhvrgrndb yhythrdhnc yrhhhh 26
- <210> 34
 <211> 26
 <212> DNA
 <213> artificial
- <220>
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 according to formula (IIf)

<220>
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<400> 34
 hhmhmvggyy tyhthrvrrc bvmhnn 26

<210> 35
 <211> 26
 <212> DNA
 <213> artificial

<220>
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 according to formula (IIf)

<400> 35
 mmmmmsggyc ttytmagrrc smchhh 26

<210> 36
 <211> 26
 <212> DNA
 <213> artificial

<220>
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 according to formula (IIf)

<400> 36
 mmmmmsggyc ttttmagrrc sachmh 26

<210> 37
 <211> 26
 <212> DNA
 <213> artificial

<220>
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 according to formula (IIg)

<220>
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 <223> n is selected from a nucleotide selected from A, U, T, G and C,
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<400> 37
 hhmamggyy ttythagrrc cvhnnm 26

<210> 38
 <211> 26
 <212> DNA
 <213> artificial

<220>
 <223> histone stem-loop sequence (with stem bordering elements)
 according to formula (IIg)

<400> 38
 hhaamggcyc ttytmagrgc cvchhm 26

<210> 39
 <211> 26
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequence (with stem bordering elements)
 according to formula (IIg)

 <400> 39
 mmaamggctc ttttmagrgc cmcymm 26

 <210> 40
 <211> 26
 <212> DNA
 <213> artificial

 <220>
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 according to formula (IIh)

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 <220>
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 <222> (25)..(25)
 <223> n is selected from a nucleotide selected from A, U, T, G and C,
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 <400> 40
 nhaahdghyc tdythasrrc cvhbnh 26

 <210> 41
 <211> 26
 <212> DNA
 <213> artificial

 <220>
 <223> histone stem-loop sequence (with stem bordering elements)
 according to formula (IIh)

 <220>
 <221> misc_feature
 <222> (25)..(25)
 <223> n is selected from a nucleotide selected from A, U, T, G and C,
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 <400> 41
 hhaamggcyc tttthagrgc cvmynm 26

 <210> 42
 <211> 26
 <212> DNA
 <213> artificial

 <220>
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 according to formula (IIh)

<400> 42
hmaaaggcyc ttttmagrgc crmyhm

26

<210> 43
<211> 1747
<212> RNA
<213> artificial

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

<400> 43
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cccgcuggag gacgggaccg ccggcgagca gcuccacaag gccaugaagc gguacgccc 120
ggugccgggc acgaucgccu ucaccgacgc ccacaucgag gucgacauca ccuacgcgga 180
guacuucgag augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa 240
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ccucuucauc ggcguggccg ucgccccggc gaacgacauC uacaacgagc gggagcugcu 360
gaacagcaug gggauCagcc agccgaccgu gguguucgug agcaagaagg gccugcagaa 420
gauccugaac gugcagaaga agcugcccac cauccagaag aucaucauca uggacagcaa 480
gaccgacuac cagggcuucc agucgaugua cacguucgug accagccacc ucccgccggg 540
cuucaacgag uacgacuucg ucccggagag cuucgaccgg gacaagacca ucgcccugau 600
caugaacagc agcggcagca ccggccugcc gaagggggug gccugccgc accggaccgc 660
cugcgugcgc uucucgcacg cccgggaccc caucuucggc aaccagauca ucccggacac 720
cgccauccug agcguggugc cguuccacca cggcuucggc auguucacga ccuugggcua 780
ccucaucugc ggcuuccggg ugguccugau guaccgguuc gaggaggagc uguuccugcg 840
gagccugcag gacuacaaga uccagagcgc gcugcucgug ccgaccugug ucagcuucuu 900
cgccaagagc acccugaucg acaaguacga ccugucgaac cugcacgaga ucgccagcgg 960
gggcgccccg cugagcaagg agguggggcg ggccguggcc aagcgguucc accuccggg 1020
cauccgccag ggcuaCggcc ugaccgagac cacgagcgcg auccugauca cccccgaggg 1080
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gaugaucaug agcggcuacg ugaacaaccc ggaggccacc aacgcccua ucgacaagga 1260
cggcuggcug cacagcggcg acaucgccua cugggacgag gacgagcacu ucuucaucgu 1320
cgaccggcug aagucgcuga ucaaguacaa gggcuaccag guggcgccgg ccgagcugga 1380
gagcauccug cuccagcacc ccaacaucuu cgacgccggc guggccgggc ugccggacga 1440
cgacgccggc gagcugccgg ccgcgguggu ggugcuggag cacggcaaga ccaugacgga 1500
gaaggagauC gucgacuacg uggccagcca ggugaccacc gccaagaagc ugcggggcgg 1560
cgugguguuc guggacgagg ucccgaaggg ccugaccggg aagcucgacg cccggaagau 1620

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ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaua	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
auagauc						1747

<210> 44
 <211> 1806
 <212> RNA
 <213> artificial

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

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ggugccgggc	acgaucgccu ucaccgacgc ccacaucgag gucgacauca ccuacgcgga 180
guacuucgag	augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa 240
ccaccggauc	guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc 300
ccucuucauc	ggcguggccg ucgccccggc gaacgacauc uacaacgagc gggagcugcu 360
gaacagcaug	gggaucagcc agccgaccgu gguguucgug agcaagaagg gccugcagaa 420
gauccugaac	gugcagaaga agcugcccau cauccagaag aucaucauca uggacagcaa 480
gaccgacuac	cagggcuucc agucgaugua cacguucgug accagccacc ucccgccggg 540
cuucaacgag	uacgacuucg ucccggagag cuucgaccgg gacaagacca ucgcccugau 600
caugaacagc	agcggcagca ccggccugcc gaagggggug gccugccgc accggaccgc 660
cugcgugcgc	uucucgcacg cccgggaccc caucuucggc aaccagauca ucccggacac 720
cgccauccug	agcguggugc cguuccacca cggcuucggc auguucacga ccuggggcu 780
ccucaucugc	ggcuuccggg ugguccugau guaccgguuc gaggaggagc uguuccugcg 840
gagccugcag	gacuacaaga uccagagcgc gcugcucgug ccgaccugug ucagcuucuu 900
cgccaagagc	accugaucg acaaguacga ccugucgaac cugcacgaga ucgccagcgg 960
gggcgccccg	cugagcaagg aggugggcga ggccguggcc aagcggguucc accucccggg 1020
cauccgccag	ggcuacggcc ugaccgagac cacgagcgcg auccugauca cccccgaggg 1080
ggacgacaag	ccgggcgccc ugggcaaggu ggucccgguu uucgaggcca agguggugga 1140
ccuggacacc	ggcaagaccc ugggcgugaa ccagcggggc gagcugugcg ugcggggggc 1200
gaugaucaug	agcggcuacg ugaacaaccc ggaggccacc aacgcccua ucgacaagga 1260
cggcuggcug	cacagcggcg acaucgccua cugggacgag gacgagcacu ucuucaucgu 1320
cgaccggcug	aagucgcuga ucaaguacaa gggcuaccag guggcgccgg ccgagcugga 1380
gagcauccug	cuccagcacc ccaacauuu cgacgccggc guggccgggc ugccggacga 1440
cgacgccggc	gagcugccgg ccgcgguugu ggugcuggag cacggcaaga ccaugacgga 1500
gaaggagauc	gucgacuacg uggccagcca ggugaccacc gccagaagc ugcggggcgg 1560

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cgugguguuc guggacgagg ucccgaaggg ccugaccggg aagcucgacg cccggaagau	1620
ccgcgagauc cugaucaagg ccaagaaggg cggcaagauc gccguguaag acuaguuaa	1680
agacugacua gcccgauggg ccucccaacg ggcccuccuc cccuccuugc accgagauua	1740
auaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa	1800
aaaaaa	1806

<210> 45
 <211> 1772
 <212> RNA
 <213> artificial

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

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ggugccgggc acgaucgccu ucaccgacgc ccacaucgag gucgacauca ccuacgcgga	180
guacuucgag augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa	240
ccaccggau c guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc	300
ccucuucauc ggcguggccg ucgccccggc gaacgacau uacaacgagc gggagcugcu	360
gaacagcaug gggauagcc agccgaccgu gguguucgug agcaagaagg gccugcagaa	420
gauccugaac gugcagaaga agcugcccau cauccagaag aucaucauca uggacagcaa	480
gaccgacuac cagggcuucc agucgaugua cacguucgug accagccacc ucccgccggg	540
cuucaacgag uacgacuucg ucccggagag cuucgaccgg gacaagacca ucgcccugau	600
caugaacagc agcggcgagc ccggccugcc gaagggggug gccugccgc accggaccgc	660
cugcgugcgc uucucgcacg cccgggaccc caucuucggc aaccagauca ucccggacac	720
cgccauccug agcguggugc cguuccacca cggcuucggc auguucacga cccugggcua	780
ccucaucugc ggcuuuccggg ugguccugau guaccgguuc gaggaggagc uguuccugcg	840
gagccugcag gacuacaaga uccagagcgc gcugcucgug ccgaccugu ucagcuucuu	900
cgccaagagc acccugaucg acaaguacga ccugucgaac cugcacgaga ucgccagcgg	960
gggcgccccg cugagcaagg aggugggcga ggccguggcc aagcgguucc accuccggg	1020
cauccgccag ggcuaaggcc ugaccgagac cacgagcgcg auccugauca cccccgagg	1080
ggacgacaag ccgggcgccc ugaggcaaggu ggucccgguu uucgaggcca agguggugga	1140
ccuggacacc ggcaagacc ugggcgugaa ccagcggggc gagcugugcg ugcgggggcc	1200
gaugaucaug agcggcuacg ugaacaacc ggaggccacc aacgcccua ucgacaagga	1260
cggcuggcug cacagcggcg acaucgccua cugggacgag gacgagcacu ucuucaucgu	1320
cgaccggcug aagucgcuga ucaaguacaa gggcuaccag guggcgccgg ccgagcugga	1380
gagcauccug cuccagcacc ccaacaucuu cgacgccggc guggccgggc ugccggacga	1440

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cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
auagaucuca	aaggcucuuu	ucagagccac	ca			1772

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

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

<400> 46	
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ggugccgggc	acgaucgccu ucaccgacgc ccacaucgag gucgacauca ccuacgcgga 180
guacuucgag	augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa 240
ccaccggauc	guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc 300
ccucuucauc	ggcguggccg ucgccccggc gaacgacauc uacaacgagc gggagcugcu 360
gaacagcaug	gggaucagcc agccgaccgu gguguucgug agcaagaagg gccugcagaa 420
gauccugaac	gugcagaaga agcugcccau cauccagaag aucaucauca uggacagcaa 480
gaccgacuac	cagggcuucc agucgaugua cacguucgug accagccacc ucccgccggg 540
cuucaacgag	uacgacuucg ucccggagag cuucgaccgg gacaagacca ucgcccugau 600
caugaacagc	agcggcagca ccggccugcc gaagggggug gccugccgc accggaccgc 660
cugcgugcgc	uucucgcacg cccgggaccc caucuucggc aaccagauca ucccggacac 720
cgccauccug	agcguggugc cguuccacca cggcuucggc auguucacga ccuugggcua 780
ccucaucugc	ggcuuccggg ugguccugau guaccgguuc gaggaggagc uguuccugcg 840
gagccugcag	gacuacaaga uccagagcgc gcugcucgug ccgaccugu ucagcuucuu 900
cgccaagagc	accugaucg acaaguacga ccugucgaac cugcacgaga ucgccagcgg 960
gggcgccccg	cugagcaagg aggugggcga ggccguggcc aagcgguucc accucccggg 1020
cauccgccag	ggcuacggcc ugaccgagac cacgagcgcg auccugauca cccccgaggg 1080
ggacgacaag	ccgggcgccg ugggcaaggu ggucccgguu uucgaggcca agguggugga 1140
ccuggacacc	ggcaagacc ugggcgugaa ccagcggggc gagcugugcg ugcggggggc 1200
gaugaucaug	agcggcuacg ugaacaaccc ggaggccacc aacgcccua ucgacaagga 1260
cggcuggcug	cacagcggcg acaucgccua cugggacgag gacgagcacu ucuucaucgu 1320
cgaccggcug	aagucgcuga ucaaguacaa gggcuaccag guggcgccgg ccgagcugga 1380

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gagcauccug	cuccagcacc	ccaacauuu	cgacgccggc	guggccgggc	ugccggacga	1440
cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
auaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1800
aaaaaaugca	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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aggacgcca	gaacauca
aagggcccg	cgcccuuc
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ccggcgagc	gcuccaca
gccaugaag	gguacgcc
120	
ggugccgggc	acgaucgcc
ucaccgacg	ccacaucg
gucgacau	ccuacgcg
180	
guacuucg	augagcgug
gccuggccg	ggccauga
cgguacggc	ugaacacca
240	
ccaccggauc	guggugugc
cggagaacg	ccugcagu
uucaugccg	ugcugggcg
300	
ccucuucauc	ggcguggcc
ucgccccgg	gaacgaca
uacaacgag	gggagcug
360	
gaacagcaug	gggaucagc
agccgaccg	gguguucg
agcaagaag	gccugcaga
420	
gauccugaac	gugcagaag
agcugccca	cauccaga
aucaucau	uggacagca
480	
gaccgacuac	cagggcuuc
agucgaug	cacguucg
accagccac	ucccgccgg
540	
cuucaacgag	uacgacuuc
ucccgagag	cuucgacc
gacaagacc	ucgcccuga
600	
caugaacagc	agcggcgag
ccggccugc	gaaggggg
gcccugccg	accggaccg
660	
cugcgugcgc	uucucgcac
cccgggacc	caucuucg
aaccagau	ucccggaac
720	
cgccauccug	agcguggug
cguuccacca	cgguucgg
auguucac	cccugggcu
780	
ccucaucugc	ggcuuccgg
ugguuccga	guaccgguc
gaggaggag	uguuccugc
840	
gagccugcag	gacuacaag
uccagagcg	gcugcucg
ccgaccugu	ucagcuucu
900	
cgccaagagc	accugaucg
acaaguacg	ccugucgaa
cugcacgag	ucgccagcg
960	
gggcgccccg	cugagcaag
aggugggcga	ggccguggc
aagcgguuc	accucccgg
1020	
cauccgccag	ggcuacggc
ugaccgag	cacgagcgc
auccugau	ccccgaggg
1080	
ggacgacaag	ccgggcgccc
ugggcaaggu	ggucccguc
uucgaggcca	agguggugg
1140	
ccuggacacc	ggcaagacc
ugggcgugaa	ccagcgggg
gagcugugc	ugcgggggc
1200	
gaugaucaug	agcggcuac
ugaacaacc	ggaggccac
aacgcccuc	ucgacaagg
1260	

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cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	ucuucaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggcuaccag	guggcgccgg	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgccggc	guggccgggc	ugccggacga	1440
cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccgagggg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagaaua	1740
auagaucuaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1800
aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1860
aaaaaaaaa						1869

<210> 48
 <211> 1858
 <212> RNA
 <213> artificial

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

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aggacgcaa	gaacaucaag
aagggcccgg	cgcccuucua
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cccgcuggag	gacgggaccg
ccggcgagca	gcuccacaag
gccaugaagc	gguacgccc
	120
ggugccgggc	acgaucgccu
ucaccgacgc	ccacaucgag
gucgacauca	ccuacgcgga
	180
guacuucgag	augagcgugc
gccuggccga	ggccaugaag
cgguacggcc	ugaacaccaa
	240
ccaccggau	c
guggugugcu	cggagaacag
ccugcaguuc	uucaugccgg
ugcuggggcg	
	300
ccucuuc	ggcguggccg
ucgccccggc	gaacgacauc
uacaacgagc	gggagcugcu
	360
gaacagcaug	gggaucagcc
agccgaccgu	gguguucgug
agcaagaagg	gccugcagaa
	420
gauccugaac	gugcagaaga
agcugcccau	cauccagaag
aucaucauca	uggacagcaa
	480
gaccgacuac	cagggcuucc
agucgaugua	cacguucgug
accagccacc	ucccgccggg
	540
cuucaacgag	uacgacuucg
ucccgagag	cuucgaccgg
gacaagacca	ucgcccugau
	600
caugaacagc	agcggcagca
ccggccugcc	gaagggggug
gcccugccgc	accggaccgc
	660
cugcgugcgc	uucucgcacg
cccgggaccc	caucuucggc
aaccagauca	ucccggaac
	720
cgccauccug	agcguggugc
cguuccacca	cggcuucggc
auguucacga	cccugggcua
	780
ccucaucugc	ggcuuccggg
ugguuccgau	guaccgguuc
gaggaggagc	uguuccugcg
	840
gagccugcag	gacuacaaga
uccagagcgc	gcugcucgug
ccgaccugug	ucagcuucuu
	900
cgccaagagc	accugaucg
acaaguacga	ccugucgaac
cugcacgaga	ucgccagcgg
	960
gggcgccccg	cugagcaagg
aggugggcga	ggccguggcc
aagcgggucc	accucccggg
	1020
cauccgccag	ggcuacggcc
ugaccgagac	cacgagcgcg
auccugauca	cccccgaggg
	1080

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ggacgacaag	ccgggcgccg	ugggcaaggu	ggucccgguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcggggggcc	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccuca	ucgacaagga	1260
cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	ucuucaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggcuaccag	guggcgccgg	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgccggc	guggccgggc	ugccggacga	1440
cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcg	1560
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ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggccuccuc	cccuccuugc	accgagauua	1740
auaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1800
aaaaaaugca	uccugcccga	ugggccuccc	aacgggccc	ccuccccucc	uugcaccg	1858

<210> 49
 <211> 1894
 <212> RNA
 <213> artificial

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

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aagggcccgg	cgcccuucua
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ccggcgagca	gcuccacaag
gccaugaagc	gguacgccc
120	
ggugccgggc	acgaucgccu
ucaccgacgc	ccacaucgag
gucgacauca	ccuacgcgga
180	
guacuucgag	augagcgugc
gccuggccga	ggccaugaag
cgguacggcc	ugaacaccaa
240	
ccaccggauc	guggugugcu
cggagaacag	ccugcaguuc
uucaugccgg	ugcugggcgc
300	
ccucuucauc	ggcguggccg
ucgccccggc	gaacgacauc
uacaacgagc	gggagcugcu
360	
gaacagcaug	gggaucagcc
agccgaccgu	gguguucgug
agcaagaagg	gccugcagaa
420	
gauccugaac	gugcagaaga
agcugcccau	cauccagaag
aucaucauca	uggacagcaa
480	
gaccgacuac	cagggcuucc
agucgaugua	cacguucgug
accagccacc	ucccgccggg
540	
cuucaacgag	uacgacuucg
ucccgagag	cuucgaccgg
gacaagacca	ucgcccugau
600	
caugaacagc	agcggcagca
ccggccugcc	gaagggggug
gcccugccgc	accggaccgc
660	
cugcgugcgc	uucucgcacg
cccgggaccc	caucuucggc
aaccagauca	ucccgacac
720	
cgccauccug	agcguggugc
cguuccacca	cggcuucggc
auguucacga	cccugggcua
780	
ccucaucugc	ggcuuccggg
ugguuccgau	guaccgguuc
gaggaggagc	uguuccugcg
840	
gagccugcag	gacuacaaga
uccagagcgc	gcugcucgug
ccgaccucgu	ucagcuucuu
900	
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acaaguacga	ccugucgaac
cugcacgaga	ucgccagcgg
960	

2015001904							
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ggacgacaag	ccgggcgcctg	ugggcaaggu	ggucccgguu	uucgaggcca	aggugggugga		1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcggggggcc		1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccuca	ucgacaagga		1260
cggcuggcug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	ucuucaucgu		1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggcuaccag	guggcgccgg	ccgagcugga		1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgccggc	guggccgggc	ugccggacga		1440
cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga		1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcg		1560
cgugguguu	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaagau		1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaua		1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua		1740
auaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa		1800
aaaaaaugca	ucaauuccua	cacgugaggg	gcugugauuc	ccuauccccc	uucauucccu		1860
auacauuagc	acagcgccau	ugcauguagg	aaau				1894

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

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

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ggugccgggc	acgaucgccu	ucaccgacgc	ccacaucgag	gucgacauca	ccuacgcgga		180
guacuucgag	augagcgugc	gccugggccga	ggccaugaag	cgguacggcc	ugaacaccaa		240
ccaccggauc	guggugugcu	cggagaacag	ccugcaguuc	uucaugccgg	ugcugggcgc		300
ccucuucauc	ggcguggccg	ucgccccggc	gaacgacauc	uacaacgagc	gggagcugcu		360
gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa		420
gauccugaac	gugcagaaga	agcugcccau	cauccagaag	aucaucauca	uggacagcaa		480
gaccgacuac	cagggcuucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg		540
cuucaacgag	uacgacuucg	ucccggagag	cuucgaccgg	gacaagacca	ucgcccugau		600
caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccgccgc	accggaccgc		660
cugcgugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccggacac		720
cgccauccug	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua		780

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ccucaucugc	ggcuuccggg	ugguuccgau	guaccgguuc	gaggaggagc	uguuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucgug	ccgaccucgu	ucagcuucuu	900
cgccaagagc	accugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgccagcgg	960
gggcgccccg	cugagcaagg	agguggggcg	ggccguggcc	aagcgggucc	accucccggg	1020
cauccgccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	cccccgaggg	1080
ggacgacaag	ccgggcgccc	ugggcaaggu	ggucccgguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcggggggc	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccuca	ucgacaagga	1260
cggcuggcgug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	ucuucaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggcuaccag	guggcgcccg	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgccggc	guggccgggc	ugccggacga	1440
cgacgccggc	gagcugcccg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cguugguguuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
auaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaugca	ucaauucuaa	aacagcucug	ggguuguacc	caccccagag	gcccacgugg	1860
cggcuaguac	uccgguaauu	cgguacccuu	guacgccugu	uuuagaauu		1909

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

<220>
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ccggcgagca	gcuccacaag
gccaugaagc	gguacgccc
120	
ggugccgggc	acgaucgccu
ucaccgacgc	ccacaucgag
gucgacauca	ccuacgcgga
180	
guacuucgag	augagcgugc
gccuggccga	ggccaugaag
cgguacggcc	ugaacaccaa
240	
ccaccggauc	guggugugcu
cggagaacag	ccugcaguuc
uucaugccgg	ugcuggggcg
300	
ccucuucauc	ggcguggccg
ucgccccggc	gaacgacauc
uacaacgagc	gggagcugcu
360	
gaacagcaug	gggaucagcc
agccgaccgu	gguguucgug
agcaagaagg	gccugcagaa
420	
gauccugaac	gugcagaaga
agcugcccau	cauccagaag
aucaucauca	uggacagcaa
480	
gaccgacuac	cagggcuucc
agucgaugua	cacguucgug
accagccacc	ucccgccggg
540	
cuucaacgag	uacgacuucg
ucccgagag	cuucgaccgg
gacaagacca	ucgcccugau
600	

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caugaacagc agcggcagca ccggccugcc gaagggggug gcccugccgc accggaccgc	660
cugcgugcgc uucucgcacg cccgggaccc caucuucggc aaccagauca ucccggacac	720
cgccauccug agcguggugc cguuccacca cggcuucggc auguucacga cccugggcu	780
ccucaucugc ggcuuccggg ugguccugau guaccgguuc gaggaggagc uguuccugcg	840
gagccugcag gacuacaaga uccagagcgc gcugcucgug ccgaccugug ucagcuucuu	900
cgccaagagc acccugaucg acaaguacga ccugucgaac cugcacgaga ucgccagcgg	960
gggcgccccg cugagcaagg aggugggcca ggccguggcc aagcgggucc accucccggg	1020
cauccgccag ggcuacggcc ugaccgagac cagcagcgcg auccugauca cccccgaggg	1080
ggacgacaag ccgggcgccc ugggcaaggu ggucccgguu uucgaggcca agguggugga	1140
ccuggacacc ggcaagacc 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 cgacgccggc guggccgggc ugccggacga	1440
cgacgccggc gagcugccgg ccgcgguggu ggugcuggag cacggcaaga ccaugacgga	1500
gaaggagauc gucgacuacg uggccagcca ggugaccacc gccaagaagc ugcggggcgg	1560
cguugguguuc guggacgagg ucccgaaggg ccugaccggg aagcucgacg cccggaagau	1620
ccgcgagauc cugaucaagg ccaagaaggg cggcaagauc gccguguaag acuaguuaa	1680
agacugacua gcccgauggg ccucccaacg ggcccuccuc cccuccuugc accgagauua	1740
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aaaaaaugca uggggggggg 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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ggugccgggc acgaucgccc ucaccgacgc ccacaucgag gucgacauca ccuacgcgga	180
guacuucgag augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa	240
ccaccggauc guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc	300
ccucuucauc ggcguggccg ucgccccggc gaacgacauc uacaacgagc gggagcugcu	360
gaacagcaug gggauagacc agccgaccgu gguguucgug agcaagaagg gccugcagaa	420
gauccugaac gugcagaaga agcugcccau cauccagaag aucaucauca uggacagcaa	480

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gaccgacuac	cagggcuucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
cuucaacgag	uacgacuucg	ucccgagag	cuucgaccgg	gacaagacca	ucgcccugau	600
caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccugccgc	accggaccgc	660
cugcgugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccggaac	720
cgccauccug	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua	780
ccucaucugc	ggcuuccggg	ugguuccugau	guaccgguuc	gaggaggagc	uguuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucgug	ccgaccugug	ucagcuucuu	900
cgccaagagc	accugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgccagcgg	960
ggcgccccg	cugagcaagg	aggugggcga	ggccguggcc	aagcgguucc	accuccggg	1020
cauccgccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	ccccgaggg	1080
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ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcggggggc	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	cgacgccggc	guggccgggc	ugccggacga	1440
cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccggaagg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaua	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1800
aaaaaagca	uuuuuuuuuu	uuuuuuuuuu	uuuuuuuuuu	u		1841

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

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

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ggugccgggc	acgaucgccu ucaccgacgc ccacaucgag gucgacauca ccuacgcgga 180
guacuucgag	augagcgugc gccuggccga ggccaugaag cgguacggcc ugaacaccaa 240
ccaccggauc	guggugugcu cggagaacag ccugcaguuc uucaugccgg ugcugggcgc 300
ccucuucauc	ggcguggccg ucgccccggc gaacgacauc uacaacgagc gggagcugcu 360

gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa	420
gauccugaac	gugcagaaga	agcugcccau	cauccagaag	aucaucauca	uggacagcaa	480
gaccgacuac	cagggcuucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
cuucaacgag	uacgacuucg	ucccggagag	cuucgaccgg	gacaagacca	ucgcccugau	600
caugaacagc	agcggcagca	ccggccugcc	gaagggggug	gcccguccgc	accggaccgc	660
cugcgugcgc	uucucgcacg	cccgggaccc	caucuucggc	aaccagauca	ucccggacac	720
cgccauccug	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua	780
ccucaucugc	ggcuuccggg	ugguuccugau	guaccgguuc	gaggaggagc	uguuccugcg	840
gagccugcag	gacuacaaga	uccagagcgc	gcugcucgug	ccgaccucgu	ucagcuucuu	900
cgccaagagc	accugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgccagcgg	960
gggcgccccg	cugagcaagg	aggugggcga	ggccguggcc	aagcgguucc	accucccggg	1020
cauccgccag	ggcuacggcc	ugaccgagac	cacgagcgcg	auccugauca	ccccgaggg	1080
ggacgacaag	ccgggcgcgc	ugggcaaggu	ggucccgguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcggggggc	1200
gaugaucaug	agcggcuacg	ugaacaaccc	ggaggccacc	aacgcccuca	ucgacaagga	1260
cggcuggcgug	cacagcggcg	acaucgccua	cugggacgag	gacgagcacu	ucuucaucgu	1320
cgaccggcug	aagucgcuga	ucaaguacaa	gggcuaccag	guggcgccgg	ccgagcugga	1380
gagcauccug	cuccagcacc	ccaacaucuu	cgacgccggc	guggccgggg	ugccggacga	1440
cgacgccggc	gagcugccgg	ccgcgguggu	ggugcuggag	cacggcaaga	ccaugacgga	1500
gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaaagaagc	ugcggggcgg	1560
cgugguguuuc	guggacgagg	ucccgaaggg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
auaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaugca	uuauggcggc	cguguccacc	acggauauca	ccguggugga	cgcggcc	1857

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

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

[illegible]

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ccucuucauc	ggcguggccg	ucgccccggc	gaacgacauc	uacaacgagc	gggagcugcu	360
gaacagcaug	gggaucagcc	agccgaccgu	gguguucgug	agcaagaagg	gccugcagaa	420
gauccugaac	gugcagaaga	agcugcccau	cauccagaag	aucaucauca	uggacagcaa	480
gaccgacuac	caggguucc	agucgaugua	cacguucgug	accagccacc	ucccgccggg	540
cuucaacgag	uacgacuucg	ucccgagagag	cuucgaccgg	gacaagacca	ucgcccugau	600
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cgccauccug	agcguggugc	cguuccacca	cggcuucggc	auguucacga	cccugggcua	780
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gagccugcag	gacuacaaga	uccagagcgc	gcugcucgug	ccgaccugu	ucagcuucuu	900
cgccaagagc	accugaucg	acaaguacga	ccugucgaac	cugcacgaga	ucgccagcgg	960
gggcgccccg	cugagcaagg	aggugggcga	ggccguggcc	aagcgggucc	accucccggg	1020
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ggacgacaag	ccgggcgccg	ugggcaaggu	ggucccgguuc	uucgaggcca	agguggugga	1140
ccuggacacc	ggcaagaccc	ugggcgugaa	ccagcggggc	gagcugugcg	ugcgggggcc	1200
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gagcauccug	cuccagcacc	ccaacaucuu	cgacgccggc	guggccgggc	ugccggacga	1440
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gaaggagauc	gucgacuacg	uggccagcca	ggugaccacc	gccaagaagc	ugcggggcgg	1560
cgugguguuc	guggacgagg	ucccgagggg	ccugaccggg	aagcucgacg	cccggaagau	1620
ccgcgagauc	cugaucaagg	ccaagaaggg	cggcaagauc	gccguguaag	acuaguuaa	1680
agacugacua	gcccgauggg	ccucccaacg	ggcccuccuc	cccuccuugc	accgagauua	1740
auaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1800
aaaaaaugca	ucccccucua	gacaauugga	auuccaua			1838

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

<220>
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	cuuccucucc	uuccuccuca	guugucaugc	agcuauagcag	gacaauucag	agugauagga	120

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ccaggguauc ccauccgggc uuuaguuggg gaugaagcag agcugccgug ccgcaucucu	180
ccugggaaaa augccacggg cauggaggug gguugguacc guucucccuu cucaagagug	240
guucaccucu accgaaaugg caaggaccaa gaugcagagc aagcaccuga auaccgggga	300
cgcacagagc uucugaaaaga gacuaucagu gagggaaagg uuacccuuag gauucagaac	360
gugagauucu cagaugaagg aggcuaacac ugcuuuuaa gagaccacuc uuaccaagaa	420
gaggcagcaa uggaguugaa aguggaagau cccuucuauu gggucaaccc cggugugcug	480
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guucuuggac ccugguugc cuugaucauc ugcuaacaac ggugcaccg aagacuggca	720
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ccgauggggc ucccaacggg cccuccuccc cuccuugcac cgagauuaau aaaaaaaaaa	840
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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

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cuuccucucc uucuccucca guugucaugc agcuauagc gacaauucag agugauagga	120
ccaggguauc ccauccgggc uuuaguuggg gaugaagcag agcugccgug ccgcaucucu	180
ccugggaaaa augccacggg cauggaggug gguugguacc guucucccuu cucaagagug	240
guucaccucu accgaaaugg caaggaccaa gaugcagagc aagcaccuga auaccgggga	300
cgcacagagc uucugaaaaga gacuaucagu gagggaaagg uuacccuuag gauucagaac	360
gugagauucu cagaugaagg aggcuaacac ugcuuuuaa gagaccacuc uuaccaagaa	420
gaggcagcaa uggaguugaa aguggaagau cccuucuauu gggucaaccc cggugugcug	480
acucucaucg cacuugugcc uacgauccuc cugcaggucc cuguaggccu uguauuccuc	540
uuccugcagc acagacugag aggaaaacuu cgugcagaag uagagaauu ccaucggacu	600
uuugauccuc acuuccugag ggugcccugc uggaagauaa cacuguuugu uauugugccu	660
guucuuggac ccugguugc cuugaucauc ugcuaacaac ggugcaccg aagacuggca	720
ggacaguuuu uugaagagcu aagaaacccc uuuugaccac uaguuaaag acugacuagc	780
ccgauggggc ucccaacggg cccuccuccc cuccuugcac cgagauuaau aaaaaaaaaa	840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaugcauc	900

2013001904

cccccccccc ccccccccc ccccccccc aaaggcucu uucagagcca ccaggaauu

959