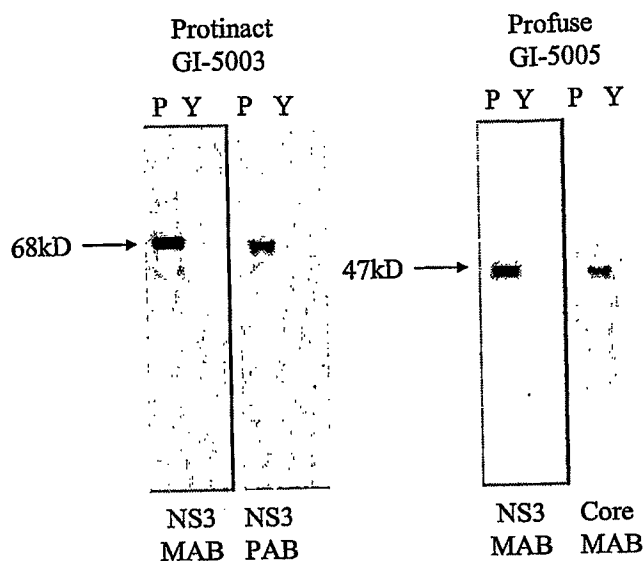


FIG. 1A



P = Profuse or Protinact
Y = YEX (vector only)

FIG. 1B

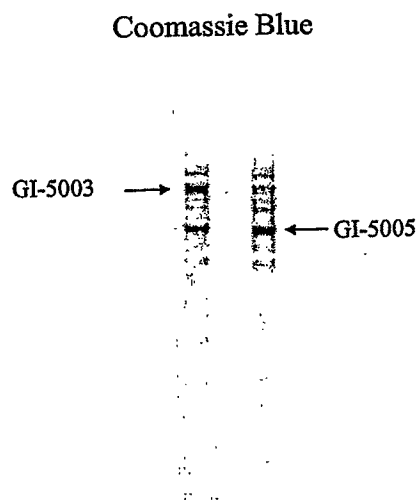


FIG. 1C

E1-E2 Tarmogen

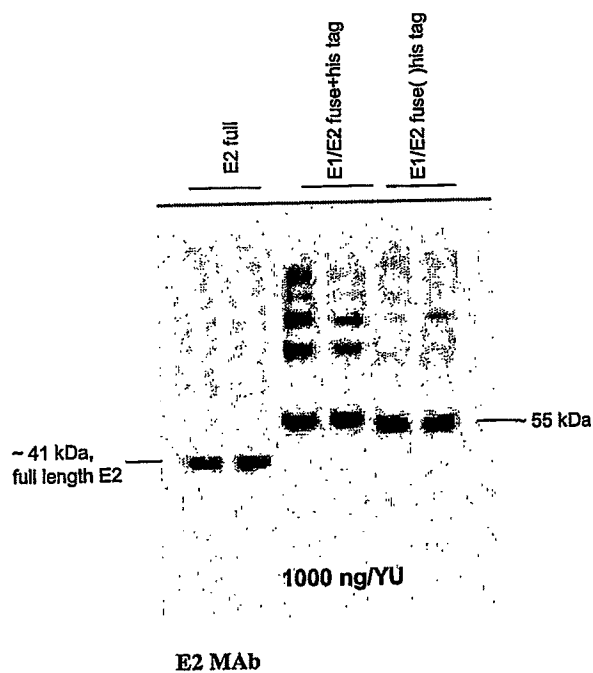


FIG. 1D

NS4B Tarmogen

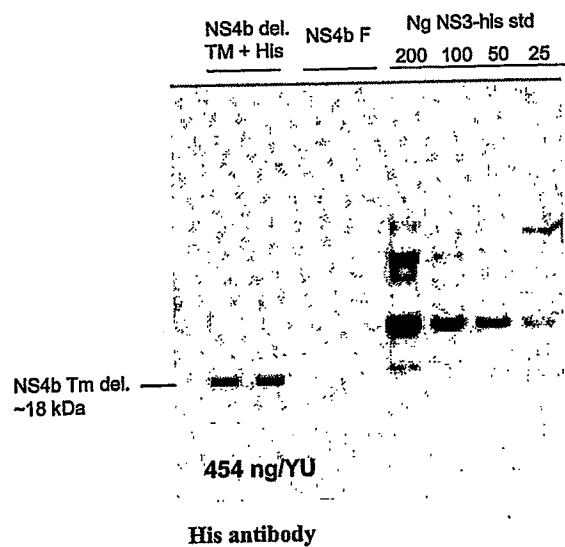


FIG. 2

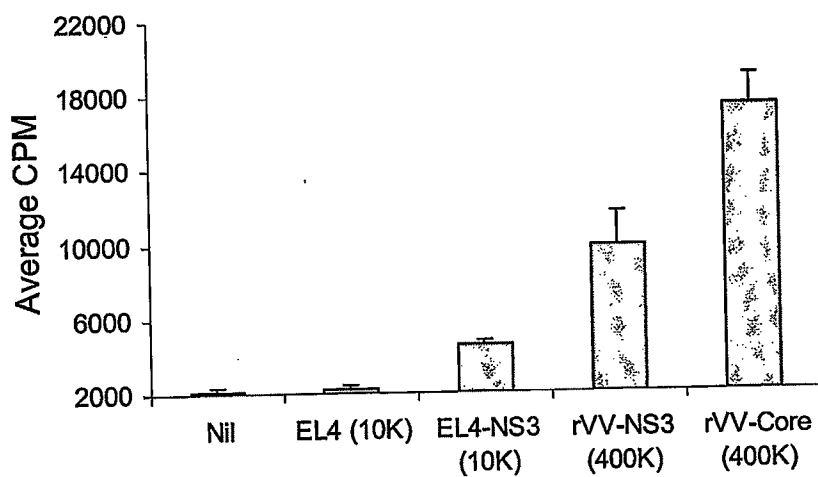


FIG. 3A

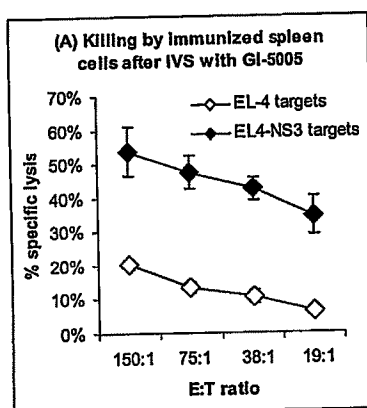


FIG. 3B

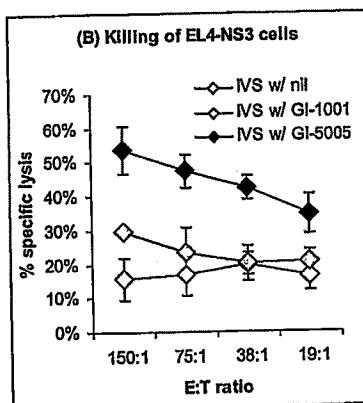


FIG. 3C

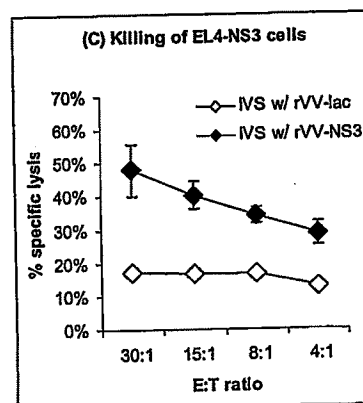


FIG. 4A

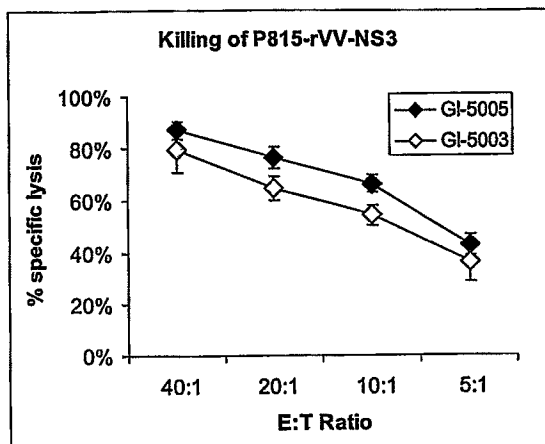


FIG. 4B

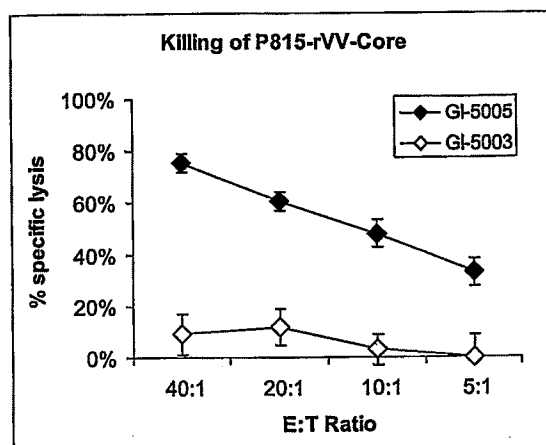


FIG. 5

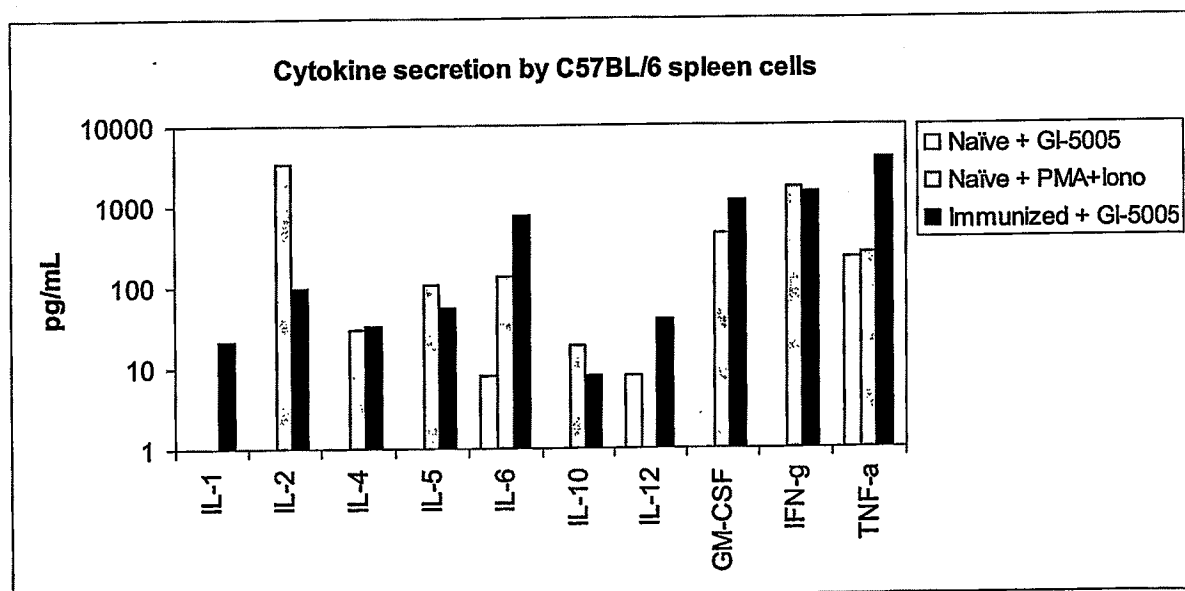


FIG. 6

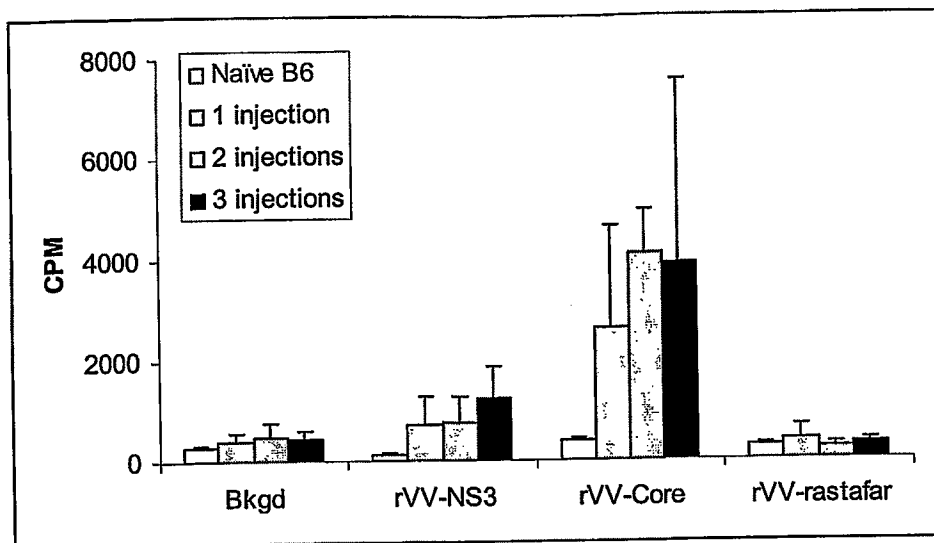


FIG. 7A

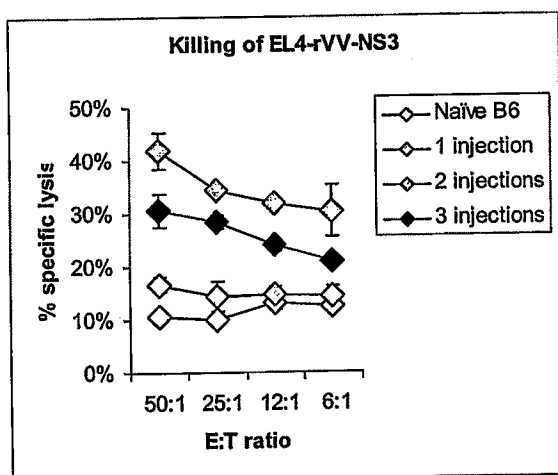


FIG. 7B

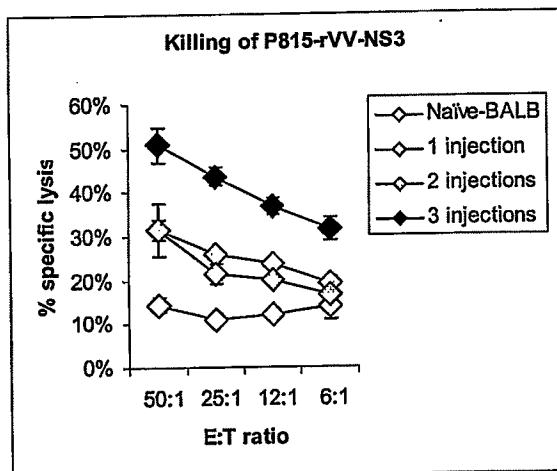
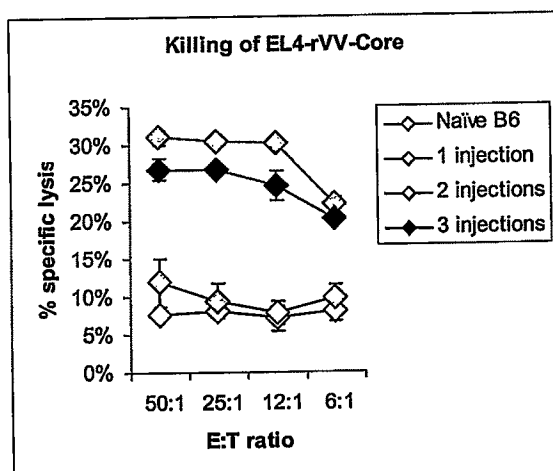


FIG. 7C

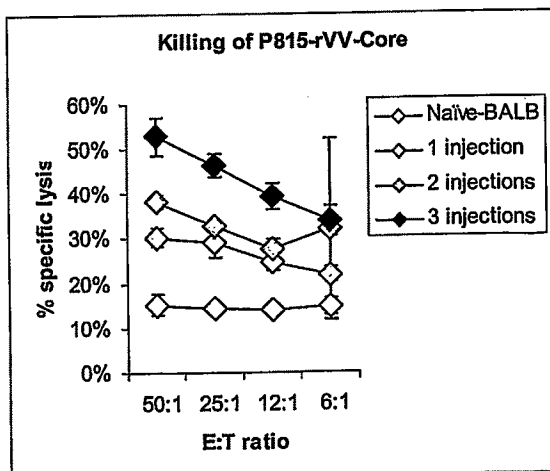


FIG. 7D

FIG. 8A

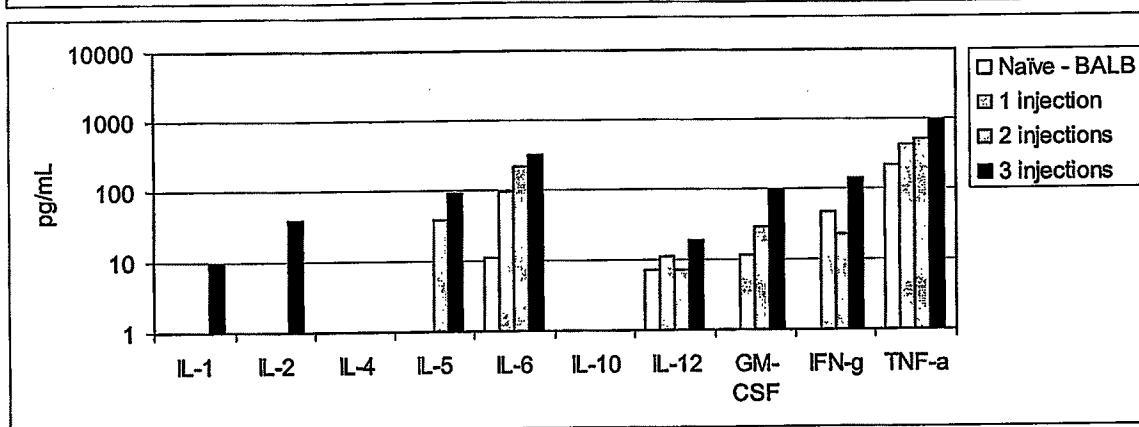
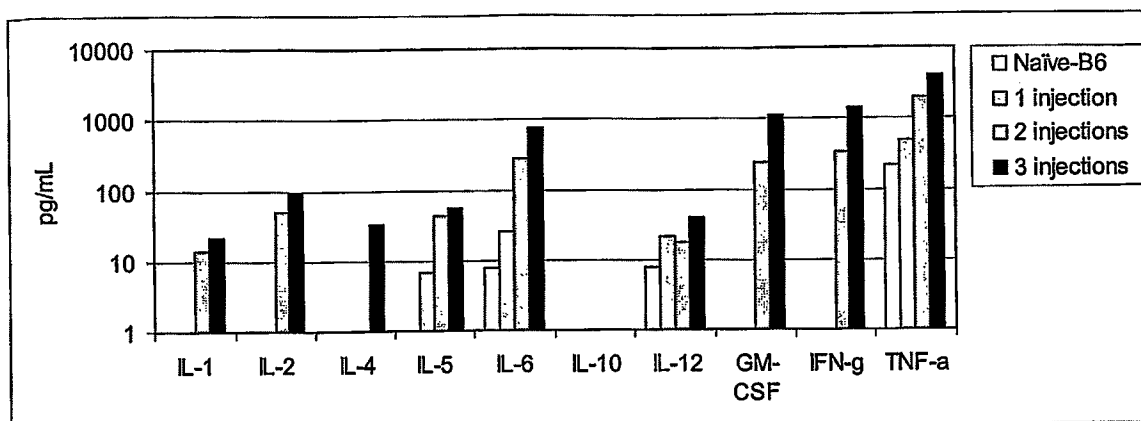


FIG. 8B

FIG. 9

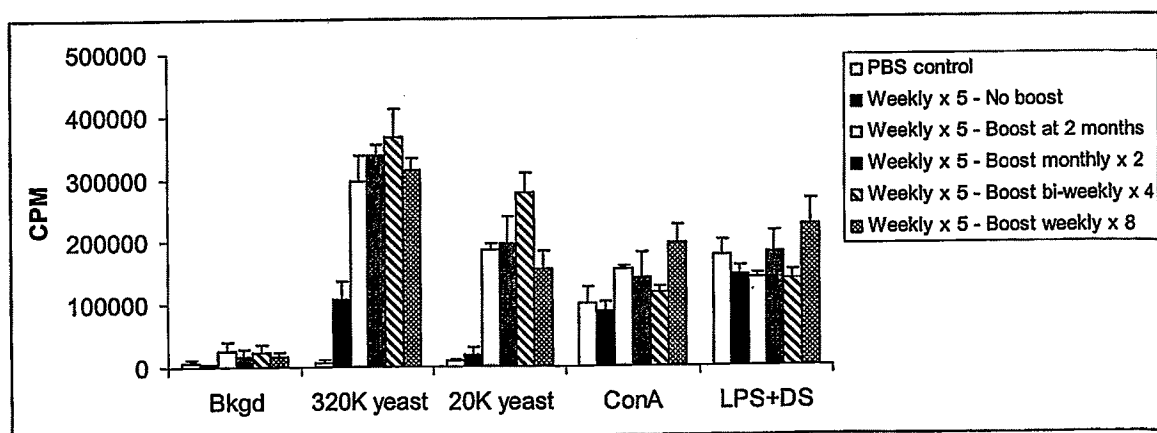


FIG. 10

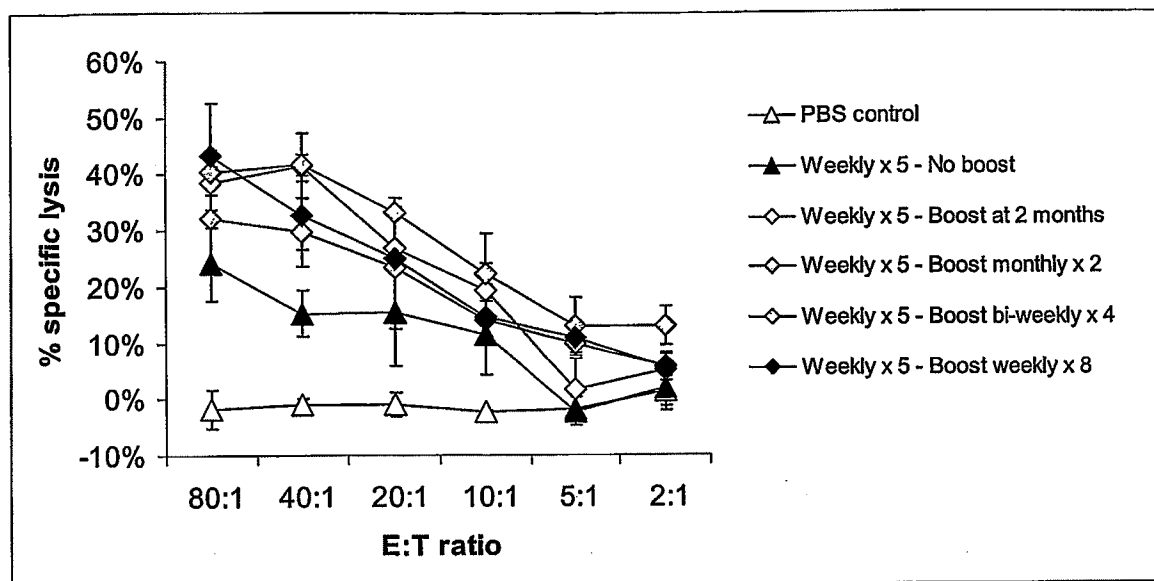


FIG. 11A

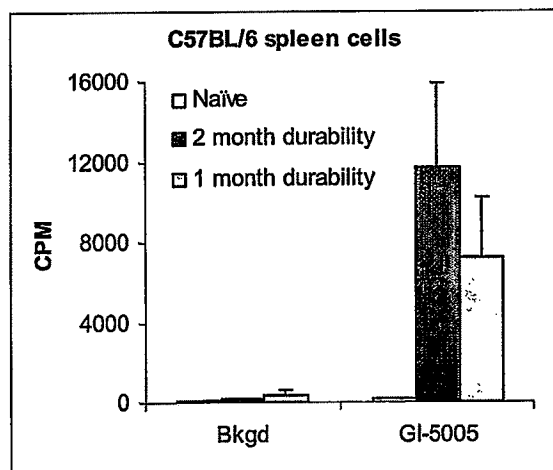


FIG. 11B

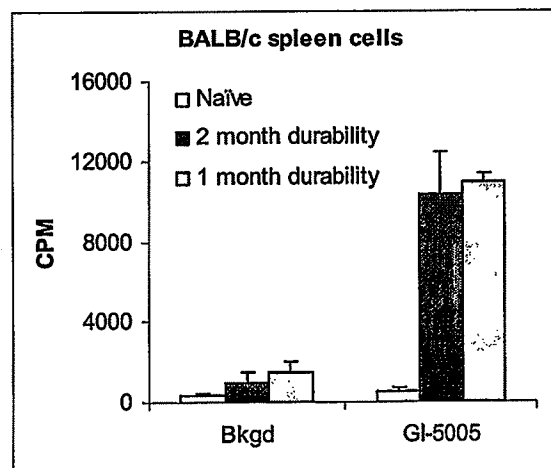


FIG. 12A

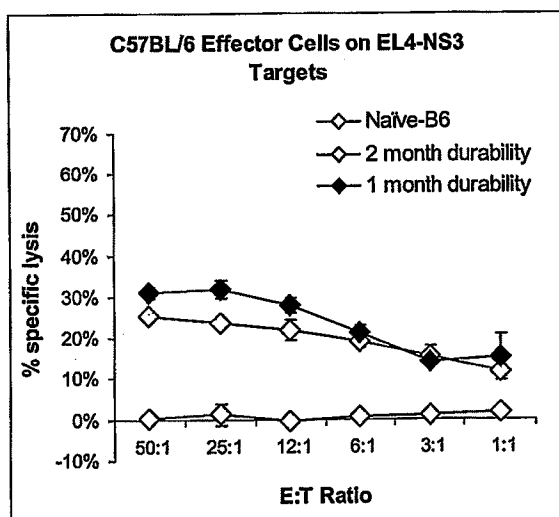


FIG. 12B

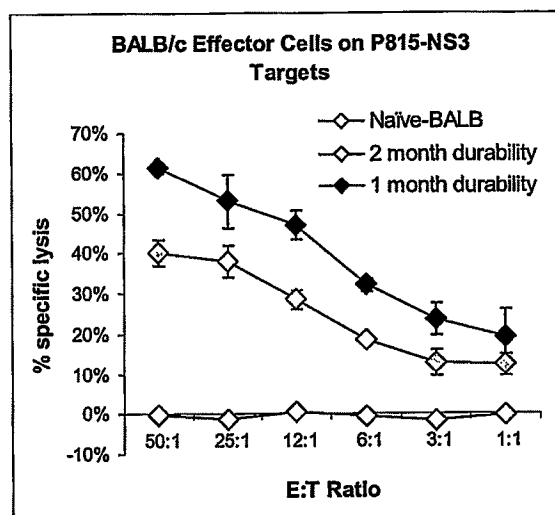


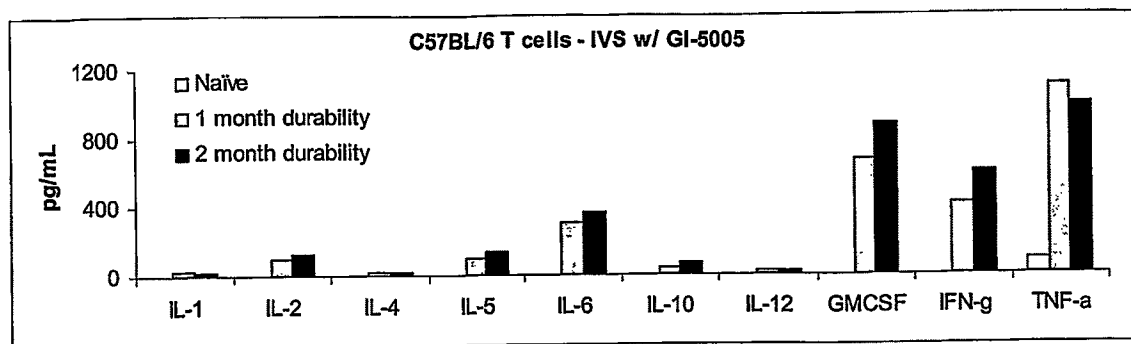
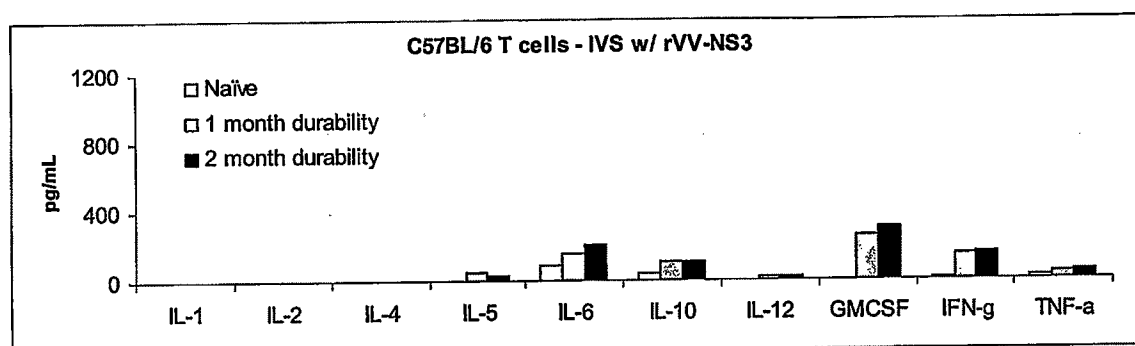
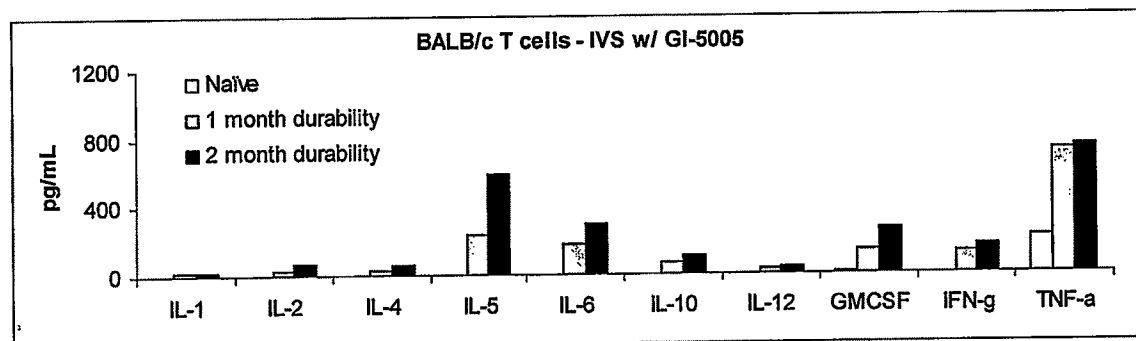
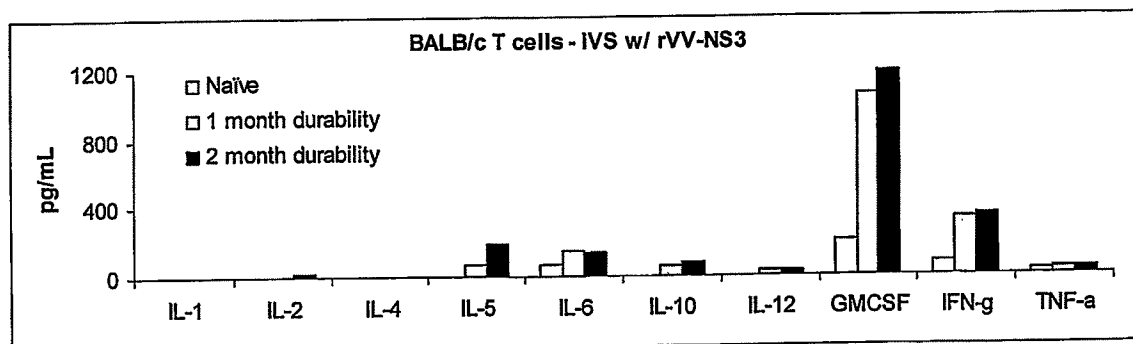
FIG. 13A**FIG. 13B****FIG. 13C****FIG. 13D**

FIG. 14A

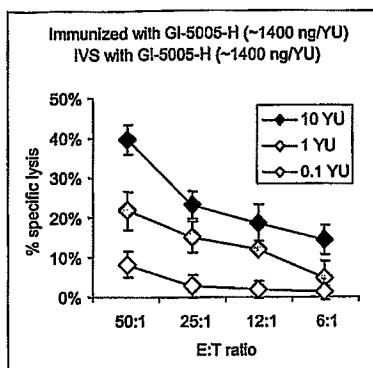


FIG. 14B

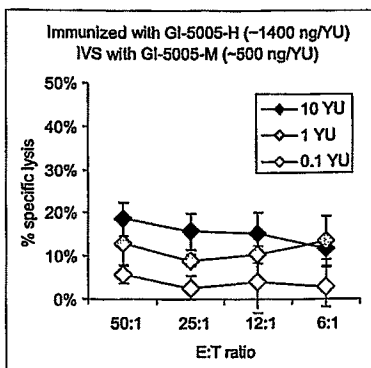


FIG. 14C

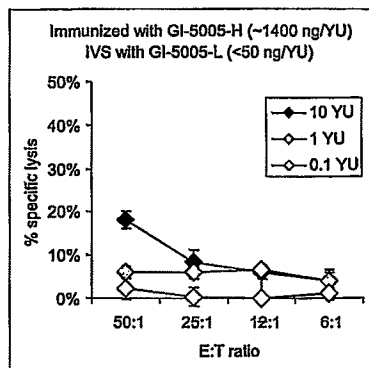


FIG. 14D

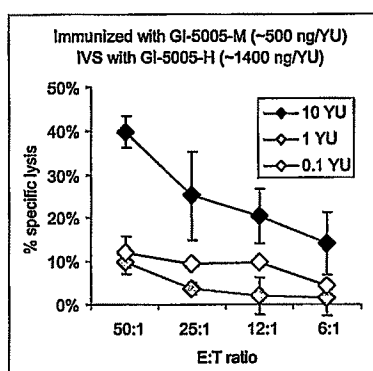


FIG. 14E

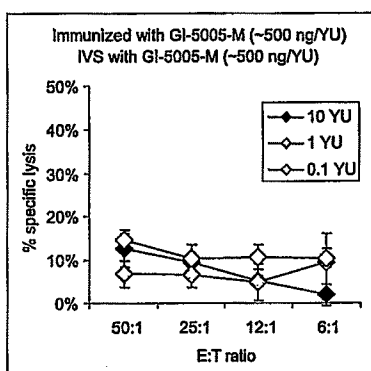


FIG. 14F

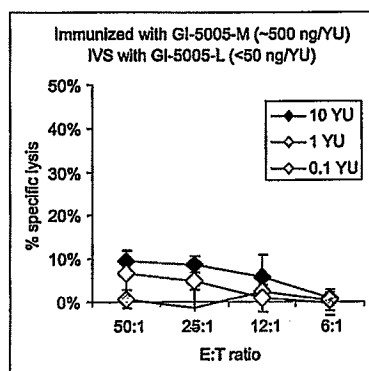


FIG. 14G

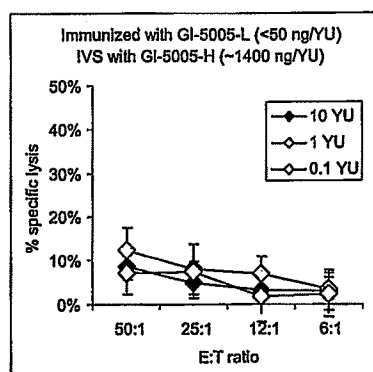


FIG. 14H

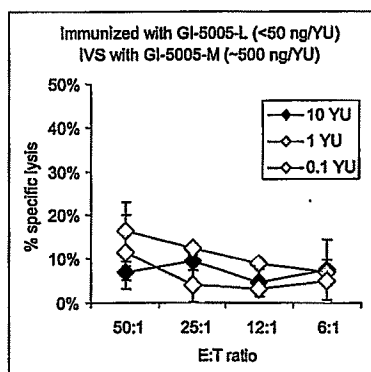


FIG. 14I

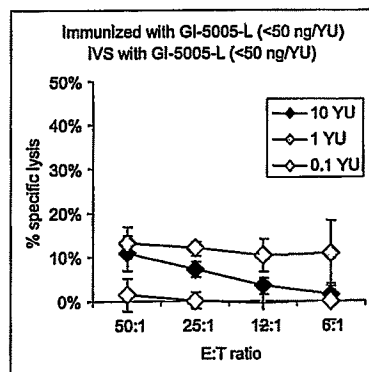


FIG. 15A

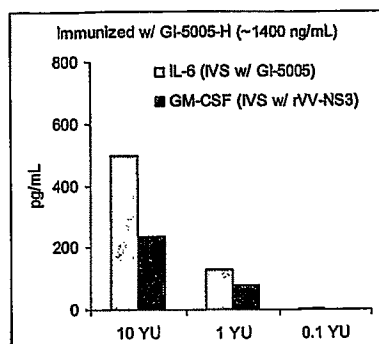


FIG. 15B

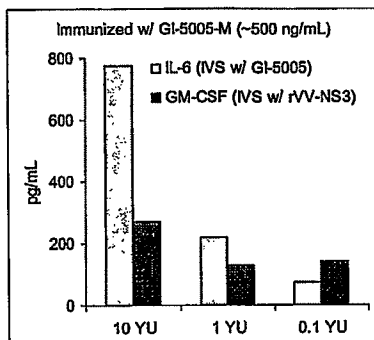


FIG. 15C

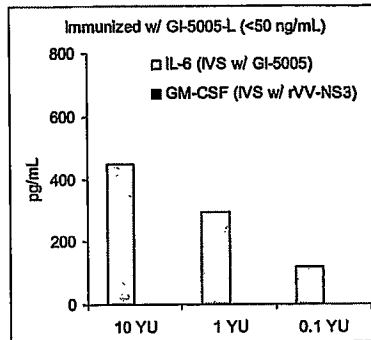


FIG. 16

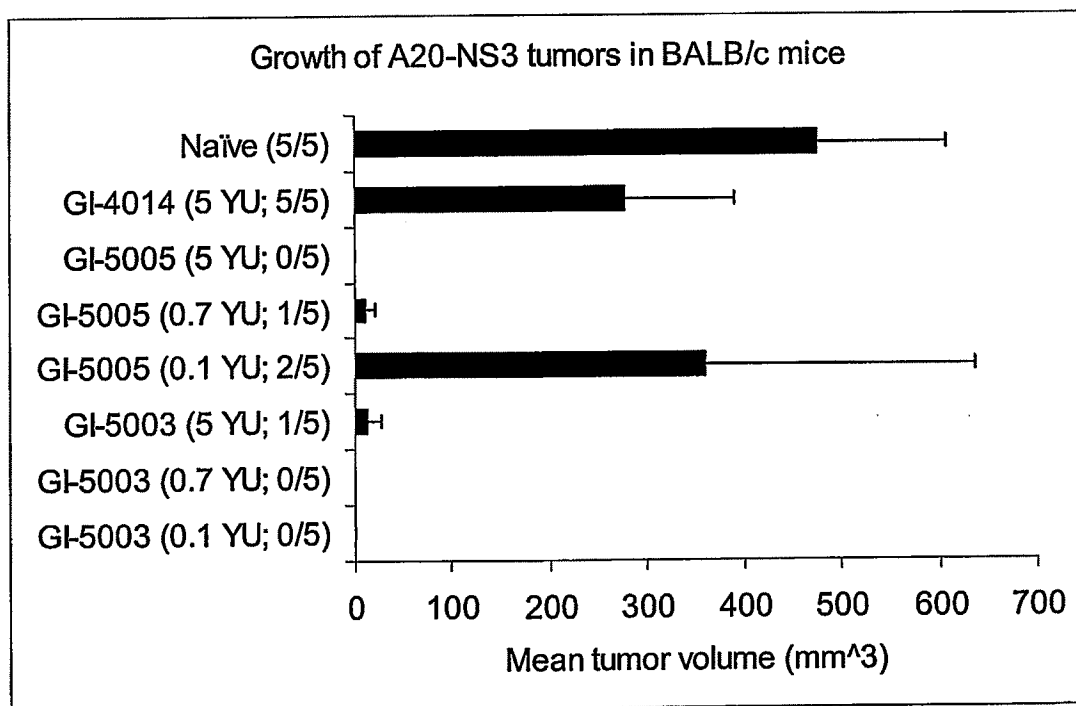


FIG. 17

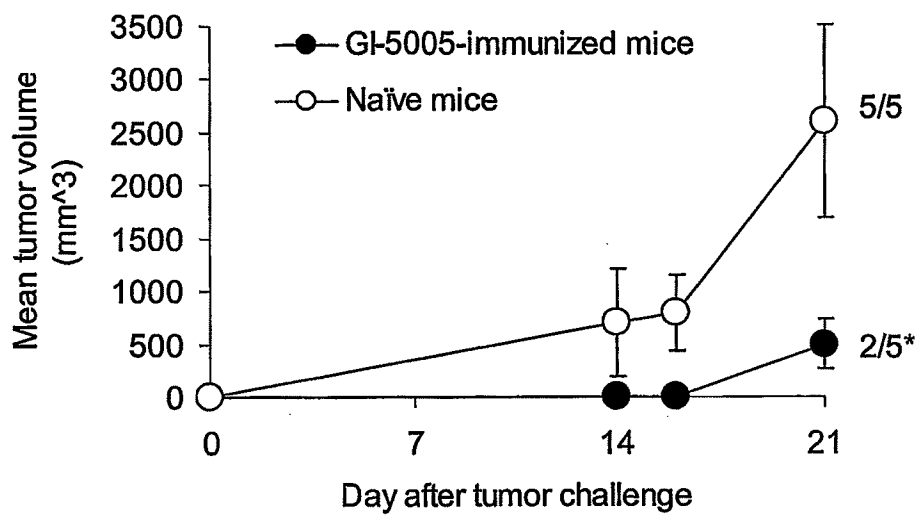


FIG. 18

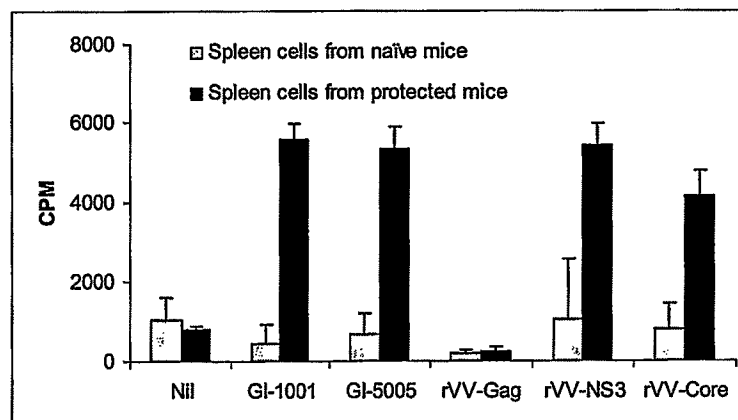


FIG. 19

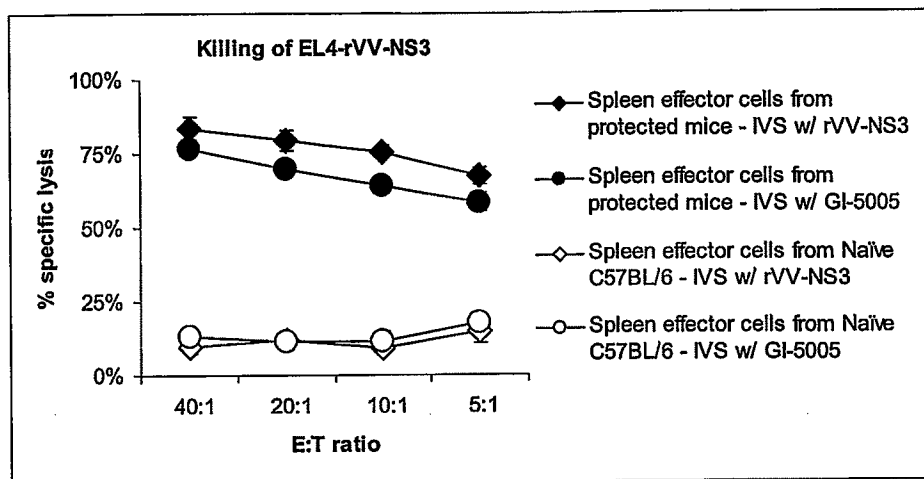


FIG. 20

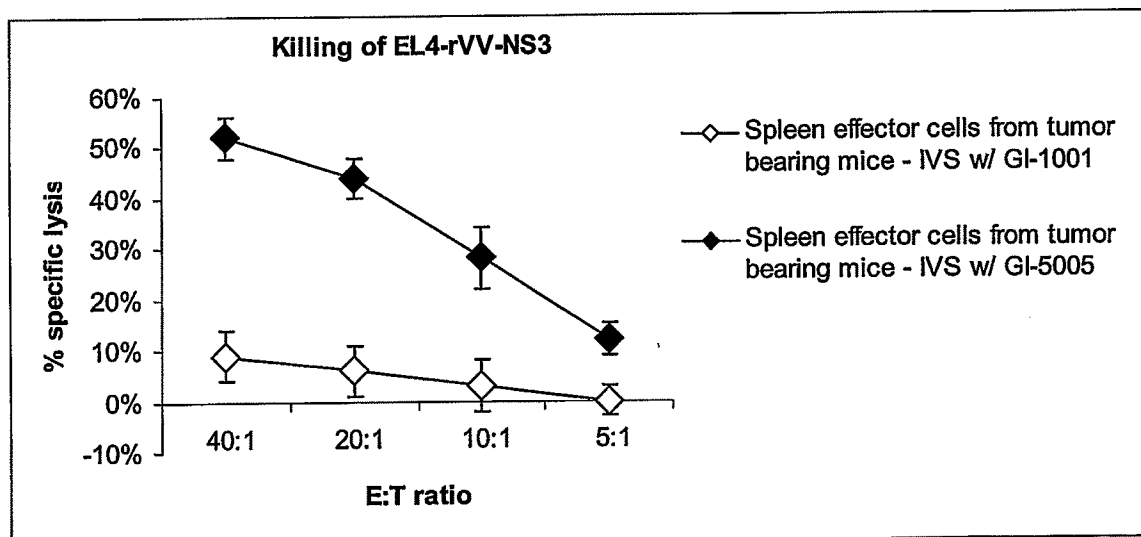


FIG. 21

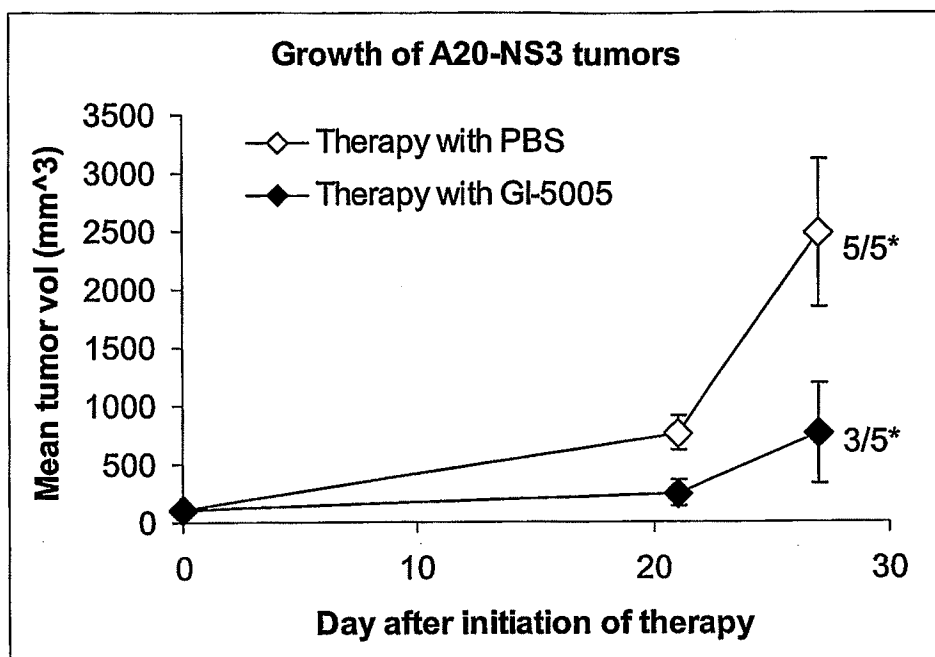


FIG. 22A

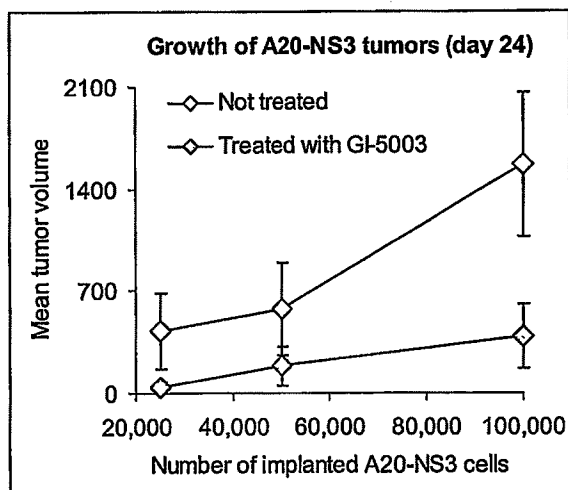


FIG. 22B

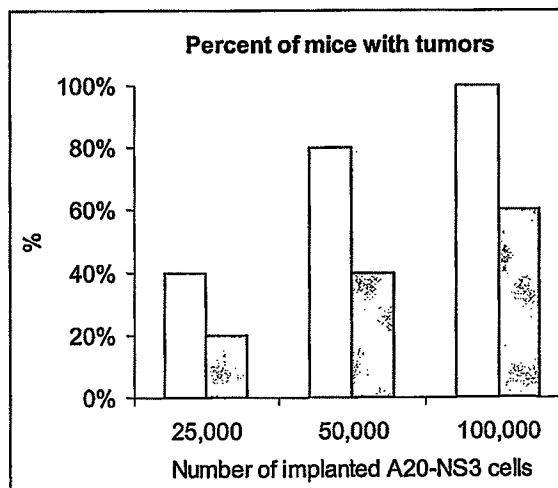
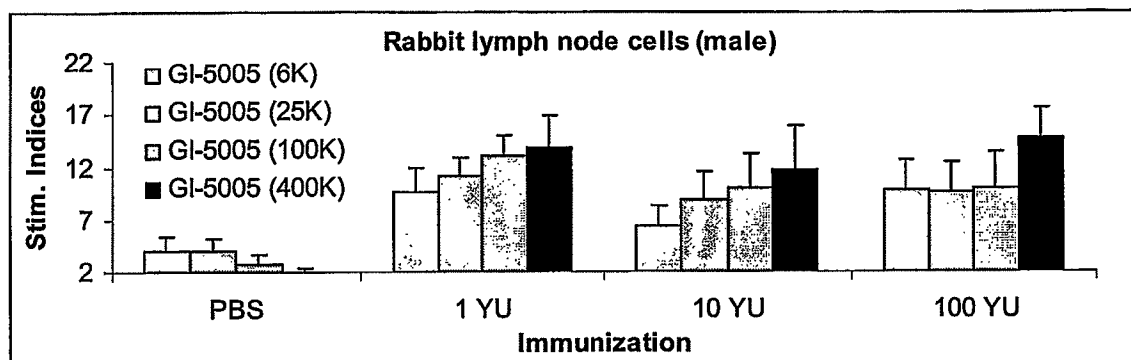
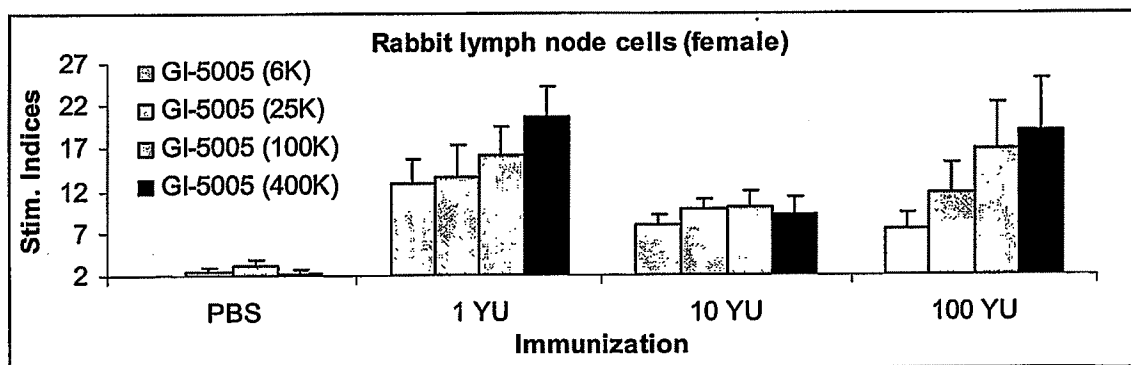


FIG. 23A**FIG. 23B**

3923-12-pct.ST25.txt
SEQUENCE LISTING

<110> Duke, Richard C.
Franzussoff, Alex
Haller, Aurelia
King, Thomas H.

<120> YEAST-BASED THERAPEUTIC FOR CHRONIC HEPATITIS C INFECTION

<130> 3923-12-PCT

<150> US 60/620,158

<151> 2004-10-18

<160> 21

<170> PatentIn version 3.3

<210> 1

<211> 1233

<212> DNA

<213> Artificial

<220>

<223> recombinant fusion protein construct

<400> 1

atggccgacg aggcaccaca aggttccgcg tcattgacac cctgtacctg cggctcctcg	60
gacctttacc tggtcacgag gcacgccgat gtcattcccg tgcgcccggcg aggtgatagc	120
aggggtagcc tgctttcgcc ccggcccatt tcctacttga aaggctcctc ggggggtccg	180
ctgtttgtgcc ccgcgggaca cgccgtgggc ctattcaggg ccgcggtgtg caccctgtga	240
gtggctaaag cgggtggactt tatccctgtg gagaacctag ggacaaccat gagatccccg	300
gtgttcacgg acaactcctc tccaccagca gtgccccaga gcttccaggt ggcccacctg	360
catgctccca ccggcagcgg taagagcacc aagggtcccg ctgcgtacgc agcccagggc	420
tacaaggtgt tgggtgctcaa cccctctgtt gctgcaacgc tgggcttttg tgcttacatg	480
tccaaggccc atgggggttg taactaatatc aggaccgggg tgagaacaat taccactggc	540
agcccatca cgtactccac ctacggcaag ttccttgccg acggcgggtg ctcaggaggt	600
gcttatgaca taataatttg tgacgagtgc cactccacgg atgccacatc catcttgggc	660
atcggcactg tccttgacca agcagagact gcgggggcga gactggttgt gctcgccact	720
gctacccctc cgggctccgt cactgtgtcc catcctaaca tcgaggaggt tgctctgtcc	780
accaccggag agatcccctt ttacactagt acgaatccta aacctcaaag aaaaaccaa	840
cgtaacacca accgtcgccc acaggacgtc aagttcccg gtggcgggtc gatcgttggt	900
ggagtttact tggtgcccgc caggggccct agattgggtg tgcgcgcgac gaggaagact	960
tccgagcggg cgcaacctcg aggtagacgt cagcctatcc ccaaggcacg tcggcccag	1020
ggcaggacct gggctcagcc cgggtaccct tggcccctct atggcaatga gggttgcggg	1080
tgggcgggat gggtcctgtc tccccgtggc tctcggccta gctggggccc cacagacccc	1140

3923-12-pct.ST25.txt

cggcgtaggt cgcgcaattt gggtaagggtc atcgataccc ttacgtgcgg cttcgccgac 1200
 ctcattgggggt acataccgct cgtcgaggac tag 1233

<210> 2
 <211> 410
 <212> PRT
 <213> Artificial

<220>
 <223> recombinant fusion protein

<400> 2

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

Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile
 20 25 30

Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg
 35 40 45

Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro
 50 55 60

Ala Gly His Ala Val Gly Leu Phe Arg Ala Ala Val Cys Thr Arg Gly
 65 70 75 80

Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu Gly Thr Thr
 85 90 95

Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro
 100 105 110

Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser Gly Lys
 115 120 125

Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu
 130 135 140

Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met
 145 150 155 160

Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val Arg Thr
 165 170 175

Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu
 180 185 190

3923-12-pct.ST25.txt

Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp
 195 200 205

Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val
 210 215 220

Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr
 225 230 235 240

Ala Thr Pro Pro Gly Ser Val Thr Val Ser His Pro Asn Ile Glu Glu
 245 250 255

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

Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln
 275 280 285

Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val Tyr Leu
 290 295 300

Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr
 305 310 315 320

Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala
 325 330 335

Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro
 340 345 350

Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro
 355 360 365

Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Arg Ser
 370 375 380

Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp
 385 390 395 400

Leu Met Gly Tyr Ile Pro Leu Val Glu Asp
 405 410

<210> 3
 <211> 1914
 <212> DNA
 <213> Artificial

<220>
 <223> recombinant fusion protein construct

3923-12-pct.ST25.txt

<400> 3
 atggccgacg aggcaccagc gcccatcacg gcgtacgccc agcagacgag aggcctccta 60
 ggggtgtataa tcaccagcct gactggccgg gacaaaaacc aagtggaggg tgaggtccag 120
 atcgtgtcaa ctgctaccca aaccttcctg gcaacgtgca tcaatgggggt atgctggact 180
 gtctaccacg gggccggaac gaggaccatc gcatcaccca agggtcctgt catccagatg 240
 tataccaatg tggaccaaga ctttgtgggc tggcccgctc ctcaagggtc ccgctcattg 300
 acaccctgta cctgcggctc ctcggaacct tacctgggtca cgaggcacgc cgatgtcatt 360
 cccgtgcgcc ggcgaggtga tagcaggggt agcctgcttt cgcgccggcc catttcctac 420
 ttgaaaggct ccgctggggg tccgctgttg tgcccgogg gacacgccgt gggcctattc 480
 agggccgogg tgtgcacccg tggagtggct aaagcgggtg actttatccc tgtggagaac 540
 ctagggacaa ccatgagatc ccgggtgttc acggacaact cctctccacc agcagtgcc 600
 cagagcttcc aggtggccca cctgcatgct cccaccggca gcggtaaagag caccaaggtc 660
 ccggtgcgt acgcagccca gggctacaag gtgttggtgc tcaaccctc tgttgctgca 720
 acgtgggtt ttgtgtctta catgtccaag gcccatgggg ttgatcctaa tatcaggacc 780
 ggggtgagaa caattaccac tggcagcccc atcacgtact ccacctacgg caagttcctt 840
 gccgacggcg ggtgctcagg aggtgcttat gacataataa tttgtgacga gtgccactcc 900
 acggatgcca catccatctt gggcatcggc actgtccttg accaagcaga gactgcgggg 960
 gcgagaactg ttgtgctcgc cactgctacc cctccgggt ccgtcactgt gtcccatcct 1020
 aacatcgagg aggttgcct gtccaccacc ggagagatcc ccttttacgg caaggctatc 1080
 cccctcgagg tgatcaaggg ggaagacat ctcatcttct gccactcaaa gaagaagtgc 1140
 gacgagctcg ccgcgaagct ggtcgcattg ggcataatg ccgtggccta ctaccgggt 1200
 cttgacgtgt ctgtcatccc gaccagcggc gatgttgctg togtgtogac cgatgctctc 1260
 atgactggct ttaccggcga cttcgactct gtgatagact gcaacacgtg tgtcactcag 1320
 acagtgcatt tcagccttga ccctacctt accattgaga caaccacgct cccccaggat 1380
 gctgtctcca ggactcaacg ccggggcagg actggcagg ggaagccagg catctataga 1440
 tttgtggcac cgggggagcg cccctccggc atgttcgact cgtccgtcct ctgtgagtgc 1500
 tatgacggcg gctgtgcttg gtatgagctc acgcccggcg agactacagt taggctacga 1560
 gcgtacatga acaccccggg gcttcccggt tgccaggacc atcttgaatt ttgggagggc 1620
 gtctttacgg gcctcactca tatagatgcc cactttttat ccagacaaa gcagagtggg 1680
 gagaactttc cttacctggt agcgtaccaa gccaccgtgt gcgctagggc tcaagcccct 1740
 ccccatcgt gggaccagat gtggaagtgt ttgatccgcc ttaaaccac cctccatggg 1800
 ccaacacccc tgetatacag actgggcgct gttcagaatg aagtcaccct gacgcacca 1860
 atcaccaa atcatcatgac atgcatgtcg gccgacctgg aggtcgtcac gtag 1914

3923-12-pct.ST25.txt

<210> 4
 <211> 637
 <212> PRT
 <213> Artificial

<220>
 <223> recombinant fusion protein

<400> 4

Met Ala Asp Glu Ala Pro Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr
 1 5 10 15

Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys
 20 25 30

Asn Gln Val Glu Gly Glu Val Gln Ile Val Ser Thr Ala Thr Gln Thr
 35 40 45

Phe Leu Ala Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly
 50 55 60

Ala Gly Thr Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met
 65 70 75 80

Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly
 85 90 95

Ser Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu
 100 105 110

Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser
 115 120 125

Arg Gly Ser Leu Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser
 130 135 140

Ala Gly Gly Pro Leu Leu Cys Pro Ala Gly His Ala Val Gly Leu Phe
 145 150 155 160

Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile
 165 170 175

Pro Val Glu Asn Leu Gly Thr Thr Met Arg Ser Pro Val Phe Thr Asp
 180 185 190

Asn Ser Ser Pro Pro Ala Val Pro Gln Ser Phe Gln Val Ala His Leu
 195 200 205

3923-12-pct.ST25.txt

His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr
 210 215 220

Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala
 225 230 235 240

Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly Val Asp Pro
 245 250 255

Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr
 260 265 270

Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly
 275 280 285

Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr
 290 295 300

Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly
 305 310 315 320

Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr
 325 330 335

Val Ser His Pro Asn Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu
 340 345 350

Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly
 355 360 365

Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala
 370 375 380

Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly
 385 390 395 400

Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Val Val Val Ser
 405 410 415

Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile
 420 425 430

Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro
 435 440 445

Thr Phe Thr Ile Glu Thr Thr Thr Leu Pro Gln Asp Ala Val Ser Arg
 450 455 460

Page 7

3923-12-pct.ST25.txt

```

tgttctatct atccccgccataataacgggt catcgcatgg catgggatat gatgatgaac 420
tggtccccta cggcagcggt ggtggtagct cagctgctcc ggatcccaca agccatcatg 480
gacatggaaa cccacgtcac cgggggaagt gccggccgca ccaaggctgg gcttggtggt 540
ctccttacac caggcgccaa gcagaacatc caactgatca acaccaacgg cagttggcac 600
atcaatagca cggccttgaa ctgcaatgaa agccttaaca ccggctgggt agcagggctc 660
ttctatcagc acaaattcaa ctcttcaggc tgtcctgaga ggttggccag ctgccgacgc 720
cttaccgatt ttgccagggt ctgggggtcct atcagttatg ccaacggaag cggcctcgac 780
gaacgcccct actgctggca ctaccctcca agaccttggt gcattgtgcc cgcaaagagc 840
gtgtgtggcc cggatatattg cttaactccc agccccgtgg tggtggaac gaccgacagg 900
tcgggcgcgc ctacctacag ctgggggtgca aatgatacgg atgtcttcgt ccttaacaac 960
accaggccac cgctgggcaa ttggttcggt tgtacctgga tgaactcaac tggattcacc 1020
aaagtgtgag gagcgcccc ttgtgtcatc ggaggggtgg gcaacaacac cttgctctgc 1080
cccactgatt gtttccgcaa gcatccggaa gccacatact ctcggtgcgg ctccgggtccc 1140
tggattacac ccagggtgat ggtcgactac ccgtataggc tttggcacta tccttgatcc 1200
atcaattaca ccatattcaa agtcaggatg tacgtgggag gggtcgagca caggctggaa 1260
gcggcctgca actggacgag gggcgaacgc tgtgatctgg aagacaggga caggctcgag 1320
ctcagcccat tgctgtgtc caccacacag tggcaggtcc ttccgtgttc tttcacgacc 1380
ctgccagcct tgtccaccgg cctcatccac ctccaccaga acattgtgga cgtgcagtac 1440
ttgtacgggg taggggtcaag catcgcgctc tgggccatta agtgggagta g 1491

```

<210> 6
 <211> 496
 <212> PRT
 <213> Artificial

<220>
 <223> recombinant fusion protein

<400> 6

```

Met Ala Asp Glu Ala Pro Tyr Gln Val Arg Asn Ser Ser Gly Leu Tyr
1           5           10           15

```

```

His Val Thr Asn Asp Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Ala
          20           25           30

```

```

Asp Ala Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Arg Glu Gly
          35           40           45

```

```

Asn Ala Ser Arg Cys Trp Val Ala Val Thr Pro Thr Val Ala Thr Arg
          50           55           60

```

3923-12-pct.ST25.txt

Asp Gly Lys Leu Pro Thr Thr Gln Leu Arg Arg His Ile Asp Leu Leu
65 70 75 80

Val Gly Ser Ala Thr Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys
85 90 95

Gly Ser Val Phe Leu Val Gly Gln Leu Phe Thr Phe Ser Pro Arg Arg
100 105 110

His Trp Thr Thr Gln Asp Cys Asn Cys Ser Ile Tyr Pro Gly His Ile
115 120 125

Thr Gly His Arg Met Ala Trp Asp Met Met Met Asn Trp Ser Pro Thr
130 135 140

Ala Ala Leu Val Val Ala Gln Leu Leu Arg Ile Pro Gln Ala Ile Met
145 150 155 160

Asp Met Glu Thr His Val Thr Gly Gly Ser Ala Gly Arg Thr Thr Ala
165 170 175

Gly Leu Val Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu
180 185 190

Ile Asn Thr Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu Asn Cys
195 200 205

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

Lys Phe Asn Ser Ser Gly Cys Pro Glu Arg Leu Ala Ser Cys Arg Arg
225 230 235 240

Leu Thr Asp Phe Ala Gln Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly
245 250 255

Ser Gly Leu Asp Glu Arg Pro Tyr Cys Trp His Tyr Pro Pro Arg Pro
260 265 270

Cys Gly Ile Val Pro Ala Lys Ser Val Cys Gly Pro Val Tyr Cys Phe
275 280 285

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

Thr Tyr Ser Trp Gly Ala Asn Asp Thr Asp Val Phe Val Leu Asn Asn
305 310 315 320

3923-12-pct.ST25.txt

Thr Arg Pro Pro Leu Gly Asn Trp Phe Gly Cys Thr Trp Met Asn Ser
 325 330 335

Thr Gly Phe Thr Lys Val Cys Gly Ala Pro Pro Cys Val Ile Gly Gly
 340 345 350

Val Gly Asn Asn Thr Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys His
 355 360 365

Pro Glu Ala Thr Tyr Ser Arg Cys Gly Ser Gly Pro Trp Ile Thr Pro
 370 375 380

Arg Cys Met Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr
 385 390 395 400

Ile Asn Tyr Thr Ile Phe Lys Val Arg Met Tyr Val Gly Gly Val Glu
 405 410 415

His Arg Leu Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp
 420 425 430

Leu Glu Asp Arg Asp Arg Ser Glu Leu Ser Pro Leu Leu Leu Ser Thr
 435 440 445

Thr Gln Trp Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu
 450 455 460

Ser Thr Gly Leu Ile His Leu His Gln Asn Ile Val Asp Val Gln Tyr
 465 470 475 480

Leu Tyr Gly Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu
 485 490 495

<210> 7
 <211> 483
 <212> DNA
 <213> Artificial

<220>
 <223> recombinant fusion protein construct

<400> 7
 atggccgacg aggcaccatc tcagcactta ccgtacatcg agcaagggat gatgctcgct 60
 gagcagttca agcagaaggc cctcggcctc ctgcagaccg cgtcccgcga tgcagaggtt 120
 atcaccocctg ctgtccagac caactggcag aaactcgagg tcttctgggc gaagcacatg 180
 tgggaatttca tcagtgggat acaatacttg gcgggcctgt caactagtcc tggagccctt 240
 gtagtcggtg tggctctgcgc agcaatactg cgccggcacg ttggcccggg cgaggggggca 300

3923-12-pct.ST25.txt

gtgcaatgga tgaaccggct aatagccttc gcctcccgga ggaaccatgt ttccccacg 360
 cactacgtgc cggagagcga tgcagccgcc cgcgtcactg ccatactcag cagcctcact 420
 gtaaccacgc tcctgaggcg actgcatcag tggataagct cggagtgtac cactccatgc 480
 tag 483

<210> 8
 <211> 160
 <212> PRT
 <213> Artificial

<220>
 <223> recombinant fusion protein

<400> 8

Met Ala Asp Glu Ala Pro Ser Gln His Leu Pro Tyr Ile Glu Gln Gly
 1 5 10 15

Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln
 20 25 30

Thr Ala Ser Arg His Ala Glu Val Ile Thr Pro Ala Val Gln Thr Asn
 35 40 45

Trp Gln Lys Leu Glu Val Phe Trp Ala Lys His Met Trp Asn Phe Ile
 50 55 60

Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Ser Pro Gly Ala Leu
 65 70 75 80

Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro
 85 90 95

Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser
 100 105 110

Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala
 115 120 125

Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu
 130 135 140

Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys
 145 150 155 160

<210> 9
 <211> 6
 <212> PRT
 <213> Artificial

3923-12-pct.ST25.txt

<220>

<223> synthetic peptide

<400> 9

Met Ala Asp Glu Ala Pro
1 5

<210> 10

<211> 9

<212> PRT

<213> Artificial

<220>

<223> synthetic peptide

<400> 10

Gly Gly Gly His His His His His His
1 5

<210> 11

<211> 2256

<212> DNA

<213> Artificial

<220>

<223> recombinant fusion protein construct

<400> 11

```
atggccgacg aggcaccaag cacgaatcct aaacctcaaa gaaaaaccaa acgtaacacc 60
aaccgtcgcc cacaggacgt caagttcccg ggtggcggtc agatcggttg tggagtttac 120
ttgttgccgc gcaggggccc tagattgggt gtgcgcgcga cgaggaagac ttccgagcgg 180
tcgcaacctc gaggtagacg tcagcctatc cccaaggcac gtcggcccga gggcaggacc 240
tgggctcagc ccgggtaccc ttggcccctc tatggcaatg agggttgcgg gtgggcggga 300
tggtctctgt ctccccgtgg ctctcggcct agctggggcc ccacagaccc ccggcgtagg 360
tcgcgcaatt tgggtaaggt catcgatacc cttacgtgcg gcttcgccga cctcatgggg 420
tacataccgc tcgtcggcgc cctcttgga ggcgtgccg gggccctggc gcatggcgtc 480
cgggttctgg aagacggcgt gaactatgca acagggaacc ttcttggttg ctctttctct 540
atcttccttc tggccctgct ctcttgctg actgtgcccg cttcagccta ccaagtgcgc 600
aattcctcgg ggctttacca tgtaccaat gattgcccta actcgagtat tgtgtacgag 660
gcggccgatg ccactctgca cactccgggg tgtgtccctt gcgttcgcga gggtaacgcc 720
tcgaggtggt ggggtggcgt gacccccacg gtggccacca gggacggcaa actccccaca 780
acgcagcttc gacgtcatat cgatctgctt gtcgggagcg ccacctctg ctcggccctc 840
tacgtggggg acctgtgcgg gtctgtcttt cttgttggtc aactgtttac cttctctccc 900
aggcgccact ggacgacgca agactgcaat tgtttctatct atcccggcca tataacgggt 960
```

3923-12-pct.ST25.txt

catcgcatgg catgggatat gatgatgaac tggcccccta cggcagcggt ggtggtagct 1020
cagctgctcc ggatcccaca agccatcatg gacatgatcg ctggtgctca ctggggagtc 1080
ctggcgggca tagcgtatct ctccatggtg gggaactggg cgaaggtcct ggtagtgctg 1140
ctgctatctg ccggcgctga cgcggaaacc cagctcaccg ggggaagtgc cggccgcacc 1200
acggctgggc ttgttgggtc ccttacacca ggcgccaagc agaacatcca actgatcaac 1260
accaacggca gttggcacat caatagcacg gccttgaact gcaatgaaag ccttaacacc 1320
ggctgggttag cagggctctt ctatcagcac aaattcaact cttcaggctg tcttgagagg 1380
ttggccagct gccgacgcct taccgatttt gcccagggtt ggggtcctat cagttatgcc 1440
aacggaagcg gcctcgacga acgcccctac tgctggcact accctccaag accttggtggc 1500
attgtgcccg caaagagcgt gtgtggcccg gtatatgtct tcaactccag ccccggtgtg 1560
gtgggaacga ccgacaggtc gggcgcgctt acctacagct ggggtgcaaa tgatacggat 1620
gtcttcgtcc ttaacaacac caggccaccg ctgggcaatt ggttcgggtt tacctggatg 1680
aactcaactg gattcaccaa agtgtgcgga gcgccccctt gtgtcatcgg aggggtgggc 1740
aacaacacct tgctctgccc cactgattgt ttccgcaagc atccggaagc cacatactct 1800
cggtgccggt ccggtccctg gattacaccc aggtgcatgg tcgactaccg gtataggctt 1860
tggcactatc ctgttaccat caattacacc atattcaaag tcaggatgta cgtgggaggg 1920
gtcgagcaca ggctggaagc ggctgcaac tggacgcggg gcgaacgctg tgatctggaa 1980
gacagggaca ggtccgagct cagcccattg ctgtgtgcca ccacacagtg gcaggtcctt 2040
ccgtgttctt tcacgacctt gccagccttg tccaccggcc tcatccacct ccaccagaac 2100
attgtggacg tgcagtactt gtacggggta gggtaagca tcgctgctg gccattaag 2160
tgggagtacg tcgttctctt gttcctctg cttgcagacg cgcgcgtctg ctctgcttg 2220
tggatgatgt tactcatatc ccaagcggag gcgtag 2256

<210> 12

<211> 751

<212> PRT

<213> Artificial

<220>

<223> recombinant fusion protein

<400> 12

Met Ala Asp Glu Ala Pro Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr
1 5 10 15

Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly
20 25 30

3923-12-pct.ST25.txt

Gly Gln Ile Val Gly Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg
 35 40 45

Leu Gly Val Arg Ala Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg
 50 55 60

Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr
 65 70 75 80

Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys
 85 90 95

Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp
 100 105 110

Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile
 115 120 125

Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu
 130 135 140

Val Gly Ala Pro Leu Gly Gly Ala Ala Arg Ala Leu Ala His Gly Val
 145 150 155 160

Arg Val Leu Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly
 165 170 175

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val
 180 185 190

Pro Ala Ser Ala Tyr Gln Val Arg Asn Ser Ser Gly Leu Tyr His Val
 195 200 205

Thr Asn Asp Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Ala Asp Ala
 210 215 220

Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Arg Glu Gly Asn Ala
 225 230 235 240

Ser Arg Cys Trp Val Ala Val Thr Pro Thr Val Ala Thr Arg Asp Gly
 245 250 255

Lys Leu Pro Thr Thr Gln Leu Arg Arg His Ile Asp Leu Leu Val Gly
 260 265 270

Ser Ala Thr Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser
 275 280 285

3923-12-pct.ST25.txt

Val Phe Leu Val Gly Gln Leu Phe Thr Phe Ser Pro Arg Arg His Trp
 290 295 300

Thr Thr Gln Asp Cys Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly
 305 310 315 320

His Arg Met Ala Trp Asp Met Met Met Asn Trp Ser Pro Thr Ala Ala
 325 330 335

Leu Val Val Ala Gln Leu Leu Arg Ile Pro Gln Ala Ile Met Asp Met
 340 345 350

Ile Ala Gly Ala His Trp Gly Val Leu Ala Gly Ile Ala Tyr Phe Ser
 355 360 365

Met Val Gly Asn Trp Ala Lys Val Leu Val Val Leu Leu Leu Phe Ala
 370 375 380

Gly Val Asp Ala Glu Thr His Val Thr Gly Gly Ser Ala Gly Arg Thr
 385 390 395 400

Thr Ala Gly Leu Val Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn Ile
 405 410 415

Gln Leu Ile Asn Thr Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu
 420 425 430

Asn Cys Asn Glu Ser Leu Asn Thr Gly Trp Leu Ala Gly Leu Phe Tyr
 435 440 445

Gln His Lys Phe Asn Ser Ser Gly Cys Pro Glu Arg Leu Ala Ser Cys
 450 455 460

Arg Arg Leu Thr Asp Phe Ala Gln Gly Trp Gly Pro Ile Ser Tyr Ala
 465 470 475 480

Asn Gly Ser Gly Leu Asp Glu Arg Pro Tyr Cys Trp His Tyr Pro Pro
 485 490 495

Arg Pro Cys Gly Ile Val Pro Ala Lys Ser Val Cys Gly Pro Val Tyr
 500 505 510

Cys Phe Thr Pro Ser Pro Val Val Val Gly Thr Thr Asp Arg Ser Gly
 515 520 525

Ala Pro Thr Tyr Ser Trp Gly Ala Asn Asp Thr Asp Val Phe Val Leu
 530 535 540

3923-12-pct.ST25.txt

Asn Asn Thr Arg Pro Pro Leu Gly Asn Trp Phe Gly Cys Thr Trp Met
 545 550 555 560

Asn Ser Thr Gly Phe Thr Lys Val Cys Gly Ala Pro Pro Cys Val Ile
 565 570 575

Gly Gly Val Gly Asn Asn Thr Leu Leu Cys Pro Thr Asp Cys Phe Arg
 580 585 590

Lys His Pro Glu Ala Thr Tyr Ser Arg Cys Gly Ser Gly Pro Trp Ile
 595 600 605

Thr Pro Arg Cys Met Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro
 610 615 620

Cys Thr Ile Asn Tyr Thr Ile Phe Lys Val Arg Met Tyr Val Gly Gly
 625 630 635 640

Val Glu His Arg Leu Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg
 645 650 655

Cys Asp Leu Glu Asp Arg Asp Arg Ser Glu Leu Ser Pro Leu Leu Leu
 660 665 670

Ser Thr Thr Gln Trp Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro
 675 680 685

Ala Leu Ser Thr Gly Leu Ile His Leu His Gln Asn Ile Val Asp Val
 690 695 700

Gln Tyr Leu Tyr Gly Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys
 705 710 715 720

Trp Glu Tyr Val Val Leu Leu Phe Leu Leu Leu Ala Asp Ala Arg Val
 725 730 735

Cys Ser Cys Leu Trp Met Met Leu Leu Ile Ser Gln Ala Glu Ala
 740 745 750

<210> 13
 <211> 1908
 <212> DNA
 <213> Artificial

<220>
 <223> recombinant fusion protein construct

<400> 13
 atggcgcagc aggcaccaag tacgaatcct aaacctcaaa gaaaaaccaa acgtaacacc 60
 aaccgtcgcc cacaggacgt caagttcccg ggtggcggtc agatcgttgg tggagtttac 120
 Page 16

3923-12-pct.ST25.txt

ttgttgccgc gcaggggccc tagattgggt gtgcgcgcga cgaggaagac ttccgagcgg 180
 togcaacctc gaggtagacg tcagcctatc cccaaggcac gtcggcccga gggcaggacc 240
 tgggctcagc cgggtaccc ttggcccctc tatggcaatg agggttgcgg gtgggcggga 300
 tggctcctgt ctccccgtgg ctctcgccct agctggggcc ccacagaccc cgggcgtagg 360
 tcgcgcaatt tgggtaaggt catcgatacc cttacgtgcg gcttcgccga cctcatgggg 420
 tacataccgc tcgtctacca agtgcgcaat tcctcggggc tttaccatgt caccaatgat 480
 tgccctaact cgagtattgt gtacgaggcg gccgatgcca tcctgcacac tccgggggtgt 540
 gtcccttgcg ttgcgagggg taacgcctcg aggtgttggg tggcggtgac ccccaagggtg 600
 gccaccaggg acggcaaact cccacaacg cagcttcgac gtcatatoga tctgcttgtc 660
 gggagcgcca ccctctgctc ggccctctac gtgggggacc tgtgcgggtc tgtctttctt 720
 gttggtcaac tgtttacctt ctctcccagg cgccactgga cgacgcaaga ctgcaattgt 780
 tctatctatc ccggccatat aacgggtcat cgcattggcat gggatatgat gatgaactgg 840
 tcccctacgg cagcgttgggt ggtagctcag ctgctccgga tcccacaagc catcatggac 900
 atggaaaccc acgtcacggg gggaagtgcc ggccgcacca cggtgggct tgttggctctc 960
 cttacaccag gcgccaagca gaacatccaa ctgatcaaca ccaacggcag ttggcacatc 1020
 aatagcacgg ccttgaactg caatgaaagc cttaacaccg gctgggttagc agggctcttc 1080
 tatcagcaca aattcaactc ttcaggctgt cctgagagggt tggccagctg ccgacgcctt 1140
 accgattttg ccaggggctg gggctcctatc agttatgcca acggaagcgg cctcgacgaa 1200
 cgcccctact gctggcacta ccctccaaga ccttgtggca ttgtgcccgc aaagagcgtg 1260
 tgtggcccgg tatattgctt cactcccagc cccgtggtgg tgggaacgac cgacaggctg 1320
 ggcgcgccta cctacagctg ggggtgaaat gatacggatg tcttcgtcct taacaacacc 1380
 aggccaccgc tgggcaattg gttcgggtgt acctggatga actcaactgg attcaccaaa 1440
 gtgtgcggag cggccccttg tgtcatcgga ggggtgggca acaacacctt gctctgcccc 1500
 actgattggt tccgcaagca tccggaagcc acatactctc ggtgcggctc cggctccctg 1560
 attacacca ggtgcatggt cgactaccgg tataggcttt ggcactatcc ttgtaccatc 1620
 aattacacca tattcaaagt caggatgtac gtgggagggg tcgagcacag gctggaagcg 1680
 gcctgcaact ggacgcgggg cgaacgctgt gatctggaag acagggacag gtccgagctc 1740
 agcccattgc tgetgtccac cacacagtgg caggctcttc cgtgttcttt cagcaccctg 1800
 ccagccttgt ccaccggcct catccacctc caccagaaca ttgtggacgt gcagtacttg 1860
 tacggggtag ggtcaagcat cgcgtcctgg gccattaagt gggagtag 1908

<210> 14
 <211> 635

3923-12-pct.ST25.txt

<212> PRT

<213> Artificial

<220>

<223> recombinant fusion protein

<400> 14

Met Ala Asp Glu Ala Pro Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr
 1 5 10 15

Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly
 20 25 30

Gly Gln Ile Val Gly Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg
 35 40 45

Leu Gly Val Arg Ala Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg
 50 55 60

Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr
 65 70 75 80

Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys
 85 90 95

Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp
 100 105 110

Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile
 115 120 125

Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu
 130 135 140

Val Tyr Gln Val Arg Asn Ser Ser Gly Leu Tyr His Val Thr Asn Asp
 145 150 155 160

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Ala Asp Ala Ile Leu His
 165 170 175

Thr Pro Gly Cys Val Pro Cys Val Arg Glu Gly Asn Ala Ser Arg Cys
 180 185 190

Trp Val Ala Val Thr Pro Thr Val Ala Thr Arg Asp Gly Lys Leu Pro
 195 200 205

Thr Thr Gln Leu Arg Arg His Ile Asp Leu Leu Val Gly Ser Ala Thr
 210 215 220

3923-12-pct.ST25.txt

Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser Val Phe Leu
 225 230 235 240

Val Gly Gln Leu Phe Thr Phe Ser Pro Arg Arg His Trp Thr Thr Gln
 245 250 255

Asp Cys Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met
 260 265 270

Ala Trp Asp Met Met Met Asn Trp Ser Pro Thr Ala Ala Leu Val Val
 275 280 285

Ala Gln Leu Leu Arg Ile Pro Gln Ala Ile Met Asp Met Glu Thr His
 290 295 300

Val Thr Gly Gly Ser Ala Gly Arg Thr Thr Ala Gly Leu Val Gly Leu
 305 310 315 320

Leu Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu Ile Asn Thr Asn Gly
 325 330 335

Ser Trp His Ile Asn Ser Thr Ala Leu Asn Cys Asn Glu Ser Leu Asn
 340 345 350

Thr Gly Trp Leu Ala Gly Leu Phe Tyr Gln His Lys Phe Asn Ser Ser
 355 360 365

Gly Cys Pro Glu Arg Leu Ala Ser Cys Arg Arg Leu Thr Asp Phe Ala
 370 375 380

Gln Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly Ser Gly Leu Asp Glu
 385 390 395 400

Arg Pro Tyr Cys Trp His Tyr Pro Pro Arg Pro Cys Gly Ile Val Pro
 405 410 415

Ala Lys Ser Val Cys Gly Pro Val Tyr Cys Phe Thr Pro Ser Pro Val
 420 425 430

Val Val Gly Thr Thr Asp Arg Ser Gly Ala Pro Thr Tyr Ser Trp Gly
 435 440 445

Ala Asn Asp Thr Asp Val Phe Val Leu Asn Asn Thr Arg Pro Pro Leu
 450 455 460

Gly Asn Trp Phe Gly Cys Thr Trp Met Asn Ser Thr Gly Phe Thr Lys
 465 470 475 480

3923-12-pct.ST25.txt

Val Cys Gly Ala Pro Pro Cys Val Ile Gly Gly Val Gly Asn Asn Thr
485 490 495

Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys His Pro Glu Ala Thr Tyr
500 505 510

Ser Arg Cys Gly Ser Gly Pro Trp Ile Thr Pro Arg Cys Met Val Asp
515 520 525

Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr Ile Asn Tyr Thr Ile
530 535 540

Phe Lys Val Arg Met Tyr Val Gly Gly Val Glu His Arg Leu Glu Ala
545 550 555 560

Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp Leu Glu Asp Arg Asp
565 570 575

Arg Ser Glu Leu Ser Pro Leu Leu Leu Ser Thr Thr Gln Trp Gln Val
580 585 590

Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly Leu Ile
595 600 605

His Leu His Gln Asn Ile Val Asp Val Gln Tyr Leu Tyr Gly Val Gly
610 615 620

Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu
625 630 635

<210> 15
<211> 2538
<212> DNA
<213> Artificial

<220>
<223> recombinant fusion protein construct

<400> 15
atggccgacg aggcaccagc gccatcacg gcgtacgcc agcagacgag aggcctocta 60
gggtgtataa tcaccagcct gactggccgg gacaaaaacc aagtggaggg tgaggtccag 120
atcgtgtcaa ctgctaccca aaccttctg gcaacgtgca tcaatgggg atgctggact 180
gtctaccacg gggccggaac gaggaccatc gcatcaccca agggtcctgt catccagatg 240
tataccaatg tggaccaaga ccttgtgggc tggcccgctc ctcaagggtc ccgctcattg 300
acaccctgta cctgcggctc ctcgacatt tacctggtca cgaggcacgc cgatgtcatt 360
cccgtgcgcc ggcgaggtga tagcaggggt agcctgcttt cgcccggcc catttctac 420
ttgaaaggct ccgctggggg tccgctgttg tgcccgcgg gacacgcgt gggcctattc 480

"3923"-12-pct.ST25.txt

agggccgchg tgtgcacccg tggagtggct aaagcgggtg actttatccc tgtggagaac 540
 ctagggacaa ccatgagatc cccgggtgtc acggacaact cctctccacc agcagtgtcc 600
 cagagcttcc aggtggccca cctgcatgct cccaccggca ggggtaagag caccaaggctc 660
 ccggctgchg acgcagccca gggctacaag gtgttggtgc tcaacccctc tgttgctgca 720
 acgctgggct ttggtgctta catgtccaag gcccatgggg ttgatccctaa tatcaggacc 780
 ggggtgagaa caattaccac tggcagcccc atcacgtact ccacctacgg caagttcctt 840
 gccgacggcg ggtgctcagg aggtgcttat gacataataa tttgtgacga gtgccactcc 900
 acggatgcca catccatctt gggcatcggc actgtccttg accaagcaga gactgcgggg 960
 gcgagactgg ttgtgctcgc cactgctacc cctccgggct ccgtcactgt gtcccactct 1020
 aacatcgagg aggttgctct gtccaccacc ggagagatcc ccttttacgg caaggctatc 1080
 cccctcgagg tgatcaaggg gggaagacat ctcatcttct gccactcaaa gaagaagtgc 1140
 gacgagctcg ccgcgaagct ggtgcattg ggcataatg ccgtggccta ctaccgcggt 1200
 cttgacgtgt ctgtcatccc gaccagcggc gatgttgtcg togtgtcgac cgatgctctc 1260
 atgactggct ttaccggcga cttcgactct gtgatagact gcaacacgtg tgtcactcag 1320
 acagtcgatt tcagccttga ccctaccttt accattgaga caaccacgct ccccaggat 1380
 gctgtctcca ggactcaacg ccggggcagg actggcaggg ggaagccagg catctataga 1440
 tttgtggcac cgggggagcg cccctccggc atgttcgact cgcccgctct ctgtgagtgc 1500
 tatgacgcgg gctgtgcttg gtatgagctc acgcccgcgg agactacagt taggctacga 1560
 gcgtacatga acaccccggg gcttcccggt tgccaggacc atcttgaatt ttgggagggc 1620
 gtctttacgg gcctcactca tatagatgcc cactttttat ccagacaaa gcagagtggg 1680
 gagaactttc cttacctggt agcgtaccaaa gccacogtgt gcgctagggc tcaagccct 1740
 ccccatcgt gggaccagat gtggaagtgt ttgatccgcc ttaaaccac cctccatggg 1800
 ccaacacccc tgctatacag actgggcgct gttcagaatg aagtcaccct gacgcacca 1860
 atcaccaaat acatcatgac atgcatgtcg gccgacctgg aggtcgtcac gagcacctgg 1920
 gtgctcgttg gcggcgctct ggctgctctg gccgcgtatt gcctgtcaac aggctgcgtg 1980
 gtcatagtgg gcaggattgt cttgtccggg aagccggcaa ttatacctga caggaggtt 2040
 ctctaccagg agttcgatga gatggaagag tgctctcagc acttacgta catcgagcaa 2100
 gggatgatgc tcgctgagca gttcaagcag aaggccctcg gcctcctgca gaccgcgtcc 2160
 cgccatgcag aggttatcac ccctgctgtc cagaccaact ggcagaaact cgaggtcttc 2220
 tgggcgaagc acatgtggaa tttcatcagt gggatacaat acttggcggg cctgtcaact 2280
 agtcctggag ccctttagt cggtgtggtc tgcgcagcaa tactgcgccg gcacgttggc 2340
 ccgggcgagg gggcagtga atggatgaac cggctaatac ccttcgcctc ccgggggaac 2400

3923-12-pct.ST25.txt

catgtttccc ccacgcacta cgtgccggag agcgatgcag ccgcccgcgt cactgccata 2460
 ctcagcagcc tcactgtaac ccagtcctg aggcgactgc atcagtggat aagctcggag 2520
 tgtaccactc catgctag 2538

<210> 16
 <211> 845
 <212> PRT
 <213> Artificial

<220>
 <223> recombinant fusion protein

<400> 16

Met Ala Asp Glu Ala Pro Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr
 1 5 10 15

Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys
 20 25 30

Asn Gln Val Glu Gly Glu Val Gln Ile Val Ser Thr Ala Thr Gln Thr
 35 40 45

Phe Leu Ala Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly
 50 55 60

Ala Gly Thr Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met
 65 70 75 80

Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly
 85 90 95

Ser Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu
 100 105 110

Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser
 115 120 125

Arg Gly Ser Leu Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser
 130 135 140

Ala Gly Gly Pro Leu Leu Cys Pro Ala Gly His Ala Val Gly Leu Phe
 145 150 155 160

Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile
 165 170 175

Pro Val Glu Asn Leu Gly Thr Thr Met Arg Ser Pro Val Phe Thr Asp
 180 185 190

3923-12-pct.ST25.txt

Asn Ser Ser Pro Pro Ala Val Pro Gln Ser Phe Gln Val Ala His Leu
 195 200 205

His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr
 210 215 220

Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala
 225 230 235 240

Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His Gly Val Asp Pro
 245 250 255

Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr
 260 265 270

Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly
 275 280 285

Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr
 290 295 300

Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly
 305 310 315 320

Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr
 325 330 335

Val Ser His Pro Asn Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu
 340 345 350

Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly
 355 360 365

Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala
 370 375 380

Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly
 385 390 395 400

Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val Val Val Val Ser
 405 410 415

Thr Asp Ala Leu Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile
 420 425 430

Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro
 435 440 445

3923-12-pct.ST25.txt

Thr Phe Thr Ile Glu Thr Thr Thr Leu Pro Gln Asp Ala Val Ser Arg
 450 455 460

Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg
 465 470 475 480

Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val
 485 490 495

Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro
 500 505 510

Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu
 515 520 525

Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly
 530 535 540

Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly
 545 550 555 560

Glu Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg
 565 570 575

Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile
 580 585 590

Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu
 595 600 605

Gly Ala Val Gln Asn Glu Val Thr Leu Thr His Pro Ile Thr Lys Tyr
 610 615 620

Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val Thr Ser Thr Trp
 625 630 635 640

Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser
 645 650 655

Thr Gly Cys Val Val Ile Val Gly Arg Ile Val Leu Ser Gly Lys Pro
 660 665 670

Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Gln Glu Phe Asp Glu Met
 675 680 685

Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu
 690 695 700

3923-12-pct.ST25.txt

Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser
705 710 715 720

Arg His Ala Glu Val Ile Thr Pro Ala Val Gln Thr Asn Trp Gln Lys
725 730 735

Leu Glu Val Phe Trp Ala Lys His Met Trp Asn Phe Ile Ser Gly Ile
740 745 750

Gln Tyr Leu Ala Gly Leu Ser Thr Ser Pro Gly Ala Leu Val Val Gly
755 760 765

Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly
770 775 780

Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn
785 790 795 800

His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg
805 810 815

Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg
820 825 830

Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys
835 840 845

<210> 17
<211> 2982
<212> DNA
<213> Artificial

<220>
<223> recombinant fusion protein construct

<400> 17
atggccgacg aggcaccatc cggttcctgg ctaagggaca tctgggactg gatatgcgag 60
gtgctgagcg actttaagac ctggctgaaa gccaaactca tgccacaact gcctgggatt 120
ccctttgtgt cctgccagcg cgggtatagg ggggtctggc gaggagacgg cattatgcac 180
actcgtgcc actgtggagc tgagatcact ggacatgtca aaaacgggac gatgaggatc 240
gtcggtccta ggacctgcag gaacatgtgg agtgggacgt tccccattaa cgcctacacc 300
acgggcccct gtactcccct tcctgcgcgc aactataagt tcgcgctgtg gaggggtgtct 360
gcagaggaat acgtggagat aaggcgggtg ggggacttcc actacgtatc gggtatgact 420
actgacaatc ttaaattgcc gtgccagatc ccatacggcg aatttttcac agaattggac 480
ggggtgcgcc tacatagggtt tgcgccccct tgcaagccct tgctgcggga ggaggtatca 540

3923-12-pct.ST25.txt

ttcagagtag gactccacga gtacccggtg gggtcgcaat taccttgca gcccgaaaccg	600
gacgtagccg tggtgacgtc catgctcact gatccctccc atataacagc agaggcgcc	660
gggagaaggt tggcgagagg gtcacccct tctatggcca gctcctcggc cagccagctg	720
tccgctccat ctctcaaggc aacttgacc gcccaaccatg actccctga cgcgagctc	780
atagaggcta acctcctgtg gaggcaggag atggcgcgca acatcaccag ggttgagtca	840
gagaacaaag tggtgattct ggactcctc gatccgctg tggcagagga ggatgagcgg	900
gaggtctccg taccgcaga aattctgcg aagtctcgga gattcgccc ggccctgcc	960
gtttggcgcc ggccggacta caacccccg ctagtagaga cgtggaaaa gcctgactac	1020
gaaccacctg tggtccatgg ctgcccgtc ccacctccac ggtccctcc tgtgcctccg	1080
cctcgaaaa agcgtacggt ggtcctcacc gaatcaacc tatctactgc cttggccgag	1140
cttgccacca aaagttttg cagctcctc acttcggca ttacggcgca caatacgaca	1200
acatcctctg agcccgcccc ttctggctgc cccccgact ccgacgttga gtcctattct	1260
tccatgcccc ccctggaggg ggagcctggg gatccggatc tcagcgacgg gtcattgctg	1320
acggtcagta gtggggccga cacggaagat gtcgtgtgct gctcaatgtc ttattcctgg	1380
acaggcgac tcgtacccc gtgcgtgcg gaagaacaaa aactgcccac caacgcactg	1440
agcaactcgt tgctacgcca tcacaatctg gtgtattcca ccacttcacg cagtgcctgc	1500
caaaggcaga agaaagtcac atttgacaga ctgcaagttc tggacagcca ttaccaggac	1560
gtgctcaagg aggtcaaagc agcggcgtc aaagtgaagg ctaacttgct atccgtagag	1620
gaagcttgca gcctgacgcc cccacattca gccaaatcca agtttggtc tggggcaaaa	1680
gacgtccgtt gccatgccag aaaggccgta gccacatca actccgtgtg gaaagacctt	1740
ctggaagaca gtgtaacacc aatagacact accatcatgg ccaagaacga ggttttctgc	1800
gttcagcctg agaagggggg tcgtaagcca gtcgtctca tcgtgttccc cgacctggc	1860
gtgcgcgtgt gcgagaagat ggccctgtac gacgtggtta gcaagctccc cctggccgtg	1920
atgggaagct cctacggatt ccaatactca ccaggacagc gggttgaatt cctcgtgcaa	1980
gcgtggaagt ccaagaagac ccgatgggg ttctcgtatg ataccgctg ttttgactcc	2040
acagtcactg agagcgacat ccgtacggag gaggcaattt accaatgttg tgacctggac	2100
ccccagccc gcgtggccat caagtccctc actgagaggc tttatgttgg gggccctctt	2160
accaattcaa ggggggaaaa ctgcggctac cgcagggtgc gcgcgagcgg cgtactgaca	2220
actagctgtg gtaacacct cacttgctac atcaaggccc gggcagcctg tcgagccgca	2280
gggctccagg actgcacat gtcgtgtgt ggcgacgact tagtcgttat ctgtgaaagt	2340
gcgggggtcc aggaggacgc ggcgagcctg agagccttca cggaggctat gaccaggtag	2400
tccgcccccc ccggggaccc cccacaacca gaatacgaact tggagcttat aacatcatgc	2460

3923-12-pct.ST25.txt

tcctccaacg tgcagtcgc ccacgacggc gctggaaaga gggctacta ccttaccgt 2520
gaccctacaa cccccctgc gagagccgcg tgggagacag caagacacac tccagtcaat 2580
tcctggctag gcaacataat catgtttgcc cccacactgt gggcgaggat gatactgatg 2640
acccatttct ttagcgtcct catagccagg gatcagcttg aacaggctct taactgtgag 2700
atctacggag cctgctactc catagaacca ctggatctac ctccaatcat tcaaagactc 2760
catggcctca gcgcattttc actccacagt tactctccag gtgaaatcaa taggggtggcc 2820
gcatgcctca gaaaacttgg ggtcccgccc ttgcgagctt ggagacaccg ggcccgagc 2880
gtccgcgcta ggcttctgtc cagaggaggc agggctgcca tatgtggcaa gtacctcttc 2940
aactgggcag taagaacaaa gctcaaactc actccaatat ag 2982

<210> 18
<211> 993
<212> PRT
<213> Artificial

<220>
<223> recombinant fusion protein

<400> 18

Met Ala Asp Glu Ala Pro Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp
1 5 10 15

Trp Ile Cys Glu Val Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys
20 25 30

Leu Met Pro Gln Leu Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly
35 40 45

Tyr Arg Gly Val Trp Arg Gly Asp Gly Ile Met His Thr Arg Cys His
50 55 60

Cys Gly Ala Glu Ile Thr Gly His Val Lys Asn Gly Thr Met Arg Ile
65 70 75 80

Val Gly Pro Arg Thr Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile
85 90 95

Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Leu Pro Ala Pro Asn Tyr
100 105 110

Lys Phe Ala Leu Trp Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg
115 120 125

Arg Val Gly Asp Phe His Tyr Val Ser Gly Met Thr Thr Asp Asn Leu
130 135 140

3923-12-pct.ST25.txt

Lys Cys Pro Cys Gln Ile Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp
 145 150 155 160

Gly Val Arg Leu His Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg
 165 170 175

Glu Glu Val Ser Phe Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser
 180 185 190

Gln Leu Pro Cys Glu Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met
 195 200 205

Leu Thr Asp Pro Ser His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu
 210 215 220

Ala Arg Gly Ser Pro Pro Ser Met Ala Ser Ser Ser Ala Ser Gln Leu
 225 230 235 240

Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro
 245 250 255

Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly
 260 265 270

Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp
 275 280 285

Ser Phe Asp Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Val Ser Val
 290 295 300

Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg Phe Ala Arg Ala Leu Pro
 305 310 315 320

Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys
 325 330 335

Lys Pro Asp Tyr Glu Pro Pro Val Val His Gly Cys Pro Leu Pro Pro
 340 345 350

Pro Arg Ser Pro Pro Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val
 355 360 365

Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Lys
 370 375 380

Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr
 385 390 395 400

"3923-12-pct.ST25.txt

Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Val
405 410 415

Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro
420 425 430

Asp Leu Ser Asp Gly Ser Trp Ser Thr Val Ser Ser Gly Ala Asp Thr
435 440 445

Glu Asp Val Val Cys Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu
450 455 460

Val Thr Pro Cys Ala Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu
465 470 475 480

Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr Ser Thr Thr Ser
485 490 495

Arg Ser Ala Cys Gln Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln
500 505 510

Val Leu Asp Ser His Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala
515 520 525

Ala Ser Lys Val Lys Ala Asn Leu Leu Ser Val Glu Glu Ala Cys Ser
530 535 540

Leu Thr Pro Pro His Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys
545 550 555 560

Asp Val Arg Cys His Ala Arg Lys Ala Val Ala His Ile Asn Ser Val
565 570 575

Trp Lys Asp Leu Leu Glu Asp Ser Val Thr Pro Ile Asp Thr Thr Ile
580 585 590

Met Ala Lys Asn Glu Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg
595 600 605

Lys Pro Ala Arg Leu Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys
610 615 620

Glu Lys Met Ala Leu Tyr Asp Val Val Ser Lys Leu Pro Leu Ala Val
625 630 635 640

Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu
645 650 655

"3923-12-pct.ST25.txt

Phe Leu Val Gln Ala Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser
660 665 670

Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg
675 680 685

Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg
690 695 700

Val Ala Ile Lys Ser Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu
705 710 715 720

Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser
725 730 735

Gly Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys
740 745 750

Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu
755 760 765

Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln
770 775 780

Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr Glu Ala Met Thr Arg Tyr
785 790 795 800

Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu
805 810 815

Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala His Asp Gly Ala Gly
820 825 830

Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg
835 840 845

Ala Ala Trp Glu Thr Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly
850 855 860

Asn Ile Ile Met Phe Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met
865 870 875 880

Thr His Phe Phe Ser Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala
885 890 895

Leu Asn Cys Glu Ile Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp
900 905 910

3923-12-pct.ST25.txt

Leu Pro Pro Ile Ile Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu
 915 920 925

His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg
 930 935 940

Lys Leu Gly Val Pro Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser
 945 950 955 960

Val Arg Ala Arg Leu Leu Ser Arg Gly Gly Arg Ala Ala Ile Cys Gly
 965 970 975

Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro
 980 985 990

Ile

<210> 19
 <211> 9599
 <212> DNA
 <213> Hepatitis C virus

<400> 19
 gccagccccc tgatgggggc gacactccac catgaatcac tcccctgtga ggaactattg 60
 tcttcacgca gaaagcgtct agccatggcg ttagtatgag tgctcgtgcag cctccaggac 120
 cccccctccc gggagagcca tagtggtctg cggaaccggt gagtacaccg gaattgccag 180
 gacgaccggg tcctttcttg gataaaccgc ctcaatgcct ggagatttgg gcgtgcccc 240
 gcaagactgc tagccgagta gtgttgggtc gcgaaaggcc ttgtggtact gcctgatagg 300
 gtgcttgcca gtgccccggg aggtctcgta gaccgtgcac catgagcacg aatcctaaac 360
 ctcaaagaaa aaccaaactg aacaccaacc gtcgcccaca ggacgtcaag ttcccgggtg 420
 gcggtcagat cgttggtgga gtttacttgt tgccgcgcag gggccctaga ttgggtgtgc 480
 gcgcgacgag gaagacttcc gagcggctgc aacctcgagg tagacgtcag cctatcccca 540
 aggcacgtcg gcccgagggc aggacctggg ctccagcccg gtacccttgg cccctctatg 600
 gcaatgaggg ttgcgggtgg gcgggatggc tcctgtctcc ccgtggctct cggcctagct 660
 ggggccccac agacccccgg cgtaggctgc gcaatttggg taaggctatc gataccctta 720
 cgtgcggctt cgccgacctc atgggggtaca taccgctcgt cggcgcccct cttggaggcg 780
 ctgccagggc cctggcgcat ggcgccggg ttctggaaga cggcgtgaac tatgcaacag 840
 ggaaccttcc tggttgctct ttctctatct tccttctggc cctgctctct tgcctgactg 900
 tgcccgttc agcctaccaa gtgcgcaatt cctcggggct ttaccatgtc accaatgatt 960

3923-12-pct.ST25.txt

gccctaactc gagtattgtg tacgaggcgg ccgatgccat cctgcacact ccgggggtgtg 1020
 tcccttgctg tcgcgagggt aacgcctcga ggtgttgggt ggcggtgacc cccacgggtgg 1080
 ccaccaggga cggcaaaactc cccacaacgc agcttcgacg tcatatcgat ctgcttgctg 1140
 ggagcgccac cctctgctcg gccctctacg tgggggacct gtgcgggtct gtctttcttg 1200
 ttggtcaact gtttaccttc tctcccaggc gccactggac gacgcaagac tgcaattgtt 1260
 ctatctatcc cggccatata acgggtcatc gcatggcatg ggatatgatg atgaactggt 1320
 cccctacggc agcgttgggt gtagctcagc tgctccggat cccacaagcc atcatggaca 1380
 tgatcgctgg tgctcactgg ggagtcctgg cgggcatagc gtattttctcc atgggtggga 1440
 actgggcgaa ggtcctggta gtgctgctgc tatttgccgg cgtcgacgcg gaaacccacg 1500
 tcaccggggg aaatgccggc cgcaccacgg ctgggcttgt tgggtctcctt acaccaggcg 1560
 ccaagcagaa catccaactg atcaacacca acggcagttg gcacatcaat agcacggcct 1620
 tgaactgcaa tgaaagcctt aacaccggct ggtagcagg gctctttctat cagcacaat 1680
 tcaactcttc aggctgtcct gagaggttga ccagctgccg acgccttacc gattttgccc 1740
 agggctgggg tcctatcagt tatgccaacg gaagcggcct cgacgaacgc ccctactgct 1800
 ggcactacc tccaagacct tgtggcattg tgcccgcaa gagcgtgtgt ggcccgggtat 1860
 attgcttcac tcccagcccc gtgggtgggtg gaacgaccga caggtcgggc gcgcctacct 1920
 acagctgggg tgcaaatgat acggacgtct tcgtccttaa caacaccagg ccaccgctgg 1980
 gcaattgggt cggttgctac tggatgaact caactggatt caccaaagtg tgcggagcgc 2040
 ccccttgctg catcgagggt gtgggcaaca acaccttget ctgccccact gattgcttcc 2100
 gcaaacatcc ggaagccaca tactctcggg gcggtccgg tccctggatt acaccagggt 2160
 gcatggtcga ctaccctgat aggctttggc actatccttg taccatcaat tacaccatat 2220
 tcaaagtcag gatgtacgtg ggaggggtcg agcacaggct ggaagcggcc tgcaactgga 2280
 cgcggggcga acgctgtgat ctggaagaca gggacaggtc cgagctcagc ccgttgctgc 2340
 tgtccaccac acagtggcag gtccttcogt gttctttcac gaccctgcca gccttgctca 2400
 ccggcctcat ccacctccac cagaacattg tggacgtgca gtacttgtag ggggtagggt 2460
 caagcatcgc gtccctgggc attaatggg agtacgtcgt tctcctgttc cttctgcttg 2520
 cagacgcgcg cgtctgctcc tgcttggtga tgatgttact catatcccaa gcggaggcgg 2580
 ctttgagaaa cctcgtaata ctcaatgcag catccctggc cgggacgcac ggtcttgctg 2640
 ccttcctcgt gttctttctg tttgcgtgg atctgaagg taggtgggtg ccgggagcgg 2700
 cctacgcctt ctacgggatg tggcctctcc tcctgctcct gctggcgttg cctcagcggg 2760
 catacgcact ggacacggag gtggccgcgt cgtgtggcgg cgttgcttct gtccgggttaa 2820
 tggcgctgac tctgtcgcca tattacaagc gctatatcag ctggtgcatg tgggtggcttc 2880

3923-12-pct.ST25.txt

agtattttct gaccagagta gaagcgcaac tgcacgtgtg ggttcccccc ctcaacgtcc 2940
 ggggggggcg cgatgccgtc atcttactca tgtgtgtagt acacccgacc ctggtatttg 3000
 acatcaccaa actactcctg gccatcttctg gacccctttg gattcttcaa gccagtttgc 3060
 ttaaagtccc ctacttcgtg cgcgttcaag gccttctccg gatctgcgcg ctagecgcgga 3120
 agatagccgg aggtcattac gtgcaaattg coactcatcaa gttaggggcg cttactggca 3180
 cctatgtgta taaccatctc acccctcttc gagactgggc gcacaacggc ctgcgagatc 3240
 tggccgtggc tgtggaacca gtctgtttct cccgaatgga gaccaagctc atcacgtggg 3300
 gggcagatac cgccgcgtgc ggtgacatca tcaacggctt gcccgctctc gcccgtaggg 3360
 gccaggagat actgcttggg ccagccgacg gaatggcttc caaggggtgg aggttgcagg 3420
 cgcccatcac ggcgtacacc cagcagacga gaggcctcct aggggtgtata atcaccagcc 3480
 tgactggccg ggacaaaaac caagtggagg gtgagggtcca gatcgtgtca actgctaccc 3540
 aaaccttcct ggcaacgtgc atcaatgggg tatgctggac tgtctaccac ggggccggaa 3600
 cgaggaccat cgcatacccc aagggtcctg tcatccagat gtataccaat gtggaccaag 3660
 acctgtggg ctggcccgtc cctcaagggt cccgctcatt ggcaccctgc acctgcccgt 3720
 cctcggacct ttacctggtc acgaggcacg ccgatgtcat tcccgctgcg cggcgagggtg 3780
 atagcagggg tagcctgctt tgcgcccggc ccatttctta cttgaaaggc tcctcggggg 3840
 gtccgctgtt gtgccccgcg ggacacgcgc tgggcctatt cagggccgcg gtgtgcaccc 3900
 gtggagtggc taaggcgggtg gactttatcc ctgtggagaa cctagggaca accatgagat 3960
 ccccggtgtt caccgacaac tcctctccac cagcagtgcc ccagagcttc caggtggccc 4020
 acctgcatgc tcccaccggc agcggtaaga gcaccaaggc cccggctgcg tacgcagccc 4080
 agggctacaa ggtgttgggtg ctcaaccctt ctgttgctgc aacgctgggc tttggtgctt 4140
 acatgtccaa ggcccatggg gttgatctta atatcaggac cggggtgaga acaattacca 4200
 ctggcagccc catcacgtac tccacctacg gcaagttcct tgccgacggc ggggtgctcag 4260
 gaggtgctta tgacataata atttgtgacg agtgccactc cacggatgcc acatccatct 4320
 tgggcatcgg cactgtcctt gaccaagcag agactgcggg ggcgagactg gttgtgctcg 4380
 ccaactgctac ccctccgggc tccgtcactg tgtcccatcc taacatcgag gaggttgctc 4440
 tgtccaccac cggagagatc cccttttacg gcaaggctat cccctcag gtgatcaagg 4500
 ggggaagaca tctcatcttc tgccattcaa agaagaagtg cgacgagctc gccgcgaagc 4560
 tggtcgcatt gggcatcaat gccgtggcct actaccgcg tcttgacgtg tctgtcatcc 4620
 cgaccagcgg cgatgttgtc gtctgtoga ccgatgctct catgactggc tttaccggcg 4680
 acttcgactc tgtgatagac tgcaacacgt gtgtcactca gacagtcat ttcagccttg 4740
 accctacctt taccattgag acaaccacgc tccccagga tgctgtctcc aggactcaac 4800

3923-12-pct.ST25.txt

gccggggcag gaccggcagg gggaagccag gcatctatag atttgtggca ccgggggagc	4860
gccccctccgg catgttcgac tcgtccgtcc tctgtgagtg ctatgacgcg ggctgtgctt	4920
ggatatgagct cagccccgcc gagactacag ttaggctacg agcgtacatg aacacccccg	4980
ggcttcccggt gtgccaggac catcttgaat tttgggaggg cgtcttttacg ggccctcactc	5040
atatagatgc ccacttttcta tcccagacaa agcagagtgg ggagaacttt ccttacctgg	5100
tagcgtacca agccaccgtg tgcgctaggg ctcaagcccc tcccccatcg tgggaccaga	5160
tgtggaagtg tttgatccgc cttaaaccga ccctccatgg gccaacaccc ctgctataca	5220
gactggggcgc tgttcagaat gaagtcaccc tgacgcaccc aatcaccaaa tacatcatga	5280
catgcatgtc ggccgacctg gaggtcgtca cgagcacctg ggtgctcgtt ggccggcgctc	5340
tggtgtctct ggccgcgtat tgcctgtcaa caggctgcgt ggtcatagtg ggcaggatcg	5400
tcttgtccgg gaagccggca attataacctg acagggaggt tctctaccag gagttcgatg	5460
agatggaaga gtgctctcag cacttacgtg acatcgagca agggatgatg ctogctgagc	5520
agttcaagca gaaggccctc ggccctcctgc agaccgcgtc ccgccatgca gaggttatca	5580
cccctgctgt ccagaccaac tggcagaaac tcgaggtctt ttgggcgaag cacatgtgga	5640
atttcatcag tgggatacaa tacttggcgg gcctgtcaac gctgcctggg aaccccgcca	5700
ttgcttcatt gatggctttt acagctgccg tcaccagccc actaaccact ggccaaaccc	5760
tcctcttcaa catattgggg ggggtgggtg ctgccagct cgccgcccc gggtccgcta	5820
ctgcctttgt gggcgctggc ctagctggcg ccgccatcg cagcgttgga ctggggaagg	5880
tcctcgtgga cattcttgca gggatatggc cgggcgtggc gggagctctt gtagcattca	5940
agatcatgag cggtgaggtc ccctccacgg aggacctggt caatctgctg ccgccatcc	6000
tctcgcctgg agcccttgta gtcgggtgtg tctgcgcagc aatactgcgc cggcacgttg	6060
gcccgggcca gggggcagtg caatggatga accggctaata agccttcgcc tcccggggga	6120
accatgtttc cccacgcac tacgtgccgg agagcgatgc agccgcccc gtcactgcca	6180
tactcagcag cctcactgta acccagctcc tgaggcgact gcatcagtgg ataagctcg	6240
agtgtaccac tccatgctcc ggttcctggc taaggacat ctgggactgg atatgcgagg	6300
tgctgagcga ctttaagacc tggctgaaag ccaagctcat gccacaactg cctgggattc	6360
cctttgtgtc ctgccagcgc gggatatagg gggctctggc aggagacggc attatgcaca	6420
ctcgtgcca ctgtggagct gagatcactg gacatgtcaa aaacgggacg atgaggatcg	6480
tgggtcctag gacttgacgg aacatgtgga gtgggacgtt ccccattaac gcctacacca	6540
cgggccccctg tactccccct cctgcgcgca actataagtt cgcgctgtgg aggggtgtctg	6600
cagaggaata cgtggagata aggcgggtgg gggacttcca ctacgtatcg ggtatgacta	6660
ctgacaatct taaatgcccg tgccagatcc catcgccgca atttttcaca gaattggacg	6720

3923-12-pct.ST25.txt

ggggtgcgcct acacaggttt ggcgcgcctt gcaagccctt gctgcgggag gaggtatcat 6780
 tcagagtagg actccacgag tacccggtgg ggtcgcaatt accttgcgag cccgaaccgg 6840
 acgtagccgt gttgacgtcc atgctcactg atccctccca tataacagca gaggcggccg 6900
 ggagaagggtt ggcgagaggg tcacccctt ctatggccag ctctcggct agccagctgt 6960
 ccgctccatc tctcaaggca acttgacccg ccaacctga ctcccctgac gccgagctca 7020
 tagaggctaa cctcctgtgg aggcaggaga tgggcggcaa catcaccagg gttgagtcag 7080
 agaacaaagt ggtgattctg gactccttcg atccgcttgt ggagaggag gatgagcggg 7140
 aggtctccgt acctgcagaa attctgcgga agtctcggag attcgcccg gccctgccg 7200
 tctgggcgcg gccggactac aacccccgc tagtagagac gtggaaaaag cctgactacg 7260
 aaccacctgt ggtccatggc tgcccgtac cacctccag gtcccctcct gtgcctccgc 7320
 ctcggaaaaa gcgtacggtg gtccctacccg aatcaaccct atctactgcc ttggccgagc 7380
 ttgccaccaa aagttttggt agctcctcaa cttccggcat tacgggcgac aatacgacaa 7440
 catcctctga gcccgccct tctggctgcc ccccgactc cgacgttgag tcctattctt 7500
 ccatgcccc cctggagggg gagcctgggg atccggatct cagcgacggg tcatggtcga 7560
 cggtcagtag tggggccgac acggaagatg tcgtgtgctg ctcaatgtct tattcctgga 7620
 caggcgcact cgtcaccccg tgcgtgcgg aagaacaaaa actgcccac aacgcactga 7680
 gcaactcggt gctacgccat cacaatctgg tgtattccac cacttcacgc agtgcttgcc 7740
 aaaggcagaa gaaagtcaca tttagacagac tgcaagttct ggacagccat taccaggacg 7800
 tgctcaagga ggtcaaagca ggcgcgtcaa aagtgaaggc taacttgcta tccgtagagg 7860
 aagcttgag cctgacgccc ccacattcag ccaaatccaa gtttggtat ggggcaaaag 7920
 acgtccgttg ccatgccaga aaggccgtag cccacatcaa ctccgtgtgg aaagacctc 7980
 tggaagacag tgtaacacca atagacacta ccatcatggc caagaacgag gttttctgcg 8040
 ttcagcctga gaaggggggt cgtaagccag ctgctctcat cgtgttccc gacctggcg 8100
 tgcgcgtgtg cgagaagatg gccctgtacg acgtggttag caagctccc ctggccgtga 8160
 tgggaagctc ctacggattc caatactcac caggacagcg ggttgaattc ctcgtgcaag 8220
 cgtggaagtc caagaagacc ccgatgggg tctcgtatga taccgctgt tttgactcca 8280
 cagtcactga gagcgacatc cgtacggagg aggcaattta ccaatgttgt gacctggacc 8340
 cccaagcccg cgtggccatc aagtccctca ctgagaggct ttatgttggg ggccctctta 8400
 ccaattcaag gggggaaac tgccgctacc gcagtgccg cgcgagcggc gtactgacaa 8460
 ctagctgtgg taacaccctc acttgctaca tcaaggcccc ggcagcctgt cgagccgcag 8520
 ggctccagga ctgcaccatg ctcgtgtgtg gcgacgactt agtcgttatc tgtgaaagt 8580
 cgggggtcca ggaggacgg gcgaacctga gagccttcac ggaggctatg accaggtact 8640

3923-12-pct.ST25.txt

ccgccccccc cggggacccc ccacaaccag aatacgactt ggagcttata acatcatgct 8700
 cctccaacgt gtcagtcgcc cacgacggcg ctggaaagag ggtotactac ottacccgtg 8760
 accctacaac cccctcgcg agagccgcgt gggagacagc aagacacact ccagtcaatt 8820
 cctggctagg caacataatc atgtttgccc ccacactgtg ggcgaggatg atactgatga 8880
 cccatttctt tagcgtcctc atagccaggg atcagcttga acaggctctt aactgtgaga 8940
 totacggagc ctgctactcc atagaaccac tggatctacc tocaatcatt caaagactcc 9000
 atggcctcag cgcattttca ctccacagtt actctccagg tgaaatcaat aggggtggccg 9060
 catgcctcag aaaacttggg gtcccgccct tgcgagcttg gagacaccgg gcccggagcg 9120
 tccgcgctag gcttctgtcc agaggaggca gggctgccat atgtggcaag tacctcttca 9180
 actgggcagt aagaacaaag ctcaaactca cccaataac ggccgctggc cggtctggact 9240
 tgtccggttg gttcacggct ggctacagcg ggggagacat ttatcacagc gtgtctcatg 9300
 cccggccccc ctggttcttg ttttgccctac tctgtctgc tgcaggggta ggcactctacc 9360
 tcctcccaa ccgatgaagg ttggggtaaa cactccggcc tottaagcca tttctgttt 9420
 tttttttttt tttttttttt tttttctttt tttttttctt tcctttctt ctttttttcc 9480
 tttctttttc cttcttttaa tgggtggctcc atcttagccc tagtcacggc tagctgtgaa 9540
 aggtccgtga gccgcatgac tgcagagagt gctgatactg gcctctctgc agatcatgt 9599

<210> 20
 <211> 3011
 <212> PRT
 <213> Hepatitis C virus

<400> 20

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50 55 60

Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
85 90 95

3923-12-pct.ST25.txt

Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
 100 105 110

Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
 115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu
 130 135 140

Gly Gly Ala Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
 145 150 155 160

Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
 165 170 175

Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr
 180 185 190

Gln Val Arg Asn Ser Ser Gly Leu Tyr His Val Thr Asn Asp Cys Pro
 195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Ala Asp Ala Ile Leu His Thr Pro
 210 215 220

Gly Cys Val Pro Cys Val Arg Glu Gly Asn Ala Ser Arg Cys Trp Val
 225 230 235 240

Ala Val Thr Pro Thr Val Ala Thr Arg Asp Gly Lys Leu Pro Thr Thr
 245 250 255

Gln Leu Arg Arg His Ile Asp Leu Leu Val Gly Ser Ala Thr Leu Cys
 260 265 270

Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser Val Phe Leu Val Gly
 275 280 285

Gln Leu Phe Thr Phe Ser Pro Arg Arg His Trp Thr Thr Gln Asp Cys
 290 295 300

Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met Ala Trp
 305 310 315 320

Asp Met Met Met Asn Trp Ser Pro Thr Ala Ala Leu Val Val Ala Gln
 325 330 335

Leu Leu Arg Ile Pro Gln Ala Ile Met Asp Met Ile Ala Gly Ala His
 340 345 350

3923-12-pct.ST25.txt

Trp Gly Val Leu Ala Gly Ile Ala Tyr Phe Ser Met Val Gly Asn Trp
355 360 365

Ala Lys Val Leu Val Val Leu Leu Leu Phe Ala Gly Val Asp Ala Glu
370 375 380

Thr His Val Thr Gly Gly Asn Ala Gly Arg Thr Thr Ala Gly Leu Val
385 390 395 400

Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu Ile Asn Thr
405 410 415

Asn Gly Ser Trp His Ile Asn Ser Thr Ala Leu Asn Cys Asn Glu Ser
420 425 430

Leu Asn Thr Gly Trp Leu Ala Gly Leu Phe Tyr Gln His Lys Phe Asn
435 440 445

Ser Ser Gly Cys Pro Glu Arg Leu Thr Ser Cys Arg Arg Leu Thr Asp
450 455 460

Phe Ala Gln Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly Ser Gly Leu
465 470 475 480

Asp Glu Arg Pro Tyr Cys Trp His Tyr Pro Pro Arg Pro Cys Gly Ile
485 490 495

Val Pro Ala Lys Ser Val Cys Gly Pro Val Tyr Cys Phe Thr Pro Ser
500 505 510

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

Trp Gly Ala Asn Asp Thr Asp Val Phe Val Leu Asn Asn Thr Arg Pro
530 535 540

Pro Leu Gly Asn Trp Phe Gly Cys Thr Trp Met Asn Ser Thr Gly Phe
545 550 555 560

Thr Lys Val Cys Gly Ala Pro Pro Cys Val Ile Gly Gly Val Gly Asn
565 570 575

Asn Thr Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys His Pro Glu Ala
580 585 590

Thr Tyr Ser Arg Cys Gly Ser Gly Pro Trp Ile Thr Pro Arg Cys Met
595 600 605

3923-12-pct.ST25.txt

Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr Ile Asn Tyr
 610 615 620

Thr Ile Phe Lys Val Arg Met Tyr Val Gly Gly Val Glu His Arg Leu
 625 630 635 640

Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp Leu Glu Asp
 645 650 655

Arg Asp Arg Ser Glu Leu Ser Pro Leu Leu Leu Ser Thr Thr Gln Trp
 660 665 670

Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly
 675 680 685

Leu Ile His Leu His Gln Asn Ile Val Asp Val Gln Tyr Leu Tyr Gly
 690 695 700

Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu Tyr Val Val
 705 710 715 720

Leu Leu Phe Leu Leu Leu Ala Asp Ala Arg Val Cys Ser Cys Leu Trp
 725 730 735

Met Met Leu Leu Ile Ser Gln Ala Glu Ala Ala Leu Glu Asn Leu Val
 740 745 750

Ile Leu Asn Ala Ala Ser Leu Ala Gly Thr His Gly Leu Val Ser Phe
 755 760 765

Leu Val Phe Phe Cys Phe Ala Trp Tyr Leu Lys Gly Arg Trp Val Pro
 770 775 780

Gly Ala Ala Tyr Ala Phe Tyr Gly Met Trp Pro Leu Leu Leu Leu Leu
 785 790 795 800

Leu Ala Leu Pro Gln Arg Ala Tyr Ala Leu Asp Thr Glu Val Ala Ala
 805 810 815

Ser Cys Gly Gly Val Val Leu Val Gly Leu Met Ala Leu Thr Leu Ser
 820 825 830

Pro Tyr Tyr Lys Arg Tyr Ile Ser Trp Cys Met Trp Trp Leu Gln Tyr
 835 840 845

Phe Leu Thr Arg Val Glu Ala Gln Leu His Val Trp Val Pro Pro Leu
 850 855 860

3923-12-pct.ST25.txt

Asn Val Arg Gly Gly Arg Asp Ala Val Ile Leu Leu Met Cys Val Val
 865 870 875 880

His Pro Thr Leu Val Phe Asp Ile Thr Lys Leu Leu Leu Ala Ile Phe
 885 890 895

Gly Pro Leu Trp Ile Leu Gln Ala Ser Leu Leu Lys Val Pro Tyr Phe
 900 905 910

Val Arg Val Gln Gly Leu Leu Arg Ile Cys Ala Leu Ala Arg Lys Ile
 915 920 925

Ala Gly Gly His Tyr Val Gln Met Ala Ile Ile Lys Leu Gly Ala Leu
 930 935 940

Thr Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala
 945 950 955 960

His Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe
 965 970 975

Ser Arg Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala
 980 985 990

Cys Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Gln
 995 1000 1005

Glu Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp
 1010 1015 1020

Arg Leu Gln Ala Pro Ile Thr Ala Tyr Thr Gln Gln Thr Arg Gly
 1025 1030 1035

Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn
 1040 1045 1050

Gln Val Glu Gly Glu Val Gln Ile Val Ser Thr Ala Thr Gln Thr
 1055 1060 1065

Phe Leu Ala Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His
 1070 1075 1080

Gly Ala Gly Thr Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile
 1085 1090 1095

Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Pro Ala
 1100 1105 1110

3923-12-pct.ST25.txt

Pro Gln Gly Ser Arg Ser Leu Ala Pro Cys Thr Cys Gly Ser Ser
1115 1120 1125

Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg
1130 1135 1140

Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Ile
1145 1150 1155

Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ala
1160 1165 1170

Gly His Ala Val Gly Leu Phe Arg Ala Ala Val Cys Thr Arg Gly
1175 1180 1185

Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu Gly Thr
1190 1195 1200

Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala
1205 1210 1215

Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly
1220 1225 1230

Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly
1235 1240 1245

Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly
1250 1255 1260

Phe Gly Ala Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile
1265 1270 1275

Arg Thr Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr
1280 1285 1290

Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly
1295 1300 1305

Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala
1310 1315 1320

Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu Thr
1325 1330 1335

Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro Gly
1340 1345 1350

3923-12-pct.ST25.txt

Ser Val Thr Val Ser His Pro Asn Ile Glu Glu Val Ala Leu Ser
 1355 1360 1365

Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu
 1370 1375 1380

Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys
 1385 1390 1395

Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn
 1400 1405 1410

Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr
 1415 1420 1425

Ser Gly Asp Val Val Val Val Ser Thr Asp Ala Leu Met Thr Gly
 1430 1435 1440

Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val
 1445 1450 1455

Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu
 1460 1465 1470

Thr Thr Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg
 1475 1480 1485

Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala
 1490 1495 1500

Pro Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys
 1505 1510 1515

Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala
 1520 1525 1530

Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu
 1535 1540 1545

Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr
 1550 1555 1560

Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln
 1565 1570 1575

Ser Gly Glu Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val
 1580 1585 1590

3923-12-pct.ST25.txt

Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
 1595 1600 1605

Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro
 1610 1615 1620

Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Leu Thr
 1625 1630 1635

His Pro Ile Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu
 1640 1645 1650

Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala
 1655 1660 1665

Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val
 1670 1675 1680

Gly Arg Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg
 1685 1690 1695

Glu Val Leu Tyr Gln Glu Phe Asp Glu Met Glu Glu Cys Ser Gln
 1700 1705 1710

His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe
 1715 1720 1725

Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg His Ala
 1730 1735 1740

Glu Val Ile Thr Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu
 1745 1750 1755

Val Phe Trp Ala Lys His Met Trp Asn Phe Ile Ser Gly Ile Gln
 1760 1765 1770

Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala
 1775 1780 1785

Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro Leu Thr Thr
 1790 1795 1800

Gly Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala Ala
 1805 1810 1815

Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala Gly
 1820 1825 1830

3923-12-pct.ST25.txt

Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
1835 1840 1845

Val Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu
1850 1855 1860

Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp
1865 1870 1875

Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val
1880 1885 1890

Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro
1895 1900 1905

Gly Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala
1910 1915 1920

Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser
1925 1930 1935

Asp Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val
1940 1945 1950

Thr Gln Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys
1955 1960 1965

Thr Thr Pro Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp
1970 1975 1980

Ile Cys Glu Val Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys
1985 1990 1995

Leu Met Pro Gln Leu Pro Gly Ile Pro Phe Val Ser Cys Gln Arg
2000 2005 2010

Gly Tyr Arg Gly Val Trp Arg Gly Asp Gly Ile Met His Thr Arg
2015 2020 2025

Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys Asn Gly Thr
2030 2035 2040

Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp Ser Gly
2045 2050 2055

Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro Leu
2060 2065 2070

3923-12-pct.ST25.txt

Pro Ala Pro Asn Tyr Lys Phe Ala Leu Trp Arg Val Ser Ala Glu
 2075 2080 2085

Glu Tyr Val Glu Ile Arg Arg Val Gly Asp Phe His Tyr Val Ser
 2090 2095 2100

Gly Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Ile Pro Ser
 2105 2110 2115

Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe
 2120 2125 2130

Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg
 2135 2140 2145

Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu
 2150 2155 2160

Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro
 2165 2170 2175

Ser His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly
 2180 2185 2190

Ser Pro Pro Ser Met Ala Ser Ser Ser Ala Ser Gln Leu Ser Ala
 2195 2200 2205

Pro Ser Leu Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp
 2210 2215 2220

Ala Glu Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly
 2225 2230 2235

Gly Asn Ile Thr Arg Val Glu Ser Glu Asn Lys Val Val Ile Leu
 2240 2245 2250

Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp Glu Arg Glu Val
 2255 2260 2265

Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg Phe Ala Arg
 2270 2275 2280

Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val
 2285 2290 2295

Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His Gly
 2300 2305 2310

3923-12-pct.ST25.txt

Cys	Pro	Leu	Pro	Pro	Pro	Arg	Ser	Pro	Pro	Val	Pro	Pro	Pro	Arg
2315						2320					2325			
Lys	Lys	Arg	Thr	Val	Val	Leu	Thr	Glu	Ser	Thr	Leu	Ser	Thr	Ala
2330						2335					2340			
Leu	Ala	Glu	Leu	Ala	Thr	Lys	Ser	Phe	Gly	Ser	Ser	Ser	Thr	Ser
2345						2350					2355			
Gly	Ile	Thr	Gly	Asp	Asn	Thr	Thr	Thr	Ser	Ser	Glu	Pro	Ala	Pro
2360						2365					2370			
Ser	Gly	Cys	Pro	Pro	Asp	Ser	Asp	Val	Glu	Ser	Tyr	Ser	Ser	Met
2375						2380					2385			
Pro	Pro	Leu	Glu	Gly	Glu	Pro	Gly	Asp	Pro	Asp	Leu	Ser	Asp	Gly
2390						2395					2400			
Ser	Trp	Ser	Thr	Val	Ser	Ser	Gly	Ala	Asp	Thr	Glu	Asp	Val	Val
2405						2410					2415			
Cys	Cys	Ser	Met	Ser	Tyr	Ser	Trp	Thr	Gly	Ala	Leu	Val	Thr	Pro
2420						2425					2430			
Cys	Ala	Ala	Glu	Glu	Gln	Lys	Leu	Pro	Ile	Asn	Ala	Leu	Ser	Asn
2435						2440					2445			
Ser	Leu	Leu	Arg	His	His	Asn	Leu	Val	Tyr	Ser	Thr	Thr	Ser	Arg
2450						2455					2460			
Ser	Ala	Cys	Gln	Arg	Gln	Lys	Lys	Val	Thr	Phe	Asp	Arg	Leu	Gln
2465						2470					2475			
Val	Leu	Asp	Ser	His	Tyr	Gln	Asp	Val	Leu	Lys	Glu	Val	Lys	Ala
2480						2485					2490			
Ala	Ala	Ser	Lys	Val	Lys	Ala	Asn	Leu	Leu	Ser	Val	Glu	Glu	Ala
2495						2500					2505			
Cys	Ser	Leu	Thr	Pro	Pro	His	Ser	Ala	Lys	Ser	Lys	Phe	Gly	Tyr
2510						2515					2520			
Gly	Ala	Lys	Asp	Val	Arg	Cys	His	Ala	Arg	Lys	Ala	Val	Ala	His
2525						2530					2535			
Ile	Asn	Ser	Val	Trp	Lys	Asp	Leu	Leu	Glu	Asp	Ser	Val	Thr	Pro
2540						2545					2550			

3923-12-pct.ST25.txt

Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
 2555 2560 2565
 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro
 2570 2575 2580
 Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val
 2585 2590 2595
 Val Ser Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe
 2600 2605 2610
 Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp
 2615 2620 2625
 Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys
 2630 2635 2640
 Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala
 2645 2650 2655
 Ile Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile
 2660 2665 2670
 Lys Ser Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn
 2675 2680 2685
 Ser Arg Gly Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly
 2690 2695 2700
 Val Leu Thr Thr Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys
 2705 2710 2715
 Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu Gln Asp Cys Thr Met
 2720 2725 2730
 Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys Glu Ser Ala Gly
 2735 2740 2745
 Val Gln Glu Asp Ala Ala Asn Leu Arg Ala Phe Thr Glu Ala Met
 2750 2755 2760
 Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro Glu Tyr
 2765 2770 2775
 Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala
 2780 2785 2790

3923-12-pct.ST25.txt

His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
 2795 2800 2805

Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr
 2810 2815 2820

Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr
 2825 2830 2835

Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu
 2840 2845 2850

Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asn Cys Glu Ile Tyr
 2855 2860 2865

Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile
 2870 2875 2880

Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser
 2885 2890 2895

Pro Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly
 2900 2905 2910

Val Pro Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg
 2915 2920 2925

Ala Arg Leu Leu Ser Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys
 2930 2935 2940

Tyr Leu Phe Asn Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro
 2945 2950 2955

Ile Thr Ala Ala Gly Arg Leu Asp Leu Ser Gly Trp Phe Thr Ala
 2960 2965 2970

Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val Ser His Ala Arg
 2975 2980 2985

Pro Arg Trp Phe Trp Phe Cys Leu Leu Leu Leu Ala Ala Gly Val
 2990 2995 3000

Gly Ile Tyr Leu Leu Pro Asn Arg
 3005 3010

<210> 21

<211> 7

<212> DNA

<213> Artificial

3923-12-pct.ST25.txt

 <220>
<223> oligonucleotide

<400> 21
accatgg

7