

2014009283
SEQUENCE LISTING

<110> CureVac GmbH
<120> Composition and Vaccine for Treating Lung Cancer
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<223> Survivin CDS GC-optimized

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<213> Artificial Sequence

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<223> MAGE-C2 (GC)-muag-A64-C30

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uccaccagcu ccagccugau ccucgggggc cccgaggagg aggaggugcc cuccgggguc 240

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<211> 1339
<212> RNA
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uccaccagcu ccagccugau ccucgggggc cccgaggagg aggaggugcc cuccgggguc	240
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gcccucaagg acgucgagga gcgcgugcag gccacgaucg acaccgcgga cgacgccacc	1080
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 <212> RNA
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 <223> MAGE-C2 CDS wild type

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ggggaggaua caggcaccug ucagggccug ccagacagug aguccucuuu cacauauaca	420
cuagaugaaa agguggccga guuaguggag uuccugcucc ucaaauacga agcagaggag	480
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ggcccugacc acuucugugu guuugcaaac acaguaggcc ucaccgauga ggguagugau	660
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ugggguccaa gagcccauuc agaaagcauc aagaagaaag uacuagaguu uuuagccaag	960
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<210> 16
<211> 1860
<212> RNA
<213> Artificial Sequence

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<223> MUC1 5 VNTR (GC)-muag-A64-C30

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 <212> RNA
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<220>
 <223> Muc1-5 VNTR CDS wild type

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 <211> 1480
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> 5T4 (GC)-muag-A64-C30-HistoneSL

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gagcucgccu ccaaccacuu ccuguaccug ccccgcgacg ugcucgcgca gcugccgagc	720
cugcggcacc ucgaccuguc caacaacagc cuggugucc ucaccuacgu cagcuuccgc	780
aaccugacgc accuggaguc ccuccaccug gaggacaacg ccugaaggu gcugcacaac	840
ggcaccucg ccgagcugca ggggcugccc cacauccggg uguuccucga caacaacccc	900

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ugggucugcg	acugccacau	ggccgacaug	gugaccuggc	ugaaggagac	cgaggugguc	960
cagggcaagg	accgccugac	gugcgcgua	cccgagaaga	ugcggaaccg	ggugcuccug	1020
gagcugaaca	gcgccgaccu	cgacugcgac	ccgauccugc	ccccucccu	gcagaccagc	1080
uacguguucc	ucgggaucgu	ccuggcccug	aucggcgcca	ucuuccuccu	ggugcuguac	1140
cucaaccgca	agggcaucaa	gaaguggaug	cacaacauc	gggacgccug	ccgcgaccac	1200
auggaggggu	accacuaccg	guacgagauc	aacgcggacc	ccgccugac	caaccugucc	1260
agcaacuccg	acgucugacc	acuaguuaa	agacugacua	gcccgauggg	ccucccaacg	1320
ggcccuccuc	cccuccuugc	accgagauua	auaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1380
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaugca	cccccccccc	cccccccccc	1440
cccccccccc	ccaaaggcuc	uuucagagc	caccagaauu			1480

<210> 20

<211> 646

<212> RNA

<213> Artificial Sequence

<220>

<223> Survivin (GC)-muag-A64-C30-HistoneSL

<400> 20

gggagaaagc	uuaccauggg	cgccccacc	cugccgccgg	ccuggcagcc	guuccucaag	60
gaccaccgca	ucucgaccuu	caagaacugg	ccguuccugg	agggcugcgc	gugcaccgcc	120
gagcggauug	ccgaggccgg	cuucauccac	ugccccaccg	agaacgagcc	ggaccuggcc	180
cagugcuucu	ucugcuucaa	ggagcuggag	ggcuggggagc	cggacgacga	cccgaucgag	240
gagcacaaga	agcacagcag	cggcugcgcc	uuccugagcg	ugaagaagca	guucgaggag	300
cugacgcucg	gggaguuccu	gaagcuggac	cgggagcggg	ccaagaacaa	gaucgcgaag	360
gagaccaaca	acaagaagaa	ggaguucgag	gagaccgccca	agaaggugcg	gcgggccauc	420
gagcagcugg	ccgccauugga	cugaccacua	guuauaagac	ugacuagccc	gaugggccuc	480
ccaacgggcc	cuccuccccu	ccuugcaccg	agauuaauaa	aaaaaaaaaa	aaaaaaaaaa	540
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaugcauccc	cccccccccc	600
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<210> 21
<211> 760
<212> RNA
<213> Artificial Sequence

<220>
<223> NY-ESO-1 (GC)-muag-A64-C30-histone SL

<400> 21
gggagaaaagc uuaccaugca ggccgagggc cgcggcaccg gcggcucgac cggcgacgcc 60
gacgggccccg gcggccccggg caucccggac ggccccgggcg ggaacgcggg cggccccgggc 120
gaggccggcg ccaccggcgg gcggggccccg cggggcgccg gcggcccccg ggcgagcggc 180
ccccggcgggg gcgccccgcg gggcccgac ggcggcgccg ccagcggccu gaacgggugc 240
ugccggugcg gcgccccgcg cccggagagc cggcuccugg aguucuaccu ggccaugccg 300
uucgcgaccc cgauggaggc cgagcuggcc cggcggagcc uggcccagga cggccccgcg 360
cugccccugc cgggcgugcu ccugaaggag uucacgguga gcggcaacau ccugaccauc 420
cggcugaccg ccgcggacca ccggcagcug cagcugucga ucagcagcug ccuccagcag 480
cugagccugc ugauguggau caccagugc uuccugccgg uguuccuggc ccagccgccc 540
agcggccagc gccggugacc acuaguuaa agacugacua gcccgauggg ccucccaacg 600
ggccuccuc cccuccuugc accgagauua aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 660
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaugca uccccccccc cccccccccc 720
ccccccccc ccaaaggcuc uuuucagagc caccagaauu 760

<210> 22
<211> 1813
<212> RNA
<213> Artificial Sequence

<220>
<223> MAGE-C1 (aa 613-1142) (GC)-muag-A64-C30-histoneSL

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agccccgugu ccaucugcag cuccagcacc ccuccagcc ucccgagag cuuccccgag 120
uccagccagu ccccccccga gggcccguc cagagcccc ugcacucggc gcagagcccc 180

ccggaggggga	ugcacuccca	gagccccug	cagucccccg	agagcgcccc	cgagggcgag	240
gacucccuca	gcccgcugca	gaucucccag	uccccgcugg	agggggagga	cagccucucc	300
agccugcacu	ucccccaguc	cccgcccag	ugggaggaca	gccugagccc	ccuccacuuc	360
ccccaguucc	cgccccaggg	cgaggacuuc	caguccagcc	ugcagucccc	cgugagcauc	420
ugcuccagcu	ccacgagccu	guccucuccc	cagagcuucc	cggagucccc	ccagagcccg	480
cccgaggggc	cggcgcaguc	ccccugcag	cgccccguga	gcuccuucuu	cagcuacacc	540
cuggccuccc	uccugcagag	cucccacgag	agcccgcaga	gcccgcccga	gggccccgcc	600
caguccccgc	ugcagagccc	cgucuccagc	uuccccucca	gcaccuccag	cucccucagc	660
caguccagcc	ccguguccag	cuucccgucc	agcaccucca	gcucccugag	caagagcucc	720
cccgagagcc	cccugcaguc	ccccgugauc	agcuucucca	gcuccacgag	ccucuccccg	780
uucagcgagg	aguccagcuc	ccccgucgac	gaguacacca	gcuccagcga	caccucugcug	840
gaguccgaca	gccucaccga	cuccgagagc	cugaucgaga	gcgagccccc	guuacccuac	900
acgcucgacg	agaaggugga	cgagcuggcc	cgguuccugc	uccugaagua	ccaggugaag	960
cagcccauca	ccaaggccga	gaugcugacc	aacgucaucu	cccgcuaacac	cggcuacuuc	1020
ccggugaucu	uccggaaggc	gcgcgaguuc	aucgagaucc	ucuucgggau	cagccugcgg	1080
gagguggacc	ccgacgacuc	cuacgucuuc	gugaacacgc	uggaccucac	cagcgagggc	1140
ugccuguccg	acgagcaggg	gaugagccag	aaccgccugc	ucauccugau	ccuguccauc	1200
aucuucauca	agggcaccua	cgccagcgag	gaggucaucu	gggacgugcu	cuccgggauc	1260
ggcgugcggg	ccggccgcga	gcacuucgcc	uucggggagc	cccgggagcu	gcugaccaag	1320
gucugggugc	aggagcacua	ccucgaguac	cgcgaggugc	ccaacagcuc	cccgccccgg	1380
uacgaguucc	uguggggccc	ccgcgcccac	agcgagguca	ucaagcggaa	ggugguggag	1440
uuccuggcga	ugcucaagaa	cacggucccc	aucaccuucc	cguccagcua	caaggacgcc	1500
cugaaggacg	uggaggagcg	ggcccaggcc	aucaucgaca	ccaccgacga	cuccacggcc	1560
accgagagcg	cguccagcuc	cgugaugagc	cccagcuucu	ccagcgagug	accacuaguu	1620
auaagacuga	cuagcccgau	gggccuccca	acgggcccuc	cuccccuccu	ugcaccgaga	1680
uuauaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1740

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aaaaaaaaau gcaucccccc cccccccccc cccccccccc cccccaaagg cucuuuucag 1800
agccaccaga auu 1813

<210> 23
<211> 1339
<212> RNA
<213> Artificial Sequence

<220>
<223> MAGE-C2 (GC)-muag-A64-C30-histoneSL

<400> 23
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agccccaccu ccguggagcu ggaggacugg gucgacgccc agcaccgac cgacgaggag 120
gaggaggagg ccagcuccgc gagcuccacg cucuaccugg uguucagccc cuccagcuuc 180
uccaccagcu ccagccugau ccucgggggc cccgaggagg aggaggugcc cuccgggguc 240
aucccgaacc ugaccgagag cauccccucc agcccccgcc agggcccgcc ccagggggcc 300
ucccagagcc ccuguccag cugcugcagc uccuucagcu gguccagcuu cuccgaggag 360
agcuccagcc agaagggcga ggacaccggc acgugccagg ggcucccga cuccgagagc 420
uccuucaccu acaccugga cgagaaggug gccgagcugg uggaguuccu ccugcugaag 480
uacgaggccg aggagcccgu caccgaggcc gagaugcuca ugaucgugau caaguacaag 540
gacuacuucc ccgugauccu gaagcgcgcc cgggaguuca uggagcugcu cuucggccug 600
gcgcugaucg aggucgggcc cgaccacuuc ugcguguucg ccaacacggu gggccucacc 660
gacgaggggga gcgacgacga gggcaugccg gagaacuccc ugcugaucau cauccucagc 720
gucaucuua ucaagggcaa cugcgccucc gaggagguga ucugggaggu gcugaacgcc 780
gucggggugu acgcgggccg cgagcacuuc guguacgggg agccccggga gcugcucacc 840
aaggucuggg ugcagggccca cuaccuggag uaccgcgagg ugccgcacag ccccccccg 900
uacuacgagu uccugugggg cccccgggcc cacagcgagu ccaucaagaa gaagguccuc 960
gaguuccugg ccaagcugaa caacaccgug cccagcagcu ucccuccug guacaaggac 1020
gcccucaagg acgucgagga gcgcgugcag gccacgaucg acaccgcgga cgacgccacc 1080
gugauggcca gcgaguuccu gagcgucaug uccagcaacg uguccuucag cgagugacca 1140

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cuaguauaaa gacugacuag cccgaugggc cucccaacgg gccuccucc ccuccuugca	1200
ccgagauuaa uaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa	1260
aaaaaaaaaa aaaaaugcau cccccccccc cccccccccc cccccccccc caaaggcucu	1320
uuucagagcc accagaauu	1339

<210> 24
 <211> 1885
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> MUC1 5 VNTR (GC)-muag-A64-C30-histoneSL

<400> 24 gggagaaaagc uuaccaugac ccccggcacc cagagcccgu ucuuccugcu ccugcugcuc	60
acggugcuga ccgucgugac cggguccggc cacgccagcu ccacccccgg gggcgagaag	120
gagacgagcg ccacccagcg guccagcgug ccuccagca ccgagaagaa cgcgguccucc	180
augaccagcu ccgugcugag cuccacagc cccggguccg gcagcuccac gaccaggggc	240
caggacguga ccucgcccc ggccaccgag cccgccagcg gguccgccgc gacguggggc	300
caggacguca ccagcgugcc cgugacccgc cccgcccugg ggagcaccac gccgcccgcc	360
cacgacguca ccuccgcccc cgacaacaag cccgcgccgg gcagcaccgc ccccccgcc	420
cacgggguga ccuccgcccc cgacacgcgg cccgcccccg gcagcaccgc gcccccgcc	480
cacggcguga ccuccgcccc ggacaccgc cccgcccccg ggagcacggc cccgccggcg	540
cacggcguga ccuccgcccc cgacaccgg cccgcccccg ggagcaccgc cccgccgcc	600
cacggcguga cguccgcgcc cgacaccgc cccgcccccg gcagcaccgc ccccccgcc	660
cacgggguga ccuccgcccc ggacacgcgg cccgcgcccg gcagcaccgc cccgccggcc	720
cacgggguga ccuccgcgcc cgacaaccgc cccgcccugg ggagcaccgc cccgccgug	780
cacaacguga ccuccgccag cggcuccgcg agcggguccg ccagcaccu cguccacaac	840
ggcacguccg cccggggccac caccacccc gccagcaagu ccacgcccuu cagcaucccg	900
ucccaccaca gcgacacccc caccaccug gcguccaca gcacgaagac cgacgccucc	960
agcaccacc acuccagcgu gccccgcug accagcucca accacagcac guccccgcag	1020

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cucagcaccg ggguguccuu cuucuuccug agcuuccaca ucuccaaccu gcaguucaac	1080
agcucccucg aggaccccag caccgacuac uaccaggagc ugcagcggga caucuccgag	1140
auguuccugc agaucuacaa gcagggcggc uuccucgggc ugagcaacau caaguuccgc	1200
cccggcuccg ucguggugca gcugaccuc gccuuccggg aggggacgau caacguccac	1260
gacguggaga ccagauucaa ccaguacaag accgaggccg ccagccgcua caaccugacc	1320
aucuccgacg ugagcgucuc cgacgugccc uucccgauca gcgcgcaguc cggcgccggc	1380
gugcccgggu ggggcaucgc ccugcucguc cuggugugcg ugcuggucgc ccucgccauc	1440
guguaccuga ucgcgcuggc cgugugccag ugccggcgca agaacuacgg gcagcucgac	1500
aucuuccccg cccgggacac guaccacccg augagcgagu acccgaccua ccacaccac	1560
ggccgcuacg uccccccag cuccaccgac cggagcccu acgagaaggu guccgccggg	1620
aacggcggca gcucccugag cuacaccaac ccggcggugg ccgccgccuc cgccaaccug	1680
ugaccacuag uuauaagacu gacuagcccg augggccucc caacgggccc uccuccccuc	1740
cuugcaccga gauuaauaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa	1800
aaaaaaaaaa aaaaaaaaaa augcauuccc cccccccccc cccccccccc cccccccaaa	1860
ggcucuuuuc agagccacca gaauu	1885

<210> 25
<211> 1596
<212> RNA
<213> Artificial Sequence

<220>
<223> MAGE-C1 (aa 613-1142) CDS GC-optimized

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cccgagggcc cgguccagag ccccugcac uccccgcaga gccccccgga ggggaugcac	180
ucccagagcc ccugcaguc ccccagagac gcccccgagg gcgaggacuc ccucagcccg	240
cugcagaucc ccaguccccc gcuggagggg gaggacagcc ucuccagccu gcacuucccc	300
caguccccgc ccgaguggga ggacagccug agccccucc acuuccccca guucccgccc	360

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cagggcgagg acuuccaguc cagccugcag ucccccguga gcaucugcuc cagcuccacg	420
agccuguccc uccccagag cuuccggag ucccccaga gcccggccga ggggcccgcg	480
cagucacccc ugcagcgccc cgugagcucc uucuucagcu acaccucggc cuccuccug	540
cagagcuccc acgagagccc gcagagcccg cccgagggcc ccgcccaguc cccgcugcag	600
agccccgugu ccagcuuccc cuccagcacc uccagcuccc ucagccaguc cagccccgug	660
uccagcuucc cguccagcac cuccagcucc cugagcaaga gcucacccga gagccccug	720
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agcucacccc ucgacgagua caccagcucc agcgacaccc ugcuggaguc cgacagccuc	840
accgacuccg agagccugau cgagagcgag ccccgucua ccuacacgcu cgacgagaag	900
guggacgagc uggcccgguu ccugcuccug aaguaccagg ugaagcagcc caucaccaag	960
gccgagaugc ugaccaacgu caucucccg c uacaccggcu acucacccgu gaucuccgg	1020
aaggcgcgcg aguucaucga gaucucucg gggauccagc ugcgggagggu ggacccccgac	1080
gacuccuacg ucuucgugaa cacgcuggac cucaccagcg agggcugccu guccgacgag	1140
cagggggauga gccagaaccg ccugcucauc cugauccugu ccaucaucuu caucaagggc	1200
accuacgcca gcgaggagggu caucugggac gugcucuccg ggauccggcgu gcggggccggc	1260
cgcgagcacu ucgccuucgg ggagccccgg gagcugcuga ccaaggucug ggugcaggag	1320
cacuaccucg aguaccgca ggugcccaac agcucacccg cccggucaga guuccugugg	1380
ggcccccgcg cccacagcga ggucaucaag cggaaggugg uggaguuccu ggcgauccuc	1440
aagaacacgg uccccaucac cuucccgucc agcuacaagg acgcccugaa ggacguggag	1500
gagcggggcc aggccaucau cgacaccacc gacgacucca cggccaccga gagcgcgucc	1560
agcuccguga ugagccccag cuucccagc gaguga	1596

<210> 26
 <211> 16
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ic)

<220>
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 <222> (1)..(1)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (3)..(8)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (10)..(14)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (16)..(16)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<400> 26
 ngnnnnnnun nnnncn

16

<210> 27
 <211> 26
 <212> RNA
 <213> Artificial Sequence

<220>
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<220>
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 <222> (1)..(2)
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<220>
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 <222> (3)..(6)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (8)..(13)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature

<222> (15)..(19)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (21)..(24)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (25)..(26)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not.

<400> 27
 nnnnnngnnn nnnunnnnnnc nnnnnn

26

<210> 28
 <211> 16
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 <213> Artificial Sequence

<220>
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<220>
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 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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<400> 28
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16

<210> 29

<211> 26
 <212> RNA
 <213> Artificial Sequence

<220>
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<220>
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 <222> (3)..(6)
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<220>
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 <222> (8)..(13)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (15)..(19)
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<220>
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 <222> (21)..(23)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (24)..(26)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 29
 nnnnnncnnn nnnunnnnng nnnnnn

26

<210> 30
 <211> 16
 <212> RNA
 <213> Artificial Sequence

<220>
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<220>
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 <222> (3)..(8)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (10)..(14)
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<400> 30
 dgnnnnnnun nnnch

16

<210> 31
 <211> 26
 <212> RNA
 <213> Artificial Sequence

<220>
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<220>
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 <222> (3)..(5)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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<220>
 <221> misc_feature
 <222> (15)..(19)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (22)..(23)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature

<222> (24)..(26)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 31
 nnnnndgnnn nnnunnnnnnc hnnnnn

26

<210> 32
 <211> 16
 <212> RNA
 <213> Artificial Sequence

<220>
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<220>
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<220>
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 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (12)..(12)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (14)..(14)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (16)..(16)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<400> 32
ngnbyynnun vndncn

16

<210> 33
<211> 26
<212> RNA
<213> Artificial Sequence

<220>
<223> Sequence according to formula (II f)

<220>
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<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
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<222> (3)..(6)
<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
<221> misc_feature
<222> (8)..(8)
<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
<221> misc_feature
<222> (12)..(13)
<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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<222> (15)..(15)
<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
<221> misc_feature
<222> (19)..(19)
<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
<221> misc_feature
<222> (21)..(23)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (24)..(26)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 33

nnnnnngnby ynnunvndnc nnnnnn

26

<210> 34

<211> 16

<212> RNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (Ig)

<220>

<221> misc_feature

<222> (1)..(1)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (8)..(8)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (16)..(16)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<400> 34

nghyyydnuh abrdcn

16

<210> 35

<211> 26

<212> RNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIg)

<220>

<221> misc_feature

<222> (1)..(2)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>

<221> misc_feature

<222> (4)..(6)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (13)..(13)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (21)..(23)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (24)..(25)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>

<221> misc_feature

<222> (26)..(26)

<223> may be present or not

<400> 35

nnhnnnghyy ydnuhabrdc nnnnnh

26

<210> 36

<211> 16

<212> RNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (Ih)

<400> 36

dghycudyuh asrrcc

16

<210> 37

<211> 26

<212> RNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIh)

<220>
 <221> misc_feature
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 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
 <221> misc_feature
 <222> (2)..(2)
 <223> may be present or not

<220>
 <221> misc_feature
 <222> (25)..(25)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
 <221> misc_feature
 <222> (26)..(26)
 <223> may be present or not

<400> 37
 nhaahdghec udyuhasrrc cvhbnh 26

<210> 38
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ic)

<400> 38
 vgyyyhhth rvvrch 16

<210> 39
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ic)

<400> 39
 sgyyttytm arrrcs 16

<210> 40
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ic)

<400> 40
 sgyycttttm agrrcs

16

<210> 41
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ie)

<220>
 <221> misc_feature
 <222> (3)..(5)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (7)..(8)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (12)..(14)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<400> 41
 dgnnnbnnth vnnch

16

<210> 42
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ie)

<220>
 <221> misc_feature
 <222> (3)..(5)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (13)..(14)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<400> 42

rgnnnyhbth rdnncy

16

<210> 43

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (Ie)

<220>

<221> misc_feature

<222> (3)..(3)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>

<221> misc_feature

<222> (14)..(14)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<400> 43

rgndbyhyth rdhncy

16

<210> 44

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (If)

<400> 44

vgyytyhth rvrrcb

16

<210> 45

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (If)

<400> 45

sgyycttytm agrrcs

16

<210> 46

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (If)

<400> 46

sgyycttttm agrrcs

16

<210> 47

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (Ig)

<400> 47

ggyycttyth agrrcs

16

<210> 48

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (Ig)

<400> 48

ggcycttytm agrgcc

16

<210> 49

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (Ig)

<400> 49

ggctcttttm agrgcc

16

<210> 50
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ih)

<400> 50
 dghyctdyth asrrcc 16

<210> 51
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ih)

<400> 51
 ggcyctttth agrgcc 16

<210> 52
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (Ih)

<400> 52
 ggcycttttm agrgcc 16

<210> 53
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIc)

<220>
 <221> misc_feature
 <222> (1)..(2)
 <223> may be present or not

<220>
 <221> misc_feature
 <222> (25)..(26)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 53
 hhhhvvgyyy yhhthrvvrc bvhnnn

26

<210> 54
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIc)

<220>
 <221> misc_feature
 <222> (1)..(2)
 <223> may be present or not

<220>
 <221> misc_feature
 <222> (25)..(26)
 <223> may be present or not

<400> 54
 mhmhmsgyyy ttytmarrrc smchhh

26

<210> 55
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIc)

<220>
 <221> misc_feature
 <222> (1)..(2)
 <223> may be present or not

<220>
 <221> misc_feature
 <222> (25)..(26)
 <223> may be present or not

<400> 55
 mmmmmmsgyyc tttmagrrc sachmh

26

<210> 56
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIe)

<220>
 <221> misc_feature
 <222> (1)..(2)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
 <221> misc_feature
 <222> (3)..(5)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (8)..(10)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (12)..(13)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (17)..(19)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (22)..(22)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (24)..(26)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 56
 nnnnndgnnn bnnthvnnnc hnhnnn

26

<210> 57
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIe)

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
 <221> misc_feature
 <222> (2)..(2)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (8)..(10)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (18)..(19)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (24)..(24)
 <223> may be present or not

<220>
 <221> misc_feature
 <222> (25)..(26)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 57
 nnhhnrgnnn yhbthrdnnc ydhnnn

<210> 58
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIe)

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>
 <221> misc_feature
 <222> (2)..(2)
 <223> may be present or not

<220>
 <221> misc_feature
 <222> (8)..(8)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
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 <222> (19)..(19)
 <223> n is a, u, t, g, and c, or a nucleotide analogue thereof

<220>
 <221> misc_feature
 <222> (24)..(26)
 <223> may be present or not

<400> 58
 nhhhvrgndb yhythrdhnc yrhhhh

26

<210> 59
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence according to formula (IIf)

<220>
 <221> misc_feature
 <222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (25)..(25)

<223> may be present or not

<220>

<221> misc_feature

<222> (26)..(26)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<400> 59

hhmhmvgyyy tyhthrvrrc bvmhnn

26

<210> 60

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (II f)

<220>

<221> misc_feature

<222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (25)..(26)

<223> may be present or not

<400> 60

mmmmmsgyyc ttytmagrrc smchhh

26

<210> 61

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (II f)

<220>

<221> misc_feature

<222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (25)..(26)

<223> may be present or not

<400> 61

mmmmmsggyyc tttmagrrc sachmh

26

<210> 62

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIg)

<220>

<221> misc_feature

<222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (24)..(25)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>

<221> misc_feature

<222> (26)..(26)

<223> may be present or not

<400> 62

hhmamggyyc ttythagrrc cvhnnm

26

<210> 63

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIg)

<220>

<221> misc_feature

<222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (25)..(26)

<223> may be present or not

<400> 63

hhaamggcyc ttytmagrgc cvchhm

26

<210> 64

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIg)

<220>

<221> misc_feature

<222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (24)..(26)

<223> may be present or not

<400> 64

mmaamggctc ttttmagrgc cmcymm

26

<210> 65

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIh)

<220>

<221> misc_feature

<222> (1)..(1)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>

<221> misc_feature

<222> (2)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (24)..(24)

<223> may be present or not

<220>

<221> misc_feature

<222> (25)..(25)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>

<221> misc_feature

<222> (26)..(26)

<223> may be present or not

<400> 65

nhaahdghyc tdythasrrc cvhbnh

26

<210> 66

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence according to formula (IIh)

<220>

<221> misc_feature

<222> (1)..(2)

<223> may be present or not

<220>

<221> misc_feature

<222> (24)..(24)

<223> may be present or not

<220>

<221> misc_feature

<222> (25)..(25)

<223> n is a, u, t, g, and c, or a nucleotide analogue thereof; may be present or not

<220>

<221> misc_feature

<222> (26)..(26)

<223> may be present or not

<400> 66
hhaamggcyc tttthagrgc cvmynm

26

<210> 67
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence according to formula (IIh)

<220>
<221> misc_feature
<222> (1)..(2)
<223> may be present or not

<220>
<221> misc_feature
<222> (24)..(26)
<223> may be present or not

<400> 67
hmaaaggcyc ttttmagrgc crmyhm

26

<210> 68
<211> 13
<212> RNA
<213> Artificial Sequence

<220>
<223> Kozak sequence

<400> 68
gccgccacca ugg

13

<210> 69
<211> 15
<212> RNA
<213> Artificial Sequence

<220>
<223> general formula of a 3-UTR stabilizing sequence

<220>
<221> misc_feature
<222> (1)..(1)
<223> n is c or u

<220>
 <221> repeat_unit
 <222> (5)..(5)
 <223> n is a, u, t, g, or c; may be present or not

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n is a, u, t, g, or c

<220>
 <221> misc_feature
 <222> (9)..(9)
 <223> n is a, or u

<220>
 <221> repeat_unit
 <222> (10)..(10)
 <223> n is c or u, may be present or not

<220>
 <221> misc_feature
 <222> (10)..(10)
 <223> n is c or u

<220>
 <221> misc_feature
 <222> (13)..(13)
 <223> n is c or u

<400> 69
 nccancccn ucnc

15

<210> 70
 <211> 44
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> 3'-UTR of an alpha-globin gene (muag)

<400> 70
 gcccgauagg ccucccaacg ggcccuccuc ccucucuugc accg

44

<210> 71
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Specific histone stem-loop sequence

<400> 71

caaaggctct tttcagagcc acca

24

<210> 72

<211> 24

<212> RNA

<213> Artificial Sequence

<220>

<223> Specific histone stem-loop sequence

<400> 72

caaaggcucu uuucagagcc acca

24

<210> 73

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> MUC1-derived peptide

<400> 73

Ser Ala Pro Asp Asn Arg Pro Ala Leu

1 5

<210> 74

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Connexin-derived peptide

<400> 74

Phe Glu Gln Asn Thr Ala Gln Pro

1 5

<210> 75

<211> 420

<212> PRT

<213> Artificial Sequence

2014009283

<220>

<223> 5T4 Protein NP_001159864.1

<400> 75

Met Pro Gly Gly Cys Ser Arg Gly Pro Ala Ala Gly Asp Gly Arg Leu
1 5 10 15

Arg Leu Ala Arg Leu Ala Leu Val Leu Leu Gly Trp Val Ser Ser Ser
20 25 30

Ser Pro Thr Ser Ser Ala Ser Ser Phe Ser Ser Ser Ala Pro Phe Leu
35 40 45

Ala Ser Ala Val Ser Ala Gln Pro Pro Leu Pro Asp Gln Cys Pro Ala
50 55 60

Leu Cys Glu Cys Ser Glu Ala Ala Arg Thr Val Lys Cys Val Asn Arg
65 70 75 80

Asn Leu Thr Glu Val Pro Thr Asp Leu Pro Ala Tyr Val Arg Asn Leu
85 90 95

Phe Leu Thr Gly Asn Gln Leu Ala Val Leu Pro Ala Gly Ala Phe Ala
100 105 110

Arg Arg Pro Pro Leu Ala Glu Leu Ala Ala Leu Asn Leu Ser Gly Ser
115 120 125

Arg Leu Asp Glu Val Arg Ala Gly Ala Phe Glu His Leu Pro Ser Leu
130 135 140

Arg Gln Leu Asp Leu Ser His Asn Pro Leu Ala Asp Leu Ser Pro Phe
145 150 155 160

Ala Phe Ser Gly Ser Asn Ala Ser Val Ser Ala Pro Ser Pro Leu Val
165 170 175

Glu Leu Ile Leu Asn His Ile Val Pro Pro Glu Asp Glu Arg Gln Asn
180 185 190

2014009283

Arg Ser Phe Glu Gly Met Val Val Ala Ala Leu Leu Ala Gly Arg Ala
195 200 205

Leu Gln Gly Leu Arg Arg Leu Glu Leu Ala Ser Asn His Phe Leu Tyr
210 215 220

Leu Pro Arg Asp Val Leu Ala Gln Leu Pro Ser Leu Arg His Leu Asp
225 230 235 240

Leu Ser Asn Asn Ser Leu Val Ser Leu Thr Tyr Val Ser Phe Arg Asn
245 250 255

Leu Thr His Leu Glu Ser Leu His Leu Glu Asp Asn Ala Leu Lys Val
260 265 270

Leu His Asn Gly Thr Leu Ala Glu Leu Gln Gly Leu Pro His Ile Arg
275 280 285

Val Phe Leu Asp Asn Asn Pro Trp Val Cys Asp Cys His Met Ala Asp
290 295 300

Met Val Thr Trp Leu Lys Glu Thr Glu Val Val Gln Gly Lys Asp Arg
305 310 315 320

Leu Thr Cys Ala Tyr Pro Glu Lys Met Arg Asn Arg Val Leu Leu Glu
325 330 335

Leu Asn Ser Ala Asp Leu Asp Cys Asp Pro Ile Leu Pro Pro Ser Leu
340 345 350

Gln Thr Ser Tyr Val Phe Leu Gly Ile Val Leu Ala Leu Ile Gly Ala
355 360 365

Ile Phe Leu Leu Val Leu Tyr Leu Asn Arg Lys Gly Ile Lys Lys Trp
370 375 380

Met His Asn Ile Arg Asp Ala Cys Arg Asp His Met Glu Gly Tyr His
385 390 395 400

2014009283

Tyr Arg Tyr Glu Ile Asn Ala Asp Pro Arg Leu Thr Asn Leu Ser Ser
405 410 415

Asn Ser Asp Val
420

<210> 76
<211> 142
<212> PRT
<213> Artificial Sequence

<220>
<223> Survivin (BIRC5) Protein 015392

<400> 76

Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
1 5 10 15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
20 25 30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
35 40 45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
50 55 60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Ile Glu Glu His Lys Lys His
65 70 75 80

Ser Ser Gly Cys Ala Phe Leu Ser Val Lys Lys Gln Phe Glu Glu Leu
85 90 95

Thr Leu Gly Glu Phe Leu Lys Leu Asp Arg Glu Arg Ala Lys Asn Lys
100 105 110

Ile Ala Lys Glu Thr Asn Asn Lys Lys Lys Glu Phe Glu Glu Thr Ala
115 120 125

Lys Lys Val Arg Arg Ala Ile Glu Gln Leu Ala Ala Met Asp

2014009283

130

135

140

<210> 77
 <211> 142
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Survivin (BIRC5) Protein NP_001159.2

<400> 77

Met Gly Ala Pro Thr Leu Pro Pro Ala Trp Gln Pro Phe Leu Lys Asp
 1 5 10 15

His Arg Ile Ser Thr Phe Lys Asn Trp Pro Phe Leu Glu Gly Cys Ala
 20 25 30

Cys Thr Pro Glu Arg Met Ala Glu Ala Gly Phe Ile His Cys Pro Thr
 35 40 45

Glu Asn Glu Pro Asp Leu Ala Gln Cys Phe Phe Cys Phe Lys Glu Leu
 50 55 60

Glu Gly Trp Glu Pro Asp Asp Asp Pro Ile Glu Glu His Lys Lys His
 65 70 75 80

Ser Ser Gly Cys Ala Phe Leu Ser Val Lys Lys Gln Phe Glu Glu Leu
 85 90 95

Thr Leu Gly Glu Phe Leu Lys Leu Asp Arg Glu Arg Ala Lys Asn Lys
 100 105 110

Ile Ala Lys Glu Thr Asn Asn Lys Lys Lys Glu Phe Glu Glu Thr Ala
 115 120 125

Glu Lys Val Arg Arg Ala Ile Glu Gln Leu Ala Ala Met Asp
 130 135 140

<210> 78
 <211> 180
 <212> PRT

<213> Artificial Sequence

<220>

<223> NY-ESO-1 Protein NP_001318.1

<400> 78

Met Gln Ala Glu Gly Arg Gly Thr Gly Gly Ser Thr Gly Asp Ala Asp
 1 5 10 15

Gly Pro Gly Gly Pro Gly Ile Pro Asp Gly Pro Gly Gly Asn Ala Gly
 20 25 30

Gly Pro Gly Glu Ala Gly Ala Thr Gly Gly Arg Gly Pro Arg Gly Ala
 35 40 45

Gly Ala Ala Arg Ala Ser Gly Pro Gly Gly Gly Ala Pro Arg Gly Pro
 50 55 60

His Gly Gly Ala Ala Ser Gly Leu Asn Gly Cys Cys Arg Cys Gly Ala
 65 70 75 80

Arg Gly Pro Glu Ser Arg Leu Leu Glu Phe Tyr Leu Ala Met Pro Phe
 85 90 95

Ala Thr Pro Met Glu Ala Glu Leu Ala Arg Arg Ser Leu Ala Gln Asp
 100 105 110

Ala Pro Pro Leu Pro Val Pro Gly Val Leu Leu Lys Glu Phe Thr Val
 115 120 125

Ser Gly Asn Ile Leu Thr Ile Arg Leu Thr Ala Ala Asp His Arg Gln
 130 135 140

Leu Gln Leu Ser Ile Ser Ser Cys Leu Gln Gln Leu Ser Leu Leu Met
 145 150 155 160

Trp Ile Thr Gln Cys Phe Leu Pro Val Phe Leu Ala Gln Pro Pro Ser
 165 170 175

Gly Gln Arg Arg

180

<210> 79
 <211> 1142
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> MAGE-C1 Protein NP_005453.2

<400> 79

Met Gly Asp Lys Asp Met Pro Thr Ala Gly Met Pro Ser Leu Leu Gln
 1 5 10 15

Ser Ser Ser Glu Ser Pro Gln Ser Cys Pro Glu Gly Glu Asp Ser Gln
 20 25 30

Ser Pro Leu Gln Ile Pro Gln Ser Ser Pro Glu Ser Asp Asp Thr Leu
 35 40 45

Tyr Pro Leu Gln Ser Pro Gln Ser Arg Ser Glu Gly Glu Asp Ser Ser
 50 55 60

Asp Pro Leu Gln Arg Pro Pro Glu Gly Lys Asp Ser Gln Ser Pro Leu
 65 70 75 80

Gln Ile Pro Gln Ser Ser Pro Glu Gly Asp Asp Thr Gln Ser Pro Leu
 85 90 95

Gln Asn Ser Gln Ser Ser Pro Glu Gly Lys Asp Ser Leu Ser Pro Leu
 100 105 110

Glu Ile Ser Gln Ser Pro Pro Glu Gly Glu Asp Val Gln Ser Pro Leu
 115 120 125

Gln Asn Pro Ala Ser Ser Phe Phe Ser Ser Ala Leu Leu Ser Ile Phe
 130 135 140

Gln Ser Ser Pro Glu Ser Thr Gln Ser Pro Phe Glu Gly Phe Pro Gln
 145 150 155 160

2014009283

Ser Val Leu Gln Ile Pro Val Ser Ala Ala Ser Ser Ser Thr Leu Val
165 170 175

Ser Ile Phe Gln Ser Ser Pro Glu Ser Thr Gln Ser Pro Phe Glu Gly
180 185 190

Phe Pro Gln Ser Pro Leu Gln Ile Pro Val Ser Arg Ser Phe Ser Ser
195 200 205

Thr Leu Leu Ser Ile Phe Gln Ser Ser Pro Glu Arg Thr Gln Ser Thr
210 215 220

Phe Glu Gly Phe Ala Gln Ser Pro Leu Gln Ile Pro Val Ser Pro Ser
225 230 235 240

Ser Ser Ser Thr Leu Leu Ser Leu Phe Gln Ser Phe Ser Glu Arg Thr
245 250 255

Gln Ser Thr Phe Glu Gly Phe Ala Gln Ser Ser Leu Gln Ile Pro Val
260 265 270

Ser Pro Ser Phe Ser Ser Thr Leu Val Ser Leu Phe Gln Ser Ser Pro
275 280 285

Glu Arg Thr Gln Ser Thr Phe Glu Gly Phe Pro Gln Ser Pro Leu Gln
290 295 300

Ile Pro Val Ser Ser Ser Ser Ser Thr Leu Leu Ser Leu Phe Gln
305 310 315 320

Ser Ser Pro Glu Arg Thr His Ser Thr Phe Glu Gly Phe Pro Gln Ser
325 330 335

Leu Leu Gln Ile Pro Met Thr Ser Ser Phe Ser Ser Thr Leu Leu Ser
340 345 350

Ile Phe Gln Ser Ser Pro Glu Ser Ala Gln Ser Thr Phe Glu Gly Phe
355 360 365

2014009283

Pro Gln Ser Pro Leu Gln Ile Pro Gly Ser Pro Ser Phe Ser Ser Thr
370 375 380

Leu Leu Ser Leu Phe Gln Ser Ser Pro Glu Arg Thr His Ser Thr Phe
385 390 395 400

Glu Gly Phe Pro Gln Ser Pro Leu Gln Ile Pro Met Thr Ser Ser Phe
405 410 415

Ser Ser Thr Leu Leu Ser Ile Leu Gln Ser Ser Pro Glu Ser Ala Gln
420 425 430

Ser Ala Phe Glu Gly Phe Pro Gln Ser Pro Leu Gln Ile Pro Val Ser
435 440 445

Ser Ser Phe Ser Tyr Thr Leu Leu Ser Leu Phe Gln Ser Ser Pro Glu
450 455 460

Arg Thr His Ser Thr Phe Glu Gly Phe Pro Gln Ser Pro Leu Gln Ile
465 470 475 480

Pro Val Ser Ser Ser Ser Ser Ser Ser Thr Leu Leu Ser Leu Phe Gln
485 490 495

Ser Ser Pro Glu Cys Thr Gln Ser Thr Phe Glu Gly Phe Pro Gln Ser
500 505 510

Pro Leu Gln Ile Pro Gln Ser Pro Pro Glu Gly Glu Asn Thr His Ser
515 520 525

Pro Leu Gln Ile Val Pro Ser Leu Pro Glu Trp Glu Asp Ser Leu Ser
530 535 540

Pro His Tyr Phe Pro Gln Ser Pro Pro Gln Gly Glu Asp Ser Leu Ser
545 550 555 560

Pro His Tyr Phe Pro Gln Ser Pro Pro Gln Gly Glu Asp Ser Leu Ser
565 570 575

2014009283

Pro His Tyr Phe Pro Gln Ser Pro Gln Gly Glu Asp Ser Leu Ser Pro
580 585 590

His Tyr Phe Pro Gln Ser Pro Pro Gln Gly Glu Asp Ser Met Ser Pro
595 600 605

Leu Tyr Phe Pro Gln Ser Pro Leu Gln Gly Glu Glu Phe Gln Ser Ser
610 615 620

Leu Gln Ser Pro Val Ser Ile Cys Ser Ser Ser Thr Pro Ser Ser Leu
625 630 635 640

Pro Gln Ser Phe Pro Glu Ser Ser Gln Ser Pro Pro Glu Gly Pro Val
645 650 655

Gln Ser Pro Leu His Ser Pro Gln Ser Pro Pro Glu Gly Met His Ser
660 665 670

Gln Ser Pro Leu Gln Ser Pro Glu Ser Ala Pro Glu Gly Glu Asp Ser
675 680 685

Leu Ser Pro Leu Gln Ile Pro Gln Ser Pro Leu Glu Gly Glu Asp Ser
690 695 700

Leu Ser Ser Leu His Phe Pro Gln Ser Pro Pro Glu Trp Glu Asp Ser
705 710 715 720

Leu Ser Pro Leu His Phe Pro Gln Phe Pro Pro Gln Gly Glu Asp Phe
725 730 735

Gln Ser Ser Leu Gln Ser Pro Val Ser Ile Cys Ser Ser Ser Thr Ser
740 745 750

Leu Ser Leu Pro Gln Ser Phe Pro Glu Ser Pro Gln Ser Pro Pro Glu
755 760 765

Gly Pro Ala Gln Ser Pro Leu Gln Arg Pro Val Ser Ser Phe Phe Ser
770 775 780

2014009283

Tyr Thr Leu Ala Ser Leu Leu Gln Ser Ser His Glu Ser Pro Gln Ser
785 790 795 800

Pro Pro Glu Gly Pro Ala Gln Ser Pro Leu Gln Ser Pro Val Ser Ser
805 810 815

Phe Pro Ser Ser Thr Ser Ser Ser Leu Ser Gln Ser Ser Pro Val Ser
820 825 830

Ser Phe Pro Ser Ser Thr Ser Ser Ser Leu Ser Lys Ser Ser Pro Glu
835 840 845

Ser Pro Leu Gln Ser Pro Val Ile Ser Phe Ser Ser Ser Thr Ser Leu
850 855 860

Ser Pro Phe Ser Glu Glu Ser Ser Ser Pro Val Asp Glu Tyr Thr Ser
865 870 875 880

Ser Ser Asp Thr Leu Leu Glu Ser Asp Ser Leu Thr Asp Ser Glu Ser
885 890 895

Leu Ile Glu Ser Glu Pro Leu Phe Thr Tyr Thr Leu Asp Glu Lys Val
900 905 910

Asp Glu Leu Ala Arg Phe Leu Leu Leu Lys Tyr Gln Val Lys Gln Pro
915 920 925

Ile Thr Lys Ala Glu Met Leu Thr Asn Val Ile Ser Arg Tyr Thr Gly
930 935 940

Tyr Phe Pro Val Ile Phe Arg Lys Ala Arg Glu Phe Ile Glu Ile Leu
945 950 955 960

Phe Gly Ile Ser Leu Arg Glu Val Asp Pro Asp Asp Ser Tyr Val Phe
965 970 975

Val Asn Thr Leu Asp Leu Thr Ser Glu Gly Cys Leu Ser Asp Glu Gln
980 985 990

2014009283

Gly Met Ser Gln Asn Arg Leu Leu Ile Leu Ile Leu Ser Ile Ile Phe
995 1000 1005

Ile Lys Gly Thr Tyr Ala Ser Glu Glu Val Ile Trp Asp Val Leu
1010 1015 1020

Ser Gly Ile Gly Val Arg Ala Gly Arg Glu His Phe Ala Phe Gly
1025 1030 1035

Glu Pro Arg Glu Leu Leu Thr Lys Val Trp Val Gln Glu His Tyr
1040 1045 1050

Leu Glu Tyr Arg Glu Val Pro Asn Ser Ser Pro Pro Arg Tyr Glu
1055 1060 1065

Phe Leu Trp Gly Pro Arg Ala His Ser Glu Val Ile Lys Arg Lys
1070 1075 1080

Val Val Glu Phe Leu Ala Met Leu Lys Asn Thr Val Pro Ile Thr
1085 1090 1095

Phe Pro Ser Ser Tyr Lys Asp Ala Leu Lys Asp Val Glu Glu Arg
1100 1105 1110

Ala Gln Ala Ile Ile Asp Thr Thr Asp Asp Ser Thr Ala Thr Glu
1115 1120 1125

Ser Ala Ser Ser Ser Val Met Ser Pro Ser Phe Ser Ser Glu
1130 1135 1140

<210> 80

<211> 373

<212> PRT

<213> Artificial Sequence

<220>

<223> MAGE-C2 Protein NP_057333.1

<400> 80

Met Pro Pro Val Pro Gly Val Pro Phe Arg Asn Val Asp Asn Asp Ser

1	5	10	15
Pro Thr Ser Val Glu Leu Glu Asp Trp Val Asp Ala Gln His Pro Thr	20	25	30
Asp Glu Glu Glu Glu Glu Ala Ser Ser Ala Ser Ser Thr Leu Tyr Leu	35	40	45
Val Phe Ser Pro Ser Ser Phe Ser Thr Ser Ser Ser Leu Ile Leu Gly	50	55	60
Gly Pro Glu Glu Glu Glu Val Pro Ser Gly Val Ile Pro Asn Leu Thr	65	70	75
Glu Ser Ile Pro Ser Ser Pro Pro Gln Gly Pro Pro Gln Gly Pro Ser	85	90	95
Gln Ser Pro Leu Ser Ser Cys Cys Ser Ser Phe Ser Trp Ser Ser Phe	100	105	110
Ser Glu Glu Ser Ser Ser Gln Lys Gly Glu Asp Thr Gly Thr Cys Gln	115	120	125
Gly Leu Pro Asp Ser Glu Ser Ser Phe Thr Tyr Thr Leu Asp Glu Lys	130	135	140
Val Ala Glu Leu Val Glu Phe Leu Leu Leu Lys Tyr Glu Ala Glu Glu	145	150	155
Pro Val Thr Glu Ala Glu Met Leu Met Ile Val Ile Lys Tyr Lys Asp	165	170	175
Tyr Phe Pro Val Ile Leu Lys Arg Ala Arg Glu Phe Met Glu Leu Leu	180	185	190
Phe Gly Leu Ala Leu Ile Glu Val Gly Pro Asp His Phe Cys Val Phe	195	200	205
Ala Asn Thr Val Gly Leu Thr Asp Glu Gly Ser Asp Asp Glu Gly Met			

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210

215

220

Pro Glu Asn Ser Leu Leu Ile Ile Ile Leu Ser Val Ile Phe Ile Lys
225 230 235 240

Gly Asn Cys Ala Ser Glu Glu Val Ile Trp Glu Val Leu Asn Ala Val
245 250 255

Gly Val Tyr Ala Gly Arg Glu His Phe Val Tyr Gly Glu Pro Arg Glu
260 265 270

Leu Leu Thr Lys Val Trp Val Gln Gly His Tyr Leu Glu Tyr Arg Glu
275 280 285

Val Pro His Ser Ser Pro Pro Tyr Tyr Glu Phe Leu Trp Gly Pro Arg
290 295 300

Ala His Ser Glu Ser Ile Lys Lys Lys Val Leu Glu Phe Leu Ala Lys
305 310 315 320

Leu Asn Asn Thr Val Pro Ser Ser Phe Pro Ser Trp Tyr Lys Asp Ala
325 330 335

Leu Lys Asp Val Glu Glu Arg Val Gln Ala Thr Ile Asp Thr Ala Asp
340 345 350

Asp Ala Thr Val Met Ala Ser Glu Ser Leu Ser Val Met Ser Ser Asn
355 360 365

Val Ser Phe Ser Glu
370

<210> 81
<211> 1255
<212> PRT
<213> Artificial Sequence

<220>
<223> MUC1 Protein J05582.1

<400> 81

2014009283

Met Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr
1 5 10 15

Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly
20 25 30

Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser
35 40 45

Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser His
50 55 60

Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu
65 70 75 80

Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln
85 90 95

Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr
100 105 110

Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro
115 120 125

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
130 135 140

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
145 150 155 160

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
165 170 175

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
180 185 190

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
195 200 205

2014009283

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
210 215 220

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
225 230 235 240

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
245 250 255

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
260 265 270

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
275 280 285

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
290 295 300

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
305 310 315 320

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
325 330 335

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
340 345 350

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
355 360 365

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
370 375 380

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
385 390 395 400

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
405 410 415

2014009283

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
420 425 430

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
435 440 445

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
450 455 460

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
465 470 475 480

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
485 490 495

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
500 505 510

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
515 520 525

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
530 535 540

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
545 550 555 560

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
565 570 575

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
580 585 590

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
595 600 605

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
610 615 620

2014009283

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
625 630 635 640

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
645 650 655

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
660 665 670

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
675 680 685

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
690 695 700

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
705 710 715 720

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
725 730 735

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
740 745 750

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
755 760 765

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
770 775 780

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
785 790 795 800

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
805 810 815

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
820 825 830

2014009283

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
835 840 845

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
850 855 860

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
865 870 875 880

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
885 890 895

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
900 905 910

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
915 920 925

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Asn
930 935 940

Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser
945 950 955 960

Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly
965 970 975

Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe
980 985 990

Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His
995 1000 1005

Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro
1010 1015 1020

Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr
1025 1030 1035

2014009283

Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln
1040 1045 1050

Phe Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu
1055 1060 1065

Leu Gln Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln
1070 1075 1080

Gly Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser
1085 1090 1095

Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn
1100 1105 1110

Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala
1115 1120 1125

Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp
1130 1135 1140

Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala Gly Val Pro Gly
1145 1150 1155

Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu Val Ala Leu
1160 1165 1170

Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg
1175 1180 1185

Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr
1190 1195 1200

His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr
1205 1210 1215

Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser
1220 1225 1230

2014009283

Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val
1235 1240 1245

Ala Ala Ala Ser Ala Asn Leu
1250 1255

<210> 82
<211> 555
<212> PRT
<213> Artificial Sequence

<220>
<223> MUC1 Protein 5xVNTR

<400> 82

Met Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr
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Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly
20 25 30

Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser
35 40 45

Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser His
50 55 60

Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu
65 70 75 80

Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln
85 90 95

Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr
100 105 110

Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro
115 120 125

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr

2014009283

130

135

140

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
145 150 155 160

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His
165 170 175

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala
180 185 190

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro
195 200 205

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr
210 215 220

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser
225 230 235 240

Ala Pro Asp Asn Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His
245 250 255

Asn Val Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu
260 265 270

Val His Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys
275 280 285

Ser Thr Pro Phe Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr
290 295 300

Leu Ala Ser His Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser
305 310 315 320

Ser Val Pro Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu
325 330 335

Ser Thr Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu

340

345

350

Gln Phe Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu
 355 360 365

Leu Gln Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly
 370 375 380

Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val
 385 390 395 400

Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp
 405 410 415

Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr
 420 425 430

Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe
 435 440 445

Ser Ala Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu
 450 455 460

Val Leu Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala
 465 470 475 480

Leu Ala Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile
 485 490 495

Phe Pro Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr
 500 505 510

His Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro
 515 520 525

Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr
 530 535 540

Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu

545

550

555

<210> 83
 <211> 3768
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> MUC1 CDS wild type

<400> 83

Ala Thr Gly Ala Cys Ala Cys Cys Gly Gly Gly Cys Ala Cys Cys Cys
 1 5 10 15

Ala Gly Thr Cys Thr Cys Cys Thr Thr Thr Cys Thr Thr Cys Cys Thr
 20 25 30

Gly Cys Thr Gly Cys Thr Gly Cys Thr Cys Cys Thr Cys Ala Cys Ala
 35 40 45

Gly Thr Gly Cys Thr Thr Ala Cys Ala Gly Thr Thr Gly Thr Thr Ala
 50 55 60

Cys Ala Gly Gly Thr Thr Cys Thr Gly Gly Thr Cys Ala Thr Gly Cys
 65 70 75 80

Ala Ala Gly Cys Thr Cys Thr Ala Cys Cys Cys Cys Ala Gly Gly Thr
 85 90 95

Gly Gly Ala Gly Ala Ala Ala Ala Gly Gly Ala Gly Ala Cys Thr Thr
 100 105 110

Cys Gly Gly Cys Thr Ala Cys Cys Cys Ala Gly Ala Gly Ala Ala Gly
 115 120 125

Thr Thr Cys Ala Gly Thr Gly Cys Cys Cys Ala Gly Cys Thr Cys Thr
 130 135 140

Ala Cys Thr Gly Ala Gly Ala Ala Gly Ala Ala Thr Gly Cys Thr Gly
 145 150 155 160

2014009283

Thr Gly Ala Gly Thr Ala Thr Gly Ala Cys Cys Ala Gly Cys Ala Gly
165 170 175

Cys Gly Thr Ala Cys Thr Cys Thr Cys Cys Ala Gly Cys Cys Ala Cys
180 185 190

Ala Gly Cys Cys Cys Cys Gly Gly Thr Thr Cys Ala Gly Gly Cys Thr
195 200 205

Cys Cys Thr Cys Cys Ala Cys Cys Ala Cys Thr Cys Ala Gly Gly Gly
210 215 220

Ala Cys Ala Gly Gly Ala Thr Gly Thr Cys Ala Cys Thr Cys Thr Gly
225 230 235 240

Gly Cys Cys Cys Cys Gly Gly Cys Cys Ala Cys Gly Gly Ala Ala Cys
245 250 255

Cys Ala Gly Cys Thr Thr Cys Ala Gly Gly Thr Thr Cys Ala Gly Cys
260 265 270

Thr Gly Cys Cys Ala Cys Cys Thr Gly Gly Gly Gly Ala Cys Ala Gly
275 280 285

Gly Ala Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Thr Cys Cys
290 295 300

Cys Ala Gly Thr Cys Ala Cys Cys Ala Gly Gly Cys Cys Ala Gly Cys
305 310 315 320

Cys Cys Thr Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys Ala Cys Cys
325 330 335

Cys Cys Gly Cys Cys Ala Gly Cys Cys Cys Ala Cys Gly Ala Thr Gly
340 345 350

Thr Cys Ala Cys Cys Thr Cys Ala Gly Cys Cys Cys Cys Gly Gly Ala
355 360 365

2014009283

Cys Ala Ala Cys Ala Ala Gly Cys Cys Ala Gly Cys Cys Cys Cys Gly
370 375 380

Gly Gly Cys Thr Cys Cys Ala Cys Cys Gly Cys Cys Cys Cys Cys Cys
385 390 395 400

Cys Ala Gly Cys Cys Cys Ala Cys Gly Gly Thr Gly Thr Cys Ala Cys
405 410 415

Cys Thr Cys Gly Gly Cys Cys Cys Cys Gly Gly Ala Cys Ala Cys Cys
420 425 430

Ala Gly Gly Cys Cys Gly Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr
435 440 445

Cys Cys Ala Cys Cys Gly Cys Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys
450 455 460

Cys Cys Ala Cys Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly
465 470 475 480

Gly Cys Cys Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys
485 490 495

Cys Gly Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys
500 505 510

Cys Gly Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
515 520 525

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys Cys
530 535 540

Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly Gly Cys
545 550 555 560

Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys Gly Cys Cys
565 570 575

2014009283

Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys Gly Gly Thr Gly
580 585 590

Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys Cys Cys Gly Gly Ala
595 600 605

Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly Gly Cys Cys Cys Cys Gly
610 615 620

Gly Gly Cys Thr Cys Cys Ala Cys Cys Gly Cys Cys Cys Cys Cys Cys
625 630 635 640

Cys Ala Gly Cys Cys Cys Ala Cys Gly Gly Thr Gly Thr Cys Ala Cys
645 650 655

Cys Thr Cys Gly Gly Cys Cys Cys Cys Gly Gly Ala Cys Ala Cys Cys
660 665 670

Ala Gly Gly Cys Cys Gly Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr
675 680 685

Cys Cys Ala Cys Cys Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys
690 695 700

Cys Cys Ala Cys Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly
705 710 715 720

Gly Cys Cys Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys
725 730 735

Cys Gly Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys
740 745 750

Cys Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
755 760 765

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys Cys
770 775 780

2014009283

Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly Gly Cys
785 790 795 800

Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys Gly Cys Cys
805 810 815

Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys Gly Gly Thr Gly
820 825 830

Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys Cys Cys Gly Gly Ala
835 840 845

Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly Gly Cys Cys Cys Cys Gly
850 855 860

Gly Gly Cys Thr Cys Cys Ala Cys Cys Gly Cys Cys Cys Cys Cys Cys
865 870 875 880

Cys Ala Gly Cys Cys Cys Ala Cys Gly Gly Thr Gly Thr Cys Ala Cys
885 890 895

Cys Thr Cys Gly Gly Cys Cys Cys Cys Gly Gly Ala Cys Ala Cys Cys
900 905 910

Ala Gly Gly Cys Cys Gly Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr
915 920 925

Cys Cys Ala Cys Cys Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys
930 935 940

Cys Cys Ala Cys Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly
945 950 955 960

Gly Cys Cys Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys
965 970 975

Cys Gly Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys
980 985 990

2014009283

Cys Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
995 1000 1005

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1010 1015 1020

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1025 1030 1035

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1040 1045 1050

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1055 1060 1065

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1070 1075 1080

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1085 1090 1095

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1100 1105 1110

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1115 1120 1125

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1130 1135 1140

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1145 1150 1155

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1160 1165 1170

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1175 1180 1185

2014009283

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1190 1195 1200

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1205 1210 1215

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1220 1225 1230

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1235 1240 1245

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1250 1255 1260

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1265 1270 1275

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1280 1285 1290

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1295 1300 1305

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1310 1315 1320

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1325 1330 1335

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1340 1345 1350

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1355 1360 1365

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1370 1375 1380

2014009283

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1385 1390 1395

Gly Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1400 1405 1410

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1415 1420 1425

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1430 1435 1440

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1445 1450 1455

Gly Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1460 1465 1470

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1475 1480 1485

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1490 1495 1500

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1505 1510 1515

Gly Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1520 1525 1530

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1535 1540 1545

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1550 1555 1560

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1565 1570 1575

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
 1580 1585 1590

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
 1595 1600 1605

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
 1610 1615 1620

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
 1625 1630 1635

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
 1640 1645 1650

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
 1655 1660 1665

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
 1670 1675 1680

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
 1685 1690 1695

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
 1700 1705 1710

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
 1715 1720 1725

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
 1730 1735 1740

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
 1745 1750 1755

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
 1760 1765 1770

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Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1775 1780 1785

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1790 1795 1800

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1805 1810 1815

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1820 1825 1830

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1835 1840 1845

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1850 1855 1860

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1865 1870 1875

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1880 1885 1890

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1895 1900 1905

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
1910 1915 1920

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
1925 1930 1935

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
1940 1945 1950

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
1955 1960 1965

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Gly 1970	Gly	Thr	Gly	Thr	Cys	Ala 1975	Cys	Cys	Thr	Cys	Gly 1980	Gly	Cys	Cys
Cys 1985	Cys	Gly	Gly	Ala	Cys	Ala 1990	Cys	Cys	Ala	Gly	Gly 1995	Cys	Cys	Gly
Gly 2000	Cys	Cys	Cys	Cys	Gly	Gly 2005	Gly	Cys	Thr	Cys	Cys 2010	Ala	Cys	Cys
Gly 2015	Cys	Cys	Cys	Cys	Cys	Cys 2020	Cys	Ala	Gly	Cys	Cys 2025	Cys	Ala	Cys
Gly 2030	Gly	Thr	Gly	Thr	Cys	Ala 2035	Cys	Cys	Thr	Cys	Gly 2040	Gly	Cys	Cys
Cys 2045	Cys	Gly	Gly	Ala	Cys	Ala 2050	Cys	Cys	Ala	Gly	Gly 2055	Cys	Cys	Gly
Gly 2060	Cys	Cys	Cys	Cys	Gly	Gly 2065	Gly	Cys	Thr	Cys	Cys 2070	Ala	Cys	Cys
Gly 2075	Cys	Cys	Cys	Cys	Cys	Cys 2080	Cys	Ala	Gly	Cys	Cys 2085	Cys	Ala	Cys
Gly 2090	Gly	Thr	Gly	Thr	Cys	Ala 2095	Cys	Cys	Thr	Cys	Gly 2100	Gly	Cys	Cys
Cys 2105	Cys	Gly	Gly	Ala	Cys	Ala 2110	Cys	Cys	Ala	Gly	Gly 2115	Cys	Cys	Gly
Gly 2120	Cys	Cys	Cys	Cys	Gly	Gly 2125	Gly	Cys	Thr	Cys	Cys 2130	Ala	Cys	Cys
Gly 2135	Cys	Cys	Cys	Cys	Cys	Cys 2140	Cys	Ala	Gly	Cys	Cys 2145	Cys	Ala	Cys
Gly 2150	Gly	Thr	Gly	Thr	Cys	Ala 2155	Cys	Cys	Thr	Cys	Gly 2160	Gly	Cys	Cys

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Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2165 2170 2175

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2180 2185 2190

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2195 2200 2205

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2210 2215 2220

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2225 2230 2235

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2240 2245 2250

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2255 2260 2265

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2270 2275 2280

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2285 2290 2295

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2300 2305 2310

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2315 2320 2325

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2330 2335 2340

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2345 2350 2355

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Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2360 2365 2370

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2375 2380 2385

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2390 2395 2400

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2405 2410 2415

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2420 2425 2430

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2435 2440 2445

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2450 2455 2460

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2465 2470 2475

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2480 2485 2490

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2495 2500 2505

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2510 2515 2520

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2525 2530 2535

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2540 2545 2550

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Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2555 2560 2565

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2570 2575 2580

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2585 2590 2595

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2600 2605 2610

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2615 2620 2625

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2630 2635 2640

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2645 2650 2655

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2660 2665 2670

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2675 2680 2685

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2690 2695 2700

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
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Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
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Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Cys
2735 2740 2745

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Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2750 2755 2760

Cys Cys Gly Gly Ala Cys Ala Cys Cys Ala Gly Gly Cys Cys Gly
2765 2770 2775

Gly Cys Cys Cys Cys Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2780 2785 2790

Gly Cys Cys Cys Cys Cys Cys Cys Ala Gly Cys Cys Cys Ala Thr
2795 2800 2805

Gly Gly Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2810 2815 2820

Cys Cys Gly Gly Ala Cys Ala Ala Cys Ala Gly Gly Cys Cys Cys
2825 2830 2835

Gly Cys Cys Thr Thr Gly Gly Gly Cys Thr Cys Cys Ala Cys Cys
2840 2845 2850

Gly Cys Cys Cys Cys Thr Cys Cys Ala Gly Thr Cys Cys Ala Cys
2855 2860 2865

Ala Ala Thr Gly Thr Cys Ala Cys Cys Thr Cys Gly Gly Cys Cys
2870 2875 2880

Thr Cys Ala Gly Gly Cys Thr Cys Thr Gly Cys Ala Thr Cys Ala
2885 2890 2895

Gly Gly Cys Thr Cys Ala Gly Cys Thr Thr Cys Thr Ala Cys Thr
2900 2905 2910

Cys Thr Gly Gly Thr Gly Cys Ala Cys Ala Ala Cys Gly Gly Cys
2915 2920 2925

Ala Cys Cys Thr Cys Thr Gly Cys Cys Ala Gly Gly Gly Cys Thr
2930 2935 2940

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Ala Cys Cys Ala Cys Ala Ala Cys Cys Cys Cys Ala Gly Cys Cys
2945 2950 2955

Ala Gly Cys Ala Ala Gly Ala Gly Cys Ala Cys Thr Cys Cys Ala
2960 2965 2970

Thr Thr Cys Thr Cys Ala Ala Thr Thr Cys Cys Cys Ala Gly Cys
2975 2980 2985

Cys Ala Cys Cys Ala Cys Thr Cys Thr Gly Ala Thr Ala Cys Thr
2990 2995 3000

Cys Cys Thr Ala Cys Cys Ala Cys Cys Cys Thr Thr Gly Cys Cys
3005 3010 3015

Ala Gly Cys Cys Ala Thr Ala Gly Cys Ala Cys Cys Ala Ala Gly
3020 3025 3030

Ala Cys Thr Gly Ala Thr Gly Cys Cys Ala Gly Thr Ala Gly Cys
3035 3040 3045

Ala Cys Thr Cys Ala Cys Cys Ala Thr Ala Gly Cys Thr Cys Gly
3050 3055 3060

Gly Thr Ala Cys Cys Thr Cys Cys Thr Cys Thr Cys Ala Cys Cys
3065 3070 3075

Thr Cys Cys Thr Cys Cys Ala Ala Thr Cys Ala Cys Ala Gly Cys
3080 3085 3090

Ala Cys Thr Thr Cys Thr Cys Cys Cys Cys Ala Gly Thr Thr Gly
3095 3100 3105

Thr Cys Thr Ala Cys Thr Gly Gly Gly Gly Thr Cys Thr Cys Thr
3110 3115 3120

Thr Thr Cys Thr Thr Thr Thr Thr Cys Cys Thr Gly Thr Cys Thr
3125 3130 3135

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Thr Thr Thr Cys Ala Cys Ala Thr Thr Thr Cys Ala Ala Ala Cys
3140 3145 3150

Cys Thr Cys Cys Ala Gly Thr Thr Thr Ala Ala Thr Thr Cys Cys
3155 3160 3165

Thr Cys Thr Cys Thr Gly Gly Ala Ala Gly Ala Thr Cys Cys Cys
3170 3175 3180

Ala Gly Cys Ala Cys Cys Gly Ala Cys Thr Ala Cys Thr Ala Cys
3185 3190 3195

Cys Ala Ala Gly Ala Gly Cys Thr Gly Cys Ala Gly Ala Gly Ala
3200 3205 3210

Gly Ala Cys Ala Thr Thr Thr Cys Thr Gly Ala Ala Ala Thr Gly
3215 3220 3225

Thr Thr Thr Thr Thr Gly Cys Ala Gly Ala Thr Thr Thr Ala Thr
3230 3235 3240

Ala Ala Ala Cys Ala Ala Gly Gly Gly Gly Gly Thr Thr Thr Thr
3245 3250 3255

Cys Thr Gly Gly Gly Cys Cys Thr Cys Thr Cys Cys Ala Ala Thr
3260 3265 3270

Ala Thr Thr Ala Ala Gly Thr Thr Cys Ala Gly Gly Cys Cys Ala
3275 3280 3285

Gly Gly Ala Thr Cys Thr Gly Thr Gly Gly Thr Gly Gly Thr Ala
3290 3295 3300

Cys Ala Ala Thr Thr Gly Ala Cys Thr Cys Thr Gly Gly Cys Cys
3305 3310 3315

Thr Thr Cys Cys Gly Ala Gly Ala Ala Gly Gly Thr Ala Cys Cys
3320 3325 3330

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Ala Thr Cys Ala Ala Thr Gly Thr Cys Cys Ala Cys Gly Ala Cys
3335 3340 3345

Gly Thr Gly Gly Ala Gly Ala Cys Ala Cys Ala Gly Thr Thr Cys
3350 3355 3360

Ala Ala Thr Cys Ala Gly Thr Ala Thr Ala Ala Ala Ala Cys Gly
3365 3370 3375

Gly Ala Ala Gly Cys Ala Gly Cys Cys Thr Cys Thr Cys Gly Ala
3380 3385 3390

Thr Ala Thr Ala Ala Cys Cys Thr Gly Ala Cys Gly Ala Thr Cys
3395 3400 3405

Thr Cys Ala Gly Ala Cys Gly Thr Cys Ala Gly Cys Gly Thr Gly
3410 3415 3420

Ala Gly Thr Gly Ala Thr Gly Thr Gly Cys Cys Ala Thr Thr Thr
3425 3430 3435

Cys Cys Thr Thr Thr Cys Thr Cys Thr Gly Cys Cys Cys Ala Gly
3440 3445 3450

Thr Cys Thr Gly Gly Gly Gly Cys Thr Gly Gly Gly Gly Thr Gly
3455 3460 3465

Cys Cys Ala Gly Gly Cys Thr Gly Gly Gly Gly Cys Ala Thr Cys
3470 3475 3480

Gly Cys Gly Cys Thr Gly Cys Thr Gly Gly Thr Gly Cys Thr Gly
3485 3490 3495

Gly Thr Cys Thr Gly Thr Gly Thr Thr Cys Thr Gly Gly Thr Thr
3500 3505 3510

Gly Cys Gly Cys Thr Gly Gly Cys Cys Ala Thr Thr Gly Thr Cys
3515 3520 3525

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Thr Ala Thr Cys Thr Cys Ala Thr Thr Gly Cys Cys Thr Thr Gly
3530 3535 3540

Gly Cys Thr Gly Thr Cys Thr Gly Thr Cys Ala Gly Thr Gly Cys
3545 3550 3555

Cys Gly Cys Cys Gly Ala Ala Ala Gly Ala Ala Cys Thr Ala Cys
3560 3565 3570

Gly Gly Gly Cys Ala Gly Cys Thr Gly Gly Ala Cys Ala Thr Cys
3575 3580 3585

Thr Thr Thr Cys Cys Ala Gly Cys Cys Cys Gly Gly Gly Ala Thr
3590 3595 3600

Ala Cys Cys Thr Ala Cys Cys Ala Thr Cys Cys Thr Ala Thr Gly
3605 3610 3615

Ala Gly Cys Gly Ala Gly Thr Ala Cys Cys Cys Cys Ala Cys Cys
3620 3625 3630

Thr Ala Cys Cys Ala Cys Ala Cys Cys Cys Ala Thr Gly Gly Gly
3635 3640 3645

Cys Gly Cys Thr Ala Thr Gly Thr Gly Cys Cys Cys Cys Cys Thr
3650 3655 3660

Ala Gly Cys Ala Gly Thr Ala Cys Cys Gly Ala Thr Cys Gly Thr
3665 3670 3675

Ala Gly Cys Cys Cys Cys Thr Ala Thr Gly Ala Gly Ala Ala Gly
3680 3685 3690

Gly Thr Thr Thr Cys Thr Gly Cys Ala Gly Gly Thr Ala Ala Cys
3695 3700 3705

Gly Gly Thr Gly Gly Cys Ala Gly Cys Ala Gly Cys Cys Thr Cys
3710 3715 3720

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Thr	Cys	Thr	Thr	Ala	Cys	Ala	Cys	Ala	Ala	Ala	Cys	Cys	Cys	Ala
3725						3730					3735			

Gly	Cys	Ala	Gly	Thr	Gly	Gly	Cys	Ala	Gly	Cys	Cys	Gly	Cys	Thr
3740						3745					3750			

Thr	Cys	Thr	Gly	Cys	Cys	Ala	Ala	Cys	Thr	Thr	Gly	Thr	Ala	Gly
3755						3760					3765			