

SEQUENCE LISTING

5 <110> GENEG S.A.

<120> SECUENCIA DE NUCLEÓTIDOS SINTÉTICA QUE CODIFICA PARA UNA
PROQUIMOSINA A RECOMBINANTE BOVINA, VECTOR DE EXPRESIÓN QUE
10 COMPRENDE DICHA SECUENCIA, CÉLULA DE ESCHERICHIA COLI
TRANSFORMADA CON DICHO VECTOR Y PROCESO DE OBTENCIÓN DE DICHA
PROQUIMOSINA A RECOMBINANTE BOVINA.

<130>

15 <160> 72

<170> PatentIn version 3.5

<210> 1
20 <211> 1098
<212> DNA
<213> bovine

<400> 1

25 atggctgaga tcaccaggat ccctctgtac aaaggcaagt ctctgaggaa ggcgctgaag 60
gagcatgggc ttctggagga cttcctgcag aaacagcagt atggcatcag cagcaagtac 120
tccggcttcg gggaggtggc cagcgtgccc ctgaccaact acctggatag tcagtacttt 180
30 ggggaagatct acctcgggac cccgccccag gagttcaccg tgctgtttga cactggctcc 240
tctgacttct gggtaccctc tatctactgc aagagcaatg cctgcaaaaa ccaccagcgc 300
35 ttcgaccgga gaaagtcgtc caccttcag aacctgggca agccctgtc tatccactac 360
gggacaggca gcatgcaggg catcctgggc tatgacaccg tcactgtctc caacattgtg 420
gacatccagc agacagtagg cctgagcacc caggagcccc gggacgtctt cacctatgcc 480
40 gaattcgacg ggatcctggg gatggcctac ccctcgtctg cctcagagta ctcgataccc 540
gtgtttgaca acatgatgaa caggcacctg gtggcccaag acctgttctc ggtttacatg 600
45 gacaggaatg gccaggagag catgctcacg ctgggggcca tcgaccctgc ctactacaca 660
gggtccctgc actgggtgcc cgtgacagtg cagcagtact ggcagttcac tgtggacagt 720
gtcaccatca gcgatgtggt tgtggcctgt gaggggtggct gtcaggccat cctggacagc 780
50 ggcacctoca agctggtcgg gccagcagc gacatcctca acatccagca ggccattgga 840
gccacacaga accagtacgg tgagtttgac atcgactgcg acaacctgag ctacatgccc 900
55 actgtggtct ttgagatcaa tggcaaaatg taccactga cccctccgc ctataccagc 960
caggaccagg gcttctgtac cagtggcttc cagagtgaat atcattccca gaaatggatc 1020
60 ctgggggatg ttttcatccg agagtattac agcgtctttg acagggccaa caacctcgtg 1080

gggctggcca aagccatc 1098

5 <210> 2
<211> 1098
<212> DNA
<213> artificial sequence

10 <220>
<223> Synthetic DNA coding for prochymosin A

<400> 2
atggcagaaa tcactcgcat ccctttgtac aaaggaaaat ctctgcgcaa ggcgcttaaa 60
15 gaacatgggc tcctggagga tttccttcag aaacagcaat atgggtattag ctctaaatac 120
agtggttttg gcgaggttgc cagcgttccg ctacgaatt atctggactc gcagtacttc 180
20 ggcaagattt atctggggac gccgccccag gaatttacag tactgttcga taccggaagt 240
tccgacttct gggtgccatc tatttattgc aagagcaacg cctgtaagaa tcatcaacgt 300
tttgaccgcg gcaaaagtgc aacattccag aaccttggtg agcccctgtc gattcattac 360
25 ggaaccggct ccatgcaagg cattctgggt tatgacacag tgactgtgtc caatattgtt 420
gatattcaac aaactgtggg cctgagcacc caggaaccag gtgacgtatt cacgtacgca 480
30 gaatttgatg gtattctggg catggcgatc ccgtctctgg cgagcgaata tagcataccg 540
gtgtttgata acatgatgaa ccgtcacctg gtggctcagg atctcttttc ggtttacatg 600
gatcgcaacg gccaggaatc aatgctgacg ttggggggcga tcgaccctgc atattacacg 660
35 gggagtttgc actgggtccc gggtacggtg cagcagtact ggcagtttac cgtagattct 720
gttaccatca gtgacgttgt ggtggcttgc gaaggcggct gccaggcaat cctggatacc 780
ggcaccagca aacttgtggg gcctagctca gatattctca acattcagca agccatcggc 840
40 gccaccaga atcagtatgg tgagtttgat atcgattgtg ataacctgtc gtacatgcct 900
accgtcgtat tcgaaattaa tggaaagatg tatccgttga ccccgtcagc atatacaagc 960
45 caggaccaag gtttttgtac ttcgggtttt cagtccgaga atcactctca aaaatggatt 1020
ctgggagacg tattcattcg tgaatattat tccgtctttg atcgggcgaa caatttggtc 1080
50 ggtctggcca aagcgatc 1098

<210> 3
<211> 1098
<212> DNA
55 <213> artificial sequence

<220>
<223> Synthetic DNA coding for prochymosin A

60 <400> 3

	atggcagaaa tcacccgcat tccgctgtat aaaggcaaaa gcctgcgtaa agcgctgaag	60
	gaacacggcc tgctggaaga cttcctgcag aaacagcagt atggcatctc tagtaaatac	120
5	agcggctttg gtgaagtagc cagcgttcca ctgactaact atctggatag tcagtacttt	180
	ggtaaaatct acctgggtac cccgccccaa gaatttacag tactgttcga taccgggtcg	240
10	agcgacttct gggttccgtc aatctattgc aaatctaacg cgtgcaaaaa ccaccagcg	300
	ttcgatccgc gtaaategtc taccttcag aacctgggta aaccgctgtc catccactac	360
	ggtagccggt ccatgcaggg tattctgggt tacgataccg tgaccgtgtc caacattgtg	420
15	gacattcaac aaaccgtggg tctgtccacc caggaacctg gtgacgtttt tacctacgca	480
	gaatttgacg gtatcttggg tatggcgtat ccgtcactgg catcggaata ctctatccc	540
20	gtgtttgata acatgatgaa tcgccacctg gttgctcagg acctgttcag tgtatatatg	600
	gaccgtaacg gtcaggaatc aatgctgact ctgggcgcta tcgaccgtc ttactacacc	660
	ggtagcctgc attgggtccc gggtactgta cagcaatatt ggcagtttac tgtggactct	720
25	gttacgatct ctgacgtcgt tgtggcttgc gaaggcggtt gccaggcgat cctggacacg	780
	ggaaccagca aactggttgg tccatccagc gatatcctga acatccagca ggcgatccgc	840
30	gccactcaga accagtatgg tgaattcgat attgattgag ataacctgtc ctacatgccg	900
	accgtggttt tcgagatcaa cggtaaaatg tatccgctga ccccgctctg ctatacctcg	960
	caggaccagg gtttctgtac atctggcttc caatccgaaa accactcaca aaaatggatc	1020
35	ctgggggacg tggtcattcg tgaatattac tccgtgtttg atcgcgcgaa caacctggtc	1080
	ggcctggcga aagcaatc	1098
40	<210> 4 <211> 1098 <212> DNA <213> artificial sequence	
45	<220> <223> Synthetic DNA coding for prochymosin A <400> 4	
50	atggctgaaa ttacacgtat cccgctgtac aaaggtaa at ctctgcgtaa ggcgctgaaa	60
	gaacacggcc tgctggaaga tttccttcag aaacagcagt atggcatctc ctctaaatat	120
	agcggttttg gtgaagtggc aagcgtaccg ctgactaact atctggactc tcagtatttc	180
55	ggtaaaatct atctgggtac cccgccgcaa gaatttactg tactgtttga taccggtagc	240
	tccgactttt gggtagcgtc tatctactgt aaatctaacg cgtgtaagaa tcatcaacgt	300
60	tttgaccgcg gtaaaagctc caccttcag aacctgggta aaccgctgtc tatccactac	360

	ggtaaccggct ctatgcaggg catcttaggt tacgataccg ttaccgtatc taacatcgta	420
	gacattcagc agaccgttgg cctgagcacc caggagcctg gtgacgtttt tacatacgc	480
5	gagttcgatg gcatcctggg tatggcatac ccgtctctcg cgtctgaata tagcatcccg	540
	gtattcgaca acatgatgaa ccgtcacctg gtggcacagg atcttttcag cgtttacatg	600
10	gatcgcaacg gtcaggaaaag catgctgacc ctgggtgcca tcgacccgtc ctactatact	660
	ggtagcctgc attgggtgcc ggtgacgggt cagcaatatt ggcagtttac tgttgattca	720
	gtgactatct ctgacgtcgt ggttgcttgc gaagggtggc gtcaggcgat tttagacact	780
15	ggtacttcta aactggttgg ccgcctcagc gatattctga acatccagca ggcaatcggg	840
	gcaacacaga accaatacgg tgaattcgac attgattgtg ataacctgtc atacatgccg	900
20	accgttgtgt tcgaaatcaa cggcaagatg tatccgctga cccgcgcggc atacacctcc	960
	caggaccagg ggttttgcac cagtggcttc caatctgaaa accactccca gaaatggatt	1020
	ctgggtgacg ttttcatccg cgaatactac tctgttttcg accgtgcgaa taacctgggtg	1080
25	ggcctggcta aggcctatc	1098
	<210> 5	
	<211> 1098	
30	<212> DNA	
	<213> artificial sequence	
	<220>	
	<223> Synthetic DNA coding for prochymosin A	
35	<400> 5	
	atggctgaga ttacacgtat tccgctgtat aaaggtaa at cgctgcgtaa agcactgaaa	60
40	gaacacggtc tgctggagga cttcctgcaa aagcagcaat acggcattag cagcaaatac	120
	tctgggtttcg gcgaggtggc ttccgtaccg ttgaccaact acctggattc ccaatatttc	180
	ggtaagatct atctgggcac ccgcgcgcaa gaattcactg tgctctttga caccggctct	240
45	tctgactttt gggttccgct tatctactgt aagagcaacg cgtgtaagaa ccaccagcgc	300
	ttcgaccac gcaaattccag cactttccag aacttaggta aaccgctgag cattcactac	360
50	ggtaaccggct ccatgcaggg tatcctgggc tacgacaccg taaccgtgag caacattgtg	420
	gacatccagc agaccgtagg tctgagtact caggagcctg gtgacgtatt cacgtacgct	480
	gagttcgacg gtatcctggg tatggcgtag ccgagcctgg ctacgcagta ctctatcccg	540
55	gtttttgaca acatgatgaa ccgccacctg gttgcgcaag acctcttctc cgtatatatg	600
	gatcgtaacg ggcaggagag catggtgacc ctgggtgcaa tcgacccgtc ctactacacc	660
60	ggctccctcc attgggttcc ggtgacagtg cagcagtatt ggcagttcac cgtagattcc	720

	gttactatct cgcacgtagt tgttgccctgc gaagggtggt gccaaagcaat cctggatacc	780
	ggcacctcga agctggtagg cccgtcttct gatattctga acatccagca agcgattggt	840
5	gccacccaga accaatacgg tgaattcgac atcgattgtg acaatctgtc ttacatgccg	900
	actgtggtat tcgaaatcaa cggtaaaatg taccggttaa ctccctctgc gtatacttct	960
10	caggatcagg gcttctgtac cagcggtttc caatccgaaa accacagcca aaaatggatt	1020
	ctgggcgacg tattcatccg cgaatattat tcggtatttg accgtgcgaa caacctggta	1080
	ggcctggcga aagcaatc	1098
15	<210> 6 <211> 1098 <212> DNA <213> artificial sequence	
20	<220> <223> Synthetic DNA coding for prochymosin A	
	<400> 6	
25	atggcggaat tcactcgtat cccgctgtac aaaggcaaaa gcctgcgtaa agcggtgaaa	60
	gaacacggct tactcgaaga ctctctgcag aaacagcagt atggatatct ttctaaatac	120
30	tctggcttcg gcgaagtcgc ttctgttctt ctgaccaact acctggacag ccagtacttt	180
	ggtaaaatct acctgggcac cccgccgcag gaattcactg ttctgttcga caccggcagc	240
	agcgatttct gggctccgct catttactgc aaatcgaacg cttgcaaaaa ccaccagcgc	300
35	ttcgatccgc gcaaatactc tacgtttcag aacctgggca aaccgctgtc tattcactac	360
	ggcacggggt ccatgcaggg tatcctgggc tacgataccg tcaccgttag caacatcggt	420
40	gacatccaac agaccgtagg tctgagcacg caggaaccgg gcgacgtggt caggtacgct	480
	gaattcgaat gtattctggg tatggcatat ccgctctctg cctccgaata tagcatcccg	540
	gtgttcgata acatgatgaa ccgccacctg gtggcccagg atctgttcag cgtgtacatg	600
45	gatcgcaacg ggcaggagtc tatgctgaca ctgggtgcca tcgatccgct ctactacacc	660
	ggctcgctgc actgggtccc ggtcaccggt cagcagtact ggcagttcac tgtagacagc	720
50	gtcactatta gcgacgttgt agttgcttgt gaaggcggct gtcaggcaat cctggatact	780
	ggcacttcca agctgggtggg tccgtcatct gatattctga acatccagca ggcaattgga	840
	gcgacccaga accagtatgg tgaatttgac atcgactgcg ataacctgtc ctatatgcct	900
55	actgtggttt tcgaaattaa cggtaaaatg tatccgttaa ccccaagcgc gtacaccagc	960
	caagaccagg gcttctgcac ctctggattt cagtctgaga accactctca gaaatggatc	1020
60	ctgggcgacg tatttattcg tgaatactat tctgtattcg accgtgcaaa caacctggta	1080

ggcctcgga aagcaatc 1098

5 <210> 7
<211> 1098
<212> DNA
<213> artificial sequence

10 <220>
<223> Synthetic DNA coding for prochymosin A

<400> 7

15 atggcggaaa tcacccgtat cccgctgtac aaaggtaa atctgcgtaa agcgctgaaa 60
gaacacgggc tgctggaaga cttcctgcag aaacagcagt acggtatctc ttctaaatac 120
tctggtttcg gtgaagttgc gtctgttcgc ctgaccaact acctggactc tcagtacttc 180

20 ggtaaaatct acctgggtac cccgccgcag gaattcaccg ttctgttcga caccggttct 240
tctgacttct gggttccgctc tatctactgc aaatctaacy cgtgcaaaaa ccaccagcgt 300
ttcgaccgcg gtaaattctc taccttcacg aacctgggta aaccgctgctc tatccactac 360

25 ggtaccgggt ctatgcaggg tatcctgggt tacgacaccg ttaccgtttc taacatcggt 420
gacatccagc agaccgttgg tctgtctacc caggaaccgg gtgacgtttt cacctacgcg 480

30 gaattcgacg gtatcctggg tatggcgta cccgtctctg cgtctgaata ctctatcccg 540
gttttcgaca acatgatgaa ccgtcacctg gttgcgcagg acctgttctc tgtttacatg 600
gaccgtaacg gtcaggaatc tatgctgacc ctgggtgcga tcgaccgcgc ttactacacc 660

35 ggttctctgc actgggttcc gggtaccgtt cagcagtact ggcagttcac cgttgactct 720
gttaccatct ctgacgttgt tgttgctgct gaaggtgggt gccaggcgat cctggacacc 780

40 ggtacctcta aactgggttg tccgtcttct gacatcctga acatccagca ggcgatcggg 840
gcgaccacga accagtacgg tgaattcgac atcgactgcg acaacctgct ttacatgccg 900
accgttggtt tcgaaatcaa cggtaaaatg taccgctga cccgctctgc gtacacctct 960

45 caggaccagg gtttctgcac ctctgggttc cagtctgaaa accactctca gaaatggatc 1020
ctgggtgacg ttttcatccg tgaatactac tctgttttcg accgtgcgaa caacctgggt 1080

50 ggtctggcga aagcgatc 1098

55 <210> 8
<211> 366
<212> PRT
<213> bovine

60 <400> 8

Met Ala Glu Ile Thr Arg Ile Pro Leu Tyr Lys Gly Lys Ser Leu Arg
 1 5 10 15
 5 Lys Ala Leu Lys Glu His Gly Leu Leu Glu Asp Phe Leu Gln Lys Gln
 20 25 30
 10 Gln Tyr Gly Ile Ser Ser Lys Tyr Ser Gly Phe Gly Glu Val Ala Ser
 35 40 45
 15 Val Pro Leu Thr Asn Tyr Leu Asp Ser Gln Tyr Phe Gly Lys Ile Tyr
 50 55 60
 20 Leu Gly Thr Pro Pro Gln Glu Phe Thr Val Leu Phe Asp Thr Gly Ser
 65 70 75 80
 Ser Asp Phe Trp Val Pro Ser Ile Tyr Cys Lys Ser Asn Ala Cys Lys
 85 90 95
 25 Asn His Gln Arg Phe Asp Pro Arg Lys Ser Ser Thr Phe Gln Asn Leu
 100 105 110
 30 Gly Lys Pro Leu Ser Ile His Tyr Gly Thr Gly Ser Met Gln Gly Ile
 115 120 125
 35 Leu Gly Tyr Asp Thr Val Thr Val Ser Asn Ile Val Asp Ile Gln Gln
 130 135 140
 Thr Val Gly Leu Ser Thr Gln Glu Pro Gly Asp Val Phe Thr Tyr Ala
 145 150 155 160
 40 Glu Phe Asp Gly Ile Leu Gly Met Ala Tyr Pro Ser Leu Ala Ser Glu
 165 170 175
 45 Tyr Ser Ile Pro Val Phe Asp Asn Met Met Asn Arg His Leu Val Ala
 180 185 190
 50 Gln Asp Leu Phe Ser Val Tyr Met Asp Arg Asn Gly Gln Glu Ser Met
 195 200 205
 55 Leu Thr Leu Gly Ala Ile Asp Pro Ser Tyr Tyr Thr Gly Ser Leu His
 210 215 220
 Trp Val Pro Val Thr Val Gln Gln Tyr Trp Gln Phe Thr Val Asp Ser
 225 230 235 240
 60

04.05.2011

Val Thr Ile Ser Asp Val Val Val Ala Cys Glu Gly Gly Cys Gln Ala
 245 250 255

5 Ile Leu Asp Thr Gly Thr Ser Lys Leu Val Gly Pro Ser Ser Asp Ile
 260 265 270

10 Leu Asn Ile Gln Gln Ala Ile Gly Ala Thr Gln Asn Gln Tyr Gly Glu
 275 280 285

15 Phe Asp Ile Asp Cys Asp Asn Leu Ser Tyr Met Pro Thr Val Val Phe
 290 295 300

Glu Ile Asn Gly Lys Met Tyr Pro Leu Thr Pro Ser Ala Tyr Thr Ser
 305 310 315 320

20 Gln Asp Gln Gly Phe Cys Thr Ser Gly Phe Gln Ser Glu Asn His Ser
 325 330 335

25 Gln Lys Trp Ile Leu Gly Asp Val Phe Ile Arg Glu Tyr Tyr Ser Val
 340 345 350

30 Phe Asp Arg Ala Asn Asn Leu Val Gly Leu Ala Lys Ala Ile
 355 360 365

<210> 9
 35 <211> 323
 <212> PRT
 <213> Bovine

<400> 9

40 Gly Glu Val Ala Ser Val Pro Leu Thr Asn Tyr Leu Asp Ser Gln Tyr
 1 5 10 15

45 Phe Gly Lys Ile Tyr Leu Gly Thr Pro Pro Gln Glu Phe Thr Val Leu
 20 25 30

50 Phe Asp Thr Gly Ser Ser Asp Phe Trp Val Pro Ser Ile Tyr Cys Lys
 35 40 45

Ser Asn Ala Cys Lys Asn His Gln Arg Phe Asp Pro Arg Lys Ser Ser
 50 55 60

55 Thr Phe Gln Asn Leu Gly Lys Pro Leu Ser Ile His Tyr Gly Thr Gly
 65 70 75 80

60

04.05.2011

Ser Met Gln Gly Ile Leu Gly Tyr Asp Thr Val Thr Val Ser Asn Ile
 85 90 95

5 Val Asp Ile Gln Gln Thr Val Gly Leu Ser Thr Gln Glu Pro Gly Asp
 100 105 110

10 Val Phe Thr Tyr Ala Glu Phe Asp Gly Ile Leu Gly Met Ala Tyr Pro
 115 120 125

15 Ser Leu Ala Ser Glu Tyr Ser Ile Pro Val Phe Asp Asn Met Met Asn
 130 135 140

Arg His Leu Val Ala Gln Asp Leu Phe Ser Val Tyr Met Asp Arg Asn
 145 150 155 160

20 Gly Gln Glu Ser Met Leu Thr Leu Gly Ala Ile Asp Pro Ser Tyr Tyr
 165 170 175

25 Thr Gly Ser Leu His Trp Val Pro Val Thr Val Gln Gln Tyr Trp Gln
 180 185 190

30 Phe Thr Val Asp Ser Val Thr Ile Ser Asp Val Val Val Ala Cys Glu
 195 200 205

35 Gly Gly Cys Gln Ala Ile Leu Asp Thr Gly Thr Ser Lys Leu Val Gly
 210 215 220

40 Pro Ser Ser Asp Ile Leu Asn Ile Gln Gln Ala Ile Gly Ala Thr Gln
 225 230 235 240

Asn Gln Tyr Gly Glu Phe Asp Ile Asp Cys Asp Asn Leu Ser Tyr Met
 245 250 255

45 Pro Thr Val Val Phe Glu Ile Asn Gly Lys Met Tyr Pro Leu Thr Pro
 260 265 270

50 Ser Ala Tyr Thr Ser Gln Asp Gln Gly Phe Cys Thr Ser Gly Phe Gln
 275 280 285

55 Ser Glu Asn His Ser Gln Lys Trp Ile Leu Gly Asp Val Phe Ile Arg
 290 295 300

60 Glu Tyr Tyr Ser Val Phe Asp Arg Ala Asn Asn Leu Val Gly Leu Ala
 305 310 315 320

Lys Ala Ile

5 <210> 10
 <211> 19
 <212> DNA
 <213> artificial sequence

10 <220>
 <223> synthetic primer anti-sense

 <400> 10
 gccatgtagc cggtgaaat 19

15

 <210> 11
 <211> 37
 <212> DNA
20 <213> artificial sequence

 <220>
 <223> synthetic primer sense

25 <400> 11
 atttcaccgg ctacatggca gaaatcactc gcattccc 37

30 <210> 12
 <211> 41
 <212> DNA
 <213> artificial sequence

 <220>
35 <223> synthetic primer anti-sense

 <400> 12
 gcagagattt tcctttgtac aaagggatgc gagtgatttc t 41

40

 <210> 13
 <211> 41
 <212> DNA
 <213> artificial sequence

45 <220>
 <223> synthetic primer sense

 <400> 13
50 tttgtacaaa ggaaaatctc tgcgcaaggc gcttaaagaa c 41

 <210> 14
 <211> 34
55 <212> DNA
 <213> artificial sequence

 <220>
 <223> synthetic primer anti-sense

60

	<400> 14	
	tcctccagga gcccatgttc tttaagcgcc ttgc	34
5	<210> 15	
	<211> 37	
	<212> DNA	
	<213> artificial sequence	
10	<220>	
	<223> synthetic primer sense	
	<400> 15	
15	atggggtcct ggaggatttc cttcagaaac agcaata	37
	<210> 16	
	<211> 45	
	<212> DNA	
20	<213> artificial sequence	
	<220>	
	<223> synthetic primer anti-sense	
25	<400> 16	
	ccactgtatt tagagctaata accatattgc tgtttctgaa ggaaa	45
	<210> 17	
30	<211> 41	
	<212> DNA	
	<213> artificial sequence	
	<220>	
35	<223> synthetic primer sense	
	<400> 17	
	tggtattagc tctaaatata gtggttttgg cgagggttgcc a	41
40	<210> 18	
	<211> 34	
	<212> DNA	
	<213> artificial sequence	
45	<220>	
	<223> synthetic primer anti-sense	
	<400> 18	
50	attcgtgagc ggaacgctgg caacctcgcc aaaa	34
	<210> 19	
	<211> 37	
55	<212> DNA	
	<213> artificial sequence	
	<220>	
60	<223> synthetic primer sense	

	<400> 19		
	gcgttccgct cacgaattat ctggactcgc agtactt		37
5	<210> 20		
	<211> 40		
	<212> DNA		
	<213> artificial sequence		
10	<220>		
	<223> synthetic primer anti-sense		
	<400> 20		
15	tccccagata aatcttgccg aagtactgcg agtccagata		40
	<210> 21		
	<211> 38		
	<212> DNA		
20	<213> artificial sequence		
	<220>		
	<223> synthetic primer sense		
25	<400> 21		
	cggcaagatt tatctgggga cgccgccccca ggaattta		38
	<210> 22		
30	<211> 37		
	<212> DNA		
	<213> artificial sequence		
	<220>		
35	<223> synthetic primer anti-sense		
	<400> 22		
	ccggtatcga acagtactgt aaattcctgg ggcggcg		37
40	<210> 23		
	<211> 36		
	<212> DNA		
	<213> artificial sequence		
45	<220>		
	<223> synthetic primer sense		
	<400> 23		
50	cagtactgtt cgataccgga agttccgact tctggg		36
	<210> 24		
	<211> 38		
55	<212> DNA		
	<213> artificial sequence		
	<220>		
60	<223> synthetic primer anti-sense		

<400> 24
tcttgcaata aatagatggc acccagaagt cggaactt 38

5 <210> 25
<211> 39
<212> DNA
<213> artificial sequence

10 <220>
<223> syntetic primer sense

<400> 25
tgccatctat ttattgcaag agcaacgcct gtaagaatc 39

15

<210> 26
<211> 36
<212> DNA
20 <213> artificial sequence

<220>
<223> synthetic primer anti-sense

25 <400> 26
gcgggtcaaa acgttgatga ttcttacagg cgttgc 36

<210> 27
30 <211> 38
<212> DNA
<213> artificial sequence

<220>
35 <223> synthetic primer sense

<400> 27
atcaacgttt tgacccgcgc aaaagttcaa cattccag 38

40

<210> 28
<211> 36
<212> DNA
<213> artificial sequence

45 <220>
<223> synthetic primer anti-sense

<400> 28
50 ggggcttacc aaggttctgg aatgttgaac ttttgc 36

<210> 29
<211> 36
55 <212> DNA
<213> artificial sequence

<220>
60 <223> synthetic primer sense

<400> 29
aaccttggtgta agcccctgtc gattcattac ggaacc 36

5 <210> 30
<211> 36
<212> DNA
<213> artificial sequence

10 <220>
<223> synthetic primer anti-sense

<400> 30
tgcccttgcat ggagccggtt ccgtaatgaa tcgaca 36

15

<210> 31
<211> 35
<212> DNA
20 <213> artificial sequence

<220>
<223> synthetic primer sense

25 <400> 31
ggctccatgc aaggcattct gggttatgac acagt 35

<210> 32
30 <211> 40
<212> DNA
<213> artificial sequence

<220>
35 <223> synthetic primer anti-sense

<400> 32
tcaacaatat tggacacagt cactgtgtca taaccagaa 40

40

<210> 33
<211> 40
<212> DNA
<213> artificial sequence

45 <220>
<223> synthetic primer sense

<400> 33
50 gactgtgtcc aatattgttg atattcaaca aactgtgggc 40

<210> 34
<211> 35
55 <212> DNA
<213> artificial sequence

<220>
60 <223> synthetic primer anti-sense

<400> 34
gttcctgggt gctcaggccc acagtttggt gaata 35

5 <210> 35
<211> 35
<212> DNA
<213> artificial sequence

10 <220>
<223> synthetic primer sense

<400> 35
ctgagcaccc aggaaccagg tgacgtattc acgta 35

15

<210> 36
<211> 40
<212> DNA
20 <213> artificial sequence

<220>
<223> synthetic primer anti-sense

25 <400> 36
agaataccat caaattctgc gtacgtgaat acgtcacctg 40

<210> 37
30 <211> 37
<212> DNA
<213> artificial sequence

<220>
35 <223> synthetic primer sense

<400> 37
cgcagaattt gatggtattc tgggcatggc gatatccg 37

40

<210> 38
<211> 33
<212> DNA
<213> artificial sequence

45 <220>
<223> synthetic primer anti-sense

<400> 38
50 tattcgctcg ccagagacgg atacgccatg ccc 33

<210> 39
<211> 35
55 <212> DNA
<213> artificial sequence

<220>
60 <223> synthetic primer sense

<400> 39
tctctggcga gcgaatatag cataccggtg ttgga 35

5 <210> 40
<211> 38
<212> DNA
<213> artificial sequence

10 <220>
<223> synthetic primer anti-sense

<400> 40
ggtagcgggtt catcatgtta tcaaacaccg gtatgcta 38

15

<210> 41
<211> 36
<212> DNA
20 <213> artificial sequence

<220>
<223> synthetic primer sense

25 <400> 41
taacatgatg aaccgtcacc tggtaggctca ggatct 36

<210> 42
30 <211> 37
<212> DNA
<213> artificial sequence

<220>
35 <223> synthetic primer anti-sense

<400> 42
cgatccatgt aaaccgaaaa gagatcctga gccacca 37

40

<210> 43
<211> 37
<212> DNA
<213> artificial sequence

45 <220>
<223> synthetic primer sense

<400> 43
50 cttttcgggtt tacatggatc gcaacggcca ggaatca 37

<210> 44
<211> 32
55 <212> DNA
<213> artificial sequence

<220>
<223> synthetic primer anti-sense

60

	<400> 44		
	cccccaacgt cagcattgat tcctggccgt tg		32
5	<210> 45		
	<211> 35		
	<212> DNA		
	<213> artificial sequence		
10	<220>		
	<223> synthetic primer sense		
	<400> 45		
15	atgctgacgt tgggggcat cgaccgtca tatta		35
	<210> 46		
	<211> 35		
	<212> DNA		
20	<213> artificial sequence		
	<220>		
	<223> synthetic primer anti-sense		
25	<400> 46		
	gtgcaaactc cccgtgtaat atgacgggtc gatcg		35
	<210> 47		
30	<211> 32		
	<212> DNA		
	<213> artificial sequence		
	<220>		
35	<223> synthetic primer sense		
	<400> 47		
	cacggggagt ttgcactggg tcccggttac gg		32
40	<210> 48		
	<211> 32		
	<212> DNA		
	<213> artificial sequence		
45	<220>		
	<223> synthetic primer anti-sense		
	<400> 48		
50	tgccagtact gctgcaccgt aaccgggacc ca		32
	<210> 49		
	<211> 39		
55	<212> DNA		
	<213> artificial sequence		
	<220>		
60	<223> synthetic primer sense		

<400> 49
tgcagcagta ctggcagttt accgtagatt ctgttacca 39

5 <210> 50
<211> 41
<212> DNA

10 <213> artificial sequence
<220>
<223> synthetic primer anti.-sense

15 <400> 50
ccaccacaac gtcactgatg gtaacagaat ctacggtaaa c 41

20 <210> 51
<211> 34
<212> DNA
<213> artificial sequence
<220>
<223> synthetic primer sense

25 <400> 51
tcagtgcagc tgtgggtggc tgcgaaggcg gctg 34

30 <210> 52
<211> 33
<212> DNA
<213> artificial sequence

35 <220>
<223> synthetic primer anti-sense

40 <400> 52
tatccaggat tgcctggcag ccgccttcgc aag 33

45 <210> 53
<211> 33
<212> DNA
<213> artificial sequence
<220>
<223> synthetic primer sense

50 <400> 53
ccaggcaatc ctggataccg gcaccagcaa act 33

55 <210> 54
<211> 32
<212> DNA
<213> artificial sequence

60 <220>

<223> synthetic primer anti-sense
 <400> 54
 5 tgagctaggc cccacaagtt tgctggtgcc gg 32
 <210> 55
 <211> 39
 <212> DNA
 10 <213> artificial sequence
 <220>
 <223> synthetic primer sense
 15 <400> 55
 tgtggggcct agctcagata ttctcaacat tcagcaagc 39
 <210> 56
 20 <211> 39
 <212> DNA
 <213> artificial sequence
 <220>
 25 <223> synthetic primer anti-sense
 <400> 56
 ctgggtggcg ccgatggctt gctgaatgtt gagaatata 39
 30 <210> 57
 <211> 40
 <212> DNA
 <213> artificial sequence
 35 <220>
 <223> synthetic primer sense
 <400> 57
 40 catcggcgcc acccagaatc agtatggtga gtttgatata 40
 <210> 58
 <211> 45
 45 <212> DNA
 <213> artificial sequence
 <220>
 <223> synthetic primer anti-sense
 50 <400> 58
 gtacgacagg ttatcacaat cgatatcaaa ctcaccatac tgatt 45
 <210> 59
 <211> 39
 <212> DNA
 <213> artificial sequence
 60 <220>

<223> synthetic primer sense
 <400> 59
 5 gattgtgata acctgtcgta catgcctacc gtcgtattc 39
 <210> 60
 <211> 42
 <212> DNA
 10 <213> artificial sequence
 <220>
 <223> synthetic primer anti-sense
 15 <400> 60
 cggatacatc tttccattaa ttctgaatac gacggtaggc at 42
 <210> 61
 20 <211> 41
 <212> DNA
 <213> artificial sequence
 <220>
 25 <223> synthetic primer sense
 <400> 61
 gaaattaatg gaaagatgta tccgttgacc ccgtcagcat a 41
 30 <210> 62
 <211> 34
 <212> DNA
 <213> artificial sequence
 35 <220>
 <223> synthetic primer anti-sense
 <400> 62
 40 cttggtcctg gcttgtatat gctgacgggg tcaa 34
 <210> 63
 <211> 38
 45 <212> DNA
 <213> artificial sequence
 <220>
 <223> synthetic primer sense
 50 <400> 63
 tacaagccag gaccaaggtt tttgtacttc gggttttc 38
 <210> 64
 <211> 40
 <212> DNA
 <213> artificial sequence
 60 <220>

<223> synthetic primer anti-sense

<400> 64
5 tgagagtgat tctcggactg aaaacccgaa gtacaaaaac 40

<210> 65
<211> 41
<212> DNA
10 <213> artificial sequence

<220>
<223> synthetic primer sense

15 <400> 65
agtccgagaa tcactctcaa aaatggattc tgggagacgt a 41

<210> 66
20 <211> 45
<212> DNA
<213> artificial sequence

<220>
25 <223> synthetic primer anti-sense

<400> 66
acggaataat attcacgaat gaatacgtct cccagaatcc atttt 45

30 <210> 67
<211> 40
<212> DNA
<213> artificial sequence

35 <220>
<223> synthetic primer sense

<400> 67
40 ttcattcgtg aatattattc cgtctttgat cgggcgaaca 40

<210> 68
<211> 33
45 <212> DNA
<213> artificial sequence

<220>
50 <223> synthetic primer anti-sense

<400> 68
gccagaccga ccaaattggt cgcccgatca aag 33

55 <210> 69
<211> 34
<212> DNA
<213> artificial sequence

60

<220>
<223> synthetic primer sense

<400> 69
5 atttggtcgg tctggccaaa gcgatcctgt tcag 34

<210> 70
<211> 18
10 <212> DNA
<213> artificial sequence

<220>
<223> synthetic primer anti-sense
15
<400> 70
ctgaacagga tcgctttg 18

<210> 71
<211> 68
20 <212> DNA
<213> artificial sequence

<220>
<223> construcción que incorpora sitio de reconocimiento para la enzima
25 de restricción BglII, el promotor tac y un sitio de unión al
ribosoma

<400> 71
30 agatctttga cagcgaccg ggctttgtgt ataatcttct ggcgtcgacc agcaggagga 60
gcgcgaca 68

<210> 72
<211> 68
35 <212> DNA
<213> artificial sequence

<220>
<223> construcción que incorpora sitio de reconocimiento para la enzima
40 de restricción BglII, el promotor lacUV5 y un sitio de unión al
ribosoma

<400> 72
45 agatctttta cagcgaccg ggctttgtgt ataatcttct ggcgtcgacc agcaggagga 60
gcgcgaca 68

50